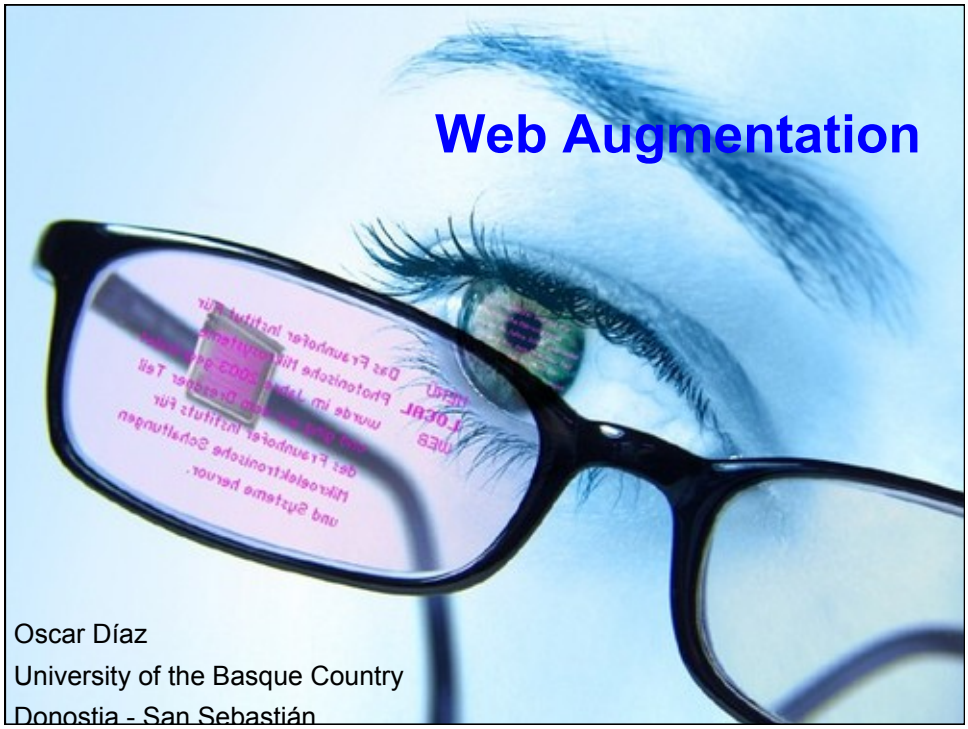
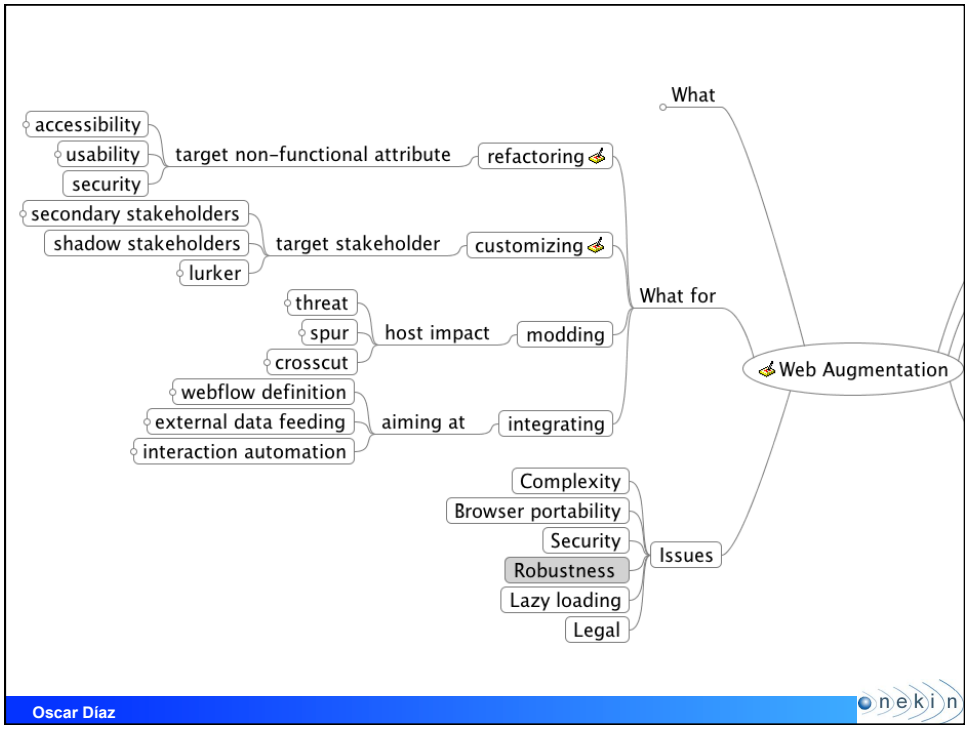

Web Augmentation
Oscar Díaz
University of the Basque Country
Donostia - San Sebastián


What
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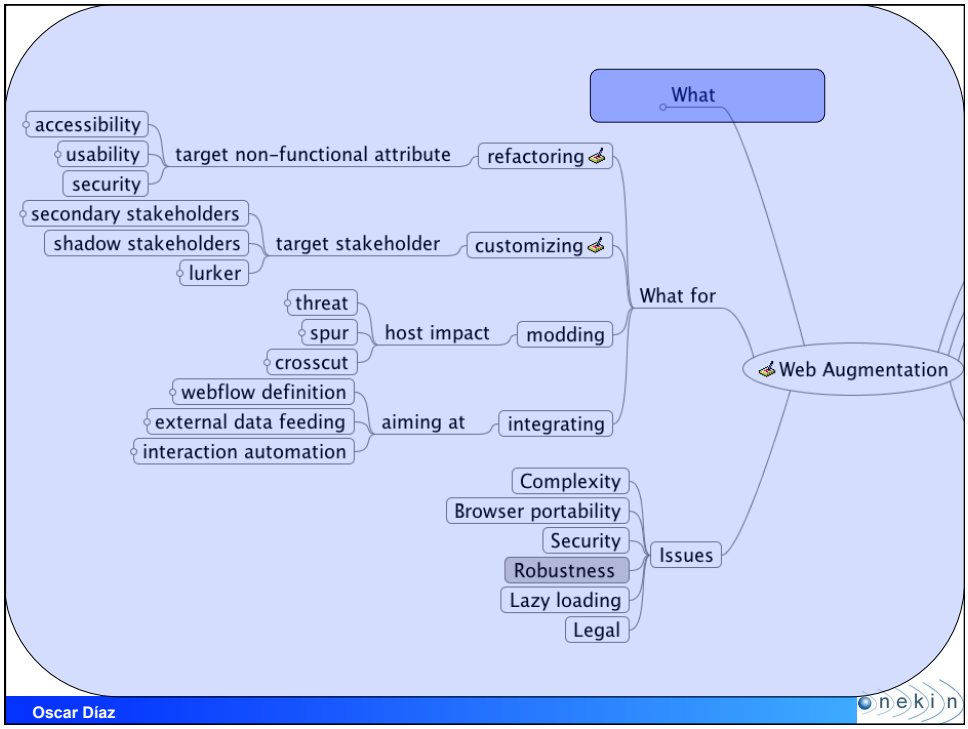
usability
security
target non-functional attribute
refactoring
secondary stakeholders
shadow stakeholders
lurker
target stakeholder
customizing
What for
threat
spur
crosscut
host impact
modding
webflow definition
external data feeding
interaction automation
aiming at
integrating
Web Augmentation
Complexity
Browser portability
Security
Robustness
Lazy loading
Legal
Issues
Oscar Díaz
nekin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Web Augmentation
Complexity
Browser portability
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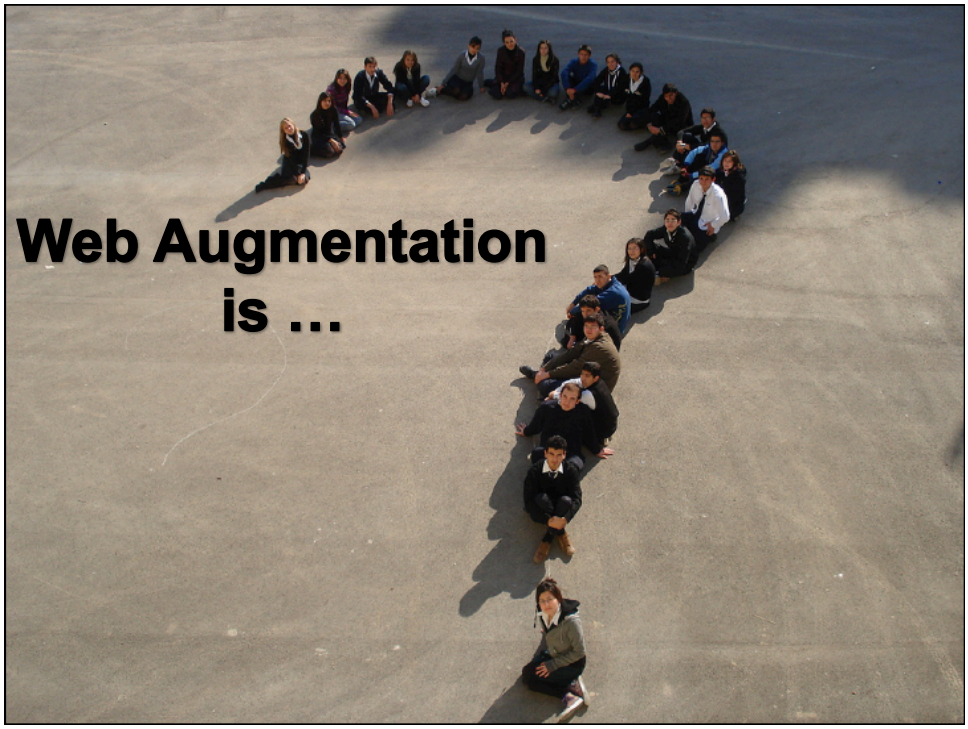
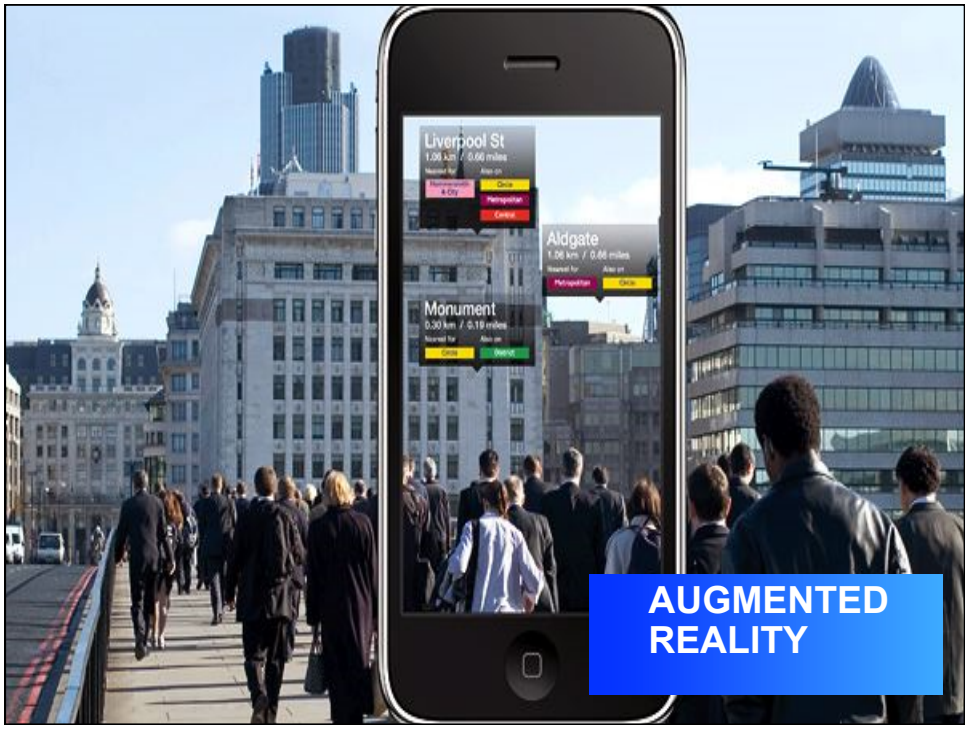
Robustness
Lazy loading
Legal
Issues
Oscar Diaz
onekin


