Turning insight into action

Why it’s time to embrace digital prescriptive maintenance

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Disruption is the new normal across all manufacturing disciplines – from automotive to high tech, to industrial equipment and consumer products.

New technologies and innovative approaches to old standards are changing the game – fast. And many digital trends – big data, artificial intelligence, robotic automation, and connected products – are merging to have great impact, especially regarding maintenance policies, processes, and procedures.

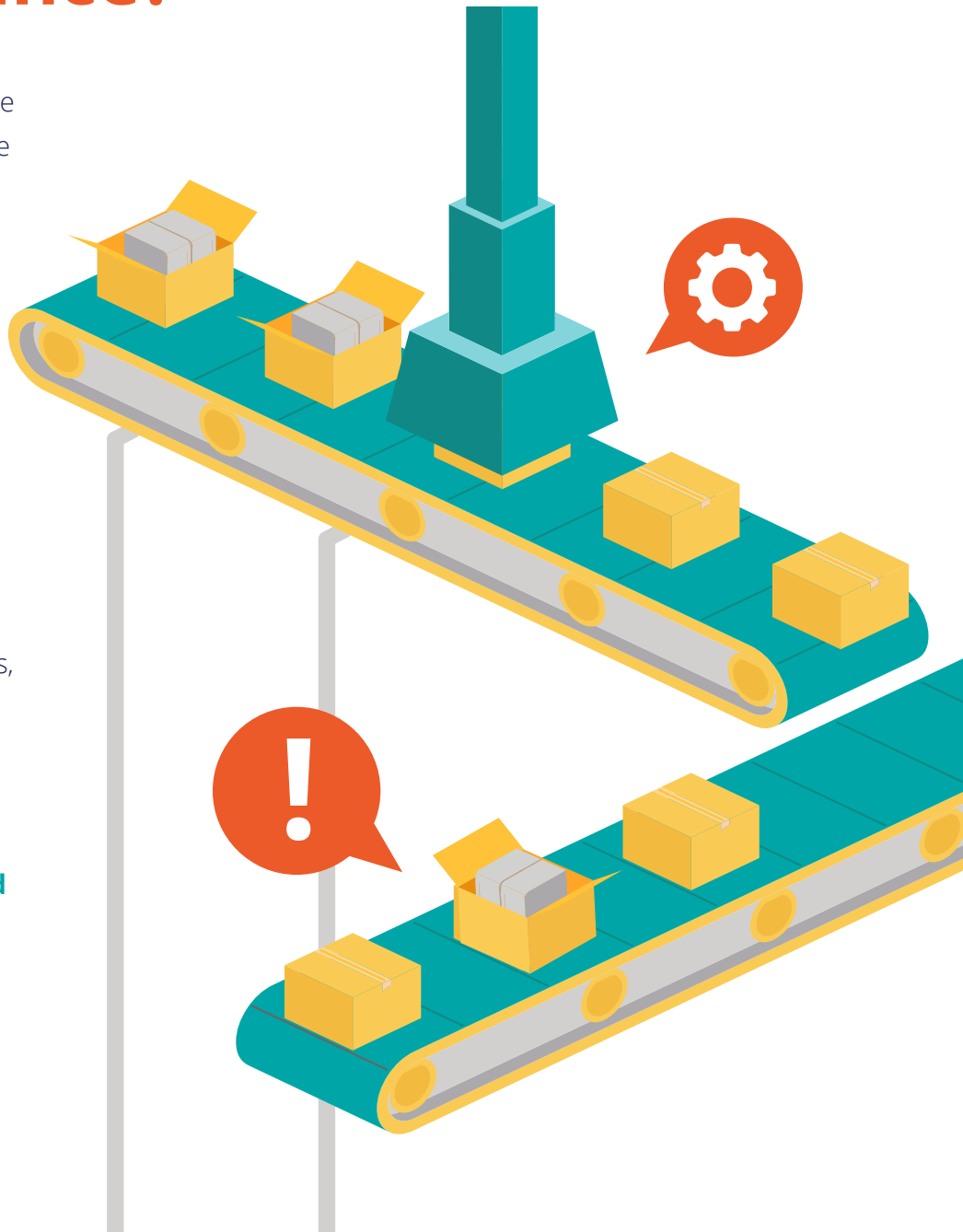
It's no longer enough to use descriptive analytics to explain the past or predict machine and process failures. Manufacturers need to be more prescriptive – to leverage data with the ability to understand, advise, and take action to drive value.

