Intel's approach to Operationalizing AI in the Manufacturing Sector

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Notices & Disclaimers

- Performance varies by use, configuration and other factors.
  Learn more on the Performance Index site.

- Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.

- Your costs and results may vary.

- Intel technologies may require enabled hardware, software or service activation.

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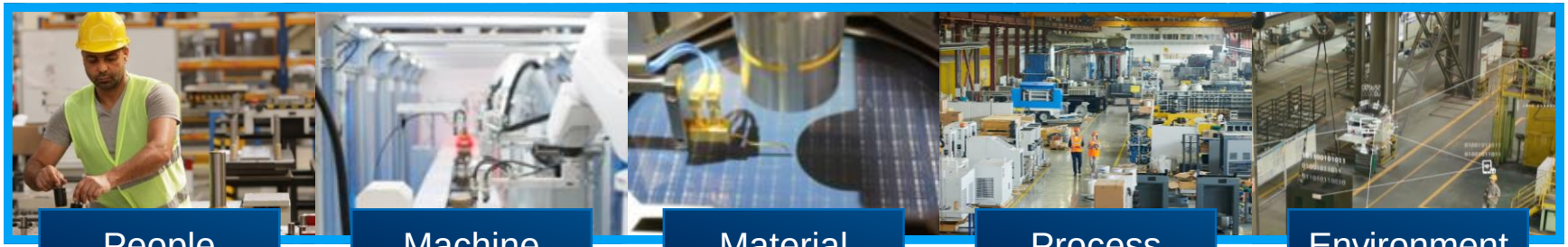
The Time for Edge AI is NOW!

- Edge computing empowers faster localized insights and decisions
- AI is improving labor productivity
- Easy-to-use tools are democratizing AI
- AI solutions are more accessible and less costly than ever before

1 Despite productivity gains, manufacturers still struggle to find talent. HRDive, 2023. 2 Source: "Industrial Manufacturing: Bullish on AI adoption. KPMG, 2021.

Industrial Use Cases for Edge Inference (Analytics)



People

- Worker behavior
- Situational monitoring

Machine

- Predictive maintenance
- Robotics pick-and-place
- Predictive analytics

Material

- Product defect detection
- Raw material appearance inspection
- Asset management

Process

- Factory operation optimization
- Optimization of raw material utilization

Environment

- Temperature optimization
- Humidity optimization
- Worker safety

Visual data gathered at the Edge drives improved operations

Use case can benefit from video data. 1. Notes from the AI frontier insights from hundreds of use cases, McKinsey Global Institute, 2018

What are YOUR barriers to adopting AI?

78% of Edge AI use cases do not reach deployment

- Available solutions are too complicated, or too limited
- Lack of AI expertise
- Mistrust of “unexplainable AI“
- Difficulty gathering useful data
- High implementation costs

1. 6 ways to help the manufacturing sector embrace AI. World Economic Forum, 2023

Industrial Workflow with Machine Learning

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AI Model Development

Data collection

Process

- Finalize image data requirement
- Setup the equipment for data collection
- Start collecting the data

Data labelling

Process

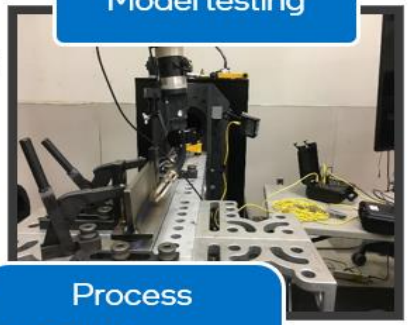
- Identify the labelling requirement
- Setup the tools needed for labelling the data
- Start labelling the data

Model development

Process

- Identify the AI framework ideal for the solution
- Feed the labelled dataset to the AI framework
- Train the AI model

