

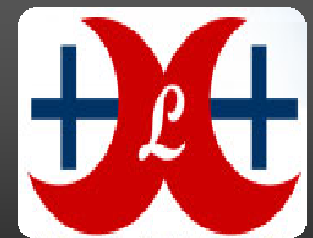
# “HL7 Laboratory Messaging through SOA Infrastructure” (HLMSI)

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# Presentation Scheme

- **Background**
- **Introduction to domain**
- **Current System Problem**
- **Messaging Infrastructure vs. SOA**
- **Proposed Methodology**
- **Related Work**
- **Conclusion and Future Work**
- **References**

# BACKGROUND

# Background

**History:** Needs of Interoperability, Integration and Information management in HIS<sup>1</sup>.

- Interoperable communication problems (since 1980); Evolution of HL7 and DICOM.
- HL7: a standard healthcare communication protocol.

**Present:**

- Lack of “Complex Processes Automation”
- Lack of “Set of related Interactions and their triggering order”
- Lack of “Capturing Business Scenarios”

# INTRODUCTION TO DOMAIN

## Service Oriented Architecture & HL7

- Healthcare complex processes in well-defined business language rather than technology-specific terminologies and grammar.
- **SOA Infrastructure**: Web services and Messages.
- **SOA for HL7**:
  - A project under Health Life Horizon (HLH),
  - Using certain guidelines of HSSP,
  - Named as HL7 Messaging through SOA Infrastructure (HLMSI).

# CURRENT SYSTEM PROBLEM

# Current System Problem

- With prevailing Messaging Infrastructure it is unable to capture real time business scenarios and maintaining of sessions.
- There is a need to propose an infrastructure that automates the messaging process in an efficient, self-maintainable, flexible and cost-effective way.



# Messaging Infrastructure vs. SOA

Messaging Infrastructure	Service Oriented Architecture
Focuses mainly on message structure, its contents and transmission.	Supports service creation and hosting in addition to message structure, contents and its transmission.
Focus is often on data movement or replication rather than functional reuse.	Services in SOA are functionally reusable.
A message just performs one function at a time (based upon the its context).	A service can perform multiple functionalities based upon the design and invocation pattern.
A message cannot interact with other messages. It is just sent and received and based upon its payload, it is processed.	Services communicate with each other. The communication pattern (invocation flow) depends upon the message context.

# PROPOSED METHODOLOGY

# Procedure

## ***1. Analyzing Similarities:***

- Analogies of HL7 v3 and SOA

## ***2. Issues in Designing Services for HLMSI and Their Solution Based on Similarities:***

- How the services should be..

## ***3. Methodology Steps:***

- Identification of services, their operations and interfaces, their interactions and profiles for implementation.

## ***4. Proposed Work-Flow of Lab Test Order and Test Result Services:***

- A real life scenario.

