

Reinvent your
supply chain with
digital process
mining and
digital twins

The EY logo consists of the letters 'EY' in a bold, white, sans-serif font. A yellow diagonal line is positioned above the 'Y'.

Building a better
working world

Reinventing the supply chain with digital process mining (DPM)

Today's global supply chains are evolving from linear models into complex networks that rely on the dynamic and seamless transfer of information and materials. Anticipating disruptions early on in the supply chain is key to improving efficiency.

Traditional tools are failing to keep up with organizational demands for dynamic adjustment and agility. And amid this evolution, supply chain organizations are being challenged to further improve visibility, obtain real-time process outputs to optimize their strategy, anticipate disruptions and respond appropriately when they occur. In effect, organizations are feeling the pressure to transform into agile entities that can more readily accommodate change.

Relying on traditional methods to address these challenges is inefficient (and insufficient) for various reasons:

- ▶ Conducting interviews and gathering data are prohibitively time-consuming. It requires stakeholders to be available, and for teams to manually input and structure the data for any value-added analysis to happen.
- ▶ Users have personal biases: the loudest voice may get the most attention.
- ▶ Data is prone to errors because of the human element: critical data may be overlooked or, worse, misstated.
- ▶ And above all else, these methods are not scalable, given the level of resource constraints and manual work required.

The evolution from linear to dynamic supply chains

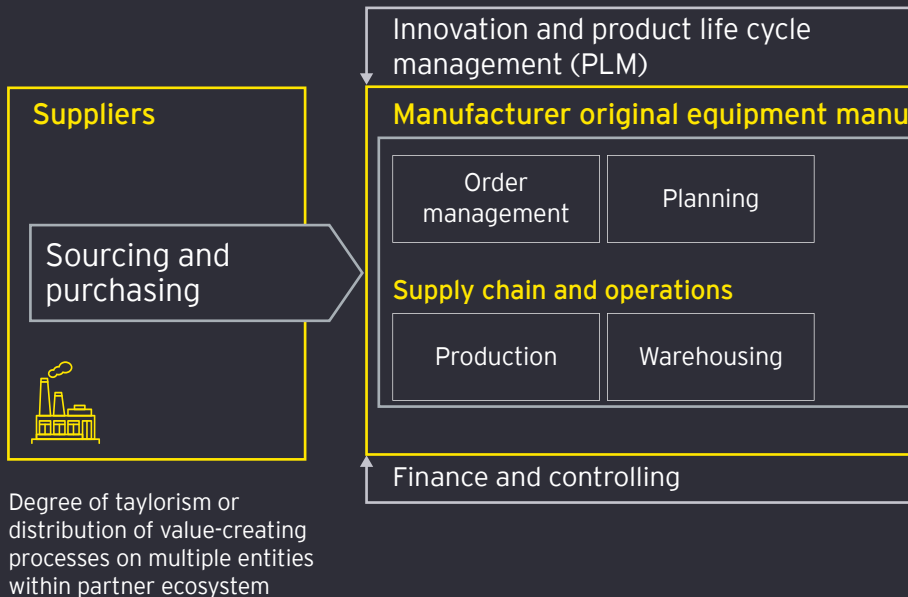
Cloud-based software platforms

Level of system and data integration, and usage of cloud-based IT systems

External systems integration

The old world: value creation within entities, on-premise information technology (IT)

