



UNIVERSITY OF  
BIRMINGHAM

COLLEGE OF  
ENGINEERING AND  
PHYSICAL SCIENCES

# (Advanced) HCI Interaction Design and the User Centred Design Cycle

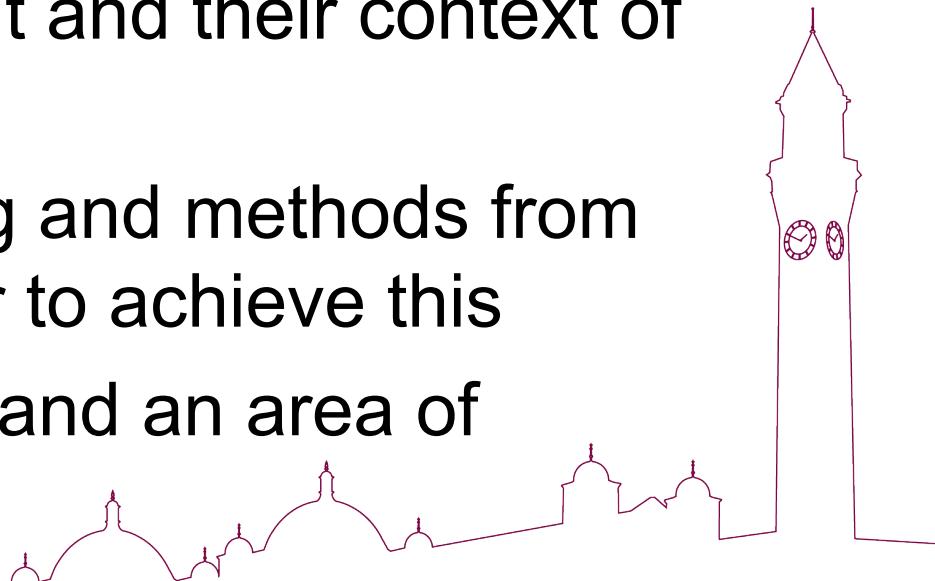
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***School of Computer Science  
University of Birmingham 2016/17***

# HCI

- Aims to:
  - Inform the design of new systems
  - Understand interactions
  - Evaluate existing design
- Requires an understanding of the technology, the people who will use it and their context of use
- It borrows understanding and methods from other disciplines in order to achieve this
- An academic discipline and an area of professional practice



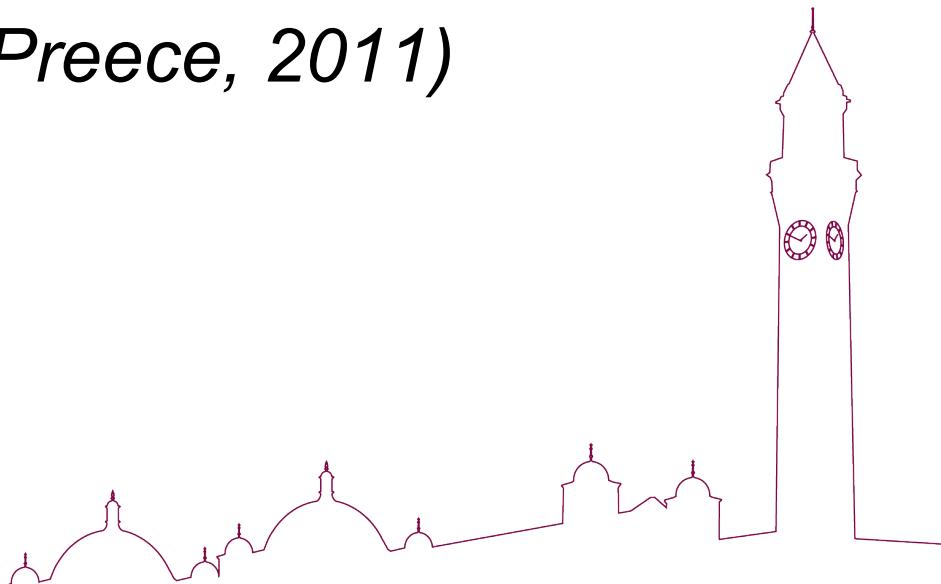
# What this module will cover

- Design process topics
  - A variety of methods and tools for
    - informing the design of
    - evaluating
    - understanding the use of
  - Topics about people that can inform design and use of interactive systems
  - Practitioner talks/guest lectures
- Interactive systems*
- 

# Designing Interactive Products: *Interaction Design*

*“designing interactive products to support the way people communicate and interact in their everyday and working lives”*

