

# **User Interface Design & Evaluation**

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Users & Personas

# Overview



- Requirements
- Users & Personas

# Overview

Users in user-centred design  
Gathering data from users  
User-centred design without users

# INVOLVING USERS IN DEVELOPMENT

- Development techniques generally keep the customer involved throughout the development process
- User-centred design focuses in particular on involving the users of the system

# WHO IS THE CUSTOMER?

- The paying client
- Representatives of the end users
- Higher level managers of the end user
- Business analyst or marketing specialists

A STEP BACK

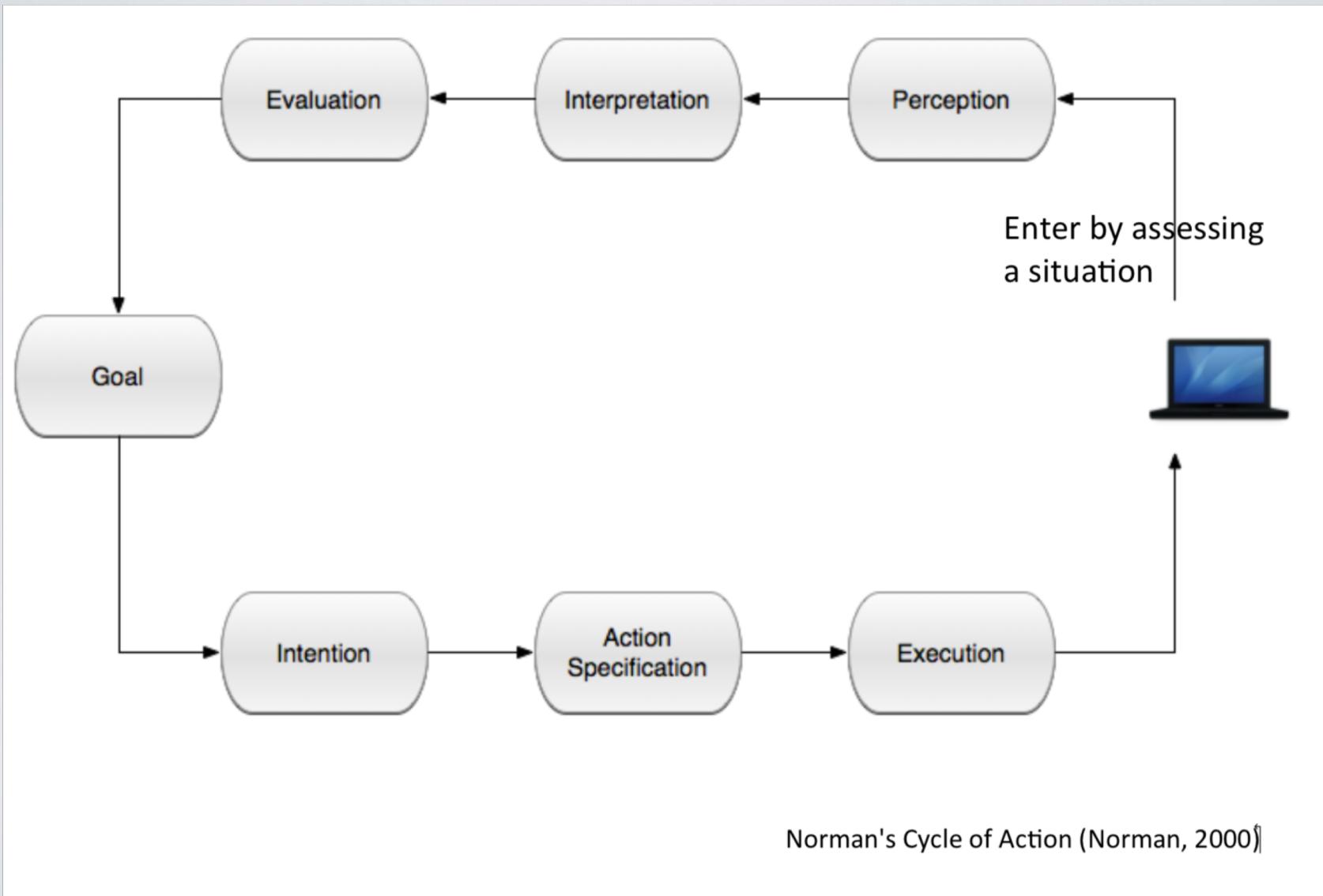
# WHO ARE THE USERS?

- Well – to begin with they are humans – so it is hard to capture all of the different idiosyncrasies that people have
- We need techniques that allow us to transition from our traditional systems thinking to thinking about how people will use our systems
- Part of this, is understanding how it is that people undertake activities in interactive systems

