



Model Driven Data Interoperability (MDMI)

An OMG Finance Domain task Force
Presentation
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Some of the problem

- The current messaging environment inhibits change
 - Legacy software to is expensive to change (remember Y2K)
 - Can't take advantage of new message formats and technology
 - Can't respond fast enough to market changes
 - Too dependant on least-common-denominator definitions
 - Message variants squeezed into restrictive syntax and semantics
- Conversion of message information not standardized
 - Ever app or EAI solution coded separately, no standard for conversion
 - Versioning is costly and slow
- STP still out of reach
 - Semantic meaning of fields between message not consistent
 - No standardized mechanism to move information between standards
 - Information integrity not maintained throughout a transaction



Objectives for MDMI

- Be UML-compliant
 - A well structured modeling paradigm (as opposed to XML)
- Express standard as open and public UML profiles
 - However, message definitions and conversion “content” can be proprietary, semi-private or public.
- Make it easily for Financial Services standards bodies
 - Separate syntax from semantics – be wire format independent
 - Provide for model (semantic) level compliance
- Enable enterprises and vendors to implement industry standard data conversions applications



What is the MDMI standard

- Models the conversion of “message elements” instead of messages
 - Describes how to take elements out of a message or insert it into a message
- Separates syntax and semantics
 - Localizes the complexity of overloaded legacy messages
 - Allows for semantic level mapping
- Message elements mapped to a central domain data dictionary
 - Standards bodies or enterprises need only map to business elements
 - Hub and spoke model creates a linear set of transformations
- Robust creation of domain data dictionaries
 - Dictionary comprised of truly reusable business elements
 - Semantic distance maintained
 - Synonyms and near-synonyms in a separate “thesaurus”
- Maps can be created using industry standard tools
 - Based on UML models



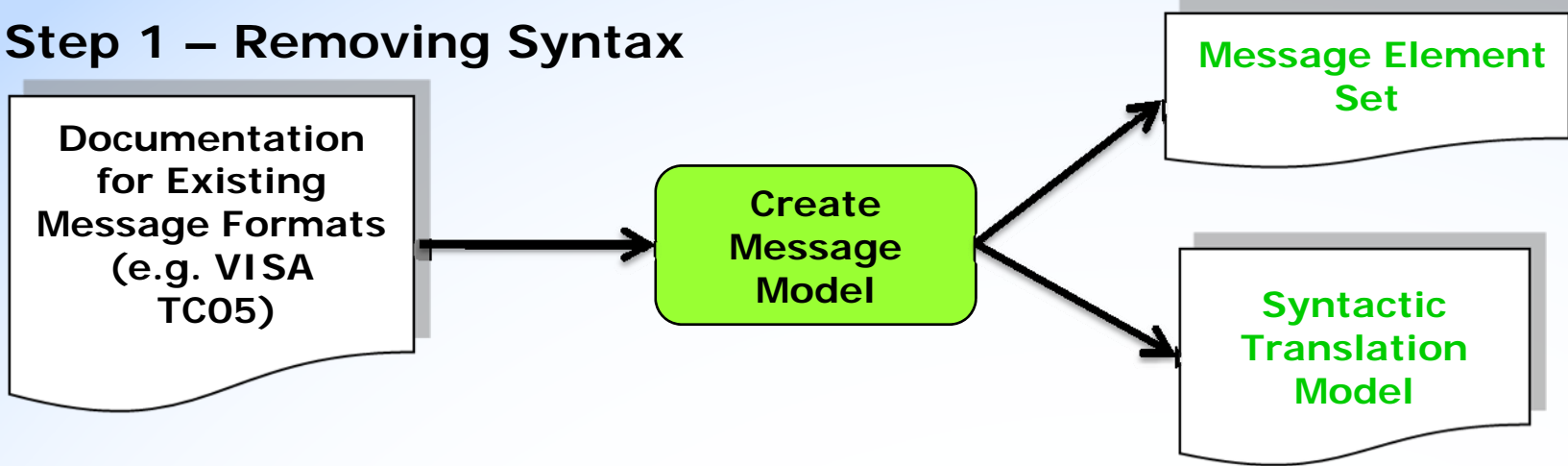
So what are MDMI benefits

- Allows standards bodies to automate versioning
 - Supports version map injection
- Provides a viable pathway to new wire formats like XML
- Defines a real world process to incrementally build a domain data dictionary
 - Based as much on existing messages as on industry modeling
 - New well-structured business elements easy to add
- Delivers on the ISO 20022 promise of effective, but flexible re-usability
 - Entities can create whole new message formats from business elements
- Creates a mechanism for federating domains through standard dictionaries
- Reduces cost and improve quality for financial institutions
 - Internal data can be easily mapped to inter-enterprise message standards

