



Le opportunità
non hanno confini



Real-time Mashups di Web Service Geografici

Cesare Pautasso

Facoltà di Informatica

Università della Svizzera Italiana

<http://www.pautasso.info/>

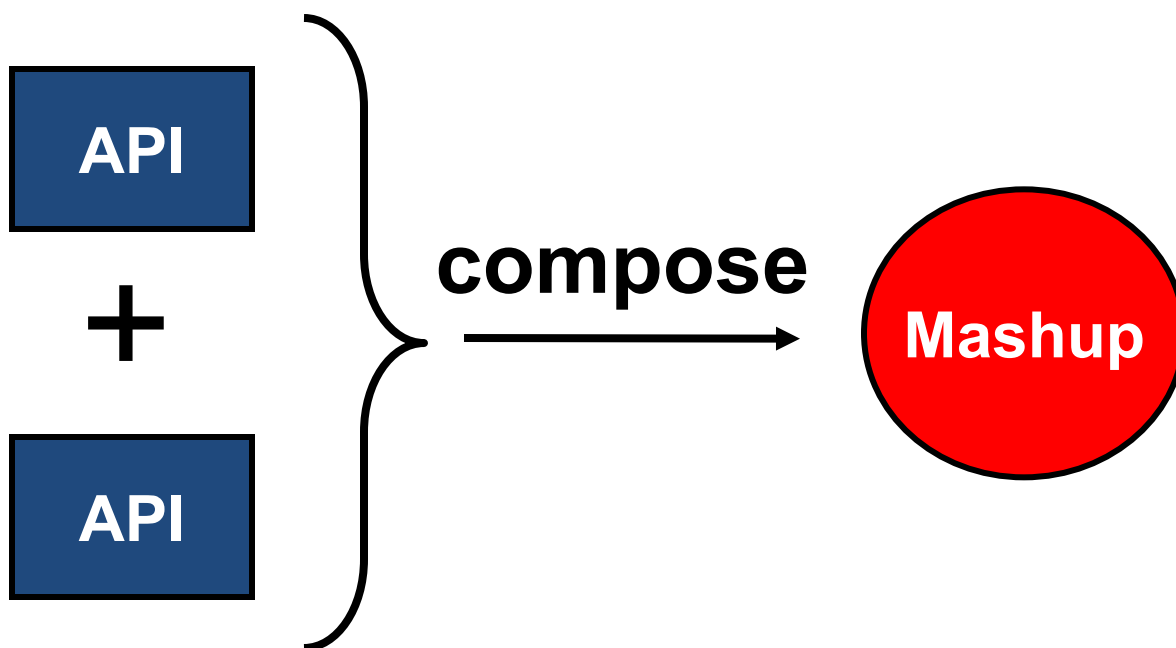
@pautasso

Mashups

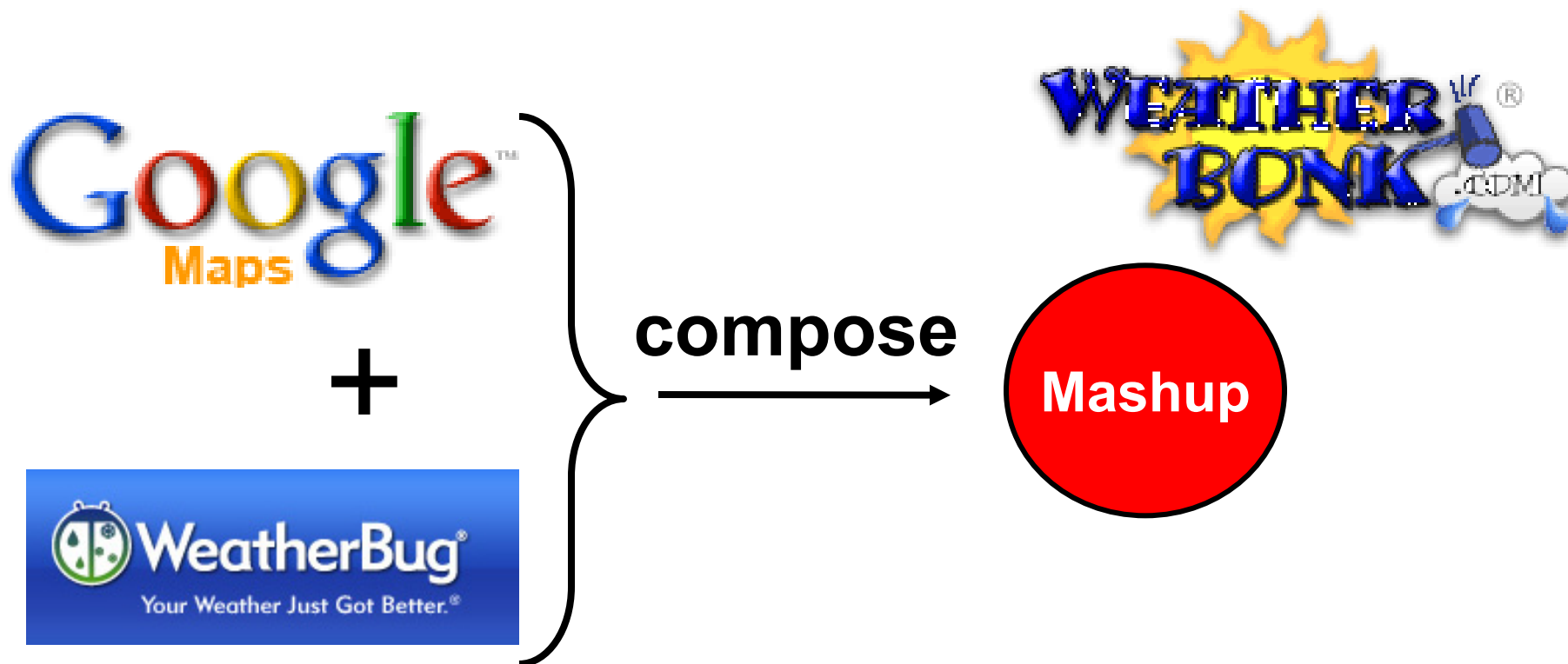
- Applicazioni Web costruite componendo Web service API preesistenti in modo nuovo e inaspettato



Mashups



Example



WeatherBonk.com

Search

Where:

Lugano, switz

Weather: ☒

Cams: ☒

Cam Type

All

Alerts ☐

Show

Overlap ☐

Icons

Big Numbers

go

Overlays: (US only)

Display:

English (°F)

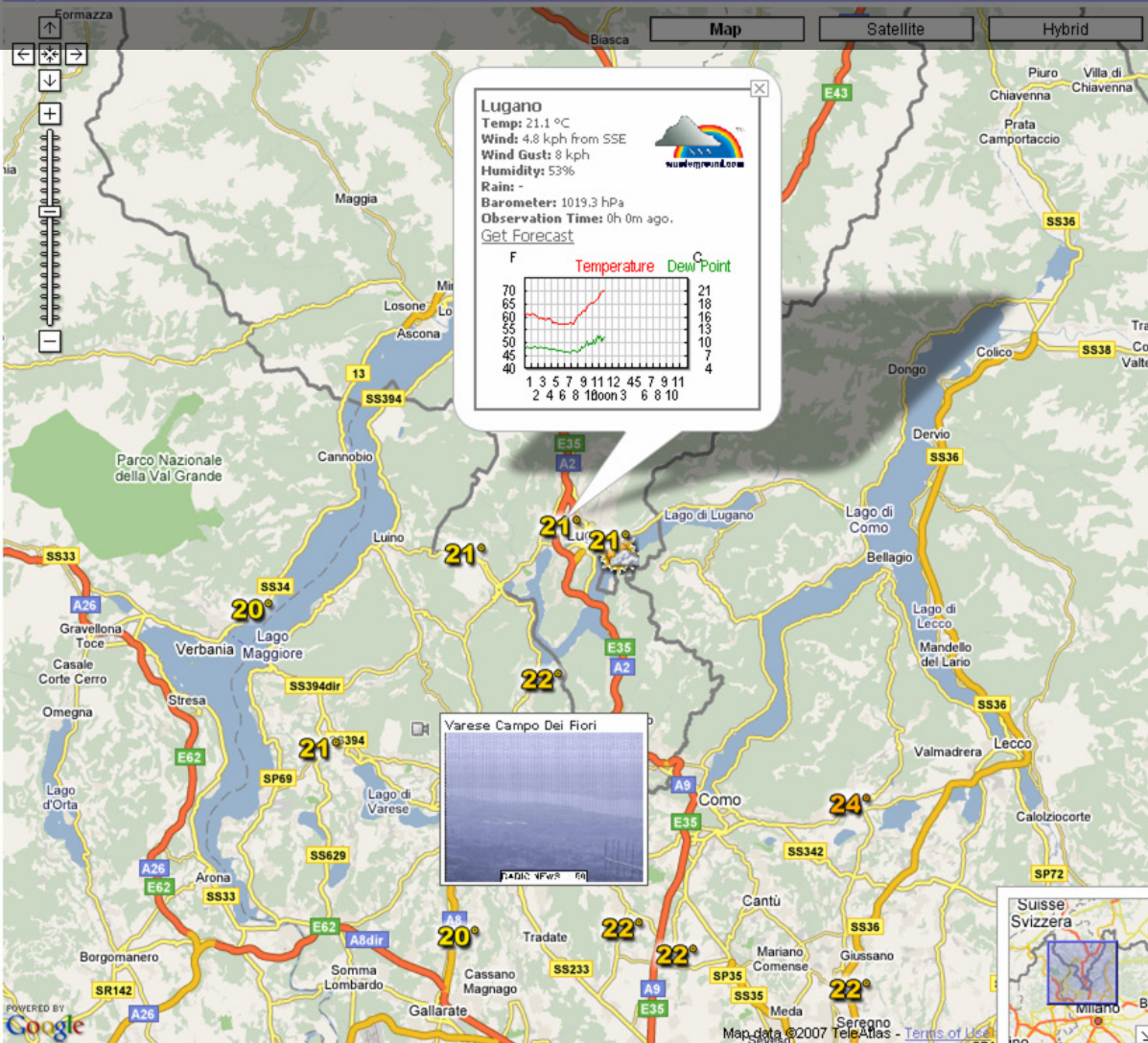
Metric (°C)

