SHORT BIOGRAPHY OF ANDREA MARRELLA

Andrea Marrella is a **postdoctoral research fellow** (settore scientifico disciplinare **ING-INF/05**) at University of Rome "La Sapienza", Italy, Dipartimento di Ingegneria Informatica, Automatica e Gestionale "Antonio Ruberti" (DIAG - Department of Computer, Control and Management Sciences and Engineering), since 2013. He got a **PhD** in **Computer Science Engineering** (Dottore di Ricerca in Ingegneria Informatica) from University of Rome "La Sapienza" in October 2013. He previously studied Computer Science Engineering (Ingegneria Informatica) at University of Rome "La Sapienza", where he obtained a Bachelor Degree in 2005 with the mark of 107/110, and a Master Degree in 2009 with the mark of 110/110. From 2011, he is qualified to practice as Computer Science Engineer (abilitato all'esercizio della professione di Ingegnere).

The research activity of Andrea Marrella is grounded in the fields of Business Process Management, Process Modeling, Simulation, Adaptation and Mining, Knowledge Representation and Reasoning, Artificial Intelligence Planning, Human-Computer Interaction, User Experience Design and Ontology-based Data Management. Such topics are challenged in the application domains of eGovernment, smart spaces, healthcare, disaster/crisis response and management. Andrea Marrella has been invited to keep various seminars and talks by colleagues of international universities and published **more than 30 papers** (see the complete list at the end of this document) on the above research topics, including **5 journals**, **1 authored book chapter**, and **several peer-reviewed conference** and **workshop papers** (including HCI International in 2009, CoopIS in 2012, CBMS in 2013, ICSOC in 2014, KR in 2014, BPM in 2011 & 2015, IJCAI in 2016, ICAPS in 2016). According to Google Scholar, his **h-index** is **12** (cf. https://scholar.google.com/citations?user=8zZvFawAAAAJ&hl=en).

From **January 2012** to **June 2012**, Andrea Marrella has been a **visiting PhD student** at **York University** in Toronto, Ontario (Canada), Department of Computer Science and Engineering, under the supervision of Prof. Yves Lespérance. In **July 2013**, he has been **visiting PhD student** at **Ryerson University** in Toronto, Ontario (Canada), Department of Computer Science, where he collaborated with Prof. Mikhail Soutchanski.

Andrea Marrella has taught since 2009 in the School of Engineering of Sapienza. In the academic year 2013-2014 he was **Lecturer** (Docente a contratto) for the course of "**Basi di Dati**" (Databases) in the range of the Bachelor Degree in Management Engineering. For the same course, he was **official teaching assistant** in the academic years 2009-2010 and 2010-2011. Furthermore, he constantly holds several **specialized seminars** for the course of "Basi di Dati" and for the courses of "Human-Computer Interaction", "Process and Service Modeling and Analysis" and "Seminars in Software and Services for the Information Society" (in the range of the Master Degree in Computer Science Engineering).

Andrea Marrella has been **principal supervisor** of 6 Bachelor Thesis in Management Engineering and of 1 Master Thesis in Computer Science Engineering. Furthermore, he has been **co-supervisor** of 21 Bachelor Thesis and 1 Master Thesis in Management Engineering, and of 1 Master Thesis in Computer Science Engineering. Such theses have been all discussed at University of Rome "La Sapienza". Currently he is **supervising** 1 Master Thesis in Computer Science Engineering and **co-supervising** 2 Master Thesis in Computer Science Engineering.

Andrea Marrella is the **principal investigator** of the research project (progetto di **Avvio alla Ricerca**) entitled: "Data-aware Adaptation of Knowledge-intensive Processes in Cyber-Physical Domains through Action-based Languages", which has been funded by University of Rome "La Sapienza" in 2016. Moreover, Andrea Marrella **is/has been involved actively** in **several research projects**, including WORKPAD (FP6 European Project, ended in 2009) and the Italian projects MAIS, TESTMED, SUPER, FIGO, NEPTIS and ACI-I (detailed information about the projects is included in this document).

Andrea Marrella **serves/has served regularly as a reviewer** for top class journals and conferences, such as ACM Transactions on Computer-Human Interaction, Information Systems, AI Communications, Multimedia tools and Applications, Journal of Artificial Intelligence Research (JAIR), Information and Knowledge Management (CIKM), Business Process Management (BPM), Service Oriented Computing (ICSOC), Cooperative Information Systems (COOPIS). Andrea Marrella has also served in the **Program Committee** of the 2017 Int. Conference on Software and System Processes (ICSSP 2017), 12th and 13th Int. Conference on Web Information Systems and Technologies (WEBIST 2016 and WEBIST 2017), 9th Int. Workshop on Evolutionary Business Processes (EVL-BP 2016), 1st Int. Workshop on Decision and Rule Mining (DRUM 2015), 1st and 2nd Int. Workshop on the Role of Real-world objects in Business Process Management Systems (RW-BPMS 2015 and RW-BPMS 2016) and the 2014 Symp. on Computational Intelligence and Data Mining (CIDM 2014). As far as **organization** and **chairship of conferences** and **workshops**, Andrea Marrella has acted as:

- Local Chair for the 8th IEEE Int. Conf. on Service Oriented Computing & Applications (SOCA 2015)
- Proceedings Chair for the 23rd Italian Symposium on Advanced Database Systems (SEBD 2015)
- Publicity Chair for the 12th Int. Conf. on Mobile Web and Intelligent Inf. Systems (MobiWis 2015)
- Workshop Chair for the 2nd Int. W/shop on Knowledge-intensive Business Processes (KiBP 2013)
- Proceedings Chair for the 1st Int. W/shop on Knowledge-intensive Business Processes (KiBP 2012)

