

# **Taking the Data Revolution to the Next Level: Effective and Inclusive Methods of Communicating Spatial Data**

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**Key words:** land data, geospatial data, land governance, data literacy, data revolution

## **SUMMARY**

With the development of the post-2015 agenda, the UN High Level Panel expressed a need for a ‘data revolution’ to enable the transformative action necessary to respond to the demands of an incredibly complex development agenda. Data collection, analytics and monitoring have been hot topics of discussion within the land community as well. New technologies are developed continuously to allow actors to capture and analyze data at a greater speed and in higher volumes than has been possible before. Research has shown that a big portion of the global “big data” is actually geospatial data, and the size of this data is growing rapidly at least by 20% every year.

Being able to analyze spatial data requires a unique skill set that only a minority of people in the land sector possess. As a result, geospatial data and analytics often do not leave the specialized networks of GIS experts, which leaves a major gap for the rest of the land sector. While we encourage the spreading of skills and attitudes for data use to an audience beyond data experts, the fine line which we are treading is the following: any small error in interpretation of this type of information, such as incorrect application of dataset comparisons, for example, can lead to inaccurate presentations of land tenure situations on the ground. This, evidently, can lead to major mishaps, possibly having very real effects on lives and livelihoods. We know that data literacy is essential to the current ‘Data Revolution’, but how do we do this in ways that are effective, safe and responsible?

The answer that we propose lies in scaling back for purpose, as opposed to scaling up. Making data understandable for non-expert audiences requires us to go from big data, to smaller data. With smaller data, the context about which the data tells a story plays a vital role. This is where general audiences can get involved in the telling of stories around the data itself, or by providing context. The Land Portal Foundation is currently exploring together with the University of Twente and Plan B, with the Netherlands Kadaster in an advisory role, by establishing a geospatial platform specifically tailored to non-GIS-experts, through which these types of initiatives could be facilitated.

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## **1. INTRODUCTION**

The “Data Revolution” is such a well-established and widely recognized concept within the sustainable development sphere now, that it is hard to believe it has only become an integral part of the development agenda over the last few years. With the development of the post-2015 agenda, the UN High Level Panel expressed a need for such a ‘data revolution’, to enable the transformative action which is necessary to respond to the demands of an incredibly complex development agenda.

Data collection, analytics and monitoring have been hot topics of discussion within the land community specifically, as well. New technologies are continuously being developed, in order to allow actors to capture and analyze data at a greater speed and in higher volumes than has been possible before. Research has shown that a big portion of global “big data” is actually geospatial data, and the size of this data is growing rapidly at least by 20% every year (Lee, J-G. & Kang, M., 2015).

Being able to analyze spatial data requires a unique skill set that only a minority of people in the land sector possess. As a result, geospatial data and analytics often do not leave the specialized networks of GIS experts, which creates a major gap for the rest of the land sector. Generally, attention seems to be shifting from the early efforts to capture “raw data”, to the use of data to now focusing on spreading skills and attitudes for data use to a wider audience (Garcia Montes, M. & Slater, D., 2018). Phrases such as “citizen geodata science” and the like, are emerging in other sectors and the land community is required to understand how to better manage this new trend. Therefore, the question we would like to pose in this paper is: *How can we open up the wealth of geospatial data and make it part of an inclusive global debate that goes beyond the technical GIS audience?* This paper partly builds upon the idea of a Land Tenure Atlas, a study which gained support from the UN-GGIM (United Nations Initiative on Global Geospatial Information Management) and the Working Party of Land Administration (WPLA) of the UN-ECE (Wouters et al, 2018)

## **2. LAND DATA & THE SDGS: INCREASED DEMAND FOR DATA LITERACY**

Land is an inherently spatial matter and therefore so are its governance and administration. The phenomenon of using geospatial data is hardly new in the land sector; certain specializations within academia as well as professional surveyors have always worked with geospatial information systems and geospatial data is an integral part of their work. In the last

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few years however, the debate of (geospatial) land data has gone beyond these specialized networks. The inclusion of land indicators in the Sustainable Development Goals (SDGs) has created an unprecedented momentum around land data collection, analytics and monitoring. There is a palpable positive drive within the land sector for people to make the best use of this opportunity ‘land’ has attained in the global development agenda. Everyone wants to contribute and join the land data debate and share their perspectives.

