

**PROPUESTA DE MINI-CURSO TUTORIAL**  
**Presentado a EVI-CoNCISa 2015**  
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**Título**

Informática Patrimonial

**Presentación**

El Patrimonio Cultural está compuesto por todos los bienes culturales que sean considerados de especial importancia por una sociedad, etnia o nación, sean históricos o actuales. El Patrimonio Cultural Material (o "tangible") recoge *productos*: monumentos, construcciones, objetos, etc.; el Patrimonio Cultural Inmaterial (o "vivo") recoge *conocimiento*: música, danza, comidas, oficios tradicionales, y otras expresiones vivas. El patrimonio cultural es la memoria colectiva, herencia recibida de los antepasados y legado para generaciones futuras; preservarlo es clave para mantener la diversidad cultural frente a la homogenización que conlleva la globalización.

Si bien el patrimonio es típicamente preservado en museos, archivos, bibliotecas y catastros, numerosos proyectos innovadores aplican tecnologías geomáticas, semánticas y sociales para preservar, difundir y contextualizar en la Web información sobre el patrimonio. Este mini-curso de Informática Patrimonial ("Heritage Computing") ilustrará desde indexadores automáticos, catálogos facetados y buscadores geo-referenciados, a enriquecedores sociales y sistemas geo-referenciados, hasta sistemas recomendadores y ecosistemas de datos abiertos.

Al terminar este mini-curso, el participante será capaz de:

- \* Identificar una problemática patrimonial que se pueda beneficiar del uso de tecnologías sociales, semánticas, geomáticas y/o de datos abiertos.
- \* Proponer y contextualizar el uso de técnicas y/o herramientas informáticas específicos para abordar la problemática previamente identificada.
- \* Evaluar comparativamente las soluciones propuestas por los demás participantes.
- \* Reflexionar alegremente sobre lo aprendido (o sufrido).

El material del mini-curso será en gran parte novedoso, elaborado en tesis de pregrado y postgrado y publicaciones recientes (guiados y/o co-elaborados por el instructor). Se usará casos de estudio con recursos del Consejo Nacional de la Cultural (CNCA) y la Biblioteca Nacional (BN) de Chile.

**Contenido**

1. Conceptos, tendencias y líneas clave de Informática Patrimonial.
2. Prácticas y estándares de catalogación y digitalización.
3. Datos: metadatos; geo-referenciación; facetas y exploradores facetados; indexación automática de recursos digitales.
4. Información: enriquecimiento social de datos; crowdsourcing; reputación y confianza ("trust").
5. Conocimiento: contextualización de información; Web Semántica, wikis semánticas, y Open Linked Data; sistemas recomendadores.

**Duración**

Un día completo [o 1/2 día, limitado a exposición lectiva].

**Público Objetivo**

- Estudiantes avanzados de pregrado y postgrado.
- Profesionales de TICs con interés en patrimonio cultural.
- Profesionales de patrimonio que sepan desarrollar software.

**Equipos Requeridos**

- Proyector de datashow.
- Impresión (previa) de material.
- Laboratorio [opcional: la versión de 1 día completo puede incluir taller de propuestas o ser sólo lectiva, la de 1/2 día es sólo lectiva].

**Breve CV**

Hernán Astudillo es Académico del Departamento de Informática en la Universidad Técnica Federico Santa María (UTFSM). Obtuvo su doctorado en Georgia Tech en 1996, trabajó varios años en empresas consultoras de arquitectura de software en EEUU y Chile, fue brevemente profesor en la U. de Sao Paulo, y se integró a la UTFSM el año 2003. Actualmente es Director del Doctorado en Ingeniería Informática e Investigador Principal del grupo Toeska, que conduce docencia, investigación y transferencia tecnológica en arquitectura de software, mejoramiento de procesos y sistemas semánticos, aplicados a cultura/patrimonio y a PyMEs. Ha publicado más de 80 artículos en revistas y conferencias internacionales, ha organizado conferencias y workshops nacionales e internacionales, y ha dirigido numerosos proyectos de I+D y de colaboración internacional. Es miembro del comité TC2 (Software Engineering) de la International Federation of Information Processing, representante de Chile en CLEI, y fue presidente fundador de la Asociación Chilena de Arquitectos de TICs.

## ***CURRICULUM VITAE***

### ***1. DATOS PERSONALES***

*Nombre* : *Hernán Enrique Astudillo Rojas*  
*Nacionalidad* : *Chileno*  
*Cédula de Identidad* : *9.683.664-3*  
*E-mail* : *hernan.astudillo@usm.cl*

### ***2. ESTUDIOS SUPERIORES***

1996 : Ph.D. Information and Computer Science (1996)  
Georgia Institute of Technology, Atlanta, EEUU  
1990 : M.Sc. Information and Computer Science (1990)  
Georgia Institute of Technology, Atlanta, EEUU  
1988 : Ingeniero Civil Informático (1988)  
Universidad Técnica Federico Santa María, Chile  
1987 : Licenciado en Informática (1987)  
Universidad Técnica Federico Santa María, Chile

### ***3. CARGOS ACADÉMICOS***

**2003 - cont** : **Profesor Adjunto (desde 2009)**, Universidad Técnica Federico Santa María, Valparaíso, Chile (Departamento de Informática)  
**1998 – 2000** : **Professor-Doutor**, Universidade de São Paulo, Brasil (Departamento de Ciência de Computação, Instituto de Matemática e Estatística)

### ***4. CARGOS DIRECTIVOS***

**2014- on** : **Subdirector de Investigación y Postgrado**, Departamento de Informática, UTFSM  
**2008, 2010-13** : **Subdirector**, Departamento de Informática, UTFSM (Campus Santiago)  
**2009 – 2007** : **Coordinador de Extensión y Asistencia Técnica**, Departamento de Informática, UTFSM (Casa Central).  
**2001 - 2003** : **Sr. Applications Architect**, Financial Systems Architects (FSA), New York  
**2000 – 2001** : **Chief-Architect**, Soluciones S.A., Chile  
**1996 – 1998** : **Lead Architect** of the Objects Global Practice, MCI Systemhouse (later acquired by EDS) (Earlier *Sr. Technical Architect* at the DelTA Group)

## 5. BECAS OBTENIDAS

- 1989 - 1995 : *Project/Research Assistant*, Georgia Institute of Technology, Atlanta, EE.UU.
- 1982 – 1988 : *Beca Presidente de la República*, Chile

## 6. DISTINCIONES

- 2002 - cont : *Investigador Asociado*, Universidad Carlos III de Madrid, España.
- 2006 - cont : *Investigador Asociado*, Universidad Diego Portales, Chile.

## 7. ANTECEDENTES DE RELEVANCIA ACADEMICA

*Reconocimientos externos vía invitaciones a dar conferencias, charlas y otros :*

## 8. SOCIEDADES CIENTIFICAS

- 1982 - cont. : *ACM – Association for Computing Machinery*, Global (basado en EEUU)
- 1988 – cont : *IEEE – Institute for Electrical and Electronic Engineers*, Global (basado en EUU)
- 2003 – cont : *SCCC – Sociedad Chilena de Ciencia de la Computación*, Chile
- 2006 – cont : *IASA – International Association of Software Architects*, Global (basado en EUU; presidente de capítulo chileno en formación)

## 10. PUBLICACIONES EN REVISTAS Y CONGRESOS SELECTIVOS

- “Semi-automated Tool Recommender for Software Development Processes.” Marina Pilar, Jocelyn Simmonds, Hernán Astudillo: *Electr. Notes Theor. Comput. Sci.* 302: 95-109 (2014) [Scopus journal]
- “Web Metadata Extraction and Semantic Indexing for Learning Objects Extraction.” John Atkinson, Andrea Gonzalez, Mauricio Munoz, Hernan Astudillo. *Applied Intelligence* (2014). [ISI journal]
- “Time-based hesitant fuzzy information aggregation approach for decision making problems.” Romina Torres, Rodrigo Salas, Hernán Astudillo. *International Journal of Intelligent Systems* (2014) [ISI journal]
- “A Market-based Approach to the Dynamic Reconfiguration Problem of Service-based Systems.” Romina Torres, Hernán Astudillo. *International Journal of Innovative Computing Information and Control (IJICIC)* (2014). [Scopus journal]
- “Achieving reuse in casual game developers - A Blender Game Engine approach”. Sven von Brand, Hernán Astudillo, René Noël. **CIBSE 2014**: XVII Ibero-American Conference on Software Engineering, April 23-25 2014, Pucón, Chile.
- “An exploratory comparison of security patterns and tactics to harden systems.” René Noël, Gilberto Pedraza-García, Hernán Astudillo, Eduardo B. Fernández. **CIBSE 2014**: XVII Ibero-American Conference on Software Engineering, April 23-25 2014, Pucón, Chile.
- “Managing requirements@run.time with a linguistic decision making approach.” Romina Torres, Hernan Astudillo. **CIBSE 2014**: XVII Ibero-American Conference on Software Engineering, April 23-25 2014, Pucón, Chile.

