

User Experience in Interactive Television Application

Sponsor
NDS Services Pay - TV Technology Pvt Ltd.
Koramangala I Block, Bangalore - 560034

Diploma Project
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Design for Digital Experience

About NDS Services Pay - TV Technology Pvt Ltd.

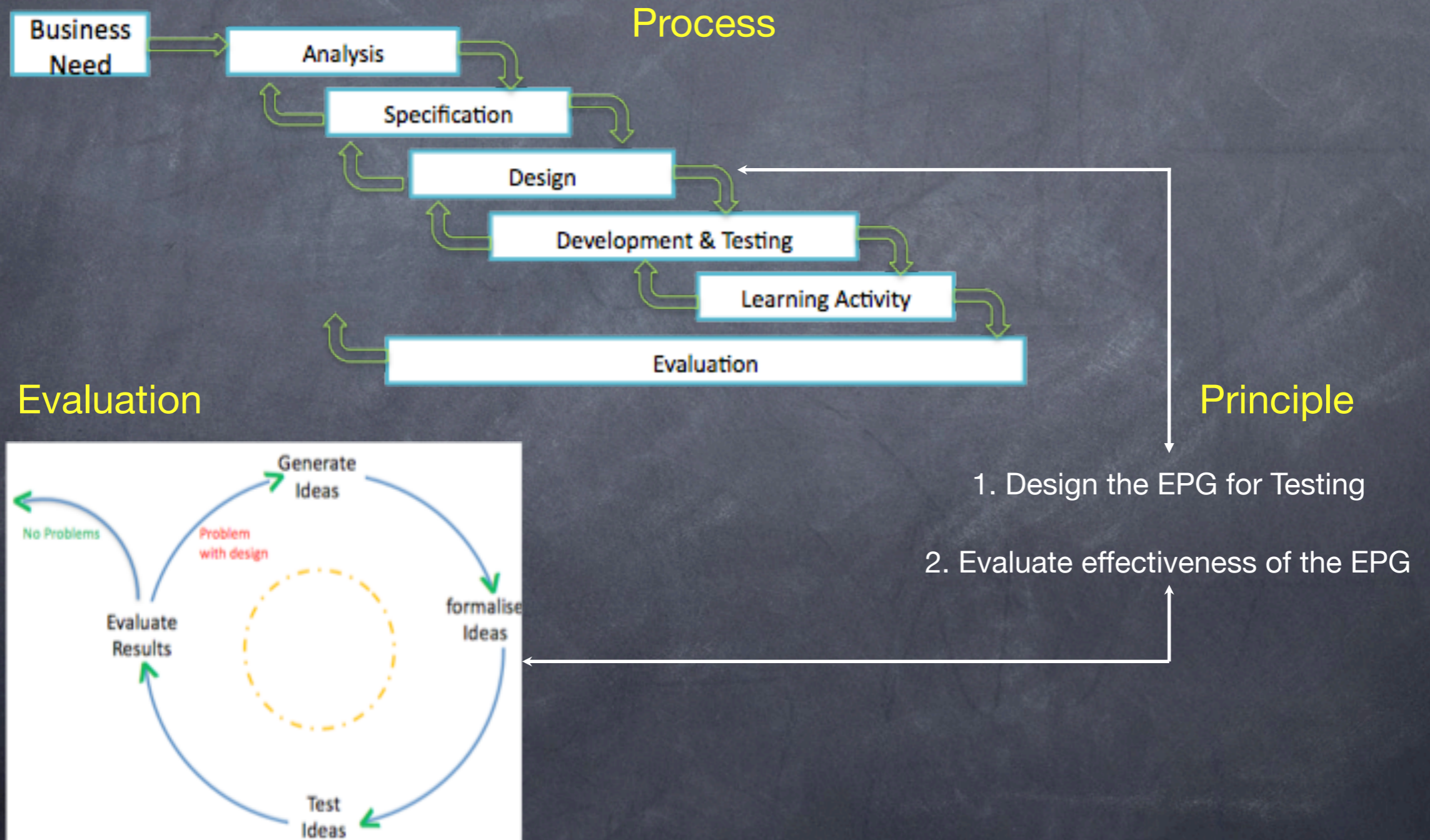
- NDS Group Ltd is a private company owned by the Permira Funds and News Corporation. It creates proven technologies that allow pay-TV operators to generate revenues by securely delivering digital content to TVs, set-top boxes (STBs), digital video recorders (DVRs), PCs, portable media players (PMPs), removable media, and other mobile devices.
- NDS offers a full range of open end-to-end solutions for pay-TV operators providing services over one network, as well as solutions for convergence—delivery of broadcast, on-demand and Internet content using multiple platforms to multiple devices —enabling content to be enjoyed anywhere, anytime on any device



Project Brief

- The project is to Enhance the User Experience of Interactive Television Applications. The idea is to make a new electronic program guide with internet contents embedded to it like social networks, video on demand.
- Address the newer challenges in the interactive television space apart from usability aspects , interfaces using Remote Control Unit, Navigational Model, incorporate newer technologies into existing platform.

Design Process



Road Map



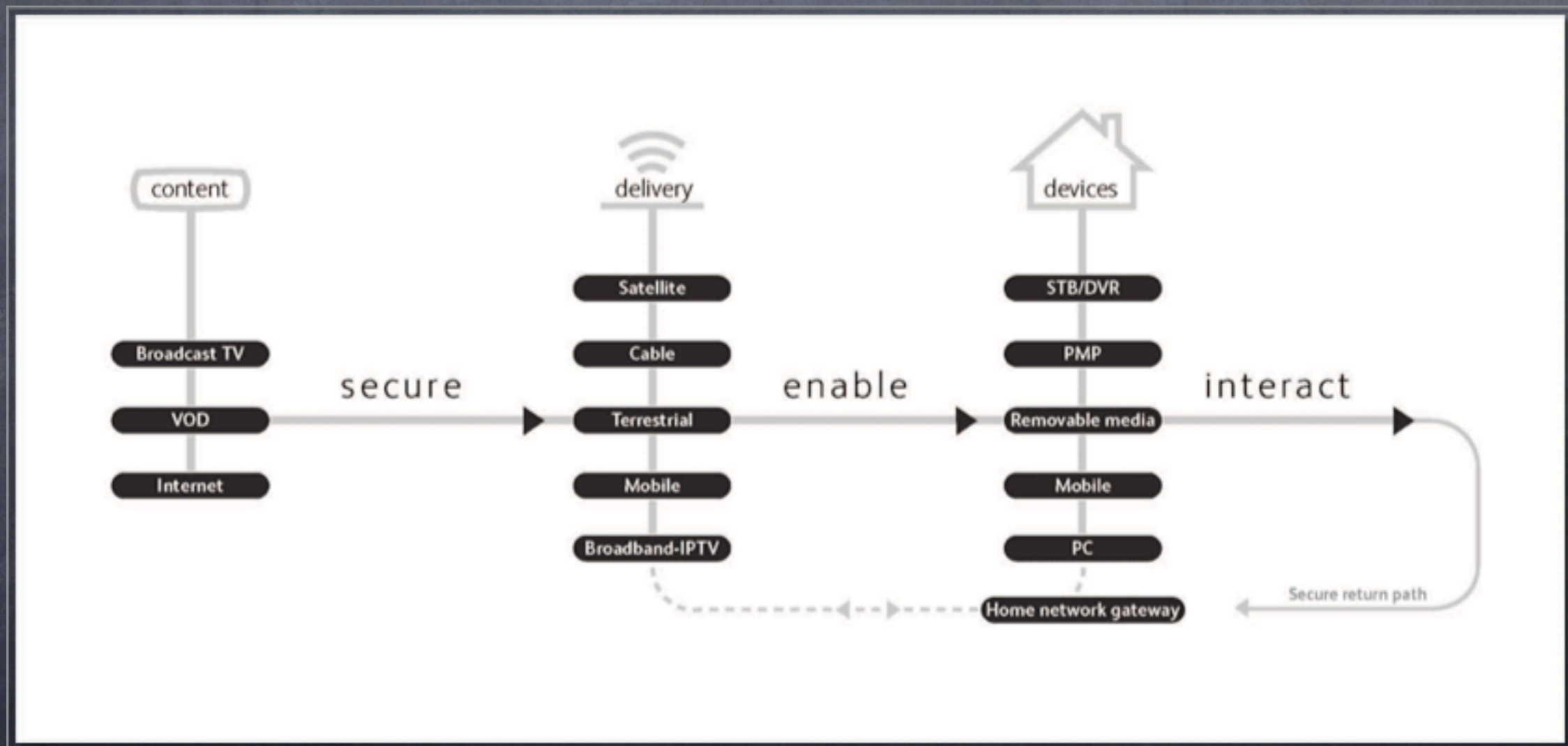
Platform Analysis

Electronic Programme Guide (EPG)

- Electronic program guides and interactive program guides provide users of television, radio, and other media applications with continuously updated menus displaying scheduling information for current and upcoming programming.
- A more modern form of the EPG, associated with both television and radio broadcasting, is the interactive [electronic] program guide (IPG, though often referred to as EPG). An IPG allows television viewers and radio listeners to navigate scheduling information menus interactively, selecting and discovering programming by time, title, station, or genre using an input device such as a keypad, computer keyboard, or TV remote control.



Platform Analysis



Platform Analysis

Interactive Television (ITV)

- I define interactive TV (ITV) as a user experience that involves at least one user and one or more audiovisual and networked devices.
- ITV could be defined as an experience shared by people, devices, and audiovisual content.

Platform Analysis

Advantage of ITV

- ITV offers some advantages over cable and satellite TV providers. They can watch movies, play games, make telephone calls, and work on a computer and many more things, which are not possible on other platforms. In addition to these, one can do online shopping, e-learning and e-banking soon. These things have already been accepted and used by Internet and mobile users, and once ITV will capture the market, it will be widely accepted by everybody.
- ITV will bring services not yet delivered such as on-demand video content, network-based DVRs, where the content is potentially stored on the network and streamed to the device wherever it might be will be straight away available to consumers.
- From the Indian consumer's perspective, ITV will allow the user to experience digital quality television with the added advantage of being a "pay per view" – service. Consumers can expect services such as Video on Demand, Video Conferencing and interactive TV – pause, fast forward and rewind live TV or recorded content stored on the service provider's remote servers. Therefore, all parameters of comfort, cost and quality will be taken care of.

Platform Analysis

Reason for Slow growth

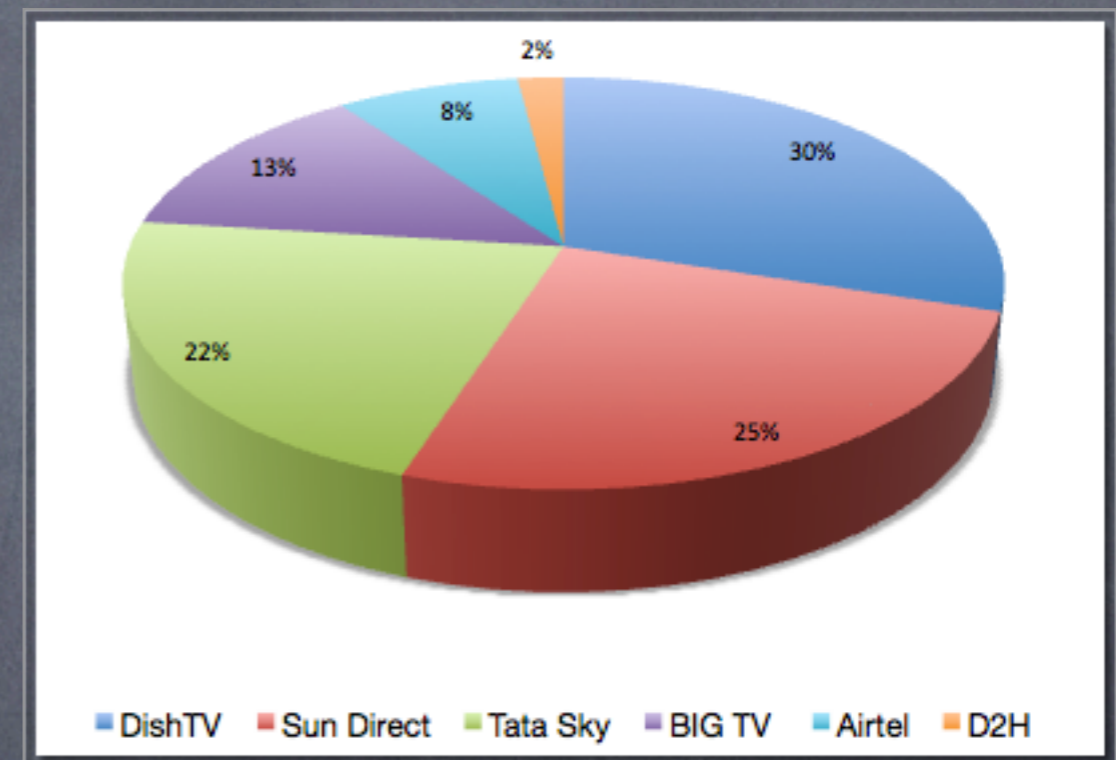
- There are many reasons for slow growth of ITV services in India. To name a few, there is a lack of customer awareness about the benefits of the ITV service, low broadband penetration, slow Internet access speeds and costly set-top box.
- Most important reason why ITV never took off earlier in India was slow Internet connectivity. However, with faster broadband speed now there is every possibility that ITV will widespread soon.
- ITV uses a two-way broadcast signal sent through the service provider's backbone network and servers, allowing viewers to select content on demand, time shift and to take advantage of other interactive TV options

Platform Analysis

- At the end of this analysis I had a deeper understanding for the platform for which I was developing the Application
- Key understanding were
 - User of Interactive Television Application were primarily Youth & Housewife.
 - The EPG should be Simple, Intuitive & Usable
 - I have to introduce Social Networking Applications for Television embedded in EPG
 - The user experience should be good after using the application

Research - Market

- India has a total television population of close to 135 million, out of which 80% have access to cable and satellite (i.e. 108 million).
- The total DTH subscribers are close to 22 million. Thus the DTH has a market share of approximately 20%.
- The subscriber base for DTH in 2006 was meagre 1 million. Now for an industry which is just 5 years old, it is a great achievement.



