ITACA: Integrated Toolbox for the M Automatic Adaptation of Web Services

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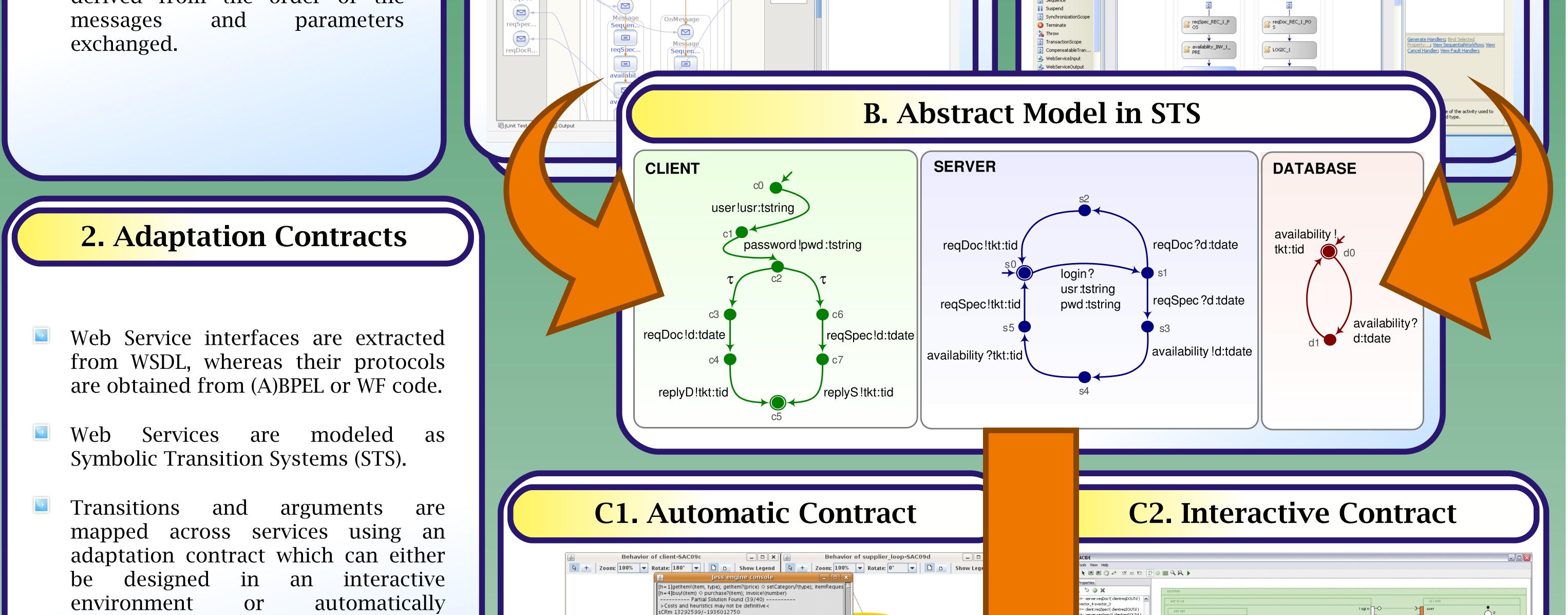
1. Objectives

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- Automatic Web Service orchestration and choreography through contract-based adaptation.
- Both signature and behavioral incompatibilities solved are avoiding erroneous executions derived from the order of the

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| A2. Services in Microsoft-WF | | | | | | | | | |
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| ConditionedActivity | | • | | Description Enabled | | Pro | | | |
|) Delay | S login | _REC_1_POS | | Enabled | True | Property Manager | | | |
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| EventHandlingScope | ■ listenSpecDoc | | | Handlers | | Seue | | | |
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| IfElse | | | | | | facr | | | |
| InvokeWebService | eventDrivenSpec | eventDrivenDoc | | | | O m | | | |
| InvokeWorkflow | 2 | £‡J | | | | A Macro Explorer | | | |
| Listen | | | | | | q | | | |
| Parallel | , reqSpec | RegDoc | | | | | | | |
| Policy | | | | | | | | | |
| Replicator | + | + | | | | | | | |
| | sequence1 sequence2 | | | | | | | | |



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h=1;c=1]

[h=0]cancel!() ◇ abort?()

generated using similarity metrics.

Contracts can be validated through interactive simulation and different kinds of trace checks on the choreography/orchestration.

3. Adaptor and Wrapper Generation

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you want to search for different solutions (y/N)?

- Protocols and contracts are encoded in LOTOS where, using CADP and state-of-theart algorithms, an adaptor protocol is generated.
- The adaptor protocol can be used as monolithic adaptor or be automatically distributed into service wrappers.
- Unfeasible interleavings are pruned in the protocol and the adaptor/wrappers are finally implemented in BPEL.

