

Eleven lessons: managing design in eleven global brands

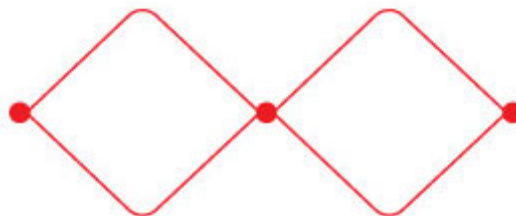
# The design process

Different designers manage the process of design in different ways. But when we studied the design process in eleven leading companies, we found striking similarities and shared approaches among the designers we talked to. In this section we show one way of mapping the design process, and give more detail on the key activities in each of the process's four stages.

## The 'double diamond' design process model

The double diamond diagram was developed through in-house research at the Design Council in 2005 as a simple graphical way of describing the design process.

Divided into four distinct phases, [Discover](#), [Define](#), [Develop](#) and [Deliver](#), it maps the divergent and convergent stages of the design process, showing the different modes of thinking that designers use.



### Discover

The first quarter of the double diamond model marks the start of the project. This begins with an initial idea or inspiration, often sourced from a [discovery phase](#) in which user needs are identified. These include:

- [Market research](#)
- [User research](#)
- [Managing information](#)
- [Design research groups](#).

## Define

The second quarter of the double diamond model represents the [definition stage](#), in which interpretation and alignment of these needs to business objectives is achieved. Key activities during the Define stage are:

- [Project development](#)
- [Project management](#)
- [Project sign-off.](#)

## Develop

The third quarter marks a period of [development](#) where design-led solutions are developed, iterated and tested within the company. Key activities and objectives during the Develop stage are:

- [Multi-disciplinary working](#)
- [Visual management](#)
- [Development methods](#)
- [Testing.](#)

## Deliver

The final quarter of the double diamond model represents the [delivery stage](#), where the resulting product or service is finalised and launched in the relevant market. The key activities and objectives during this stage are:

- [Final testing, approval and launch](#)
- [Targets, evaluation and feedback loops](#)

## The design process in eleven global companies

To find out about the design process in leading global companies the Design Council undertook its most in-depth study ever.


Researchers visited the design departments of eleven companies all world-leaders in their fields and all with a public commitment to the use of design to improve their brand strength and product and service offerings. You can use the links below to navigate the individual case studies:

- [Alessi](#)
- [BSkyB](#)
- [BT](#)
- [LEGO](#)
- [Microsoft](#)
- [Sony](#)
- [Starbucks](#)
- [Virgin Atlantic Airways](#)
- [Whirlpool](#)

- [Xerox](#)
- and [Yahoo!](#)

While the companies we spoke to had very different ways of managing their design processes, and though the terminology they use may differ from that of the double diamond model, there are some core stages within a design process that are common across the participating companies.

### **In more depth**

The double diamond model is not the only model of the design process. You can find out more about the way other academics and design researchers define and measure design processes by downloading a PDF version (464KB) of our detailed  [Desk Research Report](#)

## **Discover**

**The start of a project is marked by an initial idea or inspiration, often sourced from the Discover phase.**

The objective of the Discover stage is to act as a ‘phase of divergent thought’, where the designers and other project team members keep their perspectives wide to allow for a broad range of ideas and influences. In this stage of the design process, the company is asking a question, posing a hypothesis or identifying a problem by analysing market data, trends and other information sources.

During our in-depth study of the design process in eleven global brands, we found that [LEGO](#) refer to this stage of the process as Exploring, [Microsoft](#) call it Understand, while [Starbucks](#) have coined the term Concept Heights.

It is worth noting, however, that in practice an element of discovery takes place throughout the design process, aimed at taking into account new information, user needs, competitive contexts or challenges that arise as the project progresses.

### **Initial influences and inspiration**



Companies begin the design process when they want to develop a new product or service, or refine an existing one. The initial influence or inspiration for this can be triggered in a variety of ways. It may involve picking up on social or environmental trends, the launch of a competitor product or service, or tapping into the ideas of staff or networks.

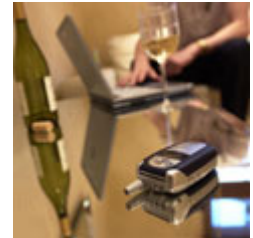
Within the company, the originator of an idea or suggestion could be a product manager, CEO, designer, user research, or even a customer. Indeed, companies like [Whirlpool](#) encourage all of their employees to take part in corporate innovation. In contrast, [Alessi](#) may be approached by a well-known designer who is seeking a

collaborative venture, or [Virgin Atlantic's](#) design head may receive a speculative email from the Chief Executive.

