



**The Medical Education
Partnership Initiative:**
Report of the Graduate Tracking
Software Review and
Implementation Workshop

Moshi, Tanzania
July 8-11, 2014

September 2014

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The views expressed in this document do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

ACKNOWLEDGEMENTS

This workshop was carried out after much thought, planning, and collaboration by representatives from several organizations. Below are the individuals, listed in alphabetical order, who deserve special recognition for their efforts in the organization and successful completion of the workshop.

Rebecca Bailey (*CapacityPlus, Team Lead, Health Workforce Development, USA*)

Ms. Bailey provided project oversight to the MEPI/*CapacityPlus* Graduate Tracking leadership group and contributed critical expertise from an education and workforce perspective to the team. She provided technical inputs for the workshop agenda.

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Ms. Deussom provided support to the MEPI/*CapacityPlus* Graduate Tracking leadership group coordinating the workshop's planning, preparation, facilitation, and evaluation, as well as leading workshop sessions on strategic action planning and stakeholder analysis, and drafting the workshop report.

Michael Drane (*CapacityPlus, Open Source Community Manager, USA*)

Mr. Drane provided technical expertise to the MEPI/*CapacityPlus* Graduate Tracking leadership group. He also led the workshop agenda development, planning, and session facilitation, particularly on the software review and six-step implementation processes. He also manages the MEPI Graduate Tracking social media.

Luke Duncan (*CapacityPlus, Senior Systems Developer, USA*)

Mr. Duncan led the Graduate Tracking software development team to receive user feedback, finalize updates, and provide support to MEPI institutions for software customization.

Sinit Mehtsun (*MEPI Coordinating Center, USA*)

Representing the MEPI Coordinating Center on behalf of Dr. Chen, Ms. Mehtsun served as a cofacilitator for the workshop on sessions regarding the MEPI Technical Working Group (TWG), branding, and the community of practice.

Nobert Mijumbi (*IntraHealth International, Human Resources Information Systems Developer, Uganda*)

As a member of the Graduate Tracking software development team, Mr. Mijumbi received user feedback, finalized updates, and provided support to MEPI institutions for software customization.

Kalay Moodley (*Stellenbosch University, South Africa*)

Dr. Moodley served as the acting MEPI Physician Tracking TWG chair, on behalf of Moses Simuyemba, who was unable to participate in the workshop. She facilitated TWG evaluation sessions and provided overall guidance and leadership to the workshop.

Rose Mwangi (*Kilimanjaro Christian Medical University College, Tanzania*)

Ms. Mwangi represented the host institution for the Graduate Tracking workshop. She provided inputs to the workshop agenda and facilitated a session on her institution's Graduate Tracking proof of concept exercise.

Moses Simuyemba (*University of Zambia, Zambia*)

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TABLE OF CONTENTS

Executive Summary.....	v
Introduction.....	1
Workshop Objectives and Expected Outcomes.....	1
Workshop Participants and Facilitators.....	2
Pre-Workshop Activities.....	2
Workshop Proceedings and Outcomes.....	4
Sharing Institutional Updates.....	4
Finalizing the Graduate Tracking Software.....	4
Sharing Experiences with Graduate Tracking.....	6
Defining Outcome Objectives for Graduate Tracking Software Implementation.....	6
Drafting 100-Day Strategic Action Plans.....	7
Measuring the Effectiveness of the TWG.....	8
Brainstorming on Software Branding and Sustainability.....	8
Next Steps.....	9
Immediate Next Steps.....	10
Long-Term Next Steps.....	11
Workshop Evaluation.....	12
Appendix 1: Workshop Agenda.....	14
Appendix 2: Workshop Participants.....	20
Appendix 3: Graduate Tracking Software Functional Requirements (from October 2013 Lusaka Workshop).....	21
Appendix 4: MEPI Graduate Tracking TWG Vision, Update, and Expectations.....	24
Appendix 5: 100-Day Strategic Action Plan Template.....	27
Appendix 6: Stakeholder Analysis Template.....	30
Appendix 7: Workshop Evaluation Form and Response Analysis.....	32

EXECUTIVE SUMMARY

The PEPFAR Medical Education Partnership Initiative (MEPI) is a five-year US government initiative supporting 13 medical schools in 12 African countries with the aim of increasing the capacity and quality of African medical education, improving retention of medical graduates, and promoting regionally relevant research through locally-led innovative programs. In collaboration with the MEPI Physician Tracking Technical Working Group (TWG), the PEPFAR-funded USAID CapacityPlus Project and the MEPI Coordinating Center (MEPI-CC) organized and conducted a Graduate Tracking Software Review and Implementation Workshop in Moshi, Tanzania, from 8-11 July 2014.

