Health and Maintenance Through the Lens of Dynamic Scheduling

Industry Forum: Monitoring, Diagnostics, and Prognostics for Manufacturing
NIST
Gaithersburg, MD
May 8-11, 2018

VIMANA
THE LANGUAGE OF SMART MANUFACTURING

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SPEC-OPS: STANDARDS-BASED PLATFORM FOR ENTERPRISE COMMUNICATION ENABLING OPTIMAL PRODUCTION AND SELF-AWARENESS – DMDII-15-03-02

DMDII

parc
A Xerox Company

ITAMCO
INDIANA TECHNOLOGY AND MANUFACTURING COMPANIES

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MTConnect

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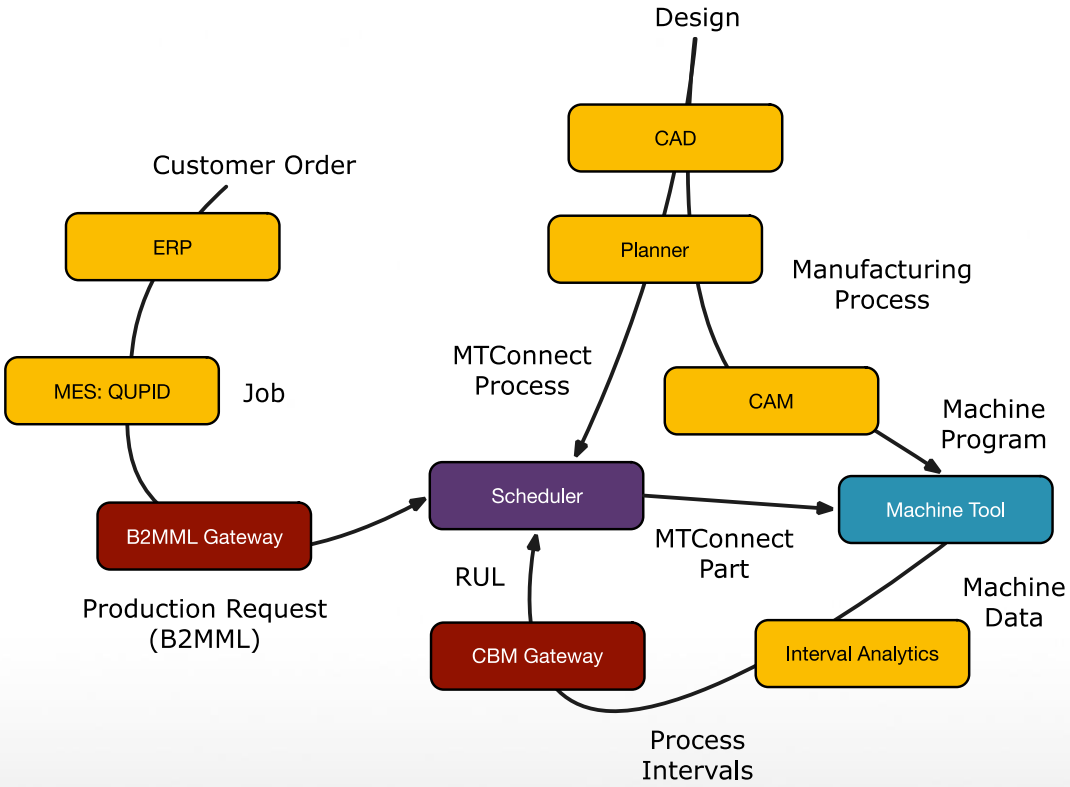

