



# Bits of Life: Leveraging Emerging Technologies to Improve the Livelihoods of Refugees

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*This article examines the role of Information and Communication Technologies (ICTs) in improving the livelihoods and employment opportunities of refugees. "Bits of Life" argues that improving the livelihoods of refugees is in accordance with refugees' rights to work, based on the International Covenant on Economic, Social, and Cultural Rights and the 1951 Refugee Convention. Furthermore, this thesis explores how access to reliable and affordable Internet serves as a crucial tool to help fulfill refugees' efforts to obtain social and economic security. In addition, it analyzes the successes and failures of existing technology-based humanitarian services and offers recommendations to improve the adaptability and effectiveness of future applications of ICTs in the field of refugees' rights and livelihoods.*

## 1. Introduction

There are currently approximately 65 million displaced people around the world.[1] This is a higher number than at any previous period since the aftermath of World War II.[2] The Syrian Civil War, alone, is projected to result in the displacement of more than 10 million people. Since the outbreak of conflict in March of 2011, over 5 million Syrian nationals have sought refuge across international borders. Jordan, Lebanon, Turkey, Iraq, and Egypt have been hosts to 95% of these refugees.[3]

According to the United Nations High Commissioner for Refugees (UNHCR), 54% of the world's refugee population have lived in exile for more than five years. Because of the variance between work regulations in different countries and the difficulties involved with obtaining work permits, a large majority of this population are unemployed, or work illegally and for very low pay.[4] Governments, United Nations (UN) agencies, the private sector, academics, and Non-Governmental Organizations (NGOs) work in tandem with one another to attempt to address the basic material needs and human rights of refugees. In respect to the Syrian and Afghan refugee crisis of the past five years, there is one unique feature of these efforts: the massive mobilization of Information and Communication Technologies (ICTs) to tackle a humanitarian crisis.[5] Cellphones and other ICTs have emerged as vital tools for survivors of humanitarian disasters, as we can see from the importance of location-based apps and communication tools among Syrian refugees.[6] These individuals use internet-connected devices to find the safest routes on their migration journey, keep connected with their family and friends, learn new languages, find NGO services, and improve their livelihoods.

This article takes the role of technology in the current Middle East refugee crisis as a jumping off point for a larger examination of the ways that ICTs can improve the livelihood of refugees, both today and in the future. Its primary case study will be an in-depth examination of the NGO Iraq

Re:Coded, which seeks to teach coding skills to Syrian refugees in Iraq and other Internally Displaced Persons (IDPs.) The primary question posed here is the following: building on projects such as Iraq Re:Coded, how can we develop a set of best practices and guidelines that will harness the promise of emerging technologies to help refugees develop sustainable livelihoods, both today and in the future? Are digital methods capable of creating more inclusive employment opportunities for refugees in terms of gender, age, and other socio-economic factors? Given current events, particularly a wave of anti-refugee and anti-immigrant sentiment in the West, are these technologies capable of neutralizing social and economic tensions arising from the entry of refugees in host countries' labor market?

Finally, this article explores the ways that the models such as Iraq Re:Coded might be improved or iterated upon in future responses to refugee crises. Key challenges in this regard—such as lack of access to reliable internet connectivity, gender and socio-economic biases, lack of access to formal financial services, Lack of partnership and long-term plans, privacy, and digital security concerns—will be raised and recommendations to circumvent these challenges will be offered.

My primary research centers on interviews with actors in the field as well as first-hand work as a volunteer organizer and activist in the field of technology and refugees' rights. Volunteering thus figures as part of the methodology of this thesis. During 2016-17, I served as an assistant coordinator for the 2017 RightsCon conference organized by Access Now, as well as serving as an instructor teaching the children of Afghan refugees and immigrants at an organization known as Women for Afghan Women in Queens, NYC. In addition, I developed relationship with Afghan refugees residing in Oinofyta Camp in Greece and interviewed them in person and through online communication tools such as Facebook Messenger and Viber messaging app. Through all these activities, I formed relationships with people directly involved in protecting the rights of refugees, gathered background data, and assessed what was working and what wasn't in a number of relevant organizations.

## 2. Iraq Re:Coded: a case study

Iraq Re:Coded is a non-profit organization aiming to teach coding and web development skills to refugees and Internally Displaced Persons (IDPs) in Erbil, the Kurdistan Region of Iraq (KRI). It is in many ways a successful model of how to leverage technology in the service of creating forms of livelihoods for refugees. This section studies the history and implementation of the program. It also conducts a stakeholder analysis in order to understand the roles that different actors can play to make projects such as Iraq Re:Coded effective. It further examines the challenges related to the sustainability of the project and its impact on mitigating the social tension among refugees, IDPs, and Kurdish Iraqis.

Iraq Re:Coded began as an idea hatched by Alexandra (Ali) Clare, an Australian graduate student at New York University's Center for Global Affairs. Ali originally developed the general outlines of the organization as part of her thesis, "Iraq Re:Coded, Durable Skills, Education and Livelihoods through Innovation and Technology for Refugee Youth." [7] Her proposed organization sought to challenge the stereotypical picture of refugees as uneducated individuals who have no other employment options except for low-skill and low-paying jobs. Clare pointed out that, typically, most humanitarian initiatives (such as those spearheaded by UN development agencies and international NGOs like International Rescue Committee) tended to focus on preparing refugees for low-skill, local jobs such as construction and restaurant work, hair dressing, sewing, and similar occupations which do not require higher education. [8] An additional problem is posed by the issue of degrees which do not easily transfer across national boundaries, requiring time-intensive processes of labor recertification.