The objectives of the workshop were to improve the graduate tracking software and its features; build the capacity of workshop participants to install, customize, use, and scale up the graduate tracking software at their respective institutions; reach a consensus on the next steps for the software system and TWG community, including software branding and sustainability; and strengthen the graduate tracking community of practice. The workshop brought together representatives from MEPI-supported schools and consortia in ten countries. The participants consisted of faculty members, administrators, and data managers at the MEPI schools who are champions of graduate tracking at their institutions. These delegates were nominated because of their wide experience, knowledge, and understanding of the current situation and future needs for graduate tracking; and their abilities to plan for, customize, deploy, and scale up graduate tracking at their institutions.

Prior to the workshop, the participants consulted with stakeholders at their schools to collect additional feedback on the data and reporting requirements for the Graduate Tracking software. When possible, they brought graduate data to the workshop with them in order to experience entering information into the Graduate Tracking software.

At the workshop, participants reviewed the beta version of the software and provided additional feedback to finalize its functional requirements, data elements, forms, reports, and other features. The majority of this feedback has been integrated into the standard Graduate Tracking software. However, feedback that is specific to an individual school's needs will be included as part of each university's customized version.

During the workshop, participants discussed steps forward for software implementation through a six-step process: assess, plan, deploy, pilot, scale up, and sustain. Within the assessment and planning stages, particular emphasis was placed on the importance of 100-day strategic action planning and stakeholder analysis. Participants from MEPI-supported schools in Tanzania (Kilimanjaro Christian Medical University College) and Ghana (Kwame Nkrumah University of Science and Technology) shared their experiences implementing their graduate tracking approaches. The representative from Stellenbosch University (South Africa) shared the school's experience with managing stakeholders.

As representatives of the Physician Tracking TWG, the workshop participants also convened to consider how they could monitor and evaluate their own effectiveness as a group, support their community of practice, and brand the MEPI Graduate Tracking software. As such, **MEPI**

Connect was agreed on as the generic name for the software. Many participants supported the name **MEPI Uganisha**, which means “we are connected” in Kiswahili.



MEPI Graduate Tracking Software Review and Implementation Workshop participants at KCMUCo in Moshi, Tanzania on July 8, 2014

Each MEPI-supported school representative departed the workshop with a draft 100-day strategic action plan for their institution with three common outcome objectives: 1) build/achieve consensus from key stakeholders on how to apply the graduate tracking software; 2) define needs for adapting, deploying, and maintaining the software; and 3) deploy the software. The specific activities and approaches to achieving these objectives were different for each institution. Moving forward, workshop participants will work to refine and execute their 100-day strategic action plan at their respective schools. They will also continue to stay connected (*Uganisha*) through their community of practice, the MEPI Graduate Tracking Facebook group.

INTRODUCTION

In 2010, the US President's Emergency Plan for AIDS Relief (PEPFAR) launched the Medical Education Partnership Initiative (MEPI), funding 13 medical schools over five years in 12 African countries to improve the quantity, quality, and retention of their graduates in an effort to strengthen health systems in those countries. MEPI is funded by PEPFAR and by the National Institutes of Health (NIH). The initiative is administered by both the NIH Fogarty International Center and the HIV/AIDS Bureau of the Health Resources and Services Administration (HRSA) in the US Department of Health and Human Services. George Washington University, based in the US, and the African Center for Global Health and Social Transformation (ACHEST), a Uganda-based nongovernmental organization (NGO), serve as the coordinating center for the initiative. In collaboration with the MEPI Physician Tracking Technical Working Group (TWG), the USAID-funded and IntraHealth International-led *CapacityPlus* project and the MEPI Coordinating Center (MEPI-CC) organized and conducted a Graduate Tracking Software Review and Implementation Workshop from 8-11 July 2014 at the Kilimanjaro Christian Medical University College (KCMUCo) in Tanzania (see workshop agenda, Appendix 1).

