



Periodic Management Report

Brussels, 14 February 2012

ARTEMIS Call 2009 – SP6100204






Periodic Management Report

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- Final Management Report
- July 1st 2011 – December 31st 2011
- Report of objectives vs. achieved results

WP2 main results (1/2)




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- Objectives:
 1. definition of the SPD requirements and specifications of each layer, as well as of the overall system on the basis of the application scenario; 
 2. definition of proper SPD metrics to assess the achieved SPD level of each function, as well as of the overall system; 
 3. definition of SHIELD system architecture. Identification of the SPD layers functionalities, their intra and inter layer interfaces and relationships. 
- All deliverables expected for WP2 have been delivered.

- Clearly significant and tangible results are:
 - SPD Node, Network, Middleware and Overlay architecture requirements specification
 - High-level Requirements specification for the SPD metrics
 - Additional results:
 - Top-level requirements specification for the application scenario
 - High-level pSHIELD system requirements specification
 - High-level SPD requirements specification for Node, Network, Middleware and Overlay Functional Layer
 - High-level pSHIELD reference system architecture requirements specification
 - Intra-layer and inter-layer interfaces definition to ensure the correct communication among the different SPD modules.

WP3 main results (1/2)

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- Objectives:
 1. Select a representative set of SPD technologies at Node level; 
 2. Develop appropriate composability mechanisms at such level; 
 3. Deliver a SPD node prototype. 
- All deliverables expected for WP3 have been delivered.



WP3 main results (2/2)

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- Clearly significant and tangible results are:
 - Power Node PCB Layout design completed.
 - Development and implementation of application: Dynamic Reconfigurable Node
 - Design and development of DAQ Adapter hardware board.
 - Design of a protection circuit for a power supply (AC)
 - Additional results:
 - Development of iPhone complementary solution. The micro/nano node types have been integrated into the Telenor platform, privacy and dependability has been demonstrated. Security (man in the middle attack) has been targeted on the micro node (Sun Spot).
 - Design of an autonomy power supply system based on fuel cells, solar panels and turbines to feed continuously a system up to 500W and ensure its autonomy during ten days if the energy harvesting system fails.
 - Manufacture of two different protection boards based on thermal fuse varistors or varistors and a gas discharge. Several tests have been carried out in order to ensure that these protections can avoid damages into the system.
 - Real-world adaptations of “trusted boot” and “fail-safe” operations have been added to the power node.

WP4 main results (1/2)

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- Objectives:
 1. Improve SPD technologies at Network level; 
 2. Develop potential prototype to be integrated in a demonstrator 
- All deliverables expected for WP4 have been delivered.




WP4 main results (2/2)

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- Clearly significant and tangible results are:
 - Realization and adaptation of HW and SW of multicore platform for the cognitive algorithm validation on embedded system
 - Implementation of a Cognitive Radio Node software
 - Additional results:
 - pShield simulator development: the scenario consists in a number of entities (agents) carrying a mobile device which is able to transmit and receive data at 3 different frequencies (namely 900, 1800 and 1900 MHz) to a centralised control centre.
 - Study of the requirements for lightweight link-layer secure communication in wireless sensor network scenarios and the design and development of proper schemes focusing on confidentiality. More specifically, intrusion detection systems (IDS) have been studied.
 - Study of the resource footprint (energy consumption among them) and its impact on performance on some commercially available devices.

WP5 main results (1/2)




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- Objectives:
 1. Define a common semantic to describe the SPD interfaces and functionalities; 
 2. Introduce the Overlay concepts and functionalities; 
 3. Develop a prototype to be integrated in the demonstrators. 
- All deliverables expected for WP5 have been delivered.

WP5 main results (2/2)

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- Clearly significant and tangible results are:
 - Prototypes of ontologies;
 - WP5 Middleware pilot;
 - Additional results:
 - Formal pSHIELD Semantic Model, realized in OWL language
 - Methodology to derive the pSHIELD meta-model
 - Inferential engine for composition compliant with the Common Criteria approach
 - Implementation, in an open source environment (OSGI), of a working middleware providing the core pSHIELD services.
 - Interaction of the pSHIELD middleware with external nodes with proper libraries
 - Definition of the Security Agent software module implementing the Common Criteria composition
 - Analysis of the Policy Based solutions candidates for the pSHIELD implementation.
 - Simulation assessment on the performance of a policy-based-approach
 - Mathematical formulation of the context-aware SPD composition based on the Hybrid Automata theory, supported by Matlab simulations.

