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Deliverable 13: Summary of Dissemination Activities Year 3

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PROFUNDIS Deliverable 13: Summary of Dissemination Activities Year 3

March 15, 2005

1 Executive Summary

The work in PROFUNDIS has been successful in year 3 (2004), with only minor deviations from the Technical Annex (TA) and from the Dissemination and Use Plan (DUP). An elaboration of what has been accomplished can be found in the Periodic Progress Report (PPR) for year 3. The present document contains a summary of dissemination activities in PROFUNDIS year 3.

The main form of dissemination for PROFUNDIS at this stage is through publications in scientific conferences, workshops and journals. Here we have been successful with 37 peer reviewed publications and 12 other reports, several of which are being submitted, including three Ph.D. theses. We include here also papers appearing in publications even if they were accepted for publication before 2004 and noted as such in a previous SDA.

There has been one general PROFUNDIS workshop and 6 visits between partners, sometimes involving several persons. These indirectly contribute also to dissemination outside the project, since visitors often give presentations attracting an external audience.

There have been 28 visits from project members to sites outside the project in order to present parts of the project. These visits range from lecture series at summer schools and invited talks at conferences to more informal presentations. The number is on par with that of the previous year, which confirm our impression that PROFUNDIS is well regarded in the scientific community.

9 websites with links to papers and tools have been created.

2   Overview of the Work Packages

PROFUNDIS consists of three technical Work Packages (WPs) outlined below. A fourth WP is devoted to project management and is given no special consideration in the DUP.

WP1

The objectives of the Work Package consist of the development of a HD-Automata model, suitable for finite-state verification, enhanced with additional capabilities like name fusions and substitutions. Also, versions of mobile calculi should be defined, e.g. for the symbolic analysis of security protocols. A verification environment should be designed and implemented, equipped with a general, open architecture and consisting of new tools realizing the models and the verification methods above. Several case studies should show the flexibility and effectiveness of our approach.

WP2

The objectives of the Work Package are to develop new logics to support the verification of structural (spatial) and behavioural properties of concurrent mobile systems, and to develop proof systems for these logics based on sequent calculi. A tool for the logical framework should be built, integrated in the verification environment developed together with other tasks. The usefulness of the approach should be illustrated by several case studies.

WP3

The objectives are to develop new type systems to control interferences among processes and the resources used by the processes [Task 3.1]; to integrate the type techniques with operational and logic techniques [Task 3.2]; to investigate the robustness of the type techniques and their algorithmic definitions [Task 3.3]; to assess the applicability of the techniques by means of case studies, and to implement some of the type algorithms and proof techniques.

3   Publications

The project has in the third year produced a total of 49 papers, out of which 37 have already passed an international peer review process to be accepted for publication at a conference or journal. This represents a substantial effort and demonstrates our commitment to follow established scientific routes for dissemination of results. The complete list of papers is at the end of this report. We include here also papers appearing in publications even if they were accepted for publication before 2004 and noted as such in a previous SDA.

4   Web Presence

1. `http://www.it.uu.se/profundis` is the project main web page. It includes:

   - A main page with synopsis of overview and pointers to all other resources.
   - A project overview, related projects, and a list of official (yearly) progress reports.
   - A list of meetings, with links to files for each meeting.
   - A list of visits.
   - A list of events, with links to the main web page of each event.
   - A list of publications reporting the work done within the project.
   - Links to all delivered software.

2. `http://jordie.di.unipi.it:8080/pweb` is a web site for the distributed PROFUNDIS tools. Here the tools STA, pi-compiler, Reducer, MWB and Trust can be accessed in a general framework.

3. `http://www.cmi.univ-mrs.fr/~vvanacke/trust.html` is a web site for the TRUST tool.

4. `http://jordie.di.unipi.it:8080/mihda` is the web site of the HD-Reducer

5. `http://rep1.iei.pi.cnr.it/projects/JACK/hal.html` is the web site for the HAL tool.

6. `http://www.it.uu.se/research/group/mobility/mwb` is the web site for the MWB tool.

7. `http://www.dsi.unifi.it/~boreale/tool.html` is the web site of the STA tool.

