MxD 14-07-02	Category: Recurring Manufacturing
Title:	Integrated Manufacturing Variation Management
Completion Date:	2018-07-31
Project Team:	Caterpillar Inc., Missouri University of Science and Technology, University of Illinois-Urbana Champaign (UIUC)
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Problem Statement:
Incoming stock from casting and forging suppliers can vary to the point that standard machine tools cannot adequately respond to the existing material condition in the as-programmed state.

Deliverable:
Metrology software and manual detailing how to implement the metrology software.

Benefits:

- Generate a more efficient method to map the volumetric errors of a machine tool
- Obtain deeper understanding of thermal efforts for industries with non-controlled working environments.
- Generate an approach for in-situ measurement with laser scanning system to capture part variation
- Generate a tool to perform virtual gage analysis
- Generate a software application to generates programs which compensate for workspace errors and simulate machining with these programs.
- Generate a tool to predict cutting forces and got better understanding of induced form errors on the parts from machining process.

Industry Use Case:

- Standard procedure and software from IMVM are available to MxD members (based on membership level)
- Company Type: Large OEMs or related suppliers
- User Position: Manufacturing engineers and operators
- Industry Segment: Aerospace, Automotive, Mining, power generation and constructions machinery companies