- Objectives:
 1. Integration of Software & Hardware components; 
 2. Validation of implemented solution through an iterative and incremental process; 
 3. Demonstration of the proposed architecture with pilot demonstrators. 
- Deliverables expected for WP6 have been delivered.
 - Activities, not fully completed, validate the expectations of tangible results:
 - Definition of the use case environment in the form of freight trains transporting hazardous material
 - Demonstration of the usability and transmission of data produced by sensors, in the service of specific use case scenarios as critical infrastructure protection
 - Exploration of the platform's synthetic capability and composability, through possible synergies and fusion/cooperation of components

- Objectives:
 1. Industrial Dissemination, 
 2. Industrial Exploitation of results. 
- All deliverables expected for WP7 have been delivered.
 - Clearly significant and tangible results are:
 - Industrial dissemination established an ecosystem for industrial applications of pSHIELD with Telenor, ABB, the Norwegian Defence Research Establishment (FFI) and the Italian Ferrovie dello Stato
 - Excellent scientific dissemination: 7 scientific articles published in high quality conferences, 6 PhD thesis on going
 - The pSHIELD sensor platform was deployed in the ESIS electrical motorbike and the measurement vehicle of the Norwegian Rail Authority (JBV), moreover another phase of developments together with the telecom and power industry is foreseen in order to develop closer to actual industrial needs.
 - Exploitation plan has been completed: some exploitation results may be achieved as a result of pSHIELD work continuation in frame of nSHIELD project.

Project Management

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- **Project meetings**
 - 10 within the reporting period. (3 FF 2 Oslo 1 Rome ; 7 PHC)
- **Web tools are used to store and share information and documentation:**
 - <http://bscw.juartemis-pshield.eu>
 - <http://pshield.unik.no>
 - <http://www.pshield.eu>
- **Project planning and status**
 - The project activities have been concluded
 - 19 out of 19 deliverables released
- **Encountered problems**
 - HAI and ATHENA had difficulties because of economic crisis in Greece

Measures on how pSHIELD has reached the scope

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- According to the Quality Control Guidelines, the evaluation shows that pSHIELD has received good results.
- The scope has been sufficiently outlined in the majority of areas
 - Performed R&D approaches received results in line with state of the art
 - Prototypical development demonstrates key features
 - The map of the business ecosystem contains identification of playmakers that have been contacted
 - Key players have been identified and contacted
 - Dissemination has been performed
- Few areas are identified for improvement
 - The architecture for interworking was specified with delay, but the selected semantic approach allows handling of heterogeneous components
 - Dissemination through public documents is still ongoing
 - The map of the business ecosystem has not been explicitly drawn, but key players have been identified
 - Feedback from the scientific dissemination is not documented

PM status table per WP & Partner (M14-M19)

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		Total	SESM	ASTS	ED	ETH	SCOM	TRS	UNIGE	UNIROMA1	AS	TECNALIA	MGEP	ATHENA	HAI	CWIN	MAS	THYIA	CS
Work package 1: Management	Actual	23,87	16,00	2,00	0,60	0,50	0,50	0,25		0,40	0,50	0,10	0,12				2,00		0,90
	Planned	21,37	16,00	2,00	0,60	0,50	0,50	0,25		0,40	0,00	0,10	0,12				0,00		0,90
Work package 2: SPD Metrics, requirements and system design	Actual	4,55		1,85								1,00			1,00			0,50	0,20
	Planned	4,55		1,85								1,00			1,00			0,50	0,20
Work package 3: SPD Node	Actual	41,80	10,00			9,00					8,50					2,50		10,50	1,30
	Planned	30,80	10,00			9,00					6,00					0,00		4,50	1,30
Work package 4: SPD Network	Actual	11,90					4,00		1,00			0,10	1,00					3,10	2,70
	Planned	10,40					2,50		1,00			0,10	1,00					3,10	2,70
Work package 5: SPD Middleware & overlay	Actual	30,91			12,90			2,00		4,00								5,51	6,50
	Planned	30,91			12,90			2,00		4,00								5,51	6,50
Work package 6: Platform integration, validation & demonstration	Actual	72,44	9,00	17,94	8,00	2,00	0,50							3,50	5,00	3,50	0,50	14,00	8,50
	Planned	95,94	9,00	17,94	8,00	2,00	0,50							4,00	20,00	5,00	1,00	20,00	8,50
Work package 7: Support activities	Actual	16,23	4,00	3,75	1,00		1,00					0,13	0,10	0,50		0,50	1,00	3,05	1,20
	Planned	15,73	4,00	3,75	1,00		1,00					0,13	0,10	0,50		1,00	0,00	3,05	1,20
	Actual total	201,70	39,00	25,54	22,50	11,50	6,00	2,25	1,00	4,40	9,00	1,33	1,22	4,00	6,00	6,50	3,50	36,66	21,30
	Planned total	614,00	89,00	50,00	63,00	60,00	25,00	15,00	12,00	24,00	21,00	10,00	9,00	19,00	30,00	26,00	9,00	84,00	68,00
	% of the planned	33%	6%	4%	4%	2%	1%	0%	0%	1%	1%	0%	0%	1%	1%	1%	1%	6%	3%

