Appendix A

The following table lists the scientific subjects for mobility as described in CD-IA-2.1.4 (revision of the subjects defined in deliverable CD-IA-2.1.2).

Scientific Subject ID	***Scientific Subjects Titles***	***Common & Complementary Competencies***
1	Business Processes and protocols	Business Process Management, Distributed Business Processes, Business Processes & Protocols, E-Business, Business Process Analysis, Monitoring & Auditing, Business Protocol Languages, Multi-Party Business Protocols, Adaptation in Business Protocols, Service Networks, Business Transactions
2	Cloud and grid computing	Grid Scheduling, Grid Workflow, Grid Brokering, Load Balancing & Scheduling, Knowledge Sharing Networks
3	Adaptation	Self-Adaptation, Dynamic Adaptation of Parallel Programs, Engineering Adaptive Component-Based Systems, Adaptive Web Services, Adaptation in Business Protocols, Adaptation of Service Compositions, Engineering Adaptive Service-Based Systems, Self-Organising Systems, Self-Healing, Flexible & Self-Healing Web Services
4	Evolution	Service Evolution, Software Architecture Evolution, Dependable Evolvable Pervasive Service Engineering
5	Quality of Service	Quality Assurance, Quality of Service, Quality of Service in Component-Based Systems, Web Service Orchestration & QoS Optimisation, Monitoring QoS Metrics of Web Services , Data & Information Related Quality, Data-Related Quality
6	Service Discovery	Semantically-Enriched Service Discovery Mechanisms, Web Service Retrieval, Service Registries, Context-Aware Invocation of Web Services, Dynamic Binding & Invocation of Web Services, Discovery of Human-Based Services
7	Service Composition	Model-Driven Service Composition, Service

		Composition, Web Service Orchestration & QoS Optimisation, Service Choreography & Orchestration, Service Networks
8	Negotiation and QoS Agreement	Service Level Agreement (SLA) Negotiation, Quality Assurance Negotiation & QoS Agreement, Estimation of the Quality of Service Providers
9	Monitoring and Prediction	Monitoring, Service-Oriented Monitoring, Monitoring Design Principles & Monitoring Framework, Business Process Analysis, Monitoring & Auditing, Monitoring of QoS Metrics of Web Services, Monitoring of Key Performance Indicators, Prediction of KPIs
10	Lifecycle	Software Processes, Software Architecture, Software Engineering, Software Quality Assurance, Software Product-Line Engineering & Variability Management
11	Requirement Engineering	Requirements Engineering, Requirements & Model-Based Testing, User-Centred Requirements Engineering, User-Centred Requirements Engineering, User Centric Services
12	Service Design and Modelling Methodologies	Service-Centric Systems Engineering, Service Design & Modelling Methodologies, Model-Driven Service Composition, Model-Driven Engineering, Interaction Design & Research, Personalisation
13	Quality Assurance	Software Quality Assurance, Testing, Analysis, Monitoring, Prediction

Table 10. Revised mobility subjects.

	1.1	1.2	1.3	2.1	2.2	2.3
Business Processes and Protocols (2,3)				X		
Cloud and grid computing (7)						X
Adaptation (1)	x	X				
Evolution (4)	X					
Quality of Service (5,12)			X	x	x	x
Service Discovery (17)						X
Service Composition (16)	x				X	
Negotiation and QoS Agreement (10)			X	x	x	x
Monitoring and Prediction (9)		X		x	x	x
Lifecycle (21)	X					
Requirement Engineering (13)	X					
Service Design and Modelling Methodologies (14,18)	X				x	
Quality Assurance (11)			X			

Table 10. Mapping between subjects and WPs.

Appendix B

This section lists all mobility. Only visits with the start date lying within the first 30 months of the project are analyzed. The stays are sorted based on the start date of the stay.

