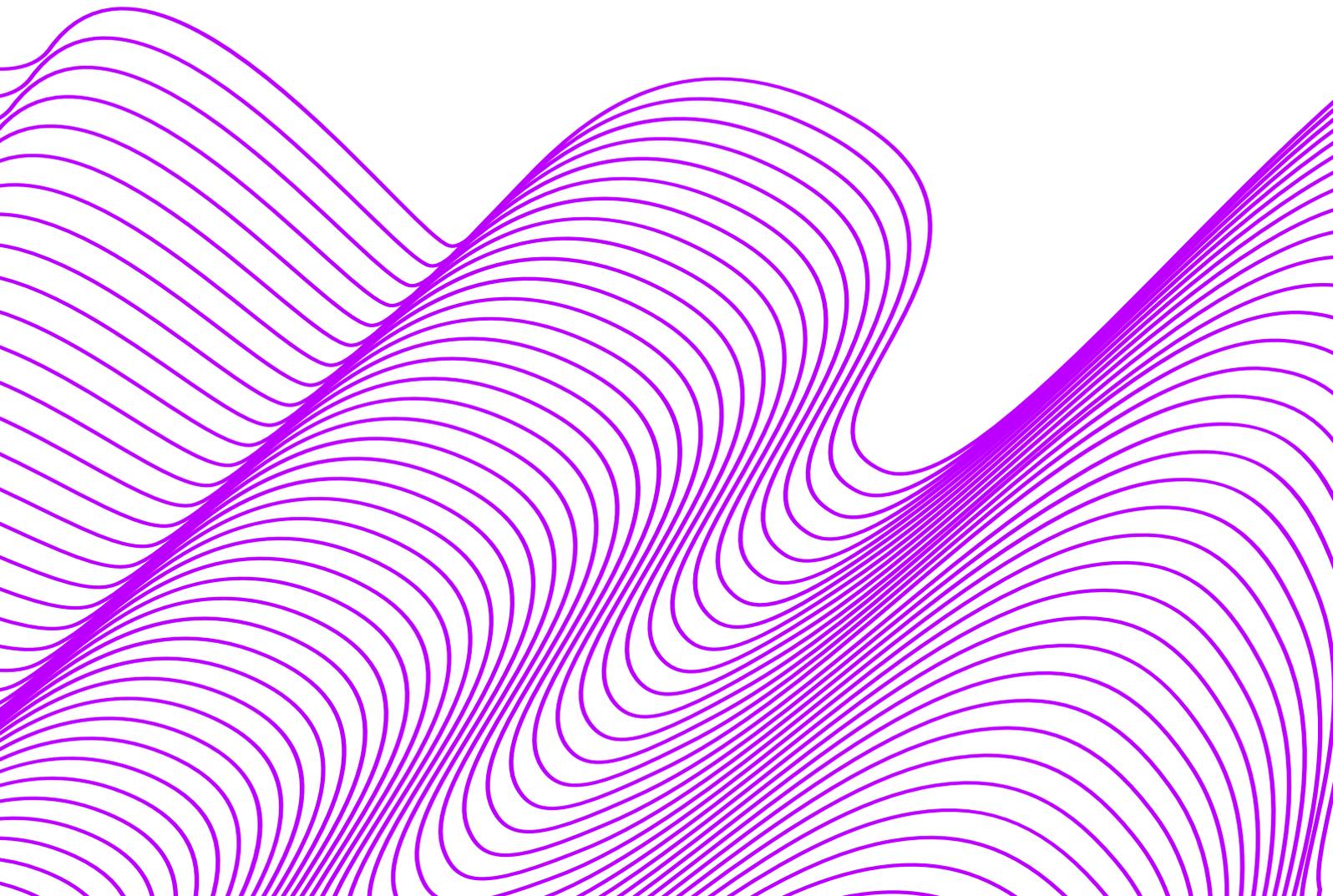


DEMAND-DRIVEN MRP ROADMAP

CREATING A
FLOW-OPTIMIZED
SUPPLY CHAIN



GLOBAL CONTEXT

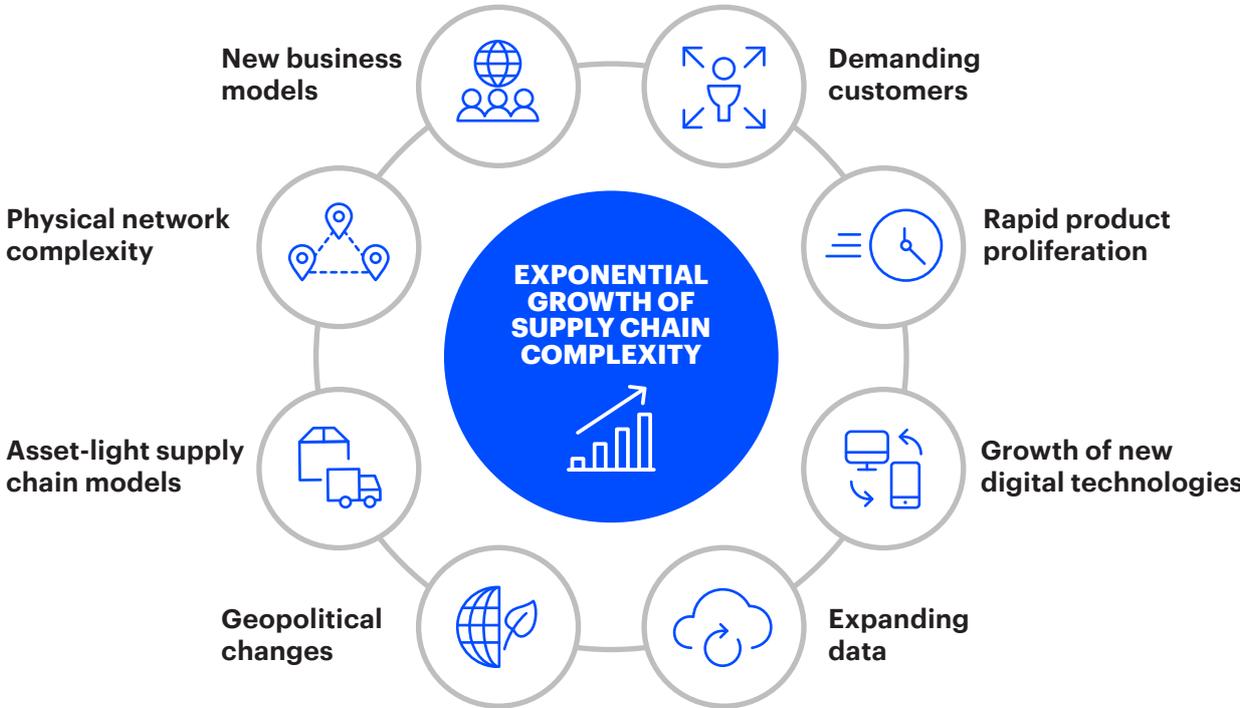
Over the last few years, the global context has forced companies to rethink the way they operate and interact with their customers, suppliers and consumers.

Companies need to drive profitable growth in a volatile and disruptive environment by establishing new strategies that balance cost, capital and service whilst dealing with increasing pressures due to innovation, growth and agility.

Key factors of complexity

- **Customer expectations:** Buying experience, personalized products and services, multi-channel buy, collect / return anywhere
- **Market volatility:** Competition, regulatory and geopolitical factors, unpredictability in price and supply
- **Globalization:** Large trading partners, buy and sell across the globe
- **Digital technology and expanding data**

Figure 1: Key factors of supply chain complexity



THE PARADIGM SHIFT

There is an emerging need for supply chain leaders to shift from cost, cash and service-focused supply chain management to a new paradigm based on speed of material flow and real-time information visibility.

Fast material flow through the supply network will ensure inventory reduction, optimal asset utilization and increased customer service whilst maximizing return on investment. An **intelligent supply chain** enabled by real-time material tracking and the IoT supports this new approach.

