

Crowdsourcing support of land administration

A new, collaborative partnership between
citizens and land professionals

Robin McLaren
Know Edge Ltd, Edinburgh

FIG Working Week 2012
Rome, 7th May 2012
TS03B – Volunteered Geographic Information

Reactions to Crowdsourcing Proposal

“It is hard to believe that Robin McLaren can be so blissfully naive as to suggest that a combination of crowd-sourcing, mobile phones and the internet, could make a significant difference to levels of security of tenure around the world”.

Mike Sharp FRICS

Reactions to Crowdsourcing Proposal

“Violence would probably ensue and the intervention of riot police to sort out hostilities could be expected – crowdsourcing thus becomes crowd crunching and probably a lot of people get hurt.”

Michael Ulrich Jnr., American Surveyor

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The 21st Century Challenge for Land Professionals

If Land Professionals are going to seriously contribute towards solutions to the 21st century's global problems then we will have to change our relationship with citizens and adopt a new paradigm.



Source: www.whataretheywaitingfor.com

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The Perfect Storm of Change



Source: <http://pixdaus.com> ©Know Edge Ltd / RICS 5

The Perfect Storm of Change



Urbanisation

Source: <http://pixdaus.com> ©Know Edge Ltd / RICS 6

Reality for too many



Source: <http://farm4.static.flickr.com>



Source: www.wolvo.net



Source: www.daylife.com



Source: www.bbc.co.uk

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The Perfect Storm of Change

Urbanisation



Security of Tenure Chasm

Source: <http://pixdaus.com>

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Challenge to Land Administrators

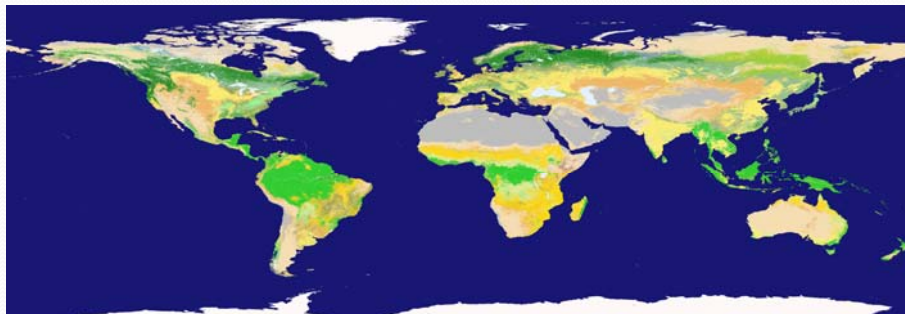
Only 25% of the 6 billion land parcels worldwide are formally registered and have robust security of tenure.



Land Information Management Systems & security of tenure at scale in critical path of sustainable cities, climate change management, food security, poverty alleviation etc.

Global Scope of Land Administration Solutions

Land Administration Solutions are only fully operational and work reasonably well in about 30 - 50 and mainly OECD countries and countries in transition in central Asia.



The Perfect Storm of Change

Urbanisation Security of Tenure
Chasm



Too Few Land
Professionals

Source: <http://pixdaus.com>

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Limited Land Professional Capacity



Source: www.flickr.com

FIG represents
350,000 Land
Professionals
world-wide

1,100,000,000 Slum
Dwellers world-wide

Not enough current or planned Land Professionals to support current Land Administration System paradigm

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The Perfect Storm of Change

Urbanisation Security of Tenure Chasm Too Few Land Professionals

Global Navigation Satellite Systems



Source: <http://pixdaus.com> ©Know Edge Ltd / RICS 13

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Urbanisation Security of Tenure Chasm Too Few Land Professionals

