OMG's MDA and Software Radio

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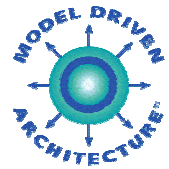
What's coming up …

- A brief word about OMG
- MDA – the elevator story
- OMG specifications supporting Software Radio (which we refer to as software-based communications (SBC) to differentiate from JTRS)
- Caveat: I'm not a SR domain expert

Background - MDA

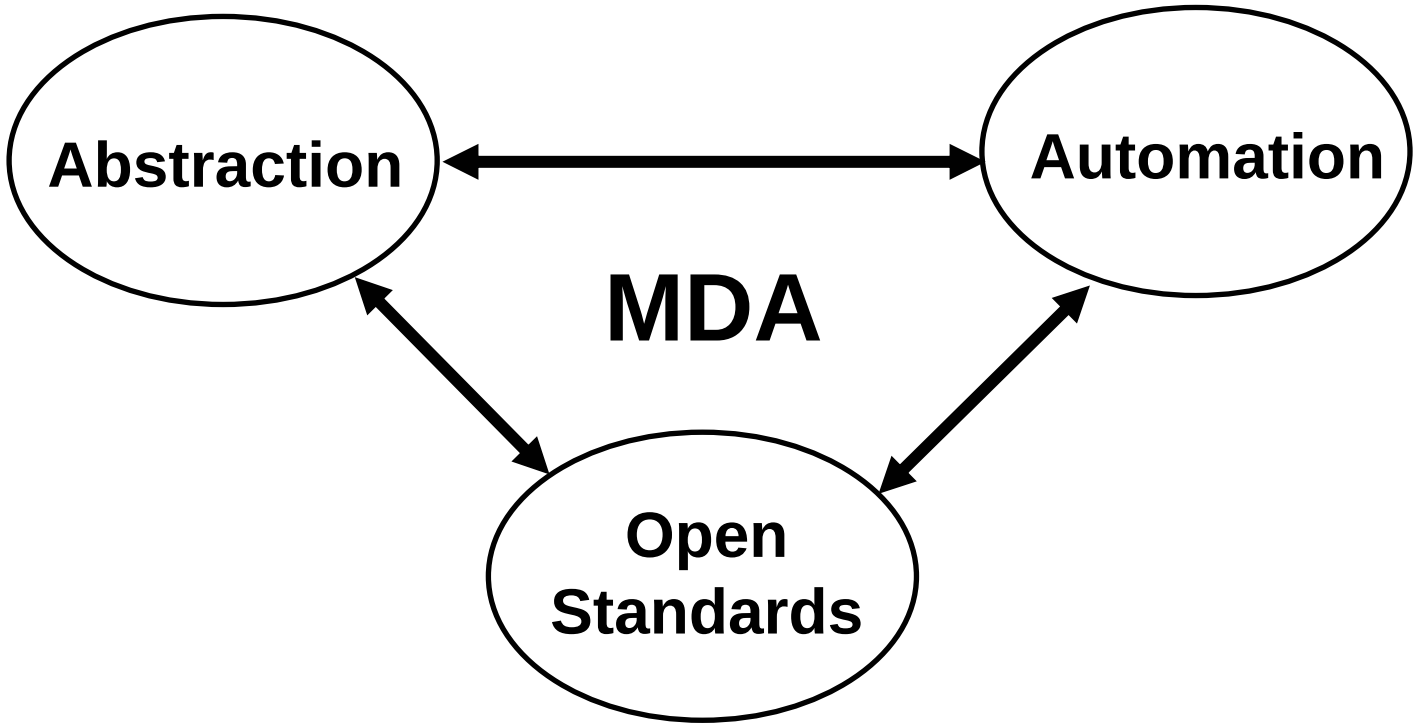


What is MDA?

