Report Out

December 5, 2012

Breakout Out Group:

Modeling and Simulation

NIST

Desired AM Capabilities/Technologies

For example:

- Be able to predict structure properties and defects
- Real-time modeling to enable process adjustments
- Supplier independent process models
- Rapid cost and capacity modeling, ideally physics based
- 100 percent fidelity between modeling/simulation and reality
- Sensing and feedback into process control models
- Validation and verification metrics

Top-Voted Challenges/Priority Topics

- Lack of validated physics-based predictive models
- Lack of modeling systems for “design-to-process” (couple design & manufacture)
- Lack of fast Insitu Measurement for modeling
- Lack of metrics and standards for measuring and characterizing AM processes & artifacts

Surprises, Ah-ha Moments and Other Thoughts

- Measurements and standards received lower scores than expected
- Group of engineers and technical people came together and thought high-level strategic thoughts
  - Down to the atomic level
- Like the idea of a test-bed because organizations do not have millions of dollars to invest
- Involve more younger people (graduate students, etc.)
- Need for datasets