Wherever the initial idea comes from, the design process in general and the Discover stage in particular provides a framework within which to process the initial ideas or inspiration. The Discover stage helps to identify the problem, opportunity or user need that should be addressed, and introduces the space within which design can provide a solution – the playing field for design. It is important that the design process used in the company allows for ideas to be captured and developed in this way, and fosters this type of creative environment among designers and other staff.

### **Information sources**

We've seen that the initial influence or inspiration for a project could come from key individuals – such as the design leader in the company. It can also come from the need to regularly update or change a product or service. However, the design process most commonly begins with teams finding their initial inspiration in information about user behaviour. Indeed, the most formalised sources of inspiration and information are the outcomes and interpretation of market research and data, observation, primary research or ideas that have been generated in formal or informal settings by members of the team.



This often takes the form of three key sources of information:

- Use of [market research](#)
- Generating [user research](#) (such as ethnography and observation)
- The involvement of a bespoke [design research group](#)

While their focus and settings differ, the design teams in all the companies we visited share a user-driven mentality, which is apparent in the up-front phase of enquiry and gathering of initial research into the behaviours, needs and perceptions of users. This information is digested by multi-disciplinary teams during the design process, including researchers, designers, product manager, engineers, research and development experts and developers.

All this research and knowledge-gathering activity creates an enormous amount of information. [Managing that information](#) is another key challenge that many of the companies in the research are addressing in creative ways.

### **Limitations of research**

While most companies used the research methodologies described above, it was generally acknowledged that such methodologies were not without their limitations. Some designers expressed concerns about whether consumer feedback could 'take you to the next level' when it comes to product and service development.



While consumers can react to what exists and relate back to what they know, some designers felt that consumers are less able to contribute to the development of completely new product or service concepts for the future. Indeed, academic studies of design-inspired innovation have noted [Alessi's](#) Juicy Salif lemon squeezer by Philippe Starck as a product where the design has not relied on 'classic market analysis based on surveys of focus groups', due to a belief that 'radical innovation of meaning is not pulled by the market [but] results from a vision about a possible future'. Design teams in companies like [Virgin Atlantic Airways](#) and [BSkyB](#) conduct user research at a stage where a prototype is well developed, rather than involving users at the concept development stage.

The outcome of the Discover stage of the design process is a project brief for a design project, and signifies the practical start of the design process.

## Market research

**One source of information that can lead to the development of new products and services is market and research data. This can mean the outputs from companies' own internal marketing, consumer insight or research teams, who commission and manage regular information and data from key target customer groups.**

It involves tracking perceptions and attitudes related to the company, its products and services, brand perceptions and customer satisfaction, and is also likely to include competitor analysis, and gathering feedback on the commissioning company's performance and reception in contrast to that of their competitors.

Through the analysis of such data by designers and other members of a project team, gaps in the market and areas for improvement and innovation are identified.

### Future trends

While timely and regular market and research data can help to identify user needs and future trends, there is equally a need to anticipate future user or consumer needs. In order to address the requirement for information of this type, specific future-focused or trends analysis is often used.

Particular topics of interest here revolve around:

- Consumer behaviour and preferences in relation to the product or service offered by the company
- New modes of communication
- New service needs that may emerge on the basis of social, economic or environmental changes

The breadth of focus here opens up the possibility of a wide range of impacts on companies' products and services – from complete product innovation (in response to issues such as global warming or technological changes), to styling preferences such as colours, finishes, materials and textiles.



An example of a design process involving the anticipation of future user needs is [Sony's](#) development of the mylo personal communicator. The mylo was designed to use the many WiFi networks that are being installed in offices, university campuses and towns across the world, and its design involved understanding and anticipating the needs of a user 'on the run'.

Similarly, [Whirlpool's](#) conceptual research initiatives have involved studying future trends in food sourcing, storage and preparation.

Finally, at [BSkyB](#) the Research & Development team is a future-focused group who look for new cabling solutions, and ways of using technological advances to provide better service solutions in customers' homes.

## User research

**The emphasis on user needs and experiences in the companies we visited means that user research features heavily in the design process.**

User research is used to identify:

- How users are accessing current products and services
- Areas for improvements or innovation
- Opportunities for new products and services that will address a user need

Many user research methods find their roots in traditional market research methodologies, particularly when it comes to the gathering of data on customer satisfaction and trends. A significant proportion of user research is conducted through qualitative research with consumers, ranging from focus groups and depth interviews with target audience groups, to more focused and detailed ethnographic and observation based techniques.

