Exhibit F

Competitor Analysis

GUI Benchmarking

2009 GUI Framework

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04/2008	SDE Wireless UI

sde samsung design | europe

1 Introduction
2 Handsets Overview
3 Music
4 Camera
5 Browser
6 DaCP
7 User Engaged GUI
8 Messaging

1 Introduction

1.1 Introduction

The 2009 GUI Competitor Analysis aims to document, understand and analyse competitors as well as Samsung mobile GUI design. Its purpose is to measure degrees of design coherence and trends in order to inform the creation of a European visual style and for Samsung as well as to preserve differentiation and ownership of that design strategy.

It is also important to evaluate the approach and success of European mobile GUI design as a whole in order to understand what is considered appropriate for the European market.

The mobile GUI design research is conducted on 14 handsets including Samsung models. Research is divided into three parts of which this document is the 'GUI Benchmarking' section:

- Expert Reviews
- GUI Benchmarking
- 2005-2008 Mobile GUI Strategy

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1.2 Introduction

The complete Competitor Analysis includes the following parts –this current document is the 'Visual Mapping' section.

Expert Reviews

Expert reviews look at each of the handsets in a more individual manner. General GUI including 'Main Menu', 'Iconography', and 'Typography' are considered. A matrix including design examples of all models is also included in order to compare as a group.

GUI Benchmarking

2-3 handsets (including 1 Samsung model) with similar offerings, such as 'Music' or 'Camera' are specifically compared and contrasted against each other.

2005-2008 Mobile GUI Strategy

The strategy and implementation of GUI is examined across major handset manufacturers from 2005-2008

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1.3 Introduction

The GUI Benchmarking looks into evaluating mobile devices which provide key offerings or high-end experiences in applications or features such as 'Music', 'DaCP' and 'Messaging'. Within sections dedicated to a particular application or feature, certain handsets will be studied and evaluated individually.

At the end of each of these sections the handsets will all be compared, or 'Benchmarked', against each other. A Samsung model will appear in each section in order to help identify opportunities and strengths in our own offering.

The end goal of this exercise is to determine which manufacturers and products are the most successful in particular features within the current market. We also hope to identify opportunities for Samsung to evolve current applications, features and offerings.

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2 Handsets Overview

2.1 Manufacturers & Models

Samsung	Soul	G600	G800	Lollipop
Apple	iPhone			
Sony Ericsson	S500i	W910i	K850i	
Nokia	N81	6500 Classic		
Motorola	Motorazr2 V8	Moto U9		
LG	Viewty	KF600 Venus		

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2.2 Samsung Models

Samsung Soul

Dual-screen slider with HSDPA high-speed data and a 5 megapixel digital camera, DaCP navigation and B&O enhanced audio.

G600

This Samsung slider is a 5 megapixel camera phone with flash and auto focus, music player and user-generated GUI design

G800

The G800 is a 3G camera phone which comes with a tactile slide opening system, good quality features & technologies. It also comes with a large 2.4 Inch colour screen, FM radio, music player & an amazing 5 megapixel camera complete with two flash options

Lollipop

The Samsung Lollipop (a.k.a F330 Music) slider is a music phone with a 2-megapixel camera as well as dedicated music hard key and controls.

Samsung Soul

Samsung G600

Samsung G800

Samsung Lollipop

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2.3 Apple Models

iPhone

Although released nearly a year ago, the Apple iPhone has maintained its position as the most inspired mobile handset on the market.

Coming loaded with full-touch interaction and a highly animated interface, the iPhone is a delight to the eye as well as a highly usable device.

Comes with: iPod music player, iTunes, Wifi, Safari browser, GPS, email and many other applications.