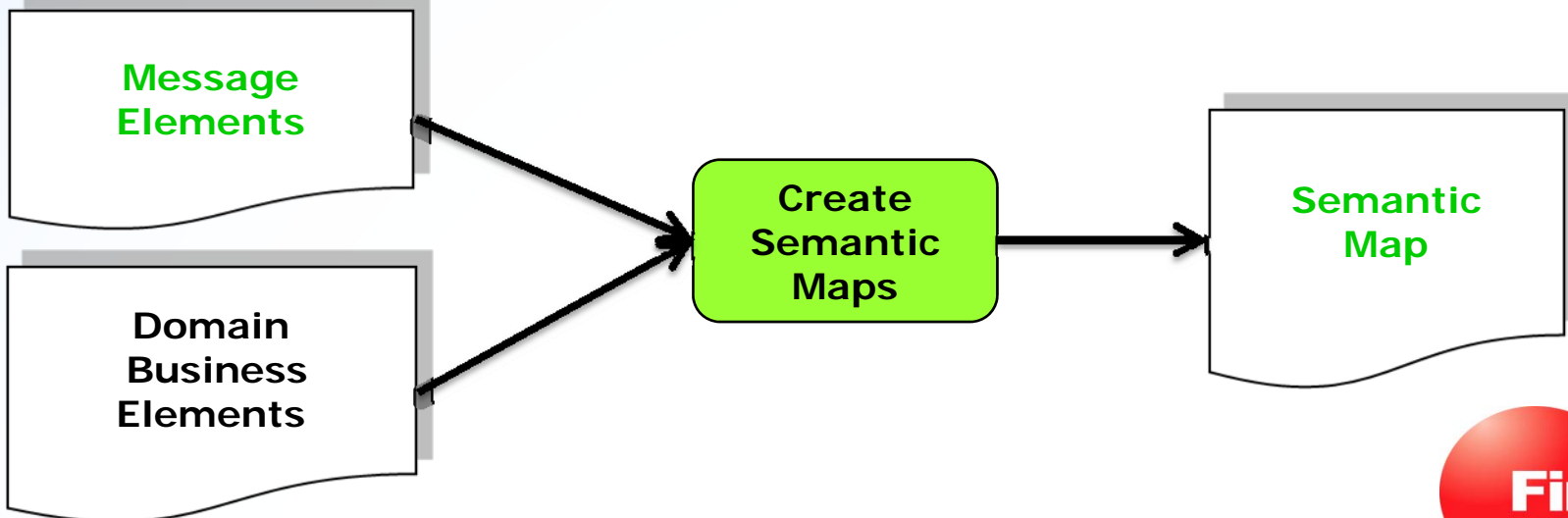


High Level view of MDMI Design Process

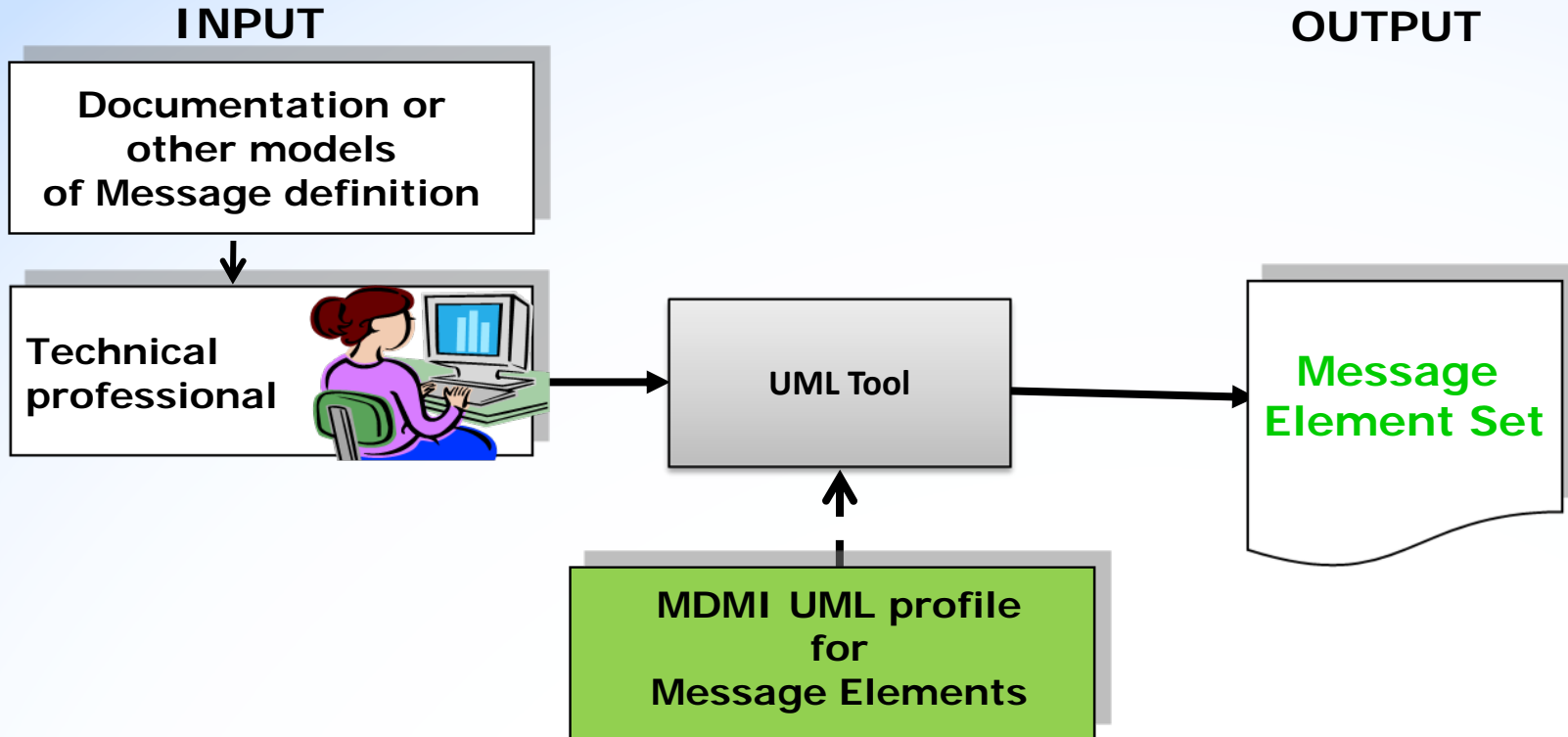
Step 1 – Removing Syntax



Step 2 – Mapping Semantics



Process to remove syntax



- Modeling done by Technical Professionals
 - No (or minor) domain knowledge necessary
 - Except for specifying Business Rules and associations