Stimulus materials such as cartoon strips to portray service propositions, storyboarding, scenario-building, multimedia, prototypes and other tools (such as eye-tracking technology for testing user interaction with software packages) are used to illustrate present and future user scenarios involving the use of their products and services. Using images and illustrations to bring the use of complex products and services to life is a useful way of communicating during user research.

## Designer involvement in user research

A key activity we noticed across all of the Discover methods and processes was involving designers as far as possible in conducting, analysing and understanding research.



Many of the companies in the survey found that actively encouraging - and in some cases expecting - their designers to take part in user research allowed them to gain faster, deeper insights and better product ideas. This approach ranges from general multi-disciplinary design practices (which keep designers, user researchers and product or service developers working closely throughout the design process), to methods made available for designers to view user research) in practice, either remotely or in person.

Some noteworthy examples of designer involvement in user research observed in the study include:

- [Starbucks](#) sends their designers to work as baristas in their stores for up to a month to fully immerse them in the coffee and user experience that the Starbucks brand embodies.
- [Xerox](#) sends designers out with service engineers when they visit customer sites to observe customers interacting with the product while in use.
- [Microsoft](#) live-streams user research focus groups and sessions to all of its global locations. These are accessible by all employees but of particular use to designers, developers, programmers and researchers across all business functions.

The benefits of involving the designers closely in user research are broadly that:

- Designers bring particular creative skills or idea generation to the analysis of research-based information, and these skills help to identify problems and solutions emerging from the data
- Having designers involved directly with other teams in the analysis of data and research involves multi-disciplinary working and thus gives other teams an insight into the skills that designers bring to the process
- This kind of collaboration helps to clarify project objectives at an early stage.

## Managing and planning information

As well as gathering these types of information during the Discover stage of the design process, design teams also face a key challenge in the way in which this information is used by, and shared with, the design function and with a wider project team.

The design processes we observed managed this challenge in two key ways:

Planning with information - Using the design process to plan the flow of information through the development phase and manage the interaction with designers and other teams throughout

Designer involvement in [user research](#) - Ensuring that designers are contributing to and taking part in research with users themselves.

## Planning with information

Reflecting the findings of market data, research and future trends - and making appropriate design changes where necessary - presents a considerable challenge when planning the development of a new product or service.

### LEGO ROADMAP: OBJECTIVES OF CORE TEAM

Year	Q1	Q2	Q3	Q4
2010				
2011				
2012				

### OBJECTIVES OF CORE TEAM

Category	Begin	End
Customer		

Most companies deal with this issue by setting strategic targets, deciding their objectives at least one year in advance and drawing up new product and service development plans accordingly. This is supported by having a formalised design process, which acts as a roadmap from the point of receiving information on users.



For example, [Whirlpool](#) has defined a set of metrics through which it aims to predict consumer behaviour and design or innovate ahead of the curve so that needs have been anticipated and addressed in advance. And [Starbucks](#) plans its promotional campaigns one year in advance, with the help of its design process, starting with information from market research.

## Design research groups

One criticism levelled at trends research is that future trends are sometimes researched in isolation of design thinking, with design thinking applied only after a trend has been identified. In order to bring design thinking closer to new business areas, product opportunities and user needs, several businesses have set up design research units whose main purpose is to generate new ideas alongside design thinking.

The Design Innovation Team at [Yahoo!](#) in San Francisco functions as an off-site incubation centre for designers on sabbatical from project work, allowing them to actively experiment, create and design for a period of three to six months. As such, it stands slightly removed from the design and project work conducted within Yahoo!, but can still yield ideas for products and services that are then exploited within Yahoo! at a later stage.

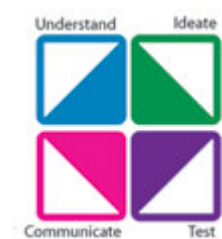


In other cases, externally commissioned designers are brought in to generate ideas for the business, such as in [Xerox's](#) Design Research Group, based in the US. The designers commissioned by this group generate ideas through research with customers and focus on visual identity, such as colour and finishing trends.

At [Virgin Atlantic Airways](#), the design team works in a more informal manner with the Research & Development group to access future thinking and ideas that may prove useful to their design solutions.

## Define

**The Define stage should be thought of as a filter where the review, selection and discarding of ideas takes place. This is where findings from the Discover stage are analysed, defined and refined as problems, and ideas for solutions are pitched and prototyped.**



During our in-depth study of the design process in eleven global brands, we found that [Microsoft](#) call this the Ideate phase, [Starbucks](#) have named it Downtown and [Whirlpool](#) refer to it as Synthesis.

