Supporting Simulink Model Management
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What is Model Management?

Change Impact Analysis
Phase 1: Differencing

Phase 2: Impact Propagation

SimPact: Simulink Impact Analysis
Static

Interactive

SimTH: Simulink Test Harness Generator

1. Inclusion of System Under Test
2. Input and Output Management
3. Environment Simulation
4. Standardization

Validation

<table>
<thead>
<tr>
<th>SimPact</th>
<th>Outputs</th>
<th>Precision</th>
<th>Recall</th>
<th>F-Measure Scores: Outputs: 0.84</th>
<th>Inputs: 0.88</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ver 1-2</td>
<td>0.86</td>
<td>0.65</td>
<td>0.64</td>
<td>0.67</td>
<td>0.91</td>
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<tr>
<td>Ver 3-4</td>
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<td>0.97</td>
<td>0.99</td>
<td>0.98</td>
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</tbody>
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Corrected F-Measure Scores: Outputs: 0.95

Inputs: 0.93

Average:

Indicates Major Release Step

SimTH Time

Correctness
• Tested only on final release (45 models)
• Of these 39 were produced correctly (86.7%)
• Low correctness due largely to older models with inconsistent modeling conventions
• SimTH tested by industry partner on models we cannot access – issues seem to be resolved