Given high graduate outmigration rates, MEPI-funded schools are investing heavily in strategies to retain graduates where they are most needed. Enabling schools with a platform to connect with alumni allows them to gauge the strategies' effectiveness. In collaboration with the [MEPI Physician Tracking](#) Technical Working Group (TWG), the USAID-funded [CapacityPlus](#) project, and the MEPI Coordinating Center support nine country-led initiatives¹ to implement graduate tracking at 18 medical education institutions.

In October 2013, a participatory approach involving medical professional councils and the MEPI TWG identified the functionality and attributes needed to meet graduate tracking objectives while ensuring interoperability with the open source [iHRIS software systems](#) used by professional councils and ministries of health. The MEPI TWG and relevant school stakeholders next convened in July 2014 to review, test, and finalize the software system, as well as to develop strategic action plans for graduate tracking implementation.

Workshop Objectives and Expected Outcomes

The workshop's primary objectives were to:

1. Improve the graduate tracking software and its features through collective review, testing, and evaluation of the system
2. Build the capacity of the workshop participants to navigate and use the software system and to install, customize, and roll out the system at their respective institutions
3. Reach consensus on the next steps for the software system and TWG community, including an agreement on the branding and sustainability of the system
4. Strengthen the community of practice and determine ways to broaden the community's outreach.

¹ Botswana, Ethiopia, Ghana, Mozambique, Nigeria, Tanzania, Uganda, Zambia, Zimbabwe

The workshop's expected outcomes were:

- A highly functional version of the software that meets the graduate tracking needs of all participating institutions
- Draft 100-day strategic action plans for each MEPI school's graduate tracking software implementation
- An agreed way forward, including recommendations for the branding and sustainability of the software system and next steps for strengthening the community of practice
- Agreed-upon revisions and updates to the Graduate Tracking page on the MEPI website (www.mepinetwork.org), its Facebook group (<https://www.facebook.com/groups/mepigt/>), and mailing lists.

Workshop Participants and Facilitators

The 15 workshop participants and six facilitators represented the full spectrum of graduate tracking needs and activities outlined in the graduate tracking framework shown in Figure 1. Facilitators included representatives from CapacityPlus, the MEPI-CC, and partner organizations. Participants included focal persons from 10 of the 13 MEPI-supported schools (see Appendix 2 for list of participants).

Pre-Workshop Activities

The MEPI Graduate Tracking Software Review and Implementation Workshop built upon progress made through a collaborative requirements development process that defined the business processes and functional requirements needed for graduate tracking that are most appropriate for MEPI schools. CapacityPlus and the MEPI-CC engaged the Public Health Informatics Institute (PHII) in Georgia to conduct a literature review of best practices for graduate tracking and carry out individual interviews with representatives of MEPI schools to develop a draft framework, business processes, and functional requirements. These were further refined during a collaborative requirements development workshop held in Lusaka, Zambia in October 2013 (<http://www.capacityplus.org/files/resources/mepi-physician-tracking-technical-working-group-workshop-report.pdf>).

As Figure 1 illustrates, the resulting graduate tracking framework satisfies the needs of a variety of stakeholders from settings such as medical schools, medical councils, and ministries. For medical schools, connecting with graduates translates into the ability to monitor career outcomes and obtain feedback and support from graduates to improve educational programs. For medical councils and ministries of health, tracking provides important information for workforce planning, quality, and distribution. Given MEPI's objectives to enhance the quantity and quality of education and research, as well as to promote the retention of new health professionals in their countries of origin, the graduate tracking software has the potential to assess the impact of the initiative over time.