What is digital prescriptive maintenance?

Digital prescriptive maintenance (DPM) leverages technology to triage and troubleshoot problems, diagnose next steps, and take corrective and preventive actions. The core components of DPM include:

- Total productive maintenance
- Prescriptive data analytics
- Automated maintenance case management

Let's take a closer look at how these attributes form an effective DPM strategy.



Total productive maintenance

Total productive maintenance (TPM) refers to the practice of maintaining machines and systems to avoid breakdowns, slowdowns, and defects. TPM has its roots in the Toyota Production System[1], and has historically focused on improving overall equipment effectiveness. **A self-directed team environment engages manufacturers and operators to work together to prevent breakdowns, leading to improvements in product quality and customer satisfaction.** This practice has become vital to the end-to-end product manufacturing lifecycle.

Harnessing the power of data

Connected devices generate enormous amounts of information. Computers and sensors in machines can continuously record and stream data about their status, behavior, performance, and conditions. This creates exponentially more data than people or standalone applications[2]. But data is nothing without interpretation. The real value comes from analyzing it to make effective decisions and take the right actions.

In DPM, data analysis must go beyond description, to prescription. **Because of this distinction, systems integration is important: applications, databases, ERPs, connected device platforms, and other tools must all talk to each other.** This allows manufacturers to perform advanced analytics, proactively determining future actions to fix things right the first time – reducing downtime and maximizing uptime.

