



# The Missing Link in implementing effective and efficient Healthcare SOA systems

The OMG MDMI Standard

Ken Lord

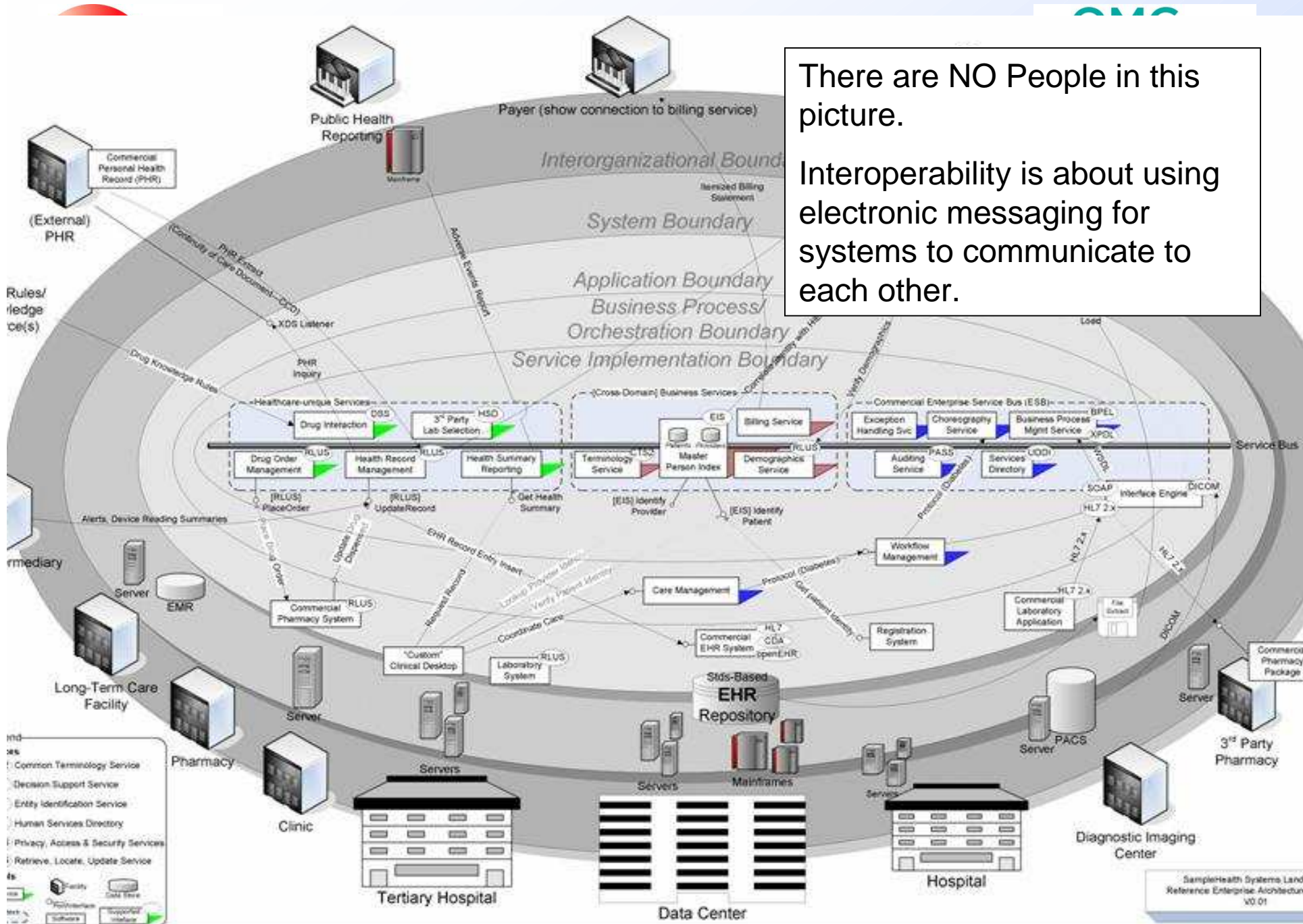


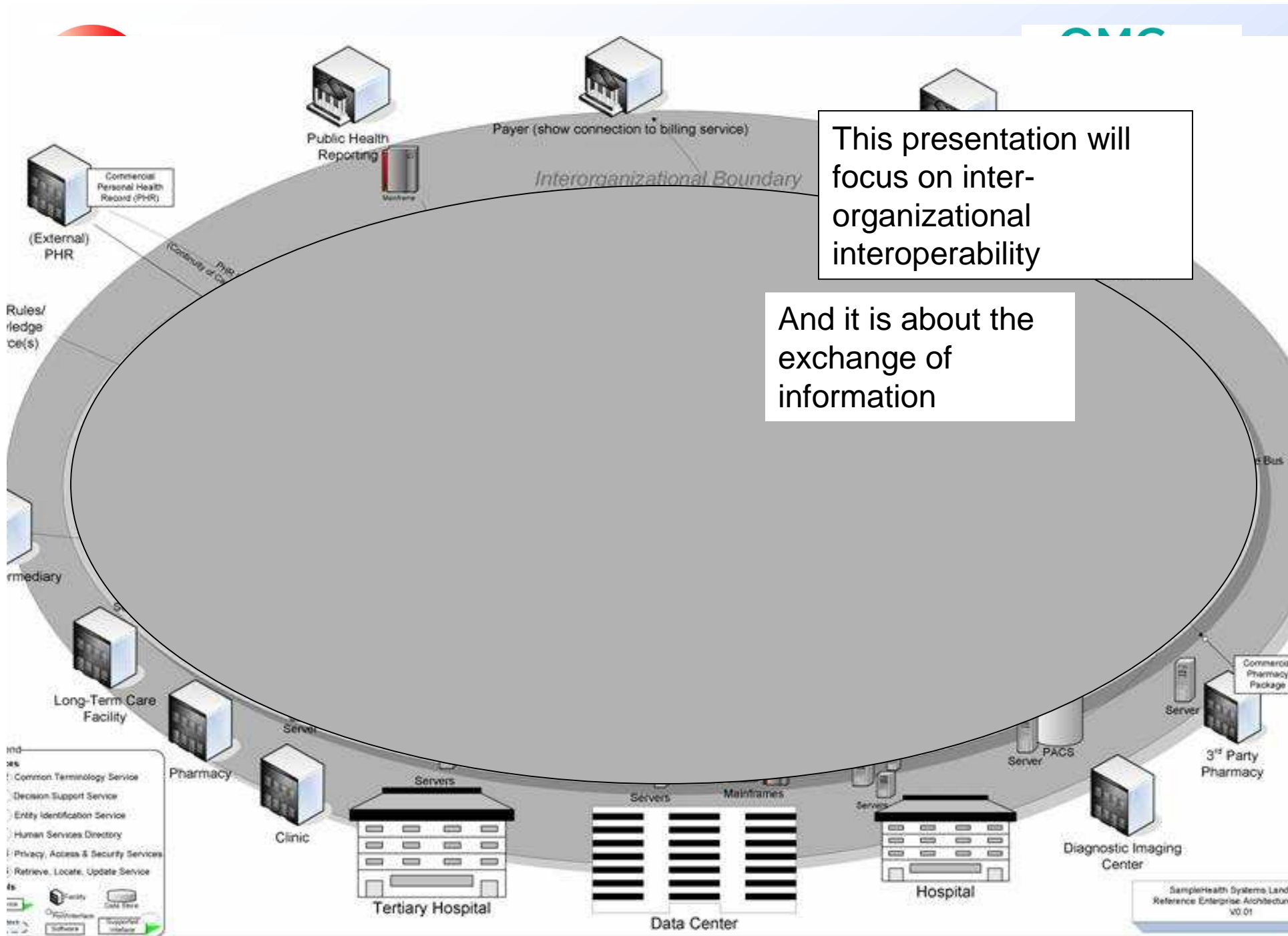
## Problem Definition



1. SOA for healthcare systems is the implementation architecture of today and the future.
2. Standards-based SOA healthcare systems provide significant benefits over proprietary SOA implementations.
3. Significant and valuable work has and continues in two fundamental areas of standards that are necessary to implement Standards-based SOA implementations: Services and Messages
4. Existing systems are a fact. Innovation and change are inevitable. These are the reasons for the interoperability problem.

