

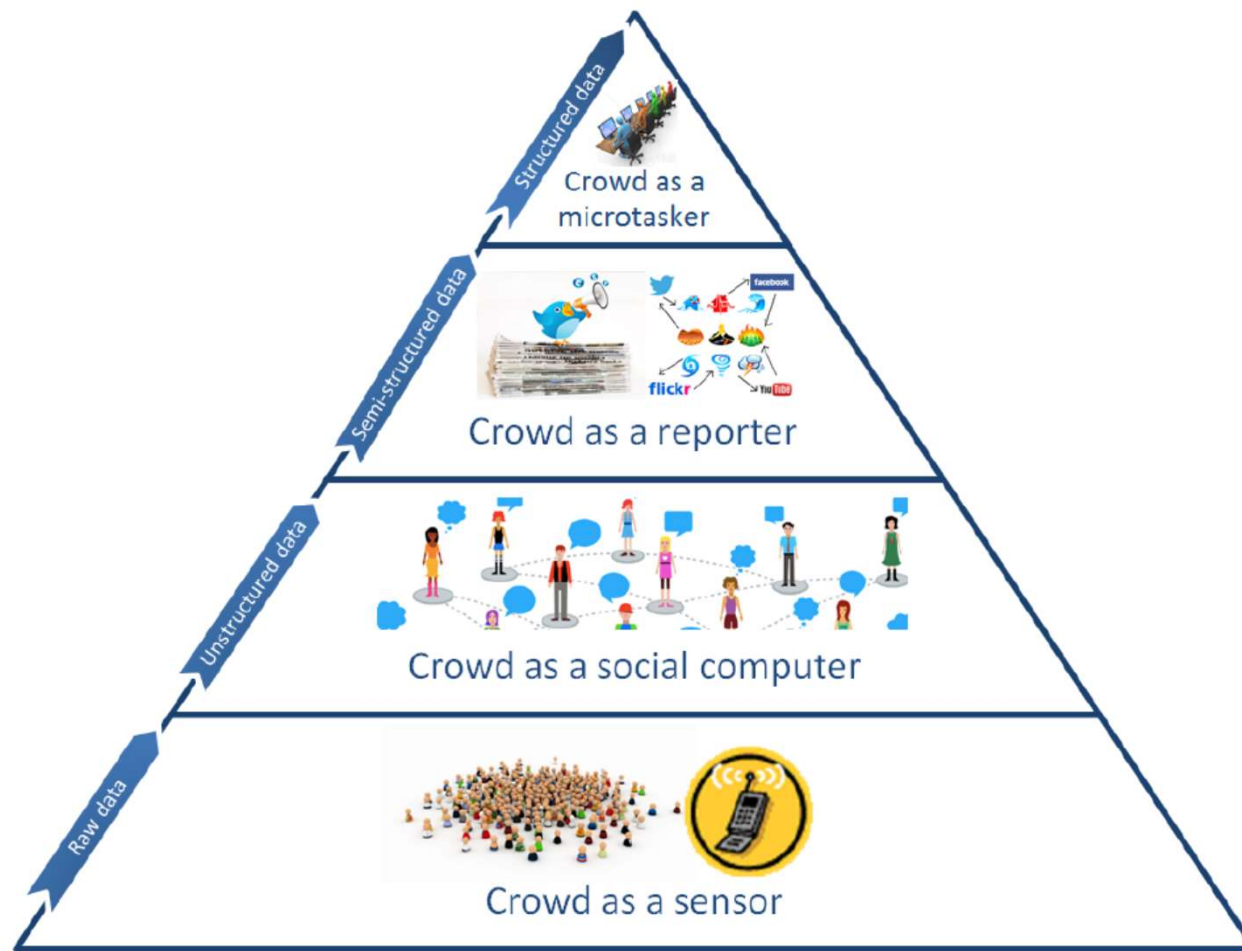
## **Citizen Reporting or Crowd-sourced Data**