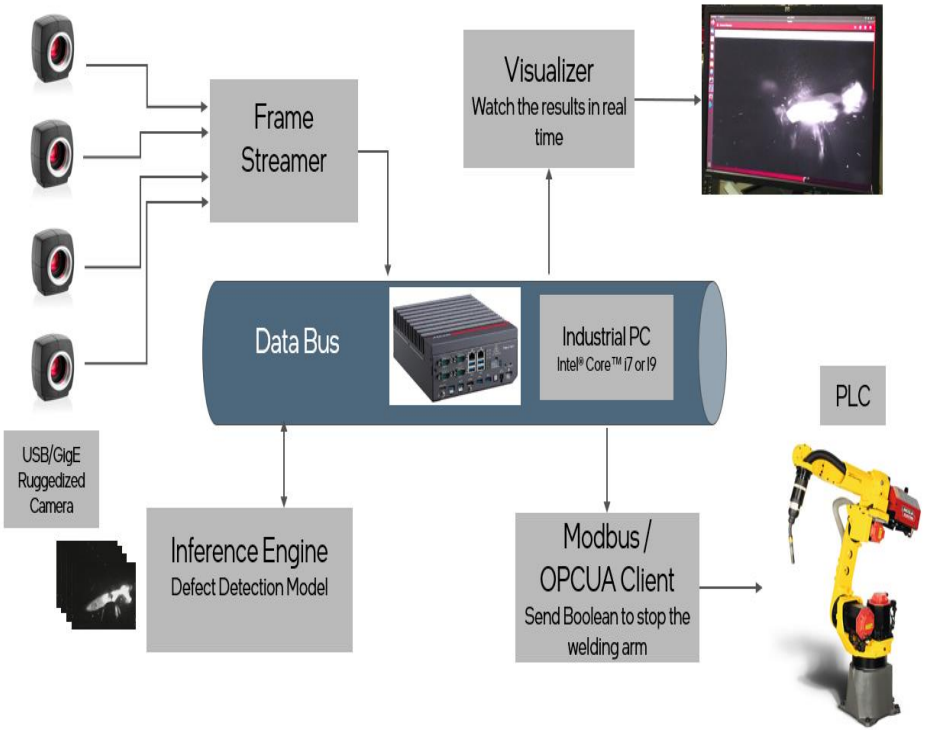
Model testing

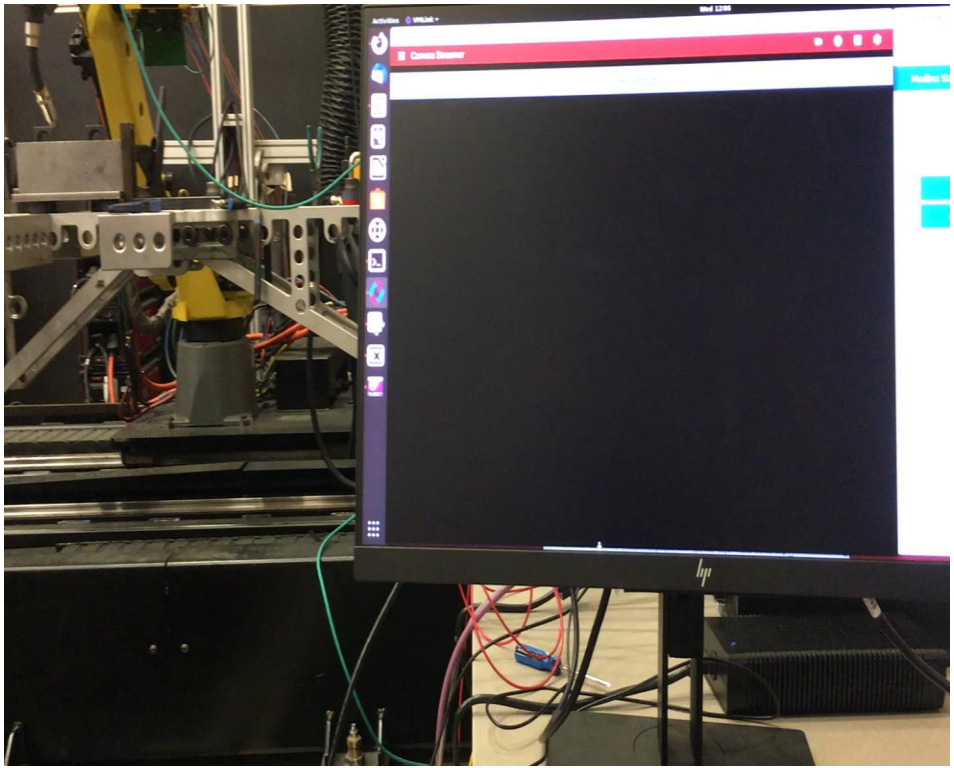


Process

- Finalize the middleware software stack
- Deploy the trained model
- Test the model

Deployment of AI Model





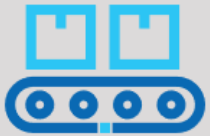
Industrial workflow with AI

embedded VISION SUMMIT®

Scenarios (Use Cases)

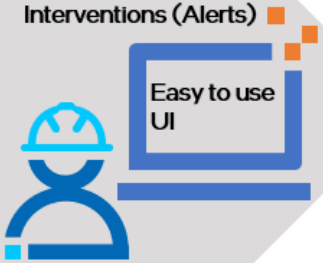
AI Model Creation / Training

Production Process (e.g. Inspection)



Data Feeds: Camera pointed at prod. line

Operator Interventions (Alerts)



Design

Pain: Unsure where to start, lack of skilled data scientists

Data Ingestion/ Database

Pain: Difficulty gathering useful data, protecting proprietary data

Results

Pain: Inexplainable AI, slow results

