

AVEVA

A woman in a yellow hard hat and safety glasses, wearing a red and black plaid shirt and yellow earplugs, holding a tablet in a factory setting. The background shows a large industrial facility with various equipment and structures.

Lean management goes digital

The benefits for discrete manufacturing

Table of contents

1. Introduction	3
2. What is digital Lean management?	5
3. Why implement digital Lean management?	7
Value drivers	8
Why should you care?	9
Potential to double improvement & savings	10
4. How AVEVA can help	11
Key features	13
Modules	14
Digitalized Lean tools	17
5. Case study	19
6. FAQ	21
7. Conclusion	23



Introduction

Introduction

What is digital
Lean management?

Why implement digital
Lean management?

How AVEVA
can help

Case study

FAQ

Conclusion



Introduction

Become Lean practitioners without being Lean experts

In a digitally changing world, manufacturers must systematically improve the effectiveness and flexibility of their operations to maintain or elevate their competitiveness. Lean management is a proven practice to establish a continuous improvement culture and drive organizations towards higher operational performance.

In this E-book, we'll show you how leveraging digital technologies to empower people with information, new insights, and collaboration tools accelerates the gains of Lean management and continuous improvement practices.

In many manufacturing plants, paper or Excel sheets still seem to play an important role for managing work, providing work instructions, and reporting work completed. Moving to a paperless manufacturing environment offers many benefits beyond eliminating time-consuming, labor-intensive, and error-prone paper-based systems with a digital equivalent. Manufacturers can quickly improve their productivity and entitle employees with a new level of actionable, relevant information and detailed production history data.

Over the next sections, you will learn how AVEVA Discrete Lean Management provides a set of digital tools to help you quickly adopt proven, industry-standard Lean practices to reduce production losses and increase discrete production line effectiveness.



What is digital Lean management?

[Introduction](#)

**[What is digital
Lean management?](#)**

[Why implement digital
Lean management?](#)

[How AVEVA
can help](#)

[Case study](#)

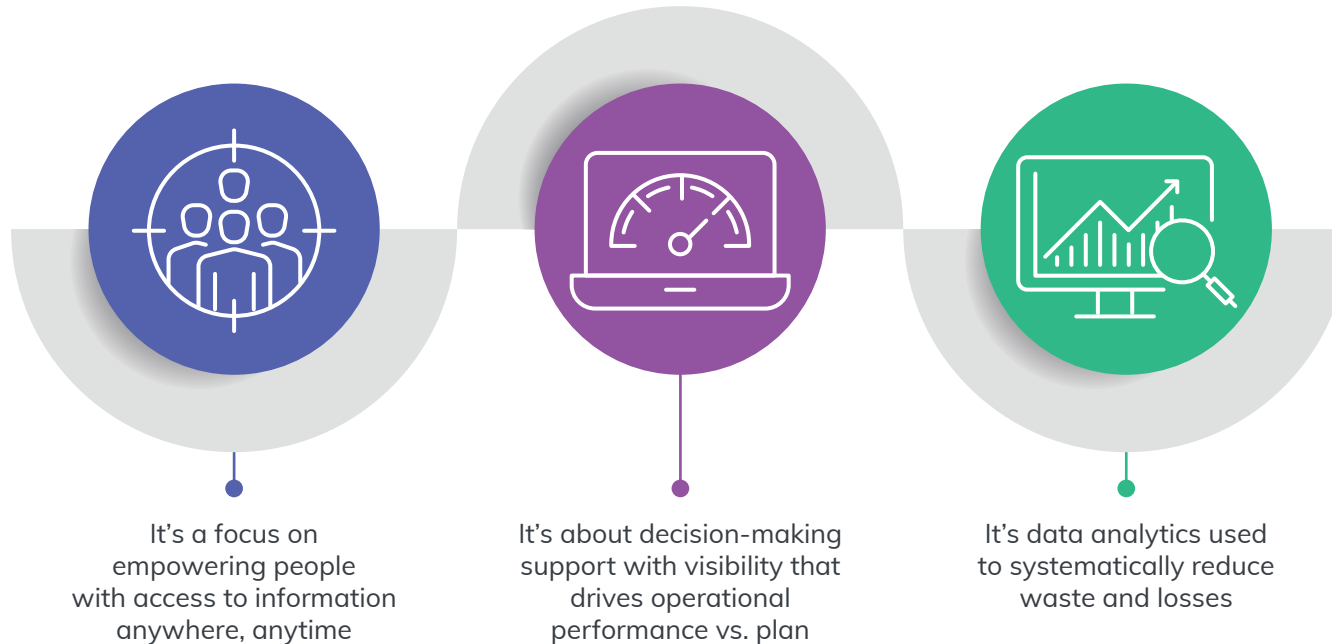
[FAQ](#)

[Conclusion](#)



What is digital Lean management?

