Usability Guidelines for 3G Mobile Internet
: A Korean Case

Version 1.0

Usability Guidelines for 3G Mobile Internet
: A Korean Case

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http://www.teaminterface.com
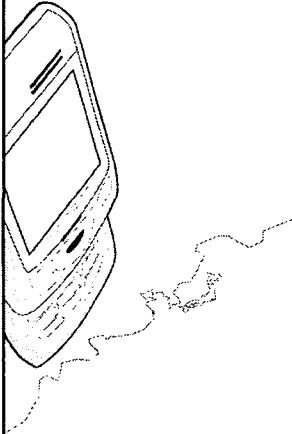http://uidesign.co.kr

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Slide 1

About Team Interface

Slide 2

Team Interface?

- UI Consultancy in South Korea.
- Founded in 1996

- **User Research / Evaluation**
  - User Satisfaction Research
  - Survey
  - Focus Group Interview
  - Ethnographic Research
  - Usability Test
  - Expert Review
- **Interface Design**
- **Visual Design**
- **Knowledge Service**
  - Seminars
  - Publishing
  - www.uidesign.co.kr

- Mobile
- Web
- S/W
- Ubiquitous

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Clients

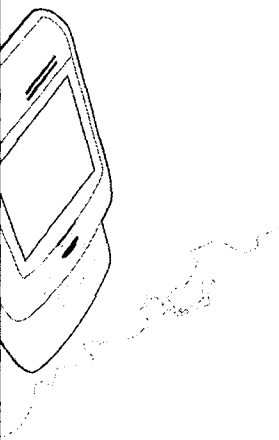| Mobile	World Wide	Web	S/W & Application

SK Telecom

N∕∕∕∕TE

SK Teletech

SAMSUNG

maxon

KTF

WiderThan.com

i∕Market

(hp)

IBM

SAMSUNG

SAMSUNG

LG Electronics

LG CNS

NN/g

Marriott

EXPERIENCE

SUPERPAGE

재보은행

Korea.com

hitel

intizen

KYOBO Trade

:Hansol

Auction

MERITZ

N∕∕∕∕TE

미우등급

KYOBO

KT Commerce

Buy Joy

korea if 3.com

주택은행

IMBC.com

MOBIS

OULLIM
SECUREWORKS

POS∂ATA

HANDYSOFT

KEPCO

*Penta*SECURITY

SAMSUNG

Interface

Section Ⅰ. Introduction

- Background
- Analyze model & Evaluation Methods
- Goals
- Mobile Internet Market in Korea

Background

Saving Private Ryan ??

A Mobile Project RFP From Global Company

7

Mobile Internet Market in Korea

▷ Wireless Internet market situation in Korea (2003)

Number of mobile internet users	Traffic of EV-DO service after 'Promotion Rate' started

91% of total subscribers

Rapidly growing its potential, Yet oriented to Market & Technology

Why & How ?? , Blocking elements?

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Perception Model & Evaluation Methods

Exposure
- Environment Analysis
- User Analysis
- External Stimulus Analysis

•Survey
•Observation
•Ethnography

- Satisfaction
- Reliability

• Survey
• Lab Testing
(Questionnaire)

Satisfaction

Recognition

- Service Recognition Analysis
- Expected Benefit Analysis

• Survey
• Interview
• F.G.I

Access
- Accessibility
- Access Inducement Analysis

• Heuristic Evaluation
• GOMS
• Lab Testing

Use

- Visibility Analysis
- Obtainability Analysis
- Convenience Analysis
- Consistency Analysis
- Mobility & Manipulation Analysis

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Perception Model & Evaluation Methods

Survey

Heuristic
Evaluation

Width (Statistics)

GOMS

Combined Analysis

Lab
Testing

Observation
Ethnography

Depth (Mental Characteristics)

FGI

Recommendations

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Goals

▷ **Mobile Usability Study in Progress**   ▷ **Session objectives :**

Step 3 — Global

Step 2 — Asia

Step 1 — Korea

Result of Each User Research

3G Mobile Internet Guideline

3G Mobile Internet Considerations

Attributes of Korean users

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Mobile Internet Market in Korea