During the initial [Discover](#) stage of the design process, the design team and its partners must keep a broad perspective and open mind in order to identify a problem - a user need or an opportunity that needs to be addressed and channelled into a design-led product or service development process.

At the Define stage, a combination of the ideas or directions identified during the Discover stage are analysed and synthesised into a brief with actionable tasks related to new and existing product or service development.

The Define stage ends with a clear definition of the problem(s) and a plan for how to address this through a design-led product or service. In practice, the Define stage ends in a project go-ahead through corporate level sign-off.

Key activities during the Define stage are:

- The generation of initial ideas and [project development](#)
- Ongoing [project management](#)
- Corporate objectives agreed and [project sign-off](#).

At most of the companies we visited, the Define stage would end with final sign-off of the concept and approval of work to begin on design and development. In some companies, much of the actual designing has effectively been frozen until the match between the concept and the overall corporate objectives that it will be aligned to and measured against have been agreed. Here, strategic dialogue takes place up front, and potential bottle necks, opportunities and no-go areas are defined ahead of the concept

approval. In this way, the development of the design project gets as far as possible without impacting negatively on finance, time and resources.

It is worth mentioning at this stage that the companies we visited as part of the study place particular emphasis on the Discover and Define stages of the design process, which no doubt contributes to the overall success of their design and design processes.

## Project development

**Having defined the problem in the Discover stage, the Define stage covers the initial development of project ideas and components needed to solve the problem at hand.**

Here, it becomes important for the whole team working on the project, and not least the designers, to have an awareness of a number of factors that influence the possible solutions to the problem.

Firstly, designers must understand the context within which the project is being undertaken. The Discover stage establishes that a problem or opportunity exists, and that a product or service development or iteration is necessary as a result.

During the Define stage a designer must engage with and understand the wider context in which this problem or opportunity sits, both within and beyond the company. This might include considering the company's own financial situation and the extent to which it is able to invest in a project, the recent launch of a competitive product with similar features, or social and economic contexts which require a certain approach or sensitivity, such as an awareness of sustainability issues.



At [Virgin Atlantic Airways](#), the role of design in the innovation process is valued, but is subject to the careful development of a robust business case before a project commences, and must – in many cases – also be compliant with airline regulations. Once a large monetary commitment has been made there is little tolerance of failure, requiring the need for the in-house design team to innovate in-line with very strict business guidelines.

Secondly, the designer must equally keep in mind what is feasible within the company's technological or production capabilities. A clear understanding of details such as materials, logistics, time-to-market and other influencers is a key part of understanding the wider corporate ability to develop a design solution.

This enquiry is not as detailed during the Define stage as during the Develop stage, but rather serves as a filter that allows designers to identify which idea has legs and should be pursued and developed.

Communication with other experts and departments internally is important at this stage. In most cases the design process oversees clear lines of communication between designers and other area experts, such as engineers, developers, materials experts, Research & Development teams, and product or service managers who are able to input the right information that will guide the designers' initial ideas.

Air safety regulations, weight and dimensions naturally affect design of products at Virgin Atlantic, and the design team runs regular milestone meetings where designers and manufacturers meet to make sure that they have the same interpretation of the design and that production is feasible.

Similarly, [BSkyB](#) must take manufacturing capabilities into account at this stage in the design process, as its set top boxes are manufactured by three different companies.



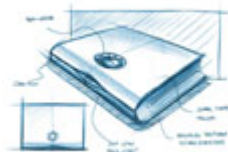
Thirdly, initial ideas generation must consider the corporate brand. The design process involves constantly checking to ensure that ideas generated are in line with the corporate brand vision, mission, values and guidelines. [Starbucks](#) checks each graphical execution of campaign materials against five core values. Any executions which are deemed not to fulfill each of these values go back to the drawing board for development or amendment.

Another example of brand awareness at this stage of the design process is within [Whirlpool](#), where its Platform Studio, consisting of an inter-disciplinary group of designers, advanced manufacturers and engineers, think about new areas for innovation.

They act on the basis of market research and data that is interpreted and analysed for product solutions, and use design thinking and prototyping as ways of interpreting user needs. The outputs from the Platform Studio are then passed on to the brand studios for consideration and implementation. The brand studios consider the fit between the latest design features and functions and the brands themselves.

This exchange is a key part of the design process in Whirlpool and allows the brands to retain their own integrity while still capitalising on the design guidelines of the central design and innovation function.