Historical PM Graph

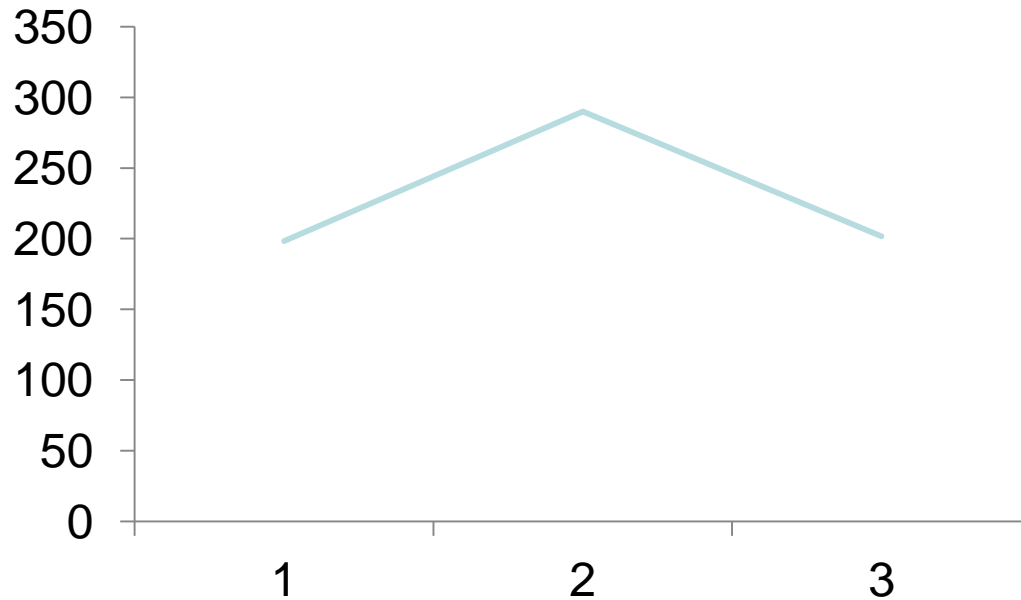
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Total Project MM 689