Company' A'   Company 'B'
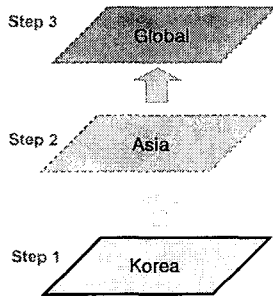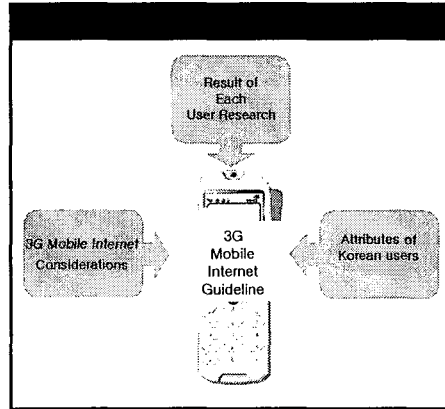
Browser-based	Text_based contents + Low-volume Multimedia contents
Platform-based	Low-volume Multimedia contents + Application Service
EV-DO	High-volume Multimedia contents

Type 1
Browser-based service

Type 2
Browser-based service
+ Platform-based service

Type 3
Browser-based service
+ Platform-based service
+ EV-DO-based service

As of 4Q, Yr 2003

12
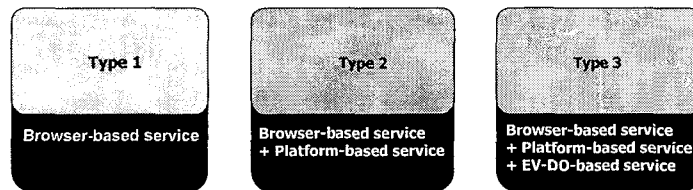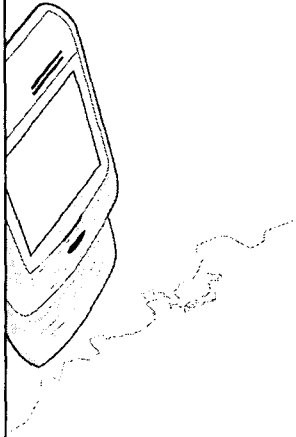
Section II . Results & Guides

- Exposure
- Recognition
- Access & Use
- Satisfaction

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Results & Guides

Analyze by the sequence of the Perception Model with the results of each methods

7 Main Guides & 32 Sub Guidelines to be considered

Guideline for 3G Mobile Internet : Korean Case

Exposure → Recognition → Access → Use → Satisfaction

| Guideline 1. | Guideline 2,3,4,5,6. | Guideline 7. |

From the mobile internet environment and use patterns in Korea

From the Five obstacles to the use of mobile internet services in Korea

From the elements that effects user satisfaction
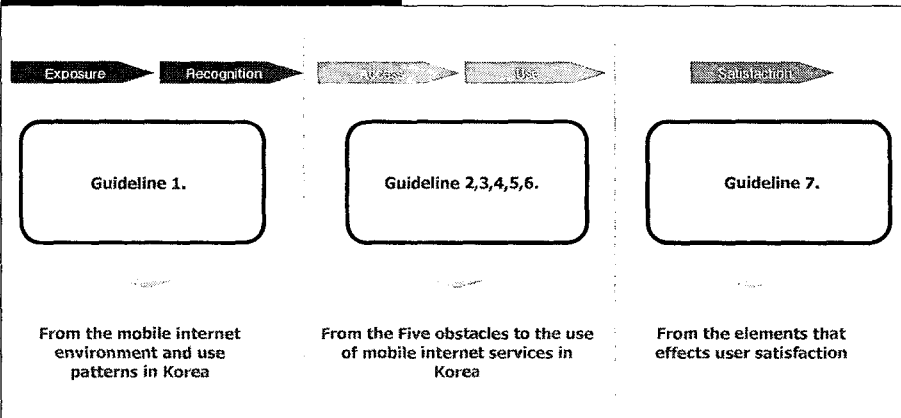
Results & Guides

Exposure

It is very important to provide the user-centered service(interface) that reflects the specific environment of the target group as well as developing the contents and technologies

Ex 1. Mainly Used Places

(%)

