Alternative Social Media for Outreach and Engagement:

Considering Technology Stewardship as a Pathway to Adoption

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ABSTRACT

Commercial social media (CSM) play a vital role in support of community outreach and engagement. Despite the apparent benefits of CSM, its widespread use raises important concerns about privacy and surveillance, limits on innovation, and data residency for the organizations that increasingly rely on them. This chapter will consider these concerns in relation to an international research collaboration involving technology stewardship training. Technology stewardship is an approach adapted from the communities of practice literature intended to promote effective use of digital ICTs for engagement. The program currently focuses on using commercial social media platforms for introductory capacity building, but this chapter will suggest important reasons to assist them in exploring non-commercial alternative social media (ASM) platforms. The chapter describes how the technology stewardship model offers a pathway for communities of practice interested in adopting ASM for outreach and engagement.

Keywords: Technology Stewardship, Communities of Practice, Social Media, Alternative Social Media, Information and Communication Technologies (ICT), Action Research, Community Informatics, ICT4D, Digital Leadership, Community Outreach, Community Engagement

INTRODUCTION

> *The platforms that host and inform our networked public sphere are unelected, unaccountable, and often impossible to audit or oversee. (Barabas, Narula & Zuckerman, 2017)*

For many organizations, commercial social media (CSM) serves an important role as a communications channel for outreach and engagement (Young, 2018). The widespread availability on mobile devices, the advanced features and affordances, and the low cost of using CSM makes it an irresistible choice particularly in resource-constrained settings. Moreover, it has provided real and tangible benefits to those organizations and their constituents that can be difficult to dispute.

Recent revelations around privacy and surveillance with CSM, not to mention ongoing challenges with mis/disinformation campaigns, and politically-motivated shutdowns of Facebook and other popular services, have raised awareness, if not deep concerns, about the trade-offs that we all make when deciding to use CSM. Free, of course, is never "free" in the sense that our digital labour and personal data becomes part of a commercial ecosystem with significant implications for organizations that use these

channels for outreach and engagement. Some of the hidden costs of CSM includes accounts being banned or suspended due to posts that may include content that violates (or is misinterpreted as such) ever-changing rules and policies; limited control over data residency and lack of cross-platform interoperability; conformity to CSM-imposed standards for profiles and exchanges; lack of control over (or understanding of) algorithmic filtering and AI operations, as well as other privacy-related practices of CSM providers (see, for example, Barrett, 2018).

WHAT IS ALTERNATIVE SOCIAL MEDIA?

Gehl (2018) has summarized a number of concerns with CSM pertaining to technology infrastructure, political economy, and cultural practices. From a technological standpoint, the tendency with CSM is toward centralization of data flows, proprietary code and closed databases, as well as secretive algorithms that influence how and when content is displayed to users. In terms of political economy, CSMs have established their business models on monetizing the free labour provided by users within a digital ecosystem largely dominated by Silicon Valley firms (at least in much of the world, although Chinese based CSM represent increasing competition). CSM have also fostered cultural practices that position users as willing data-driven and surveilled subjects with limited ability to influence how identity is portrayed and sociality is conducted in the online world.

Alternative social media (ASM) describes both a movement and a collection of platforms that respond to the concerns raised by CSM. In many cases, ASM are established as a mirror image of an existing CSM. For example, Diaspora and Friendica are self-hosted social networking services that provide open source alternative to Facebook. Twister is described as a peer-to-peer microblogging service similar to Twitter but with a decentralized architecture based on a blockchain-like protocol. Signal is a nonprofit foundation that provides an open source alternative to WhatsApp for one-to-one or group messaging that supports cross-platform encryption.

On the one hand, these ASM projects are reminiscent of the early Internet pioneers in emphasizing end-to-end architecture and "permissionless innovation". Early efforts by activities in first generation community networks (e.g., makingthenetwork.org, archived on the Wayback Machine), and by researchers in the community informatics field, struggled to achieve widespread uptake of local ICT initiatives, even while the popularity of commercial social media began to skyrocket (Gurstein, 2005). However, with growing anxieties around CSM, it seems timely to revisit and reconsider a role for non-commercial alternatives. For instance, Poell & van Dijck (2015) suggest that CSM are in fact "antithetical to community formation" because of the shift in power to emphasize data collection for advertising and the use of proprietary algorithms in moderating content. As such, the interest in ASM represents a movement that resists much of what CSM today stands for, promoting a forward-looking vision of an Internet-based public sphere perhaps best expressed by the Internet Society's guiding principles (Internet Society, 2017):

> *All Internet users, regardless of where they live, should have the ability to connect to any other point on the Internet, without technical or other impediments.*
>
> *All Internet users should have the means to communicate and collaborate without restriction.*
>
> *Any individual or organization should have the ability to develop and distribute new applications and services, free of governmental or private sector restrictions for anyone to use.*
>
> *An Internet access environment characterized by choice and transparency allows users to remain in control of their Internet experience.*

> *Everyone's ability to connect, speak, innovate, share and choose hinges on trust. The security, reliability and stability of the network, applications and services is critical to building online trust.*

These principles correspond with the the fundamental properties of ASM initiatives (Gehl, 2015). The design of ASM platforms usually supports decentralization through federated or distributed network topologies, with open source code and accessible databases. Where algorithms are used, they tend to operate at the edge of the network and are user-created and configurable. The political economy of ASM is rooted in a refusal of advertising on most platforms, with greater attention paid to social equity in exchange for digital labour, and with a growing base of support in countries outside the United States and Europe. Culturally, ASM embraces a form of "democratic surveillance" that emphasizes shared control over administrative decisions on platforms, local control over one's data and personal information, freedom in choosing online identities in support of free speech, and the search for new metaphors for online sociality that are multi-dimensional and more nuanced than those used by CSM.

It should be noted, however, that ASM skeptics have presented important points of critique in each of these areas as well. Some have suggested that network effects remain the biggest barrier to ASM adoption, as it is difficult to get sufficient numbers of users to migrate away from CSM and to these platforms. Related challenges include development of sustainable business models, especially when it is difficult to achieve economies of scale with server infrastructure and purchasing bandwidth in bulk. Security also remains a major concern for users, potentially undermining online trust with users. (Barabas, Narula & Zuckerman, 2017).

Gehl (2018) suggests that "techno-elitism" can play a role when novice users are treated with contempt by more established members of ASM communities. The strong emphasis on freedom of speech, personal choice in online identity (or anonymity) also presents a governance problem for ASM platforms that inevitably face instances of misinformation, online abuse, or hate speech.

There are clearly many barriers to the widespread adoption of ASM, with network effects being among the foremost when it comes to using these platforms for community outreach and engagement. However, it is important to ask if the standard against which to measure ASM should be as direct competitors to CSM, or whether we should see them as complementary platforms that may well serve specific communities of practice rather than, for example, the wider public? Indeed, the network effects nut may be easier to crack if we are working with more clearly defined and delineated user groups that can be transitioned into ASM through a program of training and experimentation. As the user base grows, there will be additional incentives and resources available to reduce technical barriers and improve usability and security of ASM platforms through design improvements on both server and client sides. This would form a virtuous circle of innovation made possible by the open source licensing as a *sine qua non* of ASM.