- **“A Strategy to Implement Security Tactics in a Software Architecture.”** Gilberto Pedraza-García, Darío Correal, Hernán Astudillo. **COLCOM 2014**: 2014 IEEE Colombian Conference on Communications and Computing, June 4-6 2014, Bogotá, Colombia.
- **“Web Metadata Extraction and Semantic Indexing for Learning Objects Extraction.”** John Atkinson, Andrea González, Mauricio Muñoz, Hernán Astudillo. IEA/AIE 2013:131-140. In: Moonis Ali, Tibor Bosse, Koen V. Hindriks, Mark Hoogendoorn, Catholijn M. Jonker, Jan Treur (Eds.): Recent Trends in Applied Artificial Intelligence. 26th International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems (**IEA/AIE 2013**), Amsterdam, The Netherlands, June 17-21, 2013. Proceeding. Springer 2013 Lecture Notes in Computer Science
- **“A Conceptual-KDD Approach and its Application to Cultural Heritage.”** Renzo Stanley, Hernán Astudillo, Víctor Codocedo, Amedeo Napoli: **CLA 2013**: 163-174
- **“Ontology and semantic wiki for an Intangible Cultural Heritage inventory.”** Renzo Stanley, Hernán Astudillo. **CLEI 2013**: 1-12
- **“Process-based evaluation and comparison of OTS software alternatives.”** Maria Jesus Faundes, Hernán Astudillo, Bernhard Hitpass. **FedCSIS 2013**: 1087-1094
- **“Using pattern structures to support information retrieval with Formal Concept Analysis.”** Víctor Codocedo, Ioanna Lykourantzou, Hernán Astudillo, Amedeo Napoli. **FCA4AI@IJCAI 2013**: 15-24
- **“Addressing the QoS Drift in Specification Models of Self-Adaptive Service-Based Systems”.** Romina Torres, Nelly Bencomo, Hernán Astudillo. 2nd International NSF sponsored Workshop on Realizing Artificial Intelligence Synergies in Software Engineering (**RAISE 2013**), in conjunction with 35th International Conference on Software Engineering (ICSE 2013), May 18 – 26, 2013, San Francisco, CA.
- **“A Digital Library Built Around the Information-Content Model Duality”.** Hernán Astudillo, Carlos Becerra Castro. ICADL 2012: 299-308. Hsin-Hsi Chen, Gobinda Chowdhury (Eds.): The Outreach of Digital Libraries: A Globalized Resource Network - 14th International Conference on Asia-Pacific Digital Libraries (**ICADL 2012**), Taipei, Taiwan, November 12-15, 2012. Proceedings. Lecture Notes in Computer Science 7634 Springer 2012, ISBN 978-3-642-34751-1.
- **“Empirical Measurement of Automated Recovery of Design Decisions and Structure”.** Carlos Becerra, Hernán Astudillo. VI Andean Region International Conference (**ANDESCON 2012**), Nov 8 – 9, Cuenca, Ecuador.
- **“Tagging Tagged Images: On the Impact of Existing Annotations on Image Tagging”.** César Moltedo, Hernán Astudillo, Marcelo Mendoza. International ACM Workshop on Crowdsourcing for Multimedia (**CrowdMM 2012**), held in conjunction with ACM Multimedia 2012, Oct 29 - Nov 2 2012, Nara, Japan.
- **“Mitigating the obsolescence of quality specifications models in service-based systems”.** Romina Torres, Nelly Bencomo, Hernán Astudillo. MoDRE 2012: 68-76. Second IEEE International Workshop on Model-Driven Requirements Engineering (**MoDRE 2012**), Chicago, IL, USA, September 24, 2012. IEEE 2012, ISBN 978-1-4673-4387-9.
- **“Market-Awareness in Service-Based Systems”.** Romina Torres, Nelly Bencomo, Hernán Astudillo. SASO Workshops 2012: 169-174. Sixth IEEE International Conference on Self-Adaptive and Self-Organizing Systems Workshops (**SASOW 2012**), Lyon, France, September 10-14, 2012. IEEE Computer Society 2012, ISBN 978-1-4673-5153-9.
- **“Enriqueciendo metadata de documentos históricos con crowdsourcing”.** César Moltedo, Hernán Astudillo. VII ENCUESTRO DE CATALOGACIÓN Y METADATOS, Sept 5 – 7, 2012, México, D.F., México.
- **“Should we use tactics or patterns to build secure systems?”.** Eduardo B. Fernández, Hernán Astudillo. 1st LACCEI International Symposium on Software Architecture and Patterns (**LACCEI-ISAP-MiniPLoP’2012**), July 23-27, 2012, Panama City, Panama.
- **“Web Service Compositions Which Emerge from Virtual Organizations with Fair Agreements”.** Romina Torres, Denise Rivera, Hernán Astudillo. KES-AMSTA 2012: 34-43. Gordan Jezic, Mario Kusek, Ngoc Thanh Nguyen, Robert J. Howlett, Lakhmi C. Jain (Eds.): Agent and Multi-Agent Systems. Technologies and

Applications - 6th KES International Conference (**KES-AMSTA 2012**), Dubrovnik, Croatia, June 25-27, 2012. Proceedings. Lecture Notes in Computer Science 7327 Springer 2012, ISBN 978-3-642-30946-5.

- **“Market-aware Requirements”**. *Romina Torres, Hernán Astudillo*. WER 2012. Alejandro Oliveros, Antonio de Pádua Albuquerque Oliveira, Gladys N. Kaplan (Eds.): Anais do Workshop em Engenharia de Requisitos (**WER 2012**), Buenos Aires, Argentina, April 24-27, 2012. 2012, ISBN 978-987-1635-46-7.
- **“Bridging the gap between software architecture rationale formalisms and actual architecture documents: An ontology-driven approach”**. *Claudia López, Víctor Codoceo, Hernán Astudillo, Luiz Marcio Cysneiros*. *Science of Computer Programming* 77(1): 66-80 (2012). [ISI journal]
- **“E-Government Procurement Observatory, Maturity Model and Early Measurements”**. *Gastón Concha, Hernán Astudillo, Miguel Porrúa, Carlos Pimenta*. *Government Information Quarterly*, Vol.29, Suppl.1, Jan. 2012, pp. S43-S50. DOI 10.1016/j.giq.2011.08.005 [ISI journal]
- **“From virtual organizations to Self-organizing Web service compositions”**. *Romina Torres, Denise Rivera, Hernán Astudillo*. XXX International Conference of the Chilean Computer Science Society (**SCCC 2011**). (Curicó, Chile, 07-11 Nov 2011).
- **“Recommending APIs for mashup completion using association rules mined from real usage data”**. *Boris Tapia, Romina Torres, Hernán Astudillo, Pablo Ortega*. XXX International Conference of the Chilean Computer Science Society (**SCCC 2011**). (Curicó, Chile, 07-11 Nov 2011).
- **“Mejoramiento de Descripciones de Objetos de Aprendizaje Basado en Comunidades de Expertos”**. *James Cortes, Carlos Becerra, Hernán Astudillo*. Sixth Latin American Conf. on Learning Objects (**LACLO 2011**). (Montevideo, Uruguay, 11-14 Oct 2011)
- **“Improving the Component Discovery process by leveraging automatic sensitive analysis”**. *Romina Torres, Hernán Astudillo*. V Simpósio Brasileiro de Componentes, Arquiteturas e Reutilização de Software (**SBCARS 2011**). (Sao Paulo, Brasil, 26-30 Sept 2011)
- **“Simplifying mashup component selection with a combined similarity- and social-based technique”**. *Boris Tapia, Hernán Astudillo*. 5th International Workshop on Web APIs and Service Mashups (**Mashups 2011**) (Lugano, Switzerland, 26 Sept 2011)
- **“Self-adaptive Fuzzy QoS-driven Web service Discovery.”** *Romina Torres, Hernán Astudillo, Rodrigo Salas*. IEEE International Conference on Services Computing (**IEEE SCC 2011**), (Washington, DC USA, July 4-9), pp.64-71, ISBN: 978-0-7695-4462-5 (2011), DOI: 10.1109/SCC.2011.87 [acceptance rate of 16%]
- **“Improving Web API Discovery by leveraging social information.”** *Romina Torres, Boris Tapia, Hernán Astudillo*. IEEE International Conference on Web Services (**ICWS 2011**), (Washington, DC USA, July 4-9), pp.744-745, ISBN: 978-0-7695-4463-2 (2011). DOI: 10.1109/ICWS.2011.96
- **“Externalizing the autopoietic part of Software for achieving Self-adaptability.”** *Romina Torres, Hernán Astudillo*. 4th International Workshop of Software Engineering for Adaptive Service-Oriented Systems (**SEASS 2011**) at SERVICES 2011 (IEEE World Congress on Services). (Washington, DC USA, July 4-9), ISBN: 978-0-7695-4461-8, pp.107-114 (2011). DOI: 10.1109/SERVICES.2011.69
- **“The Tutelkan Reference Process: A Reusable Process Model for Enabling SPI in Small Settings.”** *Gonzalo Valdes, Marcello Visconti, Hernán Astudillo*. 18th Annual **EuroSPI 2011** Conference: European Systems and Software Process Improvement and Innovation. 27.-29. June 2011, Roskilde (Copenhagen), Denmark. Springer LNCS (2011).
- **“From early architectural decisions to self-discovery components.”** *Romina Torres, Hernán Astudillo*. XIV Congreso Iberoamericano en Ingeniería de Software (**CIbSE 2011**), Rio de Janeiro, Brasil, 27-29 April 2011 (2011).
- **“Conception, development and implementation of an E-Government maturity model in public agencies.”** *Gonzalo Valdes, Mauricio Solar, Marcello Visconti, Hernán Astudillo*. *Government Information Quarterly*, 28(2): 176-187, April 2011 (2011). [ISI Journal]

