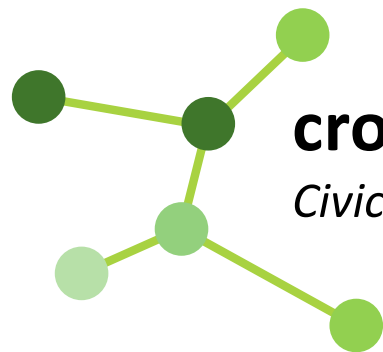


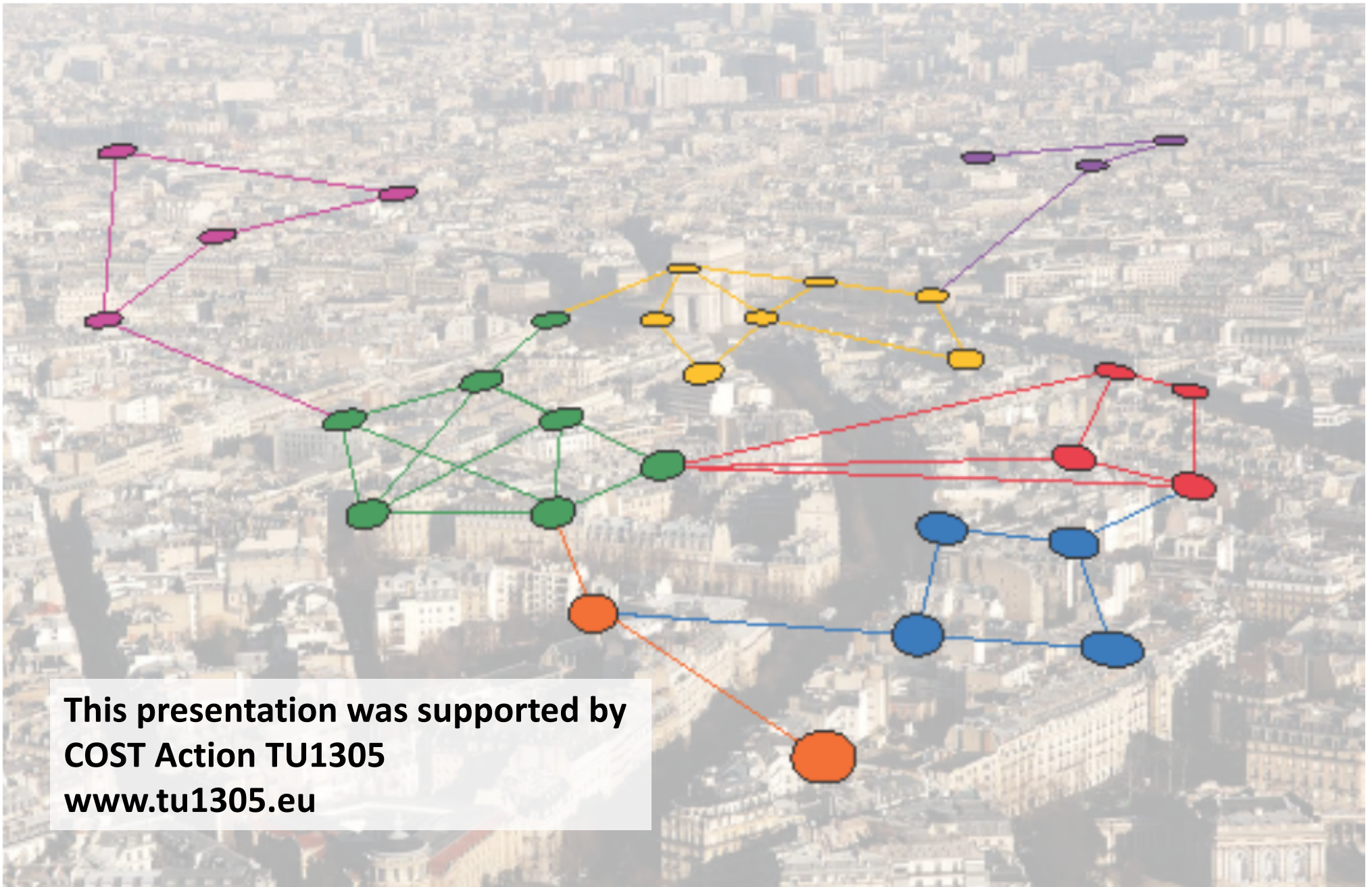
Intelligent Transport Systems: Tool or Toy?

Andrew Nash
andy@andynash.com



crowdsourced-transport.com

Civic Technology for Sustainable Transport



**This presentation was supported by
COST Action TU1305
www.tu1305.eu**

Outline

- Crowdsourcing and ITS
- Transport crowdsourcing:
 - *Reporting*
 - *Analysis*
 - *Collaboration*
 - *Action*
- Toy or tool? ... *You decide.*

Crowdsourcing and ITS

ITS is the ...

- *application of advanced communications and information technologies ...*
- *to help improve the planning and operation of transport systems.*

ITS makes transport safer, more efficient and better suited to fulfilling user needs.

Crowdsourcing and ITS

Crowdsourcing is the ...

- *application of advanced communications and information technologies ...*
- *to outsource functions – once performed by institutions – to a large, undefined network of people.*

ITS makes transport safer, more efficient and better suited to fulfilling user needs.

Crowdsourcing and ITS

I will show you how to ...

- *apply advanced communications and information technologies ...*
- *to outsource the planning and operation of transport systems.*

... in other words, how CROWDSOURCING will make transport safer, more efficient and better suited to fulfilling user needs.

Transport Crowdsourcing

4 ways to crowdsource transport

- *Report*
- *Analyse*
- *Collaborate*
- *Act!*

Report

Home Connect Discover Me Search

Tweets

- Following
- Followers
- Favorites
- Lists

Tweet to cta

@cta

cta @cta
Official Twitter feed of the Chicago Transit Authority (the CTA)!
Chicago, IL · <http://www.transitchicago.com>

6,987 TWEETS 52 FOLLOWING 22,042 FOLLOWERS

Tweets All / No replies

cta @cta 9h
79 79th buses are temporarily rerouted via 79th, Ashland, 83rd, Damen, and 79th.
Expand

cta @cta 14h
Some 95th-bound Red Line trains are operating with delays after earlier fire department activity at Sheridan. Service is resuming.
Expand

cta @cta 15h
95th-bound Red Line trains are experiencing a delay at Sheridan due to fire department activity.
Expand

cta @cta 18h
The temporary reroute of 3, 4, 6, 14, 10, 126, 130, 146, 147 buses near Grant Park has ended.
Expand

Who to follow · Refresh · View all

- Streetfilms** @Streetfilms
Followed by Aimee Custis and oth...
Follow
- Future Mobility Now** @fumono
Followed by BestPracticeMobility ...
Follow
- Darrel W. Cole** @transPR
Followed by Karen Quinn Fung an...
Follow

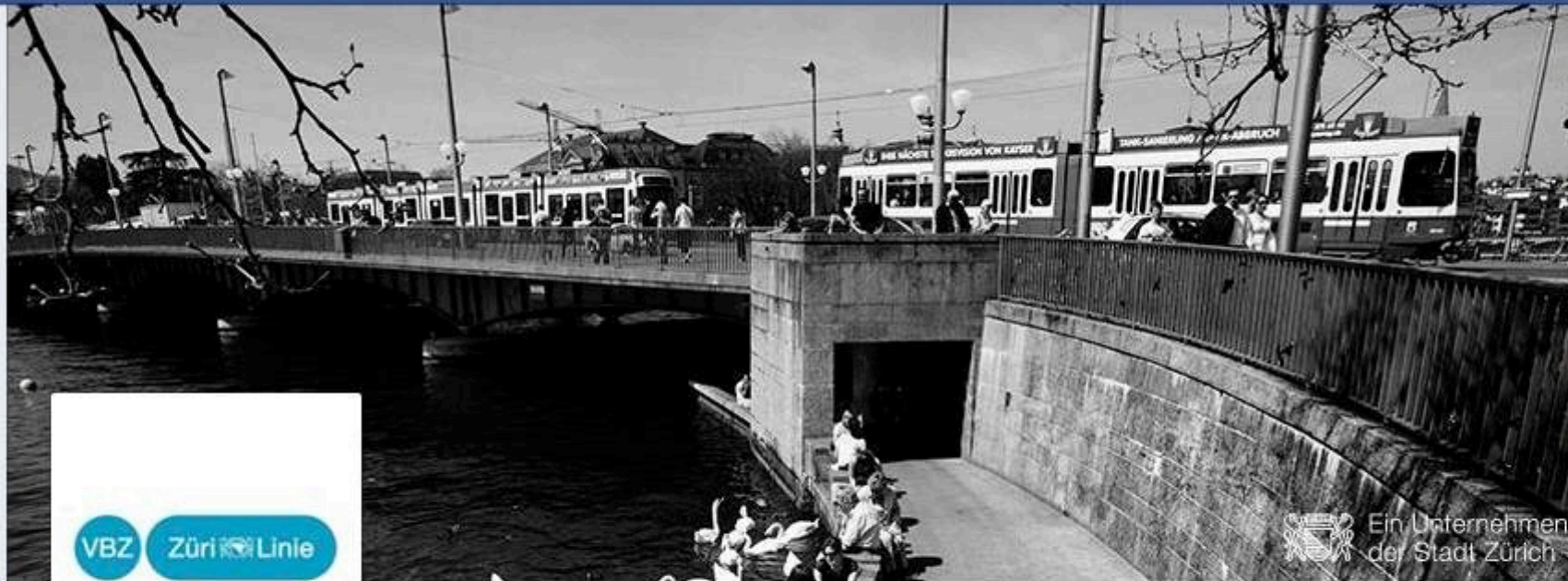
Mainstream Social Media: Twitter – Chicago