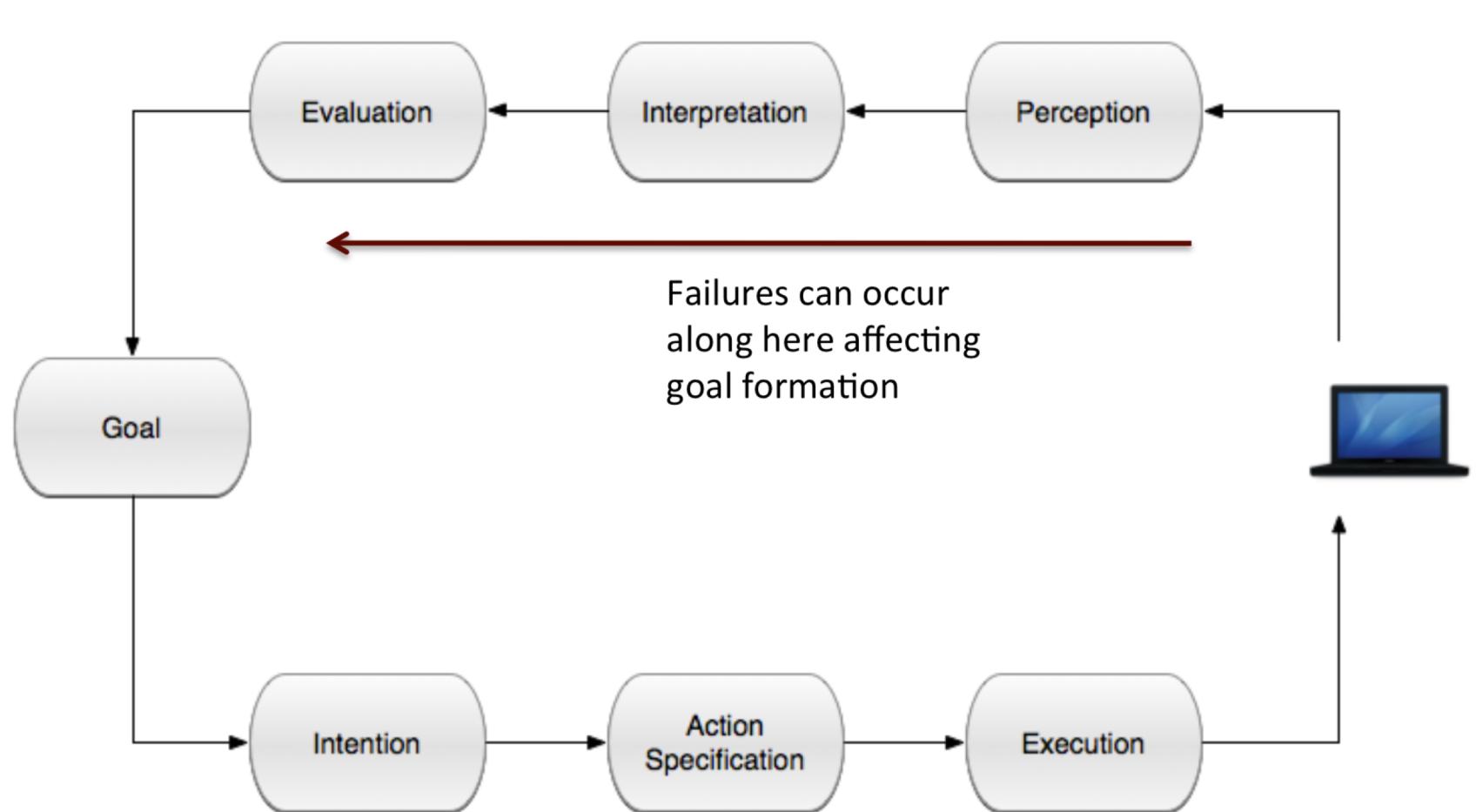
# WHO ARE THE USERS?

- End users
- Managers of end users?
- Occasional users?
- Other stakeholders?