8. `http://www-ctp.di.fct.unl.pt/SLMC` is the web site of the Spatial Model Checker (SLMC) tool.

9. `http://perso.ens-lyon.fr/damien.pous/gcpan` is a web site for the the abstract machine for the execution of Safe Ambients.

5 Project meetings

There has been one formal PROFUNDIS meeting, at Rovereto, March 5-12 2004, with around 30 participants. All sites were well represented, there were technical presentations from all Work Packages and a PROFUNDIS business meeting.

6 Visits between members of the project

In order to continue collaboration and disseminate progress from different sites the following 6 visits have been made. Note that some of these involve several people visiting simultaneously.

1. June 2004: D. Hirschkoff and D. Pous (Lyon) visited D. Sangiorgi (Bologna) to work on an optimised abstract machine for the distributed execution of Safe Ambients. twice, in June and December 2004,

2. April-July 2004: H. Vieira (Lisbon) visited Pisa.

3. November 2004: L. Caires and L. Monteiro (Lisbon) visited Lyon (INRIA)

4. December 2004: G. Ferrari (Pisa) visited Lisbon.

5. December 2004: K. Yemane (Uppsala) visited Pisa.

6. December 2004: D. Hirschkoff and D. Pous (Lyon) visited D. Sangiorgi (Bologna) again to work on an optimised abstract machine for the distributed execution of Safe Ambients.

7 Visits and talks by project members outside PROFUNDIS

On 28 occasions PROFUNDIS researchers have travelled outside their sites to present ongoing PROFUNDIS work. Though most of these trips entailed a single presentation some trips gave rise to several presentations or a series of lectures at research schools. PROFUNDIS has also this year been globally disseminated with visits to Argentina, although the vast majority understandably is within Europe.

1. January 2004: D. Sangiorgi gave an invited talk at the conference POPL 04 on "coinduction in programming languages".

2. February 2004: J. Bengtson attended the First International Workshop on "Formal Methods and Web Services", Pisa, Italy, and presented "Web Services as a New Approach to Distributing and Coordinating Semantics-Based Verification Toolkits" (deliverable of the second year).

3. March 2004: at the Global Computing Workshop in Rovereto, Italy,

   - E. Lozes presented "On the expressiveness of spatial logics"
   - E. Tuosto presented "Modelling and Minimising the Fusion Calculus using HD-automata"
   - L. Caires presented "Behavioral-Spatial Specifications in a Logic for the Pi-Calculus"
   - M. Baldamus presented "Spi-calculus translated to pi-calculus preserving may-testing"
   - D. Teller presented "Recovering resources in the pi-calculus"

4. March 2004: L. Caires delivered an invited talk entitled "Spatial Logic Specifications of Distributed Systems" at the 17th International Workshop on Algebraic Development Techniques, Barcelona, Spain.

5. March/April 2004: E. Tuosto attended the ETAPS 2004 conference, Barcelona, Spain.

6. March/April 2004: F. Valencia attended the ETAPS 2004 conference and gave a talk "On the Expressiveness of Infinite Behavior and Name Scoping in Process Calculi"

7. March/April 2004: K. Yemane attended the ETAPS 2004 conference and presented paper [26] at the 7th International Workshop on Coalgebraic Methods in Computer Science (CMCS) in Barcelona, Spain.

8. April 2004: L. Caires delivered a talk entitled "Behavioral and Spatial Observations in a Logic for the Pi-Calculus" at the 7th International Conference on Foundations of Software Science and Computation Structures, FOSSACS 2004, Barcelona, Spain.

9. April 2004: L. Monteiro delivered a talk entitled "A noninterleaving model of concurrency based on transition systems with spatial structure" at the workshop on Coalgebraic Methods in Computer Science, CMCS 2004, Barcelona, Spain.

10. April 2004: A. Ravara delivered a talk entitled "Spatial Types for Processes" at the Second APPSEM II Workshop Tallinn.