No.	Researcher	Location	Destination	Start date	End date	Duration
1	Georgios Koutras	UOC	Tilburg	06.04.2008	19.04.2008	14
2	Branimir Wetzstein	USTUTT	TUW	07.05.2008	21.05.2008	15
3	Michele Mancioppi	Tilburg	UPM	09.05.2008	20.05.2008	12
4.a, b	Vasilios Andrikopoulos	Tilburg	UCBL	11.05.2008 11.06.2008	18.05.2008 25.06.2008	8 11
5. a, b	Olha Danylevych	USTUTT	UOC	14.05.2008 20.09.2008	28.05.2008 26.09.2008	15 7
6	F. M. Nardini & Gabriele Tolomei	CNR	TUW	09.06.2008	27.06.2008	19
7	Pierluigi Plebani	POLIMI	UOC	06.09.2008	20.09.2008	15
8	Ralph Mietzner[1]	USTUTT	UniDue	29.09.2008	02.10.2008	4
9	Michele Mancioppi	Tilburg	UPM	06.10.2008	16.10.2008	11
10	Andreas Gehlert[2]	UniDue	CITY	15.10.2008	17.10.2008	3
11	Andreas Gehlert & J. Hielscher[3]	UniDue	USTUTT	13.11.2008	14.11.2008	2

[1] The research stay of Ralph Mietzner at UniDue was less than one week as it served the purpose of discussing a very specific issue, namely the combination of previous research of UniDue on variability in software with previous research of USTUTT on variability in software as a service applications. The research stay served as an initial kickoff for further distributed collaboration on that specific issue resulting in a paper at PESOS [1].
[1] Mietzner, Ralph; Metzger, Andreas; Leymann, Frank; Pohl, Klaus: Variability Modeling to Support Customization and Deployment of Multi-Tenant-Aware Software as a Service Applications. In: Proceedings of ICSE 2009 Workshop - Principles of Engineering Service Oriented Systems (PESOS).

[2] The visit to CITY became necessary in order to discuss first ideas of a prospective collaboration between UniDue and CITY (namely wrt. context). In addition, the goal of this first meeting was to agree upon, set up and start writing the joint deliverable PO-JRA-1.1.3.

[3] The research visit at Suttgart was intended to integrate the ideas of three existing papers. This clear focus allowed us to efficiently work on a structure and on the main contents of the envisioned paper, which was later on finalized offline.

