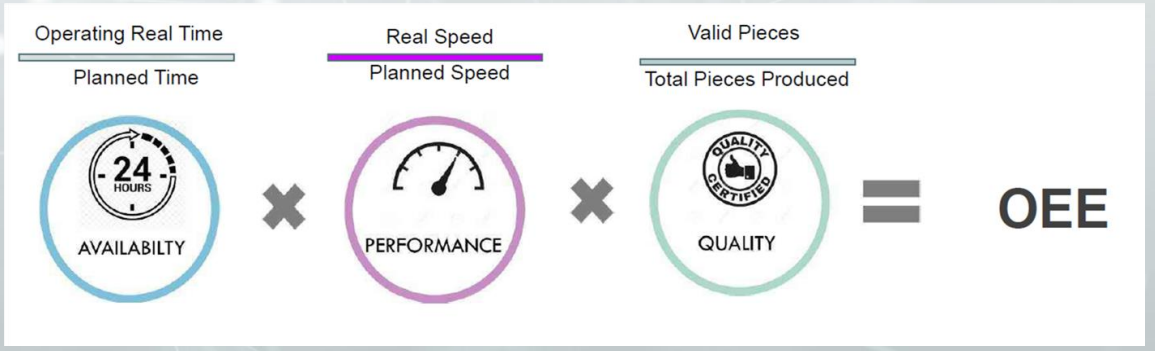
SELF-ADAPTIVE PRODUCTION IN HIGH VOLUME OPTICAL ASSEMBLY

High Volume Optical Assembly: A Chance for ML!

Conditions in Production:

- High OEE (Overall Equipment Effectiveness) requirements
- Fast & frequent product ramp-ups
- Complex production processes
  - ➢ Interdependence of parameters
  - ➢ Abundance of data



Machine Learning* can provide automated solutions to your production needs

*data driven model calculation

Machine Learning in Optics Assembly: Challenges

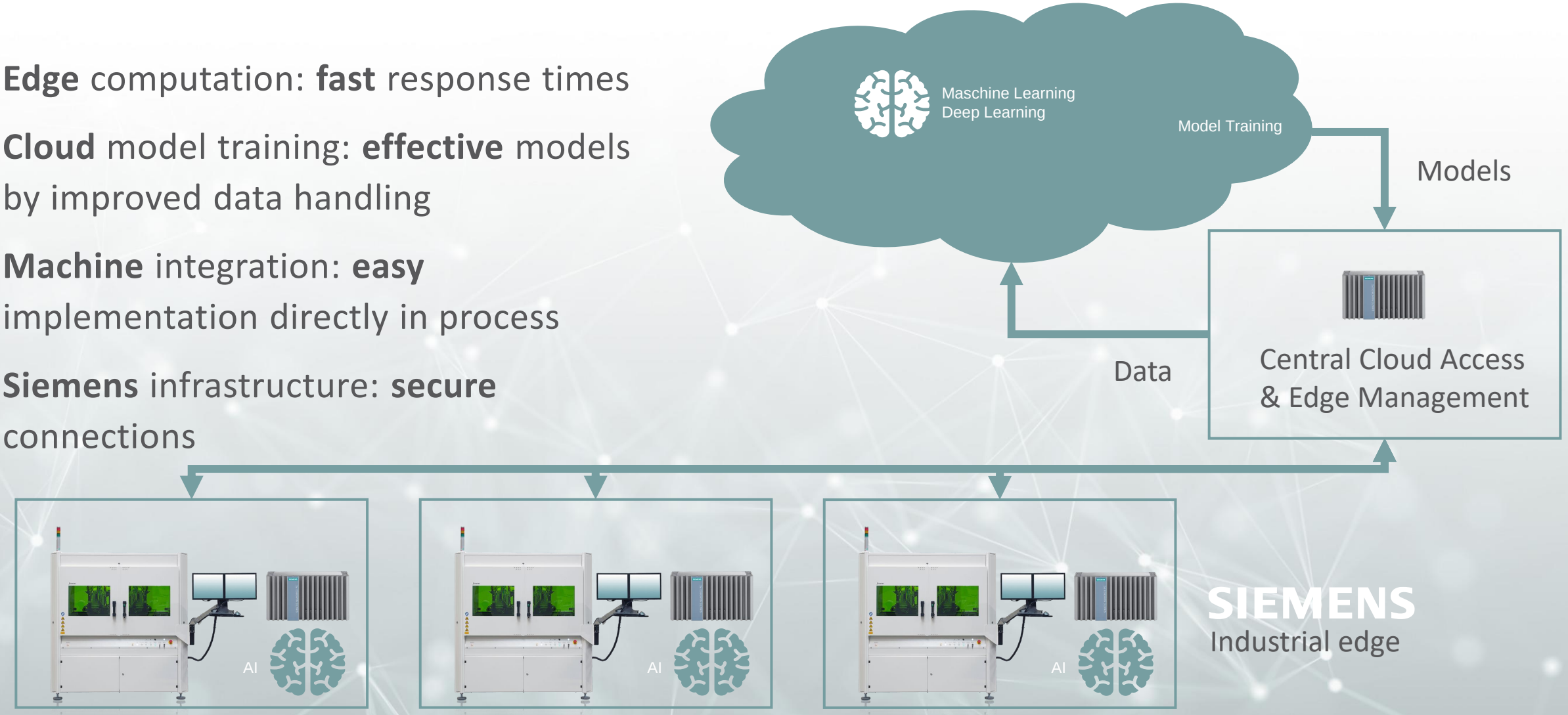
- Short product life cycle
  - ➢ Low model life time
- Lack of unified standards for packaging
  - ➢ Model transfer constrained
- Global value chains
  - ➢ No data scientists available on the factory floor