Details

Click anywhere on map for forecast.

- | Temp | Name |
|------|---------------------------|
| 20° | Lago Maggiore |
| 20° | IW2OAZ-5 Solbiate Arno IT |
| 20° | HB9DNV Locarno CH |
| 21° | |
| 21° | Lugano |
| 21° | Lugano |
| 21° | Lugano |
| 21° | Locarno |
| 21° | |
| 21° | Lugano |
| 22° | Varese |
| 22° | Bobbiate |
| 22° | |
| 22° | IK2JYT-3 Bulgarograsso IT |
| 22° | CW7783 Como IT |
| 22° | IK2CMN Verano Brianza IT |
| 24° | |
| | Varese Campo Dei Fiori |

Map





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Mashups

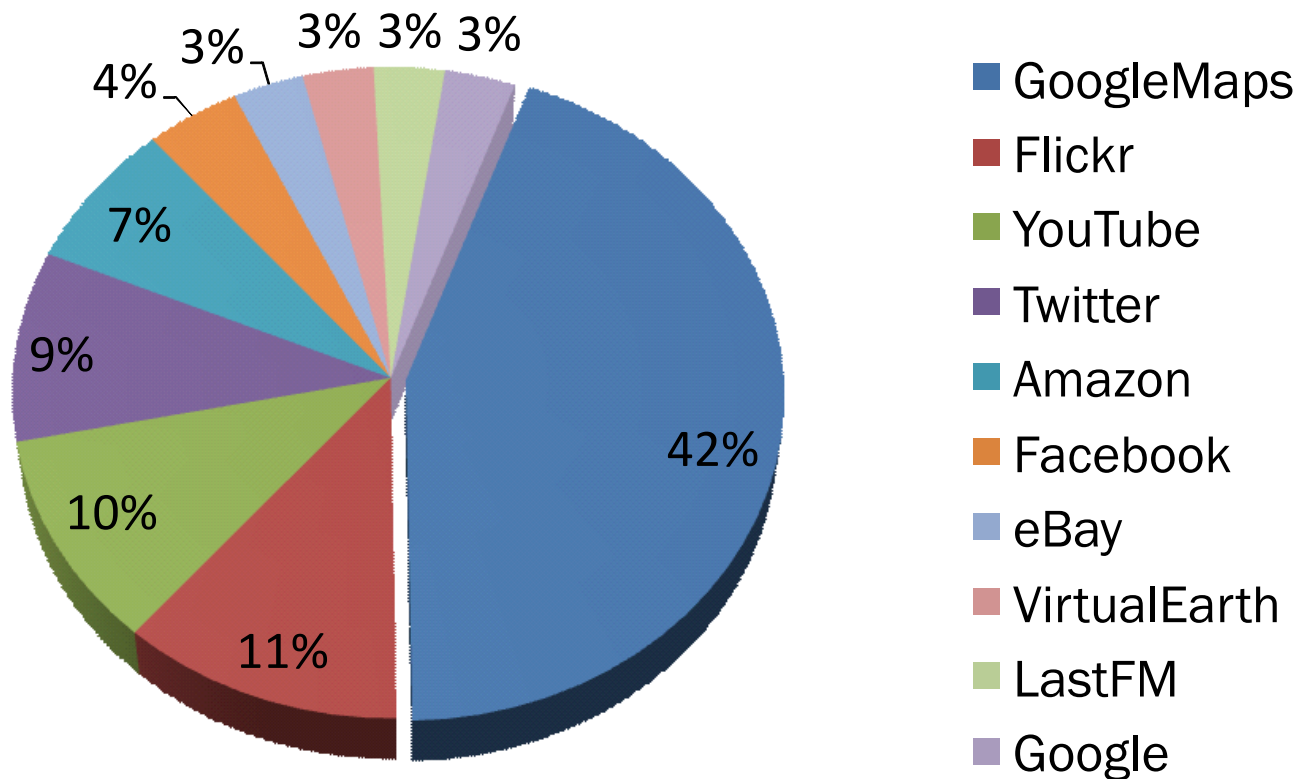
- Cosa sono
- Come si costruiscono
- Esempi geografici
- Aspetti Legali
- Uno sguardo in avanti

Mashups: Proprietà

- **Contenuti Aggregati da fonti multiple**
 - Servizi Web (API) Pubblici
 - Screen Scraping (scrAPIs) da siti Web pre-esistenti
 - Dati locali gestiti dal mashup stesso
 - Informazioni fornite dagli utenti del mashup (à la wiki)