Model Training / Tuning

Pain: Available solutions are too complicated, or too limited

The answer with Intel® Tiber™ Edge Platform

- Adaptable AI models
- Plug and play end-to-end solution

- Validated cameras and Industrial PCs
- Easy-to-use software
- Multi-modal Analytics

- Software designed for manufacturers by manufacturers

- Edge AI for secure, real-time results

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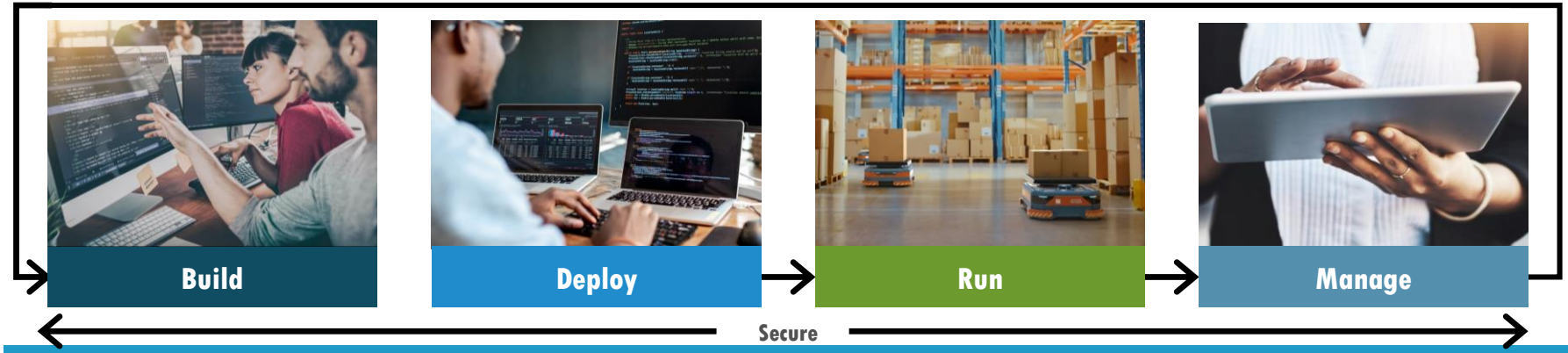
Intel® Tiber™ Edge Platform

Introducing Intel® Tiber™ Edge Platform

Through an unmatched partner ecosystem, Intel's new commercial software platform enables enterprises to build, deploy, run, and manage scalable edge and AI solutions on standard hardware with cloud-like simplicity.



