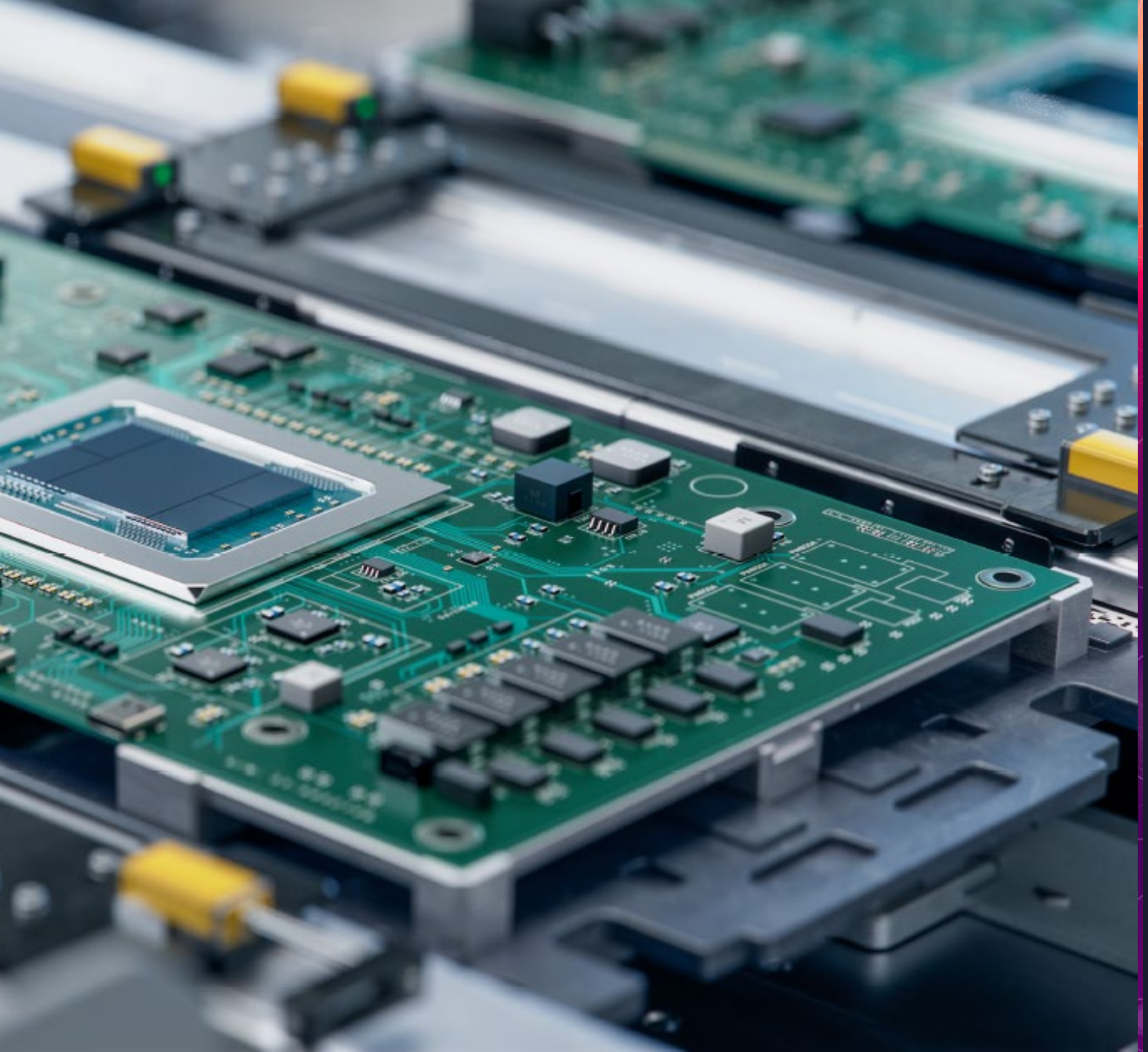
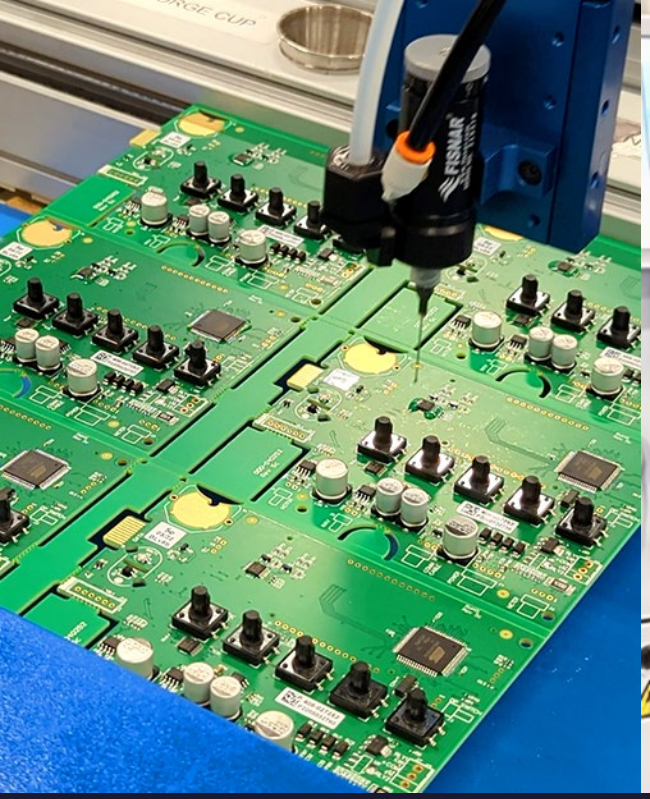


