



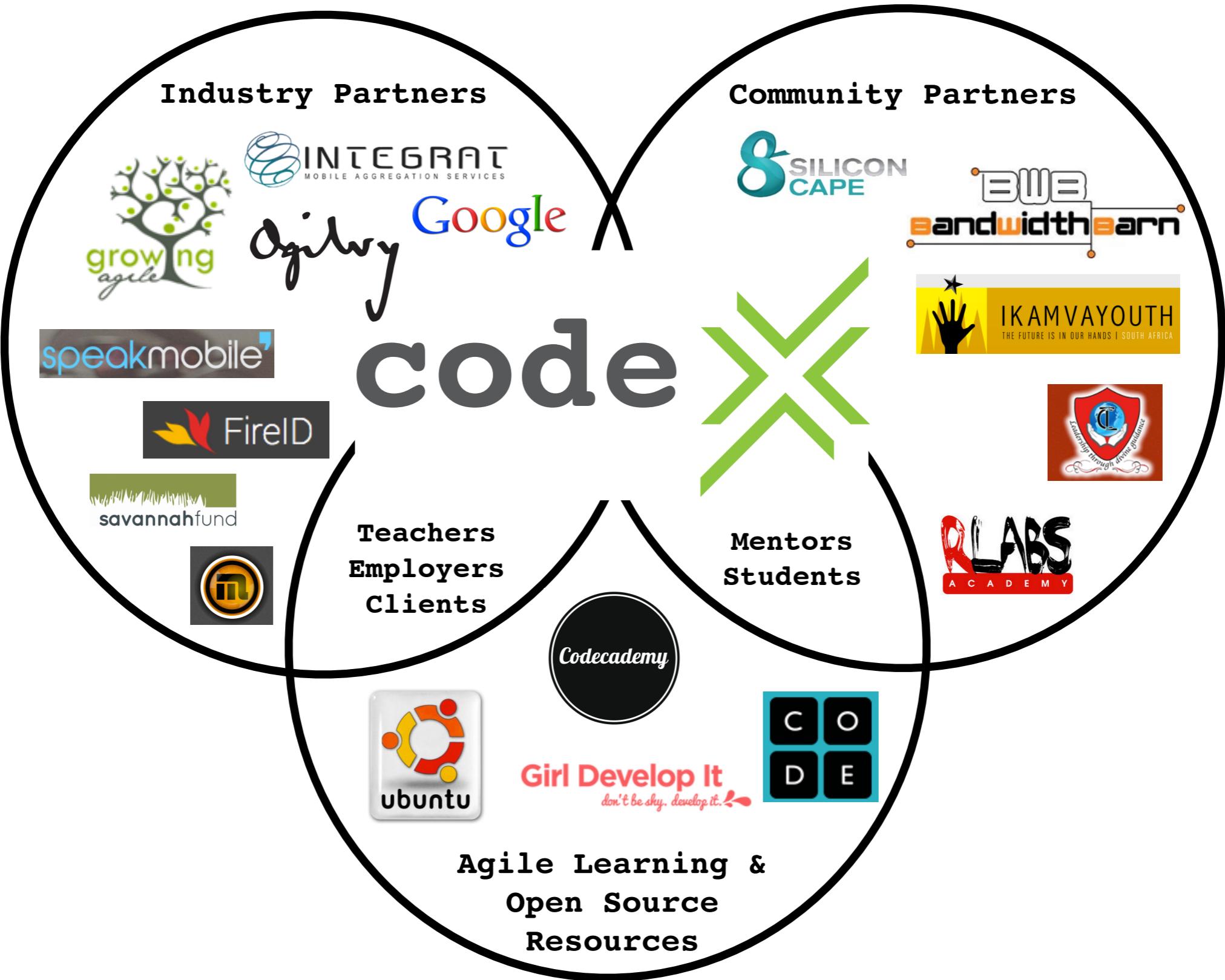
**LEARN TO LEARN**  
(to be an awesome developer)

