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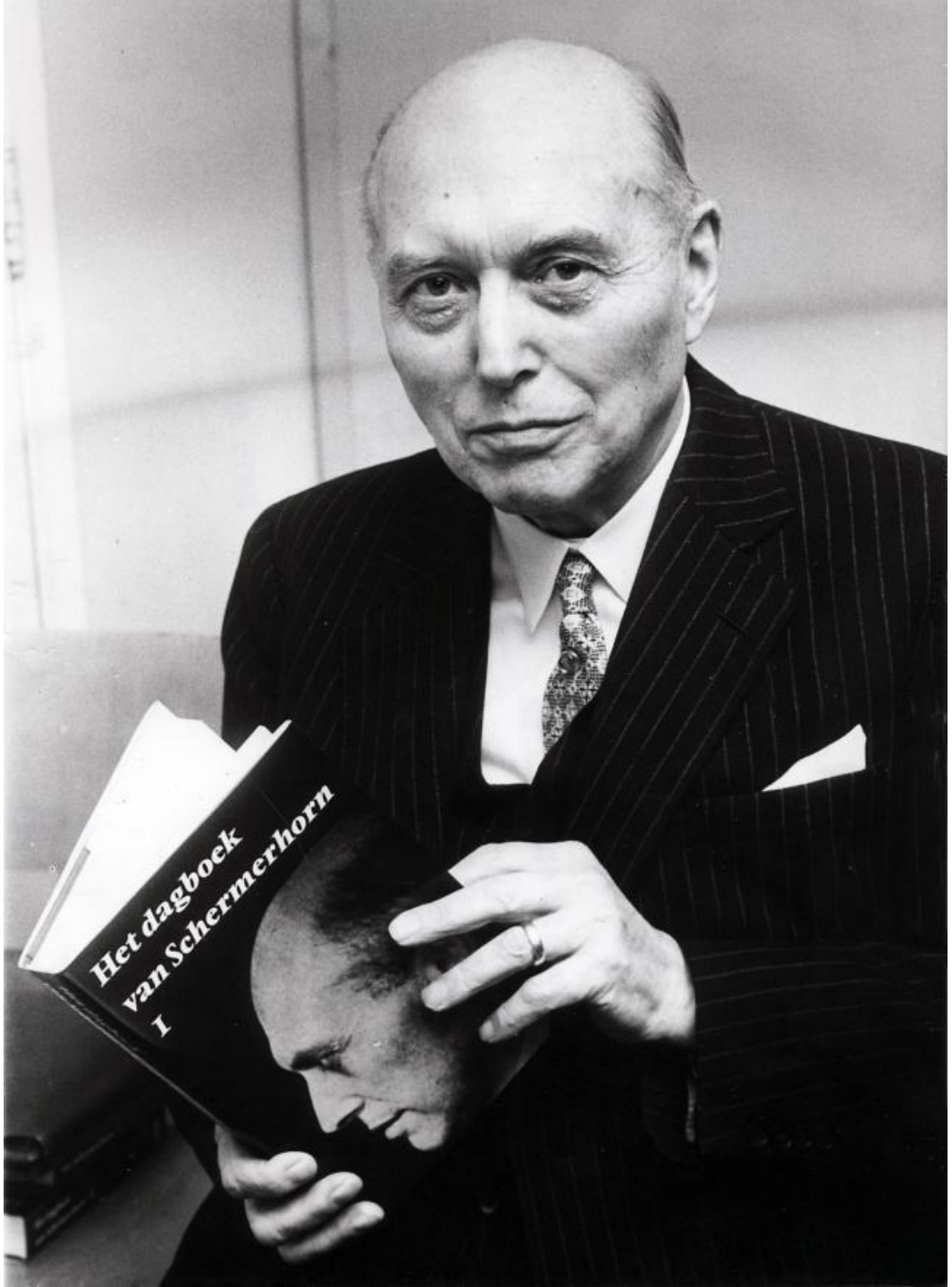
Lunching with Smart Cadastrobots

Rohan Bennett

FIG Young Surveyors Network – European Meeting

8 June 2016


Het dagboek
van Schermerhorn
I

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Geo-Information Science +
Earth **Observation**

change agents + leaders

+65 years

+150 countries

+20,000 alumni

2010 merger

Land Administration

http://www.oxforddictionaries.com

Our goal

build capacity to acquire knowledge and apply spatial and social skills on the relationship between people, rights, and land

Technological + **Institutional**

STDM

LA**DM**

Pro-Poor

Fit-for-**Purpose**

Automation...

http://www.oxforddictionaries.com

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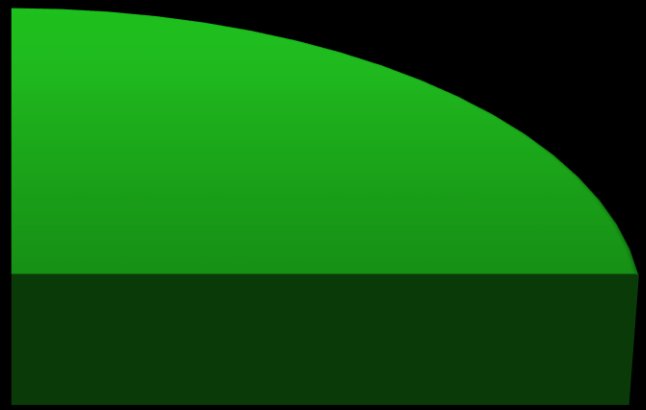
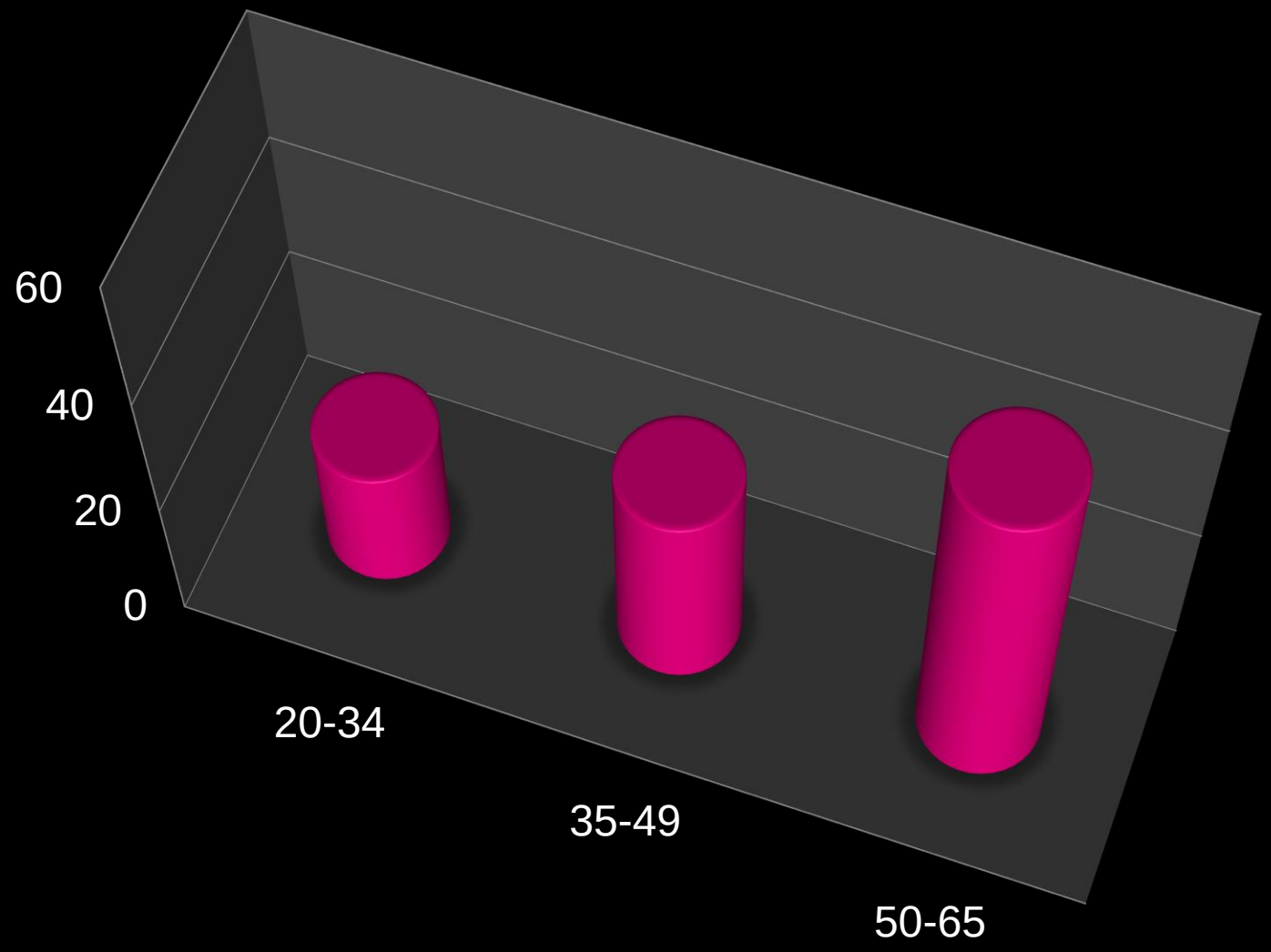
There simply **isn't enough** conventional surveyors…