Web Augmentation
is …


Liverpool St
Aldgate
Monument
AUGMENTED REALITY

book burro
Ohio State University 3 miles
Columbus Metropolitan Library 6 miles
Otterbein College 7 miles
Capital University Library 8 miles
Ohio Wesleyan University 17 miles
Abebooks $23.01
Amazon $29.95
Amazon Marketplace $22.00
Buy $25.16
Half.com $21.00
Powells $31.95
Amazon Prime and ship Two-Day for free and Overnight for $3.99.
Quantity:
Add to Shopping Cart
Sign in to turn on 1-Click ordering.
More Buying Choices
34 used & new from $22.00
Have one to sell? Sell yours here
List Price: $29.95
Price: $29.95 & this item ships for FREE with Super Saver Shipping. Details
Availability: In Stock. Ships from and sold by Amazon.com.
Add to Wish List
Add to Shopping List
Add to Wedding Registry
Add to Baby Registry
Better Together
Buy this book with End of Millennium by Manuel Castells today!
Buy Together Today: $59.90
Buy both now!
AUGMENTED WEB

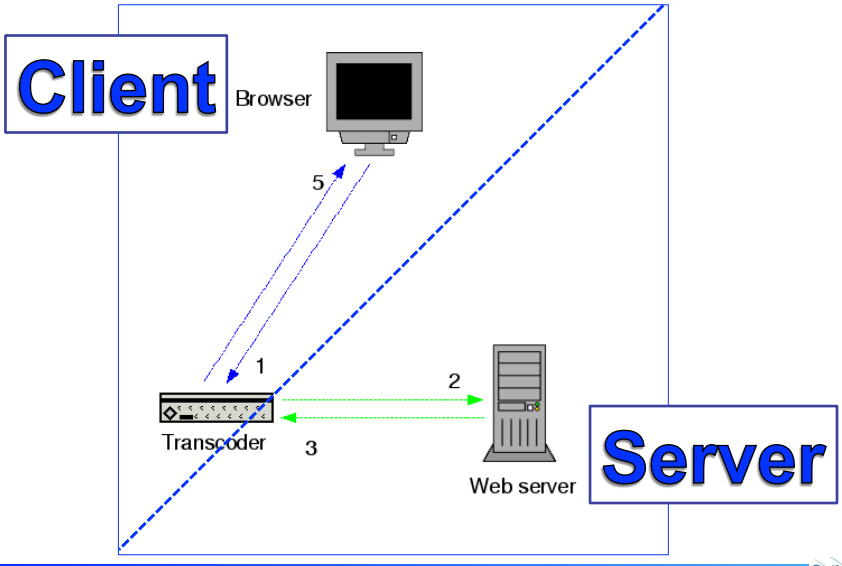
Augmented Reality

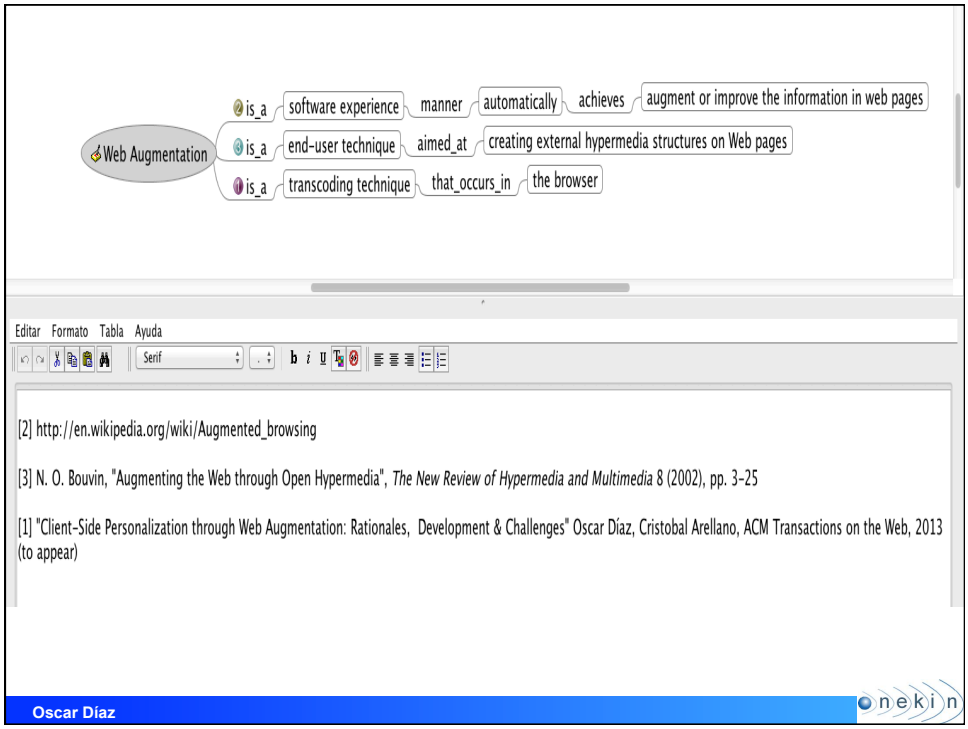
- Live view of a physical **real-world environment**
- whose elements are ***augmented by***
- **virtual computer-generated sounds or graphics**

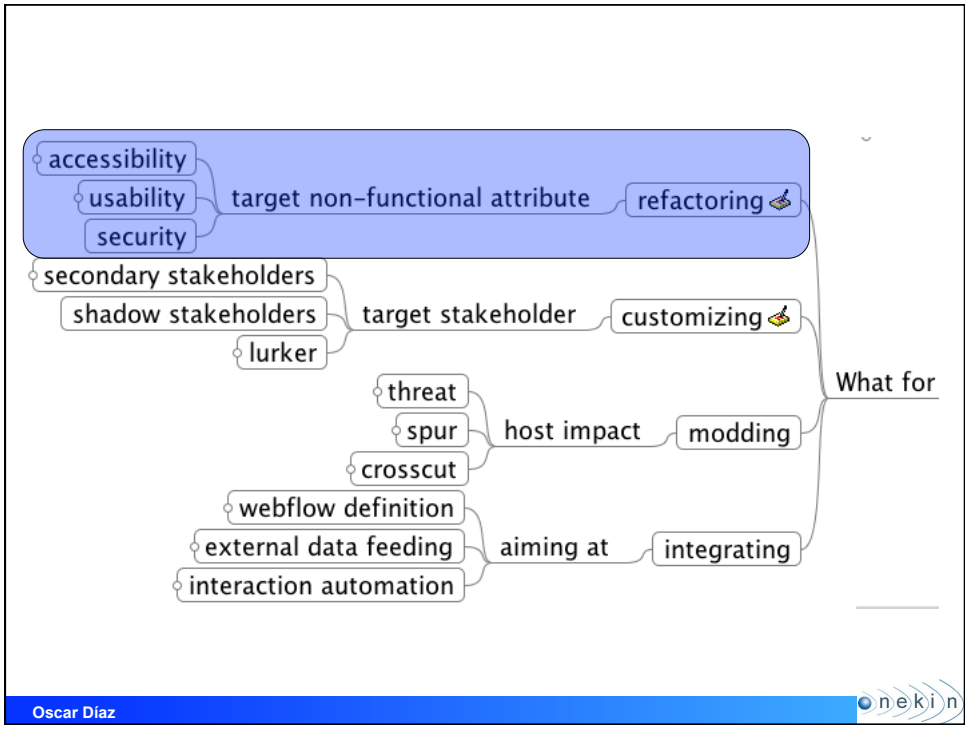
Augmented Web

- Live view of **Web sites**
- whose elements are ***augmented*** **by**
- **client-side HTML markup**

WA Basic Architecture




Web Augmentation
is_a
software experience
manner
automatically
achieves
augment or improve the information in web pages
is_a
end-user technique
aimed_at
creating external hypermedia structures on Web pages
is_a
transcoding technique
that_occurs_in
the browser
Editar Formato Tabla Ayuda
Serif
[2] http://en.wikipedia.org/wiki/Augmented_browsing
[3] N. O. Bouvin, "Augmenting the Web through Open Hypermedia", The New Review of Hypermedia and Multimedia 8 (2002), pp. 3-25
[1] "Client-Side Personalization through Web Augmentation: Rationales, Development & Challenges" Oscar Díaz, Cristobal Arellano, ACM Transactions on the Web, 2013 (to appear)
Oscar Díaz
nekin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host impact
modding
webflow definition
external data feeding
interaction automation
aiming at
integrating
What for
Oscar Díaz
nekin

