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Artisan Studio® and the OMG MARTE™ Profile

The evolution of Artisan Software Tool's commitment to enabling the success of Systems and Software Engineers in the Real-time & Embedded domains…

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Talking Points

- Commitment of Artisan Software to Real-time Embedded Engineering and the emergent MARTE™ Profile
- Artisan Software's Informal Status Assessment of the MARTE™ Profile
- Artisan Software's Informal Development Plan for the Artisan Studio® MARTE™ Profile
- Opinion on Why MDD™ often Fails and What is Needed for it to Succeed.

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History of Commitment

- 1998: First to Market with an Enterprise-scale Collaborative Modeling Environment for Real-time Engineers
- 2000: Ongoing offering of the Hassan Gomaa Notation for Concurrency Modeling integrated to UML™
- 2005: Contributing authorship of the OMG Profile for Schedulability, Performance, and Time
- Productized Real-time Profile for SPT Modeling
- *Nearly* productized support for the SPT, Rate Monotonic Analysis, and RMA Solver integration
- 2006: Best-in-class SysML™ Capabilities including the crucial Allocation and Parametrics features

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Ongoing Commitment

- 2005: Participation in the ProMARTE™ Partnership
- 2006: Active, Voting Participation in the (related) SysML™ and UPDM™ Specification Teams
- 2007: Active, Voting Participation in the MARTE™ Finalization Task Force
- 2008: Ongoing Partnership in EU Projects intending to exploit MARTE™
  - INTERESTED
  - SATURN
- 2008: Active Development of an Ergonomic (Domain-specific) Profile for MARTE™

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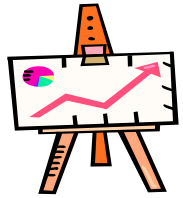

Status of MARTE™ Profile

- "Adopted Specification"
  - as of 04 August 2007
- FTF Report submitted
  - as of 26 May 2008
- XMI 2.1 Specification Files revised per Resolved FTF Issues
  - as of June 2008
- Tools with prototype versions of the revised Profile
  - MagicDraw, RSA, Papyrus, Artisan, ???
- Tools with Accessible versions of the revised Profile
  - Papyrus (Eclipse)
- Tools with Accessible, executable versions of the revised VSL
  - Papyrus (Eclipse)
- Tools with Accessible, domain-specific MARTE™ modeling
  - None (as yet)
- Tools with Integrated Solver & Simulator MARTE™ capabilities
  - None
- Tools with Accessible MARTE™-aware MDA™ transformations
  - None

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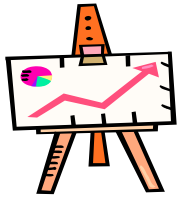

Status of Artisan Studio® MARTE™ Profile

- Successfully parses the revised XMI Specifications
  - Import is lossy
- Profile is “browsable” within Artisan Studio®
  - Hierarchical Model Browser presents additional tabs for the various realms of the profile
- Modelers can access and manually apply stereotypes
- Value Specifications are plaintext
- Can neither create nor stereotype Instance Specifications

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Artisan Studio® MARTE™ Development Goals

- Gain access to Instance Specifications (with Version 7.0)
- Implement support for UML2 Timing notations (vs. Artisan-style)
- Implement support for Stereotypes of Stereotypes
- Import MARTE XMI without Information Loss
- Add Icon/Image Palette for MARTE™ Symbols
- Record Documentation in Profile for all MARTE elements
- Implement an Antlr v3 Grammar and AST for MARTE VSL Parsing
- Implement Domain-specific Views for MARTE Modeling
- Implement Domain constraint enforcement and checking for MARTE Modeling
- Implement Case Study MARTE™ Models (artifacts from SATURN, INTERESTED…)
- Intercax Solver Integration
- The above includes Forward-Looking Statements and Should Not be Construed as…

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Why does Model-Driven Development Fail?

- Models are Incomplete
- Models are Inconsistent
- Models are Ambiguous
- Models are Incomprehensible
- Models are Unsharable
- Models are Unverifiable
- Models Ignore Multiform Time
- Models lack Quantitative and Qualitative Metrics
- Model Development is too arduous
- Model Development is too slow
- Graphical Grammars are no more—or are *less*—expressive than Text
- Modeling Tool User Interfaces are User *Hostile*
- Modeling Tools are Buggy
- Good Modeling is Subjective
- Models are Cohesive, Coupled, Complex, Rigid, and Fragile
  - Like the epitome of bad code…

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When MDD™ Will Succeed

- Refinement of de facto Metrics
  - Completeness, Objectivity
- Adoption of Formal Methods
  - Completeness, Consistency, Verification
- Improvement of Tools
  - Consistency, Collaboration, Modeling Fluency, Modeling Duration, User Interfaces, Model Modularity
- Additional Research
  - Graphical Expressiveness
  - Metrics
- Improved Education
  - Consistency, Modeling Fluency, Objectivity

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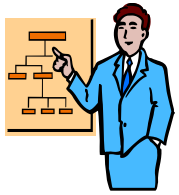

Speaker Biography

- Lonnie VanZandt
- Artisan Software Partner; Artisan Studio® user since 2000
- Independent Consulting Systems Engineer (Predictable Response Consulting) since 2000
- Specialties include: Operating Systems kernels, Real-time Systems, Object Oriented Systems, Network Protocols, UML™ Modeling, Artisan Studio® Usage, Together© Usage
- Career includes: AT&T Lucent Bell Labs, TimeSys Linux, Northrop Grumman {Cleared}, DesignNet, …
- Education: BS and MS, Computer Engineering, University of Illinois, Urbana

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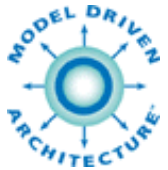

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