In sum, the project development and initial ideas generation phase of the Define stage reviews the context for the product or service development, the realism of what can be done, and the corporate brand. Taking these considerations into account, designers work through the project development and initial idea generation stage to define a project which will address the initial problem identified.



Designers work in a variety of ways to do this, to refine the scope of the project, and to home in on which solutions can have impact, which product or service has scope or potential, which product or service

would push the business and design in the right direction. Some of the methods used include reviewing further research, role-playing, paper prototyping, day-in-the-life scenarios, sketching, reviewing ideas, considering colours, styles and trends, project team scrums, selections, and brainstorms, among others.

## Project management

As design projects move from their initial discovery phase into the more structured process of definition, so the companies in our survey began to use a variety of more formal project management tools.

Formal tools serve two main purposes during project definition. They help design teams to ensure that they have considered and captured every essential aspect of the design problem – to avoid unpleasant surprises later – and they help in the communication of the design specifications to other parts of the organisation, so they can make go/no go decisions or sensible choices about the resources required to support the development of the design.

LEGO PGX: CONCEPT X CONCEPT OBJECTIVES	
CONCEPT ONE-LINER	
TO	Fill main business objective (e.g. fill the gap/market opportunity/profitability/etc.)
BY	Fill in main experience objective (e.g. creating an experience/adding excitement/pleasure/etc.)
WITH	Fill in concept (e.g. the education pathway/operation/business/etc.)
FOR	Fill in target consumer (e.g. 4-6 boys/young girls/adults/girls/etc.)
LINK TO CONCLUSIONS FROM PH	
List key recommendations and directions from PMELT: - from PH Foundation and conclusion - that are relevant as basis for this concept	

[LEGO](#) uses a series of process documents, which it calls the Foundation Overview, Foundation Document and Roadmap to effectively communicate the current status of a design project and to make the case for a particular product adjustment, redefinition or reconfiguration.

In the Define stage of the process, the Foundation Document is particularly important. It attempts to present the full rationale behind every project, including the concept, its business rationale, its target market and the required sales, marketing and communication support. The Foundation Document also allows LEGO management to assess the key risks associated with a new product idea, by spelling out the complexity of the product and any particular development challenges, together with recommendations for risk mitigation.



A similar approach to project management is used by [Starbucks](#). Originally, graphical executions of in-store promotional campaign work were posted internally in a shared space in the Seattle office for the wider Global Creative team to review and comment on. Team members would provide feedback in writing on each execution, suggest amendments and alterations, or sign-off approval.

This system is now being transferred into an online workflow management tool, which manages this process of design iteration in a highly efficient, automated way. By capturing design iterations and feedback in a central repository, the workflow management tools speeds up the approvals process and captures important design information for wider use.

While some project management approaches attempt to define the project specifications in as much detail as possible before design development begins, others adopt a fundamentally different philosophy. Some companies, particularly in the software sector, consider changes in project definition to be an inevitable part of the design process. Their management systems try to make the implementation of those changes as quick, cheap and painless as possible.

[Yahoo!](#) product development makes use of project management systems for software development. AGILE is one of these systems, and is one of a family of approaches to software development. A number of key principles underlie the AGILE methodology:

- Customer satisfaction by rapid, continuous delivery of useful software
- Working software is delivered frequently (weeks rather than months)
- Working software is the principal measure of progress
- Even late changes in requirements are welcome
- Project progress through close, daily, cooperation between business people and developers
- Face-to-face conversation is the best form of communication
- Projects are built around motivated individuals, who should be trusted
- The development process should pay continuous attention to technical excellence and good design
- Simplicity
- Projects are delivered by self-organising teams
- Regular adaptation to changing circumstances.

In the AGILE system, designers, user researchers, developers and commercial staff work closely together on a given project. Team members may work separately on their particular parts of a project, but they come together frequently to take projects forward, and adapt quickly to changes and new information where possible. This type of project management, helps designers to identify where and when their input is most valuable, and to communicate that input frequently to other members of the team.

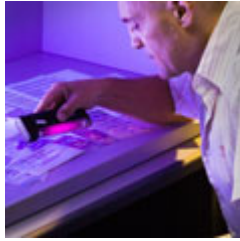
## Corporate sign-off

**At most of the companies we surveyed, the end of the Define phase is a pivotal point in the design process. It is at this stage that projects are either killed off, or given the budget and approvals to move on to production.**

In order to make this go/no-go decision sensibly, companies must have a detailed understanding of the likely market for the new design, together with a good idea of the cost and complexity of producing it.