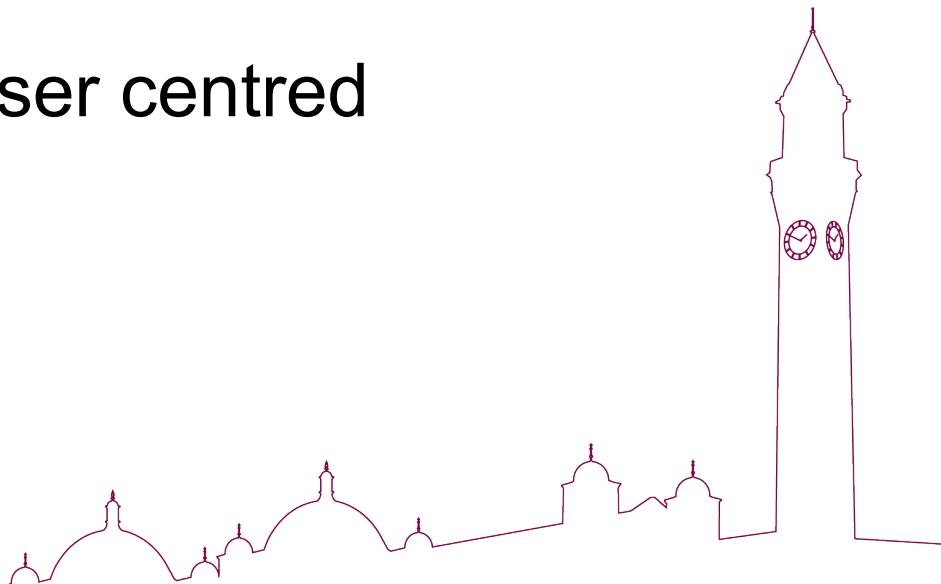
*(Rogers, Sharp & Preece, 2011)*



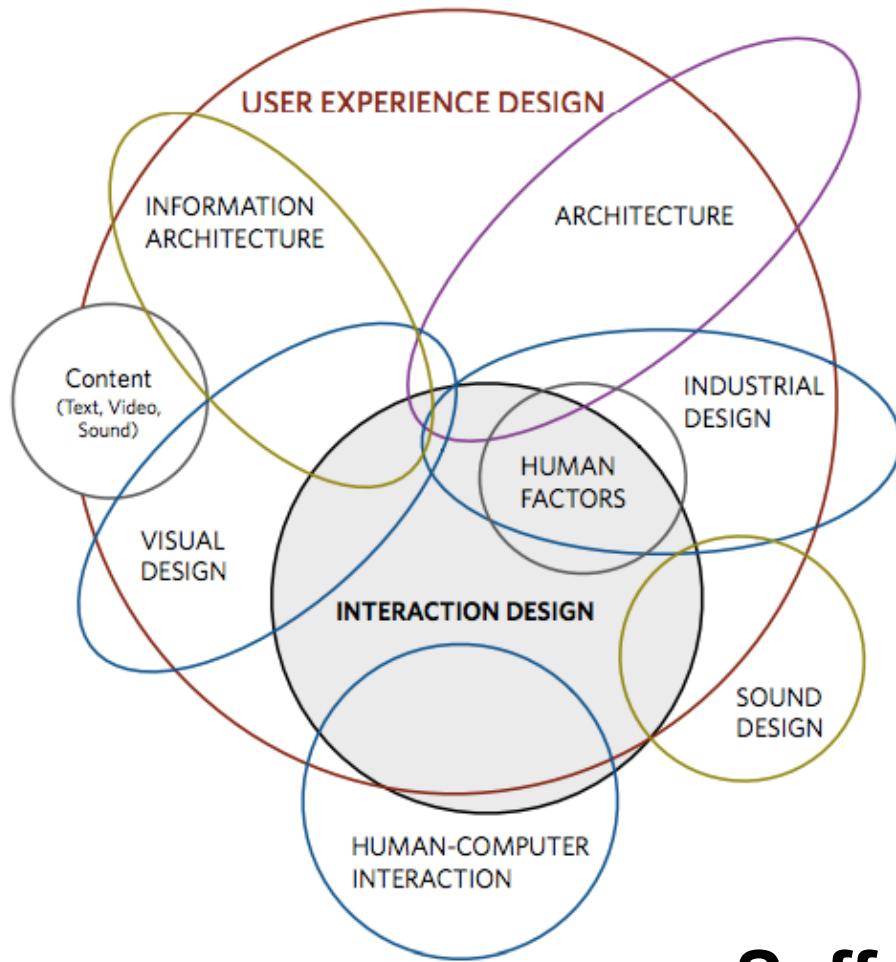
# The Purpose of Interaction Design

Making things that are usable

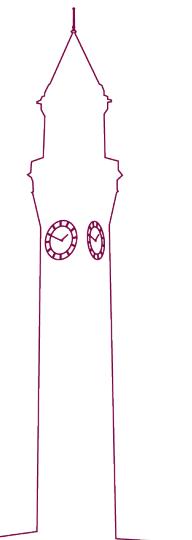
Making things user centred



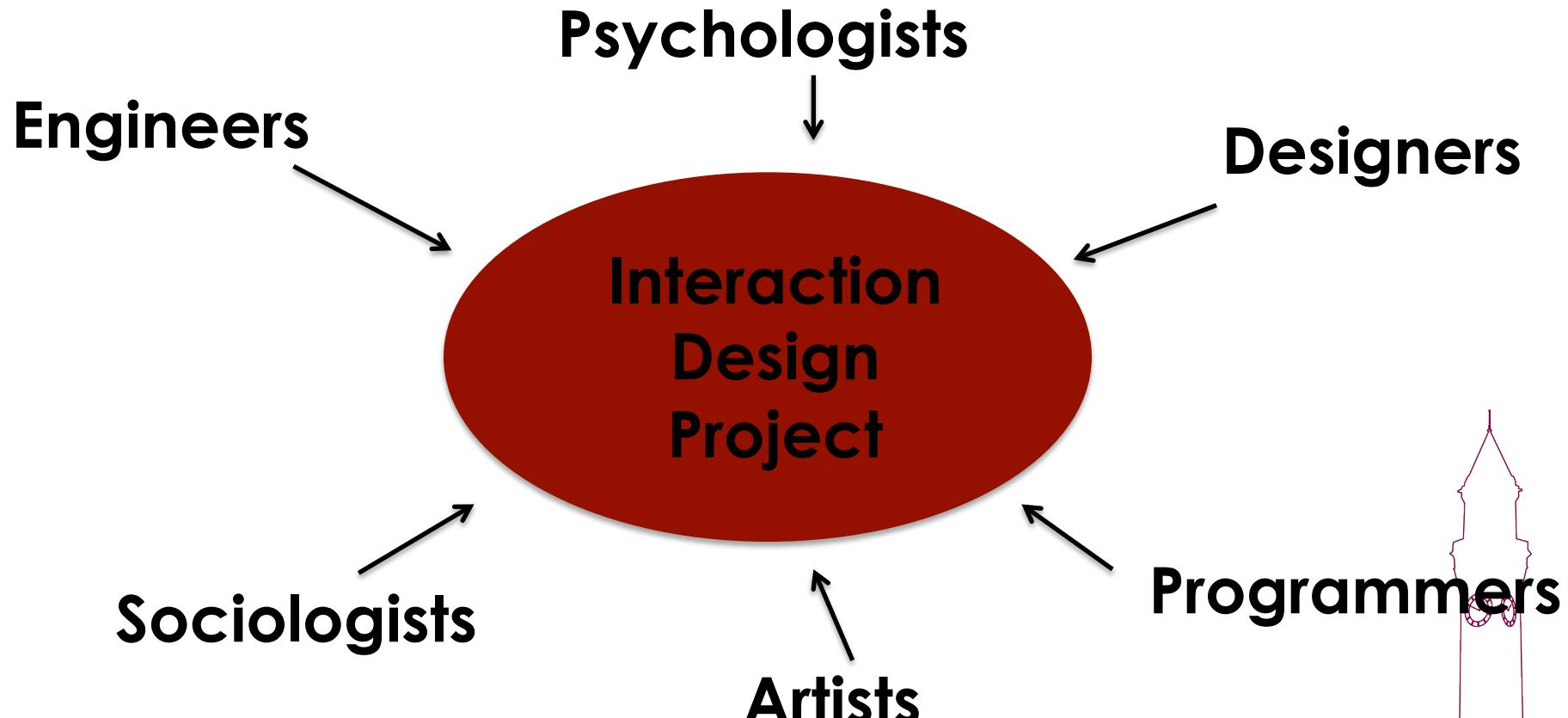
# What is Interaction Design?



