MINISTERIO
DE CIENCIA, INNOVACIÓN
Y UNIVERSIDADES

Part A. PERSONAL INFORMATION

CV date	22/12/2024

Name	José Ambrosio Toval Álvarez		

(*) Mandatory

A.1. Current position

Position	Full professor		
Initial date	June 10, 2004		
Institution	Universidad de Murcia		
Department/Center	Informática y Sistemas	Facultad de Informática	
Country	Spain	Teleph. n.	+34868884603
Key words	Software Engineering, Requirements Engineering, Reusability, Agile methods		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
1996-2004	Faculty Associate Professor
1983-1996	School Associate Professor

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Bch. Degree Mathematics (Spec. Computer Science)	Universidad Complutense de Madrid/Spain	1983
PhD. in Informatics	Universidad Politécnica de Valencia/Spain	1994

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

Ambrosio Toval serves as Full Professor in the Languages and Information Systems area, for University of Murcia, since 2004. He worked as Faculty Associate Professor since 1996 to 2004, and as School Associate Professor in the period 1983-1996. During this time, he has conducted a variety of courses in different academic levels (undergraduate, master's and doctorate) and led research on topics related to Software Engineering, Requirements Engineering and Project Management Agile Methods, supervising, or co supervising, ten doctoral theses and more than seventy master's thesis, and degree term projects. In the most recent teaching of one of these subjects, Software Development Project Management, Professor Toval formally introduced elements of teaching innovation, some of them also closely related to his most recent lines of research, such as a relationship of explicit learning objectives, serious games in requirements and project engineering, and adaptation of contents to achieve sustainability competencies.

Ambrosio formed in 1991 the Software Engineering research group of the University of Murcia, which he has led since then. He has been Principal Investigator of eight projects of the R&D National Plan, six regional ones and fifteen technology transfer contracts and projects. He has participated as a researcher in seven international projects (five European, two with Morocco), four national ones, two regional and six technology transfer projects. He has also participated in two international research networks and fourteen national ones. Among his international collaborations stands out, with cooperation reflected in research articles and student exchange, PhD Ali Idri, from ENSIAS (Marruecos), ranked amongst the top 2% researchers around the world in all scientific fields, according to the study by Stanford University (2023) and awarded the Best Moroccan Researcher in "Computer Science" for 2016-2020 Ministry of Higher Education and Scientific Research. Among the scientific publications by PhD Toval, are one hundred seven articles in JCR journals (Web of Science index) and eighteen in first level conferences. His work on requirements reuse was pioneered and published in the main Requirements Engineering forums in 2002 (REJ journal and ICRE conference). Most of the

doctoral theses and many of the Research group's publications have been based on these seminal ideas on the reuse of requirements and their organization in the so-called reusable catalogues, which have continued to evolve until the latest research projects, in which they have been adapted to new agile strategies with a focus on sustainability. He has also carried out an intense job as an evaluator, participating in numerous thesis juries, and as a reviewer of scientific articles (including JCR journals), member of conferences program committee, etc. He has participated as an official evaluator in EU projects, Marie-Curie Actions FP7-PEOPLE (2012 and 2013), as well as in national and regional assessment agencies uninterrupted since 1997.

His research interests have evolved in recent years towards more applied topics of Software Engineering and Requirements Engineering, especially in the social (privacy, sustainability) and health areas. He obtained, along with other researchers, the second prize in the 2013 call of the National Data Protection Agency Award, XVII edition of the Personal Data Protection Awards (Modality Original Research Papers). In 2016, a master's thesis co-supervised with another researcher, also received a second prize from AENOR, I edition of academic papers related to standardization.

From the research group formed by PhD Toval in 1991, other research groups led by former researchers from the initial group have emerged. Some of his master's doctoral students developed their careers in a relevant way, either as university professors or in relevant organizations, such as Groupon or Facebook. Also, some of his master thesis students, with work carried out in the lines of the research group, ended up working in relevant positions, in organizations such as HP or Minsait-INDRA, or have even formed their own companies.

The main quality indicators are listed below:
Six-year term research, periods: 5 (last one obtained in 2021)
Six-year term transfer, period:1 (last one obtained in 2019)
Doctoral thesis supervised: 10
Sum of the times cited (WoS Thomson Reuters, 22/06/2024): 2045
h-index (WoS Thomson Reuters, 20/06/2024): 21
Total articles in first quartile (Q1): 21 (17, in the last ten years) (JCR-Web of Science)
Total articles Web of Science: 107 (50 in the las ten years).