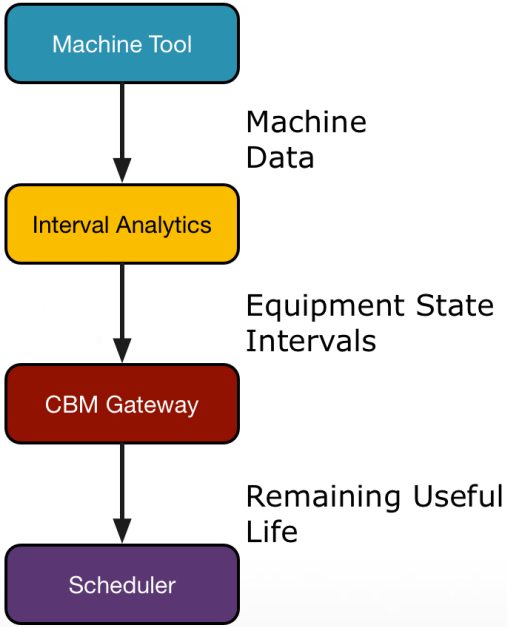

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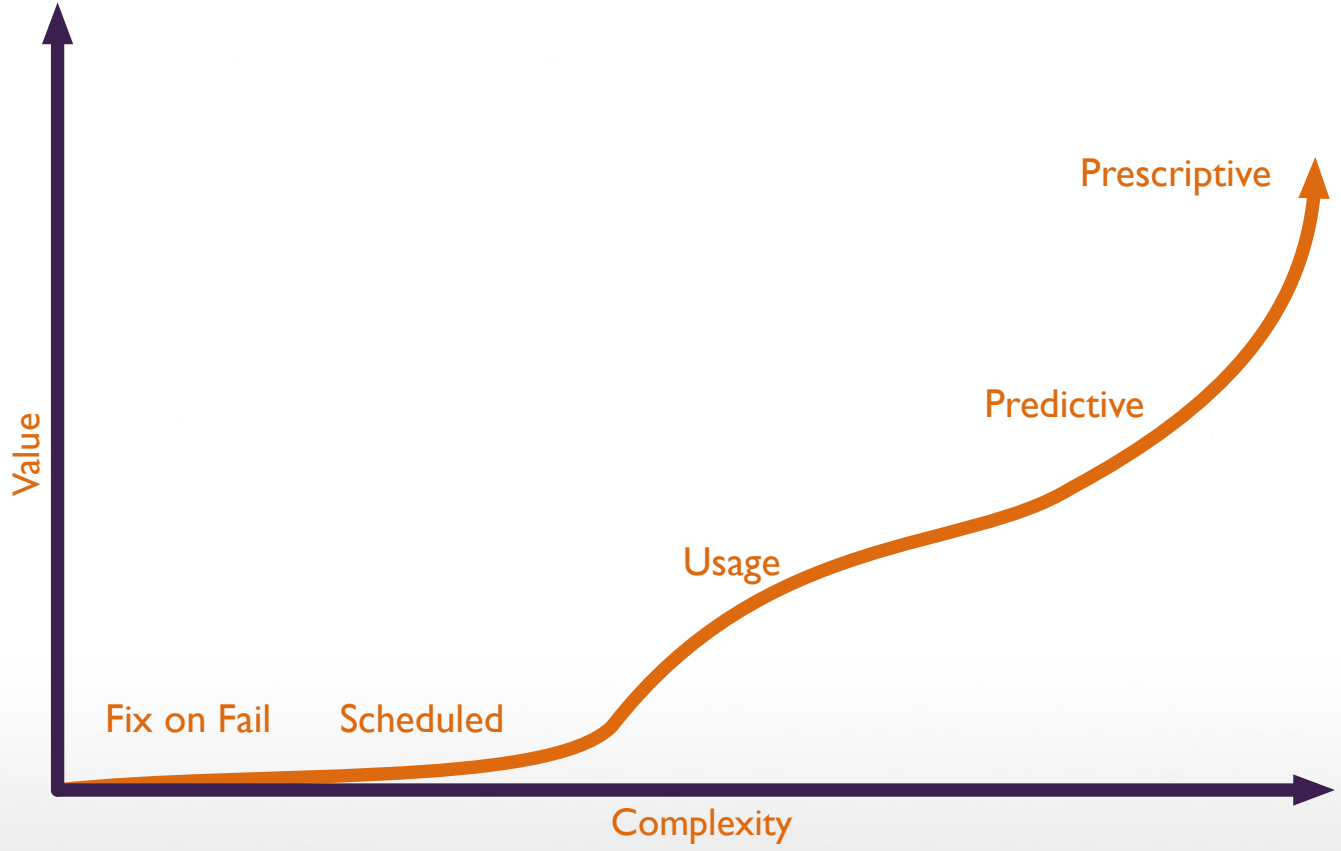

