



Framework for Testing Service Compositions

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Outline

- Problems in quality assurance of SBA
- TASSA Framework
- ISOLATION TOOL
 - Approach
 - Realization
- Tassa Features
- Future work



Problems in quality assurance of SBA

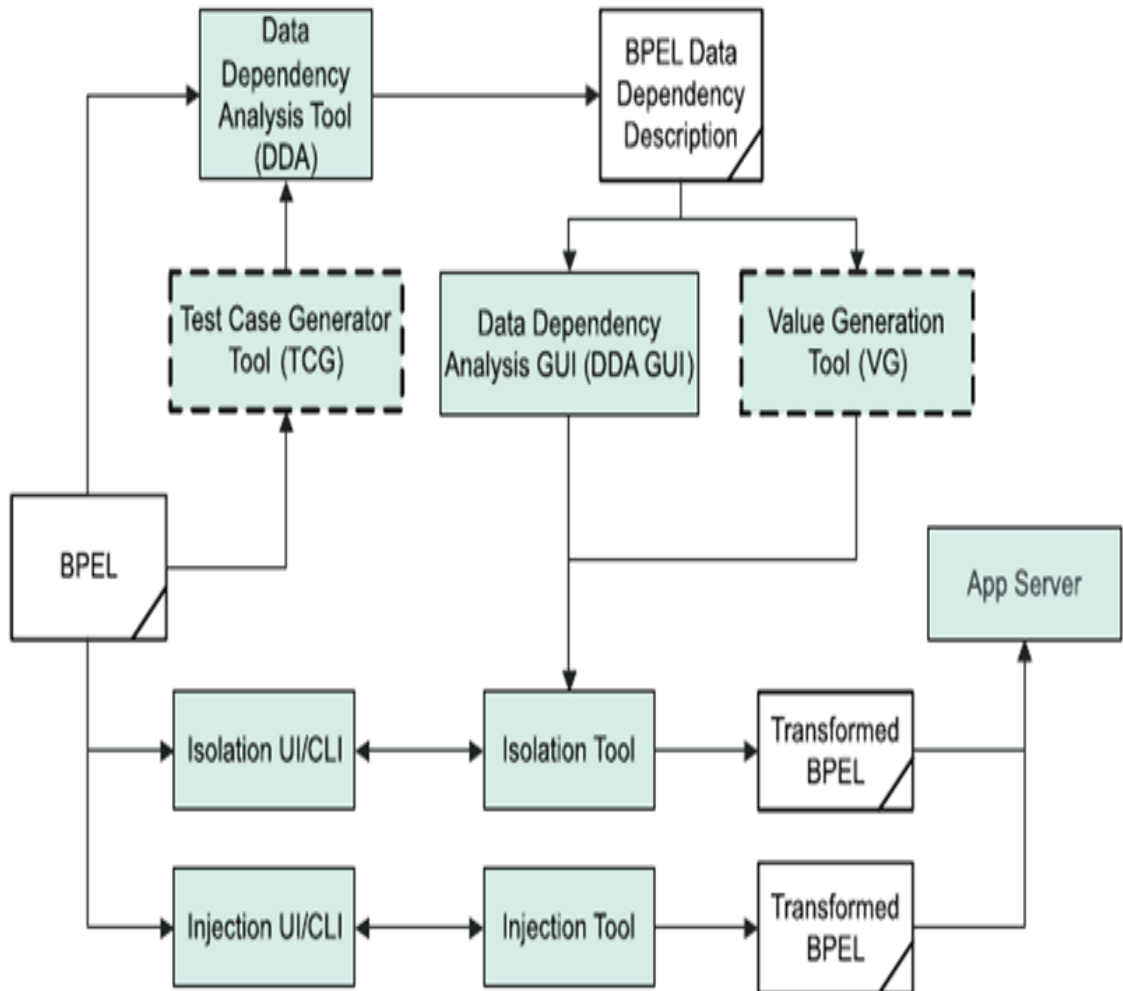
- Instrumentation of the services
- Automation
- Inability to test the service compositions
- Identifying the main causes of system failures



