

Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
AT 01_AVL	1_01	<p><u>Scientific and Technological Coordination</u></p> <p>Project management and monitoring processes have been setup to monitor work package activities, progress, schedule and status every four month.</p> <p><u>Administrative Project Coordination</u></p> <p>a SharePoint Platform has been set up to exchange the project data including reporting of the project</p> <p><u>Quality Management</u></p> <p>- to assure conformance of processes and tasks with the Description of Work and Grant Agreement and its Annexes</p> <p>- to supervise project plan correspondence of effort and delivery dates</p> <p><u>Steering Board Meetings</u></p> <p>regular Steering Board Meetings have been set up to ensure strategic progress in the project</p> <p><u>Technical Board Meetings</u></p> <p>regular Technical Board have been set up to ensure the technical and scientific progress of the project.</p>	<p>The objectives for M12 encompassed the following activities:</p> <ul style="list-style-type: none"> • Devise and implement the process for the administrative management process (SP1) including: <ul style="list-style-type: none"> o deliverable review process o tracking of dissemination activities o tracking of exploitation activities o organization of meetings and workshops o reporting (costs, efforts and results) • Provide a project handbook that serves as a manual for all partners with respect to administrative activities (SP1) • Create the CRYSTAL Homepage (SP1) • Devise and implement the technical management process (SP1 and SP6) <ul style="list-style-type: none"> o Define the roles and responsibilities of all stakeholders (use case owners and technology providers) o Define the collaboration and the communication structure between SP6 and the application SPs (SP2-SP5) o Establish full traceability among all involved artifacts in the development • Provide state-of-the-art reports the different areas (SP2-SP6) • Provide a first version of the use case definitions (SP2-SP5) • Provide a first version of the ontology documents (SP2-SP5) • Provide a first version of the documents describing the technology bricks (SP6) • Provide a first version for the meta model for the platform builder (SP6) • Provide the first version of the IOS specification 	no significant deviations	22	22,3	see progress and tangible results	Some deliverables have been submitted slightly delayed. These delays have been reported to the ARTEMIS JU and their impact has been assessed on WP, SP and Project level. The delays of the individual deliverables have no negative impact on other WPs or on the overall project objectives.
AT 01_AVL	1_02	<p>Set-up of dissemination material for public use:</p> <ul style="list-style-type: none"> • CRYSTAL Leaflet • CRYSTAL Homepage • CRYSTAL Logo • CRYSTAL Power Point Template • CRYSTAL Poster Template • CRYSTAL LinkedIn Group • CRYSTAL Newsletter <p>Creation of deliverables</p> <p>D102.010 Dissemination Plan V1</p> <p>D202.010 Use Case Description</p> <p>D102.020 Public Website including Dissemination Material</p> <p>Planning of dissemination and exploitation activities</p>	<p>Set-up of dissemination material for public use: CRYSTAL Leaflet, CRYSTAL Homepage, CRYSTAL Logo, CRYSTAL Power Point Template, CRYSTAL Poster Template, CRYSTAL LinkedIn Group, CRYSTAL Newsletter</p> <p>Creation of deliverables: D102.010 Dissemination Plan V1, D202.010 Use Case Description, D102.020 Public Website including Dissemination Material. Planning of dissemination and exploitation activities: All partners were asked via a survey to provide their dissemination and exploitation plans. The project partners have identified and defined dissemination and exploitation activities. All performed and planned dissemination activities and exploitation plans have been summarized in the deliverables "Report and Planning of Dissemination Activities V1 - D102.030" and "Exploitation Plan V1 - D102.040". Taking part in conferences:</p> <ul style="list-style-type: none"> - Interoperability Conference 2013 - Interoperability Conference 2014 - HIPEAC 2014 Presentation - ARTEMIS and Standardization Working Group Workshop - ARTEMIS and Standardization Working Group Workshop - ASAM International Conference: presenter 4th December 2013 - ARTEMIS spring events: - ARTEMIS-IA Co-Summits, - Meetings of the ARTEMIS and Standardization Working Group 	no exploitation plan from IBM UK, IBM NL and CIC by due date of the deliverables. CIC has provided input by beginning of May and this input will be considered in the update of the dissemination and exploitation plan in M20.	3,5	3,45	set-up of dissemination material (leaflet, poster, abstract... see above) participation to events listed above creation of deliverables listed above participation in general assembly meetings (F2F and WebEx meetings, Steering Board Meetings (F2F and WebEx meetings), Technical Board Meetings (F2F and WebEx meetings).	not applicable

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AT_01_AVL	3_03	<p>Use Case Framework and Process defined. Use Case details defined in terms of:</p> <p>Task 1 - Collect RQ's:</p> <ul style="list-style-type: none"> * Description of system development & according context for UC * System development activities of UC * Deliverables resulting out of system development <p>Task 2 - Prototyping IOS Concepts:</p> <ul style="list-style-type: none"> * Development / engineering methods applied * Detailed description of selected engineering methods incl. hadover to WP6 * Initial interoperability needs/requirements for IOS/RTP defined <p>Task 3 - Building SSE:</p> <ul style="list-style-type: none"> * Definition of initial concept for Interoperability Demonstrator for SysML/RQ-Management tool (Artisan Studio & Integrity) - ongoing * Definition of required RQ-Management tool adaptations (Specification Domain) - ongoing <p>Task 4 - SEE and Brick assessment:</p> <ul style="list-style-type: none"> * Initial review of first draft of Interoperability Demonstrator to assess usage potential and benefits to be gained in industrial environment * Initial review of AVL RQ-Management tool adaptations 	<p>Task 1 - Collect RQ's:</p> <ul style="list-style-type: none"> * Process for system development & according context for UC described * System development activities of UC defined and described * Deliverables resulting out of system development identified and documented <p>Task 2 - Prototyping IOS Concepts:</p> <ul style="list-style-type: none"> * Development / engineering methods applied in system development identified and described * Detailed description of selected engineering methods developed and aligned with UC partners * Initial interoperability needs/requirements for IOS/RTP defined and aligned with UC partners <p>Task 3 - Building SSE:</p> <ul style="list-style-type: none"> * Required Adaption of AVL RQ tool configuration defined and aligned for RQ Management tool (Integrity) <p>Task 4 - SEE and Brick assessment:</p> <ul style="list-style-type: none"> * Initial concept for Interoperability Demonstrator for SysML/RQ-Management tool (Artisan Studio & Integrity) developed and discussed * Initial AVL RQ-Management tool adaptations developed <p>Task 4 - SEE and Brick assessment:</p> <ul style="list-style-type: none"> * First draft of Interoperability Demonstrator analyzed * First AVL Integrity configuration adaptations reviewed and changes documented 	no deviations	29	29,2		
AT_01_AVL	1_03	Definition of objectives in the project	Support, definition and set-up of objectives and technical management process	no deviations	0,33	0,3	Resources used as planned.	
AT_01_AVL	3_04	<p>T1 Use Case Definition: Definition of UCs for the first project period is finished. Separation of sub-use-cases done as well as definition the commonalities and interaction points of both use cases. Internal workshops are done at AVL and AVL-R regularly to involve people in the UC definition phase. AVL coordinate project partners participation in regular meetings.</p> <p>The partners currently work most on the topic of requirements engineering and IOS Concepts. For that reason, AVL has invited twice for a requirement engineering workshop with the additional focus on OSLC.</p> <p>T2 Prototyping IOS Concepts: The creation of first prototypes of requirement formalization for the WLTP emission legislation are coordinated by AVL.</p> <p>Coordination of IOS Tool integration to connect the various aspects of the requirement formalization will be the next step here and for that purpose AVL has organized two requirement engineering workshops in Graz.</p> <p>Furthermore, AVL is currently coordinating prototyping IOS concepts according to the use case definition for the tools AVL Creta, AVL Santorin and HP Quality Center. First concepts for integrating AVL Cruise/Boost, AVL VeVaT/Magic and PTC Integrity (regarding AVL-R activities), Atego ArtisanStudio are developed as well.</p>	<p>T1 Use Case Definition</p> <p>Use case definitions are well documented in form of corresponding deliverables. Workshop and meeting results are documented by corresponding meeting protocols.</p> <p>Use Case Definition are well communicated inside AVL and are well coordinated with the WP partners.</p> <p>T2 Prototyping IOS Concepts</p> <p>First prototypes of requirement formalization for the WLTP emission legislation are implemented. Currently, the partners are coming up with first tool integration prototypes.</p> <p>Furthermore, IOS prototypes are implemented for AVL Creta, AVL Santorin and HP QualityCenter in form of OSLC adapters.</p> <p>Concepts for such adapters are already available for AVL Cruise/Boost, AVL VeVaT/Magic, PTC Integrity and Atego ArtisanStudio. These concepts are partly developed in collaboration with the WP partners.</p>	no deviations	53	51,7		

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AT 01_AVL	3_07	Based on content of WP303, AVL provides specific input for WP307 concerning the following topics: * Definition of classification system / top-down approach to structure system development into different levels - from vehicle to software levels * Definition and documentation of systems engineering process on vehicle and powertrain system level * Description of powertrain system requirements engineering and management process * Definition of interoperability challenge for the mapping of functional structures to product structure element represented in bill of material (BoM) as a main requirement in order to close the gap between traditional hardware and oriented product development and systems engineering	Results include: * Description and documentation of systems engineering and requirements management process of vehicle and powertrain level * Description of interoperability challenge for linking of requirements and components	no deviations	0,5	0,5		
AT 01_AVL	3_08	Contribution to the automotive ontology state of the art by providing input from previous projects. Contribution to the completion and revision of deliverable D308.011 Milestone Report - V1.	Overview of the state of the art - DODT and ontology-based requirements engineering	no deviations	0,5	0,5		
AT 01_AVL	6_01	Interoperability Specification: As the technical coordinator AVL participated actively in the IOS development. The activities where AVL participated include: + Definition of IOS scope and architecture + Definition of the IOS development process + Integration of the IOS development process in the overall technical management process + Organization of meetings with the IOS core group and other required experts from the consortium ----- Participation to events related to standardization: To foster the collaboration with standardization bodies and related projects, AVL participated as a coordinator to several events in order to meet the relevant stakeholders. Event: ARTEMIS and Standardization Working Group Workshop Date and location: 16th September 2013, Vienna Role of AVL (as CRYSTAL coordinator): • Main organizer of this workshop • Presenter Comments: At this event CRYSTAL gave project presentation to representatives of ASAM, ProSTEP, OASIS and the ARTEMIS Standardization Working Group. A major topic of this meeting was the collaboration of recognized standardization bodies with CRYSTAL and other ARTEMIS projects --- Event: ASAM International Conference: Date and location: 4th December 2013, Dresden Role of AVL (as CRYSTAL coordinator): To raise awareness of the CRYSTAL project within the ASAM community the project was presented at the ASAM International Conference. <i>Comments: ASAM is an incorporated association under German law. Its</i>	- IOS development process up and running - D601.031 provided as a final version - proposal for the Innovation Action in the H2020-ICT-2014-1 call submitted - raised level of awareness due to presentations at events with the major stakeholders	N/A	1,5	1,38	The resource where mainly used for coordination activities and for organization and participation to events related to standardization	N/A

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AT 01_AVL	6_03	<p>Task 6.3.5: System design and analysis with AVL Cruise:</p> <ul style="list-style-type: none"> *) Preparing AVL Cruise for a first prototype integration into the AVL Data Backbone T6.13.1 *) First design concepts how to integrate AVL Cruise in the tool chain described by WP3.4 in form OSLC integrations. <p>Task 6.3.15: System analysis using ARTISAN Studio:</p> <ul style="list-style-type: none"> *) Development of requirements models in SysML (lead Fraunhofer IESE) *) First design concepts about OSLC integration of ARTISAN Studio in the context of requirement engineering (lead: Fraunhofer IESE) 	<p>Task 6.3.5: System design and analysis with AVL Cruise:</p> <ul style="list-style-type: none"> *) Non-OSLC-based integration of AVL Cruise and AVL Data Backbone (Brick 3.83) is accomplished. <p>Task 6.3.15: System analysis using ARTISAN Studio:</p> <ul style="list-style-type: none"> *) WLP requirements definition (based on WP3.4 use case) as basis for the definition of a model-based requirement engineering profile for SysML 	No deviations	3	3,5		
AT 01_AVL	6_08	<p>Task 6.8.4:</p> <ul style="list-style-type: none"> *) Collaboration with ITI regarding OSLC integration of HP QualityCenter established. 	<p>Task 6.8.4:</p> <ul style="list-style-type: none"> *) First experimental OSLC adapter for HP QualityCenter implemented 	No deviations	4	3,9		
AT 01_AVL	6_10	<p>Task 6.10.5:</p> <ul style="list-style-type: none"> *) AVL is currently working on concepts how to integrate iGEM into its toolchain defined in WP3.4. <p>Task 6.10.6:</p> <ul style="list-style-type: none"> *) AVL is currently working on concepts how to integrate iGEM into its toolchain defined in WP3.4. <p>Task 6.10.7:</p> <ul style="list-style-type: none"> *) Integration concept of CRETA in WP3.4 toolchain is defined. *) Interoperability concept based on OSLC is defined 	<p>Task 6.10.7:</p> <ul style="list-style-type: none"> *) First prototype of OSLC adapter for Creta is implemented. 	no deviations	7,5	7,17		
AT 01_AVL	6_12	<p>Task 6.12.5</p> <p>AVL is currently working on VEVAT enhancements regarding requirement-based data validation.</p> <p>Among data validation algorithms, a focus lies on transferring requirements to VEVAT and receiving validation status of requirements via IOS mechanisms.</p>	<p>Task 6.12.5</p> <p>Test result data (time-based measurement data resp. simulated data channels) can be checked against requirements that have been supplied to VEVAT.</p> <p>Thereby signal shapes of data channels are analyzed and their detected properties are compared to limits/thresholds in requirements.</p>	no deviations	2,5	2,5		
AT 01_AVL	6_13	<p>T6.13.1 Simulation model data backbone: AVL coordinated successfully the mapping UC needs to this brick, which is described by a corresponding deliverable. Furthermore, AVL coordinates several brick enhancements and prototype implementations based on this mapping.</p> <p>T6.13.2 MathWorks Simulink: AVL supported VIF and ITKE with the successful the mapping UCs needs to this brick, which is described by a corresponding deliverable.</p> <p>T6.13.3 IOS and AVL TBSimu integration: Mapping of UC needs to brick was not possible, since UC definitions do not include yet this brick.</p> <p>T6.13.4 IOS and AVL ArteLab integration: AVL supported VIF with the successful the mapping UC needs to this brick, which is described by a corresponding deliverable.</p>	<p>T6.13.1 Simulation model data backbone</p> <p>Brick functionality was essentially enhanced to fulfill the UC needs.</p> <p>Architecture enhancements of the simulation model data backbone allow now the storage of more data categories via a data category plugin concept. This concept was verified by a AVL Cruise integration prototype. All these activities were performed by AVL entirely.</p> <p>Furthermore, several OSLC adapters were written to interlink data from the simulation model data backbone with other tools mostly driven by the UC needs of WP3.4. These activities were performed mostly in tight collaboration with the research partner VIF.</p> <p>T6.13.4 IOS and AVL ArteLab integration</p> <p>Some essential extensions for ArteLab have been implemented in the context of Co-Simulation.</p>	no deviations	50,5	50,5		
FR 02_A-F	1_01	<p>CRYSTAL Steering Board:</p> <p>Participation and Contribution to several meetings</p> <p>Regular Monthly meetings</p>		no deviations	0,55	0,5		
FR 02_A-F	1_02	<p>Review of</p> <ul style="list-style-type: none"> •Some Publications <p>Contribution to:</p> <ul style="list-style-type: none"> •CRYSTAL Dissemination Plan •CRYSTAL Exploitation Plan 		no major deviations	0,4	0,35		

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FR 02_A-F	2_00	05.2013 - 12.2013 - WP Lead done by AIRBUS Operation Fr Workshops and meetings organization •Sept. 19th & 20th, 2013 in Toulouse •Nov. 26th, 2013 in Munich •Regular monthly WebEx Coordination Meetings 01.2014 - 05.2014 - WP Lead done by Cassidian Participation to regular meetings		no deviations	1	0,8		
FR 02_A-F	2_08	Contribution to deliverable		no deviations	0,8	0,8		
FR 02_A-F	2_09	Contribution to deliverable D291.010	State of the art report was issued at M9 as planned	no deviations	0,76	0,76		
FR 02_A-F	2_10	Simulation for PRA (Particular Risk Analysis): The objective of this use case is to put in place a modelling and simulation methodology that can support the particular risk analysis (e.g. engine and tyre burst, bird strike) that are led at Airbus in order to ensure the aircraft safety and to fulfil the aviation regulations requirements. The purpose of the performed activity until month 12 was to establish as complete as possible a description of the use case intentions, application areas, questions, goals, and user community expectations. This past activity has required careful coordination with evaluation and testing carried out by business users. This has necessitated an efficient and pragmatic organization. PRA use case key driver for innovation is to remove all existing showstoppers in safety aircraft design analysis as shown below. Specific tasks at this stage has included a review of the internal documentation to identify application areas, specific question sets, and expected outputs. Discussions with Airbus program leaders and safety designer as the primary end user, researchers and model developers to prioritize question sets and goals. Due to this complexity of the task and the targeted effort, an optimum has been reached for the WP 210 program based on a twofold approach. • A top-down approach based on Aircraft program knowledge of the businesses and research maturity allowing the reduction of complexity by the federation and factorization of similar design process and modelling concepts. • Followed by a bottom-up approach based on today safety designer allowing to elicit key modelling capabilities and related interoperability to be developed in order to maximize with regards to the effort, safety End to End simulation chain performance. WP 210 performed activities breakdown is as follow: Preparation of the Safety Business Requirement Dossier: The Safety Business Requirements Dossier documents the overall requirements for Safety design capabilities to be developed and evaluated within the CRYSTAL project. These requirements are based on an analysis of today aircraft process dedicated to PRA "Uncontained Engine Rotor Failure (UERF)" selected to represent a broad cross-section of safety lifecycle design needs in order to determine the outline of safety developments functionality requirements. This dossier under progress has been established through end users face-to-face interviews and common technical workshop.	The Business Requirement Dossier contribution can be broadly classified into four items: • Item 1 UERF process analysis: Carried out to evaluate the "As is" of UERF design context and detail key industrial expectation for innovative "To be" process based on CRYSTAL technology. • Item 2 Aircraft program Modelling & Simulation (M&S) process breakdown: Carried out to analyze in detail the Aircraft program needs in terms of safety functionalities. E.g. dedicated safety "End to End chain" during systems architecture design phases. • Item 3 Safety platform architecture: To break down business and functional requirements into modular functions, define information flows, and identify the most appropriate architecture solution that are consistent with business needs and the safety platform infrastructure constraints. • Item 4 Use case & story board strategy: To specify document and model the WP 210 use case & related story board strategy from information obtained from interviews with the stakeholders. This activity aimed to show and quantify the ability of CRYSTAL capabilities to support the aircraft safety designer in building safety models. Preparation of the Safety Specification Dossier: The Safety Specification Dossier is the technical documentations for: • Safety capabilities: All safety stakeholders have contributed to elaborate this Specification Dossier in order to set targeted capabilities. • Use case platform integration: This task has been jointly performed and decided by IT leader (who elaborates and deploy that platform) and safety-leader (supporting with their knowledge/insight). Contributors have mapped requirements w.r.t. internal and CRYSTAL capability bricks. And set the roadmap for integration / validation of safety capabilities. • Use case specification: The global objective is to assess the use case w.r.t. the CRYSTAL model-based multidisciplinary collaborative approach. The Use case specification Dossier intends to describe the testing strategy put in place and the way demonstration of criteria has been addressed on the basis of storyboards. To monitor progress towards its objectives within CRYSTAL it has been identified KPIs in order to check its true impact on business processes It is expected to mainly analyse the overall efficiency of the new safety process compared to standard process. This period focused on the UERF PRA process itself, and asks the team to consider the goals of their modelling activity w.r.t CRYSTAL project. This activity has provided outputs; and documenting detailed context of the final use case formulation. Next step is the consolidation of the use case data model, its related Conops (concept of operations) and the platform deployment.	Not applicable	4,7	4,7		N/A
FR 02_A-F	6_01	Participation to several meetings to consolidate the IOS requirements.	Web meetings between IOS (core) partners to work on IOS requirements. Exchange on IOS status at Consortium Meeting in Munich	no deviations	0,8	0,8		
FR 02_A-F	6_02	The objective was to participate to requirements definition for CRYSTAL Platform Builder.	Due to problem of resources it has been impossible to participate to the review process for deliverable D_WP602_011 and deliverable D_WP602_021.	deviations due to resources	0,22	0		
FR 02_A-F	6_06	No activities so far			0,22	0		

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DE	03_A-G	2_01	A detailed ECS use case description version 1 was created under responsibility of national project leader in order consider and capture the entire technical inputs. All impacted Airbus domains provides valuable contributions in converging iterations and in a constructive collaboration. Involved partners in the use case have reviewed the deliverables interactively to ease communication and understanding of the technical challenges. With references to models, artefacts and design data - needs and requirements are identified for the CRYSTAL partners to develop and support a.o. tool interoperability, data management as well as analysis and assessment methods for system design.	Airbus Germany ECS use case description, 1. version Preliminary description of the ECS use case demonstrator, 1. version Detailed design model in Matlab/Simulink	no deviations	10	9	Elaboration of technical context in different domains Definition of objectives and activities of the ECS use case Identification of industrial needs in particular with respect to interoperability requirements Communication to partners with validation of first implementation concepts	
UK	04_A-UK	2_11	D2.1.3.1: Fuel Management Risk Analysis use case description Delivery date – T0+12 (end of April 2014) Progress status – submitted on 24th March 2014 after internal and external review. D2.1.3.1: Fuel Management Risk Analysis UC Prototype Delivery date – T0+18 Progress status: Fuel management risk analysis use case tool chain, dataflow and IOS has been defined Workshop held with EADS-IW to demonstrate of public use case use IBM SSE/RELM Workshop held with EADS -IW to define the IT server and architecture Progress on discussion with Airbus IT service to enable to run the project Workshop held with EADS-IW to define the IOS architecture, adapter to be built for the traceability between Safety Requirement to FT+ analysis, safety requirement to dysfunctional model (RAMSES), Requirement to Simulink Fuel system model, Requirement to physical model in open Modelica Progress on: to gain access right for EADS-IW to Airbus safety tool Progress on : Discuss with IBM UK focal point Gray Bachelor to gain more information on SE and tool support Bi-weekly progress review with stake holders. Safety failure scenario UERF has been defined Continuously built dysfunctional model , Simulink model and Physical model	Fuel Management Risk Analysis use case description V1 has been submitted to JU. Progress on IOS architecture framework with EADS-IW	No Deviations	8	5	Safety modelling and simulation experts defined the model base safety analysis process and methodology and also model build in MBSA tool. Fuel system experts to provide domain knowledge and use case modelling and simulation analysis. IOS specialists from EADS-IW provided the possible solution and demonstration which has been built on the public use case.PM coordinated different input and output.	N/A
IT	05_ALA	1_01	Participation to <u>technical board</u> F2F meetings in november 2013 and april 2014. Proposal for synchronization of <u>ontologies</u> from the different domains. Involvement in assessing current project's challenges. Support to the definition of project's first iteration in terms of objectives boundaries and needs. Involvement in the discussion about how to map UCs needs onto IOS Specification. All progresses have been performed in the context of technical board.	Operative Steering Board joined and its decisions making process has been monitored/influenced as required. Participation to and review of the Interoperability needs capturing process has been started. Discussions about IOS, Domain ontologies, interactions among Ucs and SP6 and Platform Builder role have been started.	N/A	0,8	0,9	Resources have been used as planned.	More cross-domain based approach will be adopted when discussing common technical topics.

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IT 05_ALA	1_02	The dissemination and exploitation strategy has been defined by first providing updates about project's objectives within the company and then collecting expectations and needs about the application of MBSE technologies and RTP concepts to the coming new projects. This also included the needs for training about the different methods for requirements management and System design. The activity has been arranged by identifying a point of contact for each company department having potential interests and involving them in the planning. An intervention as testimonial in the context of an academic course in Torino has been planned for the beginning of next period (may 2014).	During the period ALA started its own planning for dissemination and exploitation of project's innovations. A first draft of the plan was made available at the end of 2013. A review on the presentation and video related to Aerospace Public UC has been accomplished. Contributions to the "Report and Planning of Dissemination Activities V1" and "Exploitation Plan V1" have been provided.	N/A	3,4	2,7	Resources have been used with small limitations with respect to the plan in order to allow focusing when first significant use case experiences will be available.	The dissemination activity will be increased during the Year 2014 in order to take advantage of the availability of ALA use case first results.
IT 05_ALA	2_02	In order to reach a mature description of the use case a series of meeting between partners (ALA & POLITO) have been organized by ALA. A common understanding of the scope and boundaries of the Use Case has been agreed as well as the work sharing between partners. These activities have been driven by the commonalities with WP208 in which both partners are involved. The results of these activities have been finalized in the deliverable D202.010. Further details on WP202 use case have been organized in Requirement Specification and SEE specification deliverables in terms of description elements relationship: refined user scenarios, SEE instances.	The engineering methods applicable to ALA own use case have been defined and then refined according the improved maturity and awareness of the use case itself. Many of these methods are similar to those foreseen in the Public Aerospace UC: a tailoring activity have been performed in order to adapt them to the peculiarities of the private use case. The selected tool chain has been reviewed and consolidated. Contacts with tool vendors (IBM, PTC, Siemens) have been started to share the use case objectives and needs. The issues related to the set-up of ALA demonstrator have been discussed with the internal IT department in order to address needs in terms of hardware (workstations, servers) and possible problems in information sharing (e.g. firewall settings).The main goal achieved in this period has been the finalization of the deliverables D202.010, D202.021 and D202.031 that have been delivered at M9.	N/A	20,9	21	The resources have been used as planned.	Support from WP611 has been discussed with IBM that represents one of the major tool providers for our Use case.
IT 05_ALA	2_08	Contribution to the definition of Typical aerospace engineering methods with focus on process management, the interactions among ALM and PLM domains, LSA/RMT Analysis and Configuration Management. Provision, together with PoliTO, of a subject for Use case scenario, that is based on an Aircraft's De-Icing solution. Different possibilities are considered and modeled. During the period we started the functional modeling of these solutions, starting from a set of requirements we defined. These requirements and other data related to Aircraft's systems have been defined to be realistic. We supported the realization of the first demonstrator for the Aerospace Public UC that has been presented at the Artemis IA Co-Summit in Stockholm in december 2013.	The first Demonstrator set-up, that have been completed ahead of original schedule has been reviewed and supported. The requirements relevant to the system being designed have been defined and provided. The modelling activity at functional level has been performed. The foreseen deliverable has been produced in order to describe the Use Case. It, D208.010, has been delivered at M9. Contacts with WP209 related to domain ontology and WP608 related to PLM Bricks has been established.	N/A	13,3	14,6	The resources have been used as planned.	Support from WP608 should be now planned in details.
IT 05_ALA	2_09	Participation in the discussion about expectations for the aerospace domain ontology. Coordination and contribution to the deliverable D291.010 related to the Aerospace domain ontology. Contacts with WP208 in order to clarify different aspects including: data models for managing system functional views and traceability aspects.	The expectation analysis, state of the art collection, relevant documentation collection have been contributed. A link with the Aerospace Public UC has been established. The State of the art in domain ontology analysis has been completed. A preliminary plan for next steps has been contributed. D291.010 finalized at M9 as planned.	N/A	2,3	3,5	Resources have been used as planned. The effort has been a bit higher with respect to the plans but this will be balanced in the next period.	N/A
IT 05_ALA	6_01	Participation to the definition of template information for gathering IOS requirements. Participation to F2F meetings having IOS concerns among their primary objectives. Continuous analysis of the links and commonalities that exist among IOS concepts and SEE configuration properties.	Elicitation of IOS requirements from IOS needs have been contributed. The link among SEE description/configuration and IOS have been identified. The discussion about IOS concerns mapping has been supported.	N/A	1,1	1,7	The resources have been used as planned.	In order to increase the efficiency of the IOS requirements elicitation and to gather a concrete support from UC providers a shared ontolgy for IOS related terms is proposed.