12	Luca Cavallaro	POLIMI	USTUTT	07.12.2008	16.12.2008	10
13	Martin Treiber	TUW	Tilburg	16.01.2009	30.01.2009	15
14	Olha Danylevych	USTUTT	Tilburg	07.02.2009	13.02.2009	7
15	Andreas Gehlert	UniDue	USTUTT	02.03.2009	06.03.2009	5
16	Raman Kazhamiakin	FBK	USTUTT	26.05.2009	30.05.2009	5
17	Konstantinos Zachos	CITY	UOC	03.06.2009	16.06.2009	14
18	Andreas Gehlert	UniDue	FBK	07.06.2009	10.06.2009	4
19	Stephen Lane	Lero-UL	CITY	15.06.2009	28.06.2009	14
20	Vanessa Le Roy	INRIA	CITY	15.06.2009	04.09.2009	14
21	François Hantry[4]	UCBL	INRIA	06.07.2009	07.07.2009	2
22	Cinzia Cappiello	POLIMI	CITY	20.07.2009	31.07.2009	12
23	Daniel Dubois	POLIMI	UoC	04.11;2009	14.11.2009	11
24	Voskakis Emmanouil	UoC	POLIMI	09.12.2009	13.12.2009	5
25	Vasilios Andrikopoulos	Tilburg	POLIMI	12.12.2009	18.12.2009	7
26	Deepak Dhungana	Lero	CITY	10.01.2010	23.01.2010	14
27	Michele Mancioppi	Tilburg	USTUTT	15.02.2010	28.02.2010	14
28	Dragan Ivanovic	UPM	TUW	20.02.2010	27.02.2010	8
29	Antonio Bucchiarone	FBK	POLIMI	23.02.2010	26.02.2010	4
30	Sandor Acs	SZTAKI	TUW	21.02.2010	26.02.2010	6
31	Branimir Wetzstein	USTUTT	FBK	21.02.2010	27.02.2010	7
32	Vasilios Andrikopoulos	Tilburg	USTUTT	24.02.2010	01.03.2010	6
33	Atilla Kertész	SZTAKI	CNR	01.03.2010	05.03.2010	5
34	Osama Sammodi	UniDue	CNR	01.03.2010	11.03.2010	11
35	George Baryannis	UoC	CNR	02.03.2010	05.03.2010	4
36	François Hantry	UCBL	Tilburg	14.03.2010	18.03.2010	5
37	Kreshnik Musaraj	UCBL	CNR	18.03.2010	29.03.2010	12
38	Stephen Lane	Lero	CNR	02.03.2009	05.03.2009	4
39	Erwan Daubert	INRIA	UniHH	07.03.2010	19.03.2010	13
40	Philipp Leitner	TUW	USTUTT	08.03.2010	19.03.2010	12
41	Philipp Leitner	TUW	CNR	02.03.2010	05.03.2010	4
42	Kristof Hamann	UniHH	USTUTT	14.03.2010	19.03.2010	6
43	Maurizio Giordano	CNR	INRIA	10.05.2010	15.05.2010	6
44	Martin Treiber	TUW	UPM	16.05.2010	29.05.2010	14
45	Mariana Karmazi	UoC	USTUTT	23.05.2010	28.05.2010	6
46	Andras Micsik	SZTAKI	USTUTT	24.05.2010	27.05.2010	4
47	Laszlo Kovacs	SZTAKI	USTUTT	24.05.2010	27.05.2010	4
48	Attila Kertesz	SZTAKI	USTUTT	24.05.2010	27.05.2010	4
49	Noel Carroll	LERO	Tilburg	31.05.2010	11.06.2010	12
50	Noel Carroll	Lero	UCBL/Paris	08.06.2010	11.06.2010	4
51	Manolis Voskakis	UoC	UCBL/Paris	08.06.2010	13.06.2010	6
52	Mariana Karmazi	UoC	UCBL/Paris	08.06.2010	13.06.2010	6
53	A.K.M. Rafiqul Haque	Tilburg	Lero	19.06.2010	10.07.2010	22
54	Olha Danylevych	USTUTT	UoC	21.06.2010	05.07.2010	15
55	Vasilios Andrikopoulos	Tilburg	UCBL/Paris	28.06.2010	09.07.2010	12
56	Marc Oriol Hilari	UPC	POLIMI	04.07.2010	09.07.2010	6
57	Dragan Ivanovic	UPM	TUW	20.07.2010	23.07.2010	4
58	Michele Mancioppi	Tilburg	USTUTT	03.08.2010	24.08.2010	22
59	François Hantry	UCBL	CNR	16.09.2010	19.09.2010	4
60	Voskakis Emmanouil	UoC	UCBL/Paris	08.06.2010	13.06.2010	6

[4] The research stay lasts two days because it was mainly concerned with the presentation of an overview of concepts of model driven engineering and verification tools and discussion on related tools. Two days were sufficient to perform the analysis of existing approaches since the material was already prepared.

61	Mariana Karmazi	UoC	USTUTT	10.07.2010	18.07.2010	9
62	Dragan Ivanovic	UPM	TUW	02.10.2010	11.10.2010	9
63	Thomas Röblitz	T.U. Dortmund	POLIMI	13.10.2010	15.10.2010	3
64	Eric Schmieders	UniDue	POLIMI	14.10.2010	15.10.2010	2
65	Andras Micsik	SZTAKI	CITY	02.11.2010	05.11.2010	4
66	Attila Kertész	SZTAKI	CITY	02.11.2010	09.11.2010	8
67	Pierluigi Plebani	POLIMI	Tilburg	14.11.2010	17.11.2010	4
68	Salima Benbernou	UCBL (Paris)	Tilburg	07.10.2010	08.10.2010	2
69	Ali Imran Jehangiri	T.U. Dortmund	POLIMI	13.10.2010	15.10.2010	3

Table 11: List of Mobility Stays

Appendix C

The following table (Table 12) gives, for each performed visit (in the rows), the covered scientific subjects for mobility, as specified in the previous Deliverable CD-IA-2.1.2. The table column numbers refer to the list of scientific subjects (Appendix A). Visits from 1 to 22 are those that occurred in the first 18 months of the project and already reported in CD-IA-2.1.3.