11. April 2004: F. Valencia visited Ecole Polytechnique, Paris.

12. June 2004: L. Caires visited Paris Jussieu, Laboratoire Preuves Programmation et Systems.

13. June 2004: M. Buscemi, E. Tuosto and B. Victor attended (by invitation) DAGSTUHL-SEMINAR 04241: "Graph Transformations and Process Algebras for Modeling Distributed and Mobile Systems" International Conference and Research Center for Computer Science, Schloss Dagstuhl, Wadern, Germany. They all gave presentations.

14. June 2004: E. Tuosto attended WISP 2004: "International Workshop on Security Issues with Petri Nets and other Computational Models" Bologna, Italy, and presented paper [4].

15. July 2004: D. Sangiorgi gave an invited talk at the conference LICS 04 on the topic of bisimulation and coinduction, relevant for the work carried out within in Profundis.

16. July 2004: M. Baldamus attended LICS'04, Turku, Finland, and presented "Spi Calculus Translated to pi-Calculus Preserving May-Tests" (deliverable of the second year).

17. July 2004: E. Tuosto gave a course on "Verification for Mobile Systems", Escuela de Ciencias Informaticas. Departamento de Computacion, Facultad de Ciencias Exactas y Naturales. Universidad de Buenos Aires, Argentina.

18. August 2004: K. Yemane attended the Category Theory and Computer Science workshop (CTCS'04) and a Graduate Student Summer School, Copenhagen.

19. August 2004: D. Teller presented "Recovering resources in the pi-calculus" at the IFIP Theoretical Computer Science conference, in Toulouse, France.

20. September 2004: E. Tuosto and H. Vieira attended VODCA 2004: "International Workshop on View on Designing Complex Architectures" Bertinoro, Italy, and presented paper [35].

21. September 2004: D. Teller gave a talk about "Resources for distributed systems" at the Computer Science Seminar of the University of Sussex, Brighton.

22. October 2004: D. Teller gave a talk titled "Pi-calculus, resources, garbage-collection" at the Joint seminar of QMUL and Imperial College, London.

23. October 2004: U. Montanari gave an invited talk on the Profundis Web at Monterey CUE Workshop 2004 on Software Engineering Tools: Compatibility and Integration, Vienna.

24. November 2004: J. Bengtson visited the Stefan Berghofer and Tobias Nipkow at TU Mnchen, Munich.

25. November 2004: M. Buscemi attended the Second ASIAN Symposium on Programming Languages and Systems (APLAS 2004), Taipei, Taiwan, and presented a paper on D-fusion calculus (deliverable of the second year).

26. November 2004: U. Montanari gave an invited tutorial on European Global Computing Projects: Project PROFUNDIS, at PriSE (Principles of Software Engineering) 2004, an International Conference, Buenos Aires.

27. December 2004: B. Victor visited the IT University, Copenhagen, and gave a talk on "Fusion Solos and D-Fusion Diagrams".

28. December 2004: K. Yemane visited University of Udine.

Articles and reports produced by PROFUNDIS year 3

Reviewed Publications

[1] Roberto M. Amadio and Silvano Dal Zilio. Resource Control for Synchronous Cooperative Threads. In *CONCUR 2004 – 15th International Conference on Concurrency Theory*, volume 3170 of *Lecture Notes in Computer Science*, pages 68–82. Springer-Verlag, August 2004.

[2] Michael Baldamus, Jesper Bengtson, Gianluigi Ferrari, and Roberto Raggi. Web services as a new approach to distributing and coordinating semantics-based verification toolkits. In *Proceedings of the First International Workshop on Web Services and Formal Methods (WSFM 2004)*, volume 105 of *ENTCS*, pages 11–20. Elsevier, February 2004.

[3] Michael Baldamus, Joachim Parrow, and Björn Victor. Spi calculus translated to pi-calculus preserving may-tests. In *Proceedings of LICS'04*, Turku, Finland, July 2004. IEEE, Computer Society Press.

[4] Giacomo Baldi, Andrea Bracciali, Gianluigi Ferrari, and Emilio Tuosto. A Coordination-based Methodology for Security Protocol Verification. In *WISP'04*, volume 121 of *ENCTS*. Elsevier, 2005.