Market Share of Various players

Research - User Experience Analysis

User Experience

- User eXperience (UX) is about how a person feels about using a system.
- User experience highlights the experiential, affective, meaningful and valuable aspects of Human-Computer Interaction (HCI) and product ownership, but it also covers a person's perceptions of the practical aspects such as utility, ease of use and efficiency of the system.
- User experience is subjective in nature, as it is about an individual's feelings and thoughts about the system.
- User experience is dynamic, because it changes over time as the circumstances change.

Research - Charcoal EPG (Airtel)



Research - Charcoal EPG (Airtel)

•The Good things

- Widgets
- ITV
- Quick launch buttons on remote

• The Bad Things

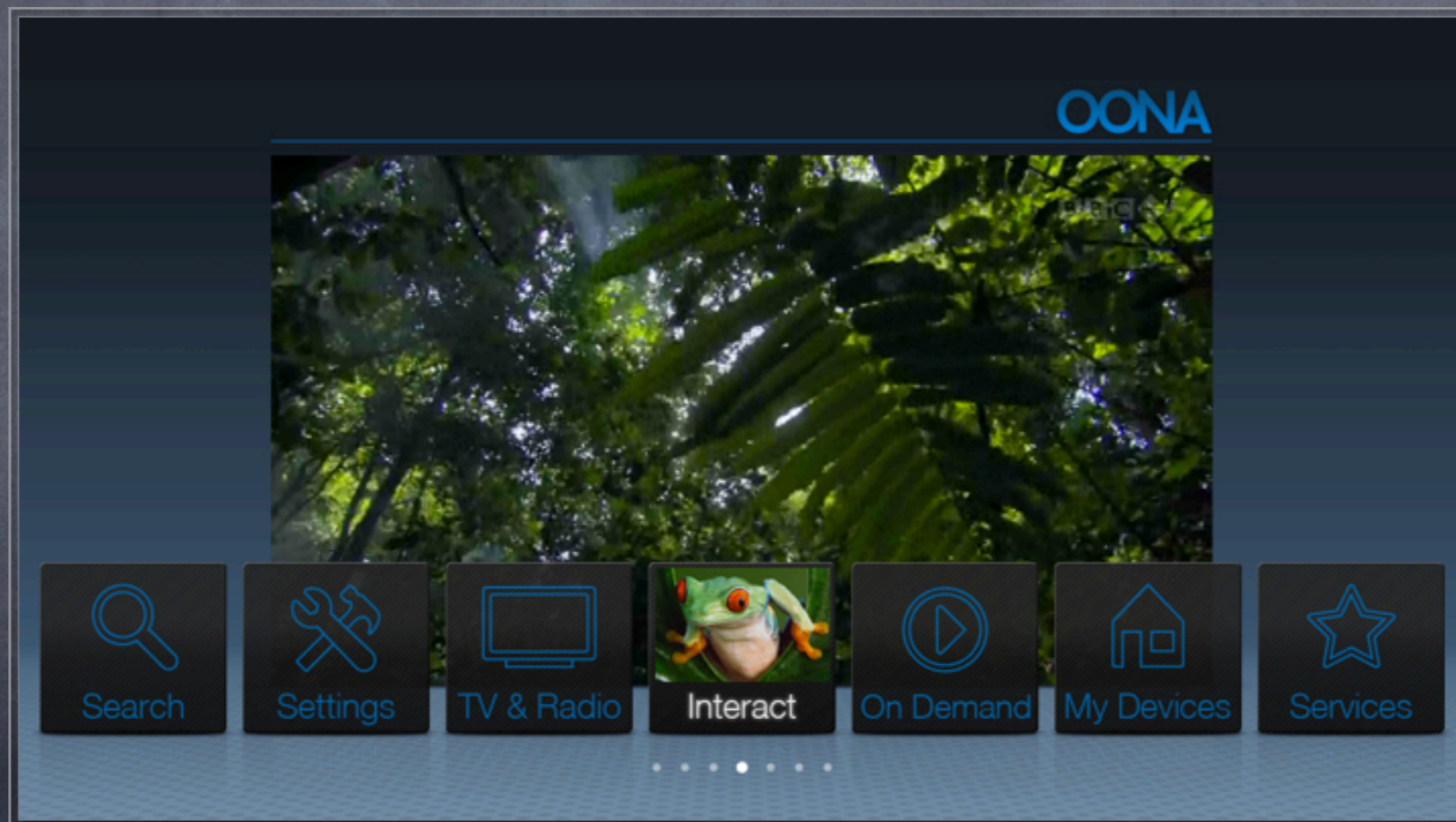
- Categorization of channels
- Placement of same buttons in different menu
- Non consistency in between navigation

Research - Charcoal EPG (Airtel)

•The Look & Feel of Charcoal EPG

- The buttons are quite big in size and also they are so separate that it looks like they all are separate entity.
- Even with 7 buttons it uses a scroll but why we need a scroll bar when we can display all seven buttons on the screen.
- The Buttons in the Airtel Live menu with icons is good but the icons are not understandable.
- The Video window when we are in the menu is very small in size and three advertisement below it are also bit cluttered, we can use big advertisement and can change the number of advertisement displayed. Non consistency in between navigation

Research - OONA EPG



Research - OONA EPG

- **The Look & Feel of OONA EPG**

- The Iconic representation of the menu makes it easy to understand and navigate.
- The Different applications have some bit of consistency in the terms of layout except some like YouTube, Facebook, Twitter, MySpace.
- The program guide with the images from the program is good.
- The magazine section helps in keep track of the good programs to be aired in that week.
- The on demand section has good collection of movies & shows to watch, and also it has the same consistency in the terms of layout, and also we can recommend the movies or show to someone to watch is a nice feature

Research - OONA EPG

- The CNN news app is a cool feature as it shows the top stories as we are watching some other news.
- The widget shop has cool free & paid widget for the TV. The selection in magazine menu is different from the other menu, which is confusing.
- Some menu in the interact menu is opaque as other menu's are bit transparent.
- Some applications are opaque and some are transparent.
- The Transition effect between the menu is good.

Research - Snowflake EPG

GRID
SEARCH
LIBRARY **NOW** STORE
WIDGETS
PROFILES

Research - Snowflake EPG

- **The Look & Feel of Snowflake EPG**

- The UI has a consistency in the terms of navigation.
- The Library Now Store uses 3 menu in one menu, so it a bit confusing as we use the left key to go to the library menu, use right key to go to the store menu from the now menu as for the other menu we just have to use up & down keys and select ok to go to that menu.
- The way of input text for searching any program is a tiring process as we have to select each character one by one using the arrow keys.
- The transition effects on changing the menu as well as on the sub menus are good.
- The fade in/out effect in the transition of screens are also good.
- The selected menu is colorful as other menu's are black and white give the user the idea that what is selected and what is not, and the user easily understand it.

Research - Conclusion (Market)

- After doing the research on the STB market in india and after reading about EPG's
 - The Need of More interactivity between the user & Set top boxes
 - Iconic representation of Menu Items
 - Easily understandable EPG's are needed
 - Consistent User Interface,
 - Broadcaster is still more important than user of the EPG & iTV applications

	Charcoal	OONA	Snowflake
Useful	4	7	7
Usable	5	8	8
Desirable	3	6	7
Valuable	5	7	9
Findable	9	8	9
Accessible	7	8	8
Credible	4	6	8

The Valuation in the terms of 0 to 10,

0 = LEAST

10 = MOST

Research - User

- The users are all age groups and all social classes, people's different life situations, emotions, attitudes, hopes and needs.
- The users of digital TV services are a more varied group than the users of PC applications.
- The methods of using TV are also diverse. People enjoy themselves in front of a television; they watch it in groups, can be tired or sick.
- An application may invite the viewer to participate and change the viewing experience,
- Accessibility and availability are still problematic areas in digital TV

HCI concepts / Domain	PC, Web	Interactive TV
User, context	PC user, work	Viewer, domestic (leisure time)
Goal	Effectiveness, efficiency, productivity	Entertainment, relaxation
Activities	Task execution	Free exploration
Techniques	Task completion, errors, efficiency	Affective state, emotions

Research - User

Design Factor	Description
Low Vs High Attention	A viewer may sit down and watch a TV program attentively, or leave the TV open as a radio
Group Vs Individual Watching	Distinguish between group and solitary use
Planned Vs Impulse Program Selection	Consider multiple levels of planning: from channel surfing to appointment viewing
Real Time Vs Time Shift	Both stored and broadcast content and applications should be available and complement each other
Entertainment Vs Information	Support a wide variety of user goals, from entertainment to information
Interactive Vs Passive	Support the predominately passive patterns of use, but offer the option for interactivity
Computer generated Vs fixed content	Replace static video elements (channel logo, ticker, info, sport statistics, etc) with computer generated content
Computer Vs Television Visual Design	Enhance, but do not replace, the main TV elements(characters, stories) with PC elements (objects, actions)

User interface principles for interactive TV applications

Research - User

- **Things considered while doing the user research.**
 - Understand the medium. This is television, not the Internet. It's all about entertainment and emotion.
 - Understand the viewer's culture: Learn why people watch TV and what they do while watching. Use this knowledge as basic level strategy for the development of interactive services.
 - Understand what content viewers want most from television. Use interactive television technology to enhance the content and improve the viewing experience.
 - Keep viewers in the broadcast experience. Do not lead them to a portal, virtual channel or "walled garden" where they miss out on the TV program they want to watch.
 - Content in context is king. Not all TV programming needs to be enhanced. Inappropriately placed enhancements can detract from a high quality TV drama or series.
 - Leverage your most successful, trusted brands first. Successful interactive television services are event-driven, not technology-driven.

Research - User

Persona I



Name : Mira Sharma
Age : 28 Years
Occupation : Works in an IT firm

Husband Mr Mohan Sharma age 37 years
 Family is staying in Kormangala, Bangalore for about 10 years
 Have 1 Kid, studying in DPS Std. 3
 Love watching English Movies
 Active on Social Networking Site



Loves Social Networking

Comment About her Favourite Movies & Become a fan of the movie Community



My Favourite Pastime watching movies & commenting about it on social networking sites

- Active on Social Networking Sites with Family & office Friends
- Content Writer in Thomson Reuters
- Like Watching English & International Movies
- Often Post about her favorite movies on Social Networking Sites
- Also is an Movie blogger
- Use computer to post comment while watching movies on Television

Research - User

Persona 2



Name : Ranjani Keshavan
Age : 37 Years
Occupation : Housewife

Husband Mr Nitin Keshavan age 48 years
 Family is staying in Kormangala, Bangalore for about 6 years
 Have 2 Kids, studying in DPS Std. 3 & 6
 Done M A in Tamil



i can't miss my Favourite TV soap



Commenting About the TV Soap

- Getting Used to Set top Box
- Purchasing premium content on TV
- Mostly Used Telephone to talk to her STB Provider and buys recharge cards
- Watches Tamil Serials Across TV channels
- Has a fixed schedule of TV Soaps in the weekdays
- Doesn't watch movies in theatre but prefers them on tv with family
- Send comments about the TV soap to her friends

Research - User

Persona 3

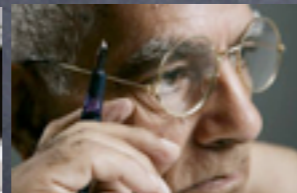


Name : Durgadas Dey
Age : 61 Years
Occupation : Media Person

Wife Mrs Shafali Dey age 55 years
 Family is staying in Kormangala, Bangalore for about 24 years
 Have 1 Kid, Working in A MNC
 Write Movie reviews



Watching Movie on TV



Write Movie Review



Write Movie Review for major News paper

- Was Responsible for sales & Marketing of Movies Posters & Merchandise
- Was Working in a big advertising agency
- Was Also responsible for ad sales trailers
- Watch most of the movie and write reviews for them
- Write reviews of Movies on sites like IMDB, Rotten Tomatoes

Research - User

Analysis & Insight

- The Program is Visible even if user launches the EPG
- The EPG & Application Should Load Fast
- Whenever user need can hide & show the interactive apps using one button only
- Should be simple & easily Understandable
- Less no of inside navigation (Single Page Navigation)
- Premium Content should be more cheaper
- Put predefined text on social networking sites about any programme.
- Send Gifts or cards to a friend on their TV.
- Search option by genre, programme, date & time.

Research - Domain

- The EPG is the most used (by viewers) interactive or enhanced application running on digital TV platforms today. The decision to adopt an IEG depends on the operator's ability and desire to offer viewers access to services beyond basic programming.
- Ability is defined by a holistic view across:
 - Commercial strategy - what does the business want?
 - Viewer's - what do viewers want?
 - Content - what does the operator provide?
 - Technology - what can the operator provide?