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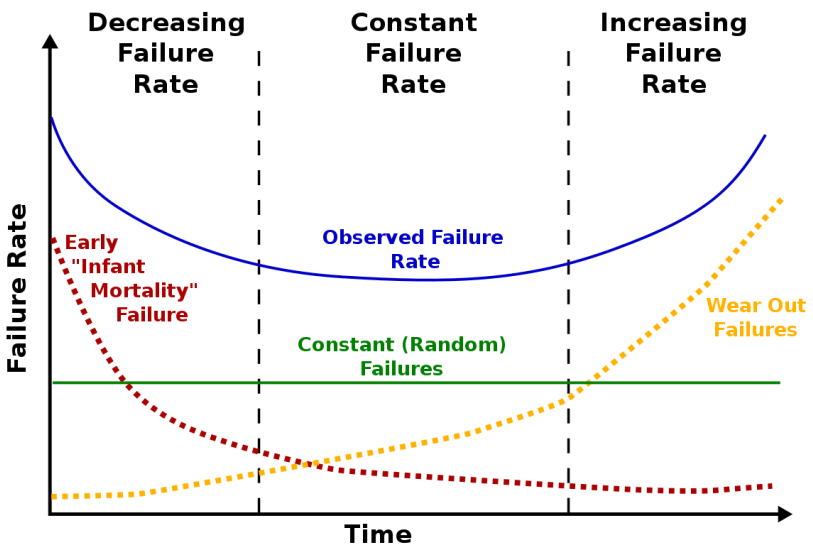