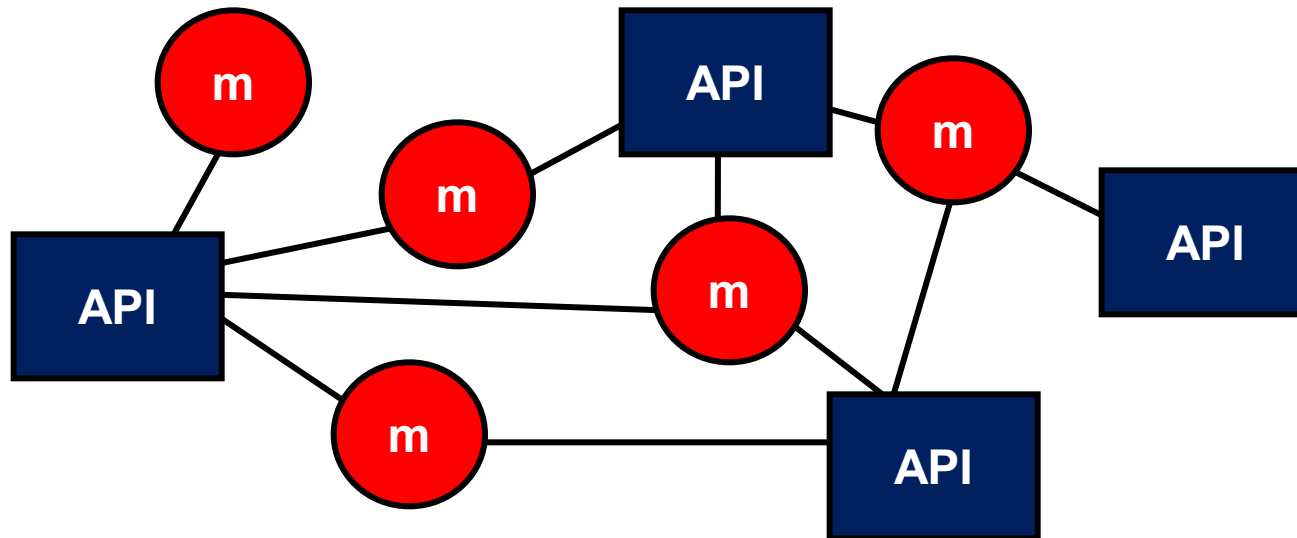


API Popolaritá

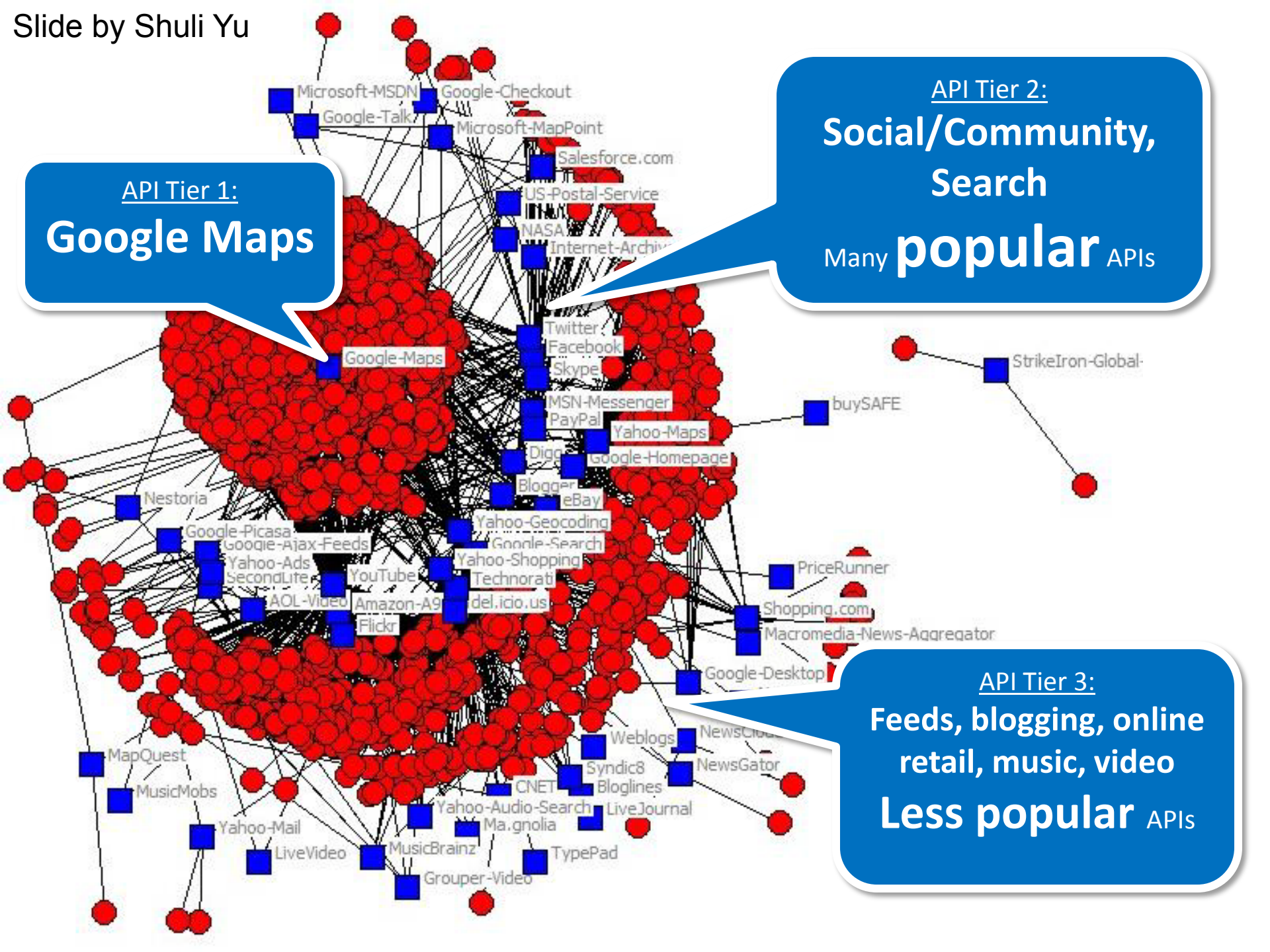


Da programmableweb.com
(All time API usage)

Ecosistema



- 2-mode Network
- ProgrammableWeb.com
(5300+ Mashups, 2300+ APIs)





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Mashups: Proprietà

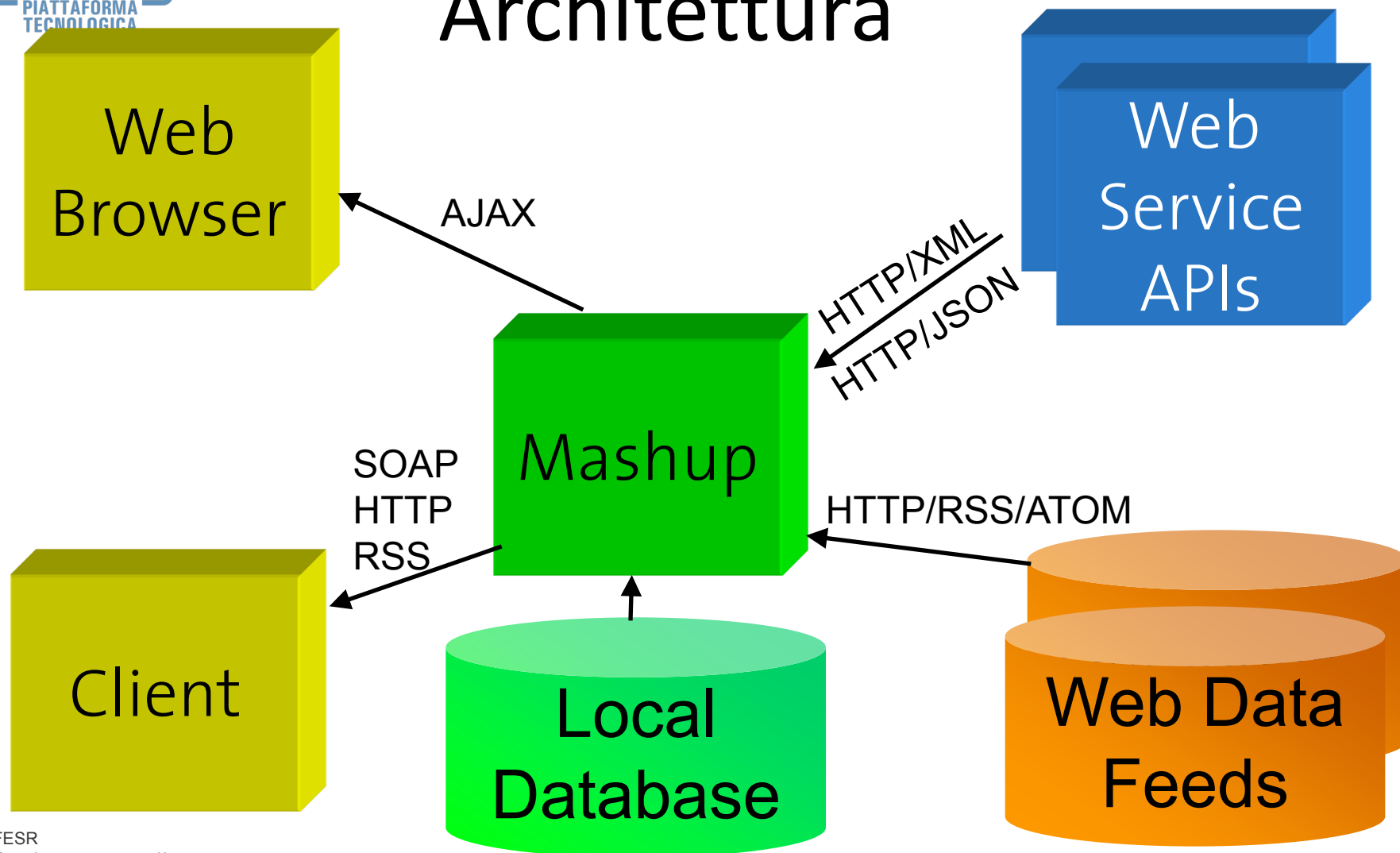
- **Contenuti Aggregati da fonti multiple**
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- **Facili da Programmare**
 - HTML5 e JavaScript sufficienti per iniziare