In many countries, only a small percentage of land is covered by the cadastre...



Cadastral Coverage

…in many countries the age profile of the land profession looks like this…



...and they cost quite a bit to train

6 years of primary school education
6 years of high school education
4 years of tertiary education
2 years of on-job or certification training

18 Years

300,000 EU worth of training costs (approx)

300K EU

We haven't even paid for a day of surveying yet

1K EU/ day

We haven't even paid for equipment yet

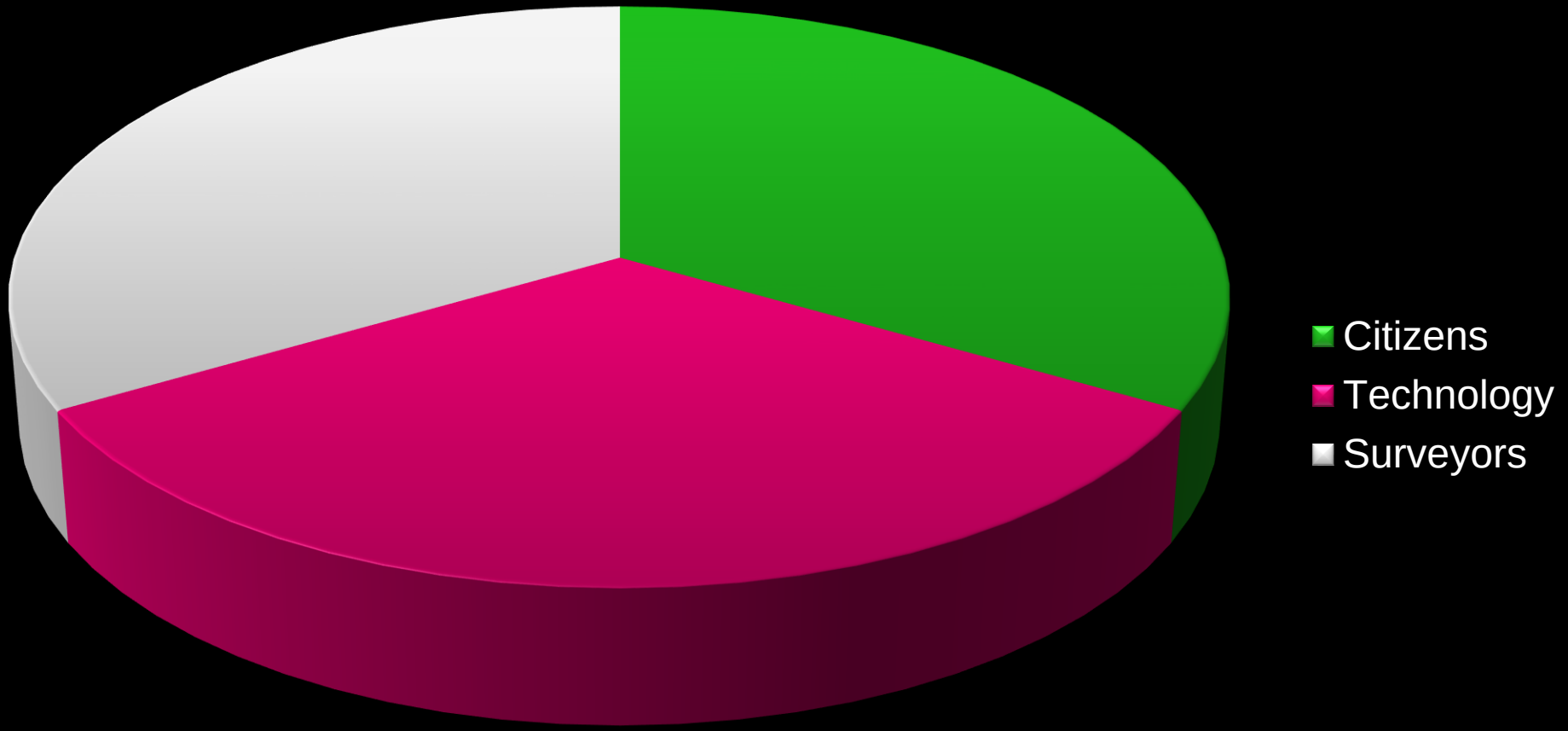
40K euro

'Kadaster Netherlands reduced it's workforce from 2600 to 1500 in 8 years'

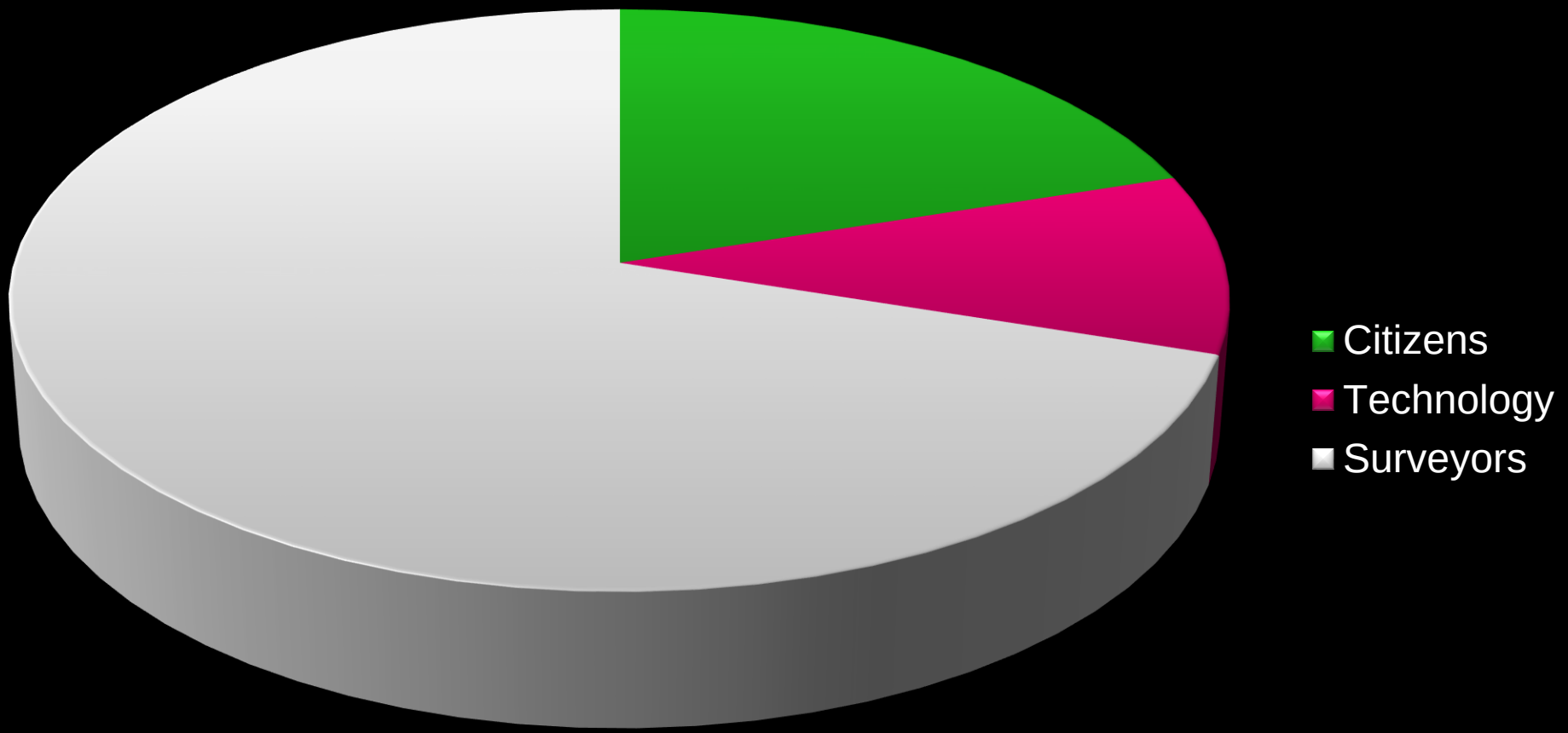
Kees de Zeeuw (2015)
Kadaster International

