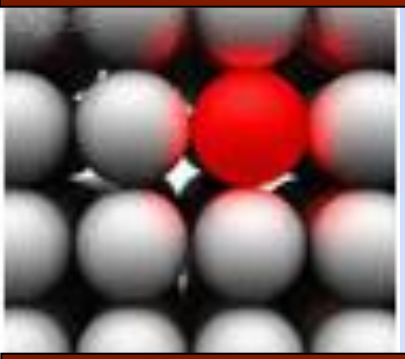


MDMI – Improving the quality of message interoperability among independent entities

July 2010

OBJECT MANAGEMENT GROUP

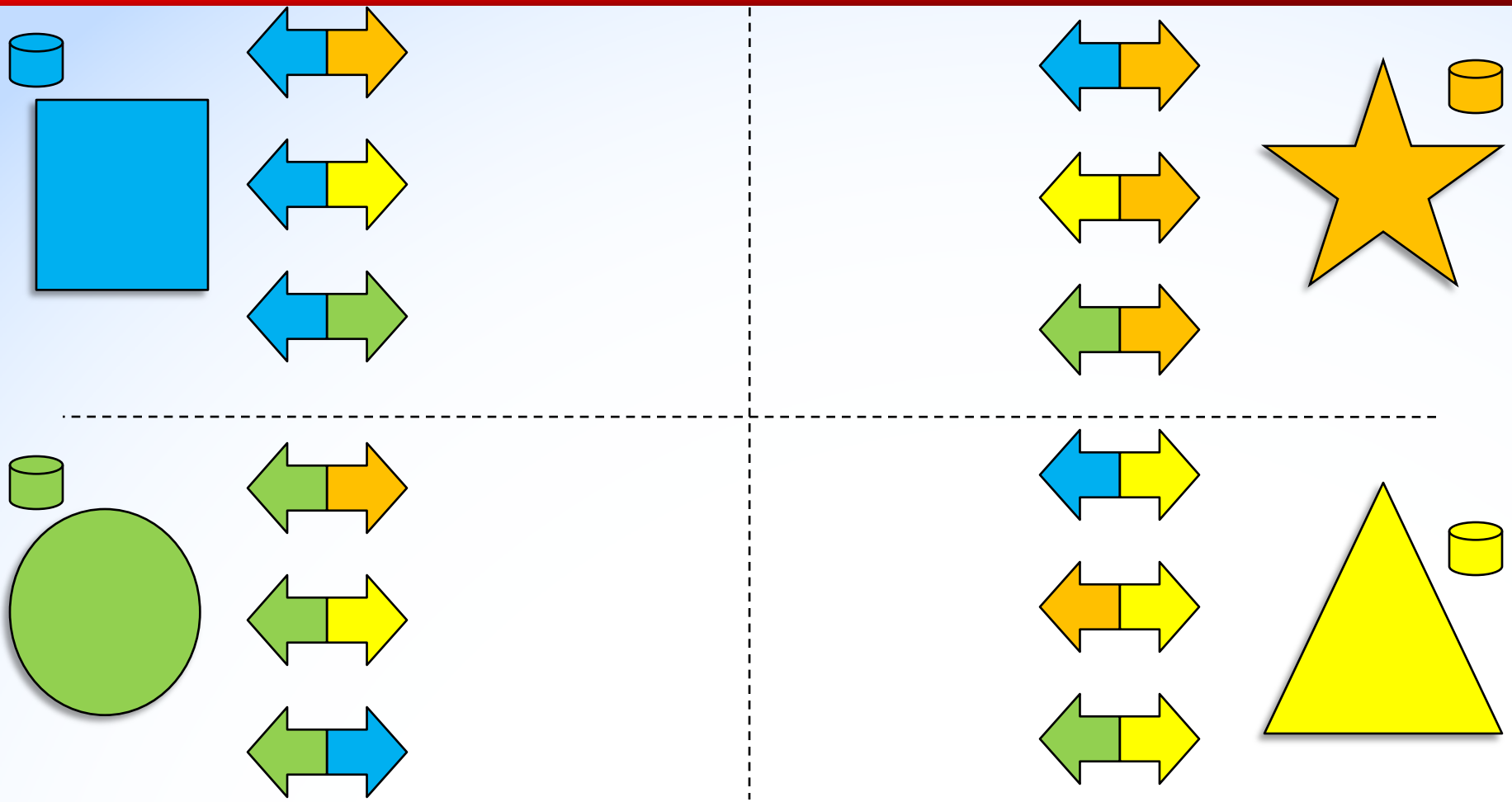
MDMI -- Model-Driven Message Interoperability an Object Management Group public standard