The ability to present a well argued business case alongside a proposed design approach was a key attribute for almost every design team we spoke to in our survey. [Yahoo!](#), for example, says that its project teams, including designers, must be able to

explain how their proposals will 'move the needle' and produce a dramatic improvement in revenue.



Companies in our survey did vary, however, in how far they allowed or required a design to progress before making the go/no go decisions. At [Xerox](#), the aim is to present one concept that has been thoroughly reviewed and tested. At Yahoo!, the 'demo or die' principle necessitates the existence of a working prototype. At [Virgin Atlantic Airways](#), before official sign-off, there has already been an intensive period of collaboration working with external agencies to 'define' very closely their business case and employ model makers to create a 3D prototype.

Many companies have formal processes to manage the corporate sign-off process and to ensure that project teams and designers deliver comprehensive and consistent information to those responsible for sign-off. At [Yahoo!](#), when the AGILE methodology is used, a Product Requirements Document is produced by the product and marketing teams and presented to the General Manager of a business unit for approval. This one page document shows the concept, confirms its logic through research and information from internal experts, and demonstrates tie-ins with the overarching corporate objectives.

At Virgin Atlantic Airways an Opportunity Identifier is presented to the board, followed by the development of a detailed business case to request financial and corporate backing for further development. At [LEGO](#) the Foundation Document is used also to bring together all the information needed assess the viability of a project.



Some companies use less formal processes to make the go-ahead decision for design projects. It is not unusual for the final decision about the viability of a project to be made by the CEO. Indeed, a close link to the CEO can have a significant impact on project success. In BSkyB and Alessi, for example, the proximity of the company head to the new product and service development process lends itself to speedy sign-off and wider support.

## Develop

**At the Develop stage the project has been taken through a formal sign-off, which has given the corporate and financial backing to the development of one or more concepts that have addressed the initial problem.**

During our in-depth study of the design process in eleven global brands, we found that [Microsoft](#) refer to this process as Implement, while [Virgin Atlantic Airways](#) call it Design.

Key activities and objectives during the Develop stage are:

- [Multi-disciplinary working](#) and dependencies with other departments
- [Visual management](#)
- [Development methods](#)
- [Testing](#)

During the Develop stage, the design team, either together with key internal partners (such as engineers, developers, programmers, and marketing teams) or via external design agencies, refine one or more concepts that will address the problems or issues identified during the Discover and Define stages.



Design [development methods](#) used here include creative techniques and methods such as brainstorming, visualisation, prototyping, testing and scenarios. The methods and working processes are in many cases similar to those during the Define stage, but are this time focused on bringing the agreed product or service to fruition.

At the end of the Develop stage, the design process will have brought the product development team to a stage where the product or service is ready for delivery to production.

## Multi-disciplinary working

**Multi-disciplinary teams are a key feature of the design processes observed in the companies that took part in this study. And multi-disciplinary teams are a feature strongly in the Develop stage, where input and advice from other areas of expertise are essential to finalising the product or service at this stage.**

Key to this is the way in which the design process aims to break down walls and silos internally, for example between design and manufacturing. The benefits of doing this include speeding up problem-solving during the project, as potential issues and bottlenecks are identified early on, and potential delays are addressed.

In the case of [Virgin Atlantic Airways](#), the design development stage of the design process involves a series of meetings with manufacturers to present the design to manufacturers and gain their feedback.

At [Whirlpool](#) the innovation process and product development phase starts in the Platform Studio (in which designers, advanced manufacturing experts and engineers work together to think about new trends and products) and ends up with a prototype being handed over to the brand studios for final preparation for launch, including user testing.



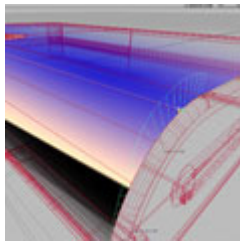
During this entire process, a multi-disciplinary team including product and brand managers from brand and marketing backgrounds, designers from Global Consumer Design, and Global Product Development groups (representing the product category being developed) manages the design process. In doing so, designers are consulting with R&D experts, the advanced materials group, and other key stakeholders.

Designers and team members from other functions and disciplines are effectively involved from beginning to end in Whirlpool's innovation process, and work together to succeed in bringing the best possible product to the market.

## Visual management techniques

**During the Develop stage of the design process, project management is carried out in much the same way as during the Define stage.**

For example, at [Yahoo!](#) the project management tools such as the AGILE principles will still apply, as does [Starbucks'](#) online workflow management tool. However, it is worth noting that many of the tools for project management take on a visual nature at this point in the process.