- **“MACOCO: A Discoverable Component Composition Framework Using a Multiagent System.”** *Romina Torres, Hernán Astudillo, Enrique Canessa.* In: Sergio F. Ochoa, Federico Meza, Domingo Mery, Claudio Cubillos (Eds.): **SCCC 2010**, Proceedings of the XXIX International Conference of the Chilean Computer Science Society, Antofagasta, Chile, 15-19 November 2010. **IEEE Computer Society** 2010. Pp.152-160.
- **“Combining COSTUME and Azimut+ to Address Functional and Non-functional Requirements in Software Component Selection.”** *Fernando Mancilla, Hernán Astudillo, Marcello Visconti.* In: Sergio F. Ochoa, Federico Meza, Domingo Mery, Claudio Cubillos (Eds.): **SCCC 2010**, Proceedings of the XXIX International Conference of the Chilean Computer Science Society, Antofagasta, Chile, 15-19 November 2010. **IEEE Computer Society** 2011. Pp.102-109
- **“Enhancing Learning Objects Metadata Improvement with Indexing and Categorization.”** *Jorge Contreras, Marcelo Mendoza, Carlos Becerra, Hernán Astudillo.* Quinto Congresso Latinoamericano de Objetos de Aprendizagem (**LACLO 2010**), São Paulo, SP, Brasil (27/sept-1/oct).
- **“Bridging the Gap between Software Architecture Rationale Formalisms and Actual Architecture Documents: An Ontology-driven Approach.”** *Claudia López, Hernán Astudillo, Víctor Codoceo, Luiz Marcio Cysneiros.* **Journal of Science of Computer Programming** (2010). doi:10.1016/j.scico.2010.06.009 [**ISI Journal**]
- **“Principios y criterios para evaluar y comparar Sistemas de Gestión de Reglas de Negocio (BRMS).”** *María Jesús Faúndes Gómez, Bernhard Hitpass, Hernán Astudillo.* Actas XXXVI Conferencia Latinoamericana de Informática (**CLEI 2010**), 18-22 Oct 2010, Asunción, Paraguay (2010).
- **“Clustering and Semantics Preservation in Cultural Heritage Information Spaces.”** *Javier Pereira, Felipe Schmidt, Pedro Contreras, Fionn Murtagh, Hernán Astudillo.* 9th Conference on Adaptivity, Personalization and Fusion of Heterogeneous Information (**RIAO 2010**). Paris, France; Abril 28-30, 2010.
- **“The Tutelkan SPI Framework for Small Settings: A Methodology Transfer Vehicle.”** *Gonzalo Valdes, Hernán Astudillo, Marcello Visconti, Claudia López.* Springer Communications in Computer and Information Science, Vol. 99, pp.142-152. 17th Conference on European Systems and Software Process Improvement and Innovation (**EuroSPI 2010**), 1-3 Sept 2010, Grenoble (2010). DOI: 10.1007/978-3-642-15666-3\_13
- **“From i\* Models to Service Oriented Architecture Descriptions Approach.”** *Carlos Becerra, Xavier Franch, Hernán Astudillo.* 4th International Workshop on Architectures, Concepts and Technologies for Service Oriented Computing (**ACT4SOC 2010**), 23 July 2010, Athens, Greece (2010).
- **“Jump-starting a Body-of-Knowledge with a Semantic Wiki on a Discipline Ontology.”** *Víctor Codoceo, Claudia López, Hernán Astudillo.* Workshop on Semantic Wikis – Linking Data and People (**SemWiki2010**) (co-located with the Extended Semantic Web Conference (ESWC 2010)), 31 May 2010, Heraklion, Greece (2010).
- Special Issue. **CLEI Electronic Journal** (ISSN: 07175000), Vol.13, No.1, April 2010. Best Papers presented at 2nd International Workshop on Advanced Software Engineering (IWASE'2009). *Hernán Astudillo, Cecilia Bastarrica.* (2010)
- **“Visualization and Comparison of Architecture Rationale with Semantic Web Technologies.”** *Claudia López, Pablo Inostroza, Luiz Marcio Cysneiros, Hernán Astudillo.* **Journal of Systems and Software**, 82(8):1198–1210 (2009). [**ISI Journal**]
- **“Identifying Weaknesses for Chilean e-Government Implementation in Public Agencies with Maturity Model.”** *Hernán Astudillo, Gonzalo Valdes, Marcelo Iribarren, Gastón Concha, Mauricio Solar.* 8th international e-Government Conference (**EGOV 2009**). Springer LNCS, Vol. 5693, pp. 151–162 (2009).
- **“Weak Constraint Programming to Identify Alternative Composite COTS-based Software Systems from Imperfect Information.”** *Carlos Becerra, Hernán Astudillo.* Proceedings of the XXVIII Conference of the Chilean Computer Society (**SCCC 2008**), 13-14 Nov 2008, Punta Arenas, Chile. **IEEE Computer Society Press** (2008).

- **“Deconstructing Agile Processes: Would Planned Design Be Helpful in XP Projects?”** René Noël, Gonzalo Valdés, Marcello Visconti, Hernán Astudillo. XXVIII Conference of the Chilean Computer Society (**SCCC 2008**), 13-14 Nov 2008, Punta Arenas, Chile. IEEE Computer Society Press (2008).
- **“Semantic-aided Interactive Identification of Reusable NFR Knowledge Fragments.”** Claudia López, Hernán Astudillo, Luiz Marcio Cysneiros. 7th International Workshop on System/Software Architectures (**IWSSA'08**) (co-located with OnTheMove Federated Conferences and Workshops (OTM'08)), 9-14 Nov 2008, Monterrey, Mexico.
- **“ESB-QM: Modelo de Calidad para productos ESBs.”** Daily Echeverría, Hernán Astudillo, Rodrigo Estrada. Encuentro de Informática y Gestión (**EIG 2008**), 20-21 Nov 2008, Temuco, Chile.
- **“NDR Ontology: Sharing and Reusing NFR and Design Rationale Knowledge.”** Claudia López, Luiz Marcio Cysneiros, Hernán Astudillo. Managing Requirements Knowledge (**MaRK'08**); Workshop in conjunction with the 16th IEEE Requirements Engineering Conference (RE'08), Sept 8, 2008, Barcelona, Spain.
- **“Querying Software Interdependence Graphs,”** Luiz Marcio Cysneiros, Karin K. Breitman, Claudia López, Hernán Astudillo. 32nd Annual IEEE Software Engineering Workshop (**SEW 2008**), 15-16 Oct 2008, Kassandra, Greece (2008), pp.108-112. IEEE Computer Society Press.
- **“Adding Planned Design to XP Might Help Novices’ Productivity (or Might Not): Two Controlled Experiments.”** René Noël, Gonzalo Valdés, Marcello Visconti, Hernán Astudillo. 2nd International Symposium on Empirical Software Engineering and Measurement (**ESEM 2008**), Kaiserslautern, Germany (Oct 2008) (TO APPEAR IEEE proceeding ISI)
- **“Identifying Relevant National e-Government Implementations for an Emerging Country: A Selective Survey.”** Gonzalo Valdés, Marcelo Iribarren, Gastón Concha Mauricio Solar, Marcello Visconti, Hernán Astudillo, María T. Villarroel, Patricio Gutiérrez, Álvaro Vásquez. 7th international e-Government Conference (**EGOV 2008**), 31 Aug – 5 Sept 2008, Torino, Italy. Springer LNCS (ISSN 0302-9743), Vol. 5184.
- **“Weak Constraint Programming to Identify Alternative Composite COTS-based Software Systems from Imperfect Information.”** Carlos Becerra, Hernán Astudillo. Proceedings of the XXVIII Conference of the Chilean Computer Society (**SCCC 2008**), 13-14 Nov 2008, Punta Arenas, Chile. IEEE Computer Society Press (2008).
- **“Deconstructing Agile Processes: Would Planned Design Be Helpful in XP Projects?”** René Noël, Gonzalo Valdés, Marcello Visconti, Hernán Astudillo. Proceedings of the XXVIII Conference of the Chilean Computer Society (**SCCC 2008**), 13-14 Nov 2008, Punta Arenas, Chile. IEEE Computer Society Press (2008).
- **“No Mining, No Meaning: Relating Documents across Repositories with Ontology-Driven Information Extraction.”** Víctor Codocedo, Hernán Astudillo. ACM Symposium on Document Engineering (**DocEng 2008**), São Paulo, Brazil (Sept 16-19, 2008) (TO APPEAR)
- **“Evaluation of Extreme Programming Design Approach: A Replicated Study.”** René Noël, Marcello Visconti, Gonzalo Valdés, Hernán Astudillo. Actas XXXIII Conferencia Latinoamericana de Informática (**CLEI 2007**), San José, Costa Rica (Oct 2007).
- **“Agile Commitments: Dealing with Business Expectations Risks in Agile Development.”** Mauricio Concha, Marcello Visconti, Hernán Astudillo. 2nd International Working Conference on Evaluation of Novel Approaches to Software Engineering (**ENASE 2007**) (held in conjunction with ICISOFT 2007) Barcelona, España (July 2007).
- **“An Empirical Evaluation of Evolutionary Design Approach.”** René Noël, Marcello Visconti, Gonzalo Valdés, Hernán Astudillo. Proc. 2nd International Working Conference on Evaluation of Novel Approaches to Software Engineering (**ENASE 2007**) Barcelona, España (July 2007).
- **“Agile Commitments: Enhancing Business Risk Management in Agile Development Projects.”** Mauricio Concha, Marcello Visconti, Hernán Astudillo. 8<sup>th</sup> International Conference on Agile Processes in Software Engineering and Extreme Programming (**XP 2007**) (Jun 2007, Como, Italy). Springer LNCS, Vol. 4536, pp. 149-152 (2007).