- MDMI is a practical way to achieve message interoperability within a distributed SOA community of independent enterprises.
- Use of MDMI should significantly improve:
  - The Reuse of existing legacy applications and current data formats
  - The Cost to achieve data interoperability in a large community
  - The Time to implement interoperability
  - The Scalability and scope of interoperability
  - The Supportability of data exchanges
  - The Flexibility allowed for each participant
  - The Autonomy allowed for each participant
- MDMI will improve the **Quality** of data exchange
- MDMI can provide significant value to each enterprise of a community, as well as the community as a whole.

The difficulty of Message Interoperability today

- Current Problem
  - Numerous message formats abound - external and internal to enterprises
  - Legacy applications preclude easy adoption of new standards
    - A single change to a message can cost banks $1B for labor and several months of development time.
  - As a result, message formats become overloaded, human intervention is common, and disparate bilateral or localized conversions exist
  - Large and unnecessary (but often accepted cost-of-business) expense maintained for most domains
- Current “costs”
  - New more powerful message formats are not adopted
  - New versions of a message format take years to be adopted
  - Messages do not remain current with market demands
    - Old message formats cause bottlenecks that slow changes for new markets
    - Within finance, the most commonly used cross-border payment message format was designed forty years ago.

Conversion Programs are too difficult to maintain



Today: Each participant builds and maintains N conversion programs.
Works for small communities – albeit painfully.
Won't work for large communities

Current industry solutions are necessary but not sufficient

- The focus is on entirely new message standards, which are created to fit current market needs and formats
  - Usually done by groups of industry experts
  - Most often, the approach is based on top-down formal modeling of industry processes
    - UML process modeling or the creation of a structured ontology
  - These efforts provide insight but do not help the interoperability problem
    - Object modeling does not result in semantic clarity at the field or business concept level, a requirement for interoperability with existing message formats
    - An ontology over-requires semantic structures making it hard to match with real world business concepts
- **The result – very slow adoption of these new message formats and loads of errors when using older formats**