Apple iPhone

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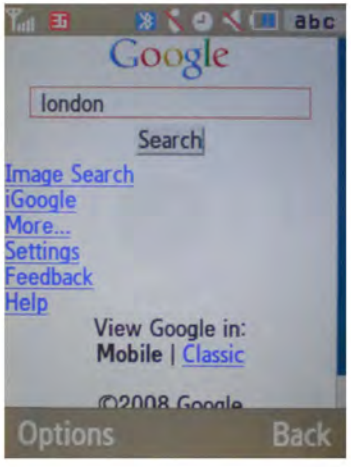
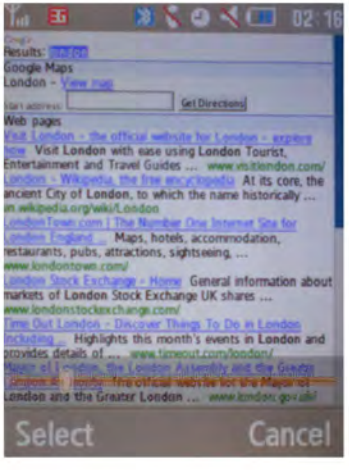
5 Browser

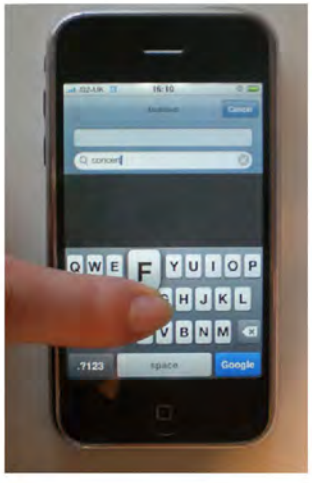
5.1 Browser Overview

Samsung
Soul

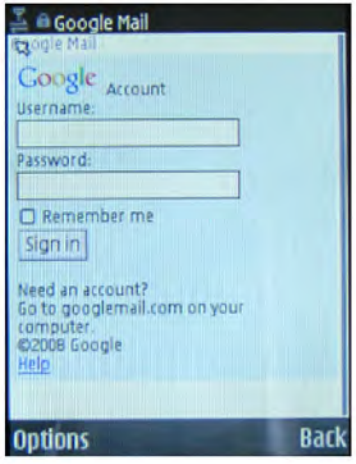


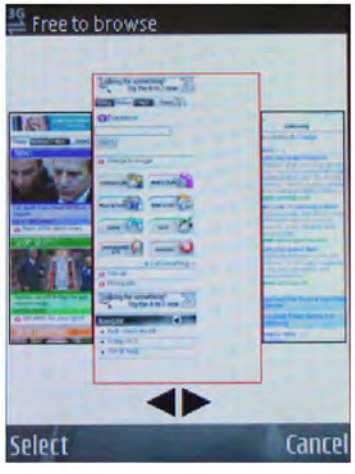


Apple
iPhone



Nokia
N81





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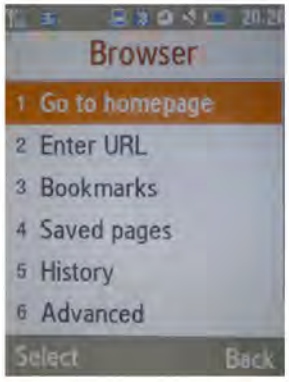
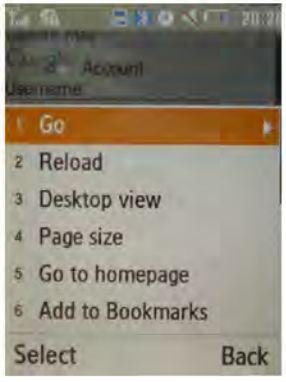
5.2 Browser – Samsung Soul

- Standard mobile browser
- Indicator bar and soft-key area same as normal phone UI
- Features include:
  - Input URL
  - Create bookmark
  - Change screen size (zoom)
- Searching happens in the Google web page
- ⊕ Samsung Fun Club website provides music info, music tones and current news
- ⊕ Google search provided as a quick link from Idle
- ⊖ Zooming widget is hard to see
- ⊖ Multiple browser windows are not a feature
- ⊖ Pages take long to load
- ⊖ Navigation between pages (back/forward) is done through the options menu
- ⊖ No page loading animation or notification