Id	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1	X												
2	X				X		X		X				
3	X												
4.a				X								X	
4.b				X								X	
5.a	X						X					X	
5.b	X						X					X	
6	X					X	X					X	
7						X		X					
8										X	X	X	
9	X												
10			X						X	X			
11			X				X			X			
12			X				X						
13									X				
14	X						X						
15	X									X	X		
16	X		X		X		X		X			X	
17	X				X		X		X				
18											X	X	
19	X				X		X		X				
20	X		X			X	X						
21	X												
22	X					X							
23	X		X									X	
24	X		X									X	
25							X						
26				X	X								
27							X						
28							X		X				
29			X						X		X		
30									X				
31					X								X

32			X	X									
33			X	X									
34	X								X				
35			X										
36	X												
37	X												
38			X										
39	X		X						X				
40			X				X	X					
41	X												
42	X							X					
43			X										
44							X						
45	X						X						
46								X					
47							X						
48							X						
49	X						X						
50	X												
51	X						X						
52	X						X						
53	X						X						
54							X						
55				X									
56					X				X				
57					X		X		X				
58	X												
59	X												
60	X				X		X						
61							X						
62					X								
63								X					
64			X										
65			X		X								
66			X		X			X					
67				X		X					X		
68				X				X					
69								X					

Table 12: Research Topics of Visits – Scientific Subjects for Mobility

Table 16 shows which of the competencies that partners have declared in the Knowledge Model (glossary, see CD-IA-2.1.2) have been exploited during the visits. For example, for the mobility

initiative number 1, titled Service Systems and Business Process Management, UoC's expertise in service networks has been combined with Tilburg's competency in business processes and service composition. Note that only the partner competencies relevant for the topic have been listed here. The table clearly indicates a synergy of research at different institutions.

Id	Research topic	Partner 1	Competencies of partner 1	Partner 2	Competencies of partner 2
1	Service Systems and Business Process Management	UoC	Service networks	Tilburg	Business processes, service composition
2	Monitoring and Analysis of Influential Factors of Business Process Performance	USTUTT	Performance indicators Monitoring Process analysis	TUW	KPI Monitoring
3	Business Protocol Soundness	Tilburg	Business Process Languages Process execution	UPM	Business protocols Compatibility
4 a, b	Controlled Evolution of Services	Tilburg	Service choreography Service evolution	UCBL	Business protocol languages
5 a, b	Service Networks on top of the BPM layering stack	USTUTT	Business processes Modeling Performance indicators	UoC	Level of services Service specification
6	Internet of Services (IoS): bring human inside the workflow of software services	CNR	Grid workflow	TUW	Service Discovery, Service Architectures
7	Semantic based negotiation	POLIMI	Service negotiation	UoC	Ontologies for services Semantics
8	Configuration and deployment of SaaS applications using techniques from software product lines	USTUTT	Enterprise application integration ESB	UniDue	SBA
9	Replaceability and conformance analysis for business protocols	Tilburg	Formal specification Service analysis	UPM	Business protocols Compatibility
10	Exploiting codified human interaction (HCI) and context knowledge for engineering, monitoring and adapting service-based applications	UniDue	Requirements analysis	CITY	Human computer interaction Requirement analysis engineering
11	Integrating requirements engineering, online testing and adaptation of workflows	UniDue	Requirements analysis/engineering Testing	USTUTT	Integration Adaptation mechanisms