Undoubtedly, many refugees fall into this category. But Clare argued that it is important to acknowledge that not all refugees share the same background: particularly in the context of Syria, which had a relatively high level of economic and professional development in urban areas, the

refugee crisis includes individuals with advanced degrees such as physicians, nurses, engineers and teachers.[9] Furthermore, even those without extensive formal education deserve to be treated with respect for their intellectual and professional potential. Particularly in the context of a looming threat to manual labor jobs due to automation, it is important to prepare refugees and other disadvantaged groups for a labor market (both in their current countries of residence and their ultimate countries of permanent resettlement) in which many low-skill trades are in decline, while technology-based jobs steadily increase.

Since Clare's thesis, which was submitted in 2015, the need for organizations that work to enable refugees to gain new forms of livelihood has steadily increased. According to a UNHCR report, as of 2017 there are almost 240,000 Syrian refugees living in Kurdistan Iraq, with majority of the population in Duhok and Erbil.[10] The refugees and IDP youth in this region face profound challenges in pursuing their secondary and higher education. According to Ali, the language barrier is one critical challenge: Syrian and non-Kurdish Iraqi IDPs speak Arabic and need their classroom material to be taught in the Arabic language, which is sometimes challenging when it comes to imparting specialized skills related to the tech industry. Because of this linguistic challenge and an overall lack of resources and funding, major humanitarian organizations inside the camps tend to focus on primary education for children.

Unfortunately, overcrowding in classrooms and social discrimination toward Syrian refugees and Non-Kurdish Iraqis in Erbil often means that youth educated in this manner find it virtually impossible to pursue formal education above the elementary level. In turn, the absence of a clear pathway toward advanced education and jobs means that both refugee and IDP youth populations are vulnerable to issues such as workplace exploitation or recruitment by radical or terrorist organizations.

With the hope of improving the livelihood of refugee and IDP youths in Erbil, after completing her thesis in the spring of 2015, Ali partnered with UNDP to propose a new non-profit organization called Iraq Re:Coded.[11]

Splitting her time between New York City and Erbil in Iraq, Ali and her local partners sought to develop a counterweight to the lack of training and employment opportunities for refugee youth. In the program that emerged from her initial year of development, refugee youth in Kurdistan Iraq between the ages of 17 and 30 years old were selected to undergo extensive training in sought-after programming languages such as Python and JavaScript, allowing them to independently develop websites and database back-ends. The training period also included other "soft skills" such as entrepreneurial mentorship and problem solving, communication and leadership.

## 2.1 Application Process and Training

In the first six months of 2016, the nascent organization of Iraq Re:Coded developed relationships with camp managers assigned by the Iraqi government, along with representatives of the Danish Refugee Council, the UNDP and UNHCR; academic institution such as the University of Dohuk and the American University in Sulymaniyah; and local NGOs and social workers. The application process to recruit students for the program began in June 2016.[12] The initial outreach in Erbil covered both populations in camps and off-camp in urban area with high refugee and IDP populations. The organization used both online and offline application forms.

In the camps, Ali and her partners sought help directly from youth committees set up by refugees themselves, briefing their young audiences about the program and explaining the benefits and necessities of the training it provides. Meanwhile, in neighboring urban areas, Iraq Re:Coded staff went to points where refugees and IDPs gathered for registration and submitting their paperwork regarding their legal status. During peak hours at these locations, these sites became promising venues for attracting an audience and seeking applicants for the program. The team also briefed local social workers who were directly in contact with refugee families and asked them to encourage the youth they worked with to apply for the coding training. Finally, the Iraq Re:Coded

team used social media (including popular Facebook pages used by refugees in Erbil and local job-posting websites) to attract more applicants. Due to these efforts, the team received over 500 applications during the first few months of launching the program.[13] The team made sure that there was a degree of balance regarding the gender composition of the final candidate pool, their location based on inside or outside the camps, and also their residency status as Syrian refugee, IDPs, or member of the host country known as Kurdish Iraqi.

After selecting eligible applicants, the team conducted the following three tests of basic competency:

- A basic digital literacy test to find out if the applicant was capable of navigating the internet, and has basic Microsoft Windows skills.
- A computational logic test to assess the level of problem solving, analysis, and thinking out of the box capabilities. The test was designed in the form of a computer game.[14]
- An English exam to rank applicants.

After giving a specific weighting to each test, the team assigned each applicant an overall score. Based on the score, the applicants were invited for one-on-one interviews with Iraq Re:Coded team. Ultimately, 50 out of the 500 applicants were able to successfully enter the training program and become Iraq Re:Coded fellows.

Currently, 40% of the fellows are women. However, for the future rounds of the program, Iraq Re:Coded hopes to attract and recruit an even higher proportion of female fellows and to ensure that all camps and urban communities have representatives in the classroom. Diverse classroom can play significant role in sustaining the program in the future, a point that I will explore further in the sections to come.