Supply chain leaders will also need to start thinking differently on the **role of inventory**. Many regard inventory as a cost that needs to be reduced, often to exaggerated levels. This can create even bigger losses in sales and increased cost due to emergency deliveries, changeovers and low asset utilization. In the context of material flow, inventory becomes an asset when it is right-sized, properly managed and smartly positioned, and becomes the key enabler for an optimal material flow.

This requires a **new planning methodology and systems** to replace the traditional Sales & Operations Planning (S&OP), Distribution Resource Planning (DRP) and Material Requirements Planning (MRP) processes.

These traditional methodologies work well in an ideal world of accurate forecast and perfect execution of supply and distribution plans. As soon as there is a discrepancy between planning and execution, the system becomes unmanageable due to the overwhelming exception messages, amplified by the bullwhip effect. The delays in different components and processes will cause constant firefighting from planners.

The Demand Driven Operating Model, combined with Demand Driven Sales & Operations planning and the **Demand Driven MRP** (DDMRP) process developed by the Demand Driven Institute is the new standard for setting up and managing the supply chain in a volatile environment.

The **Demand Driven Adaptive Enterprise** model is a new approach that combines this breakthrough methodology and a new operational system with the power of SAP S4HANA®.

TRADITIONAL MRP

The traditional MRP engine from the 1950's and 60's has served it's time. It could cope with supply chain challenges 60 years ago but is no longer suitable to deliver an optimized supply plan in a world with increasing volatility, uncertainty, complexity and ambiguity.