12	Comparison between *SCENE* and BPEL'n'Aspects	POLIMI	Design for adaptation	USTUTT	Business processes
13	Calculating Service Fitness in Service Networks	TUW	KPI monitoring	Tilburg	QoS monitoring
14	Service Networks and Service Compositions	USTUTT	Service choreography Modeling Performance indicators	Tilburg	Service choreography Service specification Evolution
15	The interface between requirements engineering and workflows	UniDue	Requirement engineering	USTUTT	Workflow
16	Adaptation of SBAs based on process quality factor analysis	FBK	(Self) Adaptation SBA analysis	USTUTT	KPI BP analysis
17	Enhancing Service Network Analysis and Service Selection using Requirements-based Service Discovery	CITY	Service discovery	UoC	Quality of service Service discovery
18	The role of assumptions in the engineering and adaptation processes of service-based applications.	UniDue	Adaptation requirements Adaptation strategies	FBK	Adaptation mechanisms Business process modeling
19	Primary Research on Software Process for SBA Development	LERO	"Industrial expertise"	CITY	User-centered requirements engineering
20	Replacement policies for dynamic Adaptation of SBAs	INRIA	Adaptation requirements Adaptation mechanisms	CITY	Service composition
21	Paradigm of model management, refinement, consistency, model checker	UCBL	Business Process Languages	INRIA	Verification
22	Designing Adaptive Service-based Applications using Service Granularity	POLIMI	Adaptation requirements Design for adaptation	CITY	User-centered requirement engineering Requirements analysis
23	Service Networks on top of BPM Layering stack	POLIMI	Business processes	UoC	Model-driven engineering
24	Service Networks on top of BPM Layering stack	UoC	Model-driven engineering	POLIMI	Business processes
25	QoS contract evolution	Tilburg	Contracts, evolution approaches	POLIMI	Formal specifications

26	Service engineering – reuse - contextual information	Lero-UL	Service engineering	CITY	Context-based information
27	Fragmentation and business Process transaction	Tilburg	Process transactions	USTUTT	fragmentation
28	Modeling dynamic behavior and provision of service composition	UPM	Modeling dynamic behavior and verification	TUW	Service composition
29	Context modeling of adaptable SBA – service engineering and design service adaptation and monitoring	FBK-IRST	Monitoring – adaptation	POLIMI	Service engineering
30	SLA-based resource virtualization	SZTAKI	virtualization	TUW	Quality assurance
31	Adaptation of service based applications – KPIs	USTUTT	KPI	FBK	Adaptation
32	Evolution and adaptation of services	Tilburg	Evolution and adaptation	USTUTT	Evolution and adaptation
33	Deployment and management and self-* service execution	SZTAKI	Deployment of services	CNR	Service management
34	Quality prediction to support proactive adaptation	UniDue	Quality of service	CNR	Adaptation
35	Monitoring and adaptation	UoC	Monitoring and adaptation	CNR	Monitoring and adaptation
36	BPM transactions – business rules and SLA	UCBL	Formal specifications	Tilburg	Business rules
37	Mining business protocols	UCBL	Mining protocols	CNR	Mining techniques
38	Configuration management process for service-based applications – quality assurance	Lero-UL	Software process aspects	CNR	Service specific expertise
39	Adaptation and monitoring	INRIA	Generic adaptation framework	UniHH	Monitoring
40	Aspect-based adaptation	TUW	Predictions on SLA	USTUTT	Aspect-based adaptation of services
41	SLA Violation	TUW	Predictions on SLA	CNR	Process mining
42	Business transactions	UniHH	Business transactions	USTUTT	Business transaction models
43	Non-conventional computing models for	CNR	Workflow formalization – based on chemical computation models	INRIA	Higher order programming languages

	service adaptation				Non-conventional programming languages
44	Dynamic service composition model	TUW	Dynamic system models	UPM	Behavior analysis
45	Service networks	UoC	QoS, Service discovery	USTUTT	Workflows
46	Deployment and management of service and self-*in service execution	SZTAKI	Deployment, service execution	USTUTT	Workflows
47	Deployment and management of service and self-*in service execution	SZTAKI	Deployment, service execution	USTUTT	Workflows
48	QoS monitoring	SZTAKI	QoS monitoring, ontological modeling	USTUTT	Monitoring, workflow
49	Service Networks and social networks analysis	LERO	Service-oriented business model	Tilburg	Business process management
50	Business Process Management	LERO	Service networks	UCBL (Paris)	Business transaction languages, performance analytics
51	Service networks – simulation, system dynamics, BP management and performance analysis	UoC	Business process management	UCBL (Paris)	Business process management
52	Service Networks metamodel	UoC	Simulation of SNs	UCBL (Paris)	Transactions, simulation
53	Business Transactional Process Fragments	Tilburg	Business processes and transactions	LERO	Service-oriented business model
54	Service Networks – meta models	USTUTT	Service networks	UoC	modeling
55	Service evolution while preserving interoperability	Tilburg	Service evolution	UCBL (Paris)	interoperability
56	Quality of Service for service composition	UPC	QoS monitoring	POLIMI	QoS monitoring
57	Quality of Service for service composition	UPM	Service Composition	TUW	QoS
58	Process fragments (syntactic structure)	Tilburg	BP management and transactions	USTUTT	Process fragments design and specification
59	Formal model for business aware transaction management	UCBL	Logic-based approach for transactions	CNR	SLA, business rules
60	Service Networks on top of the BPM layering stack (Performance analytics	UoC	Simulation, performance measures	UCBLM (Paris)	Formal issues