**What is missing is a Standard for Interoperability.**





This presentation will focus on inter-organizational interoperability

And it is about the exchange of information

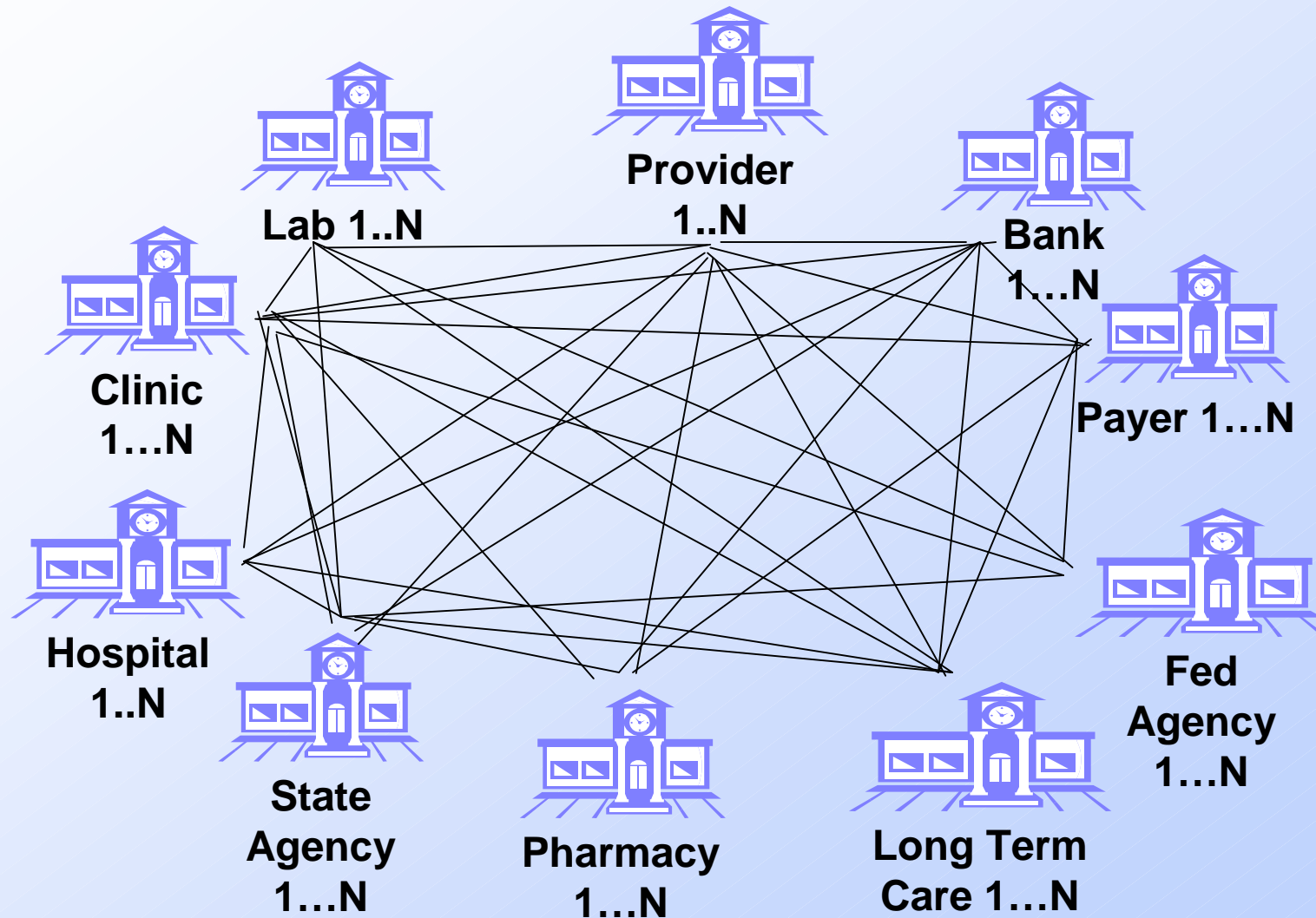
- Common Terminology Service
- Decision Support Service
- Entity Identification Service
- Human Services Directory
- Privacy, Access & Security Services
- Retrieve, Locate, Update Service

SampleHealth Systems Land Reference Enterprise Architecture V0.01





# Inter-organizational Interoperability





# Approaches to Solving Interoperability



- **Message Harmonization**
  - **It is a necessary goal but it has never worked in any industry.**
  - **Harmonization actually accelerates change. Implementation costs can be measured in billions \$**
  - **Change is inevitable and the healthcare industry changes faster than most.**
  
- **Bilateral Mapping**
  - **Proprietary**
  - **Expensive**
  - **This is the present state of the solution today.**



