



Connecting and Networking for Critical Human Needs

May 2018

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Funded by:

Cisco Foundation

GIZ and IBM

Special thanks to the Field Ready team

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Executive Summary

This project built lean and iterative MVPs and furthered partnership development towards a sustainable digital humanitarian production system. It had the goal to develop online platforms to make humanitarian supply production better, faster and cheaper. This project undertook various strategies to do this:

- Analyzing, developing and iterating design file sharing platform(s) to better understand item and user requirements (previously referred to as “Makepedia”)
- Piloting an item testing engagement to advance items towards a usable and reliable stage
- Analyzing marketing efforts to understand and grow engagement
- Conducting interviews to explore three systems proposed to help agencies buy from local manufactures in countries and communities where they work (referred to as “Makernet”)

Summary of the findings from the project:



Design File Sharing

It was realized that 1) across design sharing platforms, there is a common need for documentation standardization, item search and quality assessment of items; 2) in open hardware design items often do not reach a stage of usability and reliability; and 3) platform utilization for sharing designs takes dedicated and funded resources.



Engagement

There is interest by makers in testing humanitarian items and a need for field agencies to have the capacity to receive, filter and integrate the feedback into item development. There is indication that those closest to the problems seek to earn income from their engagement. In inviting engagement from the community, in-person efforts realized the highest return.



Manufacturer Mapping

There are strong indications that providing information on who manufactures what, where would help aid agencies to engage more with local manufacturers – particularly in remote areas with a large humanitarian response.



Supply Marketplace

This system was very popular with interviewees but there are some doubts as to whether it would really change buying behaviour. It is a very resource intensive system so it will not be pursued at present.



Transaction Engine

A system that allows a contract to be distributed among multiple small suppliers and manages quality has the potential to solve some of the challenges aid agencies are likely to face by moving to local procurement. Quality control features built into this concept were viewed as highly important, and useful in their own right.

Introduction

This report covers the *Connecting and Networking for Critical Human Needs* project. It was undertaken as part of the MakerNet concept of enabling local manufacturing and built on work done Field Ready, Humanitarian Makers and MakerNet. This work is based on the premise that local manufacturing offers many benefits (see figure 1) to enable better, faster and cheaper supply of humanitarian items, but there are challenges:

- 1) in digital design sharing due to existing platforms' lack of necessary functionality, and in collaboration (leveraging latent global skills) to advance open hardware to a usable and reliable stage for local manufacture due to low accessibility, coordination and awareness, and
- 2) in aid agencies engagement of local manufacturers due to lack of information, quality concerns, and administrative overheads from dealing with small-scale producers.

The project's work was to develop lean prototypes to address these challenges as well as engage stakeholders in their development. For the first challenge, three iterations of "Makepedia" were developed to further understanding on design file sharing and collaboration across borders, and the Humanitarian Makers community was invited to engage through feedback to inform the way forward. For the second challenge, three different systems were developed aimed at supporting aid agencies to engage more with local manufacturers, and stakeholders were interviewed to receive feedback and inform the way forward.

This report is structured such that each project initiative follows this outline:

1. Hypothesis
2. Tests or Actions
3. Key Findings
4. Conclusions

Figure 1: Benefits of using local manufacturing in a humanitarian response



1.0 Design Sharing

1.1 Starting Hypothesis

An open hardware design platform of useful items will enable people anywhere to make them, including and especially in areas receiving humanitarian assistance. There are many such platforms that already exist and the challenge was to determine if one of these would meet known needs and, if not, further flesh out what the platform structure would require to develop one.

1.2 Action Taken

Existing know-how and design file sharing platforms were analyzed against criteria established by the Field Ready team. See [Appendix A](#) for the Design Sharing Analysis and [Appendix B](#) for the Knowledge Sharing Analysis. This section focuses on Design Sharing platforms. Early on, the first MVP, Makepedia: www.makepedia.org was developed. It was a nonfunctional prototype to demo the concept to stakeholders. It reflects the item outcomes from non-platform file sharing and collaboration between Nepal-based “makers” and Kenya-based “makers”. Stakeholders such as open hardware communities, makers and humanitarians were invited to share their preferences on digital design sharing as well.

These learnings and feedback informed development of the second Makepedia MVP which had a core focus on lean functionality and community engagement. This iteration had an objective to form a deeper understanding of content structure for such a platform. It was decided to integrate and analyze two promising open hardware documentation sites, Wevolver and Docubricks, into the MVP as well as begin defining an item’s “field readiness” to meet this objective. Complete analyses of Wevolver and Docubricks can be found in [Appendix C](#) and [Appendix D](#), respectively.