Conceptualisation



3D crousel View



On Top of video : Left - Linear



On Top of video : Bottom - Linear



On Top of video : Bottom - 3D



Iconic - With current

Conceptualisation - Wireframe

Programme Banner



Navigation Using Channel Up & Down

Conceptualisation - Wireframe

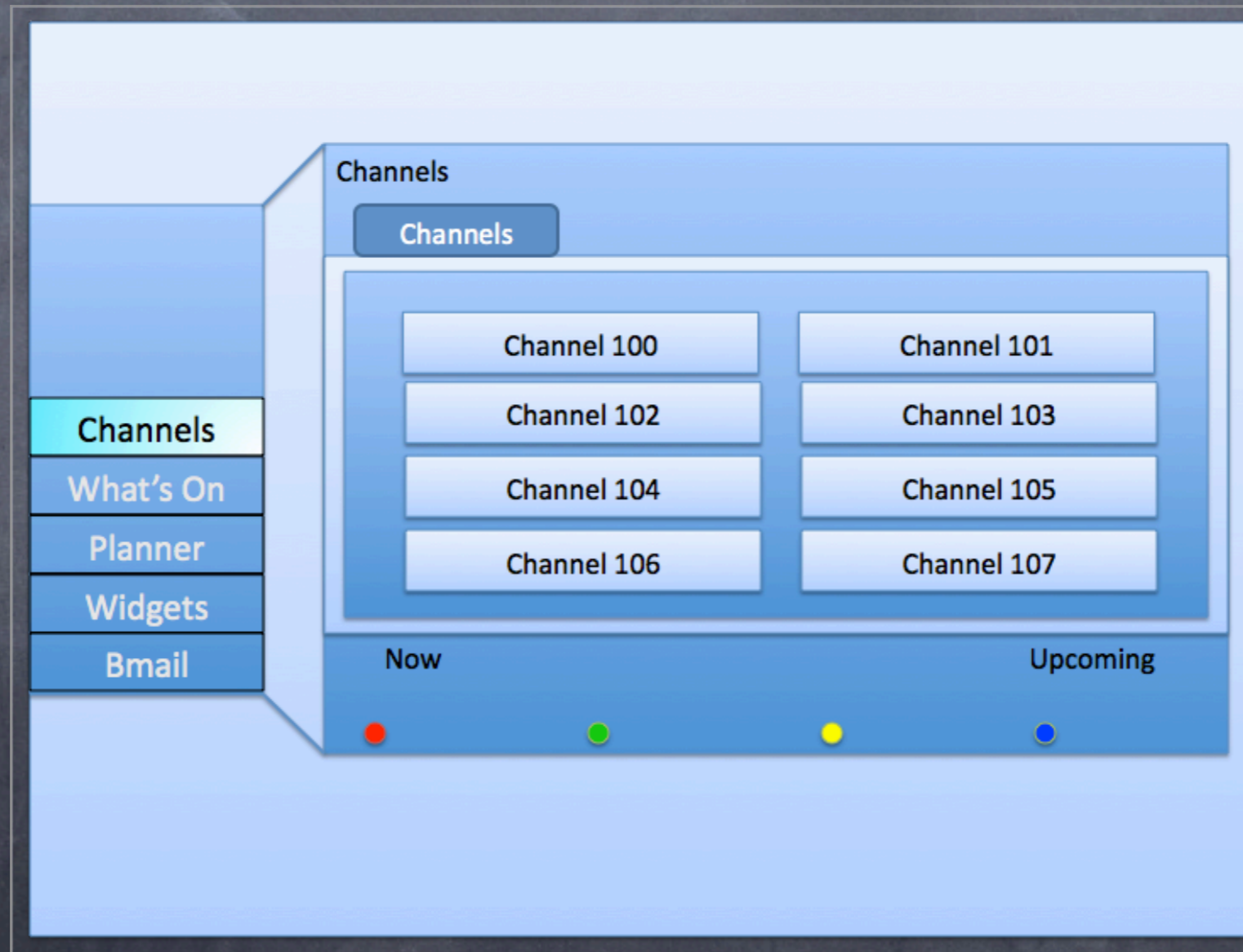
Electronic Programme Guide (EPG)



Launch the EPG Using The EPG/ Guide key and use UP & Down Key to navigate

Conceptualisation - Wireframe

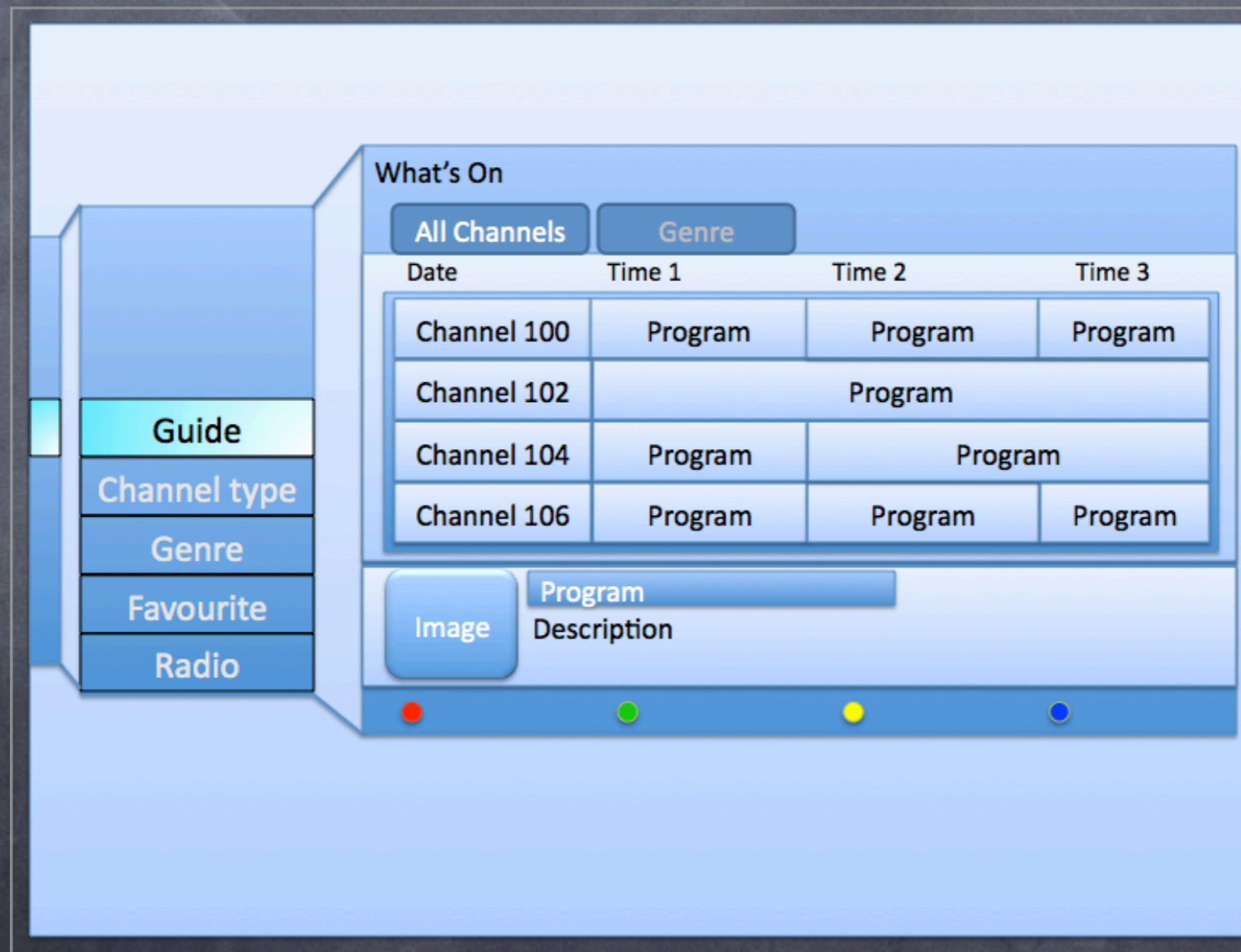
EPG - Guide



Launch the EPG Using The EPG/ Guide key and use UP & Down Key to navigate and ok to launch, After this use Arrow keys to move and ok to Select

Conceptualisation - Wireframe

EPG - What's On - Guide



Launch the EPG Using The EPG/ Guide key and use UP & Down Key to navigate and ok to launch, After this use Arrow keys to move and ok to Select

Conceptualisation - Wireframe

EPG - Planner



Launch the EPG Using The EPG/ Guide key and use UP & Down Key to navigate and ok to launch, After this use Arrow keys to move and ok to Select

Conceptualisation - Wireframe

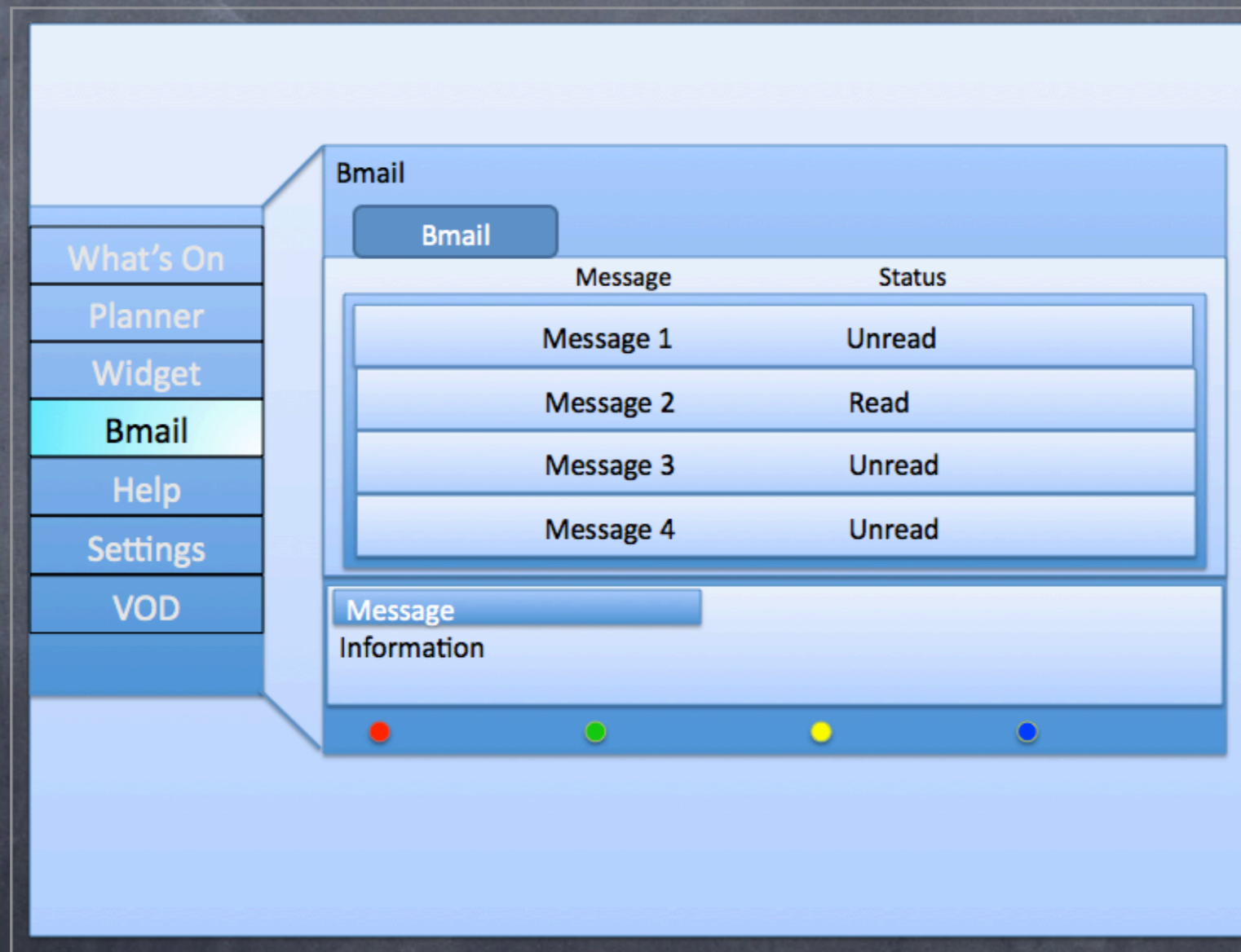
EPG - Widgets



Launch the EPG Using The EPG/ Guide key and use UP & Down Key to navigate and ok to launch, After this use Arrow keys to move and ok to Select

Conceptualisation - Wireframe

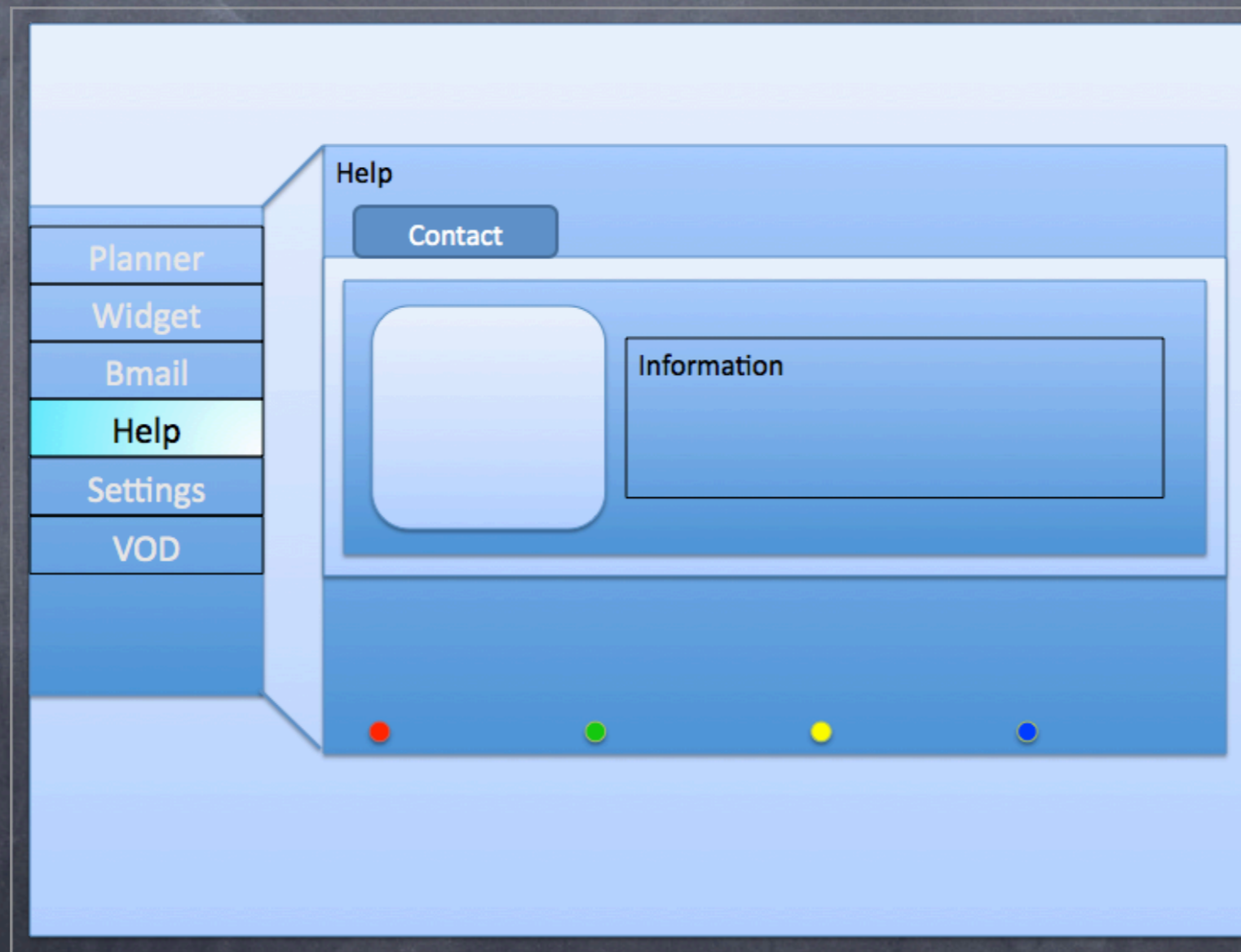
EPG - Bmail



Launch the EPG Using The EPG/ Guide key and use UP & Down Key to navigate and ok to launch, After this use Arrow keys to move and ok to Select