WA for refactoring

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

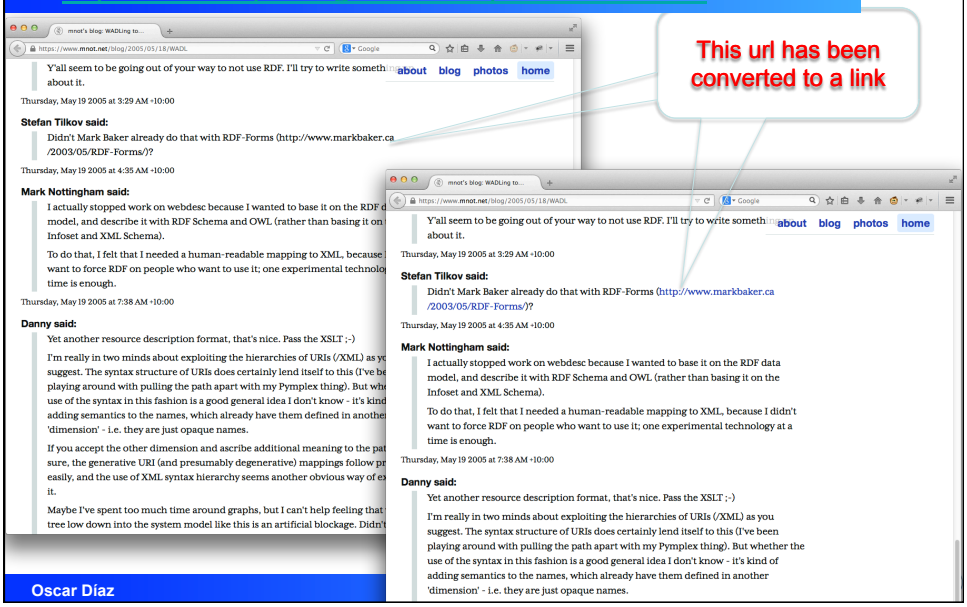
Classification criterion: target non-functional attribute

"Car refactoring"

- Changing colour to improve visibility (NF feature)
- No change in the car's functions

Usability: Linkify

http://userscripts.org:8080/scripts/show/1352



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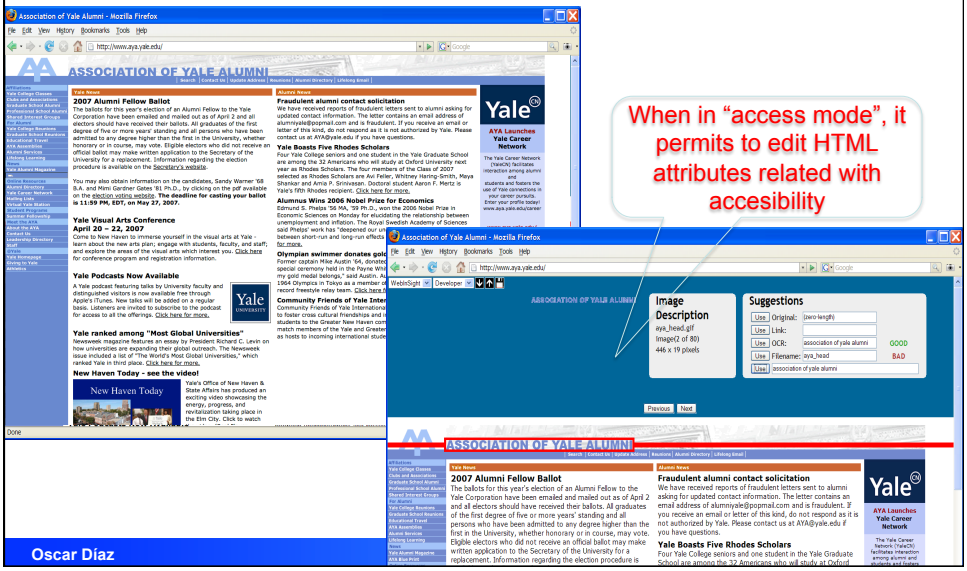
Accesibility: AccessMonkey

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



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Usability: CrowdAdapt

http://dev.globis.ethz.ch/crowdadapt/

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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

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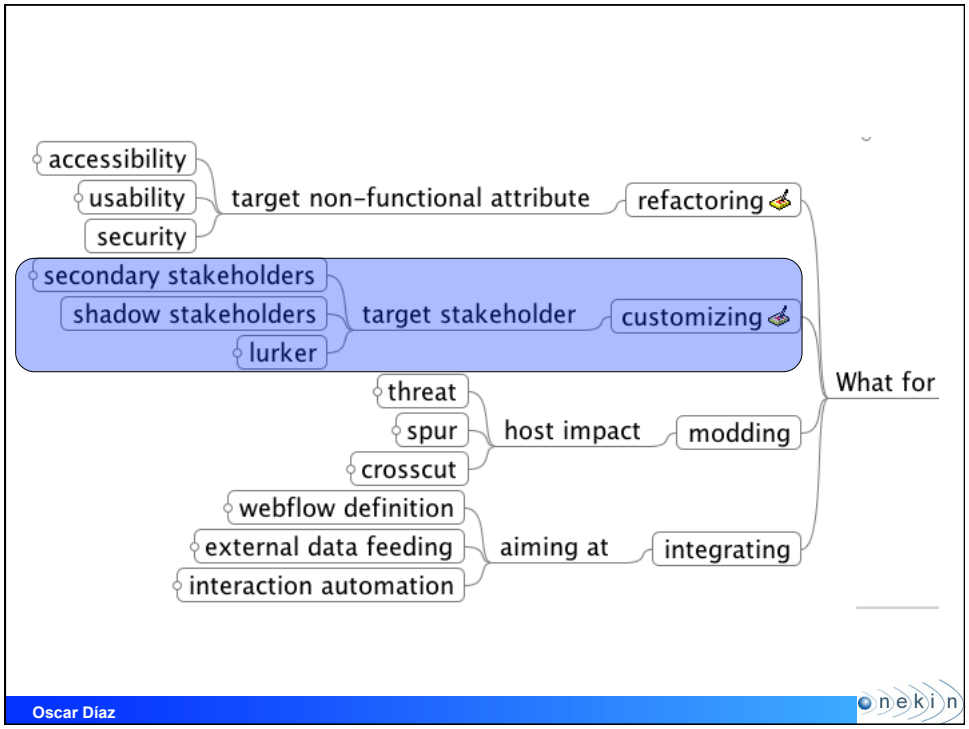
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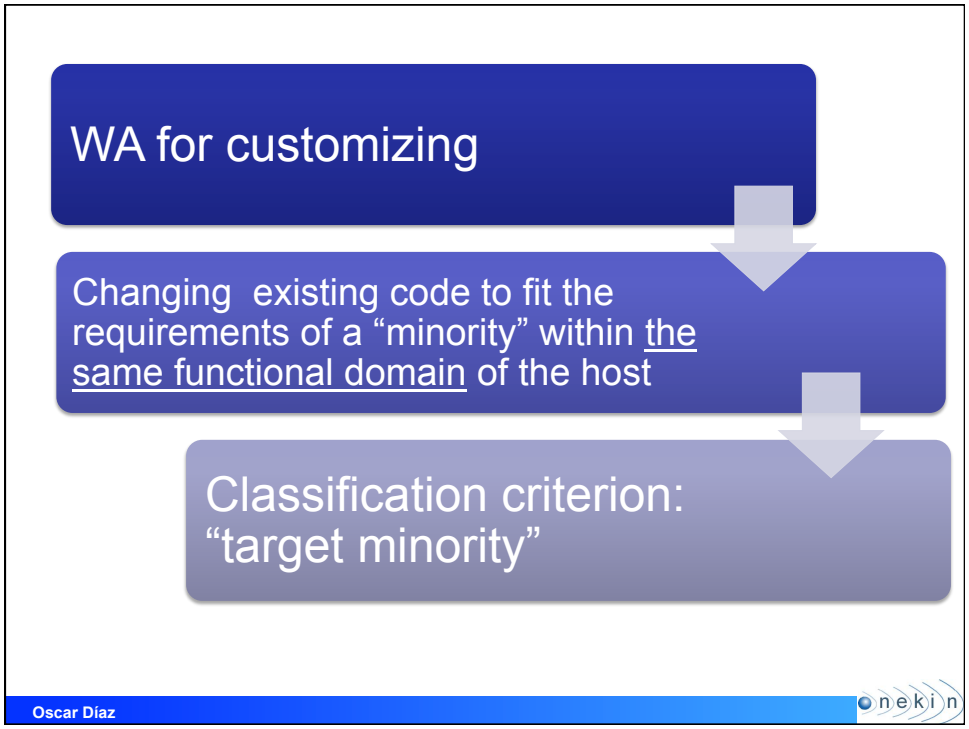
WA for customizing
Changing existing code to fit the requirements of a “minority” within the same functional domain of the host
Classification criterion: “target minority”
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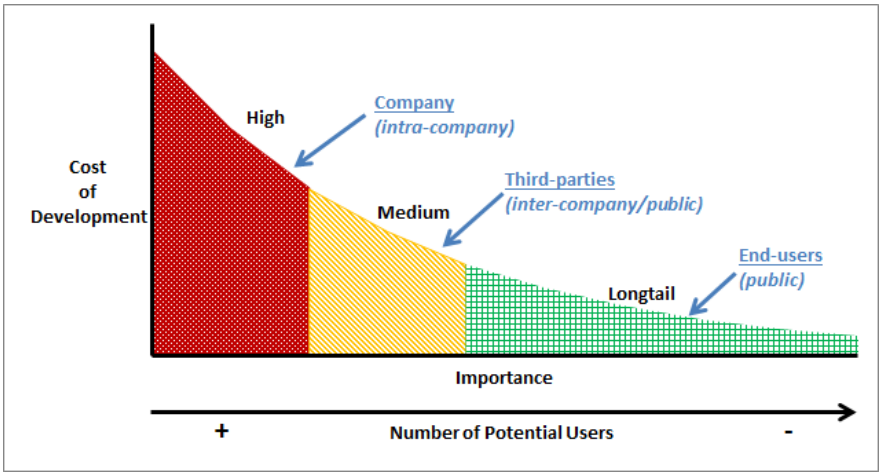
"Car customization"