How to make Machine Learning field-proof?

Our answer:
robust infrastructure, self-adaptive production & self-learning models

Infrastructure: Edge, Cloud & Machine

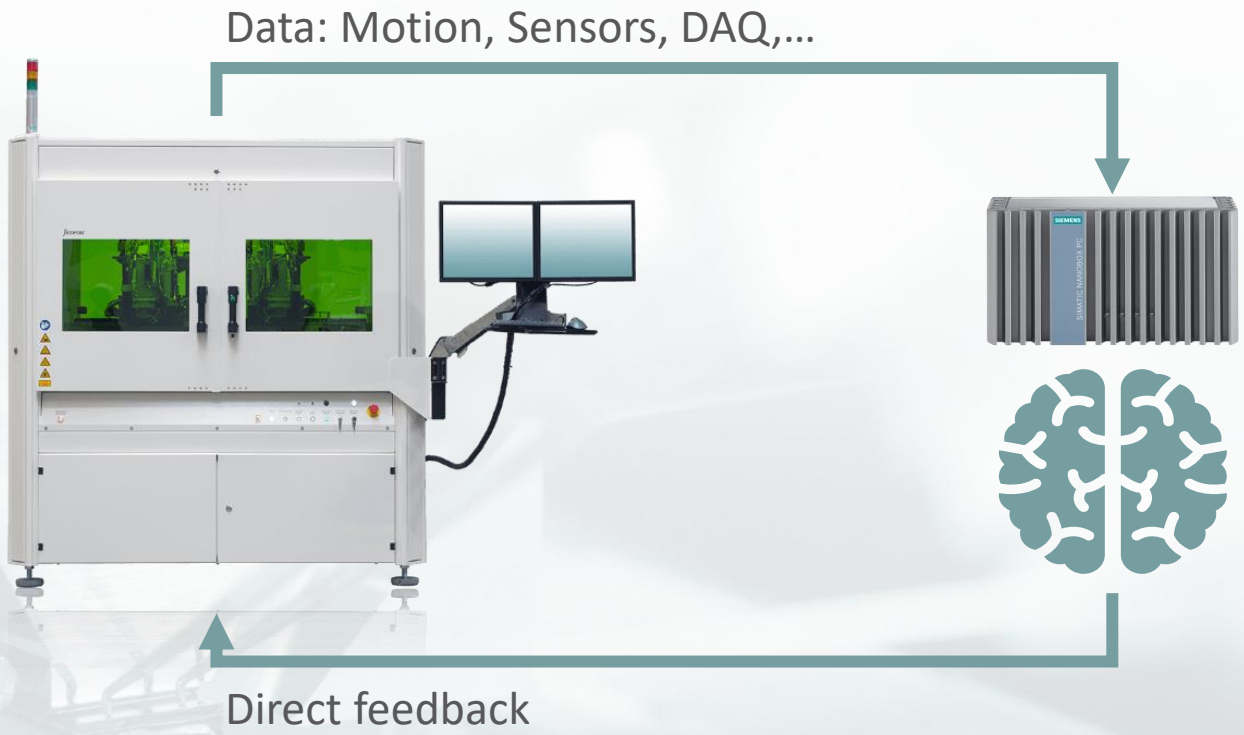
- **Edge** computation: **fast** response times
- **Cloud** model training: **effective** models by improved data handling
- **Machine** integration: **easy** implementation directly in process
- **Siemens** infrastructure: **secure** connections