Conceptualisation - Wireframe

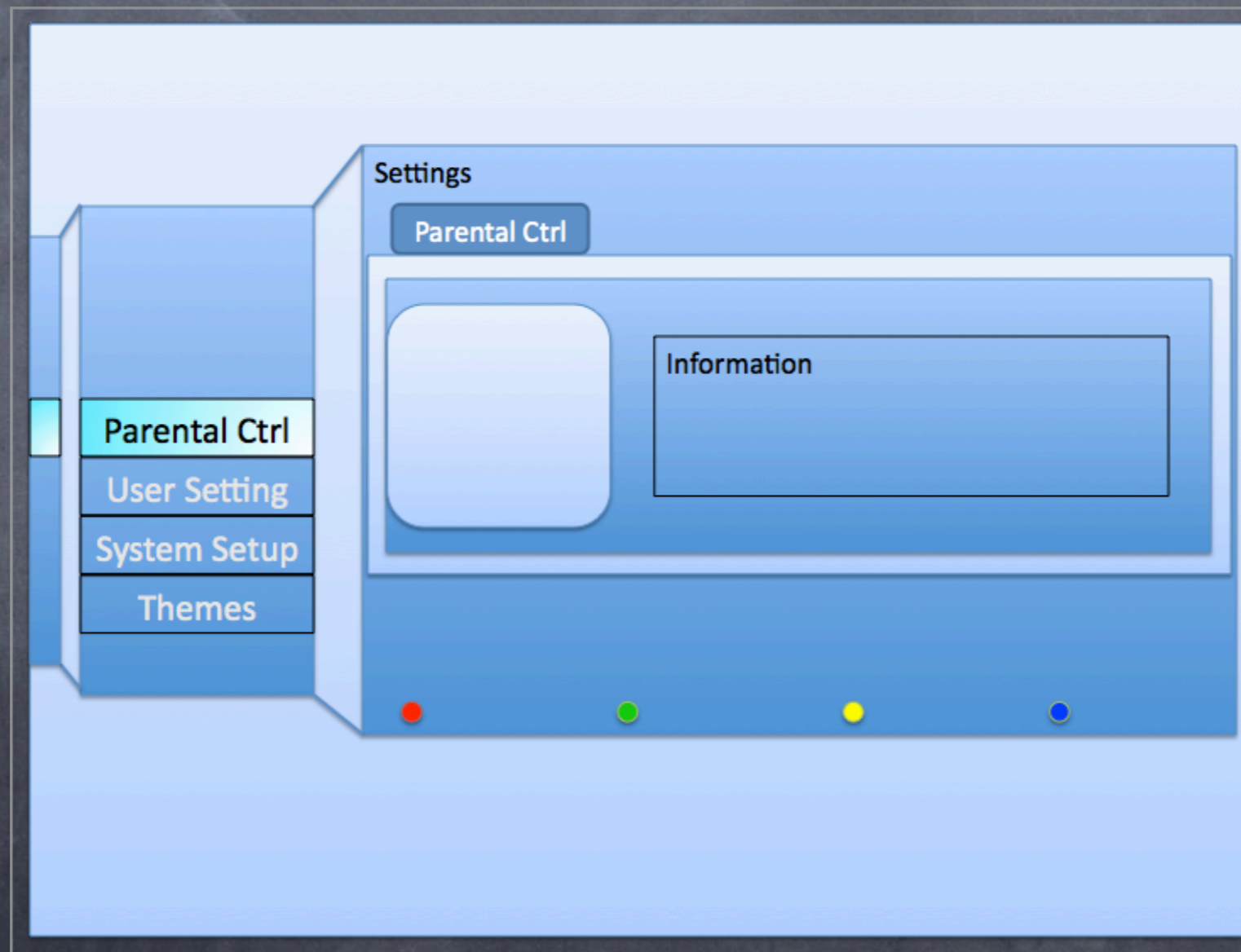
EPG - Help



Launch the EPG Using The EPG/ Guide key and use UP & Down Key to navigate and ok to launch, After this use Arrow keys to move and ok to Select

Conceptualisation - Wireframe

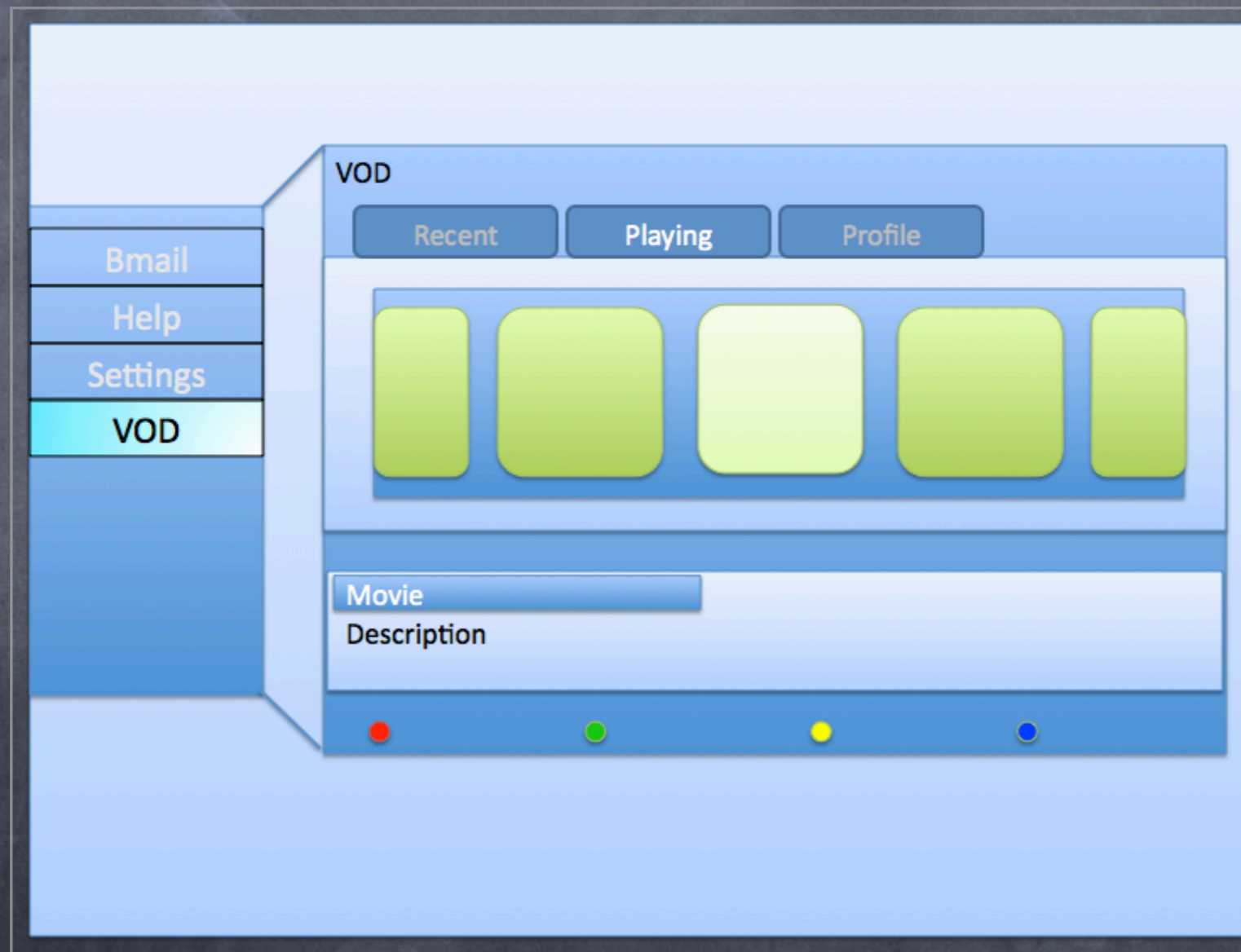
EPG - Settings



Launch the EPG Using The EPG/ Guide key and use UP & Down Key to navigate and ok to launch, After this use Arrow keys to move and ok to Select

Conceptualisation - Wireframe

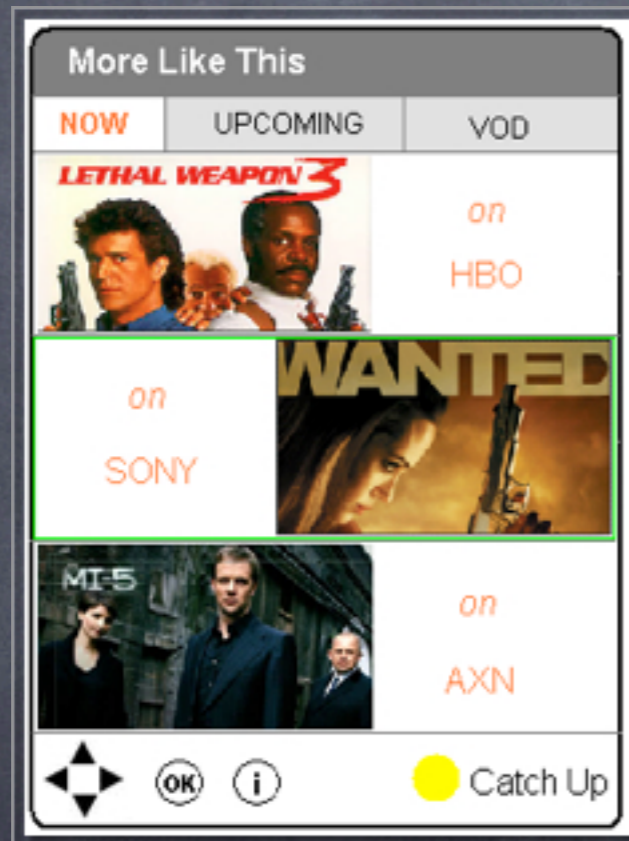
EPG - Video on Demand (VOD)



Launch the EPG Using The EPG/ Guide key and use UP & Down Key to navigate and ok to launch, After this use Arrow keys to move and ok to Select