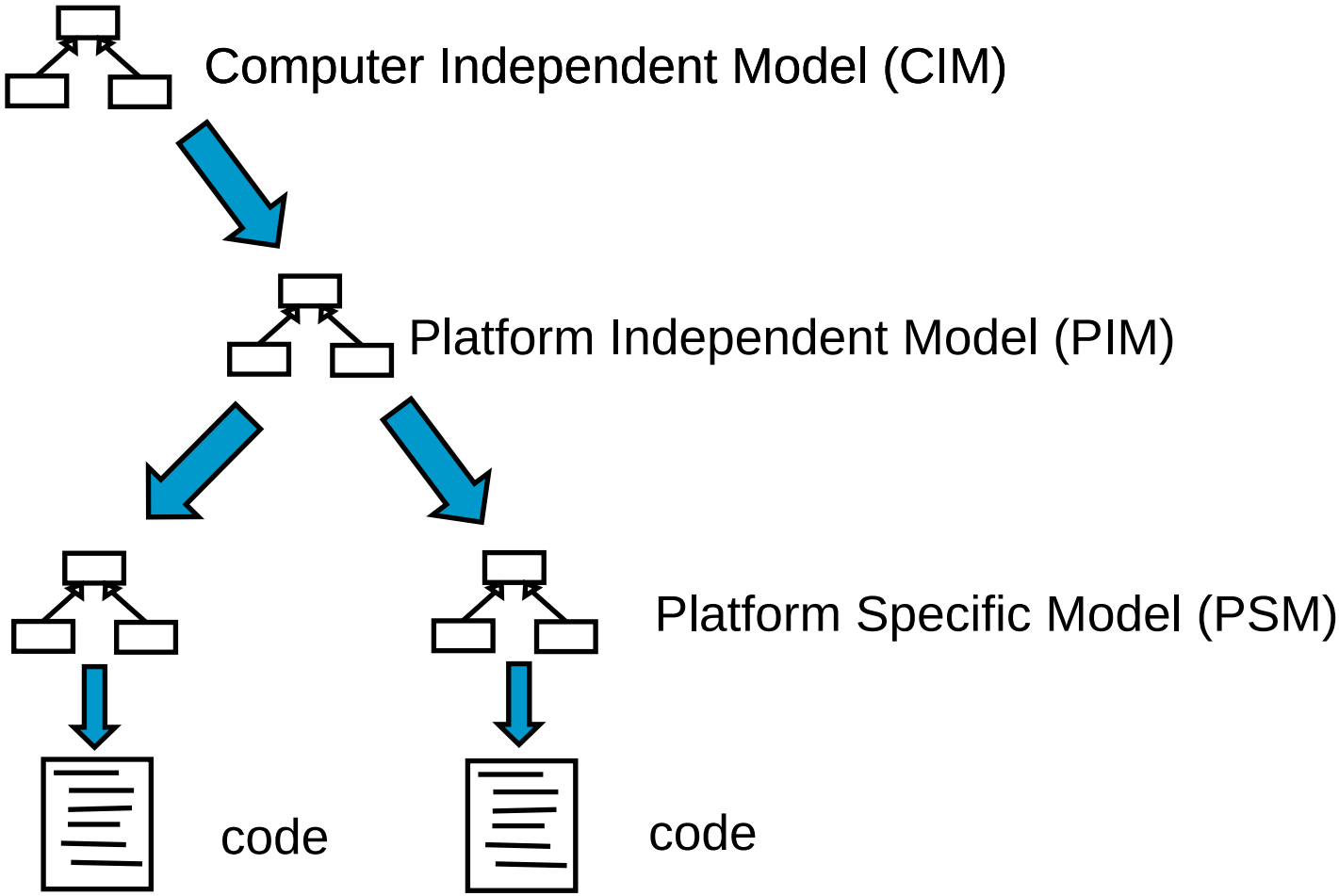
MDA := Model Driven Architecture

A model-based, standards-driven and tool-supported
software engineering approach
to
application and software system development

