MANUFACTURING
PERFORMANCE
DAYS

INVESTING IN FUTURE

Autonomous Robotics Complementing Human


WHY ME?

THE INDUSTRY CHALLENGES

- In a VUCA world (Volatility, uncertainty, complexity and ambiguity) **agility and flexibility** has become a primary enabler for competitiveness.
- To stay competitive and implement **viable "green" solutions** is needed to **continuously evolve** the **"responsiveness-to" customer**
- **Fast Evolving Manufacturing Technology Development** - No single actor has all the required capabilities to keep up with the rapid progress in technologies.
- Global situation brings more challenges from the **security of supply perspective**
- **Digital divide with supply chain & Small and medium size enterprises (SME)** in terms of competence, resources and investment.

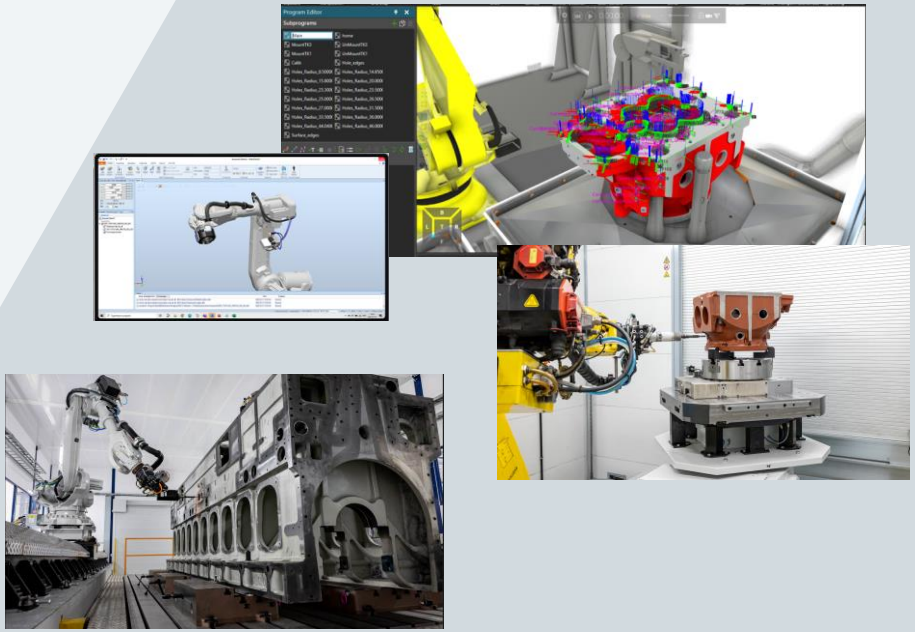
INCREASING AUTOMATION AND LARGE SCALE INVESTMENTS

WARTSILA REFERENCE CASES

ADVANCED FLEXIBLE AUTOMATION SYSTEMS

- One integrated system for all robot cells with a ONE PIECE FLOW control
- Process material flow by using autonomous AGV, FMS, gantry robots
- Full automated Large Component system (Machining robot automation, measurements and engine block assembly System)

INTELLIGENT MACHINING, PROGRAMMING & AI BASED QUALITY CONTROL



- AI enhanced Feature based offline programming
- Autonomous Tool strategy selection
- Data analytic for tool behaviour and effect to process optimization

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SO HOW TO CAPTURE BENEFITS?.... → TECHNOLOGY IS JUST AN ENABLER

THE FUTURE STANDS ON THREE PILLARS

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Being SMART

- Insightfulness and adaptability to drive transformation
- Based on three pillars

People & Mindset

Knowledge Sharing for Creativity and Growth

Technologies

Smart Assets Sharing , Utilization & Interconnection

Transparency & Interconnection

Share problems, information, platform and power of data

NETWORKED COLLABORATIONS

Enabled by advanced autonoumous systems

PEOPLE & MINDSET:
NEW COMPETENCIES

Standard Digitized Traditional Manufacturing
"Silos" of Expertise

Information Management

Manufacturing Engineering & Tecnology

Technology Suppliers (NO Partner)

Data **Scientist**

Smart Intelligent Manufacturing
Hybrid Competencies

Information Management

Data **Scientist**

Manufacturing Engineering

Ecosystem Partner

Flexibility and connectivity

Emerging Technologies

Smart Manufacturing Ecosystem

Hybrid competencies

THIS IS THE LAYER TO VALIDATE AND FIND VALUE IN TECHNOLOGY.

TECHNOLOGY COMPLEMENTING HUMAN

TRANSPARENCY & TECHNOLOGY TO SUPPORT E2E VALUE

EXTENDED ENTERPRISE - OPEN SMART MANUFACTURING ECOSYSTEM (OSME)

- **Sustainable Resilient and Flexible Manufacturing**

  From «Siloed Enterprise» to «**Extended Enterprise**» → customers, supply chain and other local SMEs deeply connected and the data flow shared.