TASSA Framework

- General concept :
 - End-to-End design-time testing
- Methodologies and tools:
 - Isolation Tool ;
 - Data Dependency Analysis Tool ;
 - Test Case Generation Tool ;
 - Value Generation Tool ;
 - Fault Injection Tool

Design Time Testing Framework





ISOLATION TOOL

- Main task
- Application's dependency upon external services
- Approach
- Realization

Application's dependency upon external services

- BPEL

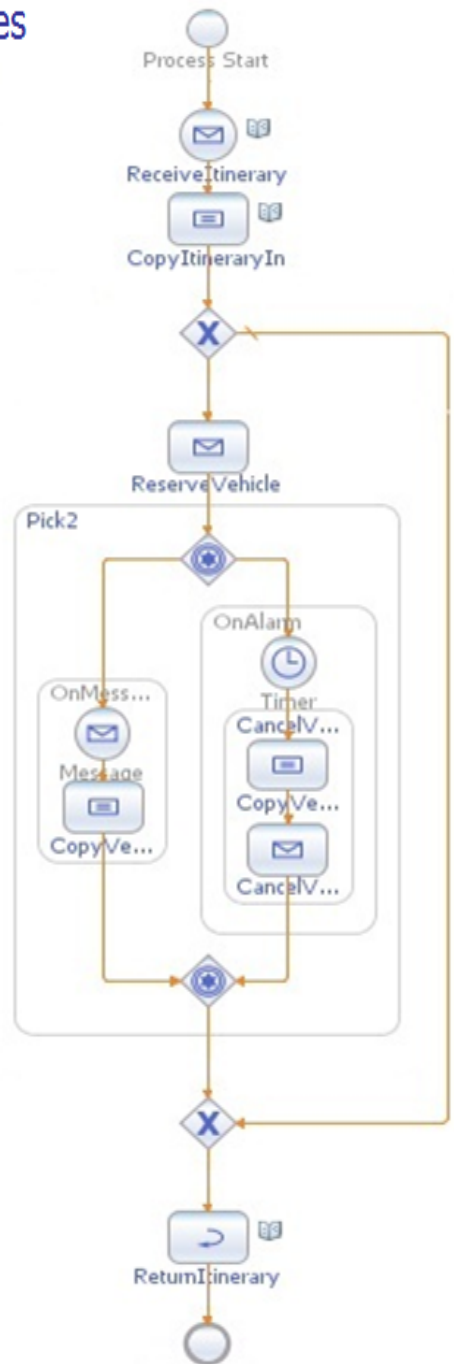
- *receive activity*

- *reply activity*

- *invoke activity*

- *assign activity*

- *pick activity*





Approach and advantages

Approach

- Modification of the process**
- Creating a test artifact**

Original Activity	Replacement Activity
Invoke activity with output parameters	Assign activity for output parameters
Invoke activity without output parameters	Empty activity
Receive activity	Assign activity
Reply activity	Empty activity
Pick activity (onMessage branch)	Assign activity + onMessage branch
Pick activity (onAlarm branch)	Wait activity + onAlarm branch
Human Task activity	Assign activity



Realization

- Web-service SimulateWS
 - Input parameters
 - Output parameters
- Graphical User Interface (GUI)
- Interface through command line (CLI)



TassaWSSimulate

- Invoke operation

```
process//invoke[@name='ReserveHotel']  
$HotelReservedIn.itinerary/@NumberOfUnits=1  
$HotelReservedIn.itinerary/@RoomTypeCode='KNGSTE'
```

- Pick operation (onMessage)

```
process//pick[@name='Pick1']  
@onMessage_index=1  
$AirlineReservedIn.itinerary/@CompanyShortName = 'LH'
```

- Pick operation (onAlarm)

```
process//pick[@name='Pick2']  
@onAlarm_index=1  
@onAlarm='-1'
```

- Reply operation

- Receive operation

- Insert operation



Tassa Features

- Pluggable/ESB-based
- Do not modify the execution environment
- Platform Independent



Future work

- Testing methodology
- Validation of the tools
- Evaluation of the effectiveness