Open Manufacturing
Open Source Software for Smart Manufacturing Integration
Who is Spruik?
Definition

Smart Manufacturing?
Figure 2: Drivers of the Future of Manufacturing

- Advanced Data Analytics
- Cyber-Physical Production
- Circular Economy & Remanufacturing
- Additive Manufacturing
- Cross-Domain Skills
- Global Value Chains
- Servicification
- Industrial Policy 2.0
- Manufacturing Regionalization
- Digital Infrastructure

Sources: Global Agenda Council on the Future of Manufacturing, Whiteside Partners framing
An alternate definition:

Smart, it’s not a tech thing:
Capacity for logic, understanding, self-awareness, learning, knowledge, reasoning, planning, **creativity**, critical thinking and problem solving
What is Creativity?

- The **process** of generating original ideas that have value

Sir Ken Robinson
What is Creativity?

• Creativity fits between **Imagination** and **Innovation**
Blockers to Creativity?

Innovation Framework

Access to Software

Access to Best Practices

Time to experiment

Tina Seeling
Open-source for innovation

- Make the software free
- Baked-in best practice using standards
- Make it quick to implement and easy to change
So, now for some tech stuff

• Context – What are we making
• Machine Data – What’s happening
• User Entry – Why did that happen
• Workflow – Orchestrating tasks
What tools do we need?

- **Context** – What are we making
- **Machine Data** – What’s happening
- **User Entry** – Why did that happen
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What are the basics of a Smart Manufacturing application

• Context – What are we making
• Machine Data – What’s happening
• User Entry – Why did that happen
• Workflow – Orchestrating tasks
A Modern Integration Architecture

- Transactional and Time-series
- Edge
- Context
- Enables both business process and Analytics
A Modern Integration Architecture

Part of the API eco-system
Seamless integration
Deployable (Dev-ops compatible)
Edge, On-Premise & Cloud
Reliable & Elastic
Scalable
At the edge

In the Cloud

InfluxData Functional Architecture

IoT & Sensors
Systems
Apps
Message Queues

Visualize
Notify
Automate

Architecture
Machine Simulator Line 1

Equipment Model

Time-series Data Historian

Workflow Engine

Enterprise Data Flow

Context Injection Engine

UI
Demo Videos

Line Performance
https://www.youtube.com/watch?v=e_p9Fmj2t1E

Master Data Editors
https://www.youtube.com/watch?v=HekHLdMOZno&t=3s

Condition based monitoring and Work Orders
https://www.youtube.com/watch?v=vtLWNXJReSM