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LEGO

Builds a Broader Product Line

Toymaker Streamlines Product Development Process with SAP Product Lifecycle Management

by **David Hannon**, Features Editor

The building block toys that the LEGO Group manufactures have become so popular that children around the world can't get enough of them — literally. Demand for the Danish toymaker's products has steadily risen in recent years. To capitalize on this level of growth, LEGO wanted to expand its product line and increase the number of projects in its new product pipeline — from its current levels of around 200 to between 250 and 300. And the business wasn't about to be limited by its legacy product development system.

"With more than 200 new product models in our pipeline each year, we reached the limit of the throughput we could achieve with the legacy system," says Edwin van Kouwen, Solution Architect at LEGO, who was the lead architect for the company's SAP Product Lifecycle Management implementation. "As our company began experiencing significant demand growth, we knew that to increase our product line's breadth and volume, we needed smoother product development — especially around our master data."

For example, in the legacy environment, getting product data from a new bill of materials (BOM) to the purchasing department was a slow and partly manual process that risked delaying product development projects. If the business did not move off of the legacy platform and speed those types of lagging processes, the supply chain would undoubtedly begin to break down.

"The LEGO spirit says, 'Only the best is good enough,' and that applies to IT," van Kouwen says. "We have to provide the level of functionality that our users expect."

After an extensive search for a system to support its product development goals, LEGO selected SAP PLM. This software was chosen because it would seamlessly integrate with the company's other SAP systems and provide a more transparent view of its product development pipeline.

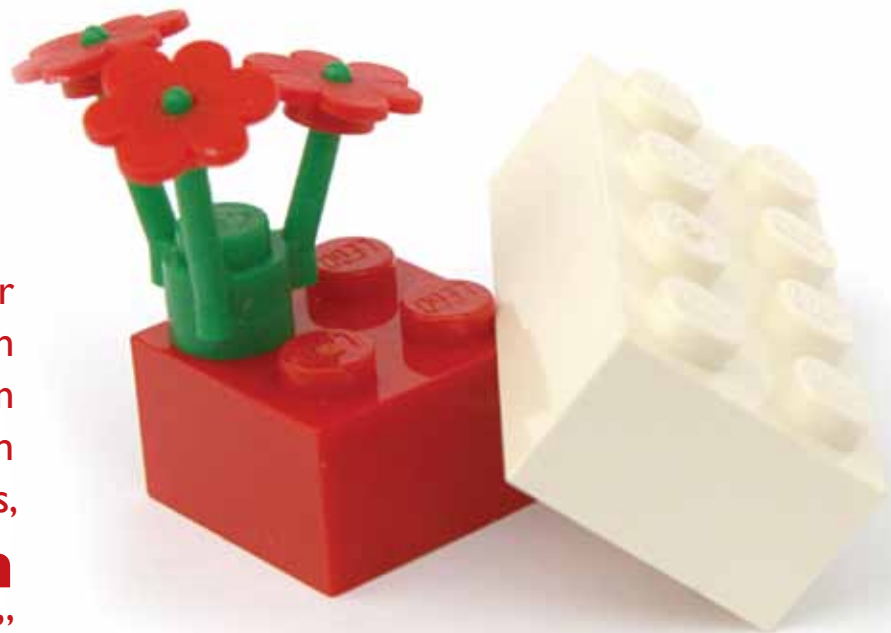
"That transparency applies to all of our product development including the products in the box, but also the marketing materials, the packaging, the molds required to produce the bricks, and more," van Kouwen says.

Building the Blocks

The drivers behind LEGO's move to SAP PLM are easily understood when looking at the company's extremely precise product development processes and designs. For example, LEGO's injection molding processes have remained so consistent over the years that the 2x4 toy bricks it first built in 1958 still connect with the bricks coming off the production line today. The processes are that precise.

Each year, LEGO starts with more than 50 new product opportunities, narrows them down to about 25 concepts, and then settles on about 18 to 20 new product development projects to launch each year.

The company's annual product development cycle is driven by two large trade shows in January



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— **Edwin van Kouwen**, Solution Architect, LEGO

and July where it unveils its newest products, and its development timelines are built backward from those dates. For example, each November, the product development team freezes its product line to be launched 14 months down the road.