Figure 1: Graduate Tracking Framework

Graduate Tracking Framework



A major outcome of the October 2013 workshop was a clear directive by the TWG to develop a software system as the primary tool for schools to track their graduates. As per the request of the TWG, CapacityPlus and the MEPI-CC determined the set of business processes and functional requirements to include within the scope of the software system. A prototype version of the graduate tracking software was developed and user-tested by members of the TWG. (See Appendix 3 for the functional requirements for the software that resulted from the October 2013 workshop in Lusaka.)

One week prior to the second workshop, which focused on software review and implementation, CapacityPlus supported the MEPI Physician Tracking TWG to conduct a proof of concept for the software at KCMUCo. It is customary in software development to conduct a proof of concept prior to the rollout and pilot of a system. Prior to the proof of concept, the software had been designed in the abstract but not yet been applied in a production environment. Technically speaking, a proof of concept aims to demonstrate the feasibility of the software and verify that the concept has the potential of being used, whereas a pilot refers to an initial rollout of the system into production.

The goals of the proof of concept at KCMUCo were twofold: (1) test the feasibility of the software; and (2) document lessons learned to inform the review and implementation workshop.

The specific objectives of the proof of concept were as follows:

- Interview stakeholders and document their input
- Conduct a one-day workshop on user and stakeholder requirements
- Determine data elements

- Customize fields, forms, and pages according to functional requirements
- Generate one or two reports based on stakeholder requirements
- Prepare data for bulk upload in Microsoft Excel
- Upload data
- Document workflows and define operation procedures
- Test-run workflows
- Document lessons learned and prepare a presentation for the review and implementation workshop.

Also in advance of the workshop, participants from MEPI-supported schools were requested to carry out the following five steps:

1. Gather actual data on graduates from their institution, either in paper or electronic form, in order to experience the software's usability and features through data entry
2. Estimate approximately how many graduate records each respective school expected to upload to the software
3. Conduct preliminary discussions with relevant stakeholders (e.g., Admissions, Registrar, Dean, Provost) to understand the types of graduate reports that would be useful, including the reports' purpose, primary recipient, frequency, and formatting
4. Provide an update to the TWG on activities, progress, and milestones achieved since the Lusaka October 2013 workshop
5. Determine the preferred/planned type of instance for each respective institution (i.e., software hosted on a cloud server or locally at the university).

In addition, participants were invited to share their expectations for the Graduate Tracking Software Review and Implementation Workshop. (Appendix 4 summarizes participants' expectations in advance of the workshop, as they relate to their institutions' visions for graduate tracking software as documented in October 2013.)

WORKSHOP PROCEEDINGS AND OUTCOMES

Sharing Institutional Updates

At the workshop's opening, MEPI-supported school representatives provided updates on their institution's context, progress in preparing for graduate tracking software implementation, and expectations for the workshop related to their vision for the software as defined at the October 2013 workshop. (See Appendix 4 for a summary of the MEPI institutions' vision, updates, and expectations.)

Finalizing the Graduate Tracking Software

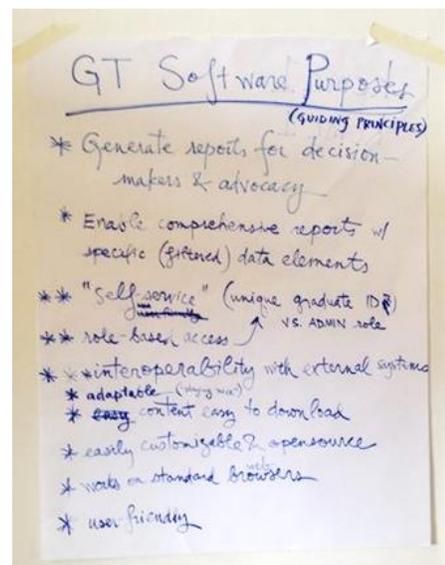
During the first two days of the workshop, participants received a guided tour of the beta version of the graduate tracking software and provided feedback for improvements, including feedback on the functional requirements, types of data elements (such as how questions are phrased, coded, and organized), forms, and other feature requests. (See

Appendix 3 for the list of functional requirements established by the MEPI Graduate Tracking TWG at the October 2013 workshop in Lusaka, Zambia.) Key enhancements to the software requirements included additional variables such as type of sponsorship and loan payment status. In addition to adding new variables—also referred to as data elements or data fields—the corresponding data sets were reviewed and edited. Data sets are the data options for each field that appear in a drop-down window or a checkbox. Forms are groupings of variables and corresponding data sets. As a result of a discussion on important indicators to track, the group opted to add two new forms to capture job satisfaction and community engagement. Since most schools will need to locate and track down information on previous years' graduates, a custom report was created to help system users manage how many graduates have been contacted and how many records have been updated during a specific period of time. This report is designed to help monitor the graduate tracking process.