Saffer (2010)



# Who is involved in ID?



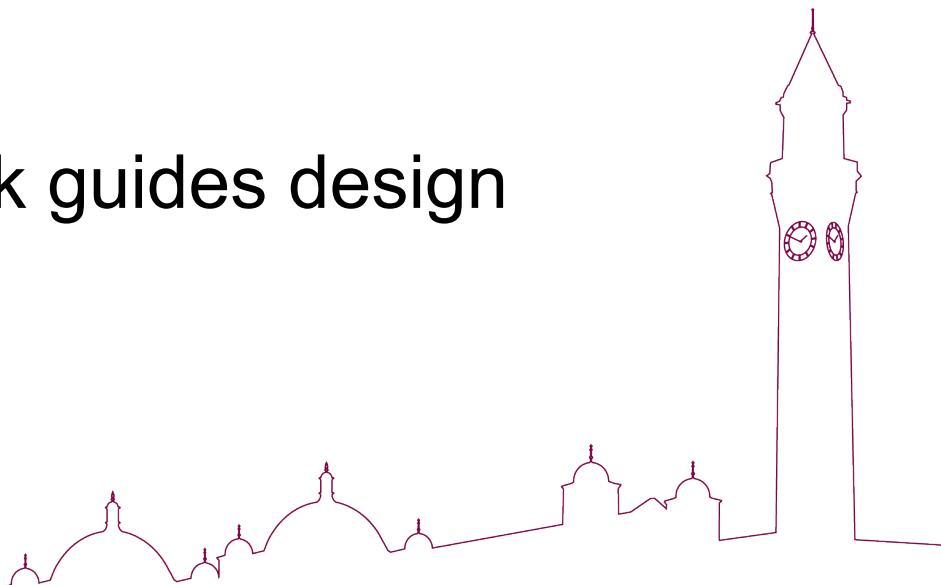
# Approaches to Interaction Design

## User Centred Design

- Designer makes user needs & goals into solution

## Activity Centred Design

- Behaviour around task guides design



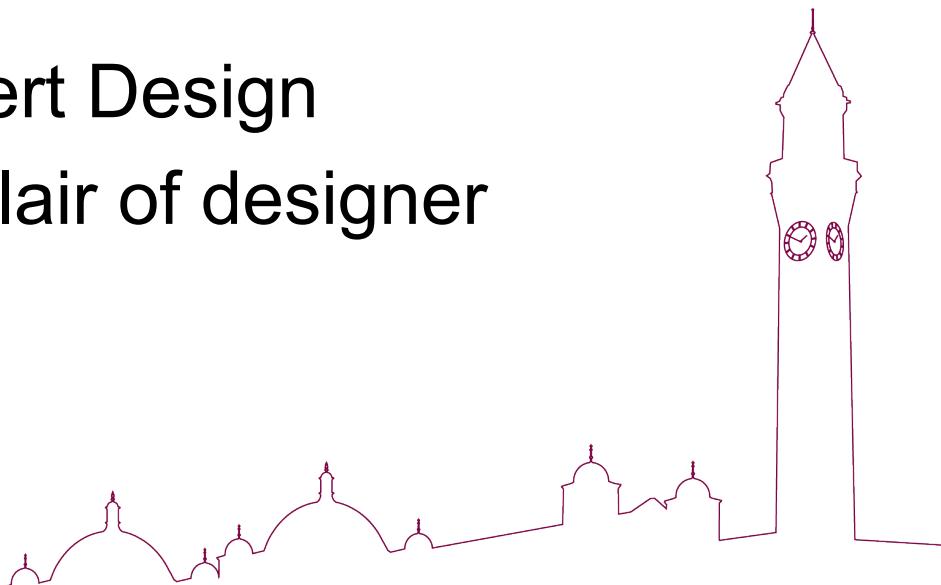
# Approaches to Interaction Design

## Systems Design

- System is focus and user's role = set goals

## Genius Design/Rapid Expert Design

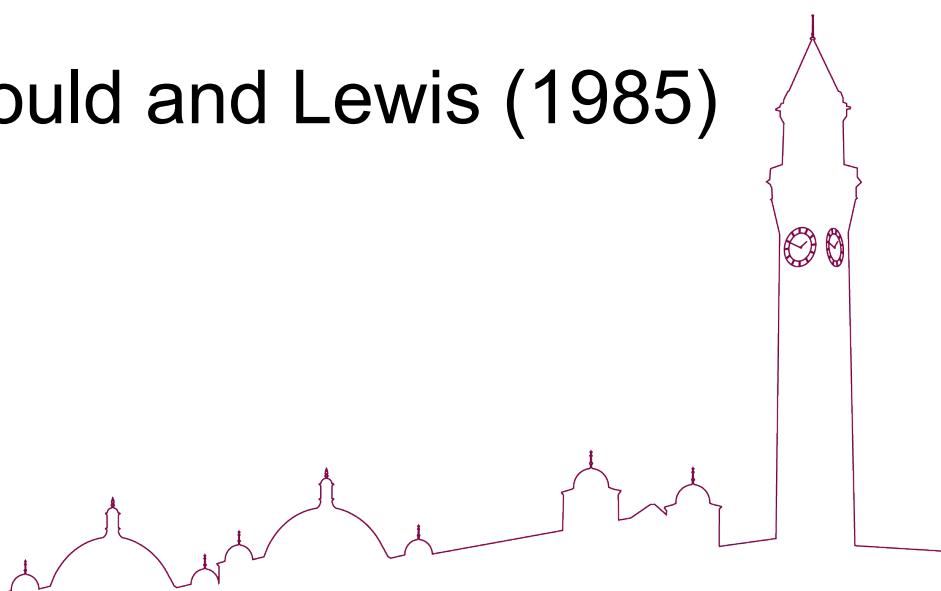
- Relies of experience/flair of designer



# User-centred approaches

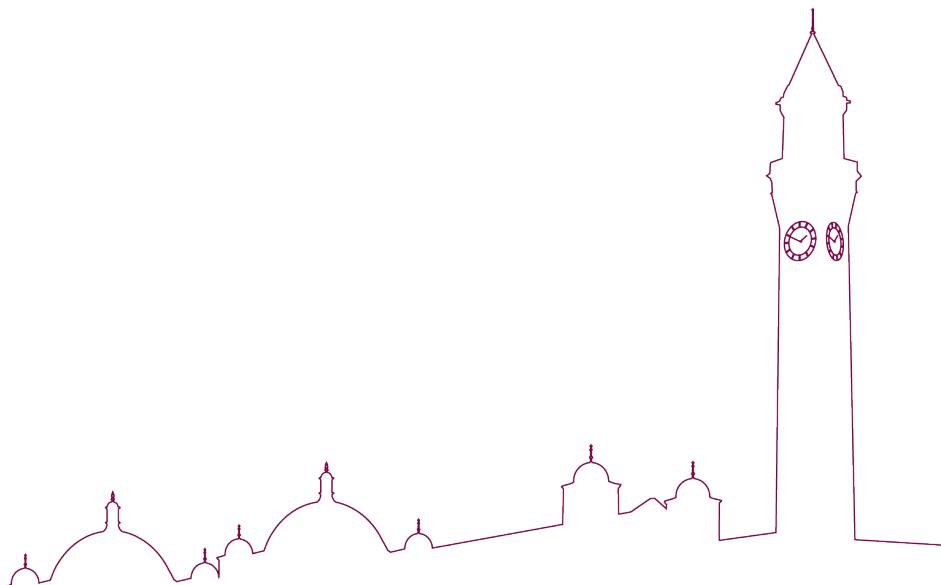
- Early focus on users and tasks
- Empirical measurement
- Iterative design

Gould and Lewis (1985)

