Identifying Business Development Opportunities
Smart Technology in Manufacturing
Outcomes for this workshop:

1. Define smart manufacturing
2. Identify opportunities
3. How to make a referral
4. Next Steps
Two important things to understand:

- IIoT, Industry 4.0, Data-driven manufacturing is all terminology for the use of technology and process improvement to drive better performance and value.

- The focus should not be specific technologies. Instead focus on operational improvement and how technology adoption can support the goals of the business and its growth.
Common Definition of Smart Manufacturing – high level

"Smart Manufacturing are systems that are “fully-integrated, collaborative manufacturing systems that respond in real time to meet changing demands and conditions in the factory, in the supply network, and in customer needs.”" (...from NIST)

"Smart Manufacturing is the ability to solve existing and future problems via an open infrastructure that allows solutions to be implemented at the speed of business while creating advantaged value."

(...from a Consultant group)

Example Definitions:

Intimidating? – We can make this more intuitive for the LEDO and manufacturers!
A Common Thread That Links All the Technologies of Smart Manufacturing – Data-Driven Manufacturing

- More Intuitive Terminology
- Application oriented as opposed to technology oriented
- Infrastructure for solutions
- We will focus just on operations/MFG – the low hanging fruit
- Proven to be more intuitive for manufacturer

**Goal:** Continuously improve business performance and efficiency

- Reduce cost;
- Improve profit
- Drive growth
Why Implement Smart Manufacturing

Typical Experience with DDM to Improve Business

<table>
<thead>
<tr>
<th>Return on Investment (Averages)</th>
<th>DDM Applications</th>
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</thead>
<tbody>
<tr>
<td>Increase overall Throughput by</td>
<td>Operational Efficiency</td>
</tr>
<tr>
<td>10-60%</td>
<td></td>
</tr>
<tr>
<td>Reduce Scrap / Rework</td>
<td>Predictive Maintenance</td>
</tr>
<tr>
<td>10-50%</td>
<td></td>
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<tr>
<td>Reduce Machine Outages</td>
<td>Worker Health &amp; Safety</td>
</tr>
<tr>
<td>15-90%</td>
<td></td>
</tr>
<tr>
<td>Reduce Accidents and Near Misses</td>
<td></td>
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<tr>
<td>10-80%</td>
<td></td>
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</tbody>
</table>
How to drive value in smart manufacturing

Requirements that drive improvements in business performance, information technology and operational efficiency

APPLICATIONS
- Operational Efficiency
- Predictive Maintenance
- Quality
- Health and Safety

PROCESS
- Data-driven manufacturing (DDM)
- Lean Manufacturing
- Automation
- Additive Manufacturing

VALUE
Improved Business Performance and Efficiency

Technology is constantly changing but best practices provide methodologies and solutions for businesses to manage change and find the right solutions to achieve their goals.
How to recognize technology opportunities that support business growth, the winning formulae:

Manufacturing Plant / Machine Shop
Gains:
Improvement in Business Performance and Operational Efficiency

Technology Company
Provides:
Data-driven Solutions (DDM) and Long-Term Support (LTS)

VALUE
Time, Money Resources Saved can lead to better optimized investment and opportunity for expansion
Key things businesses care about:

- SOLVING PROBLEMS
- BUILDING REVENUE
- REDUCING COST
- IMPROVING OPERATIONS
Things to be aware of or look for in an R&E visit:

- **Quality issues** – smart manufacturing can be an answer to chronic quality issues or at least a methodology to identify the issues.
- **Maintenance or downtime concerns** – monitoring data coming from machines helps target maintenance resources.
- **Unclear answers on productivity or throughput** – if business owners don’t have good answers about productivity it could be that they aren’t collecting the data or using the data for decision making.
- **Lots of WIP sitting on production floor** – this could be a result of poor planning that better data and scheduling could help.
- **Several people working at one machine** – staffing could be reduced with robotic assistance in loading the machine and stacking finished parts after being machined.
What to Look for (or listen for): Characteristics, attributes or conditions that might indicate a potential technology application?

- Dated Machinery
- Multiple employees per machine or workstation
- Paperwork orders around the shop
- Chronic hiring challenges for low skill or operator labor
- Extremely low value tasks such as erecting cardboard boxes
- Extremely labor-intensive tasks
- Large quantities of inventory
- Absence of screens in production area
- Existence of tool rooms – 3D printing?
- Scheduled machine maintenance
- Machine downtime
- Large quantities of scrap
- Manufacturing Execution System (MES) and/or Enterprise Resource Planning (ERP) System
LEDO preps for meeting with company, requests company profile or support from Team NEO’s Research / Innovation team

LEDO conducts meeting, identifies potential problems or opportunities

LEDO refers to Team NEO and provides information from the initial meeting

Team NEO follows up with company, refers to resources or Solution Providers or determines project opportunity

Team NEO follows up with LEDO on status of project or outcomes
Contact Erica at Team NEO: EFitzpatrick@teamneo.org with the following information:

- Company name
- What the company does
- Who to contact
  - not necessarily who LEDO talked to, but who TeamNEO should follow up with on this lead
- Opportunity
- Concerns for adopting smart manufacturing applications or technologies
- Does LEDO partner want to be in follow-up meetings
Resources Available from Team NEO

- Company Industry Profiles via Team NEO’s research department
- Team NEO Innovation Team contact Erica at Team NEO: EFitpatrick@teamneo.org
- Smart Manufacturing Cluster Website: https://smartmanufacturingcluster.org/
  - Readiness Assessment
  - Smart Manufacturing marketing material
  - Use Cases
- NEO Innovation Cluster Resources: https://teamneo.org/innovation-clusters/
What we learned today:

- Define smart manufacturing
- Identify opportunities
- How to make a referral
- Next Steps