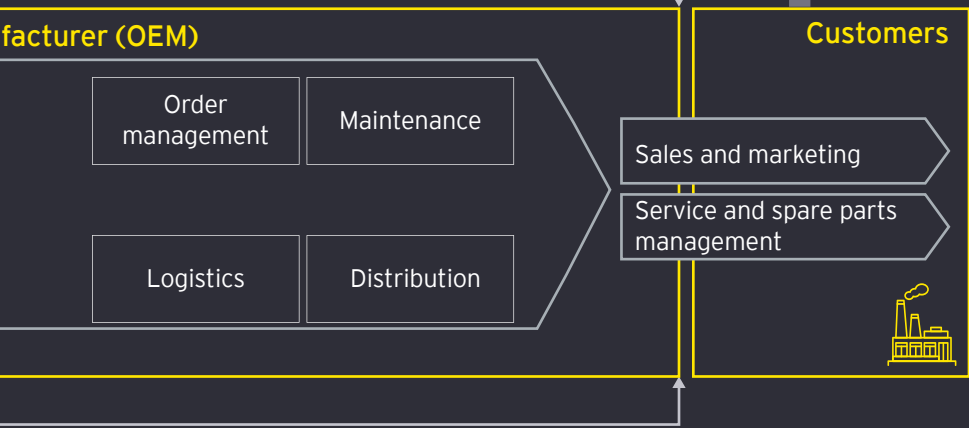
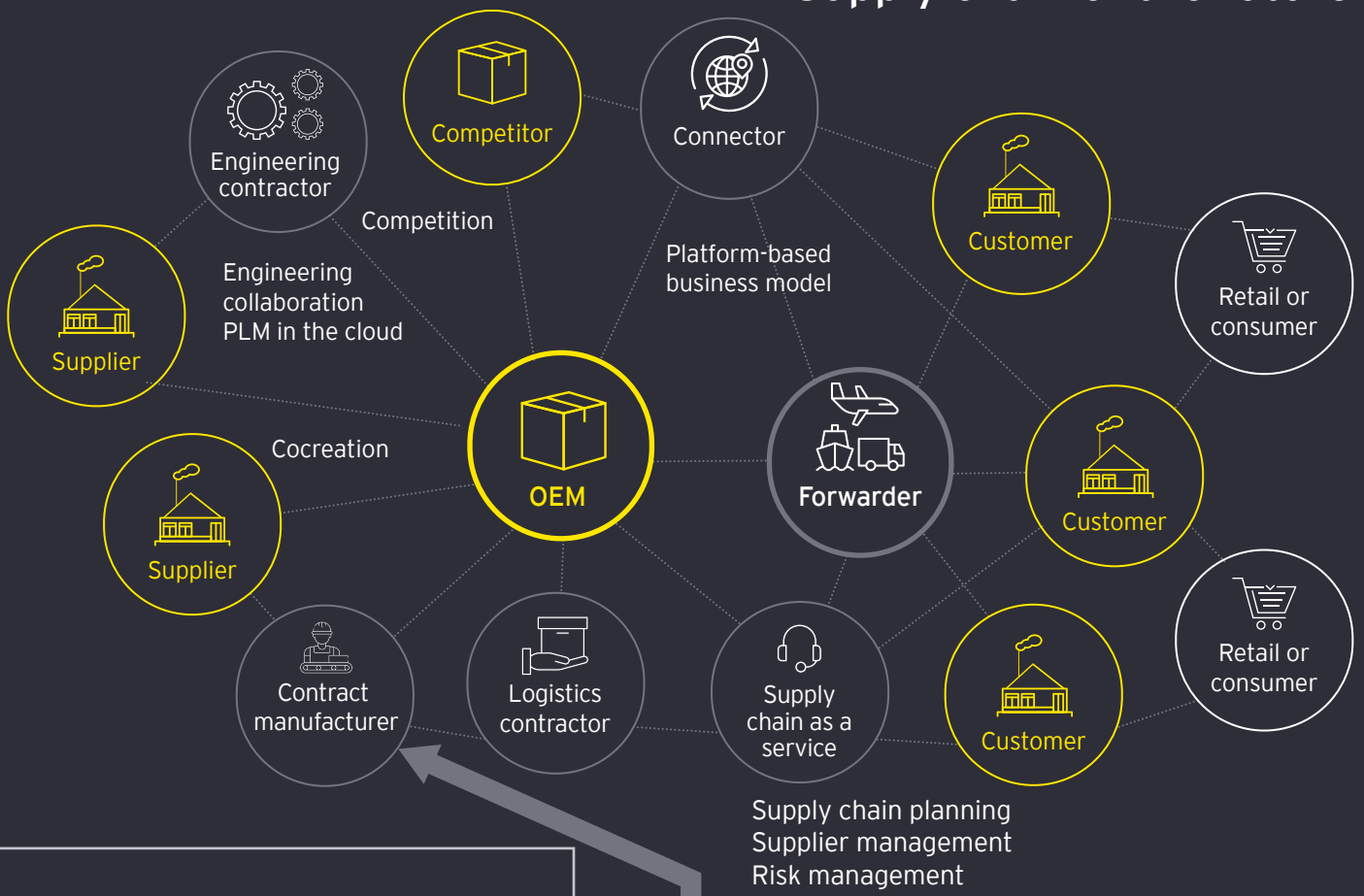
Traditionally, creators have been selling products and services through linear value chains. Companies were owning a dedicated part of the value chain, competing with competitors.



