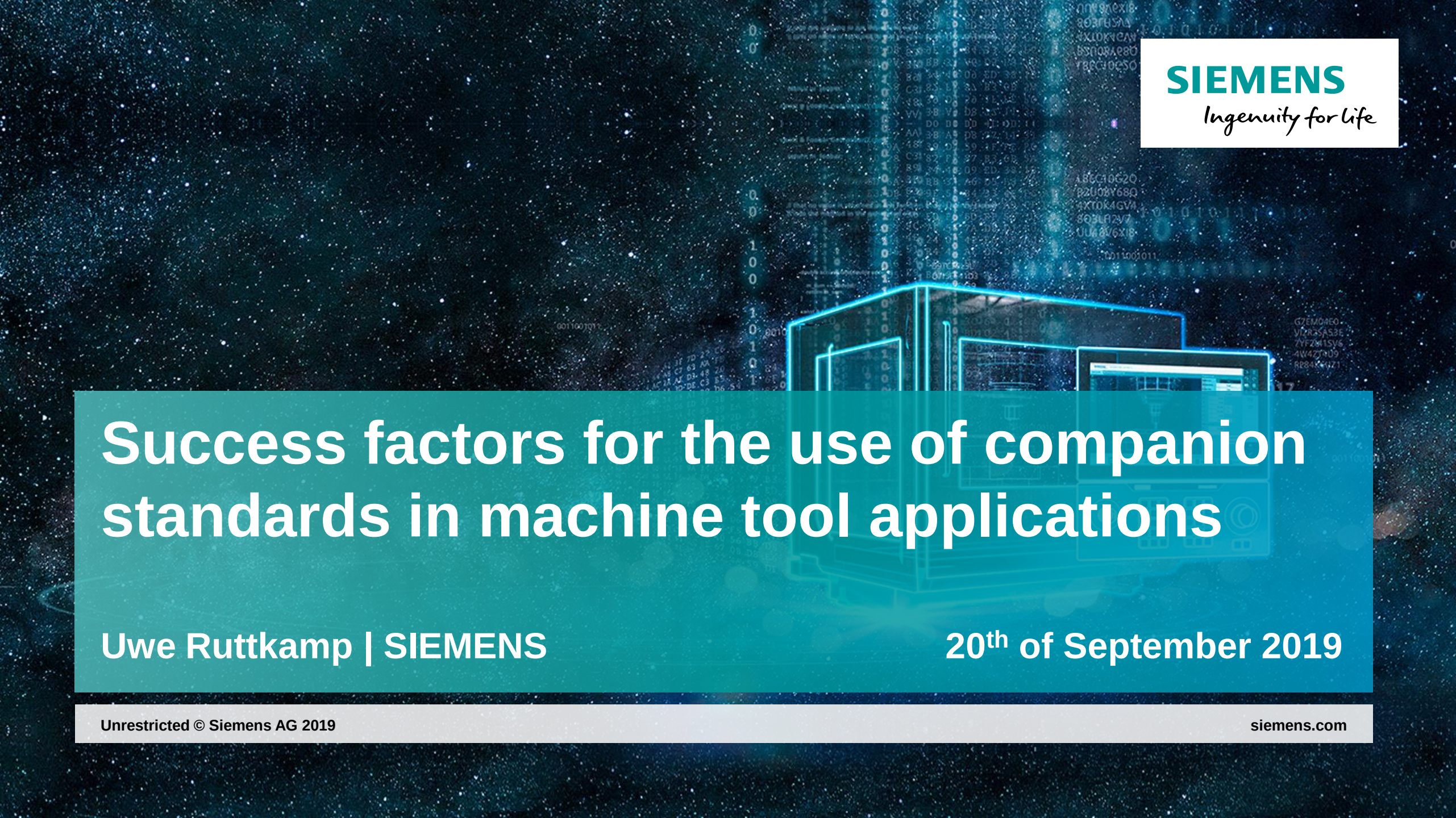

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Success factors for the use of companion standards in machine tool applications

Uwe Ruttkamp | SIEMENS

20th of September 2019

Standards help an industry to focus on the application

The UMATI initiative of VDW is important to us as it provides the content for defining the essential core use cases in machine tool industry. While at the same time utilizing the openness and flexibility of our product portfolio.