- **“Identifying ‘Interesting’ Component Assemblies for NFRs Using Imperfect Information.”** *Hernán Astudillo, Javier Pereira, Claudia López.* In: Proceedings of European Workshop on Software Architectures (**EWSA’06**), 4-5 Sept 2006, Nantes, France. Springer LNCS (ISSN 0302-9743), Vol.4344, pp.204-211 (2006). DOI: [http://dx.doi.org/10.1007/11966104\\_15](http://dx.doi.org/10.1007/11966104_15)
- **“Multidimensional Catalogs for Systematic Exploration of Component-Based Design Spaces.”** *Claudia López, Hernán Astudillo.* In: First International Workshop on Advanced Software Engineering (**IWASE 2006**). Proceedings of IFIP World Congress 2006 (August 2006, Santiago, Chile). [IFIP International Federation for Information Processing](http://www.ifip.org/) (ISSN 1571-5736), Vol. 219/2006, pp. 32-46 (2006). DOI: [http://dx.doi.org/10.1007/978-0-387-34831-5\\_3](http://dx.doi.org/10.1007/978-0-387-34831-5_3)
- **“Evaluating Alternative COTS Assemblies from Unreliable Component Information.”** *Hernán Astudillo, Javier Pereira, Claudia López.* In: 2nd International Conference on the Quality of Software Architectures (**QoSA 2006**), June 27-29, 2006, Sweden. Springer, LNCS (ISSN 0302-9743), Vol.4214, pp.27-42 (2006). DOI: [http://dx.doi.org/10.1007/11921998\\_7](http://dx.doi.org/10.1007/11921998_7)
- **“Incremental Software Reuse.”** *Juan Llorens, José M. Fuentes, Ruben Prieto-Díaz, Hernán Astudillo.* In: 9th International Conference on Software Reuse (**ICSR9**), 11-15 June 2006, Torino, Italy (2006). Springer, LNCS (number pending), ISSN 0302-9743 (2006).
- **“Emergent Architectural Component Characterization using Semantic Web Technologies.”** *Pablo Inostroza, Hernán Astudillo.* In: Proceedings of the ISWC 2006 Workshop on Semantic Web Enabled Software Engineering (**SWESE 2006**) (2006). URL: <http://km.aifb.uni-karlsruhe.de/ws/swese2006/>
- **“Explicit Architecture Policies to Satisfy NFRs using COTS.”** *Claudia López, Hernán Astudillo.* In: J.-M. Bruel (ed.): **MoDELS’2005** Workshop Reader. Satellite Proceedings of the International Conference on the UML and Applications 2005. Springer, LNCS (ISSN 0302-9743), Vol.3844, pp.227-236 (2006). DOI: [http://dx.doi.org/10.1007/11663430\\_24](http://dx.doi.org/10.1007/11663430_24)
- **“Use Cases in Model-Driven Software Engineering.”** *Hernán Astudillo, Gonzalo Génova, Michał Śmialek, Juan Llorens, Pierre Metz, Ruben Prieto-Díaz.* In: J.-M. Bruel (ed.): **MoDELS’2005** Workshop Reader. Satellite Proceedings of the International Conference on the UML and Applications 2005. Springer, LNCS (ISSN 0302-9743), Vol.3844, pp.272-279 (2006). URL: <http://springerlink.metapress.com/link.asp?ID=F217M7KQJW38332Q>
- **“Knowledge Representation for Software Architecture Domain by Manual and Automatic Methodologies.”** *Anabel Fraga, Sonia Sánchez, Juan Llorens, Hernán Astudillo.* **CLEI Electronic Journal**, Vol.9, No.2 (Dec 2005). URL: <http://www.clei.cl/cleici/paper.php?id=113>
- **“Five Ontological Levels to Describe and Evaluate Software Architectures.”** *Hernán Astudillo.* **Revista de la Facultad de Ingeniería - Universidad de Tarapacá.** Vol. 13, No. 1 (2005).
- **“Open Issues in Industrial Use Case Modeling.”** *Gonzalo Génova, Juan Llorens, Pierre Metz, Rubén Prieto-Díaz, Hernán Astudillo.* In: N. Nunes, B. Selic, A. Rodrigues da Silva, *et al.* (eds.): **UML Modeling Languages and Applications: 2004 Satellite Activities**, Lisbon, Portugal, October 11-15, 2004, Revised Selected Papers. Springer, LNCS (ISSN-0302-9743), Vol. 3297 (2005).
- **“MASPEGHI 2004: Mechanisms for Specialization, Generalization and Inheritance.”** *Philip Labire, Gabriela Arévalo, Hernán Astudillo, Andrew P. Black, E. Ernst, Marianne Huchard, T. Opluštil, Markku Sakkinen, Petko Valtchev.* In: Jacques Malenfant and Bjarte M. Østvold (eds.): **ECOOP 2004 Workshop** Reader, Springer, LNCS (ISSN-0302-9743), Vol. 3344 (2004).
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- **“How conceptual systems architecture leads to business processes.”** *Hernán Astudillo*. Practitioner Report at **OOPSLA 2000**. Minneapolis, MN, USA (Oct 2000). OOPSLA 2000 Addendum, ACM SIGPLAN Notices (2000).
- **“Reorganizing Split-Objects.”** *Hernán Astudillo*. OOPSLA 96, San José, CA, USA (Oct 1996). ACM SIGPLAN Notices, Vol. 31, No. 10 (Oct. 1996), pp.138-149.

## ***PUBLICATIONS IN PROCEEDINGS OF SCIENTIFIC MEETINGS***

- **“Towards Robustness Analysis of Component-based Systems built on Imperfect Information.”** *Claudia López, Hernán Astudillo, Javier Pereira*. International Workshop on Living with Uncertainties (**IWLU**), Co-located with 22<sup>nd</sup> International Conference on Automated Software Engineering (ASE 2007) (Nov 5 2007, Atlanta GA, USA).
- **“Knowledge Representation for Software Architecture Domain by Manual and Automatic Methodologies.”** *Anabel Fraga, Sonia Sánchez, Juan Llorens, Hernán Astudillo*. Workshop de Ingeniería de Software (**WIS 2005**), Valdivia, Chile (09 Oct 2005).
- **“Use Case Catalog to Describe Architectural Policies.”** *Claudia López, Hernán Astudillo*. In: Use Cases in Model-Driven Software Engineering (WU<sub>s</sub>CaM) – A **MoDELS’2005 Workshop**, Montego Bay, Jamaica (02 Oct 2005).
- **“Classifying software architecture quality research.”** *Mario Piattini, Coral Calero, Hernán Astudillo*. In: 5th Working IEEE/IFIP Conference on Software Architecture (WICSA’05), Pittsburgh, PA, USA (Oct 2005). URL: <http://reengineer.org/pittsburgh/working-sessions.htm#Quality>
- **“Introducción Sistemática de Tecnologías Internet en PyMEs.”** *Marlens Cortés, Hernán Astudillo*. In: IDEAS’05 -- 8° Workshop Iberoamericano de Ingeniería de Requisitos y Ambientes de Software, Valparaíso, Chile (2-6 May 2005). pp.316-325.
- **“Money-Link: Pagamentos remotos confiáveis inter-corporativos.”** *Hernán Astudillo*. Objetos Distribuidos’98: Segmento de Experiências Práticas. Curitiba, Paraná, Brasil (Dec 1998).
- **“Understanding Architecture: What we do and why we do it.”** *Hernán Astudillo, Stuart Hammer*. OOPSLA 98 Workshop on Architecture as Method. Vancouver, BC, Canada (Oct 1998).
- **“Methods for Distributed Object Computing.”** *Cris Kobryn, Hernán Astudillo*. OOPSLA 96 Workshop on Methods for Distributed Objects, San José, CA, USA (Oct 1996).
- **“Distinguishing two factors in legacy reuse: 'elegance' and 'appropriateness'.”** *Hernán Astudillo*. OOPSLA 95 Workshop on Object-Oriented Legacy Systems, Austin, TX, USA (Oct 1995).
- **“From Objects to Classes with Small-Time Metrics.”** *Hernán Astudillo*. Poster presentation at OOPSLA 93, Washington, DC, USA (Sep 1993).
- **“Restructuring of Object-Oriented Systems.”** *Hernán Astudillo, John J. Shilling*. XIII Congreso de Metodologías en Ingeniería de Sistemas, Santiago, Chile (Jul 1993).
- **“Q: A Research-Oriented Queuing Network Simulation Language.”** *Hernán Astudillo, Jörg Liebeherr*. Best student paper at the 27th Annual Conference of the ACM Southeast Region, Atlanta, GA, USA (Apr 1989).