Information actively produced or submitted by citizens through mobile phone-based surveys, hotlines, user-generated maps, etc; While not passively produced, this is a key information source for verification and feedback

-> Crowd sourcing: **informed consent, active participation/contribution, can be used to collect info and/or report/validate ground truth**

# Crowdsourcing examples

- Wikipedia: <http://www.wikipedia.org>
- <http://crisismappers.net> and <http://www.usahidi.com>
- Premise (<http://www.premise.com/#container>) A snapshot of food prices in real time - <<http://money.cnn.com/2013/10/16/news/economy/real-time-inflation>>
- MalariaSpot.org (<http://malariaspot.org>) - a platform that leverages videogames and crowdsourcing for diagnosis of global health diseases
- Geo-wiki (<http://www.geo-wiki.org>): Land cover validation and collection of new GIS information
- Zooniverse: citizen science projects
  - [http://en.m.wikipedia.org/wiki/Zooniverse %28citizen science project%29](http://en.m.wikipedia.org/wiki/Zooniverse_%28citizen_science_project%29)
  - [http://en.m.wikipedia.org/wiki/List of citizen science projects](http://en.m.wikipedia.org/wiki/List_of_citizen_science_projects)
- OpenStreetMap: <http://www.openstreetmap.org/#map=5/51.500/-0.100>  
(Visualizing Ten Years of OpenStreetMap <http://bit.ly/1DylaZ8>)
- Genographic Project by National Geographic - (history of worldwide human migrations since prehistoric time based on DNA)  
<https://genographic.nationalgeographic.com>
- Smart Citizen: <https://smarcitizen.me> -- Open source technology for citizens' political participation in smarter cities.
- Crowd design: <http://www.designcrowd.com>
- Crowd funding: <https://www.kickstarter.com>



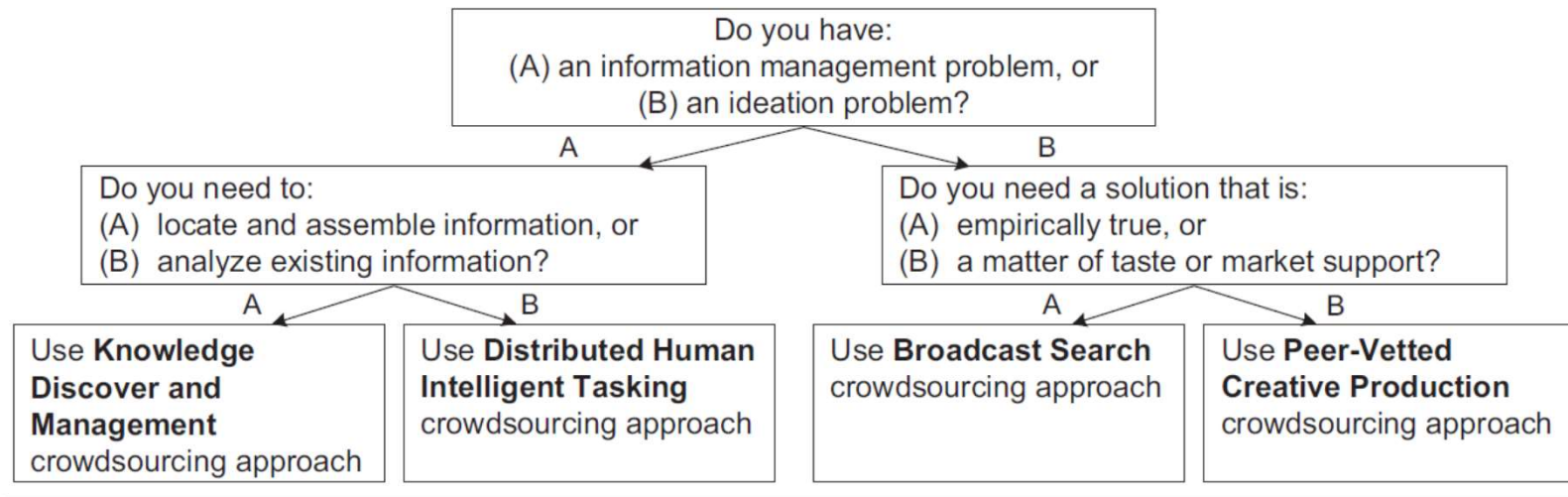
**Fig. 1.** Crowdsourcing roles based on users' involvement and level of data processing