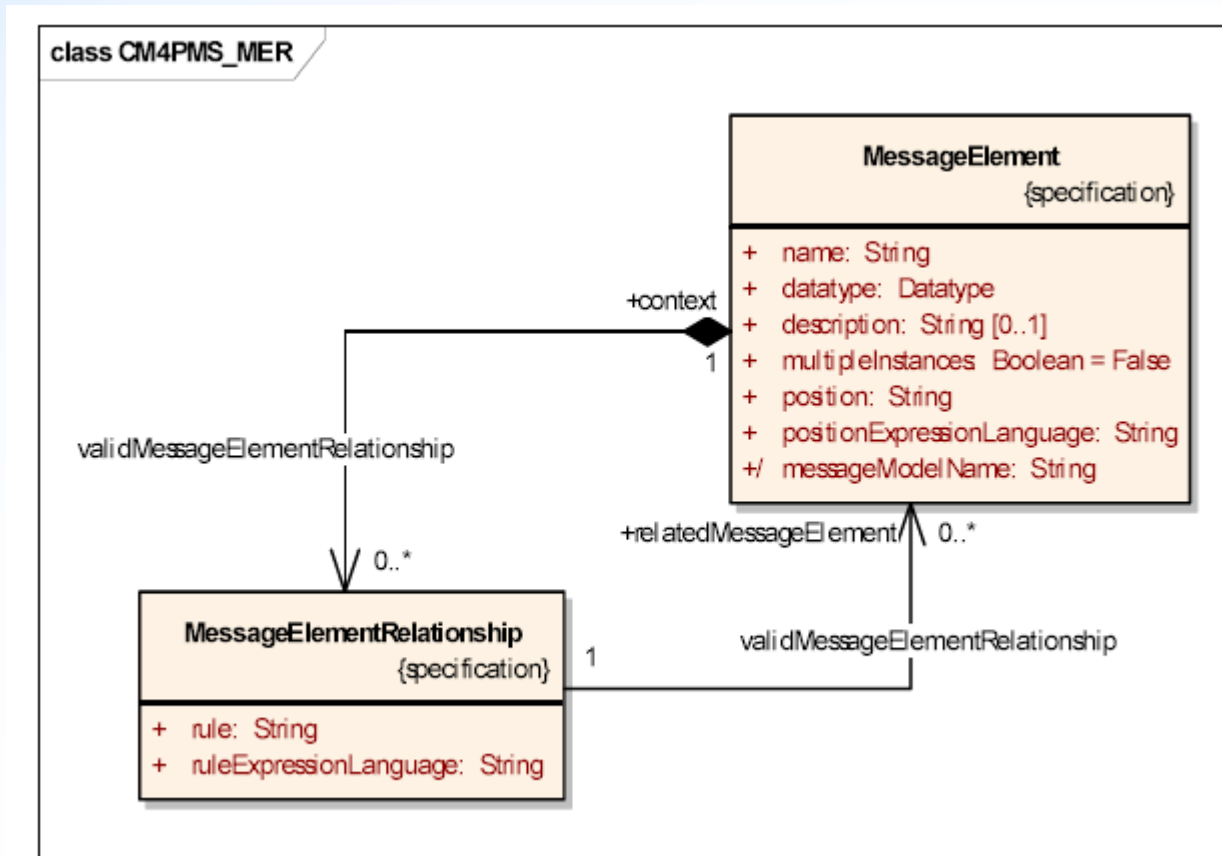
A Description of the Message Element Set

- Definition of the Message Element Set
 - A set of classes representing the smallest semantic elements in a message
 - Independent of any type of message syntax or physical format representation
- The MDMI Profile for Message Elements
 - Class description
 - Business Rules associated with a Message Element
 - Datatype rules
- Message Element relationship model
 - Directed model of the context of each Message Element

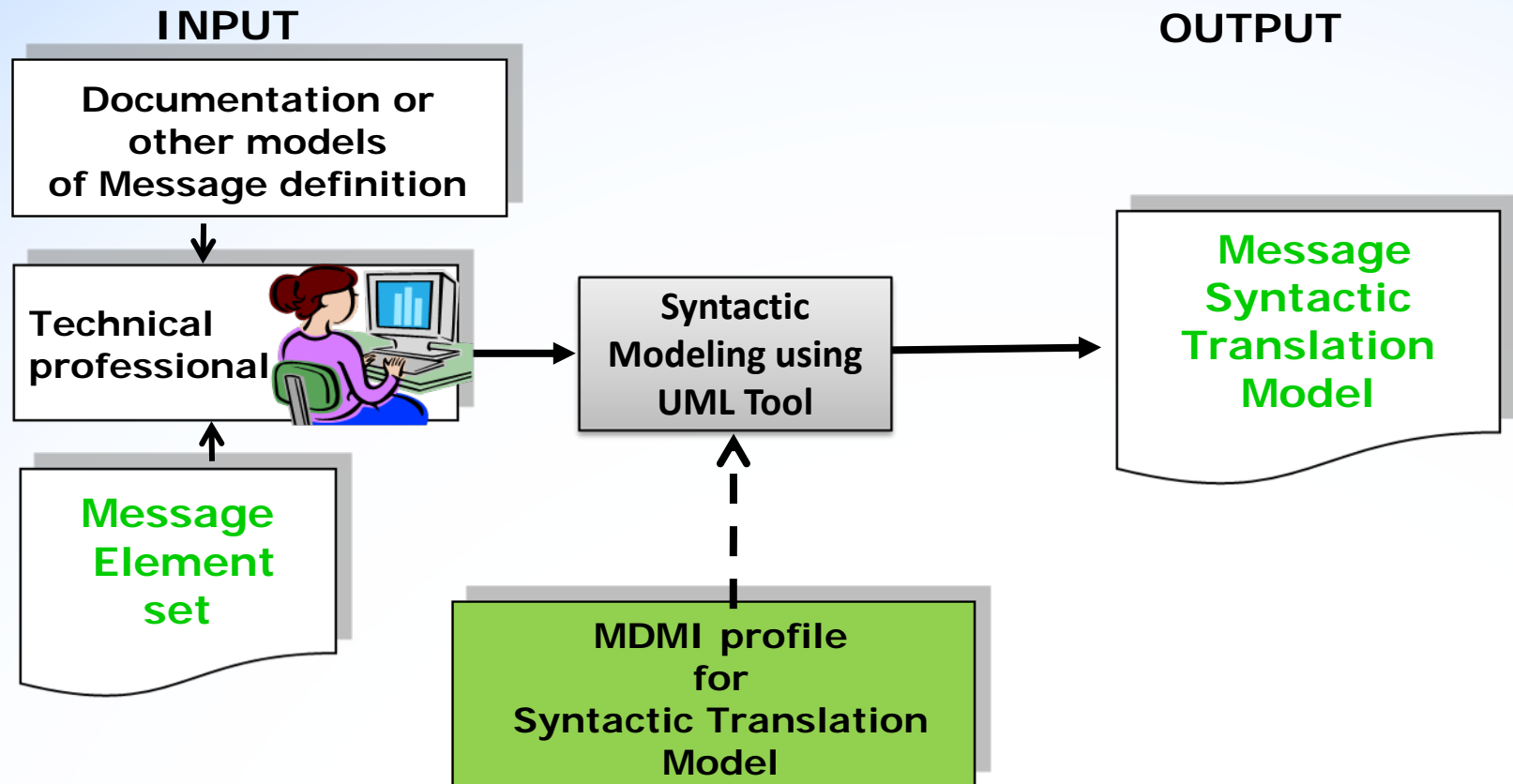


Message Relationship Model

- Providing the message context for a Message element



Process to Create Message Syntactic Model



- Modeling still done by technical professionals
 - Only minor domain knowledge necessary