# Interoperability needs a Standard Adaptor

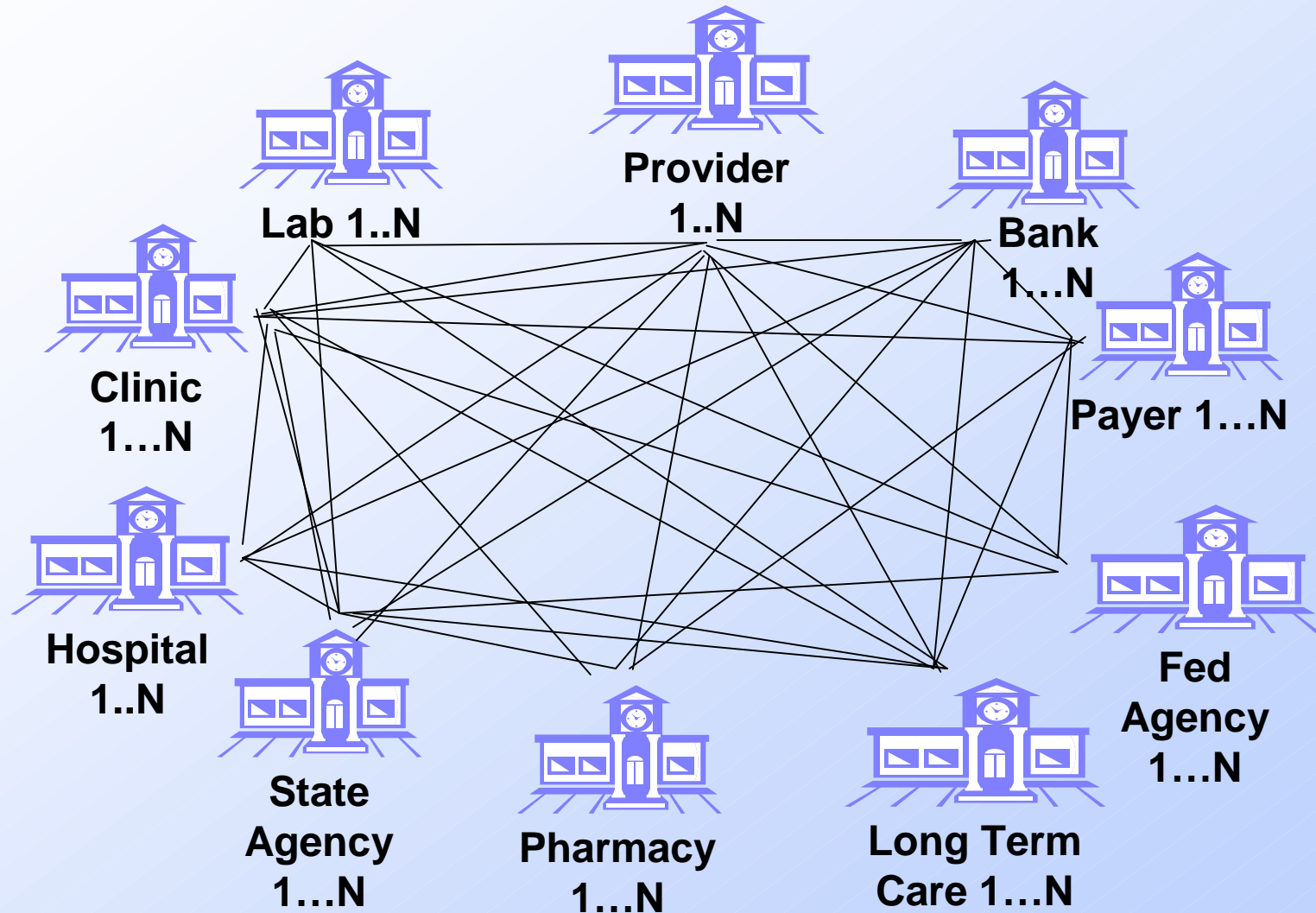


“Interoperability bridges and gateways ... as interconnections with customers, suppliers, and business partners can be produced methodically, using a consistent architecture and some degree of automatic generation”

- » Richard Soley, CEO, OMG
- » 2000



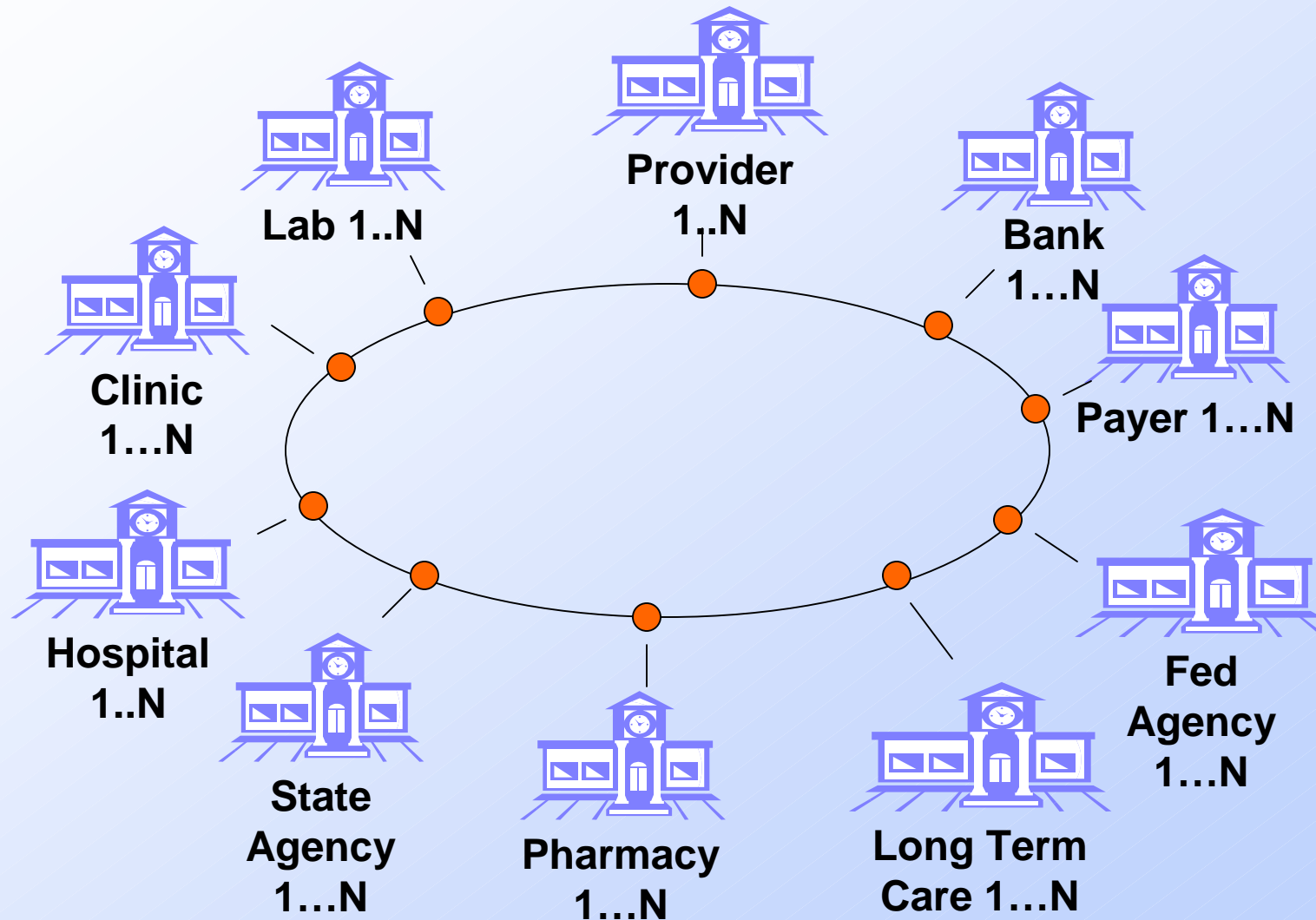
# Instead of this ....