TECHNOLOGY STEWARDSHIP

So how could we encourage organizations to consider adopting ASM for outreach and engagement? We could begin with the assumption that ASM need not be viewed as a direct competitor of CSM, and that it may be well suited to the needs and interests of specific communities of practice rather than the general public. Communities of practice are groups of individuals that share a common interest through informal and formal ties expressed through forms of mutual engagement. The term is used widely in numerous fields, such as health, education, business, and any domain where social learning through group interaction is valued:

> *Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis. (Wenger, McDermott & Snyder 2002, p.4)*

In a 2009 publication titled *Digital Habitats*, Wenger, White & Smith (2009) introduced the term "technology stewardship" to describe a role for individuals within communities of practice who wished to encourage and support the adoption and use of digital technologies among community members. The technology steward is characterized as a leadership role that cultivates the digital habitat of a community of practice. The habitat metaphor describes the collection of digital tools and resources available to the community to carry out its various communications, outreach, and engagement activities. The steward pays attention to the digital life of the community members and encourages innovation through experimentation:

> *Technology stewards are people with enough experience of the working of a community to understand its technology needs, and enough experience with or interest in technology to take leadership in addressing those needs. Stewarding typically includes selecting and configuring technology, as well as supporting its use in the practice of the community. (Wenger, White & Smith, 2009, p. 25)*

Technology stewardship should not be viewed narrowly as IT support, but instead as a multifaceted role that requires intimate knowledge of the technology-related social practices of community members, the ability to engage with community members to create visions for the future in alignment with community aspirations, to be aware of developments and opportunities in the technology landscape, and to encourage and support innovative technology practices in fulfillment of community choice. "Choice" is an important consideration to the extent that a technology steward should not dictate solutions to the members but instead, following Kleine's (2013) "Choice Framework" for development, should aim to serve four key responsibilities:

- Make the community *aware* of the existence of choice (i.e., that other ways of doing things are possible).
- Help the community to develop *a clear sense* of choice (i.e., how they might take advantage of choices available to them)
- Facilitate and support the *effective use* of choice (i.e., assist with trying a new technology practice or deploying unfamiliar digital tools)
- Recognize and sustain the *achievement* of choice (i.e., report on the outcome of new deployments, analyze and understand points of failure, and acquire resources to build on success)

Technology stewardship is a role that may be taken up *ad hoc*, usually as a response to an immediate need in a community of practice. However, the role is also one that can be assigned to individuals and even professionalized through a process of formal training and recognition. Formal training provides an opportunity to establish a strategic connection between the goals of a community of practice and the deliberate cultivation of a digital habitat to help meet those goals. For organizations involved in outreach and engagement, the presence of a trained technology steward could expand the range of choices available for communications, including the deployment of ASM.

The Joint Education and Training Initiative (JETI)

Since 2012, the author has been leading a collaborative action research project with the primary goal of better understanding how to build capacity for effective use of ICT in resource-constrained settings (Gow, 2018). Those settings range from local community-based groups based in Edmonton, Canada, to private,

public, and non-governmental organizations located in Asia and the Caribbean. This work has coalesced around a Joint Education and Training Initiative (JETI) that launched an introductory course in technology stewardship in 2016 through a partnership between the University of Alberta, the University of Guelph, the University of Peradeniya (Sri Lanka), and the University of the West Indies. This classroom-based course has run successfully twice in Sri Lanka and twice in Trinidad (Gow, Chowdhury, Ganpat & Ramjattan, 2018), with elements of it also being introduced in several Edmonton-based projects. A total of 80 participants have completed the course so far, and new offerings are being planned for the future.

The current version of the course is based on a model described in Wenger, White & Smith (2009) with adaptations made for a sector-specific audience; in this case, agricultural extension officers and advisors in Sri Lanka and Trinidad who are the primary focus of the JETI at this time. This version includes sector-relevant language and examples from an agricultural setting, while adding activities in the areas of community engagement and evaluation of ICT in use (Gow, *et. al*., 2018).

The course is conducted over two-days covering four sessions. Each session includes a mix of short lectures, hands-on activities, and group discussion:

- Session 1: Principles and practices of technology stewardship
- Session 2: Engaging your community and creating a campaign
- Session 3: Choosing an ICT platform and rapid prototyping
- Session 4: Planning and managing a campaign

The first session provides an opportunity for peer sharing of experiences with ICTs, with an emphasis on stories of both successes and failures. Course facilitators weave key concepts and practices in technology stewardship into this discussion using a case study. In the second session participants working in small groups are asked to consider and choose a community of practice as a point of focus for the remaining activities. Participants are then directed through a set of activities using a course workbook to conduct an analysis of the community of practice and its challenges, and to identify a priority concern for immediate action. This is followed by a set of procedures described in the workbook that results in a structured goal statement to be used to inform and evaluate an ICT-based pilot study ("campaign") with the community of practice. While these activities are introduced to participants in a classroom setting, the method is intended to be carried into the field setting and conducted with community members as a form of participatory action research.

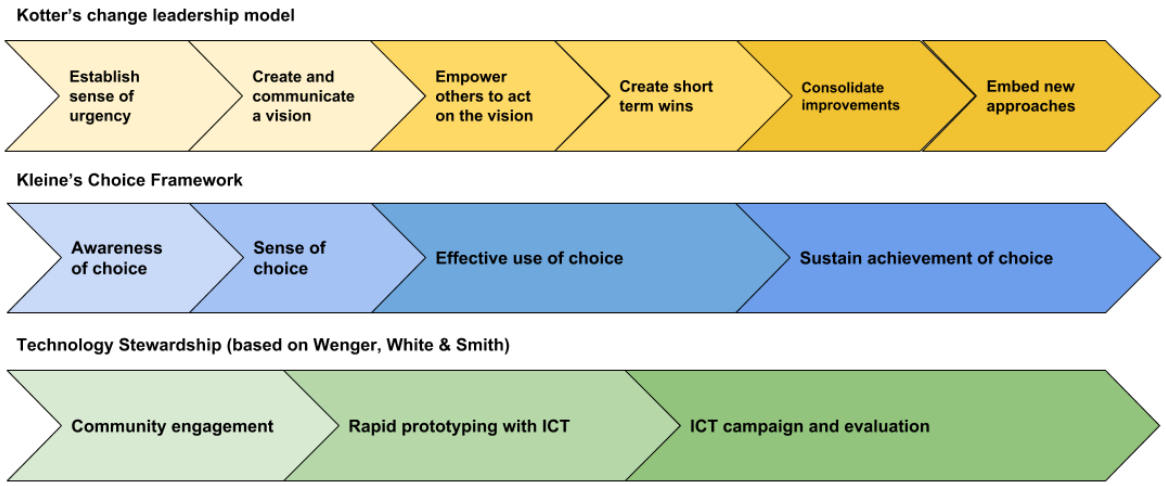
Having articulated a campaign goal, participants are then taken through a series of steps leading to the identification, comparison, and provisional selection of an ICT tool or platform suitable for the campaign. Following the model in Wenger, White & Smith (2009), the course differentiates between ICT "tools" as discrete functional components (e.g., text messaging, photo sharing, video conferencing) and ICT "platforms" as a set of interoperable tools bundled together in a software application or service (e.g., WhatsApp, Google G Suite).

