Universitat Oberta de Catalunya

Master's Degree in Multimedia Applications

User-Centered Design of a weather forecast application for smartphones

Jordi Gómez Alberti

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Motivation

- This project aims to tackle a common issue in the United Kingdom

WEATHER

WHY?

Weather changing in an instant from…

To heavy…

CAUSING

- Difficulties in creating an accurate forecast, even when attempting to model the data for the same day.
- Leading to floods in certain areas, as there is not enough time to prepare.

Poynton, Manchester
12 June 2016

Woburn Forest, Bedfordshire
13 June 2016

- Temperatures and weather conditions that are not normal for the period of the year we are in.

Brighton
12 March 2013

Objectives

Create a mobile phone application, with the following characteristics:

- Accurate
- Customizable
- Easy to use
- Error free
- Free to use
- Low data usage

Development- HOW?

Using the User-Centered Design (UCD) Methodology.

What is UCD?

- A methodology that involves the users throughout the whole lifecycle design of the application.
- A method for designing ease of use into the user experience.
- An iterative methodology that puts the user at the centre of all design decisions.

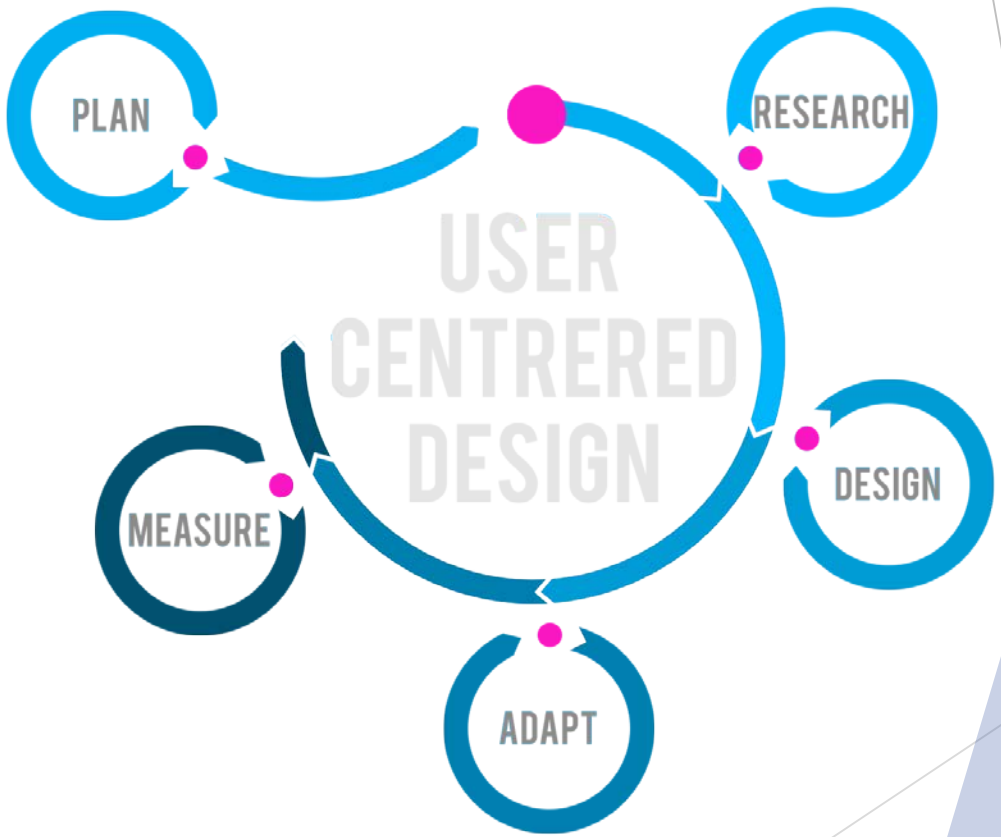
WHY?

- To optimize the users experience.
- To understand the users.
- To adapt the system to the users.
- To evaluate the designs.
- To reduce development and maintenance costs.

How do we do this?