Open & Modular | Edge & AI Optimized | Rich App Orchestration

Brownfield and heterogenous component support

Speed, accuracy, and power efficiency on right-sized components

Remote application and AI deployment and management at scale

Build and Deploy your AI Solution With Intel

Build models with the Intel® Geti™ platform

Develop with intel GETi™

5G Edge VM

On Premises Server

Cloud VM

Scale Your AI Solution With Intel

Deploy with Intel Premises AI

Deploy with OpenVINO™

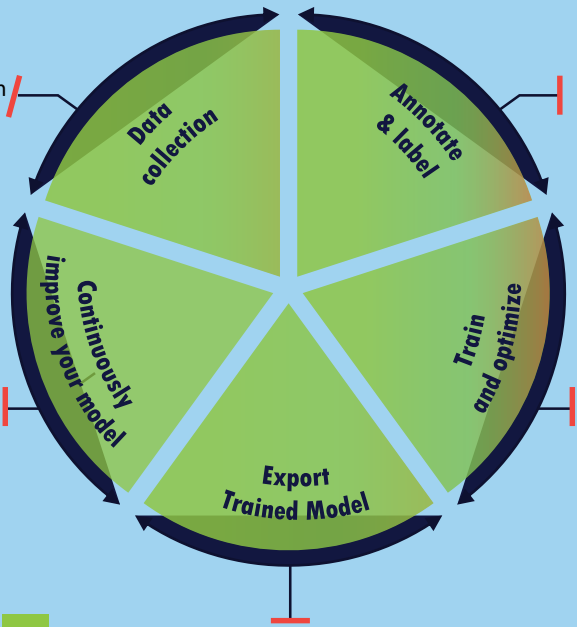
Compute (Lab) Datacenters

Edge

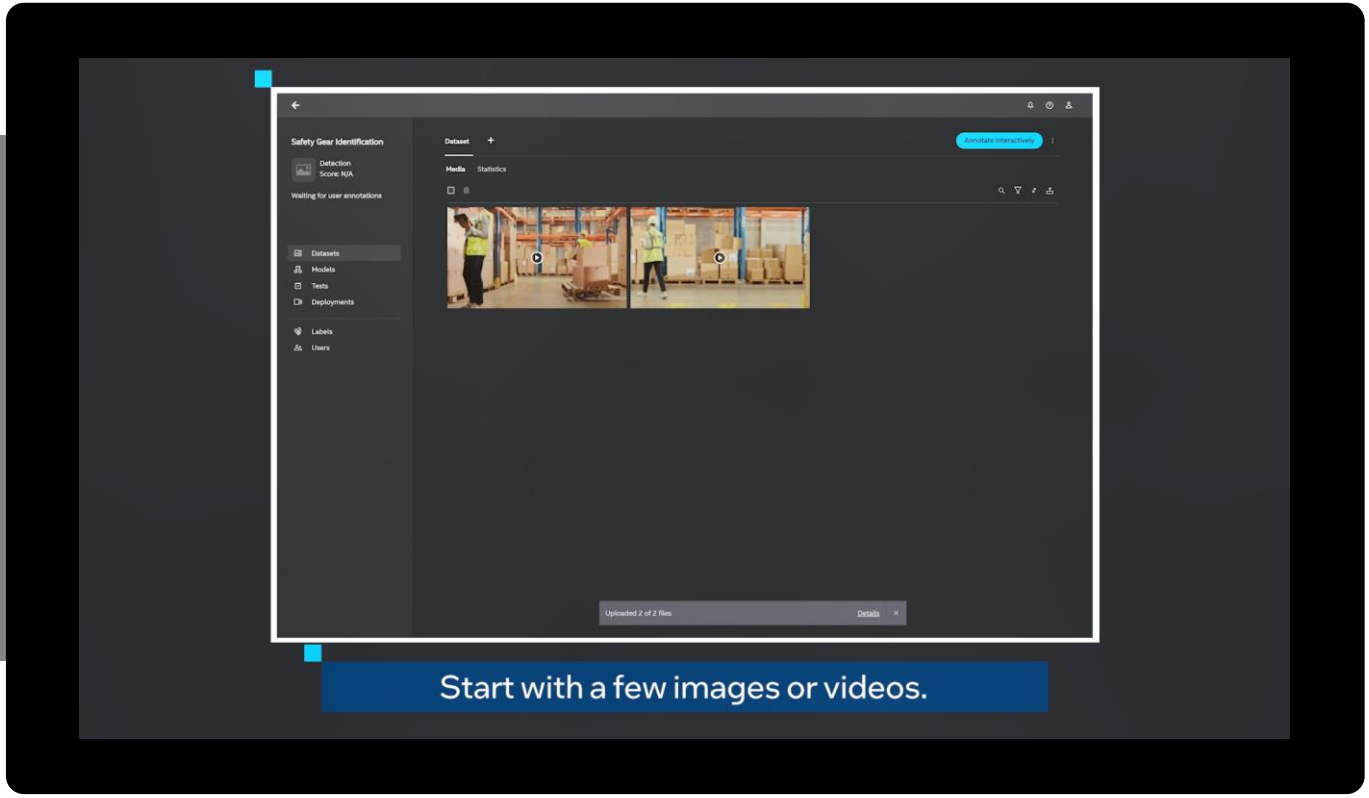
Intel® Geti™ Platform

One Platform for the Complete Model Development Cycle

Accelerate Model Development



See How Intel® Geti™ Platform Works



Intel® Geti™ Platform

Intel® Edge Insights System

An all-encompassing solution for management, operation and easy deployment of AI at the Edge.

Intel® Edge Insights System is part of Intel® Tiber™ Edge Platform

Intel® Edge Insights System

User Interface designed for developers and factory experts

Integration Tools easily connect to existing systems

Intel AI Software Offerings including tools, libraries and sample models to get a customer started.

