A Proposal for The Rosetta Language Standard

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Standard Coverage

• Base Language
  • Syntax
  • Static and Dynamic Semantics
  • Expression language
  • Facet and Interaction languages

• Standard Domain Lattice
  • Semantics
  • Unit-of-semantics domains
  • Model-of computation domains
  • Engineering domains
  • Interactions among domains

• Case Studies and Methodology
Who is working on it

- Original Rosetta definition group remains largely intact
  - Perry Alexander - The University of Kansas / Cadstone, LLC (Chair)
  - David Barton - EDAptive Computing
  - Peter Ashenden - Ashenden Designs
  - Grant Martin - Tensilica
  - Roberto Passerone - University of Trento

- New individuals
  - Davd Geshiedel, Chris Fearday - Northrop
  - Andy Adams-Moran, Lee Pike, David Burke - Galois, Inc

- General announcement to be made after DAC
Current Status

- Draft Standard in progress
  - Base Language - 70-80% complete
  - Domain Lattice - 20% complete
  - Case Studies - 20% complete
- Books in progress
  - *System-Level Design with Rosetta* - In production to appear in October - First complete description of the Base Language
  - *System-Level Design Semantics with Rosetta* - In development to appear in December 2007 - First complete description of the Domain Lattice semantics
- Case Studies
  - Industry sponsored secure boot / high assurance computing study
  - Industry sponsored power-aware design study
Current Status (cont)

- Two sources of industrial toolsets
  - EDaptive Computing, Inc - EDASstar tool suite
  - Cadstone, LLC - Bedrock Rosetta tool suite
  - University of Kansas ITTC - Raskell tool suite

- Example customers
  - Galois, Inc - High-assurance Xen derivative seeking to understand interaction between hardware and software
  - Northrop Grumman - High-assurance, power-aware communication systems for aerospace platforms

- Lack of a standard is finally a roadblock
  - Industrial customers - Early adopters hesitant to move forward
  - Government customers - Require multiple tool sources
  - Tool providers - Cannot write tools to unspecified standard
Development Roadmap

• **Study Period Tasks**
  • Assure industrial relevance through case-study execution
  • Define the Domain Lattice through case-study execution
  • Finish Base Language Standard first draft

• **After study period**
  • Edit and revise Base Language Standard
  • Write domain standards

• **Goals**
  • December 2007 - Complete Base Language standard in final form
  • December 2007 - Draft Domain Lattice Standard
  • December 2008 - Domain Lattice Standard in final form