The course workbook includes a procedure for conducting "rapid prototyping" of the ICT platform to test functionality and suitability with the community. This step follows principles similar to those used in agile project management (Dearden and Rizvi, 2015), with an emphasis on developing and testing in small incremental steps. From a change leadership perspective (Kotter, 2007), rapid and provisional deployment of the ICT platform also creates an opportunity for a "short term win" by involving the community in the experience of experimentation with a new practice. In other words, rapid prototyping offers community members an opportunity to test and to provide comment on a new ICT application without having to make a long-term commitment to it at the outset.

The final classroom session leads participants through a three-phase campaign planning exercise that includes provision for collecting data at various stages that will contribute evidence to an evaluation. Evaluation is critically important to assess both formative and summative outcomes of the campaign and to be able to report results back to the community and organizational sponsors that may be vital to providing support going forward. Campaign evaluation is therefore an essential competency for the technology steward to be able to recognize and further encourage effective ICT use among community members.

The overall course design draws upon and references Kotter's (2007) change leadership model, as well as Kleine's "Choice Framework" (Kleine, 2013) to provide a normative framework for characterizing the overall contribution of a technology steward to community development (see Figure 1).

Figure 1. Comparison of development change models



Participants complete the final classroom session by drafting an individual action plan (IAP) in which they select an activity to be completed with a community of practice outside the classroom as an optional capping project. The IAP provides a number of choices for participants based on the four training sessions, ranging from conducting a community engagement activity, completing a rapid prototyping exercise, to designing a campaign and evaluation plan. This final step in the course is where participants have an opportunity to apply the principles and practices of technology stewardship with their communities and provides the research team with valuable insights about how this role can foster innovative and effective ICT use. Table 1 summarizes the campaign ideas developed by participants in the most recent Trinidad and Sri Lanka cohorts.

Table 1. Outcome of campaign planning activities carried out in the classroom

Community of Practice	Priority Action	Campaign Objective	Identified ICT needs
Beekeepers in Kandy District Sri Lanka	Instructional project	Introduce new beehive box	Group messaging; video tutorials

"Para Team" members of Hatton (tea) Plantations Sri Lanka	Organize and schedule meeting among members	Improve awareness of and attendance at training events	Individual/group messaging; photo sharing
Small scale coconut growers in Dankotuwa (Sri Lanka)	Access to expertise (Q&A)	Reduce cost and improve timeliness of responses to questions from growers	Individual/group messaging; photo sharing
Organic vegetable farmers in Ipalogama (Sri Lanka)	Attendance at meetings; access to expertise and information	Improve awareness of gov't employment opportunities; increase attendance at training programs;	Microblogging
Fishers in North East Trinidad	Access to expertise	Improve timeliness of weather bulletins and life safety information for fishers	Group text and photo messaging
Farmers in Tabaquite region (Trinidad)	Access to expertise	Reduce costs and improve timeliness of community notifications on pest management	Individual and group text messaging; photo sharing
Agricultural Society of Trinidad & Tobago	Organizing and scheduling meetings among members	Improve attendance at monthly meetings	Event scheduling (shared); text message reminders
Food Crop Farmers Association (Trinidad)	Farmer education and information updates	Improve awareness of topical issues and current events	Microblogging; group messaging

As indicated in Table 1, each of the groups of participants were able to identify and agree upon a community of practice for the classroom activities. The "priority actions" are generated from a set of categories of "community orientations" detailed in Wenger, White & Smith (2009, p. 70) that each group identifies as part of a campaign goal setting activity.

While this was intended as a tabletop exercise for the course, each of the groups indicated that these priorities represented real and pressing concerns in those communities. If applied outside of the classroom, this activity would involve the technology steward facilitating direct community engagement with members to identify and validate priorities.

In keeping with the stewardship principle "keep it simple", all of the groups opted for a "use what you have" technology acquisition strategy, identifying ICT requirements and platforms suitable for their first campaign. Other possible technology acquisition strategies are presented in the course, including free/commercial platforms, patching pieces together through API integration, and building custom applications. It should be emphasized that the course material focuses on low cost and other "use what you have" choices as a preferred starting point for technology stewardship efforts. By default, this typically results in groups choosing a CSM platform for their ICT campaign plan. From the perspective of building capacity, a CSM platform like Google or WhatsApp (Facebook) usually offers a number of immediate benefits, such as low cost and high familiarity with most community members. Indeed, the

groups in these cohorts opted for Facebook Messenger, Gmail, WhatsApp, or Twitter as the platform of choice in their campaign planning.

However, this choice also comes bundled with all of the aforementioned concerns about CSM, particularly with organizations that may wish to retain more control over user profiles and the data that moves across the platform. In these cases, CSM can serve a short-term goal by enabling a technology steward to lead a series of low-cost trials with the community of practice to better understand emergent ICT-related practices and to identify and validate other functional requirements for a platform. Over the longer term, the technology steward might be encouraged to explore and perhaps migrate the community of practice to an ASM platform that would provide a higher degree of control and autonomy while serving the required purpose. A set of alternative choices (not exhaustive) matched to the cohort groups from Sri Lanka and Trinidad is presented in Table 2.

Table 2. Comparison of CSM and ASM choices for various ICT needs

ICT needs	CSM choices	ASM choices
Messaging	Facebook Messenger, WhatsApp, Telegram, Viber, Hangouts, etc.	Signal, MeWe, Jitsi, Friendica
Photo sharing	Google Photos, Flickr, Instagram, etc.	MeWe, Diaspora, Cluster, Friendica
Microblogging	Twitter, Facebook, Tumblr, LiveJournal	Ello, MeWe, Diaspora, Mastodon, Twister, GNU social
Shared calendar	Google Calendar, Facebook, Any.do	Kune, Thunderbird Lightning Calendar
Video sharing	YouTube, Facebook, Vimeo, Twitch, Dailymotion, etc.	MeWe, Bitchute, PeerTube, Kaltura

As the table indicates, there are numerous ASM choices to fulfill the ICT needs specific in the campaign plans generated by the cohort. Based on the four responsibilities set out in the Choice Framework described above, a technology steward can take a first step simply by making members of the community of practice *aware* that ASM choices exist. This could then be followed by giving members *a sense of choice* by showing them how they might take advantage of ASM, perhaps by presenting a use case scenario, either hypothetical or based on a real example.

The next step of *facilitating choice* could be done by piloting an ASM platform with the community. This, however, is where the technical level of difficulty can rise quickly and, arguably, it is the uncertainty entailed in this step that may discourage many potential users at the outset. ASM platforms may require that the technology steward download and install software code, build and maintain a server, and provide cyber-security and do other support functions that can be somewhat sophisticated from a technical standpoint.

Resources remain another important consideration, with access to server space and bandwidth being perhaps the most obvious. Some ASM platforms provide options for less technically intensive

implementations, but these come at some risk insofar as the stability of the platform from a technical and business standpoint may be precarious. The technology steward, in other words, will face a number of significant obstacles if they are to attempt an ASM choice with their community of practice.