D. Adaptor Protocol

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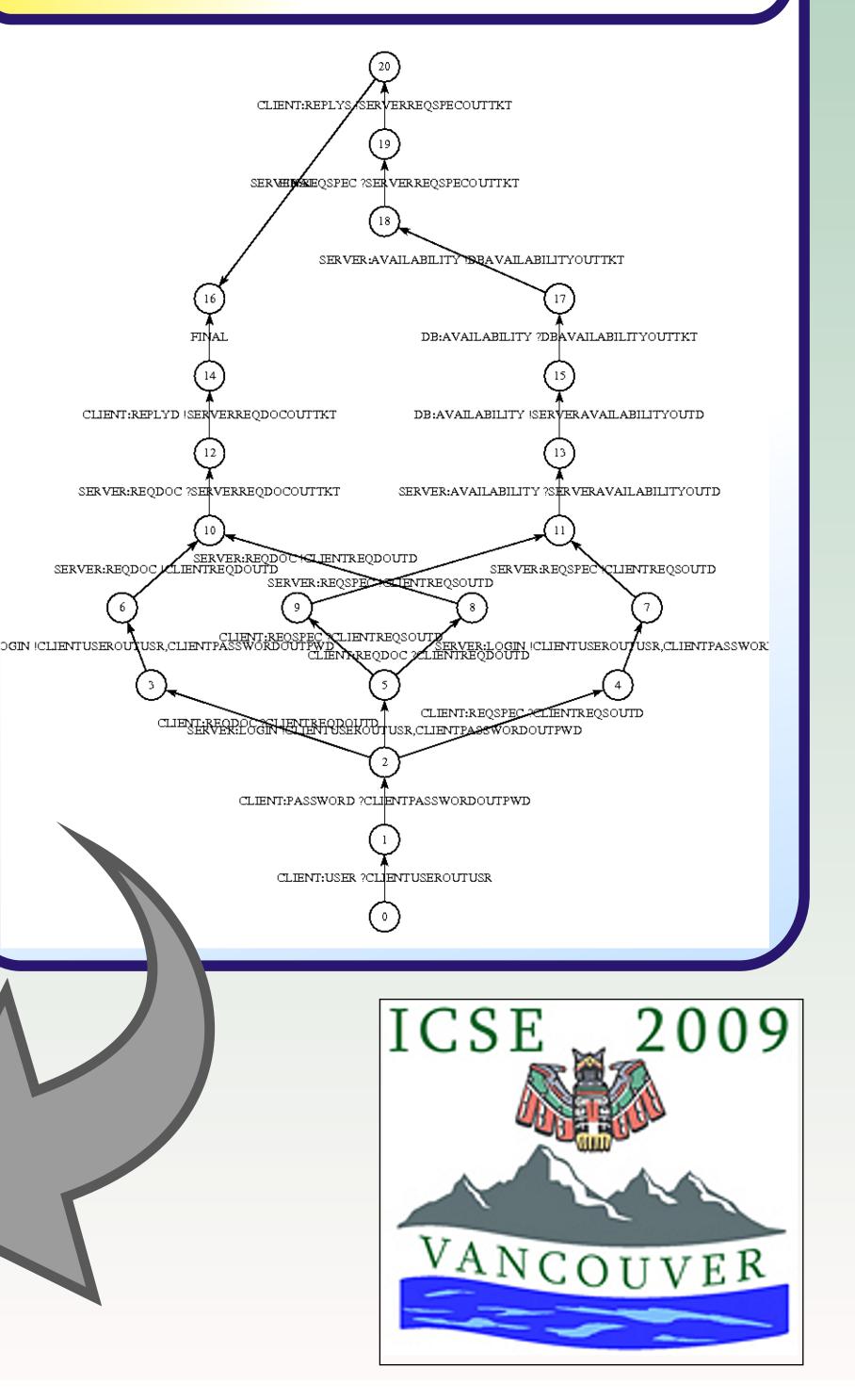
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tor 3-svector 6 client:replyD?(serverreqDocOUTt server:reqDoc!(serverreqDocOUT

ector_0-svector_2 client:user!(clientuserOUTusr)

Transitions ⊃ (s0,vector_2-svector_4,s0)



http:

reqDoc d:tdate

reqSpec d:tdate

OreplyS

4. Final Remarks

- ITACA is a toolbox that fully adaptation supports generative from beginning to end.
- About 51,000 lines of Python and Java code.
- We plan to extend it with goaloriented adaptation, system monitoring and self-reconfiguration.

