# A Goal-Directed Design Process

- Identifies user req'ts
- Defines a *plan* for behavior and appearance of products
- Design should capture the *Product Definition*

  Goals of users

  Needs of business

  Constraints of technology

Figure 1-6

Problematic Design Process

| Research

Performed by market analysts and ethnographers | **?** The Gap → | Design of Form

Performed by graphic / GUI and industrial designers |

Traditionally, research and design have been separated, with each activity handled by specialists. Research has, until recently, referred primarily to market research, and design is too often limited to visual design *or* skin-deep industrial design.

More recently, **user research** has expanded to include qualitative, ethnographic data.

Yet, without including designers in the research process, the connection between research data and design solutions remains tenuous at best.

What about empathy?

The action of …
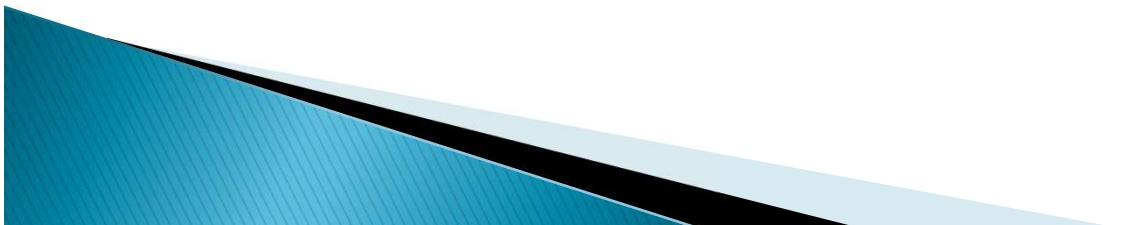
    Understanding

    Being aware of

    Being sensitive to, *and*

vicariously experiencing the feelings, thoughts, and experience of another
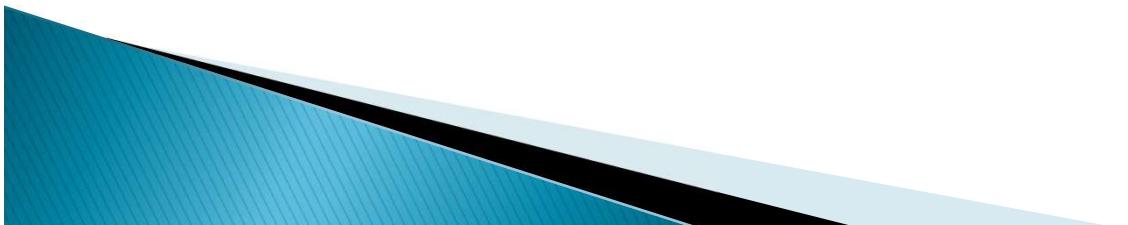
… without having the feelings, thoughts, and experience fully communicated in an objectively explicit manner

What about empathy?
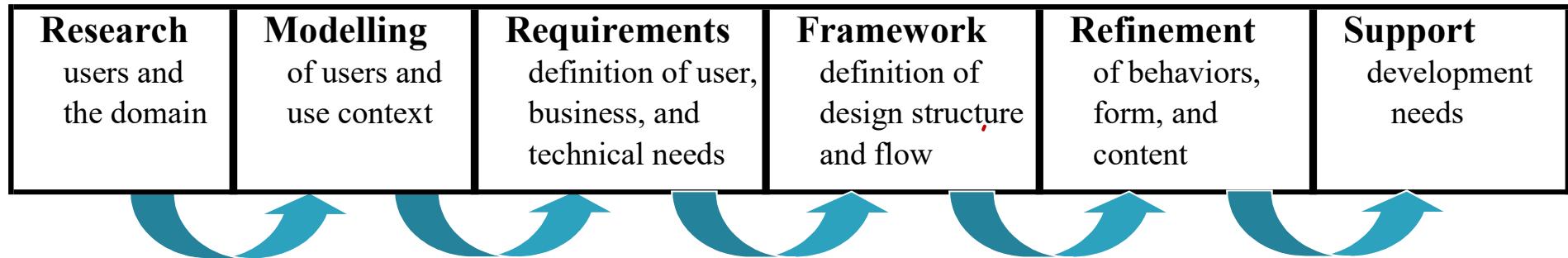
"Direct and extensive exposure to users
(required for effective user-research)
… immerses designers in the users' world, and
gets them thinking about users long before
they propose solutions."