Building from these analyses, “field readiness” began to be defined in terms of what needs to be available and/or communicated about an open design shared on an online platform. This effort was also the start of defining metadata that will be helpful in understanding documentation standards in open hardware. Using Field Ready experience and knowledge, a public draft was developed. Below is a high-level summary. In [Appendix E](#) is a table of data determined helpful for communicating the “field readiness” of items shared online.

What makes a product ‘field ready’?



Essential: needed in a humanitarian, recovery, or development context. The item is vital & there would be issues if it is not available.



Quality & Safety Checked: intention is normally to meet all reasonable standards (e.g. US FDA) – but where that isn’t possible, risk assessed.



Easy to use: It should be intuitively designed and exactly fit for purpose. Usable with as little training as possible, and ideally, repairable locally.



Robust: Optimized to function in a field context, with design features such as strength, shock resistance, an ability to survive moisture and dust.



Replicable: For widespread use it should be affordable, adaptable to different contexts, well documented, and with no intellectual property restrictions.

1.3 Key Findings

- A. A gap exists between prototype development and usable, reliable products in open hardware design processes.

- B. There is need for documentation standardization, item search and quality assessment across open hardware platforms, as well as within platforms.
- C. There is a balance to be found between levels of documentation standardization and flexibility for ease of use.
- D. There is a learning curve and labor cost burden for uploading designs and documentation to robust platforms.
- E. There are advantages in working with funded platform providers (verse resource-constrained providers).

1.4 Conclusions for Future Development

Out of the key findings, future development will focus on developing documentation standards, item search and quality assessment across platforms. This will be taken up by the softly-launched MakerNet Alliance. It is expected that the thought leadership and developments on these topics will be integrated within existing working groups and entities that are associated with the Alliance.

The MakerNet Alliance was formed to continue working towards the vision of making widespread local manufacturing a reality, both in the context of humanitarian aid and more broadly. During this project, over 25 persons and organizations joined this alliance. One concept emerging from this project explores *Search Across Digital Item Libraries*.

The gap between prototype creation and usable, reliable products by those who most need them is presented in the next section along with recommended future developments.

THE WAY FORWARD FOR DESIGN SHARING

Across platforms, develop standards, search capabilities and quality assessments for open designs.

2.0 Engagement: MVP and Humanitarian Item Testing

2.1 Starting Hypothesis

The hypothesis was that leveraging makers for testing the prototypes at the item testing stage will realize value-added outcomes for at least the two core parties involved AND bring items closer to a usable and reliable stage.

2.2. Action Taken

A minimum viable product (MVP) was set-up that would enable community engagement in the testing of humanitarian items, without much overhead or hand-holding, while also being flexible to the individuals' own resources and schedules availability. The set-up consisted of:

1. Humanitarian Makers website as the "home page" for accessing the below.
2. Google spreadsheet of humanitarian items hyperlinked to each of the below platforms.
3. Wevolver: decentralized collaboration on hardware projects for both private teams and open communities.
4. Docubricks: open hardware documentation standard.
5. Thingiverse: basic open hardware repository platform.

The User Interface of this set-up can be seen in [Appendix F](#). This visual in the appendix walks the reader through what a tester would have seen as s/he engaged with the MVP. This multi-tool set-up was possible due to the generosity of the providers – all were freely made available. It was advantageous in that it gave the flexibility desirable for testers as well as gave insight into how these platform features supported, or did not support, effective design collaboration.

During set-up, communications were shared with the Humanitarian Makers' network about the upcoming testing pilot. Members and friends helped spread awareness with their communities and their own networks as well. Messaging was carried out on social media channels, network communications, as well as talks, meetings and events. The results and learning from these marketing efforts are discussed more in [Engagement: Marketing](#).

2.3 Testing Results

Feedback was captured on a google feedback form, as well as by direct email. A total of 22 responses representing 50 people participated in the testing.¹ These responses were submitted by individuals who represented groups or just themselves. Most participants had technical backgrounds (engineering, design, making, etc). Practically all that engaged in the testing pilot also had a personal introduction to the pilot beyond the digital marketing effort. For example, MIT Lincoln Labs had invited Field Ready's Lead Designer, to speak to their team. She shared about the testing opportunity and they dove in, incorporating it into their HADR Hackathon. KLAKS3D, based in Ghana, was introduced to the testing by a member of this project team who has a professional relationship with this group.² This paper's author had presented at the IEEE GHTC conference and in the follow up discussions was introduced to the IEEE Region 6 director who personally tested and tapped a couple more colleagues to do it as well. This also initiated discussions on how the entire Region 6 community might be invited to test.

