



# iINTERACT – User Centred Design Methodology

In this age of technology exploitation, we tend to engineer solutions or applications which unfortunately lack focus on user experience strategies and the user community. The gap between user expectation, workflow and end product usability reduces the value proposition of a solution.

The iINTERACT Design Methodology, which is based on ISO Standard 13407 (Human-centred design processes for interactive systems) provides a modular approach that aims to deliver customised solutions to an organisation's usability problems.

This document will explain the building blocks behind the iINTERACT Methodology, the approach and the process followed and the various tools and activities utilised during the implementation of the methodology.

## ISO 13407 – Human centred design processes for interactive systems

ISO 13407 provides guidance on achieving quality in use by incorporating user centred design activities throughout the life cycle of interactive computer-based systems. It describes user centred design as a multi-disciplinary activity, which incorporates human factors and ergonomics knowledge and techniques with the objective of enhancing effectiveness and productivity, improving human working conditions, and counteracting the possible adverse effects of use on human health, safety and performance. ▶





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There are four user centred design activities that need to start at the earliest stages of a project:

- Understand and specify the context of use
- Specify the user and organisational requirements
- Produce design solutions
- Evaluate designs against requirements.

Primarily written as guidance for project managers, ISO 13407 identifies five main principles:

- Users must be involved early and consistently;
- There must be a clear understanding of user and task requirements;
- There must be an appropriate allocation of function between users and technology;
- Design solutions should be iterative; and
- Designs must be multi-disciplinary.

The process involves iterating until the objectives are satisfied.

The sequence in which these are performed and the level of effort and detail that is appropriate varies depending on the design environment and the stage of the design process.

### The Business Case for Usability

The benefits of usability engineering extend beyond improving the user interface and end user productivity; its beneficiaries include not only end users but also developers and their businesses. User centred design can reduce software and e-commerce costs, shorten development time and improve marketability.

The following points provide more detail on the business case for usability:

**1. Good usability leads to satisfied, purchasing and returning customers. Bad usability leads to angry customers and potential losses.**

- A user-centered approach raised customer satisfaction by 40% (Gartner 1992). End users/ customers are more satisfied when a system offers relevant services that match their needs and expectations.
- Almost 50% of users do not return if they found it hard to find relevant information on the website (Forrester 1999). Satisfied customers are also more likely to become returning customers.
- 62% of people shopping on the Internet gave up their efforts in finding the merchandise they were looking for (Zona Research 1999).
- 43% of purchase attempts (Creative Good 2000) and 35% in another similar study failed (User Interface Engineering 2000).
- The results for e-commerce sites are devastating, with lost sales due to bad design and poor usability representing a \$3.8 billion loss in year 2000 sales only (A.T. Kearney 2001). ▶



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### 2. Improves Conversion rate. Conversion rate is measured by purchases against traffic.

The best measure of a site's effectiveness is the "conversion rate". This metric refers to a site's ability to convert visitors to buyers. For example, a site with three purchases for every hundred visits will have a conversion rate of 3%.

- By raising the conversion rate to 2.7% (a modest increase, far below the industry leaders) through a user-centered re-design the revenues will increase \$50 million this year, \$62.5 million next year and \$78 million in two years (Creative Good 2000).

### 3. Enhances brand positioning and brand credibility.

- 10% of Fortune 1000 sites should be torn down because their usability is so poor they are hurting the company's brand (Forrester 1998).

### 4. Reduced costs for development and maintenance.

- If the cost of making design changes is 1x during the user-centered design phase the same thing would cost 10x as much during the development phase and 100x as much after product release (Mayhew & Bias 1994).
- American Airlines reduced development costs by 60-90% by making corrections during the design phase (Mayhew & Bias 1994).
- 80% of all software lifecycle costs occur during the maintenance phase (Mayhew & Bias 1994).
- Most maintenance costs are associated with "unmet or unforeseen" user requirements and other usability problems (Pressman 1992).

### 5. Improved productivity.

Although efficiency is not always the key issue in the usage of the system it is often important. It is more productive and efficient if a system is designed to support how users prefer to work and is guided by usability principles for efficiency. Productivity improvements have the largest impact on work supporting systems.

- A major computer company spent \$68,000 on usability work to improve a system that was used by over 100,000 people. The resulting productivity improvement saved the company \$6.8m, which is a cost-benefit ratio of \$1: \$100 (Mayhew & Bias 1994).
- Poor usability on corporate intranets can lead to poor employee productivity; investments in making intranets easier to use can pay off by a factor of ten or more, especially at large companies (CIO Business Web Magazine 1999).