Total　13~18　19~24　25~29　30~39　Age
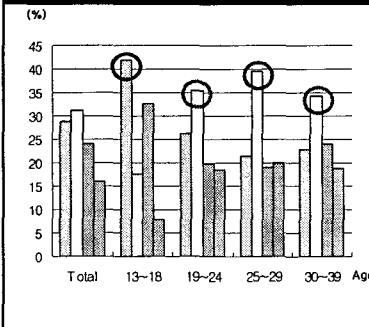
- Home
- Public transportation
- Office/School
- Public Places

Ex 2.The Mobile Internet Environment by Each Age

Age 13~18	Age 19~39
During Meal/ Break	While moving
Home/ School	Public transportation
Miscellaneous	Miscellaneous
Killing Time	Killing Time

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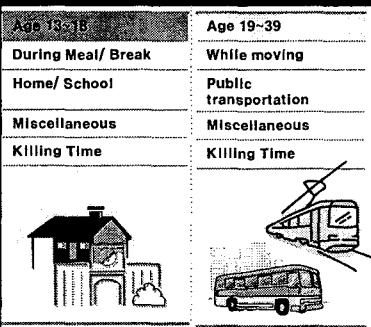
Results & Guides

Exposure

Ex 3. Killer Contents : 1G, 2G

VCD　Life/Info　Game/Animation　Miscellaneous
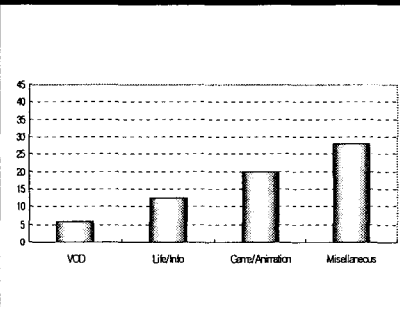
Ex 4. Killer Contents : 3G (Forecast)

VCD　Life/Info　Game/Animation　Miscellaneous

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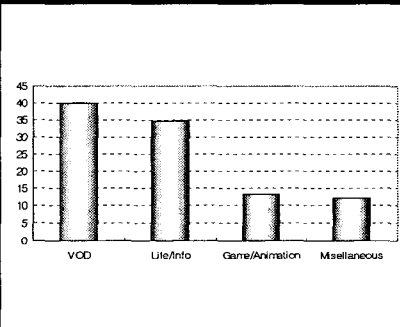
Results & Guides

Recognition

People perceive what they want

Evaluation Result : x 1. Recognition Accuracy on Mobile Internet Services

SP 'A'
SP 'B'

| | Browser-based Service | Platform-based Service | 3G-based Service |

Easy to use - Usability is the key | Team Interface Co., Ltd
All rights reserved. Team Interface Co. Ltd. 1996~2003   http://www.teaminterface.com   http://www.uidesign.co.kr
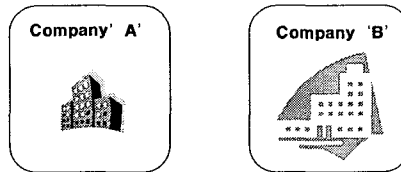
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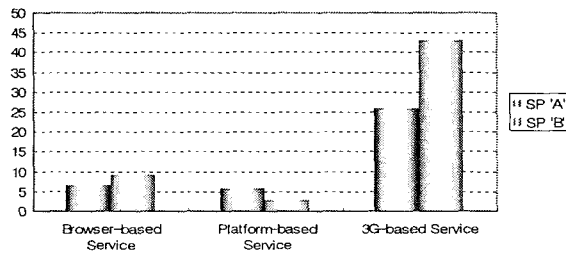
Results & Guides

Exposure & Recognition

Guideline 1.

Provide contents reflecting Korea's mobile internet environment

☞ Sub Guideline 1-1. Put frequently used menus or control buttons where one-handed handling is possible (especially, the thumb), in order to make it easier to use the mobile internet. (in hostile environment)

☞ Sub Guideline 1-2. Provide an option through which users can use the VOD service as much time as they want, and select the point they want.