The traditional MRP engine struggles to keep up with today's challenges because it:

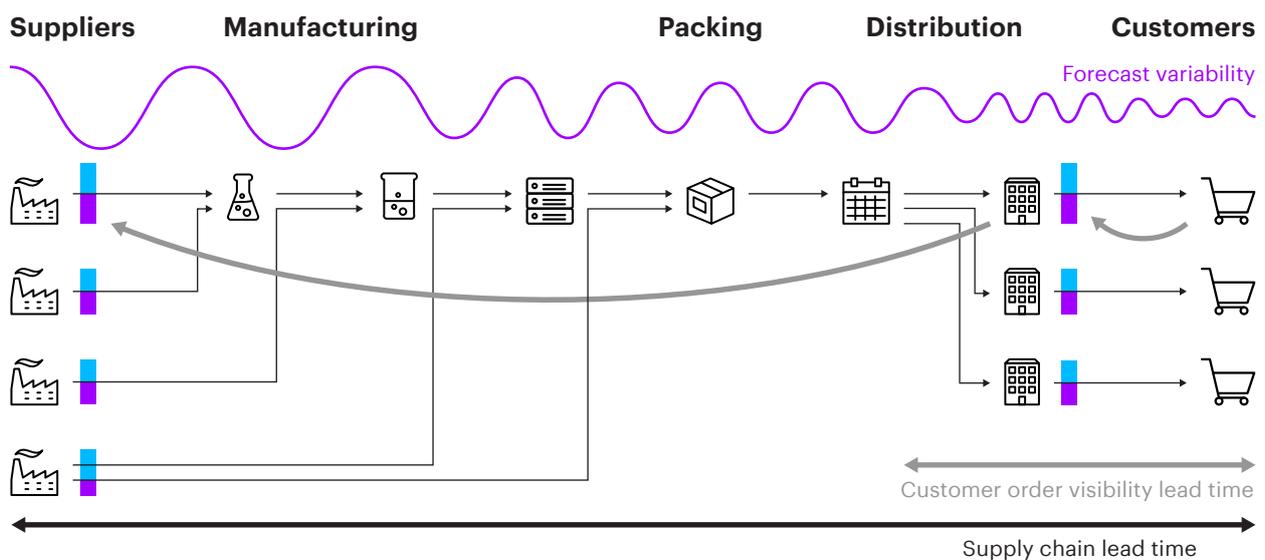
- Relies heavily on forecasts with a high probability of being wrong
- Requires manual intervention from planners to compensate forecast errors versus orders
- Implies last-minute changes in production and deliveries which increase costs and changeover losses
- Suffers from demand and supply variability which are transmitted and amplified through the supply chain (known as the bullwhip effect)
- Doesn't relate exception messages (e.g. advance or postpone production, deliveries) to service risks

- Generates untrusted plans, leading to planners often using complex spreadsheet-based tools for decision making
- Can't adequately absorb demand and supply variability through safety stocks placed at the extremities of the supply chain (e.g. finished product at customer-facing delivery centers, raw materials at the supplier-facing manufacturing sites).

As a result, companies often end up with:

- Excess inventory for unneeded products
- Stock outages for urgently needed products
- Bad inventory performance and high obsolescence cost
- Poor customer service levels
- Constant firefighting from planners to compensate for planning errors
- Frequent shuttling for finished products and emergency deliveries for components.

Figure 2: Traditional MRP



Traditional MRP uses the forecast as demand signal that is propagated through the entire Bill of Materials tree to create the planned orders. Forecast error vs. orders is amplified through the supply chain as a result of the bullwhip effect.

DEMAND DRIVEN MRP

Demand Driven MRP is an innovative planning and execution method, and a planning engine developed by the Demand Driven Institute. It builds on the MRP and DRP foundation and combines the advantages of the pull-based methods Lean, Six Sigma and Theory of Constraints.

The DDMRP philosophy is to design, set up and manage the supply chain to best serve the flow generated by the demand orders. The supply chain is divided into multiple interdependent entities with its own MRP run. The connector between those entities are the inventory buffers that act as shock absorbers for variability and protect the flow.

The DDMRP planning engine uses decoupling points (dynamically calculated inventory buffers) at multiple levels of the supply chain to:

- Create independence between entities in distribution and manufacturing
- Disconnect the rate of usage from the rate of supply.