Google Scholar index (22/06/2024). Total articles: 250; Total citations: 6369; h-index: 38; i10 index: 110.

Número de proyectos en convocatorias competitivas en que se ha participado, como IP o como investigador: 24
Número de contratos con empresas: 22

Part C. RELEVANT MERITS

C.1. Publications (including books)

Manal Kharbouch, Ali Idri, J.L. Fernandez-Aleman, Leanne Redman, Ambrosio Toval, Youssef Stelate "Reviewing the Features and Functionalities of Contraception mPHRs" Health Policy and Technology, September **2022**, Vol. 11, Issue 3, n. 100633 (**Q1**-JCR Science Edition 2022).

J.J. López-Jiménez , J.L. Fernández-Alemán, J.A. García-Berná, L. López, O. González, J. Nicolás Ros, J.M. Carrillo de Gea, Ali Idri, A. Toval, "Effects of Gamification on the Benefits of Student Response Systems in Learning of Human Anatomy: Three Experimental Studies". Int. J. Environ. Res. Public Health **2021**, *18*(24), (**Q1**-JCR SSCI Edition **2022**)

J.J. Pérez-Sánchez, J.M. Carrillo de Gea, S. Rodríguez, Ángel Toval, J. L. Fernández-Alemán, J. A. García-Berná, M. Popović, Ambrosio Toval, "Intracranial pressure analysis software: A mapping study and proposal", Computer Methods and Programs in Biomedicine, Vol 209, **2021**, 106334, pp. 1-14, ISSN 0169-2607, (**Q1**-JCR Science Edition 2020).

Garcia Berna, J. A.; Fernandez Alemán, J. L.; Carrillo de Gea, J. M.; Nicolás Ros, J.; Moros Valle, B.; Toval, Ambrosio, Javier Mancebo Félix García Coral Calero "Green IT and Sustainable Technology Development: Bibliometric Overview in Sustainable Development", *Sustainable Development Journal*. Vol 27, Issue 4, July/August 2019, pp. 613-636, Online ISSN:1099-1719 (**Q1**-JCR Science Edition **2018**)

J. Nicolás, J. M. Carrillo de Gea, B. Nicolás, J. L. Fernández Alemán, A. Toval "On the Risks and Safeguards for Requirements Engineering in Global Software Development: Systematic Literature Review and Quantitative Assessment", IEEE Access. Print ISSN: 2169-3536; Online ISSN: 2169-3536; Digital Object Identifier: 10.1109/ACCESS.2018.2874096. Impreso: Vol. 6, Issue 6, December **2018**, pp. 59628-59656 (**Q1**-JCR Science Edition **2018**)

Sofia Ouhbi, José Luis Fernández Alemán, Juan Manuel Carrillo-de-Gea, Ambrosio Toval, Ali Idri "e-Health Internationalization Requirements for Audit Purposes", Computer Methods and Programs in Biomedicine, Vol. 144, pp. 49-60, June **2017**. Published online: March 26 2017 DOI http://dx.doi.org/10.1016/j.cmpb.2017.03.014 (**Q1**-JCR Science Edition **2017**)

J.L. Fernández, A. Sánchez-Henarejos, A. Toval, A.B. Sánchez-García, I.Hernández, L. Fernández-Luque "Analysis of health professional security behaviors in a real clinical setting: an empirical study". *Int J of Medical Informatics (IJMI)* Published Online: January 23, **2015** DOI: http://dx.doi.org/10.1016/j.ijmedinf.2015.01.010 (**Q1**-JCR Science Edition **2015**)

J. L. Fernández Alemán, I. Carrión Señor, Pedro Ángel Oliver Lozoya, and Ambrosio Toval "Security and privacy in electronic health records: A systematic literature review". *Journal of Biomedical Informatics* 46(3): pp. 541-562 (**2013**). (**Q1**-JCR Science Edition **2013**)

Begoña Moros; Ambrosio Toval; Francisca Rosique; Pedro Sánchez, "Transforming and Tracing Reused Requirements Models to Home Automation Models" *Information and Software Technology (IST).* Vol. 55, Iss. 6, June **2013**, pp. 941- 965. (**Q2**-JCR Science Edition **2013**)

I. Carrion J.L. Fernandez and A. Toval "Are Personal Health Records Safe? A Review of Free Web-Accessible Personal Health Record Privacy Policies" J. of Medical Internet Research (JMIR). August **2012**, Vol. 14, Iss. 4, pp. e114-1, e114-13. (**Q1**-JCR Science Edition **2012**)