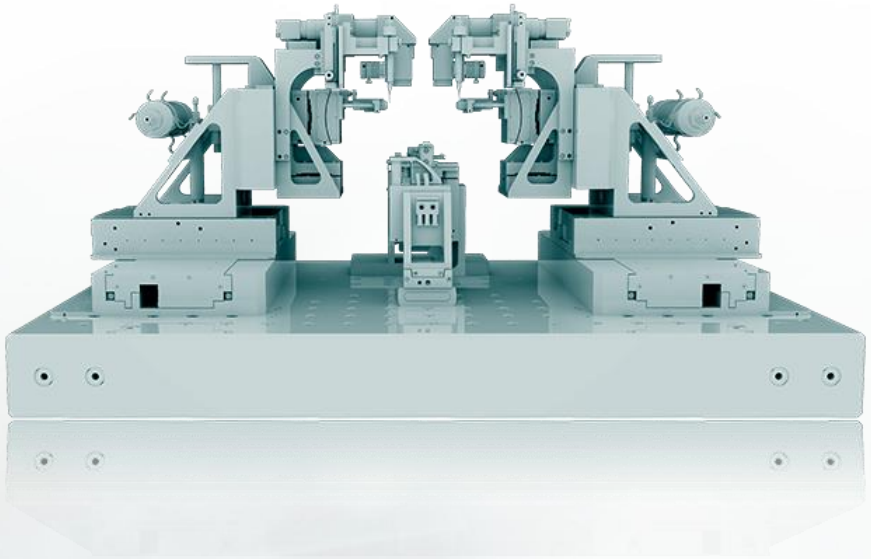
Self-Adaptive Production

Machine Performance improvement by direct feedback to machine

- Machine parameters adapt automatically to changing conditions
- Direct feedback - no human interaction
- Complete automation



Adaptive Motion



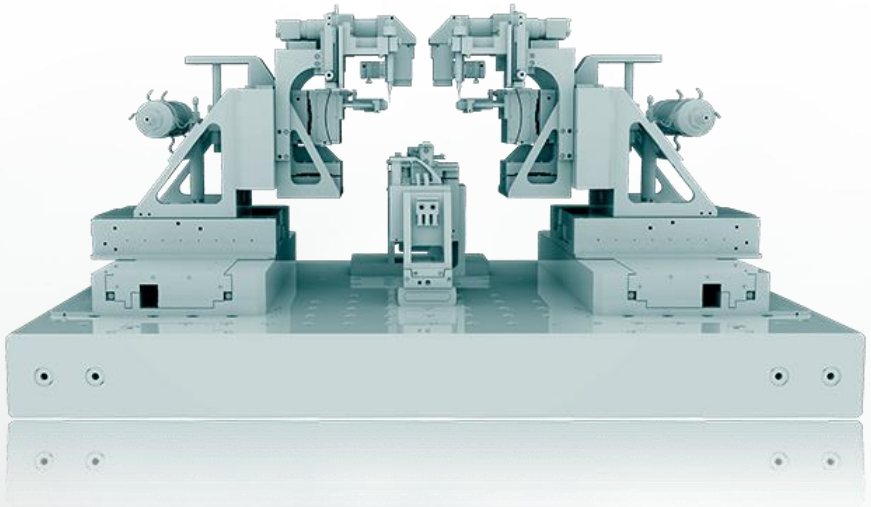
Optimum motion is a trade off:

- High throughput
  - ➢ fast motions
- High yield
  - ➢ accurate motions
  - ➢ Early alerting to prevent part loss
- Field conditions
  - ➢ Performance degradation over time

Ideally motion accuracy could be measured in the field

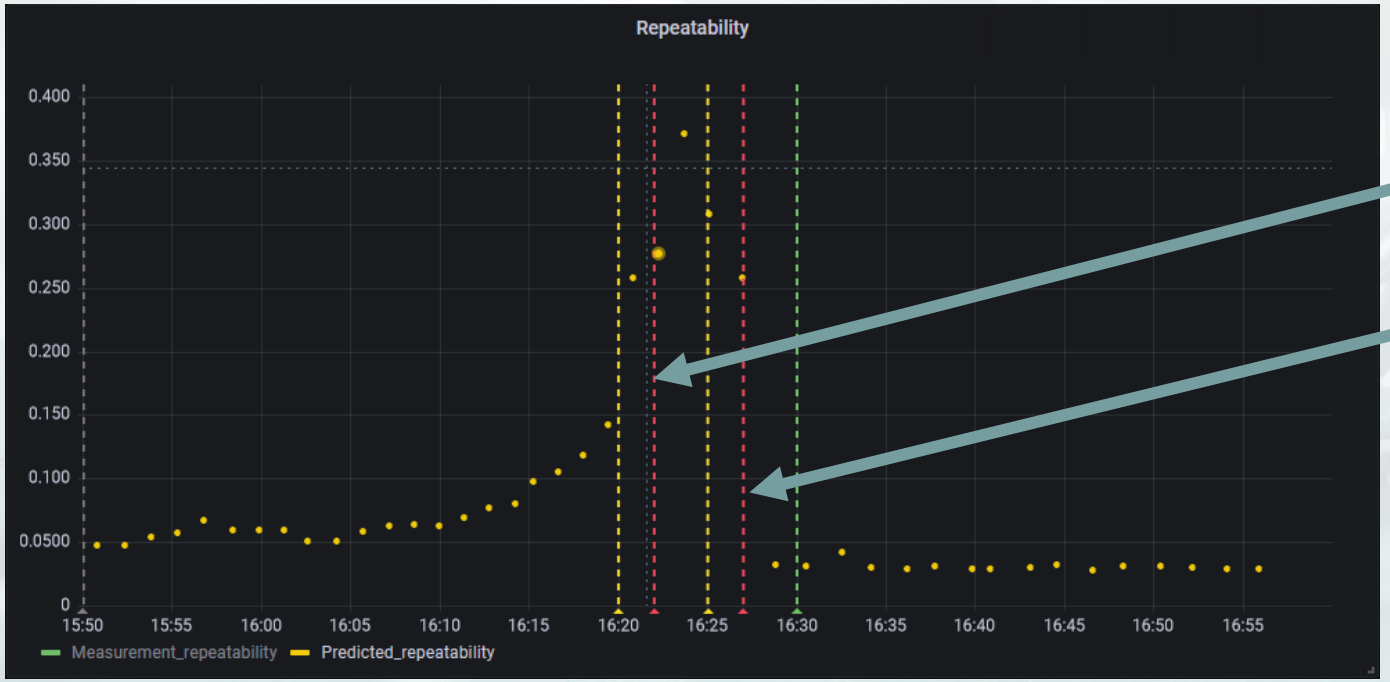
Measurement is not feasible without sacrificing throughput

Our Solution: Adaptive Motion



Finding optimum balance between precision & speed

- In real time & during production
- No measurement required in production
- Flexible configuration of response



