reBootKAMP

Rebooting the Lives of Refugees Through Intensive Computer Learning

definition 'Hack' *verb* \ˈhak\

1. a creative and clever solution to a tricky problem or limitation
2. to manage; cope.

Abstract

Sponsor
ЯeBootKAMP - A Silicon Valley based, nonprofit, education delivery organization

Initiative
In densely populated, stable refugee communities, provide the following:

1. **Infrastructure**: Provide a special *Place* to grow technical skills: computer labs, equipment, furniture, site elements and support elements.
2. **Computer Literacy:** Provide programming and digital skills classes to all interested refugees.
3. **Technical Training:** Impart market ready digital skills and professional culture training to work age refugees and certify competency.
4. **Mentoring:** Facilitate mentorship and professional practice acclimation.
5. **Employment:** Employ grads in *Studio ЯBK* and/or facilitate placement of graduate including assistance with identity and travel documents, visas, emigration and asylum in foreign countries.

Beneficiaries
Refugees of conflict selected with no bias towards cultural or sexual identity, age, physical ability or religion. 60% of the 'seats' will be reserved for females. This as a response to under-representation in the high tech and technical arts industries.

Deployment
Installation of pilot lab to serve refugee populations in North Jordan. Subsequent deployment of labs will serve refugee populations in Lebanon, Turkey and refugee communities further afield including Iraq, Afghanistan, Pakistan, Europe, Africa and North America.

Funding
Pilot lab is being produced and operated with funds from private and corporate sponsors. Subsequent labs will be produced with proceeds from tuition-driven ЯeBootKAMPs in the US.

A Generation ~~Lost~~ **FOUND!**

1. Introduction

The ЯeBootKAMP initiative in Jordan is predicated on the following assumptions:

A. Conflict in the Middle East, of which Syria is central, will continue to produce refugees and prevent repatriation for an indefinite period of time. Proliferation of extremist groups combined with coalition interventions which historically have lasted 8-13 years portend protracted engagement for at least another 3 to 8 years.
B. The choice of curriculum is driven by industry growth projections which show tech industries growing 18% by 2022 compared to all other industries at 10.8% translating into 685,000 new tech jobs in the next 8 years.
C. Given most professions are reliant upon digital technology at some level and given basic computer literacy is a necessary condition for employment in the developed world, imparting these skills is especially important for vulnerable populations.
D. Recognition that the most important skills of the 21st century hinge on the ability to manage digital data in one form or another.
E. There is a need for advanced computer programming and digital tools training in refugee communities as they are mostly is non-existent. Basic and remedial courses too, are in very short supply.
F. Due to the high demand in Jordan for programmers, web developers, data base managers and digital technicians in the industries of medicine, architecture, engineering, graphics and journalism, Syrian refugees will not be displacing Jordanian nationals in the workforce.
G. Skilling-up refugees in computer-based technologies will grow the local economy, offset inflation and bolster the health of industries they support and will raise the standard of living for Jordanian nationals. All boats rise.
H. Technical training proximate to regions of conflict advances democracy and peace by providing an alternative to fighting, forced marriage, exploitation, idleness and other negative coping strategies that destabilize populations.

I. *And finally and most importantly, a visually exciting environment enhances the knowledge acquisition experience and reinforces participation and deep engagement in the learning culture.*

2. ZatLAB

ЯeBootKAMP's learning model is ZatLAB - a self-contained, self-powered, modular, portable and scalable learning environment and ideas incubator. It was conceived of as a visually unique, secure and efficient means to impart computer based skills to refugees and distressed populations.

ZatLAB is many things: ZatLAB is a building. ZatLAB is a site. A beginning. A safe haven. Normalcy in midst of dislocation. Distraction in the midst of disorientation. Place in the midst of placelessness. A bright spot on an otherwise monochromatic palette. A machine for transforming the massive intellectual potential of the refugees into prosperity. But more than anything, ZatLAB is an 'Exit' door into a new beginning.

Specifications:

Structure: 2 - 8' (2.4m) wide, x 9'-6" (2.9m) high x 40' (12.2m) long steel shipping containers mated in their long dimension
Floor Area: 640 SF (43m^2)
Primary Power: 14,000 watt photovoltaic (solar) system with battery storage
Backup Power: 10,000 watt diesel generator
Climate Control: Ultra efficient 20K BTU Cooling / 10K BTU Heating. Summer: 72 F (22 C). Winter: 68 F (20 C)
Average Insulation Value: R-24
Internet Connectivity: Broadband with satellite and mobile cell backup.
Number of Computer Workstations: 54
Accessible Workstations: 4
Network: 2 Enterprise Wifi routers
Interior Finishes: Epoxy coated wood floors, wood panels above work counter, tinted glazing at ends of modules.
Acoustics: Acoustic treatments on ceiling and below work counter.
Patio Lounge: 20' (6.1m) x 20' (6.1m) covered and enclosed in winter. Semi-conditioned in the summer.
Lighting: LED
Patio Floor Area: 400 SF (37.1m^2)
Physical Security: Area lighting, ballistic glazing, audible and silent alarm, 10' (3m) high perimeter fencing
Supergraphics: 2-40' (12.2m) long by 8' (2.4m) high panels by world renowned artist ChemiS
Additional Features: Full whiteboard wrap on interior. Ice machine, water cooler, tower, Zen garden. Detached toilets per WASH standards.

See Appendix A for a full description

Teach a kid to drive a computer
And They Will
EAT FOR A LIFETIME

3.Tech Bootcamps

ЯeBootKAMP's initiative is modeled on a relatively new and disruptive form of para-professional training called bootcamp learning. Like the military name implies, these intensive immersion programs compress 12-18 months of highly specialized coursework into 12-16 weeks.

Tech bootcamps are an alternative to the traditional 4 year university education and a direct pathway into computer-reliant industries. They can deliver workers faster and with a finer honed skill-set than traditional models. For this reason, they are increasingly the go-to choice of tech employers.

Although bootcamps are designed to produce the worker bees for the bottom 2/3s of the tech industry pyramid they can also function as launch pads into a traditional computer science programs, consulting, application design, management or higher entrepreneurial efforts.

Currently there are 50+ bootcamps populating larger urban areas in the US. Two of the most successful, Dev Bookcamp and Hack Reactor are offering content, support and guidance.

4.Learning Rate

ЯeBootKAMP will utilize a less aggressive form of the bootcamp method striking a balance between the value of "slow" learning and the highly intensive bootcamp regimen. Instead of devoting all our resources to just 50 students every 12 weeks (200 graduates per year), we will spread the curriculum over 2-4 quarters which will allow for a much greater number of students. Courses will be throttled to produce 500-600 grads per year per lab.

5.Course Delivery & Staffing

ЯeBootKAMP will utilize blended learning to impart the curriculum. Online coursework will be facilitated by bilingual, subject matter experts in the classroom. In addition to helping students navigate the online lessons, they will provide constant evaluation, target individual coaching and coordinate movement of the students through the program. Initially the facilitators will be contract employees and volunteers of ЯeBootKAMP. After ЯeBootKAMP has graduated the first wave of students, high performers interested in becoming facilitators will be trained up to augment the staff.

Administration of the labs will be off-site either in leased space or at an education partners' headquarters. This includes registration of new students, accounting, payroll, human resources and contracts, local partnership coordination, student evaluation, producing certificates, outreach & marketing and other administrative and functions.