Workshop participants spent ample time navigating the software's various forms, considering who the software users would be, and how the data element labels and classifications corresponded with their existing graduate tracking data. For example, they discussed how data officers may use the forms to enter archives of paper-based graduate data, versus how the surveys could be administered to newly-graduated medical professionals through a web-based "self-service" approach where they enter their own demographic and professional information. In addition, participants deemed a new data element and report on loan status an important addition to understanding graduates' financial situation.

Workshop participants brainstormed and agreed upon the guiding principles for the software development team to consider as they finalized updates to the graduate tracking software and its functional requirements:

- Ability to generate reports for decision-making and advocacy
- Enable comprehensive reports of (filtered) data elements
- "Self-service" (i.e., graduates enter their own information online)
- Role-based access (e.g., unique graduate IDs and administrative roles)
- Interoperability with external systems
- Adaptable
- Content easy to download
- Easily customizable and open source
- Works on standard web browsers
- User-friendly.



During the software review and then later in strategic action planning sections of the workshop, understanding the incentives for providing graduate tracking data—whether from a professional council through an interoperable system, or from graduates through a self-

service survey—was a recurrent theme for each MEPI school to consider in order to deploy and sustain the software.

Sharing Experiences with Graduate Tracking

KCMUCo of Tanzania and Kwame Nkrumah University of Science and Technology (KNUST) of Ghana, two MEPI schools that were further along in their graduate tracking, presented their experiences of graduate tracking.

KCMUCo's team shared their experiences on the proof of concept to test the beta graduate tracking software the week prior to the workshop. They described how they managed to install and host the software from an information technology perspective, how they entered graduate records (approximately 700 graduates, which represents about 38% of their contact list), and how they generated preliminary graduate tracking reports and provided them to key stakeholders. For example, KCMUCo's reports were able to show the breakdown of graduates by gender, age, rural/urban residence, practice status, specialty, and licensure, among others.

In the case of KNUST's School of Medical Sciences, there is a strong and growing online alumni networking system to which it is envisioned the graduate tracking software will connect. (The school subsequently launched a self-service survey to the newest cohort of medical graduates in August 2014.) The surveys will be promoted to graduates on KNUST's alumni networking site (<http://smsknustalumni.org>) and will be consistently branded.

In addition, a representative from Zalongwa, a private sector company that provides student tracking support in Tanzania, shared insights on how enrolled medical students can be tracked, using the example of their SARIS software. The purpose of this presentation was to illustrate the potential for the graduate tracking system to link to student tracking systems and the importance of customizing the graduate tracking system so that it can receive data from other tracking systems.

Defining Outcome Objectives for Graduate Tracking Software Implementation

In considering how to define graduate tracking software implementation objectives, the participants examined the institutions' different contexts and needs and came to a consensus on three overarching outcome objectives:

1. Build/achieve consensus from key stakeholders on how to apply the software
2. Define needs for adapting, deploying, and maintaining the software
3. Deploy the software.

These three outcome objectives align well with the first three steps of the six-step software implementation process reviewed at the workshop:

1. **Assess**—Understand graduate data sources and the role of stakeholders and stakeholder leadership groups
2. **Plan**—Develop use cases and determine data sets as well as mobilize financial and human resources

3. **Deploy**—Set up software hosting, customization, standard operating procedures, and installation requirements
4. **Pilot**—Create a data-sharing agreement, data collection forms/surveys, data quality guidelines, and activity reporting to the stakeholder leadership group
5. **Scale up**—Determine technology, data storage, and resource requirements
6. **Sustain**—Consider software branding, accessibility, maintenance, and content for the MEPI Graduate Tracking website

Workshop participants received USB flash drives of key reference documents, guidelines, and templates for use at various steps of the software implementation process as resources to provide their teams with relevant information. The documents can be accessed here:

<https://www.dropbox.com/sh/w4tq2ndgpgwjux4/AADzZy21wxwk45woaa64OgXua>.