(3/2019 , SIEMENS translated press statement)

In automation technology we have many approaches in place for the purpose of interoperability and reducing complexity, e.g.

- Plant wide regulations which have to be applied by all suppliers
- Fieldbus protocols and their application layer
- Data backbones and adaptation layers for decoupling of IT and machines
- Communication protocols as OPC or MTConnect since more than 10 years …

Industry stake holders have created dedicated standards – aiming to unify demands for specific environments

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All standards need to provide added value in solving specific problems in many industries.
UMATI is no exception.

umati

- Specific value has to be generated on end user side
- Coverage of desired core use cases
- Simple implementation of standard and easy to apply
- Indicator for success of standard is in the end the amount of end users participating

Success factor for UMATI as a companion standard in machine tool industry

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Create added value

Target

Focus on essential core at implementation and usage

OEM/ Appl. Provider

- focus on optimal machine solution
- Reduce effort for supporting needed information for various standards

End user:

- focus on optimal machine usage
- Reduce effort for preparing and processing data
- Reduce integration cost

Requirement to fulfill

Separation of machine control and monitoring/ analysis

Fast and independent Innovation decouple the innovation cycles from controllers and applications

Upgradeability for existing production facilities

Capability to integrate and scale new opportunities in fast-paced environment

Implementation of UMATI as a successful companion standard

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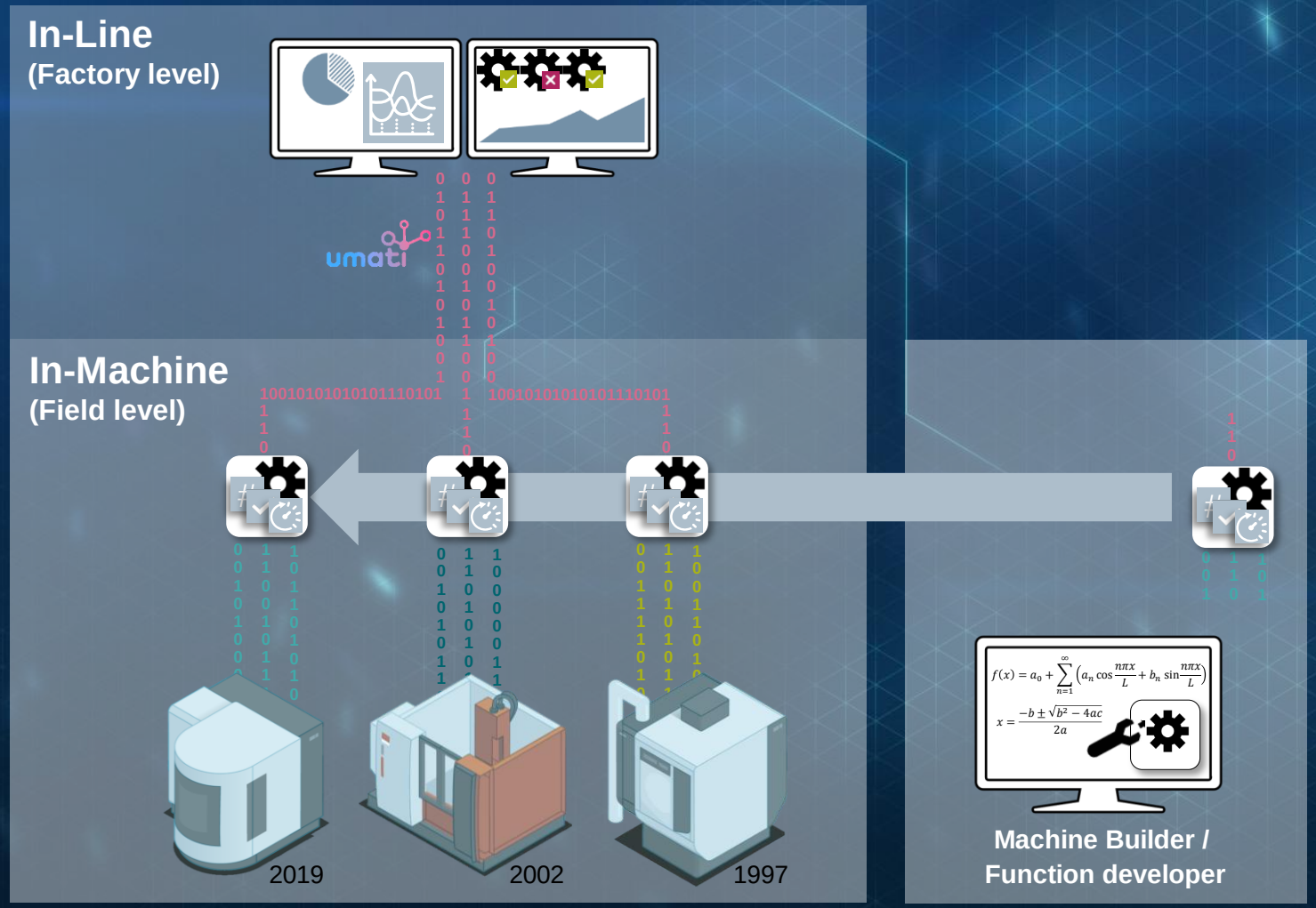

