# Using Participatory Community Network Mapping for Field Building: The INGENAES Conference Case[1]

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**Abstract**: Strongly networked practitioner fields are essential for addressing complex, discipline spanning collaboration. Building these fields requires practitioners in the field connecting and getting to know one another, as well as making sense across contexts, organizations, and disciplines. Conferences offer a focused opportunity for face-to-face sense making. We argue that field building can be strengthened by seeding the sensemaking conversations and extending them beyond the conference using a participatory community network mapping approach. We report on a pilot experiment we conducted at the INGENAES Global Symposium and Learning Exchange-conference in Lusaka, Zambia, in January 2017. In this case study, we share our provisional design, findings, and analysis for field building that encompasses the sub-domains of gender, nutrition, agricultural extension services, and more widely to agriculture development in developing nation contexts. We start by making the case for conferences as catalysts for learning and how participatory community network mapping can help make better sense of conference collaboration opportunities. We then describe how in the INGENAES case we seeded the map prior to the conference through defining a conceptual map; setting up the tools ecosystem; collecting the initial data; mapping the elements and connections and defining the map views. During the conference, we shifted our focus to seeding collaborations by telling "the mapping story"; harvesting wisdoms and actions; and starting to use the map online. This lead to some promising feedback and ideas for follow-up after the conference. We end the paper with a discussion and conclusions.

**Keywords**: Field building, conferences, community networks, mapping, participation, common ground, sensemaking

## Introduction

Complex problems are often situated in the nexus of diverse professional domains and practices. We talk of this nexus as the unique field of practice, or simply "field." Fields are richly contextualized spaces where disparate organizations involve themselves with one another to develop collective understandings regarding matters that are consequential for organizational and field-level activities (Wooten and Hoffman, 2008). Each field brings a new combination of professionals from different disciplines of research all the way through practice. Their work defines the new field that must include knowledge and participation from the diversity of professionals. Their relationships (or lack thereof) represent the human capital available to impact the field.

One central challenge is that this diverse set of practitioners may not understand or even recognize the relatedness of each other's work (even while using similar terms). Although fields really are "highly interactive relational spaces" (Wooten and Hoffman, 2008), their connections may be invisible to practitioners being part of it, thus being unable to get activated and collaborate. This lack of visibility of the relational connections blocks the knowledge-intensive collaboration needed. The silos of professional domains may blind members to both the scale and depth of the emerging field. So there needs to be attention to the building of, visualization and activation of the field, or "field building."

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The idea of field building has gained prominence in philanthropy as funders recognize the need to trigger new intersections and collaborations to address complex, even wicked societal problems. Field building is about connecting not only individuals in a network but domains that can be leveraged to solve problems. The Rockefeller foundation expressed it as the need to "find new ways of connecting existing fields and domains to solve increasingly complex problems[2]." Field building requires working together across sectors and disciplines, with new ways of facilitating knowledge exchange, co-learning and collaboration (Parkes et al, 2012).

Communities of practice (CoPs) have been seen as a natural unit of collaborative organization in which knowledge exchange and learning happens organically. CoPs often emerge within relatively stable (inter)-organizational settings. Their development requires a shared sense of purpose, a long-term time horizon, and sufficient resources (Wenger et al, 2002). Increasingly, however, communities of practice are embedded in larger social networks of connections and relationships, forming a resource for solving problems, sharing knowledge and making further connections (Wenger et al, 2011). This matches the process of field building, in which relationships and forms of collaboration continue to expand and increase in scale (Parkes et al., 2012). Complicating things, however, is that collaboration in a field is often ephemeral, consisting of organizations, networks, communities and individuals meshing and meeting rather ad hoc, with collaborators only having a very limited perspective on the whole. A field, therefore, does not consist of a single community (with a shared identity, common set of practices, etc.), but rather comprises a much more loosely-knit network of communities (around various themes, projects, organizations etc.).

Despite their collaborative complexity, fields are currently mostly left to their own devices. Everybody is working in the field, but nobody owns or tends to it. The essence of a field is its ability to serve as a meeting place where organizations can get involved with one another (Wooten and Hoffman, 2008). To better connect, sustain, and scale up field building efforts, explicit support for field building is therefore crucial. An essential process in field development is collaborative sensemaking. In such a process, stakeholders first find and then build on their common ground to address their collective problems (Conklin, 2006).

One powerful way to support such sensemaking are face-to-face conferences. According to Garud, these are holistic events, which set the stage for emerging fields by providing a forum for actors to meet, interact, and exchange information, and serve as prime venues for contestation and selection of ideas. A key field building mechanism here is "translation", where constellations of many different (idea) elements are being reconfigured in real time through the discourse between participants taking place, thus making conferences prime venues for sensemaking (Garud, 2008).

