

# Challenges in Net-Shape Manufacturing of Metallic Parts

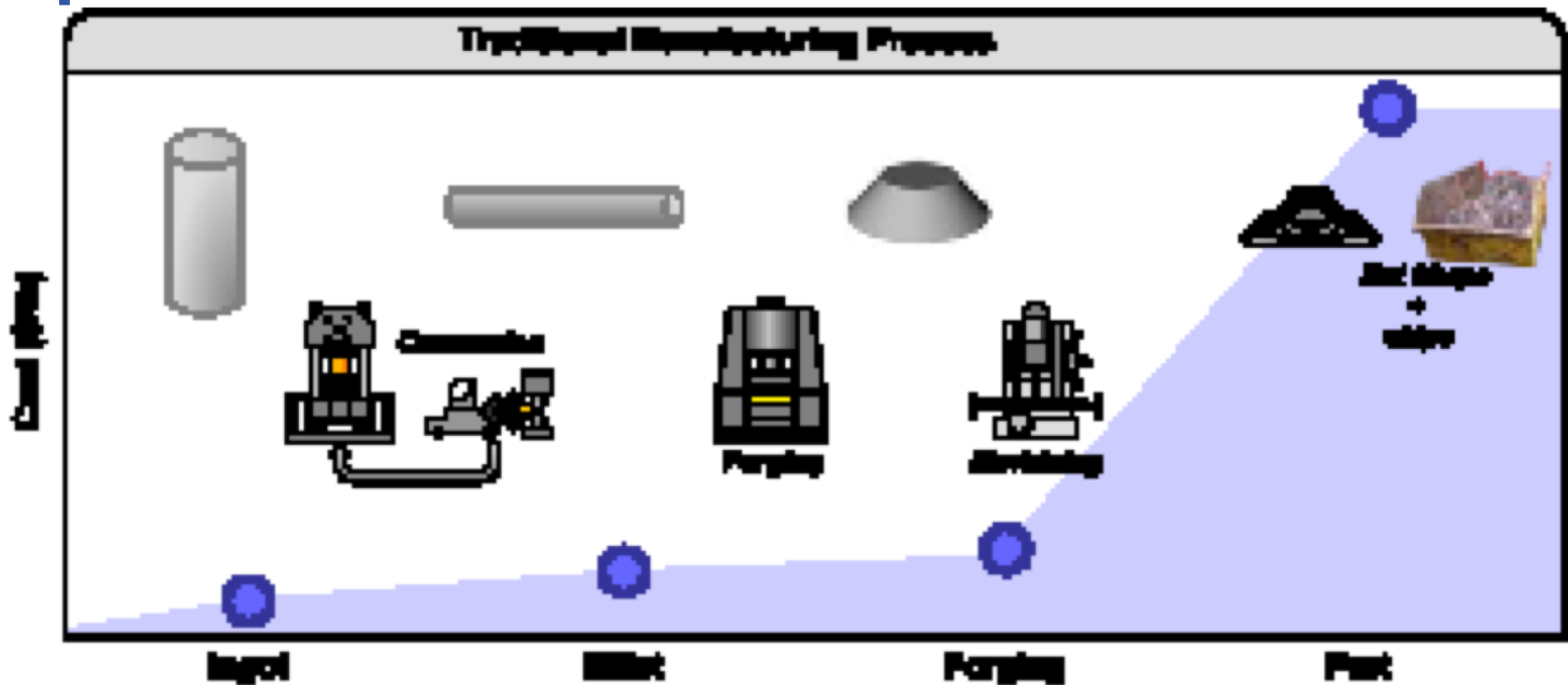
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GE Global Research  
Niskayuna, NY