# The SOA implementation looks like this





# The OMG Model Driven Message Interoperability (MDMI) Standard



- The MDMI Standard is the missing link.
- Approved by the OMG Board of Directors in November 2009.
- *The MDMI solves the fundamental part of the interoperability problem: semantic interoperability.*
- Semantic Interoperability is moving data from one format to another.
- As with all OMG standards it is an open standard
  - Go to <http://www.mdmi-consortium.org/> for the specification
  - Anyone can use it



# MDMI Benefits



Business Benefits: MDMI can increase the quality of Healthcare and reduce investment (cost) in implementing, growing, and maintaining inter-organizational interoperability.

## Technical Benefits

1. Increases the quality of message processing
2. Makes it easier to “plug-in” the network
3. Handles change and versioning
4. Leverages and enhances existing standards

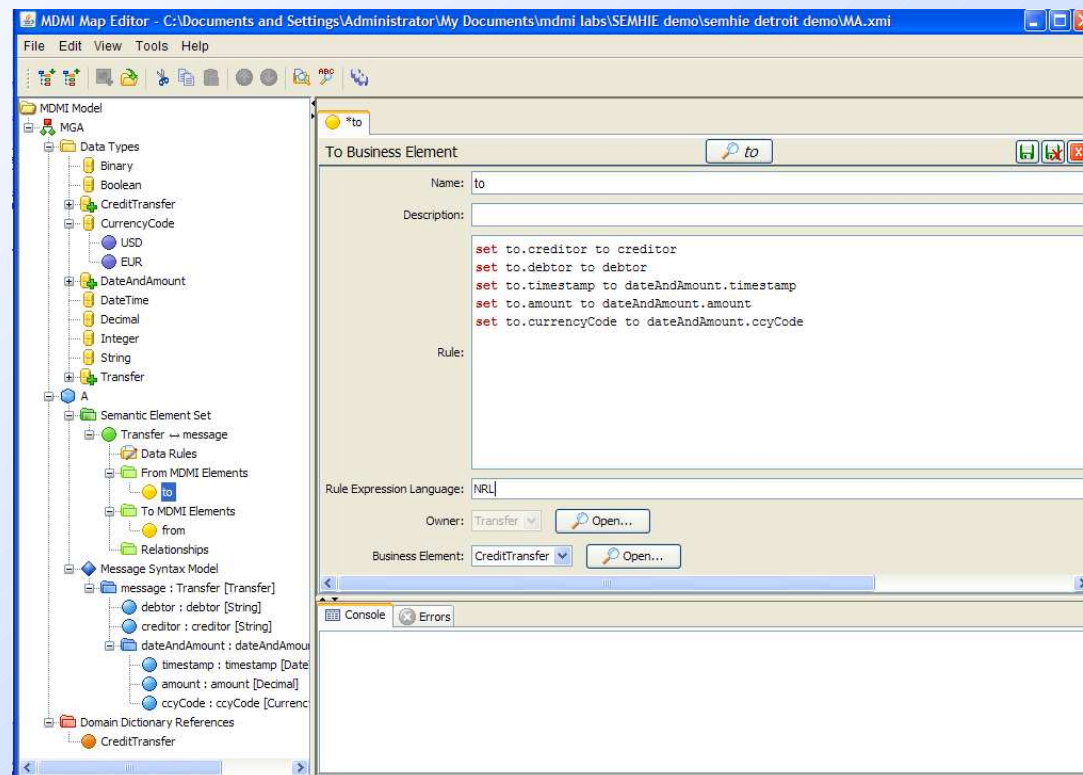


# How MDMI Works



- MDMI is a UML Meta Model. Anyone can use it to create a MDMI map.
- A MDMI map is a machine readable file that can be distributed to anyone.
- Elements of the MDMI Meta Model
  - **Semantics:**
    - 1. Relationship model between the context of each Message Element and the smallest Business Semantic element used in the industry.**
    - 2. Map the smallest semantic element to a Referent Index**
  - **Syntax.**
    - **Deconstruct a message of any syntax to its Message Elements**
    - **Reconstruct a message of any syntax from the semantic elements of the Referent Index.**