Poblet, M., García-Cuesta, E., & Casanovas, P. (2014). Crowdsourcing Tools for Disaster Management: A Review of Platforms and Methods. In P. Casanovas, U. Pagallo, M. Palmirani, & G. Sartor (Eds.), *AI Approaches to the Complexity of Legal Systems* (Vol. 8929, pp. 261-274): Springer Berlin Heidelberg.

**Table 1.** Crowdsourcing roles and disaster management cycles

	Crowd as a sensor	Crowd as a social computer	Crowd as a reporter	Crowd as a microtasker
Preparedness	●			●
Response		●	●	●
Recovery		●	●	●
Mitigation	●	●	●	

Poblet, M., García-Cuesta, E., & Casanovas, P. (2014). Crowdsourcing Tools for Disaster Management: A Review of Platforms and Methods. In P. Casanovas, U. Pagallo, M. Palmirani, & G. Sartor (Eds.), *AI Approaches to the Complexity of Legal Systems* (Vol. 8929, pp. 261-274): Springer Berlin Heidelberg.



**Figure 2.** Decision tree for determining suitable crowdsourcing type based on problem

Brabham, D. C., Ribisl, K. M., Kirchner, T. R., & Bernhardt, J. M. (2014). Crowdsourcing Applications for Public Health. *Am J Prev Med*, 46(2), 179-187. doi: <http://dx.doi.org/10.1016/j.amepre.2013.10.016>



**Table 1.** A typology of crowdsourcing problem types for public health<sup>43</sup>

Type	How it works	Kinds of problems	Current and potential uses in public health
Knowledge Discovery and Management	Organization tasks crowd with finding and collecting information into a common location and format	Ideal for information management problems involving information gathering, organization, and reporting, such as the creation of collective resources	Identifying food deserts by gathering user-reported grocery store locations on a map; reporting injury data on playgrounds and dangerous intersections; finding tobacco retailers in states without retailer licensing or conducting a "Product Watch" to report emerging tobacco products, such as dissolvables or e-cigarettes; identifying accessible scarce public health resources at the community level, such as pandemic influenza vaccine; tracking and mapping illness trends and clusters, e.g., using GermTrax.com; participatory sensing of particulate matter levels, e.g., the CitiSense platform <sup>44</sup> ; gathering information on the use and condition of parks and bike trails
Distributed Human Intelligence Tasking	Organization tasks crowd with analyzing large amounts of information	Ideal for information management problems involving large-scale data analysis where human intelligence is more efficient or effective than computer analysis	Language translation for health campaign brochures and websites; making data entry, cataloguing, and organizing information more efficient and cost effective for health organizations; behavioral modeling for weight loss factors; disease and behavior change data registries, e.g., National Weight Control Registry <sup>45</sup>
Broadcast Search	Organization tasks crowd with solving empirical problems	Ideal for ideation problems with empirically provable solutions, such as scientific problems	Identifying novel solutions to sanitation in the developing world, e.g., the Bill and Melinda Gates Foundation's Reinvent the Toilet Challenge <sup>46</sup> ; issuing challenge briefs for vaccines to prevent emerging diseases; designing medication bottles to prevent unintentional overdose; developing new designs for cooking and heating stoves in developing nations that produce little or no particulate matter; developing algorithms for predicting disease outbreaks and remedial measures
Peer-Vetted Creative Production	Organization tasks crowd with creating and selecting creative ideas	Ideal for ideation problems where solutions are matters of taste or market support, such as design or aesthetic problems	Getting community input on where to locate a park or community recreation center; adding bike lanes to city streets to promote active transit; developing social marketing campaign themes or target messages; developing menus and policies for school lunch programs; designing and determining optimal siting for community gardens and farmer's markets