Maintenance and Support options

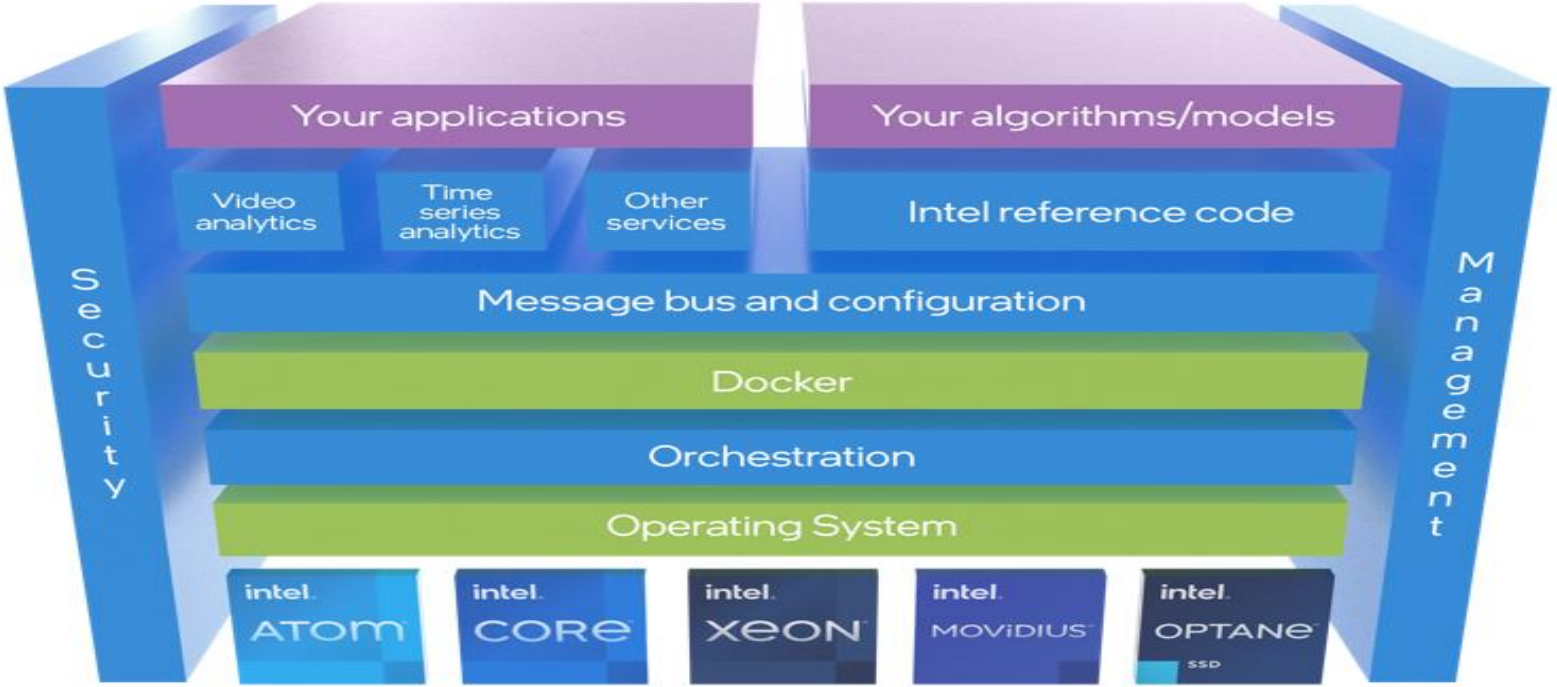
Validated Industrial PCs of your choice

Validated cameras of your choice

Value-added Services Including installation, engineering and training services

- **Industrial focused**
- **Easy-to-deploy, comprehensive solution**
- **Supporting both time series and video analytics**
- **Flexible pricing**

Intel® Edge Insights System



Intel® Edge Insights System A Comprehensive AI Edge Inferencing Platform – Help factories put AI to work

- Operator-Friendly User Interface
- Data Collection and Annotation Enabled
- Validated IPCs and Cameras Available

(Part of Intel's Edge Platform)

Software Offerings

Integrated	Compatible with
intel. EDGE INSIGHTS FOR INDUSTRIAL, OpenVINO	oneAPI, intel GETi

Maintenance and Support Options

User Interface (Developer)

Standard and Enhanced SKUs

User Interface (End Customer)