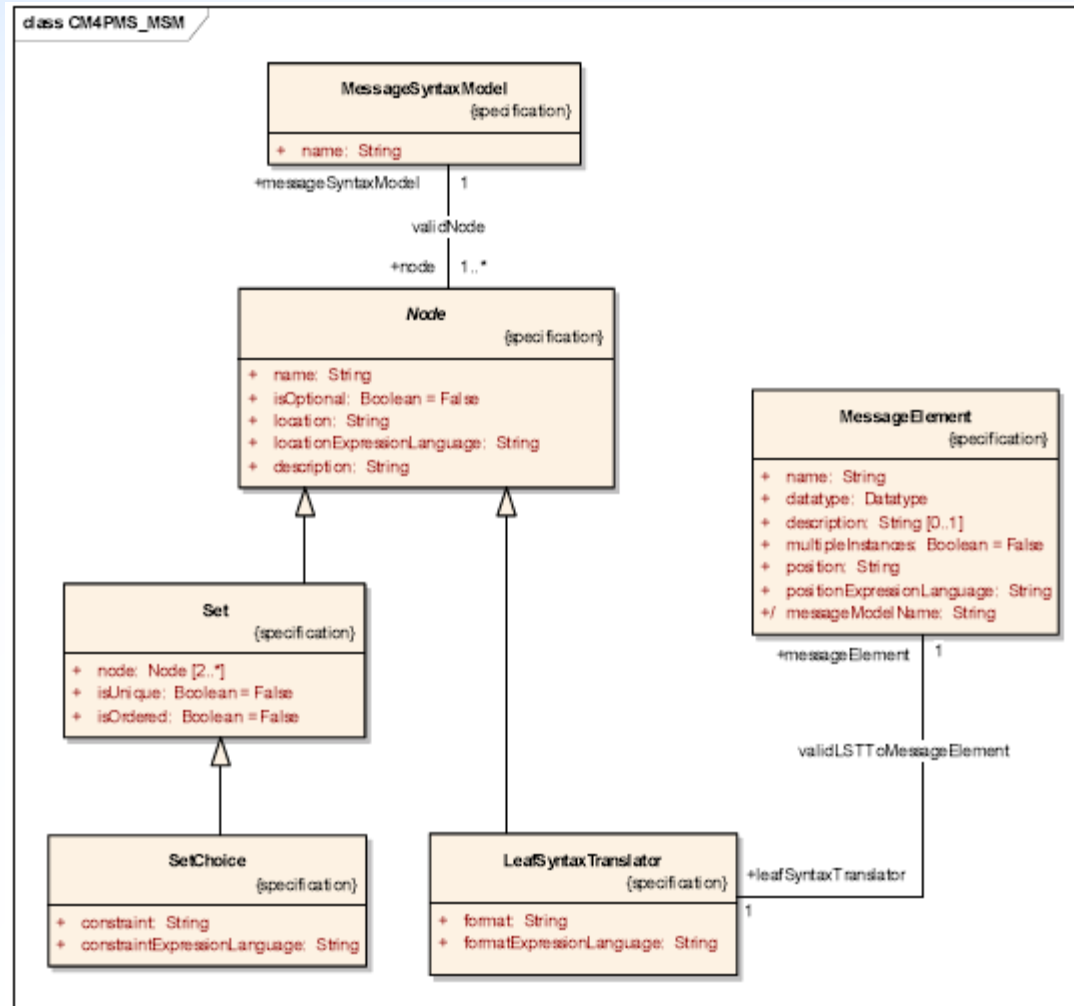


A Description of Message Syntactic Model

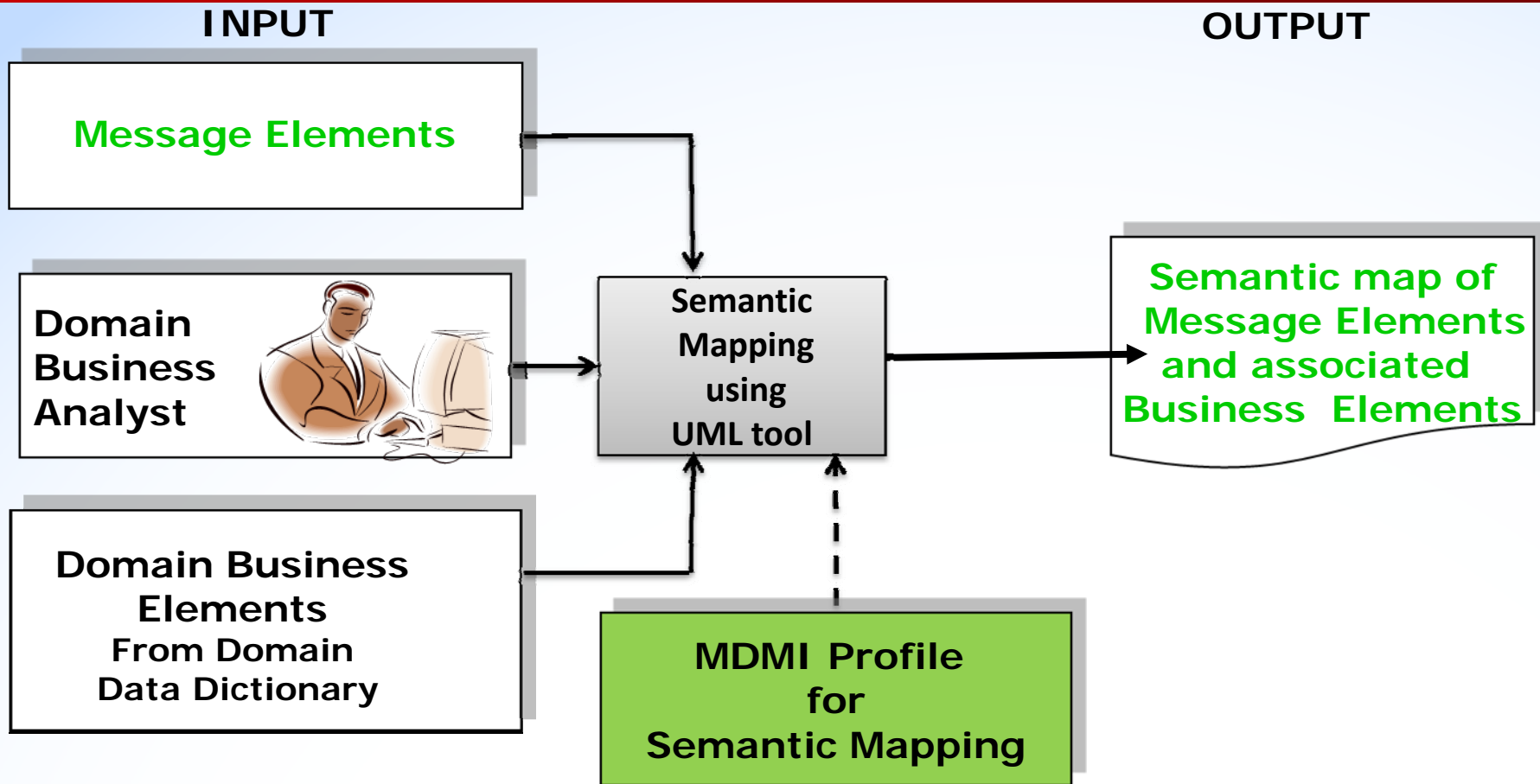
- Definition of Message Syntactic Model
 - UML Model of the syntax of a message
 - Should works for any type of existing message format, e.g., EDI, TCxx, XML, etc
- Contains LeafSyntaxTranslator for each Message Element
 - Provides information necessary to insert or extract a Message element value
 - Key attributes include Location and Format



