

Eleven lessons: managing design in eleven global brands

Design at LEGO

Danish company LEGO, the world's sixth largest toy maker, has transformed the processes of its design function in recent years. These changes have streamlined product development and the processes developed by the in-house design function are now being used as a method to improve innovation across the entire business.

Overview

LEGO has developed a new design system, called Design for Business (D4B), by which its whole innovation process is run.

Key elements of the LEGO Design For Business process include:

- The alignment between corporate objectives and design strategy
- Strengthening the collaboration in core project teams containing a design, a marketing and product manager
- Challenge sessions for the team during this process, run by colleagues and D4B members
- The development of a standard sequence of activities for product development, with frequent evaluations and decision gates
- The development of standard processes for presenting the outputs of design phases to allow straightforward comparison of different projects and options.

Meet the team

LEGO's design function includes 120 designers of 15 nationalities, based in Billund, Denmark. A further 15 designers work from Slough in the UK, and other satellite offices operate in several key markets and regions, either developing ideas for local market tastes or acting as a monitor of trends and new technologies (which is particularly the case with the Japanese unit).

For individual design projects, LEGO operates a matrix organisation containing core teams. Each core team



involves a marketer, a project leader and a design manager. Part of the objective of this structure, says Torsten Bjørn, Creative Director, was to 'align our activities and focus them around the development of strong propositions where collaboration between functions became better, the D4B methods and tools have helped to leverage this'.

In more depth

Find out how other companies in our study hire designers who demonstrate [wider skill set](#) including: multi-disciplinary working, business acumen and strategic thinking

Designers

Traditionally, LEGO has rated the ability to model creatively with its system as the key criterion for its designers, leading to the recruitment of staff from a tremendously wide range of educational and career backgrounds. More recently, there has been an increasing uptake of 'professional' designers, namely those who have received more conventional academic training in design disciplines.

Today, according to Smith-Meyer, the company is placing renewed importance on its designers' enthusiasm for LEGO itself and is employing new members of the design team who are passionate and excited about designing for LEGO.

History

LEGO was founded in 1932 by Danish carpenter Ole Kirk Christiansen. The name is an abbreviation of the Danish words "leg godt", meaning play well. Now owned by a grandchild of the founder, LEGO has remained true to its original mission of producing toys that encourage children to create and use their imagination.



The product has established an iconic status and has a strong following of users, many of whom have had a relationship with the product since childhood. Central to LEGO's offering is the concept of 'systematic creativity', 'unlimited play' and the company's mission which is 'To inspire children to explore and challenge their own creative potential.'

The LEGO concept is simple. Injection moulded plastic bricks can be snapped together to build extremely elaborate structures. Key to the longevity of the system is its flexibility. Just six of the basic 'eight stud' LEGO bricks can be combined in more than 900 million different ways. In fact, there are thousands of different brick designs and colour combinations in the LEGO range, leading to an effectively infinite range of creative play possibilities.

The evolution of design at LEGO

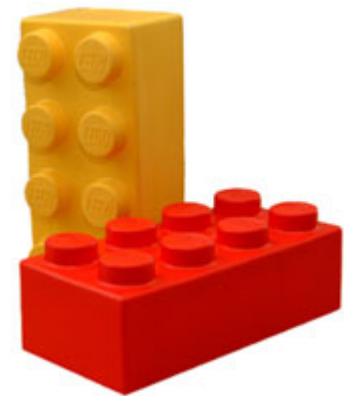
LEGO has continually evolved its system of bricks and applications for it since its invention. The original system elements have been extended in numerous ways to include, for example, people and special parts to allow the construction of moving vehicles and working train sets.

LEGO has ongoing collaborations with several universities in the UK, the US and Germany. The company has been involved in a joint R&D effort with the prestigious Media Lab at Massachusetts Institute of Technology in the US since 1984. Commercial outcomes of this research have included the company's Mindstorms system (now in its second generation). This is an advanced kit that includes sensors, actuators and a programmable logic controller. Mindstorms allows users to design, build and programme robotic systems that can sense and react to their environment.