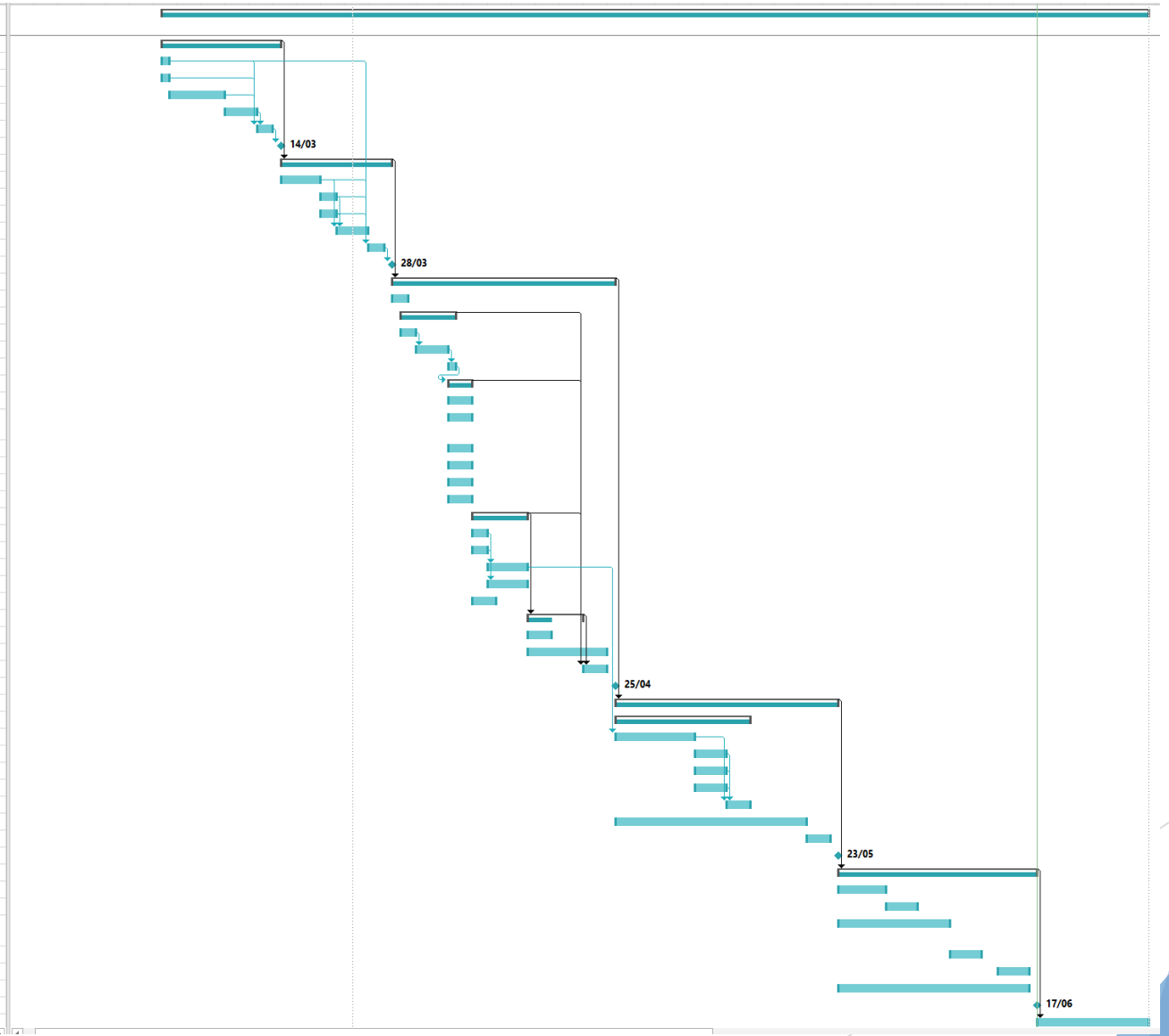
Completing the following stages:

- Planning
  - Functionalities
  - Calendar
- Researching
  - Benchmarking
  - Surveys
  - Requirements
- Designing
  - Sketches
  - Wireframes
  - Prototypes
  - Coding
- Evaluating
  - Heuristic Evaluation
  - Cognitive Walkthrough
  - User Testing



PLANNING

User-Centered Design of a weather forecast application for smartphones	124 days	Mon 29/02/16	Fri 01/07/16
PAC1	**15 days**	**Mon 29/02/16**	**Mon 14/03/16**
Proposal of title	1 day	Mon 29/02/16	Mon 29/02/16
Keywords	1 day	Mon 29/02/16	Mon 29/02/16
Proposal	7 days	Tue 01/03/16	Mon 07/03/16
Justification and motivation	4 days	Tue 08/03/16	Fri 11/03/16
PAC1 revision	2 days	Sat 12/03/16	Sun 13/03/16
PAC1 hand in	1 day	Mon 14/03/16	Mon 14/03/16
PAC2	**14 days**	**Tue 15/03/16**	**Mon 28/03/16**
Market analysis	5 days	Tue 15/03/16	Sat 19/03/16
Objectives	2 days	Sun 20/03/16	Mon 21/03/16
Scope	2 days	Sun 20/03/16	Mon 21/03/16
Developing the work plan	4 days	Tue 22/03/16	Fri 25/03/16
PAC2 revision	2 days	Sat 26/03/16	Sun 27/03/16
PAC2 hand in	1 day	Mon 28/03/16	Mon 28/03/16
PAC3	**28 days**	**Tue 29/03/16**	**Mon 25/04/16**
Methodology	2 days	Tue 29/03/16	Wed 30/03/16
Collection of data	**7 days**	**Wed 30/03/16**	**Tue 05/04/16**
User survey	2 days	Wed 30/03/16	Thu 31/03/16
Survey distribution	4 days	Fri 01/04/16	Mon 04/04/16
Survey analysis	1 day	Tue 05/04/16	Tue 05/04/16
Requeriments analysis	**3 days**	**Tue 05/04/16**	**Thu 07/04/16**
User requirements	3 days	Tue 05/04/16	Thu 07/04/16
Functional and non-functional requirements	3 days	Tue 05/04/16	Thu 07/04/16
Interface requirements	3 days	Tue 05/04/16	Thu 07/04/16
Usability requirements	3 days	Tue 05/04/16	Thu 07/04/16
Technological requeriments	3 days	Tue 05/04/16	Thu 07/04/16
Maintenance need	3 days	Tue 05/04/16	Thu 07/04/16
UCD design of the application	**7 days**	**Fri 08/04/16**	**Thu 14/04/16**
Use cases	2 days	Fri 08/04/16	Sat 09/04/16
Task analysis	2 days	Fri 08/04/16	Sat 09/04/16
Navigation tree	5 days	Sun 10/04/16	Thu 14/04/16
Information flow	5 days	Sun 10/04/16	Thu 14/04/16
Sample Personas	3 days	Fri 08/04/16	Sun 10/04/16
Prototyping	**7 days**	**Fri 15/04/16**	**Thu 21/04/16**
Sketches (Lo-Fi)	3 days	Fri 15/04/16	Sun 17/04/16
Intial coding	10 days	Fri 15/04/16	Sun 24/04/16
PAC3 revision	3 days	Fri 22/04/16	Sun 24/04/16
PAC3 hand in	1 day	Mon 25/04/16	Mon 25/04/16
PAC4	**28 days**	**Tue 26/04/16**	**Mon 23/05/16**
Usability and accessibility evaluation	**17 days**	**Tue 26/04/16**	**Thu 12/05/16**
Interactive prototype	10 days	Tue 26/04/16	Thu 05/05/16
Heuristic evaluation	4 days	Fri 06/05/16	Mon 09/05/16
Cognitive walk	4 days	Fri 06/05/16	Mon 09/05/16
User testing	4 days	Fri 06/05/16	Mon 09/05/16
Results and modifications	3 days	Tue 10/05/16	Thu 12/05/16
Coding	24 days	Tue 26/04/16	Thu 19/05/16
PAC4 revision	3 days	Fri 20/05/16	Sun 22/05/16
PAC4 hand in	1 day	Mon 23/05/16	Mon 23/05/16
PAC5	**25 days**	**Tue 24/05/16**	**Fri 17/06/16**
Sketches (Lo-Fi)	6 days	Tue 24/05/16	Sun 29/05/16
Wireframes (Hi-Fi)	4 days	Mon 30/05/16	Thu 02/06/16
Completion of remaining tasks or objectives (Safeguard time)	14 days	Tue 24/05/16	Mon 06/06/16
Video demonstrating application	4 days	Tue 07/06/16	Fri 10/06/16
Presentation	4 days	Mon 13/06/16	Thu 16/06/16
Monograph completion and revision	24 days	Tue 24/05/16	Thu 16/06/16
PAC5 hand in	1 day	Fri 17/06/16	Fri 17/06/16
Dissertation defense	14 days	Sat 18/06/16	Fri 01/07/16