Message Syntactic Model



Process to Create Semantic Map



- Modeling done by content-aware professional
 - E.g., Business Analyst who understands Domain



A Description of the Message Semantic Map

- Map of Message Elements to Business Elements in a Domain Dictionary
 - E.g., Business Elements derived from the attributes of UNIFI business components
- Semantic Mapping constraints
 - Defines allowed association between Message Elements and Business Elements
 - ***Key - Allowed mappings provide boundary to determine whether new Domain Semantic Element is required.***

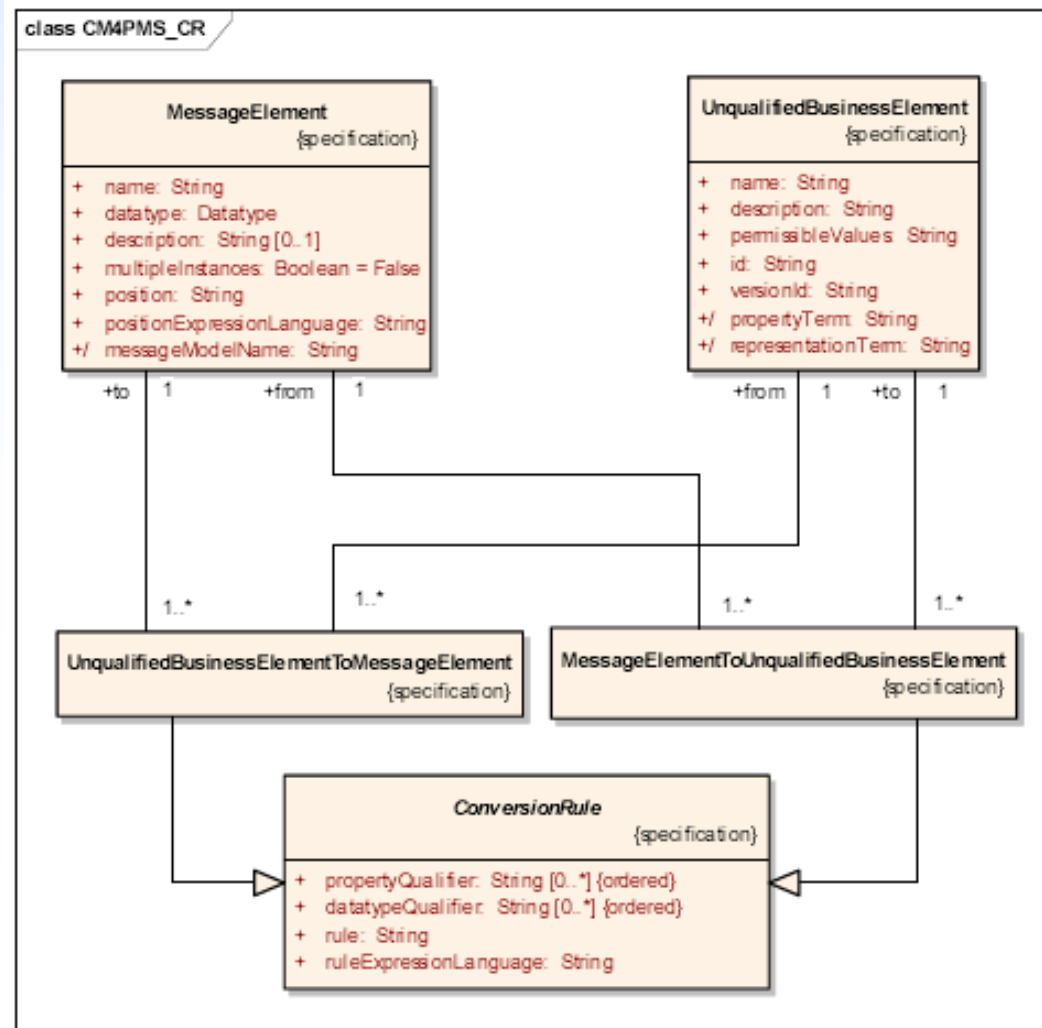


Importance of Semantic Mapping

- Semantic mapping failure implies new Business Element
- Business Elements for domain dictionary can be discovered
 - Through formal modeling (ISO 20022)
 - Through reverse-engineering of existing messages
 - Through submission by User's driven by market needs
- Semantic mapping constraints identify synonyms and near synonyms
 - Support well-structured data dictionary
 - Provide semantic distance between Business Elements
- Semantic mapping can be used federated domain dictionaries
 - E.G., Wholesale banking domain linked to Insurance domain
 - Will increase quality across multi-step transactions