The land sector is hardly unique in seeing this trend of opening up data and to debate on its meaning to a wider audience beyond the ‘traditional’ experts. Increased data literacy, particularly for vulnerable communities such as women and youth, is referred to as a much needed “bottom-up” solution in the wider development sector. Initiatives such as the School of Data, Code for America or Girls Who Code are being developed with increasing frequency and the number of data science courses available on Coursera or edX to build data science or GIS skills are significant.

To a degree, increased data literacy is indeed an important and perhaps even essential cornerstone of the ‘Data Revolution’, if we are to accomplish the sustainable development agenda. The World Wide Web, with its vast amounts of data and resources available to anyone and anywhere, brings enormous opportunity, but also significant challenges. It is well understood that the vast amounts of data and information available online are not all of equal quality or reliability. People require certain skills and know-how to be able to digest the data and assess their trustworthiness or quality. Being able to assess quality and reliability of data is a level of data literacy that is, in our opinion, indeed critical to achieve meaningful results in the sustainable development agenda.

However, many of the (online) courses, trainings and apps go much beyond creating this elementary understanding and building blocks of data literacy. In the literature among big and open data networks, there is a call for a more clear definition of the word ‘data literacy’ (Frank, M. 2015). We support this call for more clarity. While we believe it may be worthwhile to expand trainings to build actor’s capacities to digest and analyze spatial data themselves, we do not imagine that all actors in the land community will or, better yet, *should* be able to make sense of datasets with polygons or spatial coordinates.

Data analysis is an expert skill for a reason and drawing conclusions from data analysis can be harmful if not done correctly. Incorrect application of dataset comparison and conclusions on correlations can lead to incorrect presentations of land tenure situations on the ground. Such situations can lead to conflicts, displacement and loss of livelihoods and identity; the stakes are incredibly high. However, we do see a crucial societal opportunity for wider inclusion in expanding the reach of geospatial data to a non-expert audience, as opposed to data scientists speaking to other data scientists. We would like to argue that new technologies should not (only) focus on innovative methods of data analysis or monitoring, but start focusing more on communicating that data.

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### 3. FACILITATING INCLUSIVITY THROUGH DATA COMMUNICATION

While we believe that data analysis is an expert skill and should not be considered as something anyone can or should be able to do, we do not believe it is useful or effective to keep this type of discourse between experts exclusively. We may be skeptical of the notion that an inclusive data revolution entails training any- and everyone to be a skilled data analyst, but we are in complete agreement with the driving factor behind this notion: citizens and communities should be included and empowered to have a voice in the debate that ultimately aims to improve *their* daily life and livelihoods.

Different methods can be applied to include citizens and communities in the debate. Not only should everyone be educated to be data literate to the extent where individuals become critical thinkers and learn to assess reliability of data, experts that possess the analytical skills have a societal responsibility to make data understandable to a wider, non-expert audience. Such efforts focused on data *inclusion* provide a basis for collective understanding, interpreting and managing data-driven decisions and discussions among all people (Bhargava, R. et al, 2015). Including and empowering (vulnerable) citizens and communities in such a way has the potential to increase their resilience in solving local problems and equips them with the necessary tools and skills to keep their governments accountable and transparent.

The natural next question is, how do we make the data understandable for a non-expert audience? Bhargava et al (2015) phrase this in a very fitting way: “by making big data smaller”. “Small data” distinguishes itself from big data through one fundamental difference: unlike big data, the context about which the data tells a story plays a vital role (Bhargava et al., 2015). It means bringing the big data back to a scale and in a format where more people are able to digest, understand and engage with it.

