



Sigmah Project Evaluation

Final Report Wednesday July 26th 2017¹

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¹ Final draft version submitted June 30th 2017

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Introduction

Sigmah, a multi-lingual, open source project management software for the humanitarian sector, has the potential to scale and serve as an invaluable tool, improving organizational efficiency and coordination, safeguarding institutional memory, and supporting the project planning and learning cycle.

Groupe URD, the facilitator for Sigmah's Steering Cooperative (SC), has commissioned an external evaluation of the project to provide an assessment of the outcomes of the Sigmah software and an overall picture of the strengths and weaknesses of the project to enable the SC and Groupe URD to make strategic decisions about its future.

Ten years into the project, the team needs to review the technical basis of the software; the team and business model around it; the support and sales approach; and its governance. SIMLab was retained to carry out this independent evaluation. With previous experience of building and maintaining free, open-source software for the humanitarian sector ([FrontlineSMS](#)), SIMLab now draws on a decade of experience developing, implementing and evaluating technologies across sectors and geographies to provide analysis and advice for other organizations.

This report sets out our methodology and findings according to evaluation questions developed during the inception period and outlined in full in [Annex 3](#). We also make recommendations for suggested next steps, although it is important to note that not all recommendations are appropriate for all strategic directions Groupe URD may wish to take.

Acknowledgements

This evaluation was made possible with the financial support of Agence Française de Développement, Handicap International Luxembourg, and Fondation pour le Progrès de l’Homme.

Methodology

The Sigmah Evaluation was conducted over six weeks from May 22 2017 to 30 June 2017.

Key Activities	2017					
	05/22/17	05/29/17	06/05/17	06/12/17	06/19/17	06/26/17
Inception						
Kick-off meeting with Groupe URD						
Project document review and analysis						
Key Deliverable: Inception Report						
Sigmah Software Analysis						
Code analysis						
Code documentation analysis						
Key Deliverable: Technical Evaluation of Source Code						
Stakeholder Consultations and Interviews						
Users and non-users of Sigmah						
Groupe URD						
Steering Cooperative						
Donors						
Survey						
Key Deliverable: Stakeholder Consultations completed and draft report					Draft findings	
Future Planning						
Co-Creation workshop with users						
Report on co-creation workshop						
Current and future users' needs assessment						
Report Writing and recommendations						
Key Deliverable: Evaluation Presentation and the final evaluation Report						

Fig. 1: Gantt chart showing the timeline of the evaluation.

Inception and desk review

Based on desk review of key documents and interviews with key informants, we reviewed the Sigmah theory of change and suggested some potential expansions (see [below](#)).

Documentation was provided by Olivier Sarrat both proactively at the beginning of the inception phase, and in response to our specific requests. The full list of documents reviewed appears in [Annex 2](#).

Based on the SIMLab [Evaluation Criteria for technology in social change projects](#), we developed key evaluation questions which should be addressed in our investigation and report. As the resulting list was 24 questions long, and the timeframe of the evaluation relatively tight, we decided to prioritize ten questions, with the others to be addressed as time allowed. The full list can be read in [Annex 3](#). The questions were prioritized by a small group of key stakeholders, by voting for ten options from the full list of 24. Those stakeholders were:

- Olivier Sarrat, Sigmah Project Facilitator, Groupe URD
- Frédéric Seguret, M&E Officer, Handicap International
- Veronique de Geoffroy, Director of Operations, Groupe URD

Based on this preparation we finalized our plans for the evaluation.

Sigmah software analysis

We contracted an experienced Java developer, Alex Anderson, to support us with code review. His terms of reference and full report are included here as [Annex 4](#), and his reflections and recommendations are taken into account for this report.

Stakeholder consultations and interviews

By Skype, phone and in person we conducted a series of interviews of key informants, based on a list provided to us by Olivier Sarrat. The full list of interviewees appears below as [Annex 5](#).

We had intended to be selective about our interviewees, selecting some users and some non-users at random. However, responses to our requests for interview were relatively few, so we interviewed all those who responded.

The interview guide was based on the evaluation questions, and signed off by the project facilitator. The interview guide appears below as [Annex 6](#). Two interviews were conducted in French with translation from Groupe URD staff; with Isabelle Ba of La Francophonie (translation by Olivier Sarrat), and Juliette Haim of Groupe URD (translation by Charlotte Heward).

We had intended to carry out an open-access online survey for users and non-users of the software, delivered in French and English. However, during the course of the evaluation we realized that we had already reached out to all current and past users of the software, and many had not responded to our interview request (12 out of 21 users in our list did not respond to our request, or declined to be interviewed). We considered targeting only non-users of the software with a survey, but felt that this would be difficult to target. Additionally, we felt that the social capital that it would cost the Sigmah team to motivate significant responses would be better spent elsewhere.

Liaison with Groupe URD during the evaluation

During our investigation our chief point of contact has been Olivier Sarrat, Sigmah Project Facilitator. Our Terms of Reference, evaluation questions, desk review and activities have been developed with his guidance and advice, through Skype chats, and calls and emails. However, most, if not all, of these steps were cross-checked with Veronique de Geoffroy, Director of Operations at Groupe URD and the project facilitator's immediate supervisor, and we were able to interview or interact with Veronique on four separate occasions to ensure that we had multiple viewpoints on the focus and frame of the evaluation. Ultimately both Groupe URD and SIMLab were clear that final research decision-making lay with SIMLab.

Future direction workshop

At a half-day workshop held at Solidarités International in Paris, a small group of participants were facilitated by SIMLab to discuss potential options, needs, next steps, and red lines for the future of Sigmah, under the four key themes of this evaluation: the technical framework of the platform, governance arrangements, adoption and support, and the business model. The output of the workshop will be a separate outputs paper, and the discussions at the workshop were not part of the investigation for this evaluation.

Theory of change

As part of this evaluation, it has been helpful to begin with an understanding of Sigmah's intended impact in the world, so as to be able to hold the project to account against this standard, as well as against SIMLab's evaluation criteria and the agreed evaluation questions.

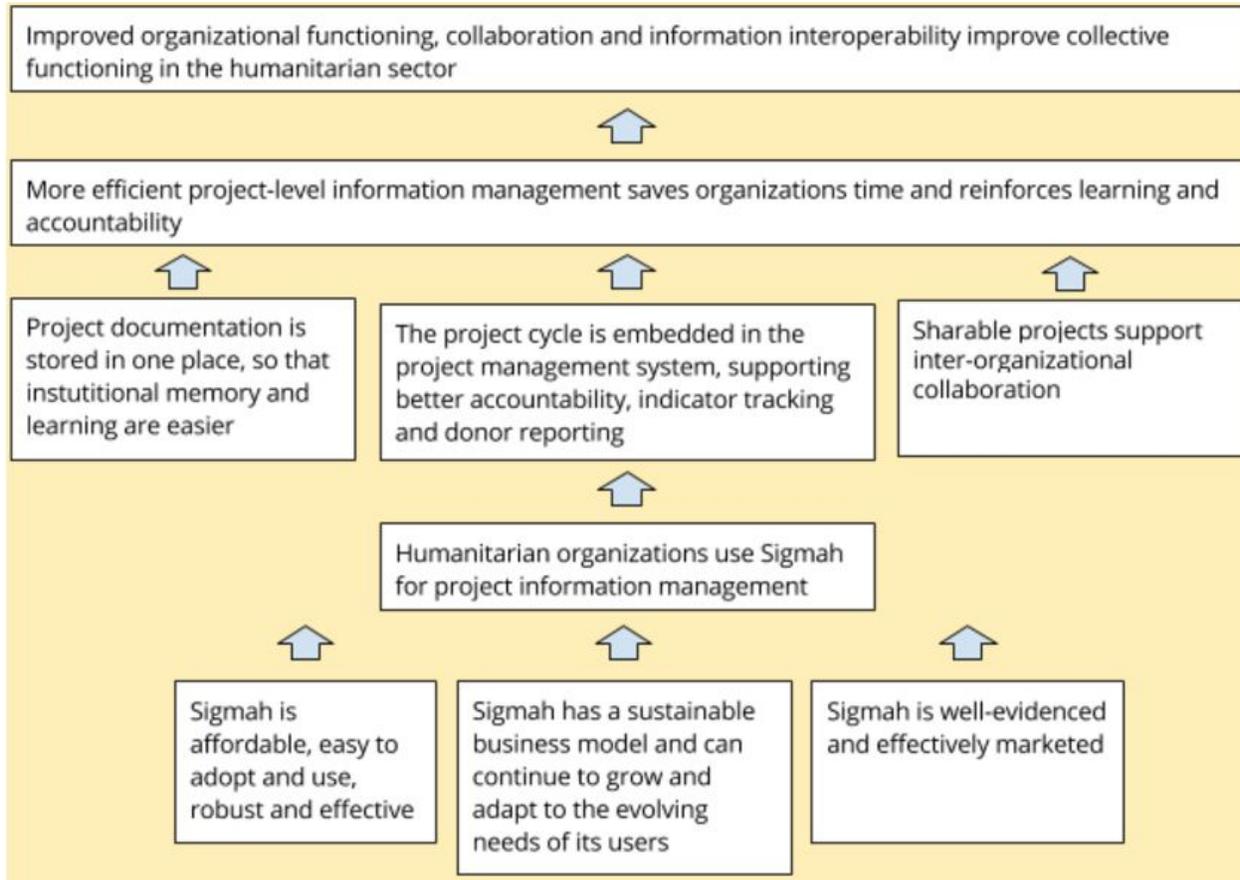
Per Sigmah documentation, the Theory of Change designed during summer 2016 as part of the HIF Journey to Scale proposal is as follows:

'organizations and the humanitarian sector sustainably improve the efficiency, quality, accountability and interoperability of their individual and collective functioning,

- *If a freely-available and adaptable technical solution meets the needs of its users in terms of information management, (critical elements: relevance of the technical solution, robustness of the software, clear benefits in terms of efficiency for individual users)*
- *If this open source software, developed as a common asset, is sustainable in terms of governance, resources and expertise, so that it can continue to grow and adapt to the evolving needs of its users, (critical elements: affordability of the solution for small organizations, a balanced business model, decentralized and effective governance, and a decentralized and effective dissemination strategy)*
- *If there is evidence that using the software brings benefits in terms of efficiency, effectiveness, coherence, transparency and interoperability, and makes it*

possible to effectively apply the Quality and Accountability standards defined by the sector. (critical elements: effective M&E to demonstrate benefits)'

On review of this text alone, there seems to be a gap between the bullet-points and the top-level paragraph. A reframed theory of change might be presented as below, with additional elements added.



Findings against the key evaluation questions

SIMLab's evaluation criteria are based on the OECD-DAC Criteria for the Evaluation of Development Projects, and the extensions and adaptations to them we developed for our [Monitoring and Evaluation Framework](#). Below are the criteria, with most critical questions addressed below each. These questions include the ten key questions identified by the Sigmah team.

Relevance

The extent to which choices made in the project are appropriately suited to the priorities, capacities and context of the target groups or organizations.

How relevant is the Sigmah platform itself, its feature set and price point to target user organizations, given their priorities, capacities and the market context? How were the design and feature set tailored to the changing needs of the users?

The core vision for the software was and, to an extent, remains, very relevant.

The initial request for the software came from a group of organizations who approached Groupe URD in 2008 asking them to complete a 'needs assessment', which would include a landscape scoping of existing information management tools on the market. This assessment identified areas of overlap which gave rise to the first system specification, and an initial prototype developed between 2010 and 2011. The first users adopted the software in June 2011 and the needs assessment was refreshed in 2012 through discussion with users and at the SC. It is clear from conversation with both users and non-users of Sigmah that project management software with a donor component, a way to standardise and enforce workflows and data entry, and to organize all project information predictably is still very much needed. Fully implemented, the road map as written would have produced a very relevant piece of software.

However, available funding has meant that a number of those features have not yet been built. In 2015 and 16, as the Sigmah team prepared funding bids for the Humanitarian Innovation Fund (HIF) Journey to Scale round, features were assessed again against an emerging business model. The application listed indicator management, native export to the IATI standard, and integration with the CHS standard as lacking from the feature set.

Beginning in 2014 with the arrival of Julien Carler, the team refocussed software development time on 'quick wins'; relatively minor adjustments to the software which had been requested by users and which would improve usability, but which hitherto had not been prioritised over the major feature development the team were striving to fund. Users can also commission custom development to create features they particularly need, as for example with an improved contact records management functionality, which was funded by L'Organisation Internationale de la Francophonie.

Thus, a few different mechanisms are at play in feature prioritization:

- Discussion at the SC, which normally functions through discussion and on a consent basis. Voting power is held in reserve in case of deadlock, but according to the Project Facilitator, rarely if ever used. However, some non-user members were described as dominant by past and present SC members, and in recent years as more members

have been new to the project and participation has reduced, these conversations have become less robust. This dynamic was described by staff and users as causing tension relating to feature prioritization.

- Funding of custom feature development by those who are able to pay - one user described developing features themselves in large part due to the slow pace of pooled funded development.
- Prioritization by the team in response to the need to develop a working business model, or to focus on 'quick wins'.

Taken together, these mechanisms may serve to render the process of prioritization opaque, and perhaps to complicate efforts to communicate how decisions are made. Despite the philosophy of collaboration for mutual gain, discussions are ongoing with some users about the fairness of their contributing to the development and maintenance of features which will serve only to distract from and complicate the delivery of the features they want.

Thus, there may be a question as to the continued relevance of the vision of pooled resources and energy to develop a sustainable project management and quality tool for the humanitarian sector, in a mature market where more focussed entrants can woo away users impatient with the slow pace of development in a group enterprise like the Sigmah project.

How appropriate is the choice of Sigmah's technical platform, its license and coding approach to the achievement of the stated goal?

The open source license, and the structuring of the project as one of collaborative development for the benefit of the sector, was expected to allow the team to raise public money from donors such as Agence Française de Développement (AFD), but also to enable the software to benefit from contributed code. Outside of organized initiatives such as Google Summer of Code, this has not transpired.

Currently, and since a data breach some years ago, Sigmah runs separately-hosted instances for each client. Given the small number of users at present, this is not problematic, but should the organization develop 'Sigmah One-Click' and other such ideas, they may need to revisit their system architecture and explore something more dynamically scalable. Similarly, no user currently runs and maintains their own instance of Sigmah, except Handicap International and Free Press Unlimited (for an internal pilot). Both agencies installed and ran their own instance of Sigmah, but the process is not straightforward. Being able to do this more easily might also make the system a more attractive one for tech-savvy users who might also contribute code.

Some users have questioned the use of the Google Web Toolkit (GWT) framework, particularly since for a number of years a updates key library was thought to have been released only under proprietary license. This has meant that important updates, including those to libraries with dependencies, have not been carried out, resulting in a gradual aging of the code base in important respects. However, the code review for this project has uncovered an open source update to GWT, which should allow updating of many or most of the aging components of the code. It is however true that there are newer frameworks which are 'sexier' and more attractive to potential developers. This could have a direct impact on the competitiveness of the platform,

either for open source contributions, for staff developers or for clients, due to slower development. For this reason, while a wholesale rewrite is not indicated at this time, this aspect of the code base should be kept under review as such decisions are made in the coming years and if appropriate, the opportunity taken to shift to something newer.

How far was the culture and approach of Groupe URD a factor in the decisions made, and how far was this appropriate in the achievement of the stated goal? Was Groupe URD the right actor to build Sigmah? Was the approach taken appropriate to their culture, in terms of risk tolerance and innovation?

All Groupe URD staff interviewed were clear that the project arose from the organization's deeply-rooted commitment to quality and project management as supportive of effective humanitarian response. The origins of the project, in addition to the requested needs assessment, lie in the next logical step in the development of their existing Dynamic COMPAS project. This project had not had the same emphasis on partnership and development for mutual benefit that Sigmah later did, and after one year had no funds for further development. At the time, the hypothesis was that developing an open source platform focused on joint partnership and the public good would enable both public support from donors such as AFD, and facilitate dissemination, further development of the toolset and willing uptake from other NGOs.

Groupe URD were and are clear that software development is not part of their skillset or activities. Their ordinary activities are short-term research and evaluation, training and the development of tools and methodologies, not the kind of complex, multi-stakeholder project that Sigmah became.

It is clear from interviews with operational staff, in particular, that keeping the Sigmah project going has involved taking on financial and operational risks for the wider organization. For at least one year, the Sigmah project has contributed to the organization taking a five-figure net loss. One Groupe URD staff member noted that the organization's tendency is towards 'energy and faith in the relevance of what we proposed, and overcoming all difficulties'. This admirable perseverance in pursuit of a goal, coupled with able and tireless facilitation by the project facilitator, may have led them to continue for longer than another organization would have with a difficult project that has drained organizational energy and is now suffering from low stakeholder investment. Although the future of the project is not yet certain, the team is keen to have the outcomes of this evaluation to support strategic decision-making.

At this point, the future business model developed by the Sigmah team relies on new clients from elsewhere in Europe, and outside the humanitarian space (for example, L'Organisation Internationale de la Francophonie, an international organization representing francophone languages and regions) - raising questions about the continued relevance of Sigmah's home at Groupe URD, a humanitarian think tank.

Effectiveness

A measure of the extent to which an information and communication channel, technology tool, technology platform, or a combination of these attains its objectives.