Boundary of movement

Major direction of traffic line

(a) Traffic line of a thumb

0.44cm

OK

0.49cm

OK

(b) Size & Position of OK button

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- 83 -
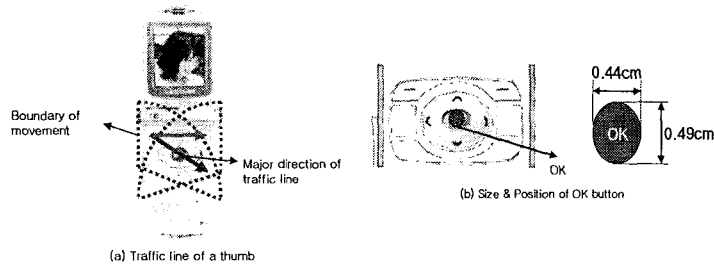
Results & Guides

Access & Use

The 5 usability obstacles in 3G mobile internet found during the study.
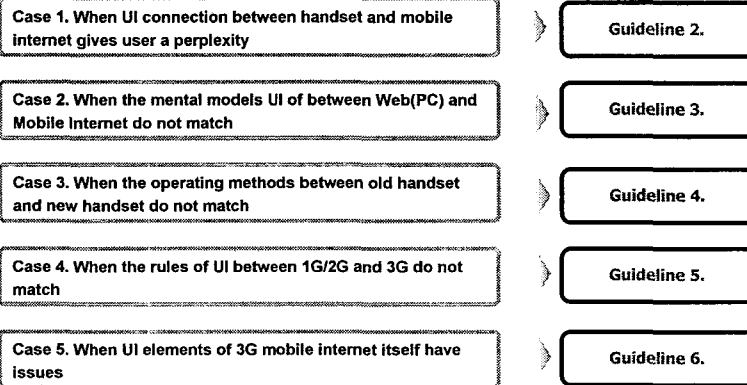
Case 1. When UI connection between handset and mobile internet gives user a perplexity	Guideline 2.
Case 2. When the mental models UI of between Web(PC) and Mobile Internet do not match	Guideline 3.
Case 3. When the operating methods between old handset and new handset do not match	Guideline 4.
Case 4. When the rules of UI between 1G/2G and 3G do not match	Guideline 5.
Case 5. When UI elements of 3G mobile internet itself have issues	Guideline 6.

Results & Guides

Access & Use

Case 1. When UI connection between handset and mobile internet gives user a perplexity

Problems incurred due to the inconsistency between handset UI and mobile internet UI.

Korean users expect
•to us e the function controls through both handset and mobile internet in a consistent manner
•tha t online 'services' to be clearly divided from the offline 'functions'
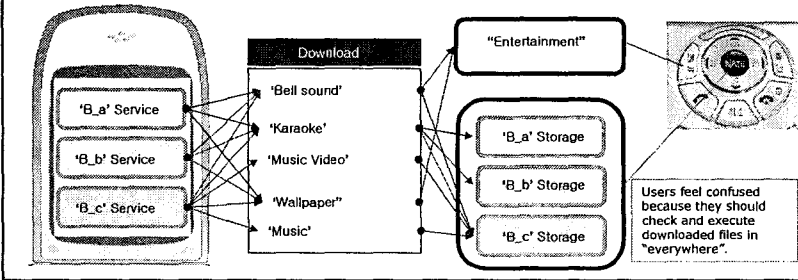
Results & Guides

Access & Use

Case 1. When UI connection between handset and mobile internet gives user a perplexity

Ex 1.Excecution and Mangement of Downloaded File

"Entertainment"

Download

'B_a' Service
'B_b' Service
'B_c' Service

'Bell sound'
'Karaoke'
'Music Video'
"Wallpaper"
'Music'

'B_a' Storage
'B_b' Storage
'B_c' Storage

Users feel confused because they should check and execute downloaded files in "everywhere".

Don't ignore the office experience from handset usage

Guideline 2.

☞ Sub Guideline 2-1. Make it possible for users to naturally connect to the mobile Internet when using a mobile phone. Apply the same control functions as those from the handset, to the mobile Internet service

☞ Sub Guideline 2-2. Provide space where users can consistently manage all of the files downloaded through the mobile Internet in the handset.