J.M. Carrillo, J. Nicolás, J. L. Fernández, Ambrosio Toval, Christof Ebert, and Aurora Vizcaino. "Requirements Engineering Tools: Capabilities, Survey and Assessment" *Information and Software Technology (IST)*. Vol. 54, Iss.10 (**2012**), pp. 1142-1157. (**Q1**-JCR Sci Ed **2012**)

I. Carrion J.L. Fernandez, A. Toval "Personal Health Records: New Means to Safely Handle our Health Data?" IEEE Computer, Nov**2012**, Vol.45, Iss.11, pp.27-33. (**Q1**-JCR Sci Ed **2012**)

J. M. Carrillo, J. Nicolás, J. L. Fernández, A. Toval, C. Ebert, and A. Vizcaino. "Requirements Engineering Tools", IEEE Software. Vol. 28, Iss. 4, pp.86-91, **2011**. (**Q1**-JCR Sci Ed **2011**)

C.2. Research projects and grants

OASSIS-UMU: Towards more Sustainable Software Organisations: A Holistic Approach to Promoting Economic, Human and Environmental Sustainability".
PID2021-122554OB-C32. Coordinated project.
Funding entity: Ministerio de Ciencia e Innovación. Convocatoria: Proyectos de generación de conocimiento 2021
Participants: UMU, UCLM, UDC, several EPO (Observating and Promoting Entities)
Duration, since **01/01/2022 to 31/12/2025**. Participation: Researcher
TOTAL AMOUNT OF THE PROJECT: 188.276 € (node University of Murcia)

BIZDEVOPS-GLOBAL: A Sustainable Technological and Methodological Environment for Software Development Aligned with Business in DEVOPS GLOBAL-Murcia ref. RTI2018-098309-B-C33. Coordinated project.

Funding entity: Mº de Economía y Competitividad. Plan Estatal de I+D+I/FEDER
Participants: UMU, UCLM, UDC, several EPO (Observating and Promoting Entities)
Duration, since **01-01-2019 to 31-12-2021**. Participation: Researcher
TOTAL AMOUNT OF THE PROJECT: 157.300€   (node University of Murcia)

ITN-DCH- Initial Training Networks for Digital Cultural Heritage: Projecting our Past to the Future ref. ITN-DCH 608013
Funding entity: Unión Europea, FP7, PEOPLE MARIE CURIE ACTIONS, Marie Curie Initial Training Networks (ITN) Call: FP7-PEOPLE-2013-ITN (Multi-partner ITN)
Participants: University of Murcia and 13 universities, SMEs and european entities. Duration, since **1-10-2013 to 1-10-2017** (48 months). Participation: Researcher
Principal researcher: Dr. Marinos Ioannides, Cyprus University of Technology.
TOTAL AMOUNT OF THE PROJECT: 3,793,457.67€ (UMU: 154,638.28€)

ISECRET-Implementation of Software Engineering Competence Remote Evaluation for Master Program Graduates (ref 2015-1-LV01-KA203-013439)
Funding entity: ERASMUS+ Call 2015 KA2 - Cooperation for innovation and the Exchange of Good Practices Strategic Partnerships for HE
Participants: Transport and Telecommunication Institute (Latvia, coordinator), Kauno Technologijos Universitetas (Lithuania), University of Murcia (Spain), University of Plovdiv (Bulgary), Technologiko Ekpedeftiko Idryma Ipirou (Greece), Wyzsza Szkola Gospodarki w Bydgoszczy (Poland). Duration, since 01-09-2015 to 30-09-2017. Participation: Researcher
Principal Researchers: Dr. Boriss Misņevs (Transport and Telecommunication Institute), José Luis Fernández Alemán (University of Murcia)
TOTAL AMOUNT OF THE PROJECT: 273.210€ (UMU: 52.160€)

