



# I-TECH

International  
Training & Education  
Center for Health



## HIS Evaluation Framework Project

*Global Digital Health Forum*

# Session Outline



- Introductions
- Overview of HIS Evaluation Framework Project
- Group discussion: HIS evaluation challenges
- “Rapid tour” of HIS Evaluation Toolkit
- Small group and report back: resources you need?
- Summary

# Who We Are



Nancy Puttkammer (I-TECH)  
[nputt@uw.edu](mailto:nputt@uw.edu)

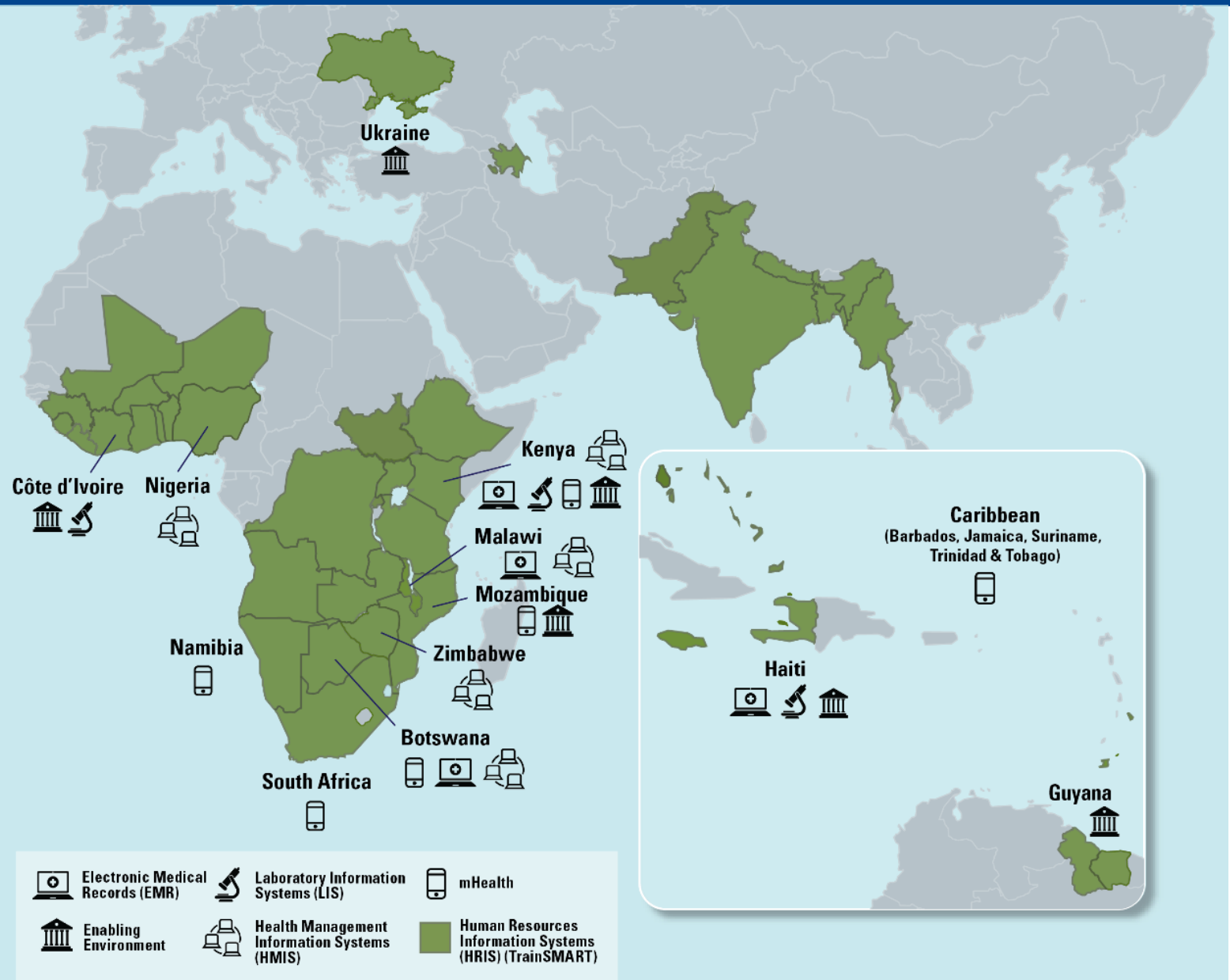


Martin C. Were (Vanderbilt)  
[martin.c.were@vanderbilt.edu](mailto:martin.c.were@vanderbilt.edu)

