



Connected TV Applications for TiVo

Project Aether

Requirements, Wireframes, and Examples

31 Aug 2012

Apps on the TiVo box

The TiVo set top box is an enhanced personal video recorder that can run stand-alone interactive programs (TiVo Apps) using Adobe Flash Lite 3.1. As the TiVo box was designed mainly for video playback and Flash Lite was designed for mobile devices, TiVo apps are not as fast and interactive as applications on PCs, smart phones, tablets, or games consoles. Graphics memory is limited on the TiVo box. For a comparison, think of the complexity and speed of a Flash website circa 2001, but with HD video.

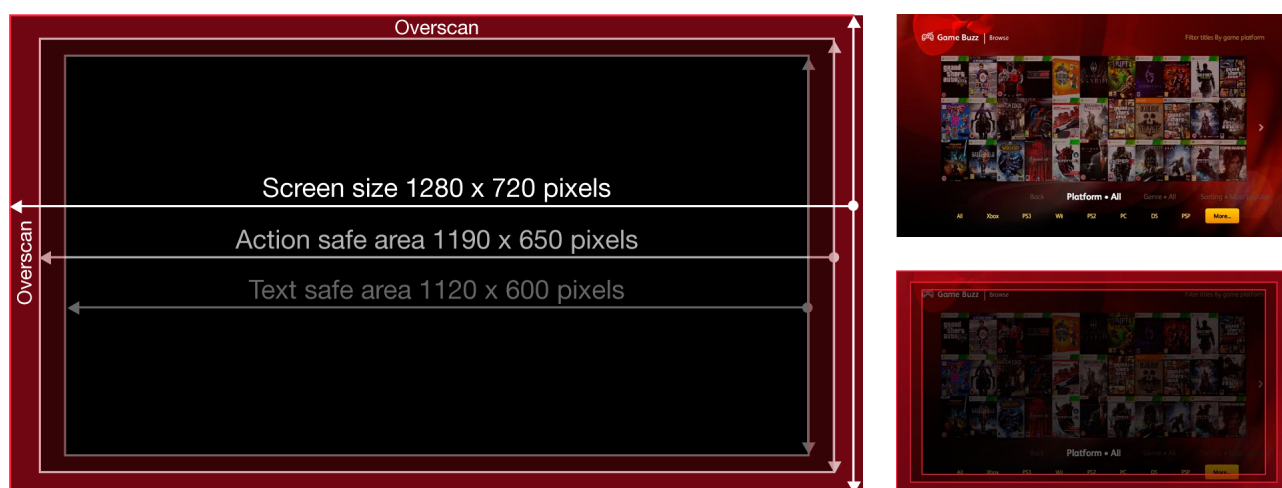
Good designs for TiVo Apps play to the strengths and weaknesses of the TiVo box, which generally translate into a combination of engaging full screen video with simple interactivity.

About Project Aether

Aether is a template application developed by Virgin Media for the purpose of displaying existing internet content on TV through the TiVo set top box. This template is made up of a collection of interactive screens which can be arranged and skinned as needed. This document details those component screens, each which have specific purposes like playing video, showing photos, displaying text, and selecting content.

The Aether component screen layouts are tailored to perform well with TV hardware. Because the display is viewed at a distance and the navigation is through the TiVo remote control, Aether screens more closely resemble DVD and Blu-Ray designs rather than websites. The latter tend to be too cluttered, complex, and text heavy for general TV viewing and interactivity.

When porting the content from a website into Aether we often emphasise the opportunity for quick and easy access to full screen video and photos, encouraging a user journey best suited for the simplicity and large display of interactive TV.



Screen Specifications

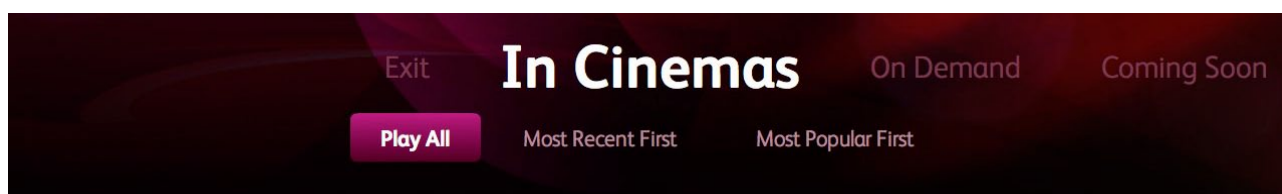
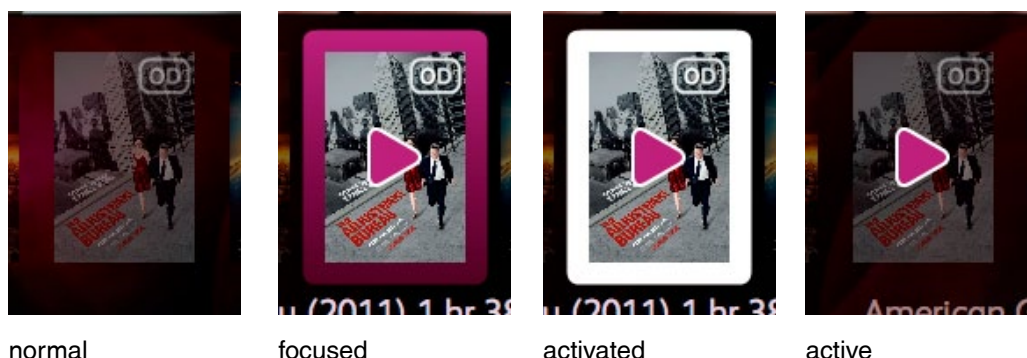
Glossary of Terms Used

activated	Button state while interactive text or imagery is being pressed, providing 1 second feedback of the button press.
active	Button state when interactive text or imagery has been pressed, but no longer in focus. Sometimes used for a menu hierarchy (eg. while subbuttons are in focus, the parent button is in an active state).
back button	Button that returns the user to a screen on the previous level, one step back in the history.
button	A button can be text or an image, and has potentially 5 states: normal, focused, activated, active, and inactive.
focus	A graphic indicator showing what area of the screen is actionable, analogous to mouse cursor on a PC. It is usually a bright outline.
focused	Button state when interactive text or imagery is in focus.
image button	Interactive image on the screen. An action is executed when in focus and the OK button on the remote is pressed.
inactive	Button state when interactive text or imagery is temporarily not interactive (aka. 'greyed out').
menu	A row or column of interactive text.
normal	Button state when interactive text or imagery not in focus.
subbutton	Child button that appears when it's parent is pressed.
text button	Interactive text on the screen. An action is executed when in focus and the OK button on the remote is pressed.

Example of the button states of a text button

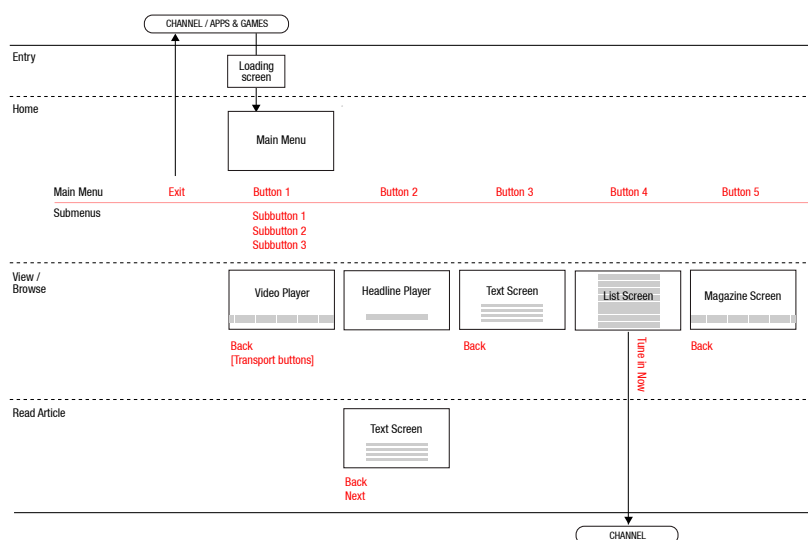


Example of the button states of an image button



a menu of text buttons, with a subbutton in focus

General Requirements



Example app flowchart

1. All apps have a Loading Screen, a Screen Saver Screen, and at least 1 content display screen.
2. All apps have a quit confirmation if the action of exiting the app results in a loss of data and/or loss of a paid for session. If there is no such loss the app does not have a quit confirmation.
3. All but the simplest apps have a Main Menu on the first level, and there is only one Main Menu screen per app.
4. Apps have hierarchical tree structures with the nodes: level, screen, menu.
5. Levels should be limited to 3 (eg. a Main Menu level plus 2 additional levels) so that navigation to the Main Menu is at most a 2 steps away.
6. There is no limit on the number of screens per level.
7. Each screen has no more than one menu set. A menu set has up to 2 hierarchical levels, with each button optionally being a parent to an array of subbuttons.
8. The first menu selection on each screen that has a menu takes the user to the previous level recorded in a history. The button name is 'back', except on the Main Menu, which reads "exit".
9. Behaviour of the INFO button: If INFO is pressed while content is being displayed (eg. full screen video) and it has information text associated with the content, the info text is displayed. If INFO is pressed elsewhere a pop-up is displayed listing application information (if present).

```

<aether>
  <global>
    <font/>
    <button/>
    <focus/>
    <menu/>
  </global>
  <level> <!-- Home Level -->
    <screen> <!-- Main Menu -->
      <menu>
        <item/> <!-- button -->
        <item>
          <menu>
            <item/> <!-- subbutton -->
            <item/>
            <item/>
          </menu>
        </item>
        <item/>
        <item/>
      </menu>
    </screen>
  </level>
  <level> <!-- View / Browse Level -->
    <screen> <!-- Video Player -->
      <menu>
        </menu>
      <carousel>
        </carousel>
      </screen>
    <screen> <!-- Headline Player -->
      <menu>
        </menu>
      </screen>
    <screen> <!-- Text Screen -->
      <menu>
        </menu>
      </screen>
    <screen> <!-- List Screen -->
      <menu>
        </menu>
      </screen>
    <screen> <!-- Magazine Screen -->
      <menu>
        </menu>
      </screen>
  </level>
  <level> <!-- Read Article Level -->
    <screen> <!-- Text Screen -->
      <menu>
        </menu>
      </screen>
  </level>
</aether>

```

How the structure of the example flowchart might be written as XML tags.

Global Parameters

The following is a list of global parameters for buttons, focus graphics, fonts, and menus that must be dynamically adjustable via XML. The variable names are suggestions only.

BUTTON PARAMETERS

colour	Normal colour of the text buttons.
focus colour	Colour of the text button when in focus.
activated colour	Colour of the text button while being pressed, usually the focus colour.
inactive colour	Colour of the text button while it is temporarily non-interactive.
active colour	Colour of the text button after it has been pressed but not in focus.

FOCUS PARAMETERS

colour	Usually a bright colour contrasting rest of the screen, indicating the actionable area.
activated colour	Colour of the focus while being pressed, usually the normal button colour.
start colour	Colour at one end of a gradient on the focus graphic. Including this override the 'colour' parameter.
end colour	Colour at the opposite end of a gradient on the focus graphic.
gradient rotation	Angle of the gradient on the focus graphic.
horizontal pad	Width in pixels from the edge of a button to the edge of a focus graphic.
vertical pad	Height in pixels from the edge of a button to the edge of a focus graphic.
radius	Corner radius in pixels of a rounded rectangle focus graphic.










FONT PARAMETERS

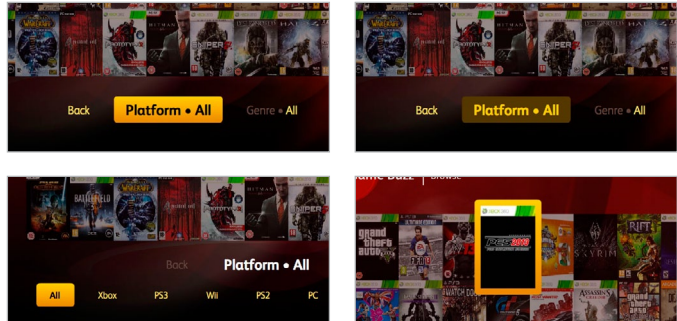
normal	Name of main font used throughout.
title	Name of font reserved for titles.
emphasis	Name of font reserved for emphasis.
size	Default size in points of fonts.
colour	Colour of normal font.
em colour	Colour of emphasis font.

MENU PARAMETERS

horizontal gap	Width in pixels between text buttons.
vertical gap	Height in pixels between text buttons, and between the menu and a component above (like a carousel).
focus scale	Size in percent of text button when in focus. 100% is no scaling.
subbutton scale	Size in percent of text button children. 100% is no scaling.
sub vertical gap	Height in pixels between subbuttons and their parent button. Overrides vertical gap parameter.