6. Digital Industries Served

ЯeBootKAMP will be training students to engage the following market sectors:

Internet / Telecom
- Web development including mobile application design
- Front end UX / UI design
- Backend programming
- Database management
- Translation of popular applications into Arabic

Computer Technology / Engineering
- Software development
- Technical support
- Systems / network administration

Technical and Creative Arts

- Architecture and engineering support - drafting, modeling, rendering and animation
- Rapid prototyping including modeling and fabrication
- Robotics
- Graphic design and image manipulation
- Game development
- Virtual reality (VR) production
- Music industry support
- Video production

Healthcare Information Technology

- Medical device software development, support and translation
- Clinical systems including electronic medical records, nursing clinical documentation, radiology, ER management, pharmacy
- Biomedical support
- Medical informatics

Infrastructure

- Database administration
- IT Project management
- Data mining / Analytics / Business intelligence
- Information Security Compliance / Governance

7. Curriculum

Courses will be broken down as follows:

1. Fundamental computer skills for ages 5 and up including older adults. This includes introduction to the computer, word processing, spreadsheets, slide presentation, photo manipulation and for kids, one hour of code. Introduction to children's programming language like Scratch and Gamemaker. And for older students introduction to HTML/CSS ,Javascript and C programming.

2. Foundation theory and advanced level programming classes for kids age 8 and up. Courses in C, Javascript, Perl, Python, PHP, C# and Arduino.

3. High level web development courses for ages 12 and up including advanced courses in HTML/CSS, Ruby, SQL, Javascript and toolkits like AJAX and jQuery.

4. Technical arts courses for students 14 and older. These would include applications specific to the design professions including the Autodesk Suite (Revit, Autocad, 3DS Max) and Sketchup for architects and engineers. Solidworks, Rhino, ZBrush and Maya for the fabrication and 3D printing industry. Unity 3D for game development. Adobe Creative Suite for the graphics / publishing industry. ProTools for the music industry and Premier or Final Cut Pro for the film industry.

5. Network administration courses for students 16 and older. Windows, UNIX and Linux.

6. Health information technology (HIT) for students 16 and older. This would follow the track of traditional programs in HIT but in bootcamp format and would shallow dive into the most popular EMRs, billing software, and medical equipment interfaces.

Additionally all students will receive training in 'emotional engineering' which includes empathy design, workplace communication and etiquette, community engagement and cultural/gender identity sensitivity.

Course content and delivery is being provided by Udacity, Hack Reactor, Codecademy and Udemy.

For a sample curriculum see Appendix B.

8. Mentorship

Once operational ЯeBootKAMP will initiate a program to connect Silicon Valley professionals and other tech centers with our students. Here the students will learn the secret handshakes and be introduced to professional culture and norms of professional practice. This will be done through social media and a web based application students will create under *Studio ЯBK*. Mentorships will offer an opportunity for the mentee to ask questions, gain a sense of tech culture and begin to build a network which could ultimately spawn an internship or future employment. For the mentor, this will be raise awareness as well provide some satisfaction in knowing they are making a tiny but important difference in helping this battered population.

9. Certification And Something More

ЯeBootKAMP will be setting the performance bar high for several reasons. It is easy to produce code monkeys, especially given the demand for this kind of worker. But this is neither consistent with our vision of imparting *something more* nor is it fair to a population already battered by barrel bombs.

The success of our production is measured by the ability of our graduates to make the world a better place. And the index of our worth as an institution is directly proportional to the happiness, success and the ability of those

who come through our labs to effect positive change, to grow democracy in the places where they sleep. So unlike some bootcamps, we are not training students to pass Google's programming test or Oracle's 115 question interview. We are training them to be citizens of the world first and programmers, modelers, web developers and journalists second.

To this end, competency in the development of not only digital skills but also emotional engineering will be gauged frequently throughout the program. There will be many low bars to hurdle but progressively higher bars as students advance from beginner to intermediate to advanced and ultimately are able to demonstrate the ability to conduct themselves professionally and engage their communities as ambassadors of humanity.

10. Orientation, Exposure, Outreach and Recruitment

Early exposure to a subject correlates with future interest and pursuit. To this end and given the proliferation of digital technology and its ubiquity in modern life, ЯeBootKAMP will sponsor a 1 hour *Introduction to the Computer* seminars 6x per week. During these sessions 50 school-aged children and young adults from the refugee community will be have the opportunity to write their first piece of 'Hello World' code, create their first game or model their first object or building. Students demonstrating interest and aptitude will be invited to a deeper dive and presented with the opportunity to enroll in future classes.

This program will expose 300 kids per week and over 15,000 kids per year per lab to the fundamentals of computing. As more labs are deployed including a mobile lab, the outreach will extend further afield to the broader refugee community at large eventually touching a majority of the student refugees in Jordan.

High performers trained up to become facilitators will also function as tech ambassadors within refugee communities. They will identify early adaptors and bright stars from formal and informal refugee schools, internet cafes, math clubs, science fairs and social networks. These ambassadors will plant seeds by organizing hackathons, implementing outreach program to the broader community and build bonds within the local tech community.

A Generation Lost FOUND!

11. Academic Calendar

The ЯeBootKAMP academic calendar will follow the local school calendar for primary and secondary school students. Technical training programs will follow the traditional 4 quarter per year model (12 weeks per quarter).

12.Sustainability and Employment

ЯeBootKAMP is bullish on the talents and motivation of the Syrian refugee. Where most see only tragedy, disorientation and suffering, we see opportunity and the potential to become a major force in technology. If there is any doubt as to the ability of these people to triumph in the face of adversity one needs only to stroll down the Champs Elysees in Za'atari Camp at midday. Given the Syrian reputation for resilience and enterprise, a Phoenix rising from the ashes is inevitable. This rebirth could take many forms but the one we will be nurturing is the emergence of a new center of the digital excellence - one formed from the diaspora rising in the Levant.

Working with a variety of partners across a range of industries, ЯeBootKAMP will be gradually scaling up the creation of incubators, accelerators, drafting farms, modeling mills, freelance graphic design firms, and video and music production studios. This will form the basis of *Studio ЯBK*. Graduates will be assembled into teams of like specialty where they will perform contract work to the end of gaining valuable workplace experience while being compensated within the legal framework of Jordanian law.

The low cost of living in refugee environments can be leveraged to offer competitive outsourcing rates below fair market value. ЯeBootKAMP has no profit motive only sustainablity: so labor can be sourced for just what is required to pay for lab operation and modest expansion in the region.

13. *Studio ЯBK*

Studio ЯBK will compliment and reinforce the learning labs. In this professional environment, graduates will have the opportunity to gain valuable experience and begin to build a knowledge base for their respective industries. Whether designing apps, modeling buildings or developing games, graduates will be able to ply their newly formed skills towards real applications empowering their ability to rejoin society.

Coding Farm

One branch of *Studio ЯBK* will focus on supplying code to niche segments in the tech markets. These include mobile development, data mining, server side applications and algorithm production. As ЯeBootKAMP is based in Silicon Valley and given the great demand for contract work in the tech industry, it is anticipated this component alone could support future labs.

Para-Professional Studio

Another branch of the studio will target the technical arts industries of architecture, engineering, graphics, gaming, sound engineering and video production. Currently, design professionals in the US and Europe outsource much of this work to overseas markets. Southeast Asia dominates outsourcing contracts in building / object modeling, rendering, animation and video production. ЯeBootKAMP visualizes capturing a share of this market by setting the quality control bar high and marketing to European firms.