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

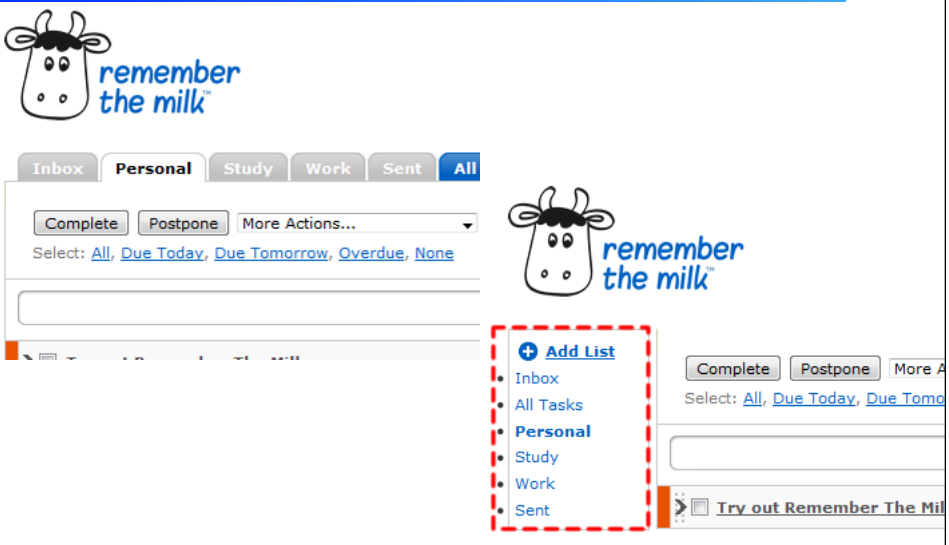
Web designers cannot foresee/afford every context and user profile



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

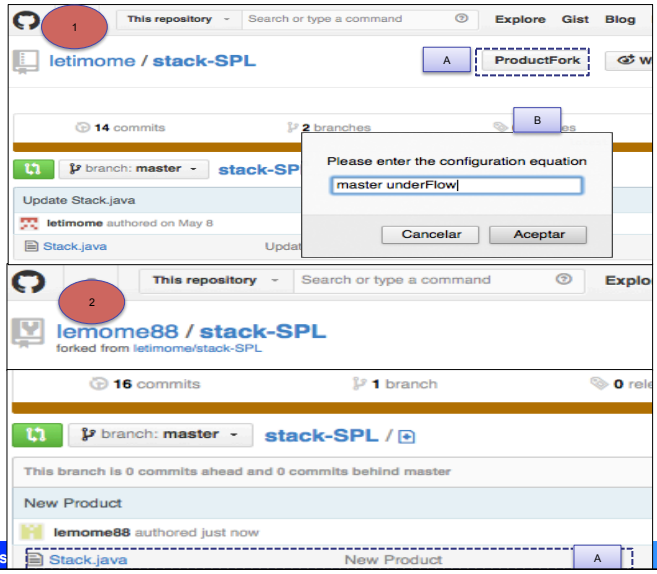
- Requirements from different stakeholders might be divergent or even conflicting
- "Shadow applications" denote "applications introduced by business units to satisfy requirements not met by official applications" [HandelP11]

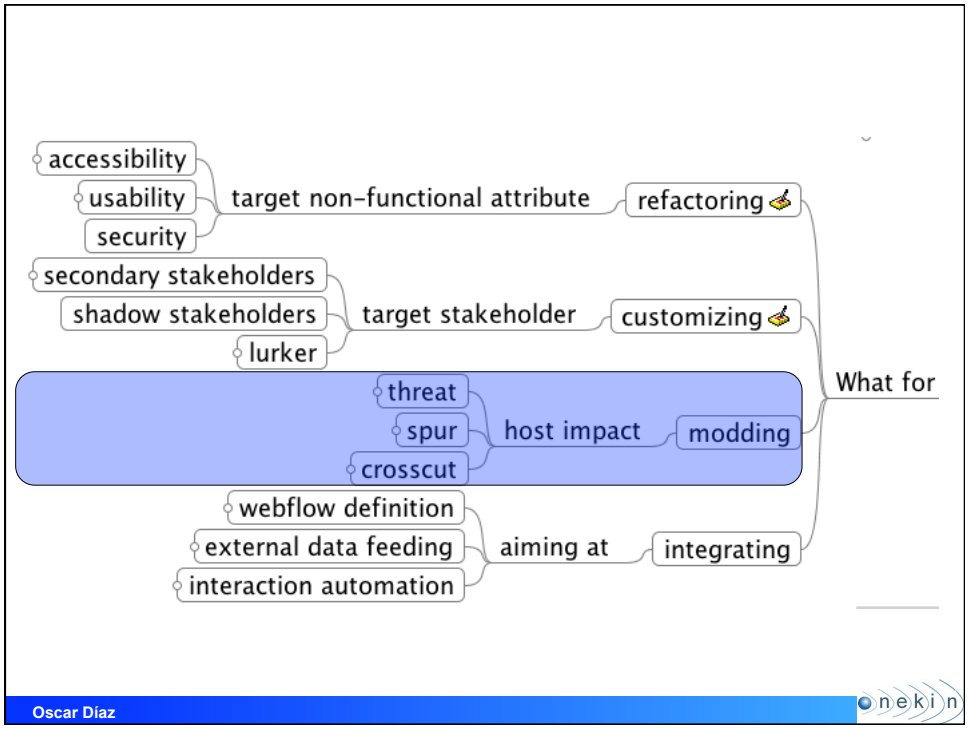
Ad-hoc leveraging of staff information

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

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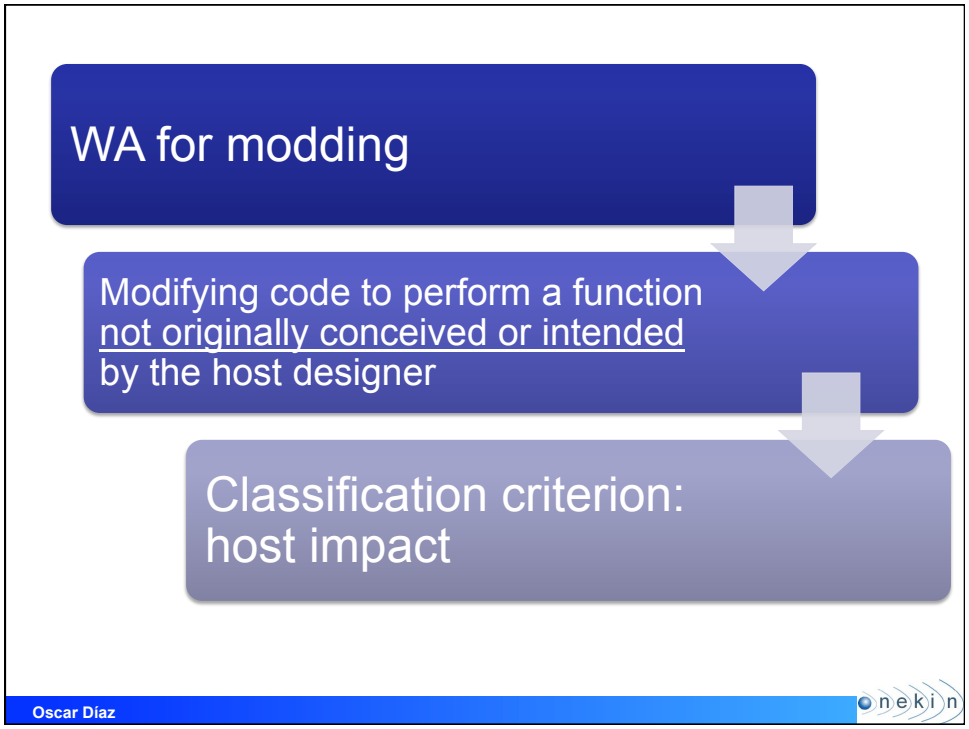
Oscar Díaz
nekin


WA for modding
Modifying code to perform a function
not originally conceived or intended
by the host designer
Classification criterion:
host impact
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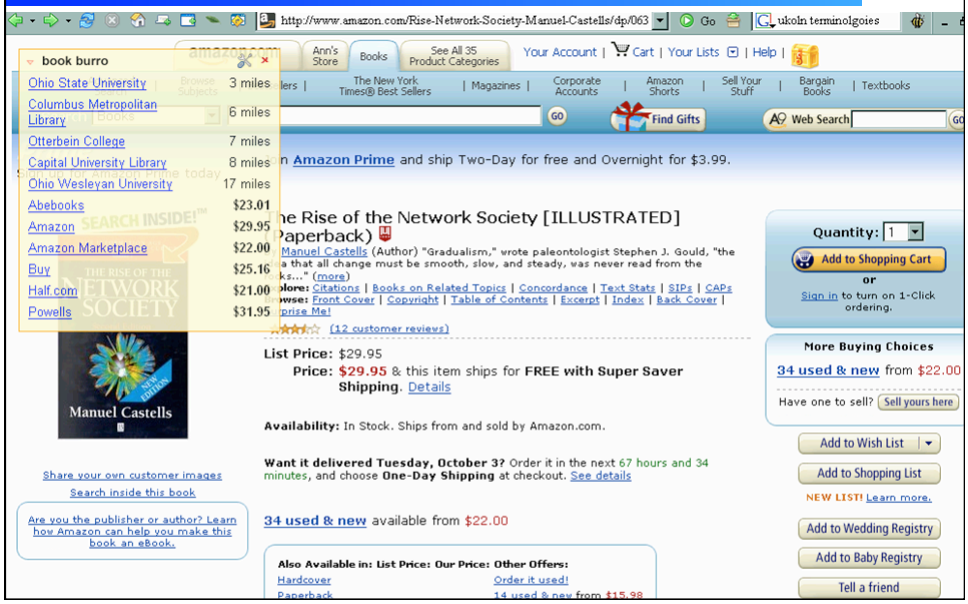
"Car modding"

