

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 Dember 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 - EDAStar 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