The Power of Automation and Value Stream Mapping



Introduction

- Paul Schwanbeck, Vice President
- Pro-Active Engineering LLC
  - Custom Electronics Design and Manufacturing
  - Emphasis on Quality and service
- Pro-Active Evolution – How has Automation Evolved over the years
- Video

Agenda

- Process Improvement & Lean Manufacturing
- Automation
- Value Stream Mapping (VSM)

Process Improvement & Lean Manufacturing Thinking

Value-Added Activities

1. Customer Impact
2. Transformation
3. Revenue Generation

Examples of value-added activities include assembling components, customizing a product to meet a customer's specifications, and performing quality checks that prevent defects from reaching the customer.

Non-Value Added Activities

1. Customer Indifference
2. Time and Resource Drain
3. Elimination Potential

Examples of non-value-added activities, or types of waste, include excessive waiting, overproduction, unnecessary transportation, unnecessary inventory, defects, and excessive motion (e.g., excessive walking or searching for tools).

Process Improvement & Lean Framework Goal

- Identify and eliminate as much non-value-added activity as possible to streamline processes, reduce costs, improve quality, and increase efficiency.
- Optimize value-to-waste ratio leading to a more customer-focused, competitive, and sustainable operation.

Automation

Advancement in robotics, AI, and machine learning are enabling machines to match or outperform humans in a range of work activities

3 fundamental perspectives when considering automation:

- What automation is *making possible* with current technology and *likely to make possible* as the technology continues to evolve
- What *factors besides technical feasibility* to consider when making decisions about automation
- Where—and how much—to automate in order to best *capture value from automation over the long term*.

Other factors to consider:

The benefits beyond labor substitution and the cost of developing and deploying both the hardware and the software for automation

Automation

Evaluate maturity of operations to determine the best approach to capture full long-term value impact.

- Biggest "bang for the buck"
- Largest reduction in lead time or inventory
- Biggest impact to the customer
- Highest probability for success
- Most visible to stakeholders
- New product or service line
- Volume or quantity

Automation

4 Stages of Automation Maturity

Low maturity	There is limited infrastructure for employing automation
Mid-maturity	There is significant automation infrastructure in place, but it uses only a fraction of the potential
High maturity	There is full utilization of traditional automation infrastructure on the manufacturing floor, but not employment of cutting-edge automation technology and realization of potential of automating managerial, support-function, and back-office tasks.
Best-in-class	Full potential of automation is captured with latest technology across all spectrums of the operation.