Planned MM 614

Extra Effort MM 75

Man per Month VS Time

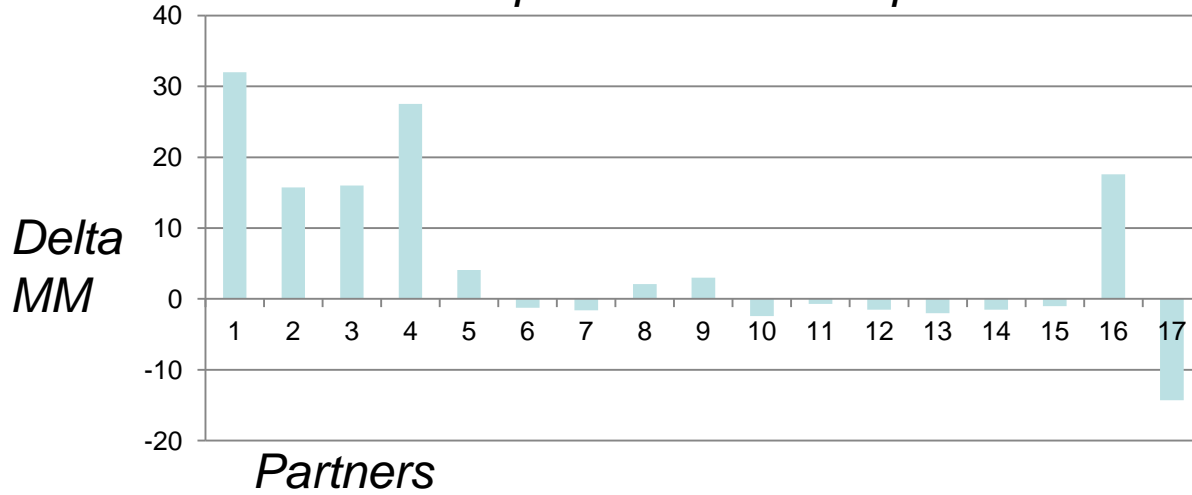


Periodical Project Report

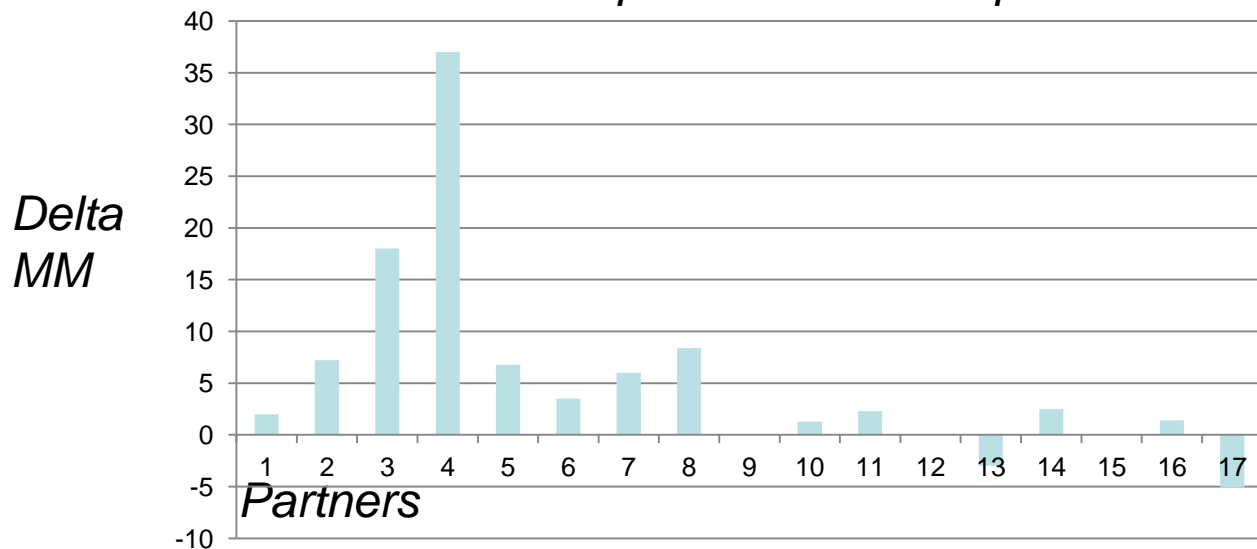
Project Effort Vs Periodic Report

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Delta Man per Month 1° - 2° period



Delta Man per Month 2° - 3° period



PM status table per WP & Partner (M1-M7)