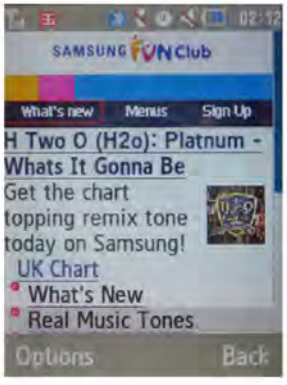


Browser Home

Google Search



Browser Options



Samsung Fun Club

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5.3 Browser – Apple iPhone

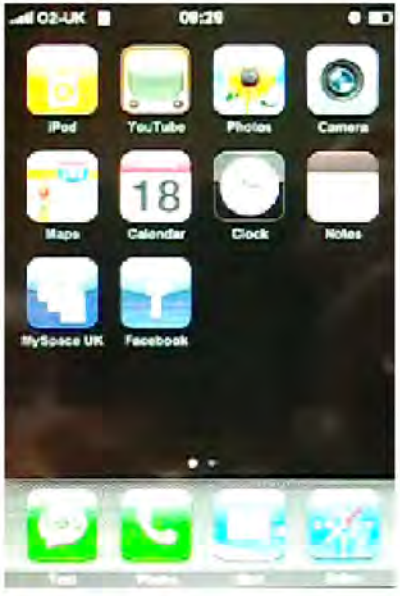
- Browser name branded: 'Safari'
- Same browser, with similar look, appears on Apple computers
- Features include:
  - Bookmarks – copied from pc bookmarks – also from Windows Internet explorer bookmarks!
  - Add Bookmark
  - Multiple Browser Windows
  - Add web-link (as icon-button) to Home Screen (Idle Screen)
  - Search using Google Toolbar
  - Seamless and fluid navigation
  - Virtual keypad for text entry with word predict
  - Customised Pull-down widget GUI
- Many websites created to appear on mobile platforms look as if they were tailored for Safari
- Touch interaction enables easy navigation, zooming and link selection
- Simple GUI gives emphasis to internet content
- Browser in portrait or landscape view

Browser Window

Adding Link to Idle Screen

Google Toolbar - Search

Multiple Browser Windows



Landscape Browser View

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5.4 Browser – Nokia N81

- No branded browser is used.
- Landscape view is available.