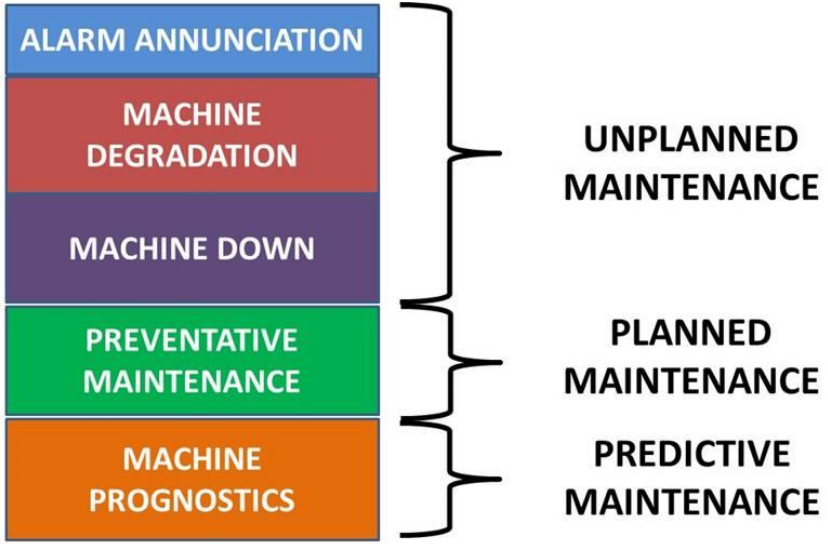

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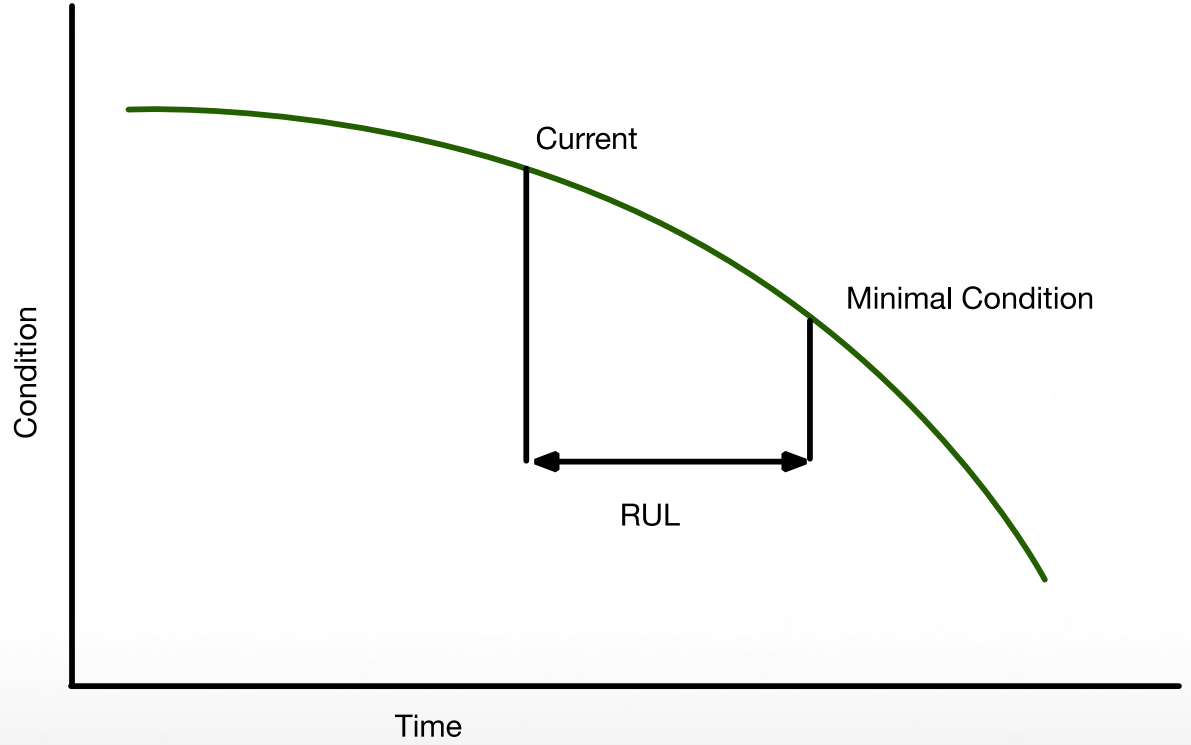

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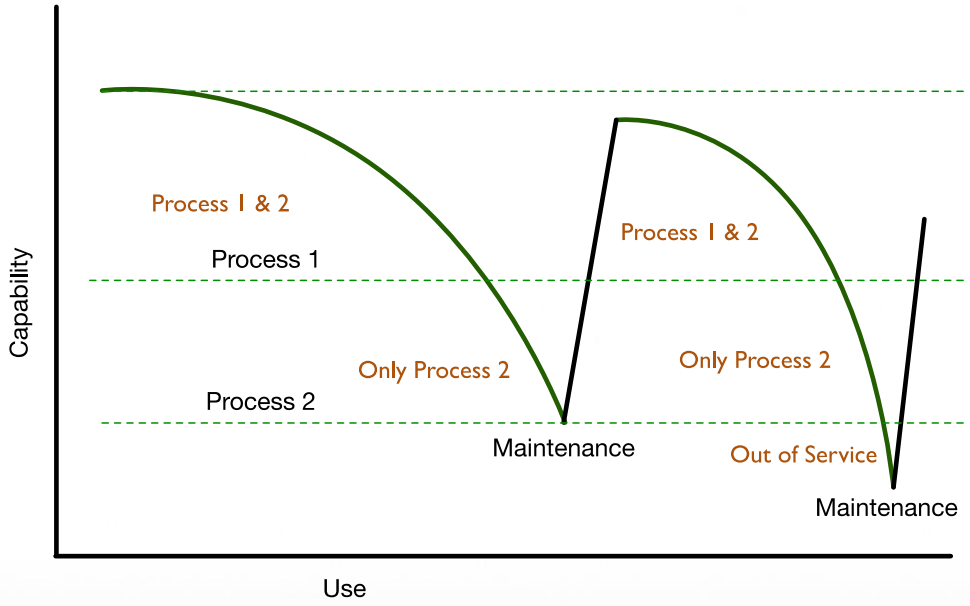
CAPABILITY CENTRIC