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
IT	05_ALA	6_02	Analysis of requirements and contribution to definition of CRYSTAL Platform Builder meta-model to define Platform Builder data. A gap analysis between CRYSTAL Platform Builder meta-model and SPEM to fix a baseline for defining tailored process has been performed. Contribution to the analysis of Platform Builder baseline workflow and identification of a preliminary Platform Builder Architecture. These activities implied the set-up of regular Teleconferences among WP602 contributors.	The following achievements have been reached with the coordination and contribution from ALA: Identification of System Engineering Environment and Platform Builder requirements, analysis of requirements and definition of a meta-model to address Platform Builder needed data. Definition of a preliminary Platform Builder specification. The Platform Builder concept has been presented to the project's technical board. Deliverable D_WP602_011 is available and includes contributions and coordination from ALA. Deliverable D_WP602_021 is available in a preliminary version.	N/A	11,3	14,6	The resources have been used as planned. The effort has been a bit higher than planned due to the need to clearly define and share the Platform Builder concept among industrial partners and tool providers.	A shared reference ontology for the concepts adopted in the context of Platform Builder development is proposed. It would help CRYSTAL partners in better understanding the objectives and the benefits of the Platform Builder solution. A better understanding would enhance the efficiency and cooperation level.
IT	05_ALA	6_08	Contribution to PLM / Process related requirements collection. The first deliverable of WP 608 has been reviewed in order to identify an extended set of topics to be covered in the next period. The objectives of task T608.10 have been updated and a dedicated amendment proposal has been prepared.	In the context of the selection process for technologies and requirements to be studied, a set of topics of interest has been prepared and delivered to the WP Leader. The finalized Specification document, WP608_11 has been reviewed. A further set of topics to be considered for project's second milestone has been defined and notified to the WP Leader.	N/A	2,5	0,9	The resources have been used as planned. The effort has been lesser than planned due to the current prioritization of the scenarios that are foreseen by ALA and Public Aerospace use cases. This situation is expected to be balanced in the next period.	A more detailed work plan relevant to the expected improvements to the PLM related bricks have to be established.
FR	06_ALS	5_03	Task 5.3.1 - Use Case Definition (Collect RQ) Progress: done • ALS has specified the Rail Use case, produced first models and meta-models supporting the safety process consistently with the Alstom methodology. • Task 5.3.2 - Prototyping IOS concepts (Definition) Progress: The IOS needs for RTP specifications are defined after an overall analysis of the targeted combined Design-Safety process. A first design view is now elaborated to specify the required IOS services to comply with the expressed needs.	Submission to JU of the following deliverable: -CRYSTAL_D_D503.010 - Use Case Requirements Specifications -CRYSTAL_D_D503.020 – IOS Needs For RTP Specifications -CRYSTAL_D_D503.030 – IOS Design Requirements Contribution to: -CRYSTAL_D_D604.011 - Specification, Development and Assessment for Safety Engineering	There is no deviation in the deliverables although the work started later than expected due to a staffing issue. Thanks to efforts made by the project's actors it was possible to keep the expected deliverable pace.	11	10,5	Due to the reason explained before, ALS spent less effort than anticipated at the beginning of the project, but the gap is almost closed	
IT	07_ASTS	1_03	N/A	N/A	No Deviations	0	0	N/A	N/A
IT	07_ASTS	5_00	Execution of technical management activities.	Definition of Use Cases and Engineering Methods. Identification of IOS/RTP needs. Preparation of Review demo.	No Deviations	2	2	Resources have been used as planned. N. B.: The MU spent in the first year represent less than 1/3 of total MU. This does not mean that ASTS plans to spend less than what initially expected: ASTS will stick to the plan, spending all the expected MU within the end of the project. Indeed, the ASTS activities have to intensify in the second and in the third year of the project.	N/A
IT	07_ASTS	5_01	Carrying out of the first steps (choise of modelling methodology to be adopted in ASTS use case, collection of requirements specifications for bricks, feedback on partner activities made in WP 6.12) aimed to the implementation of the bricks.	Submission to JU of the following deliverables: 1) CRYSTAL_D_D501.010 - Data and Methodologies report 2) CRYSTAL_D_D501.020 - Use Case Requirements Specifications	No Deviations	4,7	4,6	Resources have been used as planned. N. B.: The MU spent in the first year represent much less than 1/3 of total MU. This does not mean that ASTS plans to spend less than what initially expected: ASTS will stick to the plan, spending all the expected MU within the end of the project. Indeed, the ASTS activities have to intensify in the second and in the third year of the project.	Focus on discussion of IOS requirements.

	Comp. Co.	Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
IT	07_ASTS	5_04		Study of the state of the art of railway ontology and assessment of all the required needs towards the creation of a domain ontology well located within a unique IOS ontology context.	Submission to JU of the following deliverable: CRYSTAL_D_D504.010 - State of the art for RAIL ontology	No Deviations	1,3	1,15	Resources have been used as planned. N. B.: The MU spent in the first year represent less than 1/3 of total MU. This does not mean that ASTS plans to spend less than what initially expected: ASTS will stick to the plan, spending all the expected MU within the end of the project. Indeed, the ASTS activities have to intensify in the second and in the third year of the project.	Focus on discussion concerning the role of domain ontologies and its connection with the other ontologies within the project.
IT	07_ASTS	6_12		Assessment of the work of tool providers towards the fulfillment of ASTS requirements.	N/A	No Deviations	2,6	2,5	Resources have been used as planned. N. B.: The MU spent in the first year represent less than 1/3 of total MU. This does not mean that ASTS plans to spend less than what initially expected: ASTS will stick to the plan, spending all the expected MU within the end of the project. Indeed, the ASTS activities have to intensify in the second and in the third year of the project.	N/A
SE	08_ARCC	1_03		The work has not yet started.			0,2	0		
SE	08_ARCC	3_01		We have worked on defining the use case together with AB Volvo. The use case expresses the development activities and tools currently used at Volvo with additional activities and tools that would enhance the current process. As a complement engineering methods has been developed for the use cases that is part of the scope.	Deliverables D301.010 Use Case Engineering methods	No deviations	3	2		
SE	08_ARCC	6_05		We have contributed to deliverable D605.011 Specification, Development work for adapting the tools for the workflow in WP3_01. This work have been done in bricks 6.5.4, 6.5.5, and 6.5.6 adapts tools in the bricks to handle the new use-cases.	Contribution in D605.011. New versions of product releases with support for WP3_01 use case	No deviations	6,9	6,2		
SE	09_ARCT	6_03		We currently defining our contribution to the project and working on a specification for implementation.	Participated in project meetings and presented our project state and planned implementation	Our specification time frame has been shifted to be completed Q3.	13	8		

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
AT	10_AIT	1_02	AIT contributed to T1.2.1 by carrying out a number of dissemination activities (see below, and also under Dissemination activities), contributing the deliverables D102.030 and D102.040 (initial dissemination and exploitation planning). A submission to the FORMATS'14 conference has been prepared. First exploitation activities (T1.2.2) were started addressing use of CRYSTAL results in soon to be started projects like EMC2 or H2020 ICT projects. List of dissemination activities: - AMAA Berlin, June 17-18, 2013, Berlin, Flyer distribution at exhibition table AIT (in poster area) - ISSC Boston (International system safety Conference) 11.-15.8.2013, Flyer distribution - Euromicro SEAA Santander, Sept. 4-6, 2013, CRYSTAL Flyer display/distribution, CRYSTAL announced as co-hosting project - IDIMT 2013, Prag, 11.-13.9.2013, CRYSTAL Flyer display/distribution - SAFECOMP 2013, Sept. 24-27, Toulouse, DECS (Dependable Embedded Components and Systems) Workshop, CRYSTAL mentioned in introduction about related ARTEMIS projects and as co-hosting project - SAFECOMP 2013, Sept. 24-27, Toulouse, Flyer distribution on exhibition table - ICT 2013 Conference Nov. 6-8, 2013, Vilnius: CRYSTAL leaflets distr., talks - ARTEMIS Interoperability Conf. Dec 3, 2013: Stockholm (WP 601.3), Coop. with nSafeCer (nSC Poster presentation) - ARTEMIS/ITEA2 Co-Summit Dec. 4, 5, 2013: ECSEL Austria Booth Support (included CRYSTAL poster presentation on screen)	CRYSTAL was presented at a number of public events, support for its networking with other projects was initiated.	No deviations	0,5	1	Most of the 1 PM was used for dissemination activities, contributing to WP deliverables, and preparing publications.	50% of the planned 2 PM are already consumed. It is planned to reduce the efforts spent for WP1_02 in the rest of project, but if more than 2 PM will be used, AIT will ask for a shift of 1 PM from another WP to WP1_02.
AT	10_AIT	3_01	Elaboration of application of tool DTFsim to VOLVO ASL (Automatic Speed limiter) modelling and simulation; identification of needed tool extensions.	T1: Concepts and improvements of DTFsim function: For visualization of the system architecture, a process has been created that shows the system architecture as a directed graph. The vertices of this graph are the DTFsim elements that constitute the ASL architecture. This allows a quick visual verification of the correctness of the implemented architecture. VOLVO ASL modeling and simulation: DTFsim model of the ASL has been created from SystemWeaver database. This transformation is currently done manually, however this process has been described in detail and is available as a document. The process involves, among others, the modeling of the Logical Design Components (LDCs), the assignment of LDCs to ECUs, and the simulation of the CAN bus which is used for communication between the set of simulated ECUs. The purpose of this process is the simulation of the timing behavior along timing chains and the assessment of the CAN bus load. First results of timing measurements and network load analysis are available on SharePoint under "Tool Installations". (This work contributes to T1, T2, and T3.)	No deviations	2,5	4,5	Besides efforts needed for learning the ropes of the ASL use case, the work on applying DTFsim to ASL has been processed further than planned, which caused an increase of actual efforts compared to planned.	none
AT	10_AIT	3_03	Elaboration how AIT's tool, WEFACT could be best applied in AVL use case.	T1: Contribution to reports and deliverables for the AVL use case	No deviations	1	0,5	Resources were needed to become common with the AVL use case and prepare AIT's contribution to WP deliverables.	None
AT	10_AIT	5_01	T1: Discussions with ANSALDO and preparation of AIT's contributions to their use case.	T1: Contribution to and review of D501.010.	No deviations	1,5	1,1	Resources were needed to become common with the use case and prepare AIT's contribution to WP deliverables.	none

Comp. Cou.	Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
AT	10_AIT	5_02	T1: Elaboration of RAMS concept in TRAIL Use Case, Contributions to D502.010, Preparation of environment for TRAIL use case. Preparation of D502.020 T2: Elaboration of Brick interfaces. T1,T2: preparation and presentation of these works at interim review.	T1,T2: RAMS concept for TRAIL use case prepared, contribution to D502.010.	No deviations	5	3	Resources were needed to become common with the Thales use case and prepare AIT's contribution to WP deliverables. Efforts spent are lower than planned because decisions regarding the use case were taken later than expected and work was shifted slightly back, thereby falling into the next reporting period. The delay can be easily compensated within the coming few months.	Compensate delays from year one in the first half of year two.
AT	10_AIT	6_01	T6.1.3: AIT contributed to this work package by carrying out a number of standardization activities, as listed under "result".	T6.1.3: Following standardization activities have been carried out: - May-Dec. 2013: IEC 61508-3 Amendmend resp. TS for "SW proven in use" ongoing - Dec. 2, 2013: IEC 61511 meeting Helsinki contribution to Part 1. - Jan. 28, 2014, London: New Work Item TC65 WG 17 Human Factors – Functional Safety - Feb. 4, 2014, Brussels: ARTEMIS standardization WG – Interoperability etc., Coop. with CRYSTAL, MBAT, nSafeCer - National mirror groups meetings of MR65 (all TC65, SC 65A, B, C, E Standards, CEN/CENELEC), TSK 44 (IEC TC 44 Machinery safety) and EG 56 (TC56 Dependability), ÖNORM/ASI FA 038 (ISO TC 22 SC 3 for ISO 26262) and FA 028 (ISO TC 184 SC 2, Robotics, TC4 and others on Machinery Safety)	No deviations	0,3	0,3	All efforts needed for participation in standardization meetings.	none
AT	10_AIT	6_03	Task 6.3.10: AIT worked on the CRYSTAL technical mgmt. process: - Defining technical core requirements (according usage of the DTFSim) - Defining technical items and technical refined requirements (according usage of the DTFSim)	Task 6.3.10: For the DTFSim brick, two technical core requirements (TCR) have been identified.: TECH_CORE_REQ_0027: Model Transformation from Meta-models to timing-analysis tool models; TECH_CORE_REQ_0028: Simulation based timing analysis of the system design Based on the two TCRs, two technical refined requirements (TRR) have been defined. TECH_REF_REQ_0037: Transformation of SystemWeaver models to DTFSim models TECH_REF_REQ_0038: Analysis of timing chains and network load Finally, five technical items (TI) have been identified on the base of the TCRs. TI_0051: Identification of/Mapping between model components TI_0052: Implementation of the Transformation Process TI_0053: GUI implementation for simulation result analysis TI_0054: Implementation of the Ethernet protocol TI_0055: GUI implementation for simulation model configuration	No deviations	3	3,5	See results	none

	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
AT	10_AIT	6_04	T6.4.0 (WP lead): kick-off and coordination of WP work T6.4.1 (WEFACT brick): identification of adaption needs of WEFACT for AVL use case T6.4.2 (MB RAMS brick): identification of needs for RMB RAMS in TRAIL use case T6.4.3 (MoMuT::UML brick): identification of adaption needs of MoMuT::UML, mainly for TRAIL use case.	T6.4.0: Reports and deliverable D604.011, participation in RTP/IOS consolidation meeting, Nov. 13, Munich T6.4.1: WEFACT brick development started. T6.4.2: MB RAMS requirements and design considerations added to D604.011. T6.4.3: - Support for additional UML constructs, as well as changes to the backend engine to better cope with the complexity of the models. - Extended bounded language inclusion problem from deterministic timed automata to non-deterministic and with silent transitions timed automata, as these models represent more realistic systems. - Preparation of brick architecture (in light of MBAT results). - MoMuT::UML implementation (performance improved, including set-up and maintaining a build process for creating binaries for both the enumerative and the symbolic back-end for both 64 bit Windows and 64 bit Linux platforms. For the enumerative back-end Ulysses a new feature dealing with partial order reduction has been implemented. T6.4.4: Improvement of the MoMuT::SCADE mutation engine initiated, but not continued.	For stop of work on MoMuT::SCADE: TRAIL decided not to use SCADE anymore. Focus will be laid on T6.4.3 instead.	15	22	A number of bricks extensions and improvements identified as relevant for the use cases have been started early due to higher availability of human resources. For instance, extending the bounded language inclusion problem in MoMuT from deterministic timed automata to non-deterministic timed automata with silent transitions for better real-time support.	MoMuT::SCADE will not be developed anymore. This will compensate for the excess effort in this WP.
DE	11_AVL-S	1_03	Support and definition of CRYSTAL objectives and technical management process	How to achieve the CRYSTAL objectives Technical management process has been set-up	no deviations	0,68	0,2	Resources used as planned.	not applicable
DE	11_AVL-S	3_00	T1 SP Coordination AUTOMOTIVE T2 Interface to other SPs T3 SP Configuration and Changemanagement T4 SP Quality Management	SP Coordination	no deviations	7,38	7,6	Coordination of the SP, TB and SB meetings. SP meetings and workshops. Travel to Kick-off meeting (Vienna), Working and Consolidation Event (Munich), TB F2F Meetings (Munich, Schiphol)	not applicable
DE	11_AVL-S	3_03	Within Workpackage 3.03 in the automotive domain, AVL Schrick have been supporting 01_AVL. Within this reporting period a start has been made to pilot the Model Based System Engineering Methodology real customer project. Starting with the definition of the Engineering Methods (Requirement engineering, SYSML Modelling), the MBSE Methodology has been refined considering the overall CRYSTAL goal of an interoperable toolchain. The engineering methods are described such that the toolvenders within the consortium understand how interoperability could support our Use Case. Training at AVL-S has taken place in order to align the MBSE methodology, PTC Integrity environment and the SYSML environment with the pilot projects objectives. The PTC Integrity environment has been setup and is currently in use within the pilot project. The modelling work with SYSML has been started	Defined engineering methods describing the workflow and data exchange within the Use Case. The MBSE method is ready for deployment at AVL-S. By applying the MBSE method to a pilot project a clearer picture of the workflow and dataflow is visible within the pilot project which will lead at a later stage to a refinement of the engineering methods based on real-life project data and work flow experience. The created models in SYSML and datasets in PTC integrity are ready to be used as an example for testing IOS-enable tools	no deviations	10,9	11,5		
DE	11_AVL-S	3_07	Definition and support of the public automotive use case	alignment of public use case and demonstrator with the feedback from the interim review in Brussels	no deviations	0,55	0,32	Resources used as planned.	not applicable
DE	12_AVL-R	1_03	Select information for the evaluation, but without any evaluation of these data. ... no activity since M4		no deviations	0,3	0,2	since M4, no further activities on this topic	

Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations	PM Plan	PM actual	Use of resources	Corrective Actions
DE 12_AVL-R	3_04	<p>The focus in the first period of the project has been on the elicitation of requirements for this use-case. This UC has two parts: the first part (under the responsibility of 01_AVL) is concerned with vehicle or component level testing and our (12_AVL-R) part focuses on Model Exchange and Integration of a System-of-systems (SoS) platform, Integrated Tool environment and Variant management</p> <p>I) Model Exchange and Integration of a System-of-systems (SoS) platform. To improve the quality of these control system models, proper simulation models of the plant and the physical vehicle behaviour enables development frontloading. For vehicle simulation, AVL-R is using the simulation environment AVL BOOST RT. In addition the imported AVL BOOST RT have to be integrated and configured in the versatile System-of-systems (SoS) platform where different hardware or software systems to create a new execution environment. The current activity is focus on the synchronisation of the Part one from AVL to exchange the data form there test and Databackbone. In Addition, we synchronise with TTTech to use the exchanged model in the SoS-Platform</p> <p>II) Integrated Tool environment. The interconnection between several tools and their interoperability capabilities and the integrated tool environment (AVLab) is currently realized in a not standardized way and has to be improved. For an improvement it has to be analysed about an IOS implementation. Currently we are in the definition phase of the usage of IOS for our intergrated Tool environment.</p> <p>III) Variant management: The main part of this use case is to improvement with variability/variant management concepts. Regarding this, there has also been a first phase to understand the challenges of the use case. In the second phase we started to specify the requirements. This process is currently on-going.</p>	<p>I) First results in investigations about the to be used model and the needed HW.</p> <p>II) Integrated Tool environment. First impressions about the usage of IOS.</p> <p>III) Variant management Status Quo of the current implementation of AVL with additional requirements to accelate the development process.</p>	no deviations	9,4	9,4	Resources have been used as planned.	
DE 12_AVL-R	3_07	<p>UC3.4b has defined the three different user scenarios. In addition, the these different user scenarios have interoperability challenges which are conceptually defiend and transferred. For providing automotive-wide harmonized input to specific IOS needs, WP3.4b is in close contact to WP3.7 and SP6.</p>	<p>Conceptually requests about IOS of ...</p> <p>1) Common AVL Simulation Model Data Backbone to enable simulation and plant models exchange with integration and configuration of versatile System-of-systems (SoS) platform</p> <p>2) Integrated Tool Environment for embedded controls development</p> <p>3) Improvement of the Development via „Efficient Variant Handling within V-Cycle“.</p>	no deviations	0,7	0,6	Resources have been used as planned.	
DE 12_AVL-R	3_08	<p>Contribution to the analysis of the automotive ontology state of the art. Contribution to the completion and revision of deliverable D308.010 Milestone Report.</p>	Autosar onthology completed, revised and delivered in time for M9,	no deviatons	0,6	0,6	Resources have been used as planned.	
DE 12_AVL-R	6_05	<p>AVL-R will conduct the implementation of the TTTech development in AVL development process. Starting with requirements AVL-R will then continue over architecture to development up to testing (V-Cycle).</p>	<p>AVL-R is currently in will conduct the implementation of the TTTech development in AVL development process. Starting with requirements AVL-R will then continue over architecture to development up to testing (V-Cycle).</p> <p>a) AVL works currently at the adaptation of the BOOST RT Model from TQ based to Engine speed based.</p> <p>b) Definition of needed Sensor inputs / actuator outputs Valero CW12</p> <p>c) AVI is currently in the Investigation-Phase of the HiL environment concerning controller requests.</p> <p>All phases are roughly finished and the final results must be collected and pre-processed.</p>	no deviations	3,2	2,8	Resources have been used as planned.	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
DE	12_AVL-R	6_11	AVL-R contributes effort related to the current implemented design rules and the existing architecture and gives inputs for the definition for the Specification of the model backbone. Furthermore they have to be involved in reviewing the implementation and at the testing. In a third point, a support of the model backbone assessment will be done.		no deviations	0,9	1	Resources have been used as planned.	
DE	12_AVL-R	6_12	AVL-R will define the requirements, and develop and implement the embedded verification platform which base on the current existing specific test framework.	First investigatinos about IOS done. First implementations within the implemented tool environment done, but not really tested.	no deviations	9,4	9,4	Resources have been used as planned.	
DE	12_AVL-R	6_13	AVL-R gives inputs for the definition for the specification of the simulation model data backbone. In addition, AVL-R defines request to IOS from AVL to AVL-R systems (Santorin -> Integrity)	Currently AVL and AVL-R are in the concpet phase. Before the AVL-Databone is not basically implemented, further steps are not possible.	no deviations	0,9	0,9	Resources have been used as planned.	
BE	13_BARCO	1_03	First key metrics ideas for the WP404 Medical certification and Requirements management Framework.	First proposal of the key metrics for the WP404 Medical certification and Requirements management Framework.	no deviations	0,25	0,25	Resources have been used as planned.	
BE	13_BARCO	4_00	Overall coordination activities of the Healthcare CRYSTAL partners.	Alignment with CRYSTAL Healthcare partners on CRYSTAL objectives and workplan.	no deviations	1	1	Resources have been used as planned.	
BE	13_BARCO	4_04	Barco is working on the requirement management framework in the context of the first CRYSTAL WP404 objective; medical devices requirement traceability as requested by IEC62304 regulation, regulation by FDA and other regulatory institutes. This process will allow the traceability of requirements on a system and component level, throughout the design and test process in an interoperable way.	At Barco the activities started to set up a requirement framework compliant with IEC52304. Requirements where defined for the new requirement framework with a IEC62304 compliant workflow. Study was conducted to compare and evaluate all possible tool candidates for this new workflow. A pilot project was launched in the Barco Healthcare division with PTC Integrity. This pilot project will cover the compliance with IEC62304 on system level. The Pilot project SEE has been installed at Barco and 3 Engineering Methods with contribution to the key artefacts as requested by IEC62304 have been supported with new tooling. The IEC62304 compliance on component level are closely linked with the component-oriented and modular design activities and are as such described in the work of use case 405.	no deviations	34	36	Since the activities in both Barco Use Cases 404 and 405 are closely linked to each other, in the period M1-M9, the partners worked on both Barco use cases 404 and 405 as one linked use case. Following this approach the total effort was equally divided over the 2 use cases, this also reflects in the effort reporting for M1-M9.	
BE	13_BARCO	4_05	Tools and methodologies to support component-oriented & modular design. Tangible results: A combined 4040 405 use case description was created by Barco with the support from IBM, TNO and TUE. IBM contributed specific to the requirement process, this is also linked with the Requirement Framework activities of WP404. TNO contributed especially the introduction of performance modeling to the Barco process and the interaction with functional modeling (as defined by IBM) was added. Three implementation tracks were installed at Barco taking care of the first implementation activities, these include the IEC62304 compliance on development level. (read next column)	In Track 1, Barco started on a fully agile and modular software design toolchain for the new Barco Quality Assurance platform, 5 new engineering methods were installed: • Requirements Gathering. • Requirements Traceability. • Iterative Development. • Process Automation. • Key Quality Metrics. Track 2 is focusing on the new design process for our first Hybrid software FUN100 platform. The FUN100 platform is using one Hybrid software source base which includes both embedded software and VHDL. The same source based is built into multiple deliverables / install packages which typical depend on the interface board and/or the medical displays it is intended for. For this track we have worked out a new IEC62304 compliant Test Framework, we started with the implementation of 4 new engineering methods: • Component Integration Testing • Unit Testing. • Architectural design. • Software engineering. In Track 3 IBM, TNO and TUE are assisting Barco to introduce new modeling and simulation techniques supporting the Barco modular design process, we started implementing the following 3 engineering methods: • Functional Modeling. • Performance Simulation. • Combining Functional Modeling & Performance Simulation. Based on the use case, Barco, IBM and TNO defined a joint demonstrator. Here the interaction of functional modeling and performance modeling for simulation of an imaging pipeline is selected. IBM the IBM hosted SEE and supported Barco to implement their RM process in that environment using DOORS Next Generation and Rational Quality Manager. TNO and IBM installed and debugged a Rhapsody/ Simulink bridge. TNO then created a first generation image pipeline performance model with special emphasis on latency. The objective of TUE is to predict execution performance of a processing pipeline (Gstreamer) more accurately, as part of the intended workflow.	no deviations	90	93	Since the activities in both Barco Use Cases 404 and 405 are closely linked to each other, in the period M1-M9, the partners worked on both Barco use cases 404 and 405 as one linked use case. Following this approach the total effort was equally divided over the 2 use cases, this also reflects in the effort reporting for M1-M9.	

Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
BE 13_BARCO	6_03	Guaranteeing real-time execution of critical features.	First input to the WP603 brick.		0,5	0,5	Resources have been used as planned.	
BE 13_BARCO	6_08	Application Lifecycle Management, variant how to keep track of different versions of the models within Gerrit/Git environment, how to generate documents conform the V-model to be compliant with IEC 62304.	Interaction and alignment with CRYSTAL partners using PCT Integrity. Input to WP608 brick based on the Barco activities started in WP404 and WP405.		0,5	0,5	Resources have been used as planned.	
BE 13_BARCO	6_10	Variability Management, variability management in the ALM tool chain and link this with SW component design process.	Alignment with WP610 partners.		0,5	0,5	Resources have been used as planned.	
BE 13_BARCO	6_11	Software modeling, how to support traceability between performance metrics of the SW models and top level requirements.	Input to IBM, TNO to support the functional modeling and performance simulation engineering methods as part of WP405.		0,5	0,5	Resources have been used as planned.	
ES 14_REUSE	1_02	Submission of papers and participation in congresses.	A paper containing some ideas in common with CRYSTAL has been submitted to INCOSE 2014; this paper has been rejected, but a revision of the paper is going to be presented in CSDM 2014. Furthermore, similar ideas were also included in the INCOSE Tool Vendor Challenge (Philadelphia, USA 2013).	N/A	1	0,5	According to plan, based on the creation and submission of the papers. Preparation and execution of the Tool Vendor Challenge of INCOSE.	N/A
ES 14_REUSE	2_04	REUSE has collaborated with its industrial partners in the elicitation and analysis of their needs.	The first list of user needs has been collected, analysed and ranked. Furthermore, a list of refined requirements has been traced back to the user needs.	N/A	1	1	According to plan, based on the collaboration in several workshops for gathering, analysing, ranking and documenting the user needs.	N/A
ES 14_REUSE	6_07	REUSE has created and delivered all the deliverables due in M1-M12. Furthermore, some technical items of the bricks included in this WP has been already designed. All the partners involved in WP607, as well as other partners not directly involved but willing to use the bricks included in the WP have been trained on the tools and approaches included in the WP. REUSE has given a special status to the user needs based on IOS.	Deliverables D607.011, D607.021 and D607.041. Review of the deliverables from UC2.4 Training on our bricks (tools and approaches). Definition of some OSLC services concerning Requirements Quality and Ontology Management.	N/A	14	14,6	According to plan, based on the delivery of all the deliverables included in the reported period, as well as the design of other technical items related to the bricks included in WP607	N/A
IT 15_CRF	3_05	The use case modeling has been completed with relationship with ISO 26262. The current engineering environment has been described in summary and in relation to the WP3_07. The deliverable of the period has been delivered in time.	Analysis and preliminary definition of the use case application. Preliminary analysis of the SEE for implementation. Modeling of the use case in the environments of Simulink and Enterprise Architect. Analysis of the engineering environment for the implementation. Completion and submission of deliverable D305.011-Milestone Report - V1.	No deviations.	13,5	13,5	All the resources have been used for reaching the listed results.	N.A.
IT 15_CRF	3_07	Contribution to the preliminary definition of the automotive common Use Case and to the understanding/definition of the general preliminary automotive IOS challenges. Contribution to the completion and revision of deliverable D307.011 Milestone Report - V1.	Participation to the webex meetings for the improvement of the general automotive IOS challenges understanding/definition. The deliverable of the period (D307.011 Milestone Report - V1) has been completed, revised and delivered in time.	No deviations.	0,75	0,75	All the resources have been used for reaching the listed results.	N.A.
IT 15_CRF	3_08	Contribution to the analysis of the automotive ontology state of the art. Contribution to the completion and revision of deliverable D308.011 Milestone Report - V1.	The deliverable of the period (D308.011 Milestone Report - V1) has been completed, revised and delivered in time.	No deviations.	0,75	0,75	All the resources have been used for reaching the listed results.	N.A.
SE 16_CTH	1_02	Early dissemination activities have been performed. We expect more dissemination activities in later phases of the project.	Dissemination activities have been performed with respect to several papers submitted to conferences (Models 2014, the major scientific conference on model-driven engineering) and workshops (Analysis of Model Transformations 2013 and Graph Transformations and Visual Modeling Techniques 2014). The latter two have been accepted. Furthermore, results of Crystal have been used in teaching activities, e.g., the Model-Driven Engineering Master Course.	no deviatons	0,3	0,03	dissemination activities as mentioned before. Most of the work for preparing the dissemination activities was done in the WP6 work packages.	
SE 16_CTH	3_01	- Participation in Engineering Methods and Use Case Definition with Focus on Model-Based Requirements Engineering, integration on views and expertise on Modeling and Verification - Work on Requirements Modelling on Demonstrator system	Results - requirements for wp 6.3 and 6.12 bricks (states and pre-condition relations between requirements) - input on engineering methods and use case description	no deviatons	4	3,14	resources allocated for the mentioned results	none.

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
SE	16_CTH	3_04	- Identification of requirements for the model-based requirements brick in wp 6.3 (real-time, global variables) and the validation process brick in wp 6.12 (trace verification) - Results from wps 6.3 (modeling extensions with respect to time) and 6.12 (validation method) fed back to use case 3.4 example - work on WLTP example - participation in modelbased requirements engineering subgroup	- WLTP gear shift requirement models complete - trace based verification method applied to WLTP example (publication at GT-VMT 2014)	none	2	2,08	the resources have been used for acheiving the results	none
SE	16_CTH	6_03	T 6.3.3: Foundations have been laid, requirements have been identified, first extensions have been developed	Task 6.3.3: - State of research survey on model-basedrequirements modeling for embedded systems - State of the practice survey focus on modeling approaches and notations and usage - Extension of MSDs with Real-Time Constraints for modeling requirements with real-time annotations (GT-VMT 2014 publication) - requirements for MBRE from industrial demonstrators / use cases identified (relation to UC 3.1 and 3.4)	none	4	3,47	ressources spent for the mentioned results	non required
SE	16_CTH	6_12	Foundations has been laid to eliciate requirements as well as state of the art/practice. First results in a validation method has been achieved.	T6.12.1 - State of research survey in model-based validation and verification - State of practice survey in modeling, validation methods, and industry needs (web survey with 121 participants) - trace based real-time verification of monitored system behavior (publication at GT-VMT 2014)	no deviatons	3	1,62	The focus so far has been on extension of the modeling formalism and the identification of requirements which is a precondition for the work in this work package.	none
GB	17_CIC	6_01	Crystal Workshop with Andreas Keis and his team at EADS Airbus Space and Defence in Bremen.In terms of work that I have done to go with the work packages that I am assigned to, then I submit the following: CIC has been involved in identifying the various interoperability specifications available and looking at the cross over points. CIC has also been involved in pulling together a research study that will look to gain insights into the interoperability goals of the Crystal partners and the impact on and involvement from the their respective businesses. The research study will be completed by September 2014 and the results disseminated to the Crystal partner community. In terms of efforts and actuals we have assigned an even distribution to our time as we have been involved on a monthly basis with reviewing specifications like the OSLC so our planned and actuals are the same. According to the plan we have allocated 6 man month for M1 to M12.	research study that will look to gain insights into the interoperability goals of the Crystal partners and the impact on and involvement from the their respective businesses	no deviations	6	6	performing workshops with project partners in Bremen taking part in 2nd IOS Conference in Stockholm (moderation of panel discussion) research study project meetings (Kick-off meeting)	
DE	18_DAIMLER	3_02	WP3.2 complete the model for the development process, which describes all tasks including input/output. The workproducts are mapped to responsible tools. The interoperable tasks are identified and the main engineering methods are deduct about the tasks. The engineering methods are specified and documented in the given template. All these steps are performed in close cooperation with the use case related development project and with the direct partners of WP3.2, especially TU Berlin.	Model of process. Mapping of workproducts to responsible tools in the model. Identification of interoperable tasks and engineering methods. Specified engineering methods.	No deviations.	24	22	Workshops, modelling activities, alignments with use case development project, documentation, reviews	None
DE	18_DAIMLER	3_07	WP3.2 has elaborated use case driven input about engineering methods concerning system level development steps towards public use case in WP3.7. Additionally use case specific interoperability challenges have been specified and transferred. For providing automotive-wide harmonized input to specific IOS needs, WP3.2 contributed their viewpoint towards WP3.7 and SP6.	System level development approach, WP specific interoperability challenges and harmonized IOS needs.	No deviations.	1	1	Contribution to results mentioned above.	None.
DE	18_DAIMLER	3_08	WP3.2 deliver the state of the art technology in WP3.8.	Presentation of the state of the art technology.	No deviations	1	1	Research, documentation and reviews.	None
DE	19_EADS-CAS	1_01	CRYSTAL Steering Board:Participation in / Contribution to:Meeting on May 1st, 2013 in ViennaPreparation Meeting (WebEX) on Oct. 4th, 2013Meeting on Nov. 25th in MunichParticipation in / Contribution to the CRYSTAL APCA Negotiations CRYSTAL Technical Board:Participation in / Contribution to:Meeting on May 2nd, 2013 in ViennaMeeting on Nov. 26th, 2013 in MunichWorkshop on Apr. 1st & 2nd, 2014 in MunichRegular monthly WebEx Meetings	CRYSTAL Steering Board:Refer to MoM's and / orRefer to WP101 Report provided by AVLCRYSTAL APCA CRYSTAL Steering Board:Refer to MoM's and / orRefer to WP101 Report provided by AVL	No deviations.	1	0,9	EADS-Cas took over the SP 2 Lead on Jan. 1st, 2014 until A-F is in the position to replace Odile Laurent, the former SP2 Lead. This causes some additional effort.	A-F is asked to solve this problem and to take over (again) the responsibility for SP2 as agreed in the DoW.

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
DE	19_EADS-CAS	1_02	Review of Several (~ 10) Publications Contribution to: CRYSTAL Dissemination Plan CRYSTAL Exploitation Plan Support of / Contribution to: ARTEMIS/ITEA2 Co-Summit on Dec. 3rd & 4th, 2013 in Stockholm Presentation of CRYSTAL Results on: EADS Systems Engineering Forum on Dec. 12th & 14th, 2013 in Marignane	CRYSTAL Dissemination Plan CRYSTAL Exploitation Plan	No deviations.	1	0,7	This is an insignificant deviation. (Publications do not have a linear distribution.)	N/A
DE	19_EADS-CAS	1_03	Definition of / Contribution to the SP2 Proposal for Evaluation Criteria	(First) Proposal of Evaluation Criteria from SP2	No deviations.	0,2	0,1	This is an insignificant deviation. (Evaluation tasks will be performed in the second half of the project.)	N/A
DE	19_EADS-CAS	2_00	05.2013 - 12.2013 - WP Co-Lead: Support of WP200 Lead, Odile Laurent, A-F Participation in / Contribution to the Workshop on Sept. 19th & 20th, 2013 in Toulouse Meeting on Nov. 26th, 2013 in Munich Regular monthly WebEx Coordination Meetings 01.2014 - 05.2014 - WP (Interim) Lead: Organization of regular monthly WebEx Coordination Meetings Coordination of the SP2 - AEROSPACE Domain Creation to the dedicated MoM's Preparation of the SP2 Presentation for the JU Interim Review Review of (some) Deliverables Participation in / Contribution to the: JU Interim Review Dry-Run on Feb. 10th, 2014 in Brussels JU Interim Review on Feb. 11th, 2014 in Brussels CRYSTAL Technical Board Workshop on Apr. 1st & 2nd, 2014 in Munich (refer to WP101)	Refer to MoM's and/or Refer to WP200 Report provided by EADS-Cas (or A-F)	No deviations.	1	0,9	EADS-Cas took over the SP 2 Lead on Jan. 1st, 2014 until A-F is in the position to replace Odile Laurent, the former SP2 Lead. This causes some additional effort.	A-F is asked to solve this problem and to take over (again) the responsibility for SP2 as agreed in the DoW.
DE	19_EADS-CAS	2_03	Task T231 Participation in / contribution to 13 workshops for the elaboration of the MSE use case between June 2013 and April 2014: definition of relevant process activities, identification of engineering methods, technology baseline and required innovations, elicitation of requirements for the RTP, IOS and bricks. Setup of the SysML modelling and reporting environment for the MSE use case definition. Preparation of the Systems Engineering Management Plan for the MSE use case. Development of a traceability meta model that provides a tool independent definition of the traceability link semantics of linked artefacts. Internal dissemination: presentation of WP203 results to other organizational entities in Airbus Defence & Space. Task T232 Prototyping using Requirements Quality Suite provided by WP607. Analysis and prototyping using different approaches for variability management: FeatureIDE, Vedit, and pure::variants with connectors to IBM Rational DOORS and IBM Rational Rhapsody. Workshop with use case partner FhG IESE in Friedrichshafen on April 22, 2014. Integration of MSE prototype based on existing technology. Setup of IBM Jazz environment.	Task T231 SysML model that provides a detailed definition of the MSE use case comprising user stories, process activities, engineering methods, interaction of related bricks and related requirements. Traceability metamodel. D203.011 (MSE Report) submitted to JU. Task T232 MSE prototype based on existing technology including IBM Rational DOORS, IBM Rational Rhapsody, IBM Rational Gateway, IBM Rational Testconductor, IBM Rational Publishing Engine, Requirements Quality Suite, Vedit, FeatureIDE and pure::variants. IBM Jazz Environment. D203.020 (MSE Prototype) submitted to JU.	Less effort spent as planned due to the delayed ramp-up of the project. No impact on project objectives expected.	23,4	20,6	Production of data: Creation of SysML model for the MSE use case definition. Creation of lifecycle data for the MSE use case: requirements, functional analysis model, variability models. Integration of SEE environments: Prototype based on existing technology IBM Jazz environment Production of deliverables: D203.011 D203.020 Review of deliverables: Review of D202.010 (ALA) on Oct 28, 2013 Review of D202.021 (ALA) on Jan 23, 2014 Review of D202.031 (ALA) on Jan 28, 2014 Review of D205.010 (TASE) on Mar 3, 2014 Review of D204.010 (Sagem) on Jan 20, 2014 Review of D210.010 (A-F) on Jan 20, 2014	N/A
DE	19_EADS-CAS	2_08	Task T281 Review of WP208 use case presentation. Review of WP208 engineering methods. Feedback on public use case aerospace demonstrator.	Task T281 Comment sheets for review of WP208 engineering methods.	Less effort spent as planned due to the delayed ramp-up of the project. No impact on project objectives expected.	0,9	0,5	Participation / contribution to WP208 Webex meetings. Review of WP208 engineering methods.	N/A
DE	19_EADS-CAS	2_09	Task T291 Contribution to discussion of link between Aerospace Ontology (WP209) and RBE Ontology (WP607).	Task T291 Questionnaire "Expectations for the aerospace domain ontology".	Less effort spent as planned due to the delayed ramp-up of the project. No impact on project objectives expected.	0,7	0,2	Participation / contribution to WP209 Webex meetings.	N/A
DE	19_EADS-CAS	6_04	Task T64x Participation / contribution to WP604 Webex meetings.	Task T64x Review comments for deliverable D604.011 (AIT).	No deviation.	0,2	0,1	Participation / contribution to WP604 Webex meetings. Review of D604.011 (AIT) on Jan 24, 2014	N/A

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
DE	19_EADS-CAS	6_07	Task T67x Alignment of needs between WP204, WP203 and WP607 to define technical core requirements and refined technical requirements.Participation to WP607 tool training in Madrid on Sep 16-17, 2013.Prototyping using Requirements Quality Suite provided by WP607.Participation / Contribution to workshop in Paris on Jan 23, 2014Internal workshop for exploitation of WP607 bricks conducted.	Task T67x Industrial needs from WP203.Traceability of WP607 core requirements to industrial needs.Requirements Quality Suite tool environment	Less effort spent as planned due to the delayed ramp-up of the project. No impact on project objectives expected.	1,2	0,8	Training and familiarization with Requirements Quality Suite. Participation / contribution to WP607 Webex and F2F meetings. Review of D607.021 (Requirements Quality Analyzer) on Nov 05, 2013.	N/A
DE	19_EADS-CAS	6_08	Task T685 Alignment of needs between WP203 and WP608.	Task T685 Industrial needs from WP203.	No deviations.	0,2	0,1	N/A	N/A
DE	19_EADS-CAS	6_10	Task T610x Alignment of needs between WP203 and WP610Discussion concerning DSL brick with Siemens.	Task T610x Industrial needs from WP203	No deviations.	0,2	0,1	Participation / contribution to WP610 Webex meetings with FhG IESE.	N/A
DE	19_EADS-CAS	6_11	Task T611x Alignment of needs between WP203 and WP611.Participation / contribution to WP611 Webex and F2F meetings.	Task T611x Industrial needs from WP203.	No deviations.	0,2	0,1	Participation / contribution to WP611 Webex meetings. Participation / contribution to F2F meeting in Frankfurt on Feb 18, 2014.	N/A
DE	20_EADS IW-G	1_02	Contribution to CRYSTAL Dissemination and Exploitation Plan. Presenting CRYSTAL Results (especially the Demonstrator of the public aerospace use case) at: Airbus Innovation Forum (Nov 14th/15th, Hamburg)2nd International Conference on Interoperability (Dec 2nd, Stockholm)Artemis/ITAE2 Co-Summit (Dec 3rd/4th, Stockholm)EADS Systems Engineering Forum (Dec 12th/13th, Hamburg) Preparation of a video presenting CRYSTAL principles on the public aerospace use case demonstrator.	EADS IW part for the CRYSTAL Dissemination and Exploitation Plan ready. Several hundred participants of conferences and forums have seen and discussed the presentation of the CRYSTAL public aerospace use case Demonstrator showing CRYSTAL principles. The video has been finished and is currently under review.	We have spend more resources on Dissemination than initially planned as some of the dissemination activities (especially the presentation of a demonstrator at the Artemis Co-Summit) were not initially expected, but turned out to be very useful.	1,67	3	For realisation of the results explained before	no corrective actions planned so far
DE	20_EADS IW-G	1_03	So far no work has been performed on this WP from IW-G	So far no results	We expect that the evaluation tasks will be performed later in the project.	0,33	0	No resources used so far	N/A
DE	20_EADS IW-G	2_00	Participation to regular WebEx meetings Participation to SP2 Workshop in Toulouse on Sep 19th and 20th, 2013 Support of the SP2 Presentation for JU Interim Review in Brussels on Feb 11th, 2014 Presentation of Demonstrator as part of SP2 Presentation at JU Interim Review and JU Interim Review Dry Run in Brussels (Feb 10th and 11th, 2014)	Refer to SP2 Workshop Minute of Meeting	No deviation	0,67	0,6	Use of resources to participate to webex meetings and to SP2 Workshop	N/A
DE	20_EADS IW-G	2_01	Contribution to / Review of Deliverables:D201.011D202.021 Participation at major workshops with several Airbus representatives:July 1st, 2nd; ToulouseNovember 4th, 5th, 2013; Filton Participation to regular Airbus Use Cases progress meetings via phone and webex.	Deliverables:D201.011 D202.021	The use of effort for this Work Package is not linear, but higher in the beginning of this Work Package.	1	1,5	For realisation of the results explained before	No corrective actions planned or needed for the time being.

Co.	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
DE	20_EADS IW-G	2_03	Support of Review of Deliverable D203.011 Informal Exchange with Use Case responsables	Deliverable D203.011 (review) Some aspects of UC 203 have been taken into account for WP208 and addressed indirectly in Deliverable D208.010	Some of the aspects of UC 203 have been addressed in WP208. The respective effort for those aspects has been allocated to WP208.	2,33	0,7	For realisation of results explained above, and for informal discussions.	No corrective actions planned so far.
DE	20_EADS IW-G	2_08	Leading of the Work Package, including organisation of progress meetings, writing of MoM, progress reports, etc. Contribution to the writing of Deliverable D208.010 Development of a first SEE Demonstrator Contribution to the definition of use case data (e.g. models).	Deliverable D208.010 Working Demonstrator Significant amount of Use Case Data defined.	It has been decided with other CRYSTAL partners (notably SP2 but also beyond) to use the Public Aerospace Use Case as a kind of piloting use case on which CRYSTAL approaches will be applied and tested first before being deployed on other use cases. This required us to shift much more effort in the early phases of the Work Package than initially expected.	4	12,5	For realisation of results explained before.	It is likely that we will consume more effort on this Work Package in total than initially planned. This effort will have to be taken from other Work Package. We believe however that the approach to use the Public Aerospace Use Case as piloting use case is very valuable, so we plan to continue with this approach.
DE	20_EADS IW-G	6_04	Contribution to Deliverable D604.011 Participation to Meetings with Airbus and Cassidian representatives to clarify needs related to Safety Bricks	Deliverable D604.011 (Chapters on FT+ brick and on Safety for Avionic Design and Analysis Framework brick)	Late clarification of needs with Airbus and Cassidian. In any case, the use of effort is not linear for this Work Package. The main effort consumption is expected at later phases of the WP.	4,67	1,5	For realisation of results explained before.	No corrective actions planned so far
DE	20_EADS IW-G	6_06	Contribution to Deliverable D606.011 Participation to meetings with Airbus to clarify needs Participation to WP66 coordination meetings	Deliverable D606.011 (EADS IW G Part) TI Definition	Only minor deviations occurred. We expect to spend more effort in the next phase of the Work Package. In any case, effort spending will not be linear for this Work Package.	4,67	4	For realisation of the results explained above	N/A
DE	20_EADS IW-G	6_07	Informal meetings with WP607 leader to clarify needs and to coordinate progress steps.	No formal results so far, but some informal clarifications have occurred.	We expect to spend more effort on this Work Package when IOS compliant WP67 bricks become available and can be integrated into WP208 SEE environment.	1,67	0,5	Mainly for informal discussions with WP67 leader and representatives	No corrective actions needed at this point in time.

Country	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
DE	20_EADS IW-G	6_08	No work performed so far from EADS IW G	No results so far	<p>Due to the decision with other partners to use the WP208 use case as piloting use case and concentrate on the quick development of a first WP208 SEE demonstrator, we had to spend more effort on WP208 and take this effort from elsewhere.</p> <p>The SEE demonstrator development roadmap required a focus on ALM related tasks in the first place. The integration with PLM is still an important topic but will occur after a first successful development of an ALM brick has been achieved.</p> <p>Consequently, the effort for the ALM related Work Package WP611 is higher in this period.</p>	3,33	0	No resources used so far	Since we have now reached a first development and integration of an ALM related brick into the WP208 SEE Demonstrator, we expect to start with the extension of the environment into the PLM world. Therefore the effort to be spend on WP608 is expected to increase in the near future.
DE	20_EADS IW-G	6_10	Few informal exchange with WP6_10 partners	No tangible results so far from EADS IW G	<p>Due to the decision with other partners to use the WP208 use case as piloting use case and concentrate on the quick development of a first WP208 SEE demonstrator, we had to spend more effort on WP208 and take this effort from elsewhere.</p> <p>Among others, we decided to take the effort from WP6_10, since Product Line Engineering aspects were not in the focus of the development of the first WP208 SEE Demonstrator.</p>	2,33	0,2	For informal exchange with WP6_10 partners	We still have to determine if it is possible to extend the WP208 Use Case to product line topics. This will drive corrective actions for this work package.