Green in Software Systems and Software Engineering-UMU (GINSENG) ref. TIN2015-70259-C2-2-R. Coordinated project
Funding entity: Mº de Economía y Competitividad. Plan Estatal de I+D+I/FEDER
Participants: UMU, UCLM, several EPO (Observating and Promoting Entities)
Duration, since 01.01.2016 to 30.12.2018 (extended to 30.06.2019). Participation: Principal researcher (IP1)
TOTAL AMOUNT OF THE PROJECT: 83.369€   (node University of Murcia)
GEODAS-REQ: Management for Global Software Development through Requirements Engineering ref. TIN2012-37493-C03-02. Integrated in **GEODAS**, coordinated project
Funding entity: Mº de Economía y Competitividad. Plan Nacional de I+D+I/FEDER
Participants: UMU, UCLM, UAL, several EPO
Duration, since 01.01.2013   to 31.12.2015. Participation: Principal researcher
TOTAL AMOUNT OF THE PROJECT: 72.380€   (node University of Murcia)
Process for Global Requirements Engineering and Quality (PANGEA) ref. TIN2009-13718-C02-02. Integrated in **PEGASO**, coordinated project
Funding entity: Ministerio de Ciencia y Tecnología. Plan Nacional de I+D+I/FEDER
Participants: Universities of Murcia, Castilla-La Mancha, several EPO
Duration, since 01.01.2010   to: 31.12.2012. Participation: Principal researcher
TOTAL AMOUNT OF THE PROJECT: 286.407€ (node University of Murcia)

C.3. Contracts

Operating License Development of BDI Plus software and its license
Funding entity: Technoquality Consulting, S.L.
Participants: University of Murcia. Duration, since 21/07/2014 to 20/07/2024
Participation: Principal researcher (junto con Dr. José Luis Fernández Alemán)
TOTAL AMOUNT OF THE CONTRACT: 64990 € (years 2017-2018)

Development of BDI Plus computer program and its license
Funding entity: Technoquality Consulting, S.L.
Participants: University of Murcia. Duration, since 21/07/2014 to 20/07/2015
Participation: Principal researcher (junto con Dr. José Luis Fernández Alemán)

TOTAL AMOUNT OF THE CONTRACT: 25.746,5 €

GARTIC: Automated Requirements Management based on reuse for SMEs in the ICT sector, ref. UMU 2008-PR10865
Funding entity: Business Contribution 5 SMEs. Call for Technological Centers Funding.Participants: CENTIC (Technological Center for ICT, Murcia Region), UMU, 5 SMEs of the ICT sector. Consejería de Industria y Medio Ambiente, CARM. Duration, since 2008 to 2009. Participation: Principal researcher
IMPORTE DEL PROYECTO: 32.480,00 €   (node University of Murcia)
TOTAL AMOUNT OF THE PROJECT: 92.000 €   (business and CENTIC contribution)

ORIGIN (Innovative Global Smart Organizations) ref. IDI-20100433
Funding entity: CDTI / INDRA Software Labs SLU
Duration, since: January 2010 to December 2012 (extended to december 2013). Participation: Researcher. Principal researcher: Dr. Mario Piattini Velthuis (UCLM)
Companies: SICAMAN, EIDOS, INDRA, SIGTEL, Alarcos research group UCLM
AMOUNT OF THE CONTRACT: 800.000,00 €

Assesment and evaluation in the development of an internal tool RM-Tool based on reuse for the INDRA company ref. UMU 2012-PR15175
Funding entity: UCLM / INDRA. Duration, since 2012 to 2012 . Participation: Principal researcher.
AMOUNT OF THE CONTRACT: 17.700,00 €

Methodological and technological bases for a requirements engineering method in global environments ref. UMU 2010-PR13999
Funding entity: UCLM / INDRA. Duration, 2010 to 2011. Participation: Principal researcher
AMOUNT OF THE CONTRACT: 17.700,00 €

Leasing of Research Services: Research, Development and Simulation of a Printed Coordinate System (Digital Pen&Paper Technology) ref. ERP-02/05
Funding entity: HP (HEWLETT-PACKARD SPAIN, S. L.)
Duration, since 2005 to 2006. Participation: Principal researcher
TOTAL AMOUNT OF THE CONTRACT: 51.000,00 €

C.4. Patents,

 "Info-optical system for the monitoring of the movement of laboratory rodents"
N/Publication: 2 596 879; INVENTION PATENT APPLICATION 201600601 (Admitted to Processing, OEPM). PATENT OF INVENTION Nº: NATIONAL PATENT 201600601
DATE OF PRESENTATION AND EFFECTS: 12.07.2016. DATE OF PUBLICATION OF THE APPLICATION: 12.01.2017. COUNTRY OF PRIORITY: Spain; filed international PCT application of patent P201600601 July 31, 2017. ENTITY HOLDER: University of Murcia

C.5, C.6, C.7… (e. g., Institutional responsibilities, memberships of scientific societies…)