

Deliverable 2: Requirements and Designs

Nephos:

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Requirements and Design:

CUSTOM Stakeholders:

Using the questionnaires, online research, and a review of existing weather apps, we narrowed our primary users down to two potential groups, both of which we felt were most likely to use mobile apps to frequently check the weather.

Our two target groups are:

- London University Students
- Commuters

Below, we have compiled a list of primary, secondary, tertiary and facilitating stakeholders for both groups. We have included their background, experiences and tasks based on further research carried out.

Group 1: London University Students:

Primary: Students at universities in London

- Background:
 - Main age bracket: late teens to mid-twenties
 - Very likely to be an international audience
 - Already fairly frequently use apps for all manner of necessities.
- Experience:
 - Used to maintaining a work-study balance
 - In most cases not working a standard 9-5 day. More likely to have frequent half days
 - Experience to date mainly therefore includes a mix of part time study, work and evening/weekend related social activities.
- Tasks:
 - Studying effectively
 - Possibly partaking in extracurricular activities, social events or hobbies in free time
 - In various cases, working part time to fund extra hobbies

Secondary: OpenWeatherMap API providers

- Background:
 - Online service – provide free API for weather data
 - Data sources: meteorological broadcast services, raw data from: airport weather stations, radars, official weather stations
- Experience:
 - Experience using large amounts of data analysis/data collection techniques
 - Focused on improving accuracy/incorporating a social aspect by involving owners of weather stations in the process, as opposed to just automating everything.
- Tasks:
 - Provide accurate, easy to use information for potential users
 - Make information freely available
 - Make information easier to use (using geocoding, maps etc.)

Tertiary: Friends, family, work/university institutions

Friends/Family -

- Background:
 - o Diverse mix of ages and nationalities considering London is one of the (if not the) most multicultural cities in the world
- Experience:
 - o Likely to be a large range of experiences. Many will in fact, fit the primary stakeholder category too (being friends from university), and thus will have the same experiences as those described above.
 - o Others will differ greatly, and can range from standard 9-5 working days, to raising children.
- Tasks:
 - o Once again, varying greatly and dependent on the age and background of the given friend/family member.

Work/University institutions:

- Background:
 - o Generally rather large institutions, focused on providing education and research. Alternatively, small to large companies with entry level positions, or access to training schemes for students
- Experience:
 - o Company/institution may have just been established, or may have been running for years. Thus, level of experience can vary greatly.
 - o Most likely used to busy hours between 9am and 5pm. Possibly still open but far less frequented outside of these hours
- Tasks:
 - o Providing an up to date and relevant education to any enrolled students. Alternatively, research various given problems according to department. (University)
 - o Dependent on the company at hand. Usually providing a service to any given client at a satisfactory level.

Facilitating: Nephos

- Background:
 - o Four students at a London university (thus fitting the primary stakeholder category)
 - o Of various backgrounds/ethnicities
 - o Age bracket: 20-27
- Experience:
 - o Mix of various education systems and part time jobs
- Tasks:
 - o Complete undergraduate degree – includes passing exams, completing various pieces of coursework, attending frequent lectures and labs
 - o Possible carry out any part time jobs to a satisfactory level
 - o Pursuing hobbies

Group 2: Commuters in London

Primary: General workers, professionals, business owners, students, tourists

Note: for information regarding/related to students, see above. The below mainly relates to professionals, business owners etc.

- Background:
 - o Ages: 22+
 - o Range of jobs, ethnicities, levels of expertise and education
 - o Range of years living in London (anything from birth to a few months)
- Experience:
 - o Experience will differ greatly, ranging from international education systems and work experience to London based early education.
 - o Depending on positions within company, days (or at least the commuting part of them) can typically begin as early as 6am, and end anytime between 5-9pm.
 - o Days may consist of travel throughout the day between locations (home carers, cycling instructors for example, may need to travel throughout the day)
- Tasks:
 - o Job dependent. Manage, teach, care etc. to a certain level of satisfaction
 - o Focus on career/personal life progression. This can range from taking care of children to focusing on promotions at work

Secondary: OpenWeatherMap API providers

Please see secondary stakeholders for London University Students.

Tertiary: Friends, family, work/university institutions

Note: mainly related to work institutions. For friends, family or university, see tertiary stakeholders for group 1.

- Background:
 - o Range of small – large institutions providing various services. These can be anything from retail stores to hospitals
 - o Ranges of opening hours. Inpatient hospital wards for example, are open 365 days a year, through all hours, whereas stores may only be open from 9am to 5 pm
- Experience:
 - o People within the companies will have various levels of expertise ranging from entry level to various levels of professionalism.
- Tasks:
 - o Dependent on the company at hand. Usually providing a service to any given client at a satisfactory level.