Using appropriate software tools to visualize data, for example, can be a highly effective way to communicate data and get the message across in a way that is understandable to the general public. Visual information is said to be processed 600,000 times faster than text and consumers of information are said to retain 80 percent of what they see, while only paying attention to 20 percent of what they read (Long, K. 2014). In a world bombarded with information, clear and concise visuals are what can grab a person’s attention. In our case, without engaging visuals that depict the physical land we are talking about, we are only telling half of the story.

Story maps are one important means by which the gap between narratives and visuals can be bridged. Maps can be overlay with narrative texts, other images as well as multimedia content. The key here is to encourage the use of tools that help people to find real insights, not by having them make sense of raw data, but providing context and a narrative that resonates with the particular audience.

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### 4. LAND PORTAL SPATIAL PLATFORM

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One possible way of allowing non-experts to work with and visualize the spatial data that is of interest to them, which the Land Portal Foundation is currently exploring together with the University of Twente and Plan B, with the Netherlands Kadaster in an advisory role, is by establishing a geospatial platform specifically tailored to non-GIS-experts. This will be achieved by paying special attention to user requirements, like usability, understandability, learnability, attractiveness and efficiency of use. Non-GIS-experts are in general used to popular geoweb tools like Google Maps and expect similar user interaction for functions like zooming and panning. Bishop et al (2015) relate this to functionality unfamiliarity, and plea for additional tutorials or more intuitive help functionality. Secondly, they discuss the impact of feature unawareness, because non GIS-users are not familiar with layer selection and redrawing layers. This may prevent users from using a geospatial platform.

Land Portal will not produce new data, though it will present and link data for a huge variety of sources, such as the Property Rights Perceptions Index (PRIndex), FAOstat statistics and more, facilitating analysis and comparison of the data. Data will be published on global, national and eventually subnational level. Two way interaction between the geospatial platform and the webportal is envisaged.

Some of the possible ways we envision users can interact with this platform to achieve their specific goals are the following: As part of its due diligence process, a private investor looking for suitable agricultural land for his sugar plantation in Peru may consult the platform to match soil and land use data maps to community land maps. Similarly, a donor agency assessing a new program in Liberia can consult a visual dataset detailing (active) projects by other donors to avoid duplication of efforts. These are but a few of the many examples that can be given, but one can imagine how such a visual analytics tool can benefit many beyond the GIS expert network.

At the FIG conference, we will be able to share a prototype of this platform, that allows for non-expert users to engage with the (geospatial) land data, while at the same time providing context by including publications, news, blogs, stories and more.

## 5. CONCLUSION

The inclusion of several land-related indicators in the Sustainable Development Goals has created an unprecedented momentum for land data collection, analytics and monitoring and has moved this debate and discourse beyond the usual expert audiences.

While we encourage inclusive debate, because we believe that data inclusion provides a basis for collective understanding, interpreting and managing data-driven decisions and discussions among all people, we do not believe that data inclusion means that everybody can or should analyze raw geospatial data. Experts that possess the analytical skills have a societal responsibility to make data understandable to a wider, non-expert audience. This means they have a responsibility to communicate data to people in more easily understandable ways and formats: by making big data small.

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Using appropriate software tools to visualize data, for example, can be a highly effective way to communicate data and get the message across. Land Portal Foundation is currently working with the University of Twente and Plan B, with the Netherlands Kadaster in an advisory role, to establish a geospatial platform specifically tailored to non-GIS-experts. We hope this platform enables all kinds of actors, from experts to non-experts, to engage with the same data and learn and use it in a way that empowers (vulnerable) citizens and communities in such a way that it has the potential to increase their resilience in solving local problems and equips them with the necessary tools and skills to keep their governments accountable and transparent.

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