Health Care Incubator

Of all the advancing branches of the technology industry, one in particular is outpacing the others by a wide margin. Healthcare IT will be valued at almost $57 billion dollars in 3 years requiring a massive infusion of technology support.

Responding to current demand and forecast growth of this sector, an important part of *Studio ЯBK* is an incubator

/ accelerator lab specifically for healthcare IT. This would involve a partnership with a Healthcare IT entity and local medical professionals in North Jordan. Examples of projects include:

- A mobile application that connects all healthcare providers in North Jordan. This may include integration of an Electronic Medical Record (EMR), natural language processing, scheduling, billing or equivalency.
- An application that monitors the status and progress of newborns, pediatric patients and / or refugees with injuries and chronic disease.
- An emergency alert system that connects to external ambulance or crisis services.
- Translation and cultural tailoring of popular nutritional, health monitoring and fitness tracking apps.
- Healthcare Information Exchange (HIE) network to connect to external facilities like Marfaq hospital.

The Health Care incubator would support the larger community and contribute to the quality of life of both refugees and the host population. Further, it would provide a revenue stream to support lab growth.

14.ЯeBootKAMP Partners

The ЯeBootKAMP initiative is being driven by private sector interests in Silicon Valley. The concept of rebooting the lives of refugees through intensive computer training has resonated deeply here and the concept of empowering refugees with tech skills is selling itself.

Learning partners Autodesk, Adobe, Udacity, Hack Reactor, Dev Bootcamp and Udemy have pledged course content, professional licenses, certifications and support. Negotiations are underway with a several other stalwarts in the tech industry

ЯeBootKAMP is an opportunity to grow or augment existing computer training programs already extant in refugee communities and our labs will be open to those NGOs and entities who share our mission.

15. Career Placement

ЯeBootKAMP graduates with valid travel documents and identification will qualify for placement abroad either in the Middle East, Europe, North America or other countries with favorable work or immigration policies. Placement will be through a 3rd party employment agency or negotiated contracts with tech industry sponsors.

16.Forecast and Salaries

Starting salaries are generous compared to other industries and the amount of time and money invested. A recent survey of *intern* salaries at 2 dozen tech companies in the US revealed monthly salary and perks upwards of $10,000 a month. Compared to the traditional 4 year computer science degree, the return on the investment is an order of magnitude greater.

17. Host Population Benefit – North Jordan

ЯeBootKAMP is sensitive to the stresses being placed on the host population and is proposing the following benefits:

1. For a given program, a percentage of lab seats will be open to Jordanian nationals.

2. ЯeBootKAMP is receptive to partnering with Universities in North Jordan, augmenting their programs and serving as a leaning incubators for future admissions.

3. ЯeBootKAMP will be hiring Jordanian nationals on a consulting basis to assist in the operation and maintenance of the labs.

4.Subsequent to the deployment of the first labs, labs will fabricated and materials sourced in the regions they are deployed.

5. Healthcare IT Incubator projects will directly benefit the host population.

6. Useful life of the learning labs is 50 years and its power system, 25 years. After a negotiated period of time, the labs will be deeded to entities within Jordan.

7. As deployment scales and economy of scale discounts will be credited towards a fund for Jordanian entities to purchase labs at a discount.

8. Tech start-ups hatched from within *Studio ЯBK* and permitted to operate in Jordan will contribute to a fund for the technical training of Jordanian nationals.
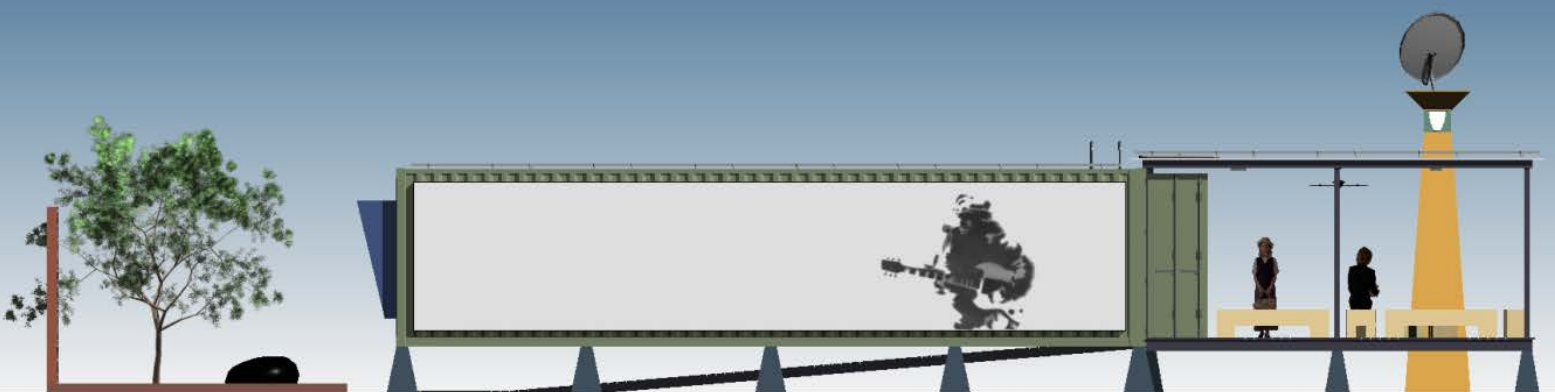
18. Summary

What ЯeBootKAMP is NOT :

1. A proving ground for developing curriculums or programs for refugees. A pedagogical experiment.

2. A computer science program.

3. A program independent of our unique physical structure - ZatLAB.

4. A traditional education NGO.

What ЯeBootKAMP is:

1. A unique physical environment - a *Place* for imparting real-life, highly marketable, computer skills to refugees.

2. An opportunity for kids as young as 5 to become literate in the most important language of the 21st century.

3. A conduit to Silicon Valley.

4. An alternative to the 4 year university education.

5. A means to empower graduates with *something more* than just the skills to be successful - the means to effect positive change

6. Secular. Egalitarian. Pro-gender equality. Culturally sensitive.

7. A democracy movement.

Appendix A - ZatLAB

3.1 Infrastructure

ZatLAB consists of two 8' (2.4m) wide, x 9'-6" (2.9m) high x 40' (12.2m) long steel shipping containers. This enclosure was chosen because it is physically secure, low maintenance, long lasting (50+ years), virtually impenetrable to the elements, relatively inexpensive, easily scalable and extremely versatile in its use. It can be easily transported, set up in multiple locations during its lifetime, connected with other modules and configured in multiple ways and hybridized with site built elements or other manufactured modules.

