Oscar Díaz
University of the Basque Country
Donostia - San Sebastián
Web Augmentation is ...
AUGMENTED REALITY

AUGMENTED WEB
Augmented Reality

Live view of a physical real-world environment

whose elements are augmented by

virtual computer-generated sounds or graphics

Augmented Web

Live view of Web sites

whose elements are augmented by

client-side HTML markup

WA Basic Architecture

Client

Browser

Transcoder

Server

Web server


WA for refactoring

Restructuring existing code without changing its external behaviour but improving non-functional attributes

Classification criterion: target non-functional attribute

“Car refactoring”

- Changing colour to improve visibility (NF feature)
- No change in the car’s functions
Usability: Linkify
http://userscripts.org/scripts/show/1352

This url has been converted to a link

Oscar Díaz

Accessiblility: AccessMonkey
http://webinsight.cs.washington.edu/projects/accessmonkey/

When in "access mode", it permits to edit HTML attributes related with accessiblility

Oscar Díaz
Usability: CrowdAdapt
http://dev.globis.ethz.ch/crowdadapt/

New tech moves beyond the mouse, keyboard and screen

Adapt webpage layout to different screen sizes, e.g. Margin removed

Image rearranged

Response Time

- Improve response time by prefetching:
  - next feeds:
    - Google Reader Prefetch More ->
      http://userscripts.org;8080/scripts/show/26383
  - next sites visited (after a search):
    - Yahoo! Prefetcher ->
      http://commons.oreilly.com/wiki/index.php/Greasemonkey_Hacks/Search#Prefetch_Yahoo_21_Search_Results
WA for customizing

Changing existing code to fit the requirements of a “minority” within the same functional domain of the host

Classification criterion: “target minority”
“Car customization”

- Adding flaps changes the car’s functions (e.g. speed, stability)

Web designers cannot foresee/afford every context and user profile

---

Oscar Díaz
Secondary requirements

- Secondary stakeholders are not the main target of the design, but their needs should be met and problems solved if possible.

- WA might serve to accommodate behavioural differences or supporting changes in behaviour over time.

Better RTM
Shadow requirements

- Requirements from different stakeholders might be divergent or even conflicting

- “Shadow applications” denote “applications introduced by business units to satisfy requirements not met by official applications” [HandelP11]

Ad-hoc leveraging of staff information

Oscar Díaz
Full Professor
+34 943 01 8064
oscar.diaz@ehu.es

Cristóbal Arellano
Research Assistant
+34 943 01 8712
cristobal.arellano@ehu.es

Jon Iturrioz
Lurkers

- They have not participate in the design of the host (no stakeholders)
- They probably tackle a similar domain to that of the host
- They tap into the host code, and, presumably, its customer base

GitHub for Software Product Lines
WA for modding

Modifying code to perform a function not originally conceived or intended by the host designer

Classification criterion: host impact
“Car modding”

- Only James Bond’s designers could ever conceive this car

Threat: Adblock Plus
Threat: BookBurro

Threat: Plurality sticklet I
Threat: Plurality sticklet II

Spur: AVG adds value to Google Search
Spur: Tag-fier sticklet

Spur: Detection of chemical compounds (complements Wikipedia)
http://reflect.ws/
Oscar Díaz

Crosscut: Skype button

Oscar Díaz

Crosscut: Diigo

Nicholas II of Russia

Oscar Díaz
WA for integrating

Modifying code to somehow glue the host with some other artefact

Classification criterion: type of integrated artefact
Integrating external data sources: Web Feeder

DEMOS TIME
Example 1: Too much information

http://www.tvguia.es/

Over 30 channels. Do you really need information about all of them?

Example 1: Information dispersion

http://www.filmaffinity.com/es/

Wouldn’t it be nice to include this content as part of TVguia?
Rationales

- Poor Web Experience
- Situational, Idiosyncratic requirements
- End-User Develop.

WebMakeUp

- **What:** a textual DSL
- **Who:** end users
- **What for:** improving the Web Experience
- **How:** a Chrome extension

Available at:
- [https://dl.dropboxusercontent.com/u/6584559/WebMakeup.zip](https://dl.dropboxusercontent.com/u/6584559/WebMakeup.zip)
ISSUES

Complexity

Problem
• Different tecnologies
• Event programming (JS)
• Manipulation of someone else's code

Solution
• APIs (e.g. Chickenfoot)
• DSL (e.g. Sticklet, WebMakeup)
• Editors (e.g. Platypus)
Browser portability

Problem
• Browser specifics (packaging, API)

Solution
• Driver-like (e.g. Kango)
• polyfill libraries
• Service-like (e.g. TOMODO)

Robustness

Problem
• WAs exhibit external dependencies to their host & other co-enacted WA
• Fuzzy anchoring: website upgrades

Solution
• robust XPaths
• fuzzy anchoring
  • structure-based anchoring (Xpath)
  • text-based anchoring (offsets)
  • pixel based anchoring (OCR algorithms)
Lazy loading

Problem
- Not all content is available at loading time
- Page content is unveiled based on user interactions (à la AJAX)

Solution
- Time delays (e.g. iMacros)
- DOM monitoring (a.k.a mutation observers)
- Interaction monitoring

Security

Problem
- WA tend to have the same privileges that those of the browser (i.e. access to user preferences, user passwords, filesystem, etc.)
- This opens the door to malicious WA

Solution
- Google Chrome’s static privilege system where Was have to enumerate the privileges required rather than give them full access by default
Legal Issues

Problem
• Copyright infringement
• Advert sabotage
• Presentation right violation

Solution
• lawsuits (IOGroup vs. Veoh)
• advert-friendly augmentation (e.g. WebMakeup)


Y con esto hemos acabado ...
Oscar Díaz

gràcies per la vostra atenció

Grupo ONEKIN (WWW.ONEKIN.ORG)

Oscar Díaz