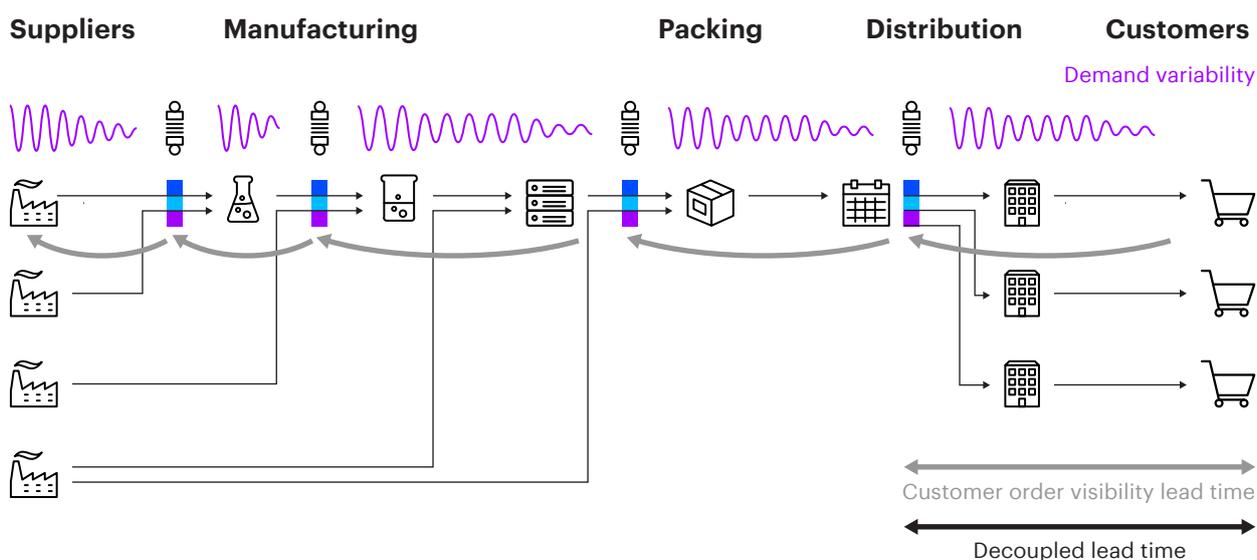
At each decoupling point, the system uses a special net flow equation formula to:

- Calculate the supply orders
- Help planners to monitor immediate intervention and future risks to the flow.

The positive effect of DDMRP will deliver:

- Better inventory control
- Improved customer service
- Lower supply chain costs
- Reduced obsolescences
- Real demand-based processes
- Elimination of planner's firefighting
- Better performance when considering seasonal variabilities or demand pikes

Figure 3: Demand Driven MRP



DDMRP uses the orders as demand signal. The buffers are consumed in line with the orders and are acting as shock absorbers to dampen variability.

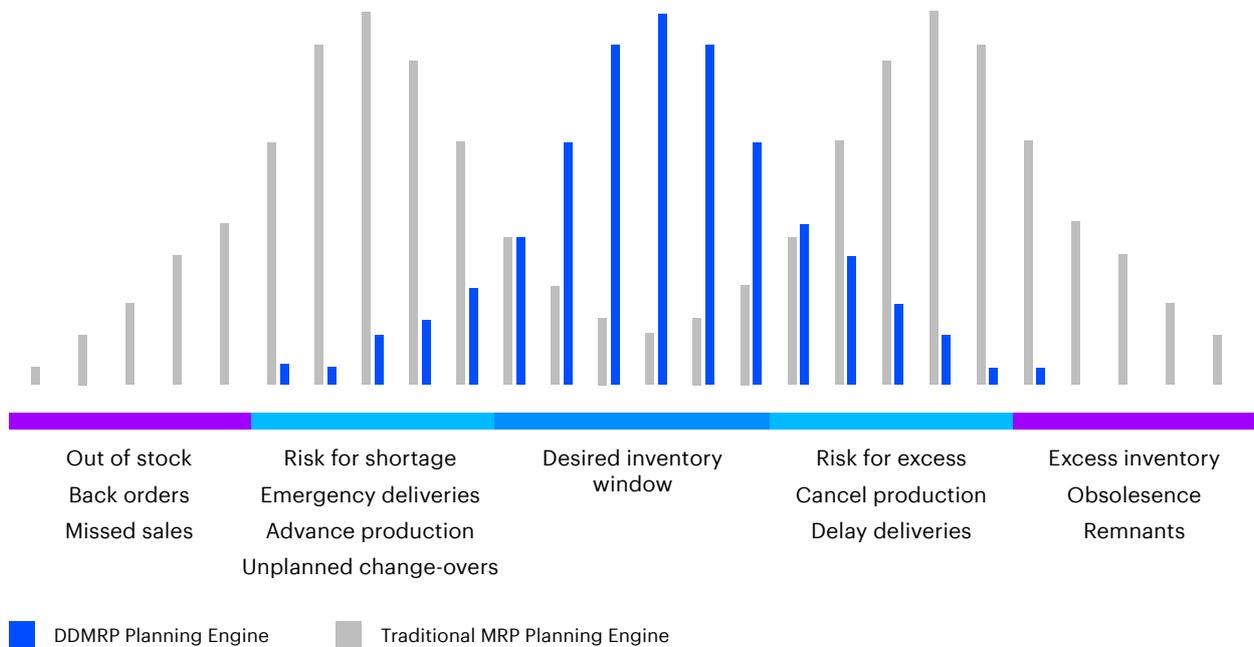
TRADITIONAL MRP VS DDMRP

With DDMRP, the supply chain becomes plannable with less firefighting.

The chart below summarizes how the inventory, and indirectly the service results, will be relieved by the forecast error-driven uncertainty.