- **Open** Ecosystem → connecting technologies & digital platforms **to** share knowledge, expertise with **high level of trust**
- **Extend** "industrial ecosystem" to other industries → "**network of companies**" with **data flowing** and **value created at network level**
- **Connect** the various realities of excellence in a Physical Hub (STH) → **experiment and grow faster**

SHARING TECHNOLOGIES & KNOWLEDGE

FAME AM CAMPUS - A NETWORK FOR GROWTH

FAME
Finnish Additive Manufacturing Ecosystem
BUSINESS FINLAND
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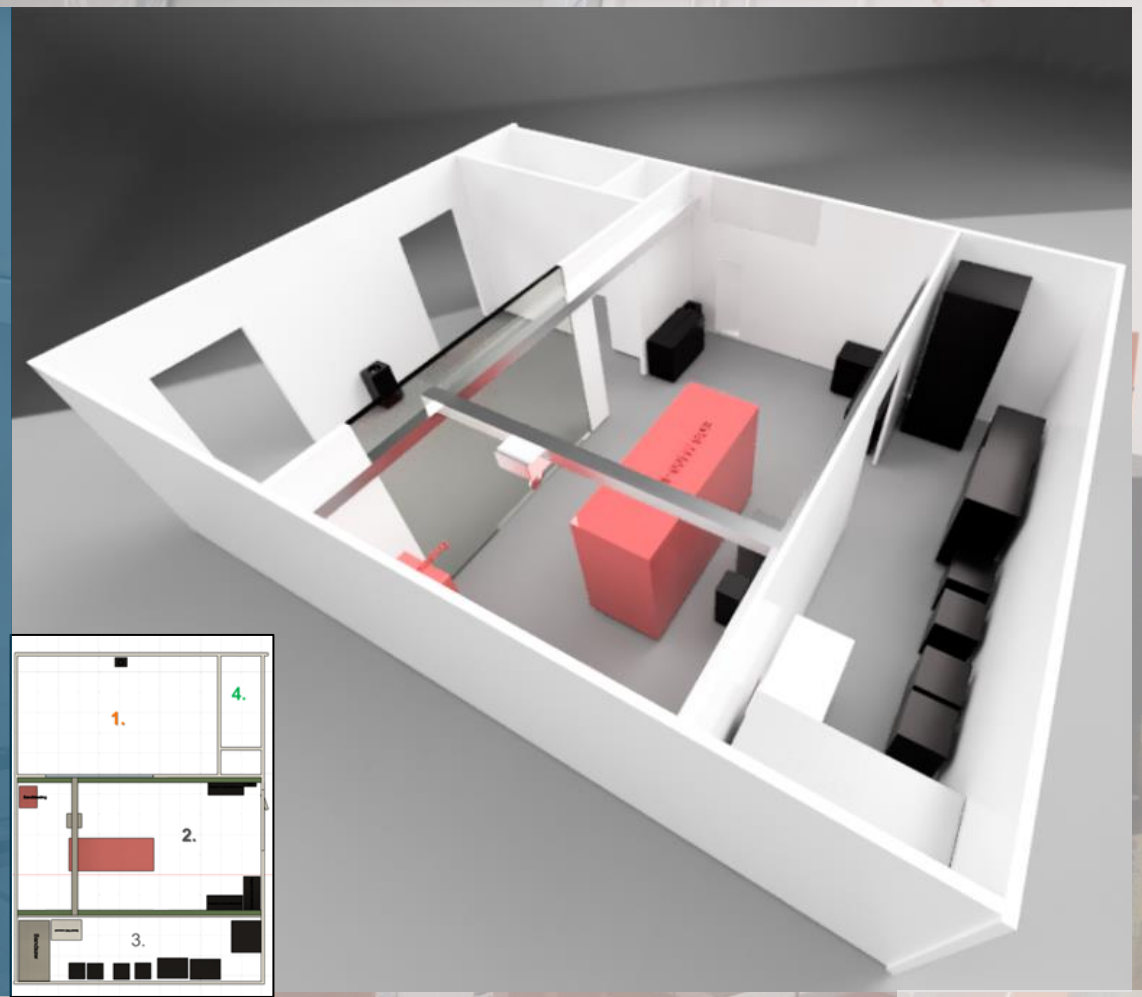
- Share assets costs & risks for growth
  - Conduct focused experimentation
- Co-creation space where possibility to set for “zero series” prototypes, prepare recipes for the go to serial
- Get people together from different companies, establishing network, inspiring each other
- Competitive edge on the market for keeping & growing the manufacturing industry in Finland



MPD MANUFACTURING PERFORMANCE DAYS

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AUTONOUMOUS ROBOTICS WITH AN HUMAN CENTRIC APPROACH

THE CHALLENGES FOR THE FUTURE

- **Focus on networked systems** and **share data & information** to generate value → focus of new technology should be to support **seamless extended enterprises** to get immediate value
- **AI** and Machine learning to **speed up the decision making**
- **Technology to foster experimentation** and support **collaborative HUB -** shared **co-creation and technology space** and focus on **sustainability**
- Shifting from being simple technology provider to "**new «shared» model as a service**" **focusing on lifetime**