Brabham, D. C., Ribisl, K. M., Kirchner, T. R., & Bernhardt, J. M. (2014). Crowdsourcing Applications for Public Health. *Am J Prev Med*, 46(2), 179-187. doi: <http://dx.doi.org/10.1016/j.amepre.2013.10.016>



# RapidPro



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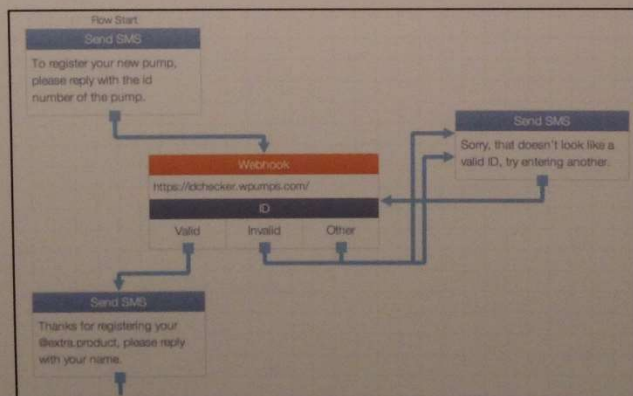
# RAPIDPRO

To learn more about RapidPro and demo it, visit:  
[www.rapidpro.io](http://www.rapidpro.io)

RapidPro is an open source software that allows you to easily build and scale mobile-based applications from anywhere in the world. RapidPro powers the way governments and development partners connect, engage, and collaborate directly with the most important - and often most marginalized - voices in their communities.

From youth engagement programmes like U-Report to education monitoring systems like EduTrac, RapidPro is becoming UNICEF's common platform for developing applications that can be adapted for different contexts and sectors. That's why RapidPro has been coined an "app store" for international development.

UNICEF Innovation continues to work with a variety of technology and development partners around the world to ensure that RapidPro and apps powered by RapidPro evolve with and respond to the needs of key stakeholders in the development community.



Example of RapidPro text flow

*RapidPro is a global open source platform that has enabled the creation and scale-up of applications for youth engagement (U-Report), education (EduTrac), and health (mTrac).*

*Almost 30 million messages have been sent or received through RapidPro since its launch in September 2014.*



**Currently RapidPro is being used in five UNICEF programmes:**

Education, Health, Communications, Polio, and Nutrition

**Supported by:**

The creation of RapidPro was primarily supported by the following UNICEF country offices: Afghanistan, Guinea, Nigeria, Tanzania, Somalia, and Zimbabwe



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# mTrac

- Launched nationwide in Nov 2011 in Uganda
- mTrac uses RapidSMS to accelerate the submission of community and health facility data, including disease surveillance, malaria treatment and drug stock indicators.



# mTRAC

*\*Developed on RapidPro*

For more information on mTrac, visit:  
[http://bit.ly/unicef\\_innovation\\_Time\\_Magazine\\_mTrac](http://bit.ly/unicef_innovation_Time_Magazine_mTrac)