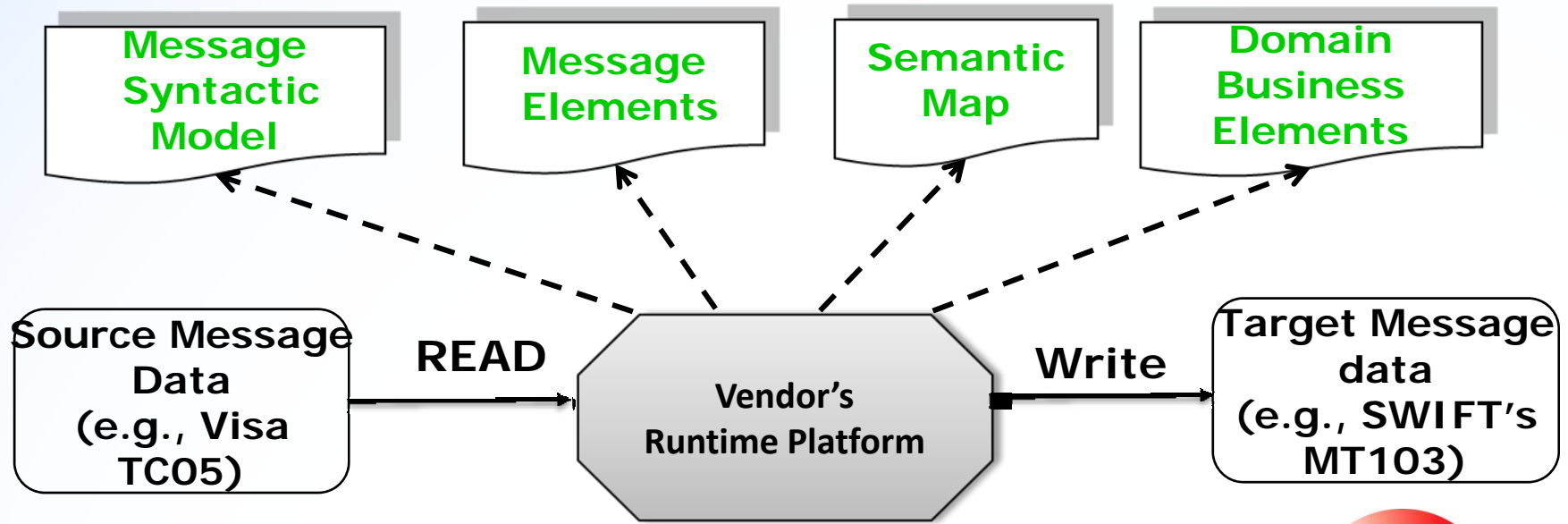


Message Element Semantic Map



Runtime Implementation

- MDMI artifacts can be “injected” by standards bodies
- Enterprises can efficiently map conversions of internal message and data formats
- A vendor can use the MDMI standard to create industry standard message data conversion applications