A PATHWAY TO ADOPTION

Technology stewardship is a form of leadership practice that involves five basic streams of activity (Wenger, White & Smith, 2009, p. 26). These activities are integrated into our training course as three sequential modules of engagement, prototyping, and campaigning (see Figure 1), but they should be conceived as a manifold set with certain activities taking precedent at certain times:

- Community understanding
- Technology awareness
- Selection and installation
- Adoption and transition
- Everyday use

The five activity streams present the basic framework of technology stewardship and provide a pathway for communities of practice to explore ASM in a way that emphasizes both social and technical implications that such a transition would entail. It is no guarantee that ASM will be accepted by members and integrated into the digital habitat of the community of practice, but it does provide the basis for a plan of action that will support a systematic assessment of ASM, including its suitability from both a technical and social practices standpoint.

Community Understanding: Create Awareness of Choice

Understanding the constitution and social practices of the community is a fundamental requirement of technology stewardship. For technology use to be effective it must not only serve the needs of the members but also be well integrated into the social practices of the community. The stewardship training program emphasizes this point with the first key principle of *vision before technology*. Vision begins with understanding the community of practice from several perspectives, and the course introduces participants to an assessment tool that accounts for a range of baseline factors:

- Lifecycle
    - stage of maturity of the community of practice
- Constitution
    - diversity in location, language, demographics, integration with other communities or organizations
- Aspirations
    - Level of ICT interest and related skills among community members
- Access
    - Device ownership, internet access, cost and other financial considerations

The community assessment is carried out as a table-top exercise in the classroom, but ultimately should be validated with data generated from the community itself. The course provides a set of questions that result in a score for each of the four factors. The scores are primarily intended to inform decisions around the selection of appropriate ICT tools and platforms that align with the community context.

Understanding community context is essential for technology stewardship and applies when considering any type of technology acquisition strategy. In the context of an ASM strategy, however, the

"Aspirations" score will be particularly important to consider. The technology steward will need to gather insights on several key questions:

- How interested are your community members in using or trying ICT tools and platforms?
- What is their capacity for learning new ICT tools and practices?
- What is the average current level of ICT-related skills among community members?
- Is there a probability of conflict in the community when introducing new ICT practices?
- How many ICT barriers are members willing to cross in order to use a new ICT platform (e.g., need to create new accounts and passwords, need to download new apps, etc.)

The course material provides a Likert scale ranking for each of these questions, which are then combined into an overall "Aspirations Score" for the community of practice A higher score suggests that community members may be willing to experiment with new ICT choices, but with this enthusiasm may also come strong opinions that could lead to potential conflict. This type of community might be open to the idea of ASM, but the technology steward will want to provide lots of opportunities for constructive feedback from community members during the prototyping and testing phase to identify concerns and diffuse points of conflict.

On the other hand, an Aspirations Score at the other end of the scale suggests a low level of tolerance for experimentation with ICT choices. Any changes the technology steward might wish to attempt should be simple and with relatively modest ambitions. The community context in this case would suggest that there are significant barriers to the adoption of ASM, but a technology steward would be wise to focus on making community members aware of this choice and suggest possible ways that ASM might be used as an alternative without necessarily attempting an implementation. Over time, the community members may become more interested and willing to experiment with a simple ASM implementation and the technology steward could then move to facilitate that choice with a modest campaign.

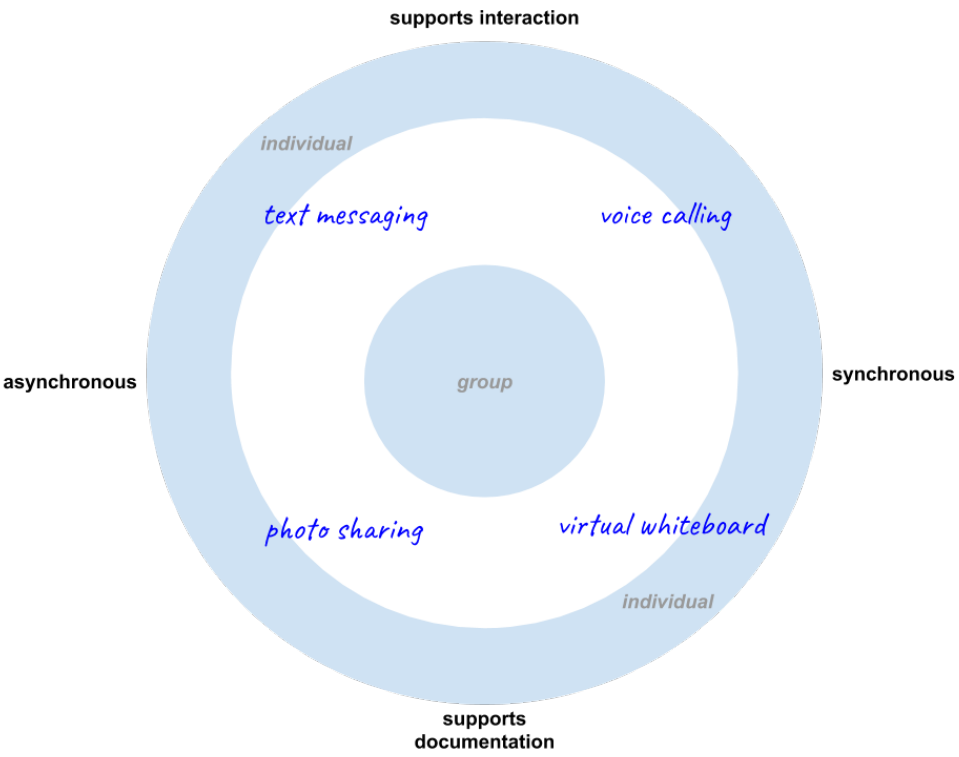
Technology Awareness: Develop a Sense of Choice

The second key principle of technology stewardship is to *keep it simple*, which means choosing ICT platforms that serve a clearly defined need in relation to the goals of the community of practice. In practice, this principle establishes a logic that will often lead to choosing one of many CSM platforms because these usually offer the most obvious solutions to commonly identified ICT needs as suggested in Table 2 above. However, the technology stewardship course emphasizes the difference between ICT *platforms* and ICT *tools*, following Wenger, White & Smith (2009, p. 154) on this point. ICT tools represent discrete functional components or services such as messaging, photo sharing, tagging, commenting, chat, and so forth. ICT platforms are defined as a *bundle of tools*, with many CSM offering similar collections even if these are not interoperable across platforms. For example, a comprehensive platform like Facebook includes a messaging tool (Messenger), as does Google's G-Suite (Messages), but these are not interoperable at this time. More specialized platforms such as WhatsApp (owned by Facebook) are primarily defined around a specific tool (messaging), but include other tools such as photo sharing, voice calling, and file sharing. The ASM space offers similar sets of tools and platforms in parallel with CSM as indicated in Table 2.

