



Zeligsoft Component-Oriented Software Engineering and MARTE

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Agenda

- Corporate Overview
- Zeligsoft Component-Oriented software Engineering
- Integration of MARTE
- Summary

Corporate Overview

Zeligsoft

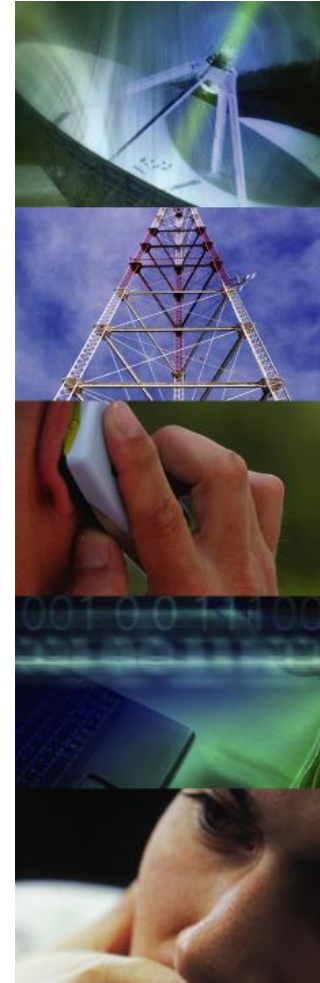
- Founded in 2002 to address embedded S/W productivity
- Pioneers in embedded Software tools and methods
- Deep domain expertise
- Headquartered in Canada's 'Silicon Valley North'
- Leading provider of design automation solution in SDR
- Open solutions that integrate with other best-in-class products



Deeply versed in component-based, modeling and automation solutions for embedded software development

Embedded software challenges

- Cost and performance demands are driving rapid platform evolution and technology adoption
- Time-to-market demands continue to increase
- Distributed architectures and remote development is raising complexity
- Increasingly mission critical functions implemented in software - QoS demands improved reliability and performance
- Growing investment in software must be protected
- Increased cost pressures and skill shortages



Embedded software demands innovative development solutions

Zeligsoft Component-Oriented Engineering

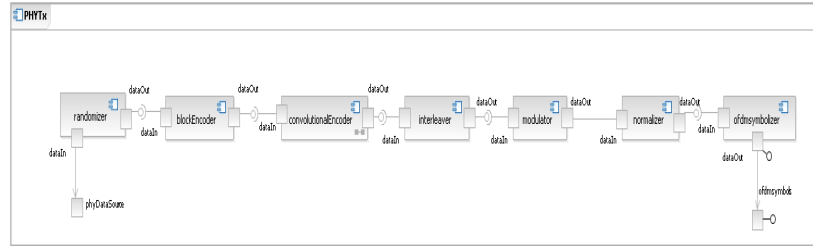


Component-Oriented Engineering

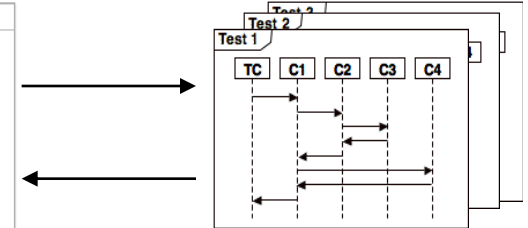
- Component-Based Development (CBD)
 - The entire methodology is focused on the development of component-based software/systems
 - Component-based applications and platforms (multi-layer)
- Model-Driven Development (MDD)
 - Rich MDD environment fully adaptable for specific domains
 - Correctness: validation, analysis, test, monitoring
 - Generation: conventional generation (model-to-model and model-to-text) + DAG
- Agile Software Development (ASG)
 - Provides Agile principles at the system level
 - Incremental testing from component (unit) testing on host to system testing on target
 - Agility to test different application deployments and system configurations