Create Page

Recent

2013
2012
2011
2010
1976
1975
1971
1969
1968
1960
1957
1955
1950
1939
1930
1927
1905
1900
1898
1896
1894
Founded



VBZ Züri-Linie

VBZ Züri-Linie

7,041 likes · 293 talking about this

✓ Liked

Message



Product/Service

Die Verkehrsbetriebe Zürich mit ihren Fahrzeugen gehören zu Zürich wie die Limmat und der See. Umsteigen lohnt sich. www.vbz.ch

About - Suggest an Edit



Photos

7,041

Likes



Fahrplan



VBZ Apéro Game



Events



Videos

Welcome

Welcome

Mainstream Social Media: Facebook – Zurich

Report an Issue

Follow this Place

Sort by: Hotness ▾

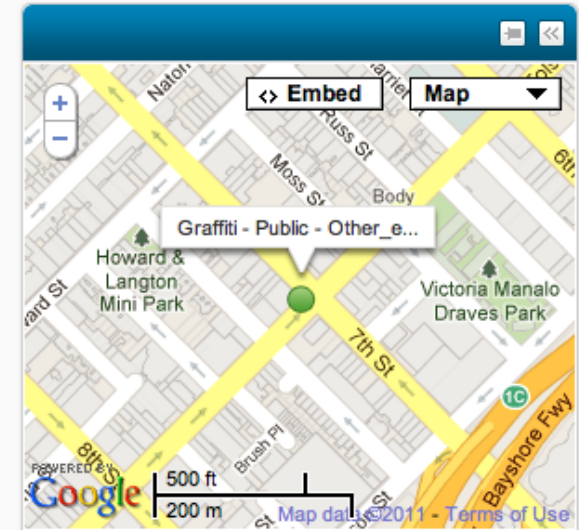
- 2

Graffiti - Public - Other_enter_additional_details_below
Acknowledged
 290-298 7th St San Francisco, CA 94103, USA - South Of Market
 reported about 8 hours ago
 SF311 about 8 hours ago
 Your request to SF311 has been accepted. Your service request ID is 992366
[Join the conversation!](#)
- 2

Garbage and/or overgrowth near building **Acknowledged**
 142 Brighton Ave San Francisco, CA 94112, USA - Ingleside
 reported about 9 hours ago
 SF311 about 9 hours ago
 Your request to SF311 has been accepted. Your service request ID is 992335
[Join the conversation!](#)
- 2

Graffiti - Public - Other_enter_additional_details_below **Acknowledged**
 Ocean Ave & Aptos Ave San Francisco, CA 94127, USA - Ingleside
 reported about 9 hours ago
 SF311 about 9 hours ago
 Your request to SF311 has been accepted. Your service request ID is 992333
[Join the conversation!](#)
- 2

Illegal Dumping **Acknowledged**
 1927 Alemany Blvd San Francisco, CA 94112, USA - Outer Mission
 reported about 15 hours ago



Top Users Who's Watching

- Sinclair
- Raph
- Neighboreyes
- hubbert
- sodapop

[More Top Users Nearby >](#)

Generic Reporting App – SeeClickFix



FixMyTransport

Euston, we have a problem

BETA

[ABOUT](#)[FEEDBACK](#)[mysociety](#)[DONATE](#)[OUR SITES](#)[Sign in or sign up](#)

Had a bad train journey?

Report your problem with a:

STOP or STATION

JOURNEY or ROUTE

and we will help you get it fixed



Follow us on Facebook



Follow us on Twitter

How does it work?

What FixMyTransport does

- ✉ Reports problems
- 🔍 Finds people responsible
- ❤ Grows support
- 📶 Tracks progress
- ✓ Gets things done

FixMyTransport Launches!

Welcome to FixMyTransport, a site specially built for public transport users in Britain who want to make public transport better for us all. We've worked hard to make the site work well, but we're sure there are plenty of things we won't have got quite right - so please do [send us feedback](#) if there's anything that's not right, or anything you'd like to see added or improved.



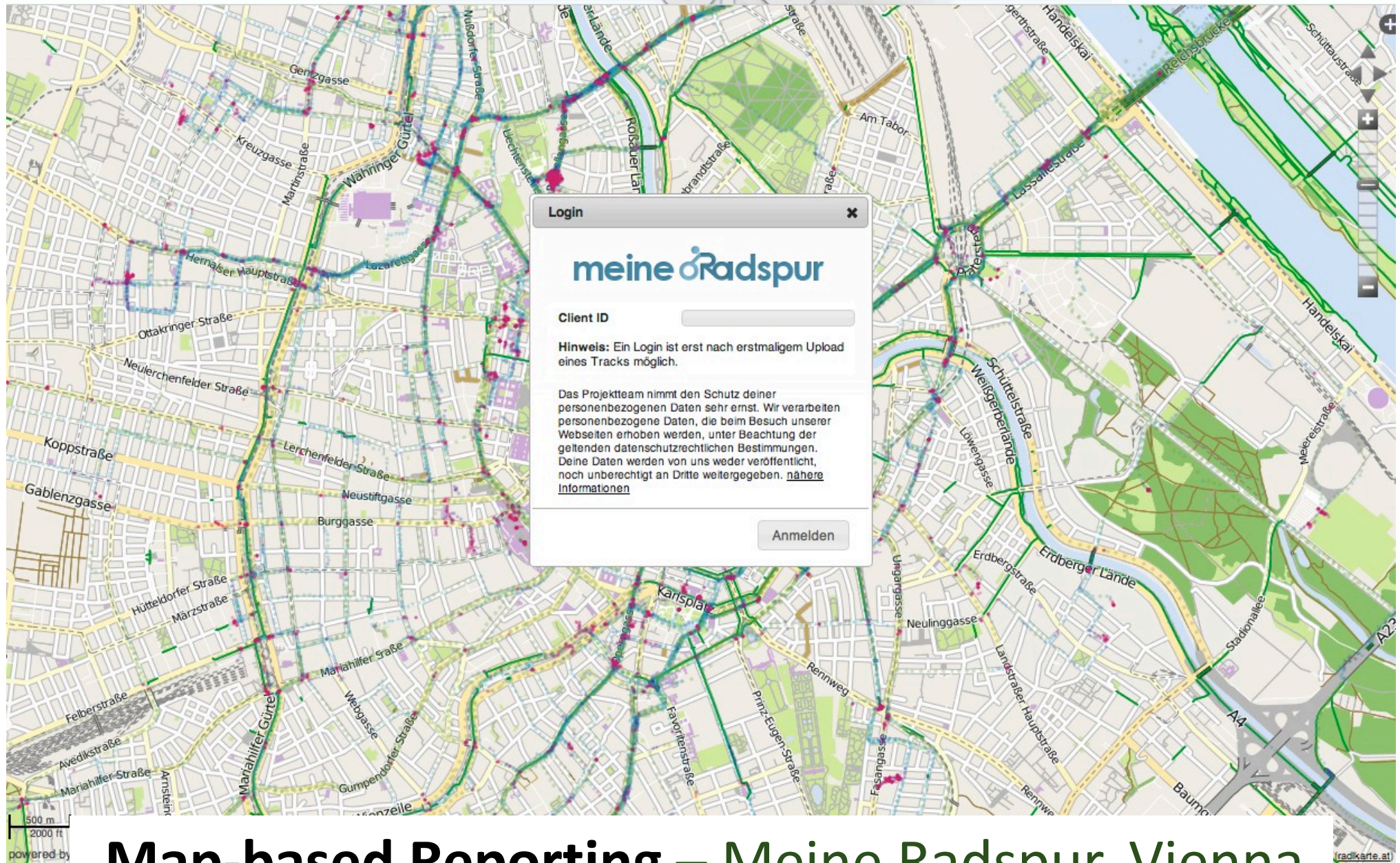
Browse Site

[View recent issues](#)[View routes by region](#)[Map of issues](#)

Customised Reporting App – FixMyTransport

feeling sunny you could even leave a compliment about a route or station that you think is particularly





Map-based Reporting – Meine Radspur, Vienna



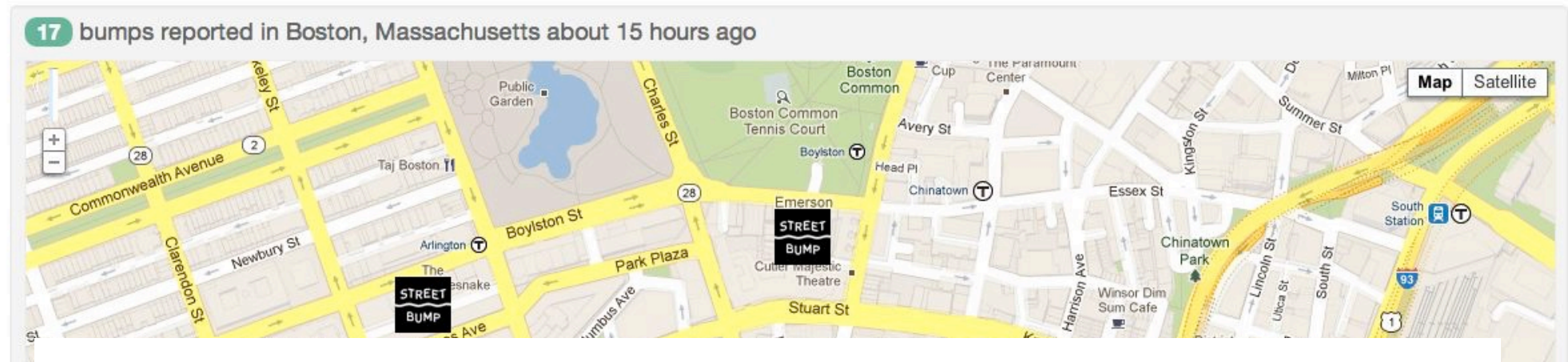
What's Street Bump?