Figure 4: Traditional MRP vs DDMRP

SKU distribution vs. inventory target



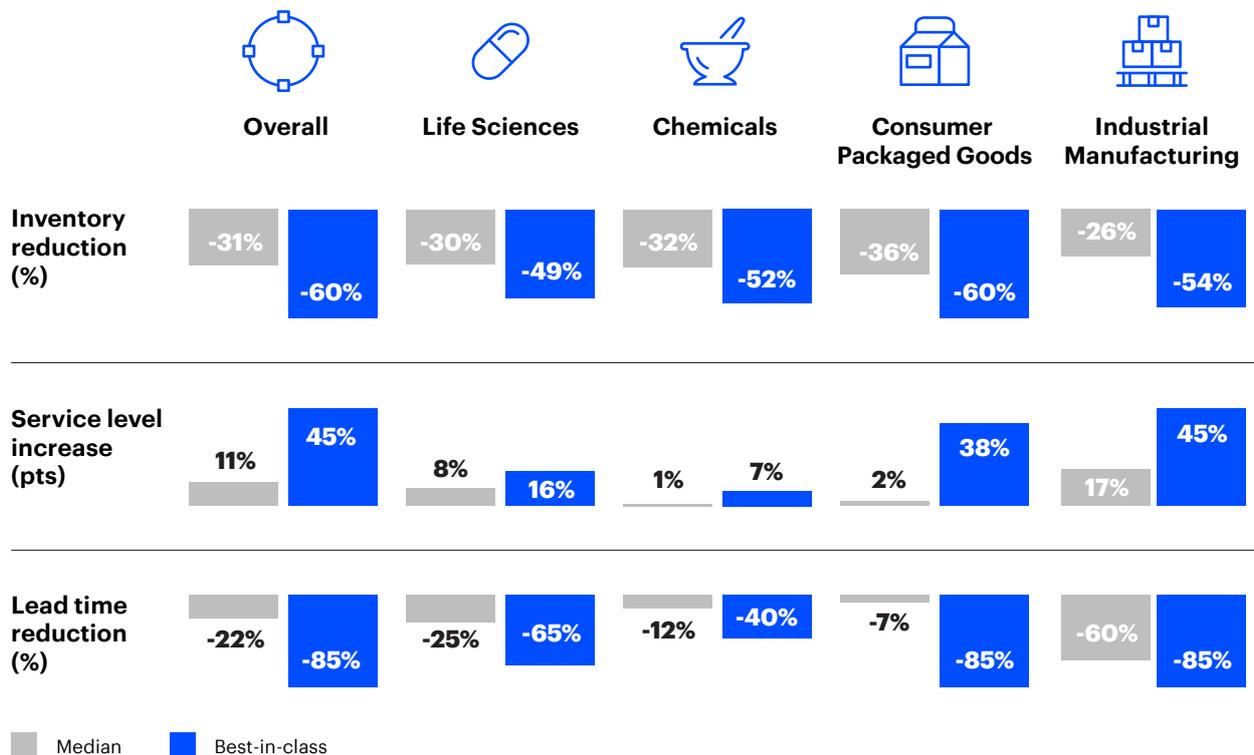
DDMRP IMPLEMENTATION BENEFITS

From our own experience, implementing DDMRP leads to tangible benefits.

For an aircraft manufacturer who was faced with a high rate of missing parts, Accenture first delivered a proof of concept of a new visual ordering methodology based on DDMRP. This allowed the client to test the methodology and mechanisms within their environment and systems, evaluate the feasibility and constraints, and to capitalize on lessons learned.

Following the success of this proof of concept, we helped to deploy DDMRP, train the stakeholders and manage the change across a wider part of their organization. A new end-to-end ordering process, supported by visual tools, can lead to **up to 40% inventory reduction** and a significant **reduction in missing parts**.