Still, a key feature – and challenge – of conferences is that they are not independent entities taking place in isolation, but rather are embedded events within a larger flow of field unfolding activities (Garud, 2008). It is here where the sensemaking power of on site, face-to-face meetings falters. All too often, the sensemaking stays within the confined circles of those who happened to be present at a particular conference activity. The implications of emergent consensus (or dissent) often only become clear long after the conference has finished. This is where the field of Collective intelligence comes into play, the (often Internet-enabled) synergistic and cumulative channelling of the efforts of many minds towards selecting actions in response to some challenge (Klein, 2007). Collective Intelligence R&D can help develop collaborative sensemaking methodologies for field building, as it seeks to develop the conceptual foundations and socio-technical infrastructures which will increase our capability to make sense of complex problems by combining contributions from many sources (De Liddo et al., 2011).

In this paper, we propose to combine the strengths of face-to-face conferences with a participatory community network mapping methodology supported with internet connected technologies (ICTs) and emerging from Collective Intelligence R&D. Participatory community network mapping is the process of a community as much as possible itself capturing, visualizing, and analyzing community network relationships and interactions and

applying the resulting insights for community sensemaking, building and evaluation purposes. In (De Moor, 2015), we introduced this methodology in the context of an urban farming case, showing how it should contain a community-specific mapping *language* (what types of elements and connections, what layout?), *tools* (required online and physical functionalities) and *processes* (from scoping to using the maps). In (De Moor, 2016), we extended this methodology by showing how it can be used for inter-communal sensemaking processes and how reusable collaboration patterns containing good practices can seed map making efforts. In (De Moor, forthcoming), we describe this methodology in more detail, showing how it consists of a mapping-driven iterative process of community network building embedding an ongoing process of community network sensemaking, where the expanding map helps to set the agenda for sensemaking conversations, as well as capture the most important outcomes of these conversations.

In this case study, we show initial work on using participatory community network mapping to support sensemaking in physical gatherings such as conferences. We report on a pilot experiment where we used this approach to support a global conference in the multi-domain field of gender, nutrition and agricultural extension: the INGENAES case. Rather than presenting our mapping theory and methodology in the abstract, we share the practical approach we designed for this conference, distil some lessons learnt and end with a discussion of possible implications.

# Conferencing meets participatory community network mapping

## Conferences as catalysts of learning

As we have seen, face-to-face conferences are key field building venues. Conferences facilitate intensive knowledge exchange across (sub)disciplines; provide social context cues and help in establishing relationships rich with emotional connection and trust-building. The focused attention they afford can jump start all these aspects without the distractions of day to day work.

Conferences also come with limitations. They are expensive and time-consuming. In fields like Gender, Nutrition and Agricultural Extension, for example, relatively few stakeholders can participate. Those attending may not fully understand nor represent the interests of their organizations and stakeholders which could not be present. Many of the conference interpersonal interactions are ad hoc, requiring the balancing of the rich exchange and content-focused opportunities with the limited available time. Good facilitation may only partially improve the efficacy of this process. Finally, there is rarely systematic follow-up after the conference, with few public traces of the learnings achieved and commitments made to action.

How can we use conferences beyond the events themselves to support field building? This is where participatory community network mapping comes in.

## Participatory community network mapping: making better sense of conference collaboration

Conferences should be situated in a larger set of activities and interactions that both set the stage for conference interactions, support sensemaking during, and extend it into the practice field afterwards. This allows both for the relational aspects of network building, and the larger contextual definition and building of the field within which the network is working. Each conference then acts as a pivot point for sensemaking, relationship development and conceptual deepening which starts before and continues past the event.

There are many ICTs that can play a role in supporting and even catalyzing field building efforts. For example, they can enable pre-and post-conference conversations using generic discussion fora and mailing lists, and social media like Facebook and Twitter. These tools can support both relational and content development, increasing immediate conversational buzz and flow. While they provide interchange, their impact is mostly ephemeral as there is no overarching sense making tool or process to knit the multidimensional relational and domain pieces of the larger field together into a more coherent fabric.

Participatory community network mapping is a useful instrument for collaborative sensemaking supporting sustainable network development, as shown by cases as diverse as local urban farming communities, regional social innovation networks, centers of expertise, and science hubs (De Moor, 2016). It does so by allowing communities to create their own persistent maps of the elements and connections currently most relevant to their collaboration, then let them interpret those various perspectives on those maps to identify the issues, priorities, and next actions which can inform community network building and thus improve their collaboration. Unexplored so far has been how such mapping can leverage events such as conferences in the field building process. Can we develop an approach that catalyzes the capturing, sustaining & scaling up of collaborative connections made during the conference? What are the steps needed prior to, during and after the conference (and other types of gatherings)? What online mapping functionalities to use to support growing the web of conference relations? How can online mapping and face-to-face conference facilitation practices reinforce each other?