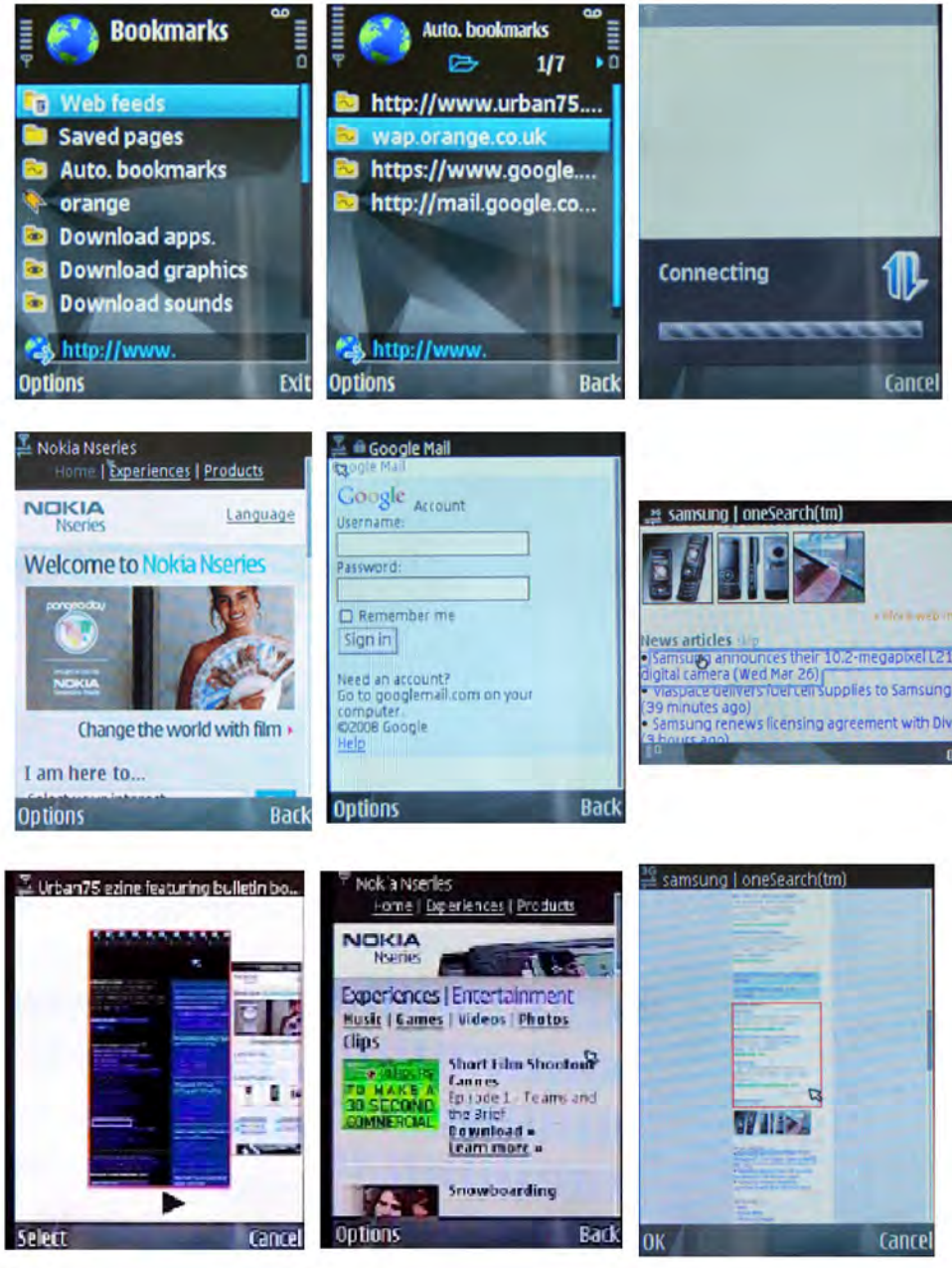
⊕ Treat history as auto bookmarks.

⊕ Multiple windows view allows quick access to previously browsed pages.

⊕ Provide dedicated product page, i.e. Nseries.

⊕ As user navigates down a page, a preview image of the entire screen pops up to show where the user is currently located

⊖ Zooming in and out is awkward, via option menus.



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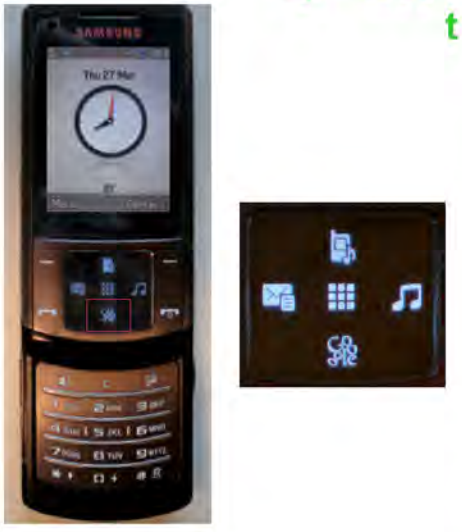
5.5 Browser – Product Design & Browser Access (Hard-key)

Samsung
Soul

Best



Apple
iPhone

Nokia
N81

- Samsung Soul has DaCP ‘Google’ link which opens up Google search engine
- Samsung Browser hard-key assignment has changed from older models where it was accessed via centre key
- No hard-key access on the iPhone
- Nokia N81does not have a direct hard-key to browser; browser is accessed via short-cuts hard-key