Internal business functions

Degree of Taylorism or distribution of value-creating processes on multiple entities within partner ecosystem

Supply chain of the future



The new world: ecosystems on cloud-enabled platforms

Digital ecosystems do not work linearly; they shape market networks and enable hybrid forms of cooperation and competition. These ecosystems create and serve communities, and harness their creativity and intelligence. Entities may play multiple roles in an ecosystem.

Addressing these challenges demands a reinvention of the supply chain. Organizations are increasingly turning to Industry 4.0 capabilities, such as digital twins, to do so. But to get there, the first step is to gather greater intelligence about the supply chain, driven by DPM – a vital tool in every organization’s toolbox. By identifying process outputs, trends and bottlenecks in real time, DPM capabilities equip organizations with insights that help decision makers implement targeted improvements, anticipate disruptions and build supply chains to fulfill their customer needs. With this intelligence, organizations can begin to further build out their Industry 4.0 capabilities.

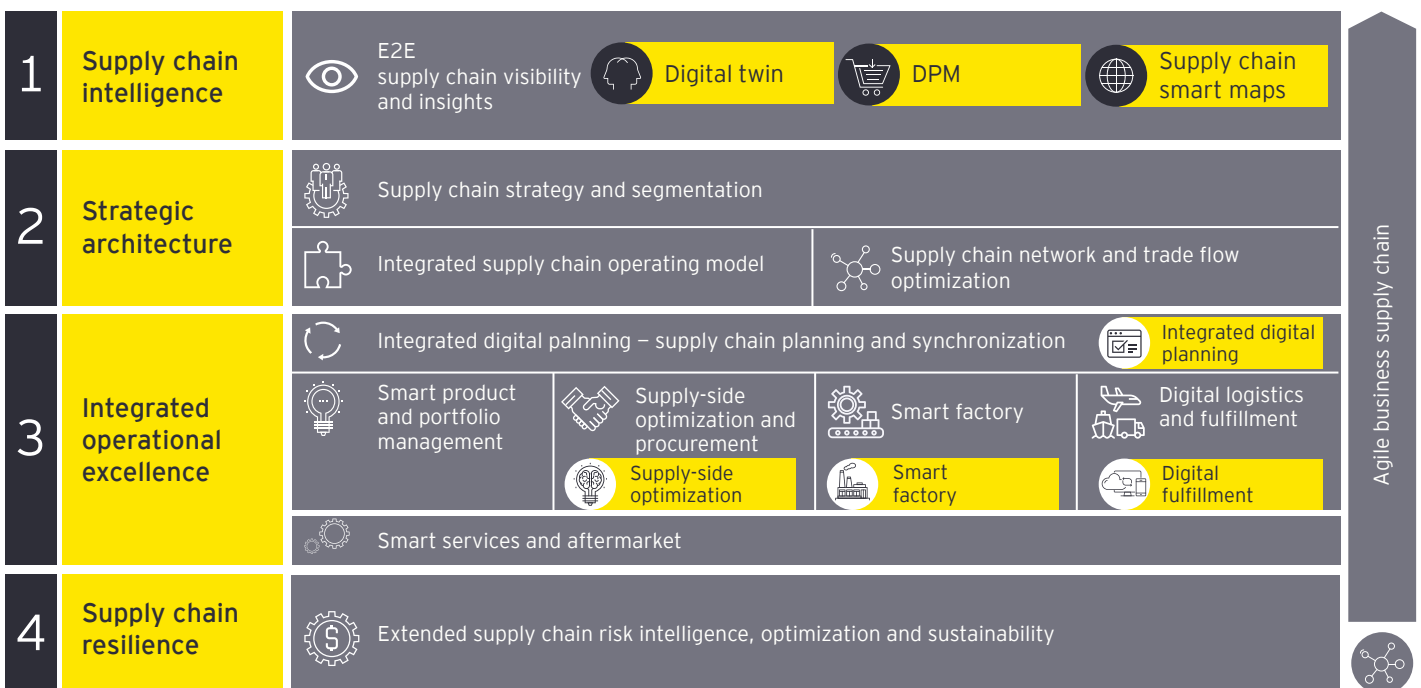
Through a digital twin, companies can experiment with a virtual replica of their end-to-end (E2E) supply chain, visualized with real-time process outputs, to monitor, simulate and optimize their performance. A digital twin is created through gathering inputs using technologies, such as internet of things, artificial intelligence and machine learning, augmented and virtual reality, as well as cloud capabilities. Value-stream mappings and look-back analyses enable deeper assessments of the historical performance of a supply chain’s value streams, such as order-to-cash and procure-to-pay. And with predictive analytics, shortfalls and disruptions can be anticipated. The digital twin simulation can, for example, help decision makers mitigate the impact caused by a shortage of raw materials amid a trade dispute or the effect a natural disaster, such as hurricane, while still fulfilling their customer commitments successfully.