RESEARCHING

Data collection for the creation of weather application.

The purpose of this form is to obtain information about the different types of users and the features which are to be expected in a Weather Forecast application.

The aim is to create an application that allows to receive accurate and precise weather forecast data and notifications of severe weather conditions.

All the information obtained will be treated confidentially and anonymously for the Master's Degree Dissertation.

Gender

Choose

How old are you?

Choose

How often do you check for the weather forecast?

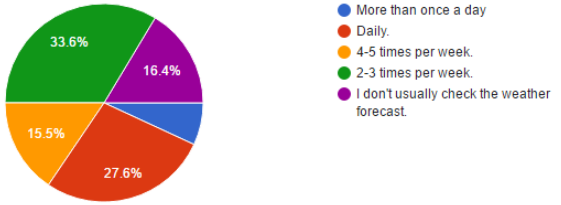
- More than once a day
- Daily.
- 4-5 times per week.
- 2-3 times per week.
- I don't usually check the weather forecast.

Would you be interested in cloud maps? (Radar imaging)
See image below

- Yes
- No

This image provides information about clouds' movement and density.

How often do you check for the weather forecast? (116 responses)



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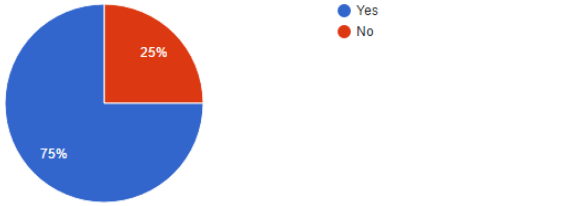
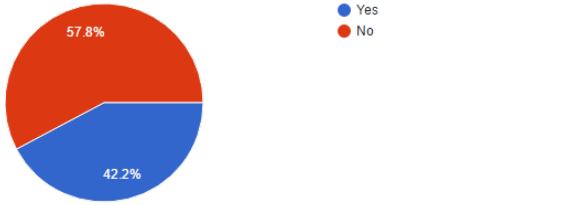
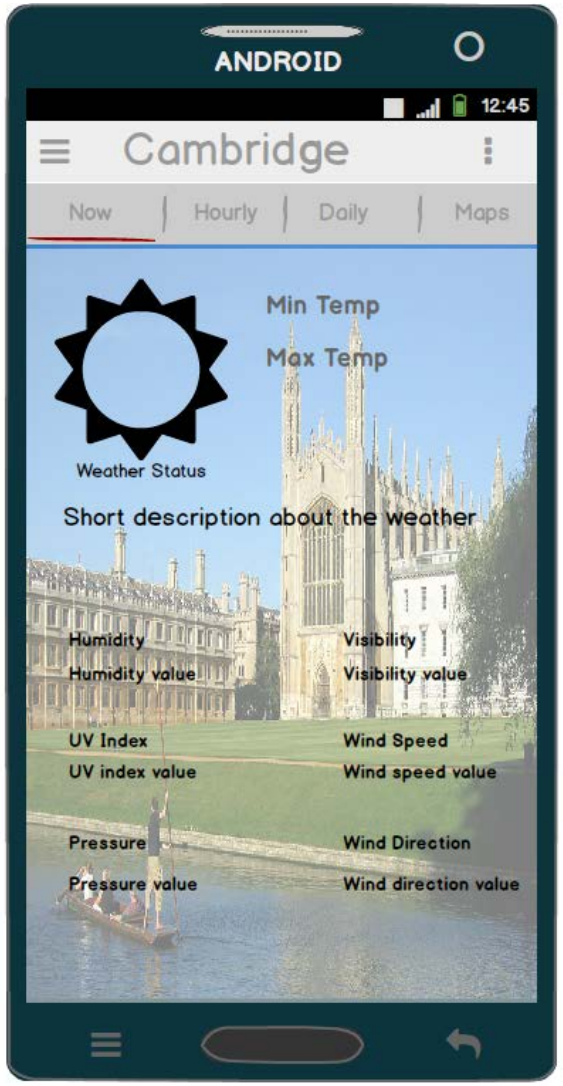