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
DE	20_EADS IW-G	6_11	Participation to WP6_11 coordination meetings Very frequent exchange with WP6_11 partners Support in specification, deployment and evaluation of WP6_11 partners, mainly by using the WP208 SEE Demonstrator. Review and some contribution to deliverables: D611.011 D611.051	Integration of WP611 brick into WP208 SEE Demonstrator Deliverables D611.011 and D611.051 (minor contribution from EADS IW G)	Due to the decision with other partners to use the WP208 use case as piloting use case and concentrate on the quick development of a first WP208 SEE demonstrator, we had to spend more effort on WP208 and take this effort from elsewhere. The SEE demonstrator development roadmap required a focus on ALM related tasks in the first place. Consequently, the effort for the ALM related Work Package WP611 is higher in this first phase of the project.	3,33	5,5	To achieve results explained before	No corrective actions planned so far
FR	21_EADS IW-F	2_09	Leading of the Work Package, including organization of progress meetings, writing of MoM, progress reports, etc. D209.010 contribution Analysis of expectations regarding usage of a domain ontology within SP2 use cases - Questionnaire "Expectations for the aerospace domain ontology" Description of relevant existing standards and resources in aerospace domain and previous projects Start identifying subparts of standards relevant for SP2 and Public use cases Follow up of SP2 use cases Coordination with other SPs ontology WP to agree on a common position of domain ontology in IOS	Deliverable D291.010 State of the art report was issued at M9 as planned	difficulties in reaching a common and agreed view on what should be done, especially in establishing clear work streams between application ontology (e.g. RBE ontology) and contribution to IOS (e.g. ICT interoperability). French consortium is also experiencing contractual issues that impact the effort level.	6	3	underspending in effort with respect to the plans due to French contractual issues: no grant agreement from DGCIS to date (T0+12).	A closer link with SP6 and with the public use case is likely to foster quicker development of the domain ontology specification and development. There is currently an active contribution to scoping discussions with other ontology WPs and SP6 in order to clarify the role of the ontology in CRYSTAL, including its relationship with IOS.
UK	22_EADS IW-UK	1_02	Presentation of CRYSTAL inside Airbus Group - Internal Systems Engineering Conference - to more than 200 participants of the Airbus Group Systems Engineering Community Presentation to internal Innovation Fairs / Technology Workshops. Creating of videos regarding CRYSTAL Interoperability / integrated Systems Engineering Environment		no major deviations	3	1		
UK	22_EADS IW-UK	2_01	"Development of the first technical software bricks for the prototype and deployment of the System Engineering platform in the UK. Contribution to D210.010 and D211.010"		no major deviations	4	1,5		
UK	22_EADS IW-UK	2_08	Iterative development of the connector for Open Modelica – simulation tool - to the current system engineering platform. Development/deployment of a software solution to allow Semantic searches against the actual platform based on the principles of linked data		no deviations	1,7	1		

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
UK	22_EADS IW-UK	6_00	Managment of SP6. Organization of workshops. contribution to deliverable D_600_010		no deviatons	2	5		
UK	22_EADS IW-UK	6_01	contribution to deliverable D_601_010 Definition of a top-down approach to collect the IOS Needs from End Users Organisation of several workshops (virtual and physical) to educate end users and technology providers about IOS concepts"		lack of resources (due to internal transfer of people between UK and France + people leaving the company)	9	3		
UK	22_EADS IW-UK	6_02	Participation in meetings and workshops.		no deviatons	3	1		
UK	22_EADS IW-UK	6_04	no activities so far		this activities are link to Airbus Group Use Cases WP2.1 and WP2.3 and are not scheduled yet	3,3	0		
UK	22_EADS IW-UK	6_06	contribution to deliverable D_606_011		further ramp up planned as, required by use cases WP2.1 and WP2.7	2	5		
UK	22_EADS IW-UK	6_08	no activities so far		this activities are link to Airbus Group Use Cases WP2.1 and WP2.3 and are not scheduled yet	2,7	0		
UK	22_EADS IW-UK	6_11	no activities so far		this activities are link to Airbus Group Use Cases WP2.1 and WP2.3 and are not scheduled yet	2,7	0		
FR	23_Elektrobit	3_06	The comparaisn of the Multicore microcontroller available on the market and the selection has been achieved. The proposal and definition of the different software architecture solution based on AUTOSAR4.0 standard is in progress.		Clarification are required from crystal regarding the expectation for the Engineering methods, IOS toolchain ...	12	8	This deviation was partly due to the need to clarify the expectation for the Engineering methods, IOS toolchain...	
FR	23_Elektrobit	6_05	We didn't spend any effort yet for this workpackage because it depends of the results of our analysis on the workpackage 3_06 which is still in progress (results of this analysis are not planned before Q4/2014).			0	0		
AT	24_TUG	1_02	We submitted several paper on requirements engineering and model-based testing, that are in the scope of CRYSTAL and currently await the notifications.	submitted: 1) SAFECOMP14: A paper on model-based mutation debugging 2) ASE14: A paper on requirement-driven test generation which combines contract-based interface theories with model-based testing. 3) FORMATS14: Bounded determination of timed automata	no deviatons	1	0,89		
AT	24_TUG	3_04	Definition and refinement of an internal requirements formalization language for synchronous systems. The language is used within the recently developed tool MoMuT::REQs, to formalize requirements and enable an automated analysis and test case generation procedure. The tight coupling of requirements and test cases also enables a very high grained traceability between the work products.	Participation in several online meetings, including a presentation of MoMuT::REQs. Participation in the WP 3.4 requirements workshop and a preparation meeting. MoMuT::REQs will be applied for the requirements engineering and testing of a CRYSTAL use case at AVL.	no deviatons	1	0,89		
AT	24_TUG	6_04	Implementation and enhancement of the tools MoMuT::REQs and MoMuT::TA. Both tools had their origins in the MBAT Project and were improved and adopted to challenges introduced by the CRYSTAL use cases.	We implemented a simulator for MoMuT::REQs allowing to execute the requirements model. Extended bounded language inclusion problem from deterministic timed automata to non-deterministic timed automata with silent transitions, as these models represent more realistic systems.	no deviatons	4	3,57		

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
AT	24_TUG	6_13	Within the WP 3.4 workshop, several IOS topics were addressed. We presented our current IOS integration within MBAT and discussed and advised on several different IOS implementation approaches. We are currently building a web interface for our backends, and work together with AIT to provide automated execution processes via IOS.	The future CRYSTAL IOS structure was defined.	no deviatons	1	0,89		
IT	25_FBK	6_01	FBK has contributed to task 6.1.1 with an analysis of the results of the ARTEMIS projects pSafeCer and nSafeCer, for a possible re-use in Crystal, in particular as regards the RTP interoperability. FBK has contributed to task 6.1.2 and in particular to the extension of the IOS. FBK has contributed to the concept of the IOS, and its development by taking into account the validation and verification tools provided by FBK.	Contribution to the analysis of the state of the art in interoperability; experience on the results of the ARTEMIS projects pSafeCer and nSafeCer. Contribution to the definition of the IOS.	no deviatons	3,5	3,5	Resources have been used as planned, in particular to contribute to the analysis of the state of the art in interoperability, and the analysis and conception of the IOS.	
IT	25_FBK	6_02	FBK has contributed to the analysis and extension of the meta-model developed in Task 6.2.1, providing input and feedbacks for the deliverable, in particular FBK has been one of the internal reviewer of the final version. In Task 6.2.2 FBK has worked on the specification of the platform builder, contributing to the structure definition of the platform and providing hints to the technology selection due to its experience on EMF framework.	Contribution to the definition of the meta-model. Contribution on the definition of the platform builder.	no deviatons	6,5	6,5	Resources have been used as planned.	
IT	25_FBK	6_03	In Task 6.3.1, FBK has contributed to the analysis of the transferability of tools/methods to other domains. In particular, it has worked on the setup of a survey (questionnaire) targeted at collecting information from different actors operating in other domains. Moreover, FBK has carried out work to improve the extended version of the NuSMV model checker, in particular as concerns capabilities for model-based safety analysis, and to analyze the decomposition of the system architecture. This work is also linked with Task 6.4.4 in WP6_04.	Survey (questionnaire). Extensions of the NuSMV model checker.	no deviatons	3	3	Resources have been used as planned.	
IT	25_FBK	6_04	FBK as worked in Task 6.4.4 on the analysis and development of extensions of the NuSMV model checker. In particular, it has been explored the integration of contract-based compositional design techniques and safety analysis, with the goal of automatically generating hierarchical fault trees. In addition, FBK has analyzed the integration of the extended version of the NuSMV model checker with Crystal Use Case 2.8, and provided an outline of the integration for the generation of Fault Trees, starting from models written in the Altarica language.	Improvement of the NuSMV model checker for safety assessment - generation of Fault Trees. Planning of the integration with Use Case 2.8.	no deviatons	3	3	Resources have been used as planned, in particular for development of the extended version of the NuSMV model checker.	
DE	26_FhG	1_03	Collect first information for the evaluation			0,33	0,2		
DE	26_FhG	2_01	" The scenario of WP 2.1 is addressed together with Airbus. It covers the injection of faults into communication paths. For this, the FERAL simulation framework that is able to support injection of network errors that resemble realistic communication faults is evaluated. Functions are modeled in Simulink. " The Simulink design verifier has been evaluated for this purpose, but only offers limited capabilities and does not support proper network simulation that is mandatory for fault injection testing. " Requirements from end users have been collected and evaluated. To enable the use of the FERAL framework from Simulink, a specialized toolbox needs to be developed that integrated FERAL with Simulink. Ongoing work is to evaluate whether this is possible or not. It needs to be checked whether this approach would enable a sufficient accuracy or not.	<ul style="list-style-type: none"> Requirements from end-users Evaluation of Simulink Design Verifier 	no deviatons	3,33	3,4		

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
DE	26_FhG	2_03	<ul style="list-style-type: none"> * Discussion of variability management issues in MSE use case and identification of respective needs. * Review of D203.011 deliverable. * In-depth analysis of different approaches for variability management using FeatureIDE and pure::variants. * Support of use case partner EADS-CAS in introduction of pure::variants. * Workshop with use case partner EADS-CAS in Friedrichshafen on April 22 2014. 	MSE prototype based on existing technology including IBM Rational DOORS, IBM Rational Rhapsody, IBM Rational Gateway, IBM Rational Testconductor, IBM Rational Publishing Engine, Requirements Quality Suite, Vedit, FeatureIDE and pure::variants.	no deviatons	3,33	3,5		
DE	26_FhG	3_03	<ul style="list-style-type: none"> * Tailoring of the C2FT approach with respect to use case 3.3: C²FTs are safety analysis models that are tightly integrated into system models. The general C²FT approach is applicable to different kinds of system models. It can be applied to the functional architecture model, the technical architecture model and other models. However, the concrete application of the C²FTs approach depends on the system model. This means that the approach for constructing C²FTs has to be tailored to the considered kind of system models. * Analysis of engineering methods and definition of IOS core requirements. * Definition of interoperability requirements and integration needs. * Identification of harmonized interoperability challenges and mapping to IOS concerns. * IOS training. 	<ul style="list-style-type: none"> * Description of the (use case 3.3 tailored) C2FT's approach (M9 deliverable) * Example" Functional model of a power train with related C2FT's" : This document describes an example for modelling component-integrated component fault trees (C2FT's). The example was set up to ** get a common understanding concerning elements in the functional architecture, ** discuss the practicability of the C2FT modeling approach for use case 3.3, ** discuss in how far the information that is required for modelling C2FT's is provided by models that are created in use case 3.3, ** discuss which of the information that is given by the C2FT models is used in the use case 3.3. * IOS core requirements, harmonized interoperability challenges 	no deviatons	5	5,1		
DE	26_FhG	3_04	<ul style="list-style-type: none"> * Identification of interoperability challenges and elicitation of requirements for this use-case * Analysis of WLTP standard * First Structure of requirements model of WLTP in Enterprise Architect * First ideas for a system model derived from WLTP (e.g. for test equipment) * First formalism for WLTP requirements based on finite state process algebra * Initial setup for a controlled experiment comparing three different formalization techniques (MSD, FSP, Boilerplates) * First prototyping of IOS concerns for few engineering methods. * Identification of harmonized interoperability challenges and mapping to IOS concerns. * IOS training. 	<ul style="list-style-type: none"> * Model * First interoperability requirements * First prototype, IOS core requirements, harmonized interoperability challenges. 	no deviatons	5	5,1		
DE	26_FhG	6_01	Contribution to IOS Specification in particular integration of harmonized interoperability challenges from automotive domain. Analysis of automotive engineering methods and definition of IOS core requirements.	IOS core requirements	no deviatons	3	3		
DE	26_FhG	6_02	Contribution to Platform Builder specification in particular IOS concerns, tool adapter functionalities as well as process enactment.		no deviatons	2	2,64		
DE	26_FhG	6_03	<ul style="list-style-type: none"> * Participation in OSLC-training * First structure for legal constraints (e.g. WLTP) as Input for SysML profile for Artisan * Basic concepts for the formalization of requirements * Cf. WP3_04 progress 	* Deliverable	no deviatons	5	4,9		

Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
DE 26_FhG	6_04	<ul style="list-style-type: none"> * OSLC-training * Analysis of Safety-Analysis-Tool interactions with respect to the implementation of OSLC-interactions: Many kinds of interactions are reasonable. We decided which interaction we want to do with OSLC * OSM-refactoring: The open safety model (OSM) was developed in previous work in order to support the interaction between a set of Safety-Analysis-Tools. Properties of these Tools are hard-coded in the OSM. In order to achieve tool-interoperability, we developed a concept for removing tool-specifica from the OSM. 		no deviatons	4	4,2		
DE 26_FhG	6_06	<ul style="list-style-type: none"> * Fraunhofer IESE focused in the first year of the Project (M1-M12) on the evaluation of existing simulation technologies and additional approaches that are necessary to create a holistic system simulation in addition to the FMU interface that was already proposed in the proposal. To solve this, brick descriptions were evaluated and requirements to simulation scenarios were collected. Fraunhofer will therefore focus on two scenarios: Evaluation of the Cabin use-case together with Airbus, as well as the public EADS case study. * The second scenario requires the development of an interface, which adds meta data to models to enable looking up of matching simulation models and their combination into simulation scenarios. This will also require the development of a model repository service, which is either realized as plugin to modeling tools, or as a specialized server that maintains available simulation models. * Furthermore, Fraunhofer IESE Coordinates the Workpackage 6.6, and therefore has not only technical, but also organizational obligations. This also includes the management of Bricks, as well as the development of Core Requirements, Refined technical requirements, and technical items that are going to be addressed in WP 6.6. 	<ul style="list-style-type: none"> • Collection of Core requirements, technical requirements and preliminary list of technical items for the project • Extension of FERAL Simulation Framework to support fault injection testing • FMU interface to integrate FERAL numeric solvers with FMU simulation components • Integration of Simulink legacy Simulation components with FMU simulation components 	no deviatons	2,67	2		
DE 26_FhG	6_10	<ul style="list-style-type: none"> * Alignment of needs and ongoing developments with other WP6.10 partners in regular webmeetings. * For System Family Engineering Framework Brick further interested UCs have been identified and analyzed for their needs. * Variant Analysis tool and approach has been specified in D610.011 * A external survey on the industrial needs for Variability Management has been conducted. * State of the Art and Practice of Variability Management have been revised for major new approaches. * Contribution of System Family Engineering Framework has been elaborated and possible content has been structured. * Coordination and compilation of D610.031 System Family Engineering Framework deliverable. * Compilation of an overview slide set on main variability management approaches and tools and presentation to automotive UC. 	<ul style="list-style-type: none"> * Needs from UC 2.3 and UC 3.4 have been elicited * D610.031 compiled and delivered * First structure for System Family Engineering Framework exists * Interest group for System Family Engineering Framework has been extended 	no deviatons	3,33	3,8		
DE 26_FhG	6_13	Analysis Co-Simulation needs and OSLC-based IOS. Definition of interoperability challenges and ios requirements of co-simulation. First prototyping of IOS concepts.	IOS core requirements and initial prototype	no deviatons	3	3		

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
ES	27_Tecnalia	2_05	WP2.05 titled CRYSTAL Space toolset applied to Avionics Control Unit Software generation, test, V&V and Certification. TECNALIA is involved in WP2.05 with the role of participant, and as such, TECNALIA has contributed to the definition of the requirements that the different bricks must comply with in order to be applied to the space domain. The technical tasks performed have been described and reflected in the associated deliverable D.205.010, for which TECNALIA has worked specifically to define the requirements needed to integrate the "Autonomous Fault Tolerant System Design Methodology" in this Use Case.	Regarding, the activity in WP2.05 TECNALIA has worked specifically to define the requirements needed to integrate the "Autonomous Fault Tolerant System Design Methodology" in this Use Case. All this work has been compiled in Deliverable D.205.010 during 2013, although the finalisation of such document and its submission has been performed on M9, January 2014, as it was planned.	No relevant deviations.	12	12	The use of resources within the reporting period has been according to what it was planned. The small difference in total costs with respect to the planned figures is a result from the annual adjustment of the actual personnel rates.	N/A
ES	27_Tecnalia	6_04	WP 6.04 titled Tools for safety engineering. TECNALIA has worked in an initial specification of an Autonomous Fault Tolerant System Design Methodology (Task 6.04.21). In WP6.04, TECNALIA has prepared an initial high level specification of the Autonomous Fault Tolerant System Design Methodology contributing with this work to Deliverable D.604.011. This deliverable was planned for M9 of the project, and so its complete submission has taken place in January 2014.	In WP6.04, TECNALIA has prepared an initial high level specification of the Autonomous Fault Tolerant System Design Methodology contributing with this work to Deliverable D.604.011. This deliverable was planned for M9 of the project, and so its complete submission has taken place in January 2014.	No relevant deviations.	14,4	14,4	The use of resources within the reporting period has been according to what it was planned. The small difference in total costs with respect to the planned figures is a result from the annual adjustment of the actual personnel rates.	N/A
ES	27_Tecnalia	6_10	TECNALIA, as WP6.10 leader, has coordinated the activities within WP6.10. In this direction from M1 – May 2013 till M4 – August 2013 heavy work was devoted to actually coordinate the actual specification of the industrial cases needs towards WP6.10 bricks. At the same time TECNALIA has contributed both to D610.011 Crystal Variability Management - V1 as well as D610.031 Brick System Family Engineering Framework - V1. Within deliverable D610.031 Brick System Family Engineering Framework TECNALIA proposed at a first stage the use of PLUM for variability Management, however it was decided later on that this first version of D610.031 was actually focusing on engineering methods and not tools. In line with this TECNALIA will accomplish the enhancement of PLUM within the project during 2014-2015 to satisfy the user requirements.	Regarding the milestones for WP6.10, Tecnalia has contributed both to D610.011 Crystal Variability Management - V1 as well as D610.031 Brick System Family Engineering Framework - V1. Within deliverable D610.031 Brick System Family Engineering Framework TECNALIA proposed at a first stage the use of PLUM for variability Management, however it was decided later on that this first version of D610.031 was actually focusing on engineering methods and not tools. In line with this TECNALIA will accomplish the enhancement of PLUM within the project during 2014-2015 to satisfy the user requirements.	No relevant deviations.	17,3	17,3	The use of resources within the reporting period has been according to what it was planned. The small difference in total costs with respect to the planned figures is a result from the annual adjustment of the actual personnel rates.	N/A
ES	28_GMV	1_01	Status reports done. Required information for JU agreements have been provided Elaboration of the documentation for the Spanish funding authorities.	Status reports Required information for JU agreements have been provided Documentation for the Spanish funding authorities and justification documents for the first year Preparation and participation in the National KoM at Madrid.	no deviatons	0,7	0,7	The resources have been used for: the elaboration of the Status reports, for the preparation and participation in the National KoM at Madrid, for the elaboration of the required information for JU, for elaboration of the documentation for the Spanish funding authorities.	
ES	28_GMV	1_02	GMV has started with the planning of the dissemination and exploitation activities. Some dissemination activities have been performed.	Contribution to the CRYSTAL Dissemination Plan and Exploitation Plan V1 Preparation of dissemination material for DASIA'14 Conference	no deviatons	0,5	0,4		
ES	28_GMV	2_05	GMV has contributed to the definition of the Space Use Case High level requirements, the Description of the applicable standards and the Identification and description of the involved engineering methods.	D205.010 deliverable "Space Use Case Requirements"	no deviatons	6,6	1,65	GMV has: o Contributed to the definition of the Space Use Case High level requirements. o Described the applicable standards. o Identified and described the involved engineering methods. o Contributed to the elaboration of the D205.010 deliverable "Space Use Case Requirements" o Participated in several WP teleconferences to provide inputs and status of the WP tasks	
ES	28_GMV	6_04	GMV has participated in the elaboration of the deliverable D604.011" Specification, Development and Assessment for Safety Engineering – V1") evaluating the industrial applicability of safety-analysis frameworks for safety assesment with respect to the dependability and safety requirements extracted from ESA	Collaboration to deliverable D604.011" Specification, Development and Assessment for Safety Engineering – V1").	no deviatons	0,6	0,6	o Collaboration in deliverable D604.011" Specification, Development and Assessment for Safety Engineering – V1"). o Participation in several WP teleconferences to provide inputs and status of the WP tasks	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
ES	28_GMV	6_09	Reviewing of existing tools for this WP.		no deviations	1,3	0,2		
CZ	29_HON	2_06	The envisioned tool chain was described and needed technology bricks were identified. The architecture of the tool chain and the tool integration is drafted including needs for the technology bricks integrations.	We have described the tool chain and its architecture in the deliverables. We have integrated NuSMV model checker from FBK with our tool chain. We are closely collaborating with Masaryk University on safety analysis and improved sanity checking. Moreover, we are cooperating with REUSE company on integrating their tools and we have made progress on both sides to make our tooling more compatible.	No deviations.	40	40	Resources used as planned.	No corrective actions needed.
UK	30_IBM UK	1_01	Contribution to multiple dissemination activities around the Public Aero Use case particularly such as the Artmeis conference and preparation of a video for dissemination with Airbus, Alenia and others	Demonstartor Presentations Video	no deviatons	0,1	0,1	IBM allocated 1PM and has undertaken Dissemination within 6.11	
UK	30_IBM UK	6_01	Contributions to technical management process. Draft IOS contributions Advisory role to multiple use-case owners and provider partners. Model the technical management process and align to IBM methods.	Contributions to technical management process. Draft IOS contributions OSLC briefings	Slower ramp up of the Crystal project	9,1	4,2		
UK	30_IBM UK	6_08	No significant activity			0	0	None of any significance yet. IBM has proposed 2PM from M9 onwards from an accepted change.	
UK	30_IBM UK	6_10	Decide in Dec 2013 M8 to contribute and so begin to engage during M10 to understand partner needs. Propose and run a suvery.			0	0	IBM has allocated 2PM from M9 via an agreed change	
UK	30_IBM UK	6_11	Organise a series of meetings of partners. Refine work package and deliverables, work with partners to submit formal changes. Deliver agreed deliverables 6.11.11 and 6.11.51 Build a showcase for the Public Aero Use case working with partners, build up dissemination materials, support events to promote. Analyse Engineering methods towards IOS, RTP and Brick needs. Model the flows used within Crystal. begin to identify Common requirements within the Technical Management Process. Build up a project area to support the work. Provide support for WP6 activities as WP6.11 leader - reporting, feedback. Advisory role to multiple use-case owners and provider partners.	Deliverables 6.11.11 and 6.11.51. Public Aero demonstrator and related collateral Website of materials Series of WG calls and meetings	Partners realign or reduce effort. Fewer provider partners active in the WP. delays in Crystal ramp up	7,8	3,1		
UK	31_IFX-UK	1_02	Dissemination and Exploitation. Agreed on deliverables within Use-case 3.3, all Documentation provided on time, reviewed and accepted URML brick replaced with Claims language extension Boilerplate as we have decided to stay with semi-formal Natural Language rather than a model driven requirement flow.	A full set of internal Requirements has been written to a manual 'semi-formal' quality and at feature level. Work is on-going to extract all external stakeholder requirements and link them, we will then tailor a document per customer showing how their Requirements are mapped to the internal feature level requirements. Within the 3_3 use-case we are looking at the variability issue and safe data storage	After analysing URML within the VeTess ARTEMIS project it was realised that 1) URML has no long term maintenance or support plan and 2) the level of the requirements at tier 2 level does not suit a model based Requirements flow	0,2	0,2	All have been used attending meetings/workshops and documenting the deliverables	

Con	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (PM Plan)	PM actual	Use of resources	Corrective Actions	
UK	31_IFX-UK	3_03	We are working on the Variation management within the 3.3 automotive use-case. Currently we are analysing the state of the art solutions being used. We have also been in discussion with the avionics group to see their proposed solutions also. For our solution we started by implementing a central database solution but alternate tooling and an issue with moving the data from one database to another is leading us to drive an API direct access solution for the data instead on asureSign for the Data Analyser Dashboard Collaboration with TVS on the asureSign tool to detect over and under engineering across different domains - pre-silicon IP, Pre-silicon SOC, post silicon validation (IP and SOC), PTE and SW.	Presentations and analysis of the issues is on-going. The basic database solution is under development within Infineon currently . The asureSign tool now implements all the requirements mapping as requested and is currently being rolled out within Infineon, on-going improvements are being supervised, Training given and documentation produced. Also some webinars are also being advertised within the consortium and also within VeTess and other external groups.	Originally a model based RE flow was suggested within this use-case. This was analysed and rejected as a result of the VeTess project. The work is being replaced with analysing and producing a boilerplate to support a Natural Language semi-formal notation solution as highly recommended by the ISO26262 standard for ASIL-C and D safety requirements.	5,2	5,2	Time spent on analysing current solutions trialling the KID and DAD design solution into the current flow and extrapolating all the required data that is required for storage. Review and re-planning to move onto API work with asureSign as a more optimum solution.	
UK	31_IFX-UK	6_04	6.4.10 was the work that was planned for URML analysis of the UML extension within the VeTess project however it was decided that due to no long term support planning on the extension we would not use this. Therefore this work on the Brick 3.99 would be deprecated and a new Brick was proposed to support a semi-formal safety extension for semi-formal notation as recommended within the ISO26262 standard. This work is now part of 6_04.11 and so far we have identified a semi-formal NL notation called the Claims language which was released as part of the 1991 IT security standard ITSEC. The work to extend this is being worked on currently within the VeTess project and a boilerplate will need to be written. Due to the non availability of the DODT from the CESAR project we are investigating usage of the REUSE tool to implement a Boilerplate currently. The Cross domain data analyser has been renamed DAD - Data analyser Dashboard. The Requirements are currently under review and a sister tool external to the CRYSTAL project called MoM (Measure Of Metrics) is currently being released, the DaD tool will make use of shared resources .. namely the KID (Knowledge and Information Database) .. which is being implemented under use case 3_03.	Design for the DAD is under review. The Database is currently single site and we are moving it into a multisite tool. Work on extending the claims language is being done under VeTess and will be used for the Boilerplate	As mentioned URML was developed by Siemens research in New York with a PhD student from Germany. Whilst being a very good solution the level at which Infineon's requirements are (signal level) doesn't lend to a Model based Requirements solution and also the URML extension has no long term support or maintenance roadmap currently.	9,4	9,7	analysis and design of DaD (and inherently KID) 1.4 asureSign work 7.3 analysis and change of Brick and Claims language replacement solution 1	the overspend was on the asureSign work and its extensions, this is due to the fact that it moved at a quicker pace than we expected - this we expect will tail off and we may regain the time later in the project Under discussion on tooling resources for Claims language Boilerplate
UK	31_IFX-UK	6_05	The analysis of the bricks has moved into 6_12 documentation	please see 6_12	project appears to have shifted slightly?	2,6	2,6	see 6_12	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
UK	31_IFX-UK	6_12	Specification, Development and Assessment for Validation Models - V1 D612.011. All bricks were analysed and written up and into the deliverable. the B3.91 asureSign brick has been integrated into the Infineon tool landscape also during this time and the flow to integrate it seamlessly to implement a Requirements driven verification methodology is on-going. ReqIf has yet to be looked at although the internal schema ARQE.xml has been donated to the consortium and is currently being extended to support asureSign. Documentum is currently not being analysed as that will be the final tooling Reqify we are under discussions with in relation to building an interface between Reqify and asuresign ClearQuest .. we will investigate this at a later stage .. theres currently a move to Jira so we may move the change management tool to Jira , which is more web based solution and is more likely to fit in with the concept of the project B3.86 Requisite Pro - we will also investigate this later in the project as Visure is currently in a roll out stage and if this is rolled out then we will move onto Visure instead - RequisitePro is currently being phased out by IBM	Documentation of the Data flow within Infineon and how all of the Bricks interface has been delivered	none currently	4,4	4,4	4.4 MM on analysing interoperability options and write up of information	none currently required
ES	32_ITI	1_02	During this period ITI participated in the definition of the dissemination activities plan and the exploitation plan, through informing about our expected dissemination activities and the exploitation expectations related to the results obtained in the project ITI is involved in. The dissemination activities cover general, industrial and research public.	Initial plan of ITI dissemination activities and initial ITI exploitation expectations. Moreover, ITI has performed a dissemination action related to CRYSTAL project in FEDIT newsletter through the publication of an article explaining the rationale and goals of the CRYSTAL project.	no deviatons	0,5	0,2	It is expected to devote more efforts in dissemination and exploitation activities once the works are more advanced and the results are being obtained.	Increase of efforts during the second and third year of the project.
ES	32_ITI	2_05	ITI has contributed to the refinement of the WP205 use case in collaboration with TASE and the other partners involved in this use case in task T2.5.1. Moreover, ITI has also participated in the detection of interoperability needs among the different tools utilised in the V-model of such use case. ITI has also contributed to the completion of the first version of the deliverable D205.010. Finally during this period, ITI has also derived the functional and IOS requirements to be included in the brick B2.55 Scheduling Requirement Analysis (to be developed in WP603).	A refined use case WP205 definition has been obtained, detailing the Enginnering Methods and highlighting the IOS needs between the tools used in the V.	No significative deviations.	2,5	2,5		
ES	32_ITI	4_06	In this period ITI has contributed to the refinement and specification of the RGB use case. For doing so, ITI has actively collaborated with RGB for refining its V-model, detailing the engineering methods of this V-model that will also make use of IOS. This V-model and use case refinement is being detailed in D406.010. This refinement has also consisted in collaborating with RGB to identify potential new tools (available in the CRYSTAL project) to be included in their use case.	The definition of a refined V-model of the use case WP406, putting special emphasys on the bricks and the required IOS interactions among them.	small deviation	9,5	9,98	Small deviation due to the incorporation of possible new tools to the use case.	
ES	32_ITI	4_07	During this year ITI has collaborated with WP partners in the works for creating and populating the State of the Art for the Healthcare ontology (D407.010). In this way ITI has participated in the elaboration of the long list of ontologies and glossaries of the healthcare domain to be considered and analyzed when building the healthcare ontology.	The State of the Art document has been detailed. This document included a long list of potential ontologies, glossaries that has to be considered and a refined list of them covering those that are of interest for the different healthcare use cases.		4	2,45	The deviation is derived from the fact that WP ontology works have been delayed until a common approach has been agreed among all them.	More efforts will be devoted in the upcoming years.

