Acquisition of accurate shop floor data = a core requirement for **Analytics Driven Manufacturing**

**Martin Wieland**, Developer, Inventcom
Discrete Manufacturers

- Use PC and CNC controlled universal machines to produce customer specific parts.
- Use older and newer machines from various machine-manufacturers at their shop floor.
- Need, to be able to perform Analytics Driven Manufacturing comparable, accurate data from all these machines about
  - Machine-States
  - Part-Counter-Values
  - Work-Orders
  - Product Quality
**Issues faced**

- Universal machines are built in form of a closed entity with an internal communication bus.
- Devices connected to this bus that store relevant information, especially the PLC, are cut off from the outside world.
- Determination of mutually exclusive machine states requires a logical combination of data from multiple internal devices.
- Machine manufacturers prohibit access or communication of external devices with internal components of the machine.
- Data may only be acquired by using special programs of each respective machine manufacturer.
CNCnet PDM

Is a multi-layered Windows Background Service that, on the machine side, can be equipped with adjustable communication modules that ‘speak’ the language of the respective machine manufacturer. CNCnet PDM enables manufacturers to:

- **Acquire** data from machines of all well-known manufacturers with one single server.
- **Combine** data from multiple sub-devices of a machine into mutually exclusive machine-states.
- **Transform** incoming data from different machine-types into comparable data packets.
- **Deliver** machine-states, part counter values, work-order information, quality and process data for Analytics Driven Manufacturing
Benefits

CNCnet PDM

- Provides acquisition of data needed for Analytics Driven Manufacturing from different machine types
- Requires no additional hardware at the machine (~$ 3k per machine)
- Requires no modifications of the machine (~$ 1.5k per machine)
- Can be entirely setup, configured and maintained from a remote location, physical presence at the machine is not required (~$ 3k per machine)
- Works with no user interaction required at the machine
- Does not void the machine-manufacturer's warranty
CNCnet PDM

- Enables data collection from universal machines needed for Analytics Driven Manufacturing
  - Acquires machine, part-counter, work-order and quality data with no user interaction required
  - Supports a wide range of machine types

- Can be implemented in a timely, cost-effective and reliable manner
  - Requires no additional hardware or modification of machines
  - Setup, configuration and maintenance can be performed from a remote location

- Risk free implementation
  - Does not interfere with the machine’s internal components
  - Does not void the machine manufacturer’s warranty