The containers are mated at their long dimension reducing 25% of the unit's exposure. Insulated and shaded glazing is confined to the ends of the units to provide filtered daylight which will offset the need for artificial lighting and allow for maximum whiteboard space along the long walls.
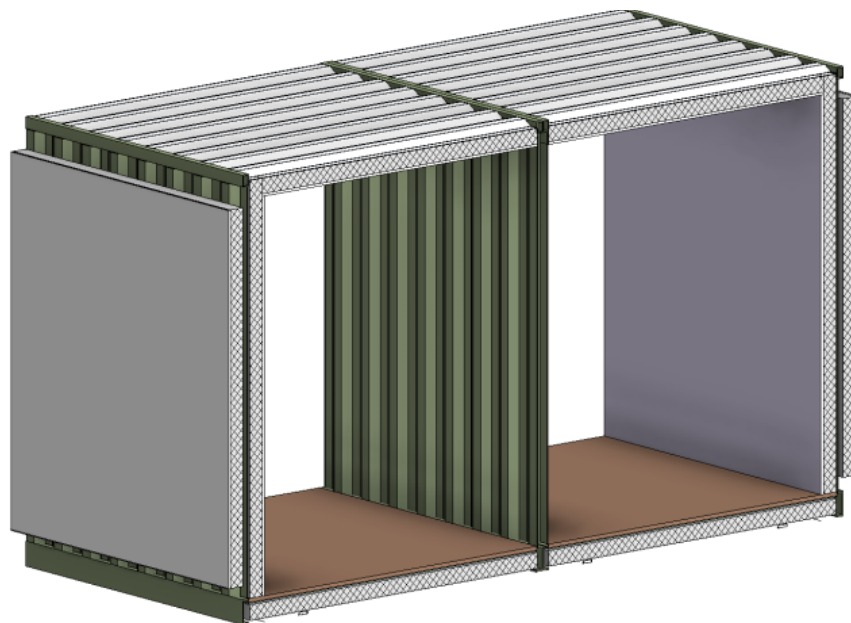
The containers are insulated with 8" of EPS board on the long exposed walls and 6" on the floors and roof giving the units an average R value in excess of 26 - twice the insulation value of commercial freezers. EPS is a 100% recyclable lightweight rigid cellular plastic that contains 98% air. It is completely inert, will not become friable like fiberglass and will maintain its performance for the life of the unit. Additionally the units are coated in an insulating, reflective paint which greatly reduces solar gain.

Clear floor area equals 281 square feet (26 square meters) per module or 562 square feet (52 square meters) total conditioned space.

Interior finishes are high grade plywood on the walls and floor. The floor is coated with a travel-resistant epoxy resin for easy maintenance. The walls are coated with a high gloss, scuff resistant epoxy coating where exposed.

Acoustic materials are applied to the ceiling and lower walls to offset the amount of hard surface (flooring, whiteboards).

The bench counters are veneered with an anti-glare plastic laminate over medium density fiber board (MDF).

The entry storefront is designed to minimize heat gain / loss by use of a less-than-standard size door: 1'-7" x 6'-4" (48 x 193cm). Wheelchair access is made possible by opening the normally fixed panel to provide 38" (~1m) of clear area. In front of the storefront glazing is a second strip door made of clear plastic strips that allow you to pass through but inhibits air movement creating a mini airlock.

A site assembled, wood frame deck and canopy provides 400 square feet (37 square meters) of additional floor area or enough space for an outdoor classroom. This area will otherwise function as a queuing and congregation space and informal collaboration space. A walk-off grate at the entry to the labs allows sand and dirt to pass through the floor system prior to entering the lab.


The patio floor deck, roof deck and ramp will be prefabricated off-site, disassembled and shipped inside one of the containers. Parts will be pre-drilled and marked for easy assembly. All wood used in the construction of the ZatLAB will be FSC certified.

The lab shell is further buffered by a span of marine plywood on its long exposed sides. These 'shields' have 3 functions. First they protect the exterior applied insulation. Second they mitigate noise transmission and third, they become a canvas for artwork. The pilot ZatLAB will feature work by the world-renowned street artist ChemiS. Themes will ultimately celebrate empowerment through knowledge. Future

ZatLABs will maintain their own unique identity by virtue of the designs on their long exterior walls which explore similar themes.

The units are supported on 30" high (.76m) concrete piers. These piers are grounded to subsurface, site-cast concrete pads. Elevating the units allows the air to circulate under the unit reducing heat transfer from the ground during the hot months. Raised units also are a response to seasonal flooding.
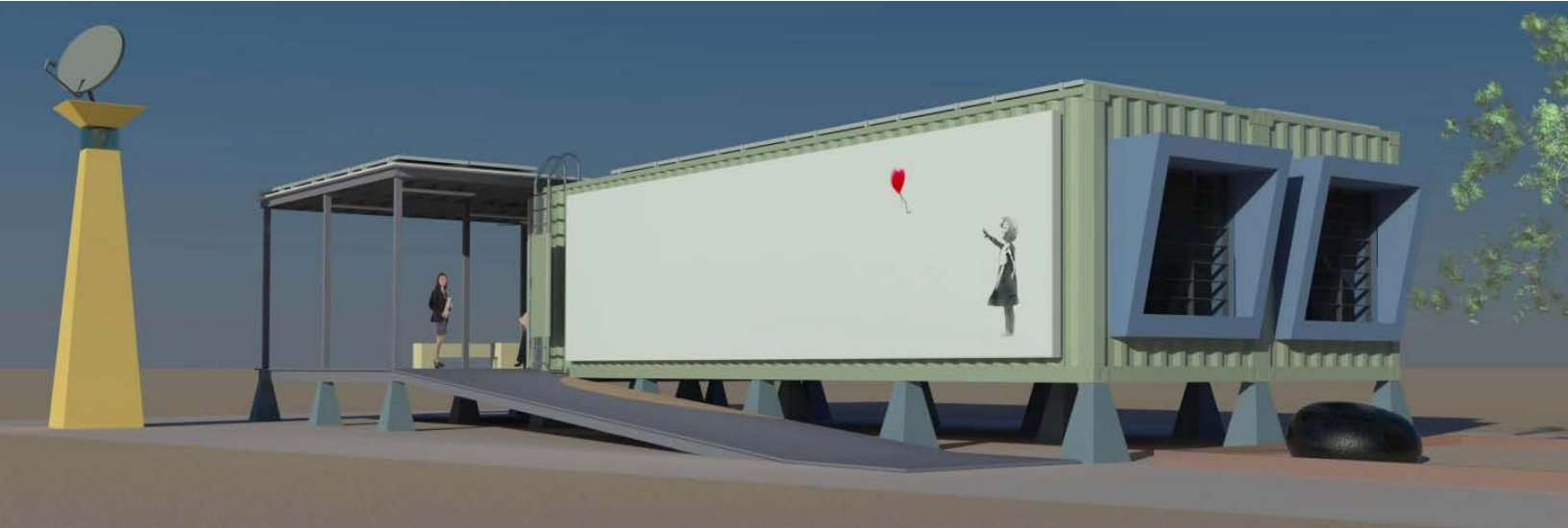

The design contains two ancillary elements. The tower will function as the security guard's station and generator garage but also to mark location. At night a beacon will illuminate the grounds as a security measure. The fixture will have a light cut-off to avoid trespass beyond the immediate area. Additionally, there will be area lighting for 24 hour operation of the lab.

The second site element is a Japanese meditation garden which is framed in view from the interior by the large portals at the end of each lab. A site built concrete wall studded with colorful light refracting glass marbles provides a backdrop for a flowering tree and feature rock. The tree will be irrigated from air conditioning condensate.

3.2 Climate

The units are conditioned by a wall mounted heat pump / air conditioner in each module. These are high efficiency units capable of maintaining 72F (22C) degrees in the hottest months and 68F (20C) in the coldest months.