Core use case: Parts in a job

Show information about:

- # Number of produced parts
- Production time of each part
- Planned production of the batch
- Machining quality for produced parts

Requirements to fulfill

- **Separate functions**
- **Fast and independent Innovation**
- **Upgradeability**
- **Capability** to integrate new opportunities

Implementation of UMATI as a successful companion standard

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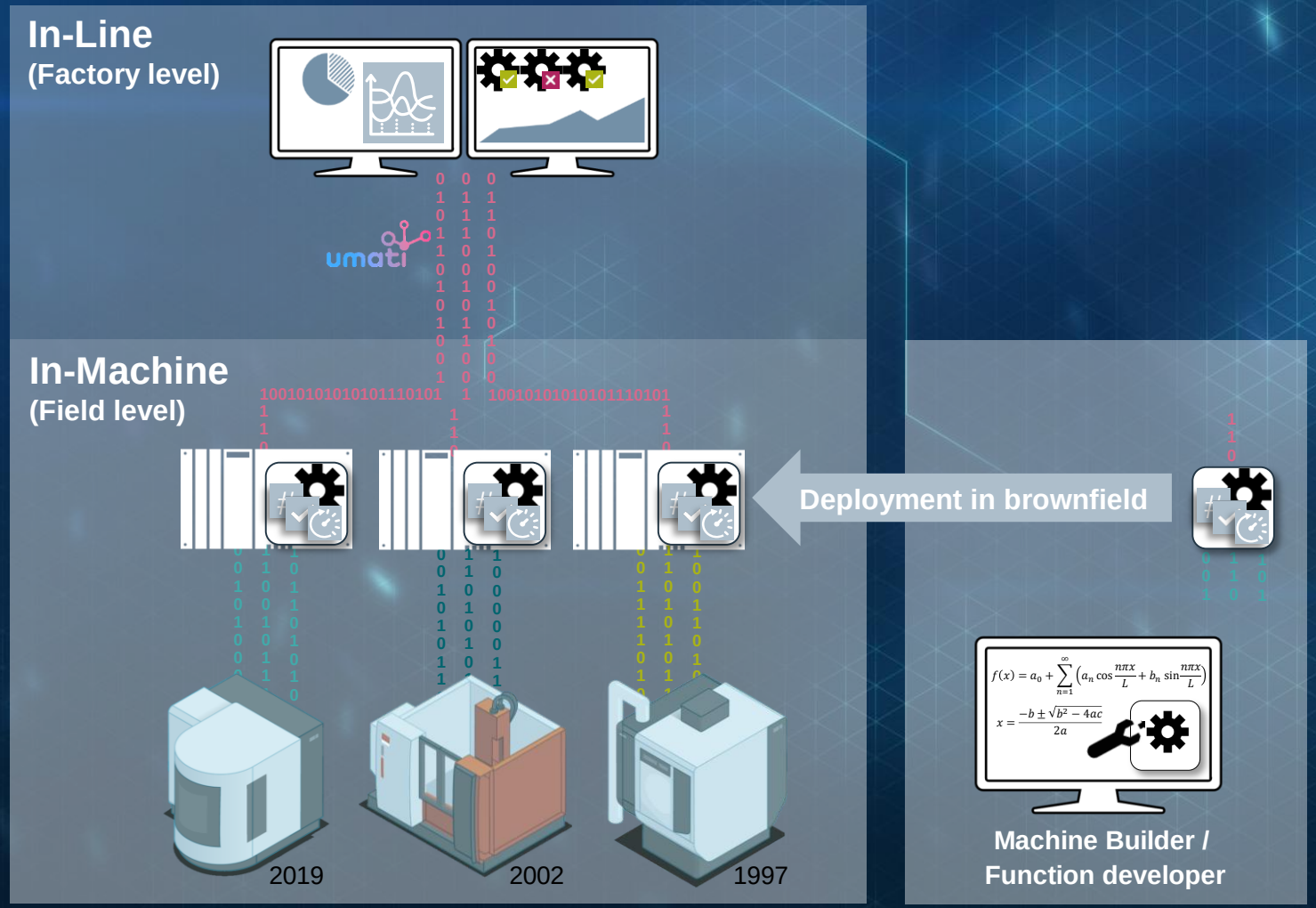

