EML: A TREE OVERLAY-BASED VISUAL LANGUAGE FOR BUSINESS PROCESS MODELLING

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Outline

• Background and Motivation
• Research Question
• EML (Enterprise Modelling Language)
  - Tree Structure
  - Flow Overlay
• Marama-EML (Support Tool)
  - A platform for efficient producing EML
  - Multi-View Integration (EML, BPMN & Form-Chart)
  - Automatic BPEL Generation
• Discussion and Future Work
Background

• Since the early 1970s many languages, standards, methodologies and tools for business modelling have been created
• Methodologies --- Entity Relationship Models, Data Flow Diagrams, Flow Charts, Scenarios, Use Cases, and Integration Definition for Functional and workflow Modelling etc.
• Notations --- UML, BPMN, BioOpera, WTD, AOM etc.
• Tools --- JOpera, T-Web, ZenFlow, ARIS, WebSphere, Visio etc.
Box + Line style Diagrams

Model-driven integration provides visual clarity and logical unity in how the business process is executed.
Motivation

• However, a common source of difficulty in all of these approaches is an appropriate visual method to reduce the complexity of large business modelling diagrams

• Most existing modelling technologies are effective in only limited problem domains or have major weaknesses when attempting to scale to large systems modelling e.g. “cobweb” and “labyrinth” problems
Motivation

Multi-view tool support and multi-level structure approaches have achieved some success but cannot fully solve the problem:

- just reduces individual diagram complexity
- increases hidden dependencies
- requires long term memory
- lack multiple levels of abstraction support
Tree Structure

- using a tree structure is an efficient way of representing the hierarchical nature of complex systems graphically
- Trees also support navigation, elision and automatic layout in ways difficult to achieve with graph-based approaches
- We have designed EML, a novel tree overlay-based visual notation and its integrated support environment to supplement and integrate with existing enterprise level modelling solutions
Research Question

• whether it is valuable to use EML’s novel tree structure-based visual modelling language as a supplement to overcome the shortcomings of existing business process notations?

• whether EML models of complex business processes effectively reduce presentation complexity?
EML Example (1)
EML Example (3)
MaramaEML Integration Framework

Eclipse based Enterprise Modeling Integration Platform

(a) EML View
(b) BPMN View
(c) Form Chart View
(d) BPEL
Discussion --- EML

• EML is the first tree overlay structure visual language in the area of business process modeling
• Service architectures are represented as trees and business sequences are modelled as process overlays on the service trees
• By combining these two mechanisms EML gives users a clear overview of an enterprise system structure while business processes are modelled by overlays on the same view
• EML uses a multi layer structure to model business processes, exception handlers and dependency triggers in different levels
• This approach significantly reduces the complexity of business processes
Discussion --- MaramaEML

• We have developed an integrated design environment (MaramaEML) for creating EML specifications
• MaramaEML aims to provide a platform for efficiently producing EML visual models and to facilitate their creation, display, editing, storage, code generation and integration with other diagrams
• MaramaEML provides a good basis to enhance the integration and generation ability of different notations
• By using generated XML-based BPEL scripts as an interchange format a single notation can be integrated effectively with other modelling technologies
• This integration approach provides multi-level framework support for flexible and broad integration of complex enterprise system models
# Summary

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**DNA**

**Domain**

**Notation**

**Approach**
Future Work

- We are developing a distortion-based fisheye zooming function to enhance the complex diagram navigation ability
- We are working on the traceability issues for MaramaEML multi-view support
- A formal usability evaluation is applying to the EML and MaramaEML
THANKS
Enterprise Modelling Language
References