Repeatability close to max spec, slow down motion

Yield at risk, stop production

Adaptive motion dashboard

Our Offer

>10% OEE improvement* achieved by

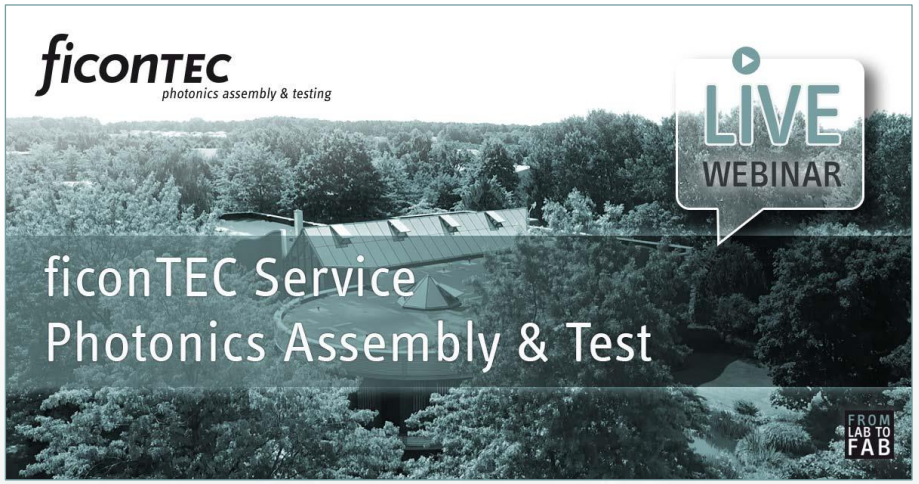
1. **UPH improvement by self-adaptive production (multiple use cases)**
2. **Yield & Process control by automated analysis & alerting**
   - Custom visualization, analysis & alerting for Process Parameters & KPIs
3. **Downtime reduction by Predictive maintenance**
   - Prediction of critical component failure & alerts for preemptive repair

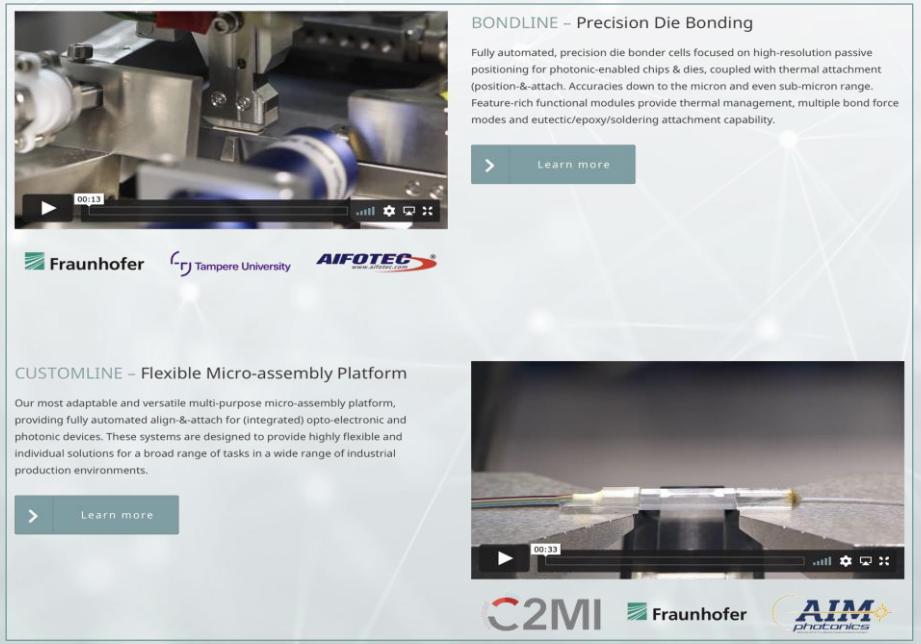
*OEE: Overall Equipment Effectiveness = Availability x relative UPH x Yield

Finding out more …

Online:

- Homepage
- ‘ficonTEC Insider’ Blog
- LinkedIN / Twitter
- Vimeo / YouTube
- Locations & Contacts





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