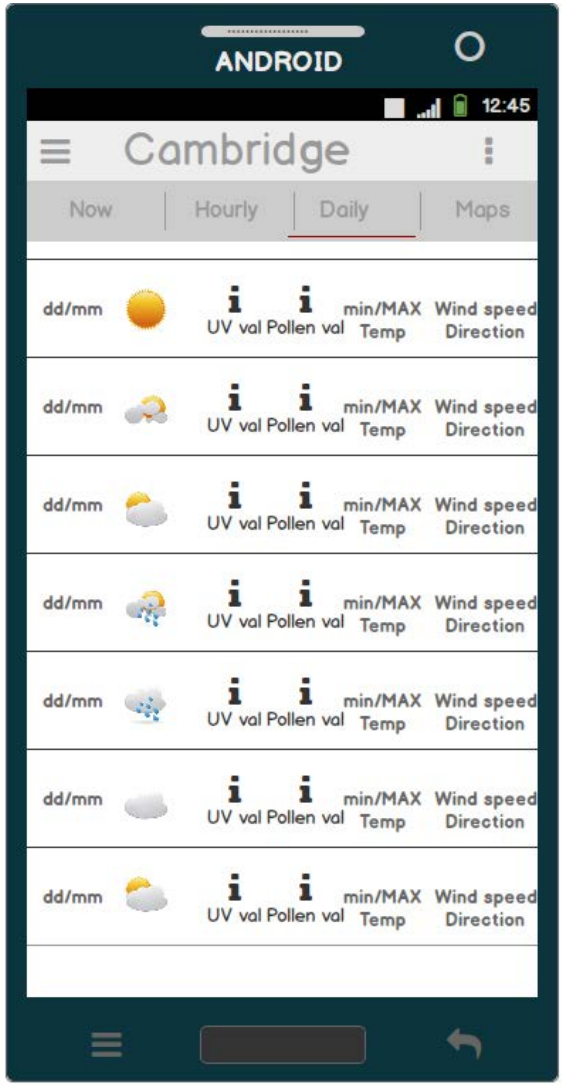
Would you be interested in videos related to weather? (116 responses)