Facilitating: Nephos

Please see facilitating stakeholders for London University Students.

Table: London University Students:

Aims	Sources of Satisfaction	Knowledge and Skills	Attitudes to work
<ul style="list-style-type: none">- Attain an undergraduate or postgraduate degree- Gain work experience, or new skills	<ul style="list-style-type: none">- Productivity at university- Attainment of good grades/feedback	<ul style="list-style-type: none">- Education up to A Levels (or equivalent)- Skills can vary greatly. Can be skills gained at a job, or extracurricular hobbies (sports, music etc.)	<ul style="list-style-type: none">- Somewhat positive-can be enthusiastic.- Strong tendency to procrastinate.
Work-group activities	Nature of Activities	Responsibility	Working conditions
<ul style="list-style-type: none">- Normally group projects. Vary depending on subject (i.e: field studies for Geography students, lab experiments for Chemistry students)	<ul style="list-style-type: none">- Focus is on research or project/coursework.- Hobbies vary greatly. Can range from outdoor, loud activities (e.g. basketball), to indoor quiet activities (e.g. reading)	<ul style="list-style-type: none">- Attending lectures, labs, seminars etc.- Meeting deadlines- Ensuring being well prepared for exams- Paying bills, rent etc. on time	<ul style="list-style-type: none">- Predominantly (although not exclusively) indoors.- Range of quiet areas to larger, louder areas for group work.

Table: Commuters:

Aims	Sources of Satisfaction	Knowledge and Skills	Attitudes to work
<ul style="list-style-type: none">- Professional/personal progression- Reaching destination on time	<ul style="list-style-type: none">- Carrying out the days tasks with good time and efficiency.	<ul style="list-style-type: none">- Ranges. Can be extensive education in a given field.- Work experience- Similar to students, may have notable skills unrelated to work.	<ul style="list-style-type: none">- Dependent on enjoyment/stress level of job/daily activities.- Can therefore range
Work-group activities	Nature of Activities	Responsibility	Working conditions
<ul style="list-style-type: none">- Generally necessary to work in some teams	<ul style="list-style-type: none">- Dependent on daily work requirements. Can involve office based work or outdoor work. Usually fixed number of hours.	<ul style="list-style-type: none">- Usually a large amount of responsibility. Commuters need to be able to complete any given tasks independent of external help (amount/difficulty of task is dependent on job given)	<ul style="list-style-type: none">- Most likely indoors – office or store based.- Potential for large amounts of work to be done outside if occupation is builder, cycling trainer etc.- Conditions thus may vary depending on weather, visibility etc.

Research Methods:

In order to gather more data about potential users, their everyday tasks and various information about what people may want from a weather app, we decided to use different data gathering methods. Our first point of call was to create an online survey, which we could spread through a range of social media websites/apps. This would ensure that we got a broad range of anonymous information about potential users. We came up with a list of mainly closed questions to

- Ensure clarity of answers
- Ensure that the survey would not take too long to complete, thus hopefully encouraging more people to complete it.

The survey included questions about the consumers' age, occupation and the importance of weather in their day to day life. A total of 24 responses was received from the survey.

Items on the survey included the following topics:

- The reasons to check the weather
- Methods used to check the weather

An online website called "zoho" (www.zoho.com) was used to prepare the questionnaire and submit the generated web link to different consumers such as students. The web link was shared by peer to peer method across the social media such as Facebook.

Questionnaire topics included:

- Age
- The form of the method used to check the weather
- Their occupation

On the next page, we have included the results from the survey. These are later analysed to help both form and develop the concept and prototypes for our design, alongside filling the gaps in our CUSTOM model of users.

Alongside this, a variety of blogs and other websites were used to further understand our potential target market. Whilst the survey gave us an idea of a *basic* target market, and what they were looking for in a weather map, the online research gave us a better understanding of the particular demographic we were focusing on, their everyday tasks, activities and requirements. The methods listed above alongside the critique of current weather apps gave us enough information to form two basic prototypes both based on the same key concept.

Research - Survey:

What is your occupation?

Response	Count
Unemployed	0.0%
Student	83.33%
Professional	8.33%
Other	8.33%

Do you regularly check the weather?

Response	Count
Yes	95.83%
No	4.17%

What is your most important reason to check the weather?

Response	Count
To dress appropriately	83.33%
To know if I should take an umbrella/weatherproof jacket with me	50.0%
To plan my journey to know if I can walk/bike to where I want to go	37.5%
It's important for my business	4.17%
It's important for my hobbies	16.67%
Other	4.17%

What is your current method of checking the weather?