"One of the most dangerous practices in
product development is isolating designers
from the users because doing so eliminates
empathic knowledge."

The Goal Directed Design Process
Six Phases

Research	Modelling	Requirements	Framework	Refinement	Support
users and the domain	of users and use context	definition of user, business, and technical needs	definition of design structure and flow	of behaviors, form, and content	development needs

Three primary activities close the gap

A **process** of modeling that synthesizes research results into design tools, a **process** of synthesizing and defining requirements from these models, and a **process** of translating the knowledge captured in the models and requirements into a design framework that reflects the goals and needs of users, while also addressing business and technical imperatives.

Research

- You need to understand the *behavior patterns* of potential and/or actual users of the product.
- Research informs the creation of personas in the Modeling phase.
- Stakeholder interviews, literature reviews, and product audits…

Modeling

- Domain models

    Information flow and workflow diagrams
- Personas

    Detailed, composite user *archetypes* representing grouping of behaviors, attitudes, goals, and   motivations observed and identified during   research

    More coming in Chapter 3

Requirements Definition

▸ Scenario-based – a day-in-the life

▸ Focus on meeting goals and needs of specific user **personas**

    … do **not** focus on user's codable tasks

▸ Understanding which tasks are truly important and why.

▸ A balance of user, business, and technical req'ts.

Framework

- The overall product concept… defining product's behavior and visual design, (and physical form, if that fits).
- Uses:
    Interaction design principles
    Interaction design patterns
- Interaction framework definition
    Principles help identify design elements
    Principles and patterns guide the development of   *design sketches* and *behavior descriptions*

Refinement

- Focus on detail and implementation
- Focus on task coherence
- Use walkthroughs and validation scenarios
    Storyboarding paths through the interface in high   detail
- Form and behavior specification is produced

Development Support
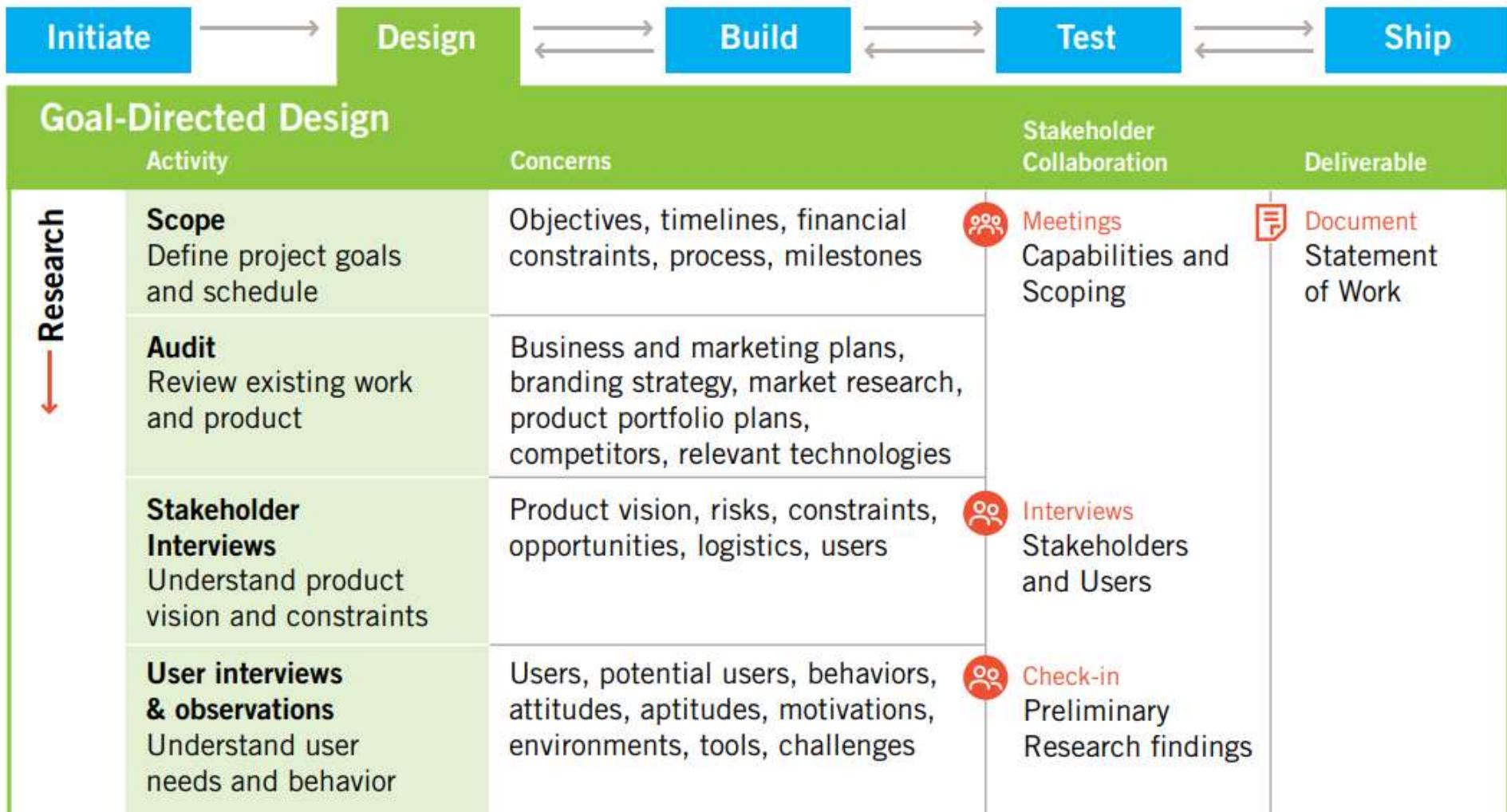
- "Help" resources needed to answer developers' questions... real-time as they occur.
- The developers should not be left alone to...
  - Prioritize the work
  - Make trade-offs to meet deadlines
  - Adjust design requiring scaled-down design   solutions

