BDEC Wuxi 2017
Breakouts
Some suggested/possible question?
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Who is the audience for this document?

Here is one image of the BDEC stakeholders
Three breakouts

• HPC/Cloud Infrastructures (Physically or logically centralized resources)
• Edge/Cloud Infrastructures (Middle)
• Applications (Left)
## Breakout - Table View

<table>
<thead>
<tr>
<th>1. HPC/CLOUD</th>
<th>2. EDGE/FOG</th>
<th>3. APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>Architecture</td>
<td>Workflows</td>
</tr>
<tr>
<td>Software</td>
<td>Software</td>
<td>HPC/Cloud</td>
</tr>
<tr>
<td>Hardware</td>
<td>Hardware</td>
<td>Edge/Fog</td>
</tr>
<tr>
<td>Data</td>
<td>Data</td>
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</tbody>
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HPC/Cloud: Kate, Satoshi, Thomas;  
Edge: Ewa, Gabriel, Geoffrey;  
Apps: Anshu, David, Jean-Pierre
Possible architecture questions

• What are the main workflow patterns? "Follow the data."

• Visualization is part of the inference cycle. Should we think of it as part of the workflow?

• Are containers/virtualization a key technology for managing software complexity and the “spanning layer” (aka “narrow waist”)?

• Do we need to support resource federation? How?
Possible software questions

• What new types of standard libraries for need to be developed? (e.g., data reduction, etc.)

• How do traditional libraries need to be adapted for new application/workflow challenges?

• What software issues are involved in the major workflow strategies: streaming, in situ, in locus, in transit?

• How do we write programs for “the edge”?

• What can we learn from AWS Lambda functions and other new cloud services?
Possible hardware questions

• Are there hardware designs which provide more balanced support for HDA and HPC?
• What are the hardware trends that will have the greatest impact on the design of new infrastructure and the applications they can support.
• How will DL hardware be integrated?
Possible workflow questions

• How does data staging and buffering fit in?
• What, if any are the characteristic ways in which workflows combine the use of resources in HPC/Cloud infrastructure, and resources in edge environments?
• How can we support workflows that move across different resource ecosystems (e.g. from edge, to Cloud, to HPC center)?
• Should we redefine "performance" to encompass the entire workflow, including all of data movement and intermediate processing involved?
• How does visualization fit into the data workflow model?
Questions for Deep Learning

• What are the key frameworks and workloads for DL?
• Is DL becoming a major element of scientific computing applications?
• What hardware and systems architectures are emerging for supporting DL?
• Is DL a distinct class worthy of its own software stack in the BDEC universe?