Response	Count
TV	4.17%
Radio	4.17%
Website	25.0%
App	66.67%
Other	0.0%

What time of the day do you usually check the weather

Response	Count
Morning	54.17%
Noon	0.0%
Evening	8.33%
Anytime	37.5%

Would you like to receive notifications of rain or snow?

Response	Count
Yes	66.67%
No	33.33%

Do you check whether the weather will change during the day?

Response	Count
Yes	66.67%
No	33.33%

Do you need to know the weather in several locations?

Response	Count
Yes	45.83%
No	54.17%

What aspect of the weather is most important to you?

Response	Count Average
Temperature	4.92%
Humidity	2.17%
Wind Speed	2.83%
Pressure	1.88%
Chance of rain or snow	4.42%

Concept Formation:

Analysis of Survey:

When setting up the survey, we decided to take account of both age and occupation to ensure that we could easily identify a basic target market to research. The age gap ranges from roughly the ages of twenty to thirty. The majority of our users were students, with a few professionals, leaving us to conclude that the survey results would give us a good indication of what predominantly students, but also professionals would want in a weather app. Alongside this, close to 40% cited "planning their journey(or transportation) as a reason for checking the weather. This led to us identifying two key target markets:

- London university students
- Commuters

The vast majority of the users claimed to check the weather regularly. Just over 50% of users listed the morning as the main time they would check the weather, but a significant 66% claimed to be checking it throughout the day. This was highlighted by the fact that a combined 90+% used either an app or a website to do so. These are both fast, portable methods of checking the weather, as opposed to the clearly unused and rather redundant TV or radio. This led us to conclude that:

- **An alarm would be useful**
If the majority of our users are prone to checking the weather in the morning, it would be useful to allow them to do so as soon as they woke up. Thus, including an alarm with our application would most likely help direct the app to our client
- **The app could not be too cluttered.**
If users were interested in checking the app on the go, they would most likely be using a mobile data plan. Navigating through various screens, images or redundant would both serve to waste data and increase loading times.

A further observation was that most of the potential users checked the weather to dress appropriately, or remember to take specific items such as umbrellas. This, combined with the fact that many users would have liked to receive notifications of rain or snow told us that:

- **Including short messages on potential extra items or more suitable modes of transport for the weather would be appreciated**
If users had specific reasons for checking the weather, adding small messages such as "it's raining, don't forget to take an umbrella", or "perhaps leave your bike at home today" would both help users plan their day and appreciate the app.

In terms of actual weather content, most users strongly preferred knowing about the temperature and chance of rain throughout the day. Very few cited humidity or pressure as key points. Alongside this, just under half of the users wanted to know about the weather in several locations. Thus:

- **The app would need to include key weather information, but could discard redundant information such as humidity.**
- **Adding several "key" locations would be useful for some of our target market**

All in all, it was clear that users were looking for a clear, quick app to check the basics of the weather throughout the week. They were not looking for overly complicated apps with high end graphics and detail on every aspect of the weather. The majority of them merely wanted to know how warm it would be, and whether or not taking their bicycles was advisable today. Thus, this led us to decide that a key concept for both target markets would be: **"Less is More"**.

Description and critique of existing Weather Apps:

Weather applications have been an integral part of smartphones and tablets since their first days. It is not surprising that a search for a weather app on Apple's App Store yields thousands of results, giving the users a great variety of options depending on their needs and taste.

All the top smartphone operating systems have their own built-in apps and in the same time more and more third-party designers are setting the level quite high, offering very well designed apps.