Digital Lean management needs just one power tool: your people



It's accelerating Lean management transformation*



Performance increase of up to **50%** or more



Up to **30%** or more in cost savings



Faster payback time

*Source: Bain & Co. and Arthur D. Little, AVEVA Discrete Lean Management helps to improve your manufacturing operations with a set of digital Lean management and operational excellence tools

Why implement digital Lean management?

[Introduction](#)

[What is digital
Lean management?](#)

**[Why implement digital
Lean management?](#)**

[How AVEVA
can help](#)

[Case study](#)

[FAQ](#)

[Conclusion](#)



Value drivers

Digital Transformation Enablement

Replace inaccurate and decentralized paper records by digital information

Operational Effectiveness Improvement

Use various lean tools to work towards elimination of waste like downtime, motion & waiting time, & non-value-added data handling

People Empowerment

Empower stakeholders to react effectively to different scenarios and identify opportunities for improvement

Lean Manufacturing Enablement

Provide a set of lean tools to enable the manufacturers to practice lean manufacturing & cultivate a continuous improvement culture

- Digitalized Lean tools
- Platform for work order management and execution
- Real-time data acquisition and visibility of production equipment utilization, performance, and production progress
- Tools for performance evaluation and analysis
- Lightweight, scalable, and easy to deploy

Why should you care?



Machine Operator

Run the production machine with high efficiency and quality

- Minimize paperwork – filling out data and forms for different stakeholders
- Rapid production issues, escalation, and response
- Operator can focus on producing in high efficiency and quality



Production Supervisor

Coordinate productions to optimize shift output and resolve problems, if any

- Minimize paperwork – WO planning, distribution and gathering, data consolidation
- Overview of current production and machine status for every piece of equipment
- Supervisor can focus on coordination and shift performance optimization



Engineer

Analyze and eliminate production losses through continuous improvements

- Data and information is ready before they step into the plant
- Engineer can spend the whole day on analysis, continuous improvement, and problem solving (value-added activities)