# HOW DO HUMANS ACT?

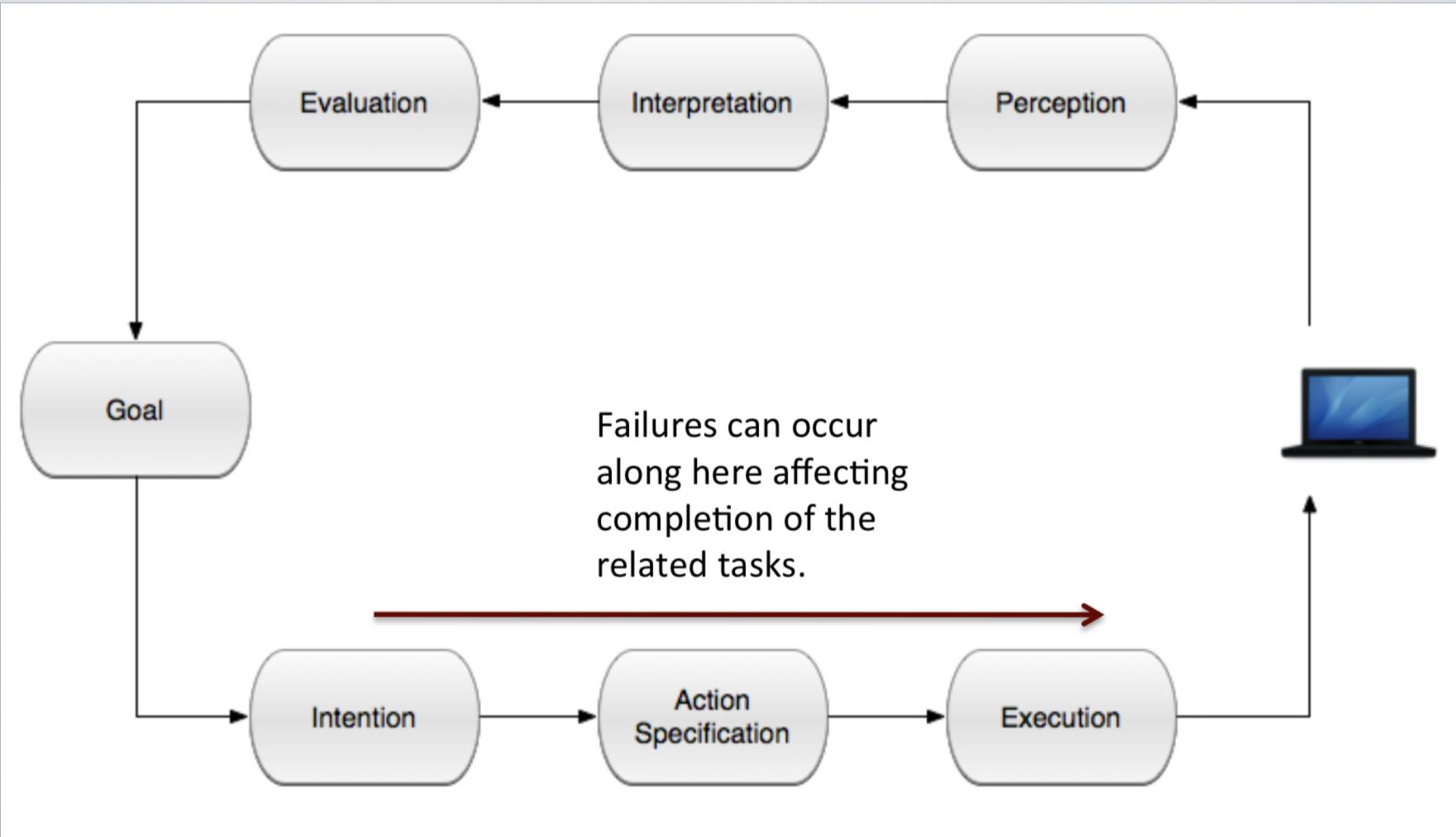


# HOW DO HUMANS ACT?

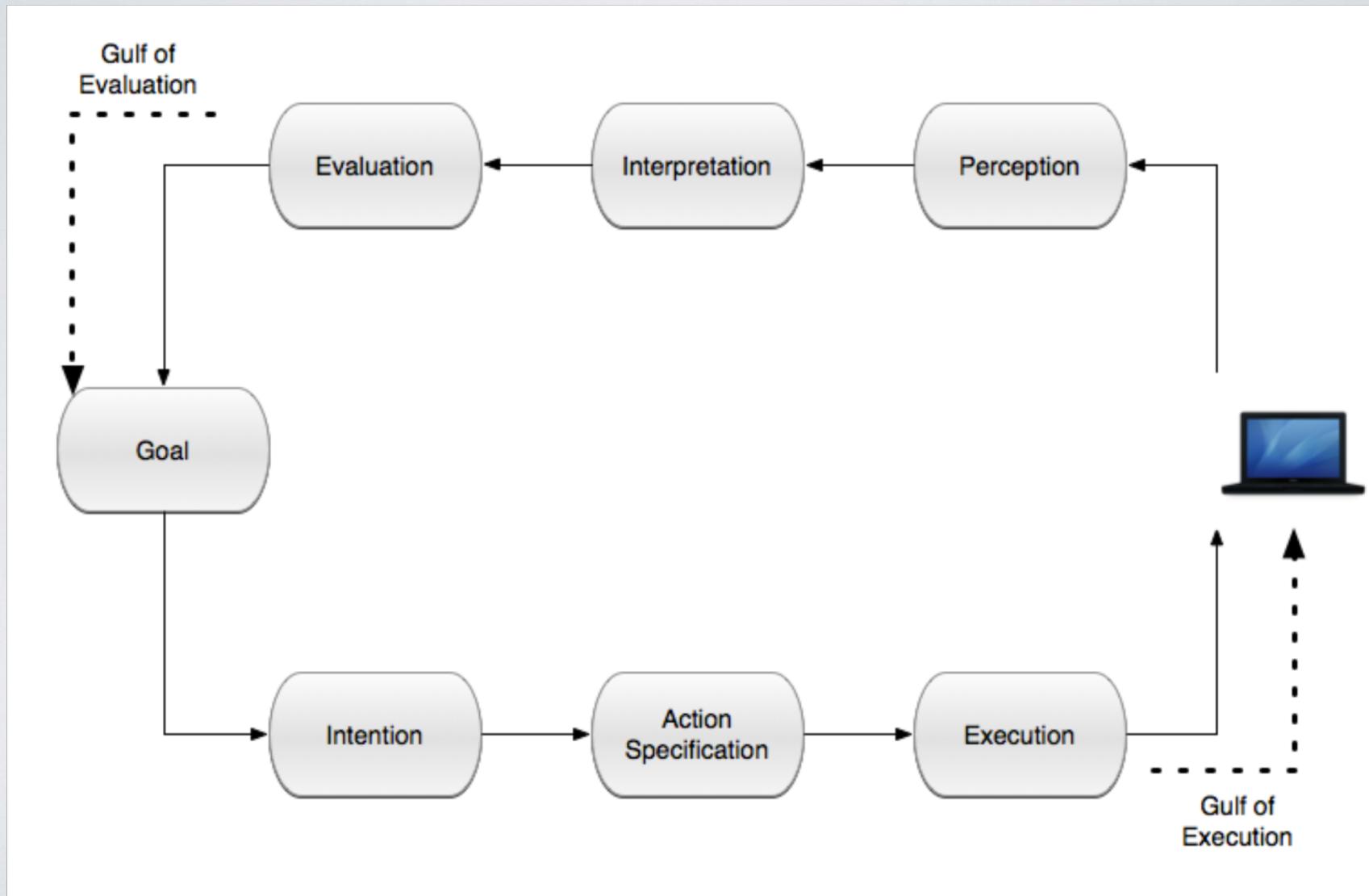


Norman's Cycle of Action (Norman, 2000)<sup>1</sup>

# HOW DO HUMANS ACT?



# HOW DO HUMANS ACT?



# LEVELS OF USER INVOLVEMENT

- Full-time for the whole project
  - ✓ Consistent, understands product, familiar with methods
  - ✗ Becomes disconnected from users, high cost
- Part-time for the whole project
  - ✓ Remains engaged with users, cheaper than full-time
  - ✗ Doing two things at once
- For part of the project
  - ✓ Remains engaged with users
  - ✗ Not consistent, time needed to learn
- Less directly – newsletter, seminars, etc.
  - ✓ Cheapest, no need to learn about development process
  - ✗ Problems take longer to emerge, not as deeply involved

# PROBLEMS WITH INVOLVING USERS TOO MUCH

- Any use of employees' time costs money
- Product might negatively affect users' jobs
- Users don't understand the development process
  - Misunderstanding of what can be done when
    - Ideas may occur at the end after learning, not at the beginning when they are useful
- Less innovation observed when users highly involved

# GATHERING REQUIREMENTS

- Talk to people
- Observation
- Examining existing products
- Daydream

# UNSTRUCTURED INTERVIEW

- A conversation about a topic
- Interviewer should prepare questions to discuss but be prepared to follow any interesting issues arising
- Useful for exploration
- Time consuming to perform

# STRUCTURED INTERVIEW

- Consist of a predefined set of questions
- Usually limited responses to questions
- Better later in a development stage, when the issues are understood
- Quickest to perform

# SEMI-STRUCTURED INTERVIEW

- Same questions asked to each interviewee
- Questions are usually open
- Interviewer prompts subject neutrally after each question to try to get more detail
  - “You mentioned X. Can you tell me a little more about that?”
- Combines exploration of unstructured interview with repeatability of structured interview

# FOCUS GROUPS

- Like an (unstructured) interview, but with several interviewees present
- Users may form opinions while discussing with others
  - Better for issues involving a social context
  - Good for capturing diversity of opinion or differences between subgroups

# QUESTIONNAIRES

- Much like a structured interview, except interviewee fills in answers themselves
- Cheaper and more convenient than an interview
- Questionnaires should be used when subjects have time and motivation to complete, structured interviews when they do not

# PROBLEMS WITH GATHERED DATA

- Memory limitations
- Social desirability bias
- Poor self-understanding
- Other cognitive biases

# REMEMBER THE PRACTICAL?

- The University would like to develop a News App that covers stuff of general interest to staff and students.
