

# Digital Twin Manufacturing

*Fast, Flexible and Accurate*

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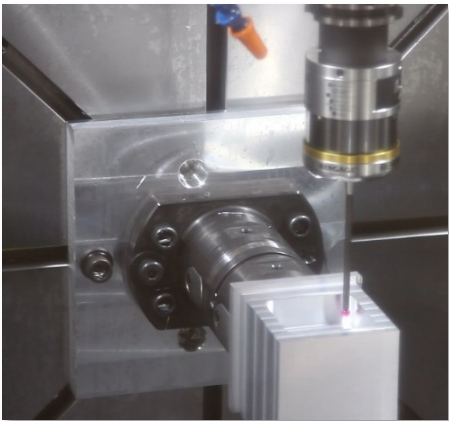
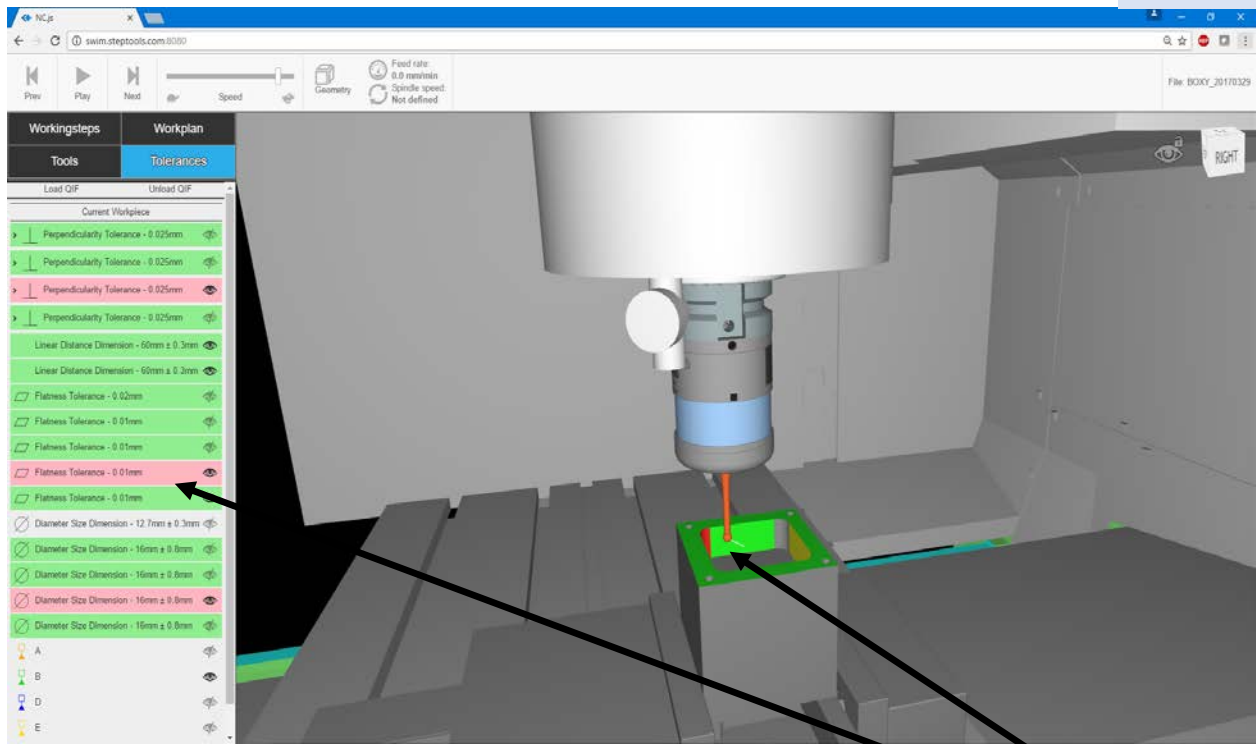
# Why digital twinning for manufacturing?