So, **what is** going on?

Citizens, surveyors, and technology have always combined to create the cadastre…



However, in recent times, surveyors have dominated....



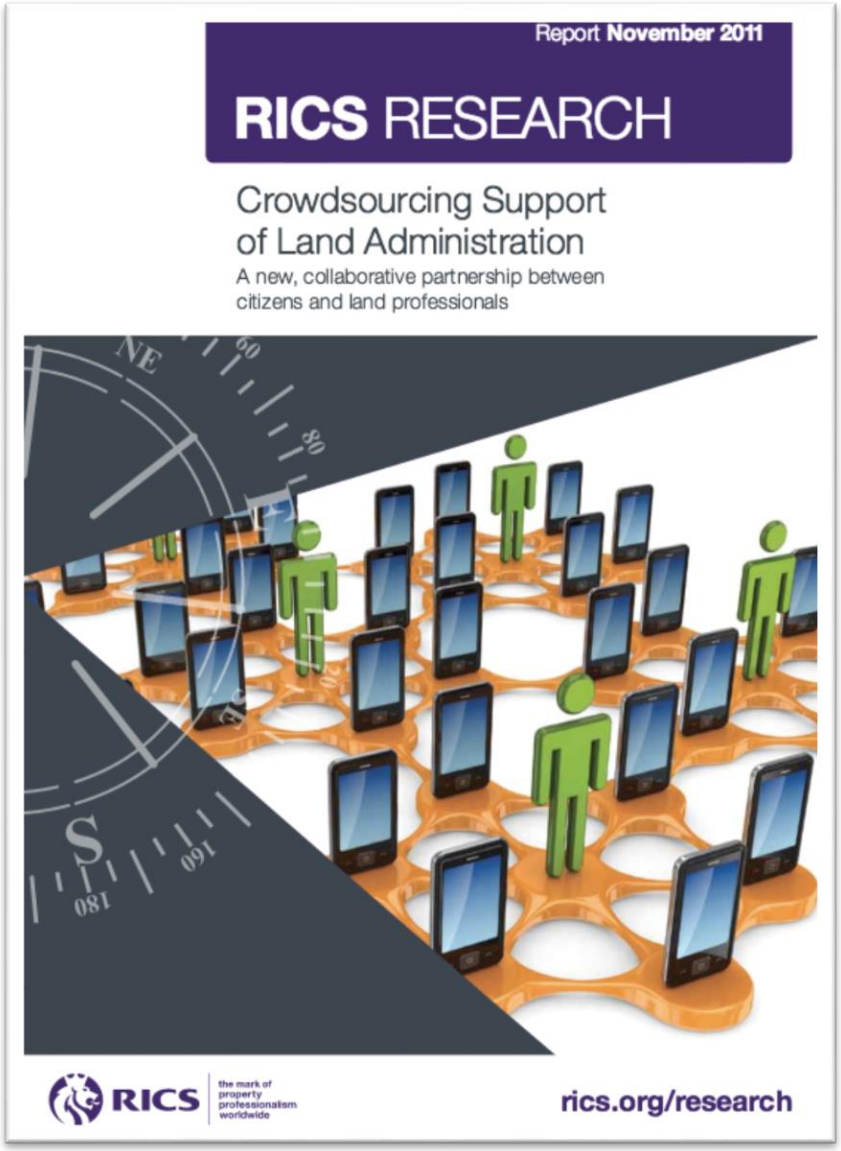
…but, the **tide is turning** back…

Citizens
mandated mobs

Machines
cadastrobots

https://www.itc.nl/Images/Events/2011/May/Vittin%20062_web.jpg

the
mandated
mobs



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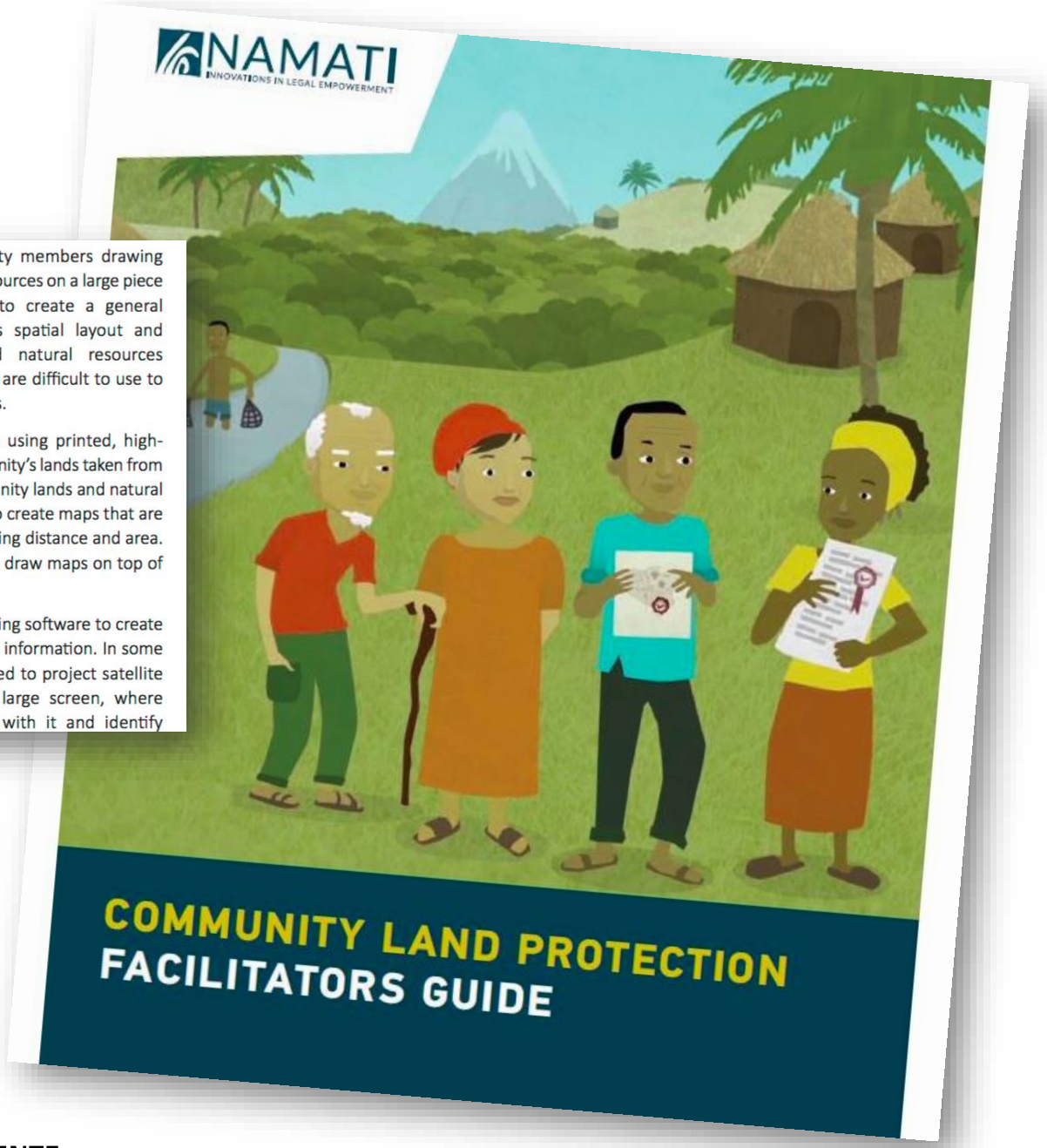
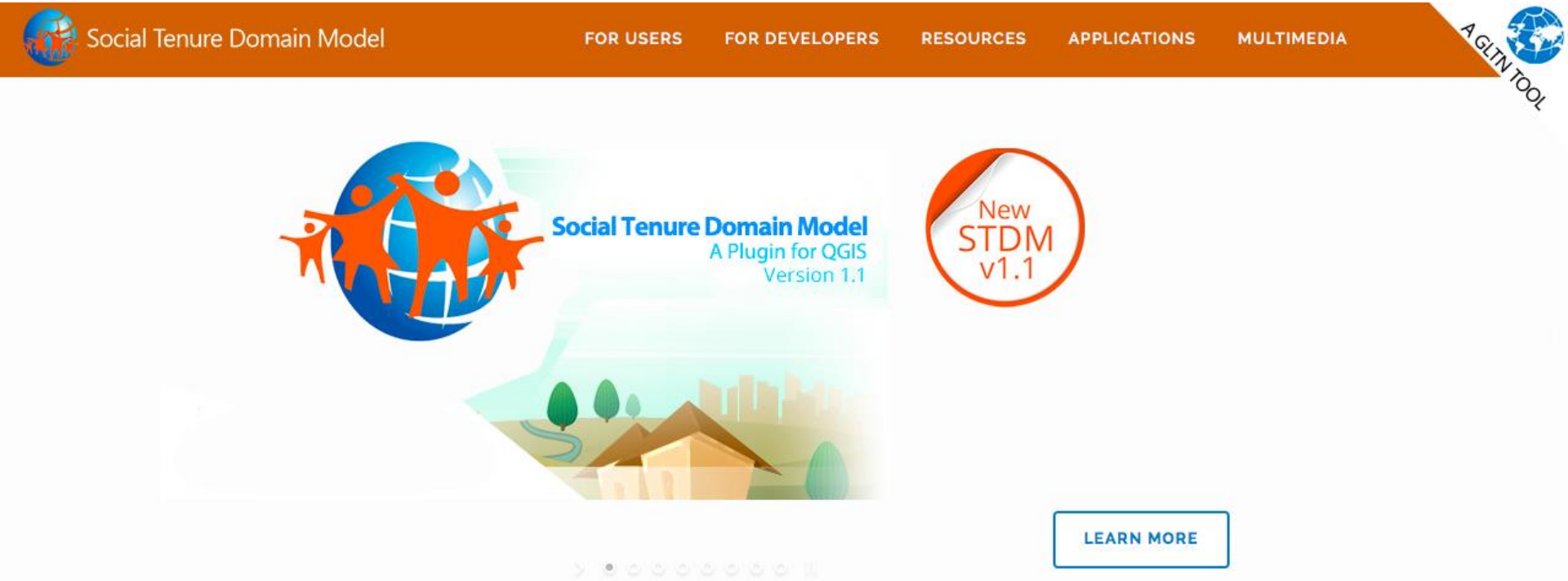
1. **Sketch mapping** involves community members drawing pictures of their lands and natural resources on a large piece of paper. The exercise can help to create a general understanding of the community's spatial layout and promote discussion of land and natural resources management. However, sketch maps are difficult to use to identify specific locations or distances.