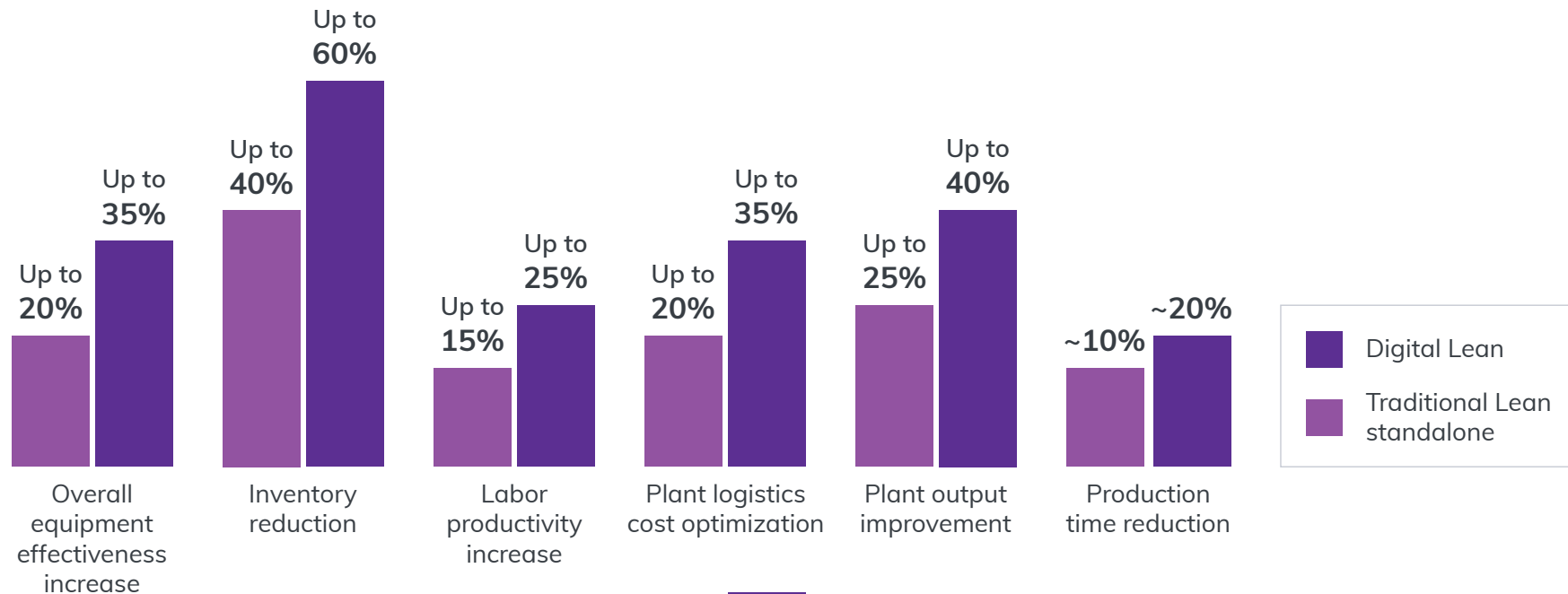
Manager

Strategize to optimize department performance

- Big data, sorted by all the necessary categories and desired period, is available anytime at their fingertips
- Manager can get the data and information fast for well-informed decision-making and strategizing to optimize the department or factory

Potential to double improvement and savings

A digital Lean approach can double the savings of traditional Lean efforts



Combining digital and Lean initiatives can reduce costs by up to 30% vs. 15% for traditional Lean efforts

*Source: Digital Tools Can Double Lean Six Sigma Saving, Bain & Company Analysis 18th Apr 2019

How AVEVA can help

[Introduction](#)

[What is digital
Lean management?](#)

[Why implement digital
Lean management?](#)

**[How AVEVA
can help](#)**

[Case study](#)

[FAQ](#)

[Conclusion](#)



How AVEVA can help

- AVEVA Discrete Lean Management provides a set of easy-to-use tools for the digitalization of production operations management. It also streamlines lean practices for discrete assembly and value-added processes in line-oriented volume products manufacturing.
- The ready to use user interface functionality offers specific support for manual work execution and labor with work order management, digital work instructions, and production reporting.
- Integration with automation systems and any type of traditional, smart, or IoT-enabled device can be used for automatic data collection and event notifications. It also keeps operators free from manual data collection tasks.
- The software offers fast returns, as it can be quickly configured to individual plant requirements and to integrate with plant and enterprise systems.



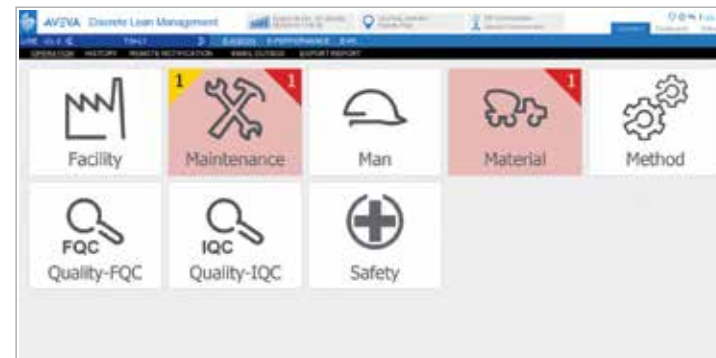
Key features

- **Standardization** – The same solution can be configured to different plants without modifying the source code (within the set of features provided by the solution).
- **Scalability** – Fully configurable during downtime and for Andon issues, work instructions, and the number of areas, lines, and workstations in a plant; unlimited thin clients including runtime stations for automatic line, thin clients for manual line, plant dashboard, web-browser-hosted interface.
- **Localization** – New language can be added with .csv file upload.
- **Interoperability** – The system provides standard interfaces (OPC, SQL) in addition to native drivers to various industrial protocols, enabling built-in integration with external equipment and systems such as:
 - PLCs and automation devices (Various TCP protocols including MODBUS)
 - Email Server (SMTP)
 - RFID Card Readers (Authentication)
 - Barcode readers (Product ID)