If a business wants to commission new equipment to add capacity, it can look at a simulation of capacity throughput with a digital twin to gauge the effectiveness of its plans. Regardless of the situation, the digital twin enables greater understanding of the impacts through simulations – without changing the physical world or making costly investments. Also, a comprehensive material, inventory and flow analysis model considers internal production, external purchases to plan warehouse capacity, internal consumption and sales of product.

DPM is a set of tools that leverages a company’s data – such as enterprise resource planning (ERP) and supporting systems – to perform a fact-based analysis of the different business processes, derive insights and create a transformation engine for the business. Its capabilities enhance analyses that businesses already perform, as well as present entirely new ways of improving performance. It also enables organizations to decode the answer for digital disruption – to gain the information necessary to make confident decisions and aggressively transform their business.

DPM provides real-time processed data that can be compared with the ERP master data in order to identify potential data discrepancies. The process of periodically updating master data can be partially or fully automated using DPM. This allows for updating order lead times or even transit times in the master data that are based on continuous real-time outputs.

The journey from supply chain intelligence to supply chain reinvention



Benefits of DPM to your supply chain:

- ▶ Mine real-time process outputs automatically
- ▶ Gather data faster and minimize manual work
- ▶ Allow users to mine the process based on facts instead of the subjective views of others
- ▶ Examine the entire set of transactions to pinpoint anomalies, characteristics and sequences of events that pose the greatest risk
- ▶ Infuse the organization with more agile and scalable capabilities

In addition to addressing the shortcomings of traditional methods, DPM also allows companies to view up-to-date process maps that can focus on as many or as few variants as desired. It also can enable E2E supply chain visualization. The customizable dashboards in DPM help the business user to explore new hypotheses in real time.

DPM enables activities that drive decisions that are not only more data-driven, but context-driven and evidence-based as well. By identifying process outputs, trends and bottlenecks in real time, DPM capabilities equip organizations with insights that help decision makers implement targeted improvements, anticipate disruptions and build supply chains to fulfill ever-changing customer needs.

The Order-to-Cash big picture

DPM mines entire order-to-cash process and provides insights into E2E process through process visualization.



Case study: How EY teams helped deploy DPM

We deployed DPM at a Fortune 500 client's supply chain, and the client noticed significant operational and strategic benefits within just three months.

The company was considering opportunities to digitize its supply chain to gain greater visibility from end to end, improve efficiency of their order-to-fulfillment process, drive more on-time deliveries to key customers and enhance communication with them on material availability, build a dynamic dashboard to track KPIs, and improve master data quality.

The client team had relied on traditional supply chain tools, and their operations team turned to different ERP modules to get visibility into supply and demand. This was a very time-consuming and inefficient process. Moreover, this process

was reactive. It had a short-time life cycle and depended heavily on human involvement, raising the potential for error. And client leadership used traditional dashboards hobbled by data that was updated infrequently, on a monthly or quarterly basis, and extracted the data manually from the ERP.

DPM extracted data from the ERP thrice a day, providing real-time data points. We created operational and executive dashboards that provided an E2E overview of their supply chain.

Within three months of deploying the DPM tool, on-time delivery improved by approximately 20% for key customers. In addition, the client saw benefits at the strategic, tactical and operational levels:

Strategic benefits

- ▶ Dynamic dashboards to provide real-time visibility into KPIs by customer, product, etc.
- ▶ Ability to identify bottlenecks and bring targeted improvements for increased cash flow
- ▶ On-time delivery improvement by 20% for key customers

Tactical benefits

- ▶ Ability to map E2E material flow movements
- ▶ Ability to track an order from the customer request date to upstream material availability