How did the Sigmah project perform against the intended outcomes and outputs: “an improvement in terms of quality and effectiveness is observed in project management mechanisms of organizations using Sigmah for more than a year”

Groupe URD expected that providing such software would allow for more effective and easier software development, improving the quality, strategy and effectiveness of humanitarian interventions. This is reflected in the most recent theory of change produced by the team (see above).

At present, none of the organizations interviewed offered metrics which would allow this evaluation to test this assumption. However, users were asked how far Sigmah had met their need for ‘[efficient project management](#)’, and how far the software had lead to ‘[continuous improvement in organizational working](#).’ Their responses to this are included under the [Impact](#) section, below.

How far has the software met the evolving needs and expectations of adopting organizations? What were the major factors here?²

Current and former users of Sigmah interviewed for this evaluation agreed that the software was not currently meeting their expectations. Key elements of the roadmap were delayed by lack of funding - this is covered in the Relevance section above.

Some interviewees reported problems with the performance of the software. Remote management, the major feature implemented using the AFD funding, did not perform well in early trials, with bugs and problems delaying implementation and putting off project staff from adopting the software. One interviewee noted that the feature ‘cost them two to three years’ with delays to the rollout, and then problems with the technology. Bug fixes, once reported, were not thought to be covered under the funding received from AFD, as this would count as ongoing running costs and not investment into the platform. For this reason, reported bugs would sometimes take months or longer to fix. Some critical or major bug fixes in new code are covered under the payment structure agreed with the current technical partner, but non-critical bugs and improvements beyond six months after the partner has provided the code are not funded. The project facilitator now does some coding on the platform to make small changes.

² Note: the question ‘what would be necessary for Sigmah to meet their expectations?’ has been removed here as it will be addressed in the recommendations.

Another challenge has been the user interface, which for some appears to be hard to learn. For one adoption focal point who was not ultimately able to get their organization to adopt Sigmah, '[t]he most important factor was that the project staff didn't think the interface was attractive or intuitive. It seemed clunky, didn't invite them to work with it more, and included too much information on one screen. They were put off from working with it and had a hard time figuring out how to do things. There were many steps where we had to figure out how to solve or work around something. But even if it had worked well, people were less willing to think out of the box on how to organize something because it looked unintuitive.'

Other core elements, which one might expect to find in enterprise software platforms, are also missing. There is still no search feature in the application. It is not clear that, aside from use in practice, stress testing was ever carried out, and for at least one user contemplating a rollout to 700 staff, this challenge compounded the challenges they experienced during their rollout of the offline functionality experience to create serious concerns about the viability of full adoption.

Ultimately many former or intended users have made the decision to switch to other options, or in one case have decided against Sigmah even though they haven't found a good alternative. For Sigmah, non-use is a competitor, as imperfect solutions involving Excel files and shared servers are still the main strategy for most NGOs. Others have moved to other platforms.

However, it is important to note that expectations may not be a valid measure of the effectiveness of software. Given the multiple challenges of complex governance, depleted member support, compromised funding and demanding users, it may not be possible to cater to the varying needs and expectations of so many different stakeholders. This challenge is exemplified by the discussions summarized under 'Relevance' about the tension between a focussed feature set which meets the narrow needs of one organization, versus the vision of a collective effort to build software for many.

Additionally, Sigmah operates in a very challenging area in a difficult field. Adoption focal points and SC members operate at Head Office, but are responsible for shaping, rolling out and then enforcing use of software which must be interacted with by users 'in the field'. These users, in addition to working in infrastructurally tougher environments, where access to power and stable internet are far worse, are often working long hours to meet high demands, of which project management is only one. Organizations may often seek to capture more information from the field than staff can practically fill out, and may require duplicative data entry, or configure complex workflows. Unfortunately, wherever the software specification is written by someone other than the user, there is also the potential for mismatched expectations and needs, and this can also be the case here. This is recognised in the adoption materials produced by the Sigmah team and the advice and support they provide to adoption focal points.

Software design and functionality does not operate in a vacuum, therefore, but as part of the interaction between field and headquarters - long a site of some tension in the humanitarian sector.

How effective was Sigmah's support to organizations adopting the software?

User support is via email, within time limits set by the service standards of the new business model. Responses tend to be timely, and there are no complaints from users, although former staff point out that although responses are swift, non-critical bug fixes and improvements may take many months to schedule.

Many times interviewees underlined that the work, energy and dedication of the project facilitator made the Sigmah project possible. His unique skillset - his software engineering degree, personal approach and, by now, considerable experience in information management for the humanitarian sector were indispensable. Unfortunately this also has a negative effect on the likelihood of long-term sustainability for the Sigmah project as currently formulated. The project facilitator would be hard to replace, both in terms of skillset and in terms of willingness to undertake the scope and volume of work required of the Sigmah Project Facilitator.

How effectively did the planned governance arrangement function in practice?

The group of NGOs who commissioned the needs assessment that led to the Sigmah project also formed the first Steering Cooperative (SC), a collaborative body which was intended to provide joint funding, including contributions direct from the agencies represented and fundraising together; decision-making; and advocacy for the software. This is universally seen as an appropriate beginning, with strong relationships between members and a joint vision and motivation to build something for the sector.

After the first few months, everything became trickier. Early versions of the software were necessarily limited in functionality, and as problems arose with technical partners and needs differed, an early SC member described sometimes fractious discussions to agree about the direction the software should take. Even strong proponents of the project found it hard to 'sell' the software internally. Those involved with the SC in later years describe frustration with the way it worked. Those using the software and making efforts to provide feedback at times felt that decisions were dominated by those who were not, building ill will. The group sometimes spent a lot of time debating eventualities which did not ultimately come to pass, while important business decisions were not discussed. Some Groupe URD staff felt the mechanism was time-consuming and costly, losing the project agility in a competitive market where decisions need to be fast. However, the project facilitator does not feel the group to be a burden.

Although the original intent had been for the SC to share the financial and leadership responsibility for the project, participation in the SC and support to the project have declined in recent years, a source of some anger among Groupe URD staff. Only one quarter of the SC members pay for the software, and even those contributions are only a few thousand Euros, although some SC members continued to provide core funding for the software even when it became clear that they would not be using it themselves. SC participation now is frequently by staff relatively new to the project, who are therefore less informed. Members have decided to use competitor software, or even commission their own software, rather than contribute funds or fundraise to build or improve the features they need in Sigmah.

Whether or not the SC provided good and timely support and decision-making to the Sigmah team, the perception among the group that the body was not functioning well has led to doubts as to the wisdom of the decisions it took and the direction of the project, which, given the collaborative nature of the project, are more than usually damaging to its functioning. Combined with the frustration of the Sigmah team at the defection of key organizations and the failure of many to contribute more than minimal funding, the mutual trust and goodwill that would be required for this type of relatively informal leadership to work seem to have ebbed away. If the project were to be spun out into its own organization, this body would have to function as its board, and would certainly have to operate in a more decisive manner. It may be now that the project would benefit from a firmer terms of reference for this group, now that the initial group of colleagues have moved on; with clear voting procedures more clearly tied to use of and contribution to the software, and a clear role for the Sigmah project facilitator in terms of decision-making.

How effectively did Groupe URD run the project?

Despite the challenges with the software and the funding for the project, most interviewees feel that Groupe URD has an impossible task and that challenges it experiences cannot be attributed to Groupe URD's management. Recent users report no delays and good communication with the project.

However, communication is an area which may need to be improved going forward. Groupe URD have had problems with late or poor delivery by external software developers, including in one case, the partner going bankrupt. These challenges have caused large delays to planned releases. The project facilitator feels that this may be because the project has so much built-in complexity that he, users, the technical partner and his colleagues underestimate how long it will take to build it. In order to offset these missed deadlines, the release candidate for version 2.2 has been released to those partners who complained.

Almost all interviewed users both past and present described these delays, and some felt they were poorly communicated. For example, there is some evidence in internal documentation that even major stakeholders were not fully aware until late 2016 that version 3 was not fully funded. For adoption focal points, the delays created ill will towards the process which became

an additional internal challenge for them to manage. However, the Groupe URD team feel that the delays were understandable and that the challenges and trade-offs had been made clear.

Beyond users and the SC, communications with the user base have been sparse since funding for the Groupe URD communications person to support on the project ran out in 2016. A new website in that year improved the information publicly available, with simpler information for a more clearly targeted audience. Analytics for the website is implemented but not currently reviewed.

Groupe URD does not currently operate formal project management procedures in its internal governance of the Sigmah project. The Project facilitator runs a Kanban board in his office to track deliverables in the short and longer term. There are no regular management meetings or internal reporting requirements beyond responding to donor reporting needs. No risk register is maintained. Internal financial monitoring tools did not include indirect costs, and do not compare cost against deliverables, although new templates have recently been produced which do provide this information. External reporting is limited to the SC meetings, and AFD reporting. Although regular check-in meetings are held, and there have been more frequent internal high-level strategic meetings in the last 18 months, senior staff at Groupe URD feel they lack the experience and skillset to support the project facilitator with issues such as negotiating with technical partners. The Groupe URD board feel similarly unable to provide an informed view. There are no regular financial monitoring meetings.