The basic educational content covered in Iraq Re:Coded's "coding bootcamp" is provided by the Flatiron School, a coding academy based in New York City which partnered with Iraq Re:Coded to offer free online access to the material.[15] In the classroom, a physical space located in the Kaz Nazan Job Seeker Center in Erbil, candidates undergo eight weeks

of extensive English-language training with a focus on ICT terminology. After the language training, there follows a 24-week coding bootcamp to learn about programming fundamentals and to "expand their digital portfolio, become proficient in database modeling and Object Relational Mapping (ORM), understand the concept of the MVC Framework and build fully functioning web apps." [16] The languages include HTML/CSS, Ruby, SQL, Sinatra, JavaScript, Rails, and Git. Each candidate is assigned to work with two mentors: an English mentor and a coding mentor who can either be present in-person in the classroom, or teach the candidates remotely via online video chat software such as Skype or Google Hangouts.

After completion, the bootcamp fellows are ready to seek employment in local start-ups, telecommunication companies, or to find independent work as freelance coders. Employment placement is the aspect of the initiative that requires the greatest amount of partnership from other NGOs and government and private sector entities, an issue that will be discussed in the section to come.

## 2.2 Stakeholder Analysis

In this section, I mapped the stakeholders involved during Iraq Re:Coded program.

### *2.2.1 Human rights and humanitarian actors*

The main funder for the project is the United Nations Development Programme (UNDP). In addition to providing initial seed funding, UNHCR has stepped in at different stages of the project to lend aid and assistance, particularly in the early stages of reaching out to the refugee community in the Iraqi camps. As was mentioned in the previous section, for some time the Danish Refugee Council has been managing different refugee camps in Kurdish Iraq including the Domiz, Sharia, and Khake camps. As such, their role in finding potential applicants and aiding in outreach to youth was no less essential. In addition, numerous interviews



were conducted with local NGOs and social workers in order to assess the needs of both refugee and host communities.

### *2.2.2 Academia*

The thesis that gave to Iraq:ReCoded was advised by Professor Thomas Hill, who later took a primary investigatory role in the project. During the outreach phase, and also during later phases of the project such as scouting to obtain employment placement among the University of Duhok and American University in Sulymaniyah, the aid of Professor Hill and other academics in the field was critical. The Iraq Re:Coded team has stated that they look forward to developing more partnerships with local universities due to the fact that many fellows are interested in pursuing a higher degree in computer science after graduation.

In future projects of this nature, it seems to me that close and sustained partnerships between academics and NGOs are critical in terms of developing networks of potential employers and educators that will allow refugees to continue their professional journey after training ends.

### *2.2.3 The private sector*

The Flatiron School provided the primary resources and materials for the coding bootcamp. Furthermore, the Flatiron School permitted one of its developers to temporarily move to Iraq and become one of the two Iraq Re:Coded main trainers. The Iraq Re:Coded team sought additional help from other local and international companies including Spark, Microsoft, the German company Code Door, the Turkish company Kodluyoruz, and major international freelancer employers Guru and Upwork. Iraq Re:Coded also won a Google RISE award, a grant offered by Google to benefit the work of educators.[17]

### *2.2.4 The Iraqi government and the telecommunications sector*

Upon registration and after going through the related paperwork, Syrian refugees gain work permits allowing them to work and seek livelihood opportunities legally. The telecommunication sector in Iraq is dominated by three companies known as Zain, Korek, and Asiacell.[18] Because of

the lack of skilled workers, these companies already outsource many of their software engineering jobs to Turkey and Lebanon. Therefore, the need for trained coders is felt considerably in Iraq, and hiring local coders is a win-win situation for both Iraqi telecommunication companies and refugees and IDPs themselves.

However, based on the lessons learned during the pilot program, Iraq Re:Coded realized that they might have to work with other local partners, especially for the job placement phase of the project. Contrary to their original assumptions, the Iraq Re:Coded team concluded that fellows were not sufficiently prepared after graduation to compete with other freelancers on a global level. According to Ali:

In the beginning of the program we thought all fellow will be ready for the employment rights after the graduation. With this in mind, we partnered with big global freelance companies, Guru and Upwork. In the pilot program, we realized our fellows are not ready enough comparing to developers in India, Philippine and Ukraine, because of the experience and also English. So, we had to shift our partnership to work with more local Iraqi companies.[19]

This led the team to decide to limit their partnership with international freelance companies such as Guru and Upwork, and, instead, seek to forge collaborations with local, smaller freelance and start-up companies in the local region near Erbil.

Despite their local focus, it is worth noting that there were also several notable examples of students who did manage to obtain international employment. Among 30 candidates who successfully finished the program so far, one fellow has been hired as a junior developer working remotely for a start-up company in Turkey. Another candidate currently works with a Danish start-up. Others are interviewing for different companies in the US.