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
ES	32_ITI	6_01	ITI has been working on the analysis of the state of the art that can be of interested for the IOS -Interoperability specification-. In this line ITI has also gained knowledge of OSLC as one of the elements for IOS. ITI has also collaborated in the revision of the Engineering methods prepared by the healthcare domain use cases, in order to ensure a good enough definition and for extracting commonalities among them. ITI has also participated in the workshops that have been organised for working on IOS.	ITI has attended the meetings it has been asked to participate and has collaborated in the revision process of the Engineering Methods of the healthcare domain.	no deviatons	10,5	8,8		It is expected to increase the effort in the upcoming year.
ES	32_ITI	6_02	In this WP ITI has participated in the analysis of the Platform Builder Meta Model (D602.011) identifying which are the main elements to be considered when tailoring a process and defining a System Engineering Environment (SEE). At the same time ITI has participated in the definition of the preliminar draft of the Platform Builder Specification (D602.021) as the solution for defining SEE. Moreover, ITI as leader of T6.2.3 is coordinating the prototyping works and has also analysed the more appropriate set of technologies for prototyping the Platform Builder.	A draft metamodel and specification for the Platform Builder have been obtained. Moreover, the development environment for creating the Platform Builder prototype has been instantiated.	no deviatons	6,5	12,2	A high level of involvement has been needed in order to collaborate in the definition of the metamodel and the specification.	No corrective actions are expected for the moment. Although it must be said that having a more well defined metamodel and specification will facilitate the prototyping tasks.
ES	32_ITI	6_03	ITI has performed and analysis of the functional features and IOS requirements to be satisfied by the bricks B2.55, B4.14 and B4.15. This analysis has also considered which the best way of providing IOS support. ITI has also defined the brick specification and performed an architecture design for such bricks. ITI has also collaborated in the definition of the TCR (Technical core requirements) to be covered by WP603 bricks. Moreover, ITI has also participated in the preparation of the D603.011.	First specifications and IOS requirements for bricks B2.55, B4.14 and B4.15. First list of technical core requirements for WP603 bricks and contributions for D603.010.		18	19,1	Minor deviations.	
ES	32_ITI	6_06	ITI collaborating with RGB and TNO has specied the brick B4.06 (Integration of B4.06 and B4.17). A first draft of IOS requirements and specification for this brick has been proposed. ITI has also collaborated in defining the project innovations and technical core requirements for WP606. Moreover, ITI has contributed to D606.011.	First draft of D606.011 obtained and the IOS requirements and specification for brick B4.06.	no deviatons	7	6,1		It is expected to increase our efforts in the future in order to be aligned with the overall planning.
ES	32_ITI	6_08	In this WP ITI during this period has worked in two different lines. On one hand has collaborated with AVL and Philips in order to determine the IOS requirements to be supported by the brick B4.12. On the other hand has collaborated with RGB in set the specifications for the B4.16.	A draft version of the IOS requirements coming from the use cases for B4.12 and B4.16 has been obtained. ITI has also contributed to the first version of D608.011.	no deviatons	7	6		It is expected to increase the efforts in the upcoming years of the project.
DE	33_ITKE	3_02	* Identification of engineering methods * Technical consulting * Identification of technical features * Identification of technical core requirements * Common architecture for all ITKE bricks	TCRs added to sharepoint	Volatility of the team	11,9	9,7	Efforts planed reference 30. April. Actual efforts reference 7. April. 324h Efforts related to organization and infrastructure 272h Efforts related to use case consulting 101h Efforts related to conceptual work 305h Efforts related to deliverables and reporting 281h Efforts related to dissemination 235h Efforts related to acquisition of specialized technical knowledge 90h Efforts related to Writing of prototypes	Team membership stabilized
DE	33_ITKE	6_03	* Identification of different analysis and exploration types * Comparative study of vertical and horizontal and deep knowledge integration technologies from perspective of users * Investigation of key shortcomings in that field by the means of a survey	* Technical report * Contribution to TCRs	volatility of team	2,6	2,1	71h Efforts related to organization and infrastructure 60h Efforts related to use case consulting 22h Efforts related to conceptual work 67h Efforts related to deliverables and reporting 61h Efforts related to dissemination 51h Efforts related to acquisition of specialized technical knowledge 20h Efforts related to Writing of prototypes	Stronger concentration on required brick features

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
DE	33_ITKE	6_04	Development of concepts for use case 4.2	Written proposals for use case 4.2	Missing IOS	1,6	1,3	44h Efforts related to organization and infrastructure 37h Efforts related to use case consulting 14h Efforts related to conceptual work 41h Efforts related to deliverables and reporting 38h Efforts related to dissemination 32h Efforts related to acquisition of specialized technical knowledge 12h Efforts related to Writing of prototypes	Increasing efforts into first IOS so that safety tools can be tested for their alignment with safety standards
DE	33_ITKE	6_05	* Identification of distinct problems in AUTOSAR development and how tool interoperability can help to alleviate them * Start of master thesis in this area regarding one of the approaches	Categorization of problems	AUTOSAR topics on low priority in CRYSTAL	0,5	0,4	14h Efforts related to organization and infrastructure 11h Efforts related to use case consulting 4h Efforts related to conceptual work 13h Efforts related to deliverables and reporting 12h Efforts related to dissemination 10h Efforts related to acquisition of specialized technical knowledge 4h Efforts related to Writing of prototypes	Increased efforts through master thesis
DE	33_ITKE	6_13	Definition of requirements for simulink interoperability	Requirements for simulink interoperability	Missing capacity	0,3	0,3	9h Efforts related to organization and infrastructure 8h Efforts related to use case consulting 3h Efforts related to conceptual work 9h Efforts related to deliverables and reporting 8h Efforts related to dissemination 7h Efforts related to acquisition of specialized technical knowledge 3h Efforts related to Writing of prototypes	No propositions
AT	34_VIF	1_02	VIF has started with the planning of dissemination and exploitation activities. We further had some dissemination activities and some are ongoing.	one short presentation at the Interoperability conference one (submitted) publication	no deviatons	1	1	attending meetings providing publications	
AT	34_VIF	3_00	support the technical management of the automotive domain. This is mainly done in accordance with the public use case, which handles technical contents.	work in the automotive domain is synchronized with activities in other domains and SP6	no deviatons	1	1		
A	34_VIF	3_03	The focus in the first period of the project has been the elicitation of requirements for this use-case. This resulted in two clearly defined tasks. The first one will cover the definition of a concept for the mapping between different structural representations. This means that there is a semantical and syntactical gap between functional and product-centric representations. The second task is concerned with the semi-formalization of requirements, which can then be used to generate a first basic part of the system architecture in SysML. The main development will be done in Brick B3_7 and B3_1.	There is currently a first prototype of the requirements semi-formalization tool.	small deviation	5,67	4	The actual use is lower than planned, because of the linear project planning. The implementation will need more resources than the definition of requirements. This means that more efforts will be used in the last phase of the project.	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
AT	34_VIF	3_04	The focus in the first period of the project has been on the elicitation of requirements for this use-case. In the first phase we tried to understand the challenges in the application domain and then started to define our contribution. This UC has two parts - part (a) is concerned with vehicle or component level testing and part (b) focuses on the development of control software. For part (a) there are two main aspects: Requirements engineering and Interoperability. For the requirements engineering part we investigated the WLTP - an upcoming standard for emission testing. This WLTP documents specifies various types of requirements (vehicle requirements, testing equipment requirements, testing procedure requirements,...) in natural language. In order to automatically validate these requirements, they need to follow certain syntactical rules. We have chosen to use a boilerplate approach in order to semi-formalize these requirements. An additional advantage is the possibility to further process these requirements, e.g. by using them to generate a first basic draft of the system architecture. The second main topic is the Interoperability between different tools. On the one-hand side, the requirements semi-formalization tool must be able to import NL requirements and link the processed requirements to their origin, on the other side there are many tools involved in the testing procedure. The second main task in this workpackage targets exactly this issue. There needs to be a clear interoperability concept in order to ensure traceability and consistency for all kinds of data involved in this process. VIF supports the definition of this interoperability concept. The main part of VIF in part (b) of this use case is to support with variability/variant management concepts. Regarding this, there has also been a first phase to understand the challenges of the use case. In the second phase we started to specify the requirements. This process is currently on-going.	A first prototype of the requirements semi-formalization tool with a basic OSLC adapter has been implemented. The evaluation of different transformation languages (for the generation of SysML elements) is ongoing. The main requirements for the interoperability concept have been specified.	The main part of the work (for the interoperability part) is the implementation of the concepts. This work will start in the next phase of the project.	6	5	The actual use is lower than planned, because of the linear project planning. The implementation will need more resources than the definition of requirements. This means that more efforts will be used in the last phase of the project.	
AT	34_VIF	3_07	VIF is responsible for the lead and coordination of the public use case automotive. In this first phase of the project, we decided to use this public use case as a discussion forum for the whole automotive domain. This means that the core group involves the use case leaders and the widened group includes all partners working in the automotive domain. We organize weekly meetings with specific topic in order to keep the partners informed and the discussions ongoing. There has also been an F2F workshop in order to specify the core interoperability challenges of the automotive domain. We are additionally in close contact with SP6 in order to foster the IOS development. One main purpose of this workpackage is the demonstration of the results of the automotive domain. We have already implemented a first version of a demonstrator and planned some extensions. So far the demonstrator is based on existing proprietary interfaces and used to identify the interoperability challenges in more detail. During the design of the demonstrator it has been kept in mind that proprietary interfaces will be substituted by IOS compliant interfaces in the next phases of the project.	First version of a demonstrator and plans to extend this demonstrator. Identification of the core interoperability challenges and harmonization of this challenges within the automotive domain. Establishment of a productive working environment within in the automotive domain.	small deviation	5,67	4,4	The actual use is lower than planned, because of the linear project planning. The implementation will need more resources than the definition of requirements. This means that more efforts will be used in the last phase of the project.	

Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
AT 34_VIF	6_03	VIF is responsible for the lead of this workpackage and the respective deliverables. With this respect, we have been able to deliver the requested input and deliverables in time. There are regular meetings to ensure that the partners have all the information they need and that the work can be done according to the Crystal processes. Within the specific tasks, we have first set-up a questionnaire together with other partners in order to identify the current state-of-practice for model-based development in the domain of safety-critical embedded systems. This questionnaire resulted in a Technical Report and has been submitted as a conference publication. There has also been a lot of implementation work which has already been described for WP3_3 and WP3_4. Basically, the requirements are coming from these use cases and the actual implementation is done in WP6_3.	Deliverable has been submitted in time. Development of a questionnaire and analysis of the results resulting in a technical report and a publication. Prototype implementation of a requirements semi-formalization tool.	no deviatons	6,3	5		
AT 34_VIF	6_10	There has been a slight change in this workpackage. Since the main focus of the involved use cases has changed, we merged out brick with the Systems family engineering brick. Doing so, we can collect more requirements from the partners and provide a more holistic variability solution. We started a close collaboration with the automotive (and also health-care) domain in order to establish a common understanding and develop a process to gather the requirements. So far we have identified two types of challenges concerning variability: 1) Tool complexity: Variability is a cross-cutting aspects throughout the entire development process. This means that all tools in a tool chain have to understand the same variability concepts and that this is also a main issue for interoperability. Another solution would be the use of an additional variant management tool, which then in turn has to provide interfaces to all tools in the tool chain. In any way, interoperability support for variability issues is one major concern. 2) Artifact complexity: Including variability in the different development artifacts means that they are getting more complex. Especially if variability is introduced as an add-on. This means that there needs to be some guidance how to structure artifacts in a way that the complexity is still manageable.	Elicitation of the requirements is still going on.	no deviatons	6,7	5		
AT 34_VIF	6_13	The work in this workpackage is closely related to WP3_4. The main work so far has been the specification of the requirements. Now there is a clear understanding what needs to be implemented and the first prototype implementation has started.	Support of deliverable writing process. Definition of Technical Items and Technical Refined Requirements following the Technical Management Process.	no deviatons	6	5		
FR 35_ALL4T EC	5_01	Definition of the Railways UseCase. Requirements identified Specification of the functionalities needed for the first prototype	Use Case for the first period is now well defined	no deviatons	8	8		
FR 35_ALL4T EC	6_04	WP 6.4.18 - Development of a first release of the brick Safety Architect for CRYSTAL This release implement the safety analyses as required by ALSTOM with FMECA reports in the ALSTOM format	First release of the portotype is operational	no deviatons	12	12		
CZ 36_MU	2_06	Prototype implementation of a tool that integrates tasks of consistency checking and vacuity checking for a set of LTL (Linear Temporal Logic) formulae. The integrated tool (MUSAT) made available to Honeywell partner.	Journal publication on the integration of consistency checking and vacuity checking for a set of LTL (Linear Temporal Logic) formulae under review.	There is no deviation from the plan.	6	6	Analysis and prototype implementation of the tool allowing the integration. Publication preparation.	
CZ 36_MU	6_04	Experimental implementation allowing analysis and verification of SIMULINK diagrams with respect to the specification given as a set of LTL (Linear Temporal Logic) formulae. Evaluation on selected SIMULINK diagrams. Analysis of applicability of model checking to the problem of safety analysis. Considering probabilistic fault injections, and application to analysis of minimal cut set.	None yet.	no deviatons	6	6	Development and implementation of the software tool DIVINE. Preparation for the integration scenarios.	
IT 37_MATE	5_01	The bricks B5.1, B5.3, B5.4 have been analysed and the results of analysis had been written up and into the deliverable Specification, Development and Assessment for Validation Models - V1 D612.011.		no deviatons	4	4		

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
IT	37_MATE	6_03	Based on the railway domain we have identified the technical core requirements, technical refined requirements, and technical items of the Use Case 5.1. Regarding the technical refined requirement TECH_REF_REQ_0042, we have made the following contributions: To support model-based system analysis of railway control system we have analysed the more appropriate set of technologies for the implementation of a graphical editor based on a custom language (under progress) defined by UNIFED and SUN.	Prototype implementation of an Eclipse plugin (TI_0063 TI_0064) for the RailModel tool.	no deviatons	1	1	The resources have been used as planned.	
IT	37_MATE	6_12	Mate, as WP leader, has coordinated the activities of the WP6.12 and the respective deliverables. With this respect, we have been able to deliver the requested deliverables taking into account the contributions provided by all the WP partners. We also analysed the more appropriate set of technologies for the implementation of three tools: RailModel, IOP Test Writer, Log Analyzer. We have also worked on OSLC prototyping in order to implement interoperability, consistency of data and data integration for integration of tools and we are waiting more detailed directions from WP6.02 to move this prototype into IOS and RTP.	Deliverable has been submitted on time. First prototype of the tool RailModel (modelling tool) has been realized with an ad-hoc (not final) modelling language defined by UNIFED for verification of railway control systems.	no deviatons	38	41	We have employed the personnel needed for reaching the reported results.	
NL	38_IBM NL	3_01	The objective of this work package is to realise and implement a use cases from Volvo, which focuses on function development in heavy vehicles. IBM NL supported the use case definition and the usage of Formal Verification.	Use case definition document was reviewed.	no deviatons	0	0,2		N/A
NL	38_IBM NL	4_01	Within WP4.1, we worked on a number of activities to start-up using model-driven development. The goal is to understand the needs/requirements for tooling and to understand the optimized workflow, described in EngineeringMethods. IBM NL supported Philips to define a development process that is supported by OSLC-integrated toolchain using Rational Team Concert, Doors Next Generation and Rational Quality Manager. We build an IBM hosted demo environment and provided acces to Philips, TNO and TU/e. We provided OSLC knowledge to enable other partners to integrate tools from other vendors. The following activities have been done: - Use Case definition support - Support specifying Philips development process - Building the IBM hosted SEE environment - Building demonstrator for Requirements Verification based on Philips content. - M9 Demonstrator Caliber - HP QC - IBM RQM - OSLC enablement. - Support TNO to add OSLC terminology into ontology. - Investigate possibilities to enable DSL for OSLC integration via Design Manager.	We supported in the creation of the Use Case Development Report D401_901. This report described the approach to come to a SEE with an optimized workflow and interoperable tooling. We built the IBM hosted SEE. We reported on the possibilities of OSLC integration of the DSL.	N/A	0	3,5	We did not plan to work on this Work Package, but together with the WP Lead (Philips) we decided to move effort from WP4.2 and WP4.3 to WP4.1, due to the scope change of WP4.2 and WP4.3.	N/A
NL	38_IBM NL	4_02	Within WP4.2, Philips worked on a number of activities for safety risk management. We supported Philips in investigating tool usage for Safety Risk Management. The following activities have been done: - Use Case definition support - OSLC enablement	The Use Case definition is reviewed. Philips staff has basic OSLC knowledge.	N/A	2	0,7	We moved most of the effort from WP4.2 to WP4.1 because of change of scope of WP4.2.	N/A
NL	38_IBM NL	4_03	Within WP4.3, we worked on a number of activities to support Philips in applying model-driven development. The goal is to understand the needs/requirements for tooling and to understand the optimized workflow, described in EngineeringMethods. The following activities have been done: - Use Case definition support - Building SSE - OSLC enablement	We supported in writing the Use Case definition report. We built the SEE.	no deviatons	2	0,2	So far we did not spend much effort on this WP yet since our involvement will only be needed later in the project. We plan to scale up our involvement in this WP during Y2 and Y3 of the Crystal project. During the first year we moved effort from this WP to WP4.1.	N/A

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
NL	38_IBM NL	4_04	Barco need improving the requirement management workflow to support IEC62304 regulation, regulation by FDA and other regulatory institutes. We supported Barco to define the Use Case, and more specific the requirement process. We built the IBM hosted SEE and supported Barco to implement their RM process in that environment using DOORS Next Generation and Rational Quality Manager.	Requirements definition for the new SW workflow compliant with ISO62304. Involvement in tool comparison of possible tool candidates to support this new workflow.	N/A	2	0,7	We moved some effort from this WP to WP4.5 due to activities that can be combined, like building SEE. Also, the Engineering Method Verify Requirements took less effort than expected, where the WP4.5 Engineering Method Functional Modeling took a little more.	N/A
NL	38_IBM NL	4_05	Barco is working to apply tools and methodologies to support component oriented & modular design in the context of IEC62304 regulation, regulation by FDA and other regulatory institutes. This process will connect the RM/QM process of WP4.4 to the engineering of components. We supported in the engineering workflow definition and the implementation into the tools.	We created the SEE with the engineering tools Rational Rhapsody and Simulink to enable integrated Functional Modeling and Performance Simulation. All artifacts are linked using an OSLC integration. The cooperative simulation is provided by a proprietary integration between Simulink and Rhapsody and is the source of IOS requirements outside OSLC, like FMI.	N/A	2	2,5	We spent a little more effort for this WP than planned because of the more complex Engineering Method. That was compensated with a lesser effort on WP4.4.	N/A
NL	38_IBM NL	4_06	This use Case deals with the development of tools for validation / certification of a Blood Pressure controller in Hospital OR (Operating Room) or ICU (Intensive Care Unit). IBM NL is involved in use case definition and review and support for Doors Next Generation usage.	Use Case definition document is reviewed. Doors Next Generation is available to be used by RGB, ITI and TNO.	N/A	0	0,2		N/A
NL	38_IBM NL	4_07	RGB has collaborated with WP partners in the works for creating and populating the State of the Art for the Healthcare ontology (D407.010).	IBM NL supported this effort and reviewed the results.	N/A	0	0,2		N/A
NL	38_IBM NL	6_03	System Analysis using Formal Methods is one of the objectives of this WP. Since Verum, leading this effort, has left Crystal, IBM NL has made an effort to fill this gap. A demo of IBM MoV was provided to the WP lead and was accepted to be a replacement of Verum ASD.	MoV was demoed and accepted.	N/A	0	0,1		N/A
NL	38_IBM NL	6_11	IBM NL aims to support selected brick definition and assessment activities within the domain lifecycle process use-cases. We aim to for example support customisation of IBM Rational applications within the Health domain flow in WP 4.1, 4.2, 4.3, 4.4 and 4.5.	We specified IBM tools to be used in the Healthcare domain. In the next phase of the project we will work on customizations that are needed for the Healthcare domain and try to find how these customizations can be generalized towards all the Crystal domains.	N/A	4	0,5	We originally planned to spend much more effort on this WP than we actually did. The reason is that we started this effort only end of last year due to a delay in the signing of the APCA. Coming year we will recover from this deviation by assigning additional staff to this WP.	N/A
NL	39_TNO	1_03	Initial ideas on key metrics for the Crystal assessment of objectives have been collected.		no deviations	0	0	TNO decided to concentrate the small effort on this WP in the second half of the project.	
NL	39_TNO	4_01	In close collaboration with Philips Healthcare, modeling techniques have been applied to parts of the interventional X-ray systems of Philips. This concerns the modeling of requirements, using domain specific languages and visualization, and the validation of software architectures using executable models. The requirements models revealed a number of conflicts and ambiguities; more experiments are needed to evaluate the usefulness of the approach and to investigate whether the modeling can be made suitable for domain experts. The architectural models can be seen as a first evaluation of the technology; more details have to be added to make design choices explicit.	The three main results are (1) a visualization of the possible choices concerning image display and the development of a Domain Specific Language (DSL) which allows experiments with these choices (2) a DSL to capture and analyze the requirements concerning the priority of movements (3) an executable model of a hybrid architecture for movement control using the POOSL language and the latest version of the tool support for POOSL developed in WP 6.03.	none	16	15,6	In the last year, two times a key research member left the team. Currently, new candidates are interviewed.	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
NL	39_TNO	4_02	TNO has extensively analysed the Philips Healthcare safety management process and laid this down in the Use case 402.010 deliverable. In particular, TNO concentrated on feedback from system use in the market to the development team ('experience feedback'). TNO created a UML sequence diagram to make the interactions clear between the various teams involved in safety risk management. Also, research questions per case study were defined and additional improvements were generated. The engineering methods selected were then translated by TNO into detailed requirements to brick 3.6 (WP604) and a long list of technical items for improvement. A selection was made to provide core requirements (step 5) and priority setting for technical items is underway (March 2014). Prototyping - To reduce the amount of hand work in tracking safety risk progress and reduce the number of Excel data exchanges, a conceptual data structure was set up based on the current Philips process. This was laid down in an Access database - An OSLC market surveillance interface was created to the FDA Maude database of medical incidents. This allows for frequent and easy to use queries on medical incident database, thus providing the needed 'experience feedback' from the users to the safety management team. In this way, corrective actions can be quickly defined - if needed. TNO proposed a novel visualization of the development process (H model instead of V model) to make the role of validation and certification more explicit, to include the system lifecycle and to emphasize the agile current character of current development processes.	Use case WP402 deliverable D402.010, in particular research questions, possible improvement and detailed description of the use case process (chapter 3) Conceptual data model for safety risk management (MS Access) OSLC demonstrator for market surveillance. Including database server, RESTful services and OSLC adapter. Web interface for querying public safety incident databases, starting with FDA Maude database.		8	11,4	Some of the work has strong overlap with WP604 and might have been reported there. So far, mostly safety analysis experts were involved. Gradually, more software effort is included.	none
NL	39_TNO	4_03	TNO has substantially contributed to the definition of the use case WP403. In several discussion with people from Philips, a possible development process is defined for model-based control software development. In order to demonstrate this process, TNO developed simulation models for the case study 'Table force sensor'. First TNO developed a Matlab/Simulink model representing the iXR table. The model is derived from the specification documentation and validated using some measurements. In order to demonstrate model-in-the-loop testing, also a model of the control software is made. Using these models, a standard validation test can now be simulated. Furthermore, the real software can be loaded into the Matlab/Simulink environment to perform software-in-the-loop testing. Alternatively, the hardware model can be compiled to run real-time in a software test environment of Philips. This demonstrates testing of control software against virtual hardware / a model of the real	Use case description. Matlab/Simulink simulation environment with several models of the control software and the iXR table.	none	4	4,4	according to plan	
NL	39_TNO	4_05	Together with Barco and IBM, TNO has contributed substantially to the definition of the use case WP405 (deliverable D405.010) and the desired development process. Especially the introduction of performance modeling to the Barco process and interaction with functional modeling (as defined by IBM) was added. The partners jointly created the corresponding UML activity diagrams. Based on the use case, Barco, IBM and TNO defined the joint demonstrator. Here the interaction of functional modeling and performance modeling for simulation of an imaging pipeline is selected. TNO and IBM installed and debugged a Rhapsody/ Simulink bridge. TNO then created a first generation image pipeline performance model with special emphasis on latency.	Use case description (Deliverable D405.010) Bridge between Rhapsody and Simulink Performance simulation plan Performance model of imaging pipeline (Simulink) Demonstration of combined functional and performance modeling (with IBM)	Initially, the use case 405 was considered a Hardware in the Loop activity. However, after scoping and intense discussions, this appeared to be much more oriented towards	7	4,3	Due to discussions on scope (Hardware in the loop vs. performance modeling) and input needed from the use case owner, the start of the performance modeling was delayed. Currently, the work is on track.	The TNO team for WP406 was recently expanded with an additional system engineer and an image processing expert.

Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
NL 39_TNO	4_06	Based on the RGB use case, TNO created a distributed Model in the Loop simulation for certification of RGB's blood transfusion controller. This includes a model of the human response to blood pressure medication. Literature was researched for typical blood pressure medication response. Real life data of RGB was statistically analysed for patterns. A hardware simulator of the human arm was added to the simulation, creating a hardware in the loop setup. Various noise source signals were added to test robustness for disturbances of biological, mechanical or electrical nature. Various phone conferences were held to align views and work with RGB and ITI. TNO contributed to definition of the core requirements of the WP406 use case to the various bricks.	Distributed Model in the loop simulator Hardware in the loop simulator with human arm hardware simulator. Model of human response to blood pressure medication Movie of simulation setup Contribution to WP406 use case document D406.010	no deviations	4	3,4	The work was efficiently performed. Also, currently the work is waiting for hardware developments at RGB (until Mid 2014).	None
NL 39_TNO	4_07	The objective of WP4_07 is definition of an ontology for healthcare systems engineering, scoped by SP4 use cases. Based on the use cases in SP4, we have extracted relevant standards for the ontology. Desk research has provided additional standards that apply to the scope of healthcare systems engineering. The SoTA of D407.010 lists all relevant standards that provide a foundation for construction of such an ontology. We have set up a workflow for creating the ontology, including validation in practice and taken the first step in assembling and filtering relevant domain terminology.	D407.010, State of the art for healthcare ontology Workflow for creating ontology (presentation)	No deviations	8,7	7,7	Once the scoping discussions on the role of ontology in Crystal have finished, the work can continue at higher speed.	Active contribution to scoping discussions with other ontology WPs and SP6 on role of ontology in CRYSTAL, including relationship with IOS.
NL 39_TNO	6_03	Based on the healthcare engineering methods, we have identified the technical core requirements, technical refined requirements, and technical items. Regarding the technical refined requirements, we have made the following contributions: --- TECH_REF_REQ_0021: Based on Xtext, we have developed a textual POOSL editor for editing of industrial size POOSL models. The basis is formed by the grammar, meta-model and scoping rules. We have tuned the grammar and meta-model for ease of use, based on feedback from experienced POOSL users. In particular we have added content assistance to help new users using templates and quick fixes for typical mistakes. --- TECH_REF_REQ_0022 ----- Based on GraphViz, we have implemented a visualization for the architectural parts of POOSL models; the graphical layout is determined automatically. --- TECH_REF_REQ_0024: For modularization of POOSL files, we have developed an import mechanism to split large POOSL files into smaller ones. This mechanism differs from the standard Xtext mechanisms in the following ways: it is based on URIs and it works recursively. In particular it supports multiple imports of the same file, and cyclic imports between files, which are very convenient in practice. --- TECH_REF_REQ_0025: For early validation of POOSL models, we have developed a large collection of validation rules that are checked statically while editing. The validation rules include acyclic relations, unique identifiers, and correct usage of language concepts. Moreover, warnings are generated for unused model elements. In particular we have developed an innovative static type checker for POOSL that has already proved to be very useful for early fault detection. --- TECH_REF_REQ_0026: We have developed transformations between our textual POOSL format and the XML-based format that is supported by already existing POOSL tools, in particular Rotalumis (a high-performance POOSL simulator) and SUEFim (an existing POOSL editor).	Prototype implementation of an Eclipse plugin (TI_0040 and TI_0041) and a Rotalumis extension (TI_0042) with the implemented functionality, together with the corresponding user documentation. These implementations are already used actively by WP4_01.	no deviations	20	9,8	Deliveries for this work package have to date been good but recruiting staff with the correct skills remains a problem since two times a key researcher left the team. Efforts are ongoing to bring the staffing up to full strength.	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
NL	39_TNO	6_04	Together with ITKE, TNO had several phone conversations and exchange of documents to define the focus of the brick development work. TNO represented the WP402 use case in WP604, and created core requirements for safety risk management based on its analysis in WP402. ITK created a discussion paper based on the core requirements which was then further discussed at Philips. TNO created a long list of possible technical items for improvement and prioritized it. The core improvements are in our view: - supporting the use of market surveillance information in safety risk management and engineering ('experience feedback') - creating 2-way fault trees (cause-effect nets) for finding a cause for a field incident and for finding possible safety risks for a part under design. - eliminating a lot of manual work in safety risk management and certification. This might be done using the Polarion tooling that ITKE uses intensively. This was laid down in contributions to deliverables D401.010 and D402.901 (main author Philips).	Deliverables D401.010 and D402.901 (main author Philips) Core requirements in AVL site Technical items list in deliverable D402.090	none	2,7	2,3	The resources were used for translating the Philips use case wp402 into core requirements and technical items and align these with ITK engineering, WP leader WP 604.	
NL	39_TNO	6_06	In biweekly telcos with WP 606 leader, the scope and demonstrations for the WP were defined. The emphasis is on co-simulation, distributed simulation and fault injection. Two demonstrators were identified: aerospace public deicing case for cosimulation and WP406 RGB case for distributed Hardware in the Loop simulation and fault injection. TNO studied and experimented with the FMI interface for real time co-simulation of Matlab and Modelica or Matlab and other tools. TNO intends to align the FMI model metadata with simulation model characterization (as developed in WP611 by TNO).	Scope for research and demonstrations in WP606 Contribution to D606.101	no deviatons	6	4,8	The demonstration work is dependent on progress in WP406 (RGB case). This has delayed work somewhat.	
NL	39_TNO	6_10	Based on the healthcare engineering methods, we have identified five main DSL topics to work on. These are described in D610_011_Crystal_Variability_Management. We have made contributions to the following two topics: --- Integration of textual and graphical editing ----- To explore the technical possibilities for integration textual and graphical editing in Eclipse, we have set up an assignment for a M.Sc. graduation project. Together with Mark van den Brand (TU/e), we are now coaching a M.Sc. student that is working on this assignment. --- Modularity of DSL instances ----- For modularization of DSL instances, we have developed an import mechanism to split large instances into smaller ones. This mechanism differs from the standard Xtext mechanisms in the following ways: it is based on URIs and it works recursively. In particular it supports multiple imports of the same file, and cyclic imports between files, which are very convenient in practice.	The technique for modularization is applied in TECH_REF_REQ_0024.	no deviatons	4	2		

Country	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
NL	39_TNO	6_11	TNO decided - in coordination with IBM- to focus on lifecycle management of simulation models (as the original scope of Performance modeling did not fit WP6.11 very well). This way laid down in a change proposal for the Crystal Technical Annex. TNO created a simulation model characterization approach with which model metadata and versions can be specified and built a database for further experimentation with this approach. Additional new fields like model validation level, model run time and parameter ranges were added. The approach was tried with several external simulation experts for completion. TNO did a stakeholder analysis and created core requirements for simulation model characterisation and traceability to requirements, simulation runs and validation tests.	Simulation model characterisation approach and database structure Contribution to D611.101 (requirements for simulation model characterization).	no deviations	5	1,5	The work was efficiently done. Now that scope and approach are clear, more labour intense work is scheduled.	
FR	40_Obeo	1_02	Obeo took part in several dissemination activities mainly around work done under WP6.09 on the Sirius technology. The community gave us a great welcome and we are registering an important and growing activity on the project newsgroup.	Obeo made : - 8 talks in international conference (Germany, USA) - 2 newsletters (one being from the Eclipse foundation) - 5 workshops including 2 in international conferences - 1 new website (http://www.eclipse.org/sirius)	Minor deviation.	2	2,1	Resources have been used on presentation preparation as well as the actual participation to the conferences.	N/A
FR	40_Obeo	6_02	Obeo has a minor participation in this wp and ramped-up its involvement starting from M9, once discussion about requirements and specifications were advanced. Obeo is mainly bringing its expertise around Eclipse. Discussion have been done around choosing the right Eclipse technologies (EPF mainly).	Partners were able to make their technology implementation choices with a good vision on advantages and drawbacks.	No deviations.	0,25	0,25	Eclipse expertise	N/A
FR	40_Obeo	6_09	Obeo is responsible for this WP. The overall progress for Obeo on this work-package is good. There has been a slight delay in the kick-off of the work-package but everything is now up and running. Most of the sub-tasks have started on time and show good progress. A major step has been reached by proposing and creating an Eclipse project called Sirius to host the technology that is developed by Obeo. The code have been submitted and a first version has been made available in December 2013. We are showing a very good acknowledgment from the community. A lot of improvements have been added to Sirius since, and a major re-architecture of the component is ongoing for better integration in heterogeneous environment. Tasks on Web rendering and requirements integration have started (state of the art, proof of concepts).	- Sirius Brick is available, go to http://www.eclipse.org/sirius - Very good welcome of the community - Many improvements made on Sirius	Lack of French contract for the Crystal project created difficulties to recruit persons for the project and to start some sub-contracting. Actions have been taken by the French consortium to have this situation solved as soon as possible. Nevertheless, Obeo has taken actions on his side and things are mostly up and running, one person who was missing has been recruited. Effort spent is still in line with what was planned due to a stronger focus on Sirius.	51	51	Resources have been mainly focused on Sirius development. Obeo is also acting as a wp leader for WP6.9	Recruitment done.
DE	41_OFFIS	1_01	Strategic guidance of the project		no deviations	0,7	0,6	Participating at Steering Board Meetings as well as Technical Board Meeting	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
DE	41_OFFIS	1_02	Dissemination of Project results		no deviatons	0,6	0,5	participating at the ARTEMIS IOS Workshop; participating at the ITEA-ARTEMIS-Cosummit; A journal article on "Statistical Model Checking for Stochastic Hybrid Systems Involving Non-determinism over Continuous Domains" has been submitted to the special issue on statistical model checking (SMC) of the "Software Tools for Technology Transfer" (STTT) journal. The article passed the CRYSTAL dissemination process and comprises theoretical work done in WP 6.07.	
DE	41_OFFIS	1_03	The first Goal within this workpackage is to derive appropriate measures to validate the Impact of CRYSTAL. Initiated a process to breakdown project objectives.		no deviatons	1	1	Leading the workpackage. Deriving a schedule for the activities in this work package. Investigation of some use case and user Story description towards identification of issues relevant to derive some measures. Discussion with some application domains on possible meeasurements.	
DE	41_OFFIS	2_04	aligned to the WP objectives	An agreement on the first CCC analysis techniques to be implemented for the use case has been found.	no deviatons	1,2	1,5	OFFIS analysed and discussed the industrial requirements and the CCC to be developed within WP6.7 with SAGEM, TRC and UC3M.	
DE	41_OFFIS	3_01	The objective of this work package is to realise and implement a use case from Volvo, which focuses on function development in heavy vehicles. The use case is based on the tools currently in use within Volvo, or on tools that fill certain near-future needs in Volvo's current development environment. The implemented and integrated SE environment will then be applied and validated on data from the development of an air suspension system for trucks. The work package also addresses 2 research topics in conjunction with the use case. These topics are: • Integrated SE environment based on the established AUTOSAR and EAST ADL standards; • Requirement management with focus on using behavioural models as requirements, and how these can be best validated and verified.		no deviatons	0,45	1	<ul style="list-style-type: none"> • Participating in the teleconferences; • Giving contributions to the WP discussions; • Reporting progress; • Reviewing documents. • Formalize an Engineering Method: integration to the Volvo Engineering Method UC3.1_TimingAnalysis_1 of the OFFIS tool (Orca) related information concerning the pre-conditions, engineering activities, post-conditions and input and output artefacts; • Model the ASL (Adjustable Speed Limit) example on Orca (OFFIS tool for real-time analysis methods for hardware architectures) 	
DE	41_OFFIS	3_04	alignment between WP3.4 and WP6.7 regarding the used methods	As a first result, a bilateral awareness of the methods used in WP 3.4 and WP 6.7 has been established.	no deviatons	0,45	0,5	For the alignment of the used methods between WP 3.4 and WP6.7, OFFIS was present at the workshop in Graz and presenteted the requirement based consistency analysis developed in WP6.7. In addition, OFFIS regularly participated in the Wp3.4 telephone conferences.	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
DE	41_OFFIS	6_01	Interoperability specification of the CRYSTAL RTP by re-using existing work and results from other ARTEMIS projects like CESAR, MBAT, iFEST, and others.	OFFIS has provided presentations for dissemination purpose and for building up a consensus on the issues related to the IOS at project level, template documents and guidelines to be used for collecting Engineering Methods from the CRYSTAL use cases, has contributed to the definitions of collaboration models and processes to be implemented and deployed across the CRYSTAL domain SPs and Technical WPs towards the specification of the enhanced CRYSTAL IOS.	no deviations	12	10	OFFIS has contributed at project level for disseminating in several CRYSTAL meetings and technical workshops the ideas and results from other ARTEMIS projects (CESAR, MBAT and iFEST) regarding their Interoperability Specifications (IOS) to be used as a cornerstone within the CRYSTAL RTP (related to the objectives of the task T6.1.1). Our activities have been also focused on defining and implementing across the project's SPs the templates and processes for collecting and analyzing the requirements from the Domain use cases (the so-called CRYSTAL Engineering Methods), a first step for paving the way for steering the specification process of the enhanced CRYSTAL IOS (related to the objectives of the task T6.1.2).	
DE	41_OFFIS	6_02	This WP has the objective to define solutions and methods to improve the instantiation of product development environments for embedded systems based on the configuration of a dedicated development process. The meta-model/specification representing the business development process will be defined and enriched in order to exhaustively support the specification and deployment of a fully integrated tool-chain instantiated for the desired project/product. Task 6.2.1: Define an extension of a standardized meta-model (Lead: OFFIS): This task will define an extension of selected standardized meta-model, used to represent the development process, in order to add deployment and IT infrastructure information useful to improve the development environment instantiation. Based on the extension of the standardized meta-model, define a specification in order to describe concepts relevant to the development environment in details for deployment and IT infrastructure useful to the tool-chain installation. This specification shall be used to describe the major functionalities offered by the tools and their interoperability aspects on two levels: a logical interoperability structure will be used to specify the developer's perspective on interoperability whereas the technical interoperability will address the technical realization of the interoperability. Based on that specification, create a library of tool descriptors to represent 'all' the business development process' tools. Furthermore, it will be possible to create a specification for real tool properties and to represent deployment information. OFFIS will provide additional structure to a meta-model representing the key development artefacts such that interoperability needs become explicit. Also, OFFIS will contribute to the derivation of deployment and configuration information for the RTP out of these descriptions.	OFFIS is responsible for the meta-model deliverable, which is named D602.011 for its first version. This document was finish on time and delivered on December 31, 2013 as expected, after internal and external reviews from partners.	no deviations	7	4,5	OFFIS is the leader concerning the meta-model task and participates actively in the other WP tasks. Common executed activities were to: • Organize and participate in teleconferences; • Give contributions to the WP discussions; • Give feedbacks for different documents of diverse tasks; • Participate on brainstorming in order to find optimal solutions and discuss clarifications for open points; • Report progress of developed activities; • Lead sub-group responsible for: o Reading the document D208.010 (in detail chapter 4: SEE for public Aerospace Use Case) and check information required from a Tool, Tool Chain and IT infrastructure point of view; o Proposing the set of information needed for Tool, Tool Chain and IT in a formalized way (meta-model and properties for each elements); o Sharing both meta-model and identified properties with the other partners; o Considering the Tailored Process elements in the SPEM meta-model (Roles, Process Engineering Tool Functions/task, Activities/task, Artefacts/WorkProducts, Guidance (Tool mentor), delivering process definition) and making a gap analysis with needed elements to configure the SEE. • Review documents.	
DE	41_OFFIS	6_05	The objective of this work package is the integration of AUTOSAR based tools and target platforms and their components to the RTP/IOS. Task 6.5.2: AUTOSAR/EAST-ADL Interface (Lead: Volvo) Description: This task will specify, develop and assess a common interface specification for tools dealing with AUTOSAR and EAST-ADL information.		no deviations	4,5	4	• Participating in the teleconferences; • Giving contributions to the WP discussions; • Reporting progress; • Reviewing documents.	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
DE	41_OFFIS	6_07	To provide methods and Tools for the formalization of requirements work on integration of the OFFIS requirements analysis methods into the TRC RQS tool chain have been performed.	OFFIS was a Coauthor on several deliverables, namely D_607_011, D_607_031, D_607_041, and D_607_021.	parental leave of a project member was causing slight reduction of effort. No risk for reaching defined objectives	18	17,5	Several steps towards the integration of the OFFIS requirements analysis methods into the TRC RQS tool chain have been performed. First, the RQS tool suite (RQA, RAT, KM) has been setup within OFFIS and intensive training on the RQS methods has been taken place. In a second step, the integration of RSL patterns into RQS in form of boilerplates has been investigated by implementing a vertical prototype. OFFIS, together with TRC, also implemented a first RQS plugin which allowed an evaluation of the existing interfaces. We have a regular collaboration with TRC,UC3M on the formalization process and the integration of CCC methods. The CCC criteria proposed by CESAR have been analysed and restructured. In addition, the theoretical basis on probabilistic analysis methods for stochastic systems has been extended and will be used for future CCC methods.	
ES	42_ORB	2_05	Orbital Aerospace has contributed to the WP2.05 Space Use Case definition by supporting leader TASE in the technical specification of the Demonstrator framework (both HW and SW) along with the rest of partners. Additionally, Orbital Aerospace has participated in the first version of deliverable D205.010 providing Use Case requirements to integrate the brick B.251 AUGÉ in the Engineering Methods defined according to space embedded SW development standards, specially focusing on Independent Software Validation and Verification (ISVV) stages.	The first version of deliverable D205.010 was released, including the Use Case Demonstrator technical framework, Use Case requirements and related Engineering Methods and proposed Bricks integration.	No relevant deviations.	12	12	Resources have been used as planned.	
ES	42_ORB	6_10	Orbital Aerospace completed the definition of brick B2.51 (AUGE), and its technical specification was agreed with TECNALIA and the rest of partners of the work package in the deliverable D610.011 "Crystal Variability Management V1". AUGE was confirmed as a extremely valuable tool for Variability Management specially in ISVV (Independent Software Verification and Validation) applicable to several Use Cases within CRYSTAL framework.	Within D60.011 "Crystal Variability Management" elaboration process, a heavy IOS dependence was detected for AUGE brick, binding the development of the tool to the activities in external IOS work packages. It was decided to base IOS interfaces specification on existing work of OSLC community.	No relevant deviations.	12	12	Resources have been used as planned.	
ES	42_ORB	6_11	Within WP6.11 "Software Development Lifecycle Management" AUGE brick was stated as a necessary stakeholder in order to provide technical IOS related specifications and requests to SDLC bricks, especially Requirements Management tools such as IBM DOORS.	Top level IOS-related requirements for AUGE brick were identified within SDLC framework.	No relevant deviations.	12	3	Manpower was transferred to 2104 and 2015 when AUGE brick is finally integrated in SDLC framework.	
DE	43_PTC	3_02	Top level requirements definition for SW Tool, improvements activities , concept of users, service and interfaces , identifying use case engineering methodes	Top level requirements for SW Tool, overall process and priorities identified	n/a	1,4	0,9		none
DE	43_PTC	3_03	USE case framework, process, initial interoperability needs for use case identified	first Demonstrator for System - and SW design and its management, requirements for interoperability identified	n/a	1,4	0,6		
DE	43_PTC	3_04	Use case definition, identifying priorities for SW Tool implementation,	focus variant and configuration engineering, top level requirements identified	engineering methodes mapping for use case delay	1,5	0,8		
DE	43_PTC	3_04	IOS requirements , consolidation of complete IOS requirements not fully achieved, OSLC as basic requirements identified.	IOS requirements identified in the OSLC area, focus on Requirements Management, IOS specification for variant and configuration Management open	delay in engineering methodes mapping with IOS	0,8	0,7		intensify discussion on needs of engineering methodes with IOS applicability
DE	43_PTC	6_11	identification of use case needs and engineering methodes for IOS SW relevant part	Top level requirements identified for IOS identified	no deviatons	0,6	0,3		

Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
NL 44_PS-Tech	4_01	In collaboration with Philips, the Philips XPoser tool has been integrated with the virtual reality (VR) capabilities offered by PS-Tech's NobiVR tool. The XPoser tool is a physics based simulation of the CT hardware, which could be used for visual requirements engineering, design evaluation, and hardware simulation. What has been realized so far is the first integration of the VR visualization parts of NobiVR with a third party 3D visualization tool (XPoser). From this basis, features are still to be added, such as VR tracking input for head-tracking / interaction.	The main result is: - NobiVR integration with XPoser a. NobiVR integration with Qt-based software b. NobiVR integration with Ogre3D engine-based software c. Configurable stereo visualization and physical screen configuration.	Key project member left in M10, new candidates are interviewed.	7	5,5		
NL 44_PS-Tech	6_03	To be able to use NobiVR within the CRYSTAL project, it was necessary to make preparations to develop NobiVR from an internal tool into a brick suitable for use by external parties. Also, we have prepared to make our internal volumetric data visualization software components suitable for use by external parties, in anticipation of use in the Philips XPoser tool to use a phantom patient from which live simulated CT images can be shown.	Internal research quality volumetric visualization code has been rewritten/refactored to a production quality application level.	Key project member left in M10, new candidates are interviewed.	10	8		
NL 45_PHILI PS	1_01	Several Technical Board & Steering Board meetings	Defining the strategy for Crystal	no deviations	0,7	0,7	Domain leader and technical representative	not applicable
NL 45_PHILI PS	1_03	For milestones M9 & M12 the objectives with the Healthcare domain are assessed.	The Use Case Development reports define the results. According to our plan we have achieved the objectives for the 1st year: - Engineering Methods defined - SEE / tool chain defined - first interoperable tools demonstrated - first IOS specification defined: based on Engineering Method Verify Requirements	not applicable	0,7	0,5	Domain leader and technical representative	not applicable
NL 45_PHILI PS	4_00	Domain leadership Setup system performance measurement using QlikView and FRASR tooling. M12 deliverable will be created D400_021 which provides the first 2 KPI's and 0-measurements.	M12 deliverable will be created D400_020 which provides the first 2 KPI's and 0-measurements.	not applicable	9	9	7 manmonths for domain leadership 2 manmonths for QlikView providing information for system performance measurements.	not applicable
NL 45_PHILI PS	4_01	Within WP4.1, we worked on a number of activities to start-up using model-driven development. The goal is to understand the needs/requirements for tooling and to understand the optimized workflow, described in EngineeringMethods. We have used different tools & models for different phases in the system engineering workflow. The following activities have been done: - Validation of SW-design - Multi-axis movement with XPC - Building demonstrator: IBR - Study Software Concept - 2D interactive model for Usability tests - HP Quality Centre - M9 Demonstrator Caliber - HP QC - IBM RQM - Formalizing and Analysing requirements with Eclipse Xtext - Visualising requirements using XText and XPoser 3D visualisation - Realisation of a 2D Interactive simulation of frontal stand and - - - table - Realisation of a 3D model of frontal stand and table - Realisation of a 3D interactive model of frontal stand and table - Realisation of a video representation of frontal stand and table - Use case definition - WP Lead	We created a Use Case Development Report D401_901. This report described the approach to come to a SEE with an optimized workflow and interoperable tooling. It also gives a detailed description of each activity / study.	not applicable	75	88		not applicable

Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if applicable)	PM Plan	PM actual	Use of resources	Corrective Actions
NL 45_PHILI PS	4_02	<p>Within WP4.2, we worked on a number of activities for safety risk management.</p> <p>We have improved the safety risk management workflow in compliance the safety regulations and used different models and tools to support this optimized workflow.</p> <p>The new workflow has been validated in real operational environment.</p> <p>The following activities have been done:</p> <ul style="list-style-type: none"> - Safety risk management workflow: design new workflow, model safety concepts, validate workflow - Product Risk Management (QlikView) Application: setup architecture, datawarehouse and application for product risk management application. 	<p>We created a Use Case Development Report D402_901. This report described in detail the approach to optimize the safety risk management with models of safety concepts and tooling.</p> <p>It also gives a detailed description of the study to setup QlikView for safety risk management..</p>	not applicable	70	70		not applicable
NL 45_PHILI PS	4_03	<p>Within WP4.3, we worked on a number of activities to start-up using model-driven development. The goal is to understand the needs/requirements for tooling and to understand the optimized workflow, described in EngineeringMethods.</p> <p>We have used different tools for different EngineeringMethods. The following activities have been done:</p> <ul style="list-style-type: none"> - Single axis modelling study - Continuous build, integration & test study - The Demonstrator Hardware in the loop (HiL) simulation - Use case definition - WPLed 	<p>We created a Use Case Development Report D403_901. This report described the approach to come to a SEE with an optimized workflow and interoperable tooling.</p> <p>It also gives a detailed description of each activity / study.</p>	not applicable	70	68		
NL 45_PHILI PS	4_07	<p>Task 4.7.1</p> <p>Goal: In this task, existing ontology catalogues related to the Healthcare-domain such as EN 13606, HL7, HISA and ISO 11073 are collected and evaluated regarding their relevance and acceptance.</p> <p>Contribute to the state-of-the-art Ontology Healthcare</p>	Deliverable D407_010 State of the art for healthcare ontology	no deviatons	4	0,5	The use of Ontologies within the Healthcare use cases is still a topic of discussion.	Corrective actions taken on Crystal level
NL 45_PHILI PS	6_03	<p>Task 6.3.6:</p> <p>Objective:</p> <ul style="list-style-type: none"> - Support rapid design analysis and architectural exploration by a coupling of a simulation tool for functional behaviour (POOSL) with a visualization engine (NobiVR) to show model behaviour in the application domain <p>Activities:</p> <p>Detailing out together with TNO and PS-Tech the tool requirements for POOSL & NobiVR;</p> <p>Support tool development and provide early feedback.</p>	<p>Use implementations of Eclipse plugin (TI_0040 and TI_0041) and a Rotalumis extension (TI_0042) with the implemented functionality for use case WP4.1</p>	not applicable	5	5		not applicable
NL 45_PHILI PS	6_06	<p>Task 6.6.4 Objective of this task is the development of bricks to support hardware in the loop testing. This task especially contributes to bricks B4.06, B4.10, B4.11, B4.17. It integrates modelling and simulation environments into the Crystal RTP and thus enables hardware in the loop testing.</p> <p>Activities: Detailing out requirements for HiL simulation & support tool development</p> <p>Experiments with models in Matlab/Simulink; provide early feedback.</p> <p>Evaluate Gazebo and Orocos.</p>	<p>Support TU/e & TNO with:</p> <p>Development of method and prototype for an automatic generation of a HiL interface.</p> <p>Matlab/Simulink simulation environment with several models of the control software and the iXR table.</p> <p>Provide early feedback on usability of simulators.</p>	not applicable	5	5		not applicable