The detailed look at Goal-Directed Design (see next slide)
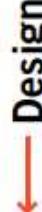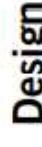
Figure 1–8: A more detailed look at the
Goal Directed Design process

|	ACTIVITY	CONCERNS	STAKEHOLDER COLLABORATION	DELIVERABLES
Research	**Scope** Define project goals & schedule	Objectives, timelines, financial constraints, process, milestones	*Meetings* Capabilities & Scoping	*Document* Statement of work
	Audit: Review existing work & product	Business & marketing plans, branding strategy, market research, product portfolio plans, competitors, relevant technologies		
	Stakeholder Interviews: Understand product vision & constraints	Product vision, risks, constraints, opportunities, logistics, users	*Interviews* Stakeholders & users	
	User interviews & observations: Understand user needs and behavior	Users, potential users, behaviors, attitudes, aptitudes, motivation, environment, tools, challenges	*Check-in* Preliminary Research findings	
Modeling	**Personas**: User & customer archetypes	Patterns in user & customer behaviors, attitudes, aptitudes, goals, environments, tools, challenges	*Check-in* Personas	
	Other Models: Represent domain factors beyond individual users & customers	Workflows among multiple people, environments, artifacts		
Req'ts Definition	**Context Scenarios**: Tell stories about ideal user experiences	How the product fits into the persona's life & environment, and how it helps them achieve their goals	*Check-in* Scenarios & Req'ts	
	Req'ts: Describe necessary capabilities of the product	Functional & data needs, user mental models, design imperatives, product vision, business req'ts, technology	*Presentation* User & domain Analysis	*Document* Uses & Domain Analysis
Design Framework	**Elements**: Define manifestations of information & functionality	Information, functions, mechanisms, actions, domain object models	*Check-in* Design Framework	
	Framework: Design overall structure of user experience	Object relationships, conceptual groupings, navigation sequencing, principles & patterns, flow, sketches, storyboards		
	Key path & Validation Scenarios: Describe how the persons interact with the product	How the design fits into an ideal sequence of user behaviors, & accommodates a variety of likely conditions	*Presentation* Design Vision	
Design Refinement	**Detailed Design**: Refine & specify details	Appearance, idioms, interface widgets, behavior, information, visualization, brand, experience, language, storyboards	*Check-ins* Design Refinement	*Document* Form & Behavior Specification
Design Support	**Design modification**: Accommodate new constraints & timeline	Maintaining conceptual integrity of the design under changing technology constraints	Collaborative Design	*Revision* Form and Behavior Spec.