Global Parameters - Colour Examples

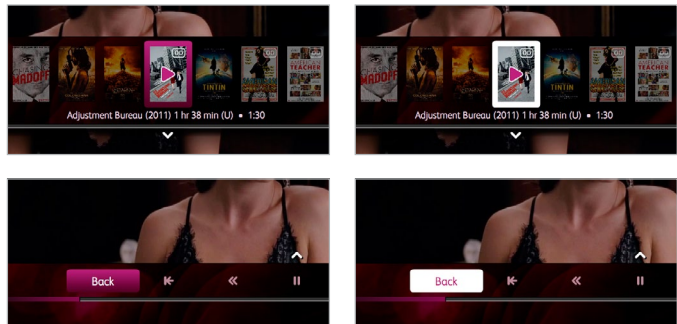
	color	focus	activated	inactive	active
font					
button					
focus					



```
<font name = "FSAIbertPro-Light" em = "FSAIbertPro" size = "30" color = "0x94784a" emcolor = "0xffffffff"/>
<button color = "0xFFDF80" focuscolor = "0x000000" activatedcolor = "0xFFCB32" inactivecolor = "0x5C463F" active = "0xFFFFFFFF"/>
<focus color = "0xFFCB32" activatedcolor = "0x4f390f" horzpad = "70" vertpad = "30" radius = "8" startcolor = "0xFFCB32" endcolor = "0xD68606"/>
```










Example XML

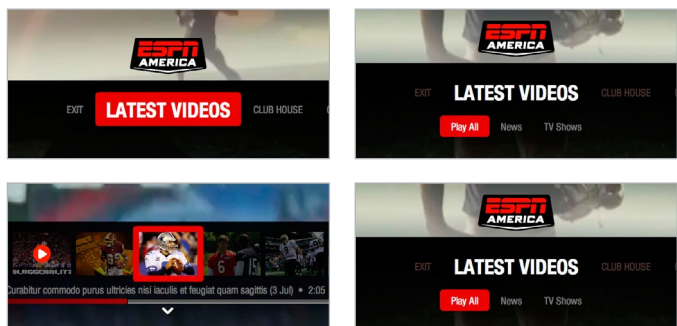
	color	focus	activated	inactive	active
font					
button					
focus					



```
<font name = "FSAIbertPro-Light" em = "FSAIbertPro" size = "30" color = "0x9f8281" emcolor = "0xe4d0e0"/>
<button color = "0xAF8997" focuscolor = "0xffffffff" activatedcolor = "0xA62876" inactivecolor = "0x6f3b4e" active = "0xFFFFFFFF"/>
<focus color = "0xA62876" activatedcolor = "0xFFFFFFFF" horzpad = "70" vertpad = "30" radius = "8" startcolor = "0xA5257A" endcolor = "0x470224"/>
```

Example XML

	color	focus	active	inactive	active
font					
button					
focus					



```
<font name = "TivoHelveticaCondensedExtend" em = "TivoHelveticaCondensedExtend" size = "21" color = "0x777777" emcolor = "0xffffffff"/>
<button color = "0x777777" focuscolor = "0xffffffff" activatedcolor = "0xCC0000" inactivecolor = "0x44342f" active = "0xFFFFFFFF"/>
<focus color = "0xCC0000" activatedcolor = "0xFFFFFFFF" horzpad = "50" vertpad = "35" radius = "8"/>
```

Example XML

Sound Effects

These sound effects confirm to the viewer of the app has received a remote control press. They are the standard TiVo sounds used on the core UI. They may be replaced more brand appropriate sounds if desired, as long as the custom sounds communicate the same emotional messages.

This is the default sound indicating a remote control button press. Sounds a bit like a single strike on a wood block percussion instrument.



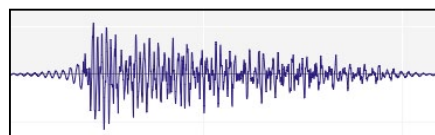
pock.wav

This sound indicates that the OK button was pressed. Sounds a bit like two strikes on a two toned wood block, rising in pitch.



pagick.wav

This sound indicates that a button press on the remote was received, but there is no action to perform. An example would be pressing RIGHT at the right end of a menu. Sounds like a jarring timpani strike.



whomp.wav

Screen Parameters

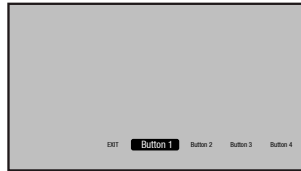
The following is a list of screen parameters that must be dynamically adjustable via XML. Each screen can have it's own screen parameters which override the global menu parameters. The variable names are suggestions only.

background	Full screen background graphic, PNG or JPG, or full screen video (usually MPG4). If the video is a background for a main menu it must loop, and it should be long enough (over 5 minutes) so the viewers do not generally wait around long enough for the loop.
foreground	Transparent PNG over the background.
font size	Size in points of the message text (for Screen Saver and Loading Screen).
information text	String (eg. on Screen Saver, "Press OK to wake up", on Loading Screen, "Loading...").
jump time	Time in seconds between random sprite positions (for the Screen Saver).
logo	PNG graphic of logo, usually in upper left corner.
lower third	PNG graphic that acts as a background for interface elements for the lower third portion of the screen, itself over another background (eg. video).
message duration	Optional. Minimum time in seconds the message is on the screen.
message text	Optional string. Overrides sprite (eg. if one wants to display messages, like trivia, instead of a sprite. For Screen Saver and Loading Screen).
name	Name of screen, sometimes shown to the right of the logo.
sprite	JPG or PNG graphic that appears at screen centre (for Screen Saver and Loading Screen).
title text	Optional string, used in tandem with 'message text' (for Screen Saver and Loading Screen).
trigger time	Length of time in seconds until the screen is displayed (for the Screen Saver, which triggers after this length of user inactivity).
upper third	PNG graphic that acts as a background for interface elements for the upper third portion of the screen, itself over another background (eg. video).

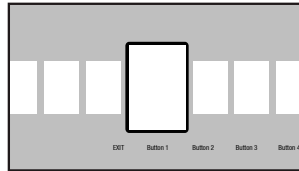
Screen Types

CONTENT SELECTION SCREENS

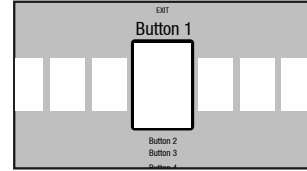
Main Menus



Picture Menu

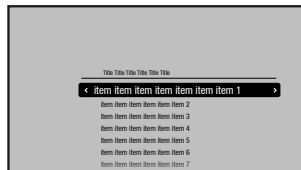


Carousel Menu

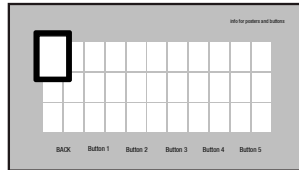


Accordion Menu

Secondary Menus



List Menu



Browse Wall



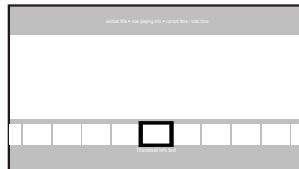
Content Info Screen

CONTENT DISPLAY SCREENS

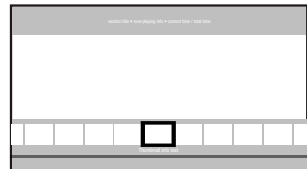
Full Screen Video & Photo



Live Video Player

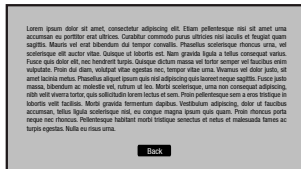


Slideshow Player

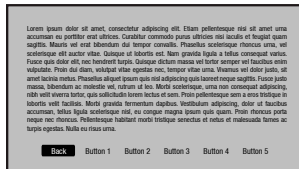


Video Player

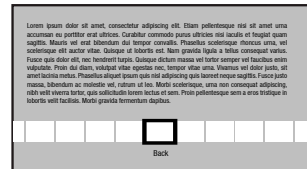
Text & Photo



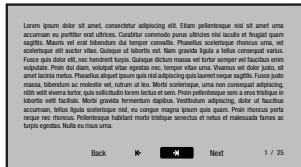
Text Screen



Tabbed Text Screen



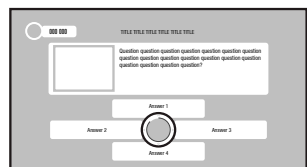
Magazine Screen



Paged Text Screen

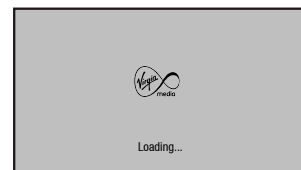


Headline Player



Quiz Screen

SUPPORT SCREENS



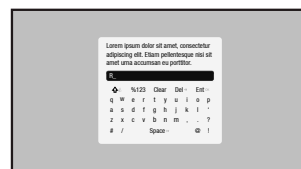
Loading Screen



Screen Saver



Pop-up



Text Entry Pop-up

Menu Parameters

The following is a list of menu parameters that must be dynamically adjustable via XML. Each screen can have it's own menu parameters which override the global menu parameters. The variable names are suggestions only.

align	Alignment of a vertical menu list, with the values "left", "center", or "right".
center	Coordinate on the X axis of a vertical menu list centre.
focus height	Height of focus in pixels. Inclusion creates a fixed height for all buttons in a menu and overrides 'focus vertical pad'.
focus horizontal pad	Width in pixels from the edge of the text button to the edge of the focus.
focus indent	Shift in pixels of the text when in focus along the x axis.
focus scale	Size in percent of text button when in focus. 100% is no scaling. Overrides global 'focus scale'.
subbutton scale	Size in percent of text button children. 100% is no scaling. Overrides global 'subbutton scale'.
focus vertical pad	Height in pixels from the edge of the text button to the edge of the focus.
focus width	Width of focus in pixels. Inclusion creates a fixed width for all buttons in a menu and overrides 'focus horizontal pad'.
font size	Font size in points of the menu items. Overrides global font size.
graphic button	Boolean. If true the menu button is a graphic, not a text button. Therefore, a menu can be a mixture of text buttons and icons.
horizontal gap	Width in pixels between items on a horizontal menu. Overrides global 'horizontal gap'.
item label	Additional menu button name.
item link	Target displayed following an OK press on a menu button.
item name	Name of a text button on the menu.
item target button	The number of the button in focus of the target.
item target level	The level number the target is part of.
item target screen	The screen number of the target.
leading	Distance in pixel between baselines of a vertical menu list. Overrides global 'vertical gap'.
menu	The menu within a menu (ie. a set of subbuttons).
menu page split	Number of buttons that make a page of buttons. A way of fitting a static menu that's wider than the screen, splitting it into pages.
vertical shift	Menu shift in pixels along the Y axis. On a horizontal menu this is added to global 'vertical gap'.
width	Width in pixels of a vertical menu list.
sliding	Boolean. If true a menu moves and has a static focus, if false the menu is static and the focus moves.



Example of a menu

Carousel Parameters

The following is a list of carousel parameters that must be dynamically adjustable via XML. Each screen can have its own carousel parameters which override the global menu parameters. The variable names are suggestions only.

images	Array of images for the carousel image buttons.
image fitting	Either “fill” or “fit”. “Fill” will resize the image to the carousel item size, distorting the proportions if necessary, ensuring that nothing is cropped. “Fit” will fit the shortest dimension into the carousel item, centring and cropping the image, ensuring the proportions are maintained.
image height	Height in pixels of a carousel item.
image width	Width in pixels of a carousel item.
image horizontal spread	Distance between image centres along the X axis.
font size	Font size in points of thumbnail information text, which updates on roll-over of a carousel item.
focus scale	Size in percent of text button when in focus. 100% is no scaling. Overrides global ‘focus scale’ parameter.
focus horizontal pad	Width in pixels from the edge of the carousel item to the edge of the focus.
focus vertical pad	Height in pixels from the edge of the carousel item to the edge of the focus.
item name	Name of the carousel item.
item label	Additional name of the carousel item.
item date	Date, in the format 00 Mon 00 (day, month, year), associated with the carousel item.
item rating	Rating of the carousel item. Might be a BBFC rating (U, 12A, 15, 18), or a critical rating (5 stars).
item running time	Time in hours and minutes of associated long form asset.
item duration	Time in minutes and seconds of associated short form asset.
item tooltip	Text in a tooltip associated with a carousel item.
item buttons	Names of text buttons associated with carousel item. In some cases this would override menu parameters.
slideshow duration	Duration in seconds of each slide in a slideshow.



Example of a carousel

Matrix Parameters

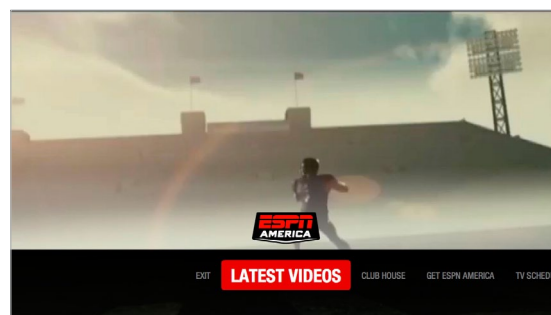
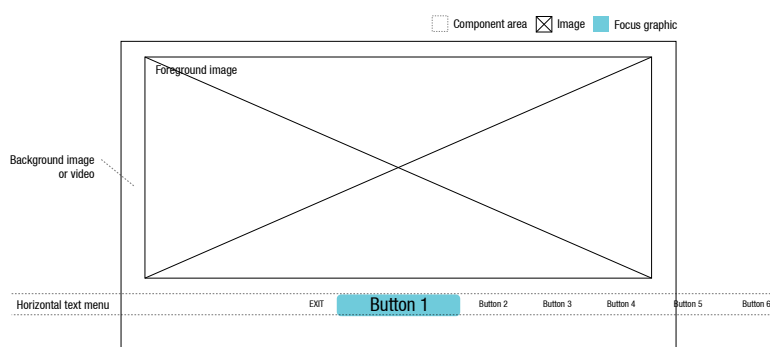
A matrix found on the Browse Wall screen is a 2D version of the carousel component. It uses the same parameters as a carousel, except for these 2 additions:

rows	Number of image buttons along the Y axis.
columns	Number of image buttons along the X axis.

CONTENT SELECTION SCREEN: Picture Menu

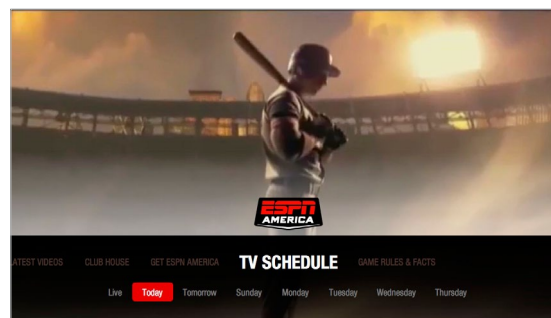
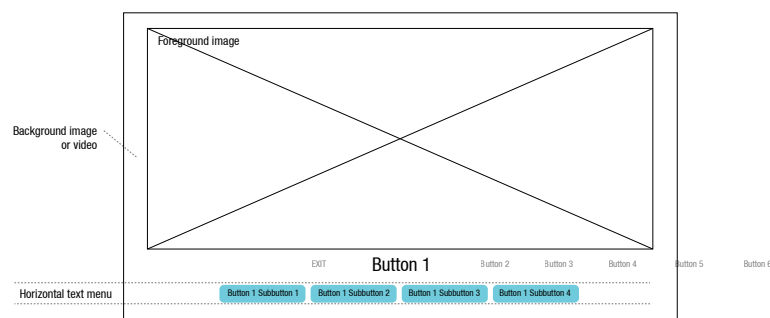
This screen most resembles a common DVD main menu, using a full screen image or video as a background overlaid with buttons. The buttons reside on the lower third along a scrolling horizontal text menu, which allows for both large legible type and scalability to any amount of buttons.