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Architettura

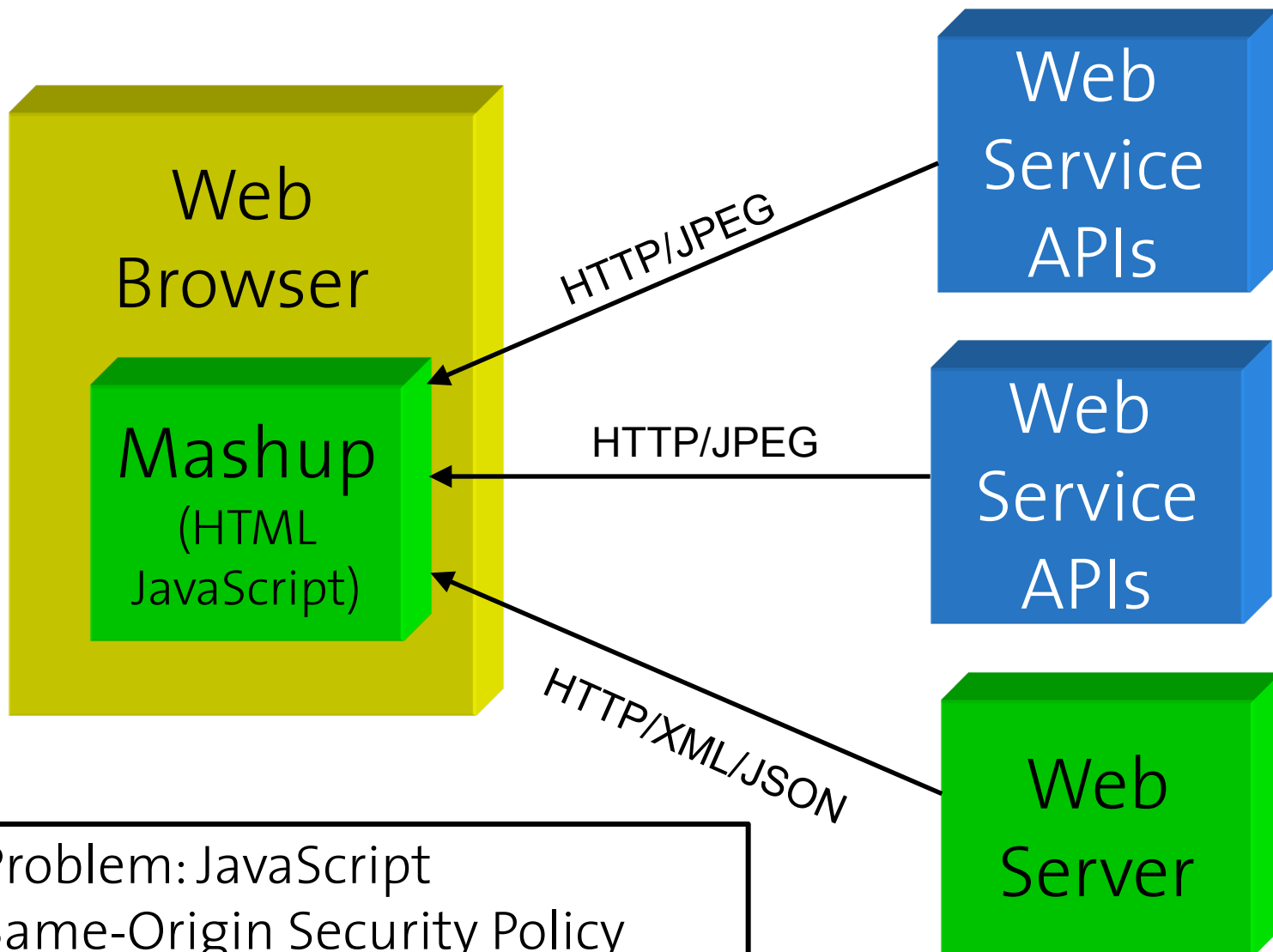




Le opportunità
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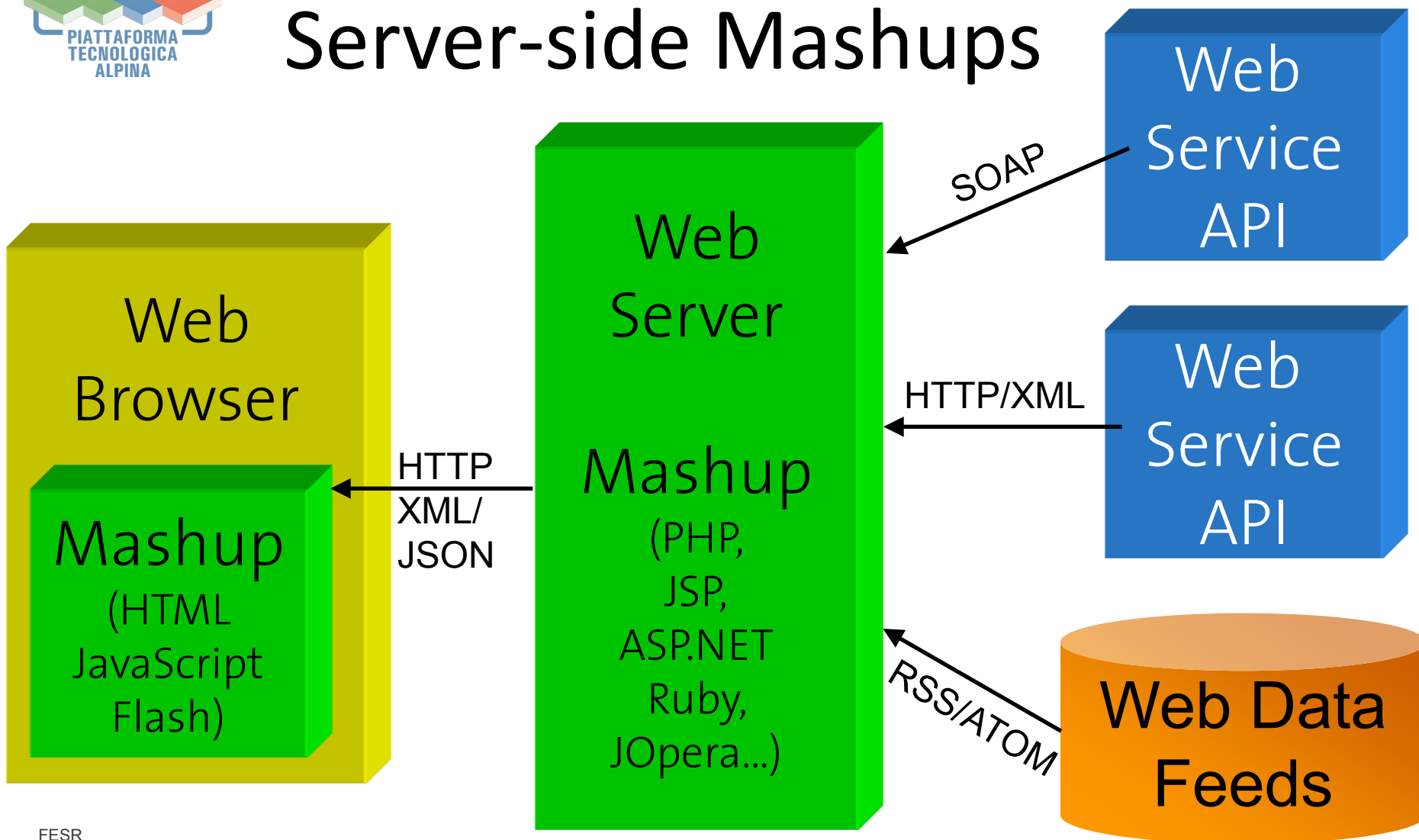


Client-side Mashups



Problem: JavaScript
Same-Origin Security Policy

Server-side Mashups



Mashups: Proprietá

- **Contenuti Aggregati da fonti multiple**
 - Servizi Web (API) Pubblici
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 - Dati locali gestiti dal mashup stesso
 - Informazioni fornite dagli utenti del mashup (à la wiki)
- **Facili da Programmare**
 - HTML5 e JavaScript sufficienti per iniziare
- **Di vita breve**
 - La stabilità e la robustezza non interessano



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Software Commerciale

- Milioni di utenti
- Sviluppo costoso e professionale
- Buona Qualità

Mashups

- Pochi utenti specializzati
- Vita breve, costo molto basso
- Good *Enough* Quality
- Sviluppati dagli utenti stessi