According to Ali, partnerships for employment placement are very specific and are forged on a personal level. "It's a lot of work," she told me. "We have to go door to door and talk to CEOs of telecommunication and

startup companies and try to get our candidates hired. This is the reason that we focus more on local start-ups because it is easier to reach out and work directly with them. There is also another fellow who is still in high school and wants to pursue a computer science degree." To help make this a reality, Clare added, the Iraq Re:Coded team was "reaching out to UN partners to find scholarships and are in conversation with local universities to see if they will admit him to a program. We are also looking for part-time or internship positions for other fellows. So, it varies a lot and for each individual there's a lot of work on our side for job placement." [20]

According to Ali, there is also a need to partner with online financial service providers such as Stripe in order to manage transactions specifically for the fellows who work remotely — a key finding that future organizations working in this field should address proactively and at an early stage of planning. "Access to formal financial service is a challenge," Ali noted in her conversation with me, because "Iraq has a very cash-based culture and it is not very common to have a personal bank account." She continued:

We set up partnership with a local bank to let our fellows open a bank account and be able to receive wired money without paying any transaction fee. Western Union is also another official banking system that some of our fellows and trainers use to wire money to and from the other countries. But sometimes we have no options except playing a middleman role in receiving and transferring the payments to the fellows. [21]

### 2.3 Societal impacts

Iraqi Kurdistan is no exception when it comes to the competition between refugees and host country members over jobs. There is an existing and long-standing tension between Kurdish and non-Kurdish Iraqis, and now Syrians are also added as outsiders in the Kurdish-majority communities of Iraq. Many local companies still tend to discriminate against Arabs and prefer to hire Kurds. However, this scenario changes when it comes to

coding and entrepreneurial skills because Iraqi Kurdistan on its own does not have enough experts in this field.

The local telecommunication companies already mentioned tend to outsource their coding jobs to countries such as Turkey, Lebanon, India, and the Philippines. Therefore, it is clear that they are open to hiring Syrian refugees or Iraqi IDPs for jobs such as these, where there is little competition among local Kurds and the corporations are forced to look elsewhere for skilled workers. Even if there was local expertise, the nature of freelance coding helps developers to find jobs remotely and opens up an enormous opportunity in terms of creating a level playing field and counteracting local biases and prejudices.

Working transnationally helps fellows in other ways, too: one important consideration is that being paid internationally and spending locally has the potential to improve their socio-economic situation and to add an infusion of capital into local economies. The Iraq Re:Coded team believes that finding and convincing local employers in Erbil to hire the graduates is also very important because it clear the path toward integration between refugees, IDPs, and host members. It also helps break down stereotypical attitudes against refugees as people who are sometimes assumed to be incapable of anything but the most low-skilled jobs. Ali pointed out that "most of the INGOs still focus on these fast-learning, low budget, low skills trainings. There is not much analysis on the long-term result in terms of development." However, projects such as Iraq Re:Coded strive to be vehicles for the long-term development of host countries.

## 2.4 Monitoring and evaluation (M&E)

Iraq Re:Coded is committed to conducting monthly M&E and to submitting the results to their primary donor, UNDP. Every quarter, the team oversees fellows' progress in both coding and language skills, and receive feedback from the trainers. Each fellow has a language and coding mentor who constantly monitors their progress and troubleshoot any issues whenever they occur. This allows for rapid iteration and adaptation to changing conditions. For instance, upon receiving the feedback, they

realized that fellows need more native English speakers. Therefore, they recruited an American language trainer to come to Iraq and work with the fellows specifically on developing fluency. In addition, each fellow was interviewed at the end of the program in order to measure their advancement in language and coding skills, and to obtain a trainer and mentor evaluation, and gain some basic qualitative insights into their behavior and attitude.

Trainers and mentors are also interviewed by the co-founders, and are encouraged to express their feedback about the overall program. "If I start it tomorrow, I'll start it very differently. This is how much you learn from constant evolution and feedback," said Ali.

## 2.5 Sustainability and Future Plans

The ultimate goal of the project is to empower every single fellow to find a full-time job or to obtain an admission to a university. However, this is easier said than done. A new crop of Iraq Re:Coded fellows graduated at the end of April 2017. Each of them had complete access to the online material for the course of six months. In this period, the team constantly seeks to secure new partnerships with local and international start-ups and freelance companies. Trainers and the entire Iraq Re:Coded team support the fellows online and offline, assist them in job hunting, and prepare them for potential interviews. However, donors set deadlines, and funding comes in fits and starts. The grant-writing process, furthermore, is very time consuming and not always successful.

Iraq Re:Coded's future goal is to engage alumni in the process either as future trainers or future contacts in forging partnership with their employers. According to Ali, the entrepreneurial ecosystem in Iraq is very small. Indeed, Iraq Re:Coded is the first coding program in the region. Therefore, they hope to expand this ecosystem by creating a tech-hub in Kurdistan Iraq.

"For the future, we are changing a lot," she told me. "Our goal is to have a tech hub that has four functions: a co-working space; a coding bootcamp

like the one we are currently doing; an incubator to provide mentoring soft skills and entrepreneur training; and research and development on start-ups' progress in the region." In the future, she added, "we want to have hackathons, meetups for start-ups in the tech hub. For next year, we will be extending the program to Turkey." [22] Additionally, more partnerships with corporations seem to be in the works. "We also reached out to more international partners like Google, Microsoft, Cisco and asked them to send representatives to run specific trainings," Clare told me. "It's a challenge to bring them to Iraq, though. We are not planning to move fast because we have to assess the sustainability of our work from different perspectives and it is very challenging to do that in the best possible way." [23] By cautiously iterating on successes and adopting new strategies to respond to failures, they hope to enact a sustainable plan for the future that doesn't over-extend their resources or leave them flat-footed when situations change on the ground.

To conclude, as is clear from the discussion provided here, Iraq Re:Coded is a well-executed and promising project which can serve as a model for future initiatives. But it is also a project whose ultimate success is very much still in question, and whose final impacts are still making themselves apparent. The overarching goal of providing a sustainable livelihood for refugees who pass through the program is in sight for some students, but others continue to struggle to find employment. It remains to be seen whether the program will be able to successfully expand and meet the main challenges mentioned above: continued funding, provision of formal financial services, sustainability, and the ability of students to successfully compete with applicants for international jobs.