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

Threat: Adblock Plus

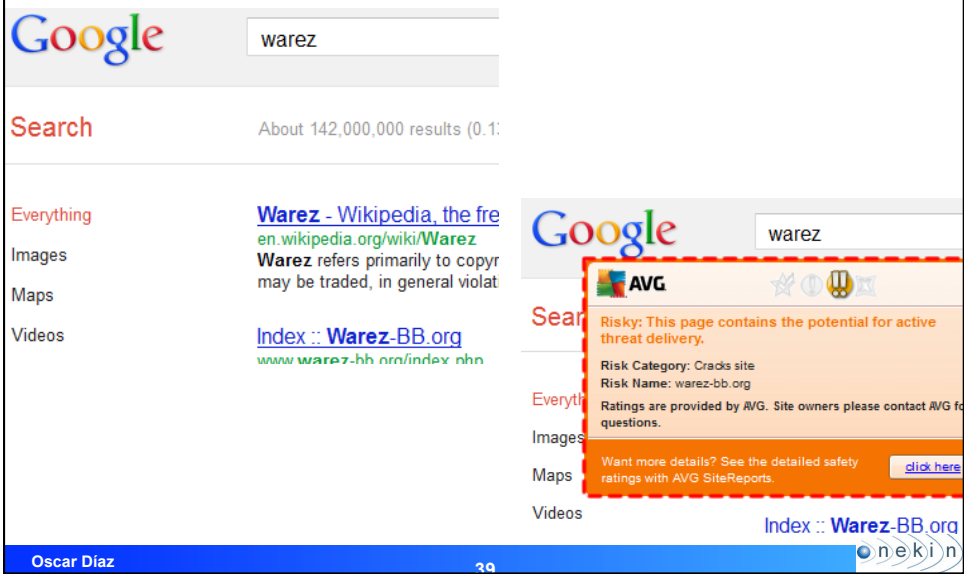
Threat: BookBurro



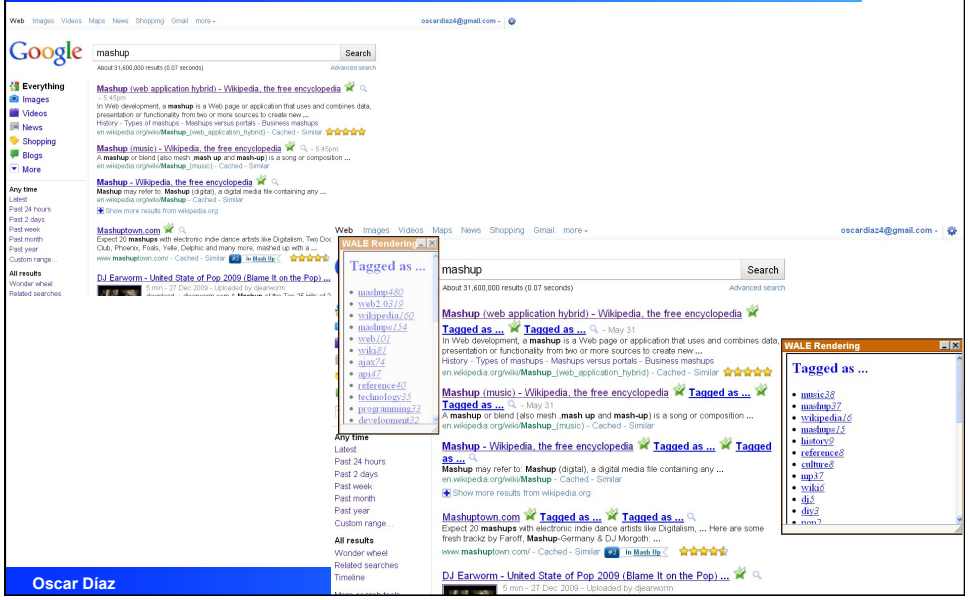
Threat: Plurality sticklet I

Threat: Plurality sticklet II

Spur: AVG adds value to Google Search

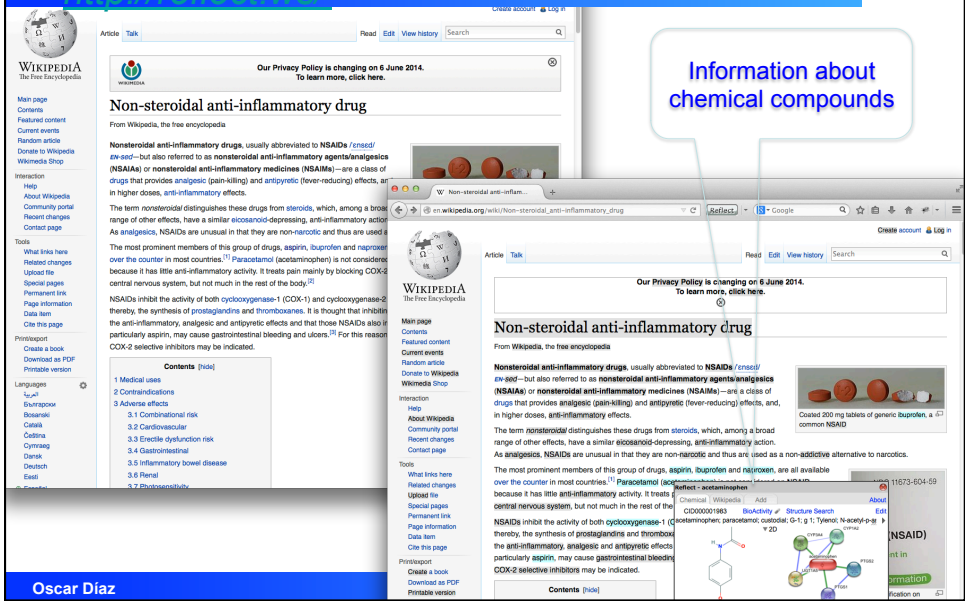


Spur: Tag-fier sticklet

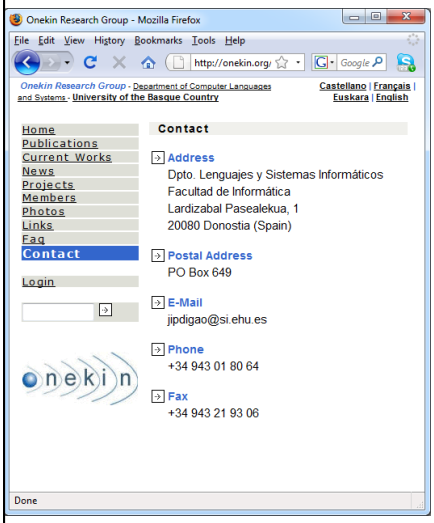


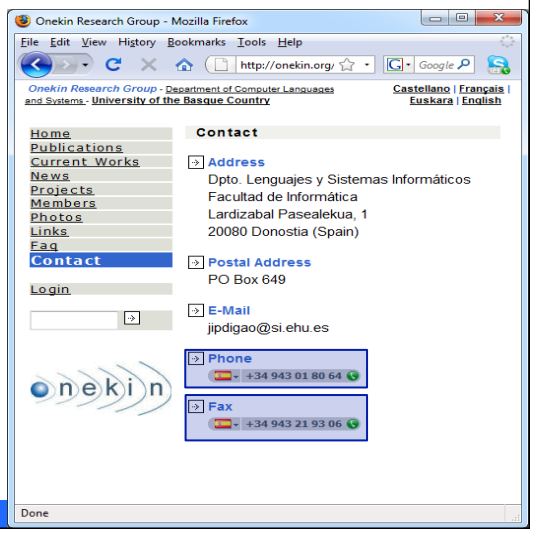
Spur: Detection of chemical compounds (complements Wikipedia)

http://reflect.ws/



Crosscut: Skype buttom





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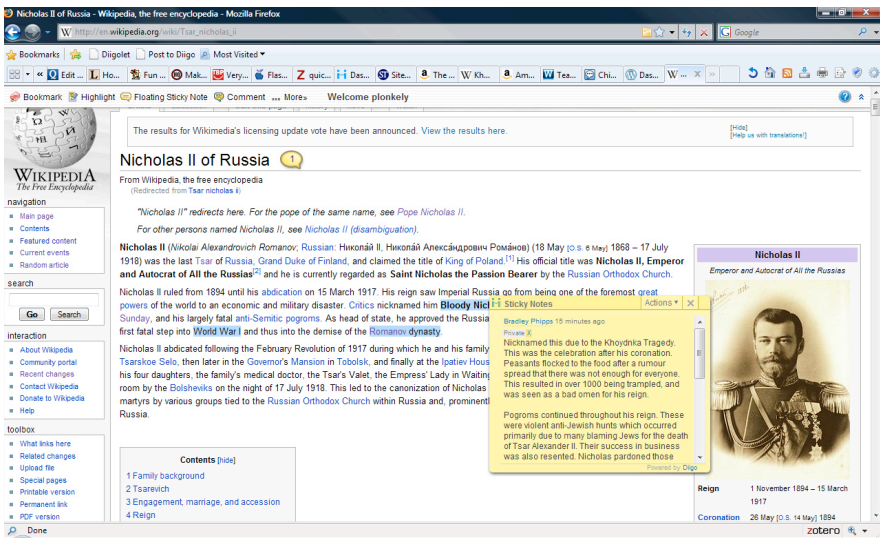
Crosscut: Diigo