Global Navigation Satellite Systems

Image Based Mapping



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The Perfect Storm of Change

Urbanisation

Global Navigation Satellite Systems

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Image Based Mapping

Too Few Land Professionals

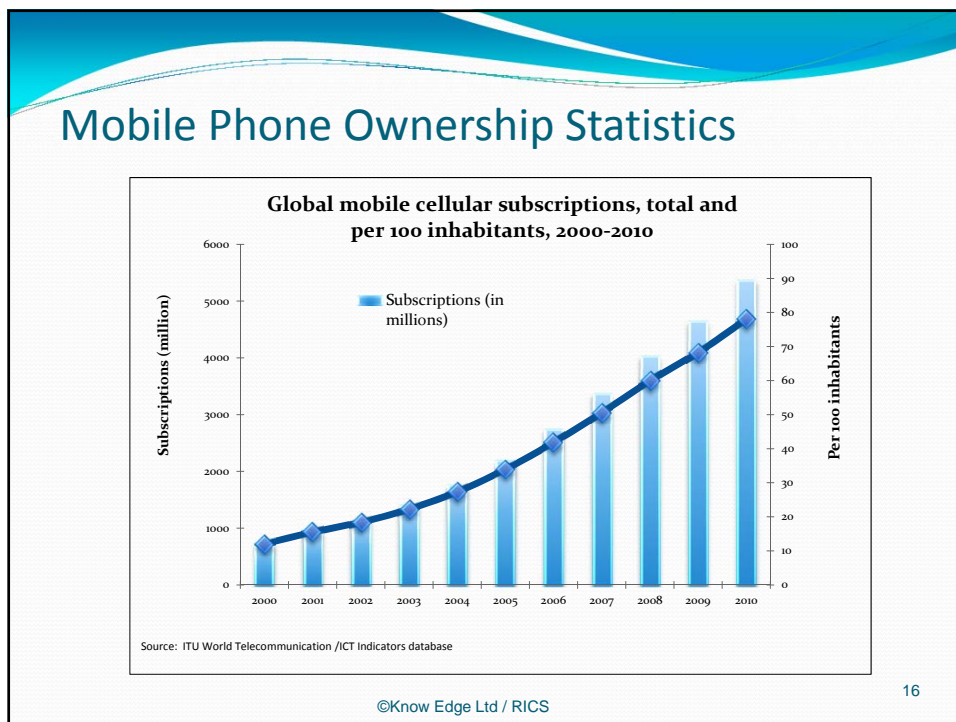


Mobile Phones

Source: <http://pixdaus.com> Source: www.ugotrade.com/wordpress

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The Perfect Storm of Change

Urbanisation Security of Tenure Chasm Too Few Land Professionals

Global Navigation Satellite Systems Image Based Mapping Mobile Phones

Web 2.0
Social Networking



Source: <http://pixdaus.com> ©Know Edge Ltd / RICS 17

The slide features a dark background with a lightning bolt on the left. The text is arranged in a grid-like fashion. The central image is a grid of many small human faces, with the letters 'WEB 2.0' overlaid in a large, white, sans-serif font. The source information is at the bottom.

The Perfect Storm of Change

Urbanisation Security of Tenure Chasm Too Few Land Professionals

Global Navigation Satellite Systems Image Based Mapping Mobile Phones

Web 2.0
Social Networking

Spatially Enabled Society



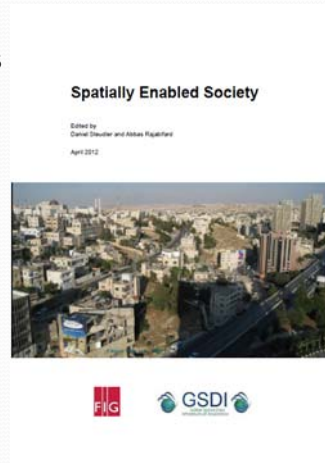
Source: <http://pixdaus.com> ©Know Edge Ltd / RICS 18

This slide is similar to the one above but features a different central image. It shows a man in a light-colored shirt interacting with a large, vertical touch-screen kiosk. The kiosk displays a map and several icons, including a house, a location pin, and a Wi-Fi symbol. The background is the same dark, lightning-themed design as the previous slide.

