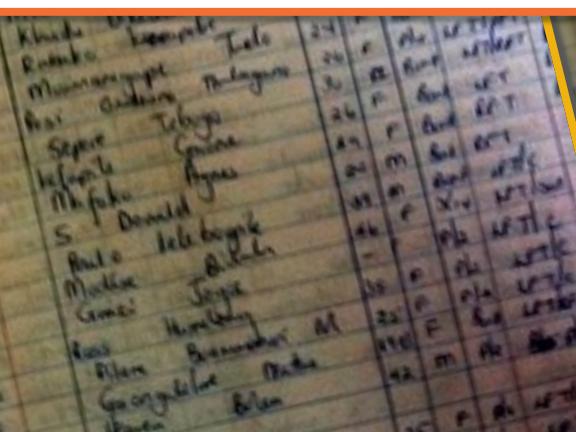
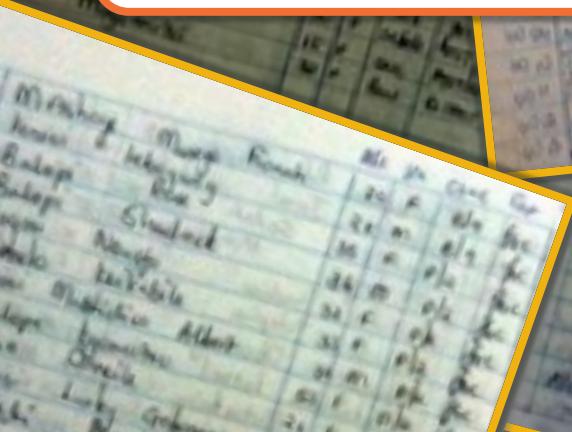
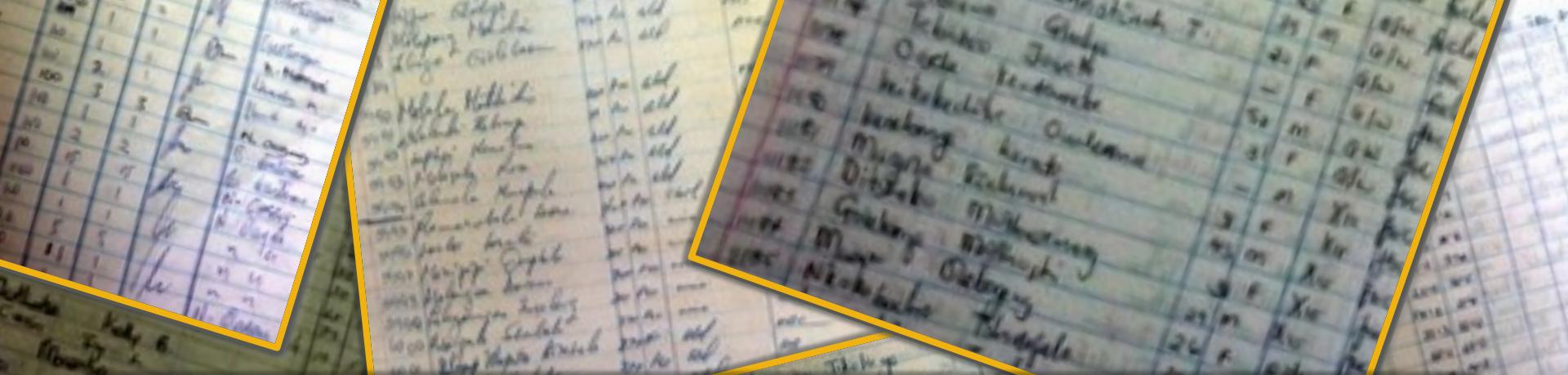


BLIS Challenges and System Design

!

Challenge 1: Non-standardized logbooks





Challenge 2: Sample labeling and workflow management





Challenge 3: Data storage, retrieval, and analysis



Challenge 4: How to obtain LIMS requirements?