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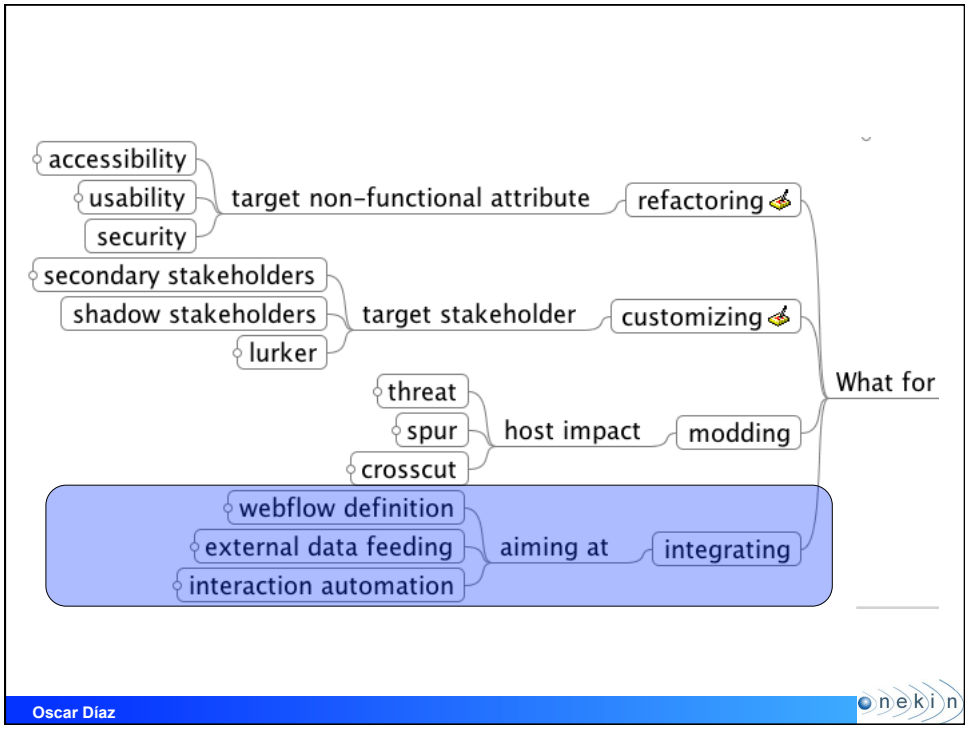
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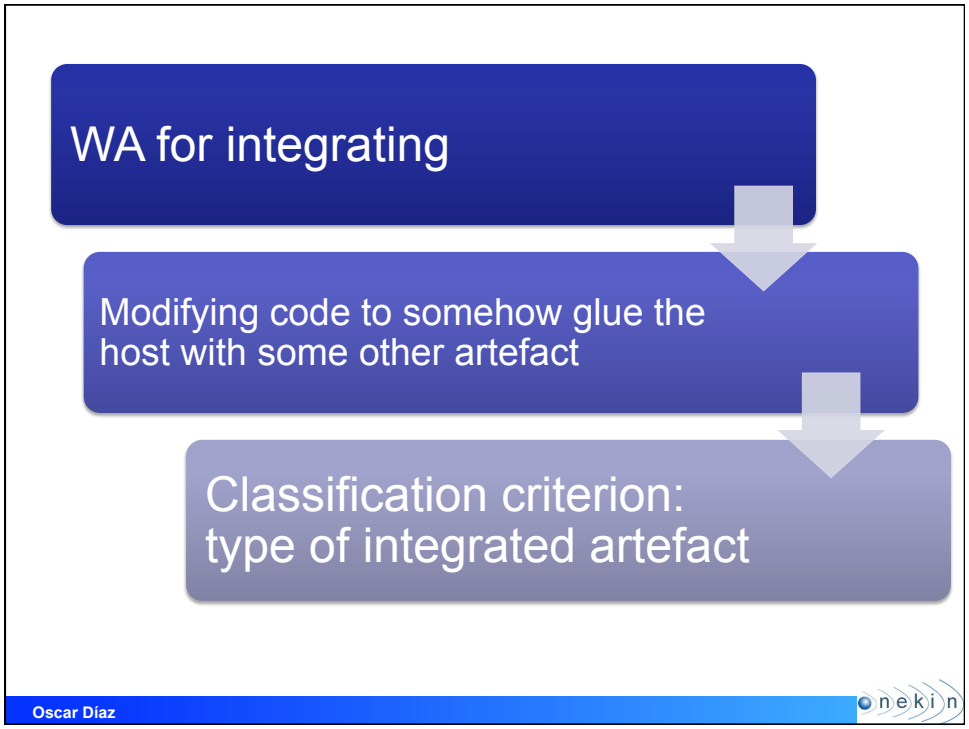
nekin


WA for integrating
Modifying code to somehow glue the host with some other artefact
Classification criterion: type of integrated artefact
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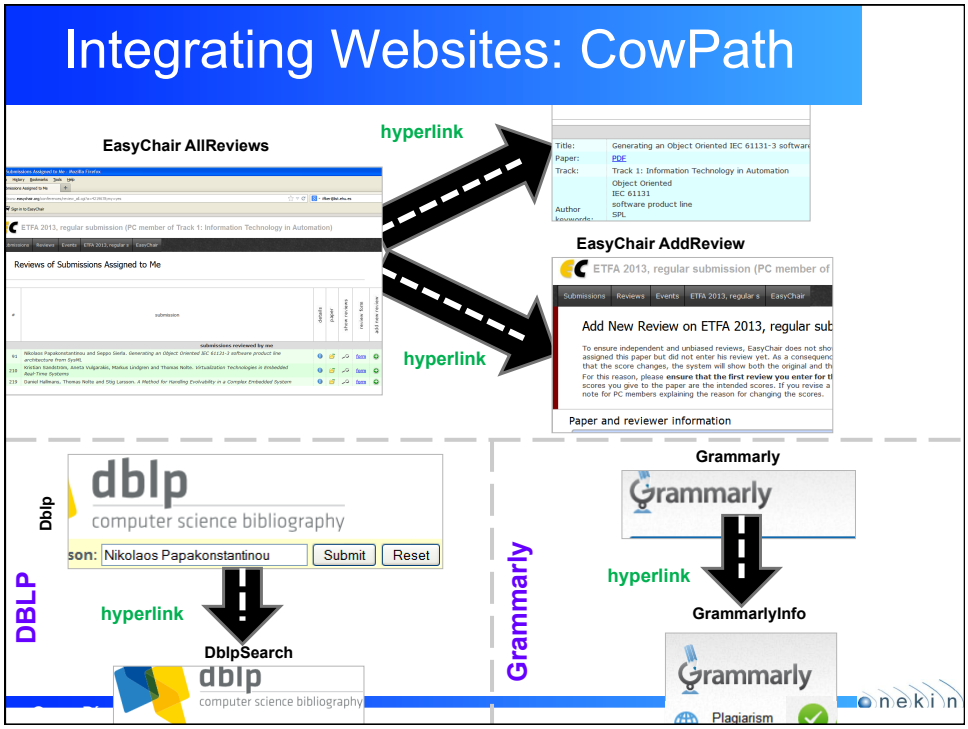
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EasyChair AddReview
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Paper and reviewer information
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Nikolaos Papakonstantinou
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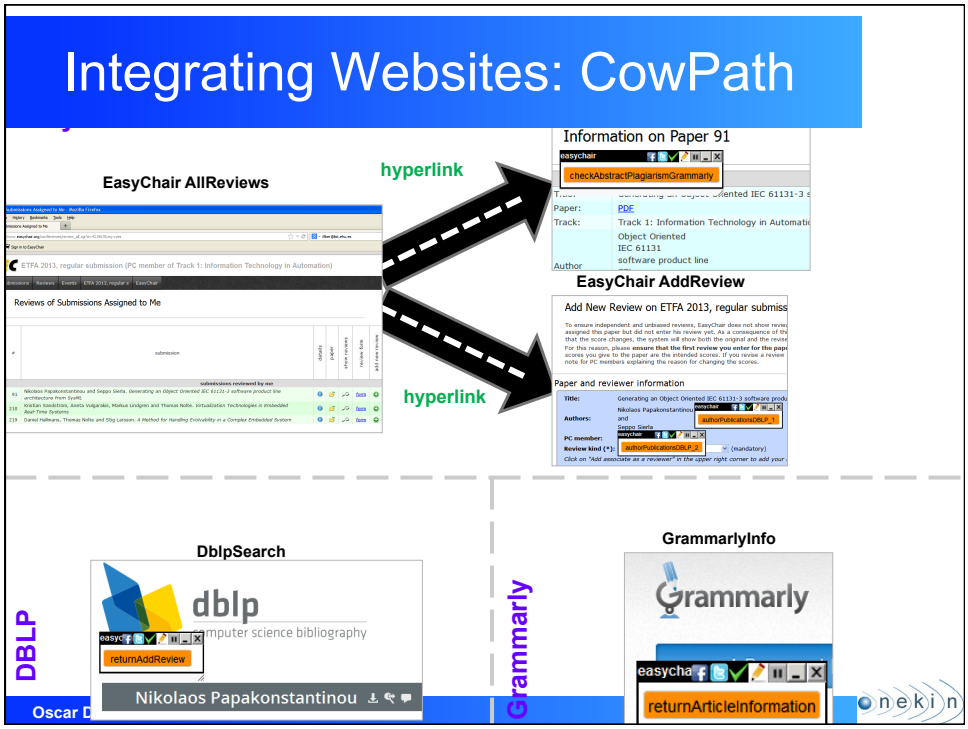
Grammarly
nekin