Each button has the potential to be a parent to a submenu of subbuttons, allowing an app to scale up to even more options. The submenu does not horizontally scroll.



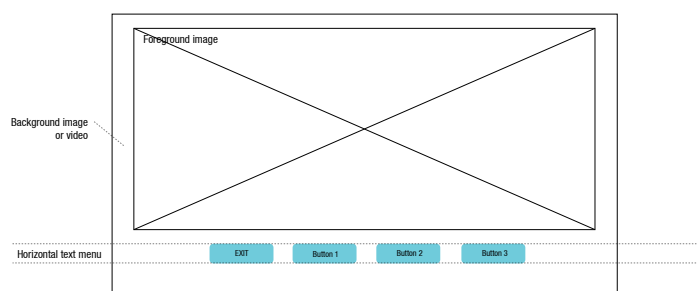
Example using a video background and lower third graphic.

Key handling on the menu: if LEFT then shift the text carousel to the right, bringing the button that was previously on the left into focus at the centre (except on the left most button, then do nothing). If RIGHT then shift the text carousel to the left, bringing the button that was previously on the right into focus at the centre (except on the right most button, then do nothing). If OK then display the activated state and load the linked screen, or if the button has a submenu then display the submenu and move the focus to the first item on the submenu. When displaying the submenu the menu slides up to make room for the submenu, the parent button is in the active state, and the other buttons are in the inactive state. If DOWN on a button that has a submenu, then behave as if OK was pressed.



Focus shown on submenu. Lower third graphic slides up.

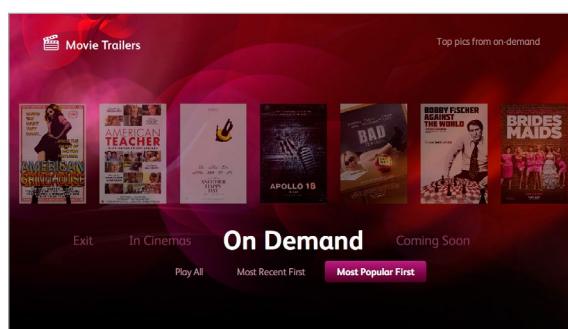
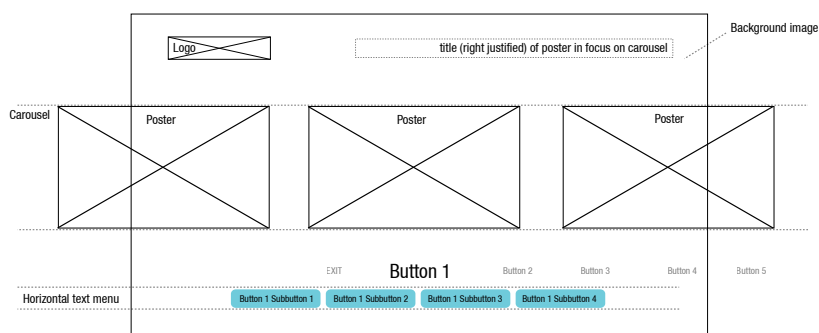
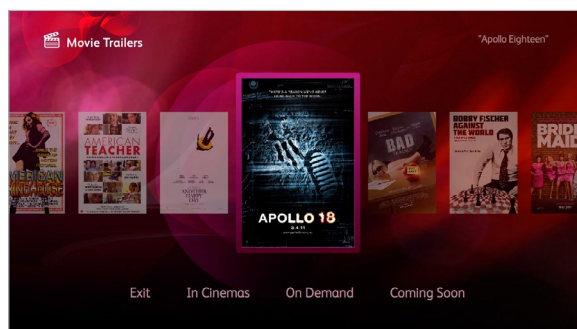
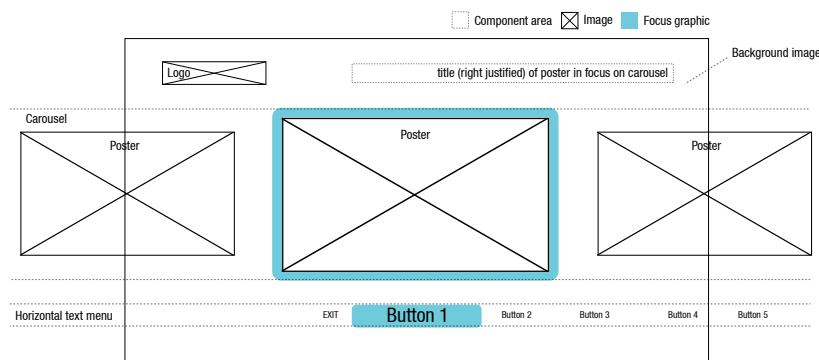
Key handling on the submenu: if LEFT then move the focus to the next subbutton on the left (except on the left most subbutton, then do nothing). If RIGHT then move the focus to the next subbutton on the right (except on the right most subbutton, then do nothing). If OK then display the activated state and load the linked screen.



Placement and behaviour of simple menus: if the pixel width of the main menu (this includes spacing and width due to focus scaling) is less than the text safe width (1120 pixels) AND none of the buttons have submenus then the menu is centered. The focus would then move instead of the menu.

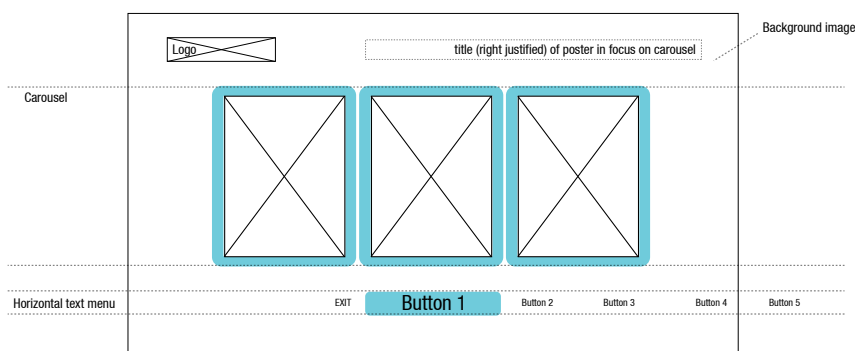
CONTENT SELECTION SCREEN: Carousel Menu

The Carousel Menu Screen is similar to a Picture Menu Screen, but with an editorially-controlled scrolling horizontal carousel displaying large image buttons. These buttons take the user to the highlights of the app, bringing 5-15 items to the forefront. The carousel wraps forever, controlled using the left and right arrows on the remote. Info text in the upper right corner provides additional information for what's currently in focus.



Key handling on the carousel: if LEFT then shift the carousel to the right, bringing the button that was previously on the left into focus at the centre. If RIGHT then shift the text carousel to the left, bringing the button that was previously on the right into focus at the centre. Scale the image button to the focus scale value when in focus. If OK then display the activated state and load the linked screen. If DOWN then move the focus to the second button on the menu.

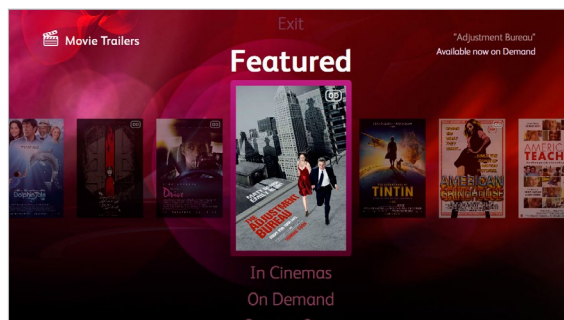
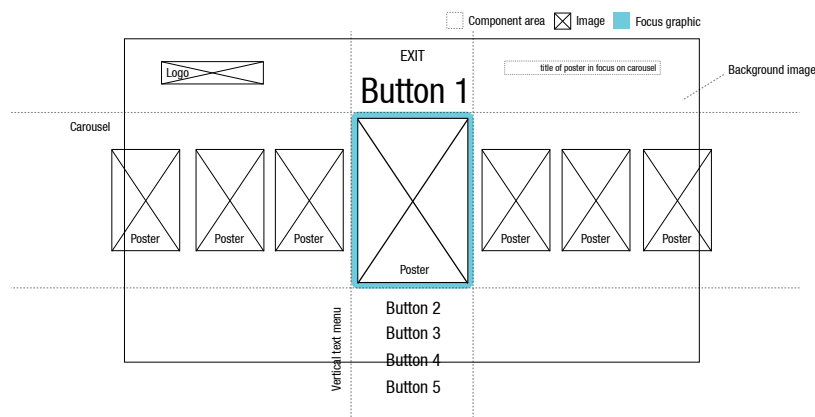
Key handling on the menu: Same as "Picture Menu", except if UP move the focus to the image button in the center of the carousel, scaling according to the focus scale value.



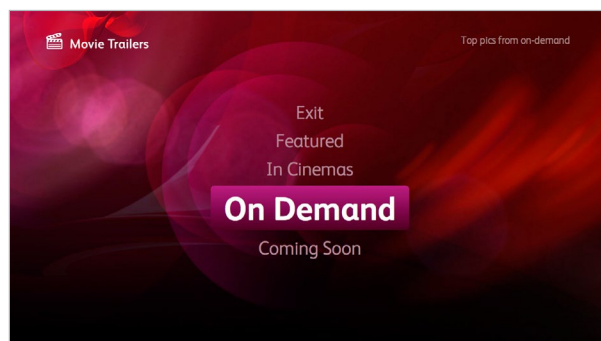
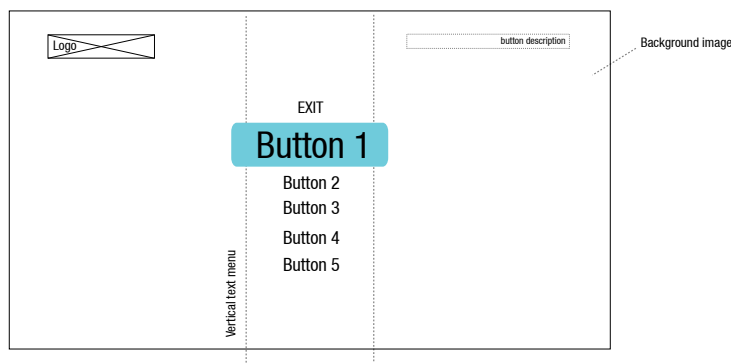
Placement and behaviour of small carousels: if the pixel width of the carousel (this includes spacing and width due to focus scaling) is less than the action safe width (1190 pixels) then the carousel must be centered. The focus would then move instead of the carousel items. When arrowing UP from the menu the carousel item in the center must be in focus (for carousel items totalling an odd number) or the carousel item nearest the right of center (for even totals).

CONTENT SELECTION SCREEN: Accordion Menu

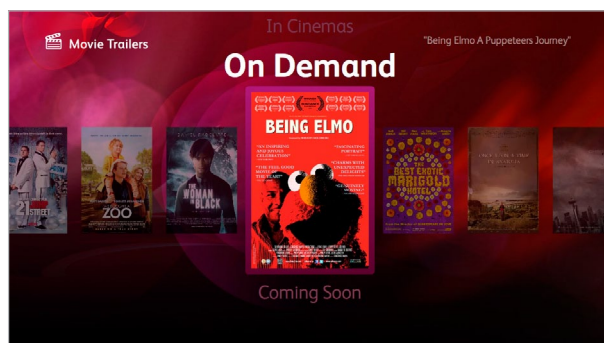
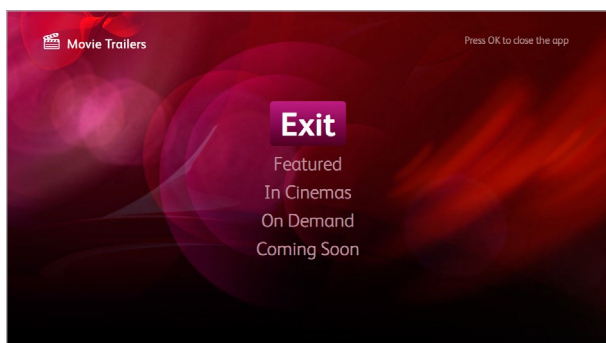
The Accordion Menu accommodates multiple horizontal carousels nested in a collapsing vertical menu. The effect is similar to exploring a file cabinet drawer and opening a file folder one at a time.



Key handling on the carousel: Same as on "Carousel Menu", except if UP or DOWN the carousel disappears and the vertical menu buttons move and space themselves evenly along the Y axis, and the whole menu vertically centers. If UP then the focus moves to the vertical menu to the text button above, and if DOWN then the focus moves to the text button below.