Spatially Enabled Society

New publication from FIG and GSDI – published May 2012

The main issue that we as societies have to focus on is probably less about spatial data and information, but much more about "managing information spatially". This is a new paradigm, which still has to be explored and discussed in the context of a spatially enabled society.



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The Perfect Storm of Change

Urbanisation Security of Tenure Chasm Too Few Land Professionals

Global Navigation Satellite Systems Image Based Mapping Mobile Phones

Web 2.0 Social Networking Spatially Enabled Society

Crowdsourcing

Source: <http://www.toprankblog.com>

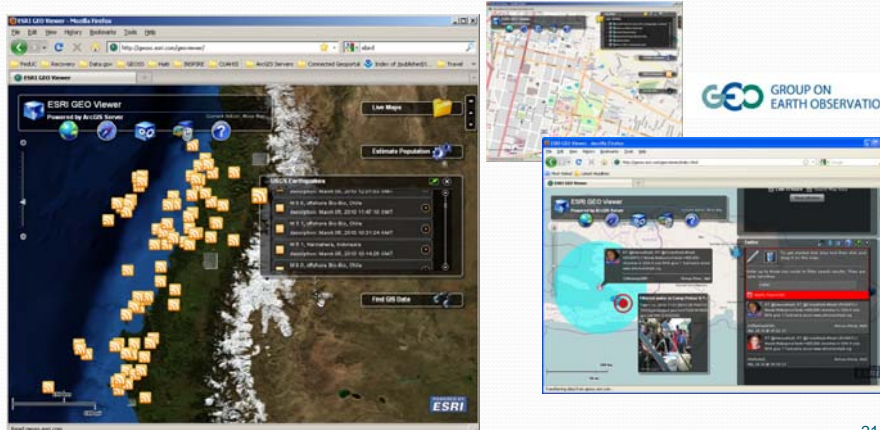
Source: <http://pixdaus.com>

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Haiti Disaster– Geo Viewer Provides GIS Social Media Integration

Fuses OpenStreetMap, Commercial Imagery, OGC services, ArcGIS Online, ... Provides 2-way Twitter Client, Flickr Search, ...



Source: ESRI Inc.

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Radical and Scalable Solutions Needed

We need radical and innovative new solutions.

Our Current Solutions are not Scalable or Sustainable.

Source: www.mol.gov.vu/lands-lr.php

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The Perfect Storm of Change

Urbanisation Security of Tenure Chasm Too Few Land Professionals
 Global Navigation Satellite Systems Image Based Mapping Mobile Phones
 Web 2.0 Social Networking Crowdsourcing Spatially Enabled Society

Can crowdsourcing support a partnership between Land Professionals and Citizens?

Source: <http://pixdaus.com> ©Know Edge Ltd / RICS 23

Mobile Phone 'Cyborg' Functionality

By 2015 the majority of Mobile Phones will be Smart Phones

Voice Recording Internet Access Video Recording GNSS Positioning
 Applications Sensors Citizen

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Empowering Citizens to Engage with Land Administration

Potential Mobile Land Administration Services

- Accessing Customer Information Services
- Recording Land Rights
- Obtaining Title
- Accessing Land Information
- Paying Fees and Mortgage Instalments
- Marketing Real Estate
- Participating in Development Control / Planning

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Accessing Customer Information Services

Customer Information Services

- Plain English explanations of procedures.
- Electronic forms for completion.
- Best practice for land registration and cadastre.
- SMS alerts on applications / transactions in proximity of a property.
- Response to citizens' queries.



Remote guidance and support will be required. Support provided by tiers of citizen intermediaries with guidance by Land Professionals.

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Recording & Maintaining Land Rights on a Phone

- Marked up paper maps & digitally photographed
- a textual description of the boundaries.
- a verbal description.
- a video and commentary – this could include contributions from neighbours as a form of verification (mobile phone numbers of neighbours could be provided).
- the positions of the boundary points identified and recorded on imagery.
- the co-ordinates of the boundary points recorded using the GNSS capability of the phone.