ANDREA MARRELLA CURRICULUM VITAE

Part I – General Information

Full Name	Andrea Marrella
Date of Birth	15/08/1982
Citizenship	Italian
E-mail	marrella@dis.uniroma1.it
Spoken Languages	Italian (Native), English (Fluent)

Part II – Education

Type	Year	Institution	Notes
University graduation	2001-2005	University of Rome "La Sapienza"	Bachelor Degree in Computer Engineering. Final mark: 107/110. Bachelor Thesis: "*An Environment for the Automatic Generation of User Interfaces*". Advisor: Prof. Giuseppe Santucci.
University graduation	2006-2009	University of Rome "La Sapienza"	Master Degree in Computer Engineering. Final mark: 110/110. Master Thesis: "*User-Centered Design Methodologies. The Approach and the Case of the WORKPAD project*". Advisor: Prof. Massimo Mecella.
Professional examination	2011	University of Rome "La Sapienza"	He is qualified to practice as a Computer Science Engineer Final mark: 193/240.
PhD	2009-2013	University of Rome "La Sapienza"	PhD in Engineering in Computer Science (Cycle XXV). PhD Thesis: "*SmartPM: Automatic Adaptation of Dynamic Processes at Run-Time*". Advisor: Prof. Massimo Mecella.

Part III – Appointments

(III A) – Academic Appointments

Start	End	Institution	Contract/Grant[1]	Position
01/11/2013	present	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	**C4, C5, C6**	**Post-doctoral research fellow** [assegno di ricerca] at University of Rome "La Sapienza" in the DASILab group led by Prof. Maurizio Lenzerini. Main research topics investigated: Knowledge Representation and Reasoning, AI Planning, Business Process Management, Process Modeling, Process Simulation, Process Adaptation, Process Mining, Human-Computer Interaction, Ontology-based data management.
01/11/2009	31/10/2013	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	**C3, C4**	**PhD Student** at University of Rome "La Sapienza" under the supervision of Prof. Massimo Mecella. Main research topics investigated: Knowledge Representation and Reasoning, AI Planning, Business Process Management, Process Adaptation, ICT solutions for Health-Care and Emergency Management, Human-Computer Interaction.
25/06/2013	14/08/2013	Department of Computer Science at Ryerson University in Toronto, Ontario (Canada).	---	**Visiting PhD Student** at Ryerson University in Toronto, Ontario (Canada), under the supervision of Prof. Mikhail Soutchanski. Main research topics investigated: Knowledge Representation and Reasoning, AI Planning, Chemical Processes.

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[1] For each Academic Appointment, the associated contracts or research grants are listed in Section (III C).

14/01/2012	07/06/2012	Department of Computer Science and Engineering at York University in Toronto, Ontario (Canada).	---	**Visiting PhD Student** at York University in Toronto, Ontario (Canada), under the supervision of Prof. Yves Lesperance. Main research topics investigated: Knowledge Representation and Reasoning, AI Planning, Business Process Modeling.
01/08/2007	31/10/2008	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	C2	**Research Assistant** for the FP6 EU Project WORKPAD under the supervision of Prof. Tiziana Catarci. My activities during this collaboration were the design of the usability tests and the implementation of a Process Management System for mobile devices.
07/11/2006	30/04/2007	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	C1	**Research Assistant** for the FP6 EU Project WORKPAD under the supervision of Prof. Tiziana Catarci. My activities during this collaboration were the requirements elicitation and analysis and the design of the user interface of the final system.

(III B) – Other Appointments

Start	End	Institution	Position
01/09/2014	30/09/2015	CIS Sapienza (Research Center of Cyber Intelligence and Information Security).	**Research Consultant** for the Project FIGO (POR FESR Lazio 2007/2013). My activities during this collaboration were the drafting of some project deliverables and the design and implementation of the framework of the final system.

(III C) – Contracts and Research Grants

ID	Start	End	Duration	Institution	Contract Type
C1	01/11/2006	30/04/2007	6 months	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	Fixed term contract (Collaborazione Coordinata e Continuativa)
C2	01/08/2007	31/10/2008	15 months	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	Fixed term contract (Collaborazione Coordinata e Continuativa)
C3	01/11/2009	31/10/2012	36 months	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	PhD Research Grant (Borsa di Studio di Dottorato)
C4	01/11/2012	31/05/2014	18 months	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	Research Grant (Assegno di Ricerca)
C5	01/06/2014	30/06/2016	25 months	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	Research Grant (Assegno di Ricerca)
C6	01/07/2016	31/12/2016	6 months	Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Ruberti of University of Rome "La Sapienza".	Research Scholarship (Borsa di Studio)

Part IV – Teaching experience

(IV A) – Teaching in Academic

Year	Institution	Lecture/Course
2009/2010	University of Rome "La Sapienza"	**Teaching assistant** (Tutor) for the course of "Basi di Dati" (Databases - ING-INF/05 - 6 CFU). The course was taught by Prof. Tiziana Catarci in the range of the Bachelor Degree in Management Engineering.
2010/2011	University of Rome "La Sapienza"	**Teaching assistant** (Tutor) for the course of "Basi di Dati" (Databases - ING-INF/05 - 6 CFU). The course was taught by Prof. Tiziana Catarci in the range of the Bachelor Degree in Management Engineering.
2013/2014	University of Rome "La Sapienza"	**Lecturer** (Docente a contratto) for the course of "Basi di Dati" (Databases - ING-INF/05 - 6 CFU), held at Sapienza - University of Rome, in the range of the Bachelor Degree in Management Engineering.