| Initiate | → | Design | ⇄ | Build | ⇄ | Test | ⇄ | Ship |

Goal-Directed Design

	Activity	Concerns	Stakeholder Collaboration	Deliverable
Research	**Scope** Define project goals and schedule	Objectives, timelines, financial constraints, process, milestones	👥 Meetings Capabilities and Scoping	📄 Document Statement of Work
	Audit Review existing work and product	Business and marketing plans, branding strategy, market research, product portfolio plans, competitors, relevant technologies		
	Stakeholder Interviews Understand product vision and constraints	Product vision, risks, constraints, opportunities, logistics, users	👥 Interviews Stakeholders and Users	
	User interviews & observations Understand user needs and behavior	Users, potential users, behaviors, attitudes, aptitudes, motivations, environments, tools, challenges	👥 Check-in Preliminary Research findings	

Modeling	**Personas** User and customer archetypes	Patterns in user and customer behaviors, attitudes, aptitudes, goals, environments, tools, challenges	Check-in Personas	
	Other Models Represent domain factors beyond individual users and customers	Workflows among multiple people, environments, artifacts		
Requirements Definition	**Context Scenarios** Tell stories about ideal user experiences	How the product fits into the persona's life and environment, and how it helps them achieve their goals	Check-in Scenarios and Requirements	
	Requirements Describe necessary capabilities of the product	Functional and data needs, user mental models, design imperatives, product vision, business requirements, technology	Presentation User and Domain Analysis	Document User and Domain Analysis

Design Framework	**Elements** Define manifestations of information and functionality	Information, functions, mechanisms, actions, domain object models	👥 Check-ins Design Framework			
	Framework Design overall structure of user experience	Object relationships, conceptual groupings, navigation sequencing, principles and patterns, flow, sketches, storyboards				
	Key Path and Validation Scenarios Describe how the persona interacts with the product	How the design fits into an ideal sequence of user behaviors, and accommodates a variety of likely conditions	🖥 Presentation Design Vision			
Design Refinement	**Detailed design** Refine and specify details	Appearance, idioms, interface, widgets, behavior, information, visualization, brand, experience, language, storyboards	👥 Check-ins Design Refinement		📄 Document Form and Behavior Specification	
Design Support	**Design modification** Accommodate new constraints and timeline	Maintaining conceptual integrity of the design under changing technology constraints	👥 Collaborative Design		📄 Revision Form and Behavior Specification	

Goals, not features, are the key to product success

- Developers build software function by function.
- A list of features is one way to explain the product's value to customers.
- But what do you know about how effective and happy users will be actually using the software?
- What's your job? How about…

Orchestrating technological capability to serve human needs and goals.

"Too often the features … are a patchwork of nifty technological innovations structured around marketing req'ts or the organization of the development team…"

Where do we attend to the overall user experience?

UX: User experience design

Prototypes could be:

horizontal (broad feature-set, less depth functionality-wise)

vertical (deep functionality, narrow set of features)

T-prototypes (much of the design is done at a shallow level while some features are implemented in great depth)

local prototypes (used to come up with design alternatives for particular interaction model).

After choosing an appropriate prototype the *iterative* process begins. This usually varies greatly between working on software products, services or industrial design projects.

UX
(User eXperience)

