



**ERCIM**

European Research Consortium  
for Informatics and Mathematics

# European Research Consortium for Informatics and Mathematics

May 2009

*20 Years of ERCIM - 20 Years of Cooperating for Excellence in Research*



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## **FMICS WG, an ERCIM success story**

Alessandro Fantechi

*ISTI-CNR and*

*University of Florence*

Formal Methods  
for Industrial  
Critical Systems



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## *A bit of history*

Following an initial successful workshop bringing together ERCIM members interested in **formal verification**, held in Pisa in December 1992, Stefania Gnesi and Diego Latella, CNR, Pisa, proposed to create an ERCIM working group dedicated to **Formal Methods for Industrial Critical Systems (FMICS)**.

Although at that time, **model checking** was in its early days, the early ERCIM FMICS community was already aware of the great potential of formal verification techniques.



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## *Chairs*

Since then, the WG, chaired in succession by

*Diego Latella (ISTI-CNR),*

*Hubert Garavel (INRIA),*

*Stefania Gnesi (ISTI) and*

*Pedro Merino (SparCIM),*

has kept pace (and even advanced, from a scientific point of view) with the development of **formal verification** techniques - and **model checking** in particular.



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# Model checking

established technique for the verification of the correctness of a design:

its importance in hardware and software industry has been ultimately witnessed by the 2007 A.M. Turing Award given to the fathers of model checking

(Edmund M. Clarke, E. Allen Emerson, and Joseph Sifakis).



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*Currently...*

Chair: Alessandro Fantechi  
Research associate at ISTI-CNR  
DSI -Universita' di Firenze

The FMICS Chair is assisted by the FMICS Board:

- Alvaro Arenas (CCLRC)
- Lubos Brim (CRCIM): Liaison with ERCIM board
- Hubert Garavel (INRIA): Dissemination and Web site
- Stefania Gnesi (ISTI-CNR): "Formal Methods" handbook coordination
- Diego Latella (ISTI-CNR)
- Pedro Merino (University of Malaga): liaison with ERCIM EXECOM
- Jaco van de Pol (CWI): Vice-chair, journal special issues
- Tiziana Margaria (Univ. Potsdam): European projects

*..... more than 100 members, of which 60 from 11 ERCIM institutions*

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## *Annual Workshops*

- The series of annual workshops, began in 1996 and sponsored by the WG, have promoted an ongoing scientific discussion focussed on identifying the most efficient verification techniques, with a keen eye on their industrial applicability. Most of the members of the FMICS community have strong links with industry and have thus contributed to the slow, but constant introduction of formal methods in the development cycle of industrial critical systems, witnessed in the last decade.



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## *Annual Workshops*

- The WG has also addressed other readily applicable verification techniques, such as static analysis by **abstract interpretation**.
- Similarly, the whole formal development life cycle has been addressed, for example in the 2008 FMICS workshop, where considerable attention was paid to the recent diffusion of Model Driven Development in industry.





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## *Annual Workshops*

- First: St. Hugh's College, Oxford (UK), March 19, 1996
- Second: Cesena (Italy), July 4-5, 1997
- Third: Amsterdam (Netherlands), May 25-26, 1998
- Fourth: Trento (Italy), July 11-12, 1999
- Fifth: Berlin (Germany), April 3-4, 2000
- Sixth: Paris (France), 16-17 July 2001
- Seventh: Málaga (Spain), 12-13 July 2002
- Eighth: Trondheim (Norway), 5-7 July 2003
- Ninth: Linz (Austria), 20-21 September 2004
- Tenth: Lisbon (Portugal), 5-6 September 2005
- Eleventh: Bonn (Germany), 26-27 August 2006
- Twelfth: Berlin (Germany), 1-2 July 2007
- Thirteenth: L'Aquila (Italy), 15-16 September 2008
- --> Fourteenth: Eindhoven (Netherlands) 2-3 November 2009



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## *Special issues*

Special issue of the journal "Formal Methods in System Design" (Vol. 12, Nr. 2, March 1998)

Special issue of the journal "Formal Aspects of Computing" (Vol. 10, Nr. 4, 1998)

Special issue of the journal "Formal Aspects of Computing" (Vol. 10, Nr. 5-6, 1998)

Special issue of the journal on "Science of Computer Programming" (Vol. 36, Issue 1, Jan. 2000)

Special issue of the journal "Formal Methods in System Design" (Vol. 19, Nr. 2, September 2001)

Special issue of the journal on "Science of Computer Programming" (Vol. 46, Nr. 3, March 2003).