[5] G. Barthe, A. Basu, and T. Rezk. Security types preserving compilation. *Journal of Computer Languages, Systems and Structures*, 2005. To appear.

[6] G. Barthe, P. D'Argenio, and T. Rezk. Secure Information Flow by Self-Composition. In R. Foccardi, editor, *Proceedings of CSFW'04*, pages 100–114. IEEE Press, 2004.

[7] G. Barthe and L. Prensa-Nieto. Formally verifying information flow type systems for concurrent and thread systems. In M. Backes, D. Basin, and M. Waidner, editors, *Proceedings of FMSE'04*, pages 13–22. ACM Press, 2004.

[8] G. Barthe and T. Rezk. Non-interference for a JVM-like language. In G. Morrisett and M. Fähndrich, editors, *Proceedings of TLDI'05*. ACM Press, 2005.

[9] Massimo Bartoletti, Pierpaolo Degano, and Gianluigi Ferrari. Method inlining in presence of stack inspection. In *Workshop on Issues in the Theory of Security (WITS'04)*, 2004.

[10] Massimo Bartoletti, Pierpaolo Degano, and Gianluigi Ferrari. Program transformations under dynamic security policies. In *MEPHISTO Final Workshop*, volume 99 of *Electronic Notes in Computer Science*. Elsevier, 2004.

[11] Massimo Bartoletti, Pierpaolo Degano, and Gianluigi Ferrari. Policy framings for access control. In *Workshop on Issues in the Theory of Security (WITS'05)*, 2005.

[12] Michele Boreale and Marzia Buscemi. A framework for the analysis of security protocols. *Theoretical Computer Science*, 2005. To appear.

[13] L. Caires. Behavioral and spatial properties in a logic for the pi-calculus. In Igor Walukiwicz, editor, *Proc. of Foundations of Software Science and Computation Structures'2004*, Lecture Notes in Computer Science. Springer Verlag, 2004.

[14] L. Caires and L. Cardelli. A spatial logic for concurrency–II. *Theor. Comput. Sci.*, 322(3):517–565, 2004.

[15] L. Caires and E. Lozes. Elimination of quantifiers and undecidability in spatial logics for concurrency. In *Proc. of CONCUR'04*, number 3170 in Lecture Notes in Computer Science, pages 240–257. Springer Verlag, 2004.

[16] Luis Caires and Etienne Lozes. Elimination of quantifiers and undecidability in spatial logics for concurrency. *Theoretical Computer Science*. To appear.

[17] S. Dantchev and F. Valencia. On infinite CSP's. In *In proceedings of the Third International Workshop on Modelling and Reformulating CSPs*, 2004.

[18] Yuxin Deng and Catuscia Palamidessi. Axiomatizations for probabilistic finite-state behaviors. In *Proceedings of the 8th International Conference on Foundations of Software Science and Computation Structures*, Lecture Notes in Computer Science. Springer, 2005. To appear.

[19] Yuxin Deng and Catuscia Palamidessi. Axiomatizations for probabilistic finite-state behaviors. In *Proceedings of the 8th International Conference on Foundations of Software Science and Computation Structures*, Lecture Notes in Computer Science. Springer, 2005. To appear.

[20] Yuxin Deng and Davide Sangiorgi. Ensuring termination by typability. In *Proceedings of the 3rd IFIP International Conference on Theoretical Computer Science*, pages 619–632. Kluwer, 2004.

[21] Yuxin Deng and Davide Sangiorgi. Towards an algebraic theory of typed mobile processes. In *Proceedings of the 31th International Colloquium on Automata, Languages and Programming*, volume 3142 of *Lecture Notes in Computer Science*, pages 445–456. Springer, 2004.

[22] Yuxin Deng and Davide Sangiorgi. Towards an algebraic theory of typed mobile processes. *Theoretical Computer Science*, 2005. To appear.

[23] Gianluigi Ferrari and Alberto Lluch-Lafuente. A Logic for Graphs with QoS. In *First International Workshop on Views On Designing Complex Architectures*, Electronic Notes in Computer Science, Bertinoro, Italy, September 2004. Elsevier. To appear.