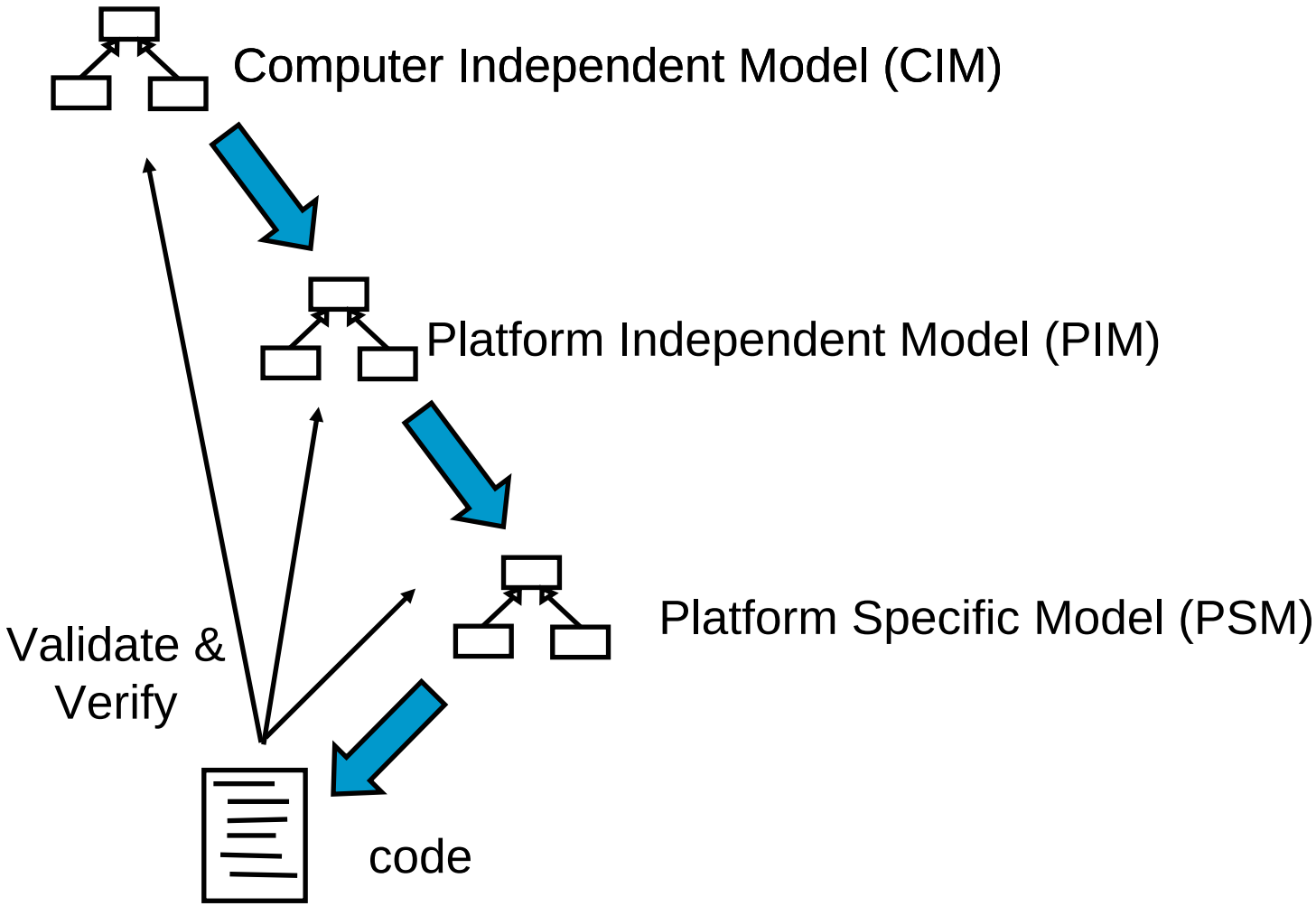
Background - MDA



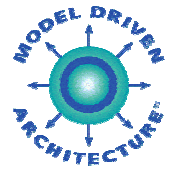
MDA – key concepts



MDA – key concepts

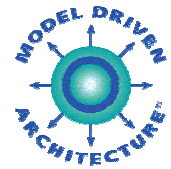


OMG SBC Specifications



- UML Profile for Software Radio
- PIM and PSM for Digital IF
- Software-Defined Radio Security Subsystem Core
- PIM and PSM for Key Management for Software Based Communications Security Subsystem
- PIM and PSM for Smart Antenna