While we do not suggest that major challenges arose from project management failings by Groupe URD, this is one area where relatively simple, low-cost changes to internal management practice, and more structured communications and documentation with users might make a large difference, leading to challenges and delays being spotted and communicated earlier, and rebuilding trust and confidence in Groupe URD's execution of the project both internally and among its older users.

Efficiency

Efficiency measures outputs -- qualitative and quantitative -- in relation to the inputs. It is an economic term which signifies that the project or program uses the least costly approach possible in order to achieve the desired results.

Code review: evaluating the conceptual and technical basis of the software, including install and maintenance procedures (see also Annex 4)

Our code reviewer focussed on three main issues:

- first time setup with Sigmah for a developer
- supporting tools and open source community for the project
- the stack of libraries, frameworks and dependencies used by Sigmah

Sigmah seems a mature and professionally-developed platform and does not need a rewrite based on the technology. The tech stack is not very current, but there are clear opportunities to update, and perhaps migrate away from less popular/outdated dependencies.

For a new developer to the project, the platform is extensively documented, although some of the information is buried in many nested links and the process of getting started was protracted. However help was readily available from the project facilitator and via the project IRC channel. There are no setup instructions for OSX (Mac) users, but ultimately the setup on OSX was very similar to the instructions provided for Linux.

Finding the basic developer tools from the project landing page at <https://github.com/sigmah-dev/sigmah> is simple, although the code, documentation and bug tracking are all hosted on different platforms. Contributing to each requires separate registration and login. Some of the platforms used are a little outdated.

There are some simple updates and ongoing maintenance which could be done to keep the project looking more 'alive' and interesting. However, there is currently no funding and no time to carry out this work.

Impact

The positive and negative changes produced by the introduction of the Sigmah platform on the organizations using it, intended or unintended.

How the Sigmah value proposition compared with reality for the 8 organizations that have adopted the software;

For many interviewees, Sigmah is 'a dream unfulfilled', still at prototype stage. One said 'I'm a proponent of the dream, not the reality'.

Interviewees were asked to comment on whether each element of Sigmah's value proposition was a true need, and whether it had been met.

Efficient project management

All interviewees confirmed that software that provided efficient project management was a clear need. Their comments on how far this need was met are summarised under the Effectiveness criterion.

Ethical open-source software

For many users this seems to have been a major motivation and a reason for using and supporting Sigmah. In contrast to the common conflation of open source with 'free as in beer', rather than understanding it to mean 'free as in speech', many respondents clearly understood that the aim here was to jointly build something that would benefit many NGOs. This may even

be because, in French, different words are used to denote different benefits: 'libre' as opposed to 'gratuit'. The 'mutualization' aspect of both the initial SC set-up, and the later selection of Sigmah by many NGOs seemed to be important. Interviewees spoke about not wanting to invest in software that wasn't open source and so wouldn't benefit anyone else, and conversely, valuing the opportunity to invest in something that would.

However, open source has its misapprehensions. As one interviewee noted, even here 'open source' is assumed to be low-cost, with smaller organizations seeing it as an affordable option for them. Larger organizations fear poor security and having to run their own servers and architecture, without corporate 24-hour support.

Additionally, in recent years the feeling has grown that at the director level, organizations are more interested in efficiency and effectiveness than in the open source roots of a platform.

Professional support

The Sigmah team conduct training and provide user support via email within the service standards agreed in their business model. One or two users from previous years described having a strong personal relationship with the project facilitator which facilitated them getting the support they needed, and hesitation about whether this would translate well to other colleagues.

Other comments on the effectiveness of support are included here under the Effectiveness criterion.

Continuous improvement in organizational working

In some cases, the process of implementing Sigmah seems to have helped organizations to have an internal conversation about their needs and priorities in terms of information and project management. HI describe the Nepal country manager using the Sigmah system to enforce planning and monitoring policy. An SC member felt that the project had produced valuable lessons learned at the strategic level both for project management and the implementation of project management software. In one case, the software itself was felt to have had this effect simply through its support to project management functions, although this was hampered by the unintuitive design and the fact that the system can be unstable and slow at times.

Cost-effectiveness

Here Sigmah is often rated highly, because the current fee structure is widely regarded as being very cheap. There may be the opportunity here to charge more, as it seems that the maximum price was effectively set by one user NGO's budget. Most others acknowledge that any proprietary, custom or alternative system would likely be more expensive.

However, because the software does not meet their needs, any funds spent on it are too much, so some noted that the software in this sense does not represent value for money. Additionally, some of the longer-term members of the project noted that the configuration and adoption process and the governance model is time-intensive and has ‘cost a lot of energy and staff time’.

Interoperability

This remains largely aspirational and is acknowledged as such, although it is possible to export and import information in Excel formats. One interviewee noted that basic APIs and interoperability with common software such as Microsoft Dynamics for financial management should be a priority over the ability to share data with other Sigmah users.

An improvement in collective functioning

This aspect of the value proposition is seen as very ambitious and has not been achieved, in particular because none of the functionality has yet been implemented. However, it has inspired discussions within the francophone humanitarian sector about the information management needs of NGOs.

Sustainability

Sustainability is concerned with measuring whether the benefits of a technology tool or platform are likely to continue after donor funding has been withdrawn.

How Sigmah’s service model and scaling cost structure, which included adoption support and bespoke development, impacted client capacity and readiness and affected the overall business

The Sigmah project is at a crossroads, as all Groupe URD staff noted in their interviews. Although the project is attracting new clients, there are not enough to make the current budget balance. The new business model is unproven - although they know how many users they would need to balance the budget, they have no clear plan for how to get there. Of the founding NGOs, many have ‘left’ the project, adopting other project management platforms and reducing their involvement in the SC and their financial contributions to the project. New members typically pay for their use of the platform, but nothing above that. Even new users say they would like to see more users help grow the platform.

A major challenge for the project has been the failure to secure 50% co-financing matching the grant from AFD. While this was a known condition of the funds prior to seeking them, Groupe URD anticipated being able to raise additional funds more easily than was ultimately realized. In contrast to their usual procedure, the team accepted the funds without having the co-financing in place. The financial controller instituted limits on spending, ensuring that funds were only internally released once the matched income was assured. Given that much of this income was from user fees and consulting, amounts were relatively small - and the

development of new features had to be put on hold. This contributed to the mismatch between aspiration and achievement for version 2 of Sigmah, and as the team did not feel they could include bug fixes and maintenance in the budget for the funding, it has further contributed to the technical debt that the platform now faces (where features are built, but not fully stable or complete). Some stakeholders began to reassess their involvement in the project when it became clear that co-financing for the AFD grant would not be easy to find.

Today's funding marketplace is also a difficult one for funding open-source software. Established systems are hard to fundraise for, with money more often going to new innovations than to maintaining and improving existing ones. The emphasis now will be on finding a business model where the software's value generates income. AFD remains a supportive donor, but would no doubt want to see a sustainable business model in place or on its way before significant additional funding were to materialise.

But in an increasingly competitive space, the software does not compare favourably to other market offerings. The UI of the software has improved incrementally, but the platform is now nine years old and shows its age. Many more competitors have sprung up, with more accessible user interfaces and added benefits like versions for tablet and smartphone. Although the will and the commitment of Groupe URD and the Sigmah team cannot be doubted, they are not currently structured either in staff, management skillset or resourcing to provide enterprise software, which is implied by large-scale adoption by major agencies. The team plans to continue to try to attract new NGOs, particularly European ones, outside the humanitarian sector - smaller users, who may be less demanding adopters.

At present, there is no written budget which accurately reflects the true cost of the platform, including the operational costs such as insurance and utilities that support organizations like Groupe URD. This knowledge will be important to any full accounting of what it would take to make Sigmah truly sustainable, particularly if it were to be spun out as a separate organization. Additional investment in design, maintenance and bug fixes, APIs and other basic improvements and in marketing are likely to be necessary for the current business model to be successful.

Do users have the resources and capacity to use the tool effectively, and how would this change if the Groupe URD project ended?

The project facilitator provides support to users for configuration and needs identification, functional design, and training, as well as answering technical support queries and representing the project for internal advocacy. With this support, the staff that the project facilitator works with are able to understand and use the software. However, training and advocating to field staff is a difficult challenge, and it may be that those headquarters advocates could use additional support to effectively design and roll out the software for project managers in the field.

Making software which is truly easy to pick up and use is a large design challenge, particularly with complex software which tries to do more than one thing. It seems therefore unlikely that this could be achieved without specific investment in user interface design and user experience.