Other groups expressed interest as well, but the timing wasn't right and further effort will be required to develop these. Examples are Penn State HESE, Nation of Makers, Global Humanitarian Lab and Makers Making Change.

¹ Three people were affiliated with Field Ready, including the author.

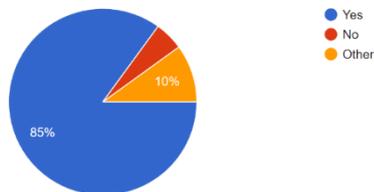
² Klacks3D also received financial support, \$100, to cover material costs. They held an event and 13 people participated.

All items, excluding the lifting airbag, were made at least once. Most items were 3D printable designs and the testers all had access to 3D printers. Interestingly, most were successful in making the items and, importantly, all were interested in testing again.

Figure 1 Survey Feedback

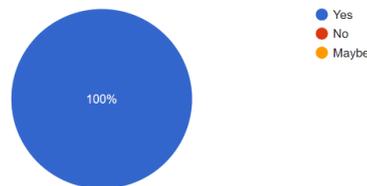
Did you successfully make the item?

20 responses



Would you be willing to do this sort of test again, to help humanitarian aid?

20 responses



Examples of additional feedback³ received:

- IV Bag Hook: Tensile tests show the hook failed at approximately 11kg when printed using PLA using default settings. Consistent print quality across multiple machines (Taz 6, MB Replicator, MB 5th Gen, MB Z18, Stratasys Dimension 1200es).
- Wevolver: Maybe when posting files make a zip file of all the files an option too. The otoscope was a bunch of files but no zip of all of them.
- Specula: The consumable specula (the black part) would be rough coming out of a 3D printer. Vacuum forming (a relatively simple process) could be an alternative for making them inexpensively in volume.

A web-conference call was held with Field Ready team members to review the feedback received from this pilot. The team was provided all of the data, presented highlights visually and, on the call, discussed the perceived value received from this pilot. Some comments by FR's team on the call:

- Seeing people were getting quite consistent results from a wide variety of people and machines is valuable (we haven't been able to do this)
- Feedback shows the need to strike a balance between too little info and too much info, so people are free to improvise and iterate from the design shown
- This type of feedback is super for improving documentation and printability and making sure they can be reproduced by range of people and designs - and need the right people giving the feedback

A couple key challenges were acknowledged during the call:

1. Community expertise is not easily known and it would be valuable to find the right expertise on a per problem basis
2. Field Ready operates with a lean structure and will require changes in work prioritization to take advantage of the testing feedback

2.3 Key Findings

- A. People who tested items desire to do it again. Organizations expressed interest but need longer lead times.
- B. Testing feedback was considered valuable by Field Ready, who had developed the items.

³ For the full item feedback (excluding feedback sent via email), view [Appendix G](#).

- C. The field agent needs the required capacity to receive, filter and integrate the feedback received on items.
- D. The flexibility offered by the pilot indicates potential to package item testing for corporate employee volunteerism.
- E. There is potential to open the item list to multiple organizations and persons to post items for testing.
- F. There are indications that persons who live within the realities of the humanitarian context seek to earn income from their engagement.

2.4 Conclusions for Future Development

These key findings point to a need for coordination and infrastructure strengthening to allow different groups and individuals to advance items past the prototyping stage. The coordination needs to happen both with and among makers and field organizations. This requires resourcing the development of partnerships and processes to streamline engagement. The infrastructure strengthening requires leveraging the efficiencies and openness of digital technologies to compound the coordination efforts. The coordination effort will inform the infrastructure effort.

THE WAY FORWARD FOR HUMANITARIAN ITEM TESTING

Investing in coordination and infrastructure strengthening for humanitarian item development and testing – with a focus on the stakeholder collaboration process.

3.0 Engagement: Marketing

3.1 Starting Hypothesis

The hypothesis was that this digital engagement insight would be informative to understanding Humanitarian Makers' community engagement with the MVP and provide insights on increasing engagement.

3.2 Action Taken

Humanitarian Makers took a three-prong approach: online, in-person and media communications to spread awareness and invite engagement.

Online

First metrics were determined. Then, baseline metrics were captured to measure against. Humanitarian Makers' trackable, digital tools were its website and social media channels (LinkedIn, Facebook, Twitter, G-Plus). Basic metrics were obtainable for the design sharing platforms utilized in the testing (Wevolver, Docubricks, Thingiverse). Field Ready also captured metrics for their Facebook and Twitter channels.