Data Standards are necessary, but not sufficient

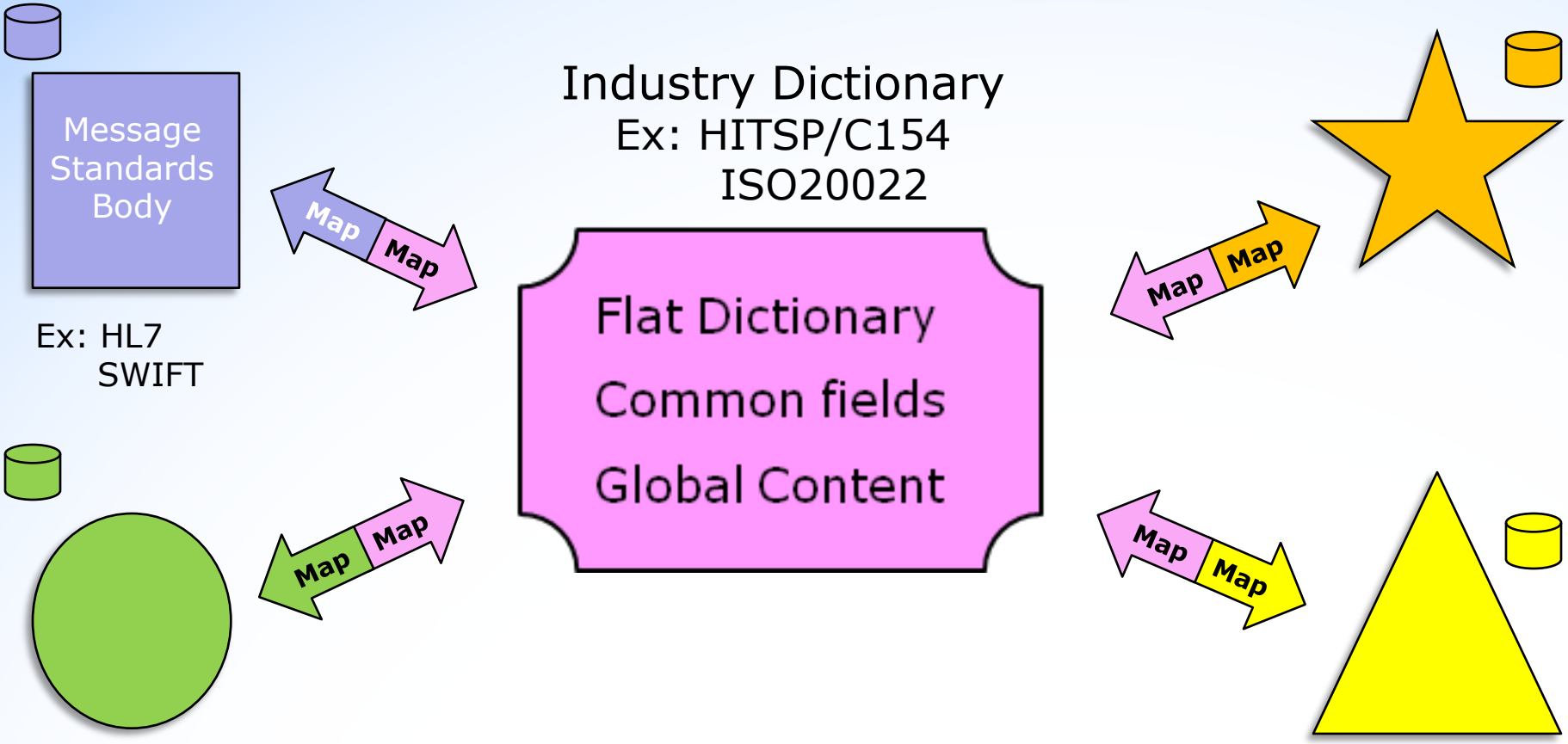
- Over decades the Financial world has painfully recognized that standard data formats are not, *by themselves*, a viable way to achieve effective interoperability.
- Since Legacy formats are too valuable to be abandoned – they must be utilized.
  - Conversions between numerous legacy formats only work if based on **semantic** interoperability.
- To achieve semantic agreement, the conversion **process** needed to be standardized, simplified and supported.

MDMI is about a standardized conversion Map– leveraging the domain standards already in place

MDMI -- the sufficient condition to allow information interoperability

- Focuses on standardized conversion maps to add to traditional standardized message formats
  - MDMI Maps are rich enough to handle mapping the semantic elements mapping of any legacy or internal message format.
  - The maps describe how to move a semantic element out of or into a message
- Provides semantic interoperability through a domain dictionary containing business elements
  - Same linear structure used in Webster's dictionary to describe the basic semantics of English
- MDMI in:
  - Syntax independence
  - Flexibility in its ability to expand
  - Provides for the co-existence of different message versions
  - Ability to move data between different message formats within a multi-step transaction
  - Public conversion Maps, created once, and supported by Standards bodies.