imagination at work

# The cost of metals manufacturing... its in the chips.



**Reasons for high “buy-to-fly”  
ratio:**

**Defect removal, equipment  
capability, geometric complexity,  
inspectability**

# What is GE doing about manufacturing?

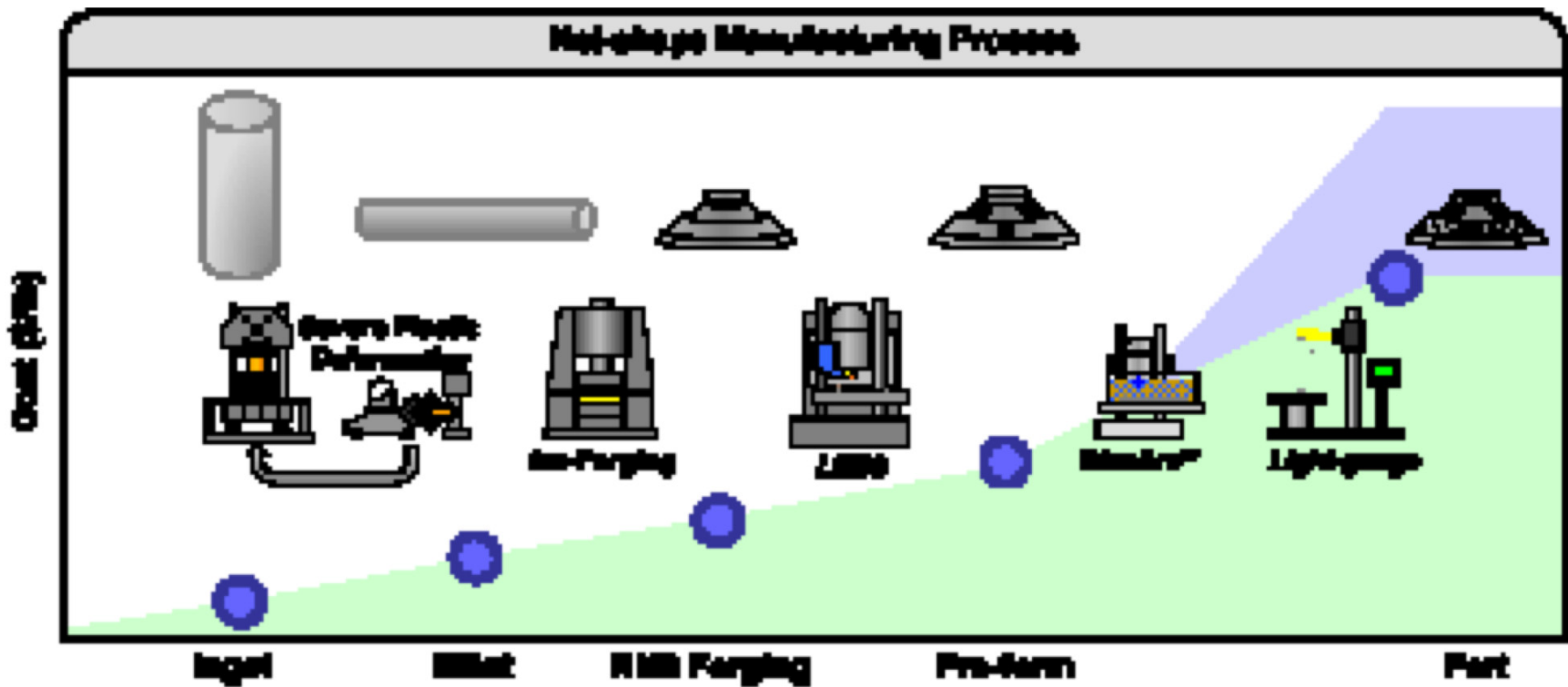
**Near-net  
shape  
processes**

**Material  
additive  
processes**

**Advanced  
joining and  
machining  
processes**

**Advanced  
measurement  
systems**

# Net-Shape Manufacturing



# Recommendations for NIST MEL

- Work with industry to understand the complex interactions that occur in the manufacturing chain.
- Encourage the inclusion of processability as one of the primary drivers in material development efforts.
- Work with manufacturers to develop and grow net- and near-net shape manufacturing technologies.
- Develop and extend modeling and simulation of net shape manufacturing processes.
- Develop design practices capable of taking advantage of these new technologies.
- Devise in-line monitoring and adaptive control capabilities for net shape manufacturing.

