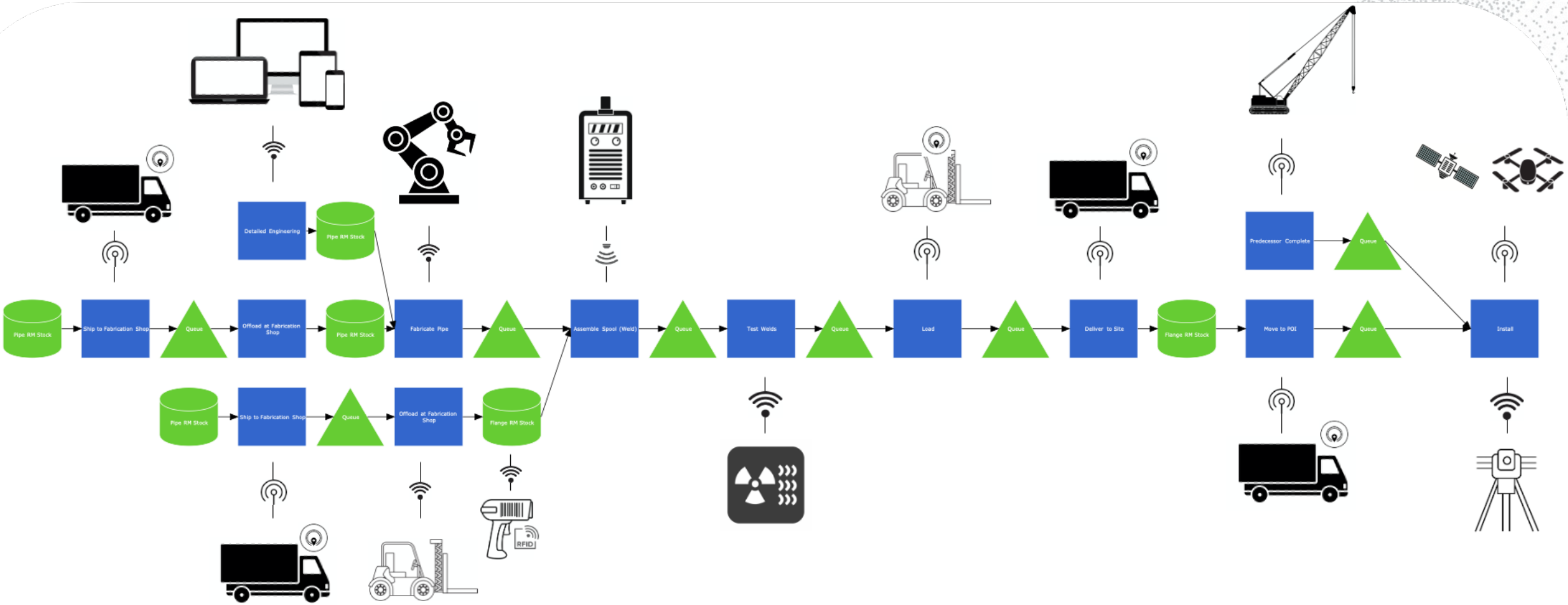
INTELLIGENT PRODUCTION

James Choo, Project Production Institute

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Self-organize and optimize

Bluetooth WiFi GPS RFID Sensor Cellular

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Sensors

Robots

Drones

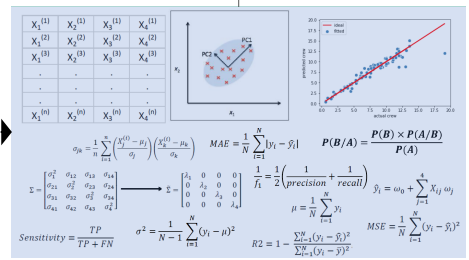
Autonomous Vehicles

Wearables

Mobile Devices

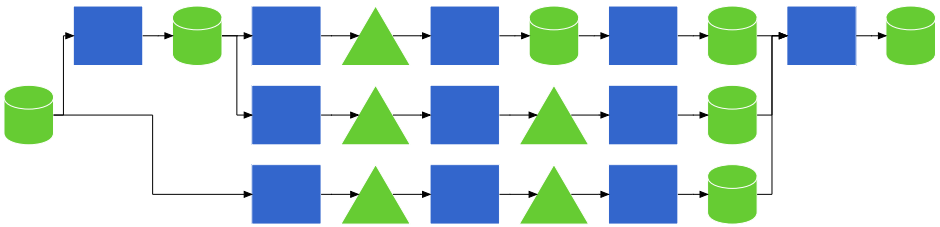
Applications





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Data Science



Production System Model

Little's Law:

CT = WIP / TH

Cycle Time Formula:

CT = RPT + BT + MT + QT + SDT + WTMT + PTB

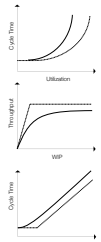
RPT = PT + ST + DT

BT = (Waiting for Batch) + (Waiting in Batch)

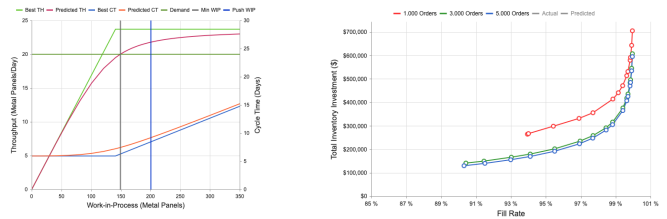
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VUT Equation:

$$CT_q \approx V \times U \times t \approx \left(\frac{c_a^2 + c_e^2}{2}\right)\left(\frac{u}{1-u}\right)t_e$$



Operations Science



Production System Control Policies

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How to make this a reality?

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How to gather and process all data being created across the supply network?

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To where and how to provide feedback and feedforward control?

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What to instrument?

How to attach it?

Can it stay attached?

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What equipment & technology is best suited to capture data at the required frequency?

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STANFORD UNIVERSITY



Gary Allen

RYDER



Shekar Natarajan

AMERICAN EAGLE OUTFITTERS

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