Numero di utenti

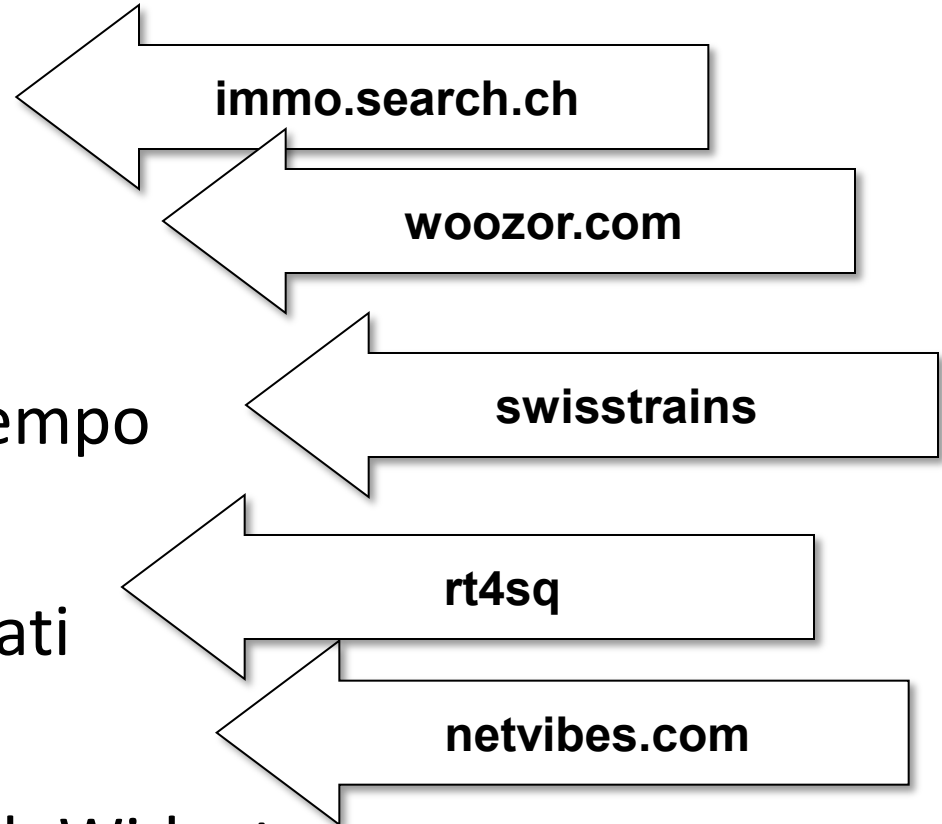
One-size-fits all

Requisiti

Ad-Hoc

Metafore Utente

- Mappa
 - Google Maps et al.
- Calendario
 - Eventi ordinati nel tempo
- Data Stream
 - Aggregare flussi di dati
- Portale
 - Composizione di Web Widgets



Consultazione Evoluzioni Città Paese Le mie previsioni del tempo

Previsioni del tempo in Como, Italia (Europa)

2 3 4 5 6

Martedì, 16 Novembre 2010

Giorno

Notte



Parzialmente nuvoloso.

Pioggia.

Massima : 12°C

Minima : 6°C

Vento : SSW alle 6 km/h

Più informazioni

°C °F

km/h m/h

Evoluzioni

Fase lunare

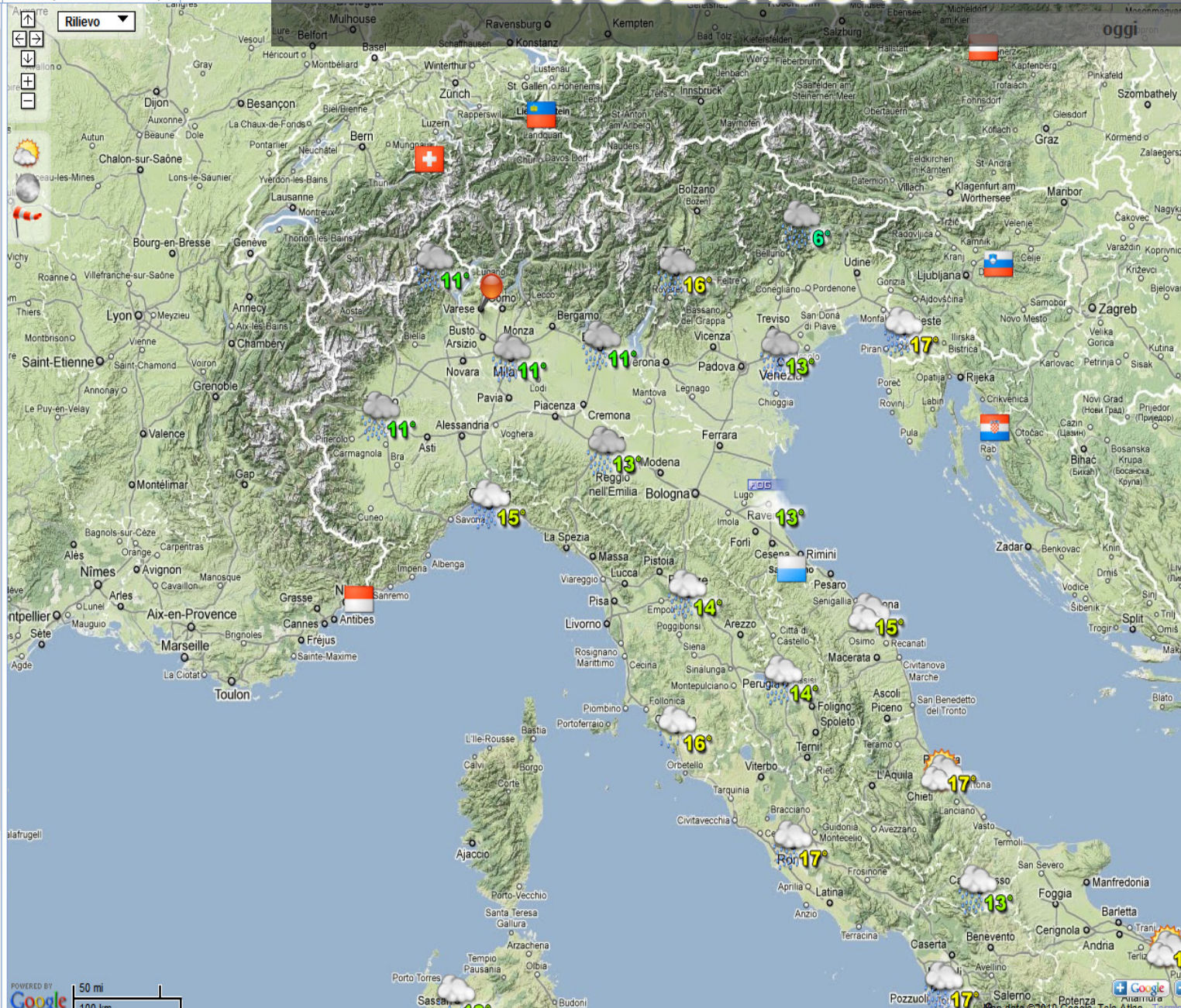


21/11/2010
17:28 UTC
28/11/2010
20:37 UTC
05/12/2010
17:36 UTC
13/12/2010
13:58 UTC

Google Webmaster

Como

45°46'48N - 9°4'48E



POWERED BY Google 50 mi 100 km

41'079 Immobilien aus 8 Quellen

[Websuche](#)

[search.ch]

[Telefonbuch](#)

[tel.search.ch]

[Karte](#)

[map.search.ch]

[Wetter](#)

[meteo.search.ch]

[Nachrichten](#)

[news.search.ch]

Immobilien

[Hilfe](#) | [de](#) | [fr](#)

Wohnung

mieten

Preis: 0 - 2'950+ .-

Zimmer: 1 - 5½+

Fläche: 0 - 150+ m²

Ort: lugano

☐ Umgebung (Karte)

Suche:

Stichwortsuche:
"Balkon", "Haust

[Liste mit Karte](#)

[Objekt-Browser](#)

[Favoriten](#)

[Dossier drucken](#)

[E-Mail-Abo](#)

[Hilfe](#)

56 Treffer		PLZ	Alter	Preis	Zi	m²	M
2,5 locali i..		6900	11 Wo.	1'500	2½	65	
2,5 locali i..		6900	11 Wo.	1'500	2½	66	
Immobilie sit..		6900	5 Wo.	1'500	3½	75	
Affitasi 2 1..		6901	3 Wo.	1'500	2½	70	
2,5 locali i..		6900	11 Wo.	1'510	2½	73	
In stabile d..		6900	10 Wo.	1'520	3½	68	
Wohnung 3½-Z..		6900	10 Wo.	1'520	3½	68	
Wohnung 3½-Z..		6900	1 Wo.	1'549	3½	87	
Bellissimo a..		6900	1 Wo.	1'549	3½	87	
2,5 locali i..		6900	11 Wo.	1'590	2½	66	
Tutte le com..		6900	1 Wo.	1'600	4½	92	
CAMPIONE D'I..		6900	6 Wo.	1'640	3	66	
Wohnung 4 Zi..		6900	1 Wo.	1'740	4	90	
Un'isola tra..		6900	1 Wo.	1'740	4	90	
Immobilie sit..		6900	5 Wo.	1'850	4½	100	
AFFITTASI A ..		6900	2 Wo.	2'090	3½	117	
4,5 locali i..		6900	11 Wo.	2'100	4½	118	
Appartamento..		6900	11 Wo.	2'150	3½	113	
Wohnung 3½-Z..		6900	10 Wo.	2'150	3½	113	
grande appar..		6900	2 Wo.	2'150	3½	129	
Appartamento..		6900	2 Wo.	2'150	5	180	
Moderno comp..		6900	12 Wo.	2'250	4½	147	
Standing sup..		6900	5 Wo.	2'380	5½	113	



[Compiz plugins are affected by Apple software patents!](#)

source: [digg](#)

posted: Sun Apr 15, 2007

Sorry but I wouldn't want to risk that we get forced to remove a plugin or anything. There are laws, and even if we don't like it, we have to get around with them. Sure it's stupid that something like this can be patented but well.. theoretically we could include this patch into a repository in Europe and only make it aviable for them (...)