For analytical purposes, ICT tools can be situated on a "tools landscape" diagram to assist the technology steward in understanding and conveying to members "how certain tools tend to influence community life in one direction or another" (Wenger, White & Smith, 2009, p. 60). The various affordances designed into specific ICT tools lend them to placement in relation to three polarities of social interaction (2009, p. 56), on the tools landscape diagram—although it is sometimes difficult to make clear distinctions: (1) tools that support synchronous versus asynchronous communications; (2) tools that support direct

engagement (participation) versus reflective engagement (reification, documentation), and (3) tools that support individual versus group participation. Figure 2 depicts a rudimentary tools landscape diagram used in the course. Participants then build on this diagram by placing other types of ICT tools on the graph and discussing their decisions.

Figure 2. A rudimentary tools landscape diagram



Adapted from Wenger, White & Smith (2009). Digital Habitats: Stewarding Technology for Communities. CPsquare.

It is important to stress that this diagram is not intended to be definitive or exhaustive. The course material does include a more comprehensive reference for the technology stewards, but the creation and/or validation of a tools landscape diagram should be viewed as an interpretive activity that forms part of the community engagement process facilitated by the technology steward.

The training course emphasizes that the technology steward should focus initially on defining the functional ICT needs in relation to the social practices of the community without committing to a specific provider or platform. The tools landscape diagram in conjunction with the community assessment tool is intended to produce a good alignment between the technology choice with the social life of the community, whether that is to preserve existing dynamics or, in some cases, to foster new social practices.

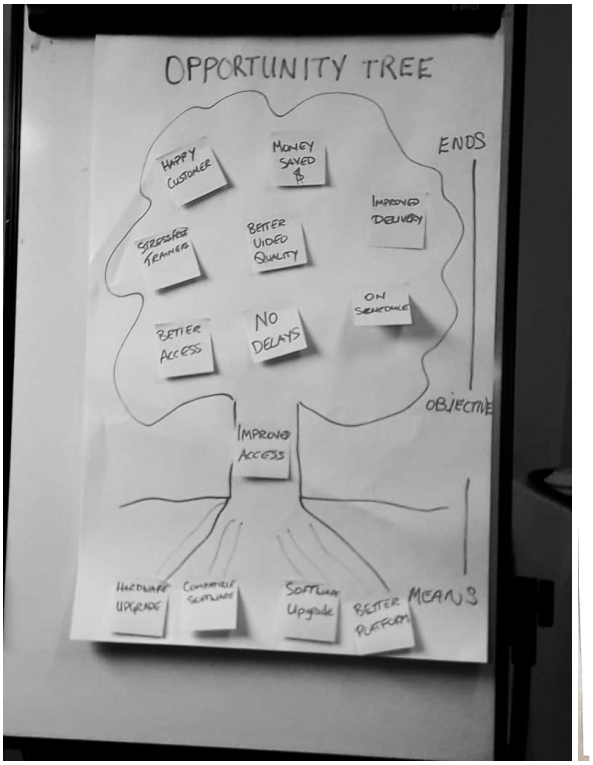
Recognizing of course that community dynamics are complex, it is usually possible to identify "a typical pattern of activities and connections through which members experience being a community" (Wenger, White & Smith, 2009, p. 69). This typical pattern can be further categorized into a set of community orientations that characterize a set of social interactions that are then be matched with appropriate ICT tools. The course material presents six community orientations, which are referred to as "priorities" in relation to needs and goals:

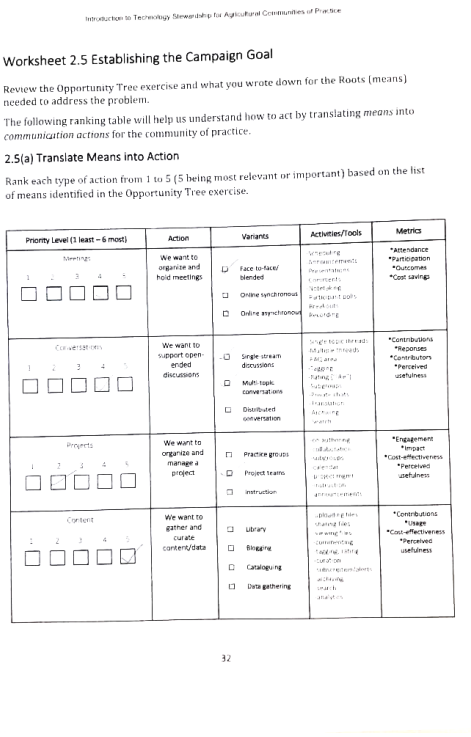
- Meetings
- Conversations
- Curated content
- Project management
- Access to expertise

- Social networking

Participants in the course are guided through a community assessment process using a problem/opportunity tree exercise, which then leads to a prioritization activity in which they rank the orientations in order of urgency or importance to the community (Figure 3).

Figure 3. Technology steward trainees use an opportunity tree exercise to prioritize community needs





Introduction to Technology Stewardship for Agricultural Communities of Practice

Worksheet 2.5 Establishing the Campaign Goal

Review the Opportunity Tree exercise and what you wrote down for the Roots (means) needed to address the problem.

The following ranking table will help us understand how to act by translating *means* into *communication actions* for the community of practice.

2.5(a) Translate Means into Action

Rank each type of action from 1 to 5 (5 being most relevant or important) based on the list of means identified in the Opportunity Tree exercise.

Priority Level (1 least – 6 most)	Action	Variants	Activities/Tools	Metrics
Meetings	We want to organize and hold meetings	Face-to-face/ blended Online synchronous Online asynchronous		*Attendance *Participation *Outcomes *Cost savings
Conversations	We want to support open-ended discussions	Single-stream discussions Multi-topic conversations Distributed conversation		*Contributions *Reponses *Contributors *Perceived usefulness
Projects	We want to organize and manage a project	Practice groups Project teams Instruction		*Engagement *Impact *Cost-effectiveness *Perceived usefulness
Content	We want to gather and curate content/data	Library Blogging Cataloguing Data gathering		*Contributions *Usage *Cost-effectiveness *Perceived usefulness

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This prioritization activity contributes to the *keep it simple* principle by providing a method by which the technology steward can narrow the focus to essential ICT tools in alignment with the needs and goals of the community. For example, Table 1 showed a number of communities of practice that have identified "Access to expertise" as a priority orientation. Access to expertise refers to "a focus on answering questions, fulfilling requests for advice, or engaging in collaborative, just-in-time problem solving" (Wenger, White & Smith, 2009, p. 84). Table 3 illustrates several activities under "Access to Expertise" along with a corresponding list of ICT tools, similar to something that a technology steward trainee might create during the course.