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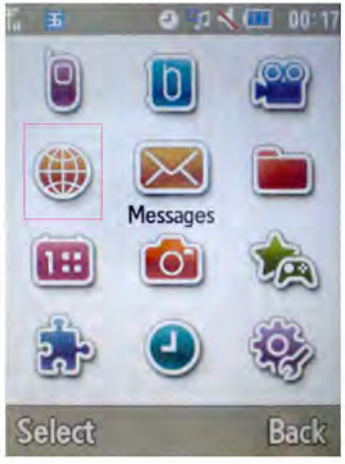
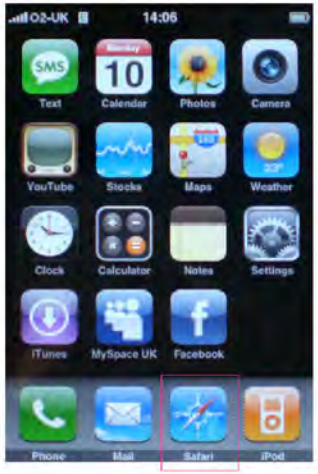
5.6 Browser – Main Browser Access (UI)

Samsung
Soul



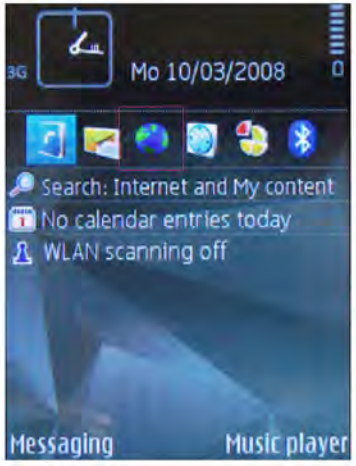
Apple
iPhone

Best



'Safari' Button on main menu

Nokia
N81



Browser icon on idle screen

- Samsung Soul has brown browser icon located one stop away from 'Messaging' on main menu
- iPhone provides Safari button in main dock on main menu
- Browser button on iPhone is branded with PC browser name
- Nokia N81 provides link to browser on idle screen
- iPhone has the quickest access to browser – has advantage of touch-interaction

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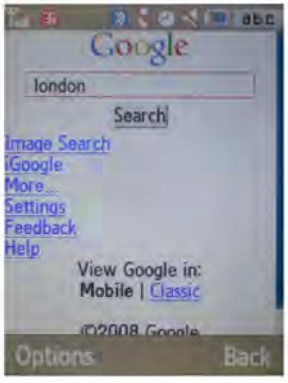
5.7 Browser – Browser Window

Samsung
Soul



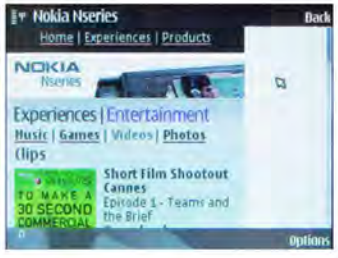
Apple
iPhone

Best

iPhone optimised websites

Landscape Browser View

Nokia
N81



- Landscape mode should be available as an option
- Samsung Soul has basic mobile handset browser experience – complete with status bar and soft-key options
- Samsung Soul and Nokia N81 use ‘Options’ menu to interact with browser window
- Samsung and Nokia have Browser library screens which appear after browser is selected from main menu
- iPhone goes straight to browser window when ‘Safari’ button is selected
- iPhone provides a full internet feature, complete with real browser, easy navigation and more pc-like experience
- iPhones provides tailored mobile web portals such as facebook and youtube

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5.8 Browser – Navigation and Zooming

Samsung
Soul

Apple
iPhone

Best

Nokia
N81

- Samsung Soul has basic up/down and left/righ navigation via the 4-way navigation hard-keys
- Every link available on the screen is highlighted when Samsung Soul navigates down the page
- Samsung Soul has dynamic zoom in/out
- iPhone has advantage of touch-interaction which makes navigation, zooming and selection easy and intuitive
- Special widgets are provided for pull-downs and entry forms in iPhone experience
- Nokia N81 zooming is primitive and is accessed via options menu – limited to 4 different zoom options
- Navigation of screen is smooth and fluid on Nokia N81
- Screen thumbnail view carousel is provided for Nokia's website history view

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5.9 Browser – Multiple Browser Windows/Tabs

Samsung
Soul

N/A

Apple
iPhone

Nokia
N81

N/A

- Only iPhone provides multiple browser windows experience
- Browser windows can be added/deleted
- Browser windows can be navigated in an animated carousel widget
- Nokia provides a similar visual navigational experience for web history of one open browser window but does not provide multiple browser window experience