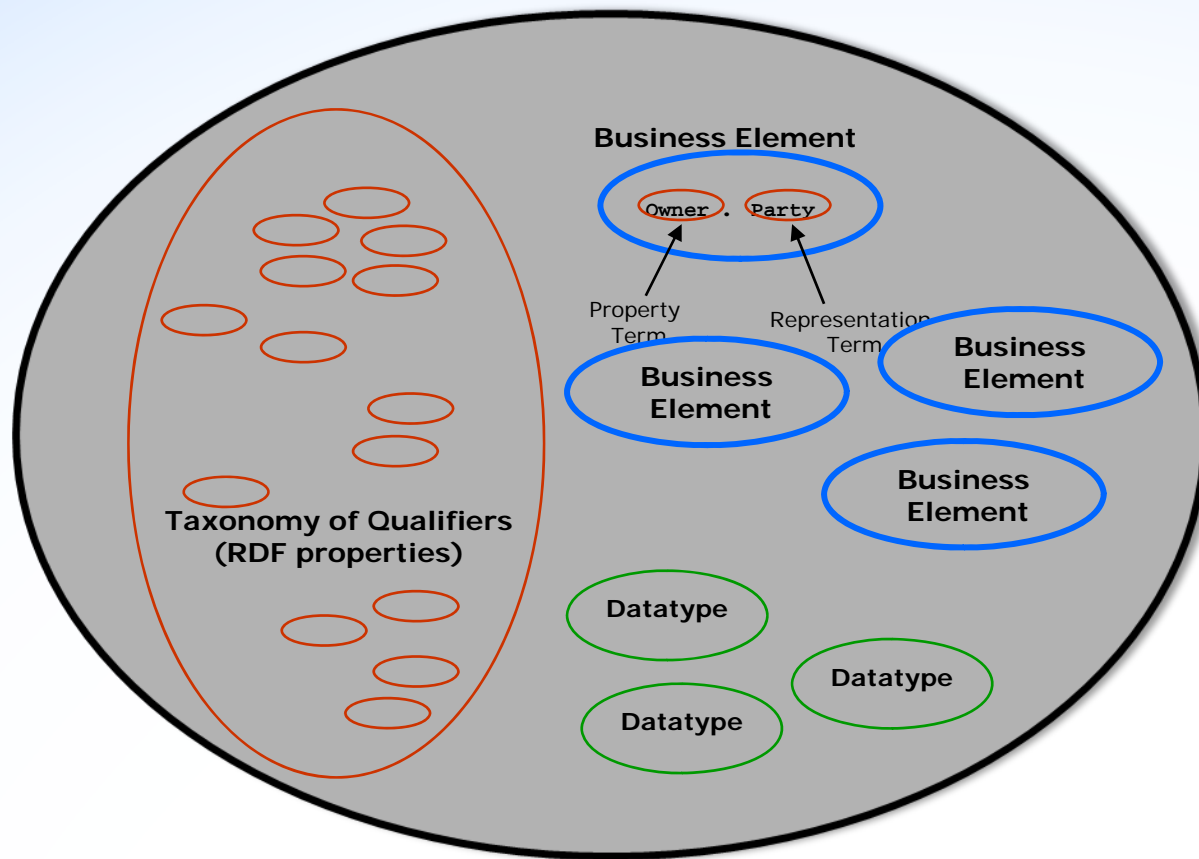




Using Semantic Mapping for well-structure Data Dictionaries



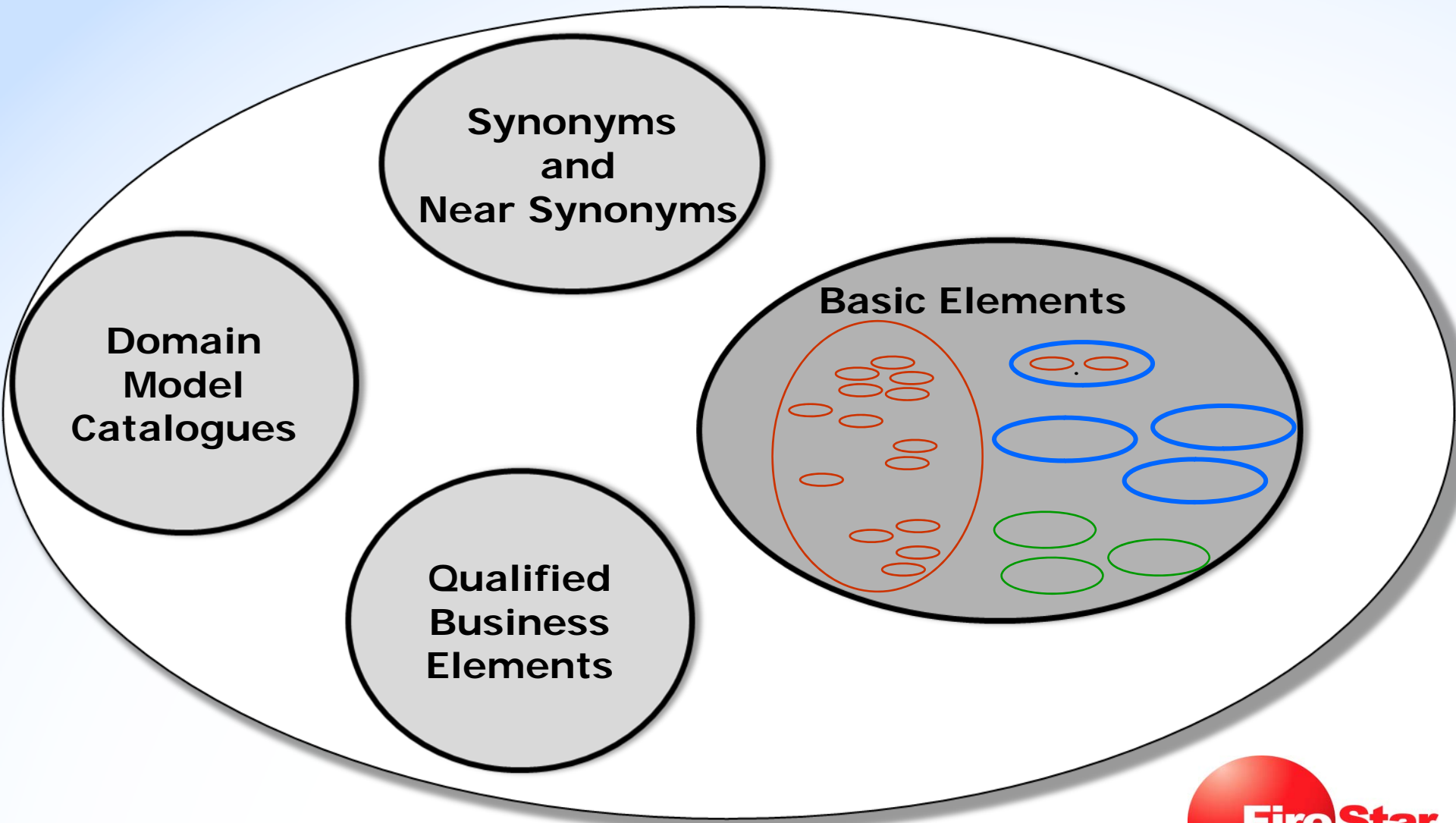
Proposed UNIFI Data Dictionary



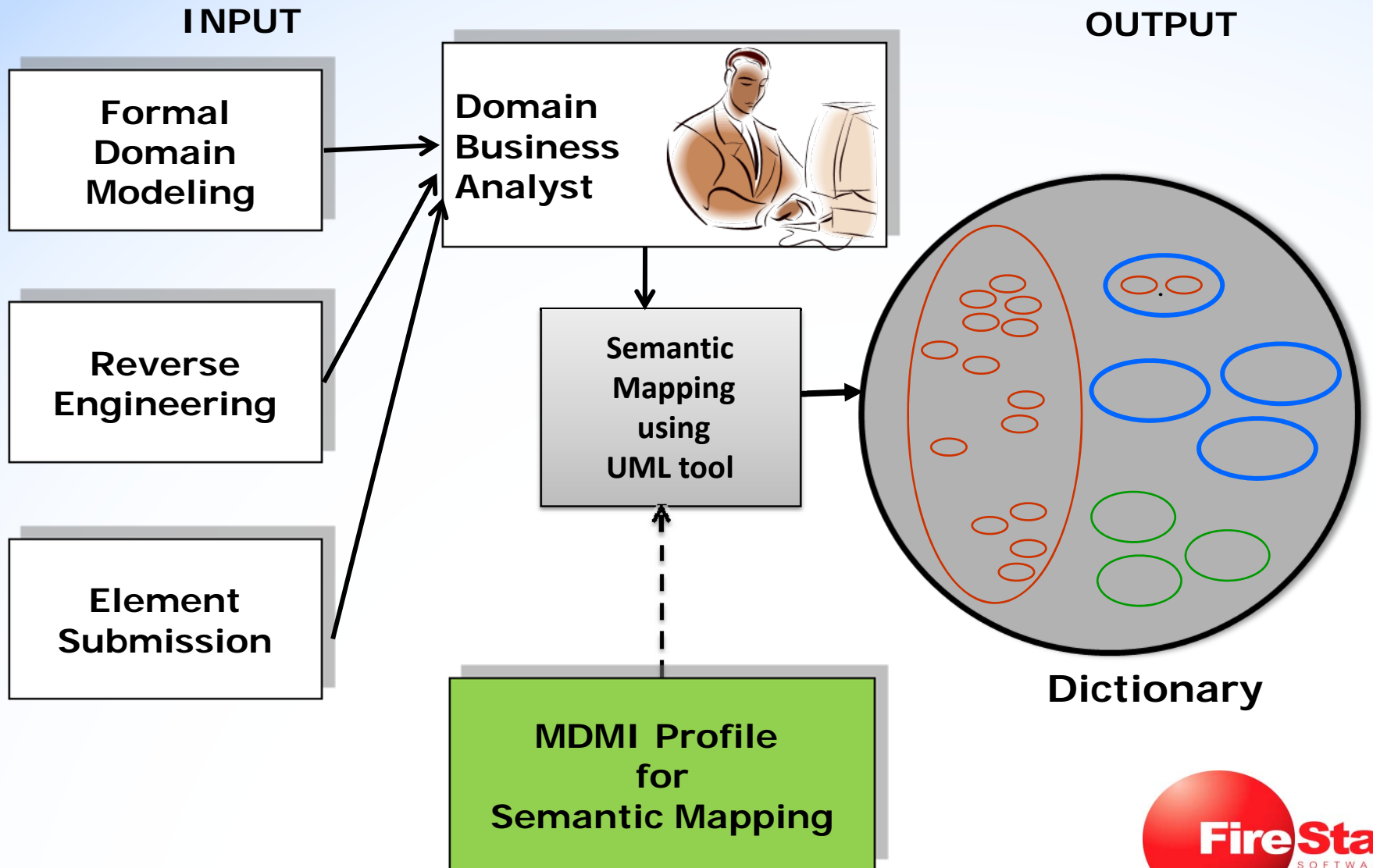
- OMG's Finance Domain Task Force has been working closely with members of the TC68 –WG4