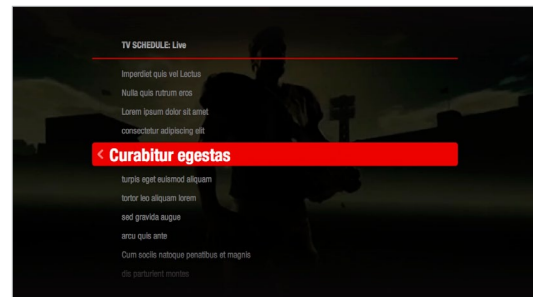
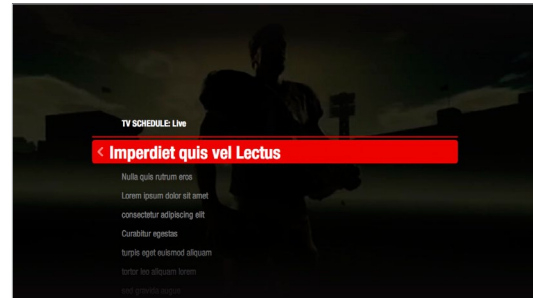
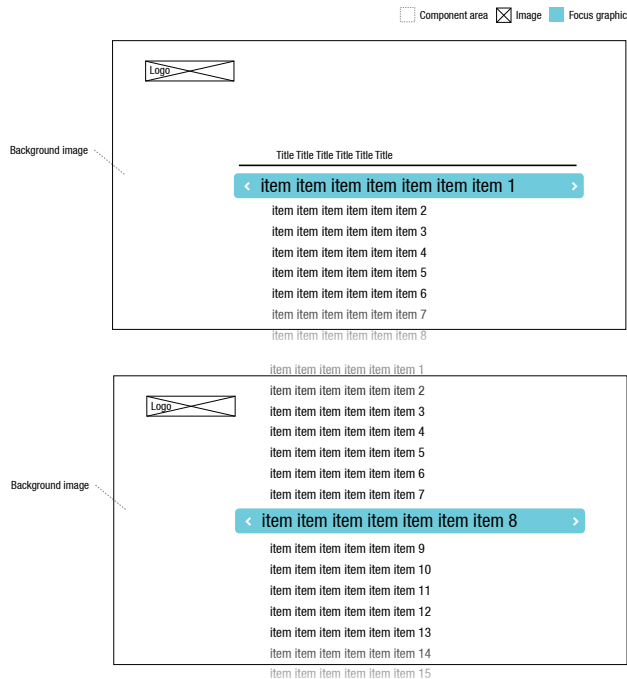


Key handling on the menu: If UP then move the focus to the menu item above, and if DOWN then move to the menu item below. Do nothing when arrowing past the top or bottom of the menu. If OK on the 'exit' button then display the activated state and quit the app. If RIGHT on the 'exit' button then move the focus down to the next menu slot. If OK or RIGHT on other buttons then display the activated state of the current button, and then spread the menu apart vertically and display the carousel in the new gap, putting the activated button above the carousel. The focus would then move to the carousel. If LEFT, excluding the 'exit' button, then open the carousel associated with the button above.



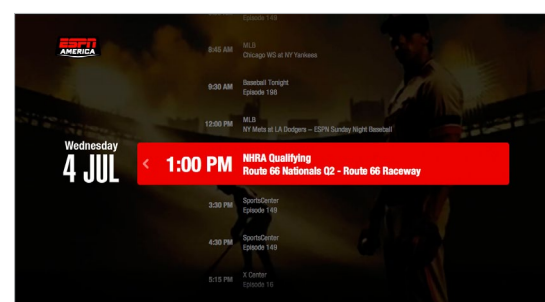
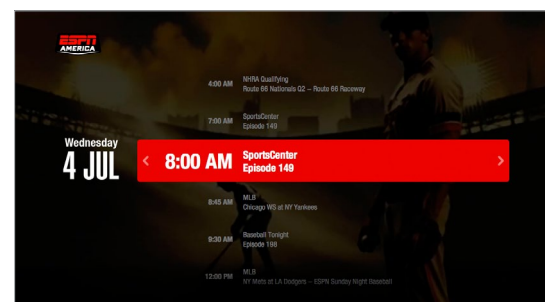
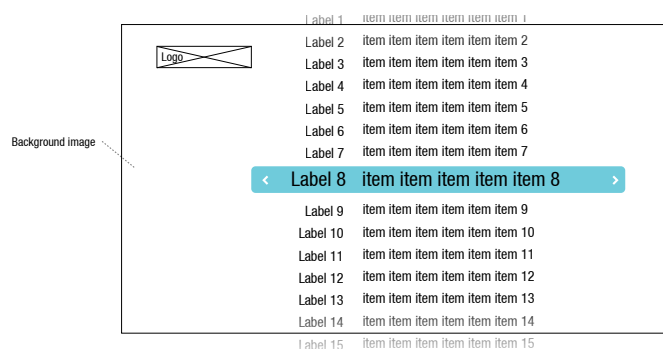
CONTENT SELECTION SCREEN: List Screen

This screen is ideal for navigating a long list of content, like programme and episode names. The focus is pinned to the centre. Alignment, column, and position parameters allow a wide variety of formatting in order to achieve different layouts and looks.



Single column left justified list screen

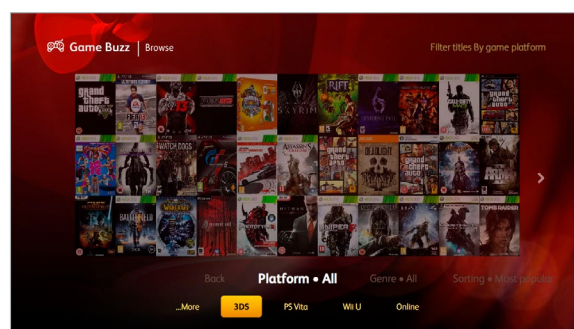
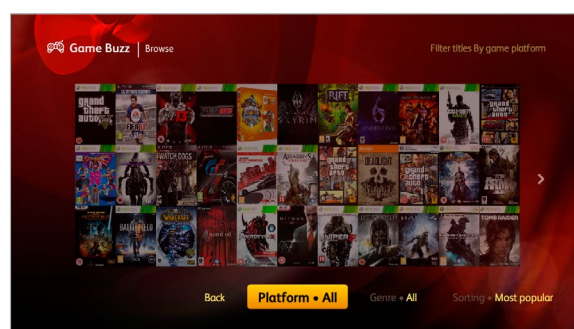
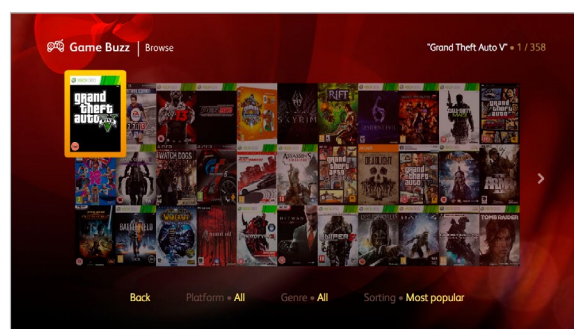
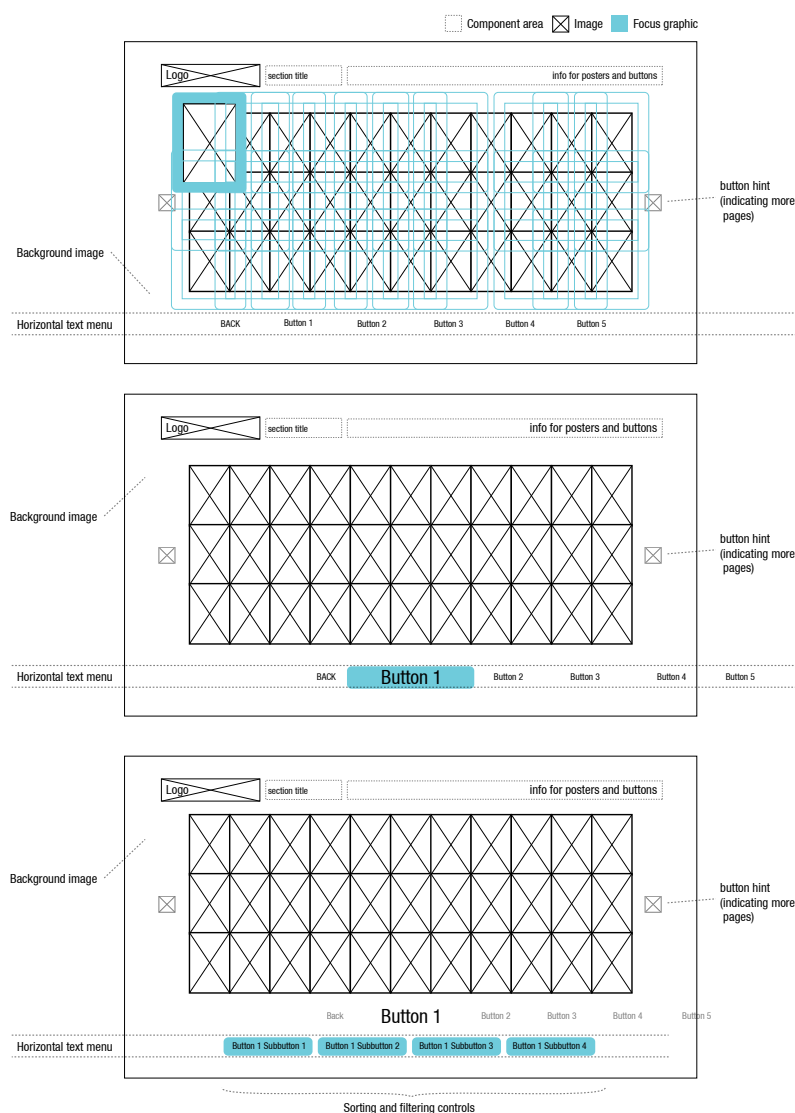
Key handling on the menu: If UP then shift the menu down, bringing the button that was previously above to the centre. If DOWN then shift the menu up, bringin the button that was previously below to the centre. Do nothing when arrowing past the top or bottom of the menu. If LEFT then display the activated state and load the previous screen in the history. If OK or RIGHT and there is a link (indicated by a right arrow hint) then display the activated state of the current button and load the linked screen.



Double column left justified list screen

CONTENT SELECTION SCREEN: Browse Wall

This screen is ideal for navigating a large library of content. Matrices of thumbnails are separated into multiple pages which load one at a time when arrowing to the far left and right on the browse wall. The buttons below the thumbnails, besides the back button for navigation to a previous screen, are optional sorting buttons. Info text in the upper right corner provides additional information of what's in focus.



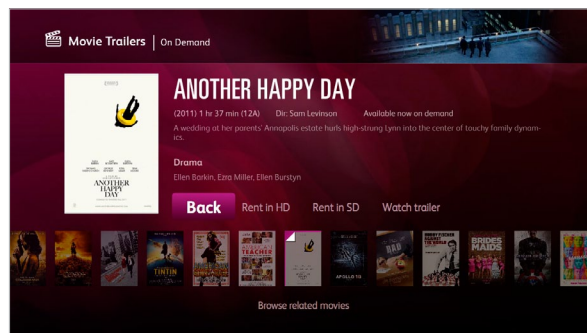
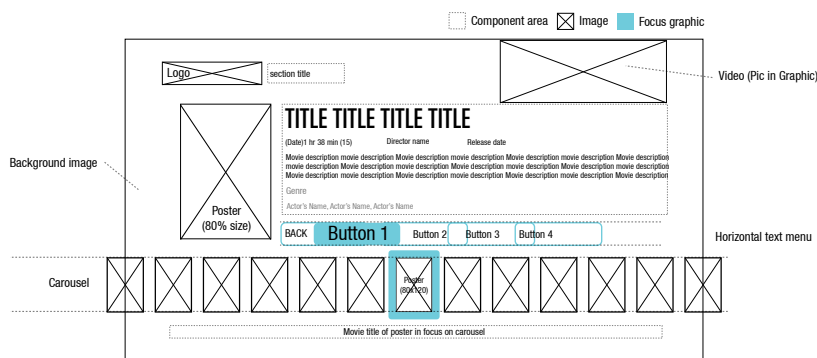
Focus shown on browse wall matrix, menu, and submenu (the browse wall menu has a variety of sorting and filtering options).

Key handling on the Browse Wall Matrix: if UP, DOWN, LEFT or RIGHT, then move the focus to the nearest image button above, below, left, or right, respectively, scaling with the focus scale value. If UP on the top row, then do nothing. If RIGHT or LEFT on the right-most or left-most columns and there are more buttons on additional pages (indicated by left/right arrow button hints) then load the new page, replacing the current one, and move the focus to the first thumbnail of the new page. If DOWN then move the focus to the menu, sliding the second button to the centre.

Key handling on the menu: same behaviour as the menu on the Carousel Menu, except the text name of filtering and sorting buttons update with the name of the option that is selected in the submenu. For submenus that are wider than the text safe area they are split into pages, using buttons labelled "...more" and "more..." to recede and advance pages of buttons.

CONTENT SELECTION SCREEN: Content Info Screen

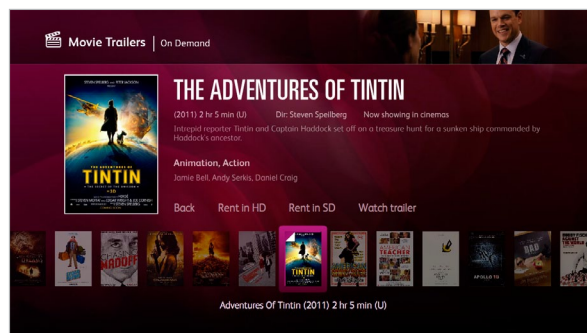
This screen displays content (eg. movie, programme, episode) information, has a menu that gives options of how to access that content, and a carousel that allows the viewer to navigate to Info Screens of related content. It also has an optional video player in the upper right corner so that content screens launched from video playlists can continue the videos uninterrupted.



Initial state of the focus is on the second button on the menu.

Key handling on the menu: the focus moves left and right with LEFT and RIGHT remote button presses, scaling according to the focus scale parameter, and the focus does not wrap. If DOWN the focus moves to the carousel.

Key handling on the carousel: behaves the same as the carousel on the Video Player screen, except if UP, the focus moves to nearest menu button to center.



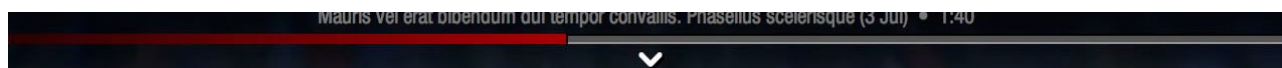
Focus shown on menu and carousel

CONTENT DISPLAY SCREEN: Video Player

Progress Bar Parameters

If the video player has on-demand video it will employ a Progress Bar, with these parameters controlled via XML.