Component-Oriented Engineering

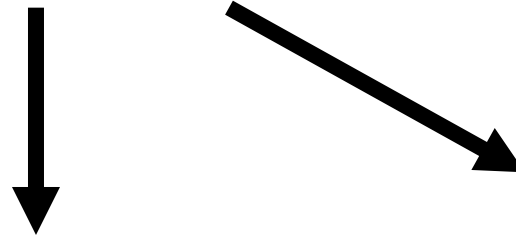
Component-Based Application



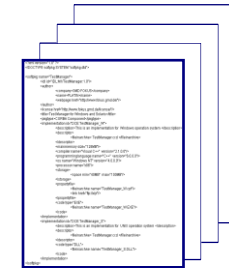
Scenario-Based Test



Deployment
Memory usage
Schedulability
Performance



Deployment-Aware Generation (DAG)



Multi-layer Platform

Logical platform Layers:

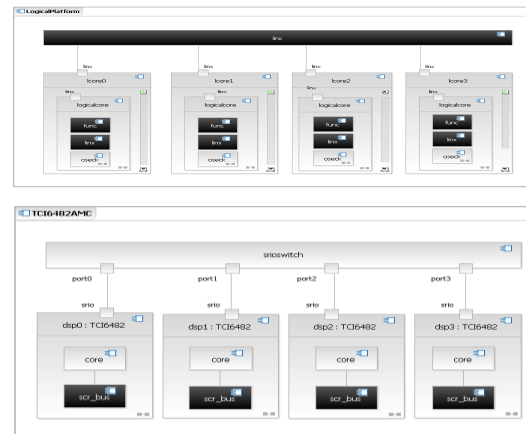
Middleware, CF

RTOS, IPC, device drivers

HW Layer:

GPP, DSP, FPGA,

memory busses, connections

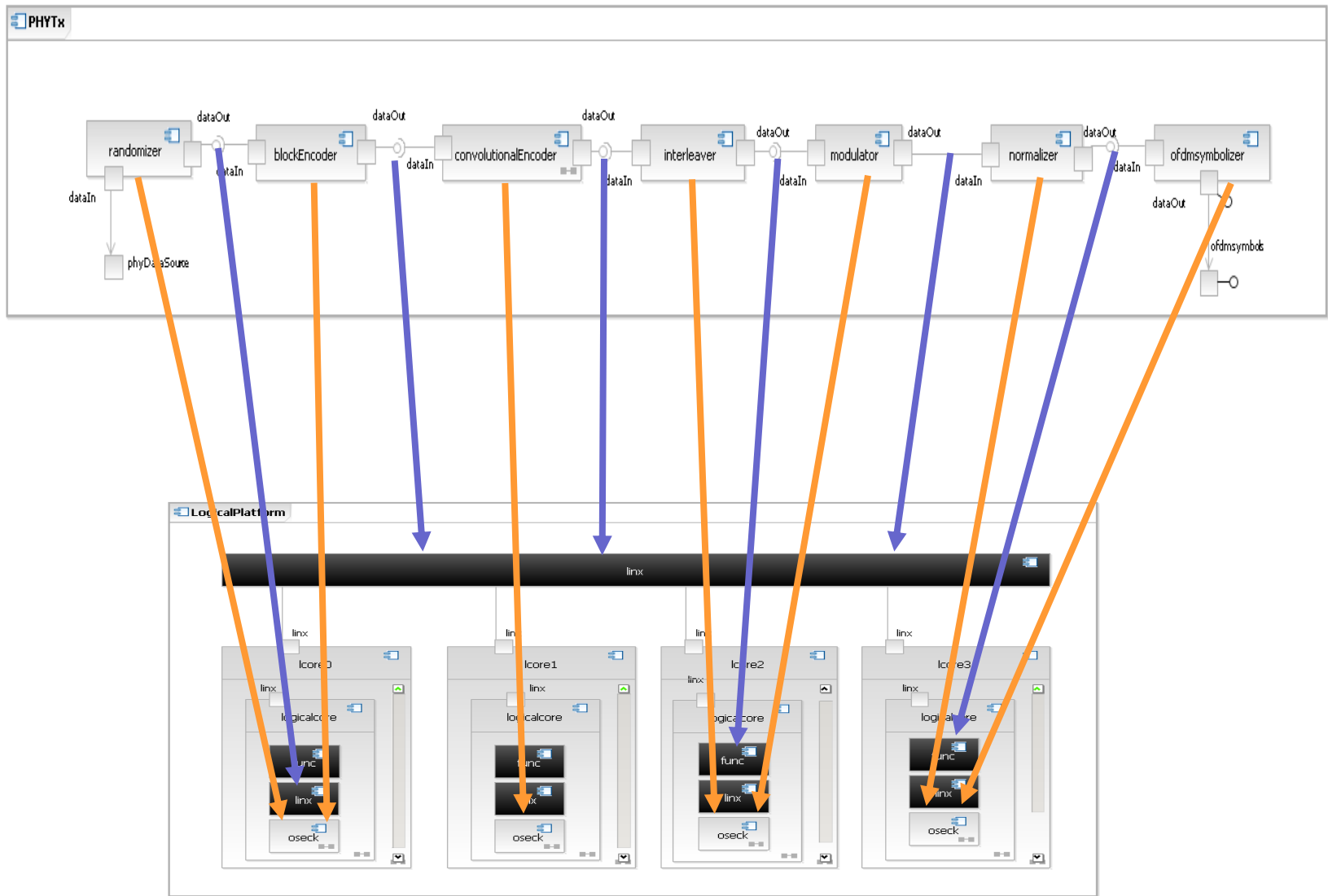


Runtime Monitor & Debug



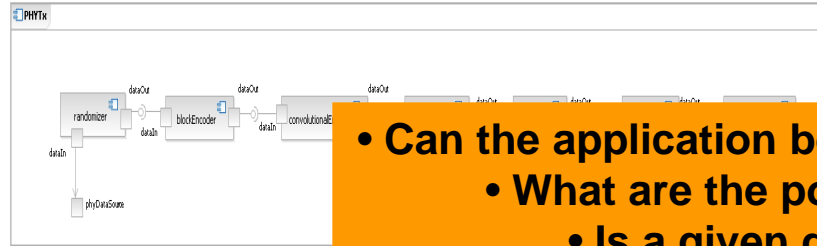
Figure 7: Runtime monitor and debug interface (displaying system activity)

Application Deployment



Key Deployment Issues

Component-Based Application



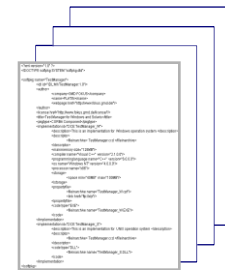
Scenario-Based Test



- Can the application be deployed on the platform?
- What are the potential deployments?
 - Is a given deployment valid?
 - What is the best deployment?

Deployment
Memory usage
Schedulability
Performance

Deployment-Aware Generation (DAG)