(IV B) – Other Teaching Activities in Academic

Year	Institution	Lecture/Course
2008/2009	University of Rome "La Sapienza"	**Specialized Seminars** (for a total of 20 academic hours) for the course of "Basi di Dati" (Databases - ING-INF/05 - 6 CFU). The course was taught by Prof. Tiziana Catarci in the range of the Bachelor Degree in Management Engineering.
2009/2010	University of Rome "La Sapienza"	**Specialized Seminars** (2 talks on the design and evaluation of the user-centered methodology used for the FP6 Project WORKPAD, for a total of 8 academic hours) for the course of "Human-Computer Interaction" (Interazione Persona-Calcolatore - ING-INF/05 - 6 CFU). The course was taught by Prof. Tiziana Catarci in the range of the Master Degree in Computer Engineering.
2010/2011	University of Rome "La Sapienza"	**Specialized Seminars** (2 talks on the design and evaluation of the user-centered methodology used for the FP6 Project WORKPAD, for a total of 8 academic hours) for the course of "Human-Computer Interaction" (Interazione Persona-Calcolatore - ING-INF/05 - 6 CFU). The course was taught by Prof. Tiziana Catarci in the range of the Master Degree in Computer Engineering.

2011/2012	University of Rome "La Sapienza"	**Specialized Seminars** (2 talks on Business Process Modeling and Management, for a total of 8 academic hours) for the course of "Seminars in Software and Services for the Information Society" (ING-INF/05 - 6 CFU). The course was taught by Prof. Umberto Nanni in the range of the Master Degree in Computer Engineering.
2012/2013	University of Rome "La Sapienza"	**Specialized Seminars** (for a total of 20 academic hours) for the course of "Basi di Dati" (Databases - ING-INF/05 - 5 CFU). The course was taught by Prof. Silvio Salza in the range of the Bachelor Degree in Communications Engineering.
2012/2013	University of Rome "La Sapienza"	**Specialized Seminars** (2 talks on Business Process Modeling and Management, for a total of 8 academic hours) for the course of "Seminars in Software and Services for the Information Society" (ING-INF/05 - 6 CFU). The course was taught by Prof. Umberto Nanni in the range of the Master Degree in Computer Engineering.
2013/2014	University of Rome "La Sapienza"	**Specialized Seminars** (3 talks on Foundations of Process Modeling with Petri Nets, Business Process Modeling and Management, for a total of 12 academic hours) for the course of "Seminars in Software and Services for the Information Society" (ING-INF/05 - 6 CFU). The course was taught by Prof. Umberto Nanni in the range of the Master Degree in Computer Engineering.
2014/2015	University of Rome "La Sapienza"	**Specialized Seminars** (for a total of 30 academic hours) for the course of "Basi di Dati" (Databases - ING-INF/05 - 6 CFU). The course was taught by Prof. Tiziana Catarci in the range of the Bachelor Degree in Management Engineering.
2014/2015	University of Rome "La Sapienza"	**Specialized Seminars** (5 talks on Foundations of Process Modeling with Petri Nets, Business Process Modeling, Simulation, Management, Adaptation and Execution, for a total of 20 academic hours) for the course of "Seminars in Software and Services for the Information Society" (ING-INF/05 - 6 CFU). The course was taught by Prof. Massimo Mecella in the range of the Master Degree in Computer Engineering.

2015/2016	University of Rome "La Sapienza"	**Specialized Seminars** (for a total of 30 academic hours) for the course of "Basi di Dati" (Databases - ING-INF/05 - 6 CFU). The course was taught by Prof. Tiziana Catarci in the range of the Bachelor Degree in Management Engineering.
2015/2016	University of Rome "La Sapienza"	**Specialized Seminars** (2 talks on Business Process Modeling, Adaptation and Execution, for a total of 4 academic hours) for the course of "Seminars in Software and Services for the Information Society" (ING-INF/05 - 6 CFU). The course was taught by Prof. Massimo Mecella in the range of the Master Degree in Computer Engineering.
2015/2016	University of Rome "La Sapienza"	**Specialized Seminar** (1 talk on the design and evaluation of the user-centered methodology used for the FP6 Project WORKPAD, for a total of 2 academic hours) for the course of "Human-Computer Interaction" - ING-INF/05 - 6 CFU). The course was taught by Prof. Tiziana Catarci in the range of the Master Degree in Computer Engineering.
2015/2016	University of Rome "La Sapienza"	**Specialized Seminars** (8 talks on Business Process Modeling through BPMN, Process Automation and Execution through Bizagi Studio and Process Mining against declarative processes, for a total of 16 academic hours) for the course of "Process and Service Modeling and Analysis" (ING-INF/05 - 6 CFU). The course was taught by Prof. Giuseppe De Giacomo and Prof. Massimo Mecella in the range of the Master Degree in Computer Engineering.

(IV C) – Other Teaching Activities

Start	End	Institution	Lecture/Course
04/05/2010	05/05/2010	CINI - Consorzio Interuniversitario Nazionale per l'Informatica.	**Lecturer** (Docente a contratto) for the course "Human-Machine Interaction", held for "SELEX - Sistemi Integrati". SELEX is a Finmeccanica company that designs and develops systems for Homeland Protection, systems and radar for air defence, battlefield management, naval warfare, air traffic control, coastal and maritime surveillance.