At the very least, the invitation into participatory mapping is essential. There must be some clear value proposition for individuals to say "yes" to learning how to contribute and to actually do it. Moreover, the exposition of maps and the collection of the data required needs to be woven into the very design of the conference so it is both useful data collection and a positive process experience. In other words, it is not just about participants providing data, but about engaging in collaborative activities to identify and prioritize what the data mean and imply so the maps matter and are owned by the participants.

Next, we outline how we addressed the questions in our first conference experiment: the INGENAES case.

## Testing the waters: the INGENAES case

Knowledge and learning exchanges as well as network building are key components of the United States Agency for International Development (USAID) funded Integrating Gender and Nutrition within Agricultural Extension Services (INGENAES) project (https://ingenaes.illinois.edu/). The project aims to stimulate the intersection between the sub-domains of gender, nutrition and agricultural extension services so that not only are farmers maximizing their participation in the agricultural value chain, but the nutrition needs of themselves, their families and communities are also served with the additional aspect of the pivotal role of women in this field. The January 2017 INGENAES Global Symposium and Learning Exchange in Zambia aimed to use mapping to catalyze this process, connecting practitioners and researchers across the sub-domains of the field, including participants designing and committing to follow-up activities back home.

Our goal with this initial experiment, was not to set up a full participatory community network mapping process, including several iterations of mapping-sensemaking-building-monitoring, as this would have required a much longer time frame and many more resources. We focused on the following questions: what would an initial map representing both the diversity and common ground in this emerging field look like? How to create it with contributions from the participants? How to use the map to give conference participants some sense of what their emerging field literally looks like? Can we design practical maps-based conference activities that help conference participants contribute to further field building?

## Prior to the conference: seeding the map

We first defined our conceptual model for the map, set up the tools, did the initial data collection, and created the map.

### Defining our conceptual model for the map

We started by thinking about what people had in common across the field. In international development, this is characteristically projects, countries of work, and the people and organizations doing and funding the work. Equally, if not more important, is finding common ground across themes or topics for collaboration.

Themes go beyond project or organization goals: typically, they are long-term ideas to work on for a field as a whole. A taxonomy of themes may drive the design of the collaboration processes and systems that make up a field (De Moor, 2016). As no thematic taxonomy existed for the emerging field at the nexus of gender, nutrition and agricultural extension, the organizer prepared a draft taxonomy specifically for the event. It consisted of five main categories (e.g. "Supporting Production" and "Addressing Nutrition and Health"). Under each of these main categories sub themes were listed that operationalized those categories (e.g. "Improved Cooking Practices" and "Children Under 2"). A criterion for being included as a category was that the themes needed to be recognizable and useful to people working in the field. In total 72 (sub) themes were identified (Appendix 1).

Projects are what conference participants are currently working on and are often the focus of attention because collaboration is driven in part by funders and funding. Besides projects, we were also interested in asking participants to look back and share lessons learnt in practice (we dubbed "Wisdoms"). To ensure that traces of potential new collaborations were captured, we also aimed to capture "(seed) Actions": new initiatives, inspired by conference activities, on which to work together after the conference.

After extensive discussion, we arrived at the following initial conceptual model of field collaboration. (Table 1). Elements and relations were only included in the model if they captured the essence of the collaboration, not all its details. This because collaboration maps are not meant to capture all the content of collaboration, but to provide context and trigger tacit knowledge and sensemaking conversations of professionals working in the field.

The conceptual model was used to design the subsequent map making process. Note that we did not intend this to be a universal model applicable to any field. Rather, it was to serve as an initial set of plausible collaboration patterns, to seed the map making efforts in the INGENAES case and act as design hypotheses for data collection, along the lines of (De Moor, 2016).

**Table 1: Initial conceptual model of INGENAES field collaboration**

| |
|---|
| *A Theme can be a Type Of Theme* |
| *An Organization can be a Type Of Organization* |
| *A Project Contributes To a Theme* |
| *A Project has as its Country of Work a Country* |
| *An Organization is Involved in a Project* |
| *A Wisdom is About a Theme* |
| *An Action is About a Theme* |
| *An Organization is Involved in an Action* |

### Setting up the tools ecosystem

To support the map making we made use of the online network visualization tool Kumu (http://kumu.io). To gather project descriptions prior to the conference, we used online survey tool Typeform (http://typeform.com). Via a dedicated Gmail account, we gathered additional

contributions for the map, as participants could, for instance, submit actions and wisdoms via an e-mail form. Especially for the conference, the Kumu developers integrated the existing online discussion tool Disqus (http://disqus.com) into Kumu. This new functionality allowed for customized online discussion threads to be added to each map component. This enables contextualized discussions, using the map as an index to interesting discussion threads. Social media such as Twitter and Facebook were to be used to distribute links to specific parts of the map in relevant channels.