In-person

During the project period, colleagues shared about the pilot at various conferences, talks and events. Examples of some of these engagements are in Table 1.

Table 1: Events Attended

Mar-Jun 2017	Aug-Oct 2017	Nov-Jan 2018
Border Session, Hauge	Open Hardware Summit	MIT Lincoln
IFRC conference, South Korea	Fab13	AidEx
Makers for Global Good, Maker Faire		Exponential Medicine
Classy Award June		ADIS18

Media

Due to the efforts shared above and the prior reputation building by colleagues and friends, Humanitarian Makers and Field Ready received a number of media inquiries. There were approximately 18 media pieces created during the project period. These pieces were shared by news organizations, journals and magazines such as Hackspace, The Chartered Institute of Logistics and Transport, Huffington Post, BBC Arabia, CNBC Technology and Fast Company. For a more complete list, please see [Appendix H](#).

These combined efforts saw greater increases in platform views and engagement during the period of Item Testing on the MVP. For a complete overview of the marketing results, refer to [Appendix I](#).

3.4 Key Findings

- A. The greatest contributor to value-added engagement⁴ was person-to-person awareness raising. This is directly evident by those who ended up actually testing items on the MVP.
- B. Paying for dedicated community management expertise produces results in terms of awareness raising. Wevolver, the platform with the highest view rate on content shared, had invested in a FTE to manage their community and curate content.
- C. Social channels are insufficient for online community management. More effective tools need to be deployed to see significant value from online engagement.⁵

⁴ Value-added engagement is defined as community engagement that led to item testing and feedback.

⁵ An association "switched from Yahoo Groups to a private community platform to increase engagement. Their community grew from just a few hundred members to 4,300 active members, tripled unique contributors, and saw a 149 percent increase in engagement." Executive Playbook, Higher Logic, pg 6.

3.5 Conclusions for Future Developments

Marketing at a variety of levels was essential for driving traffic to the MVP and makers appear to engage when the offer is physically tangible and directly related to their interests and skills. To support narrowing of the gap between prototype creation and usable, reliable items, not only marketing efforts need to be enhanced to drive more people to engage but also the engagement offer needs to be mutually beneficial to the parties involved. As a community with this objective and growing brand awareness, Humanitarian Makers, is positioned to further develop the engagement offerings and marketing efforts.

Humanitarian Makers needs to be built upon relationships and trust to be strong and effective. This is realized through person-to-person interaction and partnership formation and management. Yet there is an important role for online community management and marketing in sustaining those relationships as well as creating awareness about its opportunities. This will be realized by moving forward on the *future developments* outlined in the [Engagement: MVP and Humanitarian Item Testing](#) section as well as by investing in online community management and curation.

THE WAY FORWARD FOR MARKETING

Invest in online community management and curation as well as in coordination and infrastructure strengthening for Humanitarian Makers.

4.0 Manufacturer Mapping

4.1 Starting Hypothesis

The central thesis here is that lack of knowledge about local manufacturing options (what kind of manufacturers exist, where) is one of the major barriers to aid agencies buying from them.

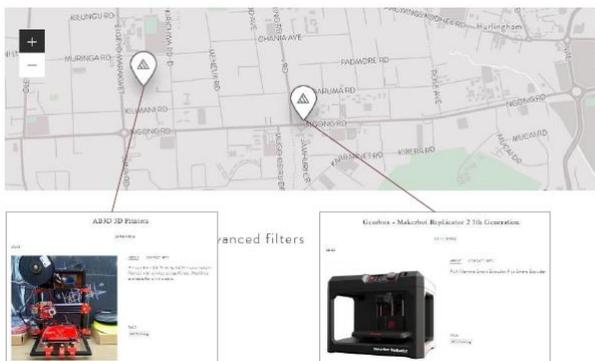
The technology for recording and displaying location-based information is well established, and several off-the-shelf options exist (e.g. adding the info to Google Maps or Open Street Map). If required, a custom solution could be easily developed based on existing technology.

The challenge is therefore not about how to display the information but how to get it in the first place, how to organise it and how to keep it updated. The resource intensity of gathering and maintaining the information depends on how much information needs to be gathered about each manufacturer and crucially, how it is to be verified. Two options were therefore developed to stimulate the discussion on this.

One concern with this system was whether aid agencies would have the capacity and interest to oversee a manufacturing process rather than buying ready-made items.