Technicians / Doctors

They haven't
seen or used one



High-level Officials

They don't know



CDC Employees

They know or
want too much!



The C4G approach:



Start with
minimal system



Engage end
users



Develop & refine based
on interactive feedback

**Cameroon
& Other
Countries
Involved**

Countries that participated in BLIS requirements-gathering phase:



Cameroon

Population: 25 million

Two Official Languages:



French



English



Challenges in Cameroon

- ◆ Two major languages used in labs
- ◆ Multiple logbooks (registration, results, workbooks), patient booklet
- ◆ Each lab has its own system for maintaining log books, for worksheets, for intake and reporting results etc.
- ◆ HIV, TB, Blood bank have additional log books
- ◆ No standard patient ID
- ◆ Recording of test results varies; “normal” ranges vary.



Overcoming Challenges



Technicians/Doctors/Staff
eager to use new technology
(but must use their time with
care)



Staff are generally very good
and have **adapted to existing
constraints** (workflow changes
should have immediate
benefits)



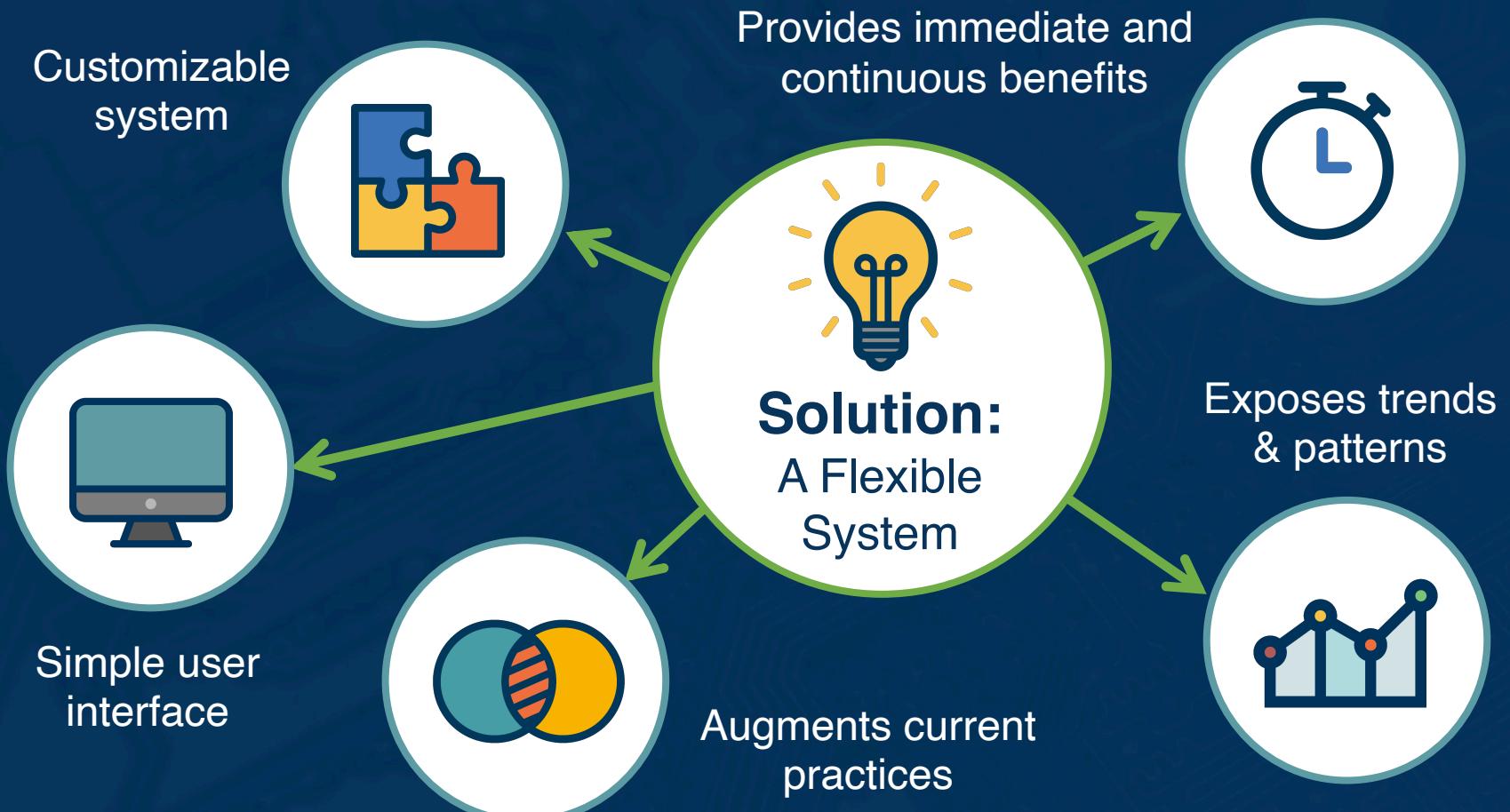
Strong partners in CDC
Cameroon and GHSS