Table 3. Activities, practices, and ICT tools for the access to expertise orientation

Activity	Practice Notes	ICT tools
Questions and answers	Individual and/or group interactions; synchronous or asynchronous exchanges; documentation of responses (to create FAQs)	Text messaging; voice messaging; multimedia messaging; microblogging; chatbots;

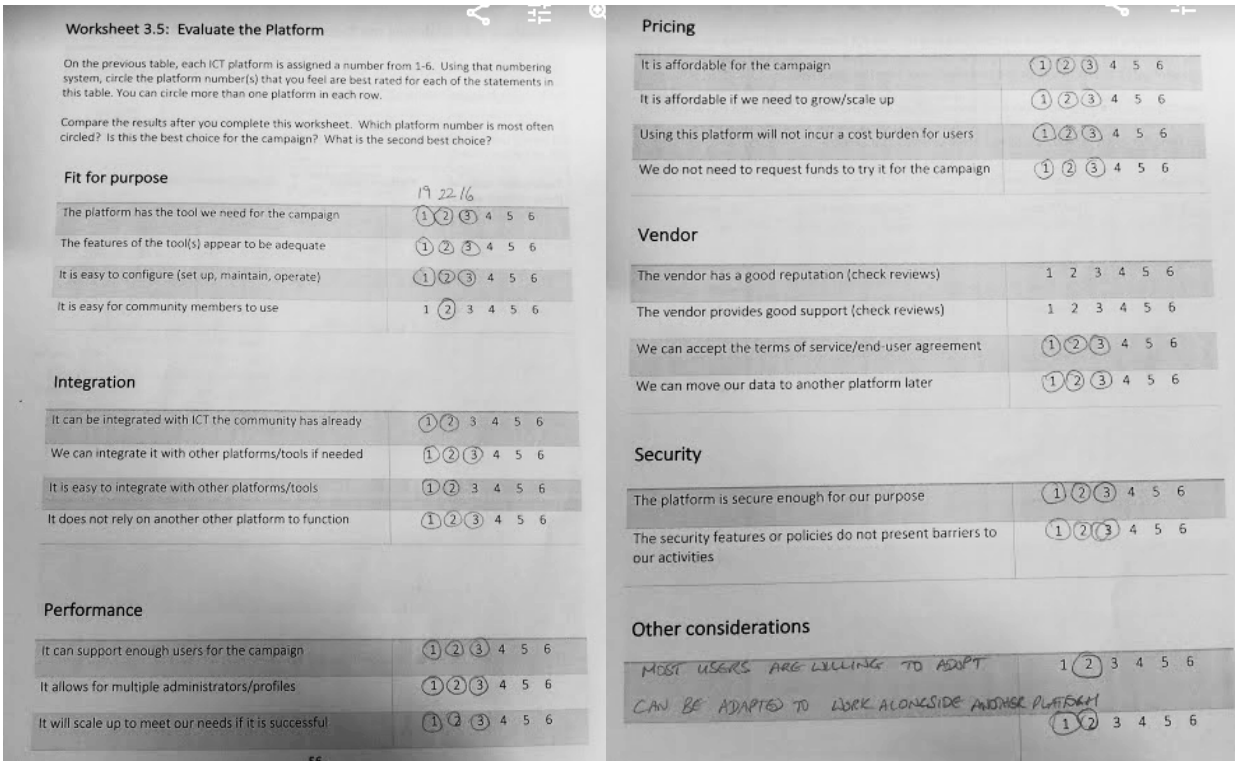
Expertise locating	Finding the right person at the right time; managing accessibility; social norms around duty to contribute and share;	Member directories; profile page; ranking/rating tool; visibility tool (offline/online);
Response rating	Categorizing responses to create FAQs; rating responses for quality; corrections and additions;	Rating tool; tagging tool; commenting tool; polling; wiki for documentation;

Having established the priority orientation for the community, listing key activities and associated ICT tools using the tools landscape diagram, the next step is to identify the platform configurations in which these ICT tools are available. An extensive list of CSM is available on Wikipedia in the "List of Social Networking Sites" article and similar lists are relatively easy to locate elsewhere. A systematic inventory of ASM is harder to locate, although The Social Media Alternatives Project (S-MAP, 2019) is an effort to compile an inventory under its "Omeka Archive." The Wikipedia page "Comparison of software and protocols for distributed social networking" maintains what is perhaps the most detailed list of both active as well as "dead or stalled" ASM projects.

Selection and Installation: Facilitate Effective Use of Choice

The technology stewardship training course includes a rating activity for comparing ICT platforms that encompasses several dimensions, each with a subset of ranking questions: goodness of fit, interoperability, scalability, pricing, vendor/developer support, and security. Tech steward trainees are encouraged to identify and compare at least three platforms as part of the rating activity before making a final choice for the campaign with their community of practice (see Figure 4).

Figure 4. A Technology steward trainee evaluates three ICT platforms for her campaign



Worksheet 3.5: Evaluate the Platform

On the previous table, each ICT platform is assigned a number from 1-6. Using that numbering system, circle the platform number(s) that you feel are best rated for each of the statements in this table. You can circle more than one platform in each row.

Compare the results after you complete this worksheet. Which platform number is most often circled? Is this the best choice for the campaign? What is the second best choice?

Fit for purpose

The platform has the tool we need for the campaign	1 2 3 4 5 6
The features of the tool(s) appear to be adequate	1 2 3 4 5 6
It is easy to configure (set up, maintain, operate)	1 2 3 4 5 6
It is easy for community members to use	1 2 3 4 5 6

Integration

It can be integrated with ICT the community has already	1 2 3 4 5 6
We can integrate it with other platforms/tools if needed	1 2 3 4 5 6
It is easy to integrate with other platforms/tools	1 2 3 4 5 6
It does not rely on another other platform to function	1 2 3 4 5 6

Performance

It can support enough users for the campaign	1 2 3 4 5 6
It allows for multiple administrators/profiles	1 2 3 4 5 6
It will scale up to meet our needs if it is successful	1 2 3 4 5 6

Pricing

It is affordable for the campaign	1 2 3 4 5 6
It is affordable if we need to grow/scale up	1 2 3 4 5 6
Using this platform will not incur a cost burden for users	1 2 3 4 5 6
We do not need to request funds to try it for the campaign	1 2 3 4 5 6

Vendor

The vendor has a good reputation (check reviews)	1 2 3 4 5 6
The vendor provides good support (check reviews)	1 2 3 4 5 6
We can accept the terms of service/end-user agreement	1 2 3 4 5 6
We can move our data to another platform later	1 2 3 4 5 6

Security

The platform is secure enough for our purpose	1 2 3 4 5 6
The security features or policies do not present barriers to our activities	1 2 3 4 5 6

Other considerations

MOST USERS ARE WILLING TO ADOPT 1 2 3 4 5 6

CAN BE ADAPTED TO WORK ALONGSIDE ANOTHER PLATFORM 1 2 3 4 5 6

During this step, trainees can be introduced to ASM platform options and asked to compare them with their CSM counterparts. Based on the outcome of the ranking exercise, the steward may elect to stick with a CSM but there are opportunities at this point to consider piloting an ASM platform for the community of practice, particularly if privacy and data residency are identified as important considerations.

Recognizing that there are a number of ASM platform choices currently available, some key considerations are interoperability among platforms, independence, support, and scalability. One possible pathway into ASM is to explore the ecosystem of platforms connected through the ActivityPub protocol, otherwise known as the "fediverse" (Holloway, 2018). ActivityPub is a decentralized social networking protocol that "provides a client to server API for creating, updating and deleting content, as well as a federated server to server API for delivering notifications and content" (W3C, 2018). This excerpt helps to further describe it in lay terms:

> *Think of it as a language that describes social networks: the nouns are users and posts, and the verbs are like, follow, share, create… ActivityPub gives applications a shared vocabulary that they can use to communicate with each other. If a server implements ActivityPub, it can publish posts that any other server that implements ActivityPub knows how to share, like and reply to. It can also share, like, or reply to posts from other servers that speak ActivityPub on behalf of its users. (Dormitzer, 2018)*

In other words, ActivityPub provides interoperability for an emerging ASM ecosystem—the fediverse—that includes Mastodon for microblogging, Friendica for social networking, PeerTube for video, Funkwhale for audio sharing, PixelFed for photo sharing, and Plume or Write.as for blogging. Other federated protocols, including the Diaspora Network are designed on similar principles.