Context and challenges

However, recent years have not been easy for LEGO. The company has faced intense competition from the explosive growth in computer-based children's toys and the rise of low cost production of traditional children's toys in the Far East and stiff competition between retailers pushing margins and prices down.

After trying a variety of compensatory strategies during the 1990s and early years of the 21st century, the company has more recently made the decision to re-focus on the core and most popular product, namely the "Classic" product lines. An increased emphasis on these in recent years has led to a warm reception from toy retailers and consumers. Combined with extensive reorganisation and outsourcing, the new approach has transformed the company's financial performance, putting it on a strong footing from which to go forward.



Given this context, LEGO's design team saw some challenges ahead: It needed to define a more holistic approach to innovation moving away from a predominantly product focused approach while maintaining an approach to design that would professionalise the department, leading to more efficient use of design resources and increased effect of the offerings in the market.

Design process evolution

Design has traditionally been held in high regard at LEGO. The company considers design to be a key element in the development of their products, has used design as a competitive weapon and has given high levels of autonomy and responsibility to its design teams.

In more depth

Find out more about how successful business processes require good [☞ leadership](#) and that design is no exception

LEGO has transformed the processes of its design function in the last two years. The design team itself precipitated this process transformation. Existing processes, while they allowed the design team exceptional creative freedom, had resulted in too many commercially unsuccessful products coming to market and had also produced significant additional complexity in the LEGO system, which by the early 2000s had, risen to more than 14,000 different components.



In order to address these issues, the LEGO design team, led by Paal Smith-Meyer and Torsten Bjørn, Creative Directors, Concept & Design, started an initiative called Design For Business (D4B). Couched within LEGO's overall development process, the objective of D4B is to ensure that all design activities are supported by a real business case, and that proposed solutions can be tested against financial requirements before being adopted. Simultaneously, LEGO wanted to improve its responsiveness by cutting the length of the design cycle down from an average of two years to less than 12 months.

The rigorous process transformation approach adopted by the LEGO design function has helped to maintain and enhance its status within the company. Indeed, the processes developed in the design division are being used as a method for innovation across the entire business.

Design For Business represents a combination of LEGO's overall corporate strategy and design strategy, and has been instrumental in achieving some of LEGO's recent business performance successes. Find out more about how LEGO's Innovation model and its Foundation overview fit in to D4B.

In more depth

Read about how other companies make sure their designers are able to talk about the commercial implications of their design decisions by [☞ integrating](#) the design process into the business

Status

In 2006, LEGO was the world's sixth largest toy maker. Revenues in that year were DKK (Danish Krone) 7,823million (£717million), up 11 per cent on the previous year. Profits were DKK1,348 million (£123.5million), up to 19.5 per cent from a level of 6.5 per cent in the year before. The company employs 5,000 people worldwide.

LEGO has its main facilities in Denmark. In recent years, LEGO has been through an extensive program of structural simplification. In particular, it has taken the strategic decision to outsource parts of its production, largely to manufacturers in Eastern Europe, and has divested itself of its own manufacturing capabilities and its LEGOLAND parks, retaining the most complex moulding inside the company, securing future expertise in the field.

The LEGO design process

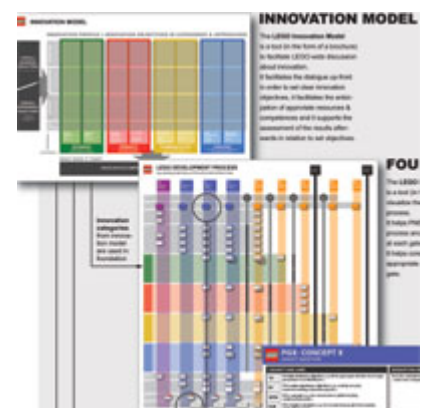
Design For Business essentially describes the overall innovation process within LEGO, and maps how a project is conceived, assessed and developed with design as a key stakeholder.

The Objective was to move from a primarily product focused innovation approach to a broader view of innovation in the organisation, enabling concepts to have more impact.