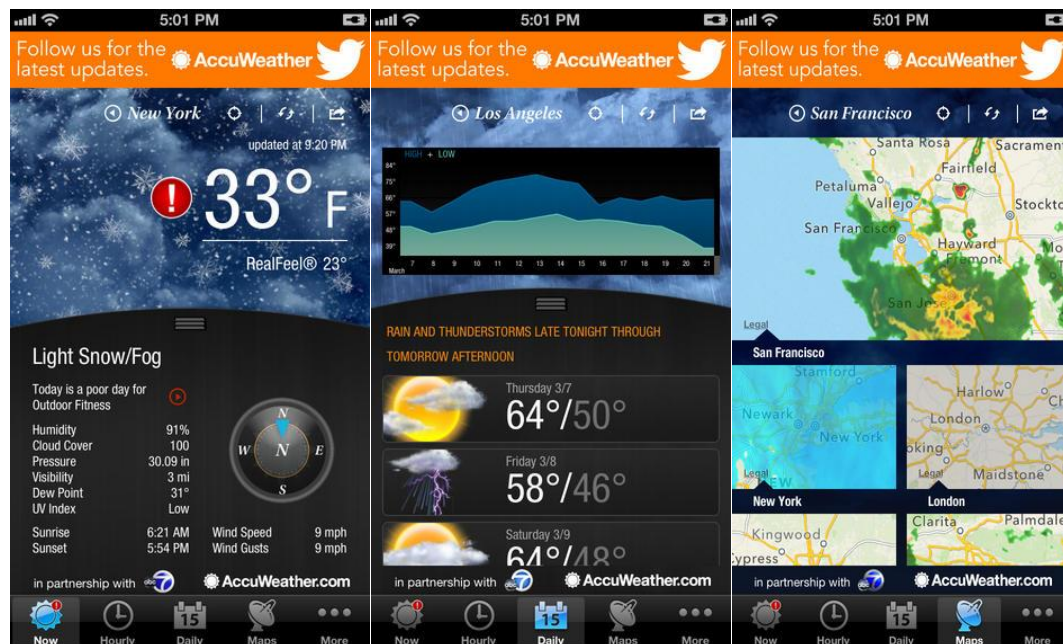
It would be a serious omission, if apart from the user requirements gathering and the specifications of their needs, we did not take into consideration the recent trends in app design in order to produce a modern and competitive design.

Users are mostly interested in few parameters of the weather, such as temperature, chance of rain and wind.

The earlier generations of weather apps are providing so detailed meteorological information, (humidity, atmospheric pressure, UV levels, pollen levels, dew point, time of sunrise and sunset, visibility levels, radar views and maps etc), that are not important for everyday users. Such details are more relevant to people with scientific knowledge. Additionally, having to display so many elements on the app screen makes it difficult for the users to navigate and comprehend, and additionally requires more resources to load all this data. Especially for those who want to check the weather on the go and need to use limited data.

Examples of those applications are:

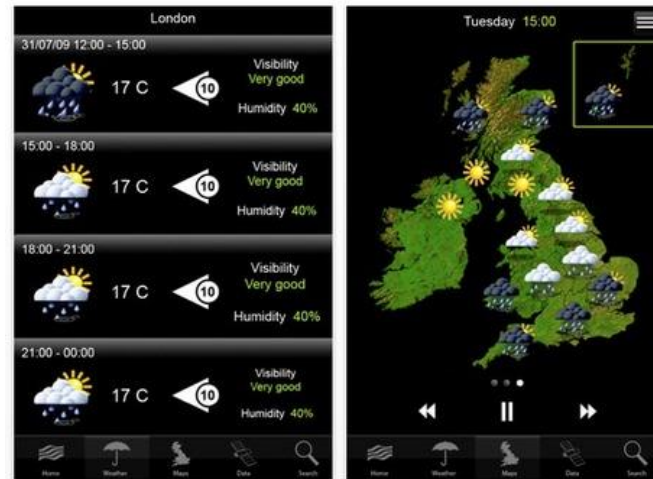
- Accuweather



- Weatherbug



- Met Office



The concept behind the design of our application is “Less is more”.

Our main goal is to give the users the weather information they consider most important in a clear and simple way.

Being targeted to a young audience such as university students and people who are on the go, such as commuters who want an accurate forecast of the weather conditions of the following hours or next day to plan their journey, our applications require a minimalistic and modern design and a simple and intuitive way to navigate.

We aim to give the users all the important information in the main screen, using less and simpler menus and being clear and comprehensible.

Most modern application designs are focused on this.

Common ground for all of them is the flat, clean and uncluttered design to provide to the user the weather conditions and forecast, and the use of light weight sans serif fonts such as Helvetica Neue, Futura, Helvetica or Gotham to give a contemporary look and make it easier for the users to absorb the information they need.

There are various design trends that are being employed by current weather apps:

Use of photographs / animation:

The greatest example of such applications is the **Yahoo Weather App** where location-based photographs retrieved from Flickr are used as a background. The images are corresponding to the time of the day and the type of current weather, giving the application a beautiful, varying and personalised look.

The main screen is simple and uncluttered and only scrolling down provides the user with more detailed weather information and forecast.



Similarly, **Clear Day** app is using as background animations of the current weather conditions, which is somehow limiting and repetitive.



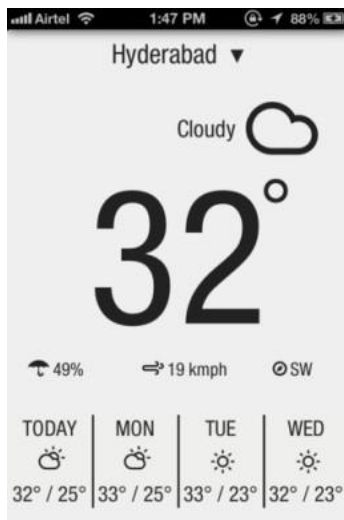
Use of flat icons:

This is a very minimalistic design some current applications are using, where a card resembling flat interface is used and simple icons are utilised to describe the weather conditions. The applications are only presenting to the users the information they want to know, avoiding the use excessive data and functions.