Samantha Dolan (I-TECH)  
[sdolan11@uw.edu](mailto:sdolan11@uw.edu)



# I-TECH and Health Information Systems



# HIS Evaluation Framework Project

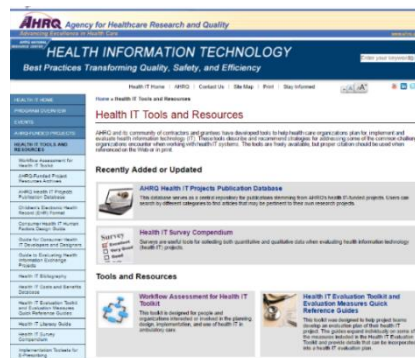
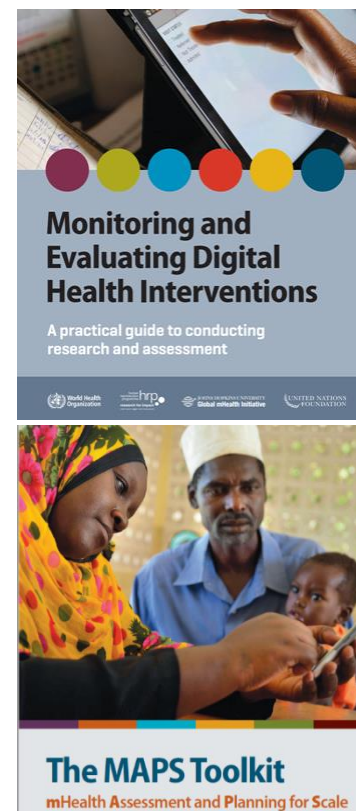


- Why HIS evaluation?
- Project origins
  - Bellagio eHealth Evaluation meeting
  - PEPFAR investments in HIS

# HIS Evaluation Framework and Toolkit

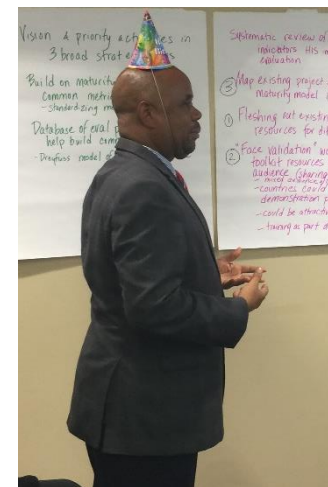
## Our niche

- *Practical* tools and resources feasible in LMICs
- Focus on *evaluation* rather than *monitoring*
- Include both *operational* evaluation and *research-oriented* evaluation
- Demonstrate *well-designed* evaluations



# Toolkit Development Process

- April 2016-present
- Steering Committee
- Consultation meeting of HIS evaluation experts (Atlanta, May 2017)
- Revisions to Toolkit contents (in process)





# Questions for Group Discussion



1. What do you want to learn through an evaluation? What are the types of evidence you are most in need of?

2. What resources have you used up until now to design and carry out evaluation?

3. What are the 3 biggest hurdles or challenges to designing and carrying out evaluation which will answer your questions?