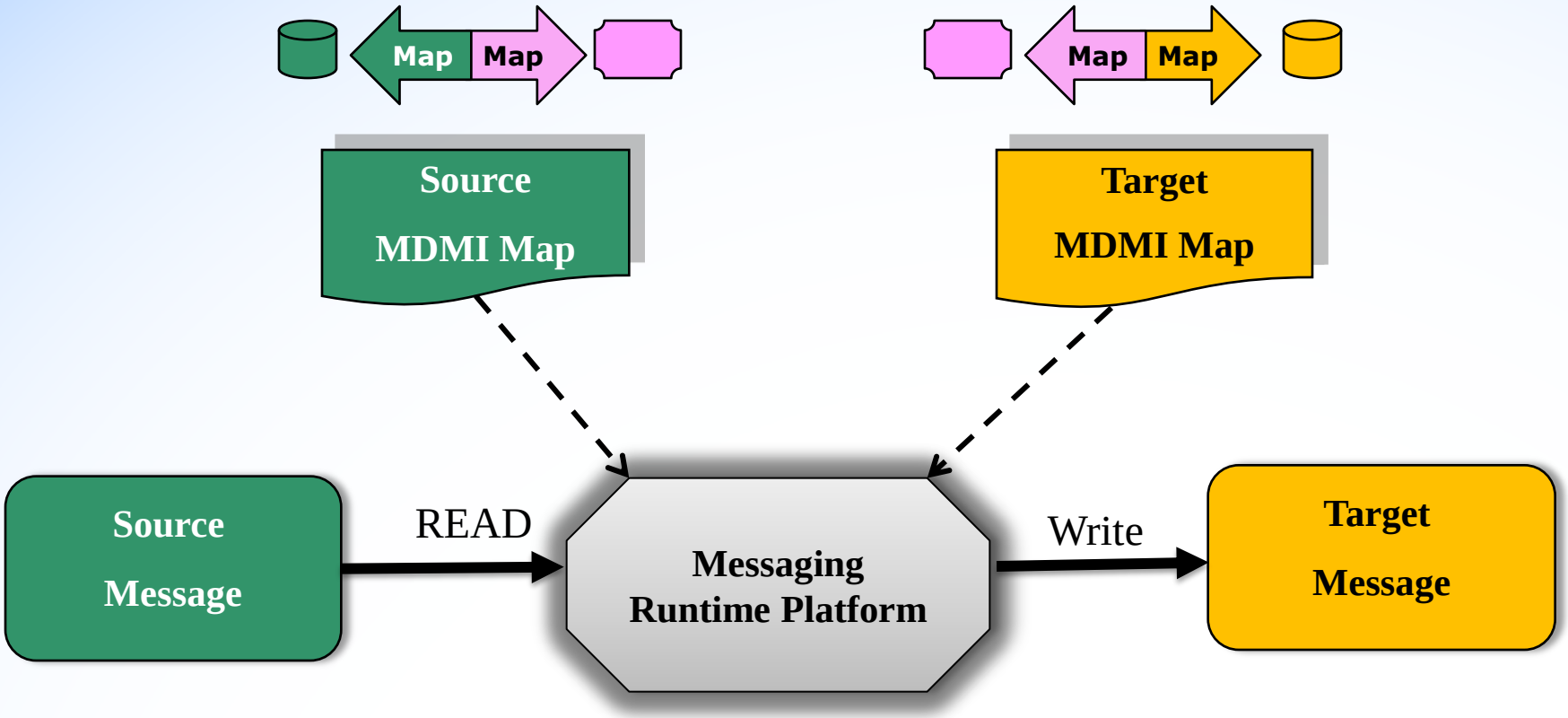
Step 1 – create the map



Each participant builds and maintains ***ONE*** map of the data elements of their messages to the Industry dictionary.