2. **Satellite imagery mapping** involves using printed, high-resolution photographs of the community's lands taken from satellites. This imagery shows community lands and natural resources in detail and can be used to create maps that are more accurate and useful for calculating distance and area. In this strategy, community members draw maps on top of printed satellite imagery.

3. **Digital mapping** involves using mapping software to create digital maps of a community's spatial information. In some approaches, the software can be used to project satellite imagery from a computer onto a large screen, where community members can interact with it and identify





Social Tenure Domain Model

A pro poor land information tool.

STDM AS A CONCEPT

There is a gap in the conventional land administration systems
such that customary and informal tenure cannot be easily handled.
There is a need for complimentary approaches in land administration.

CADASTA
Your Rights, Your Future

landmapp
unlocking land value

RIGHTS + RESOURCES

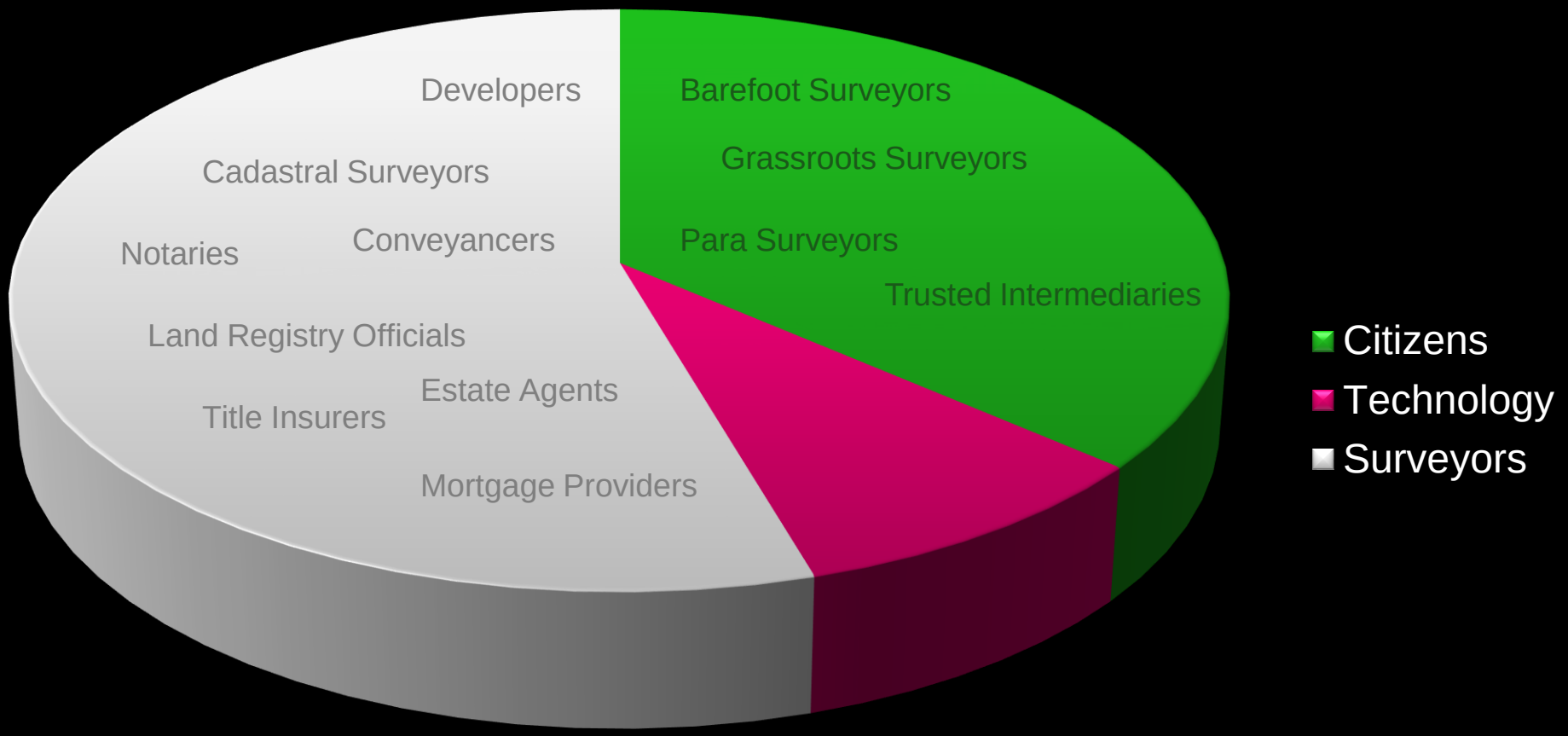
ArcGIS Features Plans Gallery Map Scene Help
Open Cadastre Map Dashboard