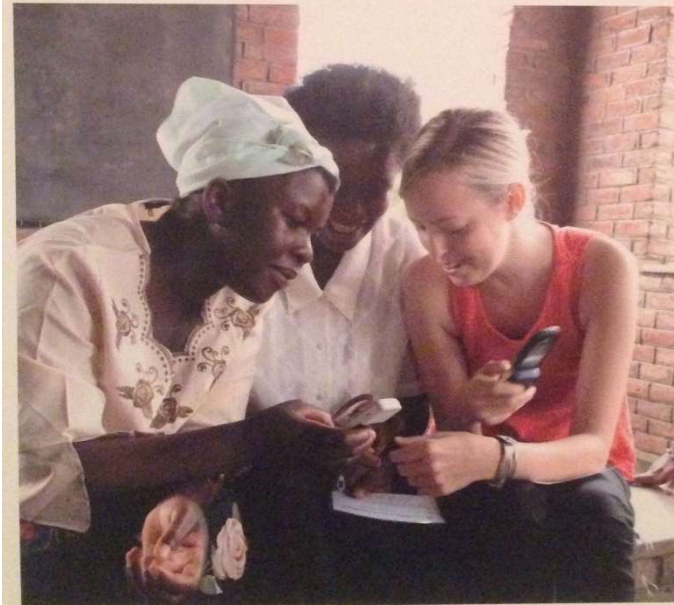
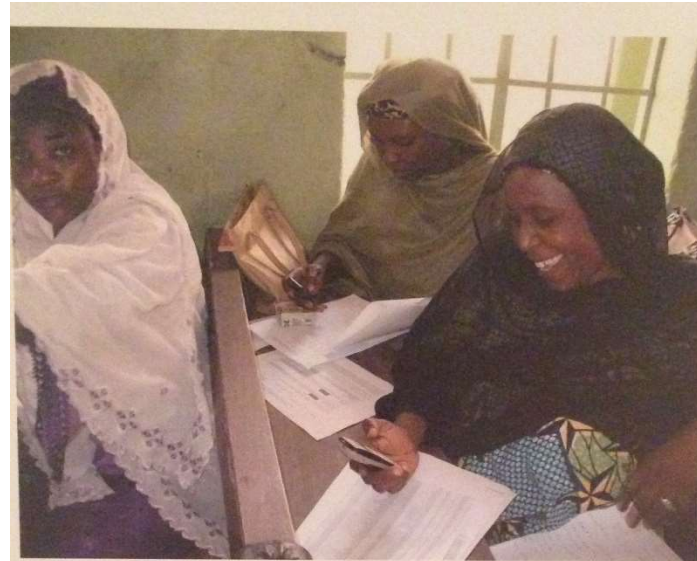
Available on RapidPro, mTrac is an innovation using mobile phones and SMS to digitize the transfer of Health Management Information System (HMIS). Launched by the Ministry of Health, Uganda, the initial focus of mTrac was to speed up the transfer of HMIS weekly reports, which cover disease outbreaks and medicines, provide a mechanism for community members to report on service delivery challenges, and to empower district Health Teams by providing timely information for action.

The aim is to avoid unnecessary stock-outs and to ensure transparency and accountability. Real-time monitoring of vaccine supplies enabled stock-outs to be addressed and led to an increase in immunization coverage of DPT1

*To date, over 16,000 Health Facility workers in 3,200 Health Facilities have been registered and trained, and are actively using mTrac for reporting critical health data.*

from 52% to 98% within one year. The initiative also integrates governance and accountability through citizen feedback, an anonymous hotline and public dialogue sessions, which has allowed District Health Management Teams to address issues raised by community members, such as those related to quality of care and health worker absenteeism.

During an Ebola outbreak in 2012, mTrac was also used in Uganda through a series of SMS messages alerting health workers to the outbreak, the case definition (symptoms), isolation procedures, the location of the nearest isolation facilities and the hotline to the national response team for reporting suspected cases.



**Countries in now:**

Uganda

**Scale-up plans for 2015/2016:**

Up to six UNICEF country offices

**Supported by:**

Ministry of Health, Uganda



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## 1000 Days

*Maternal Reminder systems being used in more than 10 countries to strengthen the first 1000 days in the continuum of care for mothers and their children.*



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## mHERO

*As part of the 2014 Ebola response in West Africa, a consortium of partners leveraged RapidPro to seamlessly connect Frontline Health Workers with real-time information and support.*



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## U-Report

*Young people use U-Report to engage in national- and community-level dialogues to address the issues and development priorities that matter most to them.*



# UNICEF U-report

(<http://uganda.ureport.in/>)