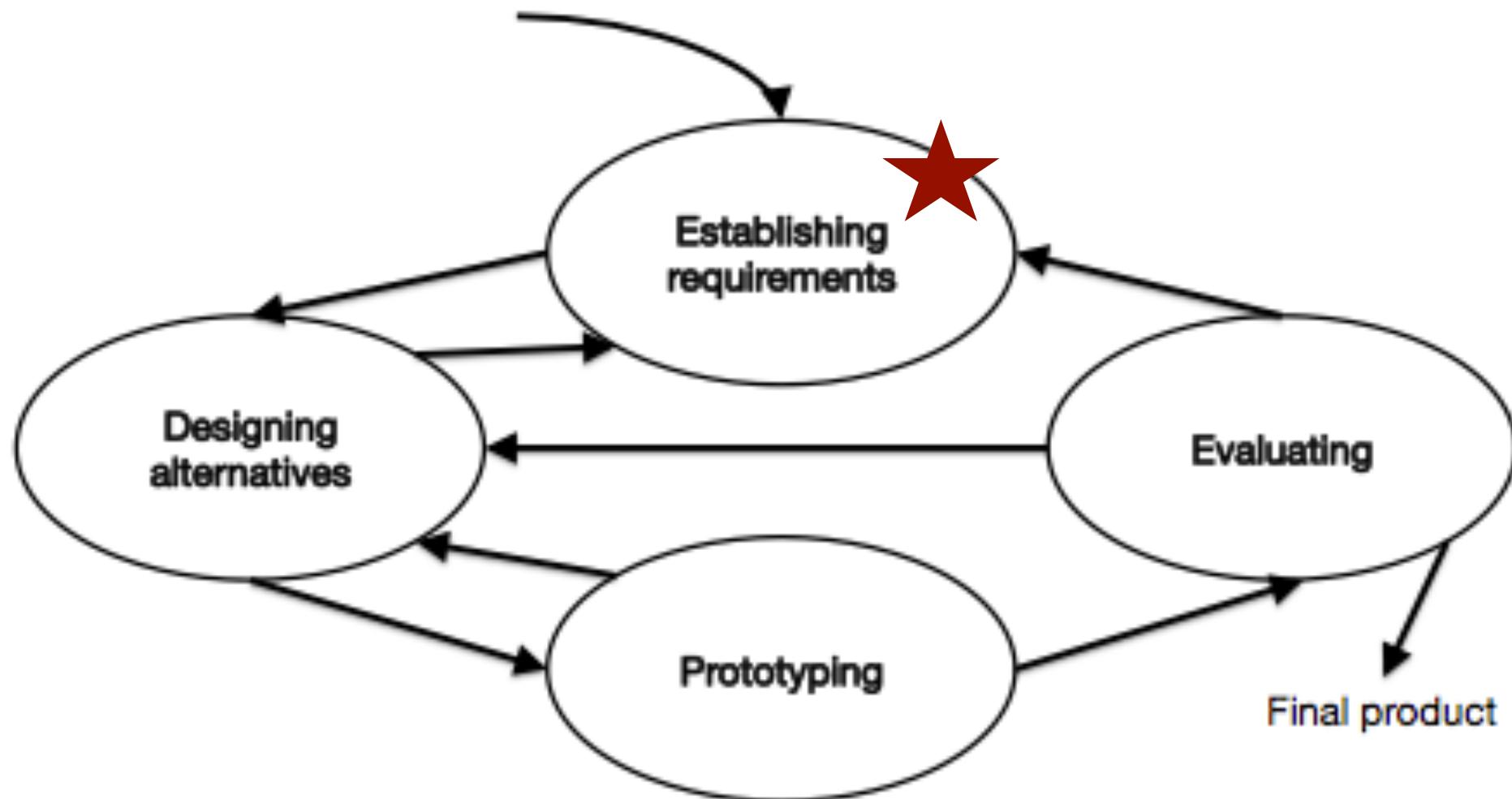


# Basic processes of Interaction/User Centred Design

1. Requirement Gathering
2. Designing alternatives
3. Prototyping
4. Evaluating



# Simple Life-cycle model



# Case study: tourist information centre studies: (Marshall et. Al 2011)

- “Quick and dirty” scoping study
- Focus on joint decision making and information sharing
- 5 days; 2 researchers
- Observational field notes (text and sketches); interviews



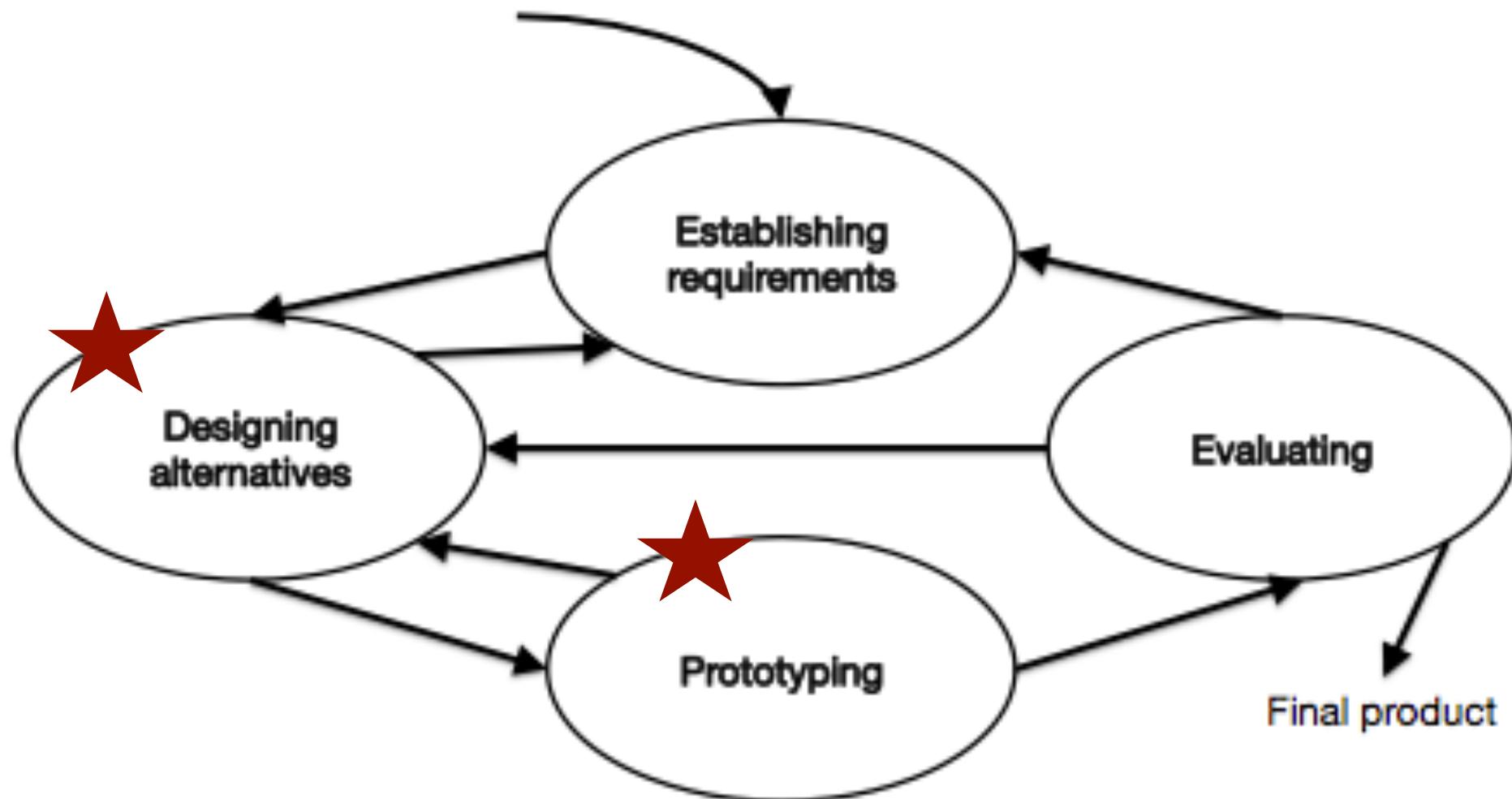
Many thanks to Paul Marshall for proving slides for this case study ☺