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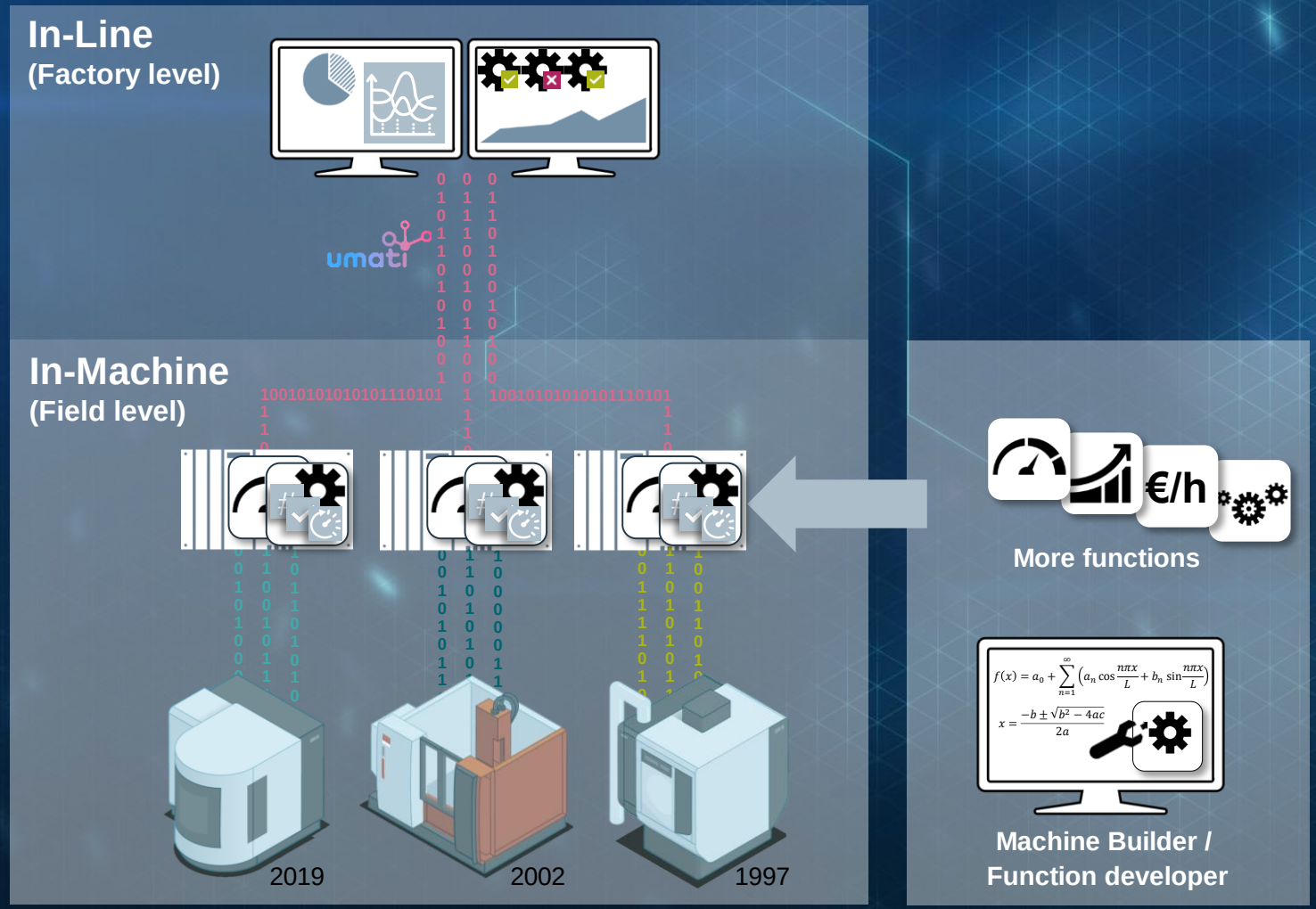