01/01/2011	30/07/2011	Istituto G. Meschini, Viale Giotto 1, 00153 Rome (Italy)	**Lecturer** (Docente a contratto) for the course of "Basi di Dati" (Databases) for the Meschini Institute. The course was held in the range of the IFTS - Istruzione e Formazione Tecnica Superiore (Higher technical education and training) courses.
02/10/2012	03/10/2012	CINI - Consorzio Interuniversitario Nazionale per l'Informatica.	**Lecturer** (Docente a contratto) for the course "Human-Machine Interaction", held for "SELEX - Sistemi Integrati". SELEX is a Finmeccanica company that designs and develops systems for Homeland Protection, systems and radar for air defence, battlefield management, naval warfare, air traffic control, coastal and maritime surveillance.
25/02/2016	03/03/2016	Consorzio Interuniversitario CINECA	**Lecturer** (Docente a contratto) for the course of "Human-Computer Interaction", held for CINECA. CINECA is a non-profit consortium, made up of 70 Italian universities, four national research centres, and the Ministry of Universities and Research (MIUR), which aims at supporting the Italian scientific community through supercomputing and scientific visualisation tools.

(IV D) – Thesis Supervisor

Dr. Andrea Marrella has been **principal supervisor** of **6 Bachelor Thesis in Management Engineering** and of **1 Master Thesis in Computer Science Engineering**. Furthermore, he has been **co-supervisor** of **21 Bachelor Thesis** and **1 Master Thesis in Management Engineering**, and of **1 Master Thesis in Computer Science Engineering**. Such theses have been all discussed at the University of Rome "La Sapienza". Currently he is **supervising 1 Master Thesis in Computer Science Engineering** and **co-supervising 2 Master Thesis in Computer Science Engineering.** The topics of the thesis supervised by Dr. Andrea Marrella cover theoretical and practical aspects which are nowadays very relevant in Computer Science, such as Business Process Management and Mining, Database Management, Human-Computer Interaction, Knowledge Representation and Reasoning, Artificial Intelligence Planning, Internet-of-Things and Big Data technologies. The relevance of the topics tackled is demonstrated by the fact that the majority of his Master students in Computer Science Engineering were able to publish the results of their thesis in international peer-reviewed scientific workshops and conferences. Furthermore, one of his Bachelor student in Management Engineering, Alessandro Benedetti, was selected to present a project based on his thesis topic ("Aquaryoum: An Aquarium Monitoring System Based on IoT Technologies") at the Maker Faire 2015 that was held in Rome from 16 to 18 October 2015. The Maker Faire is an international event created to "celebrate arts, crafts, engineering, science projects and the Do-It-Yourself (DIY) mindset".

Part V – Funding Information [grants as PI-principal investigators or I-investigator][2]

Year	Title	Program	Role	Grant value
2005	**MAIS –** "*Multichannel Adaptive Information Systems*".	Project funded by Italian FIRB 2001.	Designer and programmer	Financing to Sapienza: about €1.200.000
2006–2009	**WORKPAD –** "*An Adaptive Peer-to-Peer Software Infrastructure for Supporting Collaborative Work of Human Operators in Emergency/Disaster Scenarios*"	Project funded by the European Union 6th Framework Programme.	Analyst and designer	Overall funding from EU: €1.850.000 Financing to Sapienza: €315.000
2011–2012	**TESTMED –** "*meTodi e tEcniche per la geSTione dei processi nella MEdicina D'urgenza*"	Sapienza internal grant	Participant	Financing to Sapienza: about €24.000
2013	**SUPER –** "*SUPporting E-health knowledge-intensive pRocesses*"	Sapienza internal grant	Participant	Financing to Sapienza: about €17.000
2014-2015	**FIGO**	Project funded by Regione Lazio (POR FESR Lazio 2007/2013)	Research consultant	
2014-2016	**ACI-I** – *Development of an ontology modeling for ACI (Automobile Club d'Italia) and experimentation of the semantic technologies for accessing data.*	Project funded by ACI (Automobile Club d'Italia) in collaboration with Sapienza, University of Rome.	Participant	
2016	**NEPTIS – "***Soluzioni ICT per la fruizione e l'esplorazione aumentata di Beni Culturali*"	Programma Operativo Nazionale Ricerca e Competitività (PON R&C – Codice progetto: PON03PE_00214_3)	Participant	Financing to DIAG: about € 202.897
2016	*Data-aware Adaptation of Knowledge-intensive Processes in Cyber-Physical Domains through Action-based Languages.*	Project funded by Sapienza – University of Rome (Progetto di Avvio alla Ricerca).	Principal Investigator	Financing: € 2.000

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[2] see the Further Information Section for specific details on the candidate's participation to the projects.

Part VI – Research Activities

The research activity of Dr. Andrea Marrella is grounded in the fields of Business Process Management, Process Modeling, Simulation, Adaptation and Mining, Knowledge Representation and Reasoning, AI Planning, Human-Computer Interaction and Ontology-based Data Management. Such topics are challenged in the application domains of eGovernment, smart spaces, healthcare, disaster/crisis response & management. Dr. Andrea Marrella is affiliated to **DASIlab** (Data and Service Integration Laboratory – `http://www.dis.uniroma1.it/~dasilab`) and is a member of the **Data and Service Management research group** (`http://www.dis.uniroma1.it/en/archivionotizie/data-management-and-service-oriented-computing`) and of the **Human-Computer Interaction research group** (`http://www.dis.uniroma1.it/en/archivionotizie/human-computer-interaction`). Dr. Andrea Marrella has published **more than 30 papers** (see the complete list at the end of the document) on the above research topics.