# Tourist information study

- Very little joint decision making for groups larger than 2
- Influence of the physical environment

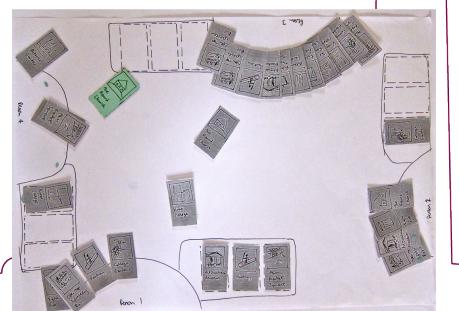
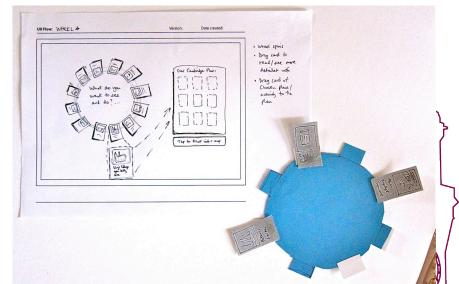
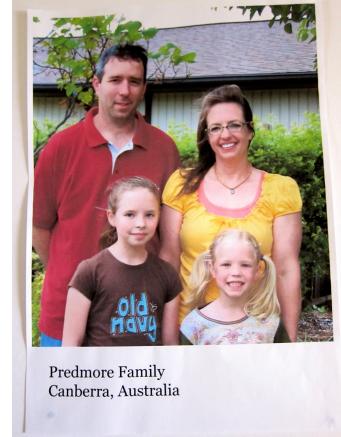


# Simple Life-cycle model

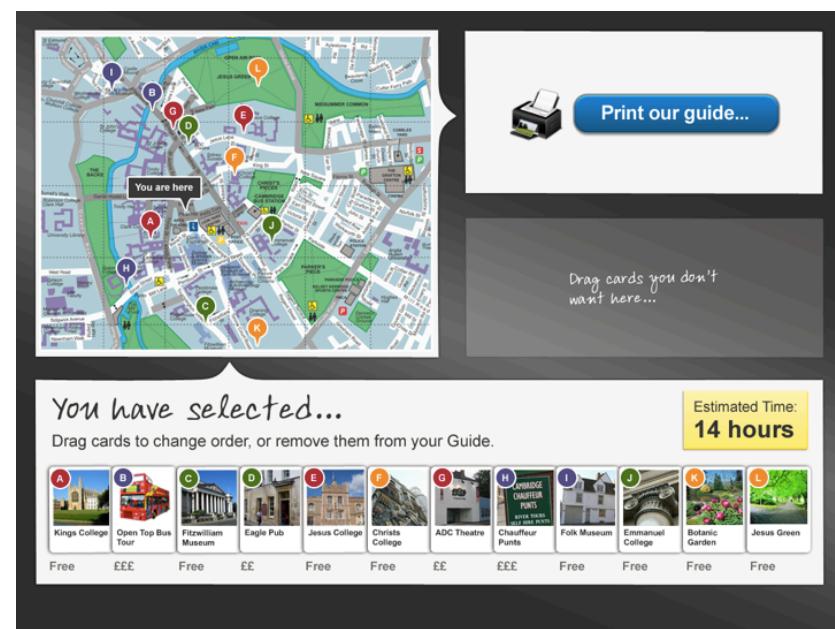


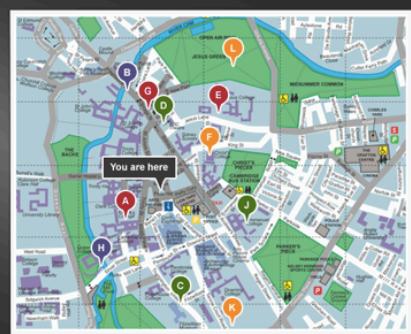
# Sketching and prototyping ideas for shared planning interface

- Developed personas and scenarios
- Sketched multiple designs
- Ran studies with paper prototypes
- Developed and tested interface









Print our guide...

Drag cards you don't want here...

Folk Museum

You have selected...

Drag cards to change order, or remove them from your Guide.

Kings College	Open Top Bus Tour	Fitzwilliam Museum	Eagle Pub	Jesus College	Christ's College	ADC Theatre	Cambridge Chauffeur Punting	Chaurfeur Punts	Emmanuel College	Botanic Garden	Jesus Green
Free	£££	Free	££	Free	Free	££	£££	Free	Free	Free	Free

Estimated Time:  
12 hours



Print our guide...

Drag cards you don't want here...

Folk Museum

You have selected...

Drag cards to change order, or remove them from your Guide.

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Free	£££	Free	££	Free	Free	££	£££	Free	Free	Free	Free

Estimated Time:  
12 hours



Print our guide...

Are you sure you want to print your guide now?

Yes

No

Folk Museum

You have selected...

Drag cards to change order, or remove them from your Guide.

Kings College	Open Top Bus Tour	Fitzwilliam Museum	Eagle Pub	Jesus College	Christ's College	ADC Theatre	Cambridge Chauffeur Punting	Chaurfeur Punts	Emmanuel College	Botanic Garden	Jesus Green
Free	£££	Free	££	Free	Free	££	£££	Free	Free	Free	Free