Street Bump is a crowd-sourcing project that helps residents improve their neighborhood streets. Volunteers use the Street Bump mobile app to collect road condition data while they drive. The data provides governments with real-time information to fix problems and plan long term investments.

Report potholes automatically using smart phone accelerometer.

Where is Street Bump being used?

1,837 trips recorded, 102,506 bumps detected



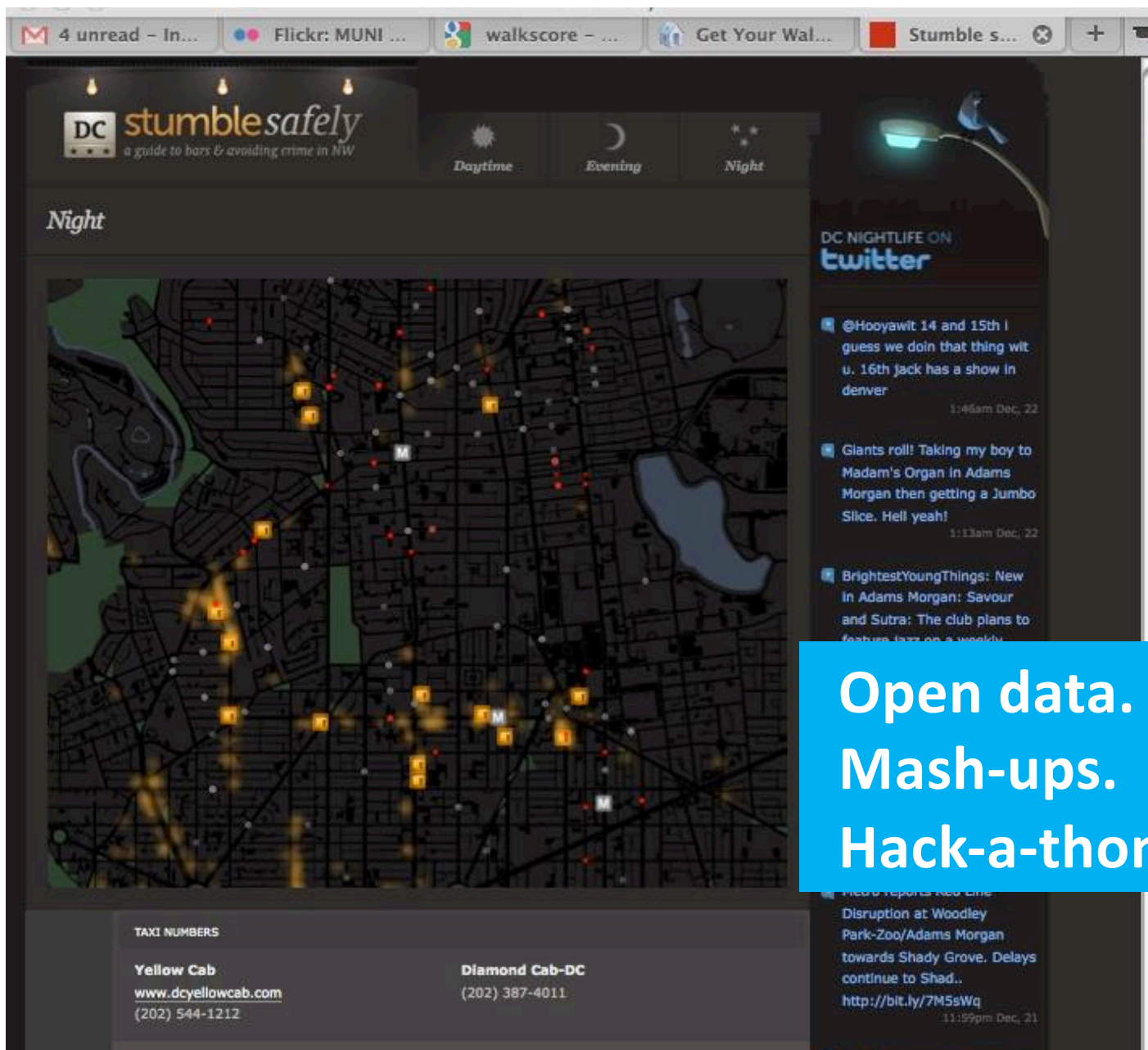
Sensor-based Reporting – Street Bump (Boston)

Analyse

Collecting & Analysing data is *easy*

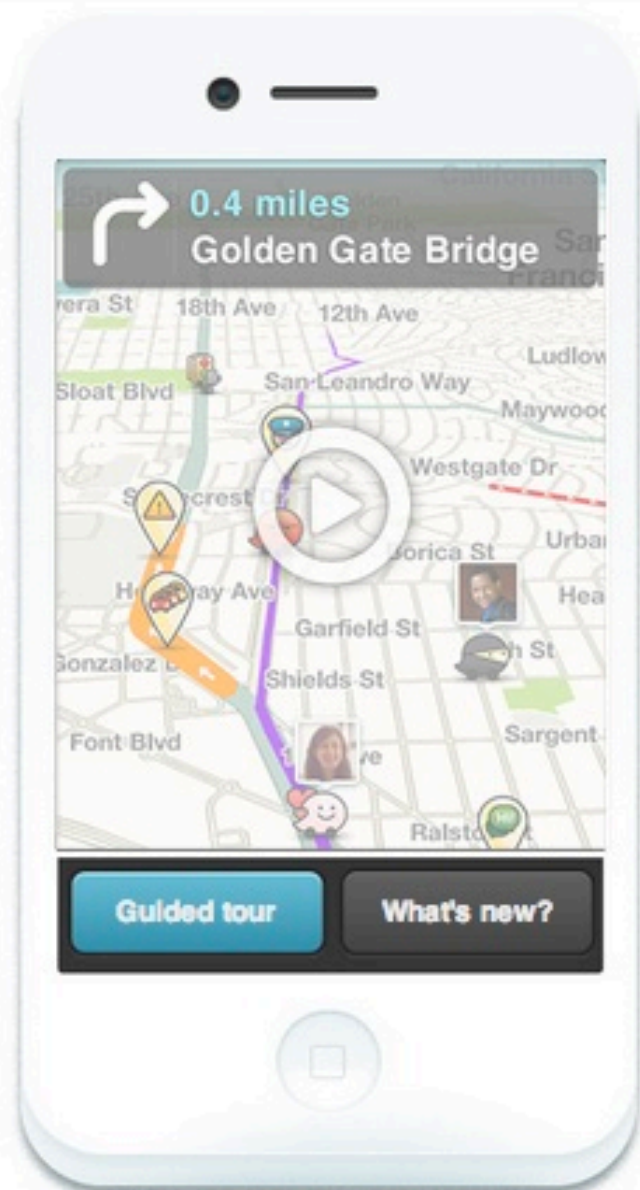
- Open data;
- Transport application data (tracking);
- Resident-collected data (cheap sensors).

*... vastly improved computing enables **anyone** to analyse scenarios, evaluate service, and develop their own transport plans.*



Open data.
Mash-ups.
Hack-a-thons.

Use Open Data to create apps & visualisations
Stumble Safely, Washington D.C.



Get the best route,
every day, with real-time
help from other drivers.



Waze is the world's fastest
based traffic and navigat
in your area who share r
saving everyone time an
commute.

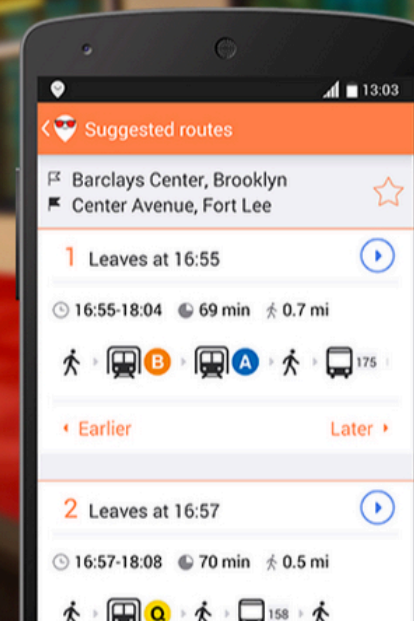
Tracking data.
Incident reporting.
Guidance.