[Are Mobile Phones Wiping Out Bees?](#)

source: [slashdot](#)

posted: Sun Apr 15, 2007

Mz6 wrote with a link to an article on The Independent site about a most unusual scientific theory. "Some scientists suggest that our love of the mobile phone could cause massive food shortages, as the world's harvests fail. They are putting forward the theory that radiation given off by mobile phones and other hi-tech gadgets is a possible answer to one of the more bizarre mysteries ever to happen in the natural world — the abrupt disappearance of the bees that pollinate crops."

[Comparison between four of the biggest Linux distributions.](#)

source: [digg](#)

posted: Sun Apr 15, 2007

This article compares four of the major distros, from an impartial point of view and try to show some of the facts that make them different, so you can read and choose which better suite your needs.

[HS Students Compete In FIRST Robotics Competition](#)

source: [slashdot](#)

posted: Sun Apr 15, 2007

A trio of teams have banded together to succeed in the 'FIRST Robotics Competition'. The teams Bobcat Robotics from South Windsor, Connecticut, Highrollers from Las Vegas, Nevada, and Gompei and the HERD from Worcester, Massachusetts combined to create a versatile robot geared to succeeding at a number of odd tasks. "These young people had six weeks to perfect their machines. And they had the enthusiasm of any athletic competition. From tie-dyed shirts to human hair dyed in school colors, competitors from 23 countries showed that math, science and brains can provide a lot of excitement ... Whether it is computer programming, wiring a motor or scouting rivals to develop strategy, students said the skills they develop often go beyond the contest. Clearly, the event has piqued the interest of major sponsors such as NASA, which will broadcast webcasts of the competitions."

[Are mobile phones wiping out our bees? - Independent Online Edition > Wildlife](#)

source: [del.icio.us](#)

posted: Sun Apr 15, 2007

[Microsoft Google Algorithm Interview Questions](#)

source: [del.icio.us](#)

posted: Sun Apr 15, 2007

Customize doggdot.us

[sign up](#) or [log in](#)

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Other features: story tracking, link emailing, open links in windows, refreshing. Just sign up to customize.

Ads by Google

[SQL Database Comparison](#)

Compare both Structure and Data Command Line Interface, Reports
[www.apexsql.com](#)

[Amanda Backup Software](#)

Open Source Backup & Recovery Simple, Secure, Enterprise Ready
[amanda.zmanda.com](#)

[Tetra SDS alarming](#)

TETRA alarm monitoring & dispatch. Software application for TETRA
[www.zonith.com](#)

[Redhat Linux for Less](#)

Bargain Prices on Redhat Software On-Site Technical Expertise
[www.mce.com](#)

[Linux Apache MySQL Perl](#)

Klausur Informatik - Ihr Partner für Offene Systeme
[www.klausur.ch](#)

FLASH EARTH

- ☐ Google Maps
- ☐ Microsoft VE (aerial)
- ☐ Microsoft VE (labels)
- ☐ Yahoo! Maps
- ☐ Ask.com (aerial)
- ☐ Ask.com (physical)
- ☐ OpenLayers
- ☒ NASA Terra (daily)

FlashEarth.com



Search for a location:

Link to this location: 

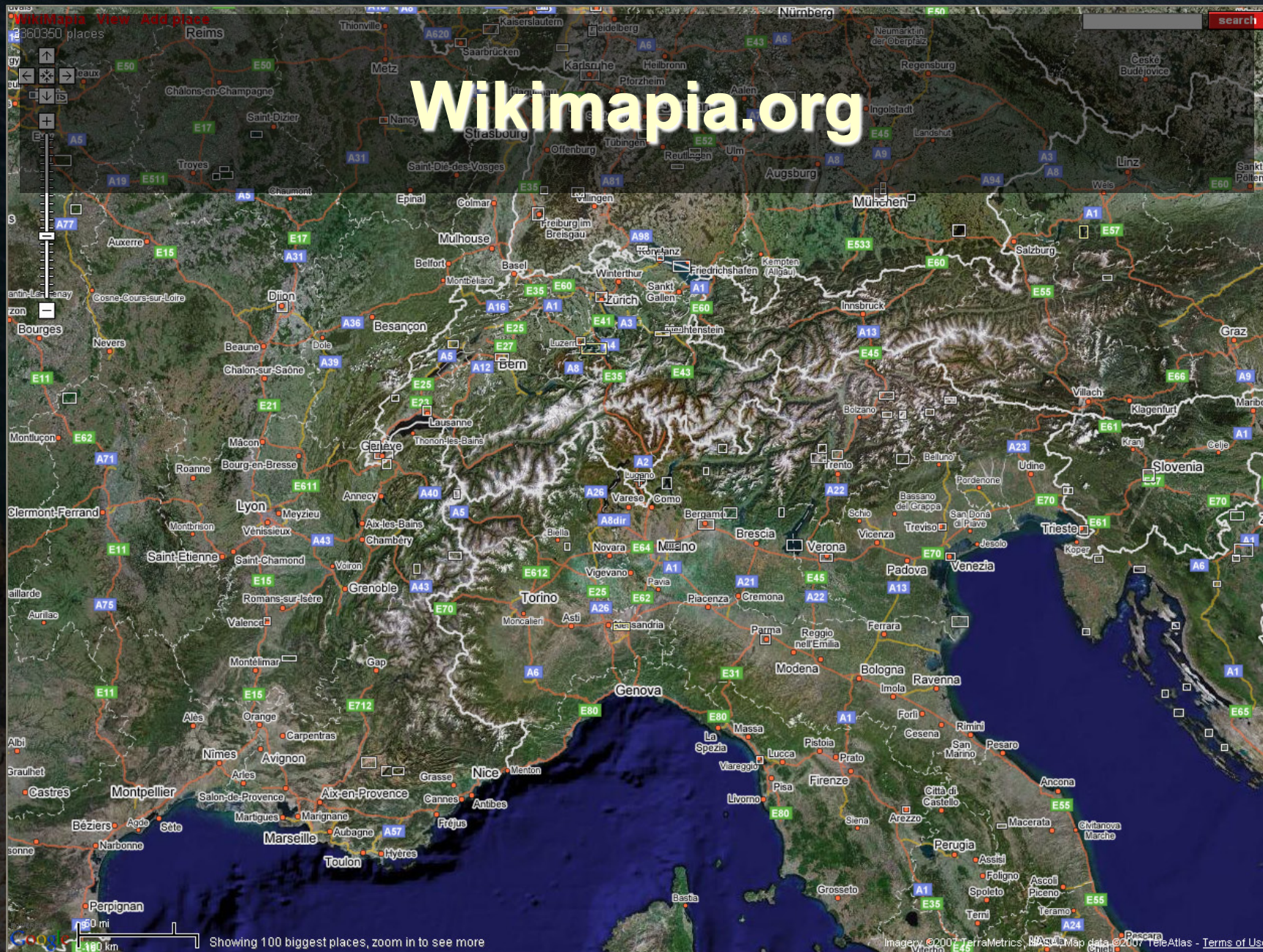
Latitude: 45° 58' 53" N

Longitude: 8° 59' 24" E

Imagery courtesy of NASA/GSFC/JPL-Caltech, OnEarth, MODIS Rapid Response

(gs) Grid-Server by mediatemple

[See all results directly on Flickr](#)