It is an interesting design approach, keeping the interface clean and simple, while looking modern and contemporary.

Such applications are:

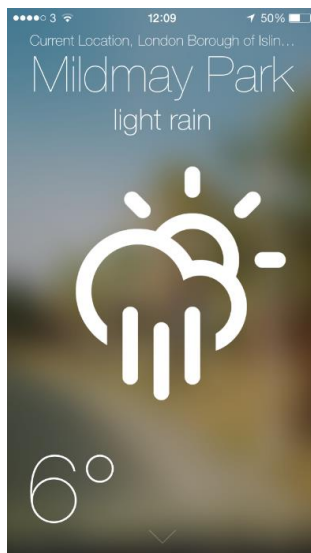
Weather Neue



MiniMeteo



Mizzle

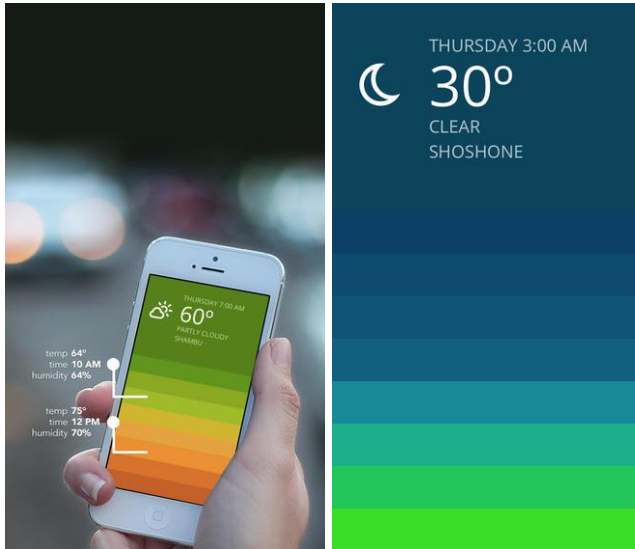


Use of colours:

Colours are evoking emotions and associations to everyone. Many modern applications are using colours to provide graphical information about the weather in a simple and intuitive way.

Some are using colours to visualise the temperature. Warmer colours are used for higher temperatures and cold ones for low temperatures.

Blue app is a good example of this approach, using solid horizontal coloured bars to show the temperature values during the day



Nice weather is also using the same concept, where colour corresponds to temperature.



A drawback of this app is that swiping to get an hourly display of the weather conditions is done on the temperature graph at the bottom by dragging a small dot, which can be difficult for some users, who will accidentally swipe to the next screen.

Haze is also utilising colours but in a more elaborate way.

Different colours correspond to different weather parameters and menus, where colour hue is used to describe the gradation of the different values.



Yellow and orange is being used to give sunshine hours, UV, cloud coverage, sunrise and sunset times, **green** is used for high and low temperatures for the day, wind chill, wind speed and wind direction, and **blue** for precipitation rain chance & amount, humidity levels and atmospheric pressure.

Solar uses gradient colours to display the time of day.

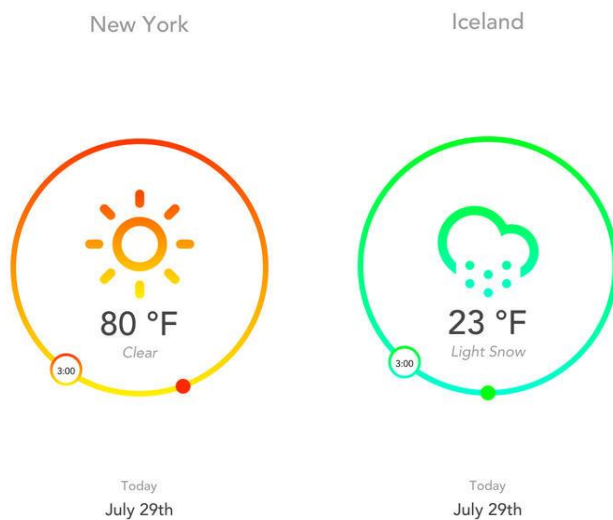


It also uses animations to show current weather conditions, for example rain or snow. However the fact that colours correspond to time of the day and not current weather conditions makes the interface counter-intuitive and might confuse some users.