- This can be
  - University news
  - Local news
  - Events

# QUESTIONING USERS

- Imagine you are preparing to talk to University students/staff to identify some user requirements for this news app.
- Which approach(es) would you use?
- What key questions would you ask?

# USER GOALS VS REQUIREMENTS

- User goals and user requirements are often related, but definitely not the same thing
  - User goal: to keep up-to-date with local breaking news items
  - User requirement: the system must notify users when local breaking news stories are identified
  - Understanding the goals of your users will help you to establish the user and system requirements

# Requirements definition

Refined based on:

User needs

Business goals

Customer needs

Context Scenarios

New processes, context of use

How users complete an activity

# PERSONAS

# PERSONAS

- One of the really big challenges for programmers is to be able to step away from “the user”
- “The user” dehumanizes your users, making them abstract, and slippery to get a hold of in terms of knowing what their goals are and how they will act
- Understanding that gives a first step to being able to conceptualize what the system should do

# HISTORY...

- Personas were originally introduced in the book *“The Inmates are Running the Asylum”* by Alan Cooper
- Still held as one of the chief references
- Cooper advocates that personas are a powerful way to communicate between programmers and designers
- Emerged from practice, not from academic research – had real application on real projects

# LIFE BEFORE PERSONAS

- Before personas were brought into the mainstream, design often relied on:
  - Role definition
  - Use case actors (bare bones “users”)
  - User profiling – trying to get information from existing interactions and generalize to the audience
- Unfortunately, this often led to unsolvable debates

# TYPICAL DESIGN IN 1998 ...

- Many conversations like this:
  - Software engineer: "What if the user wants to print this out?"
  - Manager: "I don't think we really need to add printing in version one."
  - Software engineer: "But but but someone might want to print it??"
  - Manager: "Well, yes, but can't we delay putting printing in?"
- What is the answer to this? There cannot be one – all we have is some vague notion of “someone” might want something sometime

# PERSONAS AS A MEANS OF ENDING FEATURE DEBATES

- Personas give you something to grab hold of in conversations like that:
  - Software Engineer: "What if the user wants to print this out?"
  - Interaction designer: "Lilly isn't interested in printing things out."
  - Software Engineer: "But someone might want to print it."
  - Interaction designer: "But we are designing for Lilly, not for 'someone.'"