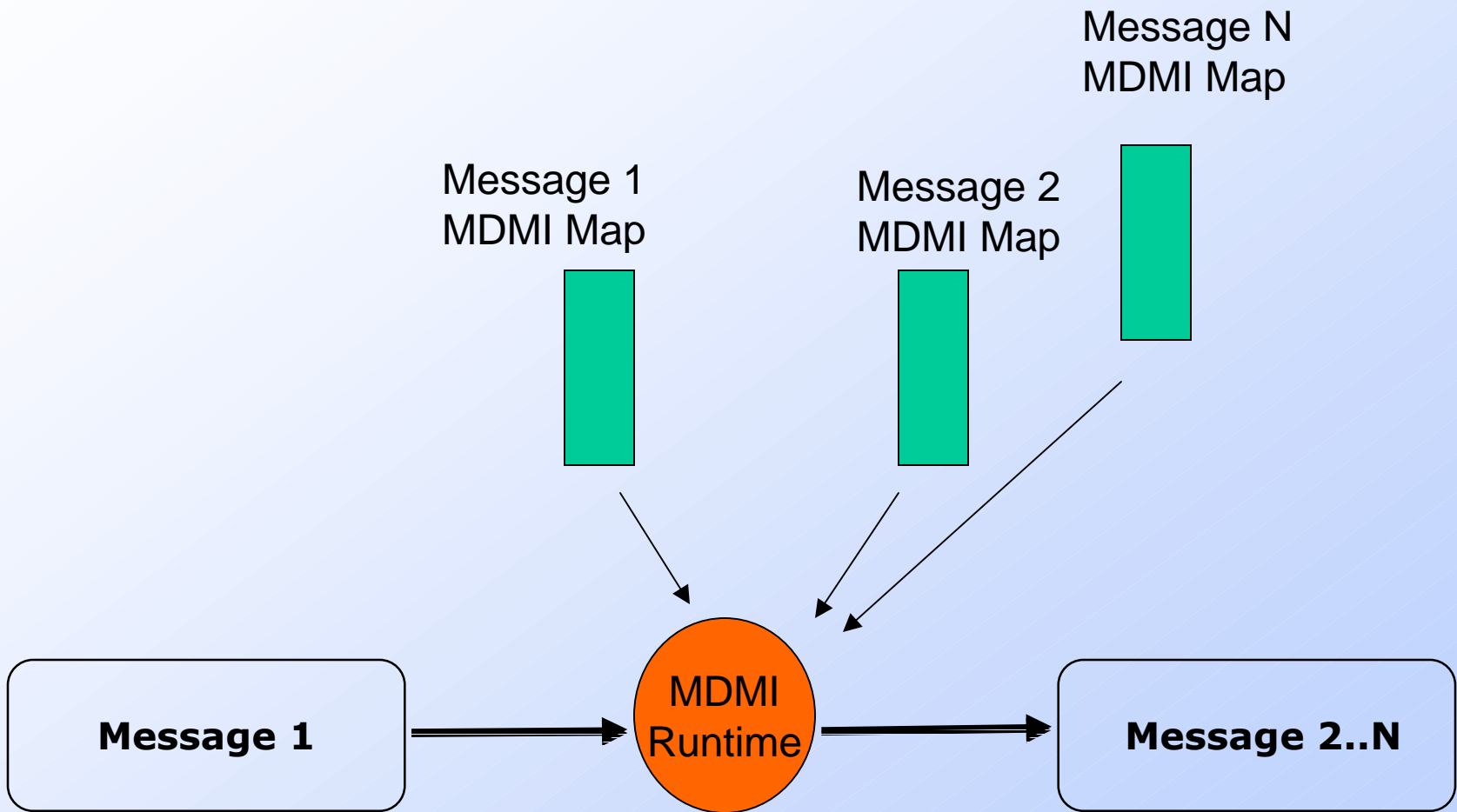
- To create an MDMI Map you need
  - Someone who knows the format and the meaning of the data
  - Referent Index
- You should have a tool