Use of clock-like interface:

Another current trend in application design is the use of a scrolling wheel clock-like navigation to provide hourly weather forecast, usually combining design approaches described above.

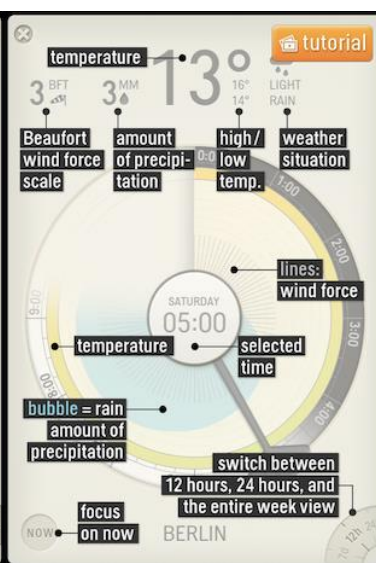
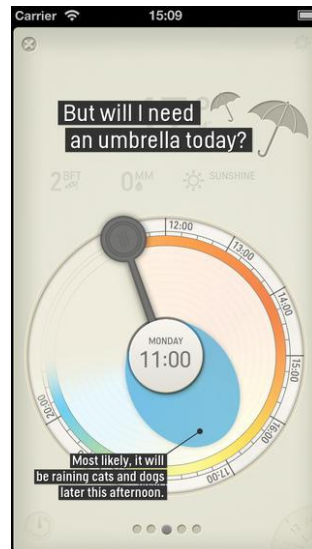
Aura is using simple icons, colours according to the temperature and a wheel to navigate through the daily forecast. It is a well-designed app, with the only drawback being that it is offering a weather forecast just for the next 24 hours and only for the current location, which is limiting.



Climate Clock is also incorporating a clock-like interface, providing information for the temperature, rain percentage and wind at a glance, without having to navigate to the desired time, but only tap to change between the different menus. It is also offering a 10-day forecast, making it more useful for users who need to know the weather of the following days in advance, and has a multiple location function.



Partly Cloudy is also using a unique clock visualisation interface and by using infographics it combines simplicity of interaction with meaningful and rich data that most modern applications are not providing.

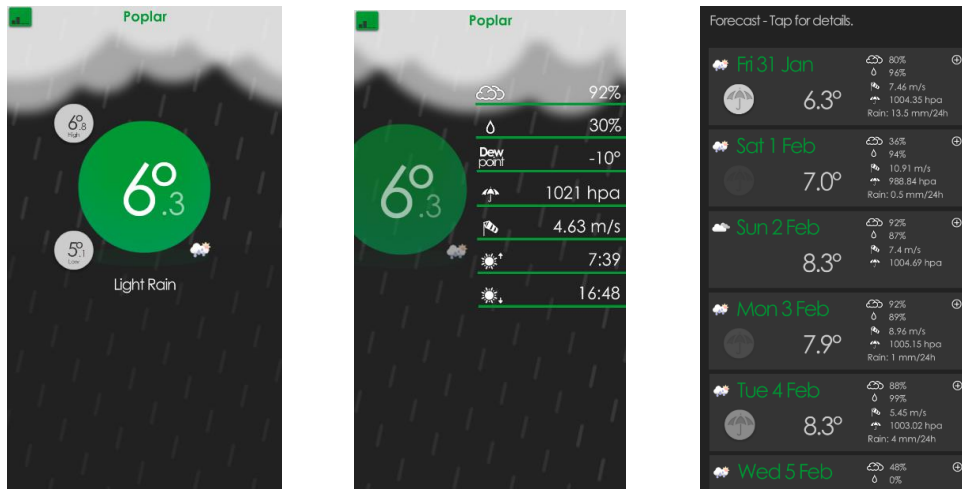


However, although it looks good and provides detailed data, it might confuse the user, who will need some time to get used to and learn what all the different visualisations correspond to.

Use of audio output:

Some applications are combining visual components with audio output to provide a more realistic and unique user experience.

Weather ...WOW! has a minimal visual interface giving the user all the important weather information by swiping to get a detailed daily forecast or a weekly view. It also uses sound according to the current weather conditions (sound of rain etc). However, the use of prerecorded audio samples makes the output sound limited, unrealistic and repetitive for the user.



Summary:

To summarise, by looking through a series of current designs and trends in weather apps, we have come to conclude that:

- Cluttered apps are not useful, and just show a large amount of redundant information
- Using colour was a particularly good way of conveying simple information such as temperature
- Using a minimalistic and modern design is a far better way to highlight key information whilst making a contemporary looking app
- The inclusion of sound can make the app more realistic and user friendly, but using generated sound would be a better approach to both avoid repetition and make the app more interesting

Design

Concept

Less is
More

Since both our primary stakeholder groups are people with little time, a minimal interface made a lot of sense - it is much easier to get information out of it and it runs equally good both on old and new devices.

