Mobile Diagnostics
for Cervical Cancer Screening in Zambia
Milestone 3: Initial Design

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• Collaborators: RJ Ryan, two anonymous MIT students
• Faculty Advisor: Gari Clifford
• Local Liaison: Dan Myung
Current Process

1. Fill out paper form
2. Nurse takes photographs
3. Review on Camera LCD or TV
4. Plug in USB or Flash Card
5. Send paper document to office for Data entry
6. Write file information on paper record
7. Rename File(s)
8. Download images to laptop
9. Type up email, embed images, send to doctor
10. Wait for Doctor feedback & return email
11. Treat patient
Requirements

- Rapid, easy to use: high throughput
- Scalable beyond CIDRZ clinics
- High-quality photography
- Operate under low network bandwidth, reliability
- High-quality client-side image review
- Integrate with existing systems and procedures
- Ready to deploy in short term
- Sustainable in long term
Architecture

Courtesy of OpenMRS. Used with permission.

Figure by MIT OpenCourseWare.
Android Solution
Requirements

- ✔ Rapid, easy to use: high throughput
- ✔ Scalable beyond CIDRZ clinics
- ✗ High-quality photography
- ✔ Operate under low network bandwidth, reliability
- ✗ High-quality client-side image review
- ✔ Integrate with existing systems and procedures
- ✗ Ready to deploy in short term
- ✔ Sustainable in long term
Laptop Solution

ID: 993452
HIV+
DOB: 10/10/1974

Photo of cervix removed for privacy considerations.
Requirements

- Rapid, easy to use: high throughput
- Scalable beyond CIDRZ clinics
- High-quality photography
- Operate under low network bandwidth, reliability
- High-quality client-side image review
- Integrate with existing systems and procedures
- Ready to deploy in short term
- Sustainable in long term
J2ME Solution
Requirements

- ✔ Rapid, easy to use: high throughput
- ✔ Scalable beyond CIDRZ clinics
- ✗ High-quality photography
- ✗ Operate under low network bandwidth, reliability
- ✗ High-quality client-side image review
- ✔ Integrate with existing systems and procedures
- ✔ Ready to deploy in short term
- ✔ Sustainable in long term
OpenMRS Server

Photo of cervix removed for privacy considerations.

Web interface screenshots courtesy of OpenMRS. Used with permission.
Requirements

- Rapid, easy to use: high throughput
- Scalable beyond CIDRZ clinics
- High-quality photography
- Operate under low network bandwidth, reliability
- High-quality image review
- Integrate with existing systems and procedures
- Ready to deploy in short term
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Conclusion

• Current focus is on Android + OpenMRS

• Possibility for laptop solution + J2ME improvements