## ***OTRAS PUBLICACIONES***

- **“UML Meets CORBA: Design of a fault-tolerant distributed system.”** *Hernán Astudillo, Dan Uhlar, Andy Trice, Jan Pachtl*. White Paper for SHL TRANSFORM on-line knowledge (Jan 1997).
- **“Example evaluation models.”** *Hernán Astudillo, Dan Uhlar, Andy Trice, Jan Pachtl*. Attachment B to the Object Analysis and Design Facility (OA&DF) RFP Response Evaluation Guidelines, OMG (Jan 1997).

- “Evaluation and Realization of Modeling Alternatives: Supporting Derivation and Enhancement.”** *Hernán Astudillo*. Ph.D. thesis (xvi+227pp). College of Computing, Georgia Institute of Technology, Atlanta, GA USA (Mar 1996).
- “Method Maintenance Issues in Dynamic Object-Oriented Databases.”** *Hyoung-Joo Kim, Suk-Ho Lee, Hernán Astudillo*. Book chapter in: Won Kim, I. S. Paik, Yahiko Kambayashi (eds.): Database Systems for Next-Generation Applications: Principle and Practice (Advanced Database Research and Development Series, Vol. 1), pp.42-50, World Scientific Publishing Company, Inc. (1993), ISBN: 9810213158
- “A Model-Based and Direct-Compositional-Based Interface Design Environment: Integration of GaTech's UIDE and Siemens SX/Tools.”** *Piyawadee "Noi" Sukaviriya, J. Muthukumarasamy, Thomas Kuhme, Martin Brenner, Hernán Astudillo*. (1993).
- “Knowledge Worker Platform Analysis Final Report.”** Melody Moore Eidbo, Spencer Rugaber, Hernán Astudillo. Technical Report CIMR-93-03, College of Computing, Georgia Institute of Technology, Atlanta, GA USA (June 1993). (U.S. Army Construction Engineering Research Lab.)
- “Criteria and Operations for Reorganization of Classless Systems.”** *Hernán Astudillo, John J. Shilling*. Technical Report GIT-CC-91/29, College of Computing, Georgia Institute of Technology, Atlanta, GA, USA (1991).
- “Supporting Evolution of Delegation-Based Workspaces into Typed Systems.”** *Hernán Astudillo, John J. Shilling*. Technical Report GIT-CC-91/28, College of Computing, Georgia Institute of Technology, Atlanta, GA, USA (1991).
- “Simulation of Design Issues in Distributed Database Systems.”** *Hernán Astudillo, Ian F. Akyildiz, Edward R. Omiecinski*. Technical Report GIT-ICS-89-031, School of Information and Computer Science, Georgia Institute of Technology, Atlanta, GA, USA (1989).
- “Heterogeneous Queuing Systems with Load Dependent Behavior and Different Scheduling Disciplines.”** *Hernán Astudillo, Ian F. Akyildiz*. Technical Report GIT-ICS-89-007, School of Information and Computer Science, Georgia Institute of Technology, Atlanta, GA, USA (1989).
- “HIDRO: Interactive Tool to Elaborate and Simulate Agro-Hydrological Models.”** *Hernán Astudillo*. Professional Engineer Degree thesis. (“*HIDRO: Herramienta Interactiva para Elaboración y Simulación de Modelos Agro Hidrológicos*.” Trabajo de Título para optar al título de Ingeniero Civil Informático). Universidad Técnica Federico Santa María, Valparaíso, Chile (1988).

## 11. PUBLICACIONES EN REVISTAS (ISI, Scopus & SciELO)

- **“Semi-automated Tool Recommender for Software Development Processes.”** Marina Pilar, Jocelyn Simmonds, Hernán Astudillo: *Electr. Notes Theor. Comput. Sci.* 302: 95-109 (2014) [**Scopus journal**]
- **“Web Metadata Extraction and Semantic Indexing for Learning Objects Extraction.”** John Atkinson, Andrea Gonzalez, Mauricio Munoz, Hernan Astudillo. *Applied Intelligence* (2014). [**ISI journal**]
- **“Time-based hesitant fuzzy information aggregation approach for decision making problems.”** Romina Torres, Rodrigo Salas, Hernán Astudillo. *International Journal of Intelligent Systems* (2014) [**ISI journal**]
- **“A Market-based Approach to the Dynamic Reconfiguration Problem of Service-based Systems.”** Romina Torres, Hernán Astudillo. *International Journal of Innovative Computing Information and Control (IJICIC)* (2014). [**Scopus journal**]
- Claudia López, Víctor Codocedo, Hernán Astudillo, Luiz Marcio Cysneiros. **“Bridging the gap between software architecture rationale formalisms and actual architecture documents: An ontology-driven approach”**. *Science of Computer Programming* 77(1): 66-80 (2012). [**ISI journal**]

- Gastón Concha, Hernán Astudillo, Miguel Porrúa, Carlos Pimenta. **“E-Government Procurement Observatory, Maturity Model and Early Measurements”**. *Government Information Quarterly*, Vol.29, Suppl.1, Jan. 2012, pp. S43-S50. DOI 10.1016/j.giq.2011.08.005 [ISI journal]
- Gonzalo Valdes, Mauricio Solar, Marcello Visconti, Hernán Astudillo. **“Conception, development and implementation of an E-Government maturity model in public agencies.”** *Government Information Quarterly*, 28(2): 176-187, April 2011 (2011). [ISI Journal]
- Claudia López, Pablo Inostroza, Luiz Marcio Cysneiros, Hernán Astudillo. **“Visualization and Comparison of Architecture Rationale with Semantic Web Technologies.”** *Journal of Systems and Software*. DOI: <http://dx.doi.org/10.1016/j.jss.2009.03.085>
- Hernán Astudillo, Javier Pereira, Claudia López. **“Identifying ‘Interesting’ Component Assemblies for NFRs Using Imperfect Information.”** In: Proceedings of European Workshop on Software Architectures (EWSA’06), 4-5 Sept 2006, Nantes, France. Springer LNCS (ISSN 0302-9743), Vol.4344, pp.204-211 (2006). DOI: [http://dx.doi.org/10.1007/11966104\\_15](http://dx.doi.org/10.1007/11966104_15)
- Juan Llorens, José M. Fuentes, Ruben Prieto-Díaz, Hernán Astudillo. **“Incremental Software Reuse.”** In: 9th International Conference on Software Reuse (ICSR9), 11-15 June 2006, Torino, Italy (2006). Springer, LNCS (number pending), ISSN 0302-9743 (2006).
- H. Astudillo, C. López, J. Pereira. **“Evaluating Alternative COTS Assemblies from Unreliable Component Information.”** Hernán Astudillo, Javier Pereira, Claudia López. In: 2nd International Conference on the Quality of Software Architectures (QoSA 2006), June 27-29, 2006, Sweden. Springer, LNCS (ISSN 0302-9743), Vol.4214, pp.27-42 (2006). DOI: [http://dx.doi.org/10.1007/11921998\\_7](http://dx.doi.org/10.1007/11921998_7)
- C. López, H. Astudillo: **“NfC: Explicit Explicit Architecture Policies to Satisfy NFRs using COTS.”** Claudia López, Hernán Astudillo. In: J.-M. Buel (ed.): MoDELS’2005 Workshop Reader. Satellite Proceedings of the International Conference on the UML and Applications 2005. Springer, LNCS (ISSN 0302-9743), Vol.3844, pp.227-236 (2006). DOI: [http://dx.doi.org/10.1007/11663430\\_24](http://dx.doi.org/10.1007/11663430_24).
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- H. Astudillo, Lahirel P., Arévalo G., et.al. MASPEGUI 2004. **Mechanisms for specialization, generalization and inheritance.** LNCS-ISI, Vol. 3344, pp.101-117, 2004, (ISSN-0302-9743).
- H. Astudillo. Five Ontological Levels to Describe and Evaluate Software Architectures. Revista Facultad de Ingeniería, Universidad de Tarapacá. SCIELO, 2005
- **“Maximizing object reuse with a biological metaphor.”** Hernán Astudillo. Theory and Practice of Object Systems (TAPOS), Vol. 3, No. 4 (Fall 1997).