"We split the year into two halves," van Kouwen says. "We have milestones set as hard dates on the calendar for a complete development of the product, including the new elements that must go into the models. We also spend a lot of time with our marketing department to find out which products are most well-liked."

Once a new product idea takes shape, all the product information is entered in the SAP system so various business partners and internal departments around the world who play a role in the product development process can access it. For example, marketing needs to see what the product will look like so it can create the right materials to promote it, and purchasing needs to know what raw materials will be used to make the product so it can begin sourcing.

"We used to distribute some of this information through the extranet, but we want to move to a self-serve model where our partners can go into our systems, pull out the information they need, and

4 Phases of LEGO's SAP PLM Transition

The transition to SAP PLM is expected to take LEGO three years to complete. The project team broke down the SAP PLM rollout into the following phases:

1. **Product information management** includes building processes for creating material masters for products and related information (molds or production robots, packaging, graphics, and BOMs).
2. **Project and portfolio management** includes solidifying the business cases behind each of the products and developing a strategy to run and track all of the parallel projects on model, packaging, and mold development.
3. **Costing and financials management** includes deciding how much to charge for products and reviewing expected manufacturing costs to help determine pricing.
4. **Dashboard project** includes developing dashboards to share combinations of administrative and graphical information with both internal organizations and external partners.

In 2011, LEGO focused on the product information management phase and plans to accomplish the other phases going forward. In 2012, LEGO will upgrade its SAP systems by moving to SAP ERP enhancement pack 5 and SAP PLM 7.01. The business also plans to move from a pilot phase to a full implementation of SAP Portfolio and Project Management, which will allow LEGO to better track project status and execution.

use it in their processes to help develop the products," van Kouwen says.

Business Rules Streamline Product Development

To streamline its product development processes even further, LEGO has implemented SAP NetWeaver Business Rules Management (SAP NetWeaver BRM) on top of SAP ERP and SAP PLM. This application will ensure users create accurate data during the product development cycle. Unlike the custom business rules developed in the past, the new business rules in SAP NetWeaver BRM include consistency checks and auto-fills to ensure data is accurate when transferred from design to production.

"We have achieved a good level of quality in our master data by applying a number of levels of custom-built logic to the systems," says van Kouwen. "We captured that logic and put it into the business rules engine, which helps us ensure the data is clean when we create our designs. It's a big change because the business rules are no longer hidden."

For example, if LEGO creates a new product made out of a certain type of plastic that is only available in four colors, the business rules won't let a designer select a color that is not on that list. While it sounds simple, if that mistake — assigning a color that's unavailable for that raw material — is not addressed early in the design process, it can delay a product's development down the line.

Having clean data and efficient business rules is important for any business to speed development and prevent mistakes in the manufacturing process — especially for those in the toy-making industry, considering its consumer bracket. "Because we make children's toys, safety and quality are very high priorities for us," says van Kouwen.

Benefits Taking Shape

Even though LEGO is still fairly early in its SAP PLM journey, van Kouwen estimates that the master data management improvements alone should allow LEGO to increase its new product output by 50%.

"By sharing our master data and forecast data with our supply chain team members much earlier in the design process, they can plan better," he says. "They get more time to purchase materials and decide where to best manufacture the bricks and packaging. They understand how many units they may need to produce a month or two earlier than they could before."

Perhaps most importantly, everyone in the LEGO enterprise now has one source of product information to access and one set of standard terms, which eliminates any confusion on which parts will be used in which products. Now, LEGO can more effectively supply the toys that will continue to inspire children around the world. ■

At a Glance

The LEGO Group

Headquarters: Billund, Denmark
Industry: Toys
Employees: 10,000
Company details:
- Founded in Denmark in 1932 by Ole Kirk Kristiansen and remains a family-owned business today
- LEGO name comes from Danish words leg godt (play well)
- In 1958, the LEGO brick toy was patented (2x4 pattern system)
- The LEGO minifigure was introduced in 1978 (today, more minifigures are in the world than people)

Mission: "Inspire and develop the builders of tomorrow"
SAP solutions:
- SAP ERP 6.0
- SAP PLM 7.01
- SAP NetWeaver BW 7.3
- SAP PPM 5.0
- SAP NetWeaver BPM 7.2 (upgrade to version 7.3 planned for April 2012)
- SAP NetWeaver BRM 7.2
- SAP NetWeaver Portal 7.3