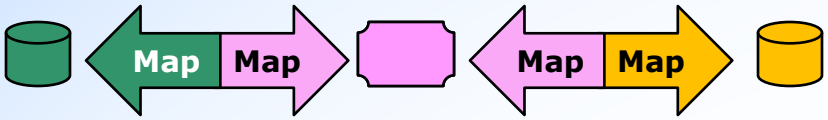
Message standards bodies also create Maps to the industry dictionary

Step 2 – Message conversion

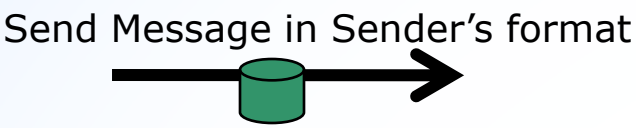


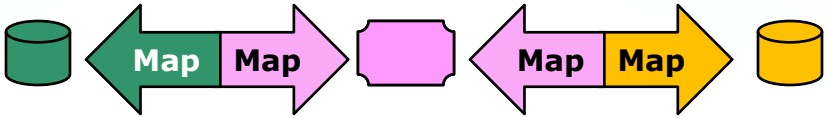
Message Conversion options

- Conversion at the originator's site

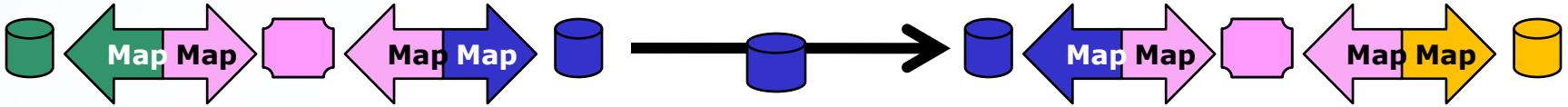


- Conversion at the receiver's site



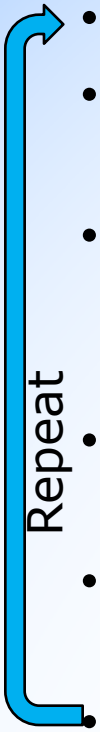


- Conversion at Both sites – send message in industry standard



Comparing Approaches

Today's approach:



- Agree standards (ISO,C154, etc.)
- Engineer thousands of conversion programs
- Everyone must be aware of multiple target formats and variations.
- Unable to efficiently scale beyond a few dozen entities
- Burden of large communities falls on all
- Begin the standard process again, and again…
- Many years from now, after billions of $$ spent, it still won't be sufficient.