With “Access to Expertise” identified as a priority, for example, a technology steward could be encouraged to compare the ASM platform Mastodon with Twitter and WhatsApp all of which include microblogging/messaging tools. Mastodon mirrors many features of Twitter, with some additional functionality, but can also be integrated with Twitter through services such as the Mastodon Twitter crossposter (https://crossposter.masto.donte.com.br). In other words, experimenting with a platform like Mastodon can provide a gateway into the ASM ecosystem, while allowing members of the community of practice to continue using CSM to support of existing practices. The next section will consider what a transition campaign might entail using Mastodon as an example.

Adoption and Transition: Support Effective Use of Choice

Mastodon provides a pathway into the ASM ecosystem in part because it is linked to the Fediverse through its use of the ActivityPub protocol. While it is primarily a microblogging platform, it is possible to integrate with platforms that include other ICT tools such as video, audio, photo sharing, and social networking. In this sense, it can provide an entry point for a more ambitious ASM strategy, should a community of practice wish to explore this choice.

A federated system is designed to be decentralized, with each server (or, “instance” in Mastodon’s terms) operating independently but with options for sharing data with other instances as determined by users and local administrators. The simplest implementation of Mastodon for an individual is to join an existing instance, such as the general purpose mastodon.social, currently with about 331,000 users. As with most online communities, instances of Mastodon tend to form around themes or subject, often unique or perhaps obscure, such as witches.live (“Are you a witch? Do you like spells, and spell accessories?”) or eldritch.cafe (“For queer people, feminists, anarchists and their sympathizers”). Other instances are based on geography such aus.social (“A Mastodon instance for Australia”), toot.wales (“... the free and open microblog for Wales and the Welsh, at home and abroad”).

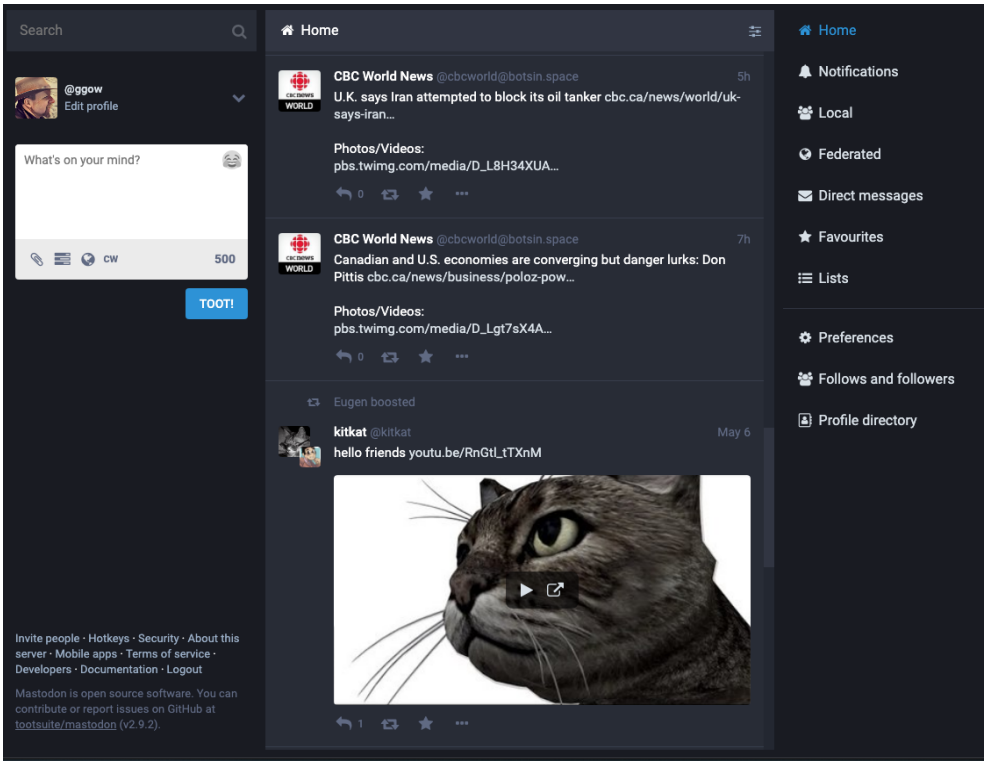
A cursory examination of the current range of Mastodon instances confirms that network effects remain a barrier to ASM adoption, with many servers have only a few hundred members (or less). So, for many users, the existing Mastodon instances may have little appeal and this option may not provide much of a pathway forward. As such, technology stewards could be encouraged to host their own instance of Mastodon for the community of practice. The ActivityPub protocol enables interoperability across servers, so any community of practice can choose to operate fully independently or integrate with other Mastodon instances to create a federation of communities. The challenge with this path forward includes technical skills and resources needed to set up and operate a server. There is the option of fully-managed Mastodon hosting (https://masto.host/) for those not interested in taking on the full responsibility of running a server themselves.

In planning a campaign to explore Mastodon for microblogging with their community of practice, a technology steward will need to consider several steps. The first step is to decide on a Mastodon instance: create new or join existing? If creating a new instance, the steward will need to decide whether to host it themselves or to use a managed hosting service. This pathway provides the most autonomy for the community of practice but will depend on the organizational context, the technical skills of the technology steward, as well as the availability of resources and time for self-hosting, including day-to-day administration and oversight of the server. Purchasing a fully managed hosting service will still require some technical skill, and will entail a monthly cost, but may be more feasible for communities of practice that are not yet committed to this pathway.

The technology steward will also need to introduce members of the community of practice to one or more Mastodon clients. The native web client works well, but others are available including other web-based

clients like Pinafore or Halcyon, desktop clients such as Whalebird or TheDesk, and mobile apps including Amaroq (iOS) and Tusky (Android). In certain respects, these clients will be familiar to many users because of the similarities to the layout with Twitter. The client will include a local timeline showing posts from members of your instance, as well as a federated timeline that includes local posts plus those from other instances who are followed by members of your instance (Figure 5).

Figure 5. Screenshot of the author's Mastodon account



The technology steward may need to assist members with creating a Mastodon account on the instance, although it will be familiar to those who have used Twitter. There are some differences with the Mastodon profile, the most notable being that users are provided with a metadata section that includes up to four labels and associated content, which is a design feature that eschews the imposition of platform defined categories typical of CSM.

The technology steward might also consider a transition plan that includes automated cross-posting with Twitter as a way to generate content and bootstrap discussion on the Mastodon instance timeline. This can be done by pointing members to a website like the Mastodon Twitter Crossposter as noted above.