- U-report is a free SMS social monitoring tool for community participation, designed to address issues that the population cares about -- Started in Uganda, in Feb 2015: 11 African countries and Indonesia
- Free youth-facing engagement application led by UNICEF to amplify the voices of youth and empower them to speak out about the issues that matter most to them.
- Using this free application, U-reporters can connect through a range of communication channels to voice their opinions about what is happening in their communities and work together with leaders at the community and national level for positive social change.
  - Cummins, M., & Huddleston, B. (2013). Real time monitoring for the most vulnerable: UNICEF's experience in Uganda. *IDS Bulletin*, 44(2), 57-68.
  - Blaschke, S. M., Carroll, P. P., Chaves, D. R., Findley, M. G., Gleave, M. C., Morello, R. N., & Nielson, D. L. (2013). Extrinsic, Intrinsic, and Social Incentives for Crowdsourcing Development Information in Uganda: A Field Experiment.

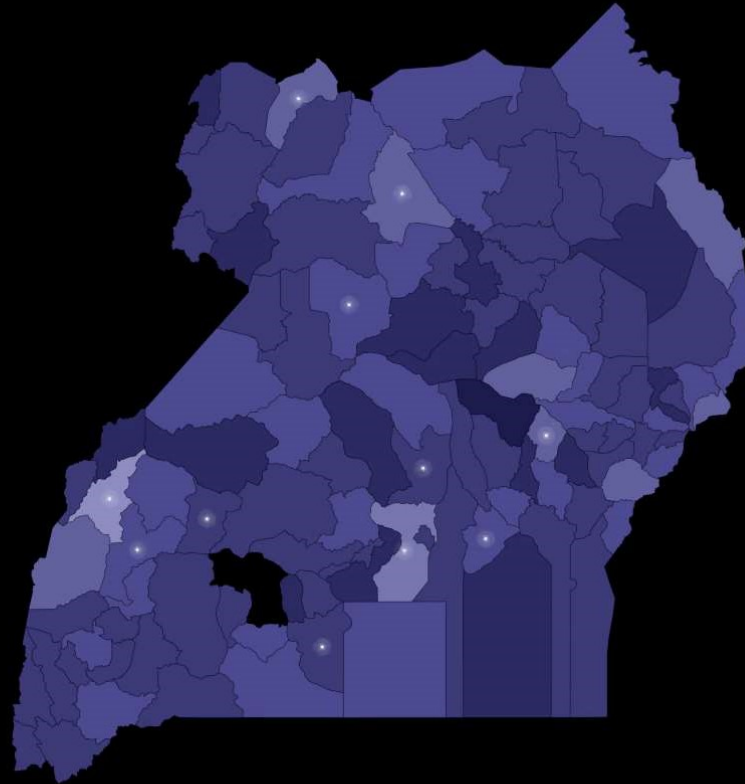
# References

- Brabham, D. C., Ribisl, K. M., Kirchner, T. R., & Bernhardt, J. M. (2014). Crowdsourcing Applications for Public Health. *Am J Prev Med*, 46(2), 179-187. doi: <http://dx.doi.org/10.1016/j.amepre.2013.10.016>
- Poblet, M., García-Cuesta, E., & Casanovas, P. (2014). Crowdsourcing Tools for Disaster Management: A Review of Platforms and Methods. In P. Casanovas, U. Pagallo, M. Palmirani, & G. Sartor (Eds.), *AI Approaches to the Complexity of Legal Systems* (Vol. 8929, pp. 261-274): Springer Berlin Heidelberg.
- Farah, J. (2014). Crowdsourced Monitoring, Citizen Empowerment and Data Credibility. In B. Murgante, S. Misra, A. C. Rocha, C. Torre, J. Rocha, M. Falcão, D. Taniar, B. Apduhan, & O. Gervasi (Eds.), *Computational Science and Its Applications – ICCSA 2014* (Vol. 8580, pp. 469-485): Springer International Publishing.
- Boulos, M. N. K., Resch, B., Crowley, D. N., Breslin, J. G., Sohn, G., Burtner, R., . . . Chuang, K.-Y. S. (2011). Crowdsourcing, citizen sensing and sensor web technologies for public and environmental health surveillance and crisis management: trends, OGC standards and application examples. *Int J Health Geogr*, 10(1), 67.
- Salathé, M., Bengtsson, L., Bodnar, T. J., Brewer, D. D., Brownstein, J. S., Buckee, C., . . . Vespignani, A. (2012). Digital Epidemiology. *PLoS Comput Biol*, 8(7), e1002616. doi: 10.1371/journal.pcbi.1002616