Conceptualisation - Wireframe

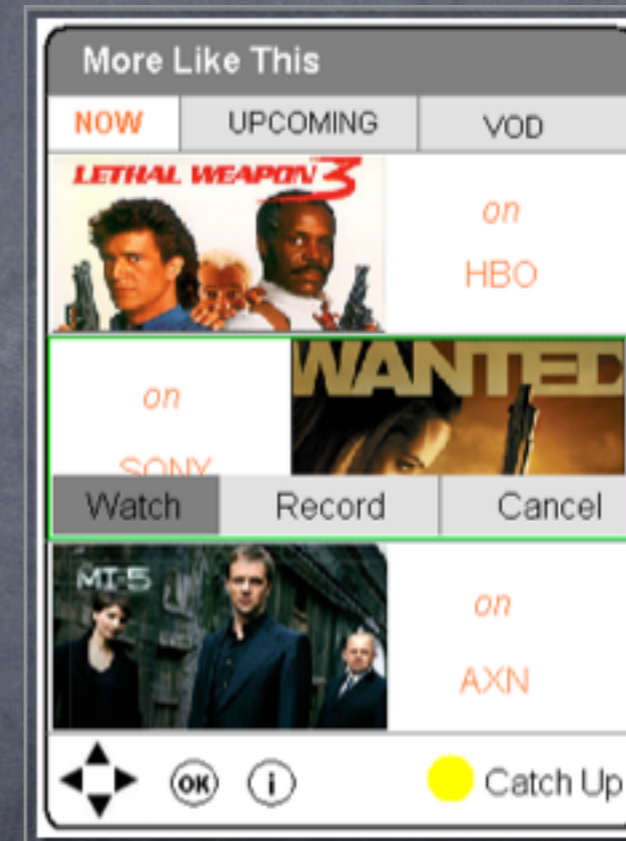
Widget - Lookup - More Like This



More Like This - Now



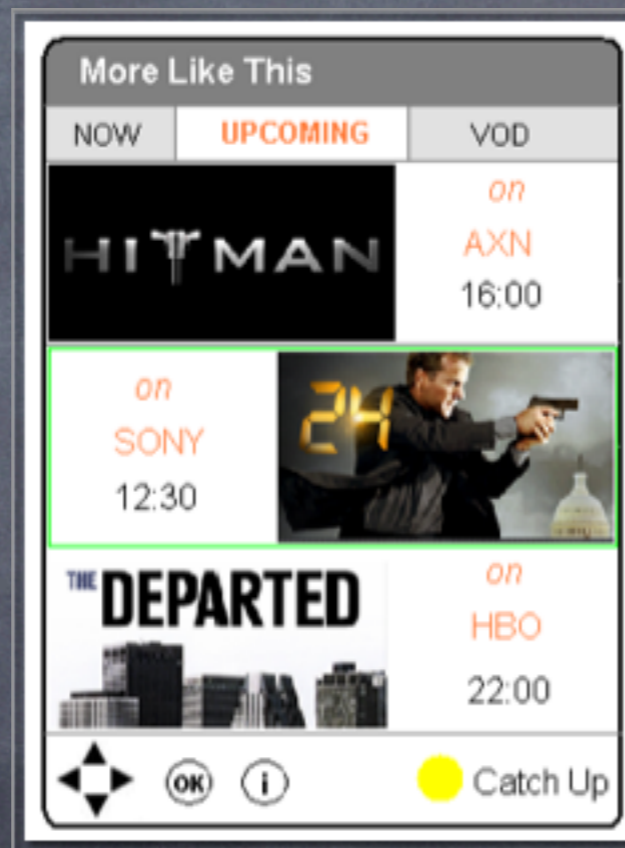
More Like This - Movie Information



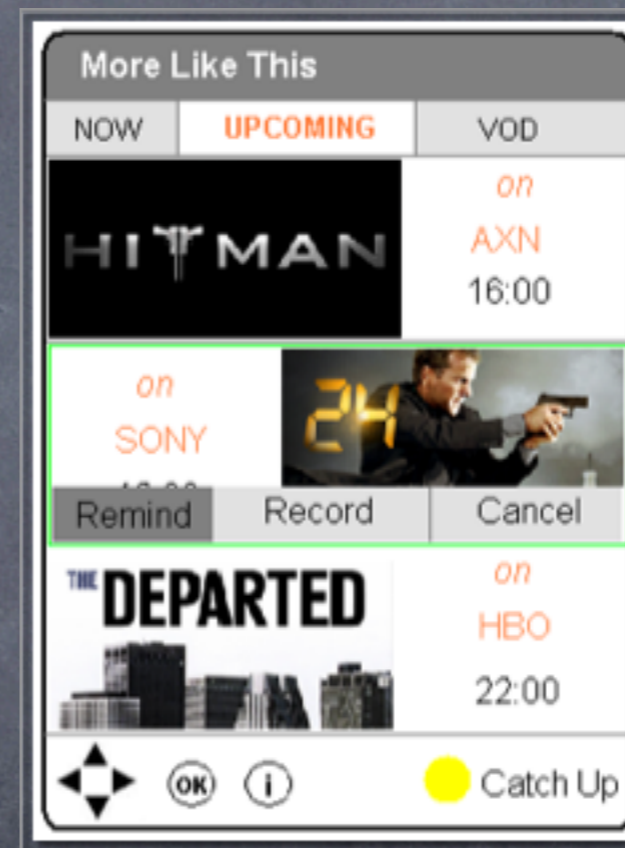
More Like This - Now - Options

Conceptualisation - Wireframe

Widget - Lookup - More Like This



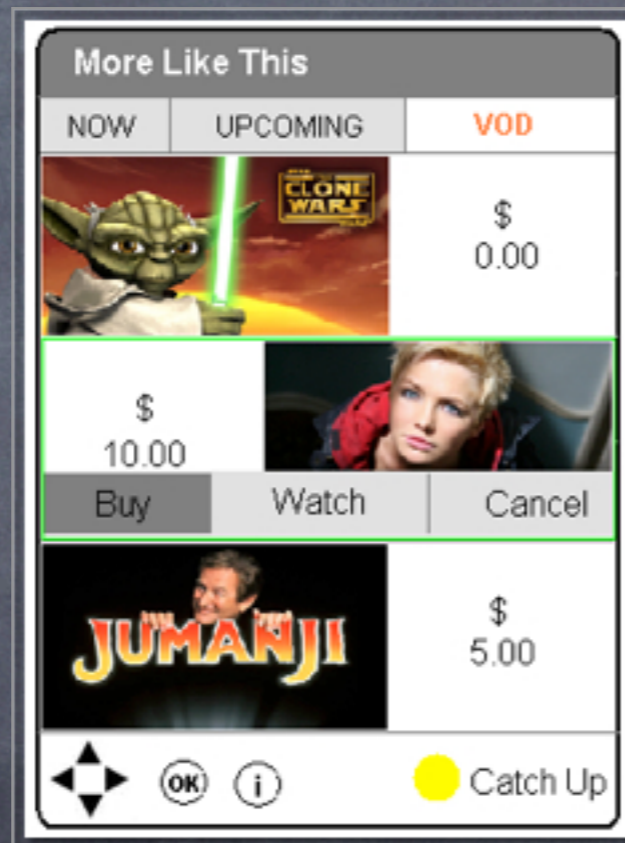
More Like This - Upcoming



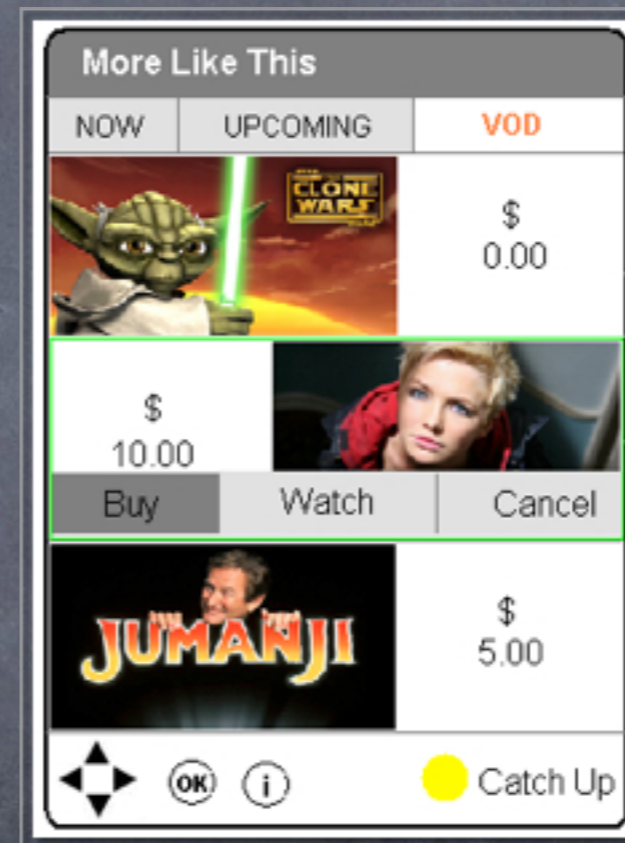
More Like This - Upcoming - Options

Conceptualisation - Wireframe

Widget - Lookup - More Like This



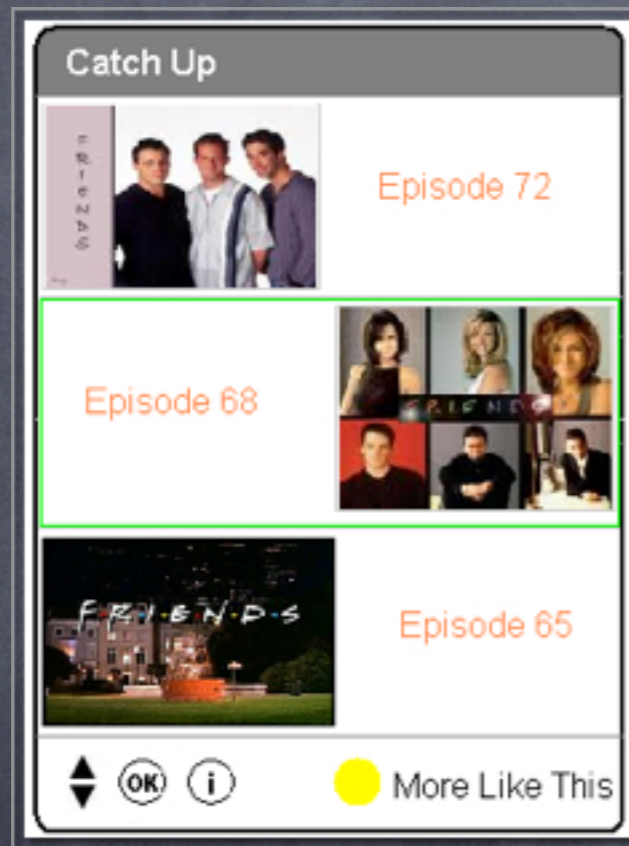
More Like This - VOD



More Like This - VOD - Options

Conceptualisation - Wireframe

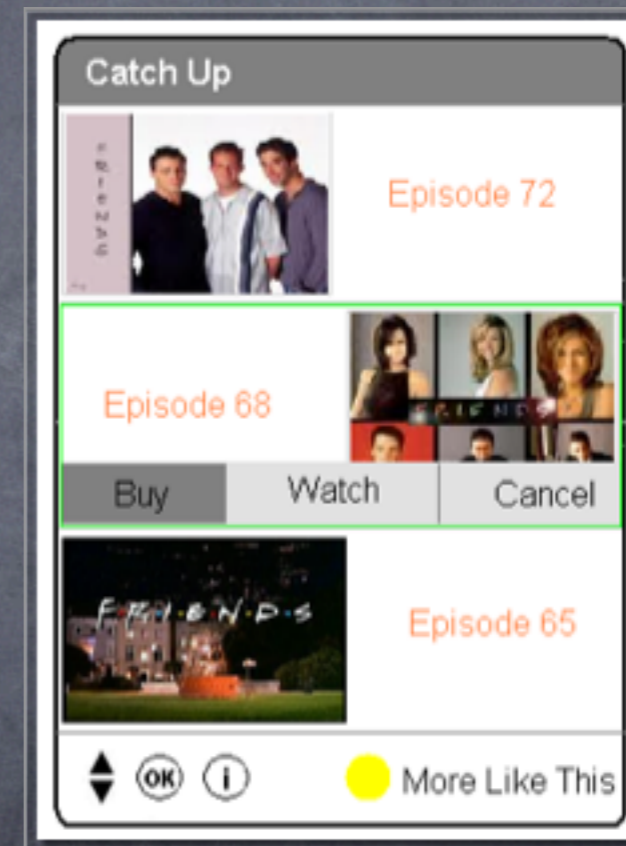
Widget - Lookup - Catch Up



Catch Up



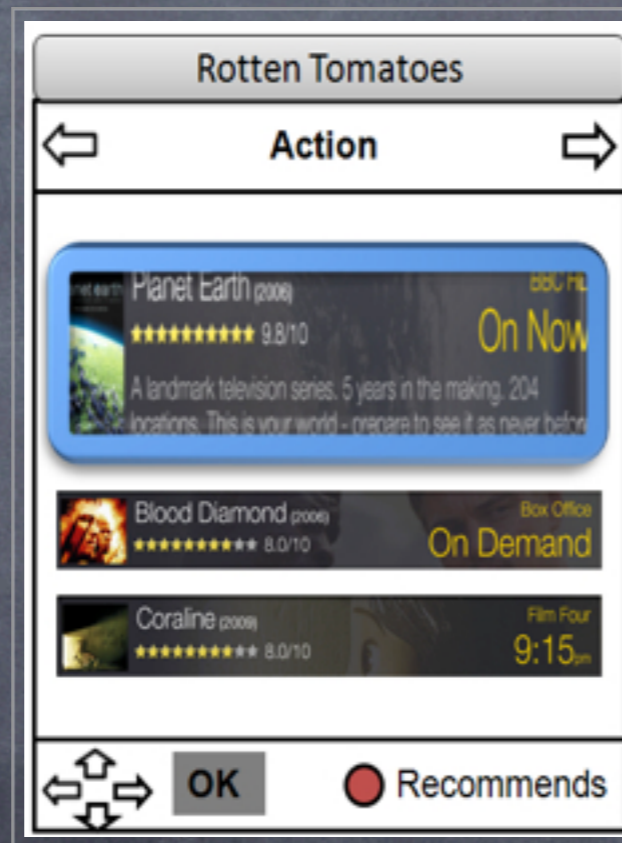
Catch Up - More Information



Catch Up - Options

Conceptualisation - Wireframe

Widget - Rotten Tomatoes



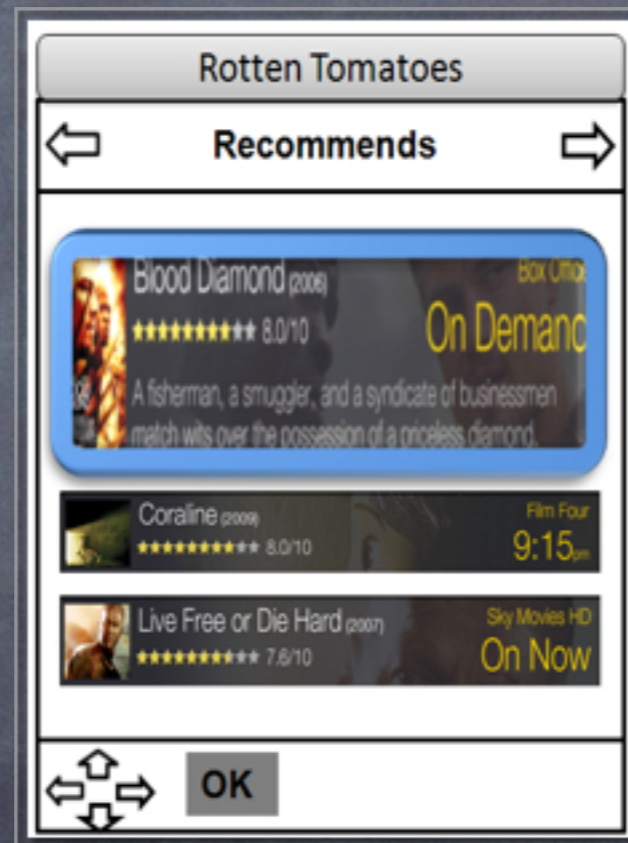
Rotten Tomatoes - Genre



Rotten Tomatoes - Information