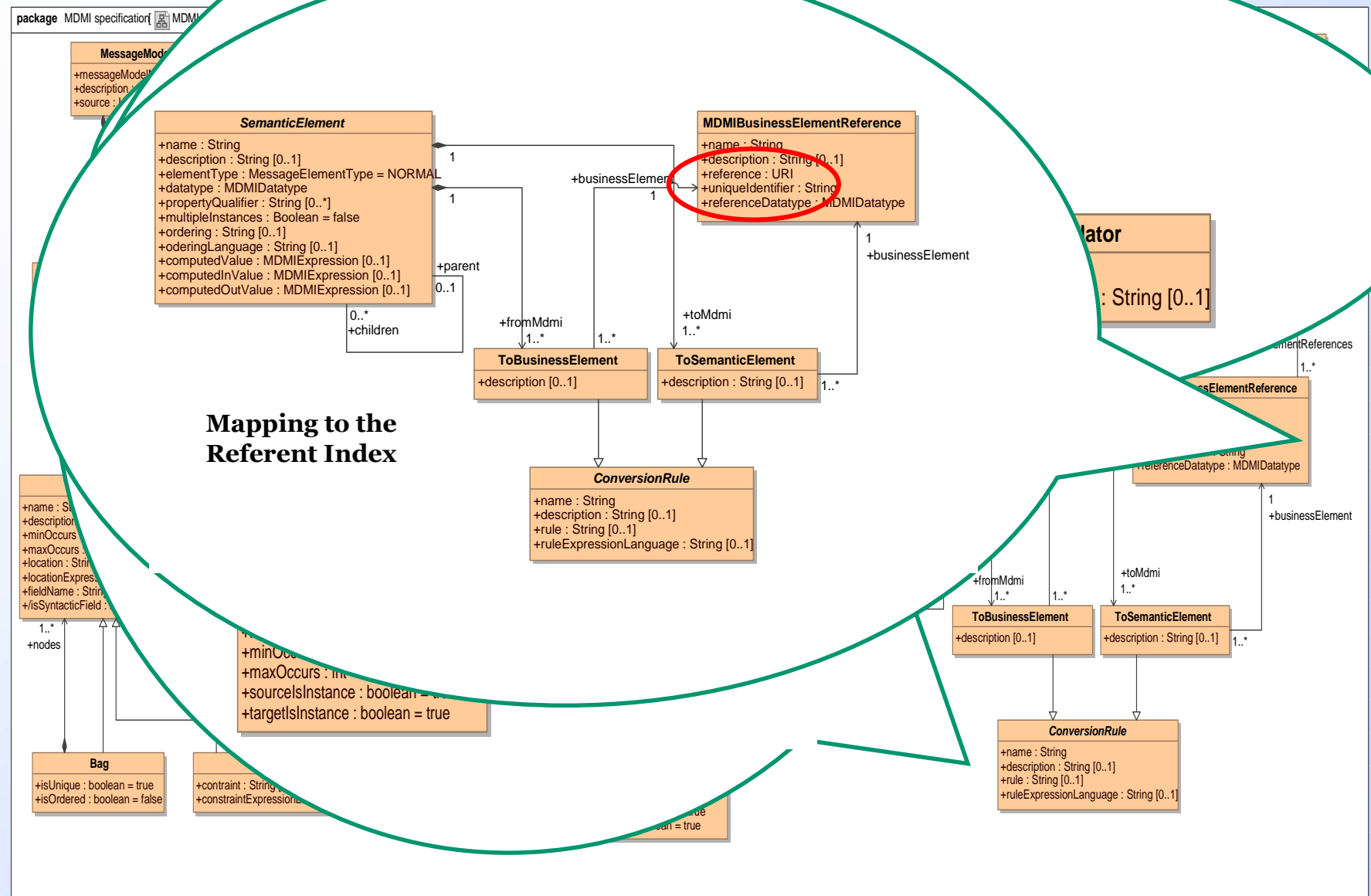




# MDMI in Action



# The core



## Mapping to the Referent Index



# 1. Improve Quality of Message Processing

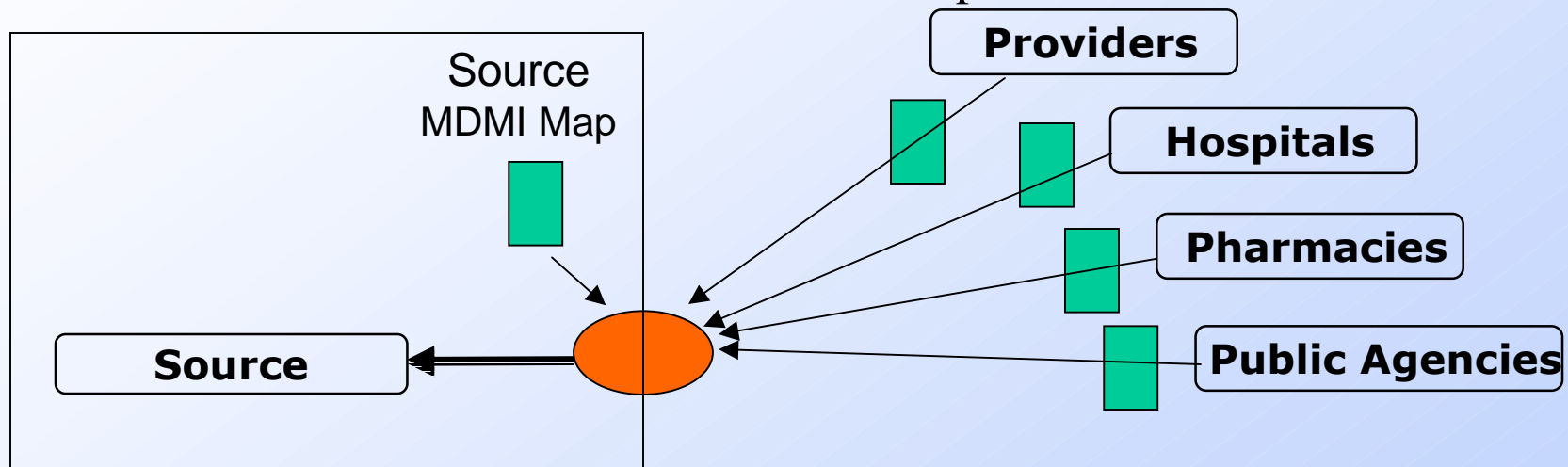


- One only needs to solve their half of the interoperability problem.
- Having the experts (Standards organizations, Federal and State Agencies, and Application Vendors) producing the maps will result in high quality maps.
- Reuse of MDMI maps will result in higher quality.
- Business Benefits: Increase Quality of Healthcare



