Theory of Computer Science @ Ivi.UvA.nl
Alban Ponse

Contents of presentation:

• Section
• Research themes
• SWOT analysis
• Scientific output and Funding
• Notable results
• Future

Discussion
section TCS: Theory of Computer Science (since 2009)

program leader: Prof.dr. J.A. (Jan) Bergstra (until 12-2011)
Dr. A. (Alban) Ponse (from 2012)

members: Dr. I. (Inge) Bethke
Dr. B. (Bert) Bredeweg
Dr.ir. B. (Bob) Dierens (support)
Dr. P.H. (Piet) Rodenburg (until 07-2011)

associated people: Dr. G. (Gerard) Alberts
Prof.dr. C.A. (Kees) Middelburg
Dr. P.H. (Piet) Rodenburg
Dr. S.F.M. (Bas) van Vlijmen
Research themes

1. Instruction sequences
   - in 2009-2011: 7 journal articles, 2 conf.papers, and 12 techn.reports
   - in 2012, a second text book was published

2. Meadows
   - a modelling of the rational, real and complex numbers with the property that the multiplicative inverse of 0 is 0
   - in 2009-2011: 3 journal articles, 11 reports

3. Proposition algebra and short-circuit logics
   - central question: What are the operators and logics underlying conditionals and short-circuit evaluation?
   - [ACM Transactions on Computational Logic, 12(3), Article 21 (36 pp), 2011]
Research themes (2)

4 Representation and reasoning
   - automated problem solving methods for QR (qualitative reasoning)

5 Interface and interaction
   - development of workbenches for building, simulating, and inspecting qualitative models

6 Knowledge capture
   - empowers domain experts in better organizing their knowledge

Output in 2009-2011 of these related themes (63 items in total):

- 11 journal articles
- 16 conference proceedings
- 1 Book chapter
- 1 Ed. collection
- 12 Technical reports
- 22 Invited talks
SWOT analysis TCS 2009-2011

Strengths:  
Capacity to address foundational research  
Increasing dissemination of results via scientific literature

Weaknesses:  
External funding folio is relatively small

Opportunities:  
Establishing cooperation with TCS@VU and ILLC@UvA  
MSc's Computer Science (with VU Univ., 2013+) + Logic  
Deployment of learning instruments (for science education)

Threats:  
Research capacity under pressure (edu + management)
Scientific output and Funding 2009-2011

- Output in terms of publications is considerable:

  Correction Self-evaluation report:

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<th>program TCS</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
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<td>all TCS publications</td>
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- External Funding:
  - DynaLearn (EU FP7, coord., ± 3 fte@UvA, 8 Partners, 3.2 ME total budget)
  - Symbiosis—Jacquard (NWO, coord, 1 PhD + 1 Postdoc)
  - Thread Algebra for Strategic Interleaving (NWO, coord., 1 PhD)
  - Microgrids (NWO; until mid 2009, Postdoc, coord. CSA@UvA)
Notable results 2009-2011

- Various toolkits, workbenches, portals for *Edu + Research*, including
  - PSF Toolkit (Process Specification Formalism), latest update in 2012
  - PGA Toolset (ProGram Algebra), latest update in 2007; web interface in 2010
  - QRM portal (Qualitative Reasoning and Modelling), latest update in 2012
  - DynaLearn (version 1.0.2), latest update in 2012

- Journals: special issues *(TCS ’11, Ecological Inf. ’09)* and editorships:
  - Journal of Logic and Algebraic Programming
  - Journal of Applied Logic
  - Scientific Annals of Computer Science
  - Advances in Software Engineering
  - Informatics and Logic
  - Scholarly Research Exchange
  - Science of Computer Programming
  - Computer Science Reviews
  - Journal of Universal Computer Science
  - The Open Software Engineering Journal
  - Journal of Algorithms in Cognition
  - Ecological Informatics

- Organization of TCSA’09-11 *(Theoretical Computer Science day Amsterdam)*

- Membership of programme committees
  - AIMS2009, NIOC2009,
  - EC-TEL, IJCAI, ECAI, AIED, ITS, QR, DKRC 2011,
  - ICCS’09-11
Some personal results:

**Bergstra:**
- Member of the Academia Europaea, since 2006
- Member of the Royal Netherlands Academy of Arts and Sciences (KNAW), since 2011
- Editor-in-chief of Journal of Logic and Algebraic Programming
- Editor-in-chief of Science of Computer Programming
- H-index = 46
- Further research themes: Process algebra, Outsourcing and Islamic finance

**Bredeweg:**
- Consultancy for Global Resources for Online Education (USA): A Roadmap for Education Technology (2010), funded by CCC and NSF
- Specialist reviewer, International Journal of Artificial Intelligence in Education (IJAIED), since 2008
- Member scientific comm. International Conferences on Ecological Informatics (ISE), since 2005
- Member executive comm. International Artificial Intelligence in Education Society (IAIED), 1997-2009
Future

- **Valorisation (2013: Bredeweg = valorization officer Informatics Inst.)**
  - Bredeweg: Deployment of learning instruments
  - Bethke, Diertens, Ponse: Webklas Informatica; development of edu material

- Seeking collaborations with the **CSA-group** (Informatics Inst.) and the **ILLC institute** (UvA)

- Seeking collaboration with the **Theoretical Computer Science group** at VU, also in the perspective of the **AFS**
  - Ponse: 1 day/week at VU, integration of *Edu + Research* in VU’s TCS-group

- **Participation in joint funding requests**
  - Bergstra, Ponse: participation in TOP-proposal NWO, coord. CWI (March 2013)
  - Bredeweg: LAMOUR, EU FP7, Coord., call 11, Obj. 8.2, (April 2013)
  - Bredeweg: Stakeholder management by Conceptual models (planned)