ITI Workshop
End-to-End Architecture

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Dependability and Security Methods: Desirable Features

- Inexpensive – performance and chip area
- Doesn't have to be perfect
  > Hierarchical
  > Allocation
- Detection and correction much better than just detection
  > But prediction and prevention even better
Hierarchical Architecture

- Escapes at lower levels caught at higher levels
- Can allocate coverage at each level
  - Failure rates
  - Data corruption
  - Security

<table>
<thead>
<tr>
<th>Applications</th>
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<tbody>
<tr>
<td>Middleware</td>
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<tr>
<td>OS</td>
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<tr>
<td>Hypervisor</td>
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<tr>
<td>Network, I/O</td>
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<td>Processors, Memory, Interconnect</td>
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<td>Power and Cooling, SPs</td>
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Future Challenges

• Grid or other massive systems
  > Computing correctly through failure
  > Graceful degradation, hardware never replaced
  > Can customers trust utility computing?

• Continual integration
  > Multicore, system-on-chip, etc.
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