# PERSONAS ARE NOT ...

- ... a description of someone who is intimately familiar with the system
- ... a description of who will buy your software
- ... idealized descriptions of user skill levels (power user, average user, dumb brick user)

# PERSONAS

- Descriptions of typical users
- Produced using data gathered
- Not direct descriptions of one real user but synthesis of several
- Allow us to imagine what a user wants and how they would perceive and interact with the system

# PERSONAS

- Basic definition
  - “A persona is a user archetype you can use to help guide decisions about product features, navigation, interactions, and even visual design.” - Kim Goodwin, Cooper
- User models
  - Models can consolidate complex information into an (easy to remember) abstraction
  - Remembering & making sense of all the raw data would be impossible without them

# PERSONAS ARE ...

- ... at their best when based on data and observation
  - see Pruitt and Grudin – note this is at odds with the original Cooper proposals
- ... realistic representations of skills and attitudes towards technology
- ... a robust cast of characters that can be drawn on during design meetings and activities
  - Other research confirms this approach, including the User Stories from agile SE
  - Cooper suggest no more than 12, preferably 3 – realistically in large systems this is too small

- Users vs “the user”
- Representing users in UCD
- Vivid & idiosyncratic
- Realistic

# WHAT SHOULD PERSONAS RECORD?

- Vivid, rounded and realistic
- Detail on issues of direct importance to the application
- Significant personal information as well
- Personas have goals, not tasks
- Name, age, nationality
- Photo
- Work activities
- Household & leisure activities
- Goals, fears & aspirations
- Computer skills, knowledge & abilities
- Technology attitudes

# DEVELOPING PERSONAS

- Create many
- Reduce to a small number
  - reject, synthesise, key
- Produce personas for users with common goals, not common roles

# Jack the Facility Manager



## Personal Background

- Age: 45-55
- Married with 1 kid in College, 1 in HS
- Education: Undergraduate

## Role: Facility or Operations Manager

- Job measured: space and operations efficiency, employee productivity
- Skills required: People management, analysis, industry knowledge
- Reports to: CEO or General Manager
- Manages: Operations staff

## Company information

- Industry: Distribution, Manufacturing, 3PL
- Yearly Revenue: \$20M
- Employees: 100

## Goals and Challenges

- Success means: a raise and promotion
- Values most: Job security, family, recognition for success, church
- Biggest challenges: New systems, managing people, keeping all balls in air
- Biggest objections: Appearance, liability, suitability, not state of the art, look dumb

## Shopping and Industry News Preferences

- Preferred communication: Email, phone
- Use internet for buying research: Much
- Gets updated industry news: Specific industry publication
- Industry publications: Trade magazines
- Industry associations: Industry trade groups
- Social networking sites: LinkedIn?

**DEMOGRAPHIC** information:

- Age 46
- \$103,000 annual salary
- BSN from UC Davis
- MHA from Walden University (online degree)
- Married, two kids
- Worked in a large hospital system in CA after nursing school

**THE PROBLEMS** she has that IHI solves:

- "I need to balance cost cutting with maintaining quality and it's very complex."
- "Getting adoption of best practices is slow and not uniform."
- "I would love to be seen as more of a 'go-to' leader within the larger organization."

**ONE DAY** in the life:

- Attends lots of face-to-face meetings
- Conducts office hours in ICU to give nurses and physicians time with her during the week.
- Handles a significant amount of paperwork related to regulation and compliance
- Has to be "on call" for scheduling and staffing issues at any hour of the day

Her **VALUES AND GOALS**:

- Son is a junior in high school and her daughter will be a freshman next year; family prioritizing their finances to pay for college
- Prides herself on staying on top of emails and being responsive to all levels of her organization and team
- Strong advocate for work-life balance in the office but often works several hours in the evening except for Friday and Saturday
- Attends church regularly
- Encourages her staff to grow professionally



## THE EXPERIENCE SHE WANTS when seeking out IHI products or services:

- Wants to be able to read comments and feedback on the IHI programs in the way that she reads Yelp reviews of restaurants
- Would like to conduct a "chat" when she is deciding whether or not to sign up for a program
- Wants to be recognized as a "fan" of IHI even if her attendance level is not what we consider high. She was an enthusiastic OS participant when she got her MHA in 2009.

**Diane Director, BSN, MHA**

Director of Critical Care at

Terre Haute Regional Hospital in Terre Haute, IN

Their **ROLE AND LEVEL SENIORITY** in detail:

- Reports to VP of Patient Care Services.
- Administrative responsibilities for a 32 bed ICU unit, 35 bed CVICU unit, and 4 cardiac inpatient units.
- Has budgeting power for 300 FTE staff ICU

Her most **COMMON OBJECTIONS** to IHI's products or services:

- Needs cost cutting guidance; doesn't know if Bedside to Balance Sheet is for her
- Wants more content on culture change that could enhance process improvements
- Needs more material on how to get senior leadership behind her efforts; mobility in the ICU was treated as an experiment in the eyes of the VP of Patient Care, not a way forward.
- RNs only get \$500 a year in pro. development funds for non-degree programs; puts IHI content out of reach for her staff.

IHI Areas of Focus that she would be interested in: Quality, Cost, Value / Patient Safety

IHI Rings she would engage in (by %): Innovate (5%), Demonstrate Results (15%), **Build Capability (75%)**, Disseminate Knowledge (5%)

IHI programs she has attended/resources used: OS courses, Rethinking Critical Care seminar, Survey Design W+A, WIHI broadcasts on ICU subject matter

# Goals

- Personas have goals (not tasks)
- Productive
- Personal
- Hygenic

# Creating personas

Imagination

Conceptual model

All your data...