	of service networks: A systems dynamics approach)				
61	Service networks	UoC	Service network's metamodel for constructing service network models	USTUTT	Service networks metamodeling
62	Dynamic modeling of quality of service: testbeds	UPM	Modeling, service composition	TUW	QoS
63	SLA-based Resource Management of Virtual Plateforms	T.U. Dortmund	Monitoring, adaptation strategies, elearning	POLIMI	Discussions with several partners: INRIA, FBK, USTUTT, POLIMI, ..
64	Evaluation of existing model checkers in the context of proactive adaptation	UniDue	Proactive adaptation capabilities	POLIMI	Model checking,
65	Quality prediction and quality based adaptation	SZTAKI	Contexts with web services and HCI aspects of web services access	CITY	Conxt-based information, HCI
66	Discussion about possible cross WP between JRA-1.2 and JRA-2.3	SZTAKI	Contexts with web services and HCI aspects of web services access	CITY	HCI approaches (CITY) + Discussion with other partners of S-Cube
67	Evolution, service discovery	POLIMI	Service retrieval	Tilburg	Service evolution
68	Service evolution and contract	UCBL (Paris)	Modeling of contracts	Tilburg	Evolution of services
69	SLA-based Resource Management of Virtual Plateforms	T.U. Dortmund	Monitoring, adaptation strategies, elearning	POLIMI	Discussions with several partners: INRIA, FBK, USTUTT, POLIMI, ..

Table 13: Research subjects of the visits – competencies of the partners

Table 14 shows, for each performed visit, the covered research topic and the related workpackages in whose deliverables the results will be described. This information has been derived, where possible, from the field "Related to S-Cube WPs/Deliverables" in the mobility stay descriptions. For example, the research stay number 2 regarding "Monitoring and Analysis of Influential Factors of Business Process Performance" is concerned with the workpackages JRA-2.2 and JRA-1.2 and its results have been or will be described in corresponding deliverables in these workpackages.

Id	Research Topic	JRA-1.1	JRA-1.2	JRA-1.3	JRA-2.1	JRA-2.2	JRA-2.3
1	Service Systems and Business Process Management				X		
2	Monitoring and Analysis of Influential Factors of Business Process Performance		X			X	
3	Business Protocol Soundness				X	X	
4a, b	Controlled Evolution of Services	X	X				

5a, b	Service Networks on top of the BPM layering stack				X	X	
6	Internet of Services (IoS): bring human inside the workflow of software services				X	X	X
7	Semantic based negotiation			X			
8	Configuration and deployment of SaaS applications using techniques from software product lines	X					
9	Replaceability and conformance analysis for business protocols				X	X	
10	Exploiting codified human interaction (HCI) and context knowledge for engineering, monitoring and adapting service-based applications	X					
11	Integrating requirements engineering, online testing and adaptation of workflows	X		X		X	
12	Comparison between *SCENE* and BPEL'n'Aspects		X		X	X	
13	Calculating Service Fitness in Service Networks			X	X	X	
14	Service Networks and Service Compositions				X	X	
15	The interface between requirements engineering and workflows	X				X	
16	Adaptation of SBAs based on process quality factor analysis		X			X	
17	Enhancing Service Network Analysis and Service Selection using Requirements-based Service Discovery		X	X			
18	The role of assumptions in the engineering and adaptation processes of service-based applications.	X	X				
19	Primary Research on Software Process for SBA Development	X		X			
20	Replacement policies for dynamic Adaptation of SBAs	X	X				
21	Paradigm of model management, refinement, consistency, model checker			X	X	X	
22	Designing Adaptive Service-based Applications using Service Granularity	X					
23	Service Networks on top of BPM Layering stack				X		
24	Service Networks on top of BPM Layering stack				X		
25	QoS contract evolution			X			
26	Service engineering – reuse - contextual information	X					
27	Fragmentation and business Process				X		