### Initial data collection

Prior to the conference our focus was to seed the map by mapping several "signature projects" submitted by conference participants. This seed content would serve as a rough "sketch of the field", triggering conversations and ideas for new collaborations. The idea was that these projects, the themes they contribute to, and organizations involved would act as background context to which wisdoms and actions collected during the conference would be added later.

We created an online survey using Typeform. Participants were asked to submit an example project relevant to the scope of the conference. Each project was characterized by very brief project description, key (expected) project activities/results, country of work, estimated number of clients/beneficiaries reached and number of people involved in the project, some contact details, and the relevant themes from the taxonomy.

The survey was sent out to a subset of 102 conference registrants, 69 responses were received. A spreadsheet was created consisting of all responses, which was the basis for creating the online map.

### Mapping the elements and connections

Kumu works with knowledge bases, which it calls "projects", consisting of one or more maps. For each map, one or more "views" can be defined that provide filters on the elements and connections of a map shown, plus - potentially different - layouts per view. It allows for seeding maps by importing spreadsheets and automatically creating the associated elements and connections in the map. However, this automated process turned out to be semi-automatic at best. First, the content of many spreadsheet entries needed to be manually cleaned up, to conform to naming conventions adopted (e.g. uniform naming of organizations and projects, and converting lists of project activities into bulleted lists). Second, organizational relations needed to be added manually, as there was no standard list of organizations to be linked to (each project could propose connected organizations unique to their project). Third, in particular the adding of thematic relations led to complications. As the syntax of the spreadsheet (one relation per cell) did not easily convert to Kumu's row-based connection representation, manual entry was first tried. In all, the pre-conference map consisted of 398 elements and 2166 relations. With so many relations to be added, manual entry made the process cumbersome and error-prone, especially given the lacking revision history in Kumu. Several solutions were tried to semi-automate the process (including clustering of relations in a Kumu attribute field, and transposing spreadsheet theme rows). Entering large number of connections in semi-automatic remains a fragile process. Given the variation in data and early stage of Kumu development this is to be expected, but it is a resource issue to take into account when designing both the survey and the map.

### Defining the map views

To make the maps easier to use for individual and collective sensemaking, we created several views. The main view was the "Collaboration Ecosystem" view, showing all elements and connections (https://kumu.io/ingenaes/2017-ingenaes-global-symposium). Given their number, rendering of the visualization turned out to be slow on many machines for easy viewing. This main view was therefore rendered in a faster, simplified version, without

graphical icons for the elements nor specific layout (e.g. only using solid, single width lined, instead of also using dashed lines with different widths) for the connections. This ecosystem view serves as a bird's eye perspective, giving a high-level sense of "where the action" is in the multidisciplinary field. This is where the "Gestalt" of the field itself can be discovered, visualized and made available for initial sensemaking.

Second, the ecosystem view allows users to explore the field ecosystem by charting their own paths, for example by first selecting the direct context of a specific project of interest, then expanding one of the themes in that context to see which other projects are associated with that theme, etc. Since each element, connection, and view has its own permalink, such explorations can easily be shared online, allowing for the stakeholders back home to join in on the journey and, for example, participate in online discussion about that view. Thus, these individualized paths allowed participants to contextualize the broader field to their specific areas of interest and sub-domains (Fig. 1).
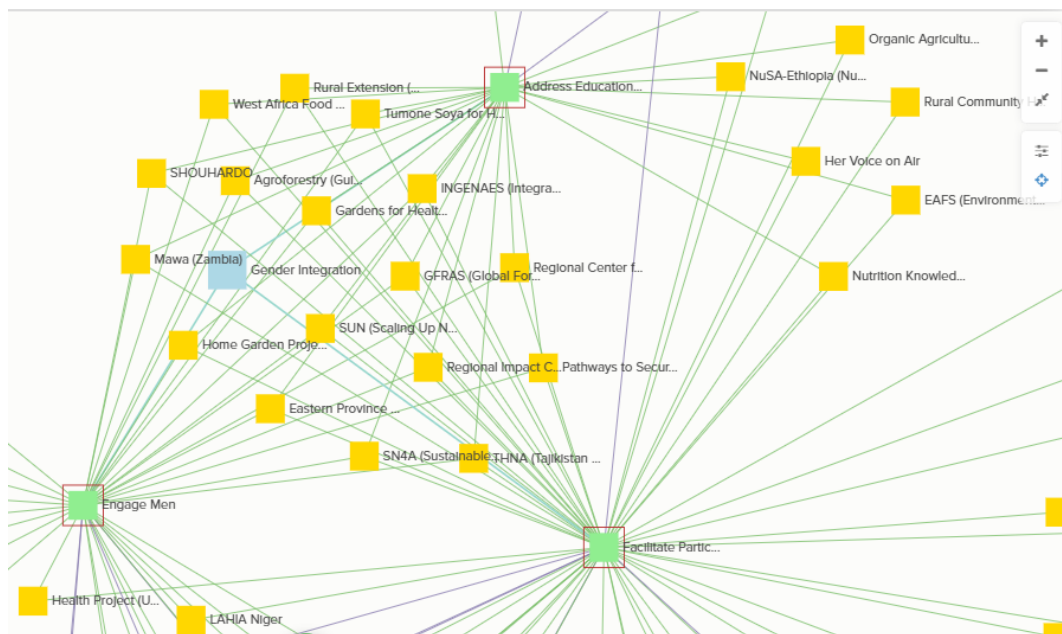