- Machines have capabilities
- Capabilities degrade due to use
- Ex: Tooling, Motion, Tolerance, Torque, Enclosure, Coolant, Max Weight, …



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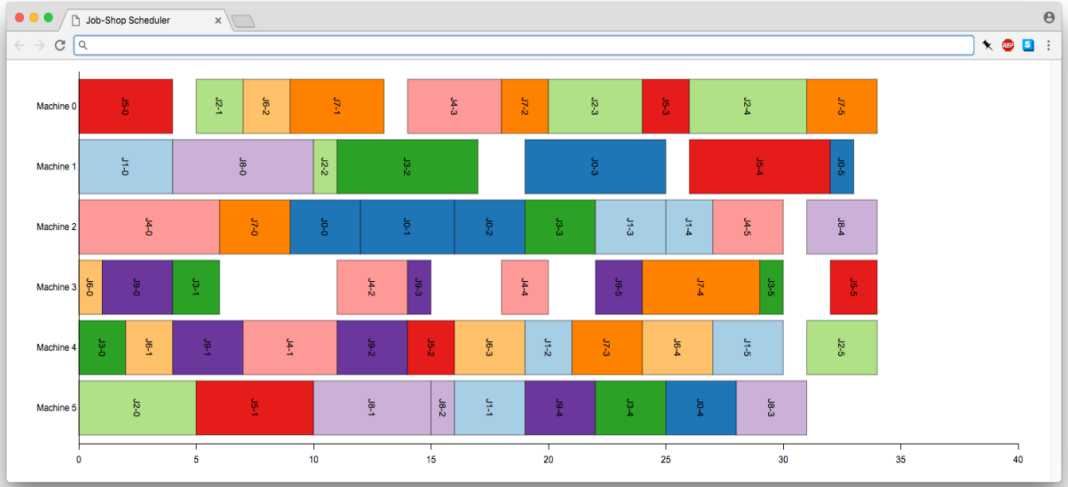
SCHEDULING

- Jobs are Sent to Machines when they have capability
- Maintain when the machine can not service the current job queue



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MILLING MACHINE

- 1996 Okuma H-Mill
- 3 Axes of Motion X, Y, Z
- Spec’d to 0.0001”
- Actual 0.005
- Can’t Finish Parts
- Good for Roughing

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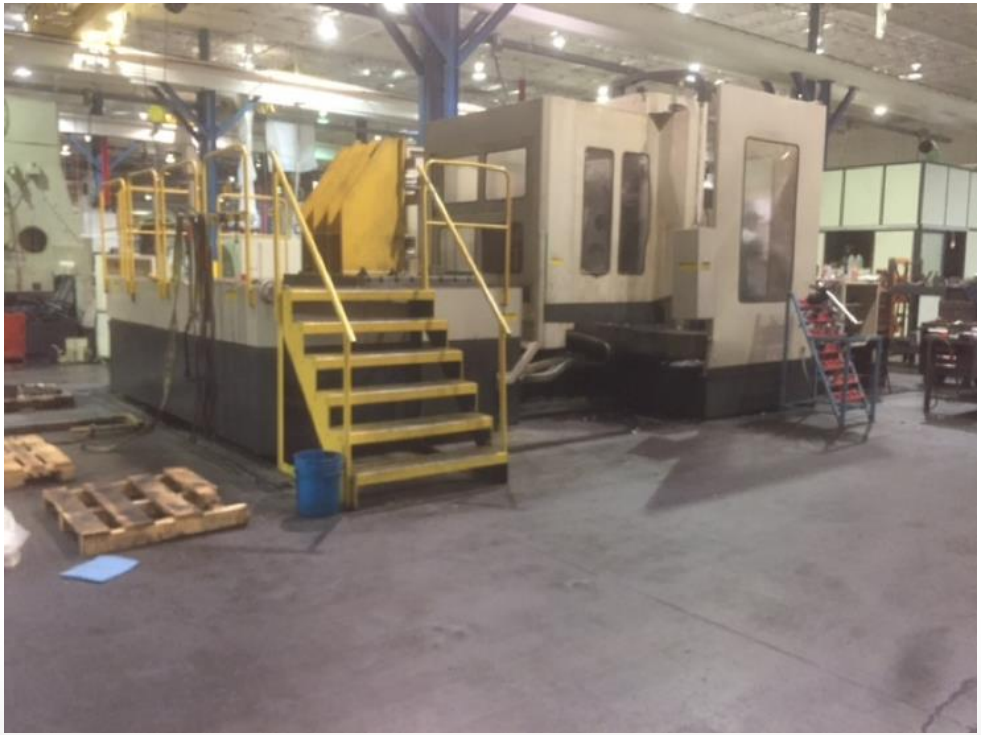
BORING MILL