Estimated Time:  
12 hours

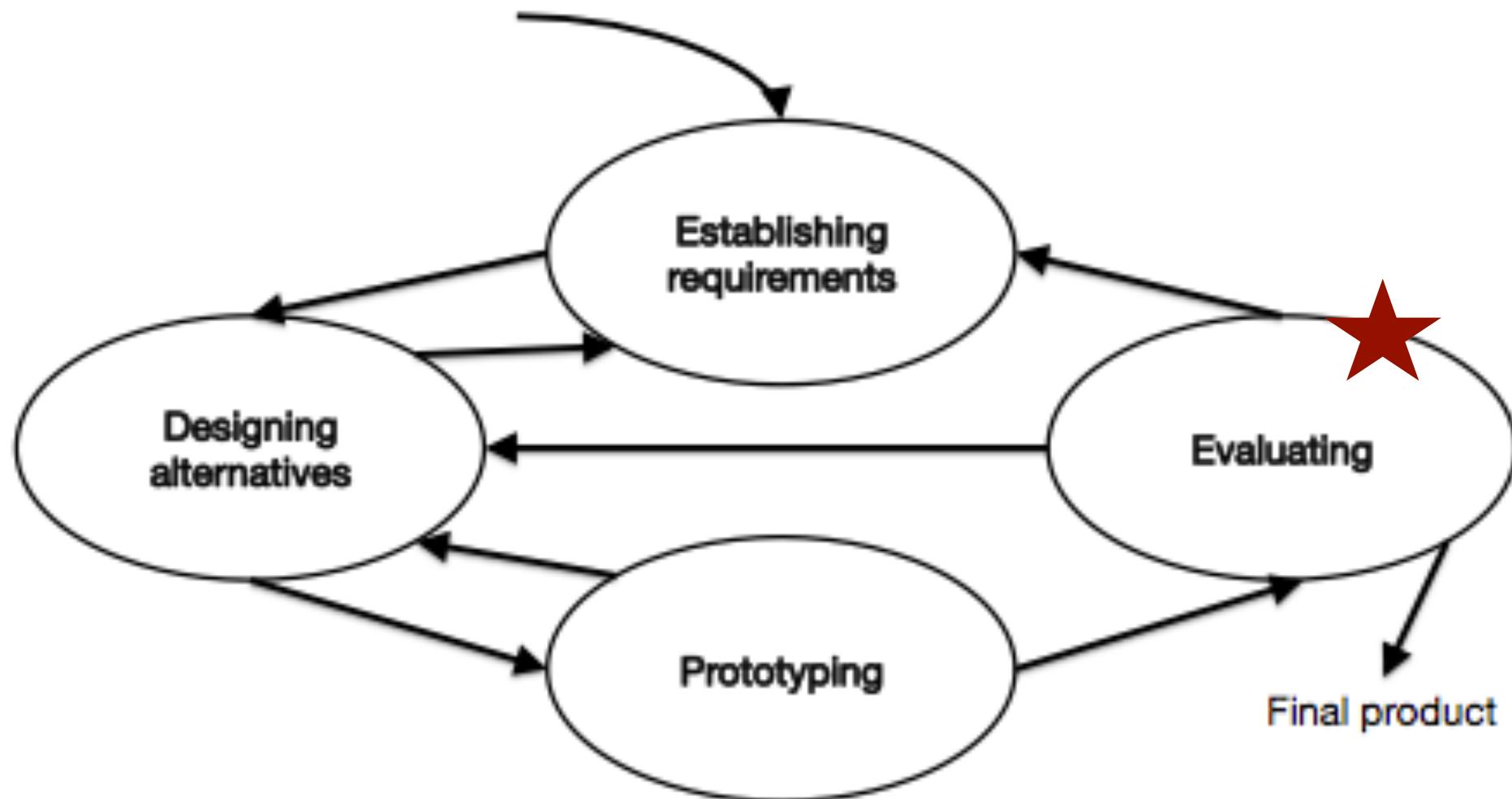
Your guide has printed.

Your Cambridge Guide

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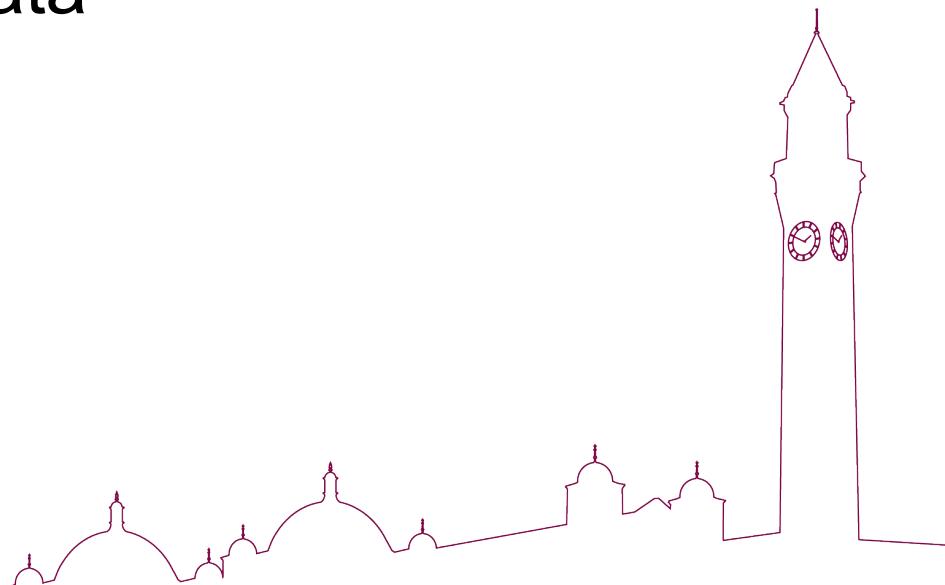
Please collect...

# Simple Life-cycle model



# In situ study

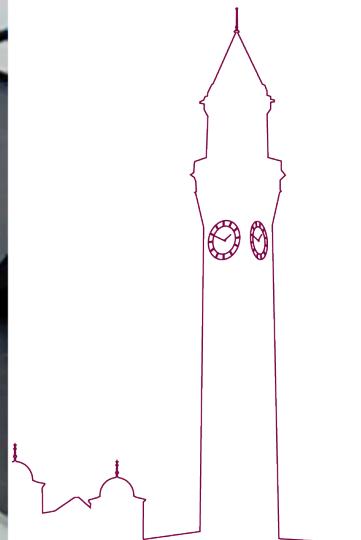
- 32 days
- 2 researchers. Detailed field notes and sketches
- 10 days of video data



# Tentative Approach



# Tapping



# Tensions between strangers



# Overview of tourist centre study

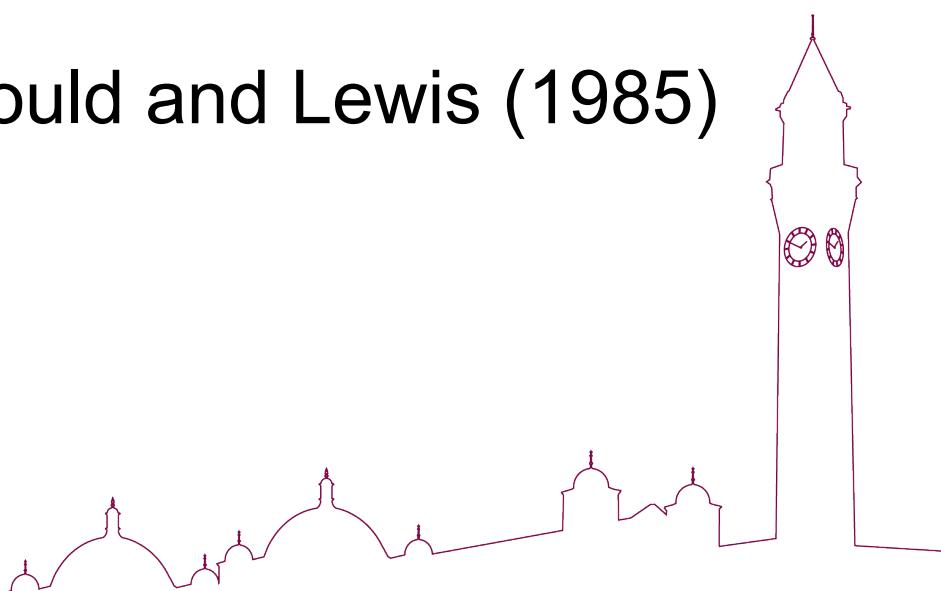
- Initial observations
- Sketching and prototyping (iteration of ideas)
- Building interactive version
- Evaluation (in the lab and in situ)
- If this was a commercial product, then redesign