Keywords	Brief Description
BPM Process Modeling Process Mining Process Adaptation Process Simulation	**Business Process Management** (BPM) is a very active research area, because it is highly relevant from a practical point of view while at the same time it offers many challenges for researchers. BPM solutions have been prevalent in both industry products and academic prototypes, when it has become clear that processes are equally important than data and need to be supported in a systematic manner. In the context of the BPM field, the research of Dr. Andrea Marrella concentrates on: *Process Modeling* (that is the activity of representing business processes of an enterprise with some formal notation, so that the current process may be analyzed or improved), *Process Simulation* (that is the ability to check at design time whether a process model contains some undesired properties and exposes the desired behavior), *Process Adaptation* (that is the ability of process management systems to automatically and autonomously adapt to changing conditions at run-time)*, Process Mining* (that consists of a set of techniques for the analysis and the enhancement of business processes based on event logs). The above research topics were also investigated within the PhD Thesis and the WORKPAD, SUPER and FIGO projects.
KR&R Action-based languages Situation Calculus IndiGolog	**Knowledge Representation and Reasoning** (KR&R) is the field of Artificial Intelligence (AI) that focuses on designing computer representations that capture information about the world that can be used to solve complex problems. The AI community developed several action-based languages that provide formal models for describing transition systems and enable reasoning about actions and their effects. Reasoning about actions and change is a long-standing research area in AI, and several effective implementations of action-based languages are available in the research literature. In the context of the KR&R field, the research of Dr. Andrea Marrella concentrates on *providing a formally well-founded view to BPM with formalisms developed for reasoning about actions* in AI. Specifically, in his PhD Thesis and in several research publications, Dr. Andrea Marrella demonstrates that action-based languages provide a rich and natural framework for supporting the formal declarative specification of data-aware business processes and for automating a number of reasoning tasks that arise in this context. To accomplish this, Dr. Andrea Marrella has investigated two well-established techniques and frameworks from KR&R fields, such as situation calculus and IndiGolog. Specifically: (i) situation calculus theories are used to model the process data and to represent the set of tasks of the application domain of interest together with their preconditions and effects; (ii) the IndiGolog

	high-level agent language provides the formal executable semantics for data-aware business processes. The above research topic was also investigated within the WORKPAD project.

AI Planning Classical Planning	**Planning systems** are problem-solving algorithms that operate on explicit representations of states and actions. There exist several forms of planning in the Artificial Intelligence (AI) literature. In particular, the field of *classical planning*, characterized by observable, static, and deterministic domains, has experimented huge advances in the last twenty years, leading to a variety of concrete solvers (i.e., planning systems) that are able to create plans with thousands of actions for problems containing hundreds of propositions. In the context of the AI Planning field, the research of Dr. Andrea Marrella concentrates on the application of classical planning techniques to solve problems and challenges coming from other research fields, e.g., for the *automated adaptation of business processes in cyber-physical domains*, for the *automatic generation of process models*, for the *conformance checking of declarative business processes*, for the *automated diagnosis of learnability in HCI*. The above research topics were also investigated within the WORKPAD and NEPTIS projects.

HCI Multimodal UIs Learnability	**Human-Computer Interaction** (HCI) is a research topic focusing on the interfaces between users and computers. In the context of HCI, the research of Dr. Andrea Marrella concentrates on *designing multimodal user interfaces (UIs) for mobile devices* and on *investigating how to extract in automated way relevant information associated to the usage of a system* (e.g., learnability metrics). The above research topics were also investigated within the WORKPAD, TESTMED and NEPTIS projects.

OBDM-OBDA	**Ontology-based data management** (OBDM) and **Ontology-based Data Access** (OBDA) tackle the challenge of providing organizations with unified access to their data. The main objective of OBDM and OBDA is to allow an effective governance of such data, as well as the managing of inconsistency in the data sources. Dr. Andrea Marrella is currently investigating such research topics within the ACI-I project, where the information about data is widespread among separate pieces of documentation that often do not conform to common standards.

Part VII – Publication

Book Chapters

B1. **A. Marrella**, M. Mecella. *Adaptive Process Management in Cyber-Physical Domains*. In: Springer Book on Advances in Intelligent Process-Aware Information Systems. *In press*, 2017.

International Journals

J1. **A. Marrella**, M. Mecella, S. Sardina. *Intelligent Process Adaptation in the SmartPM System*. In: ACM Transactions on Intelligent Systems and Technology (ACM TIST). *In press*, 2017.

J2. C. Di Ciccio, **A. Marrella**, A. Russo. *Knowledge-intensive Processes. Characteristics, Requirements and Analysis of Contemporary Approaches*. In: Journal on Data Semantics, Vol. 4, Issue 1, pp 29-57. Springer, 2014.

J3. T. Catarci, M. de Leoni, **A. Marrella**, M. Mecella, A. Russo, M. Bortenschlager, R. Steinmann. *WORKPAD: Process Management and Geo-Collaboration Help Disaster Response*. International Journal of Information Systems for Crisis Response and Management (IJISCRAM), Vol. 3, Issue 1, pp. 32–49, 2011.

J4. S. R. Humayoun, T. Catarci, M. de Leoni, **A. Marrella**, M. Mecella, M. Bortenschlager, R. Steinmann. *Designing Mobile Systems in Highly Dynamic Scenarios. The WORKPAD Methodology.* In: Springer's International Journal on Knowledge, Technology and Policy, Vol. 22, Number 1 - March 2009.

J5. T. Catarci, M. de Leoni, **A. Marrella**, M. Mecella, B. Salvatore, G. Vetere, S. Dustdar, L. Juszczyk, A. Manzoor, Hong-Linh Truong. *Pervasive and Peer-to-Peer Software Environments for Supporting Disaster Responses*. In: IEEE Internet Computing Journal - Special Issue on Crisis Management – Vol. 12, Number 1 - January-February 2008.

International Conferences

C1. **A. Marrella**, M. Mecella, S. Sardina. *An Adaptive Process Management System Implementation based on Situation Calculus, Indigolog and Classical Planning.* In: Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI 2016), Demonstration Track, New York, USA, 9-15 July 2016.