Missing Maps
Putting the World's Vulnerable People on the Map

International Independent Cadastre

MAPPING FOR RIGHTS
Putting communities on the map

Citizens are taking back a bigger piece of the pie

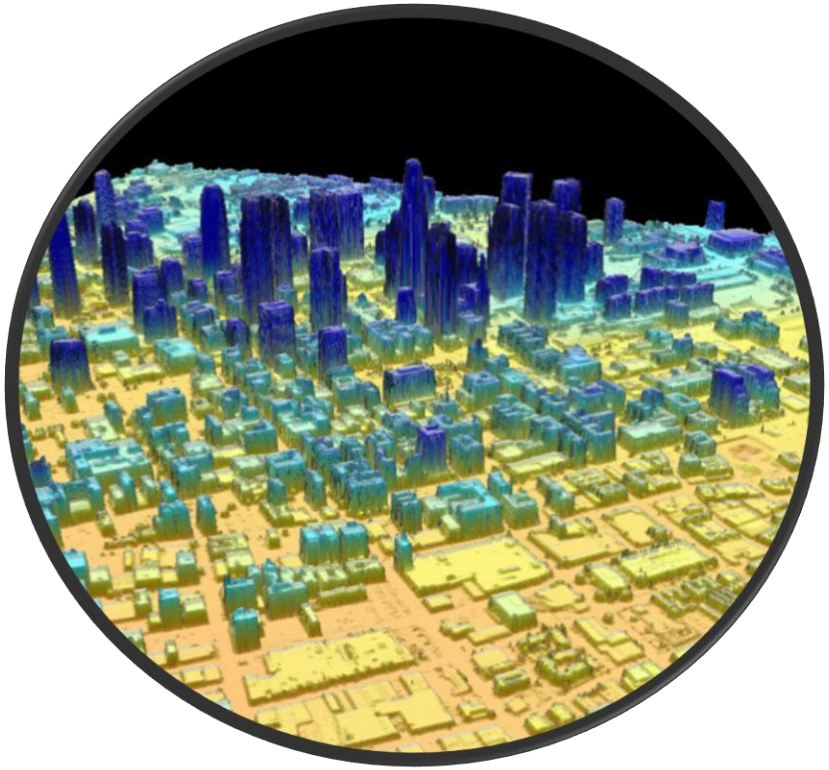


What tools do citizens really need?

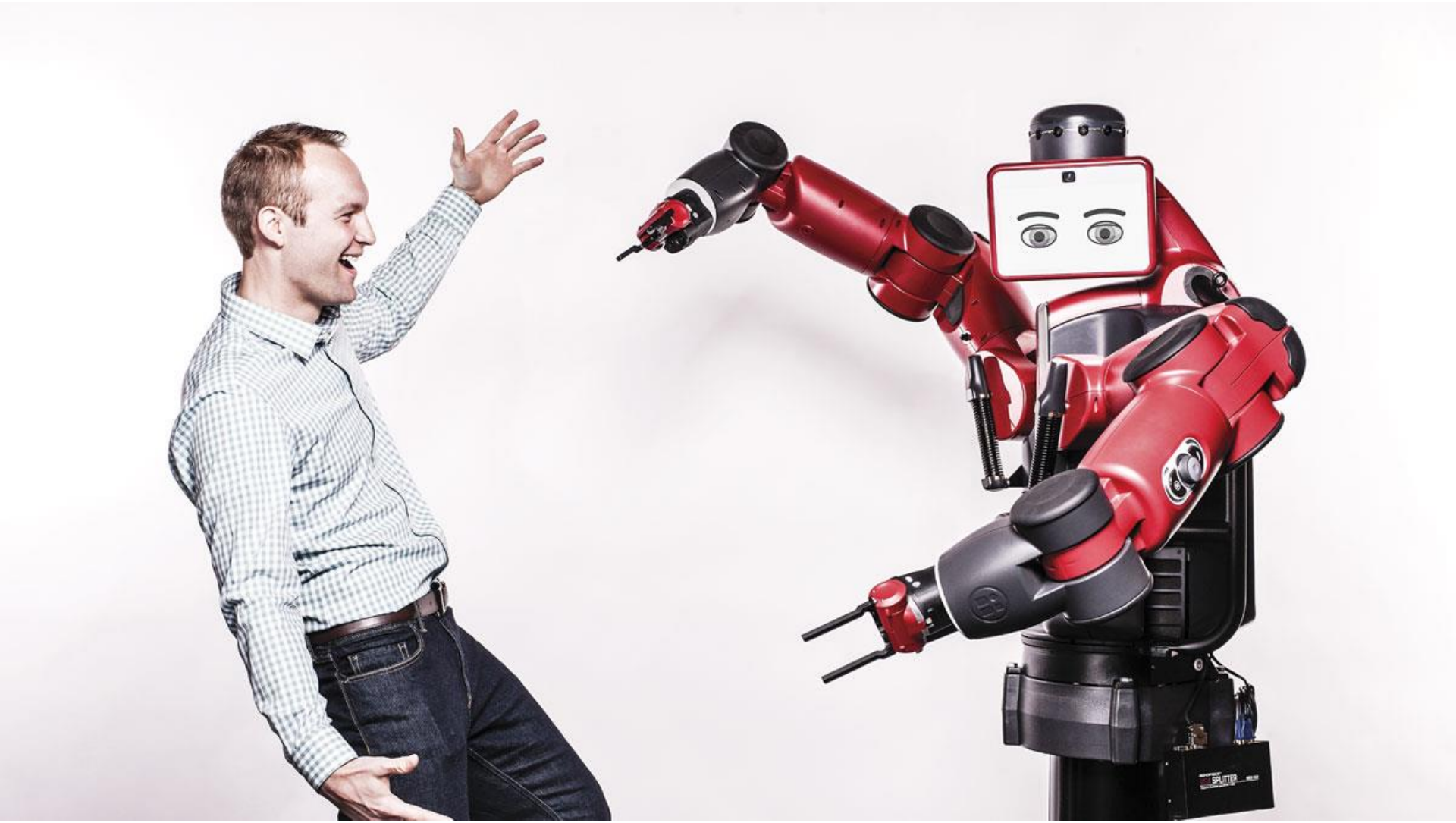
How much can *or will* citizens do?

Is there a line?