# User-centred approaches

- Early focus on users and tasks
- Empirical measurement
- Iterative design

Gould and Lewis (1985)



# Who ARE the users?

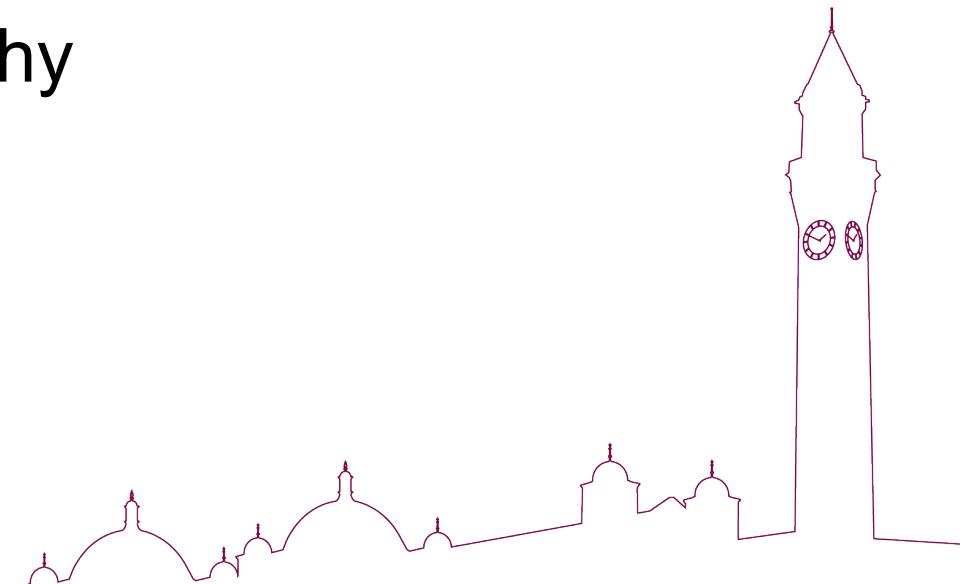
- Ones with direct task that use the system
- Other stakeholders

- Who might they be/have been in the Cambridge Tourist information office?



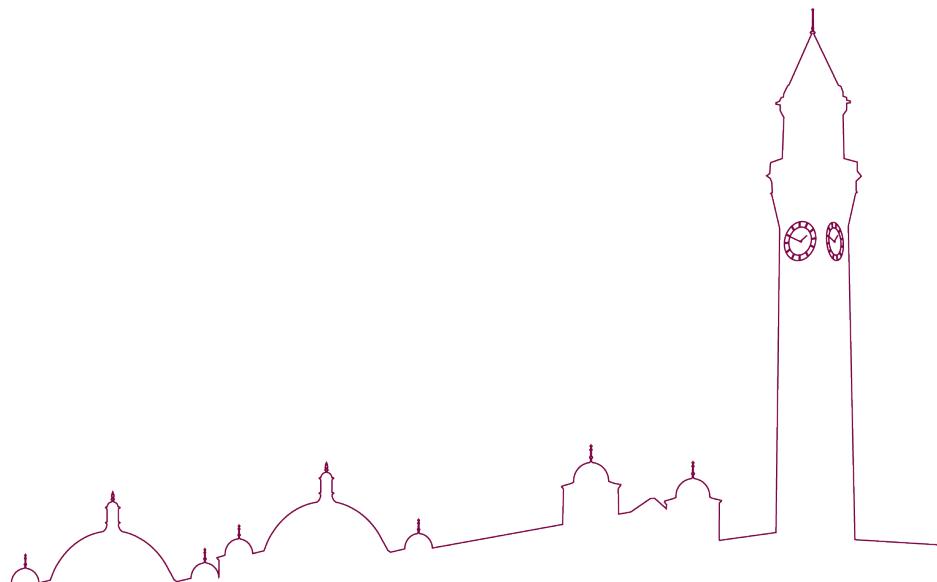
# How can we find out more about them?

- Users are rarely just you!
- Interviews, questionnaires, participatory design
- Observation, ethnography



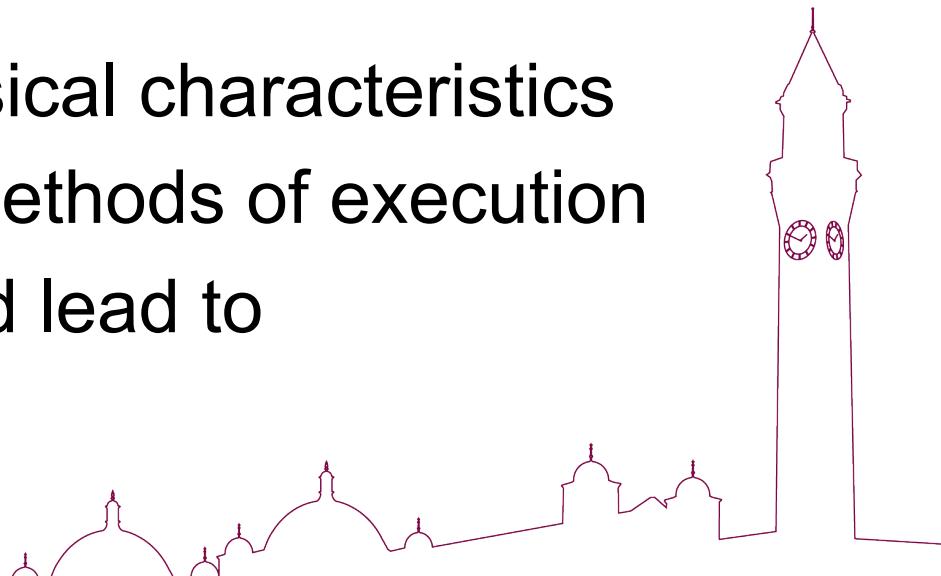
# What do they need?

- What exactly do they need/want?
- What do they currently do?



