Argument Metamodell 1.0
Luke Emmet
Overview

- Assurance case
  - Argument Metamodel (ARM)
  - Software Assurance Evidence Metamodel (SAEM)
- Process
- The Spec
Proposed by

- Adelard LLP
- University of York
- KDM Analytics
- Lockheed Martin
- CSC

Supported by:
- Mitre Corporation
ARM - consensus building

- Series of draft versions presented and discussed at SysA SIG and laterly PTF
- Adelard and Uni York working together
  - Working together towards a joint specification
  - Building on GSN and CAE
  - Based on industry experience
- Abstracted the most important concepts of argumentation
- Includes the concepts required for any possible use of argumentation
ARM early draft – CAE/GSN consolidation
ARM intermediate draft

- Assurance Case Level (packaging)
- Assurance Case Element Level (abstract contents)
- SAEM Interface
- Structured Argument Level (argument components)
- Types of argument components
- Reference to argument elements
- Types of links (interpretation of associations)
ARM Approach

● Previous OMG SWA meetings tasked University of York and Adelard with ‘unifying’ our approaches
  ● Both based on core concepts of argumentation, but with some differences in emphasis and presentation
  ● Significant experience with, and industrial validation of these notations considered to provide sound basis for the OMG Argumentation meta-model
● Worked from first principles to establish core concepts upon with both notations are based
● Cognisant of ISO 15026 model
● Backward compatibility with both approaches
Contents

1 Scope
2 Conformance
3 Normative References
4 Terms and Definitions
5 Symbols
6 Additional Information
   6.1 Changes to Adopted OMG Specifications
   6.2 How to Read this Specification
   6.3 Acknowledgements

7 ARM – background and rationale
   7.1 Background – the need for assurance cases
   7.2 Structured arguments
   7.3 Arguments as asserted positions
   7.4 Structured arguments in ARM

8 ARM Specification
   8.1 Overview
   8.2 Class definitions
   8.3 Examples
ARM – background and rationale

- **7.1 Background – the need for assurance cases**
  - Societal dependency on technology
  - Not just reducing risks but communicating how
  - An established approach – already used in safety and security domain
  - Existing tool support
- **7.2 Structured arguments**
  - Series of propositions (claims) presented to establish a conclusion (claim)
  - “chains of reasoning”
- **7.3 Arguments as asserted positions**
  - An important point
  - Arguments communicate a particular stakeholder assertion of the relationship between claims
  - Wider in scope than logical formulae that can be mechanically checked
- **7.4 Structured arguments in ARM**
  - Directed graph of connected claims
8 ARM Technical specification

The view from 1 mile up
Argument comprises argument elements and links
Argument elements are information chunks
Argument links are relations between elements
Containment and referencing
Discussion