Increase the authenticity & quality of the registration application through community 'expert'

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Recording Land Rights

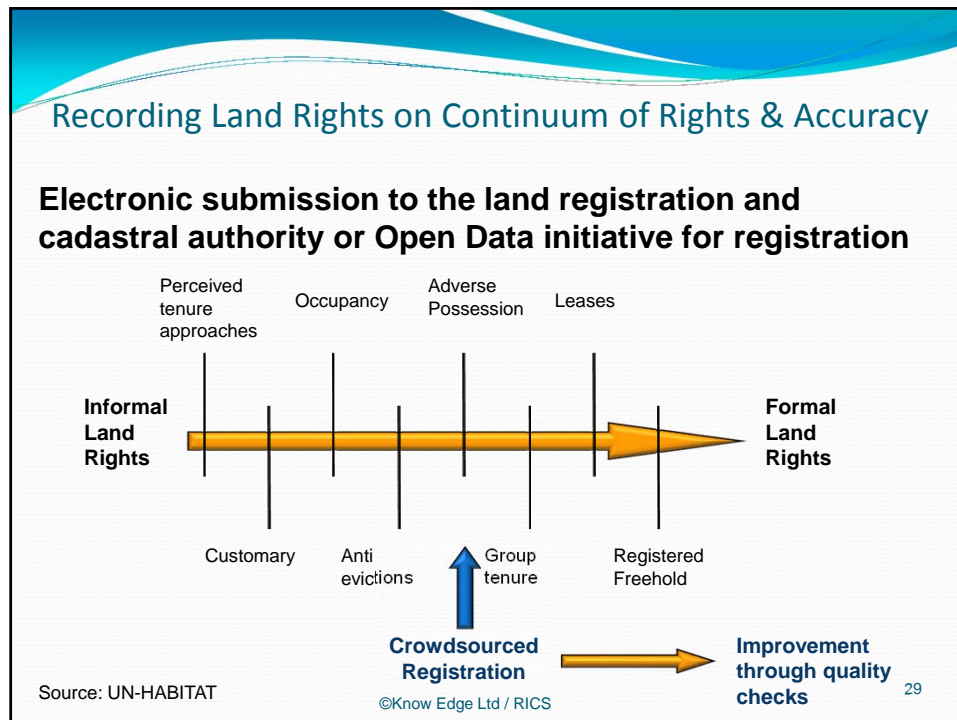
Variety of Recording Approaches



Tablets and
Imagery / Open
Data

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Title & Biometrics on a Mobile Phone

Obtaining Title

- Application payment using mobile banking.
- Mobile phones are currently being used to manage identification information, e.g. Finnish ID Cards.
- Secure identification of the user by their *eID* data stored in the mobile phone SIM card or biometrics, e.g. fingerprint recognition.

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Accessing Land Information – Transparency

Remote Access

- Mobile phones directly supporting Internet access – the only access channel to Internet in many countries.
- Information services can now be accessed by mobile phones.
- This new channel creates much more accessibility for the citizen, bringing land administration services to a wider range of society many of whom are currently excluded.



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Payments using Mobile Banking

Mortgage Payments

- Two way interaction with clients opens up the opportunities for essential feedback and quality checks.
- Mobile phone can play an important role in reducing corruption associated with financial transactions in the land sector.



Source: www.wirelesszone.com

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Technology & Standards to Support Crowdsourcing

Technology toolkits to support widespread adoption

- Ushahidi – “Activist Mapping”.
- Open Data Kit from University of Washington, supported by Google, turns a mobile phone into a versatile data-collection device.
- The EpiCollect.net from University College London provides a web application for the generation of forms and freely hosted project websites for many kinds of mobile data collection projects.
- Land Administration Domain Model.



Source: <http://uwnews.org>

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LAS App



Source: www.slipperybrick.com

It is not difficult to imagine a LAS App (application) for a smartphone that is designed for non-literate users and allows them to collect land rights information in a structured way.

