



## WG15 Status

- AP238 e1 being used in production at Boeing
  - Validated as sufficient
  - Significant process savings
  - Met industry requirements
- AP238 translators from third parties
  - CATIA v5
  - Mastercam
  - Siemens NX



# WG15 Digital Manufacturing

- Accomplishments in Mukilteo
  - Developed plan for Edition 2
  - Modules
    - Setup done (same as additive)
    - Program Structure tbd
    - Toolpath process tbd
    - PMI (AP242) done
  - Common Data Dictionary (PLIB, RDL etc.)
    - Milling and turning ops harvest from E1
    - Cutters done (ISO 13399)
  - Meets recommendations of the Smart Manufacturing SAG



# Demonstrations in Mukilteo

- Digital twin demonstration (150 attendees)
  - Real time tracking of machining
  - Services for planning, optimization and measurement
  - Virtual metrology of real time in-process model
  - Physical metrology on semantic tolerances
- Tweeting Machines
  - Structured tweets of AP238 data
    - Caliper measurements
    - Machine tool operations
- Integrated AP242 / ISO 13399 modeling of cutters



# Models Reviewed

- Additive models of AP242 and ANSI Y14
- Holes and Fasteners proposal
- Tape and Fiber Composite laydown
- Gear machining



# Digital Twins

- Airframe assembly digital twin
  - Reviewed holes and fasteners scenarios
  - Requirements for MTConnect streaming
  - Requirements for discrete event “tweeting”
  - Requirements for workingstep identification
  - Requirements for hole and fastener identification
  - Requirements for GD&T verification



# WG15 Digital Manufacturing

- Plans
  - Focus on model based manufacturing
  - Build an [ap238.org](http://ap238.org) web site
  - Test the Additive setup model
  - Validate the CDD approach for property modeling
  - Engage with SC1/Wg7, TC261, MTConnect, OMAC, TC213 and TC29
  - Continue development of Digital Twin scenarios