Figure 5: DDMRP implementation benefits



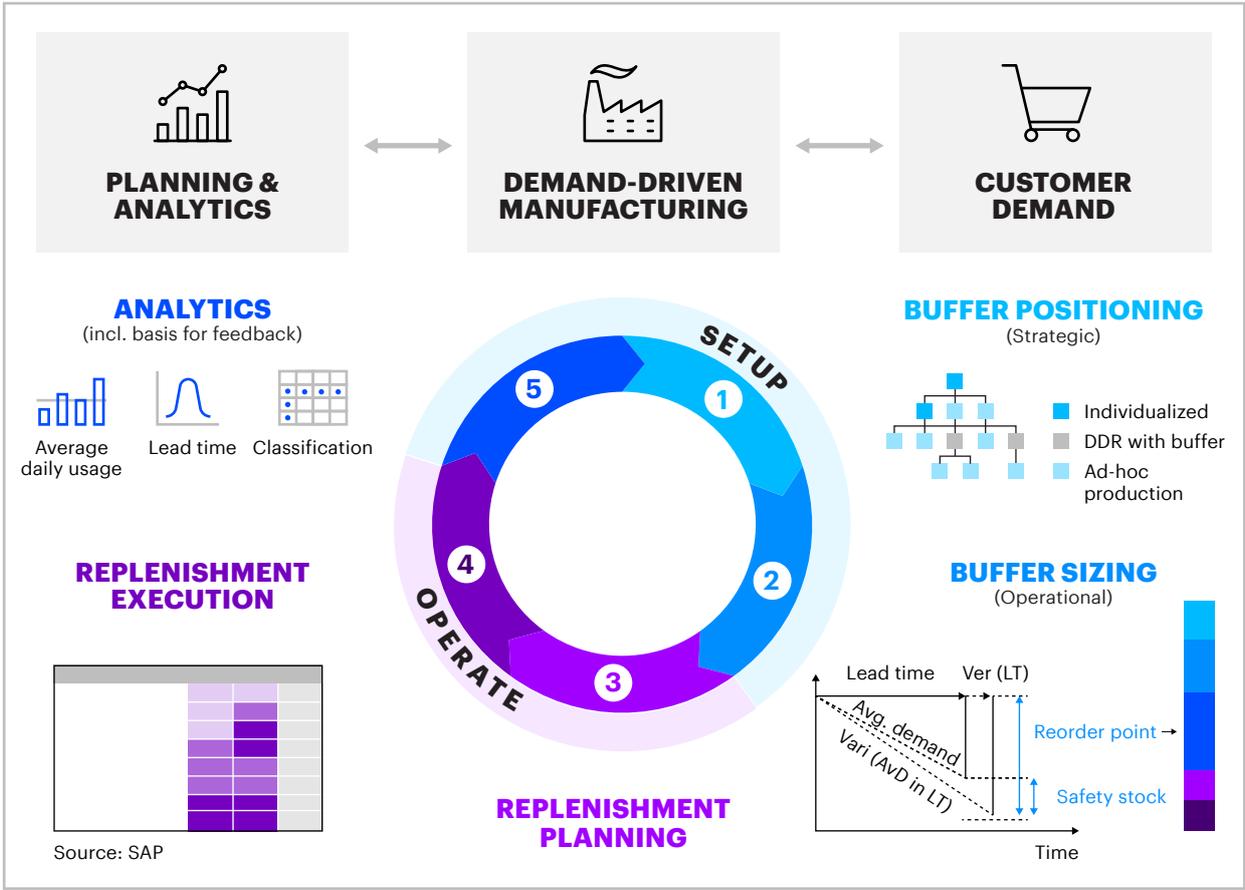
The Demand Driven Institute has also published DDMRP implementation benefits based on case studies across multiple industries that show the potential gains.

Source: <https://www.demanddriveninstitute.com/case-studies>

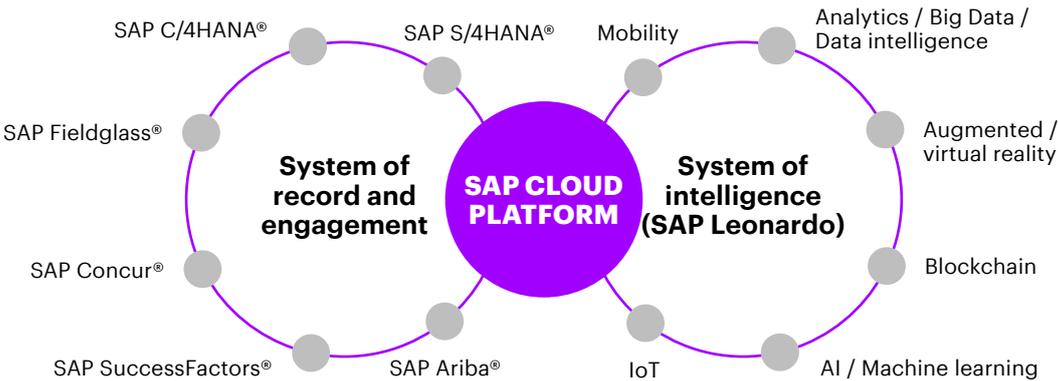
SAP® SOLUTIONS FOR DDMRP

SAP, together with Accenture, have enabled the end-to-end DDMRP process flow in SAP S/4HANA with built-in solutions that follow the five DDMRP steps and use the power of SAP HANA® for real-time buffer calculations and embedded analytics in SAP S/4HANA. With new SAP solutions and technologies such as SAP Leonardo, we are now one step away from moving to predictive simulation.

Figure 6: Demand Driven MRP enabled in the new SAP solutions landscape



ENABLE DDMRP



The recent SAP S/4HANA software releases include the demand-driven buffer level calculation and are recognized by the Demand Driven Institute as a DDMRP-compliant ERP system.

Key features in the SAP S/4HANA 1709 release (both cloud and on-premise versions) include:

- Classify products to identify demand-driven, replenishment-relevant products
- Calculate buffer level proposals for relevant materials
- Recalculate and update buffer levels through evaluation of historic data such as replenishment documents or goods issues
- Manage safety stock, reorder point and maximum stock using buffer level proposals
- Display a list of demand-driven materials including information about the current stock status and current buffer fill level of each material
- Operate demand-driven replenishment, taking buffer levels into account.