Coherence

Coherence is related to the broader policy context (development, market, communication networks, data standards and interoperability mandates, national and international law) within which a technology was developed and implemented.

Is the project team confident that the project is in compliance with existing legal and regulatory frameworks?

The software is externally hosted, meaning that the data being held by the platform is hosted and managed by the external provider and not by Groupe URD. However, given that the project facilitator is writing code for the project and holds such a pivotal role, in the event of some catastrophic breach or data loss resulting in harm, Groupe URD might not escape liability. At present, key Groupe URD operations staff felt unable to comment on the law in this area and had not worked to establish and mitigate any vulnerability to Groupe URD arising from its hosting of the Sigmah project.

Separately, risk management is currently not documented for the project. This would be a relatively simple step to add if Groupe URD worked to improve and better document project management structures around the project.

Recommendations

During the inception phase, four specific process themes have emerged which cut across the findings and the criteria. This section is arranged under those four themes. Many of the recommendations are inter-dependent - for example, those relating to business model might require suggestions made under technology or adoption to be successful.

Technical basis and design of the platform

Code review found a sound code base with good documentation, well-set up for access that developers would need to contribute. Further recommendations appear in the full Code Review report, below at Annex 4, but in summary:

- Some improvements could be made to make it simpler for developers new to the project to get started faster
- Some simple changes could be made to make it simpler to find key instructions
- The project could be made to build and deploy faster

- Some steps could be taken to make the project more attractive to third party developers, such as upgrading to the newest versions of libraries and using commonly used bug tracking platforms like Github Issues
- Investigate feasibility of replacing GWT in the longer-term with a modern single-page Javascript app framework that is more likely to interest developers and will have a wider base of potential contributors
- For potential contributors unfamiliar with Sigmah, it might be helpful to have a demo instance that is accessible and linked from Github so they can quickly and easily play with the product. This might be less of a concern if developer setup were simpler

In addition, there may be some technical considerations as the Sigmah team contemplate scaling their current set-up for more end-users and more instances of Sigmah:

- Consider automating key elements of instance maintenance
- Prioritize 'basic' features such as search which have not yet been implemented
- Ultimately, review the system architecture that requires totally separate instances, and consider whether there are aspects of each instance that could be improved for more efficient handling and scaling
- Commission user experience research to understand pain points for end users in current design
- In longer term, explore user experience redesign, although this may not be efficient or possible with the current code base
- Consider moving development in-house. This is expensive, but (particularly if the project is spun out of Groupe URD) could even reduce costs compared to external companies if significant development is planned, while potentially improving response times on bug fixes and creating more dedicated, consistent capacity around the project. This developer team might want to be two or more coders, supported by a business analyst, support personnel (who could also handle QA) and a designer, although this last might not need to be full-time.

Adoption, process design and support

The team may need to review the compatibility of their larger and more demanding NGO clients, who may need focussed functionality to scale effectively to hundreds of users storing thousands of documents; and the smaller NGO users who might not be able to pay for their own functionality or training but need a fairly full suite of products. It may be necessary to choose one over the other, or to be clear about who is the priority.

Informing this analysis should be a competitive analysis to understand the alternative softwares available both for those focussed features and for the broader project management needs of smaller users. The feature backlog should be re-prioritised based on this information.

Market analysis, to understand the addressable markets involved, would also help shed light on which group might help make Sigmah competitive.

If the smaller users are to be the focus, or even a significant income stream, the Sigmah team need to review their capacity and approach to marketing, in order to be able to grow the number of new users they are capturing.

Finally, as the team noted in the HIF Journey to Scale application, there is still no evidence of the impact of using Sigmah. This should be gathered in order to strengthen the value proposition and test the hypothesis in the theory of change.

Governance

It may be that Groupe URD is no longer the right home for the project. However, Sigmah may not be in a strong enough position at present for a jump to a new institutional home to be possible. The question should be borne in mind for the future.

In the meantime, the roles of Sigmah management and the SC should be clarified and strengthened. Should Sigmah ever spin out of Groupe URD, the SC will have to function as a board. We suggest that the SC be turned into a more formal Board, with a Chair and clear Terms of Reference. Membership may need to be more strongly tied to use of the software or contributions to the project, perhaps with some independent members brought in for their expertise, e.g. product, platform or marketing. The team should make clear the process for feature prioritization.

Internally, the Sigmah team should consider strengthening their project management processes. This could include:

- Review and reaffirmation of the Project Facilitator job description.
- Stronger project management, with clear workplan, reporting structure and timetable, and risk register requirements.
- Consider running a smaller steering group which meets monthly or quarterly, focussed on delivery, with strategic review still at SC level. That Steering Group could include advisors with experience of product and software development to support the project facilitator.
- Regular budget review and reporting.

Business model and sustainability

Based on the research (competitive and market analysis) suggested above, the business model should be reviewed. New forecasts and budgets must make provision for user support, bug fixes, maintenance and marketing, and should budget more generously for the time it takes to develop and ship a new feature. A good rule of thumb is to estimate the time required and then add 20-50%.

Groupe URD and the SC could consider using this evaluation, their experiences and the testimony of their members to share the experience of developing open source software in a non-profit, grant-funded environment. Despite the best efforts of the Sigmah team and the SC members, the project has at times fallen prey to all the traditional problems of such projects: insufficient funding compounded by reluctance to invest in maintenance; unrealistic expectations and low procurement budgets; decision-making by committee and overstretched staff. However, given the strong relationships that remain and the willingness of AFD to listen and help think through challenges, there may be an opportunity here to work together to set a new model for these types of projects.

It is clear that there are key differences between the needs of most non-profit projects and the needs of software, and thought should be given as to the ideal funding mechanisms for these types of projects which provide an important asset or service to the entire humanitarian sector. The next phase of Sigmah's development could be an opportunity to shed light on these challenges, and to develop a better way of doing things.

Annex 1: Scope of work

Below is the original RFP as advertised on the ALNAP website.

1. Introduction

The Sigmah project is already almost a decade old. Since it began, the digital revolution has increasingly become part of our everyday reality. ICT solutions and opportunities are now often seen as a natural complementary dimension to consider when looking at the issues facing the international aid sector.

The “Grand Bargain” that was agreed at the World Humanitarian Summit in 2016 is a good example of the importance given to ICT by humanitarian top management. The detailed commitments that were made by aid organizations and donors to tackle the challenges currently facing the humanitarian sector, from transparency to community engagement, included an ICT dimension. There are two main reasons for this. Firstly, ICT can increase efficiency due to automation. And secondly, in contrast to repeated calls for increased coordination, they have the ability to make stakeholders focus on shared and operational solutions, such as a concrete tool or information standards.

Mutualizing means and improving efficiency are also the two key objectives of the Sigmah project. The Sigmah Steering Cooperative and Groupe URD hope that this first external evaluation of the project will not only provide guidance for the future of our project, but will also provide a detailed study of the benefits and shortcomings of the project, and the pros and cons of cooperating to develop an ICT solution for the sector.

2. Sigmah in a nutshell:

Sigmah is a multi-lingual, open source project management software for the humanitarian sector but is also a collaborative project which has grown out of a participatory approach with its users.

In order to ensure that the software is as well adapted as possible to the needs of humanitarian organizations, and that they continue to remain interested in the project, they are involved in the development and evolution of the software.

A Steering Cooperative was therefore set-up and is currently made up of 14 organizations, which share the same needs: Acting For Life, Action Contre la Faim, CARE Nederland, Comité de Secours Internationaux, Croix-Rouge Française, Croix-Rouge Luxembourgeoise, Etc. Terra, Equilibres & Populations, Groupe URD, Handicap International, Médecins du Monde, Première Urgence Internationale, Solidarités International, Triangle Génération Humanitaire.

Groupe URD is the facilitator for the Cooperative, using its expertise in developing Quality assurance for the humanitarian sector and lessons learnt from the COMPAS method, specifically the Dynamic COMPAS, software for the management of humanitarian projects.

Software development and maintenance is done by technical partners: the three companies Netapsys, Atol C&D and Code Lutin play those roles.

All major evolutions made on the project has been possible thanks to the support of major donors like the European Commission ECHO office, the Agence Française de Développement

(AFD), the Humanitarian Innovation Fund (HIF), the Rhône-Alpes and Ile-de-France regions, or the Fondation pour le Progrès de l'Homme (FPH).

Sigmah is an innovation which is in the process of scaling. With 8 organizations currently using the product, the innovation has yet a limited impact on the sector. But indicators, such as the increase of investment from using organizations for new features, show the potential for scaling.

Soon reaching the end of the AFD-supported project, the time has come to organise an external evaluation both to evaluate the outcome of this innovation, and to help define strategies to reach scale.