## Proposed Work-Flow of Lab Test Order and Result Services

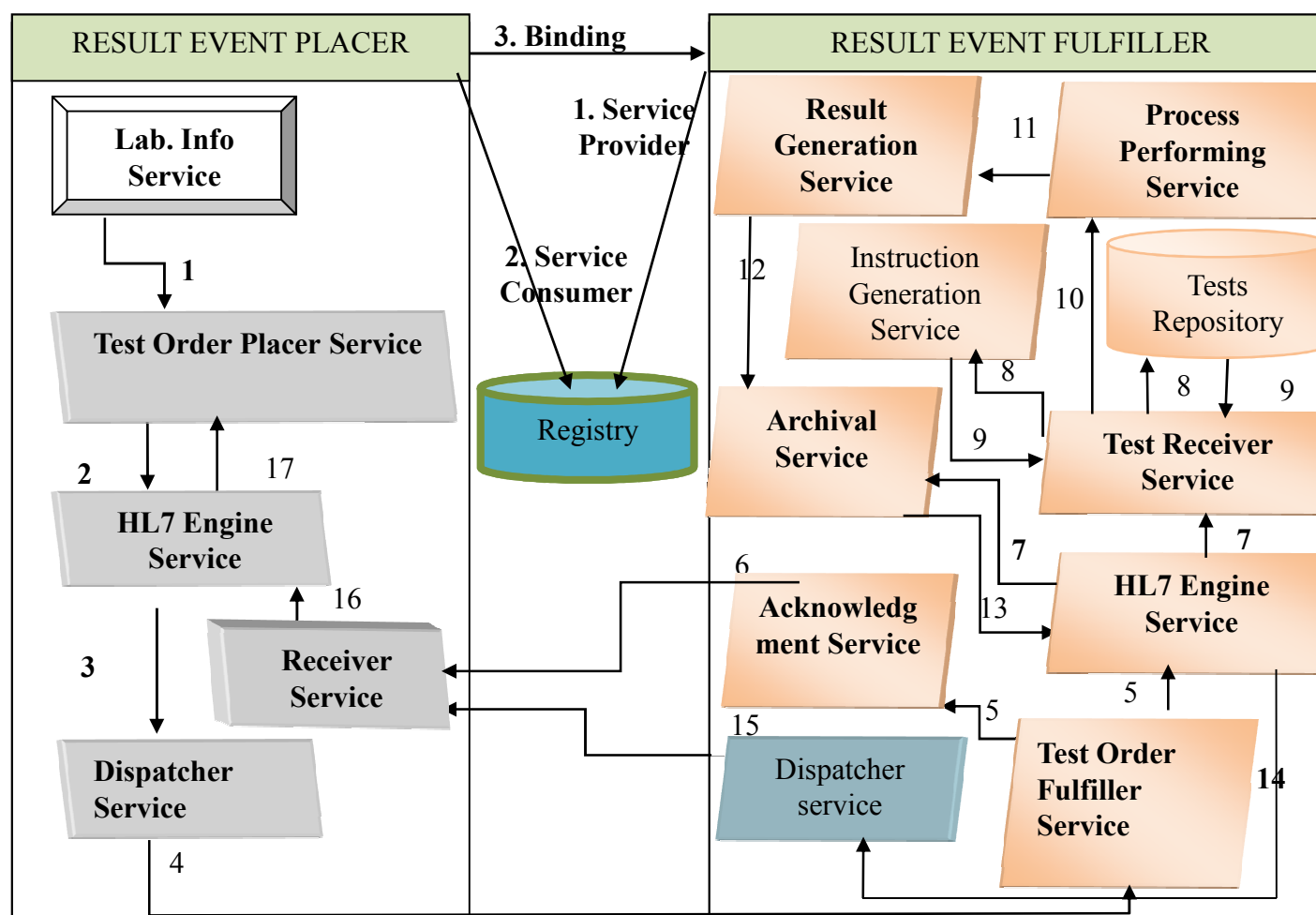


Figure 2: Invocation of Services for Test Order and Test Results

# Identified Services

Service Name	Granularity	Service Description
Lab Info Service	Coarse	Collects the patient's test information and manages the required services' invocation.
Test Order Placer Service	Fine	Gets the relevant test information from Lab Info Service and places a particular order
HL7 Engine Service	Coarse	Formats the Test Order into HL7 v3 message.
Dispatcher Service	Coarse	Wraps in wrappers and SOAP body and dispatches the v3 message.
Test Order Fulfiller Service	Fine	Gets the SOAP message and also extracts the v3 message out of it.
HL7 Engine Service	Coarse	Parses the received v3 message.

# Identified Services (2)



Service Name	Granularity	Service Description
Acknowledgment Service	Fine	Acknowledges test-order sender side about received order message.
Test Receiver Service	Fine	Receives the parsed message and invokes required services to get details about performing of the incoming order.
Instruction Generation Service	Fine	Gives information about sequence of sub-steps for performing original task.
Process Performing Service	Fine	Performs the test or any other task based upon the info received.
Result Generation Service	Fine	Generates the Results (whether preliminary or final).
Receiver Service	Fine	Receives and accordingly unwraps the SOAP message .

# RELATED WORK

# Related Work

- HSSP: A development activity by HL7, OMG <sup>1</sup>, Open Health Tools and IHE.
- Aim of HSSP is; to define services, design their Interface Specifications and decide on implementations with the consensus of HL7 work products and activities.
- HLMSI Strategy is based upon certain guidelines of HSSP but the criteria of interface and implementation specifications will be according to real life requirements of our healthcare environment.



# CONCLUSION and FUTURE WORK

## CONCLUSION AND FUTURE WORK

- The proposed methodology allows dynamic communication among Lab components, maintenance of sessions and flexibility in interactions.
- HLMSI – contrary to traditional communication systems  
- follows SOA; to provide interoperability, reusability and to get adaptability to future technologies.
- Work based on HL7 and certain guidelines of HSSP.
- True automation and Semantic SOA is future target.

# References

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# QUESTIONS?