- Digital models of the production items
  - Machines, cutters, fixtures, robots
- Digital models of the production processes
  - Workpiece, workplans, rawpiece, stage models
- What are the benefits?
  - Inclusion of semantic GD&T enables accuracy and flexibility
  - Inclusion of production kinematics enables accuracy and speed

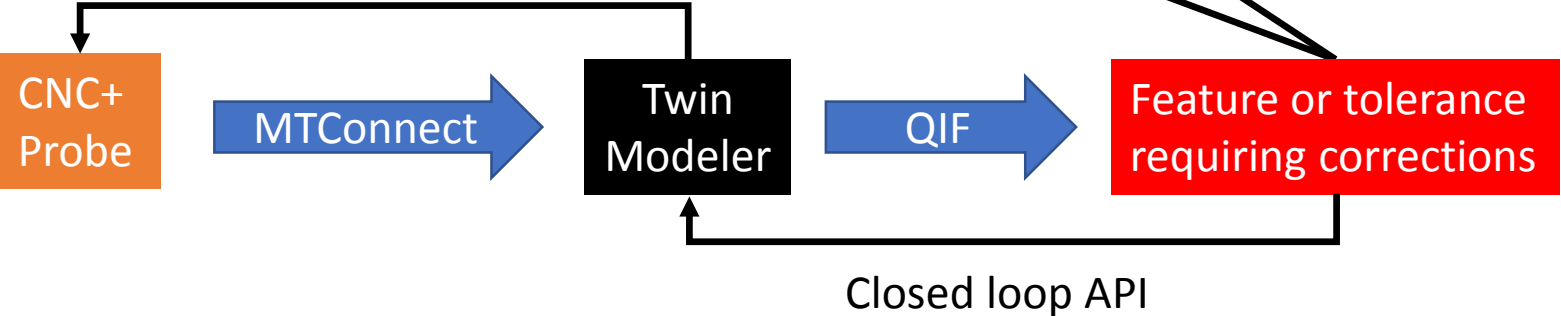


# Digital Twin manufacturing

NC.js



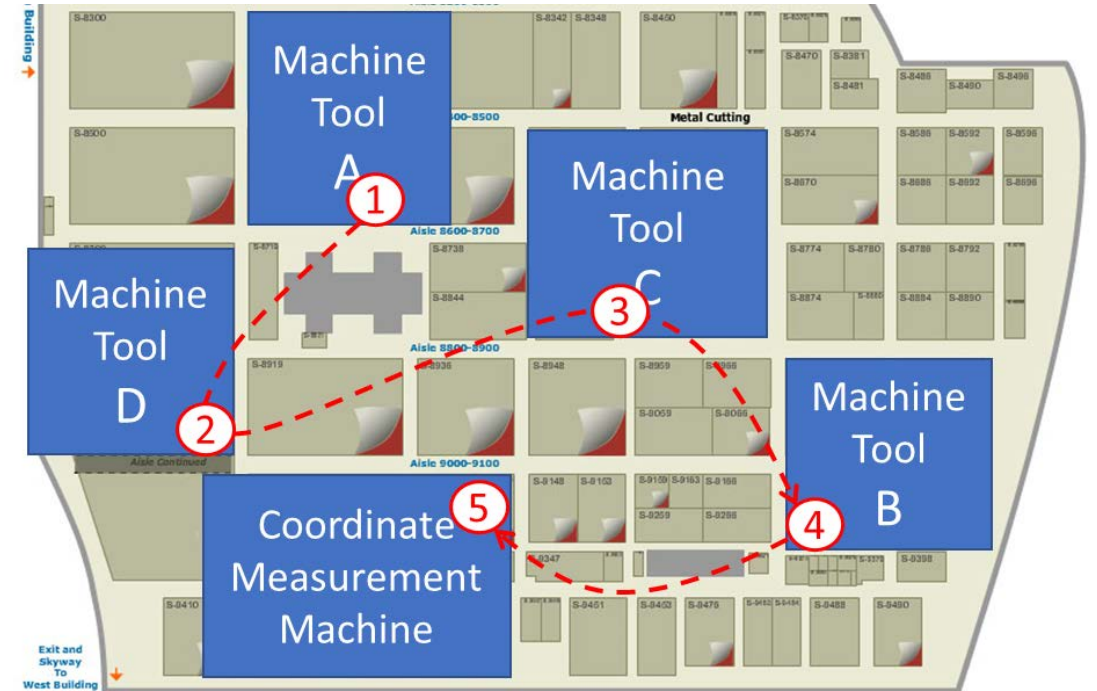
Just in time codes



- Green good
- Red bad
- Yellow good and bad

# Applications

- In-process measurement
  - Measure on the machine
- “Self driving” tools
  - Optimize feeds after tool changes
- Error free manufacturing
  - Prevent collisions on restarts
- Faster life cycle
  - Communicate issues and opportunities across the enterprise



Demonstrations at IMTS 2018  
and JIMTOF 2018

# Digital Twin manufacturing – fast, flexible, accurate

- Fast with cloud-based optimization services
- Flexible with model-based adaptable programs
- Accurate with standards-based measurement



Questions?