Smart Machine Tool

To improve the efficiency of piece and small-series production with the financial effects of mass production, close man-machine cooperation is required. Machine and its operator need to know what is happening in the machine and the process, how to understand it in the context of the production, what to do to minimize negative impacts and how to prevent them in the future. Such an advanced support provides a so-called smart machine tool.

- Intelligent machine tool is equipped by additional sources of inputs for feedback
- Currently, the resulting intelligence of the machine tool is a combination of predefined algorithms and data acquired from the operator and other systems
- Autonomous reaction to unexpected situations is a current research goal

Data logging of internal data (e.g. position, current, temperature...)
Additional sensors for direct measurement (e.g. length, temperature...)
Additional sensors for indirect measurement (e.g. vibration...)

Communication with operator
Communication with other integrated devices
Communication with superior systems (SCADA, MES, ERP)
Communication with other database systems

Communication with other real machine tools
Communication with digital twin (virtual machine tool)