In her interview, Ali described the challenges that the Iraq Re:Coded team faces going forward:

*Despite the modification that we made to the training to change it from full-time... to part-time, still twenty of the original students have withdrawn. Some of them thought the course was too difficult for them. One student returned to Fallujah to figure out whether situation his house had been destroyed or not. So, it's always challenging to work with people whose lives are not stable. We*

*had to adopt a super flexible approach to running the program. We thought we are going to have full time training, but it's impossible to do that.*

In this discussion, Ali conjectured that these programs work best in a camp setup. In a non-camp environment, the risks of dropouts and refugees not being able to participate greatly increase, meaning that future implementations of similar initiatives will need to adapt to changing local contexts and labor environments.[24] Likewise, more work needs to be done on how such programs can reach and aid refugees who are in transit between camps and urban areas, whose rights are perhaps the most in danger of being violated among all refugee groups, but who often slip through the cracks of international aid.[25]

### **3. Challenges and recommendations**

In this section, I will explore the challenges that humanitarian actors, especially non-profit such as Iraq Re:Coded are faced with in using technology to improve livelihoods of refugees. Furthermore, I will recommend various ways to tackle those challenges.

#### 3.1 Access to the Internet

Any online livelihood or educational training relies in a fundamental way on reliable Internet connectivity. According to UNHCR, at present almost 65 million refugees and IDPs are living without reliable internet and network connectivity.[26] Although mobile broadband[27] is available for most of the refugees in urban areas, 20% of those in rural areas have no access to the Internet.[28] However, the 2G or 3G connectivity characteristic of many mobile broadband networks might not be sufficient to run an online business, use online educational material, or stream training videos. In addition, access to reliable sources of power for charging devices is a significant obstacle on the path to permitting refugees to enjoy the fully benefits of online services.

Fixed broadband, via Wi-Fi hotspots, could provide an alternative solution. Private companies, such as Google and Cisco have been partnering with different humanitarian organizations such as Mercy Corps to bring Wi-Fi connections to the camps.[29] But because of over-population in refugee camps, the users are only allowed to use limited amount of data and they not able to stream videos online. In these situations, refugees in camp might end up buying expensive data packages for which they are forced to spend up to a third of their disposable income.[30] There are ambitious plans currently underway to connect the world to the Internet such as Facebook's much-criticized Free Basics, Alphabet Inc.'s Project Loon, or SpaceX's proposed "satellite constellation" system.

It is my intention here neither to critique or praise these existing initiatives. I would like to propose, however, that in addition to simply counting on the success of future plans, technologists and NGOs should actively seek to enhance their implementation, impact and societal benefit via a range of other activities. For example:

- Technologists should create applications and online platforms which requires less data usage and which even have the potential work offline. In addition, training websites should feature responsive design because most refugees rely exclusively on mobile devices to access to the Internet.
- When establishing Internet centers in the refugee camps, attention should be placed on creating spaces where refugees can not only obtain access to reliable Internet connections, but also where they can obtain free training and guidance. Although the initial phases of this might involve direction from NGO employees, ideally, it would become a peer-to-peer guided practice based on digitally-literate refugees teaching their fellow refugees about basic computer and digital literacy as well as online dangers to avoid and refugee-specific websites and social networks of value.
- Instead of concentrating their focus on the software side of the equation, NGOs might try following the lead of the large-scale connectivity projects mentioned above (such as Project Loon) and focus on creating innovative hardware solutions with practical benefits, such as bringing reliable power and energy to the camps. Many of these solutions may not be particularly high tech or hugely ambitious, and can include localized work by technically-skillful refugees themselves. Situations such as these can be harnessed and organized to allow refugees to use their technical know-how to improve life for themselves and their peers.



### 3.2 The digital divide and tech literacy

The digital divide among different groups based on gender, age, social and economic factors may prevent certain groups from access to the mobile devices, Internet and online services. In addition, digital literacy varies among different refugee groups. Level of digital literacy not only depends on access to the internet but also varies based on people's gender, age, culture and other socio-economic factors. According to Intel's report "Women and the Web": "On average across the developing world, nearly 25 percent fewer women than men have access to the Internet." [31] This gap increases as age increases. Therefore, among refugees, women and the elderly are less likely to have access to mobile phones and the internet.

Online livelihood programs rely significantly not only on access to devices and the Internet but also on digital literacy. Although there is a high rate of smart phone usage among refugees, digital literacy should not only be defined in terms of basic skills such as navigating the Internet or using email. Becoming technologically skilled can play a major role in finding jobs, forging important new professional and personal connections, and updating skills. [32] For instance, in order to start an e-commerce business to sell handcrafts or become a freelance coder, it is necessary for a person to not only to be capable of handling an email account, but to have knowledge of both front-end and back-end web design, database management, digital security, and online business logistics such as establishing a web address and purchasing cloud-based server space. Not to mention having the ability to trouble-shoot and respond quickly to emerging issues and threats.