New features added in the SAP S/4HANA 1809 release include:

- Material classification to define and determine the best decoupling point based on material categories (e.g. high runner, low runner, usage in the supply chain, past shortages)
- Average daily usage (ADU) calculation based on time series (backward / forward), taking actuals and forecast into account
- Enhanced monitoring tools.

Both SAP Integrated Business Planning (IBP) and SAP S/4HANA support the DDMRP process with a different scope and usage (see Figure 8) and enable various implementation strategies depending on a company's starting point and roadmap (see Figure 7).

Figure 7: Implementation strategies (assuming SAP S/4HANA 1809)

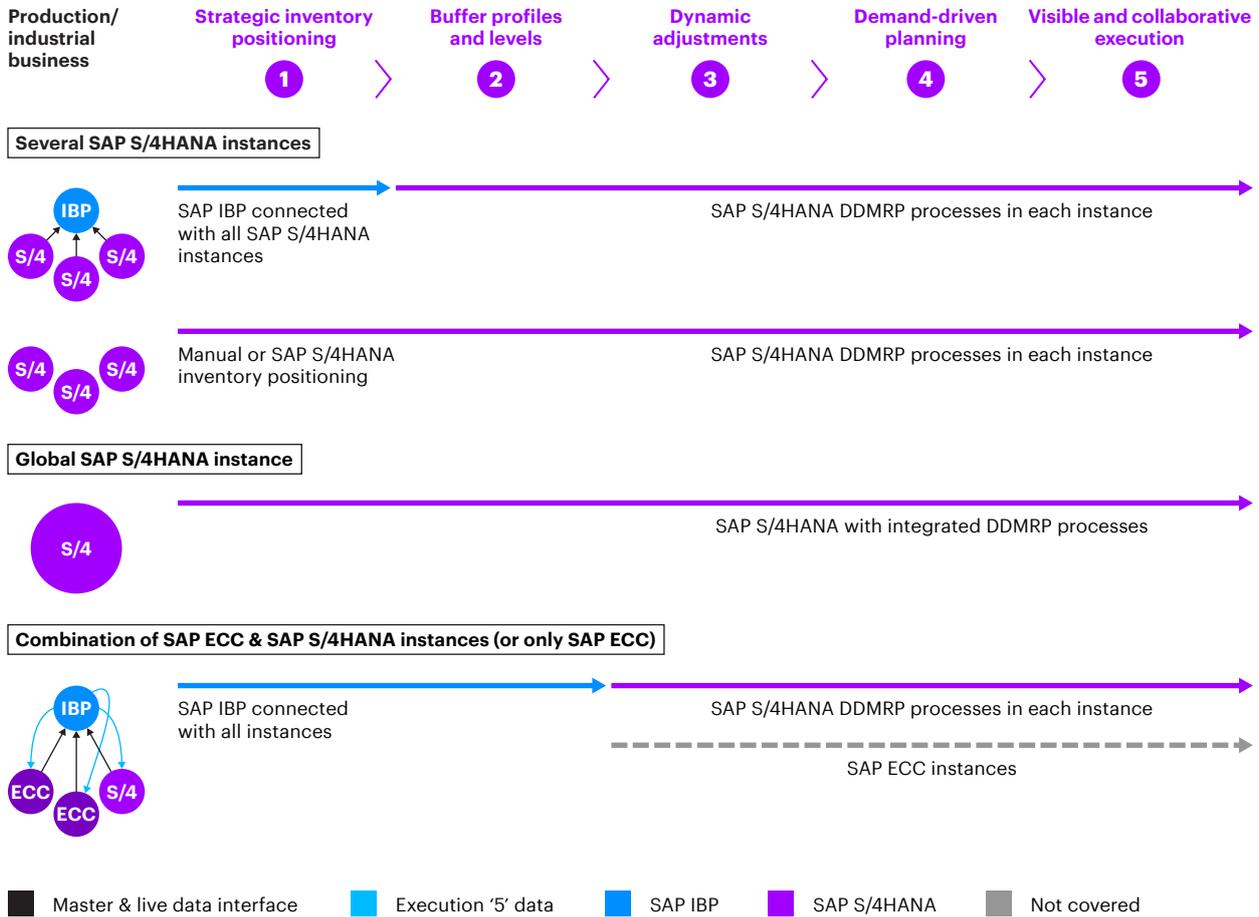
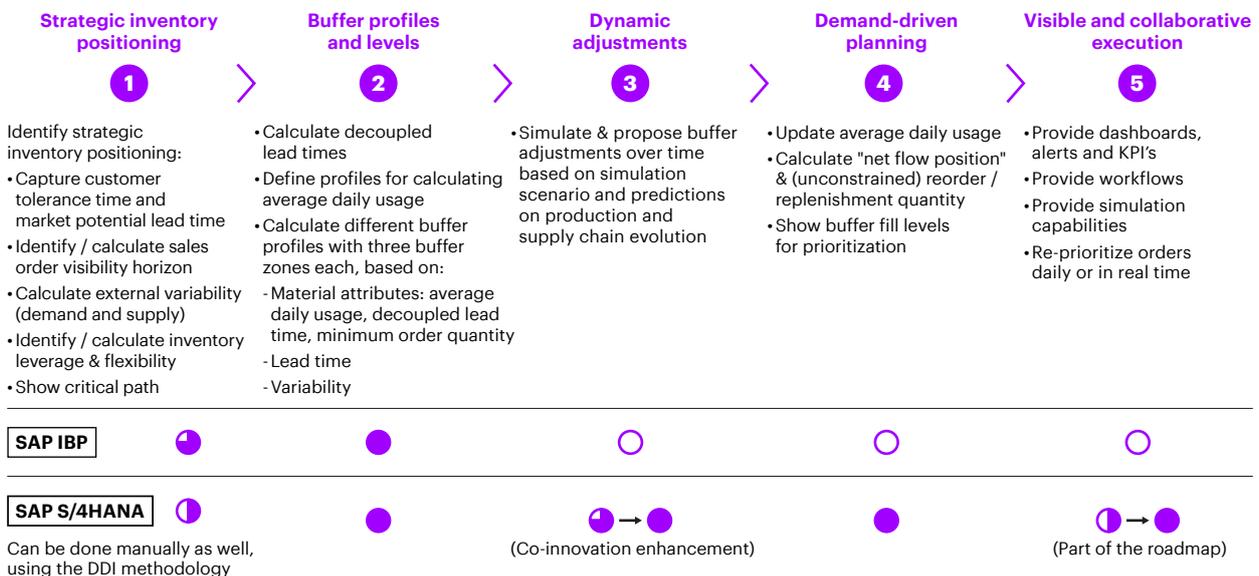