Participants left the workshop with a sound understanding on how to design, deploy, and use the software. Usability was a major focus during the testing phase of the workshop. A great deal of the feature requests made by workshop participants aimed to ensure quick and easy utilization of the system upon return to their institution. Each participant will return to their schools qualified to be a trainer of trainers on the system's general use and use of data for decision-making.

Drafting 100-Day Strategic Action Plans

During the final two days of the workshop, each MEPI school representative drafted a 100-day strategic action plan using a provided template (see Appendix 5). The plans built upon the common outcome objectives (e.g., build consensus on how to use the software, define deployment needs, and deploy software) and defined activities and persons responsible for leading the activities as well as other stakeholders involved, resource requirements, desired outputs for each activity, and the activity time frame. The draft plans focused on activities that contribute to the first three stages of the six-step implementation process: assess, plan, and deploy.

The MEPI school representatives considered the roles of their *functional teams*—such as the information technology faculty; monitoring, evaluation, and data officers; and other team members at their schools and professional councils—who should be unified and mobilized to implement the graduate tracking software as well as technology infrastructure needs. All schools were given a terms of reference template for an implementation team. The terms of reference outline the roles and responsibilities of four team members: a project manager, an information technology team leader, a human resources for health data analyst, and a planning and utilization team leader. In addition, MEPI school representatives considered who the key stakeholders are, and notably who should be engaged to participate in the software's *stakeholder leadership group*. While they varied for each school, these stakeholders include the MEPI Principal Investigator (PI); the school's dean, provost, registrar, and other faculty leadership; medical professional councils; ministries of health; and alumni leadership, if any.

Given the importance of having well-mobilized stakeholders to support the graduate tracking software implementation process, facilitators guided workshop participants through

a stakeholder analysis, whereby they free-listed stakeholders and considered how they would need to be involved to achieve the school's graduate tracking goals. Participants then assessed stakeholders' interest in graduate tracking, power, and volatility, to gauge to what extent they represented an asset or a potential hindrance to the graduate tracking software implementation process. Each stakeholder was then placed on a support spectrum ranging from high support to high opposition, in consideration of their relative power and influence on the software implementation's success. Based on each stakeholder's placement on the spectrum, MEPI school representatives considered which strategic actions should be undertaken, including how to mobilize, inform, and include stakeholders in the software implementation process. (See Appendix 6 for the Stakeholder Analysis template.)

Measuring the Effectiveness of the TWG

In a session led by Dr. Moodley, acting Chair of the MEPI Physician Tracking TWG, participants considered how to assess the effectiveness of their group through monitoring and evaluation. Formed in 2013, the TWG's aim is to support each school to build a graduate tracking system. During the discussion, participants suggested that the TWG coordinate quarterly surveys from the MEPI-CC requesting TWG members to provide updates on their institutions' progress (using SmartSheet or other survey formats to gather inputs and share results), and conduct key informant interviews to gauge TWG success and report results with recommendations for follow-up.

When discussing ways to measure their success through inputs and processes, participants suggested the following metrics:

- Frequency of communication
 - Frequency/number of Facebook sharing/interactions
 - <https://www.facebook.com/groups/mepigt/>
 - Quarterly survey results posted
 - Frequency of Skype calls
 - Newsletters shared among group members
- Number of people/schools with sustained involvement/participation
- Number of objectives attained by each school.