# What do we mean by needs?

- Users might not know possibilities
- Need understand:
  - User characteristics
  - User capabilities/physical characteristics
  - User task & current methods of execution
  - Whether design would lead to improvements



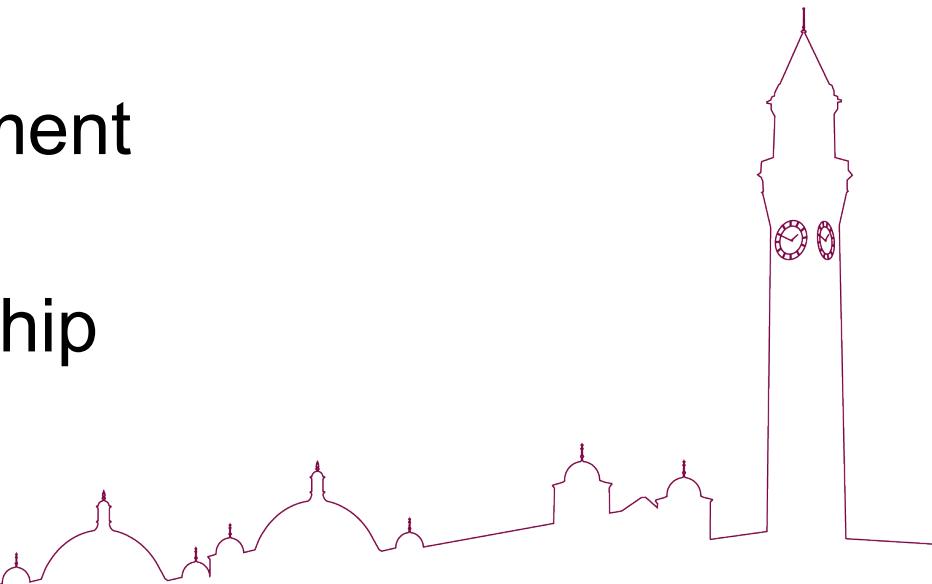
# Why is it important?

Ensures user taken into account

Designers gain better understanding of user goals => more usable product

User expectation management

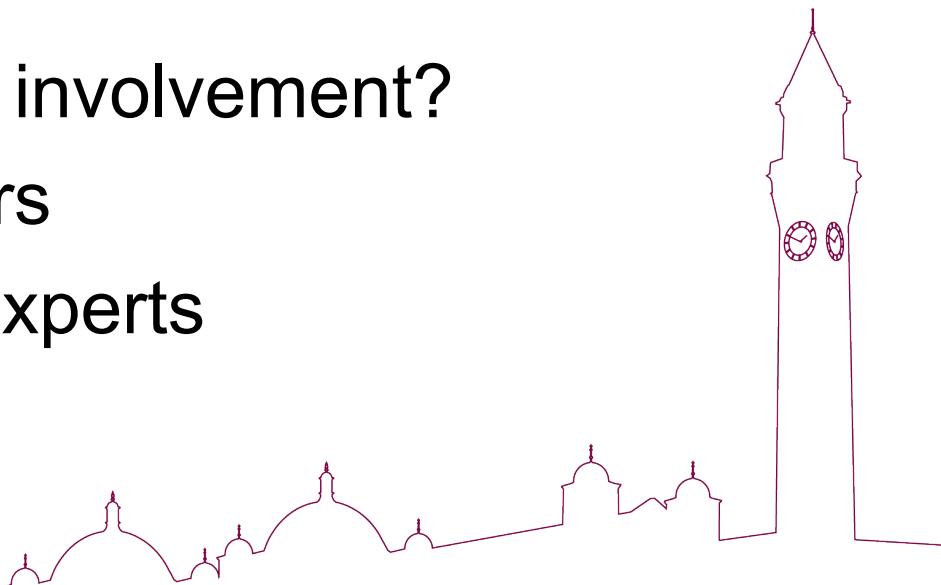
Give user sense of ownership



# How much involvement?

## □ Users as designers

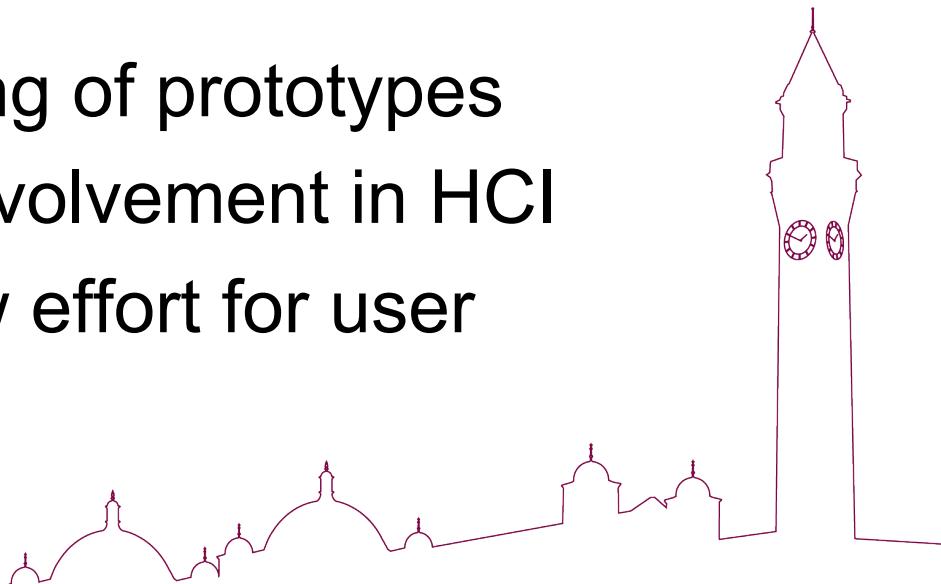
- Part of the design team
- Participatory design
- Part time or Full Time involvement?
- Time costs to the users
- They are not design experts



# How much involvement?

## □ Users as informers

- Designer gathers info about user
- This guides design
- User involved in testing of prototypes
- This most common involvement in HCI
- Can be effortful or low effort for user



# How much involvement?

## □ Users as interested consumers

- Given newsletters
- Invited to workshops/events etc
- Not so involved in the design as the other options



# Summary

- Overview of interaction design approach
  - Approaches to design
  - Basic processes
  - Lifecycle models
  - Case study
- Taking a user-centred perspective
- Tomorrow – find out more about understanding users



# Reading

## □ CORE

- The Process of Interaction Design. In Rogers, Yvonne, Helen Sharp, and Jenny Preece. "Interaction design: beyond human-computer interaction." Find this chapter in any of their books \_ or early edition available online:  
[http://www.wiley.com/legacy/wileychi/interactiondesign/pdf/  
ID\\_ch6.pdf](http://www.wiley.com/legacy/wileychi/interactiondesign/pdf/ID_ch6.pdf)

## □ Further reading:

- Marshall, Paul, et al. "Rethinking'multi-user': an in-the-wild study of how groups approach a walk-up-and-use tabletop interface." *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2011.
- "Designing For Interaction" Safer, 2010. Chapter 1.  
Available online at:

[http://www.designingforinteraction.com/  
designingforinteraction2\\_sample.pdf](http://www.designingforinteraction.com/designingforinteraction2_sample.pdf)