4. What are the types of resources that would help you address those 3 biggest hurdles?





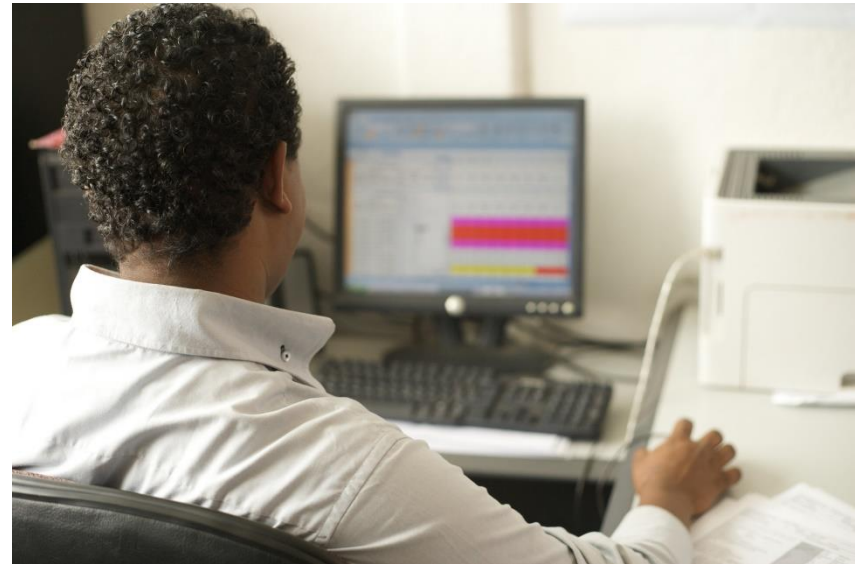
# Rapid Tour of HIS Evaluation Toolkit



## Practical Toolkit for Health Information System Evaluation

*A systematic, comprehensive, structured, and practical knowledge base for  
conducting HIS evaluations in global, resource-limited settings*

*Working Draft: November 30, 2017*

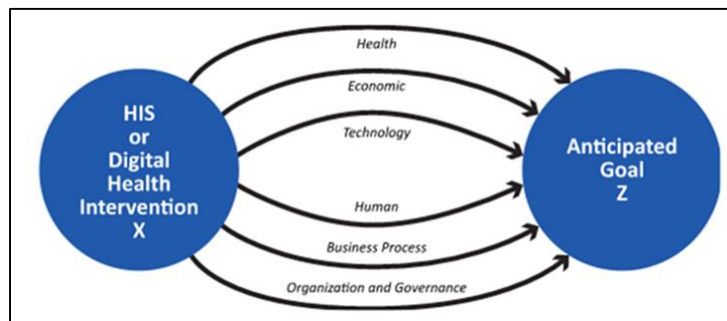
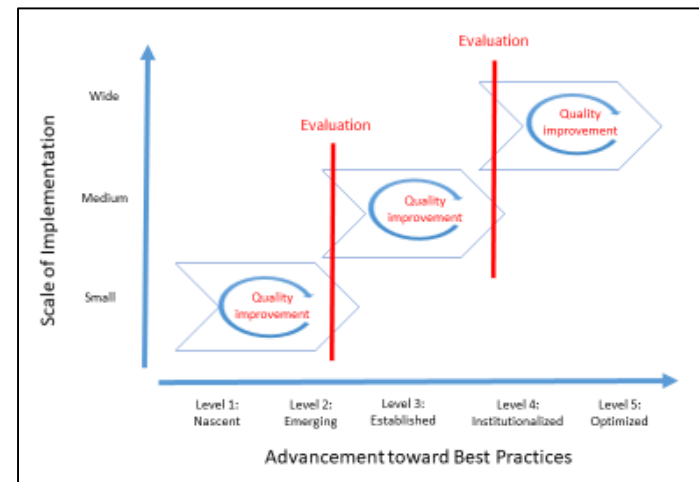


# Section 1: HIS Evaluation Framework



## System Type

## Maturity



## Domains

# Section 2: Guide to Evaluation



- Action 1: Describe project goals and stakeholders
- Action 2: Identify the system type
- Action 3: Identify maturity level of system
- Action 4: Identify value claims, recognize potential risks, and develop logic model
- Action 5: Develop a monitoring and evaluation (M&E) plan
- Action 6: Identify relevant theories and domains
- Action 7: Select and refine evaluation questions
- Action 8: Develop the evaluation study design
- Action 9: Develop the evaluation protocol
- Action 10: Determine who will carry out M&E activities
- Action 11: Define an M&E plan and report the findings

# Section 3: Case Scenarios



- Teaching cases
- Operational evaluation design → quality improvement
- Research-oriented evaluation design → rigorous, contribute to global evidence base
- Titles
  1. Strengthening case-based surveillance for prevention of mother-to-child
  2. HIV transmission - Evaluation of a tablet-based electronic PMTCT registry
  3. Applied Health Economic Evaluation of an Electronic Health Record (EHR) System in a Secondary Health Facility
  4. Evaluating the Effectiveness of an Electronic Health Record (EHR) System on Increasing Compliance with Clinical Guidelines
  5. Impact of Point-of-Service Electronic Health Record (EHR) System on Data Quality
  6. Evaluating the Utility and Fidelity of an Automated Public Health Reporting Tool Using a Mixed-Methods Approach