# MISSION

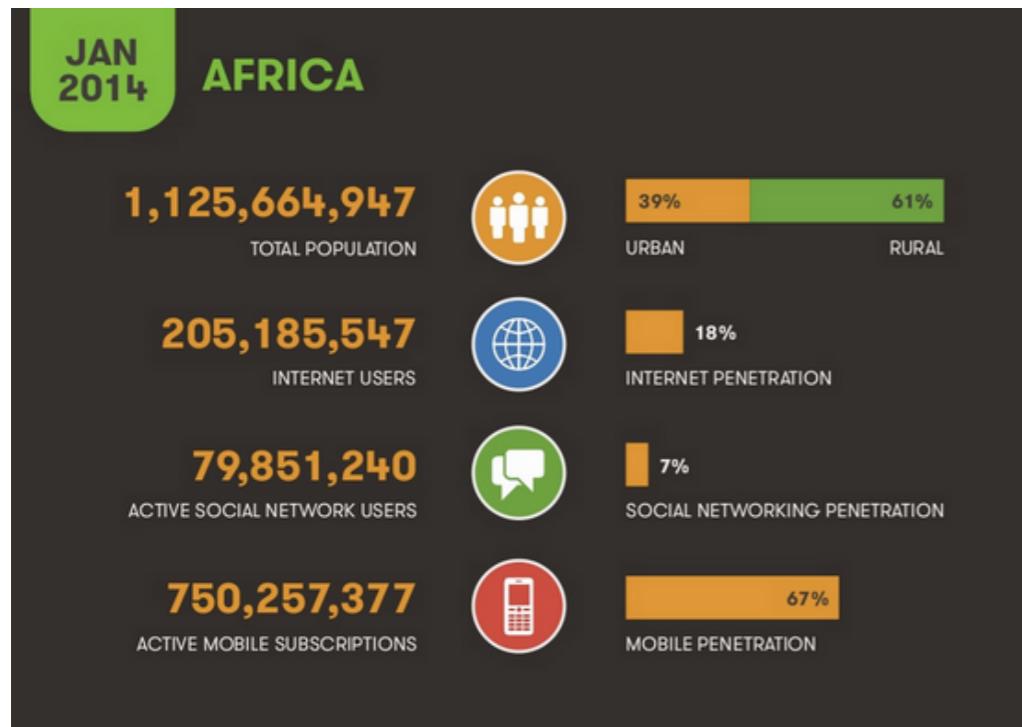


**Empower a new breed of developers to thrive  
in today's lightning fast tech economy.**

# OPPORTUNITY



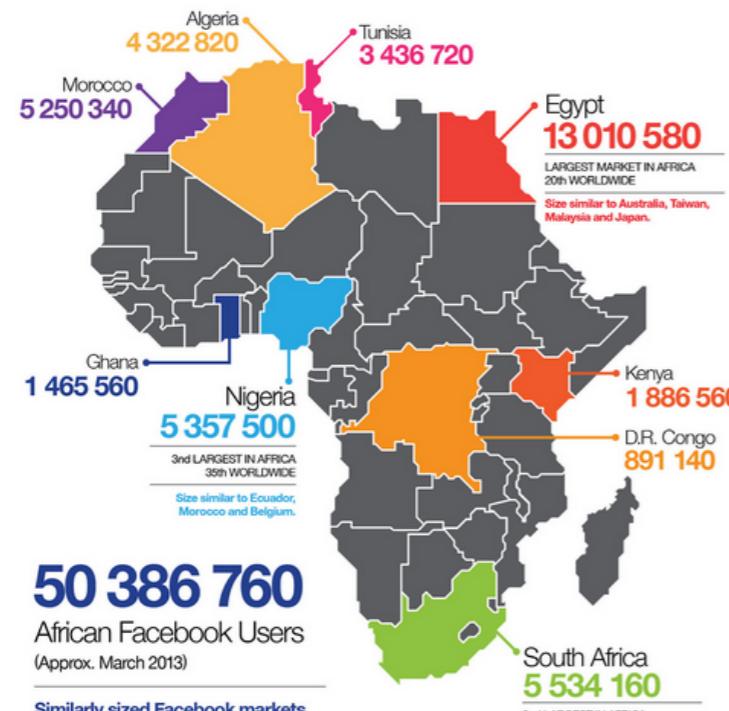
# AFRICAN TECH IS EXPLODING



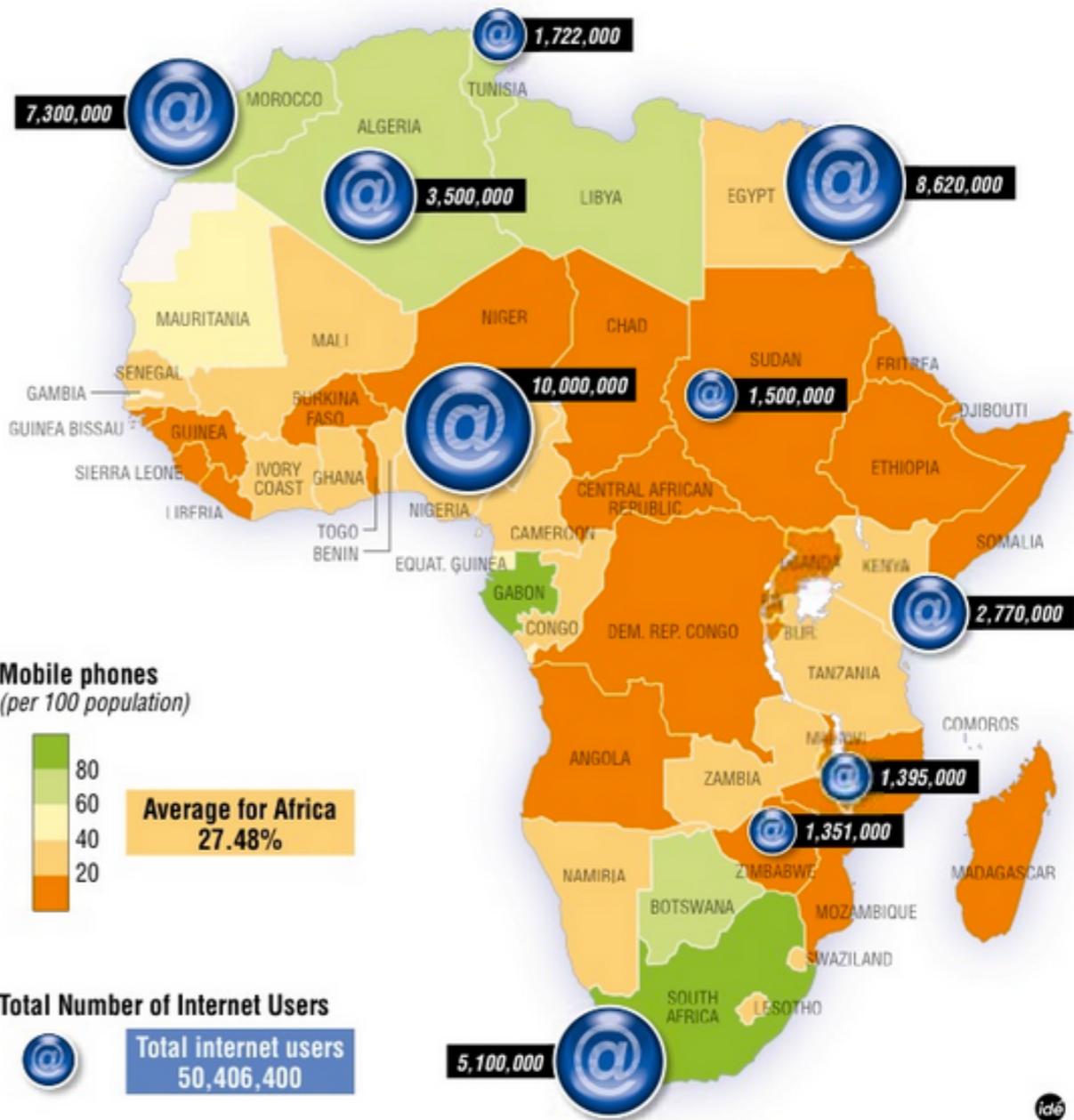
## African Facebook Users in 2013



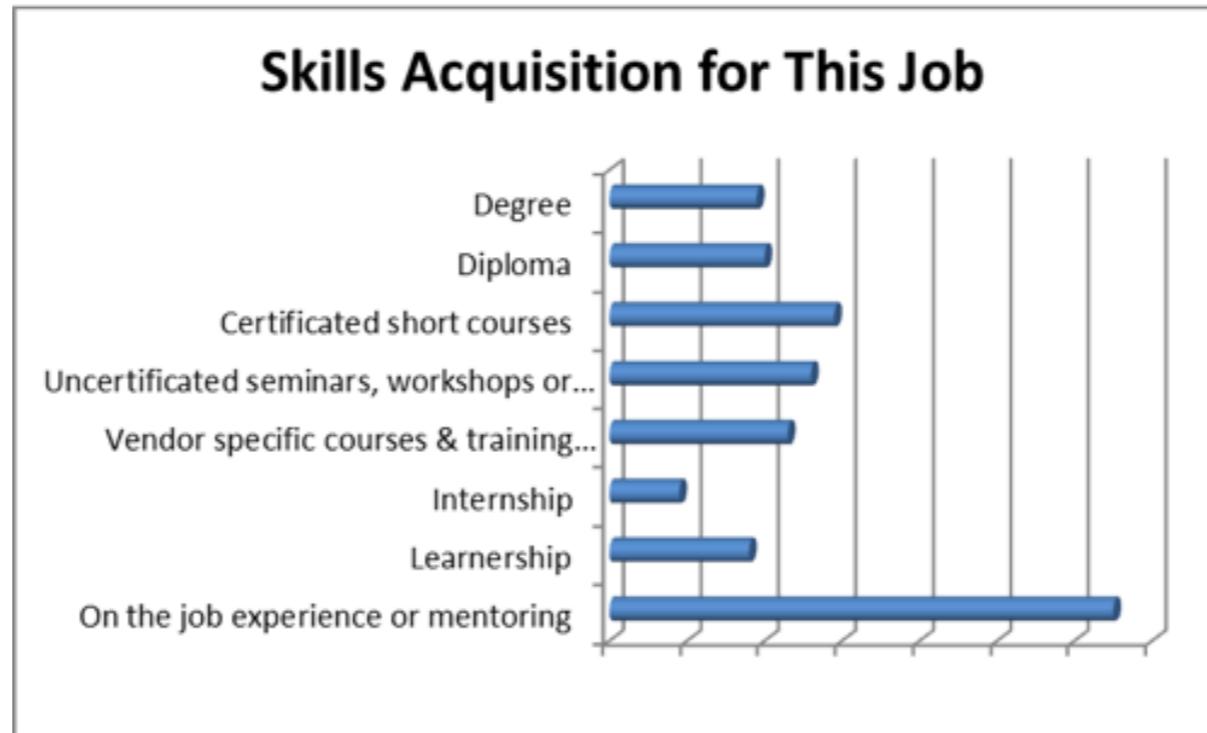