The patio is provided with ceiling fans for air movement in the hot months and clear, roll-down curtains at the perimeter to winterize the space in the cold months.
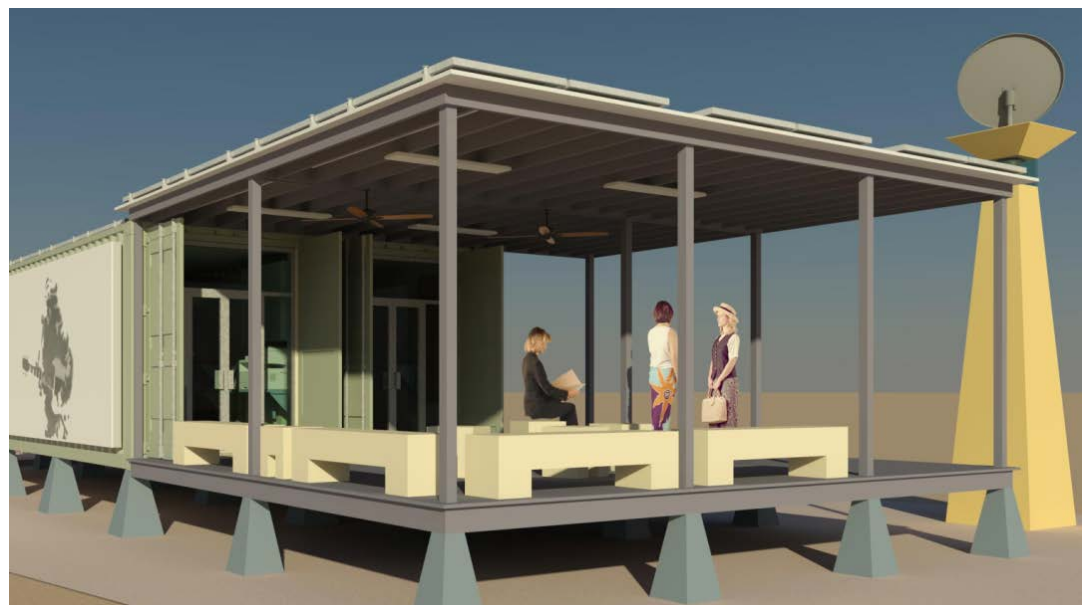
3.3 Power

A 14 kilowatt photovoltaic (PV) system will power the units year around. The system is sized for the worst case conditions which occur in December and January. Beyond these months the system will be producing an average of 4kw and up to 6kw of surplus energy. Some of this energy will be kept in reserve and accommodate small appliances and charging units. The balance will either be sold to the electric utility, donated to neighbors or used to make ice which can be sold or used in the swamp cooler to reduce cooling loads or semi-condition the patio.
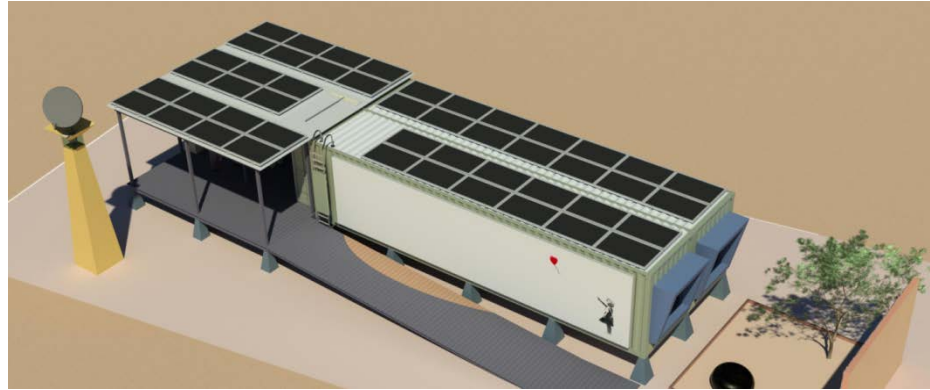
36 - 600 amp hour sealed AGM storage batteries will be tucked under the bench counters in both labs (18 per lab). These will act as heat sinks further reducing the cooling / heating capacity required. An integrated ladder provides easy access to the roof for cleaning the panels.

Provided also will be a 10 kilowatt diesel generator for those times when there is dense cloud cover for multiple days.

3.4 Connectivity

Broadband internet service in North Jordan is available through several providers. ZatLAB will have a backup satellite uplink. A proxy server will be used to cache web content which will greatly reduce the required bandwidth. ZatLABs located in remote areas will rely upon a satellite or mobile cell connection exclusively. Here, whitelists will be used to limit bandwidth as satellite thresholds are less than 20 Mbps.

3.5 Comfort / Support

Unless the labs are sited close (within a 2-3 minute walk) to existing public toilets, new toilets will be installed proximate to the labs. Toilets will be site built per WASH specifications.

A water cooler is programmed for the patio. Hot and cold water will be available from April-September and as power supply permits in the months with less sun hours per day.
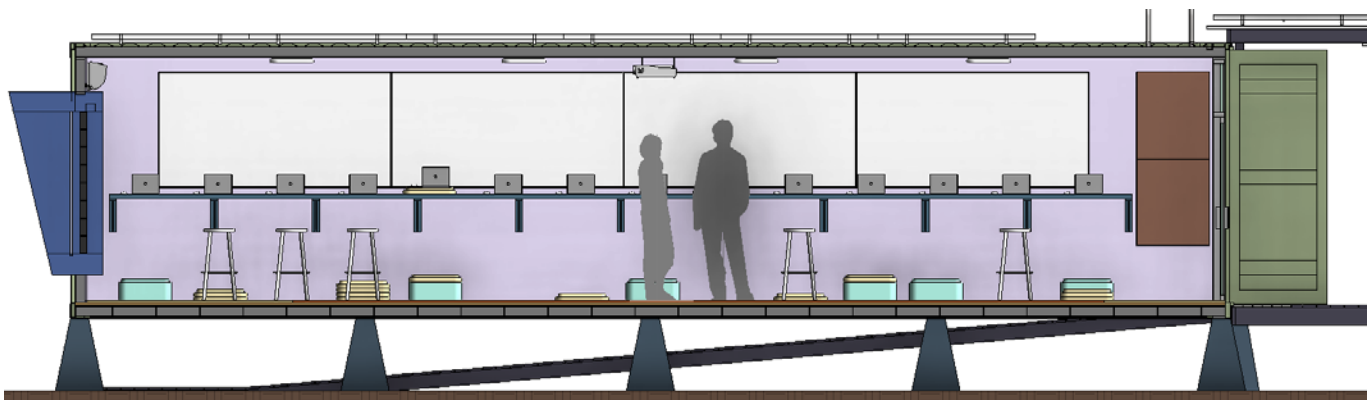
3.6 Security

Steel shipping containers provide a high degree of security requiring a cutting torch or special saw to penetrate. There will be inner locks at the storefront door and high security lock boxes on the heavy shipping container doors. The glazing panels at the ends of the units are secured by 5/16" thick x 3" deep (7mm x 76mm) flat bars.

An audible alarm will be provided with contacts at both openings. It will also be programmed to auto dial the police in the event of a breach. Security lighting will illuminate the deck and areas adjacent to the labs. The facility will be self-policed during operational hours. A 10' high security fence has been programmed to create a secure perimeter. Consistent with other educational facilities at Za'atari, a security guard will be required after hours.

3.7 Equipment

The lab is zoned into two modules capable of supporting up to 28 work stations per module. Each module is autonomous having its own air conditioner, computer network, printer, entry and security.

Computers

Laptop computers were chosen over desktops mainly because they consume a fraction of the power. They are sufficient for both distance learning, software development, solid modeling and other CPU intensive applications. 6-8 computers will have increased capability for animation, rendering and software requiring more horsepower. One laptop in each module will be the designated server for that lab. This will also function as the instructor's workstation and a control station for the slide projector. Laptops will be cable locked to the benches for security.

Network

A Windows OS will be used both on the individual workstations and as the network software. Network connectivity will be through an enterprise WIFI router in each module as this setup uses much less power than switches required for a hard-wired network.