C2. G. De Giacomo, F. M. Maggi, **A. Marrella**, S. Sardina. *Computing Trace Alignment against Declarative Process Models through Planning.* In: Proceedings of the 26th International Conference on Automated Planning and Scheduling (ICAPS 2016), London, UK, 12-17 June 2016.

C3. T. Catarci, F. Leotta, **A. Marrella**, M. Mecella, D. Sora, P. Cottone, G. Lo Re, M. Morana, M. Ortolani, V. Agate, G. Renato, G. Meschino, G. Pecoraro. *Your Friends Mention It. What About Visiting It? A Mobile Social-Based Sightseeing Application.* In: Proceedings of the 13th International Working Conference on Advanced Visual Interfaces (AVI 2016), Bari, Italy, 7-10 June 2016.

C4. O. Hanteer, **A. Marrella**, M. Mecella, T. Catarci. *A Petri-Net Based Approach to Measure the Learnability of Interactive Systems.* Proceedings of the 13th International Working Conference on Advanced Visual Interfaces (AVI 2016), Bari, Italy, 7-10 June 2016.

C5. **A. Marrella**, M. Mecella, A. Russo, S. Steinau, K. Andrews, M. Reichert. *Data in Business Process Models. A Preliminary Empirical Study.* In: 8th IEEE International Conference on Service Oriented Computing & Applications (SOCA 2015), Rome, Italy, 19-21 October 2015.

C6. **A. Marrella**, M. Mecella, P. Halapuu, S. Sardina. *Automated Process Adaptation in Cyber-Physical Domains with the SmartPM System.* In: 8th IEEE International Conference on Service Oriented Computing & Applications (SOCA 2015), Rome, Italy, 19-21 October 2015.

C7. **A. Marrella**, M. Mecella, P. Halapuu, S. Sardina. *SmartPM: An Adaptive Process Management System for Executing Processes in Cyber-Physical Domains.* In: 13th International Conference on Business Process Management (BPM 2015), Demonstration Track, Innsbruck, Austria, 31 August - 03 September 2015.

C8. F. Cossu, **A. Marrella**, M. Mecella, A. Russo, S. Kimani et al. *Supporting Doctors through Mobile Multimodal Interaction and Process-aware Execution of Clinical Guidelines*. In: 7th IEEE International Conference on Service Oriented Computing & Applications (SOCA 2014), Matsue, Japan, 17-19 November, 2014.

C9. **A. Marrella**, M. Mecella, S. Sardina, P. Tucceri. *SmartPM: Automated Adaptation of Dynamic Processes*. In: 12th International Conference on Service-Oriented Computing (ICSOC 2014), Demonstration Track, Paris, France, 3-6 November, 2014.

C10. **A. Marrella**, M. Mecella, S. Sardina. *SmartPM: An Adaptive Process Management System through Situation Calculus, IndiGolog, and Classical Planning*. In: 14th International Conference on Principles of Knowledge Representation and Reasoning (KR 2014), Vienna, Austria, 20-24 July 2014.

C11. **A. Marrella**, Y. Lespérance. *Synthesizing a Library of Process Templates through Partial-Order Planning Algorithms.* In: 14th International Working Conference on Business Process Modeling, Development and Support (BPMDS 2013), in conjunction with CAiSE 2013, Valencia, Spain, 17-18 June 2013.

C12. **A. Marrella**, A. Russo, M. Mecella. *Planlets: Automatically Recovering Dynamic Processes in YAWL*. In: 20th International Conference on Cooperative Information Systems (CoopIS 2012), Rome, Italy, 10-14 September 2012.

C13. F. Cossu, **A. Marrella**, M. Mecella, A. Russo, G. Bertazzoni, M. Suppa, F. Grasso. *Improving Operational Support in Hospital Wards through Vocal Interfaces and Process-Awareness*. In 25th IEEE International Symposium on Computer-Based Medical Systems (CBMS 2012), Rome, Italy, 20-22 June 2012.

C14. **A. Marrella**, M. Mecella, A. Russo. *Featuring Automatic Adaptivity through Workflow Enactment and Planning*. In: 7th International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom 2011), Orlando, Florida, USA, 15-18 October 2011.

C15. **A. Marrella**, M. Mecella, A. Russo, A.H.M. ter Hofstede, S. Sardina. *Making YAWL and SmartPM Interoperate: Managing Highly Dynamic Processes by Exploiting Automatic Adaptation Features*. In: 9th International Conference on Business Process Management (BPM 2011), Demonstration Track, Clermont-Ferrand, France, 28 August - 02 September 2011.

C16. **A. Marrella**, M. Mecella. *Continuous Planning for solving Business Process Adaptivity*. In: 12th International Working Conference on Business Process Modeling, Development and Support (BPMDS 2011), London, UK, 20-21 June 2011.

C17. **A. Marrella**, M. Mecella, A. Russo. *Collaboration On-the-field: Suggestions and Beyond*. In: 8th International Conference on Information Systems for Crisis Response and Management (ISCRAM 2011), Lisbon, Portugal, 8-11 May 2011.

C18. T. Catarci, M. de Leoni, **A. Marrella**, M. Mecella, M. Bortenschlager, R. Steinmann. *The WORKPAD Project Experience: Improving the Disaster Response through Process*

Management and Geo Collaboration. In: 7th International Conference on Information Systems for Crisis Response and Management (ISCRAM 2010), Seattle, USA, 2-5 May 2010.

C19. S. R. Humayoun, T. Catarci, M. de Leoni, **A. Marrella**, M. Mecella, M. Bortenschlager, R. Steinmann. *The WORKPAD User Interface and Methodology: Developing Smart and Effective Mobile Applications for Emergency Operators.* In: 13th International Conference on Human-Computer Interaction (HCI International 2009), San Diego, USA, 19-24 July 2009.