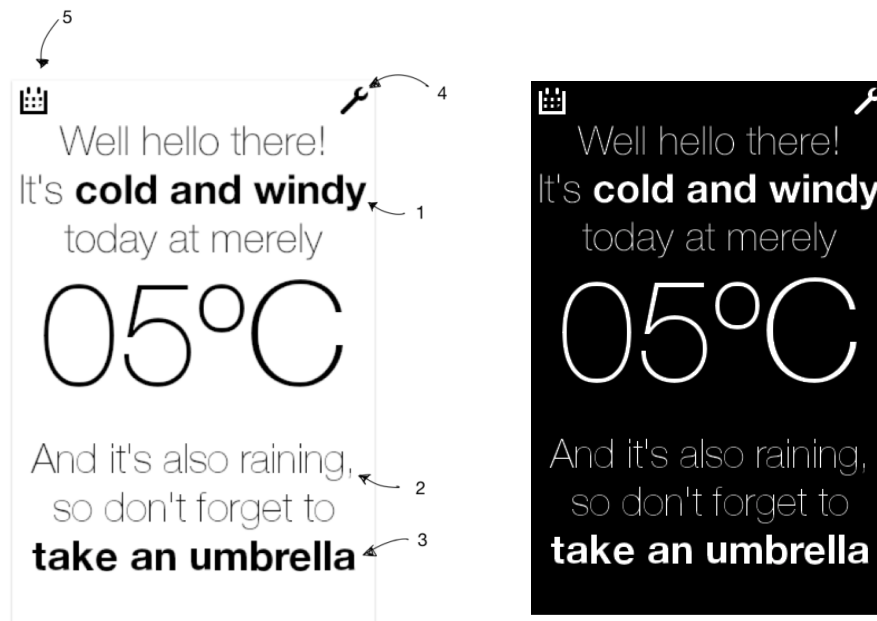
The main inspiration were Harmut Esslinger and Dieter Rams, who pioneered minimalistic design.

Prototype 1 - Students

We decided to go with a text based approach - it gives the app a personal touch and makes it a bit less formal. We will also have an alarm clock function, which will play a generative piece of music depending on the weather at the time the alarm goes off. To turn the alarm off the user can use standard buttons or enable a mode in which the app asks the user to present a coloured object to turn the alarm off.

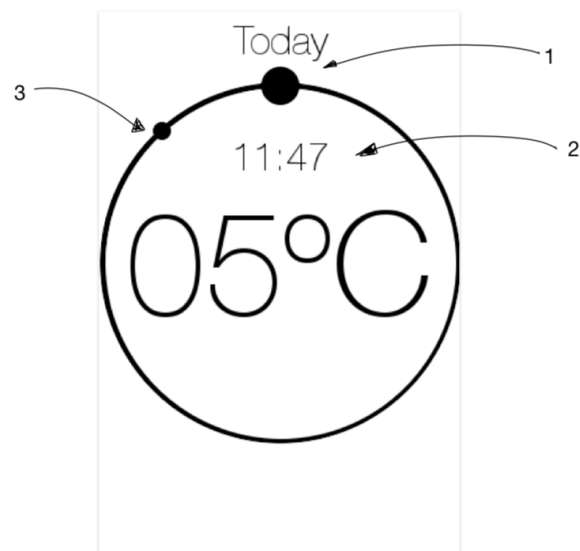
Both screen sizes will have the same functionality and similar layout, so we will present only the 320x480 one.

Main view and Night Mode



1. The app will generate a different greeting every time, depending on the current weather.
2. It will also tell you when it's raining.
3. And will tell you whether you should take an umbrella.
4. Pressing here will call the settings menu
5. Pressing here will call a calendar view with the forecast for the next days.

If the user presses and holds on the main screen he will call a clock view. In it the user can change the time of day with a circular motion either with his or her finger or by hand motion, which will be tracked using the device's camera. While the user "scrolls" through time, a custom soundscape of the currently displayed weather will be generated.



1. The big dot shows the currently viewed time on the circle
2. Shows the user selected time in hours and minutes.
3. Shows the current time on the circle.

Calendar View



Today 28.01 **03°C** ☁

Wed. 29.01 **05°C** ☁

Th. 30.01 **05°C** ☁

Fr. 31.01 **04°C** ☁

Sat. 01.02 **06°C** ☁

Sun. 02.02 **02°C** ☁

Settings View



Settings

Location

Alarm

Sound

Location Settings

Selecting automatic disables the text form.