Integrating Websites: CowPath
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DBLP
dblp
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Nikolaos Papakonstantinou
GrammarlyInfo
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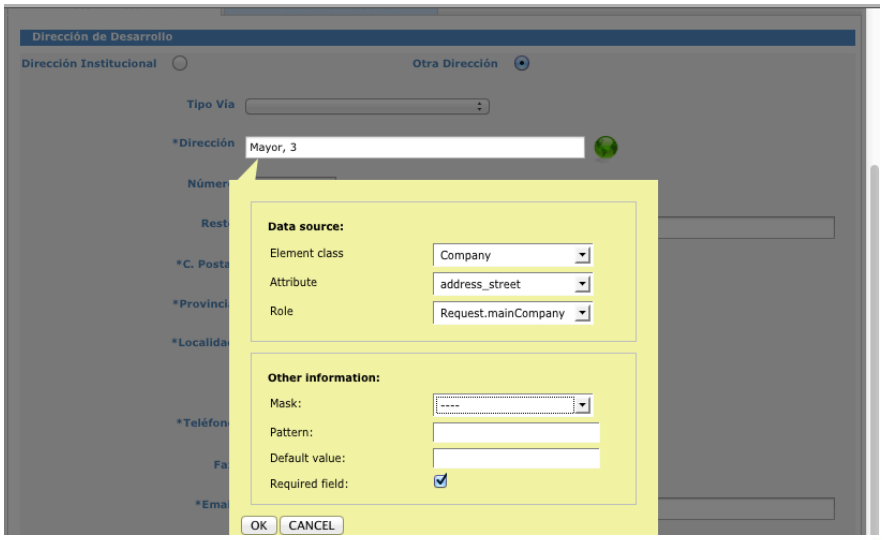
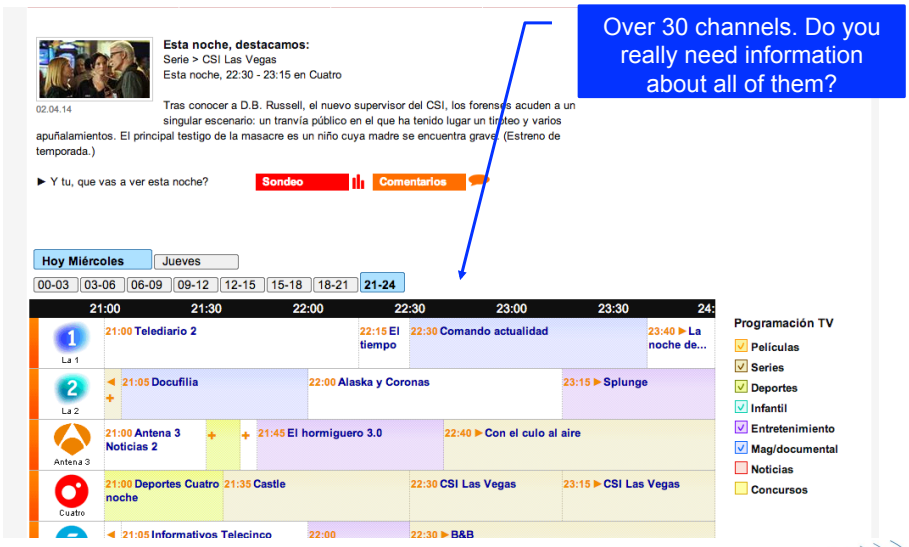
returnArticleInformation
nekin

Integrating external data sources: Web Feeder

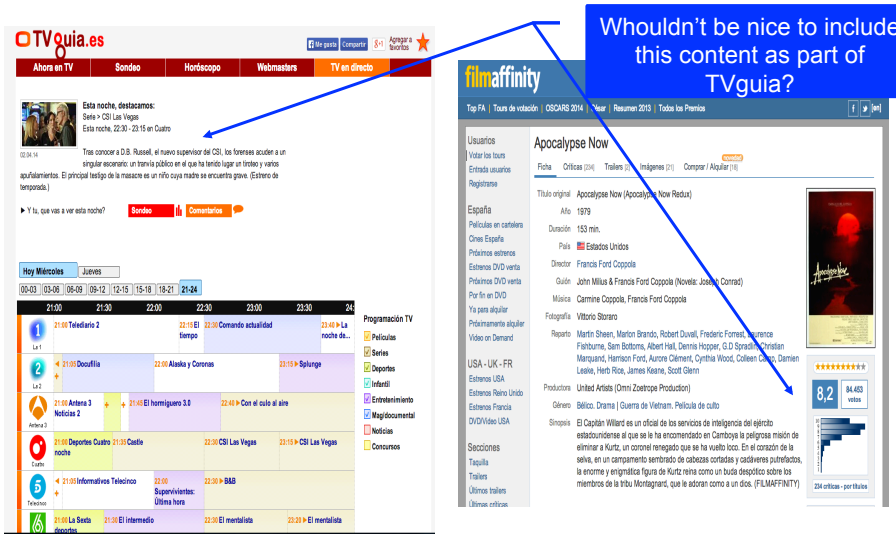


Example 1: Too much information
http://www.tvguia.es/



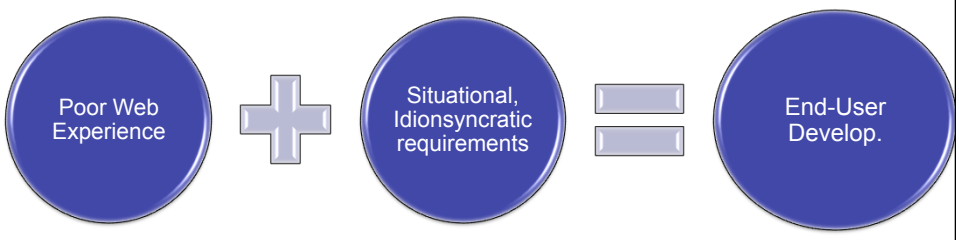
Over 30 channels. Do you really need information about all of them?

Example 1: Information dispersion
http://www.filmaffinity.com/es/



Whouldn't be nice to include this content as part of TVguia?

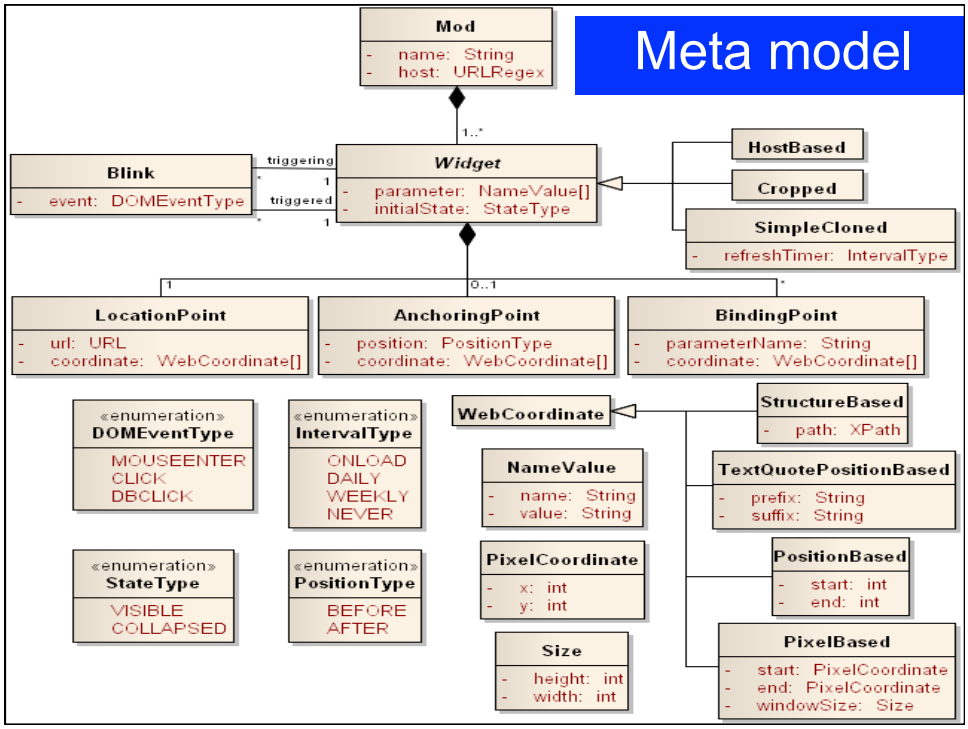
Rationales



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
  - http://www.onekin.org/downloads/public/WebMakeup/video.mov