Fig. 1: View on the collaboration ecosystem of projects that share the themes *Engage Men*, *Address Education Constraints*, and *Facilitate Participation* (see http://bit.ly/2u1Pifm for the live view)

Next to this main ecosystem view, several more specialized views were created: *Themes*, *Organizations*, *Countries & Projects*, *Themes & Projects*, *Organizations & Projects*, *Themes & Wisdoms*, *Themes & Actions*, and *Organizations & Actions*. These views[3] allow for more targeted explorations, reduce the clutter, increase performance, and more instructive icon and connection layouts to be added.

**Designing the symposium content and process strategy**

Since the combination of online mapping and face-to-face facilitation is a new way of supporting collaborative sensemaking, we paid close attention to symposium design and facilitation strategies to both introduce the mapping and keep it integrated into the entire conference flow. Participants were alerted that this was not a "conventional conference" and to come prepared to interact and discover.

From a content design perspective, this meant reducing the number of pure presentations one might see at a traditional research/practitioner conference, focusing on rapid exposition to new ideas, such as wisdoms and actions.

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[3] (e.g. https://kumu.io/ingenaes/2017-ingenaes-global-symposium#ingenaes/themes-projects)

In addition to the handout of the thematic taxonomy (Appendix 1), two simple forms were created to gather wisdoms and actions (Appendix 2). The were made available both electronically and in paper form. The paper forms turned out to be especially useful during the facilitated workshop sessions, although processing the (often illegible) handwriting took much more effort than expected.

Our task was to move from conventional sharing of content at a conference, to providing new views and ways to make sense of and even innovate upon the "traditional" conference content. We can visualize this as the weaving of conference content with the connective content revealed through the mapping process. For example, as a project presents on their work, the wisdoms allow the larger group to consider the potential (or even notice real) impact if they were to apply the insights of the presented project. New partnerships to support innovation, replication and scale can be discovered through different map views, for example via an intermediate theme that links this wisdom to a project in a country on the other side of the world. So an interactive sensemaking process – with a lot of talking and cross-referencing content - was required, moving from the focused domain exposition, to the impacts and potential on the larger field. Each insight builds the sensemaking. This is another view of the learning model of Learn, Do, Reflect (Kolb, 2015). We then added the concrete phase of Action planning to move from talk to action.

The process design for the group interactions drew heavily from Liberating Structures (http://www.liberatingstructures.com/), a set of 33 structures designed to liberate the knowledge and participation of everyone and which work very well in complex settings such as multidisciplinary field building. These included structured activities to help participants create new relationships ("Impromptu Networking" "Social Network Webbing"), share knowledge ("Shift and Share"), develop action ideas ("25/10 Crowd Sourcing"), work on their doability individually ("15% Solutions") and then benefit from peer input in triads ("Troika Consulting").

In sum, the participatory design focused both on rich content from the various domains in the field – indexed by the map - and offered exceptionally strong relationship building. Because the methods and conferenced approach were largely unfamiliar to the participants, clarity of purpose and expectation management were critical in the design and execution.

Finally, a social media strategy was designed both to send out conference content to the wider, interested networks, and invite in external voices from stakeholders. This included the recruitment of a social media team from Zambia.

## During the conference: seeding collaborations

### The "mapping story"

We introduced the mapping process at the kick-off of the conference by first telling a "mapping story". In this story, we used the metaphor of the conference participants forming a band of "hunters/gatherers of wisdoms and actions" who together go and "explore the field". One key element was that the map is not the territory, but rather an outline of the field, just like in a jungle tribe only have a general sense of awareness of where they are and can go. This set the pattern of moving beyond pure presentation, towards iterative, participatory sensemaking. There was some pushback from participants, particularly those most comfortable in a more traditional academic conference setting, while at the same time, a great deal of appreciation for the lively and engaging participatory nature of the event stimulated by this story metaphor.