Wikimapia.org

Showing 100 biggest places, zoom in to see more

Imagery ©2007 TerraMetrics, NASA Map data ©2007 TeleAtlas - Terms of Use

rt4sq

Real Time Check-ins Map

19

132

Tweet

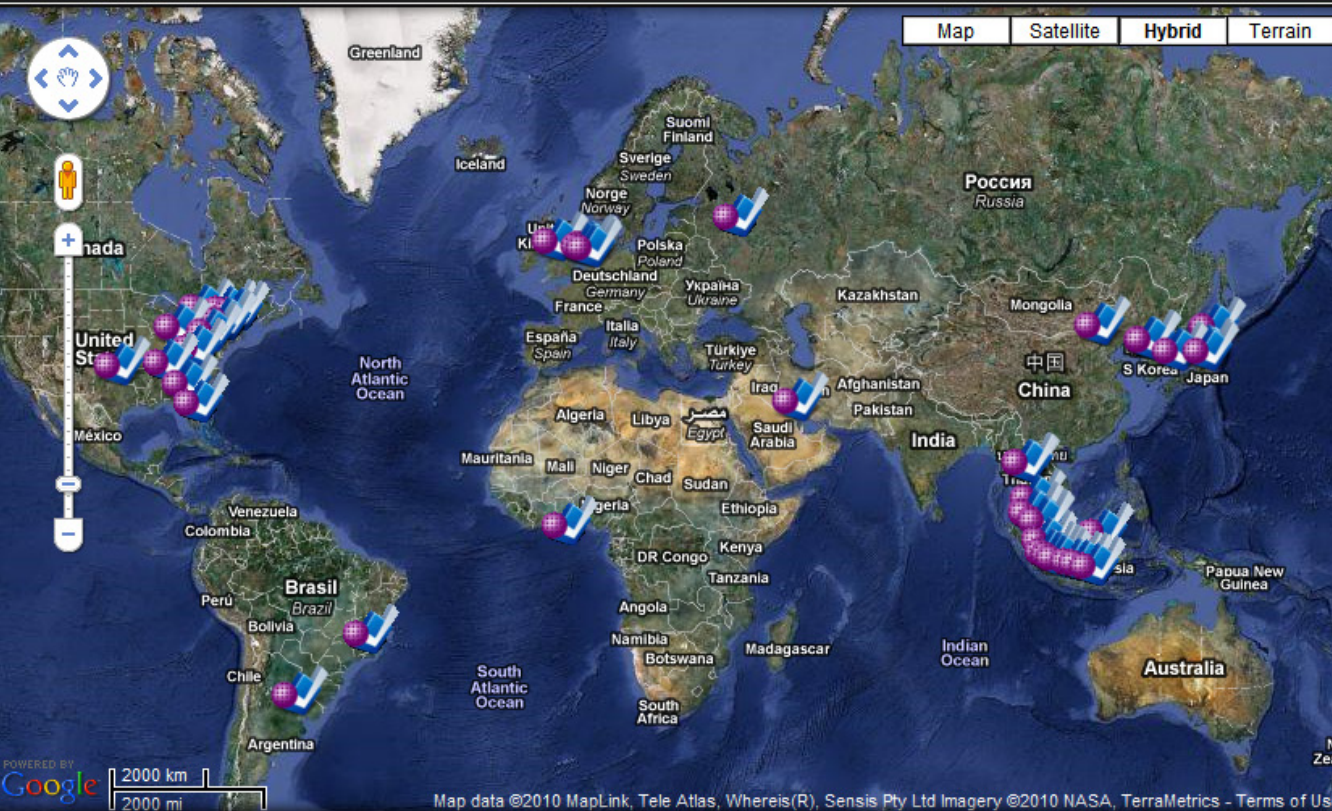
Like



22

TWEETS
MIN

foursquare check-ins
shared on twitter



BobbyDeGuitarra

I'm at Brooklyn Promenade (New York).
<http://4sq.com/buFmGZ>



CorinaPignatti

I'm at Herman Badillo Bilingual Academy (Carolina street, Buffalo).
<http://4sq.com/8Ykodf>



deandegil

I'm at RadioShack Corporation (300 RadioShack Circle, Cherry, Fort Worth) w/ 6 others.
<http://4sq.com/9stzCi>



defsoulz

Yo (@ Technology Park Malaysia)
<http://4sq.com/avY76z>



Juliusdharmadi

I'm at Domino's Pizza Hayam Wuruk (Hayam Wuruk Plaza 1, Jalan Hayam Wuruk No 108, Jakarta) w/ 2 others.
<http://4sq.com/ca2T3G>

POWERED BY
Google

2000 km
2000 mi

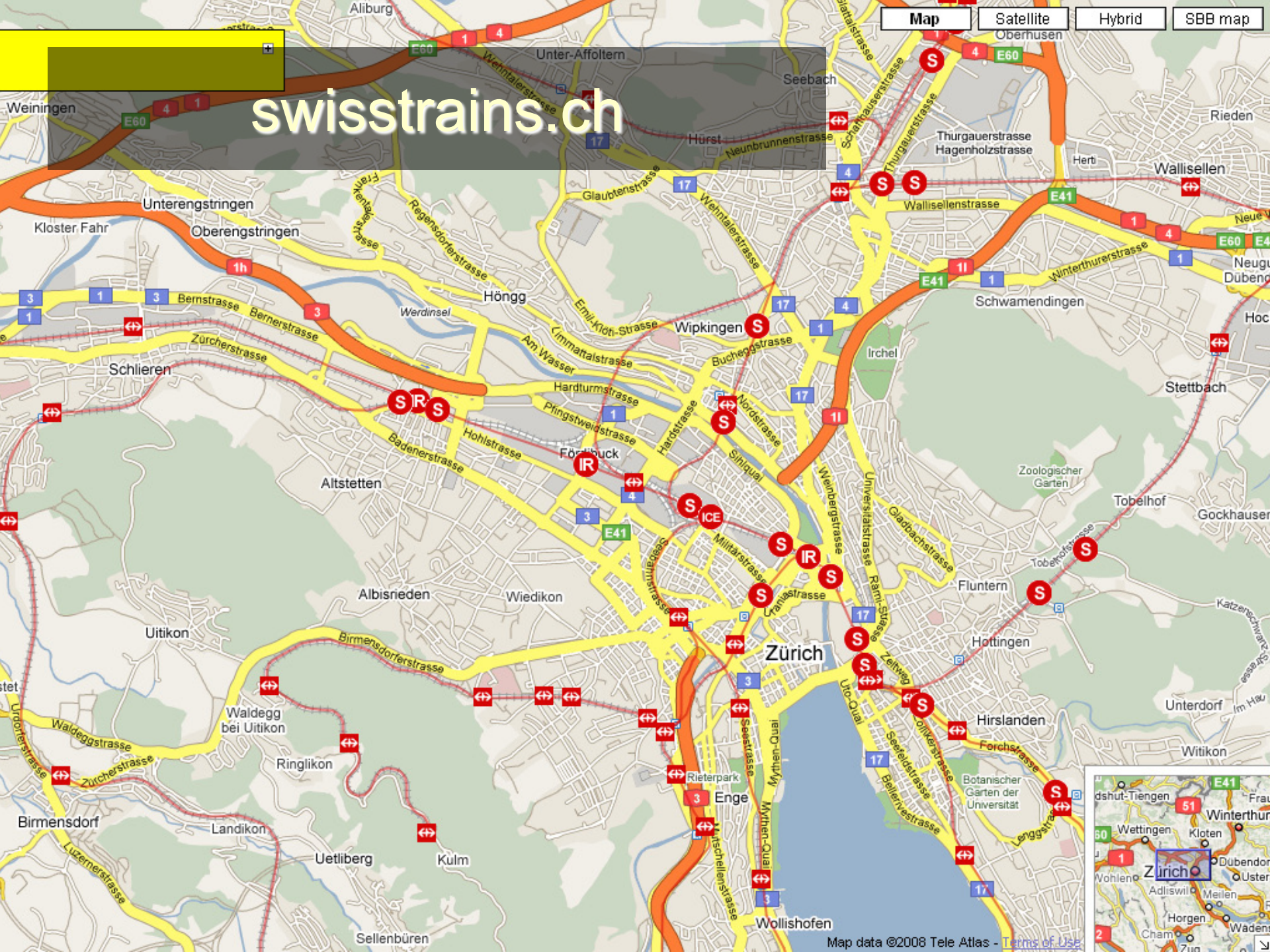
Map data ©2010 MapLink, Tele Atlas, Whereis(R), Sensis Pty Ltd Imagery ©2010 NASA, TerraMetrics - Terms of Use

"A real-time map visualization of Foursquare check-ins shared on Twitter"