Where is it?



the **cadastrobots**



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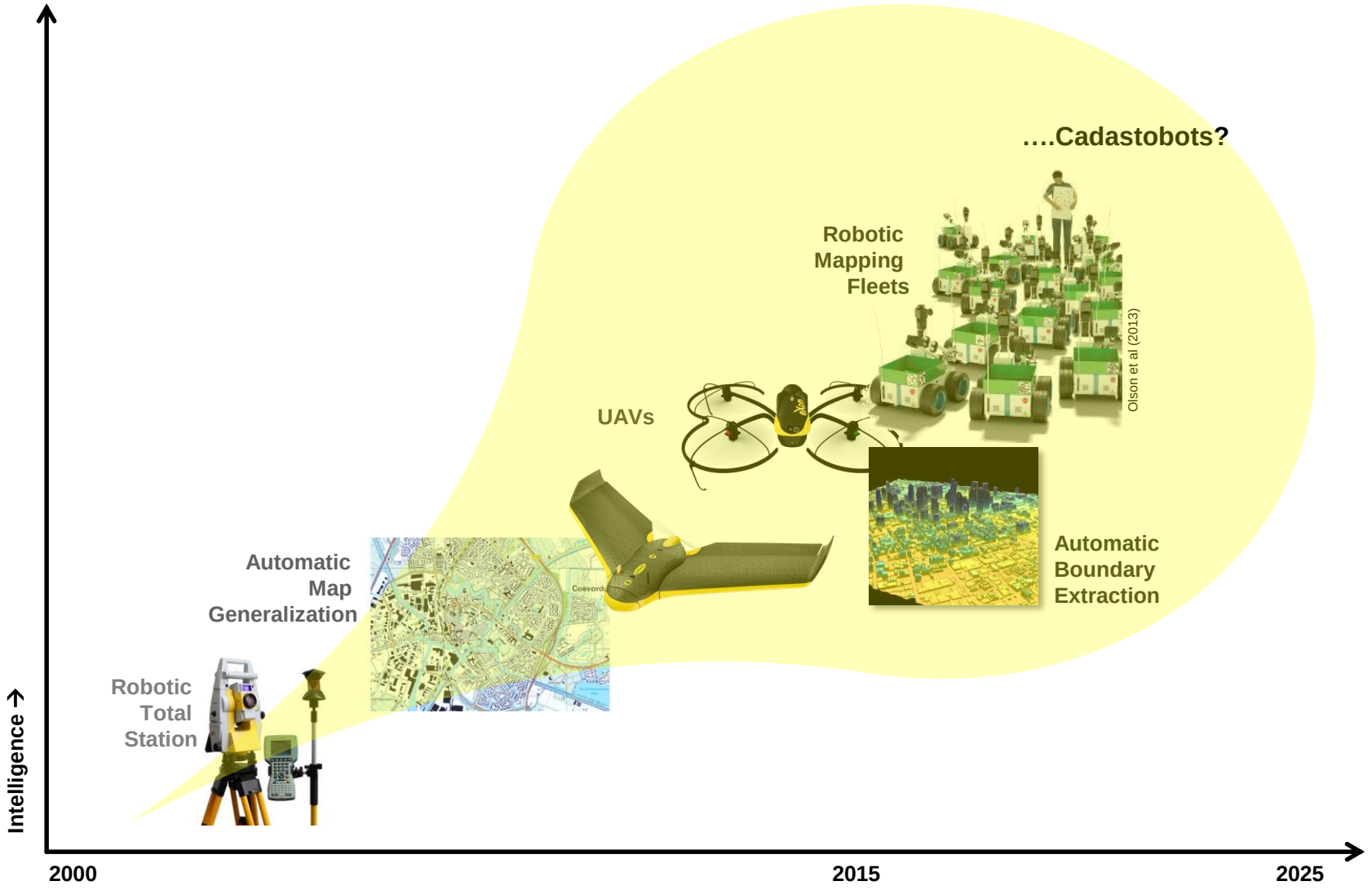
rethink robotics



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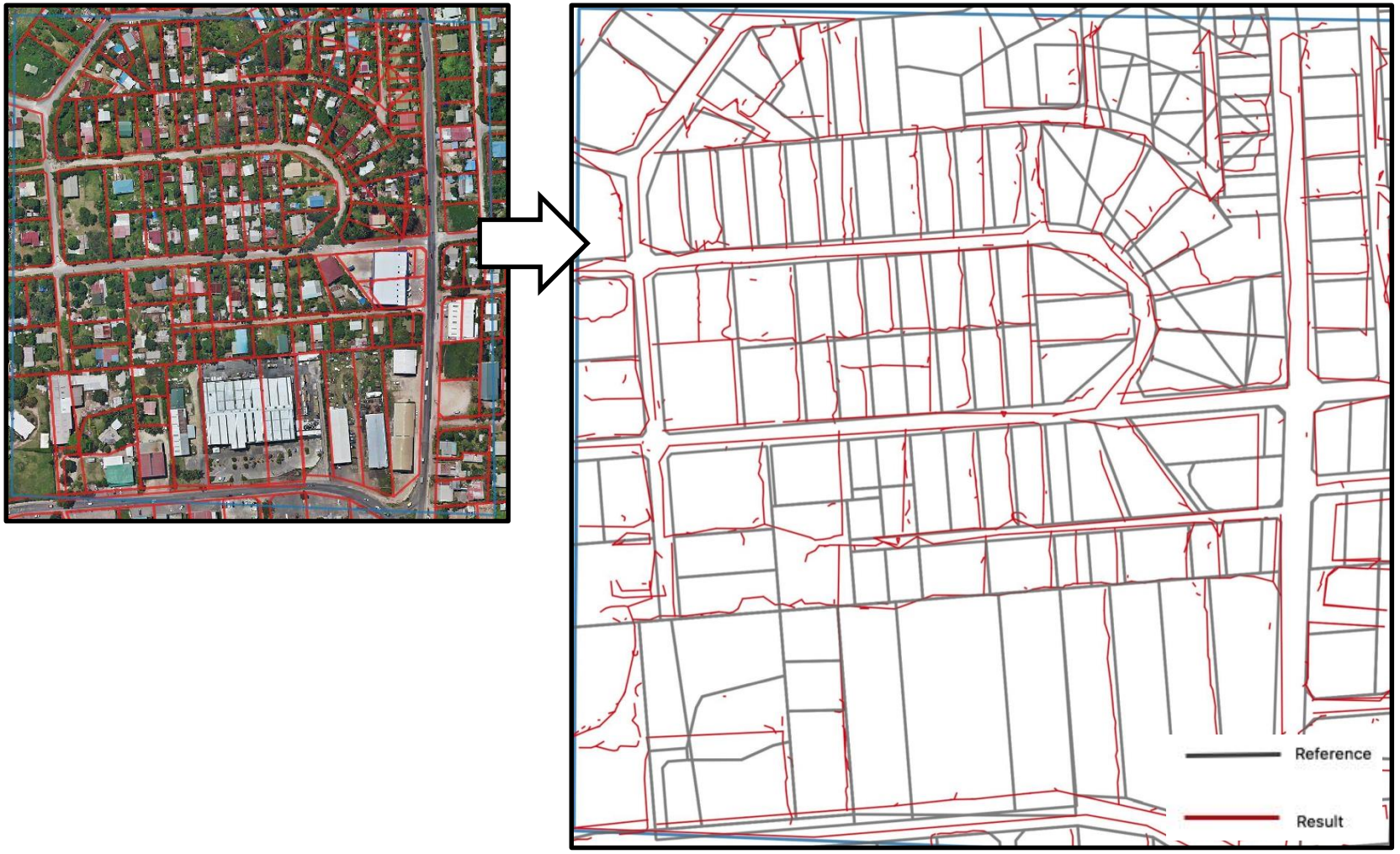
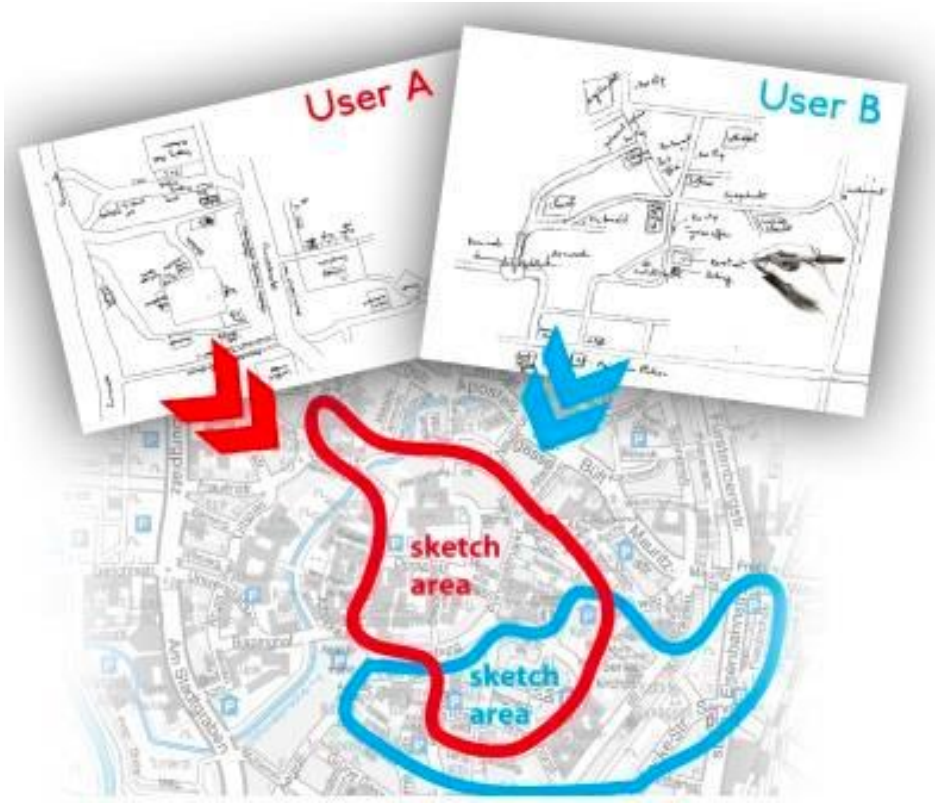