	transaction						
28	Modeling dynamic behavior and provision of service composition					X	
29	Context modeling of adaptable SBA – service engineering and design service adaptation and monitoring	X	X				
30	SLA-based resource virtualization			X			X
31	Adaptation of service based applications – KPIs		X				
32	Evolution and adaptation of services	X				X	
33	Deployment and management and self-* service execution						X
34	Quality prediction to support proactive adaptation			X			
35	Monitoring and adaptation		X			X	
36	BPM transactions –business rules and SLA			X	X	X	
37	Mining business protocols				X		
38	Configuration management process for service-based applications – quality assurance			X			
39	Adaptation and monitoring		X				X
40	Aspect-based adaptation		X				
41	SLA Violation			X			
42	Business transactions				X		
43	Non-conventional computing models for service adaptation						X
44	Dynamic service composition model						X
45	Service networks				X	X	X
46	Deployment and management of service and self-*in service execution		X	X			X
47	Deployment and management of service and self-*in service execution		X	X			X
48	QoS monitoring		X			X	X
49	Service Networks and social networks analysis				X		
50	Business Process Management				X		
51	Service networks – simulation, system dynamics, BP management and performance analysis				X	X	
52	Service Networks metamodel				X		
53	Business Transactional Process Fragments				X		
54	Service Networks – meta models				X		
55	Service evolution while preserving interoperability	X	X				
56	Quality of Service for service composition			X		X	X

57	Quality of Service for service composition			X		X	X
58	Process fragments (syntactic structure)					X	
59	Formal model for business aware transaction management				X		
60	Service Networks on top of the BPM layering stack (Performance analytics of service networks: A systems dynamics approach)				X	X	
61	Service networks				X	X	
62	Dynamic modeling of quality of service: testbeds			X			
63	SLA-based Resource Management of Virtual Plateforms		X	X			
64	Evaluation of existing model checkers in the context of proactive adaptation		X				
65	Quality prediction and quality based adaptation		X	X			
66	Discussion about possible cross WP between JRA-1.2 and JRA-2.3	X	X				X
67	Evolution, service discovery	X					X
68	Service evolution and contract	X	X	X	X		
69	SLA-based Resource Management of Virtual Plateforms		X	X			

Table 14: Research subject of visits – S-Cube workpackages

Appendix D

This appendix summarizes the outcomes of the research stays per subject (as defined in Deliverable CD-IA-2.1.2).

	Scientific Subject for Mobility	**Visits devoted to the subjects**	**Addressed Challenge**	**Outcomes**
1	Adaptation	TUW→USTUTT	Aspect-based adaptation and monitoring	Publication: [1]
		SZTAKI→USTUTT	Chemical programming approaches for multi-level adaptation and cross-cutting issues of service infrastructure and service composition.	
		CNR(Naples) →INRIA	An approach to dynamic adaptation in order to accommodate the continuous evolution of SBA environments.	Implementation and experimentation of the chemical-based workflow instantiation process [7]
		FBK→USTUTT	Run-time adaptation in a proactive way to avoid KPIs violations.	Publication: [9] Others in progress
		FBK→POLIMI	Context-based adaptation	Publication: [10]
		UniDue→POLIMI	Evaluating exiting model checkers in the context of an adaptation approach	
		INRIA→UniHH	Comparison of various approaches on various part of the adaptation process.	Comparison of the monitoring phase using different frameworks. Comparison of complete adaptation systems
		UniDue→UniMunster	Design of techniques that can be utilized to adapt applications	Investigation of strategies to cleanly integrate adaptation approaches