3. Purpose of the evaluation:

Bring to the Steering Cooperative and Groupe URD an assessment of the outcomes of the Sigmah software and an overall picture, the strengths and weaknesses of the project, for them to be able to make strategic decisions about its future.

4. Evaluation questions:

The main questions of the evaluation are:

- How effective is the adoption of the Sigmah software in improving the quality and effectiveness of project management mechanisms for organizations?
- How relevant and solid are the conceptual and technical basis of the software to respond to users evolving needs? What major features are required to fit organizations' needs?
- How effective and efficient have the Steering Cooperative and Groupe URD been to host and manage Sigmah project up to its current state of development?
- Which recommendations can be made and which scenarios can be elaborated to reinforce the project's impact on the sector, and its sustainability including its financial sustainability (grants, business model) and its governance?

5. Users of the evaluation

Direct users of the evaluation are:

- The Sigmah steering cooperative;
- Users of Sigmah software;
- Groupe URD teams, both at project and management/directorate levels.

Indirect users of the evaluation are:

- Donors who supported the project so far or willing to support it for further developments;
- Humanitarian community as a whole, interested in learning from this collaborative and innovative experience.

6. Deliverables:

- An inception report detailing the methods and tools proposed for the evaluation;
- A draft report presenting the findings and recommendations;
- A separate report on the technical evaluation of the source code and technical documentation of the project

- A slide presentation developed to facilitate a presentation to the Steering Cooperative and Groupe URD's management and team
- The final evaluation report.

7. Proposed methodology:

We suggest the following elements of methodology for the evaluation, which will be discussed further during the inception phase:

- Code and code documentation analysis
- Project documents review and analysis (project proposals, reporting documents, etc.)
- A survey should be conducted with current Sigmah users in order to collect their opinions on the software and the project
- Current and future users' needs' assessment
- Interviews with current and previous users on impact and satisfaction perceptions, and with organizations that didn't choose to use Sigmah in order to understand their choice
- Interviews with donors (current and potential) and potential users
- Interviews with the Steering Cooperative on the project management
- Interviews with Groupe URD (Project team and management)

8. Qualifications and profile of the consultant(s)

- Excellent track record of conducting and managing evaluations
- Experience in evaluating digital innovations is an asset
- Good knowledge of the international aid sector (humanitarian and development)
- Experience in managing information systems projects
- Experience in developing Java web applications, knowledge of GWT framework is an asset
- Excellent verbal and written skills in English are essential, while strong verbal and written skills in French are also important in the team

9. Process

This evaluation will start in April 2017 and is expected to require more or less 30 working days for the team of consultants.

Part of the consultancy will be home-based, with travels to Groupe URD headquarters in Plaisians, France, and possibly to other NGOs headquarters in Europe. Workshops could be an option, possibly with organizations in order to collect and understand their needs and necessarily a workshop at Groupe URD HQ for a restitution.

Supervision and reporting: the evaluator(s) will be asked to keep Groupe URD's focal point abreast of progress over the course of the evaluation process.

Annex 2: List of documents reviewed

- Sigmah Recueil Initial Besoins
- Présentation d'étude faisabilité
- Funding proposals
 - HIF Funding proposal
 - AFD proposal
- Theory of change work
 - Sigmah Theory of Change
 - Sigmah Journey to Scale Theory of Change
 - Sigmah MECE Diagrams
- Sigmah Business Model Canvas and Service Packages
- Sigmah Objectives Path
- Prioritization and critique
 - SWOT du projet Sigmah
 - Bilan Besoins avec graphique
 - HI Note Enjeux Sigmah
 - HI Note Enjeux Sigmah avec réponse Groupe URD
- Video: [The quality of humanitarian aid from the perspective of an information system](#)
- Operational documents
 - Annual budget
 - Contract template
 - Test plan

Annex 3: Full list of evaluation questions

SIMLab's evaluation criteria are based on the OECD-DAC Criteria for the Evaluation of Development Projects, and the extensions and adaptations to them we developed for our [Monitoring and Evaluation Framework](#). Below are the criteria, with the specific lines of enquiry we plan to pursue in this evaluation. Based on our findings, we will put forward recommendations for all criteria, but during the inception phase, four specific process themes have emerged which should be reflected on thoroughly in the report, although they may overlap across criteria:

- Technical basis of the platform
- Adoption, design and support
- Governance
- Business model and sustainability

Below are the key evaluation questions which arise under each criterion - those in bold are particularly interesting to the Sigmah team. The evaluation may not be able to address all these questions in detail, but aims to reflect on many or most of them.

- **Relevance** - The extent to which choices made in the project are appropriately suited to the priorities, capacities and context of the target groups or organizations. In this analysis, we can also draw on the work we have done in the past to examine and be able to begin to predict organizational readiness to adopt technologies, based on the criteria we developed for our Credit project (2014-16).

Key questions:

- Does the activity, i.e. developing and promoting the Sigmah platform, tend to fulfil the stated goal of the project per the theory of change?
- How appropriate is the choice of Sigmah's technical platform, its license and coding approach to the achievement of the stated goal?
- **How relevant is the Sigmah platform itself, its feature set and price point to target user organizations, given their priorities, capacities and the market context?** How were the design and feature set tailored to the changing needs of the users? Was the approach taken appropriate to their culture, in terms of risk tolerance and innovation?
- How appropriate was the governance model to this type of project, to software? How appropriate were the drivers of influence on the feature set and priorities of the road map?

- How appropriate and relevant was the business plan to this type of project, to software, to the market?
- **How far was the culture and approach of Groupe URD a factor in the decisions made**, and how far was this appropriate in the achievement of the stated goal? Was Groupe URD the right actor to build Sigmah?
- **Effectiveness** - A measure of the extent to which an information and communication channel, technology tool, technology platform, or a combination of these attains its objectives.
 - **How did the Sigmah project perform against the intended outcomes and outputs: “an improvement in terms of quality and effectiveness is observed in project management mechanisms of organizations using Sigmah for more than a year”**
 - How were these objectives formulated, by whom, and was this appropriate?
 - **How far has the software, met the evolving needs and expectations of adopting organizations? What were the major factors here? What would be necessary for Sigmah to meet their expectations?**
 - **How effective was Sigmah’s support to organizations adopting the software?**
 - When organizations stop using Sigmah, what are the reasons?
 - How does Sigmah compare against non-use, or against competitors on key metrics?
 - **How effectively did the planned governance arrangement function in practice? How effectively did Groupe URD run the project?**
 - How were feedback and failures acknowledged and learning incorporated? ³
- **Efficiency** - Efficiency measures outputs -- qualitative and quantitative -- in relation to the inputs. It is an economic term which signifies that the project or program uses the least costly approach possible in order to achieve the desired results.
 - **Code Review: evaluating the conceptual and technical basis of the software, including install and maintenance procedures (see Annex 1)**
 - Was the technology tool rollout carried out as planned and on time? If not, what were the deviations from the plan, and how were they handled?

³ Supplementary questions: How did the software perform: how prevalent were bugs and errors? Is it internationalized effectively? Did users have access to good technical support?

- How much time was spent providing user support? Were adjustments made based on what was learned from those asking for support? Did the need for additional support diminish over time?⁴
- **Impact** - The positive and negative changes produced by the introduction of the Sigmah platform on the organizations using it, intended or unintended.
 - **How the Sigmah value proposition of efficient project management, ethical open-source software, professional support, continuous improvement in organizational working, cost-effectiveness and interoperability compared with reality for the 8 organizations that have adopted the software;**
 - How far has the adoption and use of Sigmah allowed for continuous improvement in efficiency, quality, accountability, and interoperability in organizational working?
 - Is there evidence of similar improvement in collective functioning attributable to Sigmah?
 - How has the project evaluated and mitigated risks relating to the use and management of their data? Were security and privacy protocols put into place during program design and implementation/rollout? How were protocols specifically integrated to ensure protection for more vulnerable populations or groups? What risk-mitigation steps were taken in case of any security holes found or suspected? Were there any breaches? How were they addressed?
- **Sustainability** Sustainability is concerned with measuring whether the benefits of a technology tool or platform are likely to continue after donor funding has been withdrawn.
 - How Sigmah has performed in the current marketplace, given the opportunities and threats that it faces and the changing competitor market offering
 - **How Sigmah's service model and scaling cost structure, which included adoption support and bespoke development, impacted client capacity and readiness and affected the overall business;**
 - How the open-source license impacted the business model, competitiveness, and the capacity of the team to continue to develop the software; what was the justification (beyond public funding), and did the hypothesis that the public benefit might support sustainability prove to be true? As the tool is open source, is there sufficient capacity to continue to maintain changes and updates to it?
 - How the customer base compared to the team's expectations and projections, and the impact this has had on the governance model; need for improved targeting of new members outside the humanitarian space
 - **Do users have the resources and capacity to use the tool effectively, and how would this change if the Groupe URD project ended?**

⁴ Supplementary questions: To what extent did this offer data that enabled improvements in roll-out, uptake of the tool/platform, or feedback that informed the overall program?