Visual management techniques allow internal stakeholders to track progress on the design project and see different phases and iterations of sketches, prototypes, and other design work on the product or service concept.

The workflow management tool used at Starbucks is able to showcase graphical work examples and iterations, while [LEGO's](#) Roadmap which is contained in a poster and Excel spreadsheet, and allows the team to plan together how to reach the next stage, by aligning objectives, tasks and deliverables. Such visual management techniques are equally a key communications tool for the rest of the team, and are used to track project deliverables, developments, timings and internal or external dependencies.

## Development methods

**Whatever a company is designing, the principle of the Development phase is to prototype and iterate the concept to get it as close to an end product or service as possible. Lessons from each round of development are fed back in through formal and informal communications within the project team and with its stakeholders.**



In order to reduce costs and development time, companies are increasingly turning to virtual prototyping methods during the early phases of design development. Such methods can range from sketches and renderings to detailed 3D computer models of potential designs. Visual representations are supplemented by physical models made using rapid prototyping equipment or traditional model-making skills.

At the product-based companies we spoke to, the Develop stage included close involvement with colleagues in R&D, materials and engineering departments, and with external suppliers and manufacturers. These detailed insights into materials and engineering requirements help to reduce the number of physical prototypes required and ensure that fewer problems are discovered during testing.

At [Xerox](#), the designers have manufacturing expertise, giving them the ability to assess, together with other experts, what is possible from an engineering or development perspective. The company also uses Failure Mode and Effects Analysis (FMEA) to evaluate potential failures in a design before they take place. The use of FMEA and other analysis methods helps Xerox's design process in whittling down the number of concepts which are put forward for approval, and can usefully help to manage and reduce the cost of prototyping, engineering and tooling.

Very often, insights from development rounds produce changes in product specifications. As development is often the most lengthy part of the design process, external factors can change too, with shifts in the market or competitor activities requiring late changes in requirements to be met.

In most product-based companies we spoke to, actual manufacturing was outsourced. Liaison with manufacturing partners is often a lengthy process as design and engineering teams ensure that their requirements match the processes available at their manufacturing partners.



In the case of [Virgin Atlantic Airways'](#) Upper Class suite development, areas of the new interior, product and service impacted on cabin crew, so Human Resources, Health & Safety experts and cabin crew themselves were consulted during its development.

There are of course some differences in the development methods used when products are less tangible. The development of software products or graphical executions of campaign materials, for example, also involves continuous iterations and the sourcing and use of new information. In software development particularly, new products can be prototyped in situ as the designers, developers and user researchers work out ideas and test them themselves and with external users to iterate a solution.

A good example of such in situ prototyping and evaluation is [Microsoft's](#) design philosophy that designers should 'eat their own dog food' - encouraging them to work with their own products as they are in development.

# Testing

The testing of concepts and prototypes form a major part of the Develop stage.

Some companies use particular principles to guide their testing of products. For example, [Xerox](#) tests its products with Six Sigma principles in mind. The basic methodology consists of a number of steps that are aimed at checking that the design is consistent with user needs and corporate strategy, checking product capabilities, requirements and the ability to meet these, and optimising the design to combine these two. In fact, the Six Sigma process overall can be said to include a lot of what happens in general during the Develop stage, not just the testing phase.

Essentially the methods of testing used rely heavily on traditional market research methodologies, and in most cases testing is carried out with consumers through in situ observation, focus groups and other techniques. Generally the concept is well developed and near final before being tested with users. [Whirlpool](#) carries out simulated and real-life testing of its products with consumers in relevant market and audience groups. [BSkyB](#) will field test its products, such as set top boxes, in people's homes and gather feedback over a period of time.



In the development of Office 2007, [Microsoft](#) observed 200 users interacting with the new user interface over more than 400 hours. [Virgin Atlantic Airways](#), meanwhile, invited a selection of frequent fliers to come in and sleep overnight in its Upper Class Suite prototype chairs.



There is similarly a tendency in some companies to self-test a product. This was observed in companies like Yahoo! and [Microsoft](#). Again, Microsoft's designers and developers engaged in the principle of 'eat your own dog food', turning the project team (including designers, researchers, developers and programmers) into users and requiring them to use the beta product and report back on issues or amendments needed.

# Deliver

The Deliver stage of the double diamond design process is where the final concept is taken through final testing, signed-off, produced and launched.



It will result in a product or service that successfully addresses the problem identified during the Discover stage. It will also include processes for feeding back lessons from the full design process to

inform future projects, including methods, ways of working and relevant information.