# Report

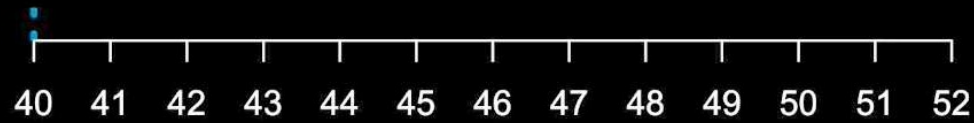
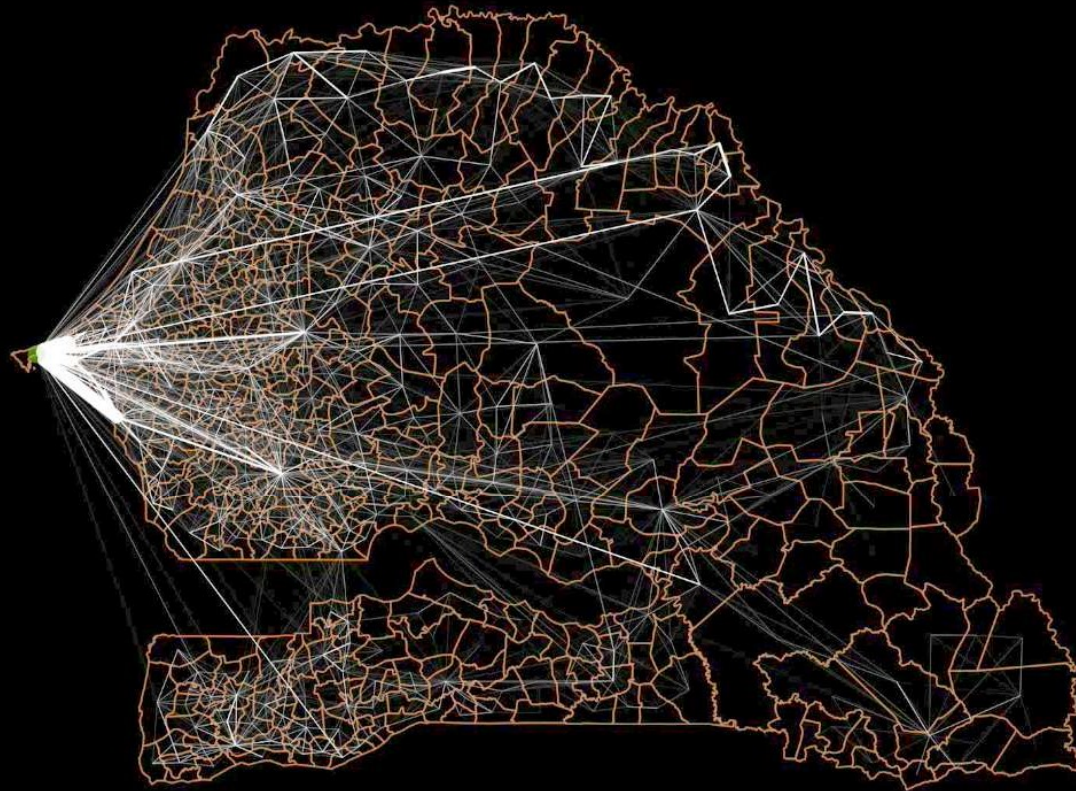
VOICE MATTERS