RIDE PUBLIC TRANSIT SMARTER

Get the fastest, least crowded routes in real time

DOWNLOAD APP



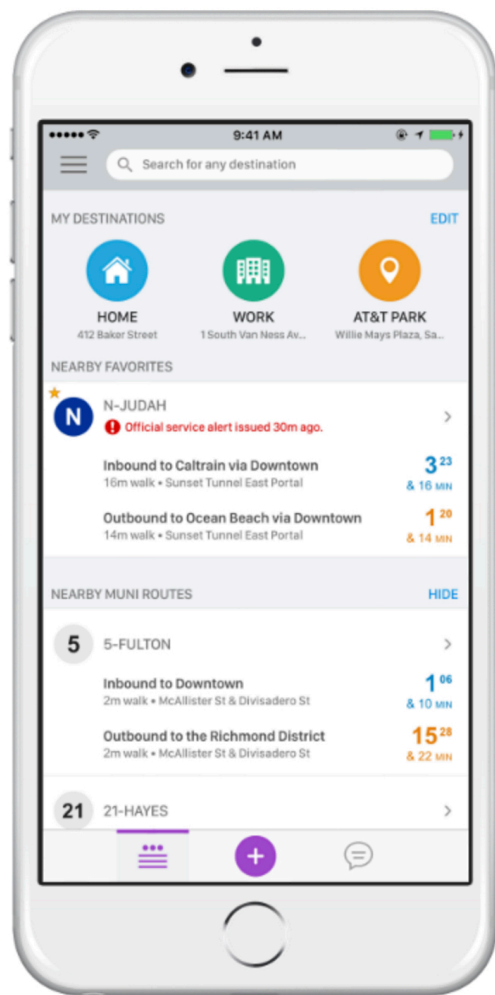
NAVIGATE YOUR CITY

Moovit takes the hassle out of using public transit by giving you all the info you need, right at your fingertips.

Enter New Trip



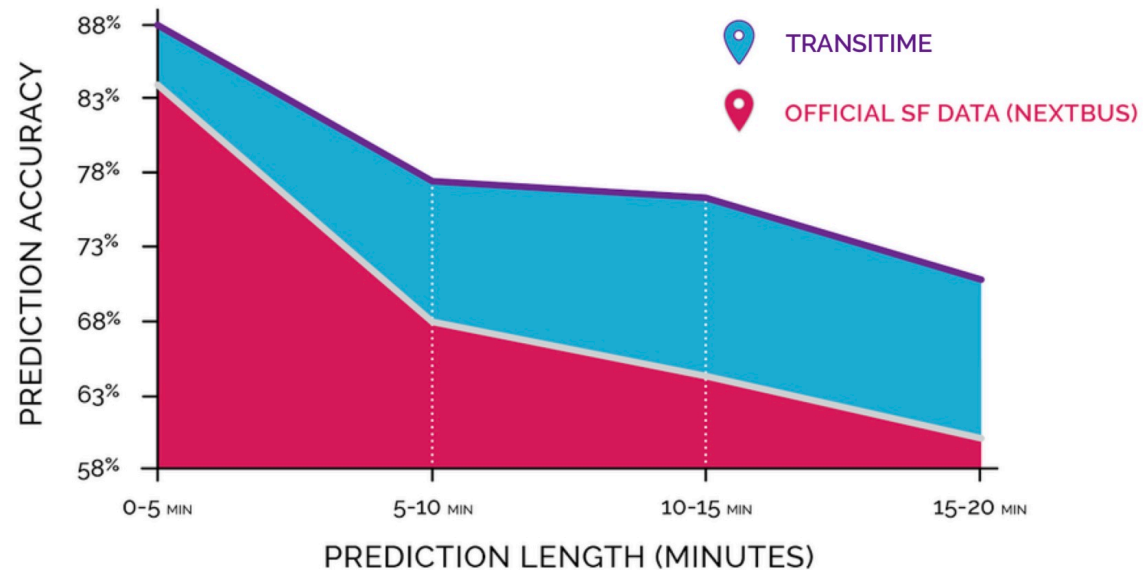
Open Source Bike Tracking App – Cycle Tracks (SF)



Meet Transitime

Swiftly has developed a more accurate real-time transit arrival prediction algorithm, called Transitime, to provide you with more accurate arrival and departure times. These predictions are accurate up to 20% more often than most current city-wide systems and bus stop signs.

PREDICTION ACCURACY

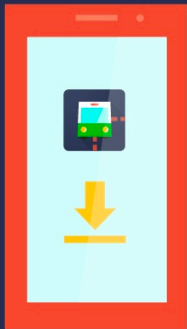


Swift app and “Transitime” analysis tool

More accurate than transit agency data?

¿Cómo participo?

1



Descarga la app

Disponible para dispositivos Android 4.1 y superior.

2



Mapea

Usa la app para registrar tus recorridos en autobús, microbús y vagoneta en equipo o de forma individual.

3



Gana premios

Los mapeadores más activos ganarán aparatos electrónicos y hasta 30,000 pesos en efectivo.

Using GPS tracking (& games) to crowdsource a map

Mexico City private mini-buses



What is WayCount?

WayCount is a hardware and web platform for crowdsourcing automobile and bicycle traffic count data.

WayCount was created with the belief that when we collectively gather and share traffic count data, together we can create a leap in understanding the movement patterns of automobiles and bicycles worldwide. As a result, we can positively influence transportation design decisions and create better cities.

The WayCount device works like other traffic counters, but has two key differences: **lower cost** and **open data**. At 1/5th price of the least expensive comparable product, the WayCount device is affordable. The WayCount [Data Uploader](#) allows you to seamlessly upload and map your latest traffic count data, making it instantly available to anyone online.

What Does WayCount measure?

WayCount measures and records the following four parameters:

- The **quantity** of automobiles and bicycles



Why Count Traffic?

Data is Power. Collectively, the WayCount user community has the potential to build a rich repository of traffic count data for busy boulevards, bike paths, alley ways, neighborhood streets, and any other traffic path that deserves measurement. With a better understanding of automobile and bicycle ridership patterns, we can inform the design of better cities and towns.

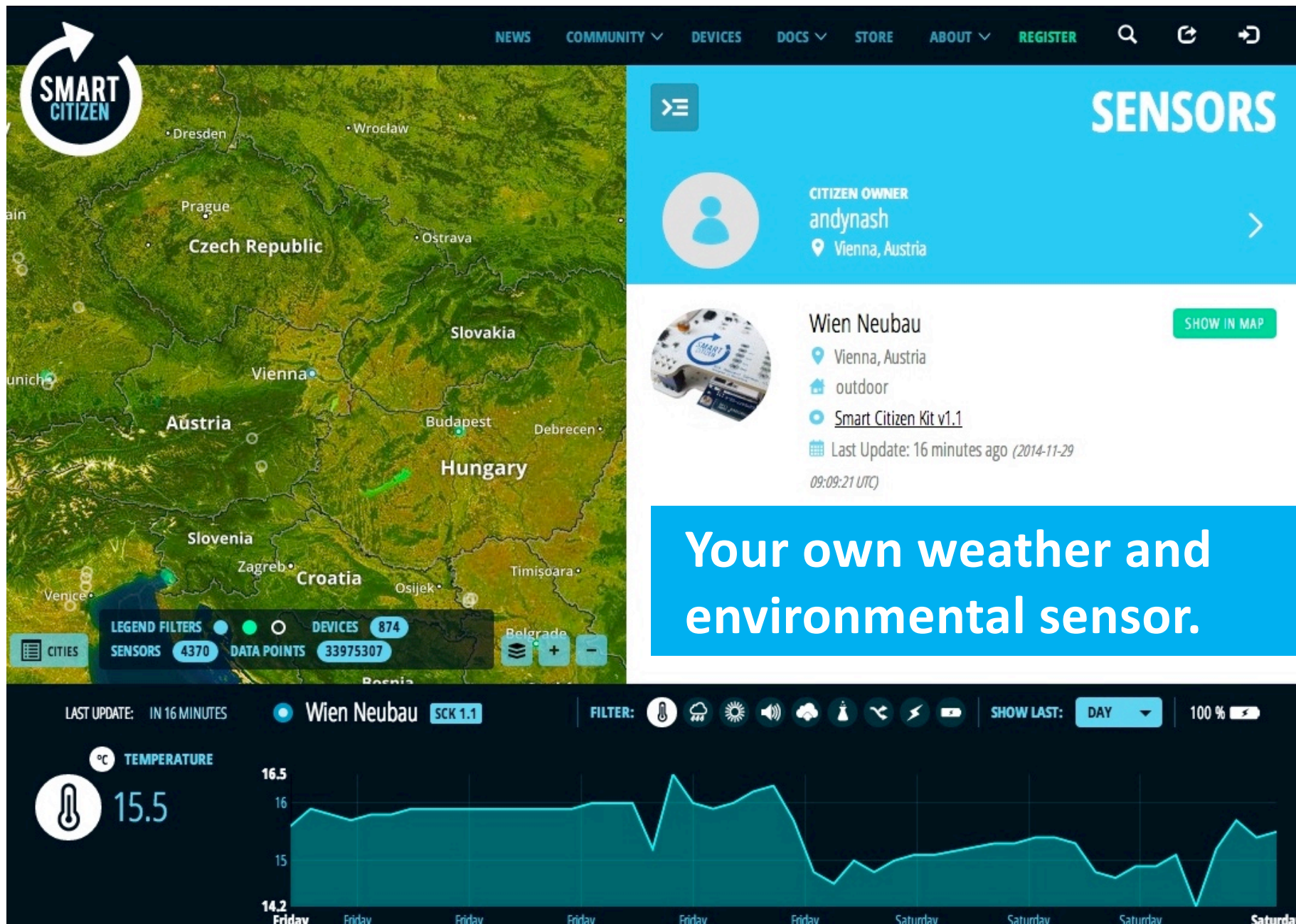
W
tra
pu
cr
co

**Your own traffic counter.
Cost: 200 Euros.**

necessary improvements to the design, maintenance, and policy of transportation systems.