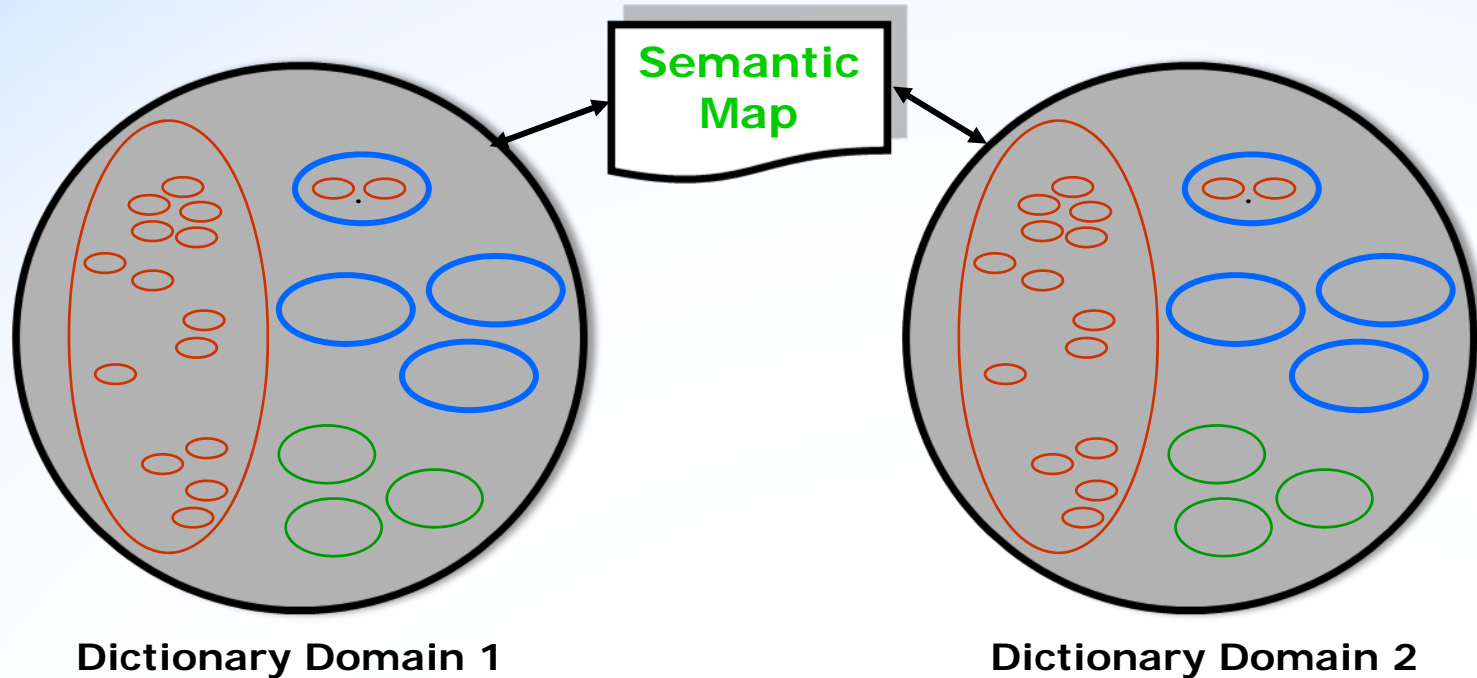
The Whole Data Dictionary Shebang



Process to Add to Domain Dictionary



Federating or linking Data Dictionaries



- Enterprise Domain to Industry Domain federation
- Industry Domain to Industry Domain federation
- Entire STP movement of data can be automated



The (potentially) glorious future of MDMI

- Choice of appropriate wire format based on need
- Creation of dynamic message formats based on business elements
- Can be a framework for lossless conversions
- Introduction of an indirect reference standard will improve security



In summary

- This standard can reduce costs
 - Injection reduce costs of conversions
- Increase quality
 - Standards bodies focus on domain they know best
- Improve STP
 - Through integral movement of data
 - Automated movement of data across federated domains
- Provide market flexibility
 - Focus on truly reusable components
 - Create well structured domain dictionaries
 - Allow for the incremental growth of dictionaries based on market need.



How can you help

- Much practical work is needed to fill out the standard
 - The devil is always in the details
- A successful proof-of-concept will result in a major standards body implementing the standard
 - That will start a snowball rolling down the mountain
- So participate with the MDMI consortium and help lead the way to this promised land
 - Founding members – FireStar, SWIFT, HSBC