[24] Gianluigi Ferrari, Ugo Montanari, and Emilio Tuosto. Verification on the web of name-passing process calculi. In *Workshop on Software Engineering Tools: Compatibility and Integration, Monterey Workshop Series*, LNCS, 2004. To appear.

[25] Gianluigi Ferrari, Ugo Montanari, and Emilio Tuosto. Model Checking for Nominal Calculi. In *FOSSACS*, LNCS, Edinburgh, UK, 2005. Springer. To appear.

[26] Neil Ghani, Kidane Yemane, and Björn Victor. Relationally staged computations in calculi of mobile processes. In *Proceedings of CMCS 2004 (7th International Workshop on Coalgebraic Methods in Computer Science)*, volume 106 of *ENTCS*, pages 105–120, Barcelona, Spain, 2004. Elsevier.

[27] D. Hirschkoff. An extensional spatial logic for mobile processes. In *Proc. of CONCUR'04*, volume 3170, pages 325–339. Springer Verlag, 2004.

[28] D. Hirschkoff, D. Pous, and D. Sangiorgi. An Efficient Abstract Machine for Safe Ambients. In *Proc. of COORDINATION '05*, number 2004–63, 2005. To appear.

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[30] F. Martins and A. Ravara. Typing migration control in lsdpi. In *Proceedings of FCS'04*, volume 31, pages 1–12. Turku Centre for Computer Science, 2004.

[31] Marino Miculan and Kidane Yemane. A unifying model of variables and names. In *Proceedings of FOSSACS'05*, LNCS. Springer, 2005. To appear.

[32] Ugo Montanari. Web services and models of computation. In *First International Workshop on Web Services and Formal Methods*, volume 105 of *Electronic Notes in Computer Science*. Elsevier, 2004.

[33] D. Teller. Recovering resources in the pi-calculus. In *Proceedings of IFIP TCS 2004*. Kluwer, 2004.

[34] Emilio Tuosto. Tarzan: Communicating and Moving in Wireless Jungles. In A. Cerone and Alessandra Di Pierro, editors, *2nd Workshop on Quantitative Aspects of Programming Languages*, volume 112 of *Electronic Notes in Computer Science*, pages 77–94. Elsevier, 2004.

[35] Emilio Tuosto and Hugo T. Vieira. An Observational Model for Spatial Logics. In *First International Workshop on Views On Designing Complex Architectures*, ENTCS, Bertinoro, Italy, September 2004. Elsevier. To appear.

[36] Vasco T. Vasconcelos, António Ravara, and Simon Gay. Session types for functional multithreading. In *CONCUR'04*, volume 3170 of *Lecture Notes in Computer Science*, pages 497–511. Springer Verlag, 2004.

[37] S. Dal Zilio, D. Lugiez, and C. Meyssonnier. A logic you can count on. In *POPL 2004 – 31st Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*. ACM Press, 2004.

Papers Submitted for Publication, Reports, Drafts

[38] Jesper Bengtsson. Generic implementations of process calculi in Isabelle. In Paul Pettersson and Wang Yi, editors, *Proceedings of the 16th Nordic Workshop on Programming Theory*, number 2004-041 in IT Technical Reports, pages 74–78. Department of Information Technology, Uppsala University, October 2004.

[39] Michele Boreale, Marzia Buscemi, and Ugo Montanari. A general name binding mechanism. Submitted for publication, 2005.

[40] Marzia Buscemi and Ugo Montanari. A compositional coalgebraic model of monadic fusion calculus. Submitted for publication, 2005.

[41] Marzia Buscemi and Ugo Montanari. A congruence result for process calculi with structural axioms. Submitted for publication, 2005.

[42] Palamidessi C., Saraswat V., F. Valencia, and B. Victor. Linearity vs persistency in the pi-calculus. Ongoing Work.

[43] Fabio Gadducci, Marino Miculan, and Ugo Montari. About permutation algebras, (pre)sheaves and named sets. Submitted for publication, International Journal on Higher-Order and Symbolic Computation, 2004.

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