- **Coherence** Coherence is related to the broader policy context (development, market, communication networks, data standards and interoperability mandates, national and international law) within which a technology was developed and implemented.
 - Has the project considered interoperability of platforms (for example, ensured that APIs are available) and standard data formats (so that data export is possible) to support sustainability and use of the tool in an ecosystem of other products?
 - Is the project team confident that the project is in compliance with existing legal and regulatory frameworks?⁵

⁵ Supplementary questions: How does open source, and this project more broadly, fit within Groupe URD and its culture? How coherent are Sigmah adoptions with mandate and culture of adopting organizations?

Annex 4: Full report of code review

Scope of work

Evaluate provided software considering the following:

- Relevance and solidity of conceptual and technical bases of the software, including
 - build, deployment & release processes; infrastructure requirements
 - security
 - developer & contributor practices , particularly from the point of view of new, independent contributors
 - Does the platform provide clean integration points for inserting or retrieving data (APIs)?
 - Does the platform provide clean and simple integration points for extending functionality?
- Maintainability and extensibility of the code & libraries, including
 - appropriateness of tech stack
 - To what extent would the code be well-suited to developing and maintaining an open-source community?
 - How well-run is the project at the moment as a FOSS community?
 - How are bugs and errors managed?
 - Is it internationalized, and is this well-realized?
- Test coverage and apparent maintainability

Activities performed and deliverables produced by Contractor: Report answering above questions (max 10 pages). Evidence/research outputs may be included as annexes, if necessary.

Report

In this document, I aim to evaluate the Sigmah platform from the perspective of an open source developer, new to the project.

Some of my suggestions have generated discussion on IRC and/or mailing list. Where possible I have linked these.

Investigation

This document covers:

- first time setup with Sigmah for a developer
- supporting tools and open source community for the project
- the stack of libraries, frameworks and dependencies used by Sigmah

Tool stack

Sigmah appears to be extensively documented, and on digging I generally managed to find the information that I was looking for. For a first-time developer, there are a lot of links to follow to get to the setup instructions, and I resorted to getting help on IRC when having trouble setting up the database. There are no setup instructions for OSX (Mac) users, but ultimately the setup on OSX was very similar to the instructions provided for Linux.

Finding the basic developer tools from the project landing page at <https://github.com/sigmah-dev/sigmah> is simple, although the code, documentation and bug tracking are all hosted on different platforms. Contributing to each requires separate registration and login (Github, Dokuwiki and Mantis respectively).

The `master` branch of the project, and pull requests, are tested automatically on Travis CI.

The Travis/Github stack will be familiar to most open source developers, although Mantis and Dokuwiki are not so well integrated with Github and due to their age will not be familiar to so many developers.

Mailing list and IRC seem active, although the mailing list is not linked from the `README.md`.

Tech Stack

Here is a selection of the key dependencies, and how current the versions being used are:

Library	Version used by Sigmah	Latest release
GWT (front-end)	2.4.0 (Sept 2011)	2.8.1 (April 2017)
gxt (front-end widgets)	2.3.1-gwt22 (Oct 2013)	4.0.0 (March 2016)
hibernate (data storage)	4.2.14.Final (June 2014)	5.2.10.Final (April 2017)
guice (dependency injection)	3.0 (March 2011)	4.10 (June 2016)
quartz (task scheduling)	1.5.2 (August 2006)	2.3.0 (April 2017)

Sencha GXT

GXT was bought by a company called Sencha, apparently before the release of version 3 in 2012. They do not seem to actively promote their open source releases, but the binaries and source are available from <https://maven.sencha.com/repo/gpl-release/com/sencha/gxt/>. Under the terms of the license, these files could all be uploaded to Maven Central, which would probably be more reliable going forwards.

Even their latest release of GXT is over a year old, and depends on an outdated version of GWT (2.7.0).

Olivier and I discovered the GXT updates while I was researching for this report, so some work may have been done already to update GXT (see <https://groups.google.com/forum/#!topic/sigmah-dev/wZMq8lXY9pw>).

Getting started as a developer

The developer documentation is quite extensive, but the process of setting up a dev environment was protracted. After finding the documentation, which lies 3 or 4 links deep from the project's github page, the following all took up some time:

- installing and correctly setting up PostgreSQL
- modifying `pom.xml` to reflect the newly-created database and db user
- making sure that the database is correctly configured. `mvn flyway:migrate` helped with this, but it was far down the documentation. It should ideally be run `_before_`mvn install``
- installing and correctly setting up tomcat
- determining how to deploy the WAR to local tomcat
- working out how to log in as a test user

Also there are no setup instructions currently included for OSX. These only deviated significantly from the Linux instructions with respect to setting up PostgreSQL.

To rebuild the WAR and redeploy to tomcat, I used the following:

```
```bash
mvn clean package -Psigmah-dev && \
mv target/sigmah-*.war \
/usr/local/Cellar/tomcat/8.5.15/libexec/webapps
```
```

This takes around 2 minutes 45 seconds on 2014 MBP i5 2.6GHz 16 GB RAM.

Conclusions

In brief: Sigmah seems a mature and professionally-developed platform. If it is serving needs of users in its current incarnation, it would seem like a big and unnecessary job to rewrite the platform. The tech stack is not very current, but there are clear opportunities to update, and perhaps migrate away from less popular/outdated dependencies.

How well managed is it as an "Open Source Project"?

Sigmah seems to have all the basics of a well-run open source project in place and reasonably maintained:

- publicly-hosted code
- a public bug tracker
- public release planning
- active public IRC channel
- active public mailing lists

How attractive is the project for potential contributors?

Why might third parties be motivated to contribute?

- users of the tools looking to fix bugs, make modifications
- students looking for an open source project as part of their course
- kind-hearted developers looking for humanitarian software to contribute to
- developers looking to improve their profile in the open source humanitarian sector
- people looking in general for some open source to do(??)

For the above:

- which are actually likely?
- what motivating factors are there?
- what de-motivating factors are there?

In my opinion the most likely source of useful contributions are:

- experienced developers using a tool who find and fix bugs relevant to them, or find limitations in functionality
- students in organised programs (e.g. Google Summer of Code)

Some factors that could be improved to make the project more attractive for potential contributors:

- make it clearer that there is an active user community

- migrate to latest versions of tools and JDK
- migrate away from unfashionable, perceived "dead" technology - especially GWT
- use more fashionable tools (e.g. github issues vs mantis, slack vs irc)

Recommendations

- make developer setup single-command. A clean approach to achieving this would be:
 - add support for H2 or other in-memory DB so that unit tests can be run out-of-the-box
 - add support for bundled/auto-configuration of servlet container out of the box, e.g. with <https://tomcat.apache.org/maven-plugin-2.2/> or <https://www.eclipse.org/jetty/documentation/current/jetty-maven-plugin.html#get-up-and-running>
 - ideally, do not require separate configuration of database environment. But if that cannot be achieved in the short-term, replace instructions to modify pom.xml in setup instructions with info on creating a `settings.xml` file (<https://groups.google.com/forum/#!topic/sigmah-dev/OayMJMp1ZIs>)
 - default directories for file and archive storage relative to project (and git-ignored)
- link directly to developer setup instructions from `README.md`, or better include the instructions directly in the `README.md` file
- include link to mailing list in `README.md`
- reduce the time taken for building and deploying so that when developing new features, changes can be seen more quickly
- make the project more attractive to third party contributors
 - upgrade to latest versions of libraries
 - upgrade to a supported version of JDK (currently JDK 8)
 - make it clearer which issues can easily be worked on by new contributors (e.g. link to http://www.sigmah.org/issues/search.php?tag_string=LowHangingFruits)
- simplify interactions with the bug tracker, e.g.
 - allow log-in with github account, to remove extra steps from becoming involved with reporting bugs or discussing issues
 - migrate to Github Issues, which will be more familiar to regular open source developers and potential contributors to Sigmah
- simplify git commit log by rebasing branches onto master before merging, and not using merge-commits
- make project feel more alive - e.g. if there is a way to include progress bars on the github homepage for the roadmap (http://www.sigmah.org/issues/roadmap_page.php)
- investigate feasibility of replacing GWT in the longer-term with a modern single-page Javascript app framework that is more likely to interest developers and will have a wider base of potential contributors
- for potential contributors unfamiliar with Sigmah, it might be helpful to have a demo instance that is accessible and linked from github so they can quickly and easily play with the product. This might be less of a concern if developer setup were simpler.