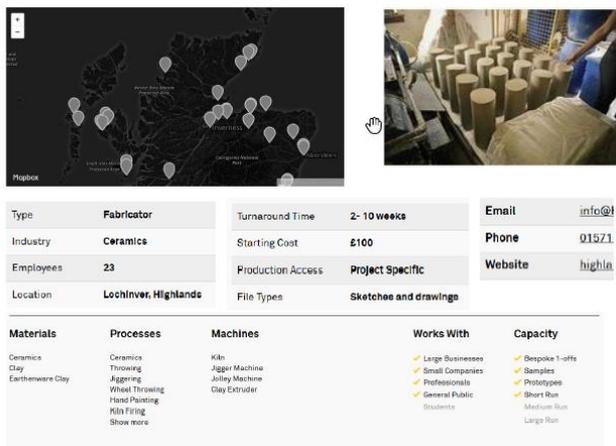
4.2 Interview Materials⁶

Two visual mock-ups of this system were developed, which require different intensities of data gathering – one very simple, showing only locations, which could realistically be self-reported:



Simple Manufacturer Mapping: image built up from screenshots from www.makepedia.org (demonstrator platform built by MakerNet Consortium)

The second concept includes structured information about how to engage with the manufacturer which, in order to be reliable, would likely need a more hands-on mapping methodology.



Manufacturer Mapping with Structured Information: image built up from screenshots from <https://make.works/> used with kind permission of Make Works

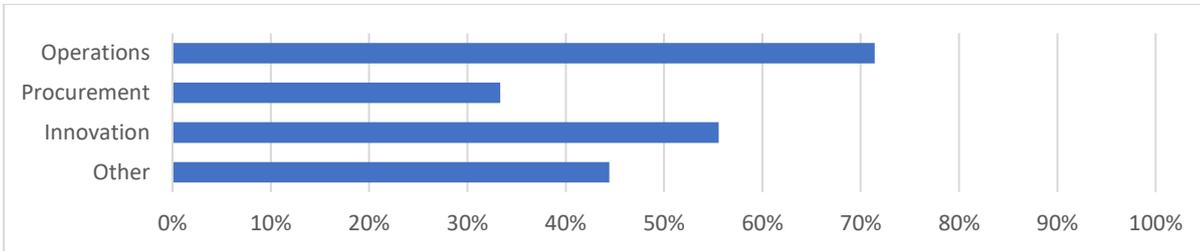
4.3 Summary of Interview Feedback

Response*	Respondents	Typical Feedback
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⁶ See [Appendix J](#) for the interview methodology.

	Number	%	
Not useful	2	10%	<i>"We prefer to buy things that are ready-made"</i>
Maybe some use	7	33%	Useful for exceptions not mainstream
Useful for some applications	10	48%	Of considerable value in remote areas
We need this	2	10%	<i>"Very useful in our context"</i>

Average rating for Manufacturer Mapping by Role: (Higher number indicates more useful)



4.4 Key Findings

- A. The notable difference between ratings given by Operational roles and Procurement is suggestive of a gap in the perceived adequacy of current procurement arrangements between those working in the field or along the supply chain, and those who focus on the buying.
- B. Concerns about agencies lacking the expertise to deal with commissioning manufacture rather than buying finished products were raised, but predominantly by procurement roles. Operational staff expressed that they know enough about what they need to have made to be able to work with manufacturers.
- C. Large manufacturers are easier to find (more likely to have an online presence). So in places where you have some large manufacturers, this is less useful. Several interviewees expressed that the real value of this approach comes in very underdeveloped places where there is little manufacturing base, and you have no idea what is there. Somalia and Northern Uganda were both suggested as places where this would be very useful (these suggestions reflect the fact that many interviewees were based in East Africa). One interviewee expressed the opposite view, that this would be useful at country headquarters level not at the field level.
- D. Some agencies already think they could use something like this a lot, others say that their policies would mean they could not use it very much. However, for those aid agencies to start changing their policies, the existence of a system and the evidence that other agencies are using it successfully would surely help to make the case!
- E. One issue raised several times by both Operational and Procurement roles is that either some kind of pre-qualification of suppliers would be a key benefit, or there is a need to provide some of the information that would allow buyers to know whether or not an organisation is compliant with their policies. Examples include whether a manufacturer is a tax registered business, and ownership information to ensure a company is not associated with corruption.
- F. Additional information that would be useful is anything that would indicate more about the supplier's ability to deliver, such as experience on similar contracts, and what volumes they can realistically handle.
- G. It was suggested that this system could be useful even without any additional mapping, just to share info between the NGOs. Furthermore, there would be a significant opportunity in harmonising supplier validations between agencies. Structures that could assist with this already exist.

H. Providing information on specific machinery types is not thought to be particularly useful - that only works for a very active buyer, who essentially has their own portable design – that is certainly a possibility in the future, but likely to be a minority.