During our in-depth study of the design process in eleven global brands, we found that [Virgin Atlantic Airways](#) have named this phase Implementation, [Microsoft](#) call it maintain, and [Starbucks](#) describe it as the Production District.

Key activities and objectives during the Deliver stage are:

- [Final testing, approval and launch](#)
- [Targets, evaluation and feedback loops.](#)

## Final testing, approval and launch

**This final stage of the process is designed to identify any final constraints or problems before manufacture and is when the product or service is checked against standards and regulations, and undergoes damage testing and compatibility testing.**



At [Virgin Atlantic Airways](#), final testing involves practices such as First Article Inspection and snagging. First Article Inspection is an assessment of the first item off the production line to ensure that it is fully functional. This will happen in parallel with production as there will be many components being produced and assessed in parallel at any one time.

Alongside this, snagging involves picking up any small adaptations necessary in relation to the product which are picked up at the point where it is tested in an aircraft environment, as opposed to in the factory environment.

## Launching the product or service

At this point in the design process the product or service is launched, and the process now includes liaison with appropriate internal teams in areas such as marketing, communications, packaging and brand.



At [Starbucks](#), the importance of internal communication and the acceptance of designs is acknowledged during the production phase too. Shop floor representatives are involved in final product reviews and part of the design process is the production of photographic instructions to help store managers install and arrange new items correctly once delivered. These directions are distributed in the form of a magazine - Siren's Eye - which describes every element of each

season's offering, with full instructions on installation and display to ensure a consistent brand experience in every store world wide.

## Targets, evaluation and feedback

Most of the companies we spoke to are required to report back on the success of the launched product or service. The common aim in doing this is to prove the impact of good design on the success of the product or service. Being able to prove that design contributed to business success helps to gain buy-in for design and maintains the team's credibility and perceived value to the organisation.

Measuring the impact of the product or service is done by collecting data from a number of sources. For example, companies use their internal consumer insight, research or marketing functions to carry out customer satisfaction tracking surveys and link changes in satisfaction to the introduction of products or services.



The introduction of a new product or service can be linked to other business performance metrics, such as sales and market share. [Virgin Atlantic Airways](#) was able to link a 2% increase in its market share to the launch of the Upper Class Suite, worth £50 million annually, a significant measure of success which is widely attributed to the design team.

Companies will also encourage customer feedback through in situ channels – via baristas at [Starbucks](#) or service operators for [Xerox](#). Equally, data on the sales of spare parts or logged in-service failures are tracked in companies like Xerox and Whirlpool, and may indicate where design has successfully overcome problems in a product or need to be developed in more detail.



Finally, where companies see design as an extension of the brand, design is valued as part of the overall company brand value. This is the case within [BT](#), where design is assumed to be strong contributor to the overall £6 billion brand value of the company.

Companies take their responsibilities in reporting back on the success of a design project very seriously, and many point out that they are required to do so. Whirlpool has a one page summary of performance of their products against a number of hard metrics, which is circulated widely internally to demonstrate the level of success achieved.

At Virgin Atlantic Airways, in-use evaluation of designs is quite extensive. Not only is the company's senior management 'a group of frequent fliers who provide extensive feedback,' it also gives customer the opportunity to fill in detailed evaluation questionnaires – called Xplane – after every flight.

The link between interior designs and Xplane data is very robust, with even small changes in seat design, introduced to meet the size constraints of individual aircraft, being reflected in customer response. Virgin Atlantic also uses third party benchmarking data to compare ongoing customer satisfaction with that of its competitors.

## Feedback loops

The information and metrics that are gathered are, of course, not always quantitative business metrics. Feedback related to problems with a product or service, or suggestions for improvements, flow back into the organisation via other channels, and can be used to spin off into new projects or improvements. One example of this type of information would be feedback gathered by [BSkyB](#) from its customer service centres. Ideas that have emerged during the design process or in post-launch feedback may be put to one side but developed later, and will then go through the design process again on its own. Alessi's private design museum, for example, houses a vast number of prototypes that were 'frozen' at some stage and never developed. However, some of these prototypes have been known to be 'unfrozen' and brought into production at a later stage.

Equally, lessons from the entire design process are usefully documented and logged in the various [methods banks](#) and case study libraries used by the companies.

---

## Other ways to view the content

- See how design is used to meet different [business challenges](#)
  - Learn how companies who participated in the study [manage their design function](#)
  - Find out how to deliver great design with the help of these [tools and techniques](#)
  - Read about the design process at [individual companies](#)
  - See how [formal processes](#) allow companies to track their design activities
-