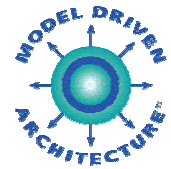
UML Profile for Software Radio (1)



- Foundation. Defines a domain-specific (specification) language* for a product line of software radios. Conceptualizes:
  - Communication Channel and Equipment
  - Applications and Components
    - Base interfaces, properties, types, ports
  - Platform Service Components

* aka “UML profile”

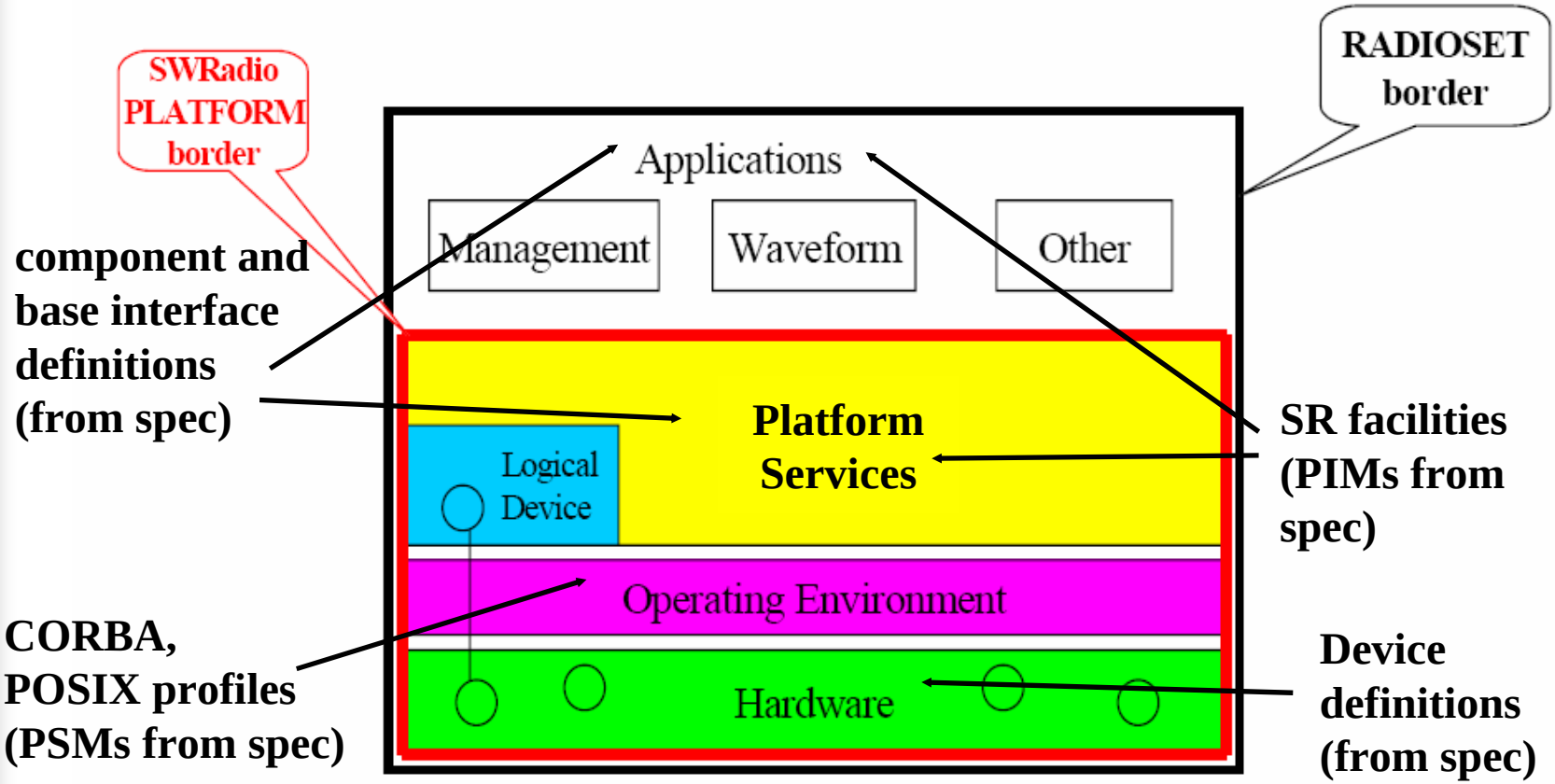
UML Profile for Software Radio (2)