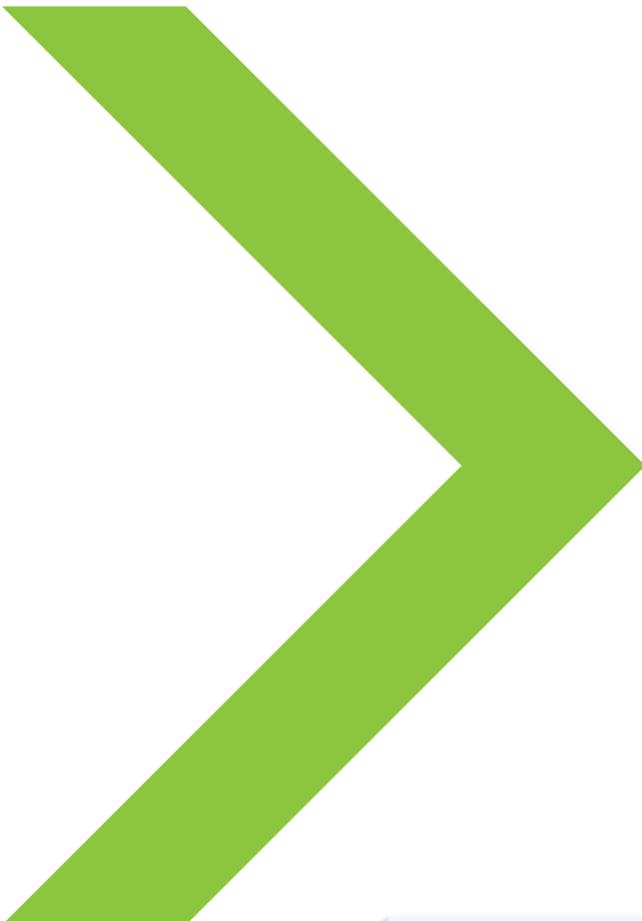
An overview of the latest user numbers in the largest Facebook markets across Africa.



## Mobile phone density and top ten countries in internet use

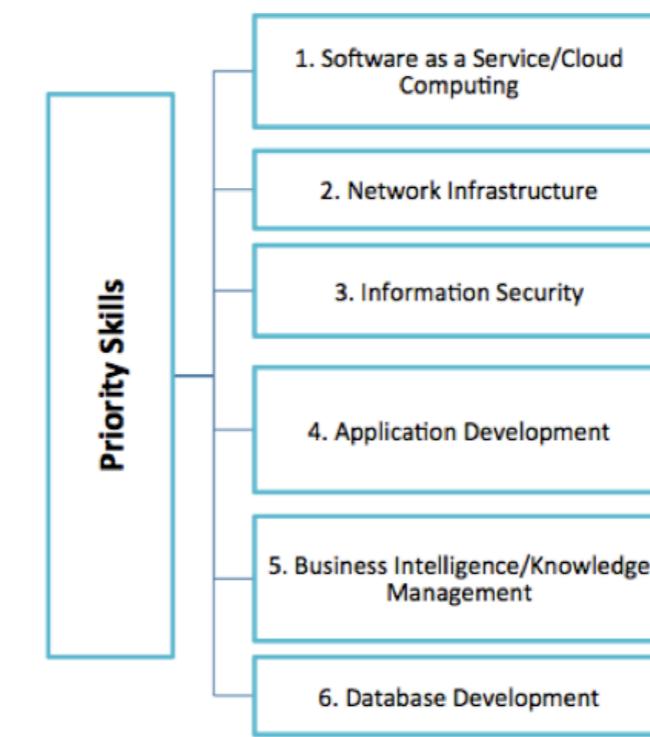
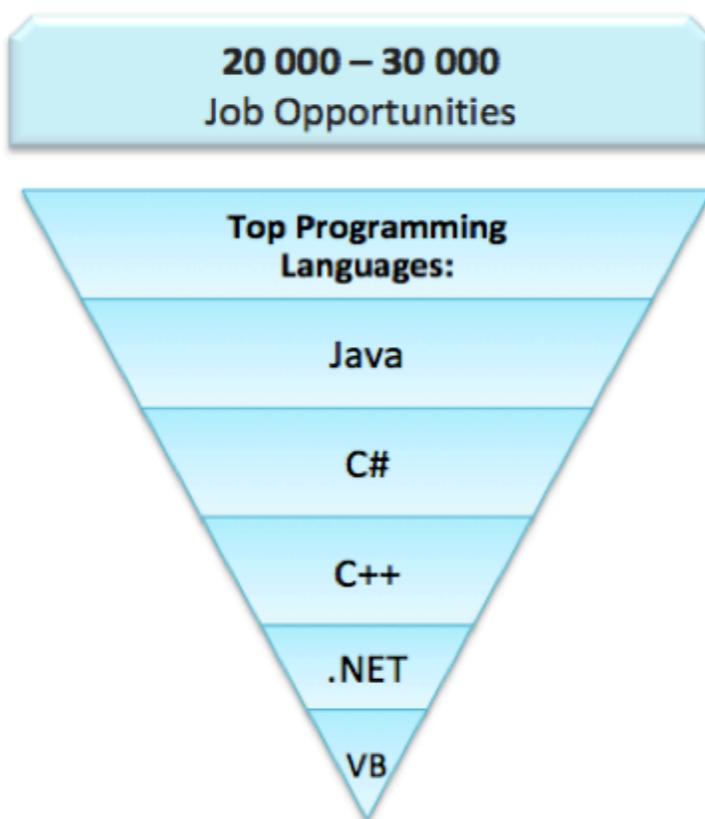


# DEVELOPERS ARE IN HIGH DEMAND



Johannesburg Center for Software Engineering's 2012 ICT Practitioner Survey:

**on the job experience and mentoring is the best training.**



# codex PILOT

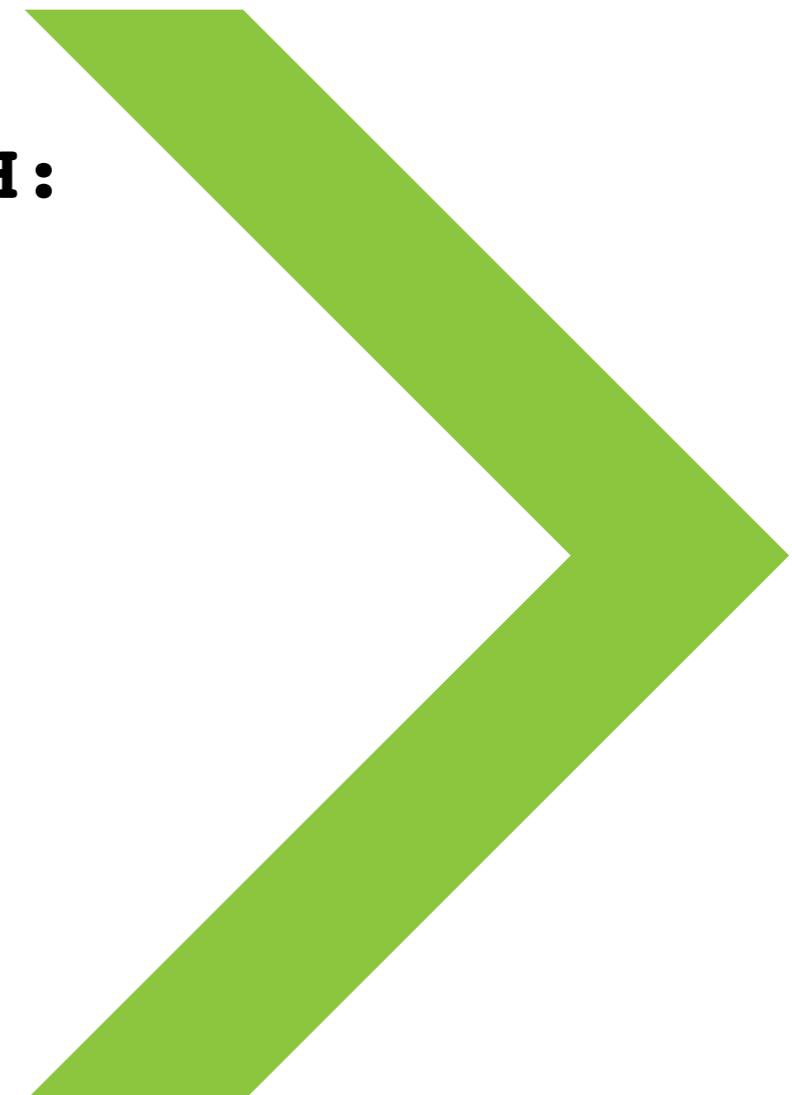


- Learn by doing real projects with real companies\*
- 3-month pilot, 2 teams of 12 students; option to continue, expand organically
- Agile philosophy, test-driven development is foundation for all work
- Testing hypothesis:  
**Agile learning breeds employable developers in Africa**