The modules

Andon

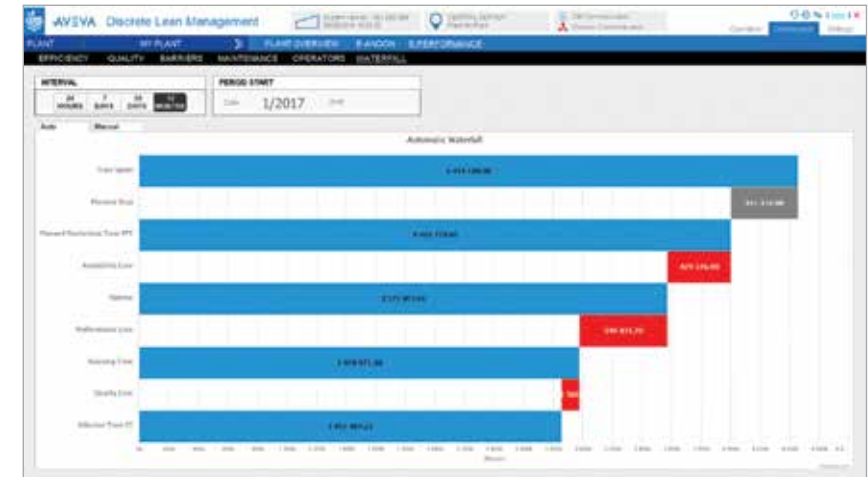
- Production issues notification, triggering fast response to prevent and reduce downtime and production loss
- Reports, acknowledges, and normalizes issues; escalation rules based on custom configuration
- Remote notification via SMTP Server (Email and Text Messages)
- Dashboard of current status (Line, Area and Plant level); history dashboards for operational management and continuous improvement



The modules

Performance

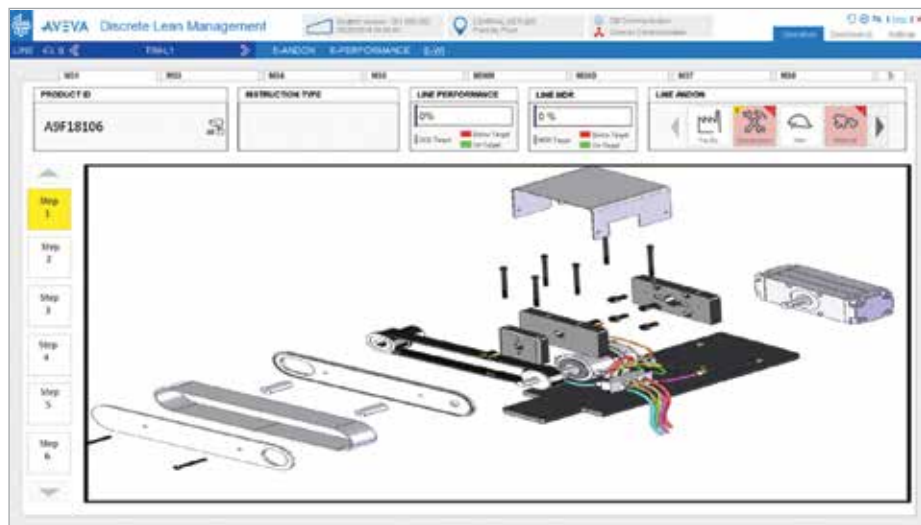
- Capture utilization and production data on production lines
- Reason entry interface for utilization loss and defect
- Automatic production data collection on automatic lines – provides native drivers to various industrial protocols and standard interfaces for integration with automated equipment, including MODBUS & OPC UA
- Performance evaluation and analysis – provides a dashboard for different KPIs by location (plant, area, and line level), interval (hour, day, and month), and product:
 - Efficiency – Overall Equipment Effectiveness (OEE) and Overall Labour Effectiveness (OLE)
 - Quality – Manufacturing Defect Rate (MDR)
 - Barriers –downtime and quality issues deployment (pareto)
 - Maintenance – MTBF and MTTR
 - Operators – operators tracking



The modules

Work instruction

- Centralized repository for work instructions (PDF documents and mp4 videos)
- Displays working instructions to the operators based on the product
- Working instructions steps are based on line or workstation and product reference relationship
- Number of steps for each workstation can be customized based on product combination
- Each step can be associated with a specific work instruction for easy navigation and management



The modules

Work order management

- **Work order management** – Allocate orders to line minimizing changeover based on priority, capacity, and line performance (OEE/OLE)
- **Work order execution** – Interface to execute work order and collect work order data
- **Full order operation log** – Change allocation, change priority, mark as suspended, released, on hold, closed, etc.
- **Data exchange with ERP** – Optional order release and order confirmation data exchange with ERP system