Establishing such a skillset is far from easy, and it depends in large upon factors that aren't connected directly to technology, yet which make advanced digital literacy among refugees possible. These include:

- Nurturing a better understanding of gender, age, cultural and other socio-economic gaps among refugees, and founding programs and developing training that seeks to close this gap first. For example, Syrian refugees in general are more

digitally-literate compared to those from less affluent nations where personal computing devices remain relatively scarce such as Afghanistan, which has a per capita gross national income of only \$610.[33] Regardless of the wide divergence in familiarity and access to digital technologies created by such income divides, however, it is important for any groups who want to initiate an online program to assure that the programs involved are inclusive and are not constructed in such a way as to encourage or develop biases.

- Although it is vitally important to offer 21<sup>st</sup> century skills such as digital literacy to refugees, alongside these activities it is also worth exploring opportunities to transform occupations that are often labeled as "low-skill jobs," such as sewing, making rugs, and crocheted items of clothing, into independent sources of income made possible by international customers. Even if an individual rug-maker, for instance, is not able to manage her own online business, teaching digital literacy, e-commerce and online marketing skills *en masse* will help refugees to work with one another to help skilled artisans find customers overseas or even teach their skills to a broader audience. Lack of access to formal financial systems might be an obstacle, but NGOs could play a mediatory role in these cases. Further in the future, blockchain-based currencies *might* provide a potential alternative to traditional banking, but this should not be a priority at the moment due to the dangers posed by price fluctuations from currency speculation.
- Close the gender divide by proposing gender-based incentive programs. Funders and donors should take into consideration that there is already a literacy gap based on gender, and allowing this gap to continue to persist in the online world is not acceptable. Funders and donors should thus allocate specific funding for programs that focus on digital literacy for women and the elderly. Regarding access to the Internet, depending on the program, there should be advocates and experts from NGOs, government agencies, and private sector to make sure the program is inclusive and that representatives for all groups and genders are involved. The program should challenge biased norms and discriminatory practices.

### 3.3 Lack of collaboration and partnership

Good intentions and a desire to help are at the core of what motivates donors, aid workers, and governmental and private sector partners working in the field of technology and refugees' human rights. But at the same time, it is an unfortunate fact that good intentions alone are not enough. This is especially true when it comes to ICTs. There is no doubt that all humanitarian actors including NGOs and non-profit organizations, UN and government agencies, private sector, funders, and technologists

have employed digital methods and tools to allow humanitarian interventions to be more productive, efficient and innovative.

At the same, however, digital technologies have all too often been framed as "magic bullets" for solving issues that are deeply complex and indeed, in some cases fundamentally unsolvable. Likewise, the outpouring of support and international media attention directed toward Syrian and Afghan refugees has led to problems of organization and collaboration, in some cases resulting in a poor use of funds, needless duplication of work, and the creation of well-meaning apps and programs that fail to find an actual audience among refugees.

It is important, then, that we don't allow the good intentions of the international community to blind us to the missteps and missed opportunities that can result from a situation such as this. This section explores the organizational and collaborative challenges posed by the high number of competing services, organizations and platforms seeking to teach technical skills to refugees, and offers several recommendations about how these might be better able to collaborate effectively in the future.

The news in the past several years has frequently featured stories along the lines of the headline that appeared in *USA Today* in September of 2016: "Google to help George and Amal Clooney educate Syrian refugee children in Lebanon."<sup>[34]</sup> This initiative led by the Clooney Foundation for Justice, which proposes the creation of ten "pop up" schools near refugee settlement areas in Lebanon and prominently features a promise of teaching computer literacy, is indicative of two trends. First, the creation of new non-profit organizations founded in direct response to the ongoing Syrian refugee crisis, with a specific set of objectives that differentiates them from existing refugee aid organizations like IRC. And second, close partnerships with technology companies that are seeking to find outlets for the social justice objectives of many of their employees, in addition to leveraging their consumer-facing products (such as Chromebooks) for charitable uses.

Any new initiative and new source of funding in this field should be welcomed with open arms. However, the enormous amount of attention focused on the specific issues surrounding education, human rights, refugees and technology has created a highly competitive environment among non-profit organizations. Unlike in the private sector, in the realm of NGOs, such competition does not always lead to successful and sustainable solutions.

As an example, let us examine the presence of refugee-related mobile applications in the Google Play online store. There are about 200 refugee-related mobile apps on Google Play as of October, 2016. Of these applications, some 57% had less than 500 downloads, and a significant proportion of them had not been updated for more than a year, leaving them vulnerable to security threats and potentially unusable on some Android builds.[35]

Although an imprecise survey, this examination of Google Play apps nevertheless indicates how unsustainable some of the online services might be. The need for further collaboration between the makers and funders of these types of apps was driven home at the 2017 RightsCon conference in Brussels, Belgium, in a panel which featured representatives from Dina Ariss, Refugee Design Council; Jovan Jelcic, Mercy Corps; Sven Seeberg, Integreat; Fran Penfold, Refugee.Info; Omar Meksassi, IRC.[36] Here, Dina Ariss of Refugee Design Council noted the urgent necessity of overcoming competition between different aid agencies and coordinating work to avoid an overabundance of apps and initiatives.

## 4. Concluding Thoughts

Below are some additional proposals for ways that organizations in both the public and private sector might be able to forge more effective and sustainable collaborations aimed at reducing unnecessary competition and amplifying existing work.