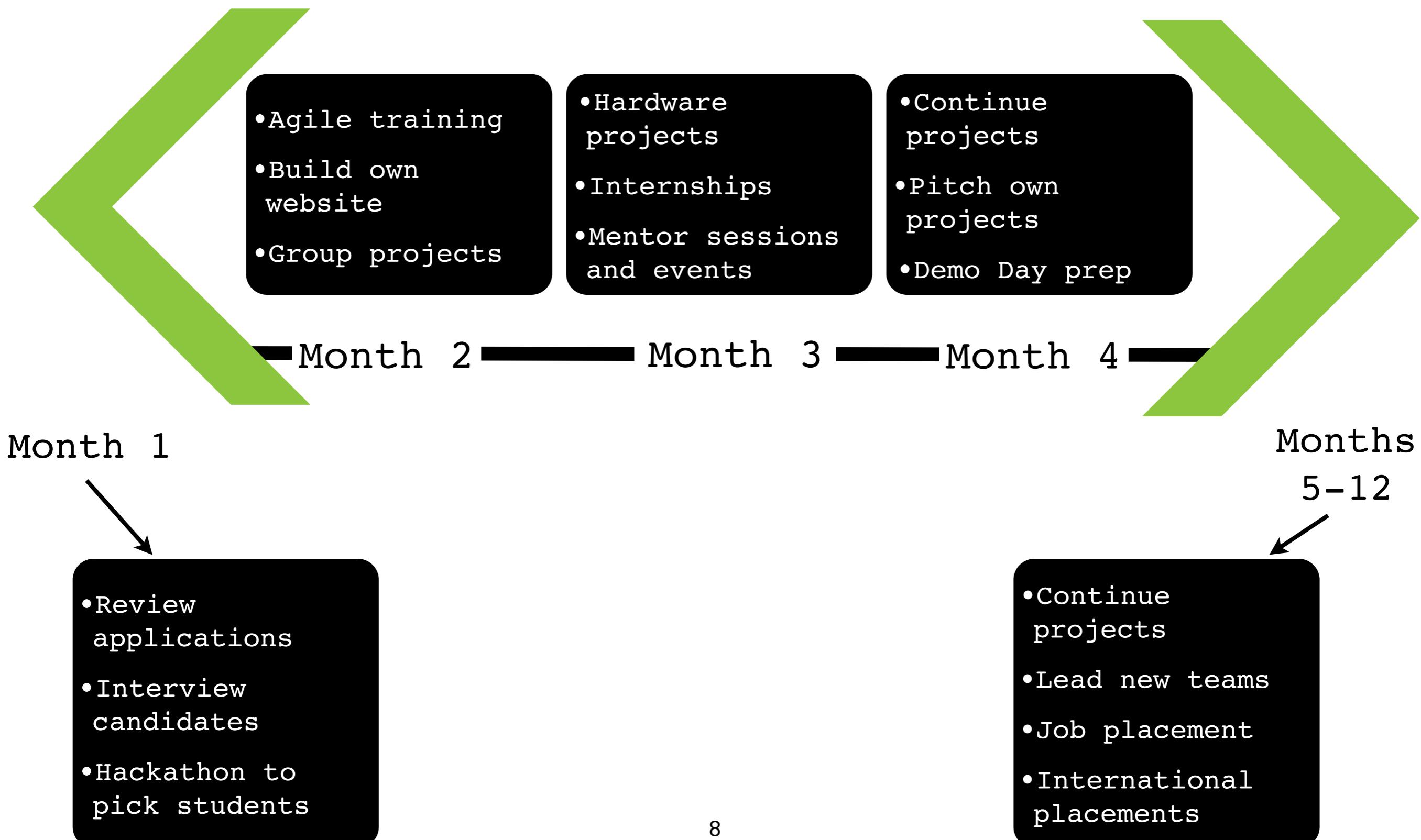
# CURRICULUM

## **REAL PROJECTS FOR REAL CLIENTS TEACH:**

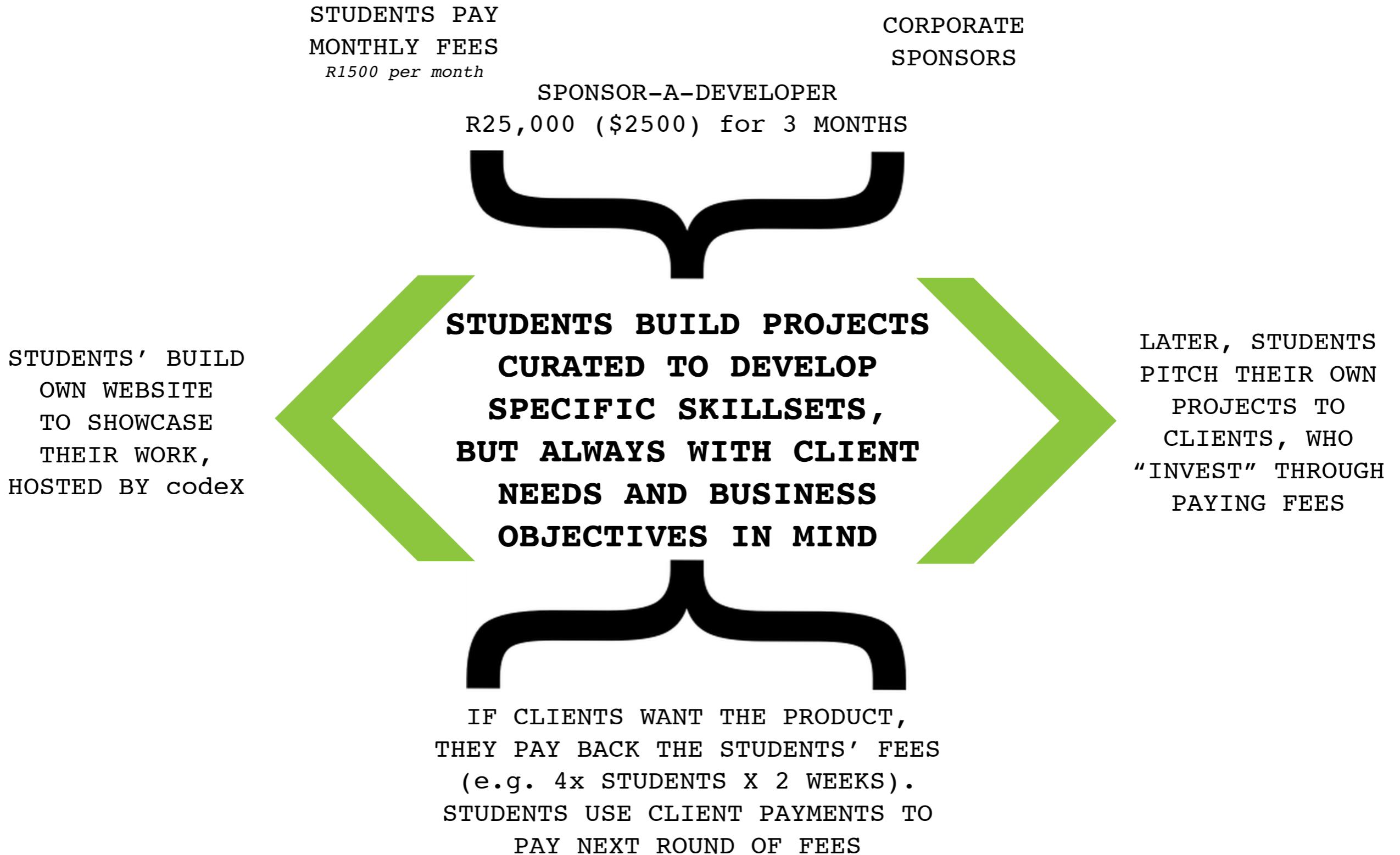
- Agile software process
- HTML5, XML, JavaScript, CSS
- Java, Python, Ruby, MySQL, node.js
- Arduino & Internet of Things
- Design thinking
- Lean startup methodology