DESIGNING

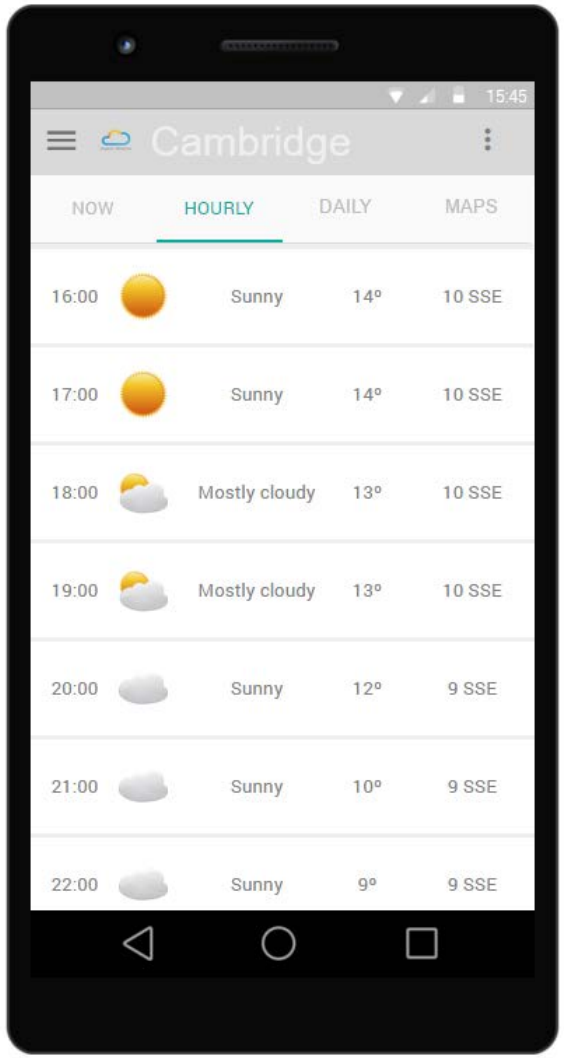


SKETCH



WIREFRAME

DESIGNING



PROTOTYPE

CODED APP

EVALUATING

Cognitive walkthrough

Task 1

Check the weather forecast of the night for a given day.

Task 2

Change the city on which the information is being displayed.

Task 3

Add a new location using the GPS.

Task 4

Change the measurement units used by the application.

Heuristic Evalualtion - A System Checklist

1. Visibility of System Status

The system should always keep user informed about what is going on, through appropriate feedback within reasonable time.

#	Review Checklist	Yes	No	N/A	Comments
1.1	Does every display begin with a title or header that describes screen contents?	O	O	O	
1.2	Is there a consistent icon design scheme and stylistic treatment across the system?	O	O	O	
1.3	Is a single, selected icon clearly visible when surrounded by unselected icons?	O	O	O	
1.4	Do menu instructions, prompts, and error messages appear in the same place(s) on each menu?	O	O	O	
1.5	In multipage data entry screens, is each page labeled to show its relation to others?	O	O	O	
1.6	If overtype and insert mode are both available, is there a visible indication of which one the user is in?	O	O	O	
1.7	If pop-up windows are used to display error messages, do they allow the user to see the field in error?	O	O	O	
1.8	Is there some form of system feedback for every operator action?	O	O	O	
1.9	After the user completes an action (or group of actions), does the feedback indicate that the next group of actions can be started?	O	O	O	
1.10	Is there visual feedback in menus or dialog boxes about which choices are selectable?	O	O	O	
1.11	Is there visual feedback in menus or dialog boxes about which choice the cursor is on now?	O	O	O	
1.12	If multiple options can be selected in a menu or dialog box, is there visual feedback about which options are already selected?	O	O	O	
1.13	Is there visual feedback when objects are selected or moved?	O	O	O	
1.14	Is the current status of an icon clearly indicated?	O	O	O	

Future Possibilities

- Finish all the coding of the application.
- Publish the application in Google Play Store.
- Enable aggregation on multiple weather data API:
  - To provide more accurate data.
  - To improve the application stability.
- Implement collaborative weather.
  - To enable more precise weather depending on post codes.
- Monetize the app.
  - Free version supported by ads.
  - App version without ads, with a single purchase.

Conclusions

- All the planned objectives have been achieved.
- An alpha version of the app has been coded:
  - Introduced myself in the stages of coding an application.
  - Enabling me to carry on learning Android coding and expanding the app.
- Expanded skills learned during the Masters' Degree.
- Verifying the importance of centring the focus on the user, as UCD states:
  - To adapt the app to the users need.
  - To offer a great user experience.
  - To deliver a tested app.