This information can be used in combination with, or separately from, conventional measurements like Annual Average Daily Traffic (AADT). AADT is a standardized indicator for measuring the rate of automobiles traveling down a street and is a value used by transportation engineers to help guide changes to

Resident data collection – WayCount traffic counter



Resident data collection - Smart Citizen Sensor

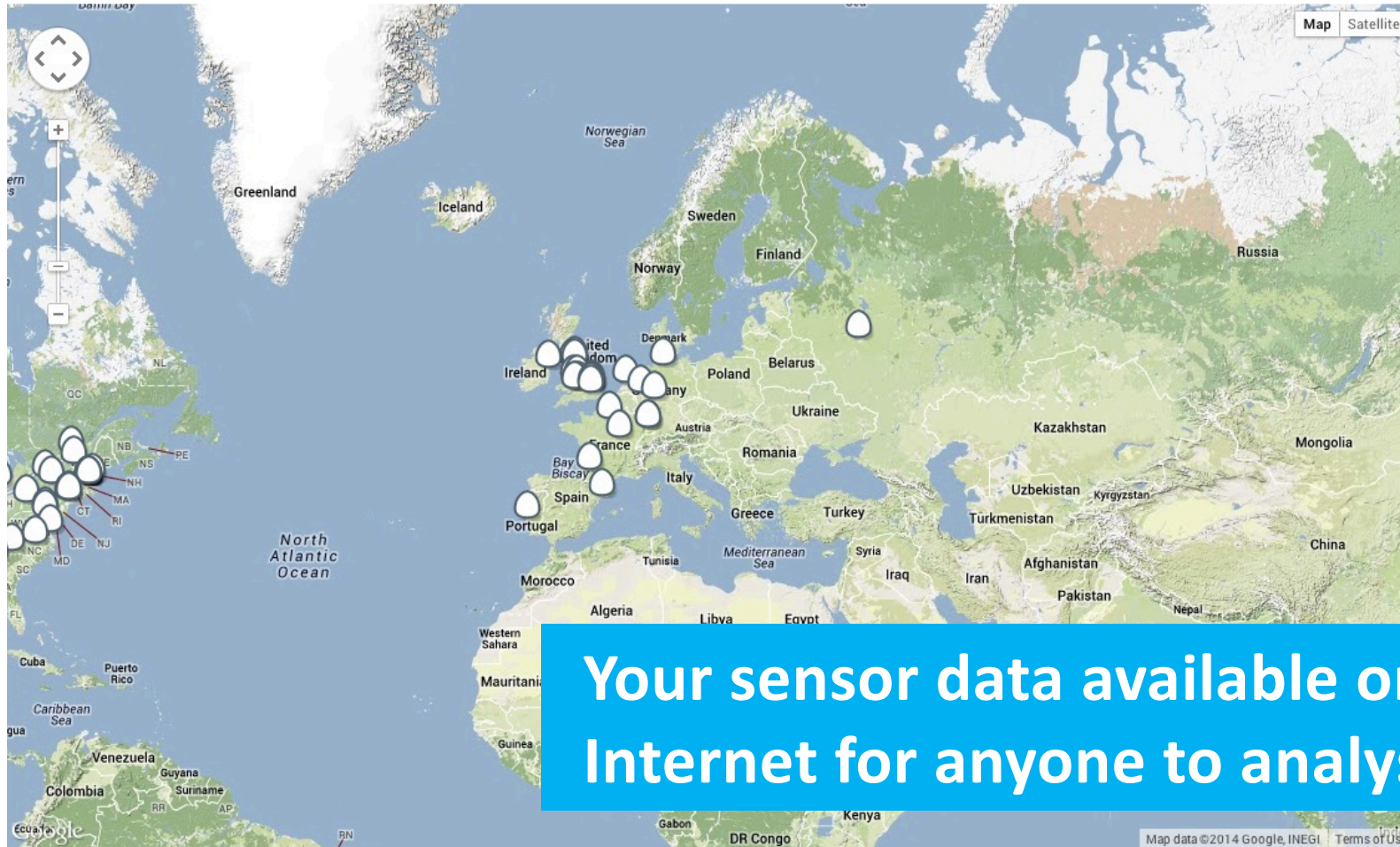


Air Quality Egg

community-led sensing network

Serial Number

ADD MY EGG



Your sensor data available on the Internet for anyone to analyse.

What is it?

A community-led air quality sensing network that gives people a way to participate in the conversation about air quality.

Sharing resident-collected data - Air Quality Egg

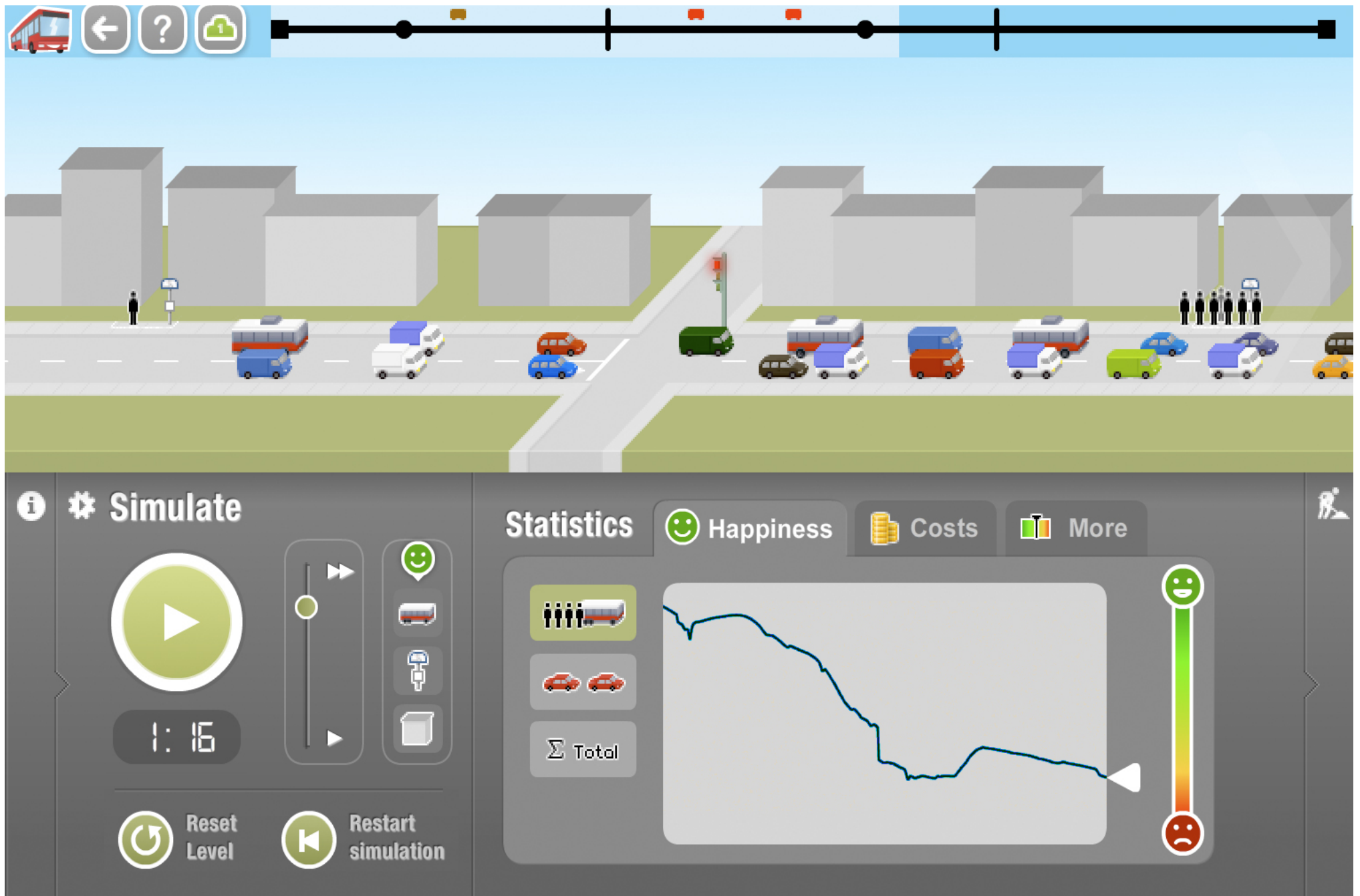
Collaborate

Better Collaboration ...

- *Improves* ... the quality of ideas,
- *Increases* ... the ability to implement and test new ideas, and
- *Helps build* ... community spirit.

Apps make Collaboration more *efficient*

- **Education – problems are complex;**
- **Process – meetings are difficult;**
- **Engagement – more is better.**



Education: Games – Bus Meister



Education: Visualisation – streetmix.net



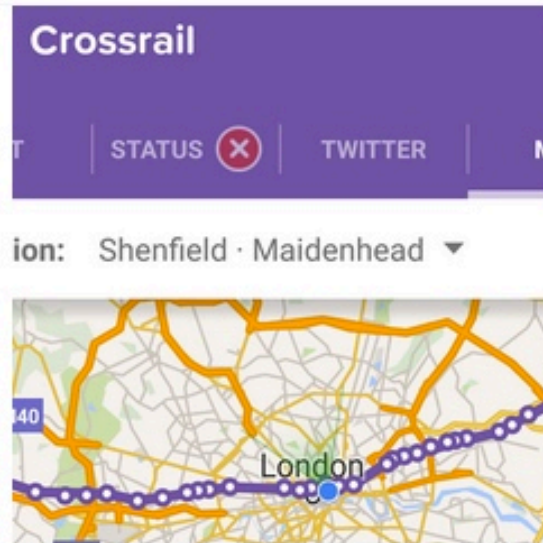
Education: Virtual Reality

Participatory Chinatown Boston

Citymapper is offering Londoners journeys involving Crossrail, which doesn't exist yet

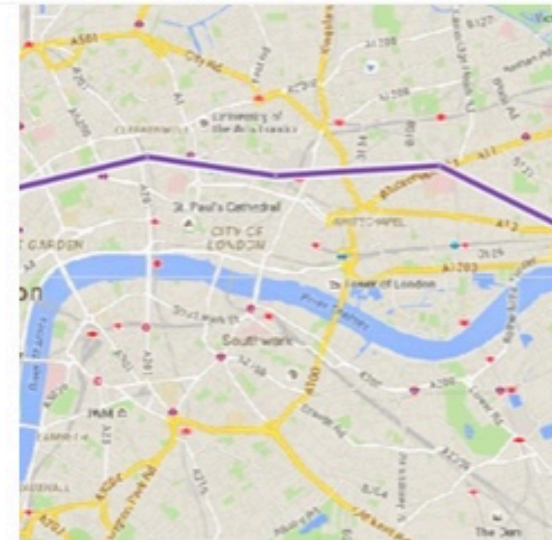
Unless you live in a rural area, or your phone battery ran down in 2012, or you're still relying on a Nokia with a copy...

www.citymetric.com




You can now see how much shorter your commute will be in the future via Crossrail using Citymapper

Canary Wharf to Oxford Circus in 26 minutes? Doesn't sound too bad. According to Citymapper, that's how long it will...