### Harvesting wisdoms and actions

Next, we role modelled this by capturing and harvesting Wisdoms and Actions. Mapping began right from the start. The opening keynote was a panel of practitioners sharing the stories of their work. Graphic recording was used to capture and highlight with icons both the

domain content and call out Wisdoms and Actions identified by the panellists. Their additions were then captured into the forms and added to the online map by symposium organizers. After the panel, the participants were invited to form groups of four, tell THEIR stories, identify wisdoms and actions and write them on forms which were submitted and added to the map. So right from the start, participants were contributors. This was eventually dubbed the "collaborative key note" with 150 presenters.

The paper image was photographed and made available to the participants as both a record of the moment, and as a tool to share what they heard and learned with colleagues not at the symposium. They could even repeat the process with their team as a possibility.



Fig. 2 Part of the "graphical recording" capturing some of the wisdoms and actions

This pattern of hearing from each other, learning and then harvesting wisdoms was strong in the design of the first two days. After each session or activity, participants were asked to submit their insights and learnings as Wisdoms, either on paper using printed forms, or by e-mail using a Word template.  An e-mail was also sent during the conference to all participants asking them to submit their wisdoms online.

The third day was focused on building on the individual wisdoms collected on the first two days, and using them to identify individual and collective next steps and capture these as Actions. Individuals were asked to consider possible implementations of gender and nutrition in agricultural extension using the Liberating Structure, "25/10 Crowdsourcing," a large group ideation and prioritization process. This yielded a diverse set of possibilities. Small groups reviewed and deepened the top ten ideas as potential collective action. This stimulated cross pollination of ideas and additional relationship building. However, this was not an intact group and the leverage points needed to be individual. So each person was invited to formulate their own "15% solution." This is a concrete, doable action that was within the control and purview of the individual. After developing their individual Action, people formed groups of three and used "Troika Consulting" to get peer feedback on their idea, which was then further refined, captured on an Action form and submitted for mapping with the appropriate theme from the taxonomy (Appendix 1). The resulting visualization in the

map allowing people to connect their actions with others in similar themes, geographies, or organizations and give some visibility and social pressure to actually do them. Participants were told they would receive follow up communications to find out what they actually did. Thus the planning and mapping set the stage for post-conference commitments and follow up, helping people remember and activate their actions.



**Fig. 3 An example of a facilitation activity: Troika Consulting (Source: Nancy White)**



**Fig. 4a: An example of a filled out action form…**
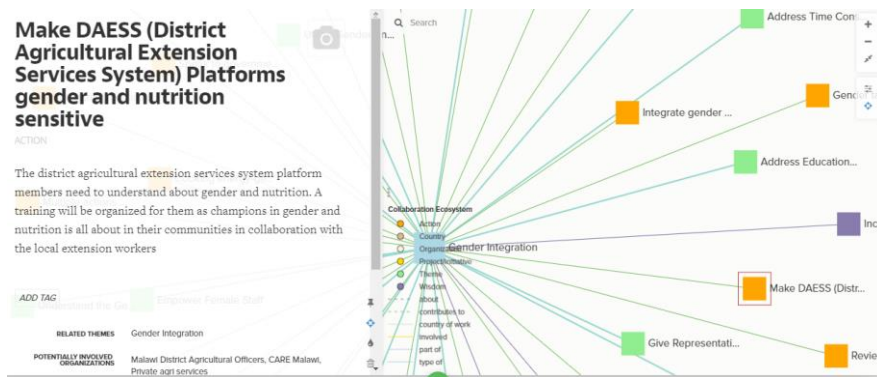
**Fig.4b …and how the action was integrated in the map (see http://bit.ly/2h5NJfl for the live view)**

## Online use of the map

Twitter was used to distribute links to the overall map, and to emphasize specific parts of it. For example, after new wisdoms had been added to the map, links to the wisdom plus its direct context (all related elements at distance 1) were tweeted. Typically, they averaged several hundred impressions and 1-3 interactions with those tweets were achieved, indicating potential for reaching new audiences beyond the conference. Adding hashtags related to the conference increased the chance of reaching relevant audiences, although both the hashtags selected and their use in the tweets scould still be improved.

Systematic attention was paid during the conference in the facilitated sessions to collect content like wisdoms and actions, but the opportunity to get involved in online discussions was only shown to the conference participants once in a plenary session. Although a few initial discussions were conducted by conference participants, its use still needs to be developed. One of the drawbacks of the current discussion tool used is that there is no way to automatically notify people that a discussion is occurring on, say a theme they are interested in. Such notifications would help draw new audiences and participants to those discussions.