C20. A. Capata, **A. Marrella**, R. Russo, M. Bortenschlager, H. Rieser. *A Geo-based Application for the Management of Mobile Actors during Crisis Situations.* In: 5th International Conference on Information Systems for Crisis Response and Management (ISCRAM 2008), Washington DC, USA, 4-7 May 2008.

C21. M. de Leoni, **A. Marrella**, M. Mecella, F. De Rosa, A. Poggi, A. Krek, F. Manti. *Emergency Management: from User Requirements to a Flexible P2P Architecture*. In: 4th International Conference on Information Systems for Crisis Response and Management (ISCRAM 2007), Delft, the Netherlands, 13-16 May 2007.

National Conferences

N1. **A. Marrella**, M. Mecella, A. Russo, S. Steinau, K. Andrews, M. Reichert. *A Survey on Handling Data in Business Process Models (Discussion Paper).* In: 23th Italian Symposium on Advanced Database Systems (SEBD 2015). *To appear*, 2015.

N2. **A. Marrella**, S. Vassos. *Story Generation in PDDL using Character Moods: A Case Study on Iliad's First Book*. In: 8th Hellenic Conference on Artificial Intelligence (SETN 2014), Ioannina, May 15-17, 2014.

International Workshops

W1. **A. Marrella**, Y. Lespérance. *Towards a Goal-Oriented Framework for the Automatic Synthesis of Underspecified Activities in Dynamic Processes*. In: 2nd International Workshop on Knowledge-intensive Business Processes (KiBP 2013), in conjunction with SOCA 2013, Kauai, USA, 16 December 2013.

W2. A. Masoumi, M. Soutchanski, **A. Marrella**. *Organic Synthesis as Artificial Intelligence Planning*. In: 6th International Workshop on Semantic Web Applications and Tools for Life Sciences (SWAT4LS 2013), Edinburgh, UK, 10 December 2013.

W3. A. Masoumi, **A. Marrella**, M. Soutchanski. *Towards a Planning-based Approach to the Automated Design of Chemical Processes*. In: Workshop on AI meets Business Processes (AIBP 2013), Turin, Italy, 6 December 2013.

W4. C. Di Ciccio, **A. Marrella**, A. Russo. *Knowledge-intensive Processes: An Overview of Contemporary Approaches*. In: 1st International Workshop on Knowledge-intensive Business Processes (KiBP 2012), Rome, Italy, 15 June 2012.

W5. M. de Leoni, **A. Marrella**, A. Russo. *Process-aware Information Systems for Emergency Management.* In: Int. Workshop on Emergency Management through Service Oriented Architectures (EMSOA) co-located with the ServiceWave 2010 Conference, Ghent, Belgium, 13 December 2010.

W6. M. de Leoni, **A. Marrella**, M. Mecella, S. Valentini, S. Sardina. *Coordinating Mobile Actors in Pervasive and Mobile Scenarios: An AI-based Approach*. In: 2nd IEEE International Workshop

on Interdisciplinary Aspects of Coordination Applied to Pervasive Environments: Models and Applications (COMA 2008) at WETICE 08, Rome, Italy, 23-25 June 2008.

Technical Reports

T1. T. Catarci, S.R. Humayoun, F. Leotta, **A. Marrella**, M. Mecella, A. Poggi. *HORIZON: A Development Methodology for Collaborative Projects*. In: DIAG Technical Reports. 2015

T2. M. de Leoni, A. Marrella, M. Mecella, S. Sardina. *SmartPM - Featuring Automatic Adaptation to Unplanned Exceptions.* Technical Report of Dipartimento di Informatica e Sistemistica ANTONIO RUBERTI, SAPIENZA - Università di Roma. June 2011.

Part VIII – Academic activities & invited talks

Dr. Andrea Marrella has been invited to keep various seminars and talks by colleagues of international universities:

- "Run-time Adaptation of Knowledge-intensive Processes through AI Techniques: Research Challenges and Some Solutions". Seminar held at the University of Toronto (UoT, Toronto, Canada), February 8, 2012. Invited by Prof. Sheila McIlraith.
- "Run-time Adaptation of Knowledge-intensive Processes through AI Techniques: Research Challenges and Some Solutions". Seminar held at York University (Toronto, Canada), February 14, 2012. Invited by Prof. Yves Lesperance.
- "Synthesizing a Library of Process Templates through Partial-Order Planning Algorithms". Seminar held at Ryerson University (Toronto, Canada), July 3, 2013. Invited by Prof. Mikhail Soutchanski.
- "Applying Process Management Methods and Techniques to Pervasive and Smart Environments" at Vienna University of Economics and Business (Vienna, Austria), July 21, 2014. Invited by Prof. Jan Mendling.

As far as organization and chairship of conferences and workshops, Dr. Andrea Marrella has acted as:

- Local Chair for the 8th IEEE International Conference on Service Oriented Computing & Applications (SOCA 2015)
- Proceedings Chair for the 23rd Italian Symposium on Advanced Database Systems (SEBD 2015)
- Publicity Chair for the 12th International Conference on Mobile Web and Intelligent Information Systems (MobiWis 2015)
- Workshop Chair for the 2nd International Workshop on Knowledge-intensive Business Processes (KiBP 2013)
- Proceedings Chair for the 1st International Workshop on Knowledge-intensive Business Processes (KiBP 2012)

Dr. Andrea Marrella has also served in the Program Committee of:

- 2017 International Conference on Software and System Processes (ICSSP 2017)
- 13th International Conference on Web Information Systems and Technologies (WEBIST 2017)
- 9th Int. Workshop on Evolutionary Business Processes (EVL-BP 2016)
- 12th International Conference on Web Information Systems and Technologies (WEBIST 2016)
- 2nd International Workshop on the Role of Real-world objects in Business Process Management Systems (RW-BPMS 2016)
- 1st International Workshop on the Role of Real-world objects in Business Process Management Systems (RW-BPMS 2015)
- 2014 Symposium on Computational Intelligence and Data Mining - Special Session on Business Process Analytics, Process Mining and Process Big Data (CIDM 2014)

Dr. Andrea Marrella serves/has served regularly as a reviewer for:

- **International Journals:**
  - ACM Transactions on Computer-Human Interaction (ACM TOCHI)
  - Journal of Artificial Intelligence Research (JAIR)

- o   Multimedia tools and Applications
- o   Methods of Information in Medicine
- o   Information Systems
- o   AI Communications
- **International Conferences:**
  - o   Information and Knowledge Management (CIKM)
  - o   Business Process Management (BPM)
  - o   Service Oriented Computing (ICSOC)
  - o   Cooperative Information Systems (COOPIS)
  - o   Advanced Visual Interfaces (AVI)
  - o   Web Information System Engineering (WISE)
  - o   Information Systems for Crisis Response and Management (ISCRAM)
  - o   ACM Multimedia (ACMMM)
- **International Workshops:**
  - o   Knowledge-intensive Business Processes (KiBP)
- **National Conferences:**
  - o   Italian Symposium on Advanced Database Systems (SEBD)
  - o   Conference of the Italian SIGCHI Chapter (CHItaly)

Part X – Further Information

XA – Participation to Research Projects

Dr. Andrea Marrella is/has been involved in the following research projects:

1. (June 2005 - December 2005) **MAIS** - *Multichannel Adaptive Information Systems*. The MAIS project investigated adaptivity at all levels in information systems, from application level to network and device level. In particular, the requirements posed by multichannel information systems and system for user with disabilities were studied. In the range of the MAIS Project, Dr. Andrea Marrella participated to the realization of the prototype "Automatic Generation of User Interfaces" - report 7.3.8.
2. (November 2006 - September 2009) **WORKPAD** – *An Adaptive Peer-to-Peer Software Infrastructure for Supporting Collaborative Work of Human Operators in Emergency/Disaster Scenarios*. The European Project WORKPAD (financed by the Sixth Framework Program FP6) has developed an innovative software infrastructure (software, models, services) and communication technologies for supporting collaborative work of human operators in emergency/disaster scenarios. The main activities held by Dr. Andrea Marrella in the range of the project were:
   - Requirements elicitation and analysis
   - Study of User-Centered methodologies and approaches
   - Realization and design of user interfaces
   - Drafting of several project deliverables
   - Active participation to project meetings
   - Design and analysis of usability tests
   - Implementation of the main software module in the range of the project: a Process Management System developed for mobile devices

3. (January 2011 – December 2012) **TESTMED** – *"meTodi e tEcniche per la geSTione dei processi nella MEdicina D'urgenza"*. The TESTMED Project focused on the development of multimodal interfaces for mobile systems to be used by doctors and nurses in hospital wards.

4. (January 2013 – December 2013) **SUPER** – "SUPporting E-health knowledge-intensive pRocesses". The SUPER Project has concerned the realization of a Process Management System for the management of health care activities.

5. (September 2014 – September 2015) **FIGO** – "Un Framework aperto ed Integrabile basato su modelli di nuova generazione per la Gestione ottimizzata e il cOnsolidamento di sistemi IT che prevedono l'erogazione di servizi B2B mediante l'utilizzo massivo di device mobile, anche attraverso il tracciamento ed il monitoraggio dei processi di business". The FIGO Project developed an open framework that allows performing process mining and data mining techniques on processes and data coming from Telecommunication companies.

6. (July 2014 – *present*) **ACI-I** – Development of an ontology modeling for ACI (Automobile Club d'Italia) and experimentation of semantic technologies for accessing data. In this project, Dr. Andrea Marrella is participating to the following activities:
   - Knowledge gathering over the domain of interest
   - Ontology development
   - Data source analysis

7. (July 2016 – *present*) **NEPTIS** – "Soluzioni ICT per la fruizione e l'esplorazione aumentata di Beni Culturali". The NEPTIS Project focuses on developing ICT-based solutions for augmented fruition and exploration of cultural heritage. Concretely, it aims at implementing an integrated system to create services and applications supporting smart itineraries, which will offer to citizens, tourists and visitors an assisted access and a personalized experience before, during and after their visits to physical cultural assets. In this project, Dr. Andrea Marrella is currently developing the planning-based reasoning engine that will be used to generate "on-the-fly" personalized paths to visit a cultural area on the basis of users' preferences.

8. (July 2016 – *present*) ***Data-aware Adaptation of Knowledge-intensive Processes in Cyber-Physical Domains through Action-based Languages*** – The increasing application of process-oriented approaches in new challenging cyber-physical domains beyond business computing (e.g., healthcare, emergency management, etc.) has led to reconsider the level of flexibility and support required to manage knowledge-intensive processes (KiPs) in such domains. A KiP is influenced by user decision making and coupled with contextual data and knowledge production acquired/produced by sensors/actuators disseminated in the environment, and must be robust to unexpected conditions and adaptable to unanticipated exceptions. To tackle this issue, this research project focuses on providing a formally well-founded view to KiPs through the use of action-based languages developed for reasoning about actions in Artificial Intelligence, which provide a natural framework for the formal specification of mechanisms to model world changes and responding to anomalous situations in an automated way during KiP execution. **Dr. Andrea Marrella is the principal investigator of this research project**, which is funded by Sapienza University of Rome "La Sapienza".