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SINUMERIK Edge is an integral part of the digitalization architecture for machine tools

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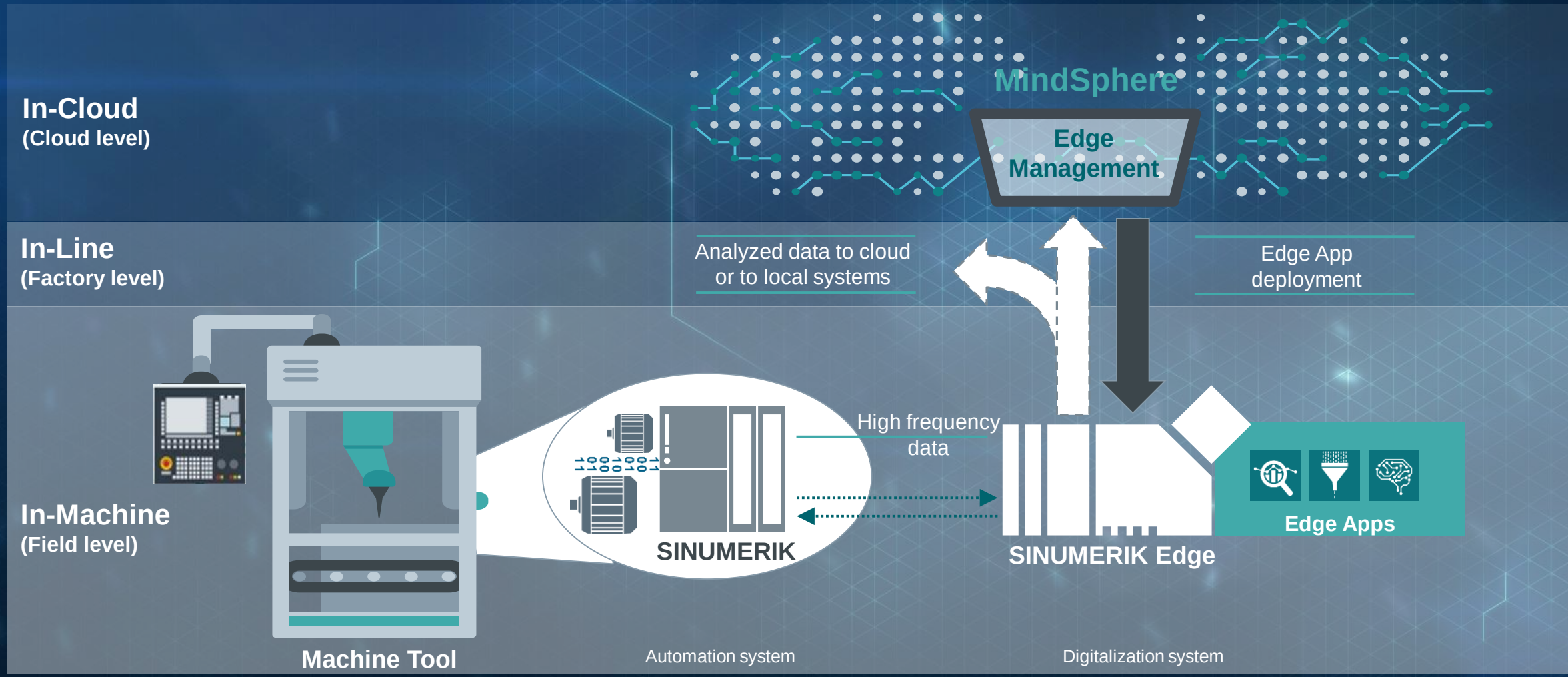