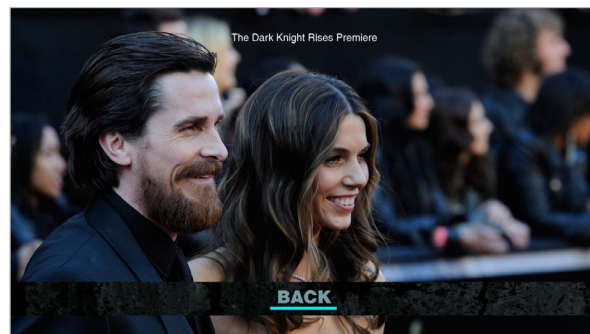
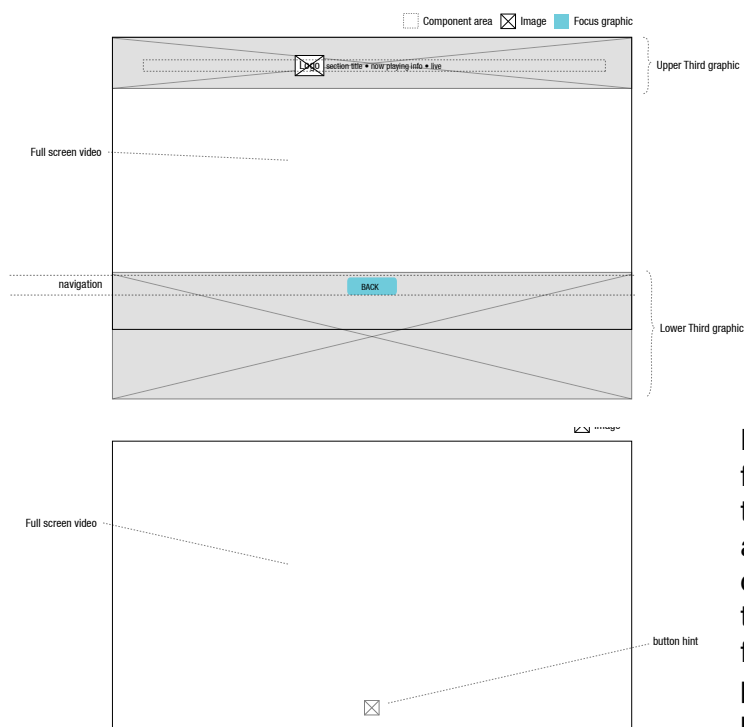
colour	Normal colour of the animated progress bar.
start colour	Colour at one end of a gradient on the progress bar. Including this override the 'colour' parameter.
end colour	Colour at the opposite end of a gradient on the progress bar.
background colour	Colour of the graphic behind the progress bar.
height	Height in pixels of progress bar.
background height	Height in pixels of the graphic behind the progress bar.



Example of a progress bar

Video Player (live video)

This is the simplest variation of the Video Player Screen, designed to display video of live events. The only interactivity is the 'Back' button to navigate to the previous screen, which appears when the viewer interacts. Information text on the upper third tells the viewer about the live stream.

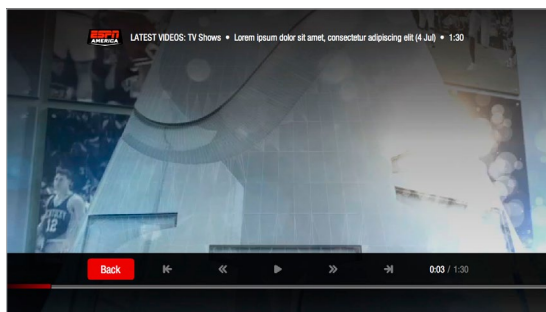
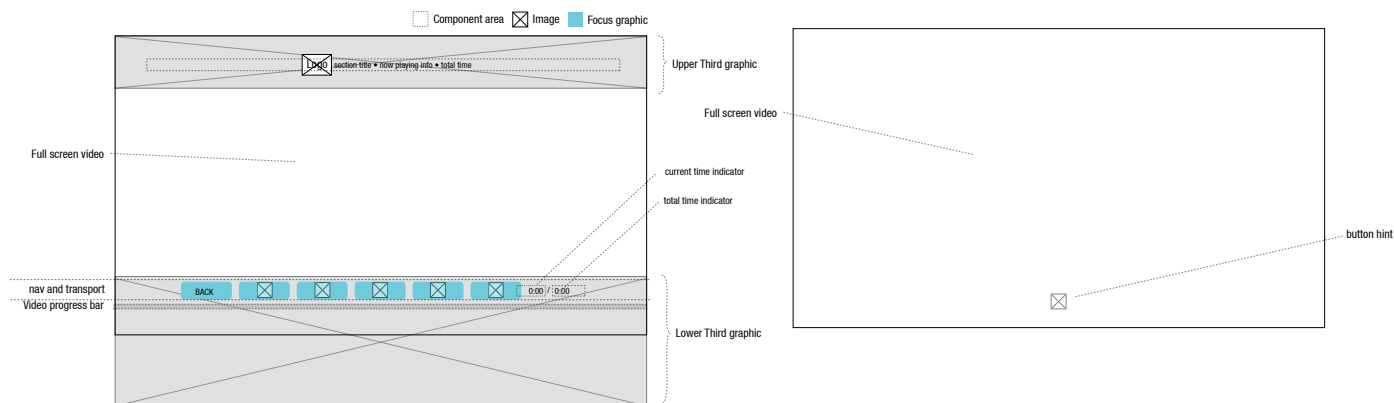


Lower and Upper Third overlays are displayed for a brief moment (about 4 seconds) when the screen first loads, and then fades away on a timeout (about a 1 second fade) so the video can be seen unobstructed. An arrow UP button hint appears for about 2 seconds, and then fades. The overlays re-appear when the viewer presses the interacts. The overlays will disappear if the viewer provides no input from the remote (about 3 seconds of inactivity).

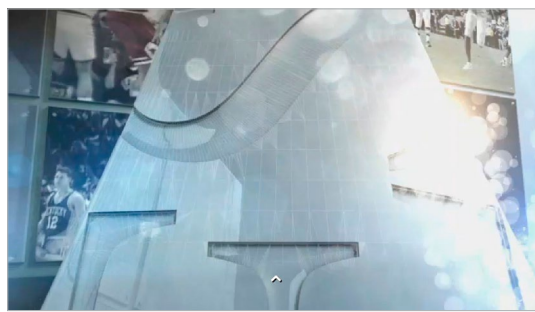
Key Handling: If the overlays are hidden, then pressing UP, DOWN, LEFT, RIGHT, OK, RED, BLUE, GREEN, YELLOW, PLAY, PAUSE, STOP, FFWD, RWD, SKIP FWD, or SKIP BACK will make the overlays visible. If INFO then display only the upper third and info text.

Video Player (single video)

This variation of the Video Player Screen has an on-screen menu of video transport controls. It also has a clock and a progress bar which indicate the time of the currently playing video.



Player showing overlay controls



Player without overlay, showing only the video.

Display of the overlays follows the same general behaviour of the live video player.

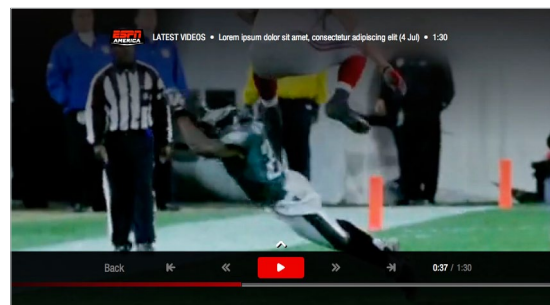
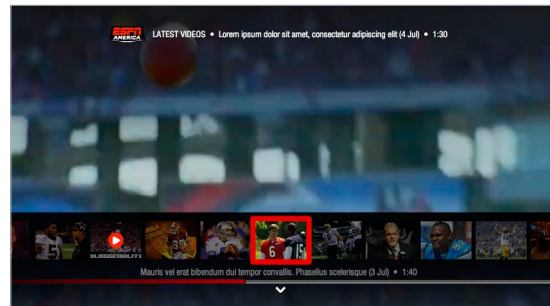
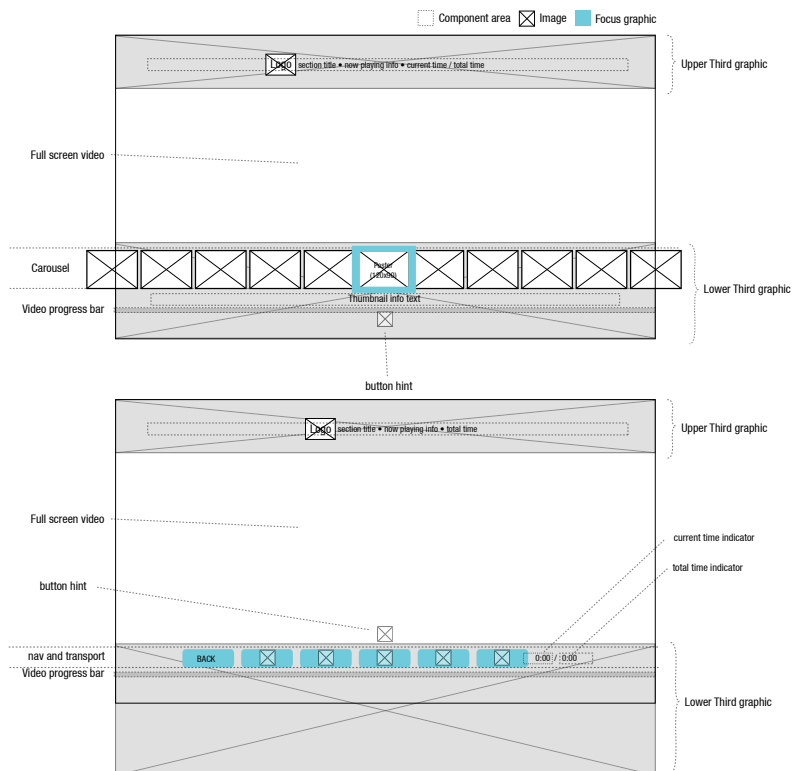
On-screen video transport buttons. **Key Handling:** if LEFT then move the focus to the video button to the left, unless on skip back, then do nothing. If RIGHT then move the focus to the video button to the right, unless on skip forward, then do nothing. If OK then display the activated state of the button, and execute the action (If on 'back' then load the previous screen in the history. The pause/play button toggles. When the video is playing the pause icon is displayed, when paused the play icon is displayed). If any video button is pressed on the remote move the focus to the corresponding on-screen button, and display its activated state, and execute the action. If while playing PAUSE is pressed, pause the video, and if the video is paused and PAUSE is pressed then play the video. If while playing STOP is pressed, display the pause icon and pause the video. If while paused and PLAY is pressed, display the play icon and play the video. If UP or DOWN then hide the overlays.



Video progress bar - a solid line which visually indicates the current time of the playing video. 0% and 100% (the two ends of the line) must be kept within action safe (x coord 60 and 1220, respectively). The initial state will have the progress bar already drawn from x0 to x60, and it will never reach x1280.

Video Player (playlist)

This variation of the Video Player Screen has a carousel on the lower third that allows the viewer to navigate the videos on a playlist. Upon a down press the carousel is swapped with the menu on the lower third.

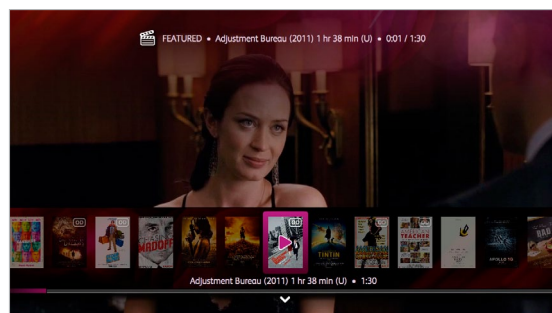
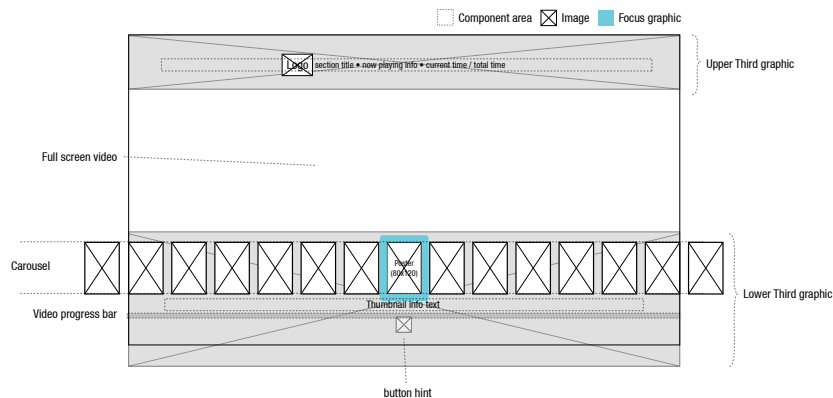


Display of the overlays and menu controls follow the same general behaviour as the single video player, **except pressing UP from the menu causes the carousel to appear and the menu to hide, swapping positions in the same space on the lower third.** The carousel is usually taller, so the lower third graphic will have to slide up during the swap. Focus moves to the center thumbnail (or thumb nearest right of center if the carousel is static and the item total is an even number).

The carousel generally behaves the same way as the carousel on the Carousel Screen, **except if UP then hide the overlays.** If DOWN then hide the carousel and swap to show the menu, focusing on the pause/play button. Also, If OK then display the activated state of the button and mark the activate thumb with the 'now playing' graphic, then hide the overlays, and then play the video.