- 1995 Toshiba Horizontal Boring Mill
- 4 Axis of Motion X, Y, Z, B
- B Spec’d to 0.0001°
- B axis Rotation Doesn’t Repeat Accurately
- Not Capable of 4 Axis motion
- Still good 3 Axis



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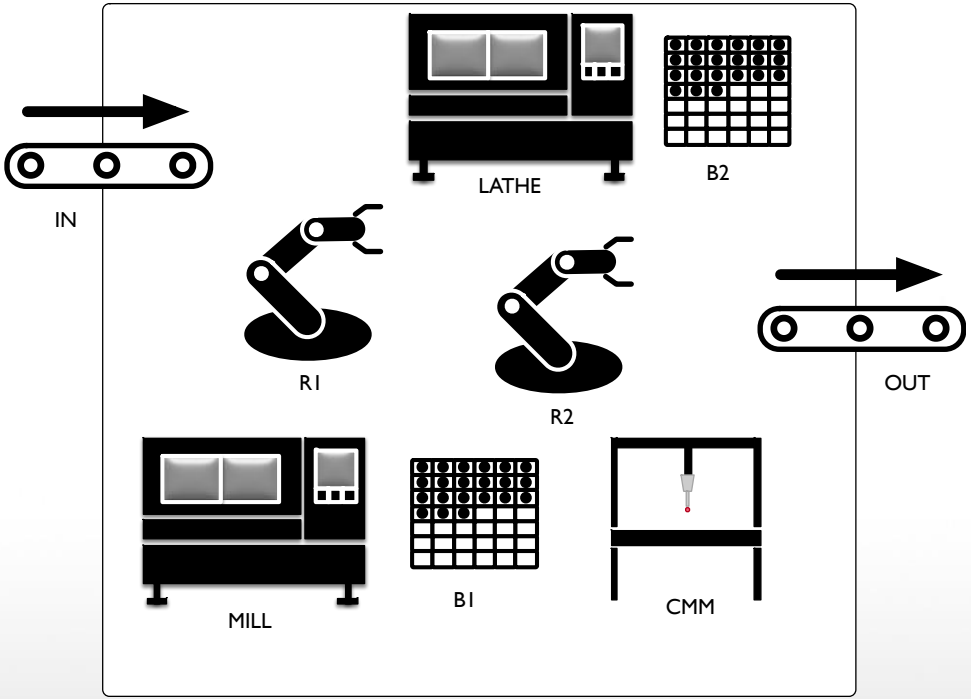
SELF-AWARE/INTELLIGENT DEVICES