engagement  
gender divide

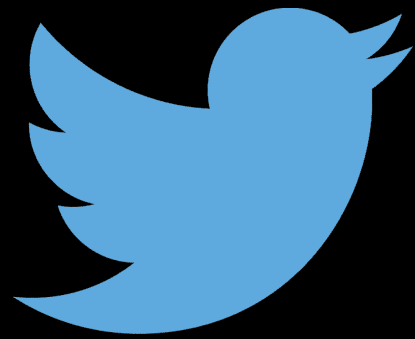


orange™

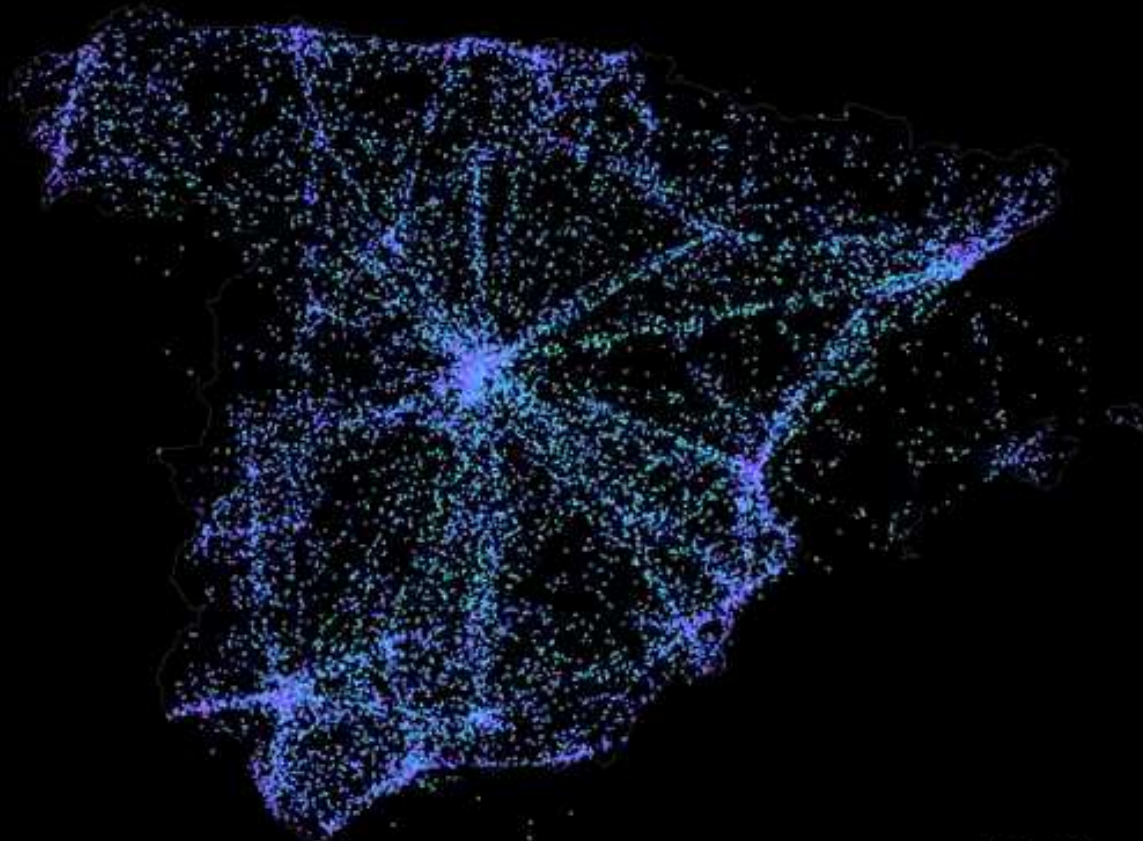
# emergencies C4D







# mobility unemployment



10:23