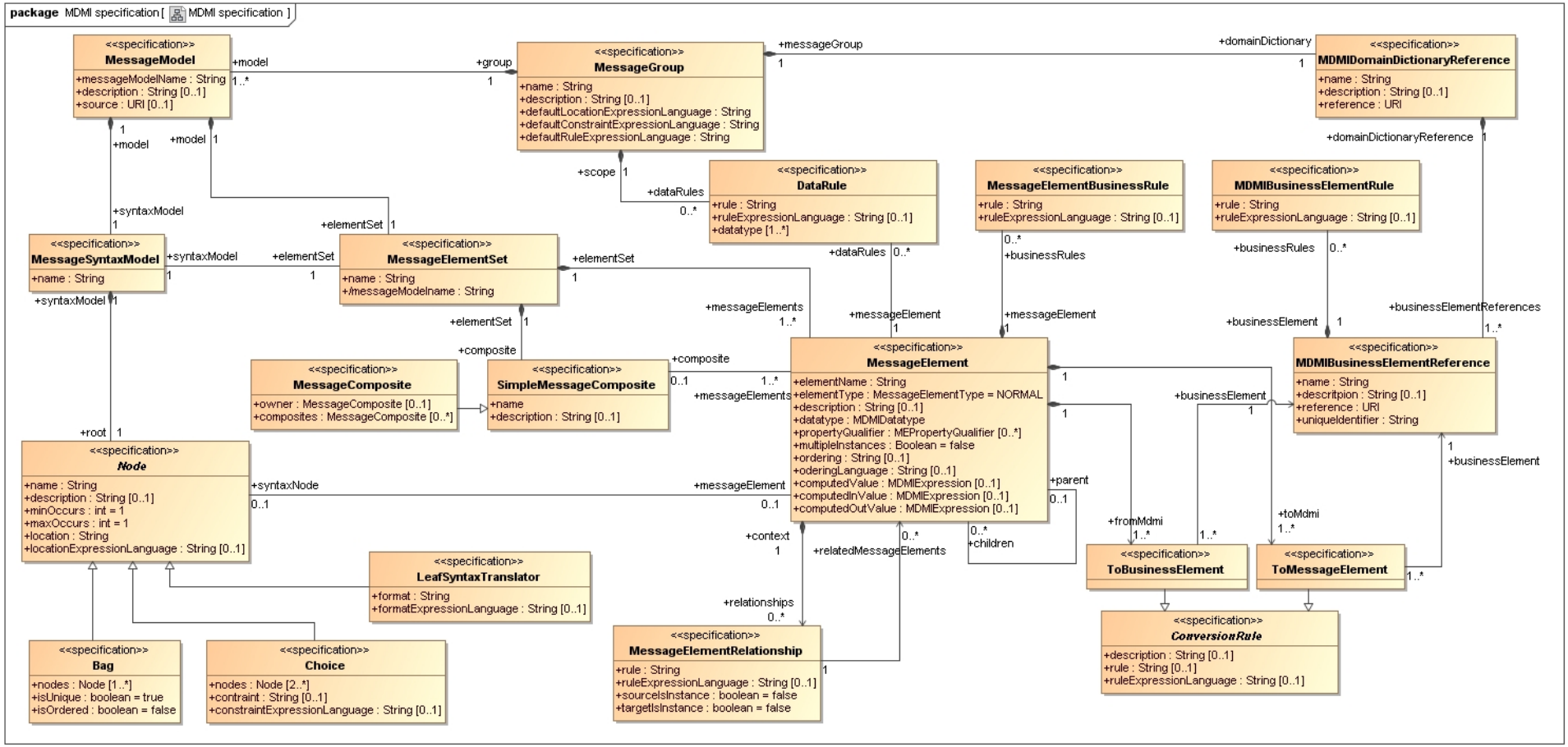
The MDMI method:

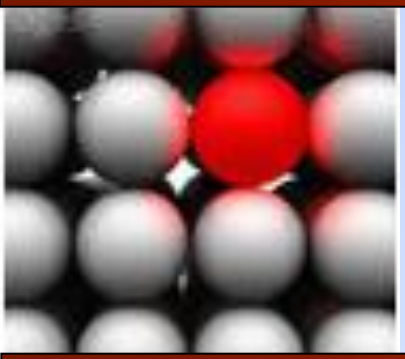
- Map to an agreed semantic standard
- Each entity maintains and publishes only map of their formats to the central dictionary
- Each entity is autonomous – need only understand their own Map
- Unlimited scalability – no incremental impact to existing members
- Interoperability achieved in months, not years or decades
- No procedural conversion programs
- No re-tooling of installed solutions
- As message standards evolve, change the maps, not the applications

MDMI Key Principles

- MDMI is a formal specification that defines a “machine readable” map.
  - Each entity creates a map to/from its current data format to an agreed semantic Industry-approved Dictionary
  - Anyone can create maps and distribute them to their partners.
  - Distribution can be open, private or proprietary.
- Fundamental principles of MDMI:
  1. Decompose each message format into its syntactic elements and its semantic elements.
  2. Map semantic message elements to business elements within a domain dictionary.
  3. Each business element has a unique id so extracting a semantic element from a message and inserting into another message is fast at runtime

MDMI Specification





Lets look at a simple example:

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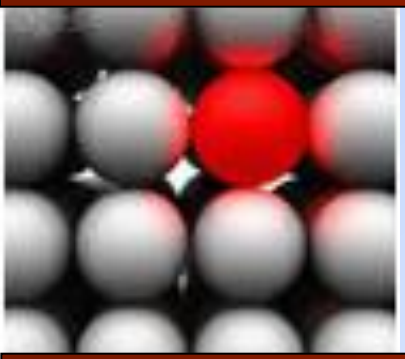

Discussion