Conceptualisation - Wireframe

Widget - Rotten Tomatoes



Rotten Tomatoes - Recommends



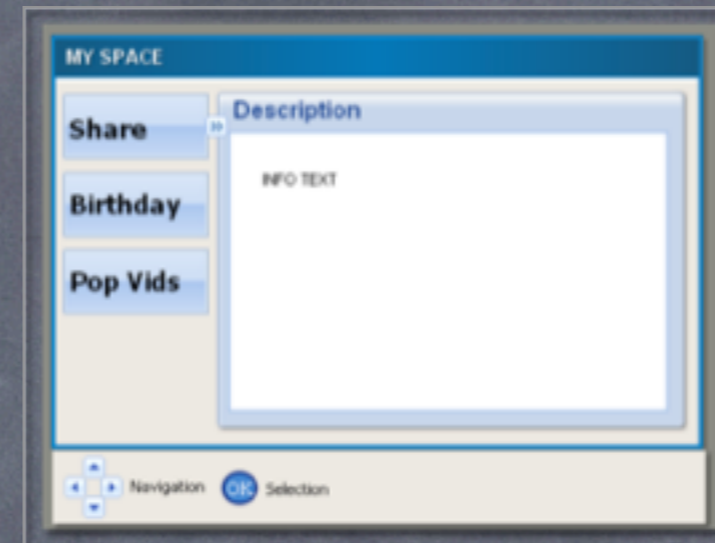
Rotten Tomatoes - Information

Conceptualisation - Wireframe

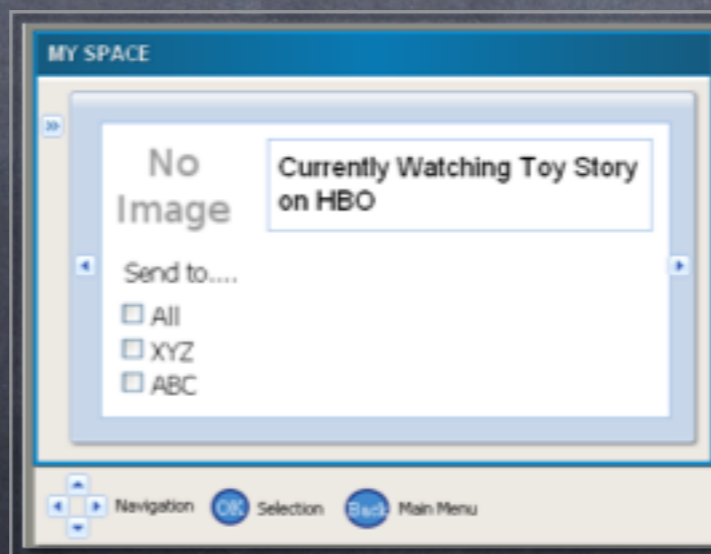
Widget - My Space



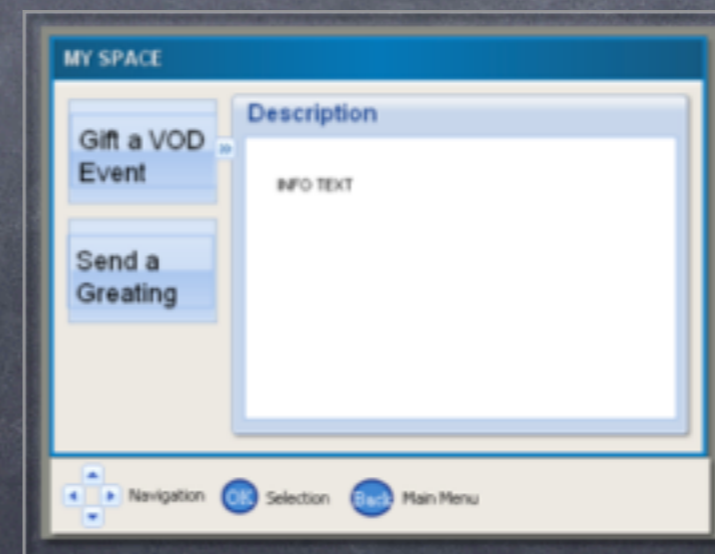
My Space - Login



My Space - Menu



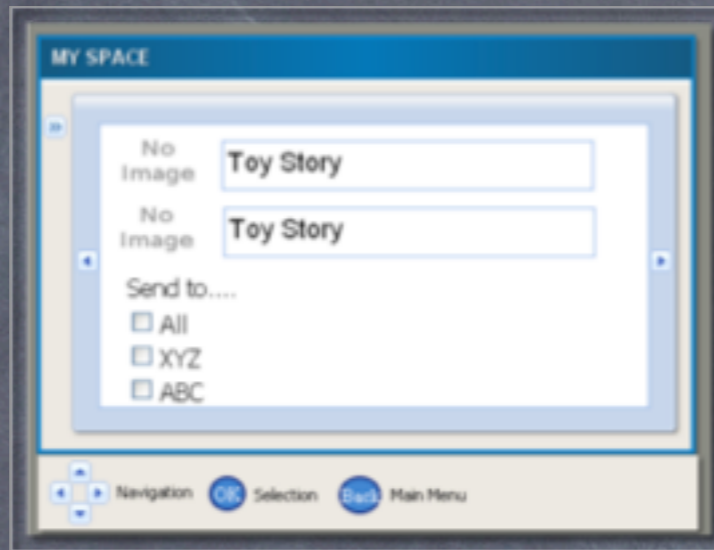
My Space - Friend Selection



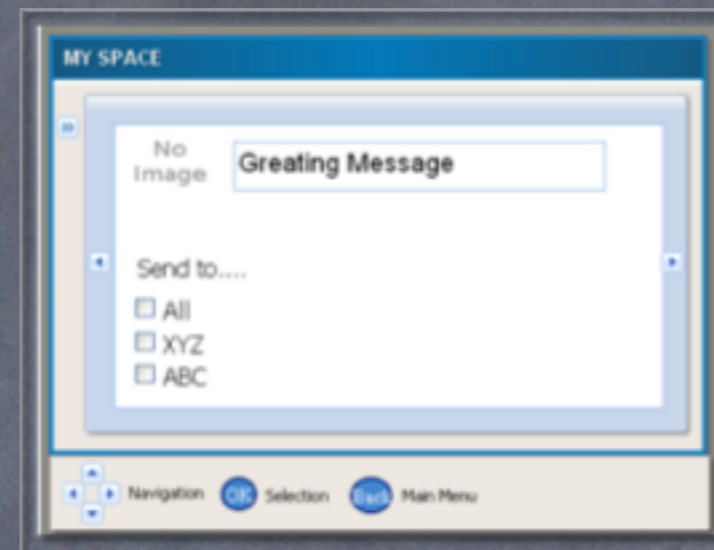
My Space - Gifting Option

Conceptualisation - Wireframe

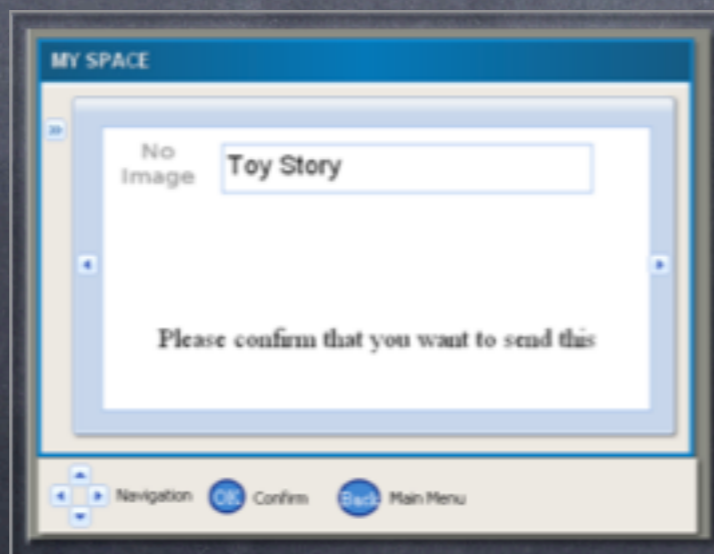
Widget - My Space



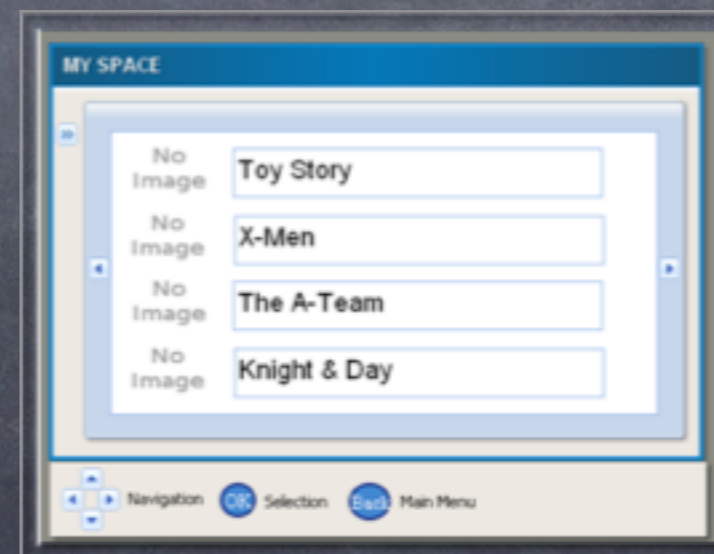
My Space - VOD Selection



My Space - Greeting Selection



My Space - Confirmation



My Space - Popular Videos

Conceptualisation

Task Flow - Widget



App Store



EPG - Widget



Widgets



Widget List

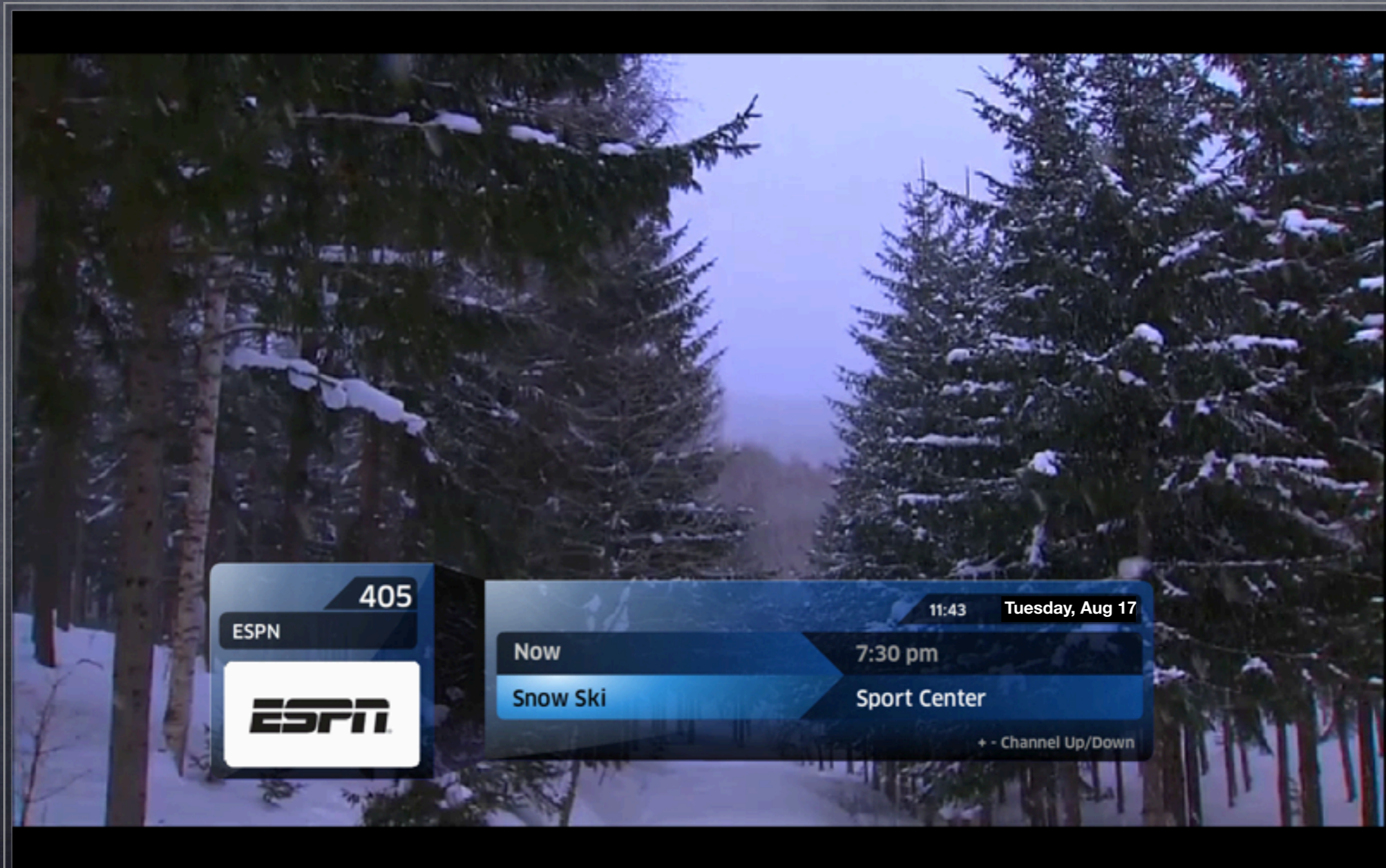
Conceptualisation - Final Screens

Zircon



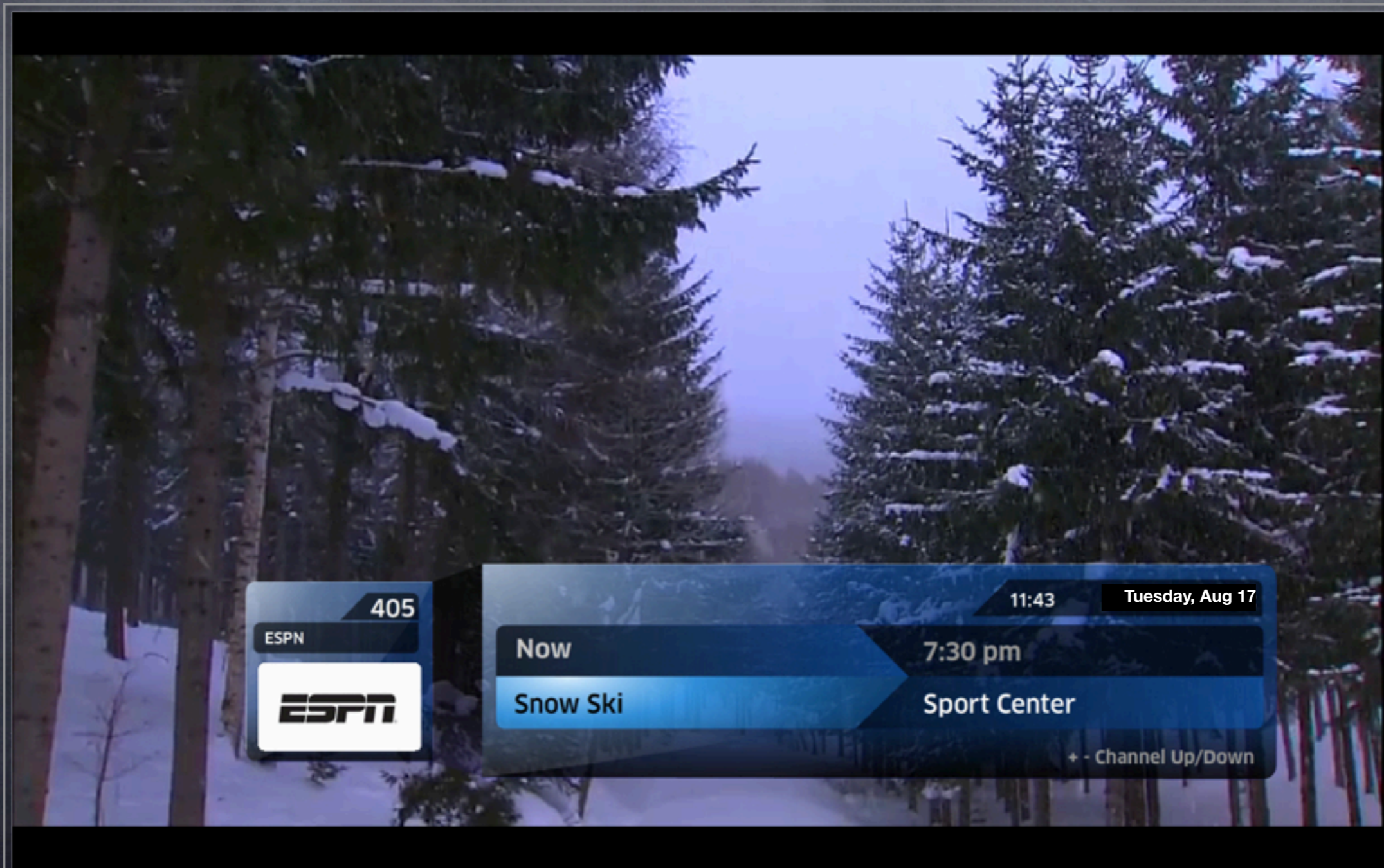
Conceptualisation - Final Screens

Zircon - Programme Banner



Conceptualisation - Final Screens