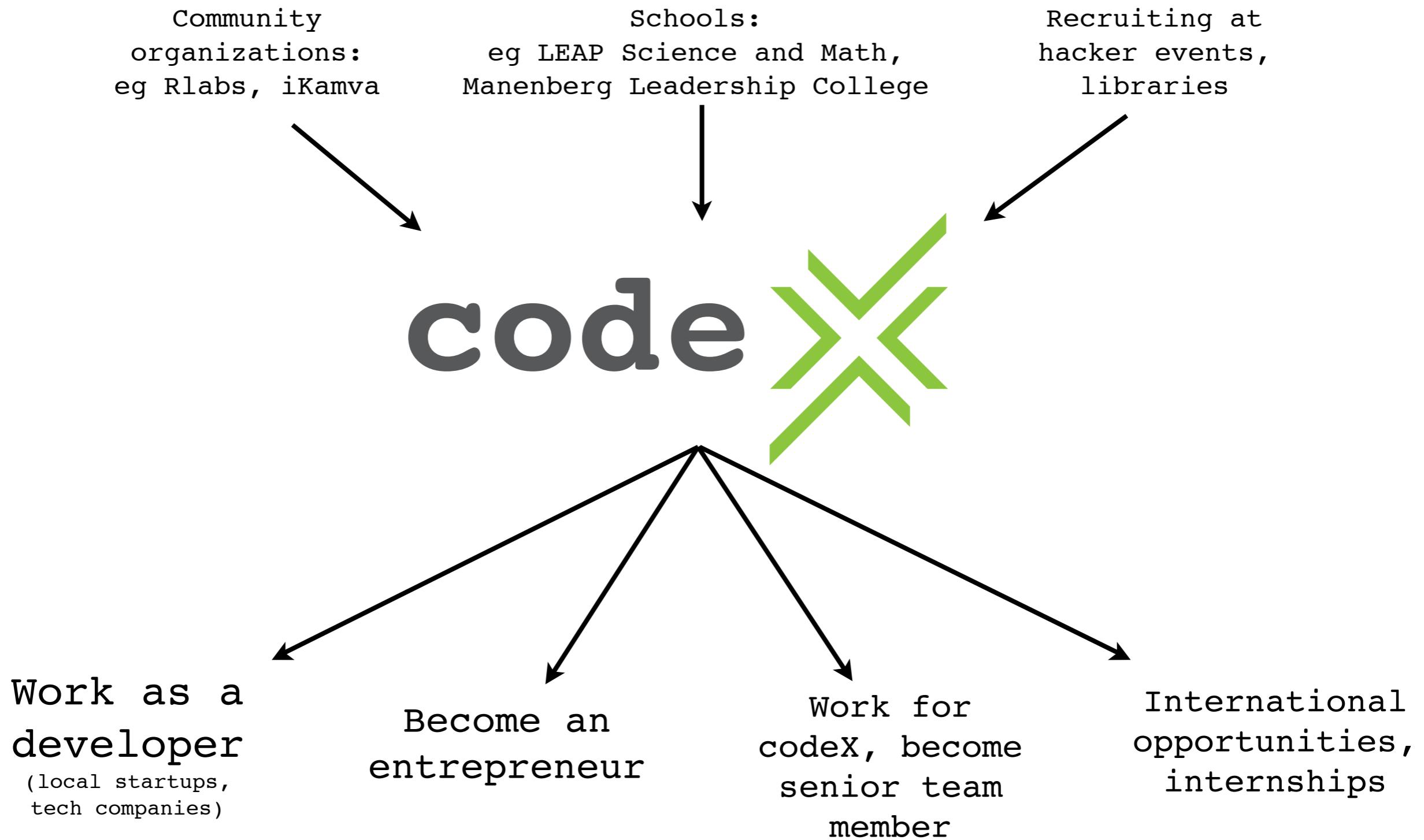
# PROGRAM STRUCTURE



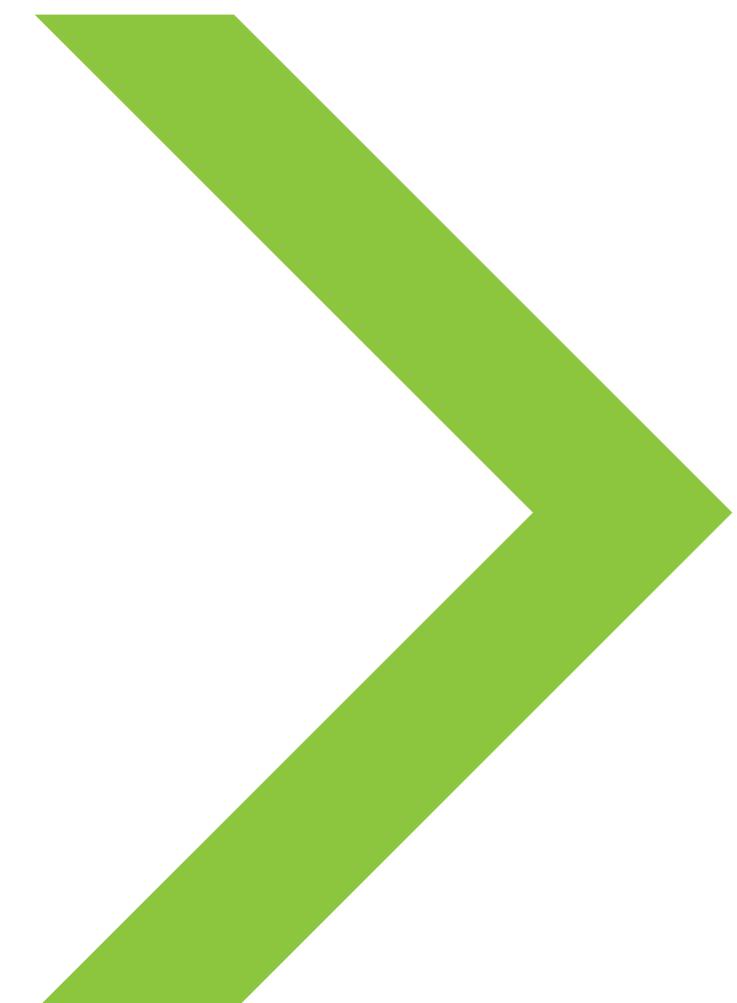
# COST STRUCTURE



# INPUTS AND OUTPUTS



# MEASUREMENT

- 
- All projects tagged to skills acquired; points earned for every project, verified by codex
  - Portfolios, GitHub profiles linked to skills database
  - Ongoing performance evaluation by team, clients, and codex staff
  - Permanent and temporary job placements
  - Companies pay for products students build
  - Students' own projects funded by clients

# RESOURCES FOR PILOT

## Contributions

- Sponsor a developer:  
\$2500 for 3 months per developer
- Laptops, Monitors, Arduinos, Raspberry Pis
- Smartphones, video cameras, A/V equipment
- Product owners, mentors advisors, speakers
- Food and wine for events
- Coffee!

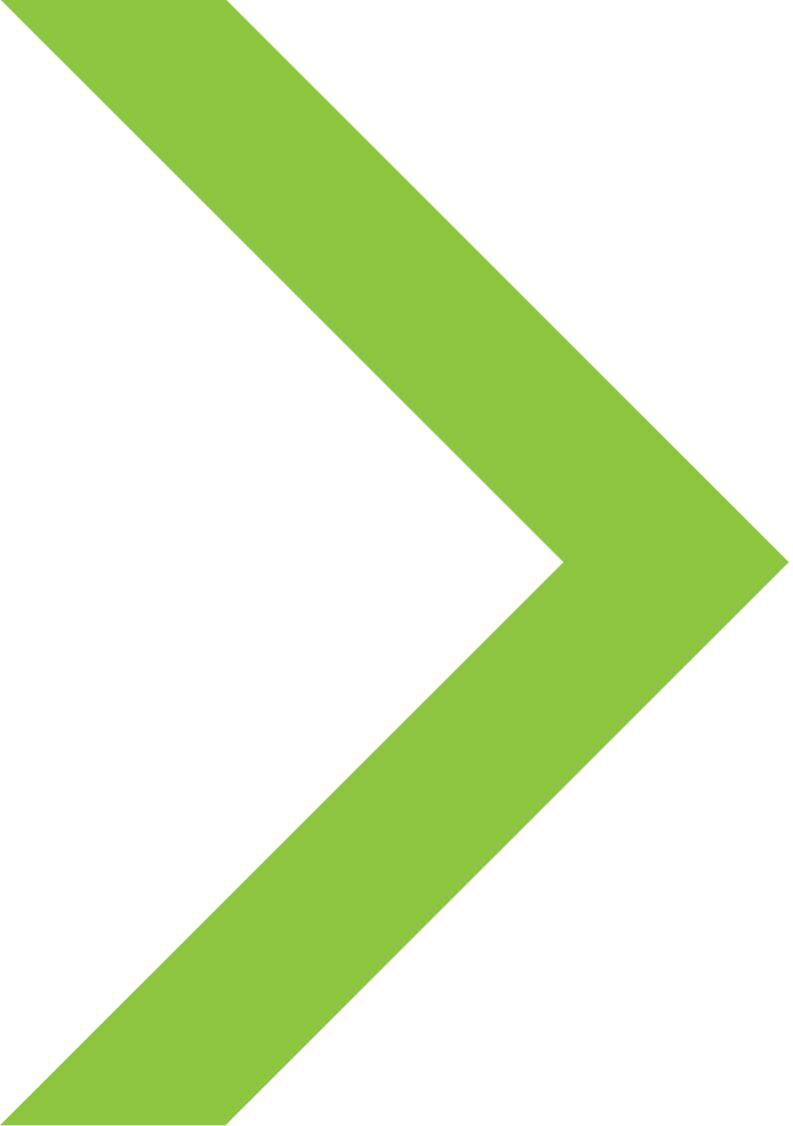
## Benefits

- First crack at new developer talent; breed what you need!
- Software products built by students
- Branding at Bandwidth Barn and on website
- Skills and enterprise development
- African tech ecosystem development

# PARTNERSHIP

- 
- Sponsor a seat in the academy; you get first opportunity to hire our students (not tied to specific student).
  - R25,000 (\$2500) for 3 months per seat.
  - Only re-up if you're happy with our results.
  