Lots, rich, qualitative

# Creating personas

- Collect data about who the users might be for your system – cast your net wide and pare it down
- Define a wide range of personas that are precise about the user
  - They do not have to be entirely accurate, but they should be precise regarding who the user is, what they intend to accomplish with the system
  - A good persona provides you with a detailed picture of who the user is and why they would use the system

# Persona Briefings

- Used heavily by Microsoft in the development of Windows and IE
- Usually based on existing data, either qualitative or quantitative in nature, or on personal observations
- The persona briefing captures different aspects of the user and collects them under broad categories

# Can provide information

A day in the life

Work activities

Household & leisure activities

Goals, fears & aspirations

Computer skills, knowledge & abilities

Market size & influence

Demographic attributes

Technology attributes

Technology attitudes

Communicating

Quotes

# Now ... iterate persona design

- Let's assume that you have created somewhere around 20 persona briefings
- How do you make them into a concise set of precise set of personas that can be used to communicate designs?

# Carve them up: Affinity Diagrams

- A useful technique for grouping “like with like”
- Cut up the briefings, and stick them to walls or placards where things group together
- You get a subset of common features that you can then ensure are represented in a smaller set of personas



# Very simple personas

Hua works as a network installer in Los Angeles. He works with computers all day every day and is very adept at getting them to function, but he doesn't really understand how they work. He survives through his reservoir of superstition and lore, his capacity for learning, and his endless patience.

Shannon is an accountant at a health spa in Tempe, Arizona. She is clueless about the Web, email, networks, the file system, and most everything else about computers, but she is an astonishing whiz with the Microsoft Excel spreadsheet program. She can whip out a new spreadsheet—complete with charts and graphs—that shows sales trends in no time at all.

# More advanced personas ...

- A good set of examples of personas, in a variety of different formats are available from the Fluid project
  - [http://wiki.fluidproject.org/display/fluid/  
Persona+Format](http://wiki.fluidproject.org/display/fluid/Persona+Format)
- This project also included some commentary about the quality of each presentation and the advantages and disadvantages of each presentation style

# Persona extensions

- International personas
- Inclusive personas

**Personas** put a **human** face on the amorphous “user” because they are based on actual user needs. They save time by focusing development toward **real use cases** and away from unlikely “edge” cases.

**Software Engineers** benefit from personas and user-centered design by not having to write code that is not needed by the target users. Who wants to make something that won't be used?

**Business analysts** benefit from personas and user-centered design because the goals, tasks, and needs of the target users are well-defined for them. They don't have to imagine or invent.

# Personas

Focuses on understanding:

Who are the users?

What are their goals?

Goals drive a person's actions

Tasks are things a person does in order to  
accomplish his goals

What are their pain points?

What are their motivations?

To drive system definition & design

# Process

- ✓ User Research
- ✓ Modeling
- ✓ Requirements Definition
- ✓ UI Framework Definition
- ✓ UI Design
- ✓ Development Support

# User research

Ethnography and empathic research

Observation & interviews

Study users in their context

Centered on users' goals and activities

Look for patterns!

# Personas

## Make sense of research findings

Personas

Mental models

Use cases - current or future processes

Use case frequency matrix

Activity diagrams - more complex processes

Artifact models

Helps gain consensus early on...before any design happens

Provides shared language & vision

## The Moderately Seasoned Professional

### Michael



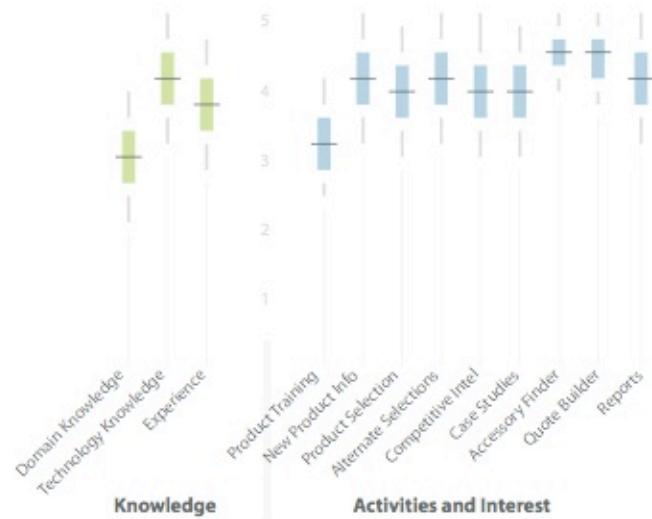
AGE: 42

OCCUPATION: Regional Sales

### "I'd like to see a good, better, best."

MICHAEL HAS BEEN IN SALES for YEARS AND HAS BEEN SELLING AND OTHER products for most of them. He's pretty comfortable with the Symbol products and isn't that interested in basic product info, but finds himself wondering if there's a better alternative than the product he's suggesting. It's a challenge keeping up to date on all the product info from Symbol and the other lines he sells. He'd love to see something that recommends a good, better, and best option when they're available as well as showing him where the particular model stacks up against other competitive products.