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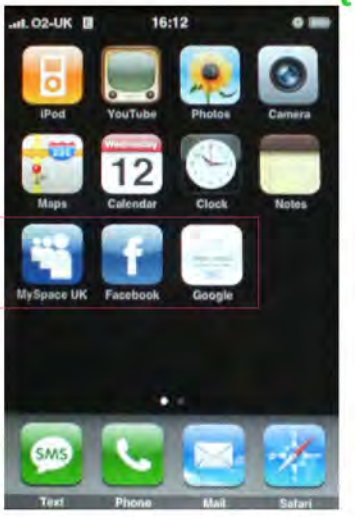
5.10 Browser – Bookmarks and Links

Samsung
Soul

Apple
iPhone

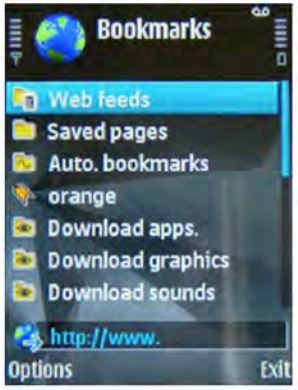
Best

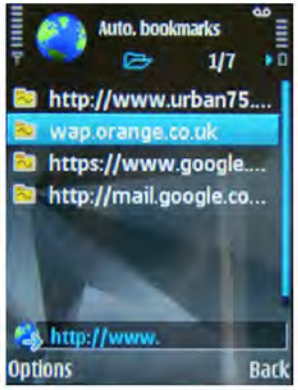


Custom web-links on Main Menu

Normal bookmarks

Nokia
N81





- Samsung Soul provides standard bookmarks in a list-structure in a bookmarks folder
- iPhone syncs with PC to gather all PC browser bookmarks (also from other browsers such as IE)
- Bookmarks created on iPhone are saved on PC when synced
- iPhone allows the creation of a bookmark button on main menu
- Nokia provides auto-bookmarks for previously visited pages – more like a history
- Nokia provides standard bookmarks in a list structure in a bookmarks folder

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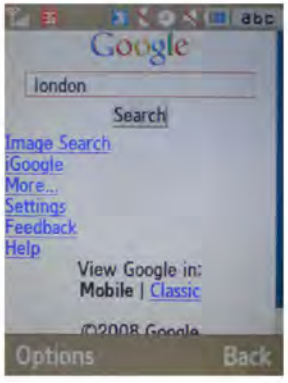
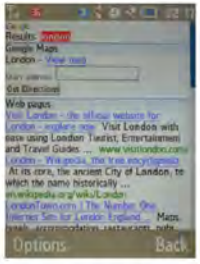
5.11 Browser – Searching

Samsung
Soul





Search Results

Google Menu

Apple
iPhone

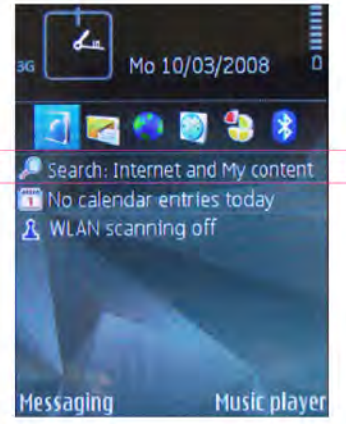
Best

Google Search Toolbar

Search Results

Google Mobile

Nokia
N81



Search Results

Yahoo Search

- Screen sizes for Samsung and Nokia are half of that of iPhone
- Small screen size compromises browser view
- Samsung Soul provides a quick link from DaCP to Google Search in browser library
- iPhone has google search toolbar provided on every screen
- Search results on iPhone appear in the same manner as search results on the PC
- No special 'Search' provision given on Nokia N81- must type in URL of search engine to access search from browser
- 'Search on internet or in phone' option provided on idle screen on Nokia

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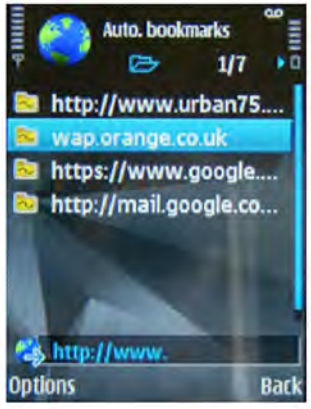
5.12 Browser – Entering URL