## After the conference: growing the collaborations

Altogether, 98 seed actions were collected during the conference, each providing the potential for growing into a field building collaboration. Still, as this was a proof of concept experiment and no follow-up process was put in place, this potential is still to be realized. However, from a post-conference survey, filled out by 113 participants, we received promising feedback. Even though overall there was little time and opportunity for participants to interact with the map in the overall hectic conference activities, their survey responses indicated real interest. 5 people indicated that the mapping approach was an action, tool, method, or approach that emerged for them and which could be integrated in their work (e.g. "I got a peek at many, but now need to go deeper. The Map and links will help"); 6 respondents reported on getting to know the mappers was their key new connection made who could help them with their work ("connection on mapping to connect volunteers in their areas"); 8 respondents mentioned the mapping was a key insight or learning, even though it was totally outside their field ("I was impressed with the mapping, and there was a lot of gender and nutrition issues").  Taking everything into account, INGENAES has decided to invest in a next round of methodology building for participatory community network mapping. Our next step will be applying the emerging methodology to a more detailed country-case. We will be focusing on making the methodology more user-friendly and on the follow-up of the seeds for actions generated, making the process more robust and cyclical.

# Discussion

In this case study, we explored how to combine the strength of conferences and participatory community network mapping to support multidisciplinary field building which encompasses both sensemaking across subdomains and relationship/network building for action. As in this paper we focused on sharing practical lessons learnt, we refer to (De Moor, 2015, 2016) for more on the theory and practice of the approach.

We started our experiment by "sketching the field" with the conference participant-provided signature project descriptions. It is interesting to see how a "paradigm shift" is required to go in sketching mode: it is not about providing the perfect project description, but much more about contextualizing it in terms of links to related themes, organizations, and countries of work. Extra attention must be paid to expectation management and providing reassurance that mapping is about context, not content. The map is not the territory, and is never going to be completely accurate or complete.

Working with themes as the conceptual fabric of a field has turned out to be promising, yet comes with challenges. Participants grasped that the visualization shows what themes are in the center and at the periphery of the knowledge field, as well as how they are loaded with meaning via their connections with related projects, wisdoms, and actions. Using a standard list of themes helped collect responses, as most participants marked up their projects, wisdoms, and actions with relevant themes, without assistance. Still, quite a few contributors came up with their own thematic categories. To some extent, this was intended, as all classifications are tentative, and participant suggestions can be incorporated in the next version. On the other hand, for common ground to develop, some level of standardization is necessary. But then, who "owns" the terminology of a multidisciplinary field? What happens to that which is contested? In future work, we hope to draw from and inform R&D on collaborative ontology engineering for practical field building terminology approaches (Simperl & Luczak-Rösch, 2014).

From a participatory point of view, we have started involving the participants by providing background context data (the projects), applying and defining new themes, producing and integrating new wisdoms (lessons learnt, looking back) and actions (looking forward, seeds for new collaborations and follow-up). By weaving the map through the conference sessions (telling the mapping story, discussing parts of the map in plenary sessions, developing meaningful actions in facilitated sessions and capturing them on the map, giving personal tours to interested people at the "mapping station"), we have started to involve the community in making better sense of itself. Many positive responses were received. Generally, participants were fascinated, and could envision many different applications (as indicated by at least six spin-off mapping projects suggested to the authors by various participants). Still, some found it hard to imagine how to concretely adapt and apply the mapping in their own work contexts. We therefore aim to focus next on how to *use* the collaboration map (and derived versions) in work processes. This would entail looking more closely at what views are most relevant for what purpose, using maps in face-to-face meetings (e.g. brainstorming workshops, meetings) and developing tailored communication processes around the map (e.g. using organizational communication channels and social media to point stakeholders to relevant parts of the map and leverage follow-up actions). Success is also predicated on the goals and aspirations of conference organizers and the participants themselves. The more intentional and motivated they are to understand their multidisciplinary field (domains) and nurture relationships between members, the more effectively mapping and facilitated interactions can be used.

The digital technologies supporting knowledge field development are still in an early stage of development. Online participatory mapping tools such as Kumu, distributed discussion tools such as Disqus, and collaborative ontology platforms (e.g. social bookmarking tools) that can be used to support evolving community concept definition and use are still young technologies, let alone their integration. Still, by experimenting, and embedding this still immature ecosystem of tools in well-designed face-to-face and online processes, new ways

can be experimented with to support collaborative sensemaking in the context of field development.

Collaboration in complex fields like the tri-partite INGENEAS project entails complex partnerships which often begin without a shared understanding of the goal and purpose of a collaboration, as well as the complex multi-stakeholder power dynamics (White et al., 2014). We work at the micro, but we do not often have the chance to zoom out to the macro to see connections, patterns, gaps and opportunities. We need to both zoom in (focus on actual practice) and zoom out (make sense and note patterns). Mapping and facilitation engage in a complex dance to support this. Mapping cannot only be a conceptual process. The elicitation of data for input, the sensemaking and the follow up of opportunities must be embedded in the real-world practice of the stakeholders. Conferences and other gatherings are part of that practice, and offer a launch pad for collaboration mapping and its applications. Just like the map shows us connections, process helps us develop connections, both through the mapping, but also in the opportunity to leverage what the map shows us with the moment in time talking face-to-face with other practitioners.