Meta model
Mod
- name: String
- host: URLRegex
1..*
Blink
- event: DOMEventType
triggering
triggered
Widget
- parameter: NameValue[]
- initialState: StateType
HostBased
Cropped
SimpleCloned
- refreshTimer: IntervalType
1
0..1
*
LocationPoint
- url: URL
- coordinate: WebCoordinate[]
AnchoringPoint
- position: PositionType
- coordinate: WebCoordinate[]
BindingPoint
- parameterName: String
- coordinate: WebCoordinate[]
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DOMEventType
MOUSEENTER
CLICK
DBCLICK
«enumeration»
IntervalType
ONLOAD
DAILY
WEEKLY
NEVER
WebCoordinate
StructureBased
- path: XPath
NameValue
- name: String
- value: String
TextQuotePositionBased
- prefix: String
- suffix: String
«enumeration»
StateType
VISIBLE
COLLAPSED
«enumeration»
PositionType
BEFORE
AFTER
PixelCoordinate
- x: int
- y: int
PositionBased
- start: int
- end: int
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PixelBased
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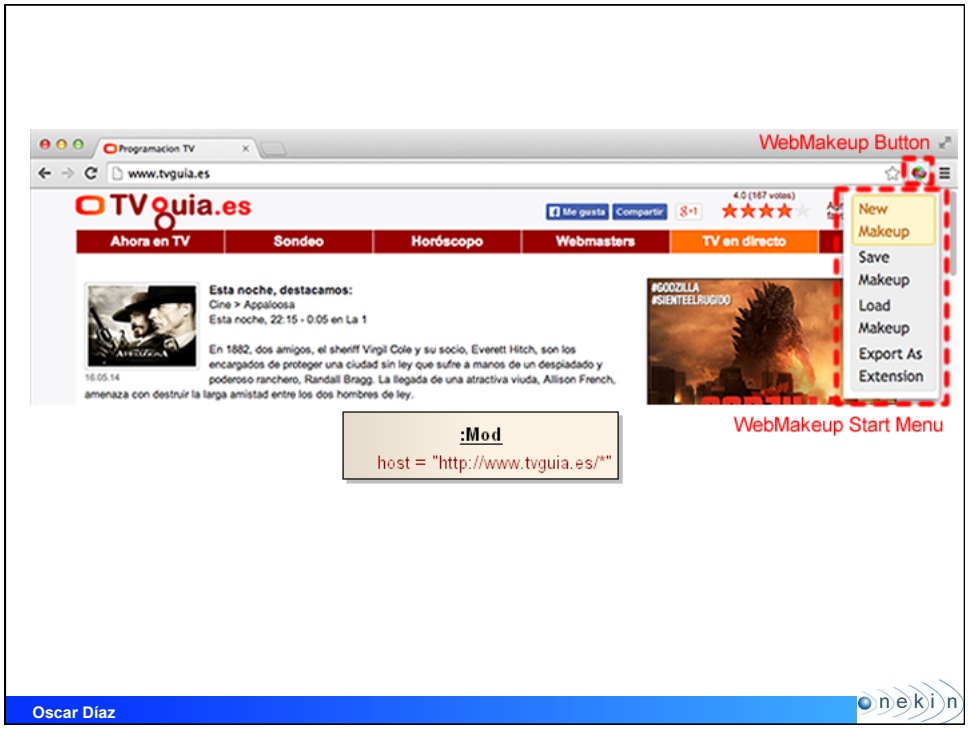
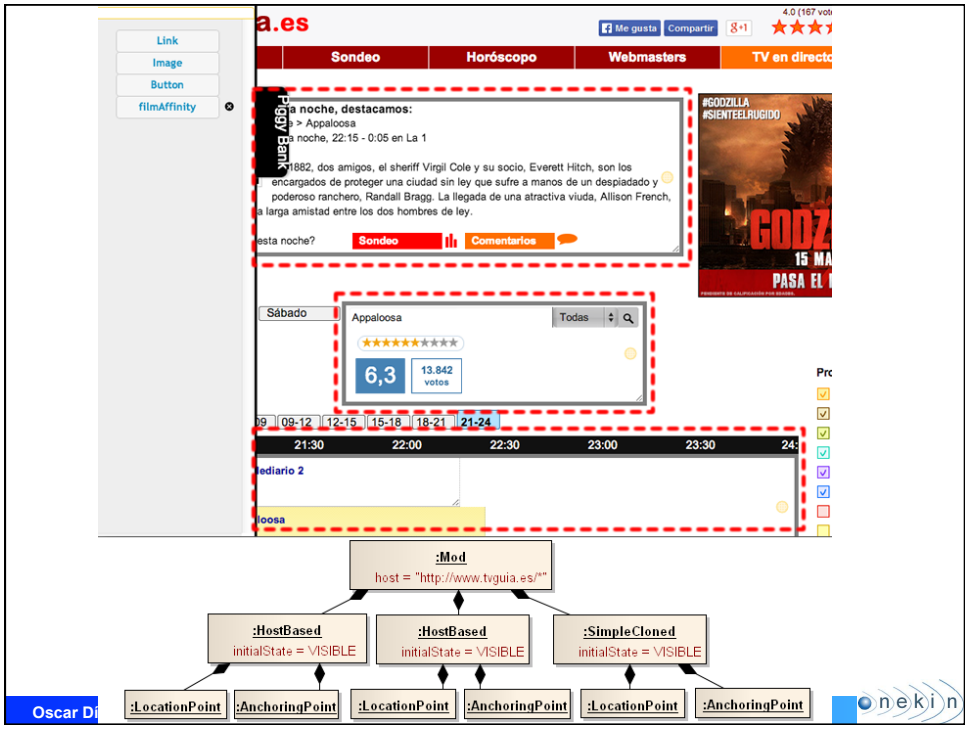
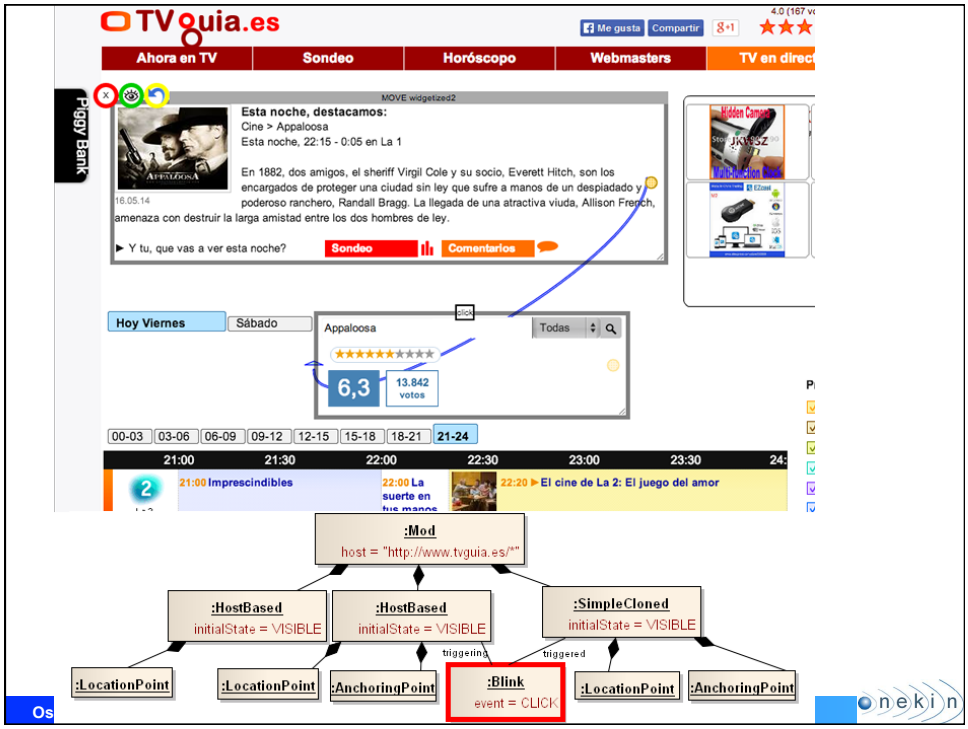
- end: PixelCoordinate
- windowSize: Size


WebMakeup Button
Programacion TV
www.tvguia.es
TVguia.es
Ahora en TV
Sondeo
Horóscopo
Webmasters
TV en directo
New Makeup
Save Makeup
Load Makeup
Export As
Extension
Esta noche, destacamos:
Cine > Appaloosa
Esta noche, 22:15 - 0:05 en La 1
En 1882, dos amigos, el sheriff Virgil Cole y su socio, Everett Hitch, son los encargados de proteger una ciudad sin ley que sufre a manos de un despiadado y poderoso ranchero, Randall Bragg. La llegada de una atractiva viuda, Allison French, amenaza con destruir la larga amistad entre los dos hombres de ley.
:Mod
host = "http://www.tvguia.es/*"
WebMakeup Start Menu


Link
Image
Button
filmAffinity
Sondeo
Horóscopo
Webmasters
Piggy Bank
Esta noche, destacamos:
Cine > Appaloosa
Esta noche, 22:15 - 0:05 en La 1
En 1882, dos amigos, el sheriff Virgil Cole y su socio, Everett Hitch, son los encargados de proteger una ciudad sin ley que sufre a manos de un despiadado y poderoso ranchero, Randall Bragg. La llegada de una atractiva viuda, Allison French, la larga amistad entre los dos hombres de ley.
Sondeo
Comentarios
Sábado
Appaloosa
Todas
6,3
13.842 votos
21:30
22:00
22:30
23:00
23:30
:Mod
host = "http://www.tvguia.es/*"
:HostBased
initialState = VISIBLE
:HostBased
initialState = VISIBLE
:SimpleCloned
initialState = VISIBLE
:LocationPoint
:AnchoringPoint
:LocationPoint
:AnchoringPoint
:LocationPoint
:AnchoringPoint


TVguia.es
Ahora en TV
Sondeo
Horóscopo
Webmasters
Piggy Bank
Esta noche, destacamos:
Cine > Appaloosa
Esta noche, 22:15 - 0:05 en La 1
En 1882, dos amigos, el sheriff Virgil Cole y su socio, Everett Hitch, son los encargados de proteger una ciudad sin ley que sufre a manos de un despiadado y poderoso ranchero, Randall Bragg. La llegada de una atractiva viuda, Allison French, amenaza con destruir la larga amistad entre los dos hombres de ley.
Y tu, que vas a ver esta noche?
Sondeo
Comentarios
Hoy Viernes
Sábado
Appaloosa
Todas
6,3
13.842 votos
21:00 Imprescindibles
22:00 La suerte en tus manos
22:20 El cine de La 2: El juego del amor
:Mod
host = "http://www.tvguia.es/*"
:HostBased
initialState = VISIBLE
:HostBased
initialState = VISIBLE
:SimpleCloned
initialState = VISIBLE
triggering
triggered
:LocationPoint
:LocationPoint
:AnchoringPoint
:Blink
event = CLICK
:LocationPoint
:AnchoringPoint

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

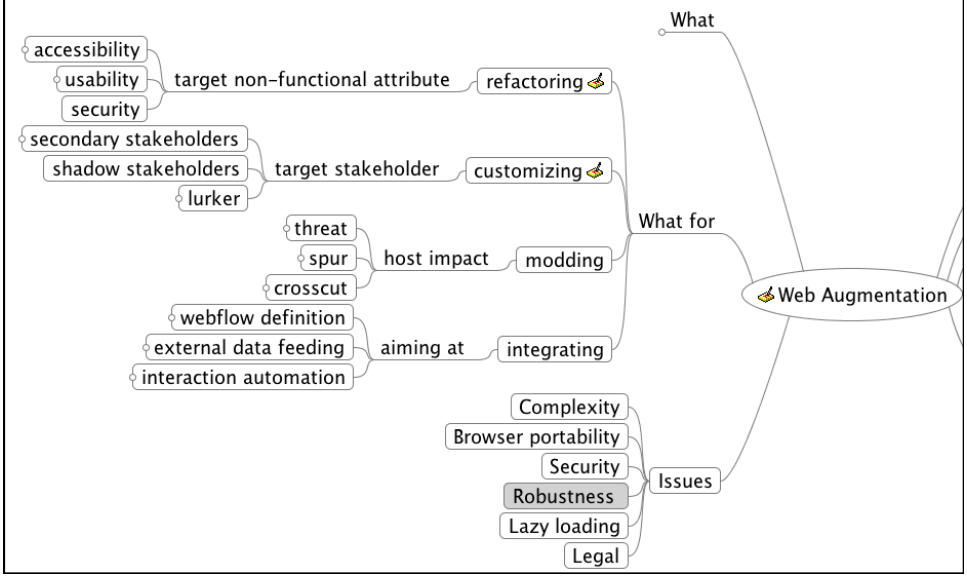
- Copyright infringement
- Advert sabotage
- Presentation right violation

Solution

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

http://techcrunch.com/2008/08/27/transcoding-is-not-a-crime-says-court-in-veoh-porn-case/

Y con esto hemos acabado …



gràcies per la vostra atenció

Grupo ONEKIN (WWW.ONEKIN.ORG)