4.5 Conclusions for Future Development

- Mapping of manufacturers is, in some situations a useful tool in its own right (as well as being an essential precursor to the Supply Marketplace option discussed in the following section). The main function is knowing where manufacturing capabilities are – nothing else is possible without that crucial first step! So a pilot could focus on providing that basic information first and then test different approaches to enriching, verifying, and updating the information.
- The secondary function is for the mapping exercise to also screen manufacturers; in fact, several respondents saw this as the main benefit. The criteria to be used for screening should be defined by a working group of agencies, and with donor & manufacturer involvement.
- Based on the interviews conducted, it appears that this system would be of most use in a remote location with a large humanitarian response. It is also likely it would be useful in areas with frequent disasters.
- It will be critical to address the gap in perception of how well the status quo functions, that was observed between procurement and operations staff.

5.0 Supply Marketplace

5.1 Starting Hypothesis

The hypothesis was that aid agencies would find it easier to procure locally manufactured goods if the options were made available within their normal procurement processes. As many organisations use a ‘catalogue’ approach (e.g. the joint IFRC/ICRC catalogue <http://itemscatalogue.redcross.int/>), this option tried to place locally manufactured products in that context.

The concern is that this type of system would be very resource intensive – up-to-date information on lead times from small-scale local manufacturers is fraught with difficulty and would require intensive effort and investment in systems to maintain it (and would never be completely reliable). The system would therefore need to be of very high value to justify the running costs.

5.2 Interview Materials

What item are you looking for?

Where do you need it?

How many?

Options

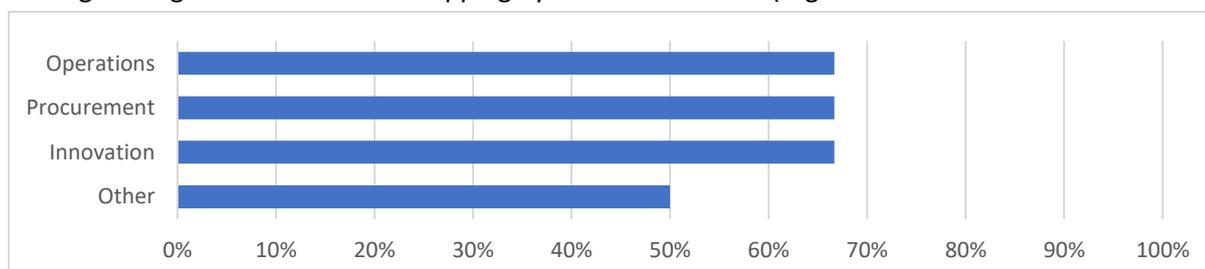
	Aid Agency Catalogue	Local Importer	Local Manufacturer	Local Manufacturer
Specification	Metal	Metal	3D Printed Plastic	Wood
Price	\$2.00	\$3.00	\$4.00	\$2.00
Location	Dubai	Nairobi	Kakuma	Kakuma
Typical Lead Time	0 + 30 = 30 days	0 + 4 = 4 days	1 + 0 = 1 days	2 + 0 = 2 days
Quality Rating		★★★★★ 67	No ratings	★★★★★ 7

Materials were developed specifically for the purposes of this project.

5.3 Summary of Interview Feedback

Response*	Respondents		Typical Feedback
	Number	%	
Not useful	0	-	
Maybe some use	5	24%	Similar to information available elsewhere
Useful for some applications	14	67%	Good info for making purchasing decisions
We need this	2	10%	"A fantastic way of doing this – we would use it"

Average rating for Manufacturer Mapping by Interviewee Role: (Higher number indicates more useful)



5.4 Key findings

- Although this was the most popular option overall, with people easily able to see how it would fit in with existing processes, it was less popular with operational roles than the much less resource intensive Manufacturer Mapping option.

- B. Several responses indicated that while the system would be welcomed for the information it provided, it would not in itself change buying behaviour:
- “If I can get the item from Dubai for the same price as I can get it locally, I will get the one from Dubai because I trust the quality” *Procurement Role*
 - “We have to fill in budget templates and we don’t always know the prices of things, so this would be useful for that” *Operations Role*

5.5 Conclusions for Future Development

- The decision is to pause development of this system, since it cannot anyway be created without first knowing where the manufacturers are.
- Once a Manufacturer Mapping system is functioning, the relative costs and benefits of developing it into a supply marketplace can more effectively be assessed.
- The finding that this may not be such a driver to change behaviour means the decision on whether to develop this system once a mapping system has been built should be carefully evaluated.