## *Proceedings ISI*

- **“Adding Planned Design to XP Might Help Novices’ Productivity (or Might Not): Two Controlled Experiments.”** René Noël, Gonzalo Valdés, Marcello Visconti, Hernán Astudillo. 2nd International Symposium on Empirical Software Engineering and Measurement (ESEM 2008), Kaiserslautern, Germany (Oct 2008) (TO APPEAR IEEE proceeding ISI).
- **“No Mining, No Meaning: Relating Documents across Repositories with Ontology-Driven Information Extraction.”** Víctor Codocedo, Hernán Astudillo. ACM Symposium on [Document Engineering](#) (DocEng 2008), São Paulo, Brazil (Sept 16-19, 2008) (TO APPEAR).
- **“Agile Commitments: Enhancing Business Risk Management in Agile Development Projects.”** Mauricio Concha, Marcello Visconti, Hernán Astudillo. 8<sup>th</sup> International Conference on Agile Processes in Software Engineering and Extreme Programming (**XP 2007**) (Jun 2007, Como, Italy). Springer LNCS, Vol. 4536, pp. 149-152 (2007).

- ***ORGANIZACIÓN DE CONFERENCIAS Y WORKSHOPS:***

Co-chair, I Simposio Latinoamericano de Sistemas de Información en Gran Escala (SIGE), collocated con CLEI 2014 (Montevideo, Sept 2014)

Chair, IWASE (International Workshop on Advanced Software Engineering), collocated con JCC 2014 (Valparaíso, Nov 2012)

Co-Chair, wBPM (I Workshop Chileno de BPM), collocated con JCC 2014 (Valparaíso, Nov 2012)

Program Co-chair, SCCC’07 (International Conference of the Chilean Computer Science Society) (Iquique, Chile, Nov 2007).

General Chair, COLLECTeR LatAm 2006 (Valparaíso, Chile, Sept 2006).

Co-organizer of IWASE’06 (International Workshop on Advanced Software Organizer), to be held at IFIP World Congress 2006 (Santiago, Chile, Aug 2006).

Chair of WUSCaM (Workshop on Use Cases in Model-Driven Software Engineering), held at MoDELS/UML 2005 (Montego Bay, Jamaica, Oct 2005).

Program Chair of IDEAS’2005 (8° Workshop Iberoamericano de Ingeniería de Requisitos y Ambientes de Software), Valparaíso, Chile (May 2005).

Co-organizer of the Workshop on Open Issues in Industrial Use Case Modeling, held at UML’2004 (Lisbon, Portugal, Oct 2004).

Co-organizer of MASPEGHI 2004: MANaging SPEcialization/Generalization Hierarchies, in ECOOP 2004 (European Conference on Object-Oriented Programming), Oslo, Norway (Jun 2004).

Co-organizer of MASPEGHI 2003: MANaging SPEcialization/Generalization Hierarchies, in ASE 2003 (18th IEEE International Conference on Automated Software Engineering), Montreal, Québec, Canada (Oct 2003).

Co-organizer of WEAR 2003: Workshop on Encapsulation and Access Rights in Object-Oriented Design and Programming, in OOIS 2003 (9th International Conference on Object-Oriented Information Systems), Geneva, Switzerland (Sept 2003).

Co-organizer of MASPEGHI 2002: MANaging SPEcialization/Generalization Hierarchies, in OOIS 2002 (Object-Oriented Information Systems), Montpellier, France (Sept 2002).

Chief site judge for the ACM Collegiate Programming Contest, Natal, RN, Brazil (Nov 2001).

Program Chairman and Co-Organizer of INTERINFO ‘87, First All-Chilean Meeting of Students in Informatics, Valparaíso, Chile (April 1987).

## ***OTRAS ACTIVIDADES:***

Representative of Chile in CLEI Board.

Representative of CLEI in IFIP TC2.

Funding president, ArquiTIC (Asociación Chilena de Arquitectos de TIC)..

Board member of *SCCC*, Sociedad Chilena de Ciencia de la Computación.  
 Member of *ACM*, The Association for Computing Machinery.  
 Member of *IEEE*, The Institute of Electrical and Electronic Engineers.  
 Member of *WIISA*, World-Wide Institute of Software Architects.  
 Awarded with the "Presidente de la República" Scholarship, every year for the duration of the Ingeniero Civil Informático program (1982 - 1987).

### 13. PROYECTOS DE INVESTIGACION

2014	2017	Empirical comparison of tactics and patterns for building secure systems	Director, PI	FONDECYT
2013	2015	VirtualMarkets: Organizaciones Virtuales de Proveedores para Identificación Dinámica de Oportunidades de Asociatividad	Director, PI	FONDEF IDeA
2011	2014	ADAPTE: Adaptable Domain And Process Technology Engineering	Co-PI	FONDEF I+D
2010	2013	ContentCompass: Identificación Semántica y Composición Automática de Material Didáctico para Dominios Especializados	Director, PI	FONDEF I+D
2010	2011	CAMPUS: Context-aware Multi-agents for Pervasive and Ubiquitous Systems	Co-PI	STIC-Amsud
2010	2013	Identificando Redes Sociales desde Trazas Informales de Actividad Comunitaria usando Técnicas Semánticas y de Lenguaje Natural	Co-Director, PI	ECOS-CONICYT
2006	2010	CONTEXTA: Integración semántica de repositorios patrimoniales distribuidos multi-medios	Director, PI	FONDEF I+D
2008	2009	SECODE: Apoyo Semántico para Diseño Colaborativo	Co-PI	STIC-Amsud
2006	2009	Tutelkan: Plataforma y proceso para Transferencia Metodológica a PyMEs	Director Científico, PI	CORFO Innova
2006	2009	CompetiSoft: Mejora de Procesos Software para Pequeñas y Medianas Empresas y Proyectos	Co-PI	CYTED

### 14. MEMORIAS Y TESIS DIRIGIDAS

#### Tesis doctorales

- **Carlos Becerra:** "Improving the Learning Objects Recommendation Process Using a Domain Description Model and an Automatic Categorization Technique". Thesis for the degree of Doctor en Ingeniería Informática, sept/2012.
- **Romina Torres:** "Time-aware specifications to support runtime adaptation of service-based systems". Thesis for the degree of Doctor en Ingeniería Informática, jul/2014.

#### Tesis Postgrado Científico:

- *COMBINANDO COSTUME Y AZIMUT+ PARA DIRECCIONAR REQUERIMIENTOS FUNCIONALES Y NO FUNCIONALES EN LA SELECCIÓN DE COMPONENTES DE SOFTWARE.* **Fernando Mancilla.** Thesis for the degree of Magister en Ciencias de la Ingeniería Informática, Abr/2014.

- *EVALUACIÓN Y COMPARACIÓN DE OFF-THE-SHELF SOFTWARE ALTERNATIVOS USANDO MODELOS DE PROCESOS.* **María Jesús Faúndes.** Thesis for the degree of Magister en Ciencias de la Ingeniería Informática, Aug/2013.
- *Impacto del grado de completitud sobre enriquecimiento de metadatos con crowdsourcing.* **César Moltedo.** Thesis for the degree of Magister en Ciencias de la Ingeniería Informática, march/2013.
- *Técnica de recomendación de herramientas de testing usando dominio y técnicas Multi-criteria decision Making (MCDM).* **Marina Pilar.** Thesis for the degree of Magister en Ciencias de la Ingeniería Informática, dic/2012.
- *Enabling Formal Concept Analysis on large Term-Document Contexts using Latent Semantic Analysis.* **Víctor Codocedo.** Thesis for the degree of Magister en Ciencias de la Ingeniería Informática, may/2011.
- *Evaluación de enfoques de diseño en extreme programming.* **René Noël.** Tesis para optar al grado de Magister en Ciencias de la Ingeniería Informática. UTFSM, Chile, 2008-01-11.
- *Traza de decisiones arquitecturales desde NFRs a Componentes.* **Claudia López.** Tesis para optar al grado de Magister en Ciencias de la Ingeniería Informática. UTFSM, Chile, 2006-11-24.
- *Visões em Arquitetura de Software.* **Ane Varoto.** Mestrado, Instituto de Matematica e Estatística, Universidade de São Paulo, Brasil (Mar 2002).
- *Uma Taxonomia da Pesquisa na Área de Engenharia de Requisitos.* **Paulo Sérgio Naddeo Dias Lope.** Mestrado, Instituto de Matematica e Estatística, Universidade de São Paulo, Brasil (Mar 2002).
- *Transações Web: Analisando Problemas e Soluções.* **Lorena Pereira da Ponte Pierre.** Mestrado, Instituto de Matematica e Estatística, Universidade de São Paulo, Brasil (Nov 2001).