The most difficult but also perhaps the most beneficial objective in this regard is a campaign to encourage funders and funding agencies to *mandate partnerships*. In other words, funders should care not only about relatively abstract concepts like sustainability, but should actively encourage this by requiring organizations that they fund to demonstrate their willingness and ability to share data with peer organizations, and to create lines of communication that allow organization to coordinate their resources so as to make them more effective. Although it will be difficult to convince the numerous different types of organizations which provide funding for refugee aid of the value of this, one potentially effective argument could center on stretching the value of a dollar. By encouraging protocols that prevent the creation of apps or programs which cover the same ground or which go unused by those they intend to serve, such an initiative would increase the effective value of donated funds.

One potential platform for this type of cross-organization coordinating could be an open source online platform for data-sharing. This could take many shapes, but at its core, such a platform would function as a clearinghouse for exchanging useful information relating to tech and refugees. For instance, why shouldn't all refugee aid apps be open source, their code available to all who wish to fork it and develop it into something new? Why shouldn't all educational materials relating to teaching digital literacy be similarly freely available? One example of types of platforms is the Digital Humanitarian Network founded by Andrej Verity and Patrick Meier. In their own words, this project has been developed "to leverage digital volunteers in support of 21st century humanitarian response."<sup>[37]</sup> These types of platforms could be expanded to be used by NGOs, private sectors, funding foundations, and academics to find collaborators, share their experiences and the lessons learned.

Finally, a lack of attention to sharing personal data on an online platform might create new methods of surveillance by national governments. The world has witnessed this firsthand from the many examples of Syrian government interference in ISP services, monitoring website content and

admins, and surveilling of users' personal SMS and email addresses.[38] To mitigate these circumstances, we might explore the following options.

Programs such as Iraq Re:Coded aiming to teach digital literacy via online and in-person training should integrate minimum digital security training into their program. The training could be very basic and embedded with simple video-clips and audio. Most of the available handbooks and digital security training are designed for people who already have above-average digital and internet knowledge. Therefore, it is very important to develop training that are easy to learn and memorable. A brief look at available digital security training materials such as the Electronic Frontier Foundation's "Security Toolkit" and Access Now's "A First Look at Digital Security" shows that these materials are designed for journalists, activists, and others who have a general knowledge of online security.[39]

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#### Footnotes

[1] This article defines "refugee", following the 1951 Convention and Protocol Relating to the Status of Refugees, as "an individual who is unable to return to his or her country of prior residence due to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion."

[2] "Connecting Refugees: How Internet and Mobile Connectivity Can Improve Refugee Well-Being and Transform Humanitarian Action" (UNHCR, September 2016), online: <http://www.unhcr.org/5770d43c4.pdf> (last access: 22 February 2014).

[3] United Nations High Commissioner for Refugees (UNHCR), "UNHCR Syria Regional Refugee Response," UNHCR Syria Regional Refugee Response, online: <http://data.unhcr.org/syrianrefugees/country.php?id=103> (last access: 22 February 2014).

[4] Akram et al. (2015): Protecting Syrian Refugees: Laws, Policies, and Global Responsibility Sharing, in: *Middle East Law and Governance*, 7(3), 287–318.

[5] On refugees' use of 21<sup>st</sup> century skills and tool such as mobile phones in and out of refugee camps see Betts, A. et al., 2014. Refugee economies: Rethinking popular assumptions, University of Oxford, Refugee Studies Centre, online: <https://www.rsc.ox.ac.uk/files/publications/other/refugee-economies-2014.pdf> (last access: 22 February 2014).

[6] Maitland and Ying Xu. "A social informatics analysis of refugee mobile phone use: a case study of Za'atari Syrian Refugee Camp," TPRC 43: The 43rd Research Conference on Communication, Information and Internet Policy Paper (2015).

[7] Alexandra Clare, Iraq Re:Coded, Durable Skills, Education and Livelihoods through Innovation and Technology for Refugee Youth, (Thesis, New York University, Center for Global Affairs, 2015)

[8] My interview with Ali Clare was conducted on April 17, 2017 and is quoted from throughout this chapter.

[9] Keith David Watenpaugh and Adrienne L. Fricke, "Uncounted and Unacknowledged: Syria's Refugee University Students and Academics in Jordan," Joint UC Davis Human Rights Initiative and Institute for International Education. (2013).

[10] "Iraq - Telecoms, Mobile, Broadband and Digital Media - Statistics and Analyses - BuddeComm," accessed April 18, 2017, retrieved at: <https://www.budde.com.au/Research/Iraq-Telecoms-Mobile-Broadband-and-Digital-Media-Statistics-and-Analyses> (last access: 22 February 2014).

[11] "Iraq Re:Coded," Partners, accessed April 17, 2017, online: <http://www.re-coded.com/partners-1/> (last access: 22 February 2014).

[12] Ibid.

[13] Interview with Ali Clare conducted on April 17, 2017.

[14] According to an interview with Ali Clare on April 17, 2017, this game was designed in-house.

[15] Flatiron School, "Free Coding Course | Flatiron School," accessed April 17, 2017, online: <http://go.flatironschool.com/free-coding-course> (last access: 22 February 2014).

[16] Iraq Re:Coded, "Re:Coded Bootcamp," accessed on May 1, 2017, online: <http://www.re-coded.com/iraq-recoded/> (last access: 22 February 2014).

[17] "Google for Education: Google RISE Awards," accessed April 17, 2017, online: <https://edu.google.com/resources/programs/google-rise-awards/> (last access: 22 February 2014).