Design for Business includes three devices with which LEGO conceives, maps and tracks a project:

- an innovation model
- a foundation overview
- and a roadmap.

To the right, is part of a diagram explaining how these three devices fit together to form LEGO's D4B programme.



The LEGO roadmap tool is used to plan how each phase relates to the next. This helps to align key objectives, tasks and deliverables during the development stage.

Based on these initial phases of objective setting and project agreement, the stage where design tools and skills are brought in to further the concept begins.



In more depth

Find out more about LEGO's [innovation model](#)

Read about how LEGO's [foundation overview](#) works

Market

LEGO exports its products to more than 130 countries around the world, with the US and Germany its largest markets.

The company develops three core product platforms:

- Duplo, a system of large bricks for babies and younger children
- The core LEGO System, which is available in numerous different themes and configurations for children aged from four to adult
- Technic, an extension of the basic LEGO system that includes mechanical elements allowing working models to be produced. It's aimed at children aged from seven to adult.

In recent years, LEGO has entered licensing agreements with a number of filmmakers and other content owners to produce specialised LEGO sets with popular cultural themes. Examples of this approach include kits for the Star Wars and Harry Potter franchises.

LEGO has an exceptionally wide user base, ranging from pre-school children to a significant population of adult users. The company even sells products specifically to be used by adults in management training activities through LEGO Serious Play.

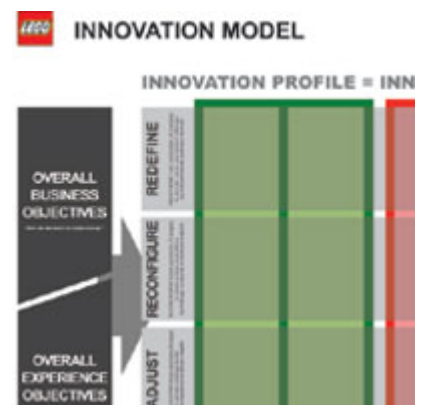
LEGO case study: LEGO's innovation model

In the first instance, the LEGO innovation model is designed as a 'quick guide' to help foster a shared understanding and language around innovation in LEGO

The model and tools helps the entire company to:

- Participate in a dialogue early on in the process to define project objectives for the project and the innovation approach needed to deliver this
- Anticipate and acknowledge the resources and skills required for succeeding
- And enable the assessment of results against set objectives at different stages of the project

In order to prevent unnecessary redesign or replication of work without stagnating creativity, the LEGO innovation model is applied to all the four fundamental areas of business at LEGO: business, product, process and



communication. In each area, activities are constantly reviewed and the right level of change is selected.

Approaches of innovation used in the model are:

- **No change** – a product or process is currently fit for purpose
- **Adjust** – minor changes and optimisation of known parameters are used to update products or modify processes in order to improve performance
- **Reconfigure** – known and often of multiple parameters, are put together in a new way in order to better meet existing business and/or customer needs
- **Redefine** – an entirely new approach and offering are introduced in a business area or market sector – existing products and processes may undergo quite fundamental modifications

LEGO case study: LEGO's foundation overview

The LEGO development process uses a stage gate system to ensure that new designs are regularly evaluated against their business criteria and the portfolio so that costly investments are not made in projects without firm financial and market justification, aligned with the original objectives.

The foundation overview is a poster-based tool used to visualise the LEGO development process. This helps the Product Market Development team to review the whole innovation process and manage stakeholder expectations.

The development process has four prototyping phases (P0 to P3) and five manufacturing phases (M1 to M5).

- **In P0 (portfolio kick-off)** the business objectives for the project are defined. At this stage, the key question asked is: What are the critical issues that should be solved for product groups/lines across the portfolio? This takes about two or three months
- **In P1 (opportunity freeze)** the team assesses what opportunities would solve the issues identified in P0 and should be taken forward for development into concepts. The marketing team becomes involved to build market and customer insights into the business case and begin to define product requirements.