Results & Guides

Access & Use

Case 2. When the mental models between UI of Web(PC) and Mobile Internet do not match

**Users tend to obtain same functions from the new media
as those from the old (familiar) media.**

Korean users expect the mobile internet
- to provide the same quality and volume of information as the wired web
- to provide the same control tools as the wired web
- to manage the information in the same way as a PC

Results & Guides

Access & Use

Case 2. When the mental models between UI of Web(PC) and Mobile Internet do not match

Ex 1. Navigation Flow of VOD Player

▶ Play ■ Stop

Goes back to the default screen preceding video activation

(a) VOD Player on the Web

▶ Play ■ Stop

81% Negative Responses

(b) VOD Player on the 3G mobile internet service

Don't make the wired web-based experience useless

Guideline 3.

☞ Sub Guideline 3-1. Provide the same button layout for effective manipulation of VOD player and PC application player.

☞ Sub Guideline 3-2. Make the system respond in the same way as PC or Web, when manipulating the buttons of VOD player.

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Results & Guides

Access & Use

Case 2. When the mental models between UI of Web/PC and Mobile Internet do not match

Evaluation Result : Ex 2. Expectations on Search results

Search result of Web

Search result of 'B' SP

'Sort by' option

Explanation in brief

Category of the information

Reliability & Popularity

Results are listed evenly

Don't make the wired web-based experience useless

Guideline 3.

☞ Sub Guideline 3-3. Display search results sorted by the reliability of the information.

☞ Sub Guideline 3-4. List search results to make it possible to classify the information by type.

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Results & Guides

Access & Use

Case 3. When the operating methods between old handsets and new handsets do not match

Difficulties - the operating method after replacement of handsets

Frequently incurring the replacement of mobile handset
Number Portability / Integration Policy is HOT

	SKT->KTF	SKT->LGT	Total	SKT # of Subscribers
Number	85,787	49.226	135.013	18.159.900
%	63.5%	36.5%	-	0.7%

▪ As of 12 Jan 2004 / Korea Information Technology Development Institute

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Results & Guides

Access & Use

Case 3. When the operating methods between old handsets and new handsets do not match

Evaluation Result : Ex1.Connection Process	Evaluation Result : Ex 2. Button Layout
Ways to Connect Mobile Internet	Two major HM's Layout of Hardkeys
1. "Mobile Internet" -> "OK"	
2. "Mobile Internet" for 2 sec	
3. "Mobile Internet" -> "Mobile Internet"	

Guideline 4.

Overcome the Shift-Barriers

☞ Sub Guideline 4-1. Provide the operation methods of all the mobile handsets in the same manner to the extent possible.

☞ Sub Guideline 4-2. Provide the basic operational buttons (OK, arrow key) for the mobile internet in an identical manner after identifying the most popular operational type.

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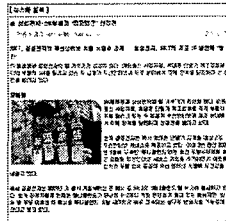SOCIETY OF KOREA.

Results & Guides
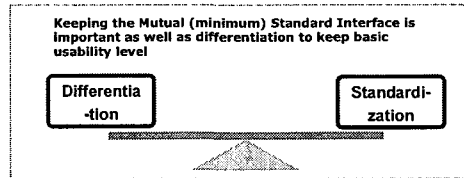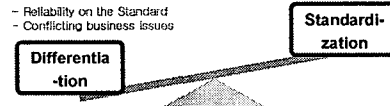
Access & Use

Case 3. When the operating methods between old handsets and new handsets do not match

CF>

Issues between SP & HM : Standardization VS Differentiation
"Will it boost up the efficiency of usability of actual service?"