Whiteboards

In software startup and incubator culture, whiteboards(dry-erase) are essential to sharing ideas, ideation and general communication. Here they will serve the same purpose as well as support old-fashion instructor notes, doodling, flow charting, diagramming, admin / student memos and messages. The white, reflective boards will also reflect light into the units thereby reducing the lighting power load.

Projector and Screen

Each module will contain a ceiling mounted projector. At the portal end and just below the air conditioner there will be a retractable screen which by virtue of its location will have a room darkening affect.

Paperless Lab

Although a printer is shown in each lab, all documents and work will be stored on student and faculty USB sticks. Depending on the nature of the curriculum the printer may be replaced by another work station.

3.8 Furnishings

Stools, standing blocks, patio furniture, walk off mats, air curtains and roll-down winterizing curtains for the patio will be provided with each lab.

4.0 Lab Loading

ZatLAB can accommodate up to 4 classes simultaneously with 13 persons per class and 2 facilitators or instructors circulating in each lab. Generally though, there would be a single, 25 person, 50 minute class per module.

The number of classes that can be taught each week are limited by availability of practice workstations as each class requires at least twice as much practice time as class time. The following is a breakdown of options.

| 3 Credit Hour Courses Per Week	Total Lab Hours Per Week[1]	Lab Hours Per Day[2]	Total Students Per 12 Week Semester[3]
18	162	13.5	450
20	180	15	500
22	198	16.5	550

[1] Based on the general rule that for every hour of class time, 2 hours of study or practice are required to assimilate the information. Courses are designed to preserve this ratio in order for the student to maintain a 90% achievement rate
[2] Based on a 6 day school week
[3] Based on 25 persons per class

20 - 50 minute classes per week are optimum. Loading above 24 classes per week will require an auxiliary power source during the winter months and increased maintenance of the equipment.

To open up more computers for instruction, ЯeBootKAMP will be providing 'top boxes' to students with access to television. These boxes convert the television into an internet workstation allowing students to practice outside the lab. All students will be issued a USB storage device to store their files and transfer to their top boxes.
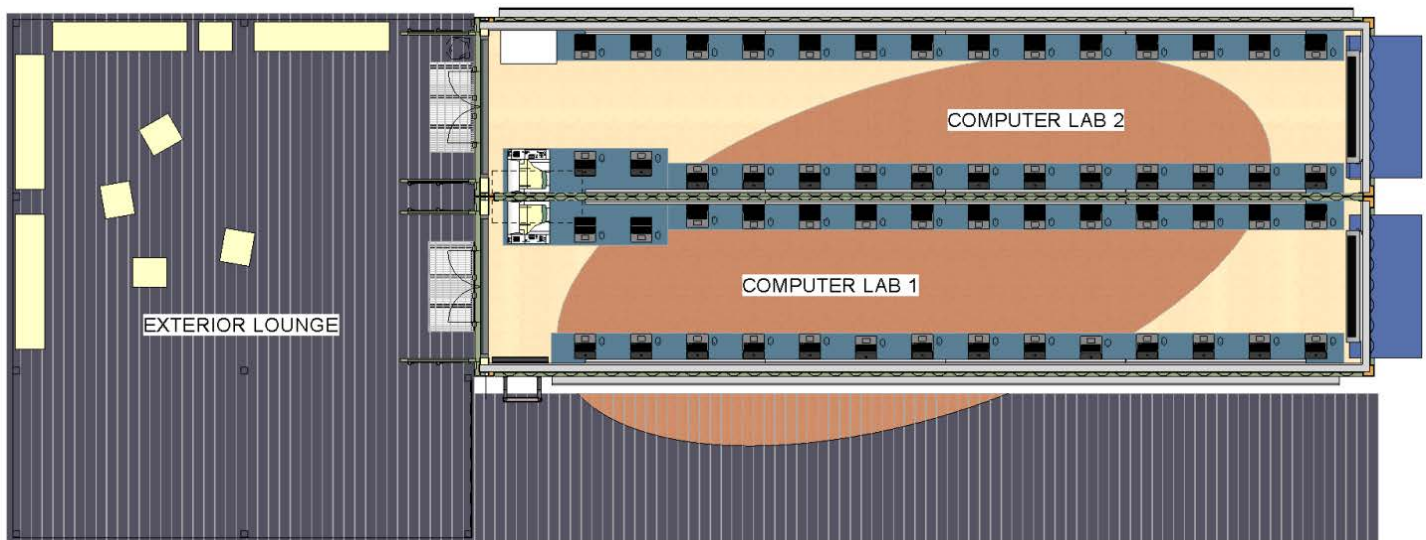
4.1 Class Zoning

There are numerous zoning configurations but for simplicity It is envisioned one module will be a dedicated to teaching and the other, a practice / work module. Modules can be zoned by the clock as well.

As there are additional demands of teaching students in a segregated society, classes can alternate female / male or in blocks of time i.e. females in the morning, males in the afternoon.

4.3 Workstations

Stand up workstations are driven by the sitting-is-unhealthy science that has been emerging since 2009 and are becoming the rule in developed nations. In the practice lab standing will discourage 'camping'. Some stools will be provided for those with health issues.

Lab counter height will be fixed at 44" (1.1m). Various height, lightweight, stackable, molded plastic risers will be provided to accommodate students of any height optimizing ergonomics. Risers will be of various heights and can also be placed under computers to achieve the proper arm posture for taller users.

30" high counters are shown in both modules to accommodate up to 4 wheelchair bound students.
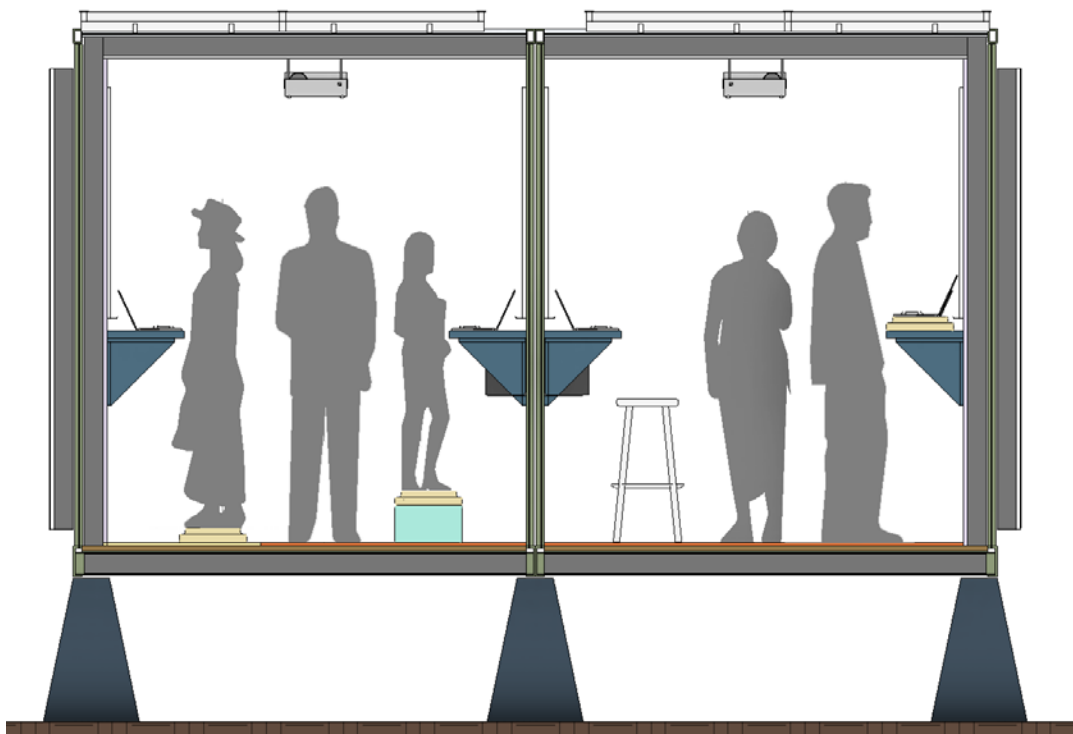
Appendix B

For the first quarters of operation, the ЯeBootKAMP curriculum will be weighted towards introductory level courses. Follows is a sample curriculum as students begin to advance into the program.