Education: Future benefits – citymapper

 Forum Game ? Best Practices Login with Facebook

Sustainable Urban Transport

Helping you make transport in your city more sustainable.




GreenCityStreets Forum

The GreenCityStreets Forum provides a place for you to recommend sustainable transportation ideas for your community. You can support (Like) or comment on ideas already in the Forum or add your own ideas. Use the links to display all the ideas for a city, for a public transport line or from another user.

Beta Version - Everyone can read GreenCityStreets Forum posts but currently you need to login via Facebook to add posts, support or comment.



Latest Forum Posts

-  0

[Wien | 13A stuck in traffic](#) **13A**

in mariahilfstrasse 60, Wien


by [Andrew Butler Nash](#) about 1 hour ago

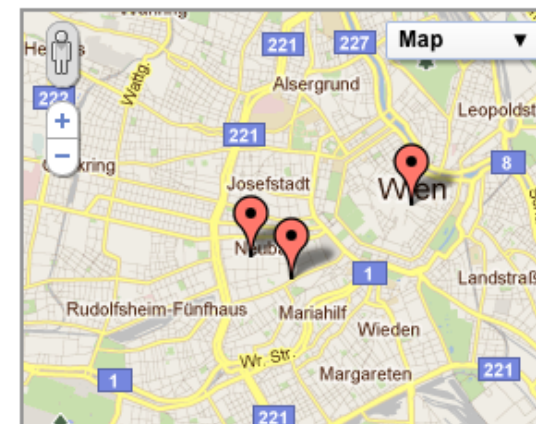
 Like
-  0

[Wien | Tram 49 comes in bunches](#) **49**

in Westbahnstrasse, Wien

by [Andrew Butler Nash](#) about 1 hour ago

 Like



Collaboration via Facebook – Green City Streets Forum


1

A growing region faces growing obstacles. Let's move forward together.


THE CHALLENGES AHEAD

We've reached a tipping point in the Greater Toronto and Hamilton Area.

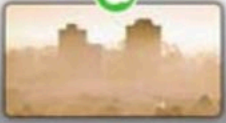
We can no longer ignore the congestion that affects our economy, our quality of life and the air we breathe. The time to act is now.



Economic Costs



Social Costs



Environmental & Health Costs

What's the big solution?

Find out →

Environmental & Health Costs

Growing urban sprawl and harmful greenhouse gas emissions.

Rising reports of respiratory illnesses caused by air pollution.

2

UNDERSTANDING THE PLAN

3

MAKING THE MOVE





4

PAYING THE FARE

5

SPREADING THE WORD

Share



Welcome to the Big Move. You can use this helpful tool to explore our vision of transportation for the next 25 years (and how to pay for it).

Collaboration & Education – MetroQuest



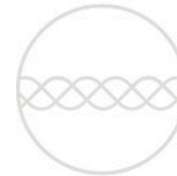
1. Talk things through

Start a discussion on any topic, and bring in the right people. Share diverse perspectives and develop ideas together.



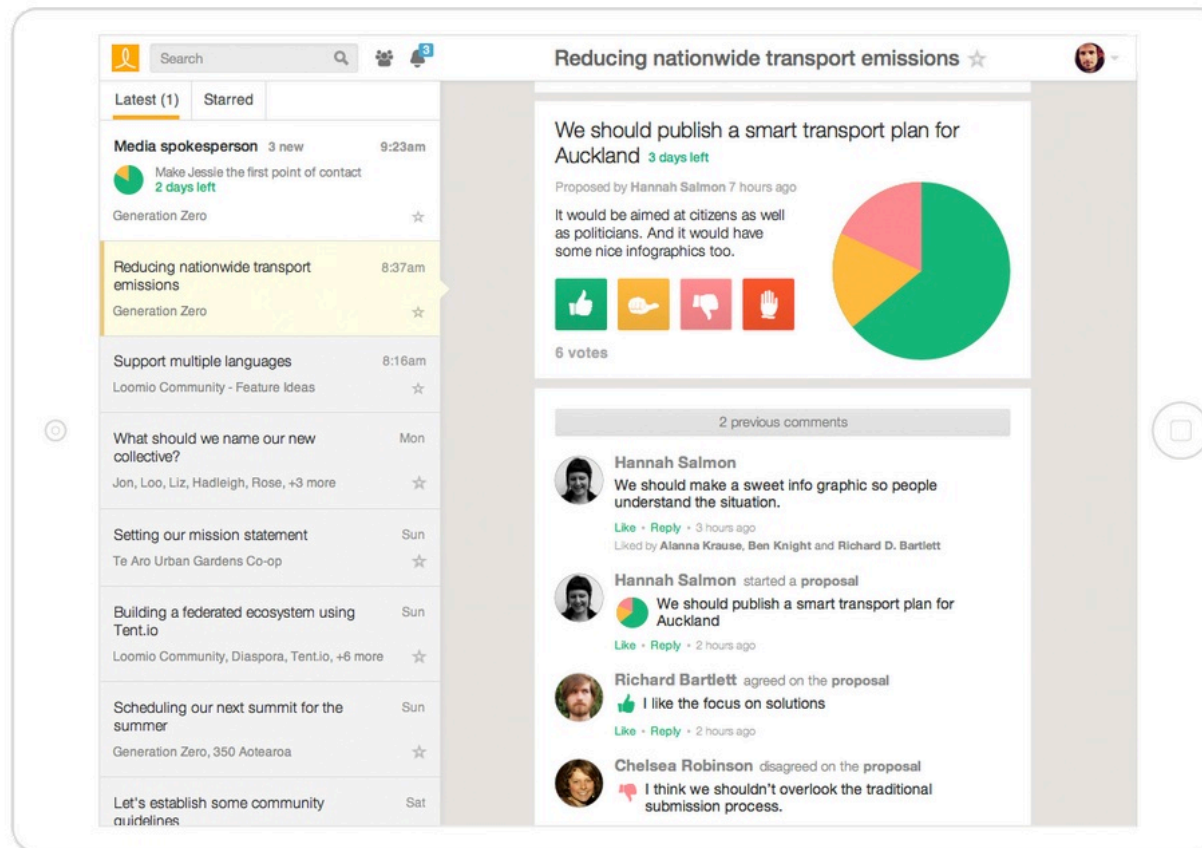
2. Build agreement

Anyone can propose a course of action. People can agree, abstain, disagree, or block – so you can see how everyone feels, and why.

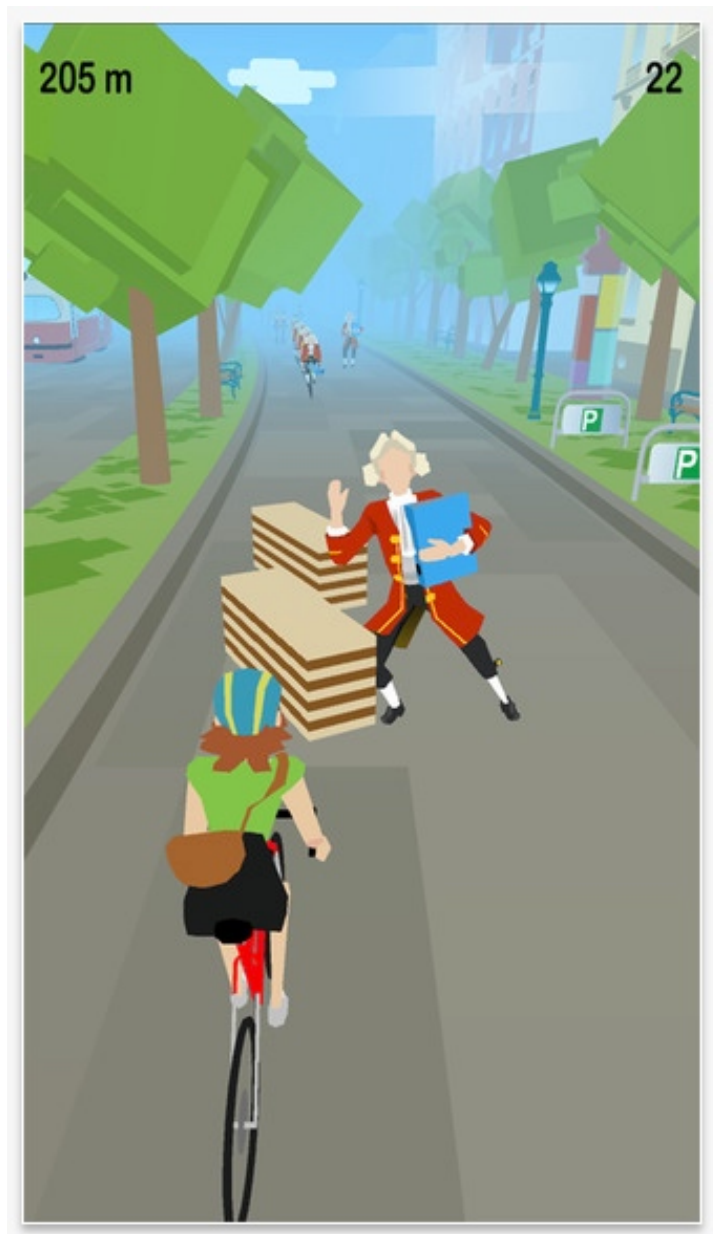


3. Decide together

Develop the proposal together so that it works for everyone. Every decision has a clear deadline, so you always get a clear outcome.