Value Stream Mapping

Optimize the flow of materials, information, and activities required to deliver a product or service to a customer

Provides a detailed representation of a current or future state of a process, allowing organizations to identify and eliminate waste, reduce lead times, improve efficiency, and enhance overall performance

Key components:

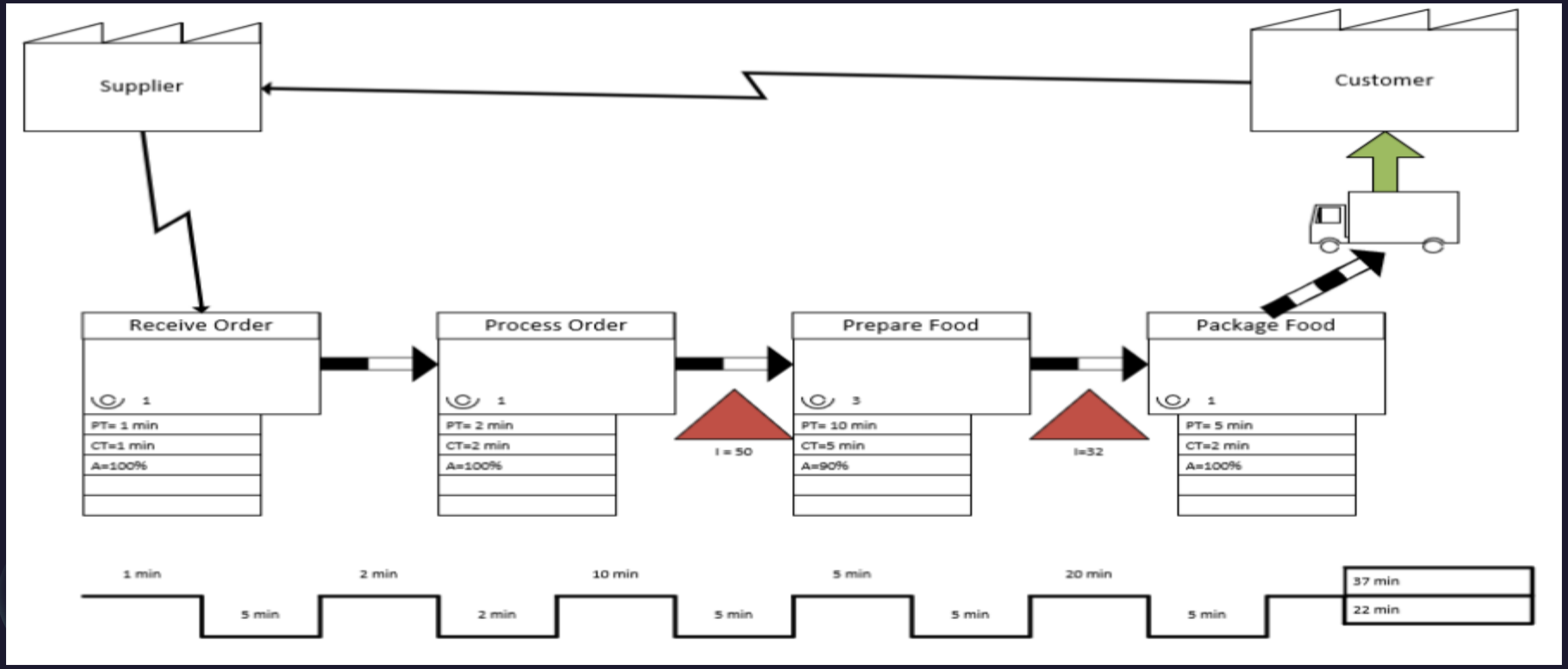
- Identifying Value Added & Non-Value Added Activities
- Process Mapping
- Current State vs Future State
- Data Collection
- Value Stream Analysis
- Improvement Planning
- Visual Management
- Customer Focus

VSM Flow

- VSM provides clarity for us by charting the flow of work through the different steps involved in the development/delivery of a product or service.
- Flow is ‘good’ when work moves steadily and predictably in relation to customer demand and supplier capacity.
- Flow is ‘bad’ when work starts and stops erratically and frequently.
- By visualizing flow, VSM helps organizations move from bad to good through improvements in productivity and reduction in waste—leading to value creation for both you, as the supplier, and your customers.

VSM Example

PT = Process time CT=Cycle time and A= availability or uptime
stores=Triangles



Value Stream Mapping & Automation

How they work together:

- Identifying Inefficiencies
- Data-Driven Decision Making
- Process Standardization
- Reducing Lead Times
- Enhancing Visibility
- Streamlining Handoffs
- Continuous Improvement
- Resource Allocation
- Employee Empowerment
- Risk Mitigation

Summary

- Both Automation and Value Stream Mapping enhance operational efficiency and drive continuous process improvements.
- VSM provides insight and strategy for optimizing processes, while automation offers the means to execute efficiency
- Combining both can achieve higher levels of operational excellence, reduce costs, improve product and service quality, and stay competitive

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ENGINEERING

Thank You

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