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The Impact of New Citizen Collaboration Model on the existing Land Administration Sector

- The rise of the 'proamateur', somewhere between the professional and the amateur, caused by this easy to use and accessible technology.
- Disruptive technology has caused professional realignments in the past:
 - Total stations allowed surveying technicians to perform more tasks, more accurately than before.



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Source: www.arch.cam.ac.uk/pushkalavati

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The Impact of New Citizen Collaboration Model on the existing Land Administration Sector

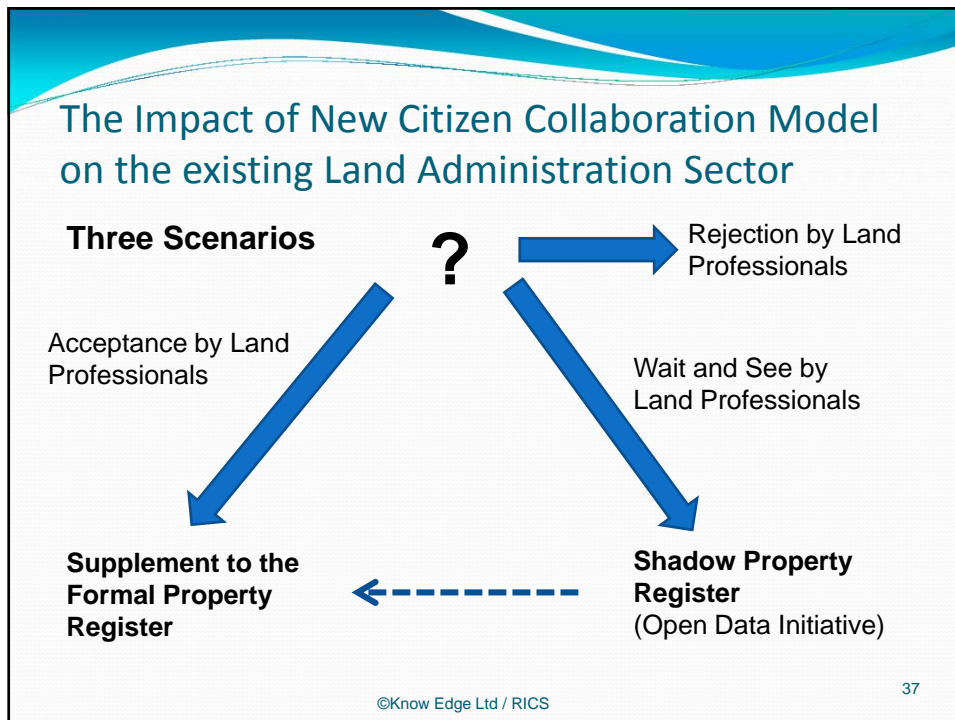
- Crowdsourcing by 'proamateurs' is not a risk to land professionals, but allows a wider range of participants to be involved in land administration and more quickly address and solve our global challenges.



Source: <http://sports.yahoo.com/golf/players>

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Managing the Risk – Authentication Options

Can crowdsourced land rights information be sufficiently authenticated?

1. Grameen Community Knowledge Workers as Intermediaries.
2. Community based Quality Assurance.
3. Wiki and e-Commerce Solutions.
4. Crowdsourcing Quality Assurance.
5. Passive Crowdsourcing Quality Assurance.

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Managing the Risk – Authentication Options

1. Grameen Community Knowledge Workers as Intermediaries

- Avoid open crowdsourcing at the outset.
- Land professionals train trusted intermediaries in communities.
- Reduce level of quality assurance over time.
- Expand through “train the trainers approach.
- Intermediaries could be shared with other information services, e.g. health and agriculture.