	Course Name	Ages	Course Description	Software	Languages
INTRODUCTION	Introduction to Computers	5-10	Basic concepts. Word, spreadsheet, presentation and image processing. Basic programming	MS Office Suite, Adobe Creative Suite	HTML, JS
	Introduction to Computers	10+	Basic concepts. Word, spreadsheet, presentation and image processing. Basic programming	MS Office Suite, Adobe Creative Suite	HTML/CSS, JS,
PROGRAMMING	Introduction to Programming	8+	Beginning and intermediate level programming. Introduction to various programming languages		C, C++, Java, Perl, Python, MATLAB, PHP, C#, Objective C, Arduino
	Advanced Programming - C, C++	8+	Intermediate to advanced techniques		C, C++,
	Advanced Programming - Java I & II	8+	Intermediate to advanced techniques		Java
	Advanced Programming - Perl / Python / PHP I & II	8+	Intermediate to advanced techniques		Perl, Python, PHP
	Advanced Programming - MATLAB I & II	8+	Intermediate to advanced techniques		MATLAB
	Advanced Programming - Objective I & II	8+	Intermediate to advanced techniques		Objective
WEB DEVELOPMENT	Introduction to Web Development	12+	Basic concepts, UX/UI and intro to HTML/CSS, Ruby, SQL, Javascript	Dreamweaver	HTML/CSS, Ruby, SQL, Javascript
	Web Programming: HTML / CSS	12+	Intermediate to advanced techniques		HTML/ CSS
	Web Programming: Javascript	12+	Intermediate to advanced techniques		Javascript
	Web Programming: Ruby	12+	Intermediate to advanced techniques		Ruby on Rails
	Database Management: SQL	12+	Intermediate to advanced techniques		MySQL
	Mobile Application Design	12+	Current trends, responsive design		jQuery
	Web Toolbox	12+	Aggregation of tools		AJAX, jQuery etc.

VOCATIONAL	Building Modeling I	14+	Introduction to building modeling	Sketchup, Revit	
	Building Modeling II	14+	Advanced building modeling.	Revit, 3DS Max, Rhino	
	Solid Modeling I	14+	Introduction to solid modeling	Solidworks, Maya	
	Solid Modeling II	14+	Advanced solid modeling	Solidworks, Maya, Massive	
	Graphics I	14+	Graphic creation and manipulation	Photoshop, Illustrator, InDesign	
	Music Production I	14+	Song production, recording, mixing	Pro Tools	
	Film Production I	14+	Film production, effects	Final Cut Pro	
	Animation I	14+	2D & 3D creation and techniques	ToonBoom, Blender	
NETWORK	Introduction to Networking	16+	Basic concepts, approaches, systems		Windows, UNIX
	Systems Programming - UNIX /Linux	16+	Advanced networking		UNIX, Linux
	Systems Programming - Windows	16+	Advanced networking		Windows
HEALTHCARE IT	Introduction to Healthcare IT	16+	Systems clinical, pharmacy, radiology		
	EMRs	16+	Concepts, terminology	Various	
	Medical Equipment Interfaces	16+	Medical device and sensor programming		
	Billing	16+	ICD-10-PCS, software and best practices	Various	
	Analytics	16+	Data governance, mining, metrics		
	Mobile Health Applications	16+	Design and interface		

Appendix C – Frequently Asked Questions

1. *What is the total cost (hard and soft in US dollars) for a ZatLAB and site development?*
$180,000 per 2 module lab. This includes all materials and labor, equipment, furnishings, power systems, porch, site elements, delivery, installation, import duties, permits, security during construction and insurance.

2. *How do the costs break down per work station and per student?*
$180,000 /54 workstations =$3,333 per workstation. ZatLAB will host4-12 week terms a year. Optimal performance is 20 - 3 hour classes per term.25 students per classroom x 20 classes per term =500 students per term x 4 terms per year =2,000 student seats per year. Assuming a ZatLAB unit's life is 10 years and including maintenance costs, this amounts to less than $10 per seat capital costs.

3. *The refugees in North Jordan are mostly from the agrarian region of Daraa and work with their hands. This kind of training is complete anathema to them. How do you reconcile this?*
Because a child's parents were farmers, nothing precludes that child from becoming a doctor, a computer programmer, a database analyst, an architect or an engineer. In fact, political factor sand climate change are hastening the decline of agrarian industry worldwide. Meanwhile service and technical industries are the fastest growing sectors of the economy and require recruitment of labor from the diminishing sectors. Despite the tragedy of exile, a Hegelian twist renders possibilities previously unavailable to this population.

4. *Syrians can't code. What precedent is there for a culture with no experience in technology to grasp this kind of training?*
India. 25 years ago Indians were in the same position- completely unfamiliar with computer technology. Yet, they are currently poised to over take the US in the total number developers.

5. *How do you plan to pique their interest?*
Mentors and role models currently in the industry. Also former ЯeBootKAMP grads who become program facilitators. They are trained-up and also act as tech ambassadors. They make presentations in the schools and otherwise demonstrate the power and dividends of investing in this kind of training. They produce camp hackathons, design-offs, game dev shoot-outs and other events to promote awareness.

6. *Will anybody show up for this kind of training?*
If only 5% of the current student eligible population has in interest in developing digital skills, that is over 6,000 young women and men in Za'atari camp alone. But as nearly 90% of all jobs worldwide are supported by digital technologies, and kids are increasingly driven by this medium of information, interest will likely be much greater.

7. *Who would qualify for a ЯeBootKAMP training?*
Those who are interested in careers in medical technology, architecture, engineering, game development, fashion design, graphic design, journalism, industrial design and production, sound engineering, video production, mobile application design, user experience design, animation, rendering, education, geographical information systems, web design, database management, math and science. Candidates will be recruited from schools in the camp and through referrals.

8. *You have indicated you would teach basic programming and digital tools to children as young as 5. Isn't this too young and are not there more important skills that should be imparted at this age?*

There currently exist over 30 programming languages geared towards children. Some of these such as the MIT developed SCRATCH target kids as young as 5.Success in any profession correlates with early introduction and applied learning. Postponing the acquisition of digital skills means Syrian youth will be forever behind the curve compared to their counterparts in Boston, Osaka, Stockholm or Rio. Such leaning would be integrated with the traditional curriculums and would not displace it.