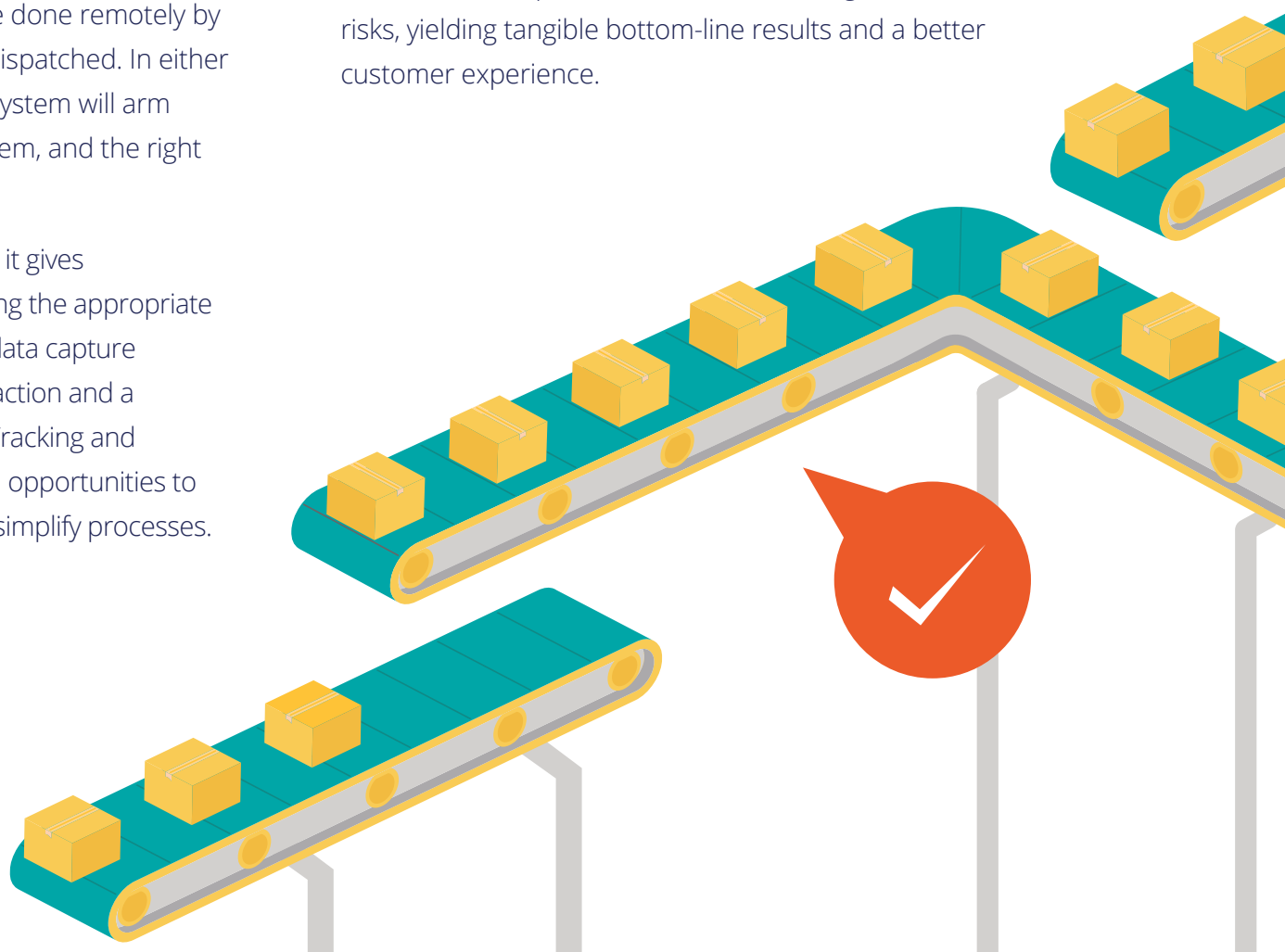
Case management

To effectively deliver the benefits of DPM, the underlying structure must be grounded in case management.

The word "case" refers to a piece of work being conducted to achieve a business outcome. A maintenance case involves multiple workers to which it can be assigned. In some situations, equipment maintenance or repair may be done remotely by software. In others, a technician may be dispatched. In either instance, an effective case management system will arm workers with information about the problem, and the right parts and tools to fix it.

Case management is essential for DPM, as it gives end-to-end visibility into processes, ensuring the appropriate responses and resolutions. Analytics and data capture process performance, providing a plan of action and a framework for continuous improvement. Tracking and resolution data point workers to additional opportunities to eliminate bottlenecks and streamline and simplify processes.

Most importantly, processes are no longer static or reactive: case management allows optimized, dynamic processes to be directly built into automated systems to drive improvements. In short, manufacturers can simultaneously improve cycle times, quality, productivity, and the customer experience – in turn reducing downtime costs and risks, yielding tangible bottom-line results and a better customer experience.



The end-to-end DPM strategy

Capturing business rules

Business rules guide decisioning and policies across organizations so that end users and customers are effectively served. By using no-code application development, anyone inside or outside of IT – including business and operations analysts– can define and build these rules into the system. Although the processes and procedures that drive these objectives may be derived from many sources throughout an organization, capturing them directly ensures they won't be forgotten. **Case management enables insight that is discovered to become actionable.**

Collaboration and continuous improvement

Effective DPM involves continuous collaboration, and case management fosters this. Workers across an entire organization can leverage discussions and sync chats – all within the context of shared business objectives. Maintenance continuously improves from innovative idea exchanges and queries, while knowledge about the product or service is aggregated for reference and analysis.

Solving real problems with DPM

OnStar implemented Pega Customer Decision Hub™ using next best actions, predictive and adaptive analytics, and decision arbitration. OnStar can now better understand vehicle capabilities and deactivation at the end of useful vehicle life. The shift resulted in a projected **$33 million per year gain** from improved conversion, profit margins, extensions of customer lifecycle on new conversions, and reduced margin dilution.

Leading industrial manufacturer of agricultural and construction equipment

On the Pega Platform™, this Fortune 200 company's machine telemetry draws from collective intelligence gained through data from thousands of connected machines. Machine health data is now easy to read and understand, so a centralized team can take the appropriate action at the appropriate time to ensure peak performance. This has resulted in **improved customer success and satisfaction, with higher yield and productivity, and reduced maintenance costs**.

With Pega, Dell EMC introduced intelligent automated routing, allowing them to move from reactive and transactional service to proactive and predictive solutions support. Dell EMC instituted a swarming approach based on availability and skill sets to increase collaboration on resolving complex customer problems, and now **meets 98 percent of SLAs.**

Simply connecting machines and capturing massive amounts of data won't unlock new opportunities for manufacturers. Value is created by taking the right actions at the right times, and a shift in strategy is required to stay ahead of the curve.

Predict potential breakage and fix it before it impacts the customer or your bottom line. Respond instantly when things go wrong and dispatch a team with the skills, tools, and insights needed to fix things fast.

The new standard of digital prescriptive maintenance allows organizations to unify objectives and workers, reduce downtime and costs, and improve customer satisfaction.

Sources:

1 Toyota Production System. http://www.toyota-global.com/company/vision_philosophy/toyota_production_system

2 Khoshafian, S. (2010). "Predictive BPM." Published in 2010 BPM and Workflow Handbook. Published in association with the Workflow Management Coalition (WfMC). Edited by Layna Fischer. http://futstrat.com/books/handbook10.php

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