Courtesy: X, Luo, (2016), Investigating semi-automated cadastral boundary extraction from airborne laser scanned data, MSc Thesis, ITC, University of Twente, The Netherlands.

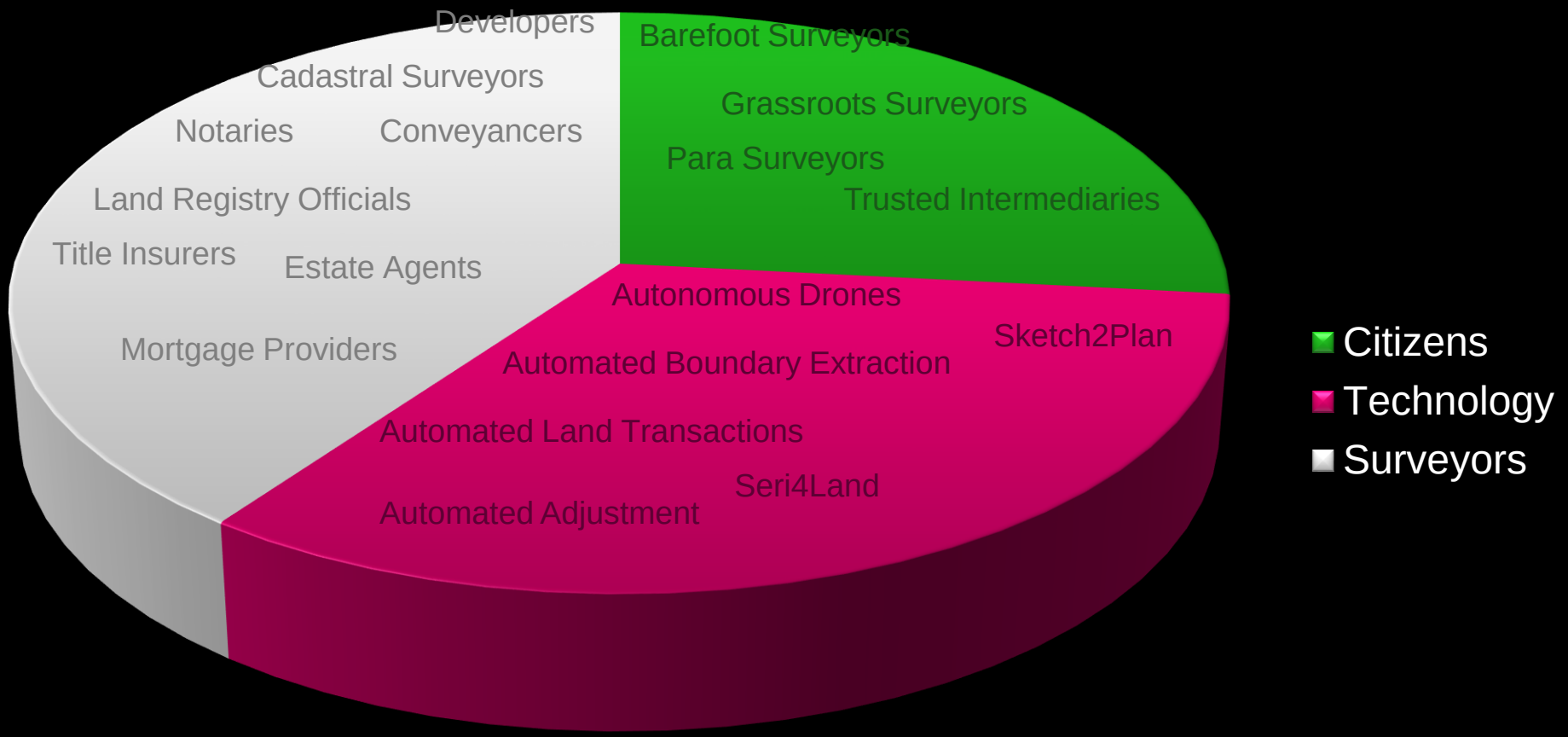
SKETCHMAPIA



http://giv-sketchmapia.uni-muenster.de:8080/sketchMapiaInterface/index.php

CONSELHO MUNICIPAL DE MAPUTO
EDITAL
N

Robots are increasingly being used for repetitive cadastral tasks...



The cadastrobots are coming!

What are the implications for land professionals?

How much can *and should* be automated?

ITS4LAND
innovations for land tenure

Home About News Events Tools People Governance

Home

We're creating seven new tools to make land rights mapping faster, cheaper, easier, and more responsible

Get Needs
A tool for sharing, understanding and visualising what users really need

Draw and Make
A tool that converts hand drawn sketches into computer-ready boundary maps

Fly and Create
A boutique imagery creation tool tailored for land rights mapping - anywhere, anytime

Automate it
A tool that discovers visible boundaries hidden in imagery, and converts them to usable land rights information

Publish and Share
A tool for simplifying land rights information processing, storage, and visualization

Govern and Grow
A governance and capacity development tool aimed at making land rights mapping sustainable