Validated Industrial PCs 

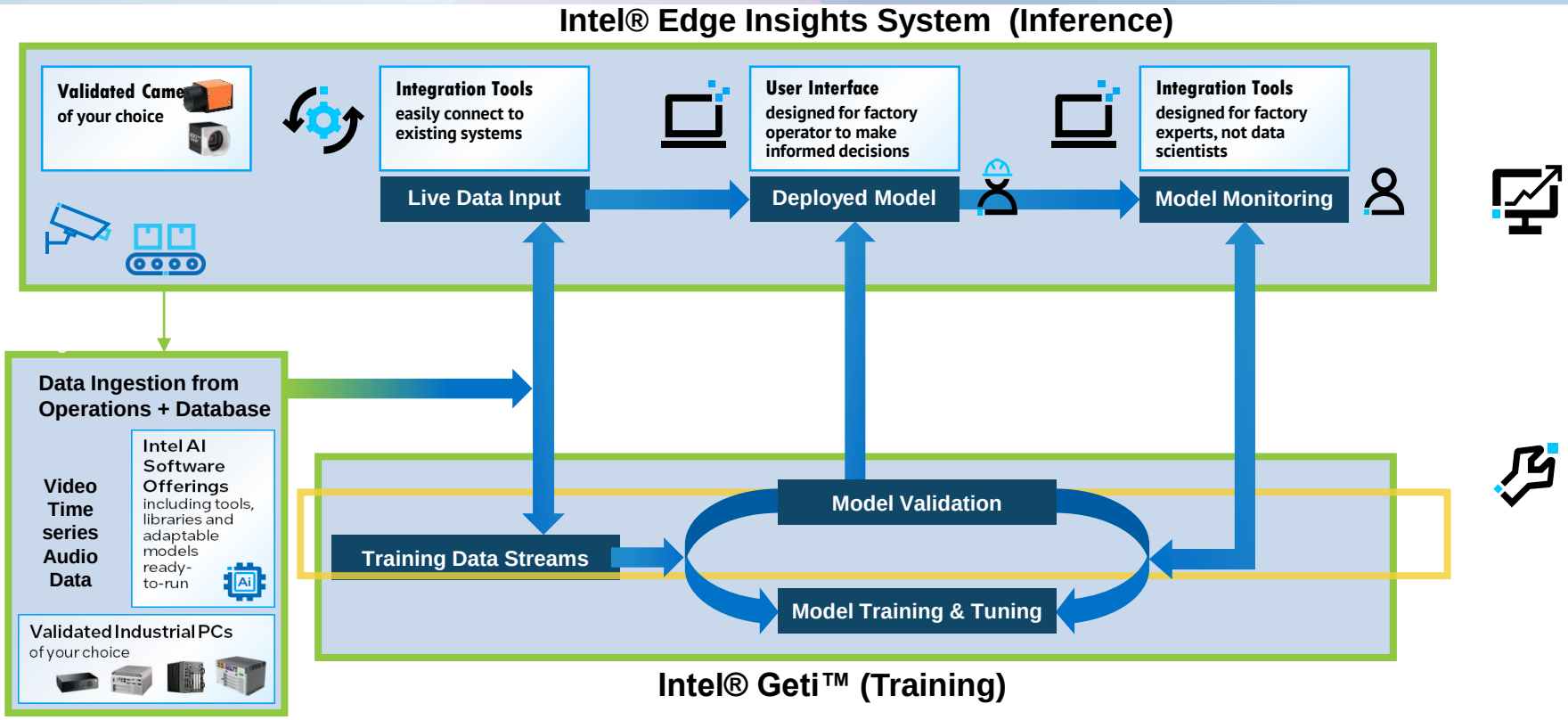
Validated Cameras 

Value-added services

Installation, Training, and Engineering services

1. Intel® Edge Insights System is expected to be officially launched by Q3 2024.
2. Intel® Edge Insights System is compatible with Intel® Geti™ platform for model creation and ingestion.
3. Intel® Edge Insights System is part of Intel® Tiber™Edge Platform.

Support through the entire ML Ops workflow



Conclusion

- There is a shift in User Persona of target audience for the Industrial AI solutions
  - From Developer, Architect, Data Scientist to SME, Operator, IT/OT Managers
- Factory wants to be independent.
  - Less reliance on IT, data scientists, and Systems Integrator.
- The key buyer or Persona is the Business Unit lead in an organization
  - With recommendations from the IT, AI team and other technical buyers (security, ML/Ops, etc.)
- Factory Lead Engineer is a key go/no-go decision maker
- Differentiating factors like low – code functionality of **Intel® Geti™** and **Intel® Edge Insights System** along with multi-modal analytics, ingress/egress extensibility, ML/Ops flow, and ability to connect to controls and factory analytics will enable adoption and deployment of AI solutions in factories.

Resources

CTA

Sign up for receiving the latest updates and news from the Intel's Edge Platform

Intel® Tiber™ Edge Platform Product Links

- Intel® Tiber™ Edge Platform Product Site
- Intel® Tiber™ Edge Platform IDZ Website

Related Products

- Intel® Distribution of OpenVINO™ Toolkit
- The Intel® Geti™ Platform - Intel's Computer Vision AI Platform
- Development Tools (intel.com)
- Intel® Edge Insights System

Thank You

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