An article about the conflict

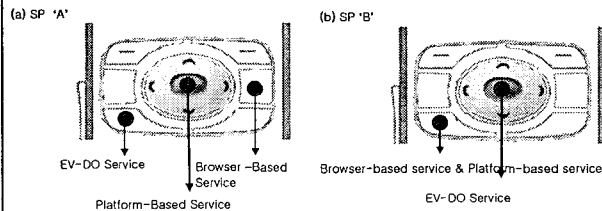- Reliability on the Standard
- Conflicting business issues

Differentia -tion

Standardi- zation

Keeping the Mutual (minimum) Standard Interface is important as well as differentiation to keep basic usability level

Differentia -tion

Standardi- zation

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Results & Guides

Access & Use

Case 4. When the rules of UI between 1G/2G and 3G do not match

Evaluation Result : Ex 1. Operation methods

Figure. Mobile Internet Access Button

(a) SP 'A'

(b) SP 'B'

EV-DO Service

Browser –Based Service

Platform–Based Service

Browser-based service & Platform-based service

EV-DO Service

The menu Selection method for each service by SP 'A'

Guideline 5.

Provide UI consistency for your services

☞ Sub Guideline 5-1. The navigation methods for various mobile Internet services provided by the same handset should be operated in the same way.
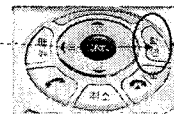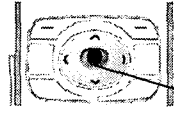
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Results & Guides

Access & Use

Case 4. When the rules of UI between 1G/2G and 3G do not match

Evaluation Result : Ex 2. Operation methods Cont'

SP 'A': 1G
SP 'A': 3G

(select) (select) ???

OK (select)

OK(select)

Non-consistent softkeys causing errors

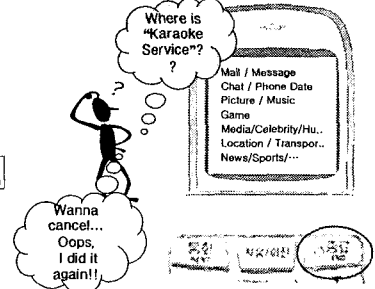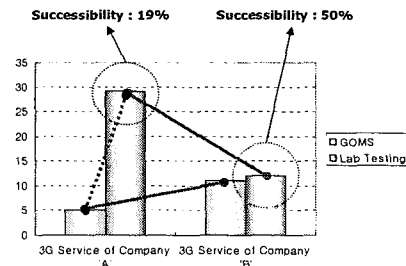**Provide UI consistency for your services**

Guideline 5.

☞ Sub Guideline 5-2. Provide consistent keys (mappings) for the services.

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Results & Guides

Access & Use

Case 5. When UI elements of 3G mobile internet itself have issues

Evaluation Result : Ex 1. Structure & Navigation

Successibility : 19%   Successibility : 50%

Where is "Karaoke Service"? ?

Mail / Message
Chat / Phone Date
Picture / Music
Game
Media/Celebrity/Hu..
Location / Transpor..
News/Sports/...

□ GOMS
□ Lab Testing

3G Service of Company 'A'   3G Service of Company 'B'

Wanna cancel... Oops, I did it again!!

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Results & Guides

Access & Use

Case 5. When UI elements of 3G mobile internet itself have issues

Evaluation Result : Ex 1. Structure & Navigation

Going through too much depths to
achieve goal

: Too many acquisition / recognition phases
given to user
: Problems found In Structure, Label,
Icon metaphors

3G Mobile UI Imperatives

Guideline 6.

☞ Sub Guideline 6-1. Provide intuitive menu grouping to minimize the acknowledgement phase of menu selection.

☞ Sub Guideline 6-2. If the list is too long to fit on the screen, provide the operation for list shift in a simple way. As for page selection, avoid some difficult controllers such as dropdown.

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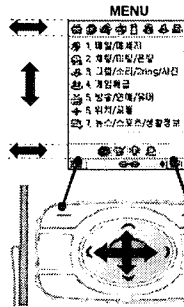대한인간공학회
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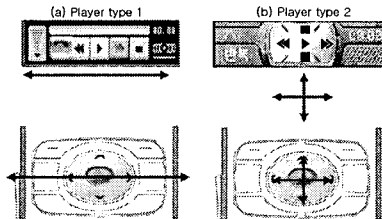# Results & Guides

Access & Use

Case 5. When UI elements of 3G mobile internet itself have issues

Evaluation Result : Ex 2. Control

Operation method on Keys :
MENU

Operation method on Keys :
VOD Player

(a) Player type 1

(b) Player type 2

3G Mobile UI Imperatives

Guideline 6.