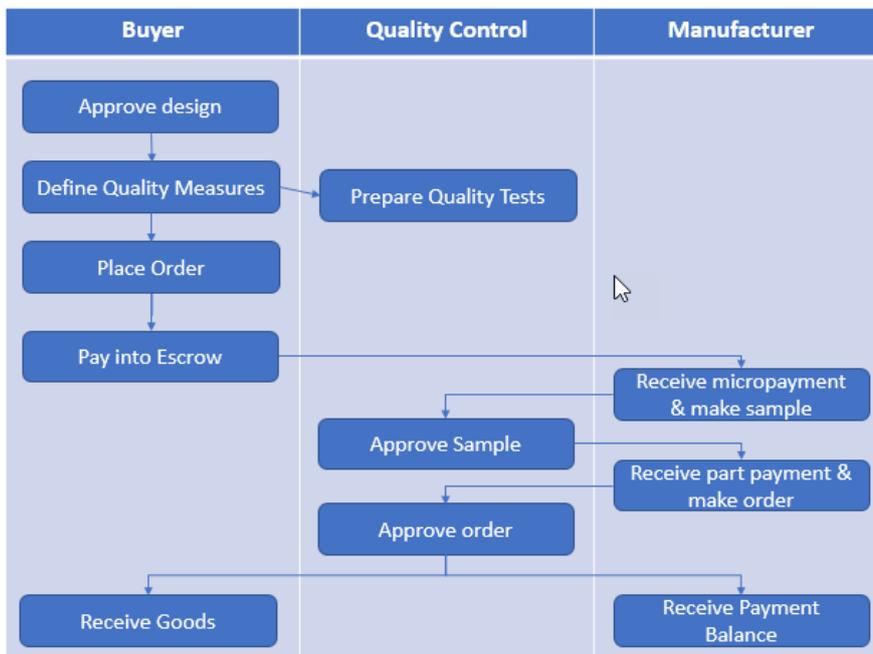
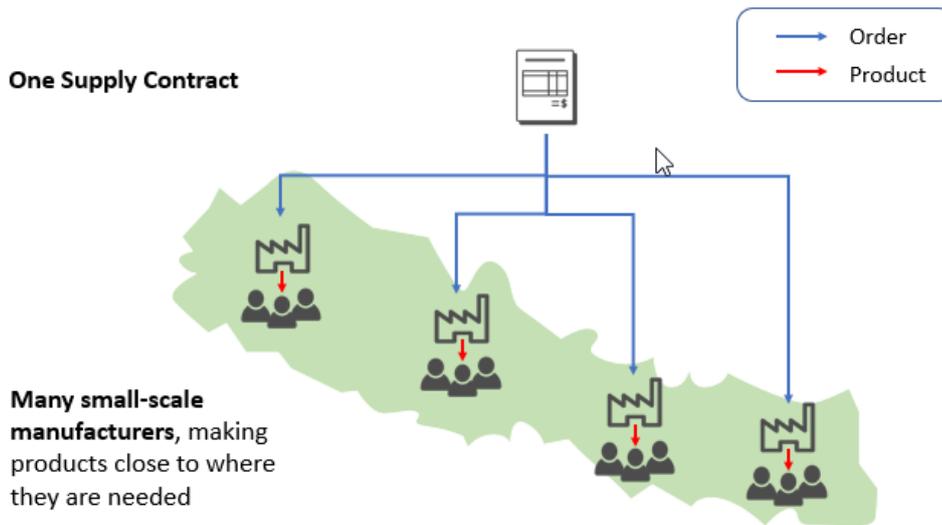
6.0 Transaction Engine

6.1 Starting Hypothesis

There are several hypothesis behind this system: (1) small scale local manufacturers are unable to fulfil a large order for an aid agency in its entirety, therefore multiple suppliers would need to be engaged to complete a single order, (2) that the administrative burden of this would be prohibitive, so it is necessary to streamline it; and (3) managing quality is of utmost importance and can be addressed by a combination of providing working capital for materials input and rigorous inspection of partial batches and ensuring payment is tied to achieving quality targets.

6.2 Interview Materials

In the interviews we first showed a diagram illustrating the concept of contract distribution, followed by a flow chart illustrating the process flow in terms of the three roles – buyer, manufacturer, and quality control agent.