Operational benefits

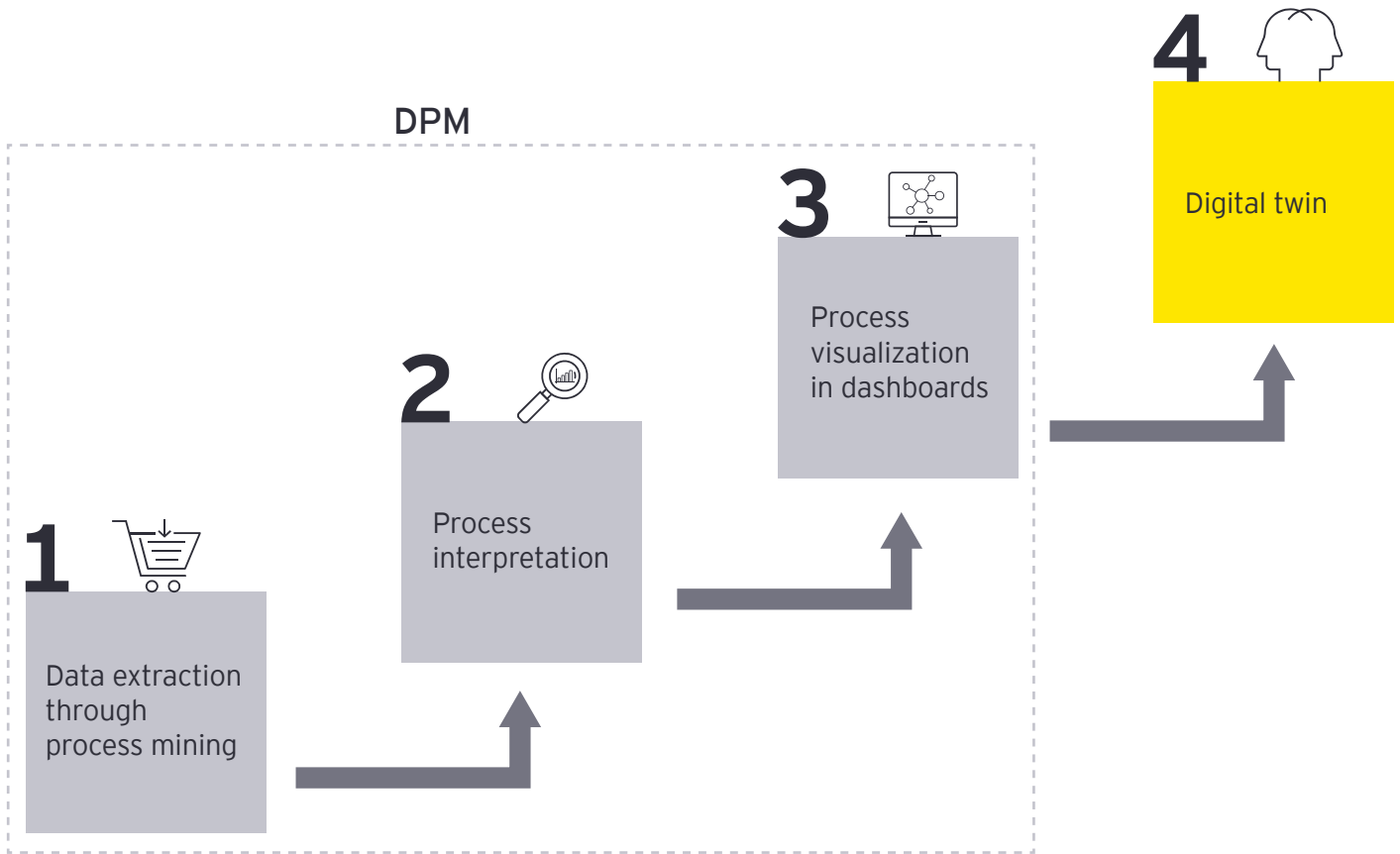
- ▶ Dynamic dashboard to provide a global supply-demand view on a single screen, instead of four different ERP screens, thereby reducing time by 90%
- ▶ Process visualization features to provide the ability to look at each case and focus on their specific problems to come up with an actionable plan
- ▶ Alert users about order exception statuses

Industry 4.0 not only improves operational efficiency, but also directly impacts a company's bottom line. DPM acts as a key enabler, providing visibility into the E2E supply chain and

helping to improve cash flow. DPM should be in the toolkit of every supply chain organization that aims to thrive in our constantly evolving digital era.

The progression from DPM to digital twins

DPM lays a foundation to a digital twin.



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ED None

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