The image shows a poster template for LEGO's PGX: CONCEPT X. It is titled 'LEGO PGX: CONCEPT X CONCEPT OBJECTIVES'. The poster is divided into several sections:

- CONCEPT ONE-LINER**: A section for a single-line description of the concept.
- TO**: A section for the main business objective (e.g., fill the gap/gain attention from target group/improve profitability/etc.).
- BY**: A section for the main experience objective (e.g., creating new play experience/adding exploration/play/etc.).
- WITH**: A section for the concept (e.g., the extension/new platform/styling variations/items/etc.).
- FOR**: A section for the target consumer (e.g., 4+ boys/growing-up girls/school-going adults/gift-givers/etc.).
- LINK TO CONCLUSIONS FROM P1**: A section for key recommendations and directions from PMDLT, including the P1 foundation and scoreboard, and those relevant as basis for this concept.
- LINK TO SHARED VISION**: A section for linking to the shared vision.

In more depth

Read more about other [visual management techniques](#) that could be useful during the development stage of the design process and find out how formal [design process management](#) works in other companies that took part in our study

Only when the project business criteria are in place, and the financial case for a new project has been proved, does the design team become involved.

- **In P2 (concept freeze)** the team establishes what the concepts are about in the context of overall business, product, communication and process requirements. The design team becomes involved, concepts are created and evaluated, some initial prototyping may be undertaken, the first full business case is prepared and detailed market analysis is used to identify the market opportunity for the new project
- **In P3 (portfolio freeze)** the team establishes which concepts are ready to be turned into projects. The full project requirements are established, including staff requirements, tooling and design costs and the full business case is put forward for approval. Some concepts that arise at this stage may not be LEGO-based and can be taken to other areas of the business for further exploration.

Overall, the journey from P0 to P3 can take up to six months.

Teams present their outputs from the P prototyping phases using standardised document templates. The foundation document is formed from a series of templates, and is used to create a foundation for each stage gate activity. It brings the core team activities together in an easy to understand document.

Tools such as the foundation document have made comparing different project options much more straightforward, and make decisions more objective says Smith-Meyer. 'Before, we had some people presenting 6 pages, some presenting 86 pages, some used CGI and interactive presentations. Now everyone presents in equal terms, focusing more on content than presentation, so we can compare apples with apples.'

Idea generation at LEGO

LEGO has produced a detailed idea-generation process to assist its design teams during each phase of the overall development process. Operating as the full design cycle in miniature, the process is intended to transform business objectives into design recommendations by encouraging the development team to conduct a logical sequence of actions, with each part of the sequence having its own defined deliverables.

This sequence begins by Exploring the problem. In this research phase, the team examines the background to the design challenge through desk research, field studies and interviews with consumers and expert knowledge holders.

Insights from the exploration phase are delivered at the end of the process, and these are used by the team in the Developing phase. During this phase, basic ideas are sketched out, from mood and colour guidelines to visual or solid mock-ups of proposed designs, packaging or themes.



The ideas from the exploration phase are presented formally to the entire project team, and then undergo a rigorous process of Validation, during which they are shown to key stakeholders including potential users, their parents, retailers and sector experts, and assessed against the objectives set.

Feedback from the validation phase may be used to refine design recommendations and to generate new insights, resulting in an iterative process before the final deliverable, recommendations on how the project will be taken forward.

In more depth

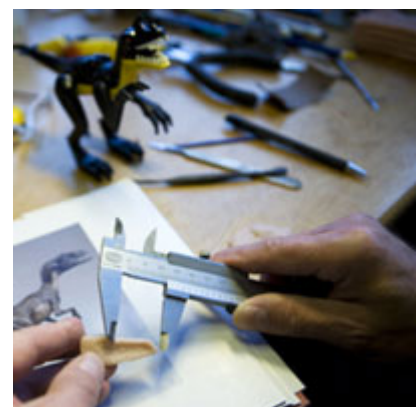
Read more about [development methods](#) and how, in this stage of the design process, prototyping and iterating the concept can get it as close to being an end product or service as possible

After completion of the cycle through the P prototyping stages, the project is reviewed and a go/no-go decision is made before the M phases take the concept forward to manufacture.