# Appendix 1: HIS Evaluation Domains



- Literature review
- Map of domains and sub-domains

Appendix 1B

## HIS Evaluation Domains and Sub-Domains

Health	Economic	Technology	Human	Business Process	Organization & Governance
adherence	affordability	architecture	acceptability/ satisfaction	availability of data	change management
clinical decision making	budget impact	core clinical information	attitudes: anxiety	business transaction quality	compatibility of HIS with tasks
clinical safety	cost benefit	data error rate	attitudes: trust	changes in business process	confidentiality
compliance with care guidelines	cost effectiveness	data security	attitudes: usability	complexity of tasks	culture of information
continuity of care	cost minimization	data standards	attitudes: usefulness	consistency	effects of infrastructure
coverage	cost utility	development process	capacity/ competence	critical steps in business process	equity of access
improved diagnosis and treatment	costs: direct	flexibility	confidence	data management practices	feedback process
quality of care	costs: fixed	functionality	cultural readiness	data quality: accuracy/validity	governance readiness
sensitivity/accuracy	costs: indirect	functionality: clinical decision support	intention to use system	data quality: completeness	human resources development
volume	costs: recurrent	functionality: order entry	interest/motivation	data quality: integrity	incentives/rewards
	perspective of economic evaluation	functionality: reporting	knowledge management	data quality: reliability	infrastructure
	resources	interoperability	learning readiness	data quality: timeliness	institutional support
	time use	privacy protections	self-efficacy	efficiency of business process	M&E structures and functions



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# Appendix 2: Protocol Resources



- Tips and Sample Language
- Sample Protocol

Case Scenario #1: Strengthening case-based surveillance for prevention of mother-to-child HIV transmission – Evaluation of a tablet-based electronic PMTCT registry	
Standard and Criteria	Tips and Sample Language
<b>Engage stakeholders</b>	
<input type="checkbox"/> Stakeholders and their engagement in the planning and implementation of the evaluation (e.g., selecting evaluation questions, reviewing evaluation design, reviewing report) are described in the overview/background.	<p><b>Tip:</b> A table is a clear, concise way to outline the roles and priorities of the various stakeholders involved in an evaluation. See Table 1 in the case scenario.</p> <p><b>Sample language:</b> The stakeholders for the eMTCT register evaluation are national MOH and HIV surveillance managers, implementing partners, healthcare workers, district managers and supervisors, patients, software developers, the HIV surveillance global community, and the funder of the evaluation. The stakeholders are involved throughout the evaluation and represent different priorities and goals for the evaluation. The national MOH and HIV surveillance managers help define evaluation questions, ensure that the evaluation will provide information they can use for decision making,</p>

# Appendix 3: Planning Resources



- Stakeholder Matrix
- Checklist for Scientific and Ethical Review
- Evaluation questions at different stages of maturity

Evaluation Title:	
Standard and Criteria	Tips and Sample Language
<b>Engage stakeholders</b>	
<input type="checkbox"/> Stakeholders and their engagement in the planning and implementation of the evaluation (e.g., selecting evaluation questions, reviewing evaluation design, reviewing report) are described in the overview/background.	
<b>Clearly state evaluation questions, purpose, and objectives</b>	
<input type="checkbox"/> The intent of the evaluation and justification are explained.	
<input type="checkbox"/> Evaluation questions are specified.	
<input type="checkbox"/> There is a description of how evaluation results will be used and by whom.	



# Appendix 4: Data Collection Resources

- Review: Software as a Service Systems for Data Collection
- How-To: Configuring Tablets for Data Collection
- Instruments for Data Collection

Required Functionality	CommCare	Google Forms	Google Sheets	Hoji	Kobo Toolbox	MagP i	Ona	RedCap	Survey CTO
Offline	✓	X	✓	✓	✓	✓	✓	✓	✓
Data Entry on PC	!	✓	✓	X	✓	X	✓	✓	✓
Import MFL	✓	X	X	✓	✓	✓	✓	✓	✓
Monitor Activity	✓	✓	✓	✓	✓	✓	✓	✓	✓
Report	✓	✓	✓	✓	✓	✓	✓	✓	✓
Export	✓	✓	✓	✓	✓	✓	✓	✓	✓
GPS	✓	X	X	✓	✓	✓	✓	✓	✓
Monthly Cost	\$100/ \$500	Free	Free	\$193/ \$483	Free	\$500/ \$834	Free/ \$99	Free	\$99