AVEVA Discrete Lean Management

REFRESH

Order	Line	MO	Product	Product Family	Qty	Qty Remaining	MO Current Date	Release Date	Order Date	Comments
1	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
2	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
3	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
4	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
5	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
6	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
7	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
8	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
9	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
10	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	

NET ALLOCATED ORDERS

Order	Line	MO	Product	Product Family	Qty	Qty Remaining	MO Current Date	Release Date	Order Date	Comments
1	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
2	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
3	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
4	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
5	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
6	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
7	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
8	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
9	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
10	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	

OPERATION

Status	Prod	MO	Product	Qty
Release	2	448342095	A2	2400
Running	2	448342095	A2	2400
On Hold	1.1	4483421175	A2	50
On Hold	2	4483429171	A2	50

MO 4483427354 2 Qty Remaining 17552400

Product A5

AMT Pass, OK, Details, Suspended, Confirmation

BARRIERS

Quality Detect	Qty
Deep scratch	4
Multifunction	11

AVEVA Discrete Lean Management

PERIOD START: 7/1/2019 PERIOD END: 07/26/2019

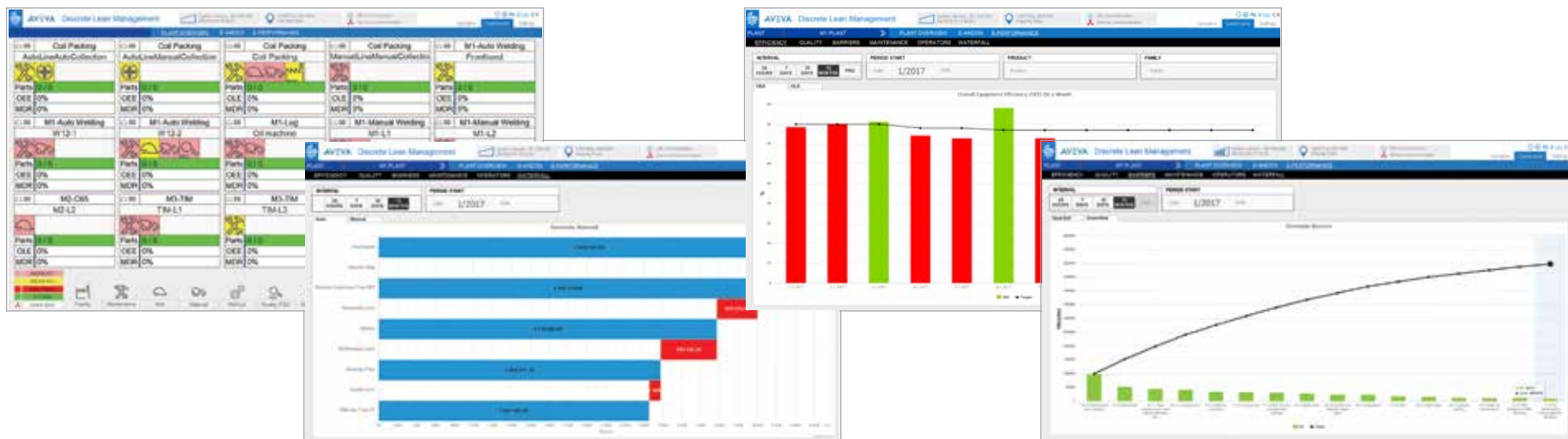
ORDER ORDERS

Order	Line	MO	Product	Product Family	Qty	Qty Released	MO Current Date	Release Date	Order Date	Comments
1	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
2	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
3	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
4	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
5	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
6	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
7	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
8	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
9	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	
10	1	448342095	A2	Product Family A	2400	2400	11/20/2017	11/20/2017	11/20/2017	

The modules

Dashboards & reports

- Data is consolidated and aggregated automatically, and can be displayed by KPIs, period, or assets (equipment, line, area, plant)
- **Plant overview dashboard** – current production progress and equipment status
- **KPI dashboard** – production, performance, maintenance, quality; root cause analysis and reporting through waterfall chart, Pareto, bar, and line charts
- **Report** – full details can be exported as Excel reports for data handling flexibility e.g. pivot table etc.



Case study

Introduction

What is digital
Lean management?

Why implement digital
Lean management?

How AVEVA
can help

Case study

FAQ

Conclusion



Case study: Schneider Electric

Goals

- Digitize Lean manufacturing practices and work information to improve performance across 100 global manufacturing sites as part of Schneider Electric's Smart Factory Programme.
- Standardize measures of equipment and labor effectiveness to generate best practices and global benchmarks.
- Enable faster decision making, issue escalation, and analysis through collection and visualization of production data.
- Improve customer satisfaction by improving product quality and on-time delivery.