Wheel of Emotions
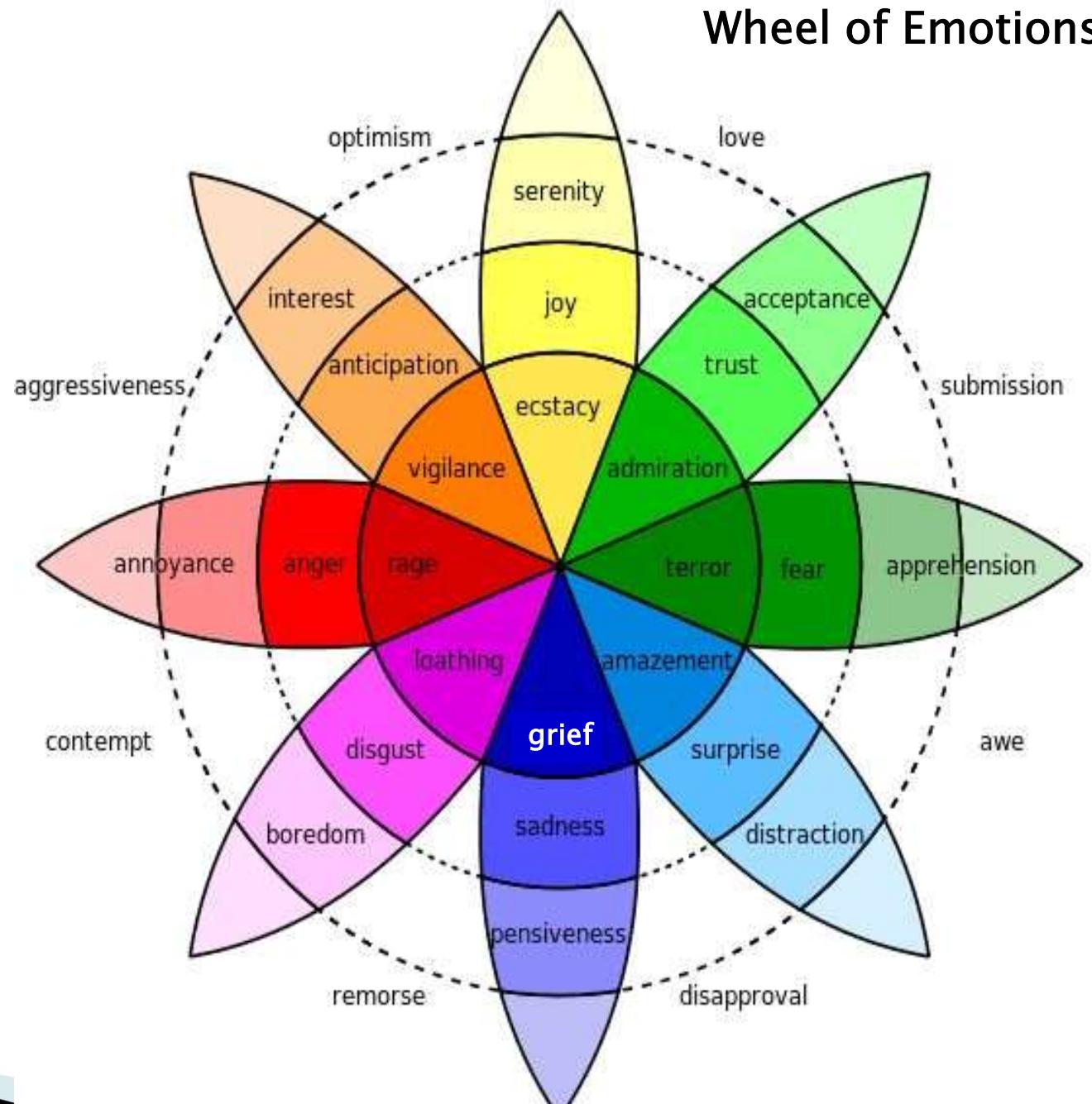
Table 1. List of usability smells and associated refactorings

Smell Id	Usability Smell	Abstract Usability Smell(s)	Refactorings
1	Undescriptive Element	User Confusion	Rename Element / Change Widget
2	Misleading Link	User Confusion	Rename Anchor
3	No Processing Page	Premature Abandonment	Add Processing Page
4	Free Input For Limited Values	Risk of Error / Activity too Long / Frequent Empty Results	Add Autocomplete / Change Widget
5	Unformatted Input	-	Change Widget
6	Short Input	User Confusion	Resize Element
7	Unnecessary Bulk Action	Activity Too Long	Distribute Menu
8	Overlooked Content	-	Split Page / Remove Redundant Content
9	Distant Content	User Distractions	Add Link
10	No Client Validation	Subsequent Failed Validations	Anticipate Validation
11	Late Validation	Subsequent Failed Validations	Anticipate Validation
12	Abandoned Form	Premature abandonment / Activity too Long	Split Activity / Postpone activity
13	Scarce Search Results	Frequent empty results.	Add Autocomplete
14	Useless Search Results	-	Add Autocomplete
15	Wrong Default Value	Unnecessary activities in the main process	Set Default Value
16	Unresponsive Element	Difficult Access to Information / Absence of Meaningful Navigation Links	Turn Attribute Into Link / Change Widget