- In **M1 (project kick off)** designers and product managers work together to refine the product definition and the business plan that will be used to bring it to market, ensuring that all design activities will be focussed on fulfilling the precise business brief
- In **M2 (business freeze)** the business case is finalised and product design can be completed to meet the business requirements
- In **M3 (product freeze)** product design is complete and attention turns to the packaging, marketing and communication aspects of the project
- In **M4 (communication freeze)** all physical aspects of the product, packaging and communication materials are finalised and LEGO's manufacturing specialists can begin the process of building the supply chain necessary to deliver the product to market
- In **M5 (procurement freeze)** the supply chain is completed, manufacturing is started and the product is launched.

For Smith-Meyer, the inclusion of all elements of packaging and communications design into the core Design For Business process was an essential element of the transformation. 'For me, a product itself is communication, it sends a signal to the consumer, it goes hand in hand and is as much communication as the packaging and design of the advertising.'

Does such a formal overall process stifle individual creativity? Bjørn is emphatic that it does not. 'I think it allows us to be more creative, because now our designers don't have to think about how they are going to structure a new project as a design manager, they don't have to spend time and suffer pain trying to reinvent things



that somebody has already done. Through this we become more efficient and effective as a design team.'

Tools, techniques and tips

LEGO has developed a wide range of tools to help its designers, development teams and the wider business to apply its Design For Business process. The process is explained on colourfully illustrated posters and leaflets, and a series of standard templates is used by the development teams to allocate tasks, record progress and present the results of each phase of the design process.

For example, the [Foundation document](#) is a standard Microsoft PowerPoint template used by development teams to present their ideas. The template helps the teams to explicitly link their proposals to the original business goals and objectives. The designers then use a standard roadmap in poster form to monitor their progress through the design process aligning with other activities in the project also mapped in the same roadmap.



LEGO is in the process of building two additional support tools to help designers to converge rapidly on the best solution for a given problem.

The first of these is LEGO Design DNA, a tool to manage the design language of each product group, ensuring both that products designed for a particular group work cohesively within it, and that the different product groups remain distinct from one another.

LEGO Design Practice is a knowledge base of tools and methods to help designers identify, use and share best practice in their design process. The system covers everything from research, validation through build ability and stability criteria to the quality of the building instructions and user testing.

LEGO also uses a bespoke 3D CAD tool that, combined with physical modelling, helps its designers build virtual concept and final models of new designs. The tool has huge productivity benefits, says Paal Smith-Meyer, Creative Director, not only because it speeds up modifications compared to building physical models, but also because the finished CAD model is used extensively by the wider organisation. 'The 3D team use it together with the communication department. This allows them to quickly work on close to final art and basis for box design, communication material, building instructions, ability to also use different versions that can become assets on the web site or in animation production.'

In more depth

See what [tools and techniques](#) other companies in our study use and find out how [design process management](#) could help your business

Concept lab

In addition to its core team of designers, LEGO has a group of 15 designers in a concept lab, with the aim of identifying opportunities to deliver more radical products that redefine particular markets. The concept lab operates on a different cycle to the core LEGO Design For Business process, producing quarterly reports on novel ideas that are evaluated for possible inclusion in later production products. The concept lab exists, says Smith-Meyer, because 'we need to continually explore entirely new ways of using our systems for future product offerings, allowing core business to focus on optimising existing offerings.'

In more depth

See how [design research groups](#) have helped other companies in our study generate new ideas

Capability building

Today, the D4B process and tools are at the core of the entire development organisation and will continue to expand into other areas of the organisation. As pioneers of this process, the development department was the first to institutionalise the new approach, which will in future form a core part of the induction process for new design staff and core team members.

In more depth

Find out how other companies in our study hire designers who demonstrate a [wider skill set](#) including: multi-disciplinary working, business acumen and strategic thinking

With thanks to LEGO

For the purposes of the design process study, we met with Paal Smith-Meyer and Torsten Bjørn, Creative Directors at LEGO.

To find out more about LEGO, visit the corporate section of www.lego.com

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