Challenges

- Use of legacy systems and individual plant solutions resulting in high IT costs and non-standard data.
- Heavy reliance on paper-based processes and manual work instruction slowing issue response.
- Lack of visibility on shop floor operations for decision-making and performance analysis.
- Availability of a manufacturing solution able to handle Schneider Electric's wide variety of manufacturing lines and products.

Results

- Deployed AVEVA Discrete Lean Management to more than 70 manufacturing sites.
- Increased productivity 10% due to downtime mitigation.
- Enabled 70% faster response time through automated escalation.
- Increased worker effectiveness by eliminating paper-based work order management and instruction.
- Eliminated 90% of paperwork.



[Read the full story](#)

“ AVEVA software solutions provide tremendous value to Schneider Electric factories. We see productivity, uptime, and efficiency improvement, and we're deploying to our other remaining sites. ”

Sylvain Gire, Vice President, GSC Transformation-Industrialisation, Schneider Electric

FAQ

Introduction

What is digital
Lean management?

Why implement digital
Lean management?

How AVEVA
can help

Case study

FAQ

Conclusion



FAQ

We don't have a well-defined digital transformation roadmap. How does AVEVA Discrete Lean Management fit?

AVEVA Discrete Lean Management is a great way to start the digital transformation journey, with predefined digital operation management contents based on industry best practices to increase productivity, flexibility, and reliability while lowering manufacturing cost. Start the digital transformation journey quickly and easily to prove its value before making a big investment. Use this initial project to identify the real issues (uncovered by data) and get the values. Fine-tune your plan according to the issues revealed, then prioritize investment in the areas that can make the biggest impact.

We know where to start our Digital Transformation journey, but we have budget/time constraints and we're concerned about risks. How can AVEVA Discrete Lean Management mitigate this?

Fully customizable CAPEX projects usually come with high risk and high levels of uncertainty. 98% of mega-projects are delivered late and 80% are over budget due to poorly managed risk, high levels of ambiguity, and scope changes throughout the course of the project.* AVEVA Discrete Lean Management is a standard solution with clear scope. It is easy to deploy, and adds value fast with low risk and low levels of uncertainty, enabling better chances of on-time project delivery within budget.

We practice continuous improvement methodology (Lean Six Sigma or TPM), but in traditional way. How does AVEVA Discrete Lean Management integrate with this?

AVEVA Discrete Lean Management provides digital Lean tools allowing you to double the savings of traditional Lean efforts. It lightens your stakeholders' workload while delivering values by minimizing paperwork, automating data consolidation and handling, offering tools for performance visualization and evaluation.

How can I protect my investment for future changes?

AVEVA Discrete Lean Management is subscription based, and since it is use-as-it-is software, the deployment will be fast, engineering costs will be much lower, and the configuration data is easily reusable in future projects. With a subscription and AVEVA Flex, the OPEX and Flex credit can be fully transferred to another solution when going further into your digital transformation journey.

*McKinsey

Conclusion

Introduction

What is digital
Lean management?

Why implement digital
Lean management?

How AVEVA
can help

Case study

FAQ

Conclusion



Conclusion

AVEVA Discrete Lean Management is designed to help companies and plants with a low digital maturity in production operations to:

- Digitize and/or automate their production reporting for measuring and visualizing performance KPIs in real-time, and for enabling data-driven continuous improvement.
- Minimize the impact of production problems by enabling team collaboration in response to issues through real-time electronic notifications, escalation via email, and visibility of critical status information on dashboards and mobile devices.
- Improve their productivity and reduce human error by digitalizing their current paperwork for work order management and work instructions.

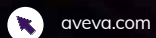


AVEVA

We'll take you there™

For more information, please visit:

aveva.com/en/products/discrete-lean-management



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About AVEVA

AVEVA is a global leader in engineering and industrial software driving digital transformation across the entire asset and operational life cycle of capital-intensive industries. The company's engineering, planning and operations, asset performance, and monitoring and control solutions deliver proven results to over 16,000 customers across the globe. Its customers are supported by the largest industrial software ecosystem, including 4,200 partners and 5,700 certified developers. AVEVA is headquartered in Cambridge, UK, with over 4,400 employees at 80 locations in over 40 countries.

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