ЯeBootKAMP is based in a place where 12 year olds are designing apps, Our vision may be a bit skewed but evidence suggests learning a computer language is not unlike learning a spoken language. Programming is being advanced as the new literacy and a necessary skill for navigating in the 21st century. Code.org, Tynker.com and others offer courses in app building and game design for kids as young as age 5. MIT targets Scratch Jr. and CHERP at toddlers. In both the US and Europe, the 3 Rs (reading, writing and arithmetic) are increasingly being viewed through the coding prism. Early entry age into any activity correlates with success in that activity later on in life be it music, sports or academics. **Every day a refugee child is NOT learning computer based skills is one more day lost to a future job competitor.**

9. *You can train refugees in digital tools and development but what good is that in the camp or refugee community?*

As of January 2015 there 8.4 million technical jobs that remain unfilled as the result of geographic separation. The US has pledged to take 10,000 Syrian refugees per year. Canada another 10,000. Worldwide, countries have pledged nearly 100,000 visas for Syrian immigrants per year. About 30%ofthese slots are reserved for UNHCR referrals. The balance will be filled by those with the means to convince embassy officials they will not be a burden on society. Refugees with technical training and experience are given priority over those with little or no professional skills.

10. *How do you plan to connect these newly trained technicians with jobs outside of the region?*

We will be using our connections in Silicon Valley and other tech centers around the world to establish partnerships whereby we can provide specific kinds of talent. Additionally, we will be partnering with employment agencies, immigration attorneys and other multinational corporations. For instance, Siemens Corporation in Germany may be interested in 5 Javascript programmers from our program. Working though Adecco and immigration attorneys VPMK we would establish a channel that once laid, would streamline the process for future workers.

11. *What opportunities will there be for ЯeBootKAMP students to connect to professionals?*

ЯeBootKAMP is establishing a mentorship program whereby tech professionals throughout the world will 'adopt' a ZatLAB student. This to introduce the student to the culture of their future profession but also to begin building the single most important thing as one begins a search for employment - a network.

12. *What are some sample technical tracks and anticipated starting salaries for those who can immigrate (conservative US$)?*

2 courses in HTML/CSS and 2 courses in Javascript: $85,000 at a tech start-up
2 courses in Revit, 1 course in 3ds Max, 1 course in Photoshop: $75,000 at an architecture or engineering firm
2 courses in SQL, 1 course in HTML, 1 course in Javascript: $85,000 at an analytics firm
2 courses in Premier, 1 course in Photoshop: $55,000 at a video production company or television station
3 courses in Maya or Solidworks: $65,000 at a fabrication plant
3 courses in Pro Tools: $55,000 at a sound engineering studio
2 courses in Photoshop, 1 course in Illustrator, 1 course in InDesign: $55,000 at a graphics design firm

13. *What becomes of those who do not want to leave the region or are not placed upon graduation?*
Studio ЯBK. A umbrella of incubator labs, start-ups, drafting farms, modeling mills, freelance graphic design firms, and video and music production studios hosted out of ZatLABs or special incubation and accelerator labs designed for commerce only. In the age of broad bandwidth, one can live anywhere and work anywhere else.

14. *The type of commerce you propose is in strict violation of Jordanian law. Syrian refugees in Jordan are forbidden to interact with the local or international economy. How do you plan to address this yet compensate ZatLAB facilitators and graduates working in the camp?*
Through use of Bitcoin and other alternative currencies including a currently in development Emp2COIN (Empathy + Empower) designed specifically for use in the humanitarian theater. Other forms of compensation are continuing education, offshore trusts, credits and vouchers for services. But more valuable than anything: precious centimeters of column space on their LinkedIn profiles - Experience.

15. *What benefit will the host country receive?* These are detailed in the last pages of our proposal.

16. *Few technical e-learning courses are available in Arabic. How do you plan to bridge the language barrier?*
Bilingual in-lab facilitators will be translating and helping students navigate the language difference where they occur. Unlike other subjects, much of the material is symbol and graphic icon driven. Computer code although based on the Latin alphabet, is a language onto itself. Leaning to code is much easier than learning a foreign language as the symbol set is much smaller while syntax and grammar are more clearly defined. Portions of the curriculum will be translated especially in the introductory courses. Keyboards will have both Arabic and Latin alphabets. Additionally, there is precedent for English language course being taught in the camp by other education partners.

17. *What computer languages will be taught and why?*
Initially HTML/CSS, Javascript (frontend and back end) and SQL will be offered as these are the foundation languages most of the industry is built on. As we gain traction and more labs come on line, we will begin to offer other programming courses including Ruby, C (+ variants), Java, PHP, Perl and Python.

18. *What digital tools will be taught?*
Autodesk Suite (Revit, Autocad, 3DS Max) and Sketchup for architects and engineers. Solidworks, Rhino, ZBrush and Maya for the fabrication and 3D printing industry. Unity 3D for game development. Adobe Creative Suite for the graphics / publishing industry. ProTools for the music industry and Premier or Final Cut Pro for the film industry.

19. *You are building the ZatLAB pilot in America and shipping to Aqaba for transport to North Jordan. Given customs can take up to a year to clear, how do you plan to expedite delivery?*
By prior agreement with Jordanian officials and negotiated benefit for Jordanian nationals.

20. *Is ЯeBootKAMP actually a bootcamp type of training where you pack 2 years of learning into 2 months of intensive,10 hour per day instruction?*
Not quite. Our curriculum is bootcamp-lite. It is a hybrid of traditional 'slow' learning and the bootcamp deep dive. Courses will vary in intensity depending on level, age and content. For instance, introductory courses will follow the more traditional structure of 3 – 1 hour classes per week while more advanced courses like SQL2 might be 3 – 3 hour courses per week.

21. *Infrastructure, training, employment, immigration help, in-camp tech park...this sounds very aggressive. Are you deploying this all at once?*

No. Being a non-profit there is not deploy-at-scale requirement typically of for-profit startups. The pilot project consists of a computer lab and the training component. Scaling will be incremental and progressive allowing plenty of time to solidify partnerships with employment agencies, immigration attorneys, corporate hosts and incubator lab sponsors.

22. *Why build the pilot labs in America and spend money shipping them overseas?*

- As our founder has spent 35 years in the building industry, we know the supply chain very well in America and the San Francisco Bay area specifically.
- As the design includes wood elements, these materials are much cheaper and more widely available in the US than in Jordan.
- Shipping on the high seas is cheap. Costs to ship a full size container from the port of Oakland to Aqaba, Jordan is less than $5,000 per container.
- Quality control, at least with the pilot lab, will be much higher here given the familiarity with the workforce and relationships with contractors.
- Labor for the pilot is being donated by volunteers in the Bay area. This is a cost savings of $20,000.

23. *Do you have any tech partners at this early date?*

Autodesk and Adobe have pledged support for the digital tools half of the curriculum. A development bootcamp leader has pledged their curriculum. Two leading MOOCs have also pledged content. Certifications and additional programming course content is currently be negotiated with several other e-learning partners.

24. *What happens if the war ends tomorrow?*

The labs will remain in place until the all refugee students are repatriated. It is assumed most would return as soon as it is safe but many will have nothing to return to or fear reprisals so will remain in their current state. Assuming full repatriation, labs will be moved to more urban areas and become tuition-based.

25. *What are the qualifications of the Founder / Executive Director Hugh Bosely and why his interest in helping refugees?*

Hugh has 35 years experience in the building delivery industry starting in the trenches as a carpenter before becoming a General Contractor and ultimately an architect. He has deep experience in the design and construction of modular buildings and education facilities. He has managed complex university projects up to US$40 million and holds degrees in Philosophy and Architecture.

His interest in helping refugees grows from his lifelong commitment to providing an architecture for humanity and wanting to focus the remainder of his career on developing life-affirming and democratic solutions for people in poverty.