☞ Sub Guideline 6-3. The horizontal menu should be navigated by left & right buttons of arrow keys and the vertical icon menu be done by up & down buttons of arrow keys.
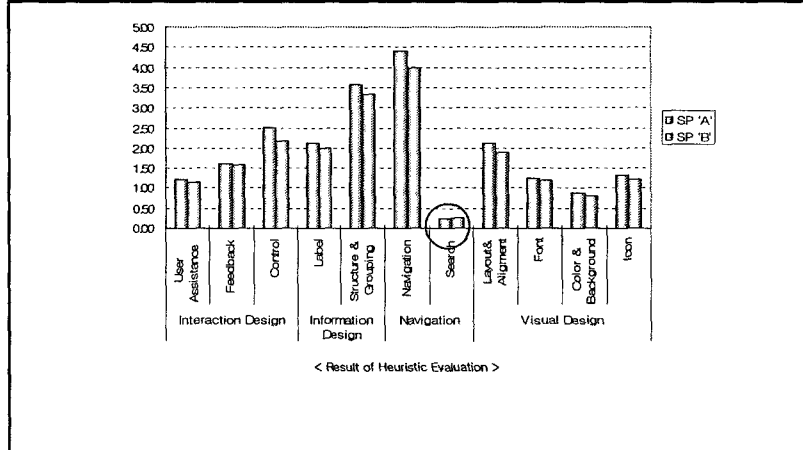
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Results & Guides

Access & Use

Case 5. When UI elements of 3G mobile internet itself have issues

Evaluation Result : Ex 3. Search

< Result of Heuristic Evaluation >

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Results & Guides

Access & Use

Case 5. When UI elements of 3G mobile internet itself have issues

**A lot of restrictions for mobile handset to use SEARCH
- Inconvenient input system / manipulation**

**Users expect that search function can give them..
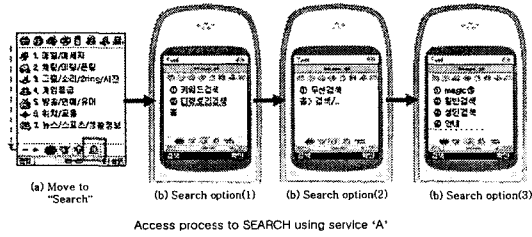"quicker access to designated information"**

Results & Guides

Access & Use

Case 5. When UI elements of 3G mobile internet itself have issues

Evaluation Result : Ex 3. Search – Access / Control

(a) Move to "Search"
(b) Search option(1)
(b) Search option(2)
(b) Search option(3)

Access process to SEARCH using service 'A'

Guideline 6.

3G Mobile UI Imperatives

☞ *Sub Guideline 6-6. Shorten the depths to the search as possible.*

Eg) If the search extent and search conditions are to provided, offer easy controllers like a combination of radio buttons.

Results & Guides

Access & Use

Case 5. When UI elements of 3G mobile internet itself have issues

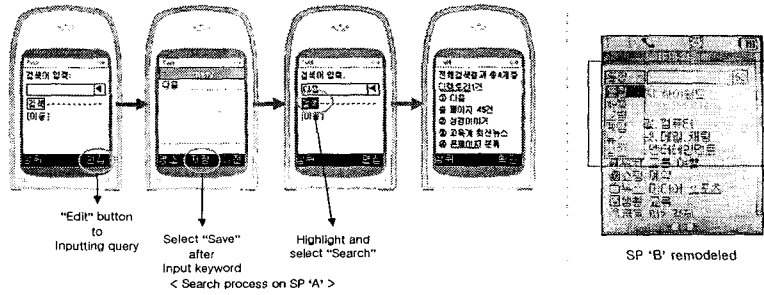Given options in the search page : Text Boxes, Confirmation Button, Option Buttons.

Too much burden on recognition while understanding 'controlling controllers' causes the errors.

