

Intelligent Manufacturing Framework

Project Title	Intelligent Manufacturing Framework
Why Do We Need to Do This Project?	<p>The cost of failure – i.e., waste generation, time lost, production downtime.</p> <p>Need to leverage rich manufacturing databases, and streamline the datasets to dramatically improve the productivity by applying the learning.</p>
What Needs to Be Done (Key Goals)? What is Our Ultimate Achievement?	<p>Big Data mining/analysis</p> <p>Develop a shared framework that can be used to capture and manage data information and knowledge for intelligent manufacturing</p> <ul style="list-style-type: none"> • Incorporating the human element and reasoning process with intelligent control • Extends human creativity • Embraces emergent behavior • Expert system with a human touch
Project Deliverable(s)	<p>A methodology and a toolset to support the implementation of intelligent manufacturing.</p> <p>Framework to sense, monitor, analyze, control manufacturing operations, based on SM.</p>
Project Workflow Steps and duration of each step	<p>Establish a boundary of the kinds of processes we can address (e.g., machining, forming, etc)</p> <p>Select target equipment and classes of equipment and a pilot product family.</p> <p>Define a methodology for determining critical parameters – includes defining operating boundaries, control limits, etc.</p> <p>Establish the logic for intelligent controls, heuristics, expert systems, decision processes, transfer functions (need a complete model for intelligent control).</p> <p>Address all aspects of plant operations and equipment maintenance.</p> <p>Implement a pilot to validate, and conduct a study to demonstrate the value of the project.</p>

“Best Guess” Cost	
Industry Champion(s)	Jack Harris (Rockwell Collins-Iowa), Tom Edgar (UCLA), Jim Davis (UT Austin), Dan Nagy (Intelligent Manufacturing Systems), NAM, SME, SAE.
Project Approach/ Guidelines	
Participant Names and contact info	
Capable Technology Providers	P&G, LANL, NIST-MEL, ORNL, Siemens