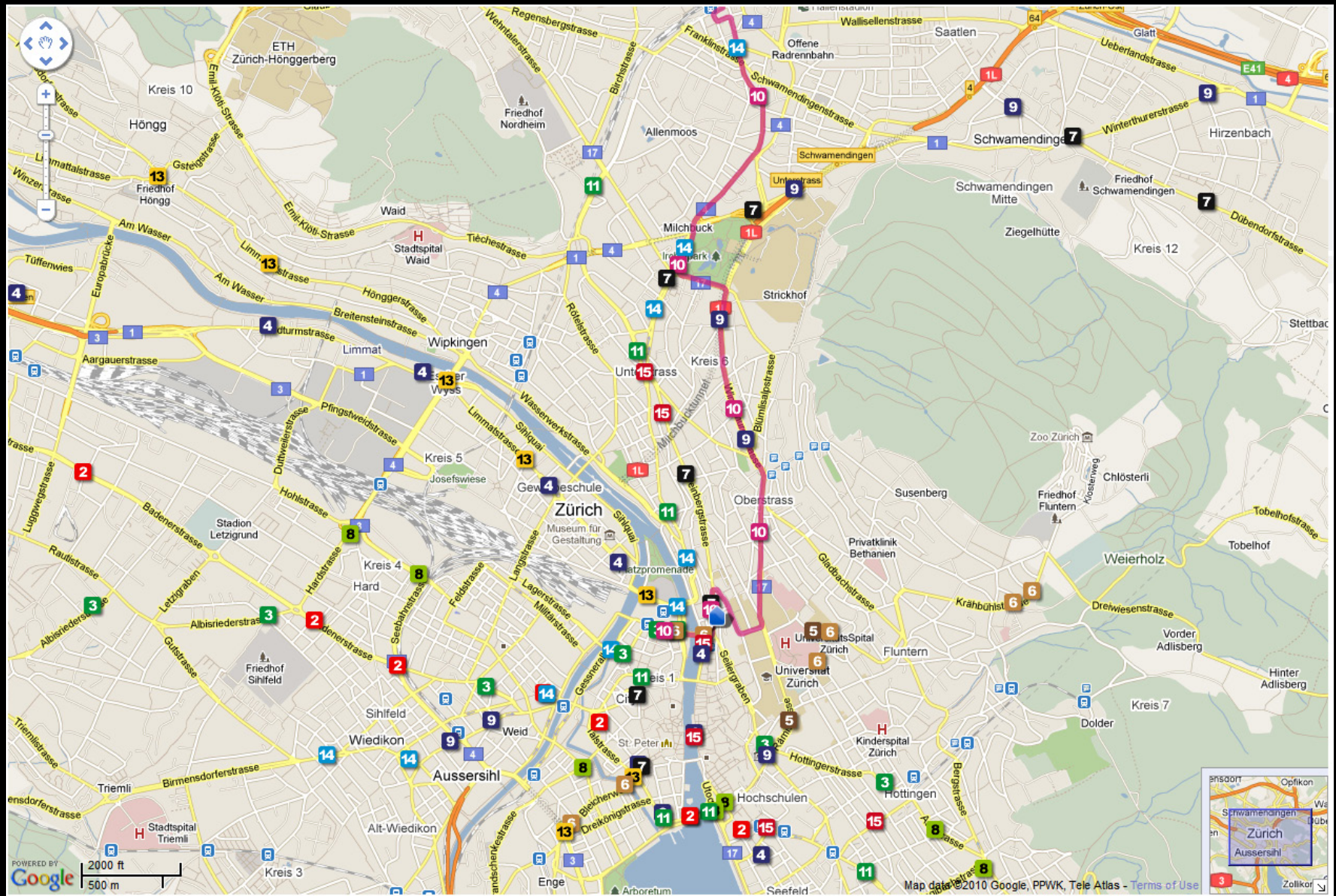
zauber

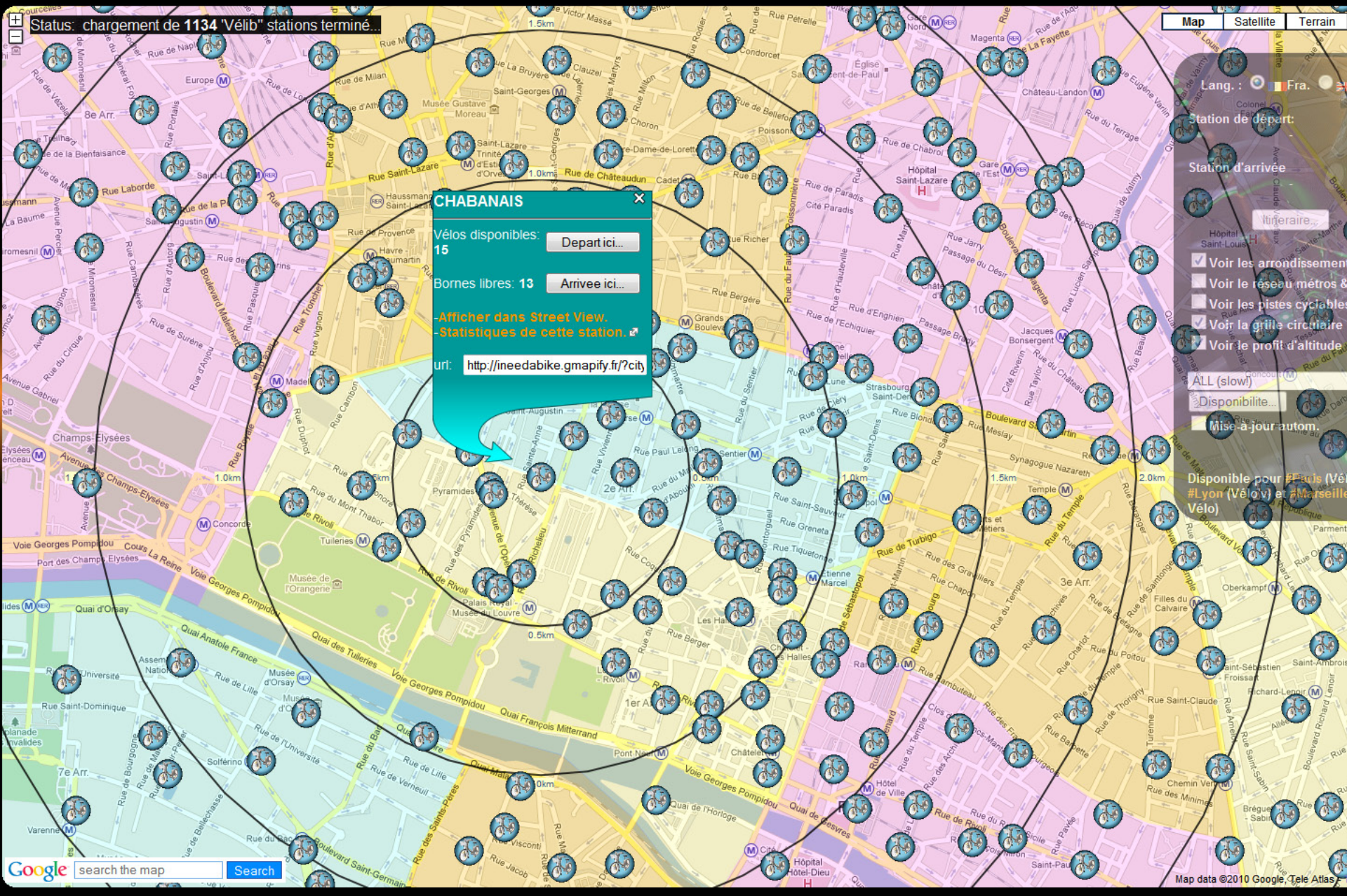
swisstrains.ch

Map Satellite Hybrid SBB map



local.ch







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Esempi

- weatherbonk.com
- woozor.com
- doggdot.us
- flashearth.com
- wikimapia.org
- netvibes.com
- immo.search.ch
- swisstrains.ch
- ineedabike.gmapify.fr
- rt4sq.zaubersoftware.com
- local.ch

Sfide Tecnologiche

- Composizione/Integrazione
- Estrazione Dati (Pull/Push/Scraping)
- Eterogeneità
- Qualità delle fonti/servizi
- Gestione eccezioni
- Evoluzione

Aspetti Legali

- Anche se tecnicamente é diventato facile riusare il software per comporre mashups, rimangono aperti alcuni problemi legali:
- Quali sono i “Terms of Use” delle API?
- Fair-Use: esiste un “Right to Remix”?
- Security/Privacy
 - Affidereste la vostra chiave d’accesso ad un mashup sconosciuto?



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Conclusioni

- Grazie a standard tecnologici emergenti i costi di integrazione di dati e applicazioni sul Web si sono ridotti moltissimo
- É diventato quindi possibile costruire Mashups un nuovo tipo di applicazioni Web che compongono in maniera leggera Web services API e fonti di dati Web



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Riferimenti

- <http://www.programmableweb.com/>
- Mashups'10 - 4th International Workshop on Web APIs and Services Mashups @ ECOWS <http://mashup.inf.unisi.ch/mashups2010/>
- Shuli Yu and C. Jason Woodard, **Innovation in the Programmable Web: Characterizing the Mashup Ecosystem**, ICSOC Workshops, LNCS 5472, 136-147, 2008
- C. Cappiello, F. Daniel, M. Matera, C. Pautasso, [Information Quality in Mashups](#), IEEE Internet Computing, vol. 14, no. 4, pp. 14-22, Jul/Aug 2010
- C. Pautasso, [Composing RESTful Services with JOpera](#), In: Proc. of the International Conference on Software Composition ([SC2009](#)), July 2009, Zurich, Switzerland.