The right tool for Michael helps him pick the best product while recommending other alternatives. It also has case studies with examples of how other more seasoned salespeople have been able to upsell in similar environments and applications. Accessories and add-on services for Symbol scanners are a must. And if it is a frontend for Solution Builder that would be a huge bonus.



#### Primary Use

- Case studies
- Alternate product selections (good, better, best)
- Accessory finder
- Product info for new products or product refresh
- As a frontend to Solution Builder

#### Goals

- Pick the right product and find better alternatives.
- Keep up-to-date on competitive intelligence.
- Increase sales volume.
- Increase accessory and add-on sales.
- Close more deals faster.

#### Influencers

- Easy-to-use
- Speed
- New product info
- Ability to run reports on open vs. closed quotes
- Ability to generate quotes

#### Frustrations & Pain Points

- Having multiple usernames and passwords. He already has several for the different applications he uses at work and email – he doesn't need another one.
- A tool that leaves him in the dark

# Persona do's and don'ts

- **Should:**

- be based on **user research**
- be based *primarily* on **qualitative research**
- be focused on **users' goals**
- be based on **common behavior patterns**
- be **specific** to your design **context** or problem
- **come to life**, and seem like real people

- **Should not:**

- be focused on **stereotypes** or **generalizations**
- be an '**average**' of observed behavior patterns
- be based *only* on **user roles**
- be based *only* on **information gathered from subject matter experts**, as they cannot completely represent end users

# Why use personas?

- Focus
- Empathy
- Gaining consensus
- Avoiding the elastic user

# Why use personas?

**FOCUS:** Designing for too many different types of users makes a product too complex to truly satisfy any of them

Pleasing some users often conflicts with pleasing others

--must have a way to make choices

Helps prevent focusing the design on:

- edge cases
- averages

# Why use personas?

Empathy: People are wired to be attuned to other people

Helps put yourself in the users' shoes  
Helps avoid self-referential design

Facilitates the use of role playing to:

- make design decisions
- evaluate designs

# Why use personas?

Gaining consensus:

Give the team a shared understanding (early on!) of who they users are and what they need

Without personas, the team may be disagreeing about who the users are, rather than actual design decisions, without even knowing it

Gives the team a tool to reason through design decisions

# Why use personas?

## Avoiding the elastic user

If the users haven't been clearly defined, they may stretch to fit the needs of the product team

“Our students are very tech-savvy, and will certainly be able to figure that out.”

“Students just won't be able to understand how to do this. We need to create a wizard.”

# **Types of personas**

## **Design Personas**

User Personas (most common)

Customer/Buyer Personas

Served Personas

Negative Personas

Provisional Personas

## **Other types of Personas**

Marketing Personas

Strategy Personas

Organization Personas

# **Types of personas**

## **Primary persona**

A persona whose needs must be satisfied

Multiple primary personas require separate interfaces

## **Secondary, tertiary, etc. personas**

Personas whose needs should be considered after those of the primary persona(s)

A persona is made secondary because their needs can be mostly met if the design is focused on the primary persona

# They contain

Goals

Attitudes (related to your context)

Behaviors & Tasks (in your context)

Photo

Name

Tagline

Demographic info

Skill level

Environment

# They contain

- Interview/Observation Setup
- Persona Info (personal details)
- Context of work
- Teaching style/format
- Computer/Technology use
- Use cases/Activities
- Pain points/Opportunities/Time wasters
- User goals
- Typical/Good/Bad day
- Course Details
- Schedule/Organization
- General CMS/LMS use & activities
- Types of course materials
- Communication
- Content Reuse
- Photos

Dedicated focused employee  
“Work is important, but not my whole life.”



## Personal Information

**Profession:** Data Architect

**Age:** 31

**Background:** Originally from upstate New York

**Education:** BS in Library Science from Columbia. Is continuing her education informally, by sitting in on classes at UC Berkeley's School of Information whenever she can. Attends industry conferences about once a year.

**UCB Background:** “Fell” into a technical position at UC Berkeley 3 years ago after working in libraries.

**Home Life:** Has been married for 3 years and has two children, ages 1 and 3. Their family has a pet Cockatoo.

**Hobbies:** Photography (learning Photoshop)

**Personality:** Efficient, detail-oriented, dedicated. Enjoys meeting new people and learning about them.

## User Goals

- To be as efficient as possible at work so she can spend as much quality time with her family as possible
- To make more money
- To continue to learn
- To improve her photography & perhaps make it more of a business

## Pain Points

- After the IST re-org, some processes have been unclear, and she's often had to hunt around for the right person to get things done.
- Too many passwords to remember
- Too many collaborative tools being used in organization
- Information she needs is all over the place, not organized efficiently

## Site Objectives

- Help Ernest find the information he needs quickly & easily
- Clarify the IST/OCIO information available instead of adding just another site to the confusion
- Help Ernest learn about and connect with the IST/OCIO community

# Methods for gathering personas

- User observation
- Contextual inquiries
- Interviews
- Focus groups
- Diary studies
- Existing data
- Existing knowledge

# How to create them

- Persona hypothesis
- User research
- Identify behavioral variables/attributes
- Persona scales
- Choose personas
- Write personas
- Communicate personas

# Persona hypothesis

A starting point to help determine what types of users to research

Created *before* talking to end users

- Based on information gathered from stakeholders, SME's, your personal knowledge, and review of existing literature
- Hypothesized behavior patterns
- Should *not* be based purely on demographics