Samsung
Soul

Apple
iPhone

Nokia
N81



- Samsung Soul has URL enter in main Browser library screen
- Samsung Soul provides 'Go to' URL in options menu in browser
- iPhone provides 'enter URL' experience on every screen
- Nokia N81 provides 'Go to Web Address' in options menu in browser

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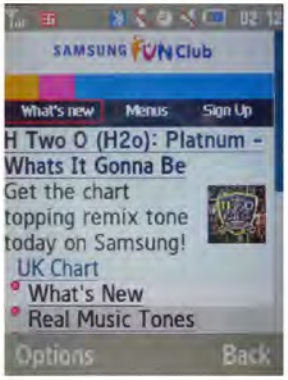
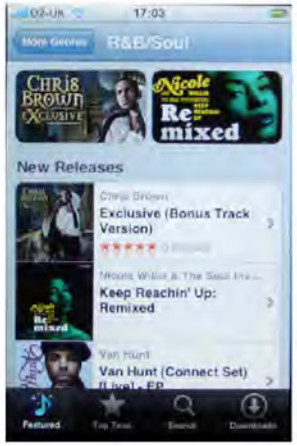
5.13 Browser – Other internet based services

Samsung
Soul



Samsung Fun Club

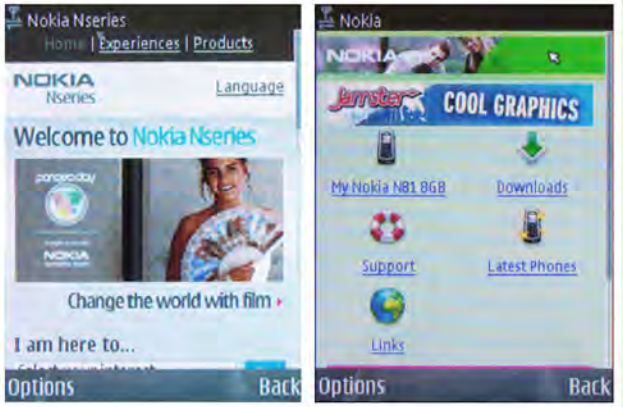
Apple
iPhone



iTunes Mobile Music Store

Nokia
N81

Best



- Samsung and Apple provide music centric services
- Samsung Funclub site appears primitive and outdated – an old WAP site
- Apple provides PC services such as iTunes
- Apple and Nokia provide mobile tailored sites
- Apple does not provide default bookmarks for Apple products and services
- Mobile iTunes is not accessed via the browser but by its own button on main menu
- Nokia provides default bookmarks for Nokia/N-Series information, support and services

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5.14 Browser - Summary

Samsung Soul

- Quick access to Google search via the DaCP
- Dynamic zooming in/out feature
- Searching is functional
- Standard/Low browser experience
- Poor navigation
- Samsung mobile websites appear basic and primitive
- Browser window is basic and browser interaction is conducted via options menu
- Page navigation requires highlighting every provided internet link – it is not smooth or fluid
- No multiple browser windows
- Bookmarks and links are basic

Apple iPhone

- Full internet experience
- Safari branded browser
- Portrait and landscape views
- Easy navigation and zooming
- Multiple browser windows
- Can enter URL on every screen
- Google search toolbar available on every screen
- Direct access to browser after initial main menu selection
- Advanced bookmarks experience – with PC sync and main menu buttons
- Syncs with other PC browsers
- Mobile iTunes provided – but not through browser
- No default bookmarks for Apple support or services

Nokia N81

- Browser access is available on the idle screen
- Portrait and landscape views
- Standard Browser experience
- Navigation is fluid
- Animated carousel displays history view
- Screen thumbnail layover provides info on screen position
- Provides default bookmarks for Nokia products and services
- Zooming is not intuitive and must be accessed via options
- Search, as a function, is only available via the idle screen

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