- Component Facilities (expressed in UML using this profile)
  - Radio Control
  - Common Layer (e.g., PDU, flow control)
  - Data Link Layer (e.g., MAC)
  - Physical Layer
    - A good start but more work is continuing.
    - This is being continued with OMG Smart Antenna API and Digital IF RFPs
    - Audio and Serial Components

UML Profile for Software Radio (3)

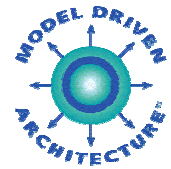
- Defines a Software Radio Architecture
  - An abstraction of SCA



PIM and PSM for Digital IF

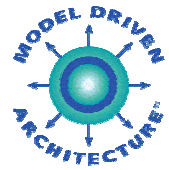
- This forthcoming platform service specification will define:
  - PIM for control interfaces of tuners and exciters in a high bandwidth digital streaming system
  - Data descriptors for the messages passed across the digital Intermediate Frequency (IF) platform
  - A UML 2.0 compliant profile that allows the modeling of system aspects, topology and data flow
- Utilizes UML Profile for Software Radio

Software-Defined Radio Security Subsystem Core



- The forthcoming platform service specification will provide the definition of the common capabilities of a secure communication subsystem.
- It will also provide management interfaces for the following:
  - The security subsystem
  - For authentication
  - For cryptology and bypass channel communication
- Utilizes UML Profile for Software Radio

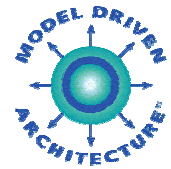
PIM and PSM for Key Management for Software-Based Communications Security Subsystem



- This forthcoming platform service specification will define interfaces for key management in a secure communication subsystem.
- Utilizes UML Profile for Software Radio
- Examples of primary key management functions include:

Key Receipt and Identification	Key Allocation and Use	Key Zeroization
Key Storage	Key Accounting	Rekey

PIM and PSM for Smart Antenna

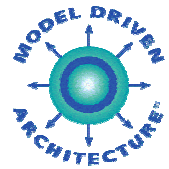


- This forthcoming platform service specification will define a smart antenna interface specification to be implemented in OMG's software radio architecture.
- Utilizes UML Profile for Software Radio

Topics for collaboration

- Semantics
  - Model elements (e.g., comm channel) must accurately reflect industry usage
- Identify other PSMs for the OE
- Identify other services to be standardized
  - e.g., cognitive radio, adaptive technology, spectrum management
- Specification evolution
- Preventing redundancy !!!

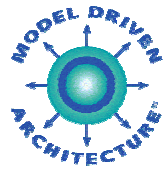
Other OMG Specifications



- Modeling
  - e.g., UML, Transformations
- Middleware
  - Minimum CORBA
  - Lightweight Services
  - …

References

- *http://www.omg.org/mda*
- *http://sbc.omg.org*



Thank you.

Questions ???