Bringing Agility into Linked Data Development

An Industrial Use Case in Logistics Domain

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Logistics Container Transportation

Diagram:
- Land Transport
- Warehouse Center
- Land Transport
- Loader Company
- Door Delivery
- Container
- Port Terminal
- Vessel Agency
- Land Transport
- Port Terminal
- Vessel Agency
- Port Terminal
Logistics Container Transportation

Vessel Agency

Loader Company

Warehouse Center

Railway Transport

Land Transport

Port

Voyage, Tariff, Agreement

Work order

Offer, Operation status, Work order

Offer, Operation status, Tariff

Offer, Tariff

Offer, Operation status, Offer

Shipping order
Logistics Container Transportation

<table>
<thead>
<tr>
<th>IN TURKEY</th>
<th>TOTAL</th>
<th>WORKING with INTEGRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td>Warehouse Center</td>
<td>~80</td>
<td>21</td>
</tr>
<tr>
<td>Land Transport</td>
<td>~900</td>
<td>~650</td>
</tr>
<tr>
<td>Agency</td>
<td>22</td>
<td>13</td>
</tr>
<tr>
<td>Forwarder</td>
<td>~200</td>
<td>2</td>
</tr>
<tr>
<td>Railway Transport</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

- **New Integration Cost**
  - 12-30 days

- **Costly Operations**
  - Data transformation between services
  - Data format (EDIFACT, RosettaNet, STEP, AnsiX12) agreement processes
  - Maintenance of integrations

- **Integration/Budget** → %25-30
- **Maintenance/Budget** → %10-15
Why Linked Data?
Observation and Monitoring of Container Life Cycle Application

From: Manisa / Turkey

To: Muchen / Germany

- Land Transport → from Manisa / Turkey to İzmir Alsancak Port / Turkey
- Sea Transport → from İzmir Alsancak Port / Turkey to Pireus Port / Greece
- Sea Transport → from Pireus Port / Greece to Venice Port / Italy
- Land Transport → from Venice Port / Italy to Munchen / Germany
Iteration 1 - Methodology

Analysis

ARC Backlog

Validation & Verification

Iteration Requirement Specification

Architecture Identification

Architecture evaluation criteria

Ontology tests
Linked Data tests
Architecture tests

Application Development

Linking

Ontology Modelling

Linked Data Generation

LEGEND

Activities

Output of the activities
### ID: BAKI-IT1

#### Purpose
Observation of the Container Transportation History

#### Selected Data Sources
- ARLES (Port database)
- YNA (Agency database)

#### User Story
As a customer, I need to search port history of a specific booking number, so I could learn whether the port history of my goods as expected.

#### Competency Questions
1. Is there specific booking number in the specific port?  
2. What is the list of actions specific booking number in specific port?

...
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LEGEND
- Activities
- Output of the activities
Before the development, an education about linked data knowledge set is required to prevent smooth flow of the activities.

Development of test cases and execution of tests should be done when necessary knowledge is ready.

Integrating architecture identification and evaluation of the identified architecture within the development life cycle is a good idea.
Generation of test cases and making tests in the Ontology Modeling, Linked Data Generation and Linking activities are good idea.

Application development should be a parallel process with Linked Data generation.
Customer Operation Unit
- 20 concurrent users
- ~300 million RDF triples
- ~3 million change messages per day

Role based access management
Monitoring rule management screen
Questions...