## Title of tool or instrument: e-Health Readiness assessment tools

**Authors:** Shariq Khoja, Richard E. Scott, Ann L. Casebeer, M. Mohsin, A.F.M. Ishaq, and Salman Gilani

**Type of tool or instrument:** Readiness assessment tool

**Description:** Two e-health readiness assessment tools for application in healthcare institutions of developing countries: one for managers, and one for healthcare providers. There are four categories of readiness described in each tool: core readiness, technological readiness, learning readiness, and societal readiness.

**Citation/Source:** Khoja, S., Scott, R. E., Casebeer, A. L., Mohsin, M., Ishaq, A. F. M., & Gilani, S. (2007). e-Health readiness assessment tools for healthcare institutions in developing countries. *Telemedicine and e-Health*, 13(4), 425-432.

**Cited by:** Khoja, S., Scott, R. E., Casebeer, A. L., Mohsin, M., Ishaq, A. F. M., & Gilani, S. (2007). e-Health readiness assessment tools for healthcare institutions in developing countries. *Telemedicine and e-Health*, 13(4), 425-432

**Location:** [https://www.researchgate.net/publication/5992662\\_e-Health\\_Readiness\\_Assessment\\_Tools\\_for\\_Healthcare\\_Institutions\\_in\\_Developing\\_Countries](https://www.researchgate.net/publication/5992662_e-Health_Readiness_Assessment_Tools_for_Healthcare_Institutions_in_Developing_Countries). Items for the tools are described in Tables 1-5.

# Appendix 5: Annotated Bibliographies

## Topics

- Theories of HIS success
- Best practices in HIS evaluation
- Other resources for HIS Evaluation
- Exemplary studies

1. Ammenwerth E, Iller C, Mahler C. [IT-adoption and the interaction of task, technology and individuals: a fit framework and a case study](#). BMC Med Inform Decis Mak. 2006 Jan 9;6:3. doi:10.1186/1472-6947-6-3.

**Summary:** FITT framework—fit between individuals, task and technology, taking into account the process-oriented character of an IT introduction. Views information systems as technical systems embedded in social-organizational environments. Socio-organizational settings may differ and lead to different adoption processes of the same IT system. Helps to better analyze the socio-organizational-technical factors that influence IT adoption.