Our findings are still only tentative. Our focus was especially on testing the waters in the first two stages (prior to/during) the conference. Our evaluation of results was rather anecdotal. Still, given the positive responses and concrete follow-up planned so far, we believe that there is significant value in further developing this approach.

# Conclusion

Building strongly networked multidisciplinary fields is a necessary condition for increasing society's capacity to address complex problems. These fields are often initially hard to conceptualize and visualize, and thus activate. Conferences are a crucial instrument for creating new connections across disciplines, organizations, and projects, and understanding the potential of collaborating across the field's sub-disciplines. Mapping helps visualize the connections and relationships (or lack thereof.) By aligning physical conferences with participatory community network mapping, we hope to contribute to better field building. In this case study, we have shared an exploratory approach and initial lessons learnt. Of course, they are not sufficient for building strong fields, but we contend that mapping the emerging collaboration can make a field more visible, make conference conversations more focused and capture core results for future field building efforts and actions beyond the conference meeting space. We envision that ultimately such approaches could lead to federations of collaboration maps, actively owned, used, and grown by their communities. They would be key to increasing civic intelligence: collective intelligence directed towards the amelioration of shared social and environmental challenges (Schuler, 2009), and could be a powerful force for global integration in our age of fragmentation.

# Acknowledgements

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# Appendix 1: Conference thematic taxonomy handout

| Gender integration | Supporting Production | Market orientation | Addressing nutrition and health | Methods & Approaches |
|---|---|---|---|---|
| • Treat women as clients<br>• Utilize gender analysis<br>• Address time constraints<br>• Address mobility constraints<br>• Address literacy constraints<br>• Address education constraints<br>• Give representation and voice<br>• Facilitate participation<br>• Promote gender-responsive technologies<br>• Hold staff accountable<br>• Empower female staff<br>• Engage men<br>• Gender transformative approaches | • Staple crops<br>• Highly nutritious crops<br>• High value crops<br>• Biofortified crops (e.g., sweet potato, rice, beans)<br>• Livestock (e.g., cattle, goats, rabbits, …)<br>• Poultry (meat, eggs)<br>• Dairy<br>• Aquaculture, Fisheries<br>• Responsible agrochemical use<br>• Integrated pest management<br>• Climate change adaptation<br>• Natural resource management<br>• Irrigation<br>• Soil fertility<br>• Safe agricultural labor practices<br>• Post-Harvest handling (reducing losses, adding value)<br>  • Processing<br>  • Preservation<br>  • Storage | • Value chain support<br>• Market oriented advisor services<br>• Farming as a business<br>• Farm business advisors | • Better nutrition for all<br>• Pregnant women<br>• Lactating women<br>• Children under 2<br>• Children under 5<br>• Adolescent girls<br>• Elderly<br>• HIV positive<br>• Improved cooking practices<br>• Improved recipes<br>• Promoting WASH practices<br>  • Hygiene in food preparation, caregiving<br>  • Irrigation and Multiple Use Water Services (MUS)<br>  • Livestock, clean water, sanitation and hygiene | • Farmer Field Schools with nutrition component<br>• Home economics extension<br>• Household based approaches<br>• Gardens / or Small scale production<br>  • Homestead gardens,<br>  • School gardens,<br>  • Community gardens<br>• Local service providers<br>• Farmer-to-Farmer extension<br>• Community based volunteers<br>• ICT<br>  • Videos<br>  • SMS<br>  • IVR<br>  • Call centers<br>  • Internet based platforms or knowledge banks<br>  • Expert systems (digital query and answer system)<br>  • Training tools (online manuals instead of printouts)<br>  • Tracking and rewarding staff performance<br>  • Apps (e.g., for recipes) |

# Appendix 2: Conference wisdom and action forms

## Please submit your WISDOMS

Your name: _____

Your email: _____

Title (max 8 words):
_____

Related theme(s):
_____
_____

Description:
_____
_____
_____
_____
_____
_____

*Questions? See handout, talk to XXX or send email to ingenaes-network@gmail.com*

---

## Please submit your ACTIONS

Your name: _____

Your email: _____

Title (max 8 words):
_____

Related theme(s):
_____

(Potentially) involved Organizations:
_____
_____

Description:
_____
_____
_____
_____
_____

*Questions? See handout, talk to XXX or send email to ingenaes-network@gmail.com*