Location



Location

Automatic☐

Automatic☒

London, UK

London, UK

Alarm Settings

←

Alarm

On

⊗

07:55

Set alarm sound

Use coloured
object
to switch off

⊗

Sound settings

←

Sound

On

⊗

Volume

Prototype 2 - London Commuters

Here we decided to go with a split-screen view, the top half showing users current position and the bottom one - his destination.



1. The user can swipe horizontally to change the displayed time of day. A coloured object can be used to move this control too. While the user scrolls through the day, a custom soundscape of the currently displayed weather will be generated.
2. A downward swipe will open the calendar view.
3. The user can do a horizontal swipe here to select between a list of destinations
4. The user can press here to edit the list of destinations.
5. Displays which modes of transport he or she can use to get to the destination.

Calendar View

An upward swipe will return the user to the main view.

Today 28.01 03°C ☁

Wed. 29.01 05°C ☁

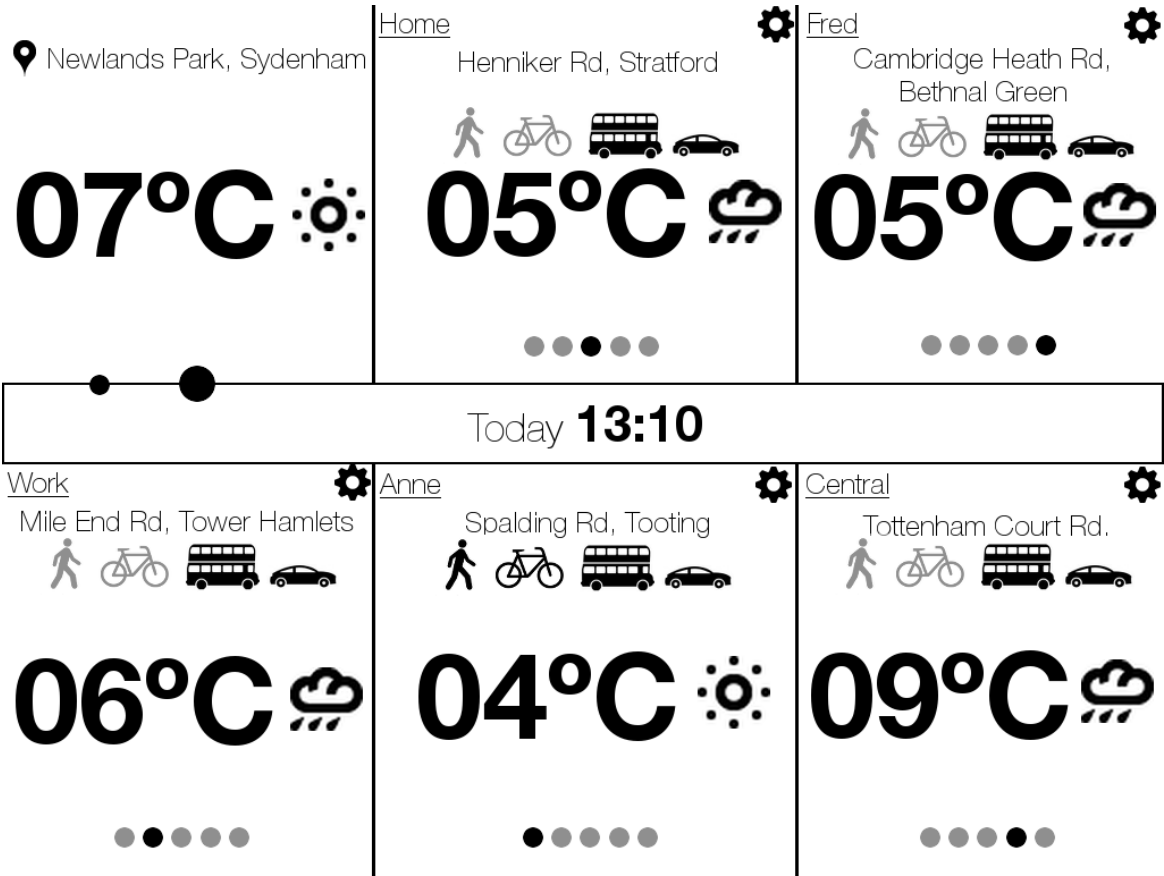
Th. 30.01 05°C ☁

Fr. 31.01 04°C ☁

Sat. 01.02 06°C ☁

Sun. 02.02 02°C ☁

The 1024x768 screen layout.



Here the user can view a selection of preset locations. Theses can be added manually by pressing the settings button in each “window”. Otherwise the functionality remains largely the same.