**Example uses:** Describing adoption of a nursing documentation system in a hospital.

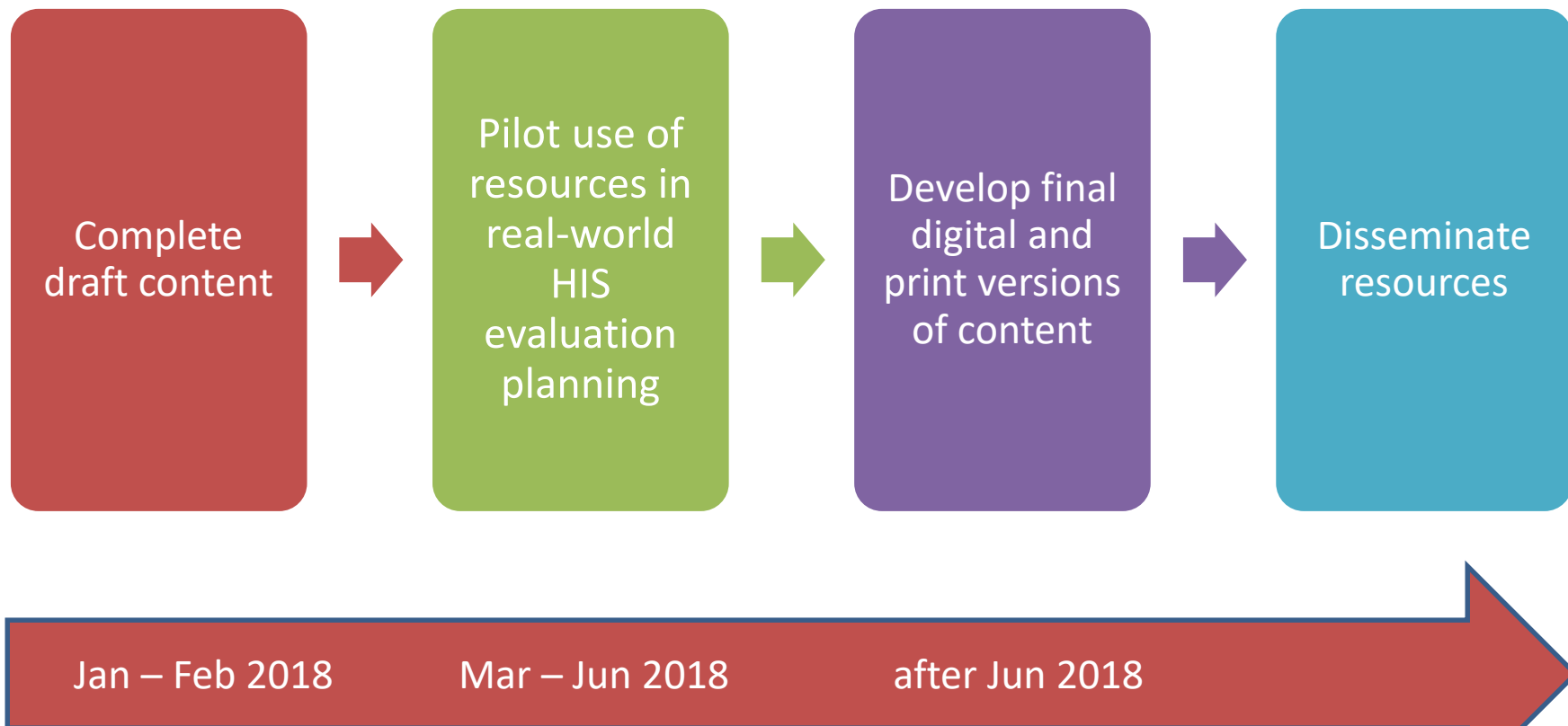
**Unique aspects:** Other models concentrate on individual attributes of the users and of technology, this model is based on the idea that IT adoption in a clinical environment depends on the fit between the attributes of the users (e.g., computer anxiety, motivation), of the attributes of the technology (e.g., usability, functionality, performance), and of the attributes of the clinical tasks and processes.

# Group Work + Debriefing



- Which resources will help most with the challenges you raised?
- Which resources will help least?
- What is missing?
- What do you like?
- What do you not like?

# Summary and Next Steps



# Accessing the Draft Toolkit



[bit.ly/2AAfogX](http://bit.ly/2AAfogX)

# Thank You!

# Acknowledgements



## Steering Committee

Joseph Babigumira (UW), Samantha Dolan (I-TECH/UW), Hamish Fraser (University of Leeds and Brown University), Canada Parrish (I-TECH/UW), Nancy Puttkammer (I-TECH/UW), Xen Santas (CDC), Herman Tolentino (CDC), Martin Were (Vanderbilt University)

## Expert Consultation Group

Craig Appl (I-TECH/UW), Jeffrey Bale (CDC), Julia Driessen (University of Pittsburgh), Alvin Marcelo (Asia eHealth Information Network / AeHIN), Megan McGuire (Medecins Sans Frontieres / MSF), Garrett Mehl (World Health Organization), Onesmus Kamau (Kenya Ministry of Health), James Kariuki (CDC), Shariq Khoja (University of Calgary, Tech4Life Enterprises), Claud John Kumalija (Tanzania Ministry of Health), Oleksandr Kurdus (Ukraine Public Health Institute), Tom Oluoch (CDC), Janise Richards (CDC), Tracy Sandifer (I-TECH/UW), Vivian Singletary (Public Health Informatics Institute), Aline Umubyeyi (Rwanda Ministry of Health), Steven Yoon (CDC)

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PI: N. Puttkammer

## HIS Evaluation Toolkit Authors

Craig Appl, Joseph Babigumira, Samantha Dolan, Hamish Fraser, Canada Parrish, Nancy Puttkammer, Tracy Sandifer, and Martin Were.

## HIS Evaluation Toolkit Assistants

Benjamin Akimana

Sue Duvall

# Extra Slides