Special issue of the journal "Software Tools for Technology Transfer" (Vol. 5, Nr. 2-3, Mar.2004)

Special issue of the journal "Formal Methods in System Design" (Vol. 30, Nr. 3, June 2007)



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## *Awards*



- *ERCIM President Gerard van Oortmerssen presents the **Working Group Award 2002** to Stefania Gnesi, coordinator of the Working Group on Formal Methods for Industrial Critical Systems.*



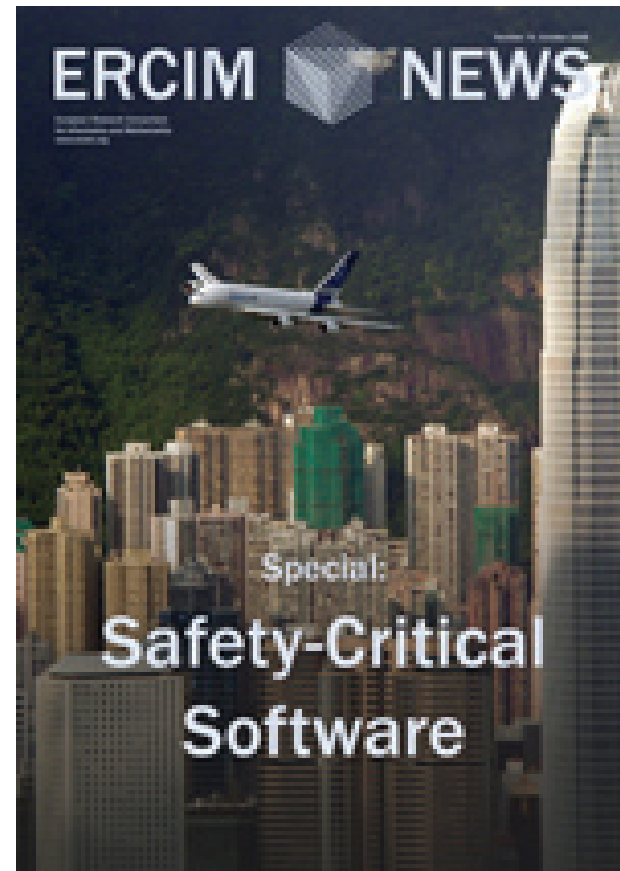
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## *Joint activities*

### ERCIM News 75 Special Theme Safety-Critical Software

jointly edited by  
Pedro Merino (FMICS WG)  
and  
Erwin Schoitsch (DES WG)





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## *Other liasons*

- Strong links have been maintained with other organizations acting in the same area, such as EASST (European Association of Software Science and Technology) and FME (Formal Methods Europe).
- In November 2009, the FMICS workshop will be held during the FM week, a special gathering of events organized this year by the FME association.



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## *Projects*



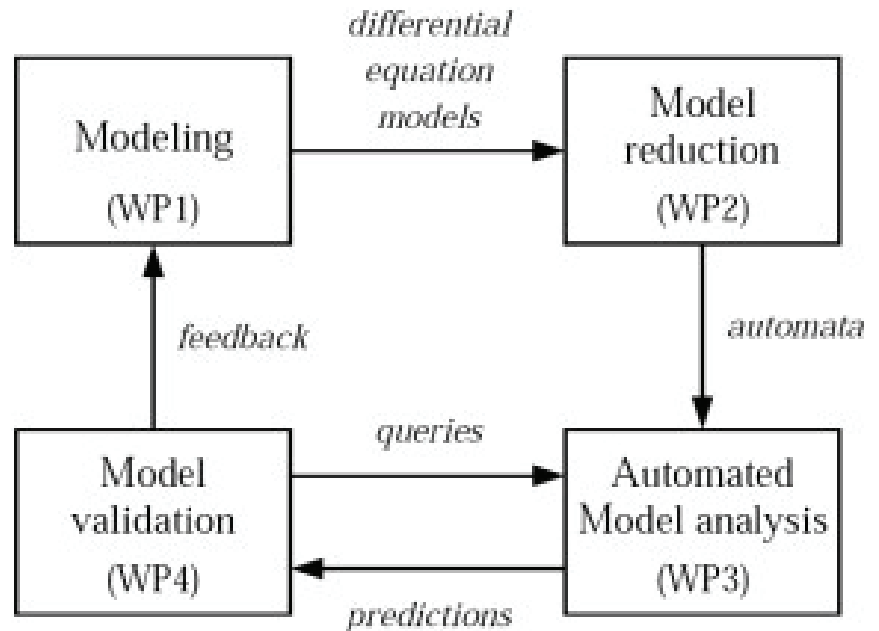
### Escherichia Coli - Modeling and Analysis

6th Framework Programme

<http://www.ec-moan.org/>

ERCIM partners:

- CWI
- INRIA
- CRCIM





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## *To do...*

- Although 14 years of activity, still much remains to be done about the original aim of the WG, namely, formal methods adoption by industries
- Rapidly increasing complexity of applications, and deep integration of pervasive applications with safety critical ones represent never-ending challenges to the FMICS community:  
*--> FMICS will remain the oldest WG in activity for long....*