## 2. Simpler, easier to plug into inter-organizational SOA

- One needs to create only THEIR map.
- Simpler: One only needs to know its own syntax, its own data, and an industry standard Referent Index.
- Vendors: Vendors can distribute their maps to their customers.



- Business Benefits:
  - **Interoperability will increase which leads to higher quality in healthcare**
  - **MDMI will lead to lower costs. MDMI offers hope that the small “business” in healthcare will be able to achieve interoperability.**



## 3. Change Management / Versioning



- For change, a MDMI map is modified and redistributed to those who need it.
  - **Creating the new version is much simpler.**
  - **The receiving party may not need to do anything.**
- Change is like distributing a new Word Processing file. The change is declarative (providing a new file) and not procedural (developing new code).
  - **Implementation time is reduced**
  - **Development costs are reduced**
  - **Testing costs are reduced**
- **Business Benefits: Agility, Lower Costs, Increased Quality**





## 4. Leverage Existing Standards



- MDMI leverages OMG Standard process and standard tools
- Referent Index is leveraged from existing standards
  - **Finance: ISO 20022**
  - **Insurance: ACORD**
  - **Healthcare: HITSP provides direction for industry standards**
- As MDMI is adopted, there will be an increasing number of MDMI tools
- Business Benefit:
  - **Lower Costs**
  - **Enhanced value of existing industry standard work**
  - **Increased use of new Message Standards**



## Who will benefit



- Patients and Providers
  - **Higher quality healthcare**
  - **Lower cost interoperability**
- Payers
  - **Reduced costs**
- Healthcare Software Vendors
  - **Reduced costs in providing and maintaining interoperability.**
- It is not just automating present clinical workflows, it benefits all those participating in the community
  - **Fraud Detection**
  - **Straight through processing in Healthcare: The Healthcare Revenue Cycle**



## MDMI – A necessary component



- MDMI represents quantum level improvements in:
  - The Quality of the data exchanged
  - The Flexibility allowed for each participant
  - The Autonomy allowed for each participant
  - The Reuse of existing applications
  - The Cost to achieve data interoperability in a large community
  - The Time to implement interoperability
  - The Scalability and Scope of interoperability
  - The Supportability



## In Healthcare SOA – MDMI is the missing link



1. Standards are essential to implementing a Healthcare SOA.
2. The OMG MDMI Standard is the Missing Link for effective (high quality) and efficient (low cost, agile) Healthcare SOA.
3. There are 3 foundation “Standards” that are necessary to building, growing, and maintaining a dynamic, inter-enterprise SOA (Health Information Exchange)
  - **Services (applications)**
  - **Messages**
  - **MDMI**



## MDMI – the only feasible approach



- “To make meaningful use possible, including the necessary exchange of information, we need to **meet providers where they are**, and offer approaches that are both **feasible** for them and support the meaningful use requirements of the Centers for Medicare & Medicaid Services (CMS) Electronic Health Record Incentives Programs. ”

- Dr. David Blumenthal - May 14, 2010





## Next Steps



The velocity of adoption of MDMI leads to the acceleration of benefits for all participants in the healthcare community.

1. **Learn more about MDMI**
2. **Work with thought leaders**
  - **Southeast Michigan Health Information Exchange (SEMHIE) whose vision is to implement a HIE based on a SOA. SEMHIE is using MDMI for interoperability with the Social Security Administration.**
3. **Work with MDMI Vendors**
4. **Join an OMG MDMI Labs for Healthcare**



## What is the OMG MDMI Lab in Healthcare



- **OMG MDMI Labs for Healthcare**
  - **Leveraged research and development for the participants**
  - **Builds re-useable assets: maps, Referent Index, best practices, knowledge base**
  - **OMG Lab provides:**
    - **Experts in Healthcare Semantics**
    - **Experts in MDMI technology**
    - **An OMG MDMI Software Workbench**
    - **OMG Web site / WIKI / Grid**
  - **Funded by sponsors who**
    - **Define common use cases for the shared research and development**



# OMG MDMI Lab for Healthcare Contacts



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- <http://www.mdmi-consortium.org/>



## Summary



- **Healthcare SOA is the future of Health Systems**
- **MDMI is the missing standard that provides the cornerstone solution for interoperability.**
- **MDMI is the only feasible solution**
- **OMG MDMI Labs for Healthcare is a simple way to create interoperability and achieve the benefits of SOA in healthcare.**