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		Total	SESM	ASTS	ED	ETH	SCOM	TRS	UNIGE	UNIROMA1	AS	TECNALIA	MGEP	ATHENA	HAI	CWIN	MAS	THYA	CS
Work package 1: Management	Actual	12,12	2,00	1,00	1,17	1,00	2,00	0,50				1,00	0,25				0,50	1,50	1,20
	Planned	29,45	18,00	1,70	1,80	1,00	2,00	0,50				1,00	0,25				0,00	1,50	1,70
Work package 2: SPD Metrics, requirements and system design	Actual	62,46	4,00	16,00	5,96	11,00	0,70					3,00		3,00	5,00	1,50	0,50	10,00	1,80
	Planned	77,70	9,00	23,00	8,00	11,00	1,00					2,00		3,00	6,00	2,00	0,50	10,00	2,20
Work package 3: SPD Node	Actual	44,50	2,00			9,00					6,00			2,00		4,00	1,00	7,00	13,50
	Planned	70,90	14,00			21,00					6,00			2,00		4,00	2,50	7,00	14,40
Work package 4: SPD Network	Actual	26,90					6,00		8,60			0,00	4,00	0,50				0,50	7,30
	Planned	31,20					9,00		9,00			1,00	4,00	0,50				0,50	7,20
Work package 5: SPD Middleware & overlay	Actual	44,88			17,38			6,50		10,70		1,00				2,00		1,30	6,00
	Planned	59,90			26,50			6,50		13,20		1,00				3,00		1,30	8,40
Work package 6: Platform integration, validation & demonstration	Actual	4,00			0,00											2,50	1,50		0,00
	Planned	10,70			4,00											3,00	3,50		0,20
Work package 7: Support activities	Actual	3,40	1,00		0,00											0,50	1,00	0,20	0,70
	Planned	5,70	3,00		1,00											0,50	0,50	0,20	0,50
Actual total		198,26	9,00	17,00	24,51	21,00	8,70	7,00	8,60	10,70	6,00	5,00	4,25	5,50	5,00	10,50	4,50	20,50	30,50
Planned total		614,00	89,00	50,00	63,00	60,00	25,00	15,00	12,00	24,00	21,00	10,00	9,00	19,00	30,00	26,00	9,00	84,00	68,00
% of the planned		32%	1%	3%	4%	3%	1%	1%	1%	2%	1%	1%	1%	1%	1%	2%	1%	3%	5%

PM status table per WP & Partner (M8-M13)

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		Total	SESM	ASTS	ED	ETH	SCOM	TRS	UNIGE	UNIROMA1	AS	TECNALIA	MGEP	ATHENA	HAI	CWIN	MAS	THYIA	CS
Work package 1: Management	Actual	28,38	18,00	1,00	2,40	1,50	1,50	0,25		1,20	0,50		0,13				0,50	0,50	0,90
	Planned	27,78	16,00	1,00	3,00	2,00	1,50	0,25		2,00	0,50		0,13				0,00	0,50	0,90
Work package 2: SPD Metrics, requirements and system design	Actual	41,60	3,00	9,00	8,00	12,00	0,30					2,30			3,00	1,50		1,50	1,00
	Planned	42,60	3,00	10,00	8,00	12,00	0,30					2,30			3,00	1,50		1,50	1,00
Work package 3: SPD Node	Actual	77,20	18,00			33,00					8,50			2,00		2,50	0,50	9,50	3,20
	Planned	85,50	18,00			42,00					7,00			2,00		2,50	1,00	9,50	3,50
Work package 4: SPD Network	Actual	28,50					10,50		7,00			0,10	3,00	1,50				4,40	2,00
	Planned	23,00					9,00		3,00			0,10	2,00	1,50				4,40	3,00
Work package 5: SPD Middleware & overlay	Actual	55,89			24,10			5,50		11,60						2,00	1,00	4,19	7,50
	Planned	71,19			26,50			5,50		22,00						3,00	0,00	4,19	10,00
Work package 6: Platform integration, validation & demonstration	Actual	46,98	0,00	20,75	5,00	2,00	0,50									2,50	0,50	15,23	0,50
	Planned	66,00	2,00	39,00	8,00	4,00	0,50									2,50	0,50	5,00	4,50
Work package 7: Support activities	Actual	11,45	2,00	2,00	1,00							0,20	0,40	0,50		0,50	1,00	2,75	1,10
	Planned	10,80	2,00	2,00	2,00							0,20	0,25	0,50		0,00	0,00	2,75	1,10
Actual total		290,00	41,00	32,75	40,50	48,50	12,80	5,75	7,00	12,80	9,00	2,60	3,53	4,00	3,00	9,00	3,50	38,07	16,20
Planned total		614,00	89,00	50,00	63,00	60,00	25,00	15,00	12,00	24,00	21,00	10,00	9,00	19,00	30,00	26,00	9,00	84,00	68,00
% of the planned		47%	7%	5%	7%	8%	2%	1%	1%	2%	1%	0%	1%	1%	0%	1%	1%	6%	3%

PM status table per WP & Partner (Total)