Analyze MyWorkpiece
Enhancing process quality with Digital Twin of Performance

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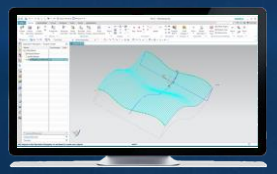
NX CAM



CNC programming

Improve

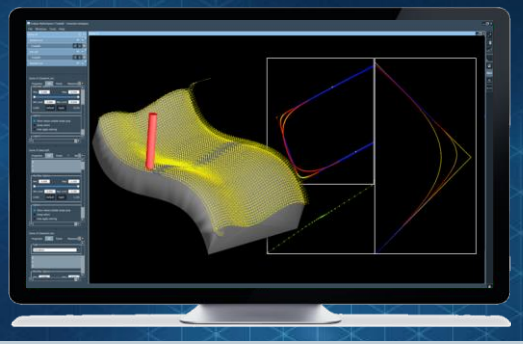
Analyze

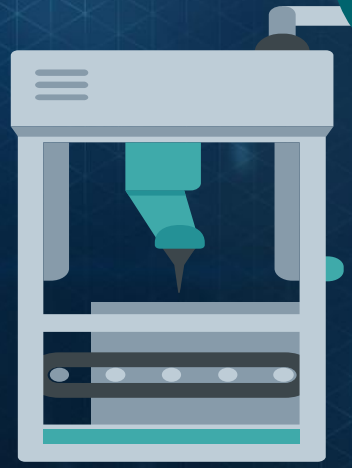
Process improvement

Produce

Observe

Analyze MyWorkpiece /**Toolpath**



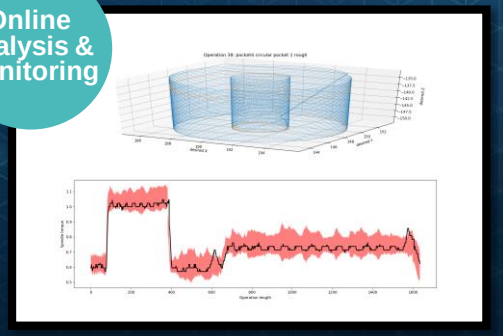


SINUMERIK Edge

Data Capture & Analytics

Analyze MyWorkpiece /**Capture**

Online analysis & monitoring



Analyze MyWorkpiece /**Monitor**

Digital Twin of Performance:
Production fingerprint

High resolution, high quality process data collected and pre-analyzed during production

Continuous quality control

Early detection of quality issues in the production through continuous production monitoring