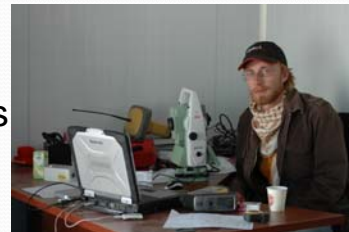


Source: <http://fenixintl.com>

Managing the Risk – Authentication Options

1. Grameen Community Knowledge Workers as Intermediaries

- The costs per parcel in rural areas could come down below US\$ 3 per parcel.
- The new role of land surveyors will be for capacity building, enabling technology and data flow and quality control, but not for field work.



Source: <http://landsurveyorsunited.com>

Managing the Risk – Authentication Options

2. Community based Quality Assurance

- Driving forces for land registration will be more and more local communities and producer associations rather than sporadic or unsystematic registration.
- Systematic registration / crowdsourcing campaigns preferred model:
 - District by district.
 - Commune.
 - Cooperative.



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Source: www.itc.nl

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Managing the Risk – Authentication Options

2. Community based Quality Assurance

- Local public display of the results combined with the witness function of the local land committee and the people is providing societal evidence of land rights.
- Recent experience in Lao, Cambodia, Azerbaijan with German Development co-operation (GIZ and KfW).



Source: www.tabi.la

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Managing the Risk – Authentication Options

3. Wiki and e-Commerce Quality Assurance

- Centralised user reputation system based on feedback from crowdsourced registrations.
- VGI data can be of high quality.
- VGI evidence to prove that the quality increases as the number of participants increases (Linus Law).



Source: <http://www.cyclestreets.net>

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Managing the Risk – Authentication Options

4. Crowdsourcing Quality Assurance

- Crowdsourcing elements of the quality assurance process to a world-wide network of informed consumers and land professionals.
- Automate some of the checks.



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Source: www.teacupmarketing.com

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Managing the Risk – Authentication Options

5. Passive Crowdsourcing Quality Assurance

- Analyse log of use and location of the mobile phone, inferring the location of the owner.
- Network timestamp provides a robust (99.999%) piece of evidence that can be associated with land rights data.



Source: <http://terranautix.com/>

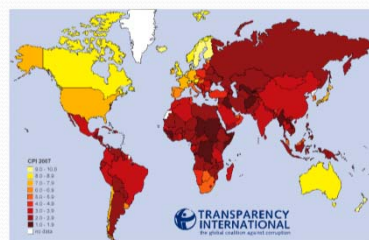
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Managing the Risk

Will openness lead to more corruption in the land sector?

- Transparency is at the heart of the crowdsourced philosophy and the increasing use of the mobile phone to check authentication, should support the fight against corruption.



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Managing the Risk

It already happened in Kyrgyz Republic

- In Kyrgyz Republic people were hired off the street, trained in six weeks, given a tape and existing maps and sent off to survey and register 3.75M properties.
- Despite being 'rough and ready' there were very few resulting disputes and the banks accepted the registration in agreeing mortgages.



Source: www.outdoor-photos.com

Source: Gavin Adlington, World Bank

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Managing the Risk

and it is also happening in the Congo



- Rainforest Foundation UK's "Mapping for Rights" program trains forest people to map their land using GPS devices, marking the areas they use for activities such as hunting and fishing -- as well as their sacred sites -- and the routes they use to access these vital areas.
- The GPS information is used to create a definitive map of the land used by these semi-nomadic communities, which can be used to challenge decisions that see them excluded from areas of forest.

Source: <http://www.trinityafer.com/en/index.php/news/9110-gps-technology-maps-land-rights-for-africas-forest-people-congo>

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Source: <http://pixdaus.com>

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The challenge for Land Professionals is not just to replicate elements of their current services using crowdsourcing, but to radically rethink how land administration services are managed and delivered in partnership with citizens.

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Let's try it and pilot it and make land administration by the people for the people a distinctly 21st Century phenomenon.



Report November 2011

RICS RESEARCH

Crowdsourcing Support of Land Administration

A new, collaborative partnership between citizens and land professionals

pdf download available on RICS website:
http://www.rics.org/site/scripts/download_info.aspx?fileID=10840&categoryID=325

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