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		Total	SESM	ASTS	ED	ETH	SCOM	TRS	UNIGE	UNIROMA1	AS	TECNALIA	MGEP	ATHENA	HAI	CWIN	MAS	THYIA	CS
Work package 1: Management	Actual	64,37	36,00	4,00	4,17	3,00	4,00	1,00	0,00	1,60	1,00	1,10	0,50	0,00	0,00	0,00	3,00	2,00	3,00
	Planned	61,50	36,00	3,00	3,00	2,00	4,00	1,00	0,00	2,00	1,00	2,00	0,50	0,00	1,00	0,00	1,00	2,00	3,00
Work package 2: SPD Metrics, requirements and system design	Actual	108,61	7,00	26,85	13,96	23,00	1,00	0,00	0,00	0,00	0,00	6,30	0,00	3,00	9,00	3,00	0,50	12,00	3,00
	Planned	76,00	9,00	14,00	8,00	12,00	1,00	0,00	0,00	0,00	0,00	2,00	0,00	3,00	9,00	4,00	0,00	11,00	3,00
Work package 3: SPD Node	Actual	163,50	30,00	0,00	0,00	51,00	0,00	0,00	0,00	0,00	23,00	0,00	0,00	4,00	0,00	9,00	1,50	27,00	18,00
	Planned	143,80	29,00	0,00	0,00	42,00	0,00	0,00	0,00	0,00	20,00	0,00	0,00	4,00	0,00	7,00	2,80	21,00	18,00
Work package 4: SPD Network	Actual	67,30	0,00	0,00	0,00	0,00	20,50	0,00	16,60	0,00	0,00	0,20	8,00	2,00	0,00	0,00	0,00	8,00	12,00
	Planned	61,00	0,00	0,00	0,00	0,00	18,00	0,00	12,00	0,00	0,00	1,00	8,00	2,00	0,00	0,00	0,00	8,00	12,00
Work package 5: SPD Middleware & overlay	Actual	131,68	0,00	0,00	54,38	0,00	0,00	14,00	0,00	26,30	0,00	1,00	0,00	0,00	0,00	4,00	1,00	11,00	20,00
	Planned	116,00	0,00	0,00	37,00	0,00	0,00	14,00	0,00	22,00	0,00	1,00	0,00	4,00	0,00	7,00	0,00	11,00	20,00
Work package 6: Platform integration, validation & demonstration	Actual	123,42	9,00	38,69	13,00	4,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	3,50	5,00	8,50	2,50	29,23	9,00
	Planned	128,50	9,00	29,00	13,00	4,00	1,00	0,00	0,00	0,00	0,00	3,00	0,00	5,00	20,00	6,00	4,50	25,00	9,00
Work package 7: Support activities	Actual	31,08	7,00	5,75	2,00	0,00	1,00	0,00	0,00	0,00	0,00	0,33	0,50	1,00	0,00	1,50	3,00	6,00	3,00
	Planned	27,20	6,00	4,00	2,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,50	1,00	0,00	2,00	0,70	6,00	3,00
Actual total		689,96	89,00	75,29	87,51	81,00	27,50	15,00	16,60	27,90	24,00	8,93	9,00	13,50	14,00	26,00	11,50	95,23	68,00
Planned total		614,00	89,00	50,00	63,00	60,00	25,00	15,00	12,00	24,00	21,00	10,00	9,00	19,00	30,00	26,00	9,00	84,00	68,00
% of the planned		112%	100%	151%	139%	135%	110%	100%	138%	116%	114%	89%	100%	71%	47%	100%	128%	113%	100%

PM status table per Partner (Total)

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	Total	SESM	ASTS	ED	ETH	SCOM	TRS	UNIGE	UNIROMA1	AS	TECNALIA	MGEP	ATHENA	HAI	CWIN	MAS	THYIA	CS
Actual total	689,96	89,00	75,29	87,51	81,00	27,50	15,00	16,60	27,90	24,00	8,93	9,00	13,50	14,00	26,00	11,50	95,23	68,00
Planned total	614,00	89,00	50,00	63,00	60,00	25,00	15,00	12,00	24,00	21,00	10,00	9,00	19,00	30,00	26,00	9,00	84,00	68,00
% of the planned	112%	100%	151%	139%	135%	110%	100%	138%	116%	114%	89%	100%	71%	47%	100%	128%	113%	100%
Project share	100%	13%	11%	13%	12%	4%	2%	2%	4%	3%	1%	1%	2%	2%	4%	2%	14%	10%