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
NL	45_PHILI PS	6_08	<p>Task 6.8.4 The major objective of this task is to improve interoperability with other tools which are usually used in tight collaboration with HP Quality Center related to WP3.4</p> <p>Activities:</p> <ul style="list-style-type: none"> - Analyse use cases 3.4 and 4.1 for requirements HP QC - Develop EngineeringMethod Verify Requirements - Study existing implementations of HP QC OSLC interfaces - Define IOS services for HP QC <p>QlikView:</p> <p>Collect the type of data and information that is necessary to efficiently support the development processes and collect the requirements of the use cases on QlikView and similar dashboard and data mining functionality and harmonize and prioritize these requirements:</p> <ul style="list-style-type: none"> - Rational Team Centre - Safety risk management - system performance measuring 	<ul style="list-style-type: none"> - Detailed description of EngineeringMethod Verify Requirements - First draft IOS description for HP QC - QlikView requirements for Rational Team Centre, Safety risk management, system performance measuring 	not applicable	11	10	<p>HP QC: 2 manmonths</p> <p>QlikView: 8 manmonths</p>	not applicable
NL	45_PHILI PS	6_10	<p>Task 6.10.8</p> <p>Goal: This brick will provide a domain-specific language tool suite comprising existing open source tooling, additionally developed components, and guidelines specifically tailored towards safety-critical embedded systems development.</p> <p>Activities:</p> <ul style="list-style-type: none"> - Review technical specifications of bricks; - Support exploration of possibilities for integration of textual and graphical editing of models - experiment on provided implementations for the WP4.1 use case; provide early feedback. 	<p>Support TNO in the technique for modularization as applied in TECH_REF_REQ_0024</p> <p>Participated in TU/e - DSL workshop</p>	not applicable	3	3		not applicable
NL	45_PHILI PS	6_11	<p>Task 6.11.4 Specification and support in adaptation of a commercial tool (e.g. based on the IBM Rational Jazz Platform) to support concurrent as well as collaborative engineering by providing configuration and change management of data used in the development and assessment of healthcare systems</p> <p>The Configuration and Change Management Brick will have to be connected with various tools.</p> <p>Activities: will provide objectives, requirements and data for IBM RTC to enable IBM for adaptation and development of RTC used in the use case 4.3. Philips will review technical specifications of bricks, will experiment on provided implementations with early feedback.</p> <p>These activities are in cooperation with the continuous build, integration & test activity executed in WP 4.3</p>	<p>Based on the study continuous build, integration & test:</p> <ul style="list-style-type: none"> - the Engineering Method ContinuousTestBuildIntegrationReport is defined - tool requirements for RTC are defined 	not applicable	10	7		not applicable

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
IT	46_POLITO	1_02	<p>As far as the Dissemination Activity is concerned, the team was involved in several meetings together with the other project partners. A dissemination plan was even preliminarily defined. Furthermore, some CRYSTAL related educational activities were promoted. Since the very beginning of the project, several and recurring meetings (both physical or by WebEx) have been set up with all the partners involved in each WP. In particular, the team attended three key events. The first was the CRYSTAL Working and Consolidation Event (Munich, November, 25th and 26th) in which the various partners involved in all the domains of the project talked about both the technical and administrative items. On December 3rd 2013, in Stockholm, some delegates of this team attended the 2nd European Conference on Interoperability for Embedded Systems Development Environments. In this general context, the team did show some challenging issues of the CRYSTAL interoperability concepts briefly, as they are applied to the case of aircraft systems. On December 4th and 5th, during the ARTEMIS Co-Summit 2013 the team show off the interoperability progresses reached within the WP-208 case. A PhD Course has been settled down in Politecnico di Torino as a relevant event connected to the project CRYSTAL. The course is mainly focused on the PhD activities, although assistant researchers are even attending. The main goal of the 'Design of industrial systems through the Systems Engineering approach' course is to explain the role of System Engineering in the whole product life cycle. It is aimed to show some typical tools of the innovative Model Based Design Approach, as it is described during some Lectures, being proposed by professors and researchers involved in the CRYSTAL project, as a i of the so-called Model Based System Engineering (MBSE). Moreover, possibility of activating a Master on the MBSE as a dissemination activity related to the CRYSTAL project is under-development as well as BSc. and MSc Theses.</p>	<p>The attendance to some National and International Meetings allowed reaching the due feeling with a global understanding of the interoperability issues explored by this project, in many fields of Engineering. Moreover, during the ARTEMIS Co-Summit 2013 the team received the "Award for Communication" as an appreciation of the effective presentation of the preliminary results obtained within the WP 208 test case. Knowledge about interoperability and of the software and tools typical of the MBSE was gradually increased during this first year. Master, PhD courses and Master Theses promoted the interest in Systems Engineering and were used to investigate even additional test cases for the proposed design methodologies. Group attended also the kick off meeting of this project, on May 4 2013 in Wien, to plan the whole dissemination activity.</p>	<p>Actually in this first year the dissemination activity was preliminarily planned more than implemented. Currently a project of a PhD specialised course on Systems Engineering is going on at POLITO and a Master Course for Engineers is under evaluation for a possible start up on late 2014 or beginning of 2015.</p>	1,5	0,9	<p>Efforts appear less than those planned but it is worthy noticing that personnel involved include some full professors whose costs are compatible with the financial effort planned.</p>	<p>There are few corrections to apply just to accelerate the decisional process tp activate the events already planned.</p>

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
IT	46_POLITO	2_02	<p>Main goal of this WP is the definition and design of an innovative diagnostic and monitoring system to be installed on a New Regional Turboprop. Task for this team, being defined in the Description of Work (DoW), is that of developing the Enhanced and Integrated Monitoring and Support System (EIMSS) to be integrated in the fuel system architecture, interfacing with the required equipment. Modeling activity fits the project requirement of testing the interoperability among some different tools used to design this system. During the first six months a general assessment of the state-of-arts within the fuel system architecture was preliminarily performed. Design process was then started. To this purpose, a Matlab® (by TheMathworks) code was developed to simulate a simple traditional fuel system (M1-M6). In the two following months, System Engineering Methodologies were applied to perform several analyses. The innovative approach called Harmony was applied for a preliminary design, being based on a top-level functional design of the system. Doors by IBM was used to state and manage the top level requirements, which define the system specifications, with a particular care for the functional requirements.</p> <p>Subsequently functional analysis was carried out within Rhapsody® and a system functional model was built up according to the System Modeling Language (SysML) tools. Design synthesis phase was finally proposed by resorting to a top level baseline. Trade off studies were even performed by defining some Figures of Merit, being chosen among some simple design drivers, and they were used as selection parameters. The preliminary model developed within Matlab® was improved to meet this baseline characteristics and to allow the performance requirements updating (M10-M12).</p>	<p>A preliminary Matlab® model was developed to understand the operating conditions in which fuel system should have to work. This model was updated after that functional analysis was performed and the design of the system was completed. The functional model is based on a set of requirements which describe the basic system functions. They are included in the top-level requirements specification, managed with Doors®, together with performance, physical, operational, safety, maintainability and testability requirements. The functional analysis that has been performed, follows the "Harmony for system engineering" process and the definition of system behavior was based on several use cases which traced functional requirements. Each use-case was developed in Rhapsody® by IBM and functional model was described thanks to SysML structure and behavior diagrams. During the design synthesis phase, functions were allocated to the components of the selected architecture which best complies with the analysis. They were also verified through simple drivers as measure of effectiveness criterion.</p> <p>According to the scheduled activities proposed in DoW (332830, 2013-02-28), the first Milestone (M9) has been reached successfully. The tool chain was defined and interoperability scenarios were proposed. Furthermore, in the following months, a first stage functional baseline of the system and a preliminary performance model have been outlined.</p>	N/A	15	9,5	Efforts appear less than those planned but it is worthy noticing that personnel involved include some full professors whose costs are compatible with the financial effort planned.	
IT	46_POLITO	2_08	<p>This WP is focused on the definition of an Anti-icing or De-icing System to be installed on a New Generation Regional Turboprop. To this purpose, during the first months of the project, a study of the state-of-art of the technology has been carried out. A lot of architectures have been proposed and evaluated. Among those solutions some looked to be applicable to the project goals as the pneumatic, thermoelectric, chemical and aero-thermic systems. All those systems were analyzed and for each proposed solution the possibility to install on several parts of the aircraft was explored. In particular, together with the other partners, it was decided to propose the anti-icing system to protect wing leading edge, tail surfaces, engines fairing and propellers. The following months were devoted to define the environmental model, to forecast the ice accretion during the different mission profiles. To this purpose, a Matlab® model was built up. The pneumatic system has been selected as a first case study and a physical model has been drawn by using the Simulink® environment. In this model, the inflation and the deflation sequence for each boot has been simulated for the specific scenario foreseen by the inputs of the program.</p> <p>Accordingly to interoperability, being one of the main goals of the CRYSTAL project, the Simulink® model was built by taking into account its position in the tool chain that has been defined preliminarily.</p>	<p>A description of all the selected Anti or De-Icing Systems have been provided and a more detailed analysis was written in case of the Pneumatic System. The physical model built up by resorting to the Simulink®, allowed to size it properly, within an iterative process. Dimensions of the different boots are updated in a sensitivity analysis and results of simulation allow the user selecting the optimized solution and a suitable architecture. The Matlab® code, used to forecast the ice accretion upon several surfaces, provides an ice accretion profile, being an input for the physical model.</p> <p>For the first Milestone, an interoperability simulator was implemented by Airbus IW Germany, in Hamburg. Both the Matlab® code and the physical model were inserted for a further testing activity.</p> <p>Results of this WP show that the it is already at an advanced stage of its development, if it is compared to some other scheduled activity.</p>	no deviations	16	14,8	Efforts appear less than those planned but it is worthy noticing that personnel involved include some full professors whose costs are even more than the financial effort planned.	

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
IT	46_POLITO	2_09	In this phase we focus on the definition of the state of the art, working on Deliverable 209.010 "State of the art for Aerospace ontology" and discussed the ontology from different points of view, considering technological aspects and the domain-specific knowledge. In particular we worked towards building a shared understanding of the intended design. Given the different backgrounds of the people involved it required a relevant effort. In particular, we from the Dept. of Control Automation and Computer Engineering needed to build a knowledge of the aerospace case-study and the most relevant specificity of the context. On the other end we had to interpret the requirements as emerged from discussion to design the intended solution, trying to identifying the most suitable technical options and verifying with our partners (the domain experts) if our suggestions would address their concrete needs. As result of the first phase we provided a suggested list of technologies, in particular we suggest to adopt the technology stack which constitute the so-called Semantic Web. The designed solution is rooted in RDF and it is completed by the related technologies, in particular OWL and SPARQL. A major activity was building this shared understanding and support for the high-level strategy. To do that we took part in several conference calls with the involved partners.	With D209.010 we contributed to present a comprehensive picture on the practices, methods and tools that should be considered as the base on which to build the later deliverables of the Crystal project related to the aerospace domain. Deliverable 209.010 addresses three different aspects of the state of the art. They are: • the STEP standards (AP233, AP239) that we consider, provide the basis vocabulary and extension mechanisms to extend the IOS/OSLC core vocabulary • the Semantic web formalisms (RDFS, OWL) that have been adopted within the IOS OSLC specification • integrated tool support for edition, query, etc. (SPARQL, PROTÉGÉ, VIRTUOSO). In particular we were responsible for the second aspects and contributed to the third.	N/A	5,5	5,5		
ES	47_RGB	1_03	Break down project objectives in WP406 for Engineering Methods under development.	Metrics under definition for the evaluation for the WP406 Use Case in the Medical Section	N/A	0,33	0,33	According to Plan	N/A
ES	47_RGB	4_00	Support to General Technical Management as a Healthcare CRYSTAL partner.	Support to General Technical Management as a Healthcare CRYSTAL partner.	N/A	1	1	AS planned	
ES	47_RGB	4_06	This use Case deals with the development of tools for validation / certification of a Blood Pressure controller in Hospital OR (Operating Room) or ICU (Intensive Care Unit). RGB has been selecting among existing tools and defining with the support of ITI and TNO a new tools for development under the V model for this Use Case.	AT present works on bricks development are under way. In this period ITI has contributed to the refinement and specification of the RGB use case, detailing the engineering methods of this V-model that will also make use of IOS. This V-model and use case refinement is being detailed in D406.010. ITI and TNO are collaborating in these tasks.	N/A	59	59	As planned	
ES	47_RGB	4_07	RGB has collaborated with WP partners in the works for creating and populating the State of the Art for the Healthcare ontology (D407.010). In this way ITI has participated in the elaboration of the long list of ontologies and glossaries of the healthcare domain to be considered and analyzed when building the healthcare ontology. Works on ontology have included insight into ISO11073	RGB is leading the use of ontology on the 4_06 Use Case application. The State of the Art document has been detailed. This document included a long list of potential ontologies, glossaries that has to be considered and a refined list of them covering those that are of interest for the different healthcare use cases.	no deviatons	1,33	1,33	As planned	
ES	47_RGB	6_03	RGB has collaborated with ITI in the definition of the functional features and IOS requirements to be satisfied by the bricks B4.14 and B4.15. For this purpose, RGB has provided all necessary information on the Use Case for ITI to define the brick specification and performance of an architecture design for such bricks.	Cooperates with ITI in the first specifications and IOS requirements for bricks B4.14 and B4.15, First list of technical core requirements for WP603 bricks and contributions for D603.010.	no deviatons	1,33	1,33	As planned	
ES	47_RGB	6_06	RGB has been collaborating with ITI and TNO in the specifications of brick B4.06 (integration of B4.06 and B4.17). As a result of this, the definition of the technical core requirements for WP606 have been done. RGB has also contributed to D606.011.	First draft of D606.011 obtained and the support in the definition of IOS requirements and specification for brick B4.06.	no deviatons	1,67	1,67	As planned	
ES	47_RGB	6_08	RGB has collaborated with ITI in the establishment of the specifications for the B4.16.	A draft version of the IOS requirements coming from the use case 4.06 for B4.16 has been obtained.	no deviatons	1,33	1,33	As planned	
ES	47_RGB	6_11	RGB is providing objectives requirements and data in relation to the Use Case 4.06 to enable IBM and other partners for adaptation and development of bricks	RGB is reviewing technical specifications of bricks and experiment on provided tools for early feedback	no deviatons	1,33	1,33	As planned	

Country	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
FR	48_SAGEM	1_01	Contribution to the management of the project. Participation to :Vienna Kick-off meetingMunich April 1-2, 2014 Technical board meeting Participation to webex meeting about Consortium Agreement. Point of contact during summer period with French authorities. Contribution to: •CRYSTAL Dissimination Plan •CRYSTAL Exploitation Plan	Agreement about Consortium Meeting.	No deviations.	0,6	0,7	Contribution to the management of the project. Participation to : •Vienna Kick-off meeting •Munich April 1-2, 2014 Technical board meeting Participation to webex meeting about Consortium Agreement. Point of contact during summer period with French authorities. Contribution to: •CRYSTAL Dissimination Plan •CRYSTAL Exploitation Plan	No corrective actions
FR	48_SAGEM	2_00	Contribution to the management of the aeronautical domain. Participation to Toulouse September 19-20th, 2013 SP2 meeting. Participation to montly coordination and reporting webex meeting. Reviews of some SP2 deliverable (especially from WP203 and WP206)		no significant deviations	0,2	0,4	Contribution to the management of the aeronautical domain. Participation to Toulouse September 19-20th, 2013 SP2 meeting. Participation to montly coordination and reporting webex meeting. Reviews of some SP2 deliverable (especially from WP203 and WP206)	no corrective actions
FR	48_SAGEM	2_04	We have reached a shared and clearer understanding about the technical needs to filled by the WP607 RBE tool chain for the satisfaction of WP204 needs. We have identified the gaps between the industrial needs and the current status of the WP607 tools. That leads to the definition of a first roadmap for WP204 and WP607. We have installed and tested the current version of the WP607 tools for dealing with ontologies and confirmed our interest for this technology. We have initiated the definition of "Requirement process" including ontology technologies. This is not finalized yet. We have written a first specification for CRYSTAL WP2.4 tool chain needs : E-FCS RBE process and toolchain evaluation - V1.	Deliverable : E-FCS RBE process and toolchain evaluation - V1. Core requirements for WP607. Organisation of 2 face-to-face meeting in Paris on Requirements Based Engineering :June 11th, 2013January, 23-24th , 2014.	No significant deviations (WP204 and WP607 are highly connected. Some efforts planned for WP204 have been spent for WP607 with no impact for project objectives.)	6	5	Analysis and preliminary definition of the use case. Identification of the Sagem needs for RBE tool chains and ontology. Identification in collaboration with WP203 and WP607 of the gaps between the industrial needs and the current status of the WP607 tools. We have drilled the process and tools for using ontology. We installed the "TRC" current tools (Requirements Quality Suite), have been trained to use them and have begun to test them. This have allowed us to precise Sagem needs for WP607 tools and write E-FCS RBE process and toolchain evaluation - V1 which contains Sagem's needs and first evaluation of the current TRC tools. We have thought about a internal process to be able to use this tools on industrial context by the end of the project.	No corrective actions
FR	48_SAGEM	2_09	Contribution to discussion of link between Aerospace Ontology (WP209) and RBE Ontology (WP607).	Participation / contribution to WP209 Webex meetings to define work-package objectives.	Less effort spent as planned due to the delayed ramp-up of the project. No impact on project objectives expected.	0,4	0,2	Participation / contribution to WP209 Webex meetings.	No corrective actions.
FR	48_SAGEM	6_01	Contribution to the definition of the WP601 objectives through the definition of Engineering Methods in the WP204 work package. Participation to the Munich IOS Meeting June 20-21, 2013.	Engineering Method for WP204 defined (especillay regarding WP607 RBE) Core Requirements for WP607 defined.	no deviation.	0,7	0,7	Contribution to the definition of the WP601 objectives through the definition of Engineering Methods in the WP204 work package and of corerequirements for WP607. Participation to the Munich IOS Meeting June 20-21, 2013.	No corrective actions.

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
FR	48_SAGEM	6_02	Contribution to the WP602 webex meetings to define the objectives of this work package. Review of WP602 deliverables.	Validation of the proposal for building the System Engineering Environment from a library of bricks with standardized description.	Less effort spent as planned due to the delayed ramp-up of the project.	0,5	0,2	Contribution to the WP602 webex meetings. Review of WP602 deliverables.	
FR	48_SAGEM	6_07	Alignment of needs between WP204, WP203 and WP607 to define technical core requirements and refined technical requirements. workshops: . Organization/ Participation / Contribution to workshop in Paris on June 11, 2014 . Participation to WP607 tool training in Madrid on Sep 16-17, 2013. . Organisation/ Participation / Contribution to workshop in Paris on Jan 23-24, 2014 Prototyping using Requirements Quality Suite provided by WP607. Definition of a internal processus to use these WP607 bricks. Definition of needs for improvements about WP607 bricks.	Industrial needs from WP204. Traceability of WP607 core requirements to industrial needs. Requirements Quality Suite tool environment.	No significant deviations (WP204 and WP607 are highly connected. Some efforts planned for WP204 have been spent for WP607 with no impact for project objectives.)	1,7	2	Training and familiarization with Requirements Quality Suite. Participation / contribution to WP607 Webex and F2F meetings. Review of D607.021 Requirements Quality Suite documents. First evaluation of the Requirements Quality Suite and identification of needs for improvements for taking into account more CESAR completeness/correctness/consistency criteria.	No corrective actions.
IT	49_SUN	5_01	T1 Use Case Definition (Collect RQ) SUN contributed to this task collaborating with UNIFED-II in the definition of a methodology for the improvement of the V&V activities of the industrial partner. More specifically, SUN defined a model-driven methodology for the automatic generation of test sequences. Single activities are constituted by: (1) collection and study of the related works on automatic test case generation and on model driven process to support V&V activities on the specific use case, (2) definition of the automatable process to support the test case generation, (3) study and review of the model-driven technologies able to support the implementation of the automatic tools. T2 Prototyping IOS concepts (Definition) The contribution of SUN research unit has been related to the harmonization of the requirements for the IOS integration of the use case. More specifically, SUN has participated to project meetings discussing and defining the artifacts of the automated process defined in T1 that are involved in the intergration in CRYSTAL IOS/RTP.	T1 Use Case Definition (Collect RQ) -Related works on techniques on automatic test case generation and on model driven V&V process; - automatable process supporting test case generation; -maps of the available model-driven technologies towards the needs of the use case and of the defined process.	no deviatons	3,17	2,92		
IT	49_SUN	6_03	Task 6.3.1 Model-based system analysis Within this task, SUN contributed in two main ways: (1) SUN has been an active partner in the definition of the survey published on-line that has been submitted to several industries aiding to identify the industrial usage and needs in the field of model-based engineering; (2) SUN has contributed also to the definition of a (domain-independent) methodology for testing by means of model-driven techniques. Moreover SUN is defining an pattern-oriented approach for facilitating the building of both system and test specification high level models.	Task 6.3.1 Model-based system analysis - Crystal WP6.3 survey results - List of Test Specification Patterns	no deviatons	2,67	2,46		
IT	49_SUN	6_12	T6.12.2: Rail model implementation and assessment SUN unit contributed to this task by supporting the definition of a language for the specification of rail signalling systems. SUN is also working on the design of proper transformational tools to support the automatic test case generation.	T6.12.2: Rail model implementation and assessment - Some preliminary results of the activities within CRYSTAL projects are going to be published in "Towards Model-Driven V&V assessment of railway control systems" that as been accepted for publication into the Journal of Software Tools and Technology Transfer.	no deviatons	21,3	19,7		

Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations	PM Plan	PM actual	Use of resources	Corrective Actions
DE 51_SIEMENS	6_01	<ul style="list-style-type: none"> - work with the OASIS-OSLC standardisation organization to develop and enhance the OSLC stand which was chosen as basis for the CRYSTAL IOS - represent CRYSTAL project in the Steering Committee of the OASIS-OSLC standardisation member section - work with other standardisation organisation to promote the CRYSTAL IOS standard (a.o. ProSTEP, iVIP, Incose) - represent CRYSTAL IOS concerns in the ARTEMIS Standardisation Workgroup - support CRYSTAL dissemination activities in organizing conference about interoperability and speak at other relevant conferences (see dissemination plan). - represent WP6.1 in the CRYSTAL technical board - contribute as author to WP6.1 deliverable interoperability specification - V1 - support domain use case owner to define their UC engineering methods and map their engineering method activities to the IOS concerns. 		no deviations	3,7	3,5		
DE 51_SIEMENS	6_04	<ul style="list-style-type: none"> - analysis of safety tools needs with respect to development processes for software intensive systems - review of public aerospace use case - review of Deliverable D608.11 		no deviations	11	8,2		
DE 51_SIEMENS	6_10	<ul style="list-style-type: none"> - Deliverable D610.011 "Crystal Variability Management V1": provided "DSL Brick" chapter. - Deliverable D610.011: Sectopm "Variant Management of High Integrity Systems" - participation in DSL Workshop in Eindhoven Feb 17, 2014 to kickoff/align brick contributions - Know-how ramp-up for mbeddr DSL workbench - Elaboration of a reference process for Safety Assessment and Certification (as input to one of the next deliverable version) 		no deviations	11	9,9		
DE 51_SIEMENS	6_11	<ul style="list-style-type: none"> - contribute as reviewer to Aerospace public use case demonstrator - prepare environment for enhancement of CRYSTAL SEE instances - Siemens internal exploitation activities based on Use Case demonstrator 		no deviations	7,3	4,2		
DE 52_SISW	6_08	<p>according to plan. The first deliverable was the collection of PLM related requirements for the functionality of an IOS. Specification, Development and Assessment for Product Lifecycle Management CRYSTAL_D_608_011_v3-0.doc. This mostly was based on the Aerospace use case. A thorough analysis of the engineering methods required to fulfill the use case leads to a table. The analysis allows to prioritize the list of requirements towards the specification of the IOS.</p>		In the discussion with Alenia we decided to regroup the deliveries in order to have a better and more streamlined structure	36	12		
FR 54_SOYATEC	6_09	<p>Soyatec is responsible of the Modeling Driving solution for UI, known as Presentation Modeling Framework - PMF. It is an Open Source component for generating GUI presentation of business data. The overall progress for Soyatec on this component is good. There has been a slight delay in the kick-off of the work-package but everything is now up and running. Most of the sub-tasks have started on time and show good progress. A major step has been reached by analyzing and specifying the generic and highly extensible UI Meta-model with a code generation Engine for Eclipse. The generation of Web Application is the final target. This task is delayed.</p>	<p>The first implementation is provided early January 2014. This integration includes the first code generator on some static UI for Eclipse UI using a XML markup language for Eclipse : XWT.</p>	<p>The core development of PMF is underestimated. A Web solution UI is a complex case, it is a huge step to start immediately UI generation. And PMF itself needs also some tools in Eclipse.</p>	93,6	23	Lack of French contract for the Crystal project created difficulties to recruit persons for the project.	Continue to hire a good quality technical engineers.
SE 55_SYS	1_03		No results		0,3	0,07		

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
SE	55_SYS	3_01	Task 1 Use Case Definition Provided description of current SE environment at Volvo based on SystemWeaver.Participated in Engineering Methods and Use Case Definition.Review responsible of CRYSTAL_UC_Definition_WP3.1 Task 2 Prototyping IOS conceptsPrototyped OSLC (but registered this work in wp 6.8)Prototyped exchange of Autosar for design data for components, signals and systems.Prototyped exchange of communication network information.Prototyped management of variability concepts (basis for future work on Life-cycle mgmt in wp 6.8) Task 3 Building SEESet up a globally accessible SE environment based on real data to be used by the partners as a basis for their integration work.Have performed training sessions for partners.	Task 1 Use Case Definition Identified a set of engineering methods that have used as a basis for further work on IOS and SEE. Task 2 Prototyping IOS conceptsImplemented IOS prototypes in SystemWeaver for Autosar, communication network information, variability and OSLC. Task 3 Building SEEA EAST-ADL type SE environment with access for all partners in wp 3.1.	No deviation	12	13	Have used a little more resources than planned. This is due to the extensive IOS prototyping that have been done. Some of this should perhaps have been registered on the bricks.	Will try to have a better balance between use case and brick development during the second year.
SE	55_SYS	6_01	Task 6.1.2 Enhanced Interoperability SpecificationParticipated in workshops and meetingsFocus on automotive info such as Autosar	Task 6.1.2 Enhanced Interoperability SpecificationNo specific results	no deviatons	2	1,1		
SE	55_SYS	6_02	Task 6.2.1 Define an extension of a standardized meta-modelFollowing the work Task 6.2.2 Specify the platform builderFollowing the work	No results	no deviatons	1	0,1		
SE	55_SYS	6_08	Task 6.8.1 PLM requirements gatheringContributed to the requirements gathering Task 6.8.2 PLM IOS/RTP architecture and system designFocus on architecture for integrating IOS concepts into the SystemWeaver SEE Task 6.8.3 PLM IOS/RTP proof of conceptPrototyping OSLCPrototyping variability concepts	Task 6.8.3 PLM IOS/RTP proof of conceptOSLC prototype implementation in SystemWeaverVariability management prototype in SystemWeaver	no deviatons	6	35		
NL	56_TU/e	4_00	The content of this WP was changed; this WP addresses tooling for measuring the effectiveness of changes in the workflow as proposed by the other WPs. TU/e has conducted a study of process improvement metrics and in cooperation with Philips has selected appropriate KPIs for the null-measurement. These KPIs pertain to defect resolution and characterise the gap between the phase the defect has been detected and the defect has been caused, as well as the process followed during the defect resolution. The KPIs have been implemented and calculated for the chosen system development project.	The KPIs have been implemented and calculated for the chosen system development project.	no deviatons	6	6		
NL	56_TU/e	4_02	The TU/e is currently investigating the support of modularity in the various language workbenches to develop DSLs. This research will eventually contribute to the effort by TNO to developed a domain specific language to describe the behaviour of moving parts in a surgery room.	Preliminary ideas on this topic.	no deviatons	7	5,5	According to plan - the WP has been rephrased.	
NL	56_TU/e	4_03	The work has focused on the 'Hardware in the loop' simulation which is part of the use case by PHC. TU/e has worked closely with PHC in defining the use case. TU/e built a tool to generate an interface for mixed simulations, based on a description of that interface. Models developed by TNO will be integrated in this mixed simulation such demonstrating testing of control software against a real-time simulation model. in addition, traces along the interface can be collected for developing models automatically, or for tracing errors. This HiL simulation changes the workflow of the iXR development.	Use case description. Development of method and prototype for an automatic generation of a HiL interface.	none	22	13,5	Two extra technical staff employed for accelerating development.	Underspensing of mm is due to a late start caused by having to wait for candidates. Currently, two more technical staff are added to the project and have made up for most of the pending work.
NL	56_TU/e	4_05	TU/e has worked closely with Barco to define the use case. The objective is to predict execution performance of a processing pipeline (Gstreamer) more accurately, as part of the intended workflow. TU/e has worked on the problem definition, and is now working on analysis and modeling of actualy run-time system. Tools under consideration are Gstreamer and correspondent languages. Interface concern these tools, but also the components to be run by the Gstreamer framework.	Contributions to the definition of the use case. First results in the modeling of the pipeline.	none	6	5	According to plan; slow start due to hiring.	