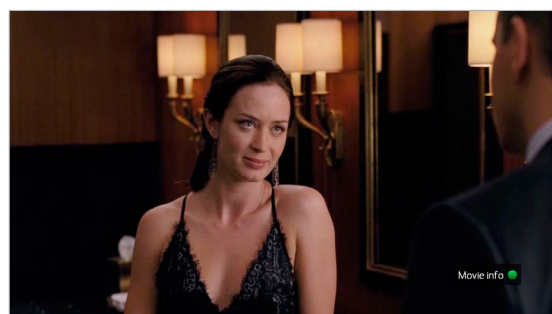
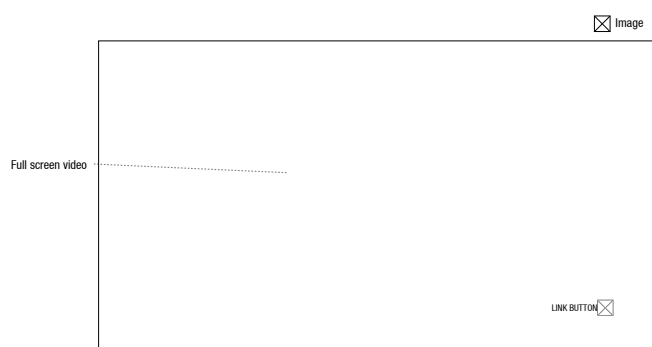
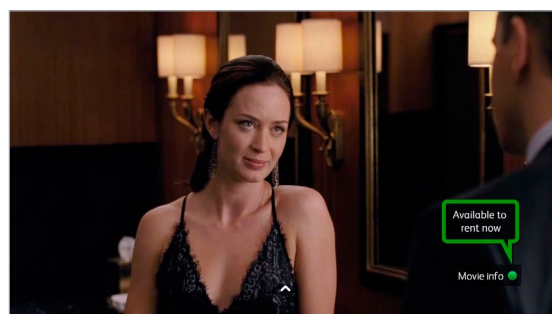
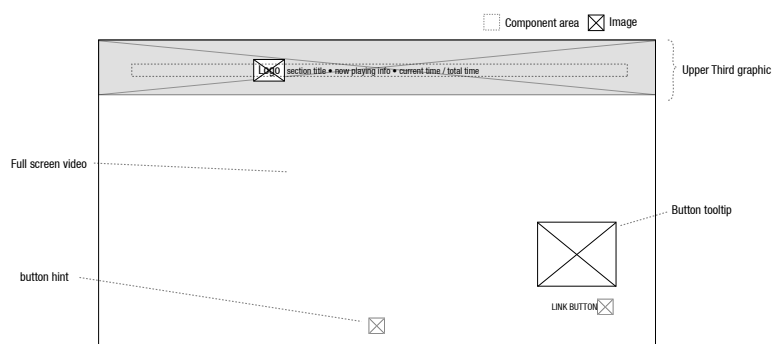
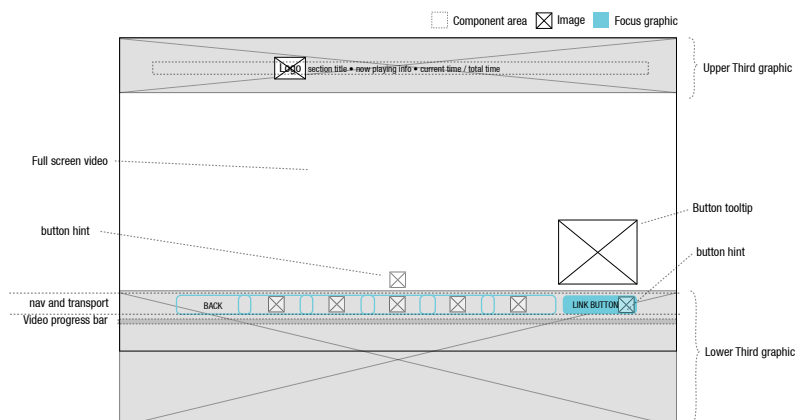


Note the arrow button hints that tell the viewer that pressing UP or DOWN will perform the lower third swap. Also when the next video in the playlist plays the upper third with info text displays, and then fades away after about 3 seconds (if nothing on the remote has been pressed).



Carousel showing vertical thumbnails

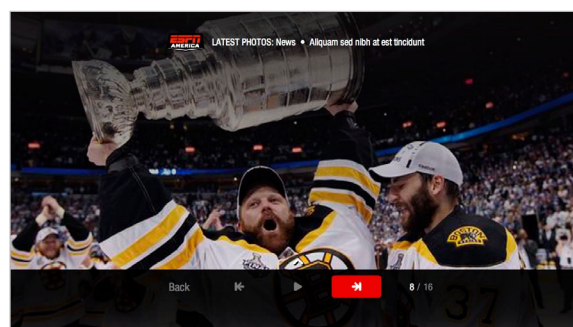
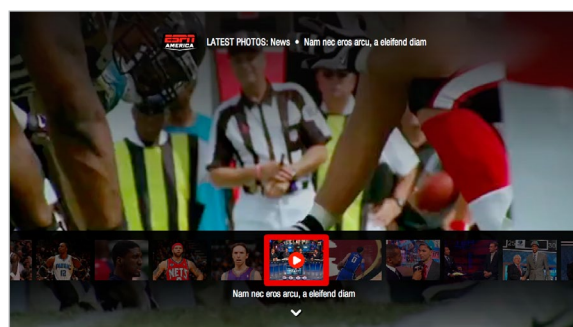
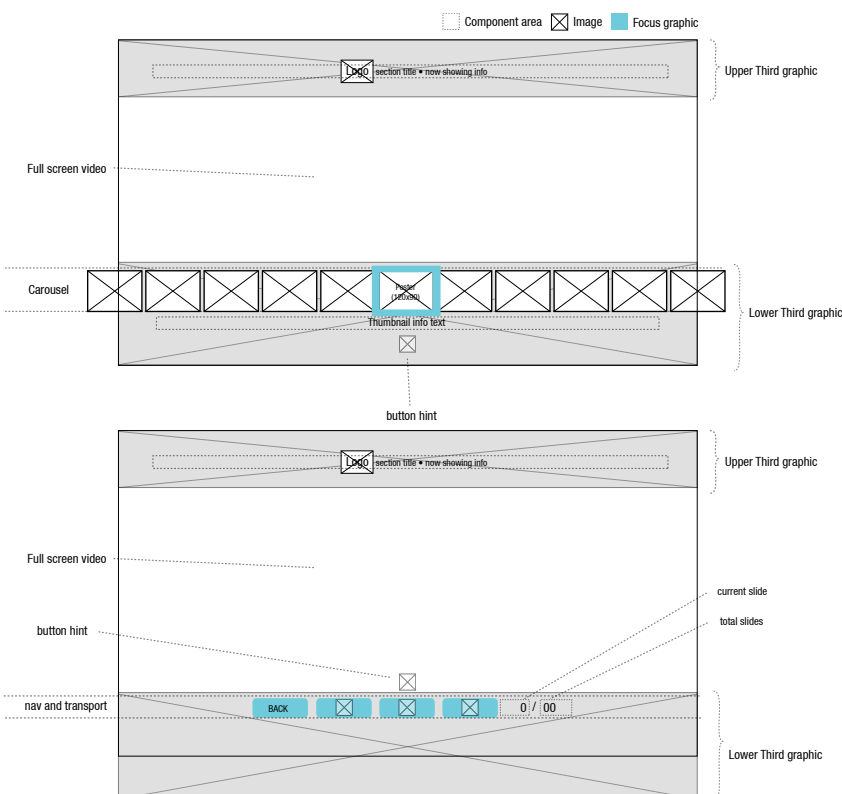
Optional link button: A link button on the Video Player allows the viewer to jump from a video to a related section in the app. The button is added to the right side of the menu. When this option is present the clock is moved to the information text in the upper third.



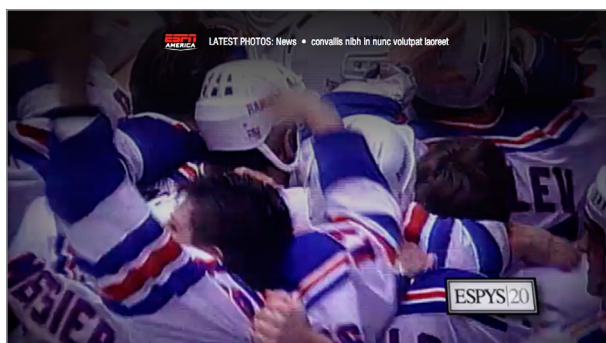
The link button includes a coloured button hint, indicating that the button can be activated with the coloured button on the remote control, along with the OK button. When the overlay disappears the coloured button hint and the label will remain as long as the linked video is playing.

A link button may also have an optional tooltip that highlight and provide further instructions to the viewer. This persists on screen 2 seconds after the rest of the overlays have disappeared.

CONTENT DISPLAY SCREEN: Slideshow Player



A Slideshow Player has many of the same features of the Video Player showing a playlist, except it displays full screen photos. There is no progress bar, and instead of a time indicator this screen displays a number which indicates the currently showing slide's place in the slideshow (eg 3/25)





Key handling: same as the playlist Video Player, except that the timer controlling the slide duration stops while remote control buttons are being pressed.

CONTENT DISPLAY SCREEN: Text Screen

Text Block Parameters

columns	Number of columns in the text block.
footer height	Optional. Height in pixels of a footer block. Inclusion creates a separate area within the text block aligned to the bottom.
header height	Optional. Height in pixels of a header block. Inclusion creates a separate area within the text block aligned to the top.
height	Height in pixels of the text block.
image	Optional. PNG or JPG. The image in the text block.
image align	Alignment of the image in the text block, either “left”, “center”, or “right”.
image position	Y coordinate of the upper left corner of the image relative to the text block.
padding	Distance in pixels between the edge of the text block and the edge of the images and text within.
position	Coordinates (x,y) of the upper left corner of the text block.
text	Optional. String. The text in the text block.
text align	Alignment of the text, with the possible values “left”, “center”, or “right”.
width	Width in pixels of the text block.
wrap	Boolean. If true the text wraps around images.

 Component area  Image

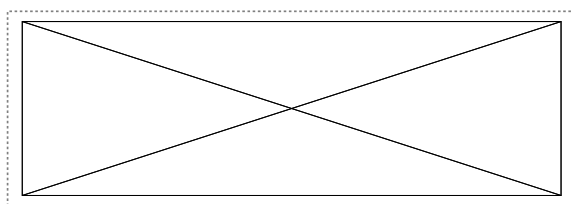


Image only

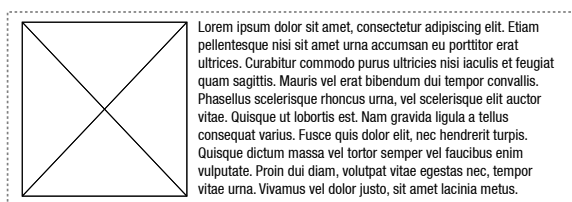


image align = 'left', text align = 'left'

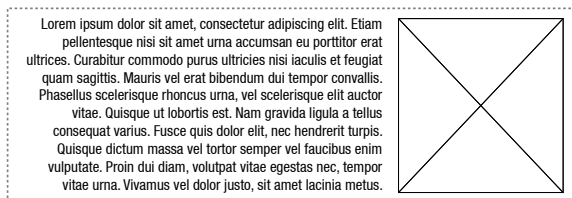
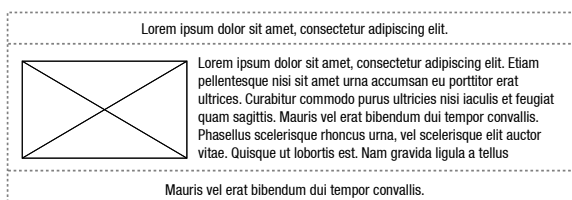


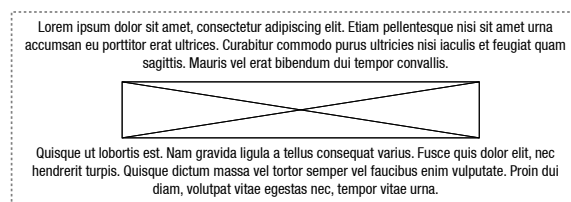
image align = 'right', text align = 'right'



header height = 25, footer height = 25

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam pellentesque nisi sit amet urna accumsan eu porttitor erat ultrices. Curabitur commodo purus ultricies nisi iaculis et feugiat quam sagittis. Mauris vel erat bibendum dui tempor convallis. Phasellus scelerisque rhoncus urna, vel scelerisque elit auctor vitae. Quisque ut lobortis est. Nam gravida ligula a tellus consequat varius. Fusce quis dolor elit, nec hendrerit turpis. Quisque dictum massa vel tortor semper vel faucibus enim vulputate. Proin dui diam, volutpat vitae egestas nec, tempor vitae urna. Vivamus vel dolor justo, sit amet lacinia metus. Phasellus aliquet ipsum quis nisl adipiscing quis laoreet neque sagittis. Fusce justo massa, bibendum ac molestie vel, rutrum ut leo. Morbi scelerisque, urna non consequat adipiscing, nibh velit viverra tortor, quis sollicitudin lorem lectus et sem. Proin pellentesque sem a eros tristique in lobortis velit facilisis. Morbi gravida fermentum dapibus.