  - Supply product owners for a project aimed at your business needs
  - Projects are framed appropriately for codex educational model.
  - Billing model is on a contract basis at R150 per hour per codex student. Estimate: 15 billable days of 6 hours per month per codex student.
  - Resulting products become partner property

# MENTORS, PARTNERS, CLIENTS

- 
- Andy Volk, Developer Relations, Africa, Google
  - Karen Greaves & Sam Laing, Growing Agile Founders
  - John Hill, GetSmarter CTO
  - Rapelang Rabana, ReKindle Learning Founder
  - Lungisa Matshoba, Yoco Co-founder
  - Doug Hoernle, ReThink Education Founder
  - David Campey, Information Logistics Founder
  - Malan Joubert, Fire ID CEO
  - Gerhard van Wyk, IMQS CTO
  - Retief Gerber, NioCAD CEO
  - Glenn Stein, GoMobile CEO
  - Chris Rawlinson, Ogilvy Innovation Lab
  - Justin Stanford, 4di Capital
  - Marlon Parker, RLabs Founder & CEO
  - Alex Fraser, Invenfin, Silicon Cape
  - Roger Norton, Playlogix CEO
  - Norman Parkin, Integrat CEO
  - Mbwana Alliy, Savannah Fund Managing Director
  - Erik Jan Bijvank, FONK Managing Director
  - Alan Knott Craig, Jr., Project Isizwe CEO

# TEAM

## Elizabeth Gould, CEO

Elizabeth gets to be obsessed with her twin passions, technology and Africa, on TV. As host of Bloomberg TV Africa's *The Shift*, she travels around the continent telling the stories of the innovators, investors, and companies building Africa's digital future.

She is a veteran technology journalist and executive producer, making hundreds of stories, shows, and series for Bloomberg TV in New York, including *Brink*, *TechStars*, *Innovators*, *Women to Watch*, and *New Hack City*.

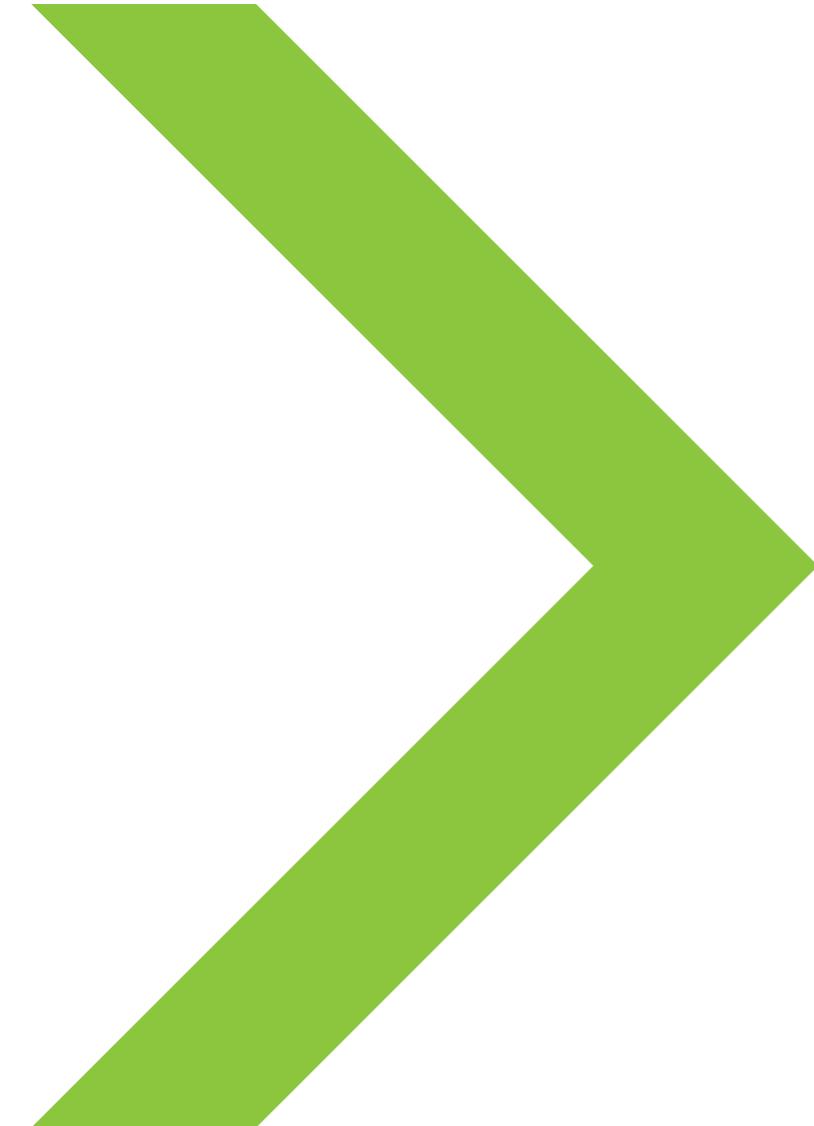
Elizabeth has a deep and longstanding passion for economic development on the continent, which she studied at UC Berkeley, the University of Cape Town, and Columbia University's School of International and Public Affairs.

When not evangelizing Africa's tech ecosystem, she spends her time on and around Table Mountain and the Cape peninsula, loving everything her new home of Cape Town has to offer.



# TEAM

## David Weber, CTO



Dave has done quite a bit. Founder, CEO, CTO, Professor, Academic, Engineer and Computer Scientist. His expertise extends into the arcane depths of his academic background (telecommunications and digital signal processing) to some hard core engineering and software development.

He also knows a bit about businesses. Starting, managing, growing and turning them around. He has a PhD from Carnegie Mellon University and the usual academic trail of publications and mad inventions.

He is passionate about software development as well as the people methodologies supporting good products. Other things that get him excited are building and flying light aircraft, banging pots in the kitchen, mountains and fine coffee.