	Comp. Co.	Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
NL	56_TU/e	4_07		The TU/e has performed a restricted systematic literature research on the relationship between ontologies and the design of domain specific languages. The goal of this research was to identify to whether and how ontologies are used when designing domain specific languages.	TNO has drafted a first version of an ontology for systems development. The TU/e has given feedback on this ontology. The next step is to use FRASR to validate the ontology.	no deviatons	2	2		
NL	56_TU/e	6_06		After a thorough requirement analysis of WP 4.3, TU/e has been studying the possible uses of the tools Gazebo (B4.10) and Orocos (B4.11) with regards to their contribution to the 'Hardware in the loop' simulation. Exploration of these tools is being made by the Robotics group, where both are used on the @Home Service Robot, where Gazebo is used to visualize and interact with simulated environments for the robot, and Orocos to create a reusable component-based environment capable of managing in real time the controllers used in the robot. Further study was made on how to connect these two tools directly, without depending on middleware, such as ROS	Tests have been made using a unfinished plugin to connect the two tools. The integration and use of this plugin is still complex and not consistent but early results suggest that it can be done, although Gazebo is not a tool developed for real-time systems.	no deviatons	6	3	as planned	
NL	56_TU/e	6_10		The TU/e is currently investigating a number of language workbenches to develop DSLs to see how they support modularity. Another research in cooperation with TNO is on integration of textual and graphical editing of models. A prototype for Xtext and GMF has been developed based on EMF.	The TU/e has organized a workshop for participants (TNO, Siemens, Philips, TU/e) in the B4.4. A number of future research directions have been discussed. The focus is on modularity in DSLs and the integration of textual and graphical editing of DSL models.		5	1		
DE	57_TUB	3_02		We completed a SPEM model of the use case process, which describes all tasks and the inputs and outputs (SPEM workproducts) of these tasks. For each workproduct we determined the tool that is responsible for it, and by using this information we could identify 100% of the interoperable tasks in our use case process. In the next step we identified all engineering methods that are needed to perform the interoperable tasks. Finally, we specified each of those engineering methods. All these steps were performed in close collaboration with Daimler.	Result 1: SPEM-Model of use case process. Result 2: Mapping of workproduct (artefact) to responsible tool. Result 3: Identification of all interoperable tasks in the use case process. Result 4: Engineering Methods for all interoperable tasks. Result 5: Specifications for all Engineering Methods	none	21	21	Almost the complete time was used for the modeling of the use case process and the engineering methods. The rest of the time was used to produce the M9 deliverable.	none
DE	57_TUB	3_08		The state of the art for automotive ontology has been evaluated. Development of an own ontology did not yet start because of the ongoing discussion about the actual goal for the ontology.	Deliverable for M9	none	1	1	Mainly work for the M9 deliverable and discussion about the actual goal of the domain ontologies in CRYSTAL in general.	Supporting the discussions about the role of the domain ontologies.
DE	58_IST	3_03		Collection of interoperability requirements for IOSDefinition of intergration needsMapping of engineering methods to IOS challenges		no deviatons	3	3		
DE	58_IST	3_04		First prototyping of IOS conceptsMapping of engineering methods to IOS challengesDefinition of IOS core requirements		no deviatons	3	3		
DE	58_IST	6_01		Contribution to IOS specificationDefinition of IOS requirements based on engineering methods (automotive domain)		no deviatons	3	3		
DE	58_IST	6_02		Contribution to specification of Platform Builder		no deviatons	2,5	2,5		
DE	58_IST	6_13		Definition of IOS requirements for co-simulationContribution to use case mapping (automotive domain)Review of deliverables (CRYSTAL_D_613_011, CRYSTAL_D_613_012)		no deviatons	3	3		
FR	59_TASF	2_07		The work on this first period has been focussed on defining the requirements for the realisation of the use-case. The process was to make several interviews with avionics architects for several on-going at Thales Alenia Space. Then a technical note has gather all the activities performed by the avionics engineers during the avionics development process. In particular this technical note list all the analysis that are performed during the system definition (safety, power consumption, bandwidth, ...), for each analysis it list the input and the output of the analysis. This document will be used to define the needs in term of model contents to be handled by the architecture sketcher and the fine definition of the usecase. Participation to aerospace domain requirement meeting.	The technical note on the current practicies in term of avionics analysis has been written.	No deviation	2	1,56		

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (	PM Plan	PM actual	Use of resources	Corrective Actions
ES	60_TASE	2_05	WP2.05 titled Space Toolset applied to Avionics Control Unit Software generation, test, V&V and Certification. TASE as WP2.05 leader has delivered D205.010. Space Use Case Requirements, that contains a summary of the ECSS-E-40 Series requirements for the space systems applied to the CRYSTAL domain, and summarizes the specific needs to be covered by the CRYSTAL bricks in order to be able to be space qualified. As well it provides a first guideline of the design rules to be followed in the different bricks. Deliverable D205.020. CRYSTAL Space Toolset Specification has also been prepared, reviewed and delivered: it is the formal specification of the tools required to configure the CRYSTAL space Toolset as well as a first draft of the application procedure of the CRYSTAL tools to the Space Environment, including design rules, guidelines for the usage of tools and Best Practices. TASE has planned and managed the different telcos. and meetings with the WP partners in order to coordinate the activities in WP2.05	In the frame of deliverable D205.010 TASE summarizes the needs to be covered by the CRYSTAL bricks and describes the use case for the Space domains in terms of the SW to be developed as well as the executing HW platform. Deliverable 205.020 is the formal specification of the tools required to configure the space toolset and contains a draft of the application procedure, including design rules, guidelines and best practices.	No relevant deviations.	27	27	As project start was shifted to November due to delay in Spanish national funding assignment a stronger effort has been done during 2014 up to April in order to recover the planning and the scheduled activities flow.	N/A
ES	60_TASE	6_01	WP6.01 titled IOS Evolution & Development, Standardisation. TASE is involved in WP6.01 with the role of participant, and such as, TASE has cooperated as well in the revision process of the Engineering Methods of the aerospace domain, identifying Engineering Methods and the way they interact each other and performing an alignment of these methods and inter-operability scheme and requirements with respect to those selected for the aerospace public use case. TASE has participated in the different telcos/webinars held to that end by Project Coordinator and has held others by its own initiative with SP2 leader and Product Lifecycle Expert.	TAS-E has provided a list of engineering methods for the UC2.5 and a first alignment with respect to the engineering methods of the public aerospace use case. IOS requested services have been started to be specified.	No relevant deviations.	1,5	1,5		N/A
ES	60_TASE	6_10	WP6.10 titled Variability Management. TASE is involved in WP6.10 with the role of participant, and such as, TASE has contributed to the deliverable D610.011 Crystal Variability Management - V1 issued by WP6 leader providing feedback on AUGU tool requirements and definition.	TASE has contributed in the tailoring of a set of variability management and check tools that can be used in the new multicore domain in order to guarantee that partial tests and recertifications can assure proper operation of the final system and that these tools provide enough reliability to be accepted by ESA as design validation tools.	No relevant deviations.	1,5	1,5		N/A
AT	61_TRAIL	5_00	Execution of technical management activities.	Meetings, workshops, coordination, reporting	none	1,5	1,4	see results	none
AT	61_TRAIL	5_02	1. First iteration of Use Case Definition has been completed successfully leading to deliverable D502.010 (use case definition). Also contributions to preparation of D502.020 (bricks interface requirements) 2. For the specification of the IOS requirements an early demonstrator has been developed showing the feasibility of the model based automated test case generation approach 3. Selection of modelling techniques and tool evaluation is still ongoing. different safety analysis tools are tested	1. The deliverable D502.010 (use case definition) was successfully delivered to the JU 2. Demonstrator successfully presented at 1st JU Interim Review Meeting.	After an internal analysis it was decided to not use SCADE in the context of model driven automated testcase generation. The safety analysis tool MB RAMS (AIT) will not be used in this use case, we will switch to Safety Architect (All4tech) This results in a shift of efforts to T3 (building SEE)	18	9	40% of the efforts went to Modeling tools evaluation, 60% went to toolchain analysis and requirements specification	Due to reasons given in "reasons for deviation" efforts will be shifted to T3 (building SEE)
AT	61_TRAIL	6_03	We will mainly contribute to tasks specification and assessment from the viewpoint of the use case provided by Thales Austria. Special emphasis will be laid on the compliance of the approach with the safety standards applicable to the railway domain.	So far no efforts have been placed since the contribution focuses on applicability of the model based system analysis in the railway domain	none	0	0	none	none

Co	Comp. Short	WP	Progress towards objectives	Tangible Results	Reason for deviations (if any)	PM Plan	PM actual	Use of resources	Corrective Actions
FR	62_TGS	6_09	Task 6.9.1 - MBE Development & Execution Environments <ul style="list-style-type: none"> Definition and implementation of the MBE Development Environment (DE) that provides a textual DSLs to describe architecture frameworks and viewpoints, including the description of the meta-models, diagrams, UIs, services, packaging & configurations. Development of the generators that generate AF & VP from their DSL descriptions (targeting Sirius). Development of the MBE Execution Environment (EE) that manages the artifacts produced by the MBE DE, including dynamic viewpoint extension, viewpoint activation/deactivation capabilities. Development of the MBE Core Technology Kit (CTK) that gathers a set of MDE technologies/tools used at development and execution times, including, in a first stage, a message reporter, a resource reuse tool and the integration of Sirius, Composer, Transposer and Accuracy. Development of a test case for MBE DE & EE : "Simple Component" architecture framework and safety and performance viewpoints. Open Sourcing of the MBE DE & EE in Eclipse under the name Kitalpha. Task 6.9.2 - Sirius <ul style="list-style-type: none"> Contribution to dissemination activities about Sirius. Task 6.9.4 - MBE technologies <ul style="list-style-type: none"> Implementation of the Transposer technology framework that aims to master complex model transformations, through transformation mapping declaration, mapping rules inference & scheduling mechanisms and transformation workflow contribution mechanisms. Implementation of the Composer technology framework that aims to separate generation and organization concerns for model-to-text generations through generation strategies declaration & execution, and generation workflow contribution mechanisms. Implementation of the Accuracy technology framework that aims to ease validation and analysis rules implementation by providing the capability to add DSL and Java constraints based on EMF Validation. 	<ul style="list-style-type: none"> First specifications AF & VP DSL-based MBE DE 1st prototype, with generators & packaging AF & VP MBE EE 1st prototype 1st implementation of Composer, Transposer, Accuracy technology frameworks MBE CTK 1st prototype 1st integration into the MBE CTK of the Sirius, Composer, Transposer, Accuracy technology frameworks 1st early prototype of the Model co-evolution technology New Eclipse project Kitalpha Kitalpha presented to the Eclipse Polarsys & Automotive Working Groups Talks about Sirius at Eclipse Conferences 	Some experts left TGS to takeover MDE activities in Thales Units who were not replaced. Lack of French contract for the Crystal project.	99	86	Mainly development of the MDE development & execution environment and the related technologies. Special focus on the model co-evolution technology that have great stakes while having great uncertainties. TGS leads T6.9.1, T6.9.4 and T6.9.5 and contributes to T6.9.2 and T6.9.3.	Maintain the full contributing team longer than planned in 2014.
FR	63_TRT	6_09	The objective of the period is focused on describing the state of the art of Model co-Evolution which contributes to the brick Model co-evolution (B2_31e) of the WP6.9. This state of the art highlights the following concerns: considering the variety of the existing viewpoints, how to ensure the global consistency - and, more generally, communication - between the different views of the designed system? When each of the views is being mapped to a model, this issue requires at least synchronizing heterogeneous models.	The state of the art of Model co-Evolution has been included in the WP6.09_V1 deliverable.	no deviations	36	14		
AT	64_TTTech	3_00	TTTech contribute to the definition and shaping of the public use case for the automotive domain. This included the participation in these use case discussions and the contribution of requirements to the public use case.	Further definition towards a public use case demonstrator for the automotive domain. Effective contributions to the overall management of SP3 automotive.	N/A	3,2	2,63	Participation in use case meetings and organization of the use case contributions. Communication with use case partners and use case external stakeholders.	N/A
AT	64_TTTech	3_04	TTTech closely cooperated with AVL-R on the definition of the joint use case. Several workshops were held to collect the requirements for the use case and to specify the targets. The first iteration of the use case definition was achieved documents. Discussions regarding usage scenarios and the platform architecture were held. Several variants of platform hardware were discussed and are now being evaluated in several pre-studies. The interactions and interfaces with the IOS were analysed and feedback to the IOS definition was delivered.	- a use case and usage scenario have been defined and been described in detail in the respective deliverable of workpackage 3.4 - outline of several variants of the underlying platform as basis for the use case demonstrations that are currently being evaluated - extensive discussions concerning hardware-related requirements of the future demonstrator jointly with AVL-R - identification of use case driven requirements for the IOS and collection & communication of these requirements to the IOS related workpackages	N/A	25,7	25,7	Participation and organization of use case meetings Discussions and definition of the use cases Collaboration to the requirements capturing and elicitation of the use case Contribution to the deliverable Contribution to the IOS requirements capturing process Participation in SP3 telcos and meetings	N/A

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AT	64_TTEch	6_05	Based on the requirements obtained from the main related use case UC3.4, TTTech started the definition of the required technology bricks of WP605. TTTech also established the feedback loops to the use cases to enable an aligned development of technology bricks and the anticipated demonstrators in the use cases. Furthermore TTTech held a kick-off for WP605, coordinated all different WP605 developments, and organised the ongoing work in this workpackage. For all tasks in WP605 first descriptions of the technology bricks exist which will be iteratively refined in the following project year.	- the first deliverable of WP605 (D605.011) was delivered and lists and describes all technology bricks of the workpackage - the relations of the technology bricks to the use cases were discussed and a mapping which bricks will be demonstrated in which use cases was defined - a communication basis of WP605 partners was established - all brick developments have started by all responsible partners - TTTech started the definon work on the Tasks 6.5.8, 6.5.9, and 6.5.10. For all these bricks a close coordination with use case 3.4 was organized and a description of these bricks was conducted. All bricks are documented in the first deliverable (requirements specification and system overview) and will be iteratively refined in the future. For all bricks also the development work has started.	D605.011 was delayed in response to a more time-intensive alignment with the use cases. Despite this delay all development work has already started and the work will be intensified so that no effects on the next deadlines are expected.	58,4	58,4	- coordination and overall management of WP605 - organization and participation in WP605 telcos and meetings - organization and editing of the D605.011 - communication with other WPs, IOS group, Automotive group - definition of the technology bricks WP605 - Tasks 6.5.8, Task 6.5.9, Task 6.5.10 - alignment with use cases and integration/consideration of their requirements (e.g. through joint workshops) - work on all TTTech technology bricks started (requirements, concept, system design and implementation/realization of first system parts) - description to the relevant tasks of TTTech in D605.011	First deliverable D605.011 was delayed but without effect on WP605 progress, therefore no corrective actions needed
ES	65_UC3M	1_02	UC3M planned and started the dissemination and exploitation activities. Some dissemination activities have been performed. A paper written with REUSE has been done and pending for acceptance/rejection in a conference.	UC3M contributed preparing the CRYSTAL Dissemination Plan and Exploitation Plan V1 including the dissemination and exploitation activities planned for the first stage of the project. Also, material for INCOSE SYMP 2014 and CSDM 2014 has been done and will be ended for both conferences.	no deviatons	0	1	Participation and organization of papers, submissions and preparation of presentations.	Additional effort in order to disseminate as soon as possible
ES	65_UC3M	2_04	UC3M has been analyzing the use cases and its refinements according to their needs. UC3M also contributes with the study of the integration with other tools and the IOS.	UC3M collaborated in the first list of user needs, analysis and ranking.	no deviatons	1	1	Participation in meetings, workshops with users and analysis of documents.	
ES	65_UC3M	6_07	UC3M has been working in the ontology definition, structure, methodology and process. In the boilerplates brick advances in formalization has been made and analysis of the Cesar project CCC specification studied. UC3M has studied the user needs based on IOS.	UC3M collaborated with the deliverables in the work package for ontology representation, boilerplates, formalization and requirements assessment. Research of some OSLC services concerning Requirements Quality and Ontology Management.	Founding arrived late from the National Funding Authorities, personal could not be contracted on time.	22	15	Participation in meetings, workshops with users and analysis of documents. Planning and design of deliverables.	We will increase efforts during the second and third year of the project.
DE	66_ALU-FR	3_02	We have explored a number of engineering methods delivered by project partners. Based on this information, we have identified an initial set of artifacts relevant for the data model and their interdependencies. In particular, we have investigated the data-flow between the models stored in Enterprise Architect and PTC Integrity. We put a special attention on interconnections with related standards like e.g. OSLC, RDF, FOAF, Dublin Core, etc. which should significantly ease the integration cost of CRYSTAL IOS with other standards and thus increase the expected industry acceptance and visibility.	Initial data model featuring artifacts from Enterprise Architect and PTC Integrity.	no deviatons	12	18		
IT	67_UNIGE-DITEN	3_05	We have started and completed the targeted use case modeling according to the ISO 26262 standard. We contributed to the timely completion of the period's deliverable.	Definition of the SysML models for the targeted system (using Enterprise Architect). Definition and simulation of the Simulink model of the targeted system. Completion and submission of deliverable D305.011-Milestone Report - V1.	No deviations.	7	9	We have employed the personnel needed for reaching the reported results. The increase in MMs is due to the modeling work actually needed. However, we have met the budget constraints.	Increase in MM expenditure, without increasing the budget.
IT	68_UNIFE-D-II	5_01	The general objective of UNIFEDII in WP5.1 is to contribute to the automatic generation of test cases in order to alleviate the high effort (in terms of costs and time) required by the V&V activities in the rail domain. Specifically, UNIFEDII in collaboration with SUN has contributed to the task T1 to the definition of requirements for brick 5.1 and to the collection of state-of-art modeling methodologies and enabling techniques; and to the task T2 to the harmonization of requirements. A high level definition of the test case generation process has been also provided.	A map of the enabling modeling approaches and technologies which may be used in the development of the tools supporting the test generation process has been provided. A high level definition of the test generation process is available.	no deviatons	7,26	7,26	Resources have been used as planned. In particular for the state-of-the art analysis of modelling and enabling technologies, definition and harmonization of requirements.	
IT	68_UNIFE-D-II	6_01	Preliminary investigation of existing interoperability specifications coming from the CESAR, MBAT projects.		no deviatons	3,1	2,1		

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IT	68_UNIFE D-II	6_02	UNIFEDII has contributed to the analysis and revision of the Platform Builder Specification, and to the revision of the PB meta-model specifications, also on the basis of the long term experience in other projects like COSMIC, a public-private laboratory with industrial partners of the Finmeccanica group in the domain of critical embedded systems.	Review of deliverables D602.011 and D602.021	no deviatons	5	4,3	Resources have been spent mainly in the cooperation with ALA on the analysis and review of the state of the art, and in the revision of: the SEE requirements, the meta-model specification, the functional and non-functional requirements for the Platform Builder, as well as requirements related to interfaces and use cases, in view also of the PB applicability in the mission-critical systems domain. Participation to a meeting at ALA in Turin, and to regular teleconferencing sessions.	
IT	68_UNIFE D-II	6_03	UNIFEDII has contributed to the task 6.3.1 working at: 1) a survey about the needs and the state of practice in industry of model-based engineering and model-based system analysis methods (questionnaire), and 2) the definition of a methodology for test case generation and the background related to the main themes addressed by this research activity. As for the point 2) the methodology being developed in collaboration with SUN envisages: a) the definition of a proper formal state-based language to be used for modeling the system behavior and formalize the requirements (from which the test specifications are obtained); b) the definition of Test Specification Patterns which provide general reusable models for recurrent classes of requirements; c) the development of a domain specific modeling language (Intermediate DSML) both as the target language of model transformation engines from the state-based models and as the source language to different model checkers. The activities related to the definition of the state based Language are conducted within the WP6.12. A first set of test specification patterns has been defined within the WP6.3.	Survey (questionnaire). High level definition of the test case generation methodology. A set of Test Specification Patterns.		2,2	2,2	Resources have been used as planned. In particular to participate at the setup of the questionnaire, to work at the definition of the test case generation methodology and at the definition of a first set of patterns.	
IT	68_UNIFE D-II	6_08	Analysis of relevant tools (e.g., IBM Rational DOORS, IBM Rational Rhapsody) and standards () in the field of Embedded Systems Lifecycle Management.	Preliminary study for supporting technology selection.	no deviatons	1	0,4		
IT	68_UNIFE D-II	6_12	The contribution of UNIFEDII to WP6.12 addresses the objective of reducing the validation and test effort, in particular the time needed for the definition of system level tests. Specifically, in task T6.12.2 (Rail model implementation and assessment) UNIFEDII in collaboration with SUN is developing a test case generation process and a hierarchical state machines formalism to be used in verification contexts. The language peculiarity mainly resides in the semantics of fork-and-join which allows dynamic (bounded) instantiation of machines (processes).	Syntax and semantics of the constructs to model the control flow. A first application to UCS modeling has been made. First results related to the test case generation process definition have been described in a paper accepted for publication on the International Journal on Software Tools for Technology Transfer (STTT).	no deviatons	33,4	33,4	Resources have been used as planned. In particular for the definition of a formal language (extension of hierarchical state machines) to model railway control systems and requirements.	
FR	69_Valeo-F	3_06	We have worked to define our user story...which is based on an engine controller. A usable part of the application has been identified to create a dedicated specification. Microcontroller selection checklist has been created and a target HW is now identified. Nevertheless, It remains unclear what contribution to Use Case and IOS we can bring to the project as and therefore the deliverable is still not completed Deliverables D306.010 Use Case Definition not done and D306.021 Milestone Report - V1.	D306.021 Milestone Report - V1	IOS contribution not clear	11	10		A meeting with Bert Kehrens is planned to agree on report content
FR	69_Valeo-F	3_07	We have contributed to the description of the public use case ;with a description of our use case. Moreover,since WP3.7 has been functioning as a forum for automotive coordination, we have participated in regular telephone meetings discussing common interoperability challenges in the automotive domain.		no deviatons	0,1	0,1		
FR	69_Valeo-F	3_08	We contributed to the state-of-the-art deliverable on automotive ontologies with a chapter on EAUTOSAR	AUTOSAR section in D308.010.	no deviatons	0,1	0,1		

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SE	71_VOLVO	1_01	We have participated in the project management activities such as attending Technical Board Meetings and providing progress reports for the national funding authorities. We also participated as technical representatives for the automotive domain at the interim review.	Progress reports for the national funding authorities.	No deviation.	0,7	0,4		
SE	71_VOLVO	1_02	We contributed to the dissemination and exploitation plan with input on activities we plan to perform within the project. We attended the ARTEMIS co-summit in Stockholm Dec. 2013. We presented interoperability in CRYSTAL at "Elektronik i fordon" in Gothenburg Apr. 2014.	Entries in D102.010 Dissemination Plan and D102.040 Exploitation Plan - V1.	No deviations	0,3	0,1		
SE	71_VOLVO	3_00	We participated in coordination of the automotive domain.		Coordination work is mainly performed through the automotive public use case (WP3.7).	1	0,1		
SE	71_VOLVO	3_01	We have worked on defining our use case in more detail. The use case expresses the development activities and tools currently used at Volvo seasoned with additional activities and tools that would enhance the current process. Apart from describing the work flow, the use case description also outlines the interoperability challenges that we need to solve in order to achieve a tightly integrated workflow. The use case definition has involved the CRYSTAL tool vendors whose tools are included in the workflow in order to establish a good collaboration spirit. To be able to get concrete discussions and results, sharp product data (e.g. models, documentation and code) for the function Adjustable Speed Limiter has been provided for all use case participants to elaborate on. In addition to the use case definition we have also worked on OSLC prototyping in order to learn the technology. We have then started to apply this knowledge on the different interoperability scenarios of our use case. So far we have managed to implement linking of Simulink models to requirements in SystemWeaver through OSLC.	Deliverables D301.010 Use Case Definition and D301.021 Milestone Report - V1. Working OSLC connection between Simulink and SystemWeaver.	No deviations	29	28,6		
SE	71_VOLVO	3_07	We have contributed to the description of the public use case with a description of timing analysis as performed in our use case. Moreover, since WP3.7 has been functioning as a forum for automotive coordination, we have participated in regular telephone meetings discussing common interoperability challenges in the automotive domain.	Presentation on interoperability challenges regarding Simulink - SystemWeaver connection. Contribution to deliverable D307.011 Milestone Report V1 - Public Use Case Automotive.	No deviations.	1	0,5		
SE	71_VOLVO	3_08	We contributed to the state-of-the-art deliverable on automotive ontologies with a chapter on EAST-ADL.	EAST-ADL section in D308.010.	No deviations.	1	0,1		
SE	71_VOLVO	6_01	We participated in SP6 telcos. We have reviewed deliverables D613.011 and D613.021 on simulation models.		We have focused on our use case in WP3.1.	2	0,2		
SE	71_VOLVO	6_05	We have contributed to deliverable D605.011 Specification, Development and Assessment for AUTOSAR Tools & Components with a section on brick 6.5.2 EAST-ADL/AUTOSAR interface.	Contribution in D605.011.	We have focused on developing our use case in WP3.1 in order to understand how the EAST-ADL/AUTOSAR interface is to be used.	3	0,4		We have increased the resources in our CRYSTAL team and plan to start implementing our brick before the summer.