[18] "Iraq - Telecoms, Mobile, Broadband and Digital Media - Statistics and Analyses - BuddeComm."

[19] Interview with Ali Clare conducted on April 17, 2017.

[20] Interview with Ali Clare conducted on April 17, 2017.

[21] Interview with Ali Clare conducted on April 17, 2017.

[22] There is an interest in ICT-related entrepreneurial and start-up initiatives in Turkey. Infrastructure and internet connectivity is more stable and reliable. Currently, there are more than one million Syrian refugees live in Turkey and programs such as Iraq Re:Coded is in demand for that population. For more about Syrian refugees rights to work see: Akram, S.M. et al., "Protecting Syrian Refugees: Laws, Policies, and Global Responsibility Sharing," *Middle East Law and Governance*, (2015) 7(3), pp. 287–318.

[23] Interview with Ali Clare conducted on April 17, 2017.

[24] E.H. Campbell, "Urban refugees in Nairobi: Problems of protection, mechanisms of survival, and possibilities for integration, *Journal of Refugee Studies* (2006) 19(3), pp. 396–413. See also "Iraq - Telecoms, Mobile, Broadband and Digital Media - Statistics and Analyses - BuddeComm," accessed April 18, 2017, online: <https://www.budde.com.au/Research/Iraq-Telecoms-Mobile-Broadband-and-Digital-Media-Statistics-and-Analyses> (last access: 22 February 2014).



[25] C. W. Kihato, & Landau, L.B., "Stealth Humanitarianism: Negotiating Politics, Precarity and Performance Management in Protecting the Urban Displaced," *Journal of Refugee Studies* (2016).

[26] "Connecting Refugees: How Internet and Mobile Connectivity Can Improve Refugee Well-Being and Transform Humanitarian Action" (UNHCR, September 2016), online: <http://www.unhcr.org/5770d43c4.pdf> (last access: 22 February 2014).

[27] Mobile broadband means internet access over the existing mobile networks which requires cell tower to transmit to and from mobile phone. Mobile broadband could be any types of connectivity including 2G, 3G, 4G, and LTE.

[28] United Nations High Commissioner for Refugees, "Connectivity for Refugees," UNHCR, accessed April 27, 2017, online: <http://www.unhcr.org/connectivity-for-refugees.html> (last access: 22 February 2014).

[29] "NetHope," Google.org, accessed April 27, 2017, online: <https://www.google.org/our-work/crisis-response/nethope/> (last access: 22 February 2014).

[30] Disposable income for refugees in camps means the amount of money that each refugee receives from UNHCR or other governmental humanitarian aid agencies. See UNHCR, "Connecting Refugees: How Internet and Mobile Connectivity Can Improve Refugee Well-Being and Transform Humanitarian Action,"

[31] "Women and the Web: Bridging the Internet Gender Gap," Intel Corporation (2013).

[32] Alexander Betts, Louise Bloom, Josiah Kaplan, and Naohiko Omata, "Refugee Economics: Rethinking Popular Assumptions," Humanitarian Innovation Project, University of Oxford (2016).

[33] World Bank. (2016) "Data: Afghanistan." Retrieved from: online: <http://data.worldbank.org/country/afghanistan> (last access: 22 February 2014).

[34] Jessica Guynn, "Google to help George and Amal Clooney educate Syrian refugee children in Lebanon," USA Today, September 20, 2016, online: <https://www.usatoday.com/story/tech/news/2016/09/20/george-and-amal-clooney-team-with-google-to-educate-syrian-refugee-children-lebanon-united-nations-obama-refugee-crisis/90716882/> (last access: 22 February 2014).

[35] This estimate is based on my research on Google Play in October of 2016. I searched for the words "Refugee," "Asylum," and "immigrants." I observed that there are almost 200 applications on Google Play alone which appear to be designed specifically for refugee needs.

[36] "Apps for Refugees: Successes and Challenges," RightsCon, Brussels, Belgium, March 31. Organized and chaired by Roya Pakzad and featuring panelists Dina Ariss, Refugee Design Council; Jovan Jelicic, Mercy Corps; Sven Seeberg, Integreat; Fran Penfold, Refugee.Info; Omar Meksassi, International Rescue Committee, online: <https://events.bizzabo.com/RightsCon/agenda/session/177264> (last access: 22 February 2014).

[37] Digital Humanitarian Network founded by Andrej Verity who is currently the information management officer at the United Nations (UN) Office for the Coordination of Humanitarian Affairs (OCHA) and Patrick Meier, Co-Founder and Executive Director of WeRobotics and the author of the book Digital Humanitarians. For more information about DHN look at: "DHN | Leveraging Digital Networks for Humanitarian Response," accessed April 22, 2017, online: <http://digitalhumanitarians.com/about> (last access: 22 February 2014).

[38] Syria | Country Report | Freedom on the Net | 2012.

[39] EFF Security Toolkit: <https://www.eff.org/deeplinks/2016/09/five-eff-tools-help-you-protect-yourself-online>, Access Now's A First Look at Digital Security <https://www.accessnow.org/a-first-look-at-digital-security/> (last access: 22 February 2014).

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Digital Humanitarians who have concerns about data privacy and online dangers should duplicate some of these resources, customize, and simplify it for the refugee population and assure the digital literacy training have some of these security components.

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