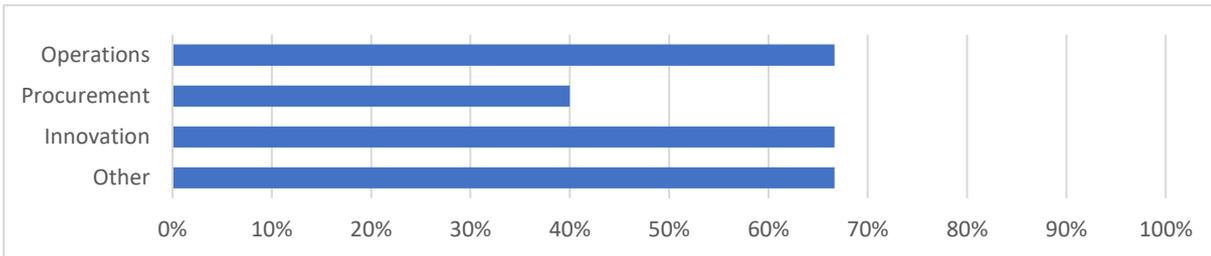


6.3 Summary of Interview Feedback

Response*	Respondents		Typical Feedback
	Number	%	

Not useful	1	5%	<i>"We have an MRP⁷ system and do not need this"</i>
Maybe some use	6	29%	It looks slow, there are a lot of steps
Useful for some applications	10	48%	<i>"With well-designed projects this would work"</i>
We need this	4	19%	<i>"This would have saved us millions"</i>

Average rating for Manufacturer Mapping by Interviewee Role: (Higher number indicates more useful)



6.4 Key findings

- A. This was the most popular option with interviewees from innovation functions, whose job it is to look into the future and imagine what will have a significant effect on operations.
- B. We were surprised by the extent of enthusiasm for the quality control functions – some interviewees even saw value in using it to manage a single supplier contract because of that.
- C. People in procurement functions were least likely to see significant benefit in using a system like this – possibly because the pain point of dealing with many small suppliers for one order is not one they have yet experienced.
- D. This set of interviews confirmed the earlier finding that quality is a key concern for aid agencies in buying from local manufacturers and that no system will have a significant impact on buying behaviour unless this is addressed.

6.5 Conclusions for Future Development

- The highest priority with this system is to test the fundamental assumption that tying payment to robust independent quality control results in small batches will have a significant impact on quality and delivery performance of suppliers.
- It is also important to test the effectiveness of a distributed approach to quality control (based on independent agents). It is difficult to see how the system could scale effectively with centralized quality control.

⁷ Materials Requirements Planning

Summary of Conclusions: The Way Forward

We will be undertaking a number of crucial steps going forward:

Design Sharing

We will develop, across platforms, design standards, search capabilities and quality assessments. This will be moved forward by the MakerNet Alliance. It envisions a future with sustainable, globally networked local manufacturing. The perceived benefits are rapid search capability by designers and manufacturers of items needed in humanitarian response, ease of assessing readiness of items for production and use, and flexibility to the diversity and growth of design sharing platforms.

Engagement

MVP and Humanitarian Item Testing:

We will invest in coordination and infrastructure strengthening for humanitarian item development and testing – with a focus on the stakeholder collaboration process.

Marketing:

We will invest in online community management and curation as well as in coordination and infrastructure strengthening. Both of these will be moved forward by Humanitarian Makers who harnesses the power of the network to make quality items where there is acute need.

The next steps are laid out in [Appendix K](#). The perceived benefits are advancement of prototypes to a usable and reliable stage, contribution to these developments by many stakeholders (especially local to the need), efficient onboarding of field organizations' items and potential revenue from corporate employee engagement.

Manufacturer Mapping

This system was considered to be the most useful by those in operations functions, and the least useful by those in procurement functions. This appears to be due to current arrangements working better for procurement departments than for operational field staff – something that should give rise to concern in aid agencies. A tentative conclusion is that speed of delivery and how well something meets the precise needs of a situation is more important to the operational staff, both of which factors can be greatly assisted by local manufacturing.

There is therefore a strong case for further developing this system. A pilot should be conducted in an area with few large manufacturers and a large humanitarian response, such as Northern Uganda or Somalia. This will be most effectively carried out by a coalition including those with expertise in other manufacturer mapping exercises, organisations that work to improve the capability of local manufacturers, and at least one but ideally several aid agencies.

Supply Marketplace

This option will not be further developed at present. This decision can be revisited for specific areas once a Manufacturer Mapping system is up and running.

Transaction Engine

There was great interest in this system, particularly for the quality control features. It is very important to test the assumptions about the effect those will have as soon as possible. In order to do that, the existing minimum viable product needs to be further developed to be able to run a trial with multiple small-scale manufacturers making the same items for a real aid agency customer. The next steps for the manufacture mapping, supply marketplace and transaction engine are further laid out in [Appendix L](#).

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