Zircon - Programme Banner



Conceptualisation - Final Screens

Zircon EPG



Conceptualisation - Final Screens

Zircon EPG - Channels



Conceptualisation - Final Screens

Zircon EPG - What's On - Guide



Conceptualisation - Final Screens

Zircon EPG - Planner



Conceptualisation - Final Screens

Zircon EPG - Widgets



Conceptualisation - Final Screens

Zircon EPG - Bmail



Conceptualisation - Final Screens

Zircon EPG - Help



Conceptualisation - Final Screens

Zircon EPG - Settings - Parental Ctrl



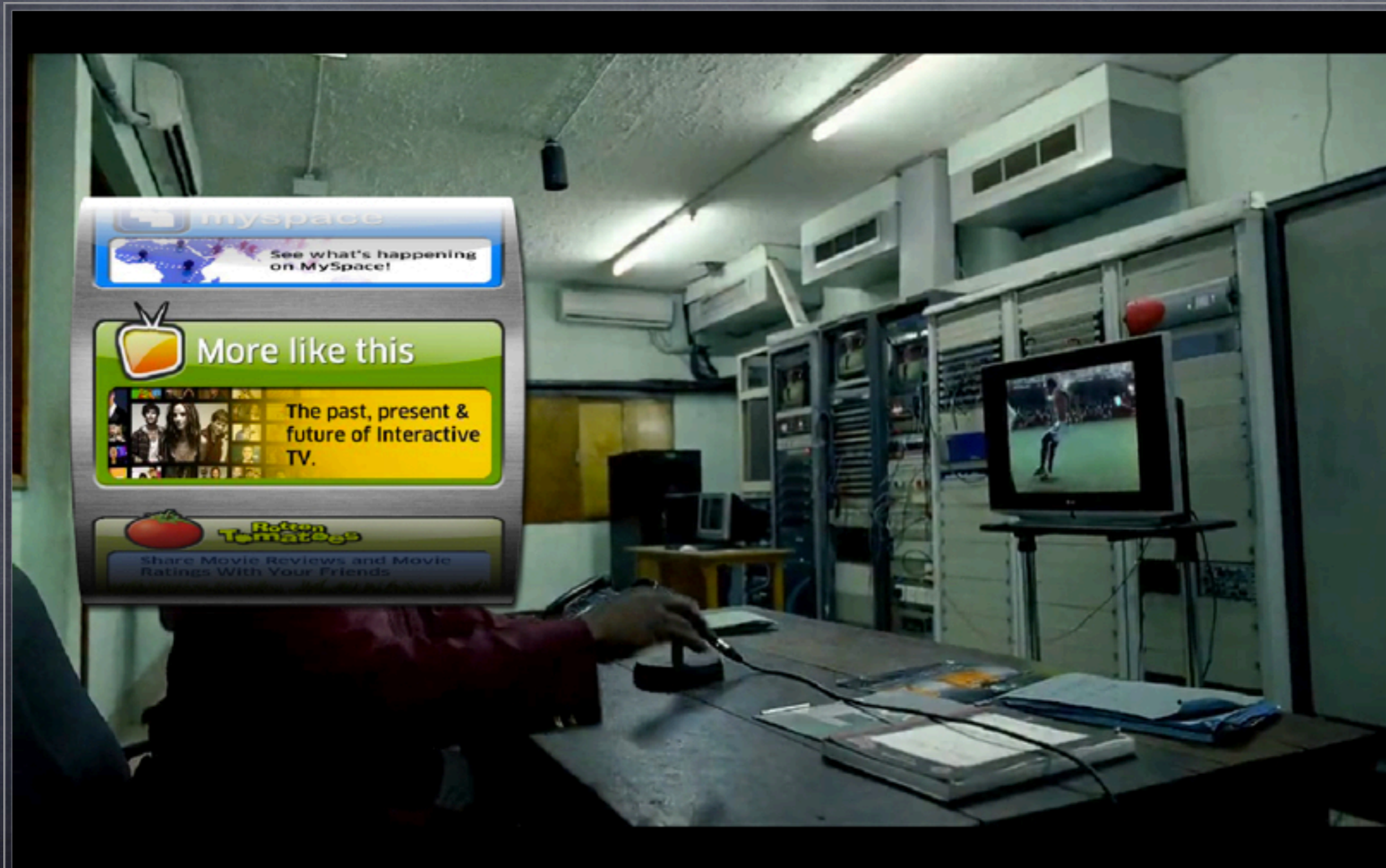
Conceptualisation - Final Screens

Zircon EPG - VOD



Conceptualisation - Final Screens

Widget List



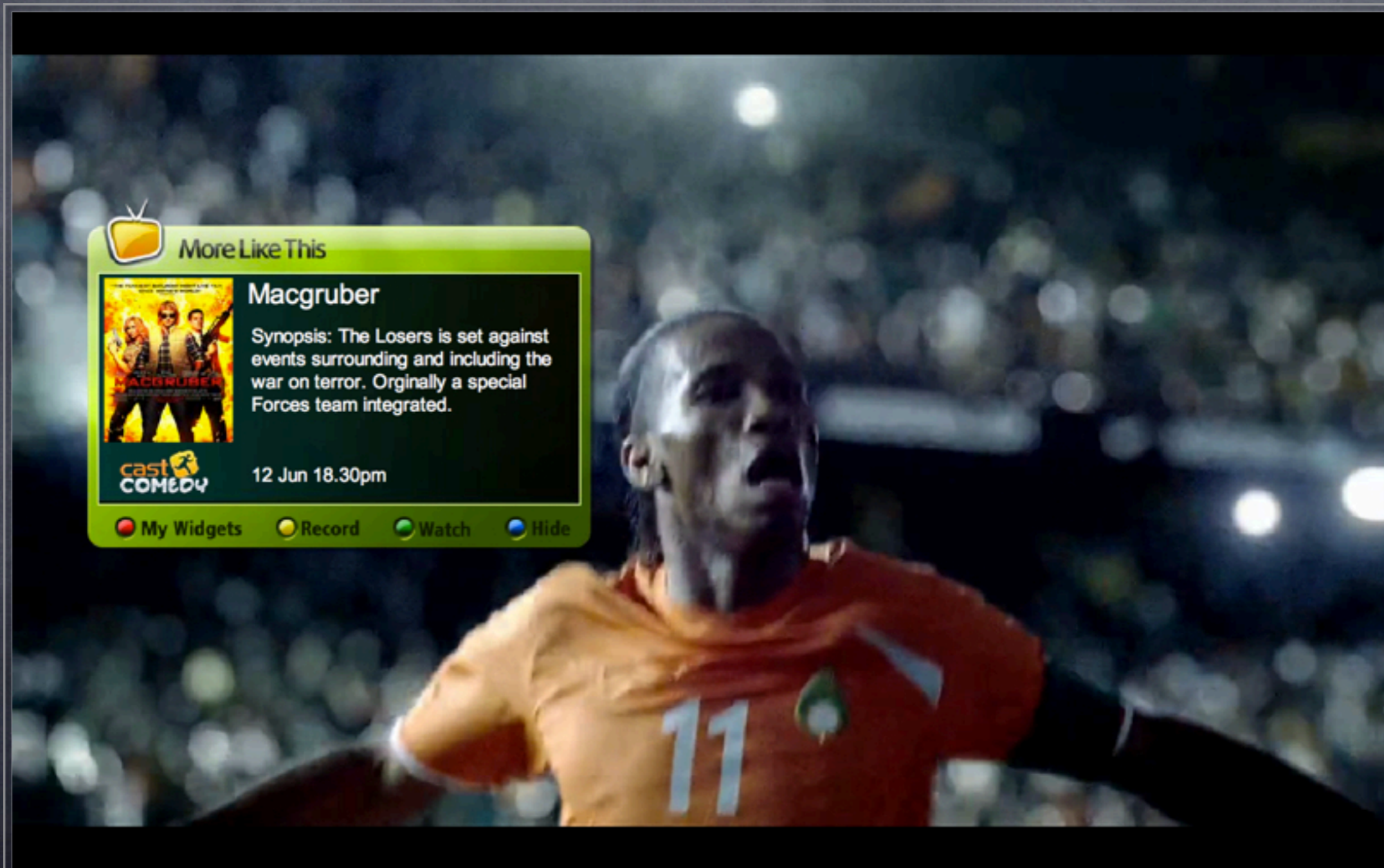
Conceptualisation - Final Screens

More Like This



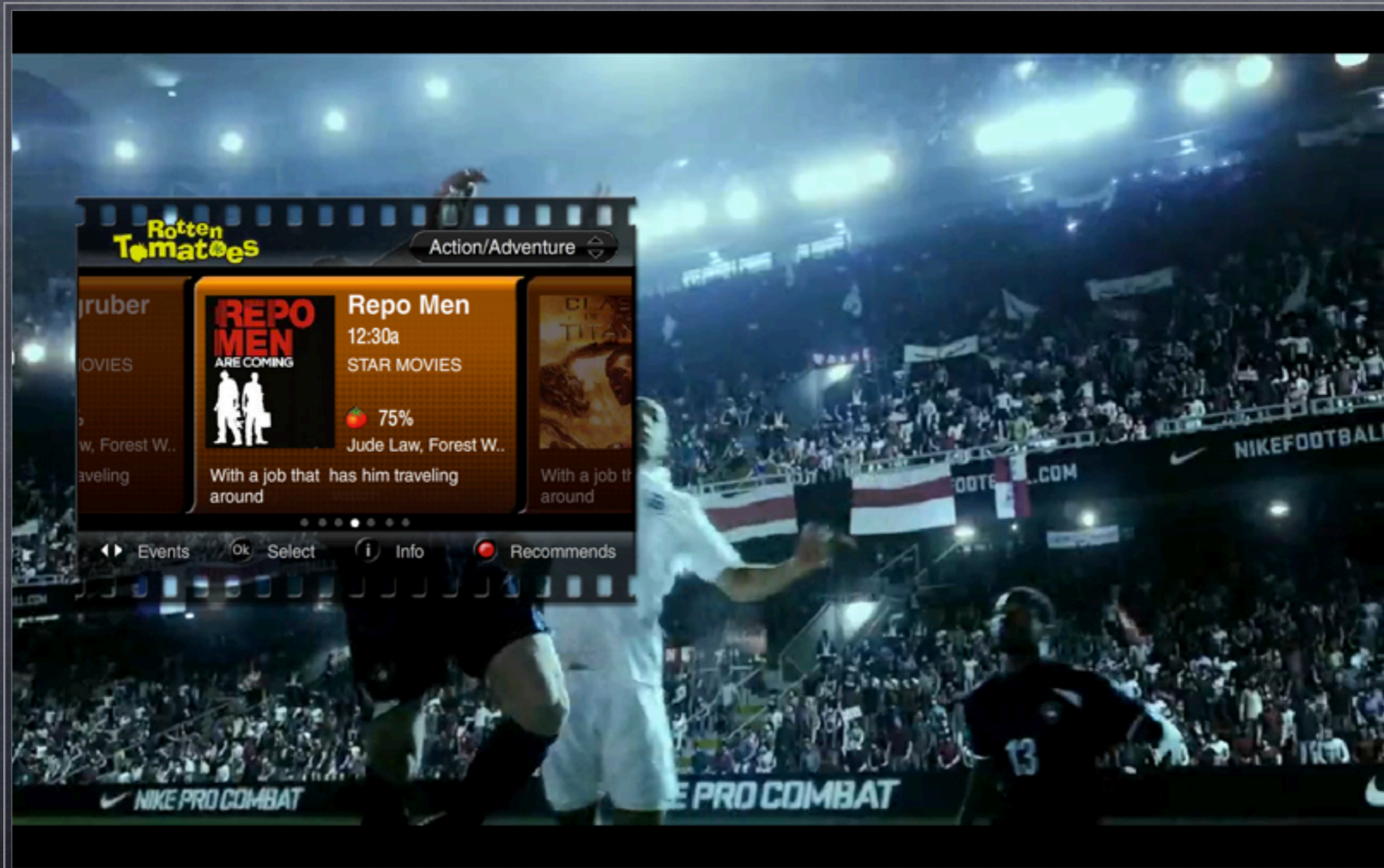
Conceptualisation - Final Screens

More Like This



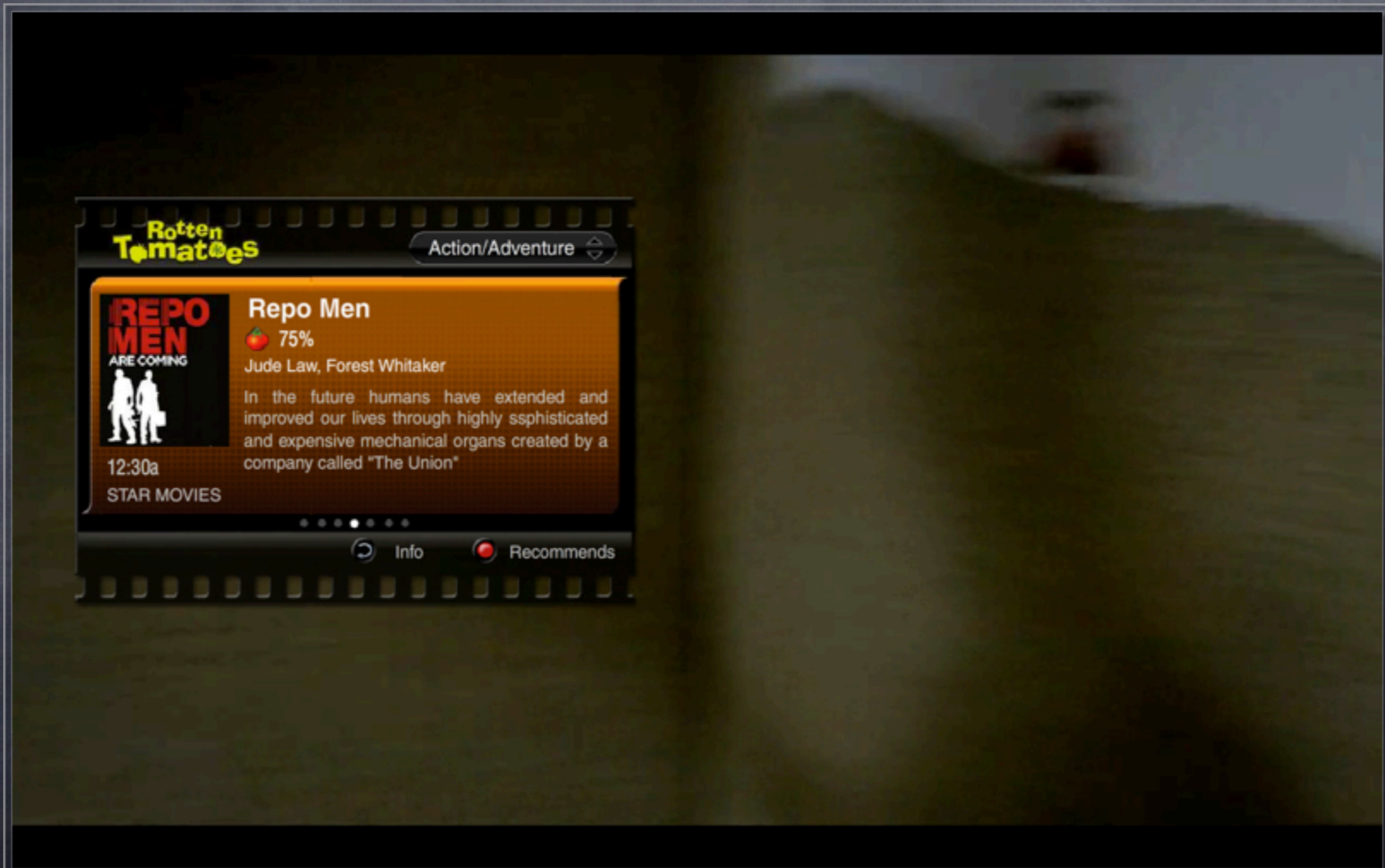
Conceptualisation - Final Screens

Rotten Tomatoes



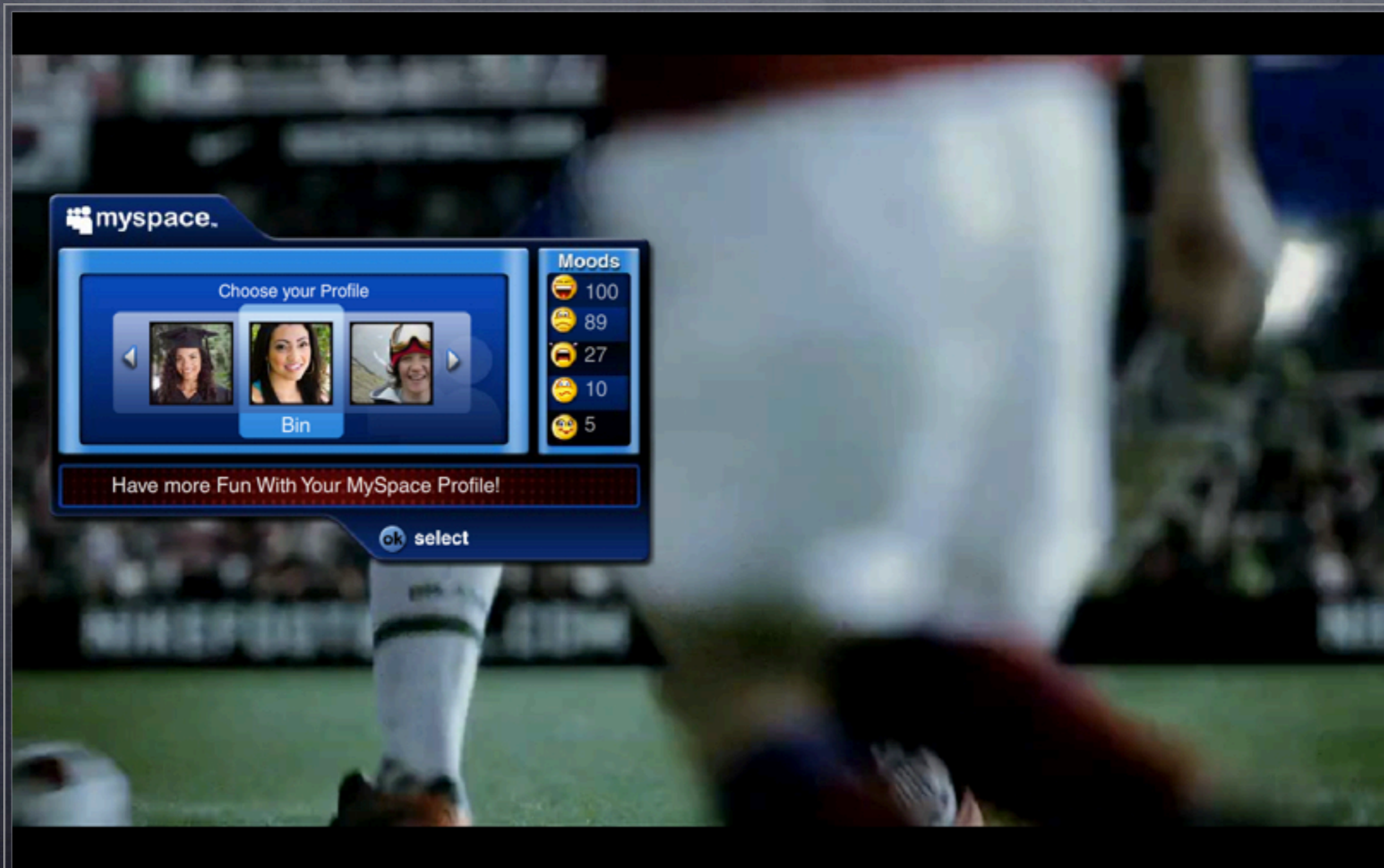
Conceptualisation - Final Screens