Design Principles

- ◆ **Robustness** to limited infrastructure
- ◆ **Simple, minimal user interface**
- ◆ **Flexible** database
- ◆ **Fully configurable** and customizable workflow
- ◆ Patient **confidentiality** and system **reliability**
- ◆ **Respect** for stakeholders' time and feedback
- ◆ **Collaborative development**
- ◆ **Immediate and continuous benefits** for users
- ◆ **Standardization**, or imposing “superior” methods, **is NOT our agenda.**





User Interface, Evaluation, & Feedback

User Interface



Simple



Functional



Easy to use



Blends into
laboratory workflow



Zero Training!

Type	Lab Receipt Date	Status	Details	Report	Delete	Print Barcode
Whole Blood	28-07-2011	Results Pending	Details	Report	Delete	Print Barcode
Whole Blood	28-07-2011	Results Pending	Details	Report	Delete	Print Barcode
Serum	12-03-2010	Completed	Details	Report	Delete	Print Barcode
Serum	12-03-2010	Completed	Details	Report	Delete	Print Barcode

Single Specimen Results

Patient Number Contains

Lab Section

Search

Batch Results

Verify Results

Worksheet

Lab Section-wise Results

- ◆ To improve **usability** of the system and tailor it **based on feedback** received
- ◆ Lab personnel **perform a set of tasks on the prototype**
- ◆ **Expected difficulty, observed difficulty** and **comments** are recorded for each task
- ◆ **Results** from evaluation used to update **BLIS ASAP!**



Continuous User Evaluation



Results from evaluation and anecdotal feedback **used to make refinements/updates** to C4G BLIS.



Quick turnaround for feedback **lead to more engagement** from end users and implementers.



We had a **partner on the ground**, thanks to the **CDC: the Global Health Systems Solutions (GHSS)** and their technical staff.

Continuous User Feedback

Dear GHSS team,

I hope you had a good start to the week. I look forward to your updates on how things are going in all three labs. I am particularly interested in the patient reports and the status of the wireless set-up.

We will be sending the next update of BLIS this Saturday, June 12th (it should arrive before noon Cameroon time). This update will include the following:

1. adjustments to the autocomplete options (as reported by Sidney)
2. small improvements to patient reports (requested by Buea)

3. (new feature) doctor statistics report (as requested by Bamenda)
4. (new feature) the ability to see the trend (monthly, weekly, daily) of prevalence for any test, and to be able to see the trends separately for male and female patients.

We would be eager to have feedback on the new features so that they can be expanded and refined to suit the needs of the labs.

Best wishes, SV



Email update



Technician downloaded



Physically deliver



Available freely for download

<http://blis.cc.gatech.edu>