Figure 8: DDMRP scope in SAP IBP and SAP S/4HANA



HOW CAN ACCENTURE HELP?

Adopting DDMRP is more than implementing software. As DDMRP is an end-to-end methodology, it requires a **profound supply chain management transformation**. This new approach to planning and execution requires:

- Training on concept and methodology
- Significantly adjusting business and planning processes
- Changing how planners assess and act on KPI's
- Revising the planning organization and reward system.

We enable and support the DDMRP transformation and implement the DDMRP operating model by coordinating the **key elements for success**:

- **Simulation:** Proving the value through simulation.
- **Training:** DDMRP transformation will only be successful if both the leadership and the planning community understand the limitations of MRP and truly believe that DDMRP is the way to deliver breakthrough

inventory and service results with less effort from planning and more stability in manufacturing.

- **Pilot:** Helping to design and run a pilot for a representative supply chain will help to experience and compare the DDMRP replenishment orders with the current orders, analyze performance, get used to the DDMRP-specific metrics and visuals, and design the new tools and work processes.
- **Change management:** driving change in business processes, planning responsibilities, job functions, rewards systems, supplier relationships and KPI's.
- **Tailor-made solution:** Adopting the most suitable solution and roadmap based on the unique company situation, and ensuring a smooth implementation.
- **Process (re)definition:** Streamlining and integrating the planning process.

Our unified approach and holistic methodology to tackle all these elements reduces risk and accelerates time to value.

WHY ACCENTURE?

Our supply chain services unlock value with innovation

Accenture helps clients unlock their supply chain to be an engine for growth, designing new value delivery services, partnering with them in their expansion and enabling new business models.

49
Industries served



Industry X.O
Global practice focused on the entire product value chain to help our clients innovate, engineer, manufacture and operate in a connected world.

200+
Supply chain clients in 33 countries

10K+
Industry X.O professionals

Our delivery excellence makes your digital transformation a reality

Targeting and delivering tangible value for our clients is our primary focus—and delivery is where we turn solution into action and action into results.

50+
Delivery centers

120+
Countries

40+
Industries



Professionals
with deep industry, technology, business and process skills

Intelligent tools
to transform client data into intelligent insights

Leading SAP partner for services and innovation

We have early access to SAP innovations and help shape them.

1st
in co-development and co-innovation on SAP S/4HANA, Leonardo and Cloud Platform

38
SAP Pinnacle Awards

16
Liquid Studios for SAP Leonardo

100+
SAP awards in the last 5 years

>50K
SAP practitioners

Contact Us

Jean Christophe Ledoux

jean.ledoux@accenture.com

Europe

Petra Breton

petra.breton@accenture.com

Andras Csiky

andras.csiky@accenture.com

United States

Michel Roger

michel.roger@accenture.com

Dmitry Svetlov

dmitry.svetlov@accenture.com

Nate Palmer

nathaniel.l.palmer@accenture.com

About Accenture

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions – underpinned by the world’s largest delivery network – Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With more than 459,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.

To learn more about DDMRP:

Visit the **Demand Driven Institute website**

Read the **book on DDMRP**

Watch the videos **Introduction to DDMRP**
and **Precisely Wrong**

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