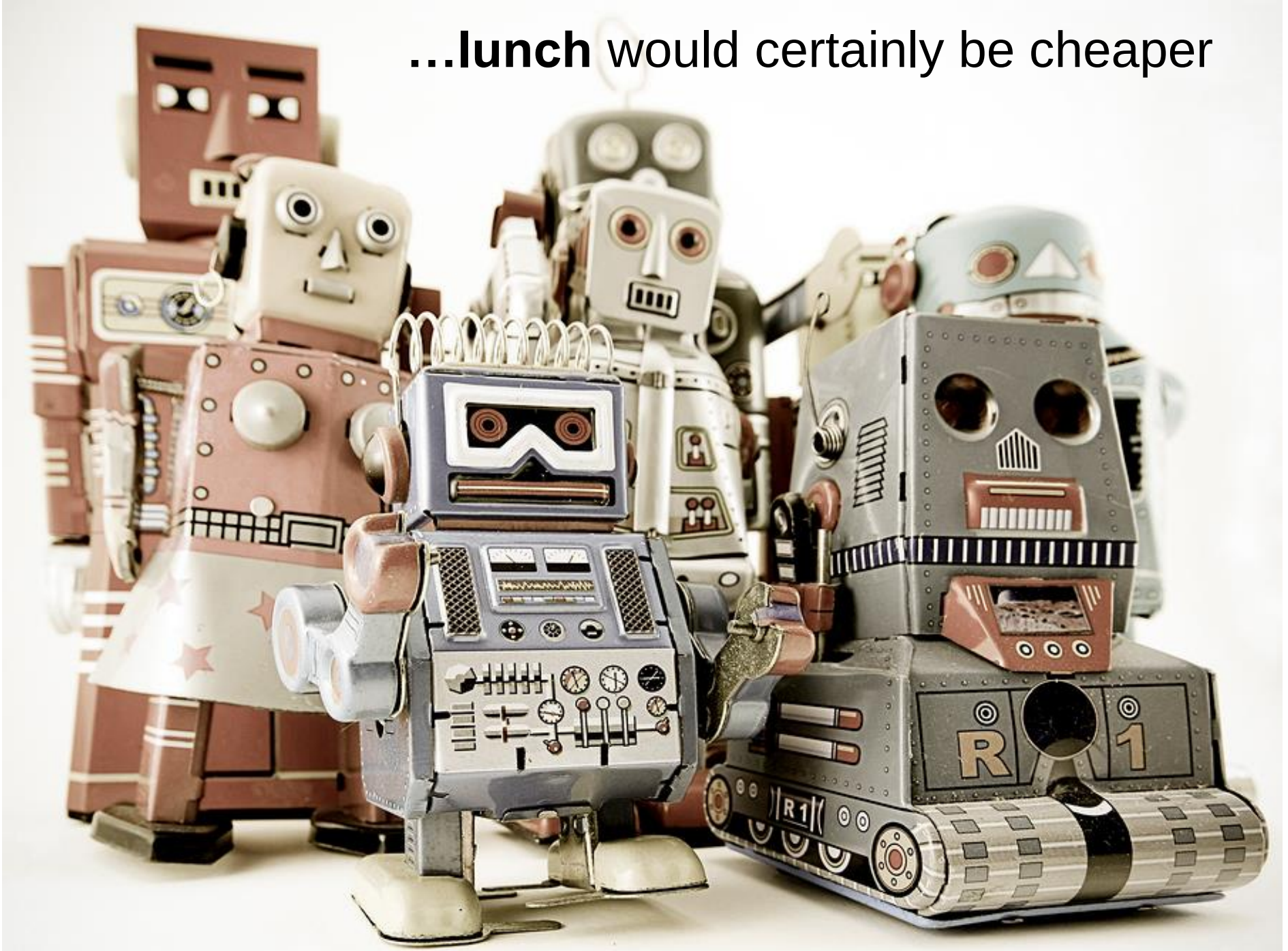
Capitalize
A tool that ensures land rights mapping solutions are financially sustainable - and more than just 'pie in the sky'

Take a moment to think about this…

Perhaps the future about training surveyors to train cadastrobots to adjudicate, demarcate, survey, and disseminate?

…even at ITC

…lunch would certainly be cheaper



http://geeknewscentral.com/wp-content/uploads/2012/10/bigstock-a-fun-group-of-robot-toys-26064050.jpg

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Thanks. Questions. Discussion.

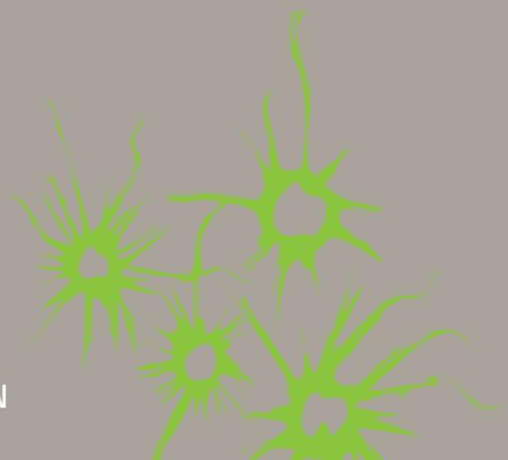

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FIG WORKING WEEK 2020

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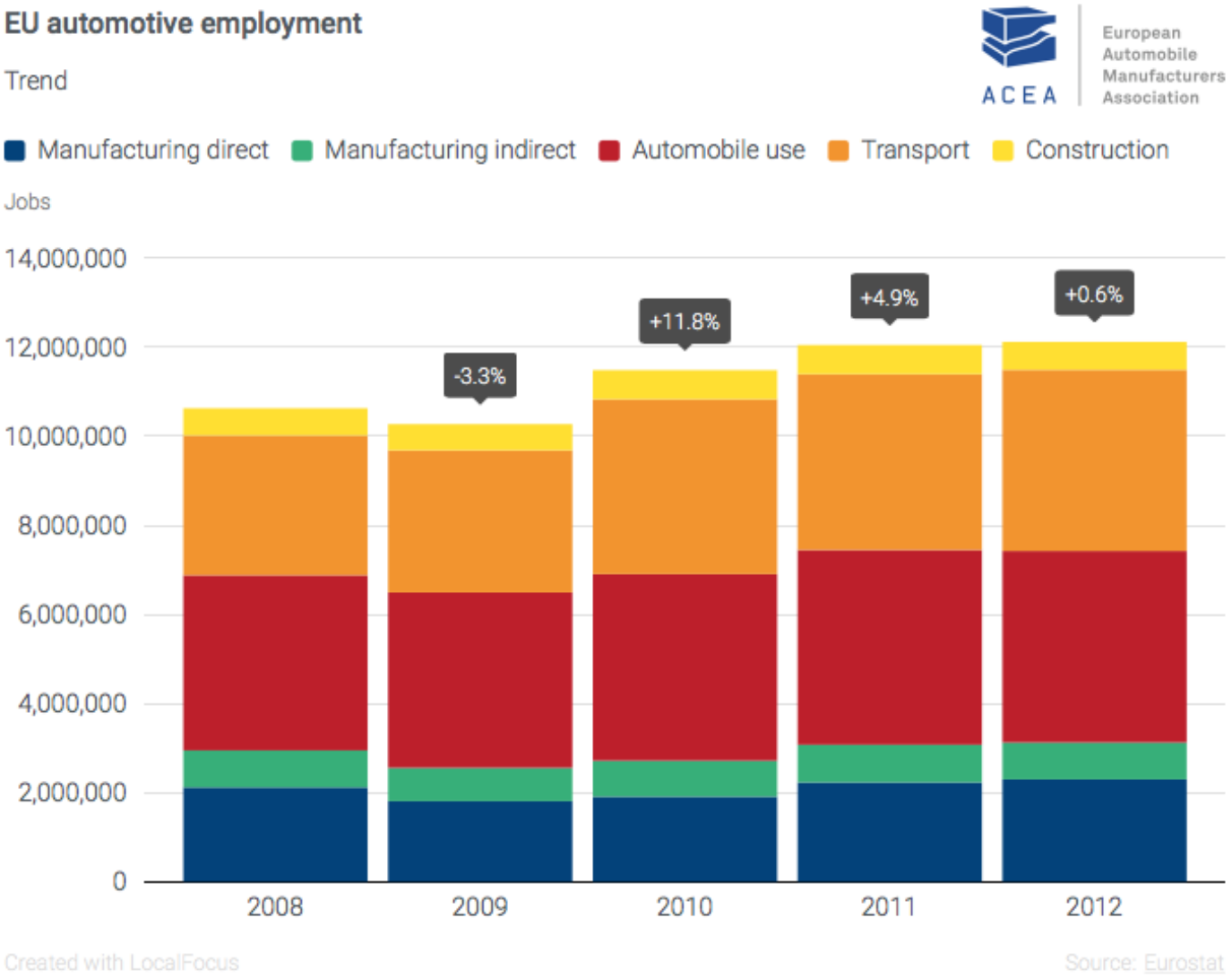

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…but, maybe it's **not so simple?**