### 6. Reduced costs for training.

Usable systems are easier, more intuitive and require less training. Every hour cut down on training is one hour more of productive work and one hour less to pay an instructor.

- End-user training for a usability-engineered internal system was one hour compared to a full week of training for a similar system that had no usability work. As a result of usability improvements at AT&T, the company saved \$2.5m in training expenses (Mayhew & Bias 1994). ▶

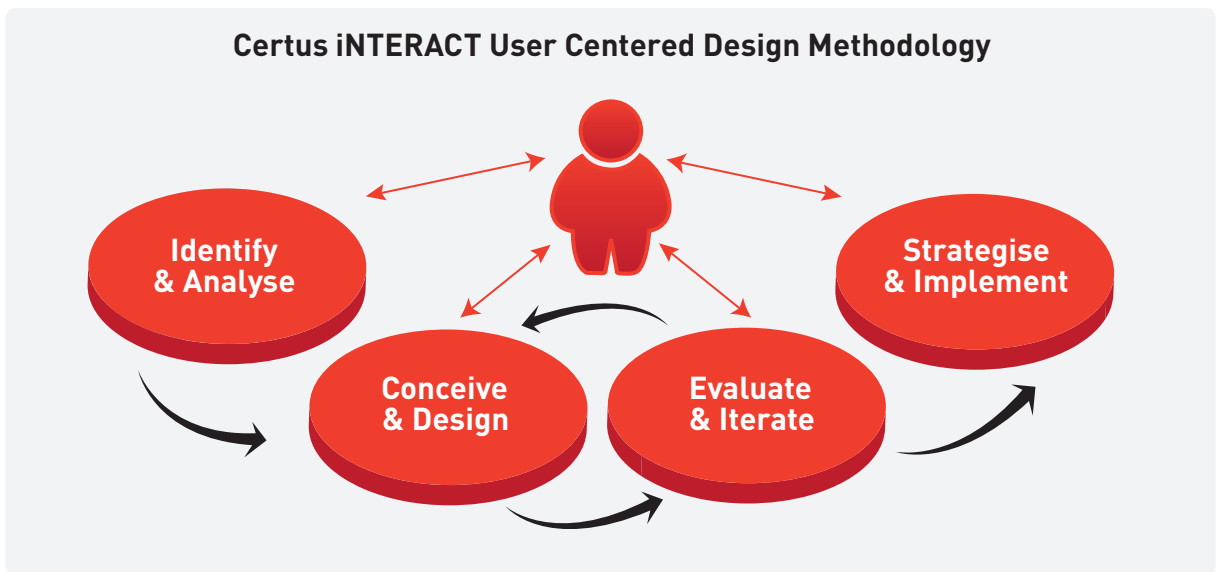


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## Methodology Components

Listed below are the services that will be offered by Certus during the four stages of the software development lifecycle. The following four stages defined in Certus iINTERACT are based on the key activities outlined in the ISO 13407 definition of the user centered design process.

### The Process Flow



Phase 1 Identify & Analyse	This task is comprised of strategic ways to derive usability objectives from business objectives, and to gain commitment to usability. It also collects information about the purpose of the system and its overall context of use.
Phase 2 Conceive and Design	The aim of this task is to understand the key tasks achieved by users through the system, analyse them and enhance their efficiency and ensure that the task flows match conventional user expectations. It is also used to identify any possible gaps in the system's offering.
Phase 3 Evaluate and Iterate	The main objective of this phase is to iteratively identify the areas of improvement in the system by employing assessment techniques and incorporate them in the designs.
Phase 4 Strategise and Implement	The main objective of this phase is to define a best practice strategy and implementation plan.





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## The Process Matrix

The following table details the four stages outlined in the process flow on the previous page. Each stage is comprised of a number of tasks which in turn are achieved through a series of activities.