Implementation of UMATI as a successful companion standard

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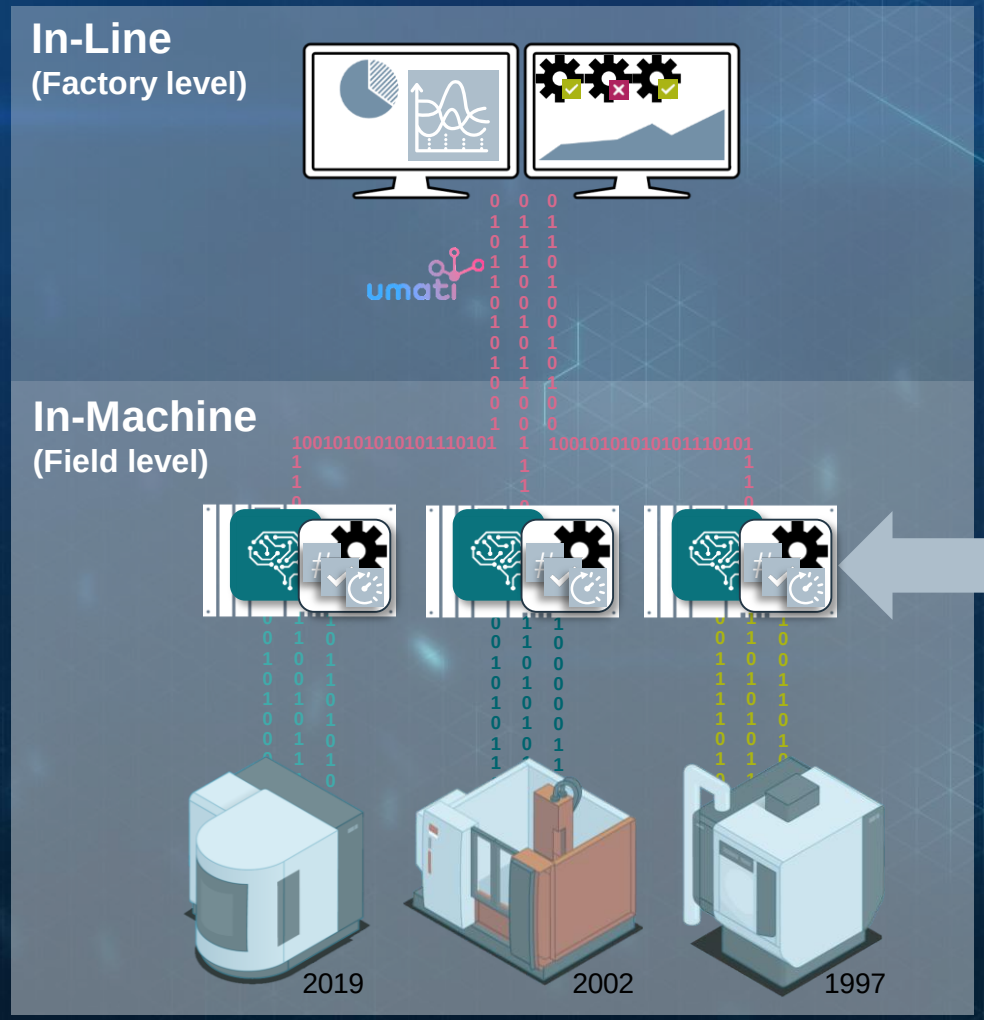

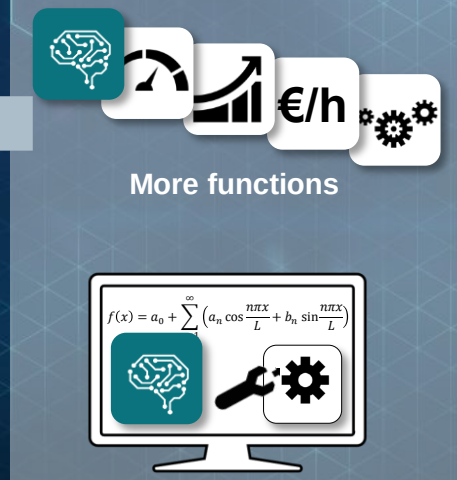

Core use case: Parts in a job

Show information about:

- # Number of produced parts
- Production time of each part
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- ☑ Machining quality for produced parts

Requirements to fulfill

- ✓ **Separate functions**
- ✓ **Fast and independent Innovation**
- ✓ **Upgradeability**
- ✓ **Capability** to integrate new opportunities

Uwe Ruttkamp | Head of Machine Tool Systems

Advantages of SINUMERIK Edge for UMATI

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SINUMERIK Edge fulfills all UMATI requirements

- **Separation**
- **Innovation**
- **Upgradeability**

…and is the base for many more new business Opportunities

Thank you for your attention