#### Memorias de Pregrado:

- *Wiki Semántica basada en confianza para enriquecimiento de contenido* – **Pablo Iocco** (02/07/2014) – Casa Central – Ingeniería Civil Informática
- *Interpretación de modelo operacional de BPM sobre BMC* – **Jean Paul Fuentes** (11/06/2014) – Campus Santiago – Ingeniería Civil Informática
- *MODELO DE CALIDAD PARA EVALUAR CONTINUIDAD DE DESARROLLO* – **Pablo Acuña** (07/05/2014) – Casa Central – Ingeniería Civil Informática
- *BUSCADOR WEB FACETEADO BASADO EN CONFIANZA* – **Oscar Cornejo** (20/03/2014) – Casa Central – Ingeniería Civil Informática
- *ANÁLISIS Y CARACTERIZACIÓN DE DEFECTOS ENCONTRADOS EN LA PLATAFORMA WEB YOHAGOHISTORIA* (28/06/2013) – **Carolina Jiménez Jorquera** – Casa Central – Ingeniería de Ejecución en Informática
- *VIRTUALIZACIÓN DE ARQUITECTURA DE REFERENCIA PARA LA PLATAFORMA E-EGS DEL BOEING 787 DREAMLINER* (08/03/2013) - **FELIPE EDUARDO CALDERÓN BAEZA** - Casa Central - Ingeniería Civil en Informática
- *ONTOLOGÍA Y WIKI SEMÁNTICA PARA UN INVENTARIO DE PATRIMONIO CULTURAL INMATERIAL* (06/12/2012) - **RENZO FRANCESCO STANLEY COTROZO** - Casa Central - Ingeniería Civil en Informática
- *AN ENTITY SYSTEM AS THE BASE OF A NODE GRAPH VISUAL PROGRAMMING LANGUAGE* (29/11/2012) - **SVEN VON BRAND LAREDO** - Casa Central - Ingeniería Civil en Informática
- *Implementación de un Sistema de Registro de Tarifas en una Compañía Naviera de Nivel Global* (29/11/2012) - **GONZALO ESTEBAN ADARO FERNANDEZ** - Casa Central - Ingeniería de Ejecución en Informática
- *Editor de objetos didácticos digitales para visualización en dispositivos móviles* (28/09/2012) - **DANIEL ANDRÉS BUSTAMANTE GÓMEZ** - CasaCentral - Ingeniería Civil en Informática
- *Diseño e implementación de un framework de desarrollo para aplicaciones de autoservicio* (04/04/2012) - **JUAN PABLO VILLASECA CARRASCO** - Santiago - Ingeniería Civil en Informática

- *SOCIEDAD DE AGENTES PARA NEGOCIACIÓN DINÁMICA DE CONTRATOS DE SERVICIOS* (28/03/2012) - **DENISE ESTIBALITZ RIVERA CATALDO** - Santiago - Ingeniería Civil en Informática
- *PRINCIPIOS Y CRITERIOS PARA EVALUAR Y COMPARAR REPOSITORIOS SOA* (05/10/2011) - **ENRIQUE DANIEL MORENO DELANNAYS** - Santiago - Ingeniería Civil en Informática
- *APOYO SEMÁNTICO PARA DISEÑO COLABORATIVO DE MALLAS CURRICULARES* (30/08/2011) - **WEI LIU** - Santiago - Ingeniería Civil en Informática
- *SELECCIÓN DINÁMICA CONTEXTUAL DE AVISOS WEB* (18/03/2011) - **Daniel Inostroza González** – Casa Central - Ingeniería Civil en Informática
- *WIKIS CON LECTURA PERSONALIZADA USANDO CONFIANZA EXPLÍCITA* (03/03/2011) - **Carlos Alberto Guajardo Miranda** - Casa Central - Ingeniería Civil en Informática
- *Generación de Listas de Reproducción Personalizadas para Streaming* (12/01/2011) - **André Rigollet** - Santiago - Ingeniería Civil en Informática
- *Desarrollo de un Framework para el diseño de juegos de realidad alternativa* (25/11/2010) - **ALEJANDRO IGNACIO BALTRA MÜHLENPFORDT** - Casa Central - Ingeniería Civil en Informática
- *WEB SEMÁNTICA APLICADA A UN SISTEMA DE INFORMACIÓN TURÍSTICA PARA LA PUBLICACIÓN Y BÚSQUEDAS DE PICADAS* (26/02/2010) - **PABLO NICOLÁS BAEZA BAEZA** - Santiago - Ingeniería Civil en Informática
- *APOYO SEMÁNTICO PARA APLICAR PATRONES, EN ENTERPRISE ARCHITECT, PARA DISEÑOS UML* (11/2009) - **JORGE ESPINOZA CAMILLA** - Santiago - Ingeniería Civil en Informática
- *Generador Semiautomático de soluciones a problemas de selección de COTS* (08/07/2009) - **Claudio Esteban Forno Martínez** - Santiago - Ingeniería Civil en Informática
- *Herramienta Gráfica para Modelado con Colaboraciones.* **Christian Ferrando.** Ingeniero Civil en Informática y Telecomunicaciones, Universidad Diego Portales, Chile, 2009-03-09.
- *Guía para la Incorporación de TI en los Procesos de Lecto-Escritura de Niños Autistas.* **Manuel Labra.** Ingeniero Civil Informático, UTFSM, Chile, 2008-12-04.
- *Azimuth Social Network: Mejorando la Calidad de Información de Diseño Utilizando Redes Sociales.* **Carlos Orrego.** Ingeniero Civil Informático, UTFSM, Chile, 2008-11-26.
- *Guía de Políticas y Procedimientos para el Desarrollo de Aplicaciones ASP.* **Cristina García.** Ingeniero Informático. UTFSM, Chile, 2008-11-20.
- *Evaluación de Procesos Web: Modelo y aplicación en Empresa Minera.* **Alejandro Madrid.** Ingeniero Civil Informático, UTFSM, Chile, 2008-08-29.
- *Diseño de un plan de pruebas para la plataforma de redes sociales Bligoo* (05/2008) - **Nicolás Fernández** - Santiago - Ingeniería Civil en Informática
- *Generación Automatizada de Sitios Web Personalizados Basados en Roles Asignados al Usuario.* **Alberto Calderón.** Ingeniero Civil Informático, UTFSM, Chile, 2008-02-21.
- *Evaluación de Enfoques de Diseño en Extreme Programming.* **René Noël.** Ingeniero Civil Informático, UTFSM, Chile, 2008-01-11.
- *Especificación de un TTS (Trouble Ticket System) para Soporte Técnico.* **Gabriel Estivales.** Ingeniero en Ejecución Informática. UTFSM, Chile. 2007-08-17.
- *Análisis y Prototipo de Sistemas Basado en Colaboraciones.* **Katherine Gallardo.** Ingeniero Civil Informático, UTFSM, Chile, 2007-03-01.
- *Decisiones de Arquitectura para Apoyar la Lectura y Anotación Colaborativa de Textos Canónicos.* **Pablo Inostroza.** Ingeniero Civil Informático, UTFSM, Chile, 2007-01-11.
- *Trazabilidad y Reuso de Decisiones de Arquitectura desde NFRS a COTS.* **Claudia López.** Ingeniero Civil Informático, UTFSM, Chile, 2006-11-24.
- *Índice Unificado para Artefactos Multimediales Distribuidos.* **Martín Barrera.** Ingeniero Civil Informático, UTFSM, Chile, 2006-11-23.
- *Herramienta de Apoyo al Modelado de Colaboraciones para la Generación Automática de Interfaces XHTML.* **Alfonso Montenegro.** Ingeniero Civil Informático, UTFSM, Chile, 2006-11-23.
- *Desarrollo de Aplicaciones Basadas en XML.* **Claudio Delgado.** Ingeniero Civil Informático, UTFSM, Chile, 2006-10-27.



- *Diseño y Construcción de Sistema Proveedor de Funcionalidades para Análisis Técnico Financiero.* **Sebastián Tapia.** Ingeniero Civil Informático, UTFSM, Chile, 2006-06-09.
- *Casos de Estudio para Enseñanza de Arquitectura de Software.* **Jennifer Beltrán.** Ingeniero Civil Informático, UTFSM, Chile, 2006-02-28.
- *Evaluación Comparativa de Enfoques Para Representar y Analizar NFRs Utilizando Casos de Uso.* **Cristian Foix.** Ingeniero Civil Informático, UTFSM, Chile, 2006-02-28.
- *Método Híbrido de Análisis de Requerimientos Combinando Aspectos y Softgoals.* **Loreto Sánchez.** Ingeniero Civil Informático, UTFSM, Chile, 2006-02-28.
- *Propuesta para Introducción Sistemática de Tecnologías Internet en las PYMES.* **Marlens Cortés.** Ingeniero Informático, UTFSM, Chile, 2005-01-20.
- *Espacios Virtuales de Interacción.* **Ignacio Aguirre.** Ingeniero Civil Informático, UTFSM, Chile, 2005-01-14.
- *Conceptos Claves para el Desarrollo Moderno de Aplicaciones Distribuidas.* **Cyntia Pizarro.** Ingeniero de Ejecución Informático, UTFSM, Chile, 2004-01.