Collaboration tools and app – Loomio



Ringstrasse 150 - Ring Ride

Help make the Ringstrasse better

Organisationen

RADLOBBY
ÖSTERREICH

Radlobby Wien

In Wien kümmern sich die Radlobby-Vereine ARGUS (Arbeitsgem

Rad-Ärgernisse direkt an die Zuständigen der Stadt Wien senden? Das geht ganz

Rasen am Ring

Die Plattform „Autofreie Stadt“ tritt am Internationalen Autofreien

Engagement: Games – Ring Ride Vienna

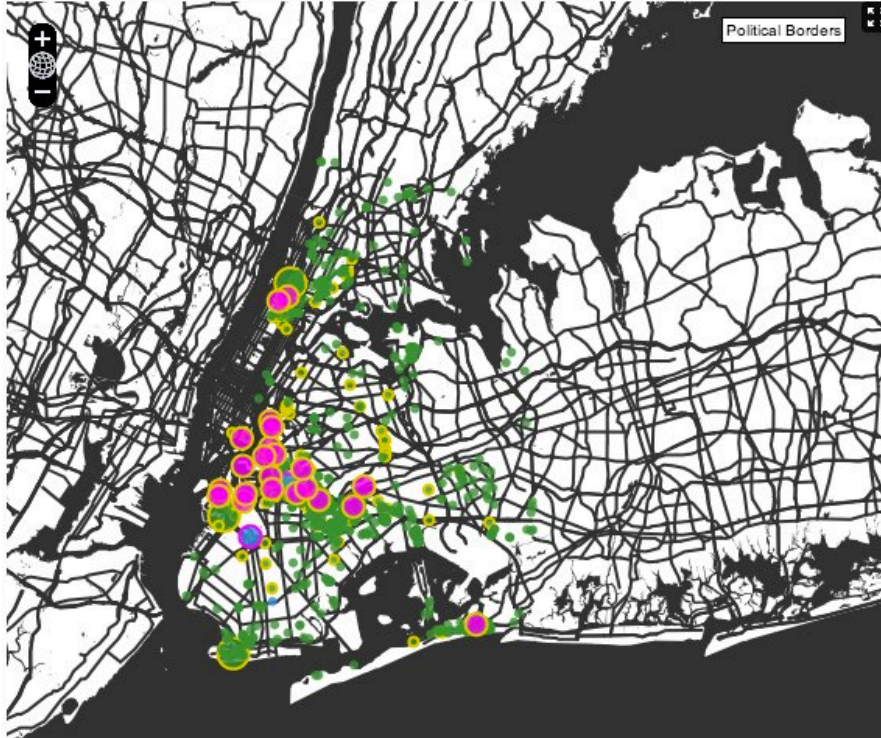
Act

Apps lead to ACTION

- ***Re-use*** ... vacant urban land → 596 Acres;
- ***Share*** ... food with neighbours → Casserole;
- ***DYI*** ... do it yourself → bike lanes, pedestrian signs;
- ***Change*** ... travel patterns → Chromaroma, Walk-a-Stop;
- ***Fund*** ... local projects → Spacehive, Kickstarter;
- ***Provide*** ... transport service → Uber, BlahBlahCar, Bridj;
- ***Create*** ... open source software and apps → travel?

Lot size: 0 to 3+ acres

Streetview is below the map when a lot is selected.



This map shows sites of potential community projects. We have taken several different sources of information about vacant publicly owned land, chosen the most accurate information from each and shared them here. This is our commons. We also add few private lots whose owners have volunteered their land for community use.

- ☒ public vacant lots
- ☒ public vacant sites being organized around (114)
- ☒ public vacant sites where groups have access (22)
- ☒ private vacant sites (1)
- ☒ private vacant sites being used by community (3)
- ☐ community gardens on public land
- ☐ gutterspaces



Upcoming Events

596 Acres at GreenThumb Grow Together in the Bronx
Saturday, March 29 from 8:30 a.m. to 4 p.m.

596 Acres' Citywide General Organizing Meeting
Saturday, April 5 from 1 p.m. to 3:30 p.m.

Book Binding with 596 Acres at Build It Green in Gowanus!
Saturday, April 5 from 1 p.m. to 3:30 p.m.

[view all upcoming events](#) | [view past events](#)

Recent news

News From the Acres - March 20, 2014
March 20, 2014 in news from the acres

Vacant Acres Dinner at the Sunview with Uncle Ruth
March 17, 2014 in OtherCities

News From the Acres - March 13, 2014
March 13, 2014 in news from the acres

Information exchange and organisation ... 596 Acres

Search for lots near an address:

Boroughs:

☒ Bronx

☒ Brooklyn

☒ Manhattan

☒ Queens

You are currently looking at:

1221 public vacant sites on 1375 lots on 432.592 acres ...how big is that?
114 public vacant sites being organized around on 214 lots on 54.025 acres ...how big is that?
22 public vacant sites where groups have access on 37 lots on 4.218 acres ...how big is that?
1 private vacant sites on 1 lots on 0.305 acres ...how big is that?
3 private vacant sites being used by community on 3 lots on 0.163 acres ...how big is that?
0 community gardens on public land on 0 lots on 0 acres ...how big is that?
0 gutterspaces on 0 acres ...how big is that?



Share: Meals – Casserole (UK)

- *Cooking the meal is as important as receiving it.*
- *Social contact is as important as nutrition.*

STEAL THIS IDEA: A \$600 PROTECTED BIKE LANE DEMO AT AN OPEN-STREETS EVENT



Chrissy Lee of the Minneapolis Bicycle Coalition sets up a "pop up" bike lane demo last summer.

DYI – *Do it yourself* – Bike lane (Minneapolis)

IT'S NOT TOO FAR.

Plan, design and install quick, light and affordable street signs for people.

 Follow @WalkYourCity

 Like 2.2k

 Feedback & Support



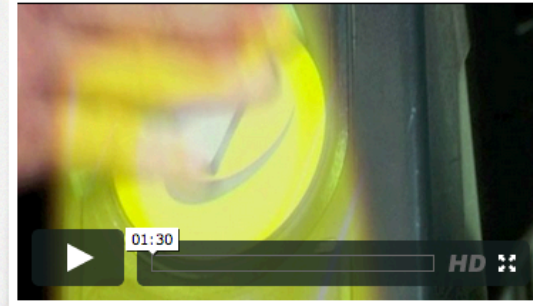
DYI – *Do it yourself* – Signs (Walk Your City)

Chromaroma, adding colour to your journeys

A new game for London...

Sign Up Now

or [find out more](#)



Use your Oyster card to play online

Chromaroma takes your travel data
and makes it into a game where every journey
counts in a competition for the city!

Play with friends or compete against them

Set records, earn
achievements, go on real missions.
Travel like you mean it!



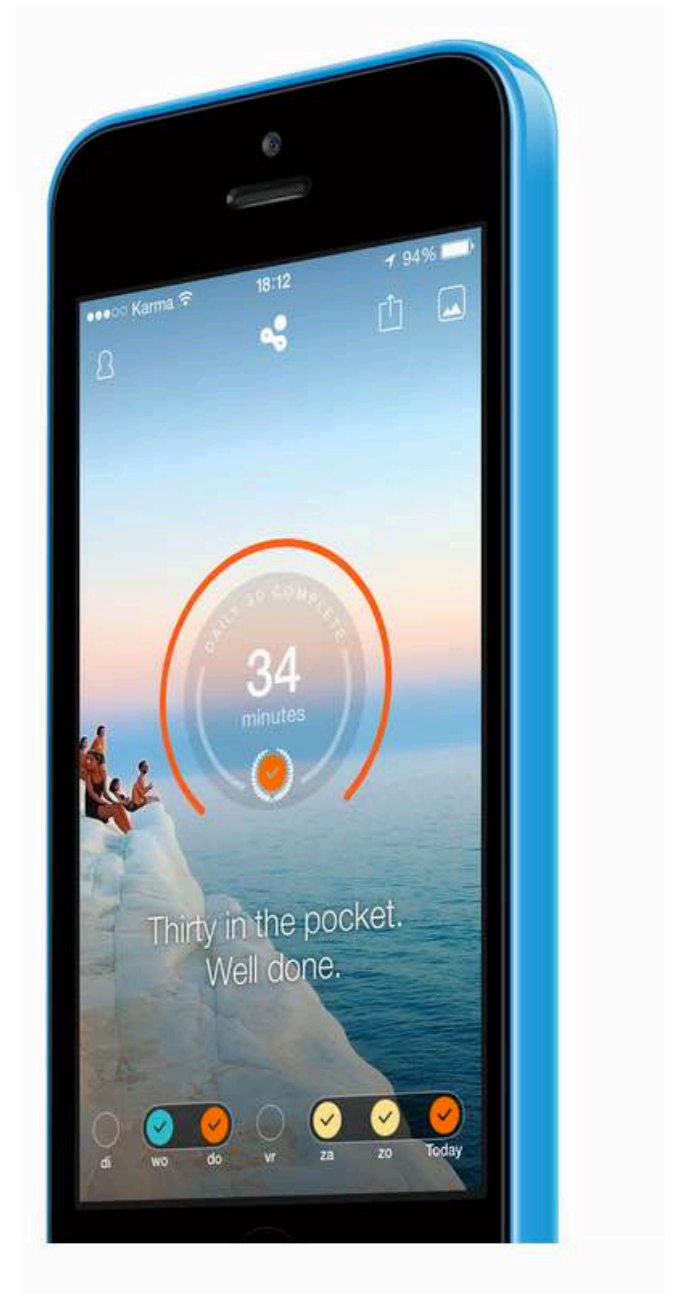
Change Behaviour – Chromaroma game (London)

$$\begin{array}{c} \text{Activity monitor} \\ + \\ \text{Real time transport data} \\ + \\ \text{Social networking} \\ = \\ \text{Walk-a-Stop} \end{array}$$

Public transport agency sends push notifications to help manage demand (e.g., crowded station).