Results & Guides

Access & Use

Case 5. When UI elements of 3G mobile internet itself have issues

Evaluation Result : Ex 3. Search – Access / Control (1)

"Edit" button to Inputting query

Select "Save" after Input keyword

Highlight and select "Search"

< Search process on SP 'A' >
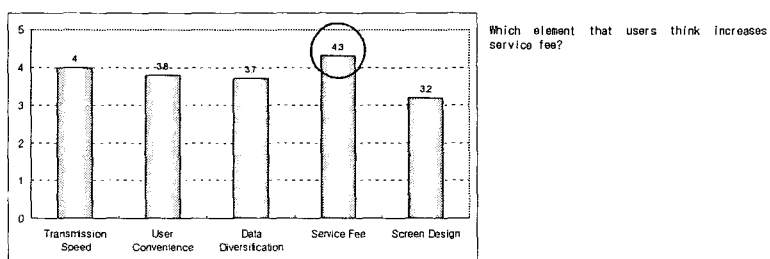
SP 'B' remodeled

Guideline 6.

3G Mobile UI Imperatives

☞ Sub Guideline 6-4. When a user moves to the search window, the default location of the cursor should be provided for him to input keyword directly.

☞ Sub Guideline 6-5. Provide the intuitive operational method for execution order after search keyword input.

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Results & Guides

Satisfaction

Evaluation Result : Ex 1. Satisfaction Factors

Which element that users think increases service fee?

| | 43 | 32 |

- Transmission Speed
- User Convenience
- Data Diversification
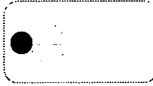- Service Fee
- Screen Design

Guideline 7.

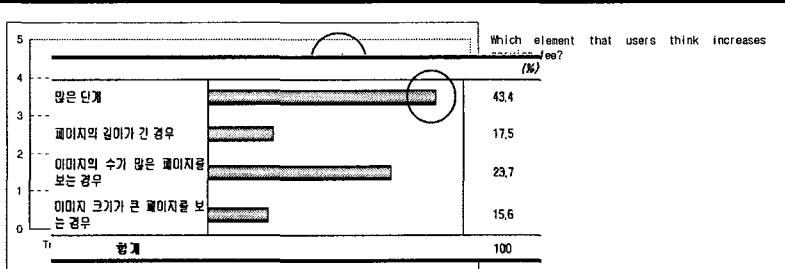**Design after identifying the major elements that influence the satisfaction level of users.**

☞ Sub Guideline 7-1. Too much graphics should be checked to give users the stability in terms of service fee and speed.

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All rights reserved, Team Interface Co. Ltd., 1996-2003   http://www.teaminterface.com   http://www.uidesign.co.kr

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Results & Guides

Satisfaction

Evaluation Result : Ex 1. Satisfaction Factors

Which element that users think increases
~~service~~ fee?

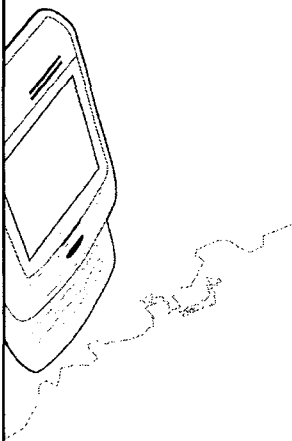|	(%)
많은 단계	43.4
페이지의 길이가 긴 경우	17.5
이미지의 수가 많은 페이지를 보는 경우	23.7
이미지 크기가 큰 페이지를 보는 경우	15.6
합계	100

1. Too many depths
2. Too many images on the screen

Guideline 7.

Design after identifying the major elements that influence the satisfaction level of users.

☞ Sub Guideline 7-1. Too much graphics should be checked to give users the stability in terms of service fee and speed.

Section III. Conclusion & Future Direction of Study

Conclusion & Future direction of study

This study was conducted to boost the usability of 3G mobile Internet service and suggested some guidelines by carrying out the research on overall phases of Korean mobile Internet service.
TeamInterface is continuously studying the following issues from a business and academic reasons.
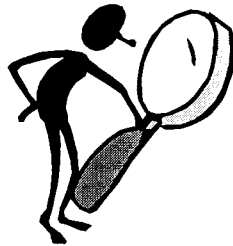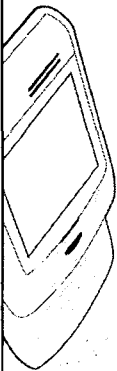
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Q&A

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