# TEAM

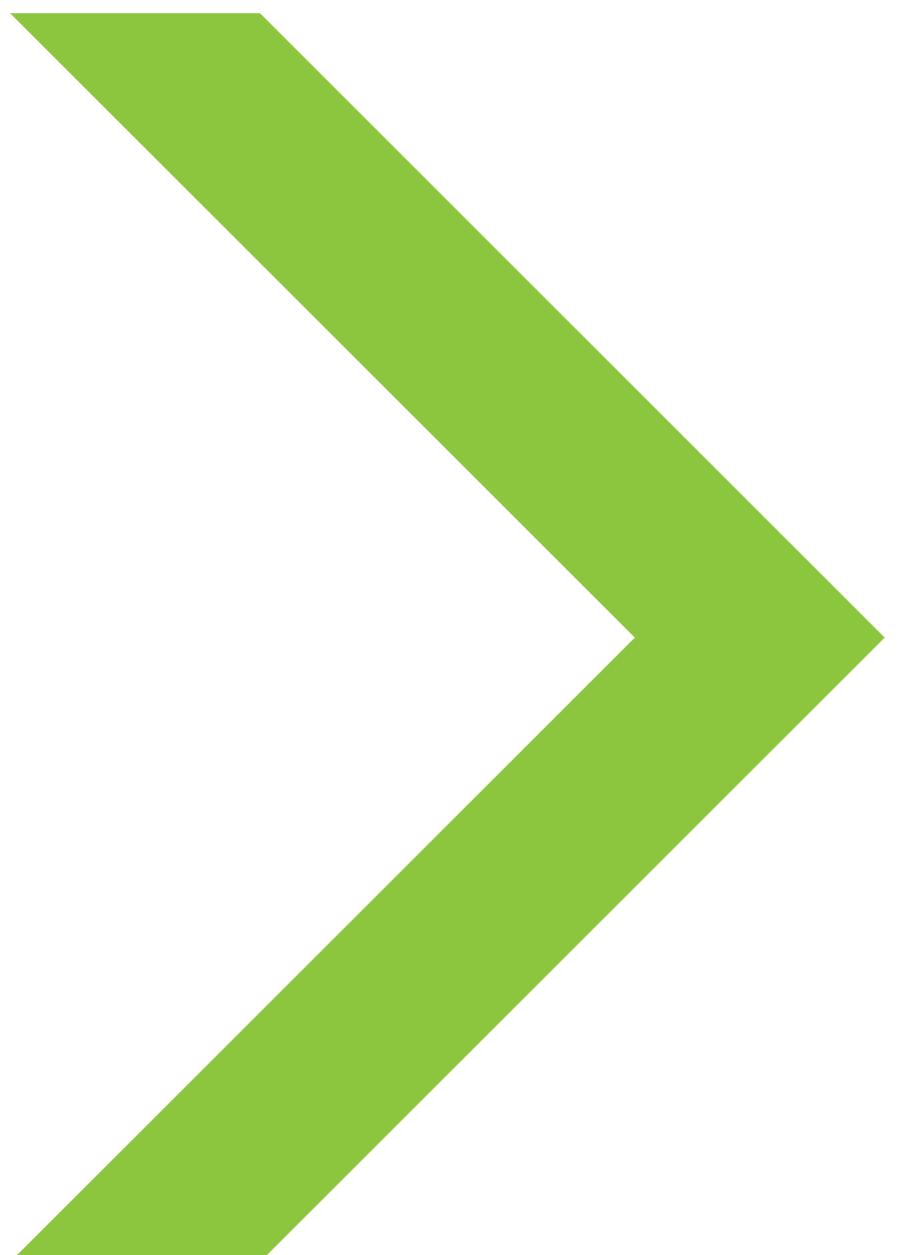
## Michael Jordaan, Chairman

Michael traded in his corporate stripes for more casual attire when he stepped down as CEO of First National Bank in August 2013, one of SA's largest banks with a customer base of nearly nine million. With more than 20 years' experience in the financial services sector and nearly a decade at the helm of the bank, Michael oversaw the move away from traditional banking toward rewarding ecosystem-centric solutions for customers, (well known in these parts for making banking cool), and led FNB to be named the "World's Most Innovative Bank" in the 2012 BAI-Finacle Global Banking Innovation Awards in Washington DC.

The former banker now heads up a young private investment company, Montegray Capital, investing in disruptive business models enabled by technology. Michael lends a strategic hand to various businesses, including as Chairman of mobile messaging company Mxit and as non-executive Director on the JSE Limited. He is also the recipient of the CNBC Africa Business Leader of the Year for Southern Africa award.



# CONTACT DETAILS



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Michael Jordaan:

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[@michaeljordaan](https://twitter.com/michaeljordaan)



## **SAMPLE PROJECTS**

# SAMPLE PROJECTS

## Fire and Emergency Reporting Tool

**Client:** large municipality

**Problem:** shack fires and veldt fires are difficult to report and manage for both the general public and first responders.

**codEx solution:** Mobile app allowing public to communicate these events quickly and effectively to emergency services.

### Product requirements:

1. Real time reporting
2. Android and Mxit
3. Mechanism to minimise false alarms and prank reporting
4. Audit trail that leads back to the reporter to eliminate anonymity
5. Location and images overlaid onto street map, to be sent to first responders
6. Must be able to handle heavy simultaneous reporting



### Learning Outcomes (and points earned)

Agile Methodologies	5
Computer Literacy	0
Testing Methods	3
Source control	3
Hardware	0
Mobile	1
Operating Systems	0
Programming light	7
Programming medium	0
Algorithms	3
User interfaces	6
HTML5	8
Web services	3
Web servers	0
Deployment	2
Networking	0
Databases	5
Graphic design	3
<b>Total</b>	<b>46</b>

# SAMPLE PROJECTS

## Arduino Fun

**Client:** Local school

**Problem:** Show kids how to use Arduinos

**codex Solution:** build and film some Arduino projects as examples and inspiration for a high school program they are starting.

### Product Requirements:

- Build something cool in 3 days
- Document your story with phone camera
- Edit it using open source video editing software
- Publish it to the web
- Examples: Get your arduino to switch on a device depending on an SMS that was received. Tweet your device into moving a robot. Follow a stripe on the floor. Build a disco light.

### Learning Outcomes (and points earned)

Agile Methodologies	1
Computer Literacy	2
Testing Methods	0
Source control	1
Hardware	3
Mobile	0
Operating Systems	0
Programming light	6
Programming medium	0
Algorithms	2
User interfaces	0
HTML5	0
Web services	4
Web servers	0
Deployment	0
Networking	0
Databases	0
Graphic design	0
<b>Total</b>	<b>19</b>

# SAMPLE PROJECTS

## Raspberry Pi (in your face)

Your product owner thinks you need some exposure to operating systems, web servers and some real world hardware. So take a blank Raspberry Pi computer (every geek I know has one), set it up from scratch then build a web server and connect to that server. Now control the coffee machine (or whatever grabs your fancy) from your new web server. Woot, now you can install Linux, set up web servers, get a network going and lose some of the mystique of the command line.



### Learning Outcomes (and points earned)

Agile Methodologies	1
Computer Literacy	3
Testing Methods	0
Source control	0
Hardware	1
Mobile	0
Operating Systems	3
Programming light	7
Programming medium	0
Algorithms	0
User interfaces	2
HTML5	2
Web services	0
Web servers	1
Deployment	0
Networking	2
Databases	0
Graphic design	1
Total	23

# SAMPLE PROJECTS

## Remote Access Controller

**Client:** Local community

**Problem:** Want to be able to open security gates with cell phones

**codex solution:** Raspberry Pi and 3g Dongle, using all open source software (Linux)

Product Requirements:

- Open the gate using a missed call
- System checks caller ID and only allows phones on the access list to open gate.
- Access lists must be simple, clean, and maintainable using a web based interface by an administrator, user name and a password to gain administrator access
- Audit trail of when and by whom gate is accessed, uploaded hourly to an external source for safe keeping
- Access restrictable to specific phones via caller ID as well as by times.
- Residents can send an SMS to the system with registration requests, contractor or staff access etc.
- Multiple phone numbers which can be called to open different gates.
- System must work if power fails



### Learning Outcomes (and points earned)

Agile Methodologies	5
Computer Literacy	0
Testing Methods	3
Source control	3
Hardware	2
Mobile	0
Operating Systems	1
Programming light	7
Programming medium	0
Algorithms	1
User interfaces	5
HTML5	5
Web services	3
Web servers	2
Deployment	1
Networking	0
Databases	2
Graphic design	3
<b>Total</b>	<b>40</b>