Extension work

Further investigation of the project and codebase that I would carry out given more time:

- add static analysis to get a general feel for the quality of the code (findbugs, PMD, CPD, code coverage; in that order)
- read through test code to:
 - evaluate the clarity with which test intent is expressed
 - level of testing and fragility (warning signs such as too much mocking)
- investigate recent response times for Mantis issues (answering, fixing)
- investigate current state of external APIs, and possibilities for implementation/extension
- find out what the "integration tests platform" at <http://www.urd.org/sigmah-testlink/login.php> is, and work out if it's useful
- how do releases happen? How frequent are they for (1) bugfixes and (2) features?
- what are the infrastructure requirements for hosting a Sigmah instance? How well documented is this? Are there tips for monitoring and maintaining live instances and associated services (database etc.)?
- could the controllers be transparently changed to serve JSON to GWT components, and then GWT slowly be swapped out for a modern Javascript single-page application framework?
- spend more time investigating the product roadmap and looking at the feasibility/simplicity of implementing a few upcoming features
- look further into the current state of translation and how public contributions might be made for new languages?

Appendices

Appendix A: Issues & Queries

Here are some general issues which I noticed:

- links for translators in e.g. `src/main/resources/org/sigmah/client/i18n/*.properties` are out of date (point to http://code.google.com/p/sigma-h/wiki/ContributionRules#Rules_for_coordination_with_translators)
- translation files say that Google Gears is required; Wikipedia says that it no longer exists ([https://en.wikipedia.org/wiki/Gears_\(software\)#End_of_life](https://en.wikipedia.org/wiki/Gears_(software)#End_of_life))
- configuration advice on JDKs is unclear: http://wiki.sigmah.org/doku.php?id=contributorguide:preparebuildenvironment#environment_and_tooling; Java source version should be enforced at compile-time. I haven't checked if it is, but the text on that page implies otherwise: "new syntax added in JDK7 and JDK8 should not be used".

- link to comic on <http://wiki.sigmah.org/doku.php?id=contributorguide:contributorguide> is dead
(http://www.euromedcp.eu/images/stories/infocommunications/hidden_disaster_en.pdf)
- Does the Sigmah user really need "create database" privilege?

Annex 5: Full list of interviewees

| Name | Agency | In person or Skype/phone | Role in relation to Sigmah project |
|-----------------------|---|---|------------------------------------|
| Emilie Aberlen | Agence Française de Développement | Skype | Donor |
| Isabelle Ba | Organization Internationale de la Francophonie | In person (translation by Olivier Sarrat) | User |
| Julien Carlier | tbc | In person | Former staff |
| Véronique de Geoffroy | Groupe URD | Skype/in person | Staff |
| François Grünewald | Groupe URD | Skype | Staff |
| Juliette Haim | Groupe URD | In person (translation by Charlotte Heward) | Staff (finance) |
| Charlotte Heward | Groupe URD | Skype | Staff |
| Charlotte Honorez | Fondation Follereau Luxembourg | Skype | User |
| Bastiaan van Ommen | Care Nederland | Skype | User |
| Antoine Petibon | Independent | Skype | Former Steering Cooperative |
| Olivier Sarrat | Groupe URD | Skype/in person | Staff |
| Tim Schoot Uiterkamp | Free Press Unlimited | Skype | User |
| Frédéric Séguret | Handicap International Federation & Handicap International Luxembourg | Skype | Former user |
| Jeanne Taisson | Groupe URD | In person | Staff (comms) |

| | | | |
|-------------|------------------|-------|------|
| Edmond Wach | Terre des Hommes | Skype | User |
|-------------|------------------|-------|------|

Annex 6: Interview guide

Sigmah evaluation

Interview Guide

About the project

Thank you for agreeing to be interviewed.

Is it ok to do this in English?

Groupe URD, the facilitator for Sigmah's Steering Cooperative, has commissioned an external evaluation of the project to provide an assessment of the outcomes of the Sigmah software and overall picture and strengths and weaknesses of the project to enable the Steering Cooperative and Groupe URD to make strategic decisions about its future.

Before we start

Introduce yourself and your background briefly. Thank them for doing the interview.

Read the following:

We will be asking you some questions about how you and your organization have interacted with the Sigmah project. I/we will be making notes as we go/recording our interview. The notes/recording will only be used for our research, and we will try our best to look after them so that no-one else can access them. We will not share them with Groupe URD or quote you directly without asking you first. We will destroy the notes/recording in two years. If you want us to destroy them sooner, or give you a copy, you can ask us.

Do you agree to those rules? Are you ok to continue the interview?

If yes, continue. If no, stop.

Questions

1. What has been your role in relation to the Sigmah project?
2. [Users] On a scale of 1-10 with 1 being low and 10 high, how likely are you to recommend Sigmah to others? Why?
3. [Users] What were your organization's needs at the time you joined the project?

4. [Users] Was the technology tool rollout carried out as planned and on time? If not, what were the deviations from the plan, and how were they handled?
5. [Users] What are some of the pain points of using Sigmah? For you? For your organization?
6. [Users] Have those needs been met by the Sigmah platform?
 - a. efficient project management
 - b. ethical open-source software
 - c. professional support
 - d. continuous improvement in organizational working
 - e. Cost-effectiveness
 - f. Interoperability
 - g. Improvement in collective functioning?
7. [Users] What level of support have you received from Sigmah?
8. [Non-users] Why did you not use Sigmah?
9. [Board/Staff] Was the technology tool rollout (new features etc) carried out as planned and on time? If not, what were the deviations from the plan, and how were they handled?
10. The project was governed by a SC of supporting and user organizations. Do you feel this was appropriate? What positive and negative effects did it have?
11. What were challenges with the governance arrangements and the project management by Groupe URD?
12. How important do you think the culture of Groupe URD and its role in the sector was to this project? Could it have happened anywhere else? Should it?
13. [OS only] How were objectives formulated. and who by?
14. [OS only] How much time was spent providing user support? Were adjustments made based on what was learned from those asking for support? Did the need for additional support diminish over time?
15. [OS and Veronique only] How has the project evaluated and mitigated risks relating to the use and management of their data? Were security and privacy protocols put into place during program design and implementation/rollout? How were protocols specifically integrated to ensure protection for more vulnerable populations or groups?

What risk-mitigation steps were taken in case of any security holes found or suspected? Were there any breaches? How were they addressed?

16. [OS] best thing to look at for costs of platform to date, to understand how the business model is unfolding?
17. [OS] Is the project team confident that the project is in compliance with existing legal and regulatory frameworks?

Annex 7: About SIMLab

Technology has limitless potential to improve lives - but technological systems can be poorly designed for the most vulnerable, locking them out with the wrong technology or requiring skills not everyone has. Our work targets the hardest-to-reach, people who are often struggling with overlapping challenges, systems that don't work for them, and basic barriers to fulfilments of their rights and basic needs. **At SIMLab, we know how to design sustainable, cost-effective and effective systems and services** that work, and allow people and organizations to respond effectively to these complex environments. **Our approach here is unique:** we meet people where they are, and involve them in the design of systems and services, not only empowering the people and organizations we support, but making sure the solutions we develop are lasting and effective.

To do this, we foreground 'inclusive' technology, from radio to social media, from SMS to Whatsapp, from the mobile web to community noticeboards: tools that are accessible and easy to use; relatively inexpensive to run and access, and most importantly - actually used, trusted and acted upon. Putting information and access to services in people's hands using the devices and systems they already have in their pockets and homes can empower them to make their own decisions about their lives; give them access to lifesaving emergency information; give them the tools to hold institutions to account; and help them to make changes and get help so they can break them out of cycles of disadvantage and become more resilient to shocks.

We began with a mission to lower barriers to social change through mobile technologies. We were originally the makers of FrontlineSMS, which is now a suite of products, including FrontlineCloud and FrontlineSync, that help organizations professionally manage text messages. FrontlineSMS has been downloaded over 200,000 times and is in use in more than 135 countries. SIMLab's impact has been recognized by the NGO community at large: in 2013, the Global Journal named us the #1 Tech NGO in the world, and we received a Google Impact Award jointly with Landesa. In 2011, SIMLab was awarded the Curry Stone Design Prize.

Our support to partners

SIMLab is a DC-based nonprofit. We work directly with human service providers, helping them execute on ground-breaking projects to improve their own programmatic work and advocacy. We help communities hold institutions accountable, help advocacy organizations fight through bureaucracy to protect rights, and help individuals to participate in the systems critical to their livelihoods. Our implementation work is critical to our learning and credibility, and gives us the opportunity to test and refine our thinking and frameworks, while supporting our partners to have an impact. We work with partners in a number of ways: through grant funding, whether direct or as a sub-grantee; through multi-year tendered projects; and through one-off consulting projects designed to support specific aspects of the project cycle or strategic development processes.

Additionally, we build on our existing learning and evidence base, share it, and support organizations through tools we develop - inclusive, empirically-based approaches to needs identification, system development and implementation, data management and systematizing monitoring and evaluation of technology in social change work.

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