## **15. DOCENCIA IMPARTIDA**

### **PREGRADO**

#### **UTFSM:**

Arquitectura de Software Magíster Depto. Informática (01-2007) (01-2006) 02-2005 01-2005 02-2004 (electiva, pregrado)

Desarrollo Basado en Componentes (02-2007) (01/2007) electiva pregrado.

Seminario de Middleware Magíster y Pregrado (electiva pregrado). (01-2005) (01-2006)

### **POSTGRADO**

#### **UTFSM:**

Magíster en Cs. de la Ingeniería Informática- Doctorado en Ingeniería Informática - UTFSM

MII-414 Arquitectura de Software Magíster y Doctorado UTFSM- Depto. Informática (01-2007) (01-2006) 02-2005 01-2005 02-2004

MII-491 Desarrollo Basado en Componentes (02-2007) (01/2007)

MII-490 Tema especial: Seminario de Middleware Magíster y Pregrado (Magíster y Doctorado) (01-2006) 01-2005

DII-565 Arquitectura de Software Avanzada (Doctorado)

DII-524 Evaluación de Arquitectura de Software (Doctorado) (01-2008)

DII-525 Desarrollo Basado en Componentes (Doctorado) (01-2007)

DII-526 Modelo de Calidad de Arquitectura de Software (Doctorado) (02-2007)

#### **Universidad Carlos III de Madrid :**

Arquitectura de Software (programa doctoral en ciencia de computación). (2003-2004-2005-2006)

Métodos científicos en Computación (programa doctoral en ciencia de computación). (2002-2004-2005)

#### **Universidad de Buenos Aires:**

Arquitectura de Software; Escuela de Ciencias Informáticas, anual. (2003-2005)

#### **Universidade de São Paulo:**

Engenharia de Software; mestrado e doutorado em Computação (2000)

## **17. ACTIVIDAD PROFESIONAL.**

### **PROYECTOS PROFESIONALES:**

### 1. Global funds transfer network replacement (8/2001-8/2002)

As a *Sr. Application Architect* at *Financial System Architects* for the Global Funds Transfer Network Replacement initiative, a port from VAX-TMX to Solaris+Oracle, including Messaging and Fed/CHIPS interfacing.

### 2. Securities settlement replacement (12/2000-3/2001)

As a *Sr. Application Architect* partnering with *Financial System Architects*, elaborated as-is and to-be architectures for the securities trading **Broker/Dealer Support**, from VAX-TMX to Solaris; solution separates key transactional components and allows replication for fault-tolerance, load-balancing and white labeling.

### 3. m-Engage (web-, WAP-, B2B-enabled CRM suite) (3/2000-6/2001)

At a Chilean startup, Mr. Astudillo defined the architecture and technologies to extend an existing CRM product into a product line with web-, WAP- and B2B capabilities. Mr. Astudillo remains involved as a shareholder.

### 4. Architecture methodology for distributed object systems (6/1998-8/1998)

At the *MCI Systemhouse Object Global Practice*, Mr. Astudillo co-authored a **methodology and templates** for definition and delivery distributed object systems. His contribution focused on the architecture definition task, and on the architect's role in a project. The effort outcomes include an architect's primer and some innovative notations, to be presented at industry workshops and conferences in short term.

### 5. High-availability distributed payments system (5/1998-8/1998)

At a large U.S. bank on behalf of MCI Systemhouse, Mr. Astudillo was the *lead architect* in the design of the **U.S. Treasury Cash-Link**, which aimed to automate payments by commercial banks to U.S. federal agencies. The project addressed the need to *decentralize payment processing* to the proper Fed branch, and of *immediate reporting* for positioning and forecasting. The project outcomes include a distribution architecture, consisting of a high-availability **payments mediator** (OLTP-like, distributed, replicated and load-balancing), and a high-capacity **historical analysis center** (centralized and fault-tolerant).

### 6. Reinsurance risk evaluation system (12/1997-5/1998)

At the largest U.S. reinsurance company on behalf of MCI Systemhouse, Mr. Astudillo was the *lead architect* in the **Knowledge Based System** project, which aimed to facilitate delivery of reinsurance expert medical knowledge to third-party underwriter desktops. The project addressed two bottlenecks: *reuse of medical knowledge across multiple products* (each with a manual, wizards and workflow description), and *delivery of multiple products* in a common "underwriter workstation". The project outcomes included a prototype and a long-term architecture, consisting of a **collaborative medical modeling and publishing** tool, and a **common workstation** with **product-specific workflow models**.

### 7. Sales commissions system (2/1997-3/1998)

At a large long-distance phone company on behalf of MCI Systemhouse, Mr. Astudillo was *chief architect* in the **Project X**. The system facilitates the payment of **sales commissions** to the client's sales force, satisfying three key stakeholders: marketing (writing compensation plans), HQ personnel (maintaining a sales assignments model), and payroll (producing periodic statements using the plans and assignments to process ~1TB of revenue data feeds).

His project-related outcomes included: (as chief architect) exercised *general technical oversight* and assessed *technical risk*; (as application architect) identified key technical issues, defined the *application architecture*, and *coordinated development work allocation*; and (as object architect) designed and built the key subsystem to describe compensation plans, which included an ad-hoc language ("BOMscript") and associated tools (compiler and meta-modeler).

#### 8. MCI Systemhouse methodological efforts (9/1997-9/1998)

Mr. Astudillo participated actively in an internal **Object-Oriented Methodology Task Force**, formed to define an object-oriented methodology for object-oriented projects. The results remain internal to the company.

#### 9. Large health insurer claims processing (8/1997)

Mr. Astudillo participated in the initial design for a Blue Cross/Blue Shield, aiming to migrate its mainframe-based COBOL systems into an O-O client-server system. Project outcomes included a *long-term system architecture* and a *migration path*. The proposed system included a mainframe-sized scale **workflow engine**, preserving the client's investment in existing core systems yet re-deploying auxiliary functions in an object-oriented client-server model.

#### 10. Applied research with the CMU's Software Engineering Institute (7/1997-12/1997)

Mr. Astudillo participated in an R&D initiative aimed to define a single **Architecture Handbook** and **Architect Starter Kits**, for company-wide use by application architects in future projects. The initiative included collaboration with the CMU's SEI.

#### 11. Large bank Profitability Reporting Facility (2/1997)

Mr. Astudillo performed an *architectural review* and *detailed subsystems design* (particularly Security) for a PRF. Involved technologies included DCE in a 3-layers O-O system.

#### 12. UML definition and OMG submission (9/1996-1/1997)

Mr. Astudillo was part of MCI Systemhouse's team that helped to define the **UML (Unified Modeling Language)** and its subsequent submission to the OMG as standard for Object CASE modeling. The project team suggested notation changes and additions to accommodate the modeling of *distributed and fault-tolerant systems*, particularly of CORBA flavor. See resulting publications below, including some white papers are available at the OMG web site.

#### 13. UI cognitive design tool (Summer '93)

As a *Project Assistant* at the Georgia Institute of Technology, Mr. Astudillo built key pieces of a multi-person, multi-year **User-Interface Design Environment** to evaluate efficacy of cognitive models to support UI design. He built a central source code repository, and ported (actually, extended) the client-server interface from *library-based* code on Sun's OpenWindows clients to *process-based* code in Siemens' SX/Tools clients.

#### 14. Workflow coordination tool (Spring '93)

As a *Project Assistant* at the Georgia Institute of Technology, Mr. Astudillo prototyped the **Knowledge Worker Platform Analysis**, as proof of feasibility for Unix/XView porting of an existing MS-Windows coordination tool. The client agreed to finance the whole port based on this prototype.

#### 15. Model derivation automation (1991-1993)

As a *Graduate Research Assistant* for a (semi-) automated support system for **metrics-based derivation** of strongly typed software systems from object-based domain models, Mr. Astudillo researched and built a *Smalltalk testbed* to propose and evaluate derivation criteria and rules, and combined with NeOpus (an *object-oriented rule system*).

#### 16. NCR Cooperative Computing Systems Division (Summer '91)

As an *Intern*, Mr. Astudillo ported the *Security Framework* (a subsystem of "NCR Cooperation" inter-platform **distributed objects environment**) to a Unix platform, documented it from scratch and built additional applications.

#### 17. Graphical editor ('89-90 year)

As a *Graduate Project Assistant* for the "Spock" project, Mr. Astudillo built part of, and later extended, an X-based **graphical editor for multiprocessor software** ("BDE"). He also prepared the specification and overall design for GEI, the successor of BDE.

**18. Object-oriented storage system ('89-'90 year)**

As a *Graduate Research Assistant* on object-oriented databases and schema evolution, Mr. Astudillo built a prototype C++ **object-oriented storage system** on top of the (then experimental) Wisconsin Storage System (WiSS).

**19. Distributed databases queuing simulation ('89-'90 year)**

As a *Graduate Research Assistant* on performance evaluation, Mr. Astudillo built a *queuing network discrete-event simulation model* of a **distributed database**. He implemented it on IBM CMS using the RESQ2 language. He also developed and published "Q", a queuing simulation language.

VALPARAISO, Junio de 2015.