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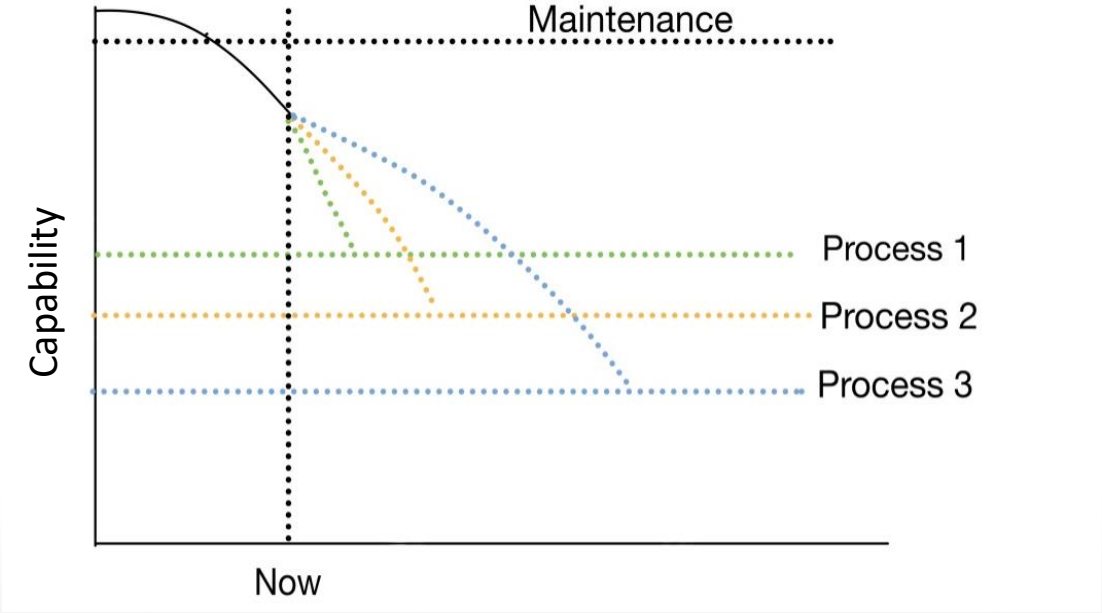
PRESCRIPTIVE ANALYTICS



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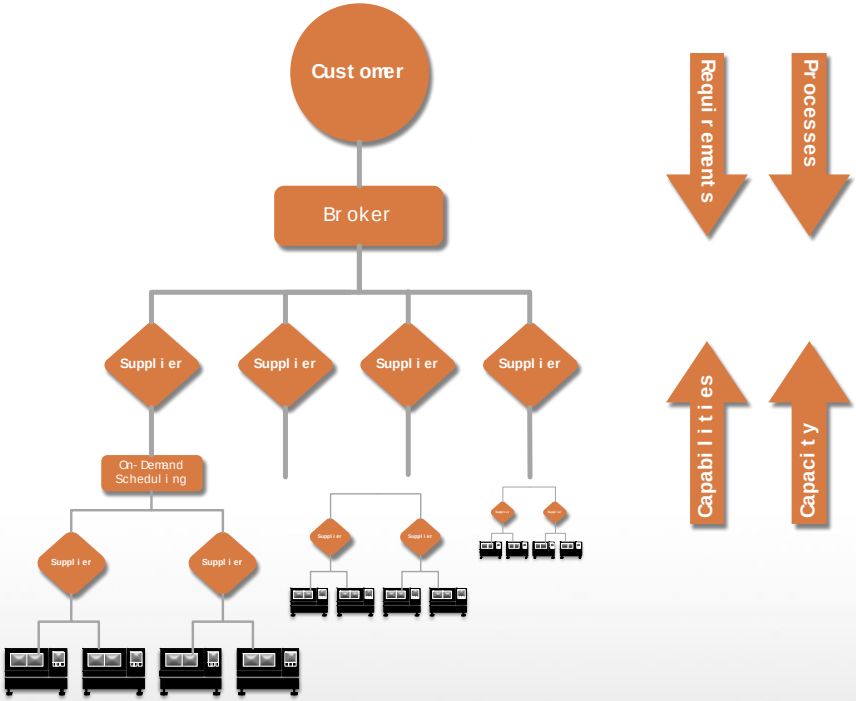
MANUFACTURING AS A SERVICE



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