Differentiate users based on needs and behaviors

- More user types can be added later if research points to other types
- Often map to roles in a non-consumer domain (e.g. education)

Can be just a rough outline/list of user goals & behavior patterns you expect to see

# User characteristics matrices

## User types (Roles)

# Application (CMS) use

# Class structure

## Group size

Technical level  
Country/region  
Type of institution

# User research

Interview & observe users in the context of their work

Use focus structure document to guide each user visit

Take detailed notes & photos

Capture interesting quotes

Use symbols in notes to organize info

Process ‘raw’ notes into a more categorized & synthesized format

Create summaries of notes

# Choose personas

Determine list of potential personas  
based on common behavioral patterns  
(Sanity check)

Do they make sense? Do they reflect  
what we've seen? Are there too many to  
be useful? Will they help us make design  
decisions?

Finalize initial persona list

# Write personas

Draft persona characteristics & goals for each persona

If possible, all info should come **from actual user research** (your notes)

All persona information **should be relevant to your design context**

Check persona set

Anything **missing**?

Any redundant personas?

Write the persona descriptions

Some bulleted lists, some narrative

You may have multiple formats depending on your team's needs

A few personal details OK

Try to relate them to your design

Add them last

Choose primary, secondary, etc. persona(s)

# Jill Anderson



*"I'm looking for a site that will simplify the planning of my business trips."*

AGE: 35

WORK: Regional Director

FAMILY: Married, 1 Child

LOCATION: Austin, Tx

ARCHETYPE: The Frequent Flyer

Organized

Practical

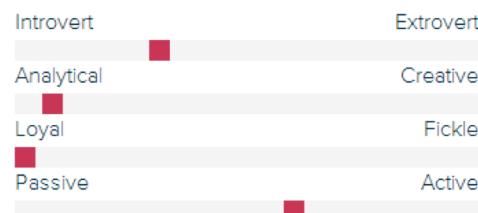
Protective

Hardworking

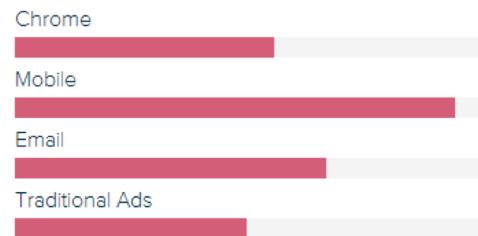
## Bio

Jill is a Regional Director who travels 4-8 times each month for work. She has a specific region in which she travels, and she often visits the same cities and stays at the same hotel. She is frustrated by the fact that no matter how frequently she takes similar trips, she spends hours of her day booking travel. She expects her travel solutions to be as organized as she is.

## Personality



## Preferred Channels



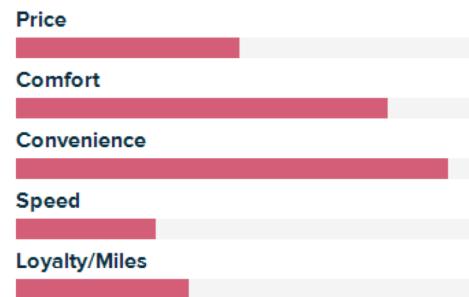
## Goals

- To spend less time booking travel
- To narrow her options quickly

## Frustrations

- Too much time spent booking - she's busy!
- Too many websites visited per trip
- Not terribly tech savvy - doesn't like the process

## Motivations



## Brands





Shae

**Age:** 27

**Gender:** Female

**Education:** Bachelor of Social Services

**Employment:** Full time Case Manager

**Salary:** \$65K

**Domestic situation:** Lives in a share house with two other professionals.

## Pain points

- Limited budget for donations
- Mobile browsing experience is clunky or limited
- Can't pause regular donations easily
- Feels guilty for not keeping track of her deductions better when it comes to tax time

## Scenario

Shae has just been reading about the typhoon that hit the Philippines last week and would like to donate to Medicins Sans Frontiers relief appeal. She checks her online banking app and sees her funds are getting really low this month. She wonders if she could put her monthly Beyond Blue donation on hold and goes to their website on her mobile. After 5 minutes of fruitless searching she can't find any information about pausing a donation and gives up feeling disappointed and a little frustrated.

## Behaviours

- Reads Crikey and HuffpostWomen everyday
- Uses her mobile for online banking and social media
- Checks her bank account balance every morning
- Submits own tax return

## Goals

- To help people in need
- To make a difference to her community
- Support organisations that are contributing to social change

## The personas cover the user groups that:

- *the redesign team determined are particularly important,*
- *some members of the team do not know much about, or*
- *that someone in the task force felt compelled to write up.*

# Analysis methods

- Grounded theory
- Thematic analysis
- Content analysis
- Critical incidents

# Basic techniques

- Careful reading
- Devising codes/categories
- Applying codes/categories
- Validation

# CONCLUSIONS

- Personas are a powerful way to express information about for whom you are designing your system
- Plays to the strengths of humans
  - Pruitt and Grudin point to fiction and acting as examples of where similar techniques are applied

# READING

- Interaction Design – Preece, Rogers and Sharp
- Chapters 7.4-7.5 and 10.3.I
- The Inmates are Running the Asylum by Cooper
- Personas, participatory design and product development by Grudin and Pruitt
- Pruitt, J. and Grudin, J. – Personas: Practice and Theory

Practical V