			proactively	
2	Business Processes	LERO→Tilburg	Service Design and Modelling Methodologies	Publication: [27]
		POLIMI→UoC	Identification of patterns in existing service networks and exploit them to reorganize the network by adding the capability to rapidly react to dynamic environment conditions and to changes in business requirements.	Publication: [6]
		UniHH→USTUTT	Design of a common meta model for Business Transactions	A paper dealing with the concept of business transaction which is planned to be integrated in the Deliverable CD-JRA-2.1.5. Publication under progress.
		UCBL→Tilburg	Formal underpinnings of a business aware transaction management language for design time , execution , runtime-monitoring, analysis and reuse time	Publication: [26]
3	Business Protocols	Tilburg→UPM	Study formalisms for the definition of business protocols with time constraints, and analyze their soundness.	Publication: [11]
		Tilburg→USTUTT	The refinement of the classification of fragmentation of service compositions.	Submitted publication: [12]
4	Evolution	POLIMI→Tilburg	Combining service retrieval and service compatibility	[2] (submitted)
		Tilburg→UCBL	An approach to contract-based	Publication: [18, 20, 21]

			evolution in SBA	
		Tilburg→POLIMI	Design of an approach to QoS contracts	Publication: [19]
		Tilburg→USTUTT	Adapting a service composition to new requirements or changes to the composition context	Potential connections with service composition and the impact of change of the service composition to the service context were investigated.
5	Information Quality			
6	Interaction			
7	Grid Computing	SZTAKI→CNR	Formal Models for QoS-Aware Service Compositions, and Deployment and execution management	Discussion on how model checking can be applicable in models for service management in the future
		POLIMI→IBM Haïfa	Impact of optimization approaches for dynamic placement of virtual servers in cloud environment	Theoretical and experimental frameworks built. Publications planned
8	Model-Driven Engineering			
9	Monitoring	SZTAKI→CITY	Methodologies of monitoring and adaptation approaches in distributed systems such as Grids and Clouds	Preparation of Deliverables JRA-1.2 and JRA-2.3
		UPC→POLIMI	Monitoring for quality of service	Initial model for QoS monitoring
		USTUTT→TUW	Implemented an integrated KPI monitoring and analysis approach	Publications: [22, 23]
		City→UoC	The develop a process model for KPI-driven service discovery to enhance SN analysis and service selection.	Publication: [24]
		UPM→USTUTT		Experiments in

			Static analysis (in principle, using dependency analysis) of business process implementations to help discard spurious / collateral events which are not related to the main effect under study.	progress
10	Negotiation & QoS Agreement	SZTAKI→TUW	SLA-based Resource Virtualization architecture extended with autonomic operation and enhanced SLA propagation and assurance	[3, 5] (publications) [4] (research report)
11	Quality Assurance	UNiDue→CNR TU_Dortmund→POLIMI	Design of an approach to support proactive adaptation decisions by augmenting monitoring with online testing to predict failures with confidence Iinvestigating of a multi-layer eLearning system at TU Dortmund.	Publication: [25] Monitoring data gathered
12	Quality of Service	UPM→TUW	Prediction and analysis of QoS for service orchestration	Publication: [8] Journal publication: in progress
13	Requirements Engineering			
14	Service Architectures	Lero-UL →VUA	How to use Service Oriented Architecture (SOA) to address the challenges faced by Global Software Development (GSD).	Publications: in progress
15	Security			
16	Service Composition	UoC→CNR	Service compositions using a variety of composition models	A novel approach for the automatic creation of specifications of services and service compositions more suitable for verification.

		Tilburg→USTUTT	The investigation of fragments and change operators for service choreographies.	Technical report: [13]
		USTUTT→UoC	Design of mechanisms to transform Service Value Networks into executable runtime artifacts	Publications: [14, 15, 16]
		USTUTT→Tilburg	Classification of fragmentation approaches of service compositions	Submitted publication: [17]
		USTUTT→UoC	Comparison of the perspectives of the institutions on Service Networks. Refinement of the Service Network Modeling Notation.	A paper will be submitted to EOMAS2011
17	Service Discovery	POLIMI→Tilburg	Combining service retrieval and service compatibility	[2] (submitted)
18	Service Design & Modelling Methodologies			
19	Service-Oriented Computing			
20	Service Oriented Software Engineering			
21	Software Engineering Life-Cycle	Lero-UL → VUA	To establish whether there is a value in researching the Global Software Process as a Service	Publication: in progress
22	User-Centred Requirements Engineering			

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