Text only



text align = 'center', wrap = 'false'

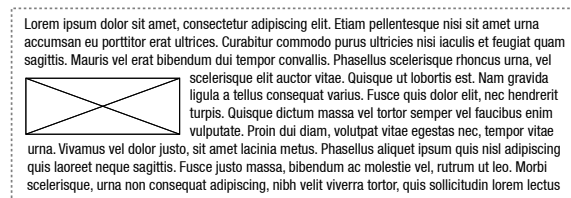
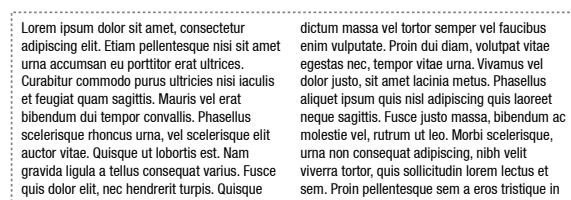
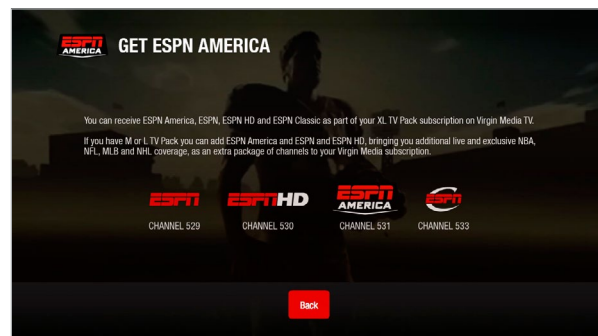
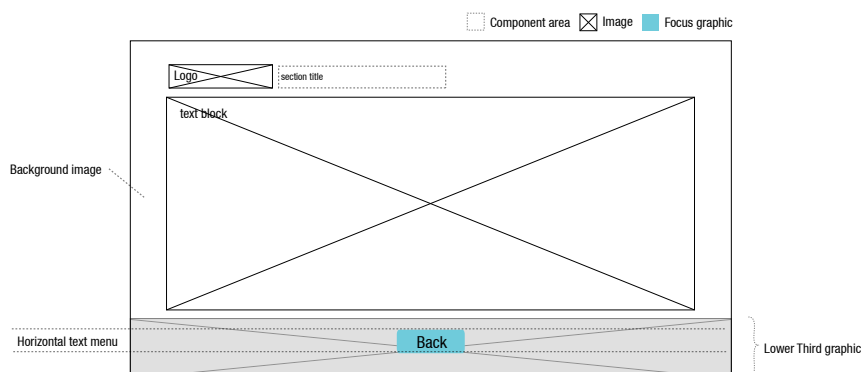


image position = 40, wrap = 'true'



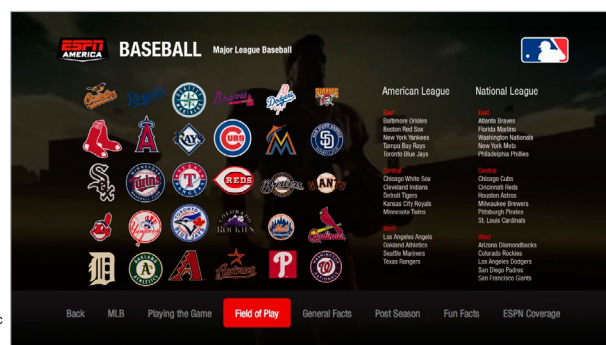
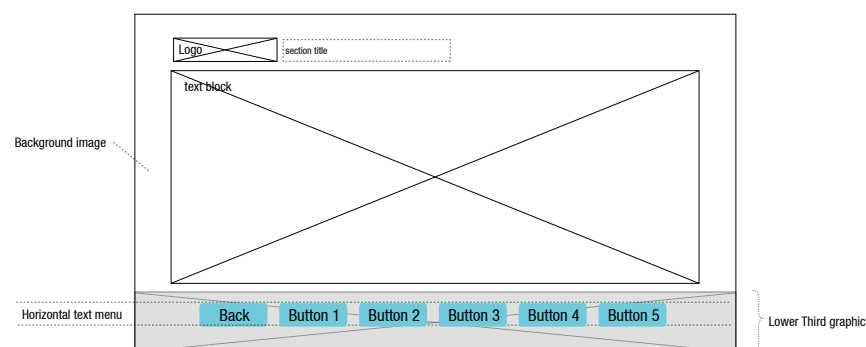
columns = 2

Text Screen (basic)



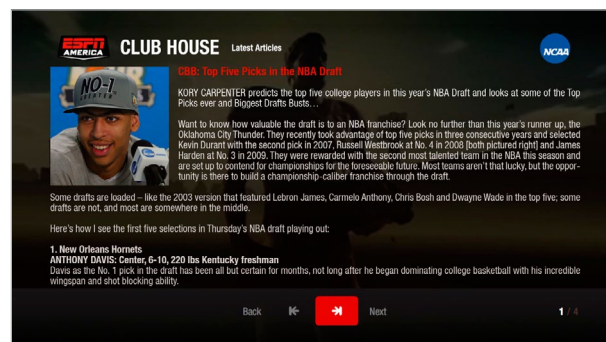
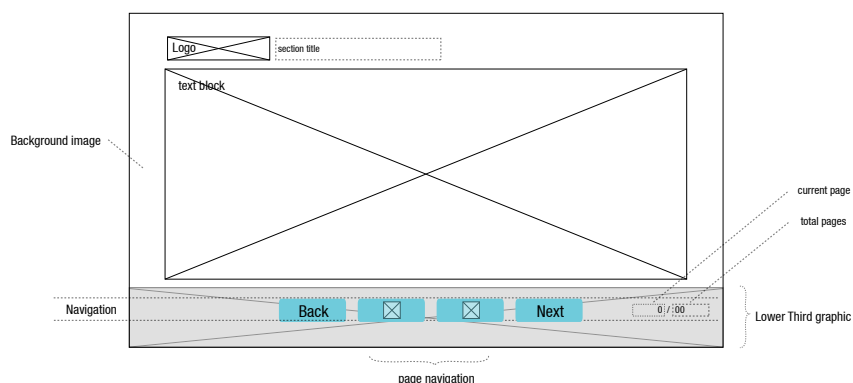
The most basic Text Screen has a simple 'back' button. **Key handling:** If OK then display the activated state, and then load the screen that was last in the history.

Text Screen (tabbed)



This is a multi-page text screen. Each page is loaded on the OK press of tabbed buttons along the bottom of the screen. The number of pages are limited to the pixel width of the button labels and spaces between them, which must fit in the text safe area (less than 1120 pixels). **Key handling:** if LEFT then move the focus to the next button on the left (except on the left most button, then do nothing). If RIGHT then move the focus to the next button on the right (except on the right most button, then do nothing). If OK then display the activated state and load the linked text block (save the 'back' button, described above).

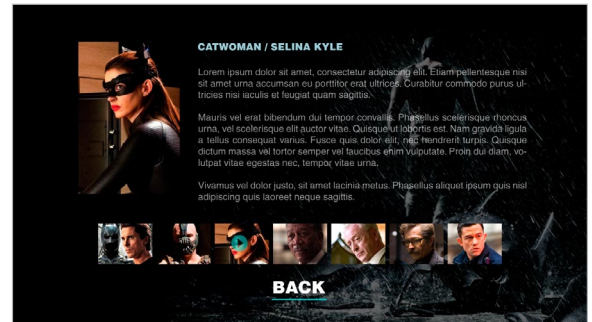
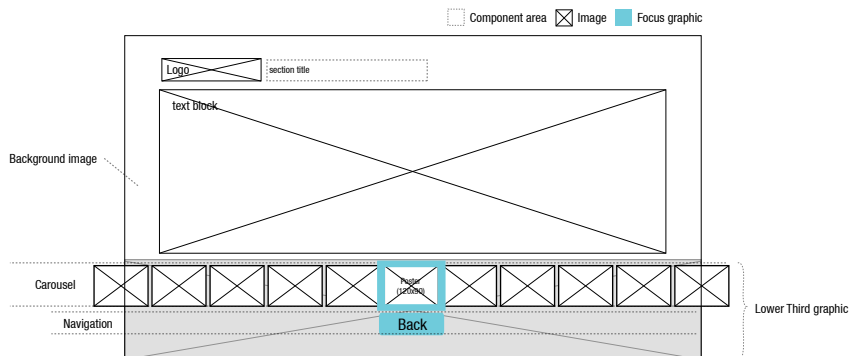
Text Screen (paged)



This is a multi-page text screen, with each page loading on the press of skip buttons. The number of pages are unlimited. There is an optional 'next' button for accessing the next article in a set of articles. In the lower right corner is a page indicator. **Key handling:** 'back' button and LEFT and RIGHT work the same as other text screens. If OK on the skip buttons then display the activated state and

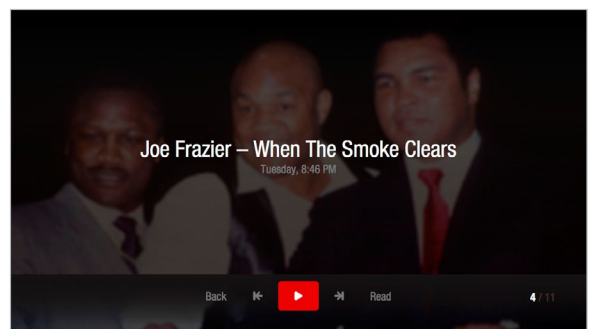
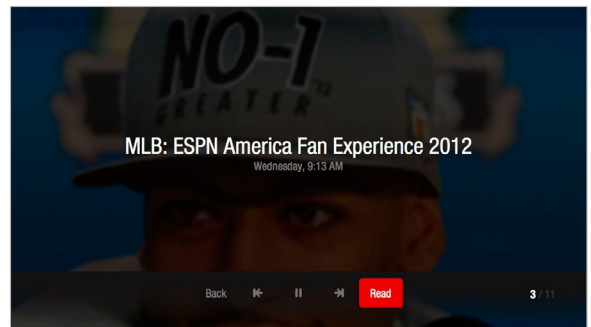
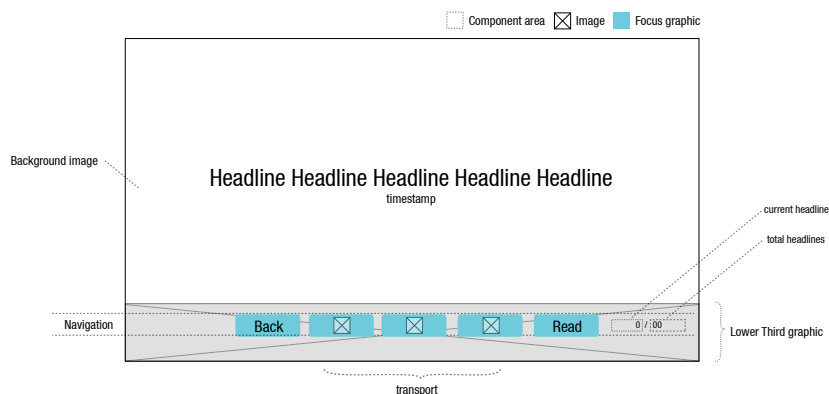
then recede/advance a page, except when at the first or last page, then wrap the array. (eg. last page +1 == first page). The skip buttons also work similarly with the SKIP BACK and SKIP FWD buttons on the remote control, with the difference that the focus will jump to the corresponding button upon remote press. If OK on the 'next' button, then show the activated state, and then load the text block of the first page of the next article and update the page number indicators.

Text Screen (magazine)



This version of the text screen is similar to the tabbed text screen, but uses a carousel of pictures instead of text buttons. The carousel behaves the same as the carousel component on the Carousel Screen. The 'back' button behaves the same as the basic text screen. **Key handling:** If OK on carousel image button then display the activated state and load the linked text block.

CONTENT DISPLAY SCREEN: Headline Player



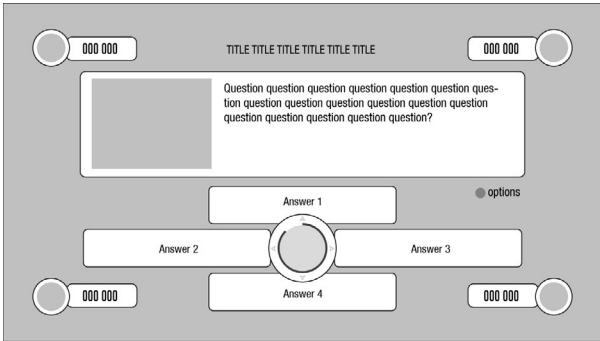
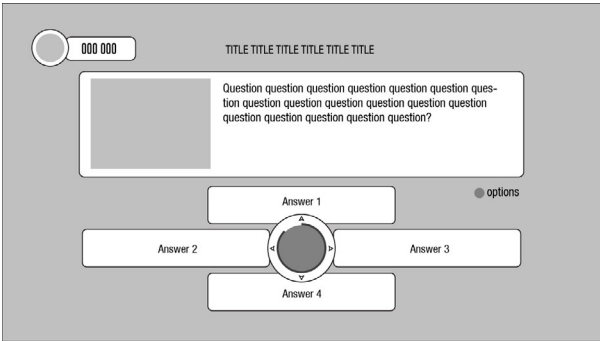
This screen takes short text content, like news headlines or Twitter entries, and displays them as a leanback experience. The text is displayed much like a slideshow (the headlines can be considered carousel items, with the slideshow duration variable controlling the timing) advancing automatically but also responding to user control. There are 3 on screen transport buttons, and an optional 'Read' button that links to a related screens (like a full article on a text screen). If there is a link to the headline then the initial state of the focus is on the 'Read' button. If there is no linked screen then the initial state is on the pause/play button. In the lower right corner there is a current headline indicator, which behaves similarly to a slideshow indicator. The headline has an optional timestamp line displayed underneath.

Headlines have the option of having a related picture displayed in the background as well.

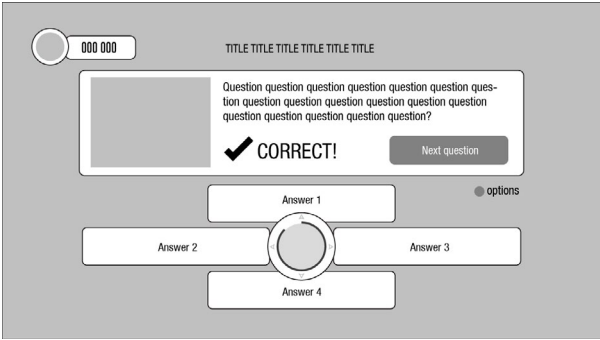
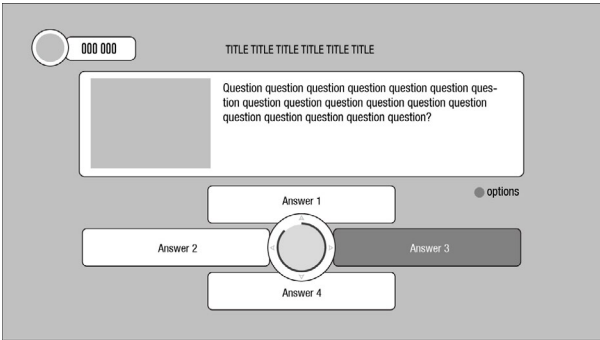
Key Handling: the menu behaves the same as the Slideshow Player, except the 'Read' button which behaves the same as the 'Next' button on the paged text screen.