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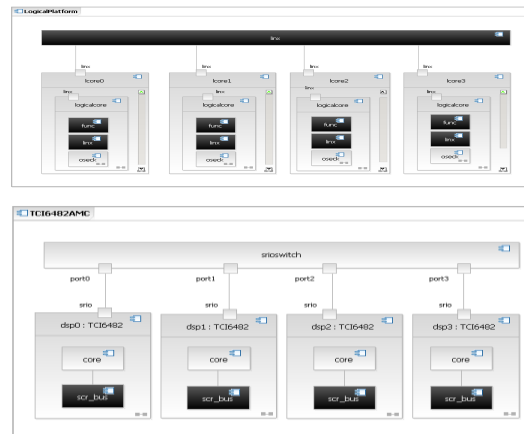
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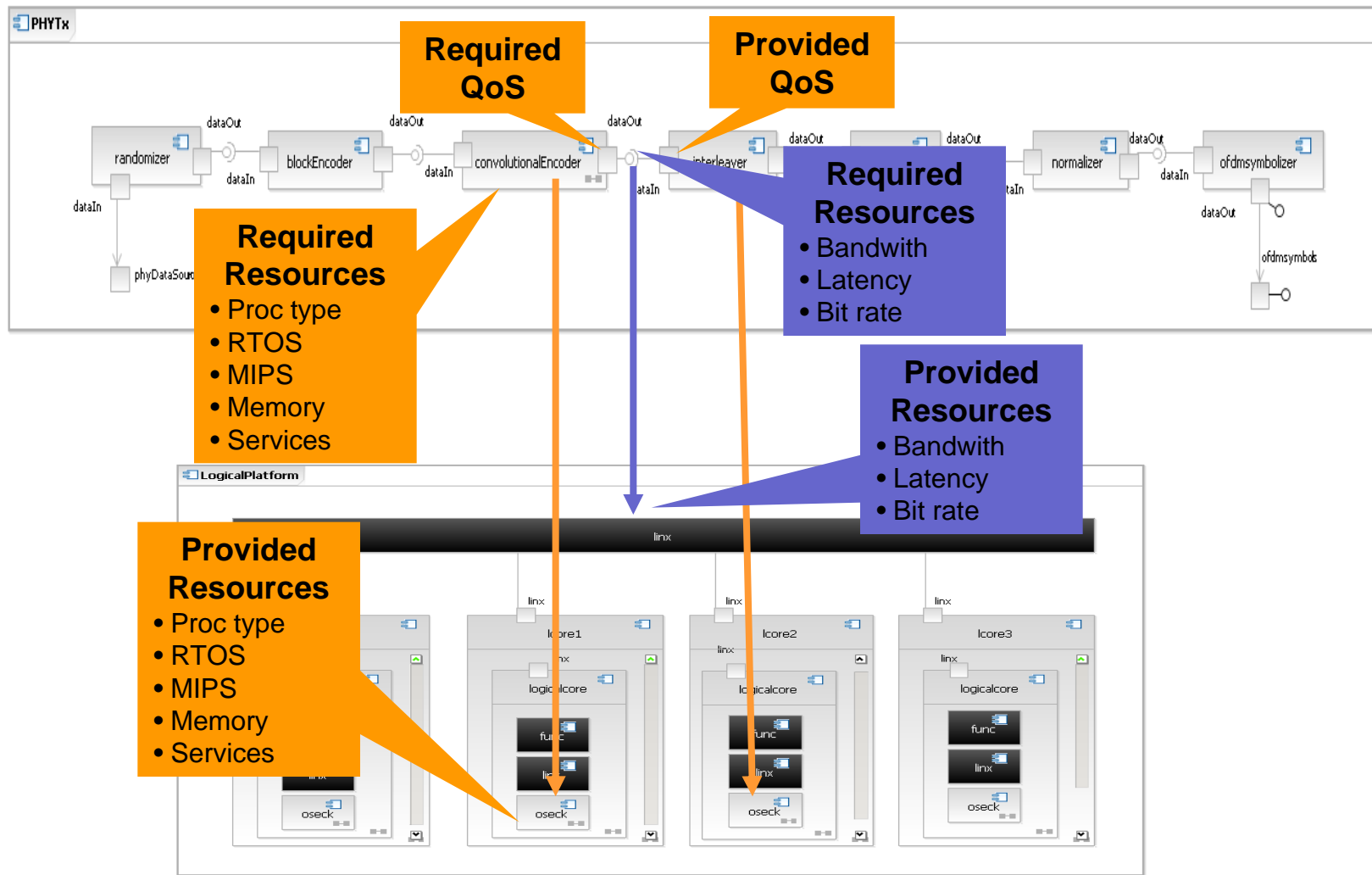
Runtime Monitor & Debug



Figure 1: Runtime monitor and debug interface (hypothetical)

Required Information

Required
QoS



Component-Oriented Engineering and MARTE

- MARTE provides the core concepts required to model, analyze and validate embedded real-time systems
- Deployment Validation/Analysis
 - Validate deployments with respect to resource requirements
 - Calculate resource usage
 - Calculate the list of potential deployments for a set of applications
- Real-time Analysis
 - End-to-end timing analysis
 - Determine overall latency
 - Determine if a given platform has sufficient resources to properly deploy a required set of applications
 - Top-down and bottom-up analysis
- Enables integration with other MARTE-compliant tools
 - Schedulability and performance analysis tools
 - Modeling tools

Summary

- Zeligsoft provides Component-Oriented Engineering tooling
 - Advanced MDD environment
 - Decouples applications from platforms
 - Enables analysis and validation
- MARTE
 - Provides the core QoS concepts for embedded real-time systems
 - Enables analysis and validation
- Integrating MARTE key concepts in Zeligsoft CX results in an advanced component-oriented software engineering tool
- Zeligsoft will be part of the MARTE FTF2



Thank You

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