Why not walk a stop?

Users receive map and reward (points, coffee on route).



Change Behaviour – Walk-a-Stop (Prototype)

the love shack bus stop

by Dana Jo

Home

Updates 23

Backers 88

Comments 6

Athens, GA

Public Art

Funded! This project was successfully funded on Jan 3, 2012.

Update #22

Mar 2 2012

[love shack bus stop is finished and installed!]

2 comments Like

{hey there everyone, i have some pictures up on my website that you you can see by [clicking here](#). also, if you did not get to pick up your backer rewards at the opening, i will be mailing them to you on monday as well as the prints for my \$75-100 folks. again, thank you all so very much for helping make the love shack bus stop a reality!}



88

backers

\$3,015

pledged of \$2,500 goal

0

seconds to go



Project by

Dana Jo

Athens, GA

[Contact me](#)

K First created · 2 backed

f Dana Jo Cooley 1120 friends

danajocooley.com

[See full bio](#)

Pledge \$5 or more

14 backers

a postcard art print of the love shack

Fund local projects – Bus Shelter (Kickstarter)

The logo for BlaBlaCar, featuring the words "Bla Bla Car" in a sans-serif font. "Bla" is green, "Bla" is blue, and "Car" is red. The logo is centered at the top of the page.

Bla Bla Car

Trusted ridesharing

Connecting people who need to travel with drivers who have empty seats

Choose the country for your rideshare

Confirm

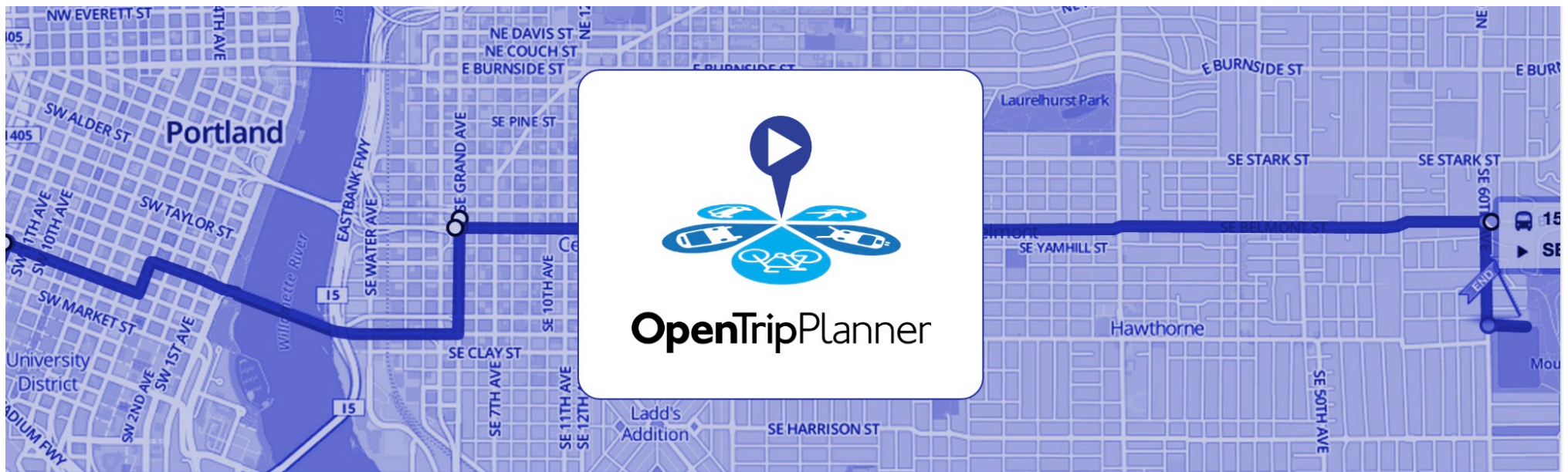
Provide transport service – Rideshare (Bla Bla Car)

[HOME](#)[ANNOUNCEMENTS](#)[SERVICE AREA](#)[WE'RE HIRING](#)

CONNECTING THE CITY

Bridj is your everyday transportation system that adapts in real time to where you live work and play.

Provide transport service – Public Transport (Bridj)



Multimodal trip planning & analysis

OpenTripPlanner provides a range of passenger information and transportation network analysis features using our infrastructure for finding itineraries combining transit, pedestrian, bike, and car segments.

OpenTripPlanner  OTP Analyst

Create – Open source software (Open Trip Planner)

Toy or Tool?

Toy or tool?

ITS and Crowdsourcing ...

- *will significantly change the way transport is planned and operated ...*
- *how we manage this transition will have massive impacts on society at large.*

Toy or tool?

Tips and Tricks

- *Don't reinvent the wheel.*
- *Give data to get data.*
- *Open beats closed.*
- *Standard beats custom.*
- *More?*

How Boston's Changing the Way People Experience Transit

And why picking one app is good for commuters everywhere



Don't reinvent the wheel – Transit App and Boston

Boston will use Waze data to measure 'block the box' ticketing push



Via Flickr user [Robbie Shade](#)

Give data to get data – Waze and Boston



Open beats closed – openttraffic.io

The screenshot displays the Google Maps transit interface. The top blue bar contains navigation icons and a search bar with the origin 'Stephansplatz, 1010 Wien, Austria' and destination 'Westbahnhof, Austria'. Below this, a warning states: 'These results may be incomplete - not all transit agencies in this area have provided their info.' A button 'Send directions to your phone' is visible. The main panel lists three transit options:

- Walking:** via Mariahilfer Str., 43 min, 3.4 km. A 'DETAILS' link is provided.
- Transit:** 6:34 PM–7:34 PM, 1 h. The route is shown as a blue line on the map, passing through the city center.
- Transit:** 6:34 PM–7:38 PM, 1 h 4 min. The route is shown as a grey line on the map, passing through the city center.

The map on the right shows the city of Vienna with various districts labeled, including Hernals, Währing, Leopoldstadt, and Landstrasse. The Danube river is visible on the right side. A 'Sign in' button is in the top right corner.

Standard beats custom data formats

What happens when you don't provide data in standard formats?

ITS: Toy or tool?

Our challenge ...

Recognising that these TOOLS are not TOYS
and using them effectively to ...

... make transport safer, more efficient and
better suited to fulfilling user needs.

*(Remember ...
... if we don't do it ...
... someone else will!)*

Crowdsourcing: Toy or tool?

A massive impact on society at large?

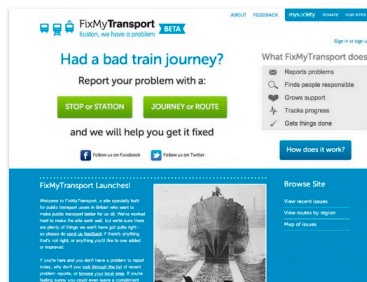
- *automation, robots and the “end of work”.*
- *crowdsourcing + technology supports “volunteers” doing remaining human work.*
- *passion replaces salaries in an age of guaranteed incomes.*
- *service quality and life satisfaction increase.*
- *can transport be a model for the transition?*



crowdsourced-transport.com

Civic Technology for Sustainable Transport

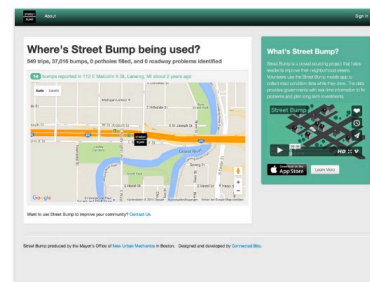
Four Types of Crowdsourcing in Transportation



Report

Report problems.

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Analyse

Collect and analyse data.

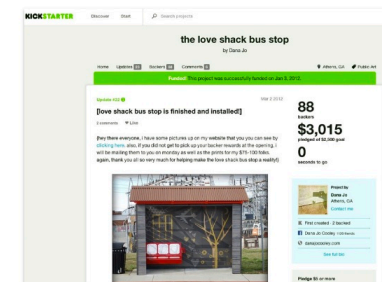
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Collaborate

Work together on projects.

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Act

Support and provide transport.

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Andrew Nash develops engaging public participation applications and games designed to improve city live-ability and transport.

- Crowdsourced-Transport.com
- Ringstrasse150.com
- AndyNash.com