




# Defense-Wide Manufacturing Science & Technology (DMS&T) Program

## MTConnect® Challenge



The US ARMY - RDECOM - Benet Labs, the National Center for Defense Manufacturing and Machining (NCDMM) and The Association for Manufacturing Technology (AMT) have teamed up to develop and execute the “MTConnect® Challenge”, an Office of Secretary of Defense (OSD) Defense-Wide Manufacturing Science and Technology (DMST) sponsored project.

### PROBLEM / OBJECTIVE

The discrete part manufacturing community suffers from access to “Real Time” actionable information. This problem is displayed as the lack of manufacturing data thread from the component, equipment to factory level. Real time information is key in the feedback loop allowing for timely process improvements, ensuring on-time, on budget delivery of machined parts and improving supply chain visualization. The end result is fewer parts shortages.

There are new and emerging interoperability standards that facilitate the development of software solutions that enable the manufacturing data thread with real time information. While the standards such as the MTConnect® Protocol have industrial and defense manufacturing support, they need help in traversing the proverbial implementation valley of death.

### APPROACH / BENEFITS

#### **Approach**

Develop a manufacturing challenge, the “**MTConnect® Challenge**” that seeks to engage and stimulate development of a broader base of advanced manufacturing intelligence software applications for the discrete parts manufacturing community.

The “MTConnect® Challenge” focuses on developing manufacturing solutions (tools) using the newly developed MTConnect® interoperable protocol for use on machining platform development. The goal of this challenge is to engage and stimulate a broader base of software and system architects, to develop advanced enterprise, facility and machine control applications based on extensions to the MTConnect® standard. This will help enable a more efficient and competitive domestic manufacturing infrastructure for the defense enterprise. MTConnect® is an open communication standard that provides the capability to pass data from machine tools to higher level systems for further processing using the XML based standard.

#### **Benefits**

The challenge will help to promote and accelerate the MTConnect® Protocol, the development of software solutions to address the real time actionable information and facilitate process improvements, ensure on-time, and on budget delivery of machined parts while improving visualization throughout the supply chain.

Through marketing activities and the incentive nature of a challenge, a larger community will be engaged in the development and implementation of manufacturing intelligence solutions.

### ***The Challenge***

The MTConnect® Challenge is a two phase competition, with cash prizes at the conclusion of each phase. Phase 1 (Ideation) of the challenge sought to identify ambitious yet achievable ideas that capture the public's imagination and that harness innovation and manufacturing intelligence breakthroughs that could benefit the DoD and their industrial manufacturing supply chain. Phase 2 (Projects) is seeking the submittal of software applications that facilitate Real time information solution to provide feedback from the component, machine and factory floor allowing for timely process improvements, to ensure on-time and on budget delivery of machined parts, and improving supply chain visualization.

Phase 2 of the challenge runs from July 2013 through April 2014. Information about the challenge can be found at <http://mtconnect2.challenge.gov>

Phase 1 of the challenge culminated with the receipt of 38 ideas of which five (5) were selected for award. Below is a synopsis of the winner selections.

- **Integration with Microsoft Visio** – James Finn — International TechneGroup Incorporated  
Uses data acquisition stencils and display objects to virtually connect shop floor equipment, to Visio templates, providing users the ability to develop their own real-time shop floor manufacturing data up-load and visualization programs.
- **MTConnect TeamEngage** – Peter Laird  
Functions as a plant operations collaboration system that allows ad-hoc groups within an operations team to initiate and control conversations revolving around a snapshot of MTConnect data.
- **sim.MTConnect.org | A 3D, Web-Based, MTConnect Simulator** – Scott Lininger  
Simulates and visualizes MTConnect interactions against a 3D map of your factory through an elegantly-simple Web site. Uses a drag-and-drop library of virtual equipment to simulate equipment activities.
- **Interactive Work Instructions** – Donovan Buckley & Arvind Rangarajan – GE Global Research, PARC  
Uses real-time MTConnect tool path data to automatically scroll to the right page in a set of PDF work instructions, bring real-time simulation corresponding to the feature being machined, and flag any drifts from the intended tool path for operator intervention or material review board action.
- **AugMT: Augmented Vision with MTConnect** – Nick Tullos & Jeb Baugh – Praeses, LLC  
Combines processed information from MTConnect data streams with augmented reality technology available through Google Glass technologies. The system will also feedback video and audio information to departments of address production needs.

### **POINT OF CONTACT**

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