CONTENT DISPLAY SCREEN: Quiz Screen

TO BE DETERMINED



Multiple player example

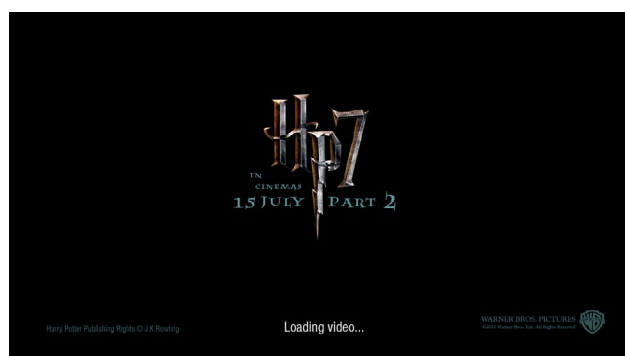
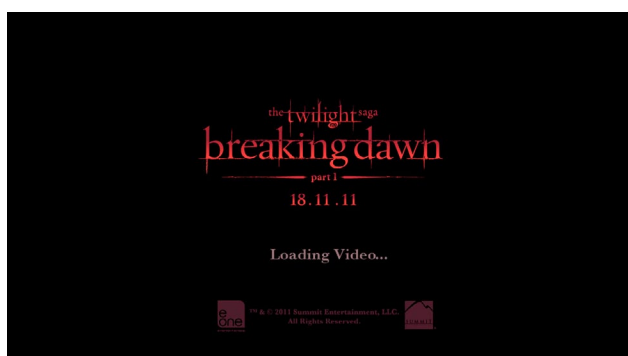
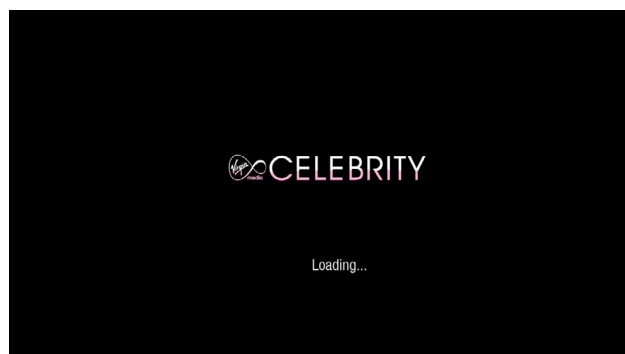
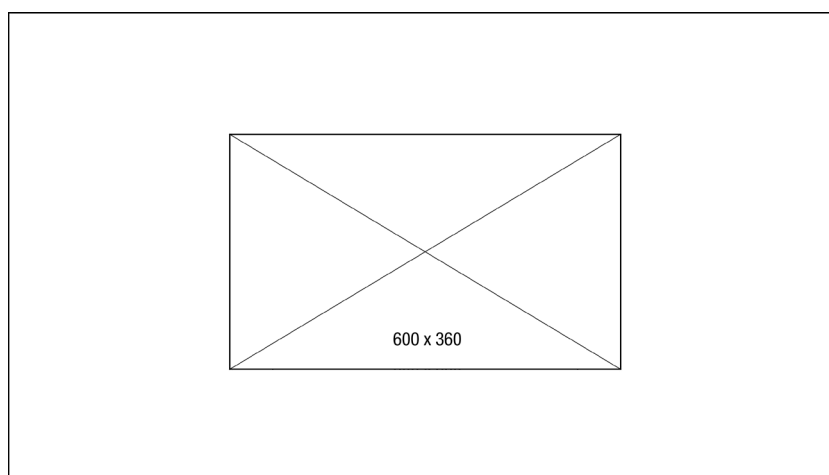


Single player example

SUPPORT SCREEN: Loading Screen

This screen is displayed while the app is loading. It's purpose is to reassure the viewer that loading is in progress, to provide a brief distraction during loading, and to prevent the 'dead air' of a black screen during the load from being mistaken for a malfunction.

There is always a black screen for a second or two when TiVo first runs Flash, so dead air can't be avoided entirely, but the Loading Screen displays as quickly as possible after the launch of Flash. To ensure a quick display the graphics should be kept to a minimum file size of 150 Kb and displayed on black. Graphics must be transparent PNGs. Logos should have maximum dimensions of 600 x 360, and animations should generally be avoided.



TO BE DETERMINED: rules for the display of trivia on the loading screen to distract from unusually long load-times.

SUPPORT SCREEN: Screen Saver

This screen is displayed after a long period of inactivity (governed by the trigger time parameter). Its purpose is to prevent screen burn-in while at the same time letting the viewer know the app is still running. Burn-in can sometimes occur if a static graphic stays on the screen in the same place for an extended period of time (this is more a danger with phosphor-based screens like CRTs and plasmas, but a similar image persistence can occur on LCD screens too, as individual liquid crystal pixels can get 'stuck' as they wear out). An image (usually the loading screen logo) along with an instructional message (default = "Press OK to wake up") jumps about the screen randomly, governed by the jump time parameter. The random positioning keeps the image and message in view (ie. does not get cut off, so in a sense there is collision detection along the edges). **Key Handling: if OK then the Screen Saver disappears and the screen returns to the state it first went to sleep in.**

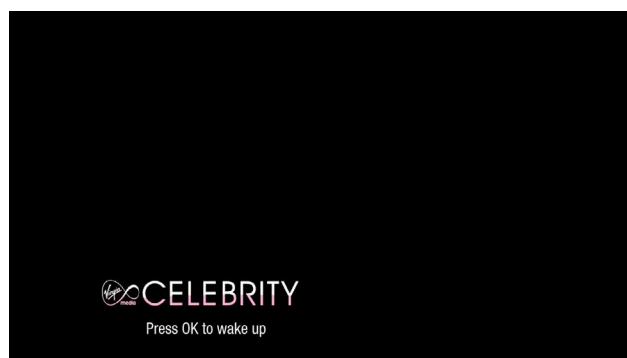
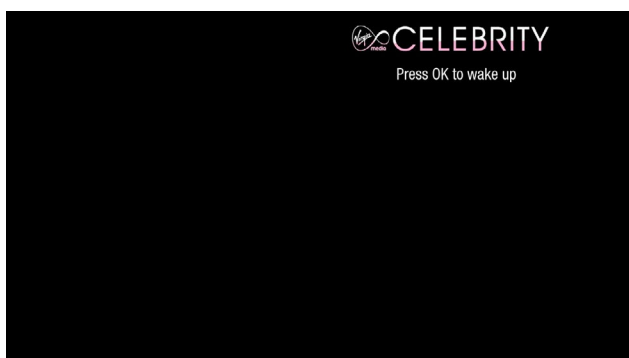
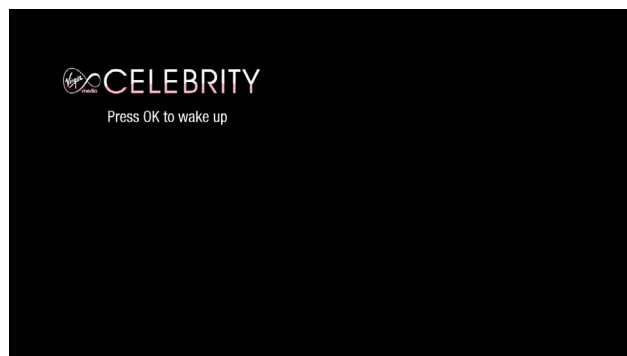
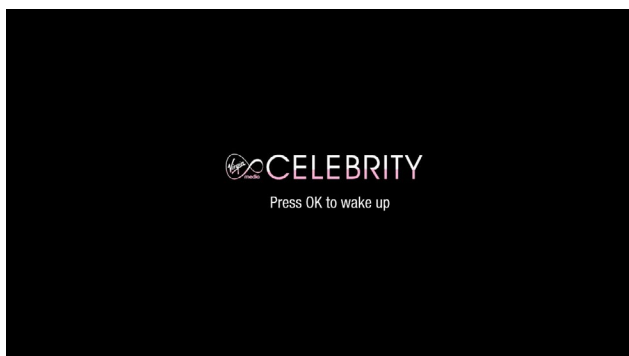
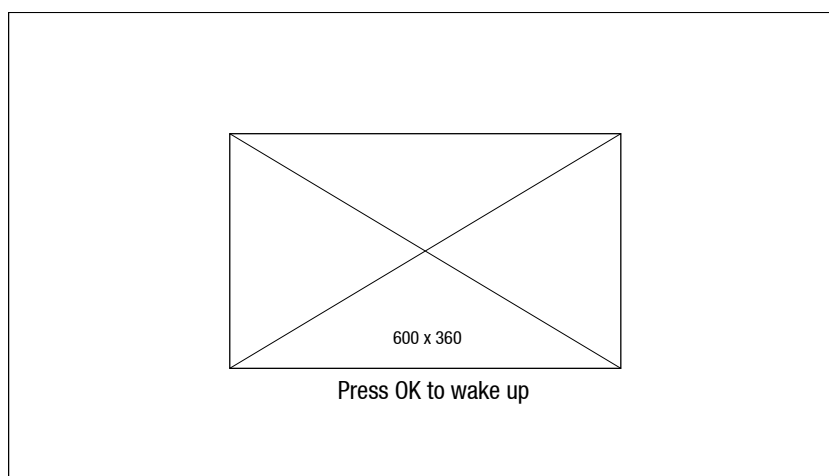


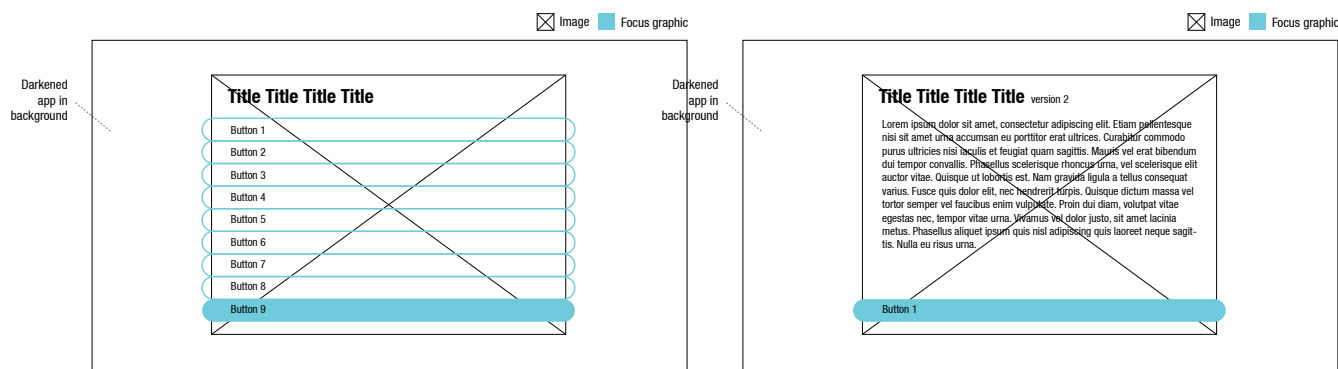
image and instruction text randomly jumps to different positions on the screen.

SUPPORT SCREEN: Pop-up

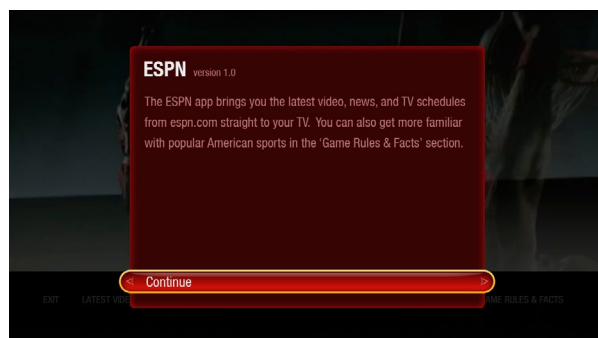
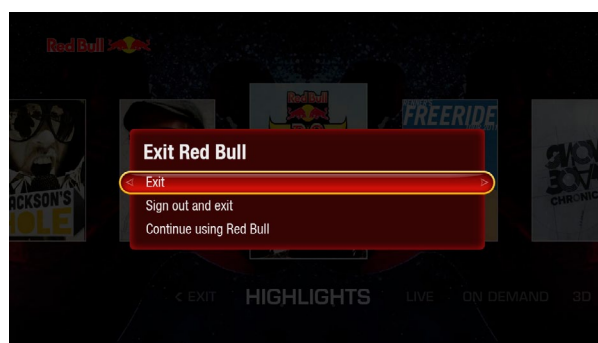
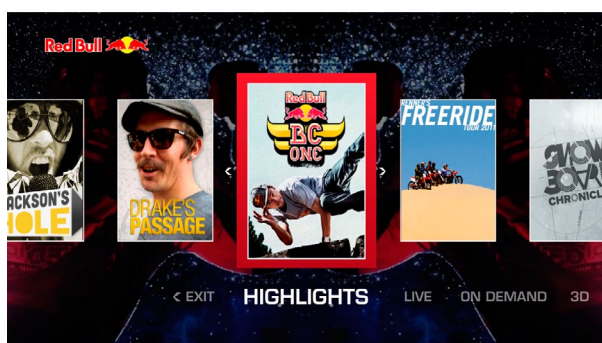
Pop-up Parameters

background	JPG or PNG of the background panel.
entry text	Optional string. Default text in the text entry field.
font size	Size in points of the message font.
foreground	PNG of an overlaid graphic.
height	Height in pixels of the pop-up.
keyboard	Boolean. 'Yes' means the pop-up has an on-screen keyboard.
menu	Vertical menu text buttons.
menu item	Text button name. Must be at least 1 button, maximum 9.
message	String. Text block that has a message or instruction pertaining to the pop-up
position	X coordinate of the centre of the pop-up (default 640).
title	Optional string. Name of pop-up
version name	Optional string. Version number designation.

Pop-up windows are used if part of a task or message does not fit on the current screen, but also does not warrant an entirely new screen. When activated the focus hides from the parent screen and appears on the first pop-up button, of which there can be a total of 9. The parent screen is also dimmed using a dark overlay so that a clear separation can be seen between the pop-up and the background.



Pop-ups can be used for a column of buttons, or simply display a message with a "Continue" button.



Parent screen

Pop-up over parent screen

SUPPORT SCREEN: Pop-up (text entry)

TO BE DETERMINED