Rotten Tomatoes



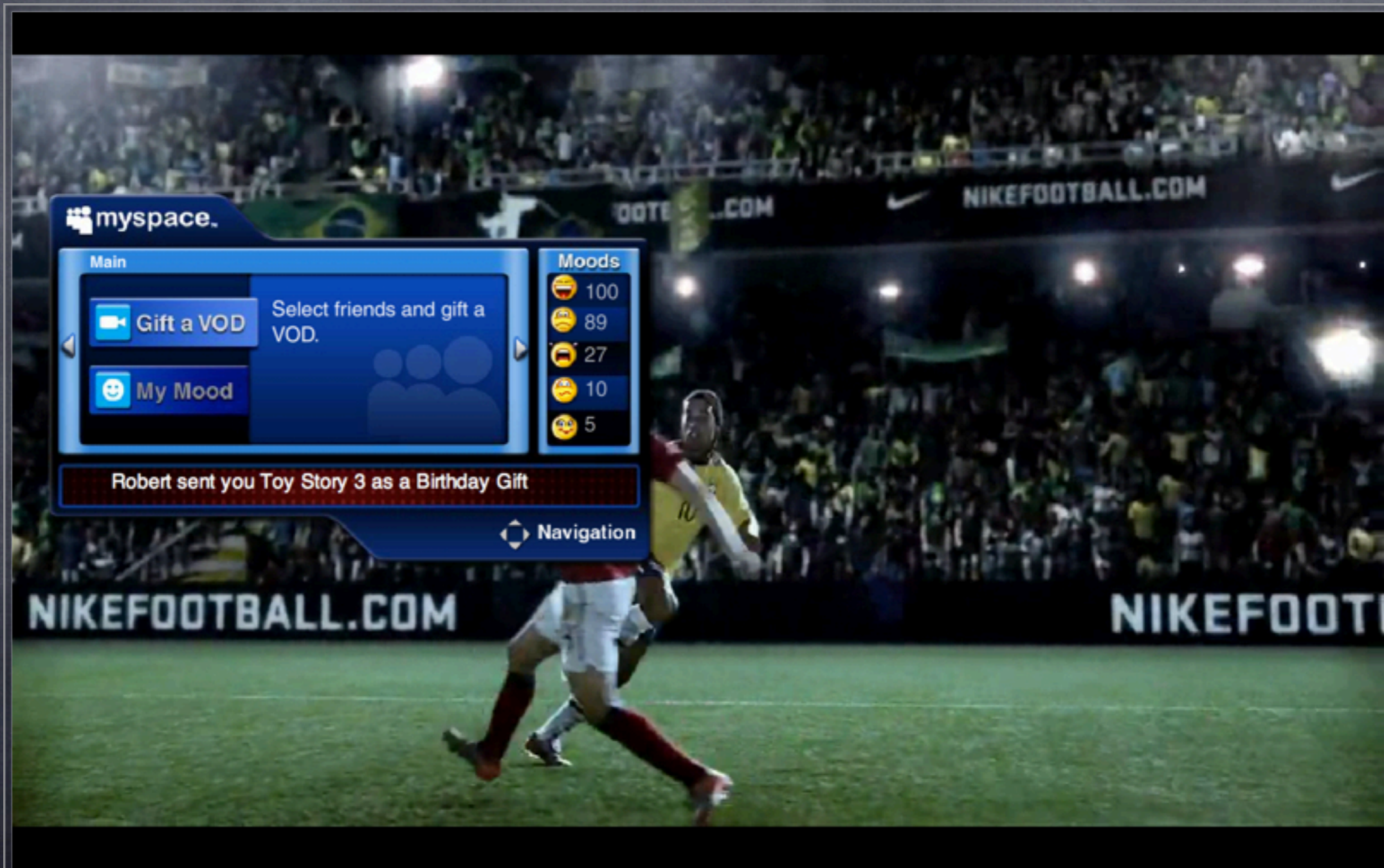
Conceptualisation - Final Screens

My Space



Conceptualisation - Final Screens

My Space



Usability Testing

- The word usability refers to the feature of an application which makes it easy and good to use and which produces a good user experience. Good usability is achieved by user-centered design.
- As regards interactive television, two factors are emphasized : ease of use and entertainment.
- Purpose
 - Test the EPG & iTV App on selected User group
 - Make qualitative and quantitative observations
 - Create finding by analyzing the data
- Participants
 - 15 Tech Savvy (24-35 of age)
 - 10 Housewife (28-45 of age)
 - 5 55+ of age

Usability Testing

Number of User Tested : 30

Characteristic	User Group 1	User Group 2	User Group 3
Number of Test cases	15	10	5
Target User	Tech Savvy	Housewife	Retired
Observation			
Number of user tested	8 Female & 7 Male	10 Female	5 Male
Familiar with EPG	15	6	3
Not comfortable with EPG	0	4	2

Thank You

Guided By
Mamata N Rao