1. Identify & Analyse	2. Conceive & Design	3. Evaluate & Iterate	4. Strategise & Implement
<b>Task 1: Identifying Business Objectives</b> <ul style="list-style-type: none"><li>• Business Stakeholder Interviews</li><li>• Requirement Gathering Workshops</li></ul>	<b>Task 4: Conceptual Modelling</b> <ul style="list-style-type: none"><li>• User Mental Model</li><li>• Task Analysis</li><li>• Task Flows</li></ul>	<b>Task 8: Expert Evaluation</b> <ul style="list-style-type: none"><li>• Quantitative Analysis</li><li>• Qualitative Analysis</li></ul>	<b>Task 11: Design Production</b> <ul style="list-style-type: none"><li>• Standards based production of deliverables</li></ul>
<b>Task 2: User Research</b> <ul style="list-style-type: none"><li>• One-on-One Interviews &amp; Focus Groups</li><li>• User Observation</li><li>• Contextual Enquiries</li><li>• Personas and Scenarios of use</li><li>• Log Analysis</li></ul>	<b>Task 5: Information Design</b> <ul style="list-style-type: none"><li>• Card Sorting</li><li>• Site Maps</li><li>• Content Analysis</li></ul>	<b>Task 9: User based evaluation</b> <ul style="list-style-type: none"><li>• Cognitive walkthrough</li><li>• Real User testing</li></ul>	<b>Task 12: Style Definition</b> <ul style="list-style-type: none"><li>• Style Guides</li><li>• Usability Guidelines</li></ul>
<b>Task 3: Environment Research</b> <ul style="list-style-type: none"><li>• Review of existing systems(s)</li><li>• Competitor Analysis</li><li>• Domain Expert Interviews</li><li>• Understanding of Technology</li></ul>	<b>Task 6: Interaction Design &amp; Prototyping</b> <ul style="list-style-type: none"><li>• Low Fidelity Wireframe</li><li>• Cognitive walkthroughs</li><li>• Interactive Prototype</li><li>• Development</li></ul>	<b>Task 10: Accessibility Audits</b> <ul style="list-style-type: none"><li>• Accessibility Evaluation</li></ul>	
	<b>Task 7: Visual Design</b> <ul style="list-style-type: none"><li>• High Fidelity Visual Interface concepts</li></ul>		





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## Glossary

Term	Definition
User Centered Design	User Centered-Design is a method that places a user at the centre of the design process. UCD is also a process that focuses on cognitive factors that come into play with user's interactions with things.
Focus Groups	Focus group is a method for collecting ideas and other valuable information. In our methodology this method is used to gather information about the users, business and systems. In a focus group, number of individuals (between 8 and 12) come together to discuss a common theme of interest. The moderator ensures that the desired topics are addressed and that the meeting is focused and well directed towards the topic. A typical session lasts between one to two hours.
Contextual Enquiries	This is a technique to understand users, their workplaces, tasks and needs. It consists of visiting the users on their workplace, observing them carrying out their tasks, and analysing the resultant data. This is an effective technique for gathering information about user needs analysis and task analysis.
Heuristic Analysis	Heuristic Evaluation is a diagnostic method in which experts take the role of less experienced users and describe the potential user experience problems they see arising in a system or interface for those users. The review is based on compliance with a set of global best practice user experience attributes or heuristics.
Cognitive Walkthrough	In the cognitive walkthrough technique, users are observed in a lab-setup where they use the live application. Software such as Techsmith Morae™ is also used in this technique to capture some of the user actions such as number of clicks, and time taken to perform tasks. Users are asked to 'think aloud' when they are performing tasks with the application. Subsequent to this the users take part in a survey. This provides a real world study of the users' actual behaviour with application, using a typical business scenario.
Card Sorting	Card Sorting is a technique for exploring how people group items and reveals the natural groupings of information as desired by the users. This helps in developing navigation and information structures that maximize the probability of users being able to find items.





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## About Certus

Delivering customer value through successful enterprise software projects that align business processes with technology is Certus Solutions core focus and key strength.

Backed by over 20 years experience, Certus designs, develops and integrates enterprise solutions based on IBM software components, implemented to address each client's unique business requirements and environment. As a Premier IBM Business Partner and the largest specialist team of IBM certified professionals across Australia and New Zealand, Certus represents a solid proposition for organisations looking for a full-service enterprise partner, offering a rare depth of expertise across the breadth of the IBM software portfolio.

Certus' experience includes work with some of the region's largest organisations, including Air New Zealand, Aon, Cement Australia, Fonterra, Honda Australia, Tupperware Australia and Westpac.

Owned and operated by its senior management team, Certus employs 100 people servicing over 400 clients from offices in Brisbane, Melbourne, Sydney, Auckland and Wellington.

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## For further information

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