Everyday Use: Recognize & Sustain Achievement of Choice

Launching a campaign with a community of practice to explore an ASM platform like Mastodon can require considerable effort, and there is of course no guarantee it will succeed in changing existing practices in any significant way. The training course emphasizes two other principles of technology stewardship that are essential to for campaign planning: *use the knowledge around you* and *understand failure and build on success*. Technology stewards will need to build a coalition of support from among members of the community of practice, so it is sometimes a useful strategy to invite a subset of interested individuals to participate in an exploratory trial of the new ICT platform. For example, several members

might be invited to join an existing Mastodon instance to gain some initial experience before deciding to move forward with a larger scale campaign.

A technology steward might also need assistance from members with a deeper pool of IT-related knowledge, particularly if there is a desire to run a Mastodon instance or other self-hosted ASM platform. The JETI program also aims to foster a community of practice among technology stewards that could eventually serve as a global network of support for ASM-related efforts:

> *Stewarding technology should be treated as a team sport for two reasons. First, it helps to have a group within a community to share the work—or at least share in the understanding of the role. Second, it helps to connect with other stewards (from whatever community) who can provide a larger context, offer support, share ideas, tips, and innovation, and help in pressuring a tool developer to address community needs. Still many technology stewards struggle alone. Wenger, White & Smith, 2009, p. 25)*

The concept of the campaign share features with an action research strategy (Stringer, 2013) insofar as it represents an intervention stage within an overall iterative framework that flows from and back into a community engagement and assessment stage carried out under the leadership of the technology steward. Campaign planning therefore begins with a community engagement leading to a clearly stated campaign goal that sets a specific objective for an identified priority action (or "orientation"). For example, a goal statement for a campaign oriented to improving access to expertise for an agricultural community of practice might be stated as follows:

> *We need to find a way to improve the timeliness and reduce the cost of exchanging messages between the extension officer and community members when scheduling meetings and responding to inquiries about crop management for vegetable farmers in St. George County.*

This is a well-defined goal insofar as it contains three key details:

- it sets a specific target (improve timeliness and reduce costs);
- for a specific priority action (exchanging messages for scheduling meetings and responding to inquiries);
- with a clearly defined community of practice (vegetable farmers in St. George County);

It is important to note that the goal statement does not mention a specific ICT tool or platform. The choice of ICT platform is contingent and context dependent. One strength of this approach is that it separates the goal from a specific ICT choice, reinforcing the "vision before technology" principle.

Having formulated the goal and *then* selecting an ICT platform for the campaign, the technology steward must consider several important planning elements: timing and timeline (when is the best time to start? how long to run it?), implementation requirements (who should form a coalition of support? any formal approvals needed? Any ICT training required?), promotional and other costs, mitigation of potential security and privacy concerns, planning for evaluation, and wrapping up the campaign.

Both the campaign goal and the evaluation plan are critically important with regard to the stewardship principle of *understand failure and build on success*. On the one hand, without a clear goal in mind, it will be difficult to plan and implement a focussed campaign and manage members' expectations. On the other hand, without an evaluation plan it will be difficult to assess the outcome of the campaign. Generally, campaigns will have one of four outcomes,

- Campaign goal achieved as anticipated
- Campaign goal partially achieved
- Campaign goal not achieved
- Campaign abandoned by the community

A good evaluation plan ensures that the right questions are being asked pre-, mid-, and post-campaign, and that the right kinds of data are being collected to undertake an assessment of success and/or failure. The course introduces trainees to four key metrics for the evaluation plan:

Interaction: the amount of activity on the ICT platform during the campaign. How many people joined the group? How many people posted messages? How many messages were posted? What time of day/day of week was activity most frequent? Are there any significant patterns in the activity?

Engagement: the type of activity on the ICT platform during the campaign. This is a more qualitative measure looking at the content of the interactions, such as the types of messages posted and types of content shared, uploaded, rated, commented on, and so forth;

Influence: the impact of the campaign relative to other methods of interaction and engagement. How many people are aware of the campaign? How many are participating (actively or passively) in the campaign? Has the campaign changed perceptions of ICT use? Has the campaign changed attitudes or perceptions of community members in relation to its intended outcome?

Behaviour change: the impact of the campaign on observable practices in relation to the intended outcome. Are community members doing things differently? Have they changed their communication practices? Has the campaign led to observable changes in professional or business practices of the community members in relation to its intended outcome?

Trainees are reminded in the course that, even in the worst-case scenario of campaign abandonment, there is no such thing as "failure" if you can understand what happened during the campaign attempt. Because learning from experience is integral to the action research process, an effective evaluation plan provides a foundation for understanding and adjusting plans. For instance, it is entirely possible that a campaign that attempts to introduce ASM for microblogging might not be successful with a community of practice, but a good evaluation plan should provide the technology steward with evidence to explain why that might be so, while also generating insight as to what might be attempted next in relation to the community's goals and priorities.

In the case of a successful campaign, technology stewarding can move into the background as the transition takes place. This involves the fourth responsibility of the technology steward in *recognizing and sustaining the achievement of choice* with community members. Background stewarding includes supporting new members in their use of the community's technology, identifying and spreading good practices, identifying and supporting innovative practices of members, and attending to evolving community dynamics in relation to ICT use.

A successful introduction of an ASM platform into a community of practice would involve both the foreground work leading up to and including the campaign, as well as these various aspects of "stewarding in the background" as a day to day role for the technology steward. Even as new members of the community of practice become more comfortable in the choice to use a new platform, the technology steward's role continues, particularly insofar as they are recognizing success and highlighting innovative practices of members. In the case of a Mastodon campaign presented as an example in this chapter, the technology might need to manage both an existing CSM (i.e., Twitter) and the ASM platform during a

transition phase, or possibly ongoing as a blended set that makes up the community's overall digital habitat. A successful migration to Mastodon might also lead to further campaigns to integrate other ActivityPub-based ASM platforms featuring different ICT tools, such as photo or video sharing, and social networking.

CONCLUSION

There is no *prima facie* reason that a community of practice could not include both CSM and ASM platforms within its digital habitat. On the one hand, CSM will continue to be attractive for community engagement from the standpoint of affordances, cost, and reach. On the other hand, ASM promise similar tool sets with higher degrees of privacy, autonomy, and flexibility. While ASM may be limited in scope from a practical standpoint by technical barriers, trust issues, and network effects, they may very well serve an important complement to CSM as part of a community's digital habitat.

Technology stewardship offers a pathway to adoption of ASM through an action research approach that includes community engagement and ICT piloting using a campaign model. The goal is to provide members of a community of practice a wider range of choice in how they wish to communicate using digital technologies. Technology stewardship training can provide a foundation by which a community of practice can be made aware of the existence of ASM as a choice, shown how that choice might contribute to the digital habit, and supported in the effective use of ASM, should it be a choice that community members wish to exercise.

Looking ahead, ASM can play an important role in the digital habitat of communities of practice that wish to retain higher degree of control and autonomy with their communication practices and the data that flows from them. CSM will most likely continue to dominate, but the complementarity ASM offers is worthy of further exploration under the right conditions. Technology stewardship model presented in this paper offers one possible pathway forward, but others are of course possible. It is likely that limited success in using ASM for community engagement will be achieved through other types of targeted initiatives with support from community development workers and research teams. An important step going forward will be to connect these initiatives through a global community of practice that can build on lessons learned and provide mutual support and encouragement for this choice.

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