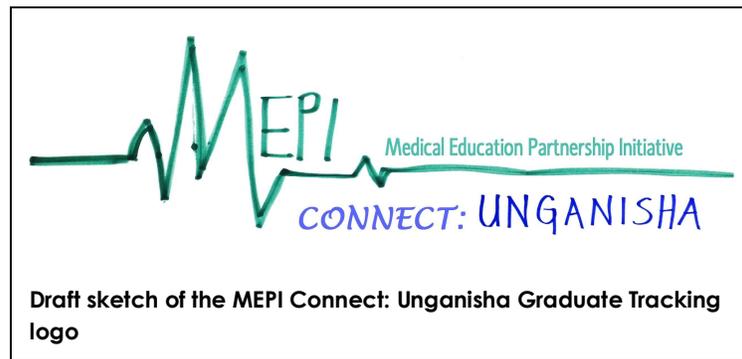
Participants agreed that the next steps for monitoring and evaluation of MEPI graduate tracking are to develop and disseminate a quarterly survey (MEPI-CC) and analyze and disseminate quarterly survey results (MEPI TWG Chair Moses Simuyemba, Jonathan Gandari, with support from Michael Drane).

Brainstorming on Software Branding and Sustainability

Participants brainstormed about possible ways to brand the graduate tracking software. In previous sessions, some concern had been expressed about the name and branding of the software if "self-service" (i.e., graduates entering their own data through an online form) is to be one approach for gathering graduate data. Because "tracking" can have potentially predatory connotations, participants agreed that the software's brand should conjure up more positive associations.

Participants considered how the most ubiquitous software and applications have simple but meaningful names (e.g., Google, Facebook, LinkedIn). They also considered how some web developers have used African words (e.g., *Ubuntu*), and many felt strongly that the MEPI-led graduate tracking software should have an African name. This led participants to seek words in various African languages, including Kiswahili, the official language in Tanzania. Relying on their Kiswahili-speaking participants, they brainstormed different names and words that meant “link,” “connection,” and “togetherness,” among others. While the software is open source and could be adapted to any context for alumni tracking, the group wanted to preserve the MEPI brand as well. It was through this process that participants proposed the name “MEPI Connect” or “MEPI Uganisha” in Kiswahili for the graduate tracking software. This will be discussed with the MEPI Steering Committee before the name of the software is finalized.

Developing a logo that mimics an EKG lifeline, participants noted that the long-stretching line also represents continuity and connectedness, which conjures the value and hope that graduates will stay connected to their alumni institution for the duration of their lives.



In addition, participants agreed on the following updates to the MEPI Graduate Tracking webpages:

- Summaries of the TWG workshops and the development of the graduate tracking system and software, including links to the workshop reports
- A stand-alone page that introduces MEPI Connect/Uganisha and its core features, with links to an online demo version and links to the source code for download
- Photos from the workshops and 2014 MEPI Symposium
- Activity and progress updates from each school in the TWG.

There were discussions about the longer-term sustainability of the software. Notwithstanding some sharing of ideas, no answers were arrived at. The TWG will have further discussions in the future related to sustainability of the software.

NEXT STEPS

The workshop achieved its expected outcomes. The group finalized the software; drafted 100-day strategic action plans for each MEPI school, including producing graduate tracking software objectives for each school; reached agreement on software branding and how to sustain a virtual collaboration between participants; and agreed on updates to MEPI’s website and Facebook page.

In closing remarks, one participant insightfully remarked that it is not just the software that requires customization but also the implementation plan, which must be customized according to context. As they move forward to refine and implement their 100-day strategic plans, MEPI school representatives will strive to achieve their objectives while adapting and adjusting their implementation plans to their respective environments.

Immediate Next Steps

Over the next 100 days, participants pledged to carry out a number of next steps.

New features and fixes

The graduate tracking software development team agreed to incorporate the new feature requests and bug fixes into the software in advance of its scheduled release in September 2014.

Customization preferences

Upon downloading the latest version of the software, MEPI graduate tracking implementers and other stakeholders will have the opportunity to outline their software customization preferences to the development team.

Branding

After consultation with the Steering Committee, the graduate tracking software could be updated with its new name “MEPI Connect: Uganisha” or other agreed-upon name, and branded according to USAID, PEPFAR, and other relevant US government branding requirements.

Implementation of action plans

Each MEPI school representative committed to return to their respective institutions to refine and implement their strategic action plans. Two schools indicated their intention to launch the graduate tracking software in August 2014: *Universidade Eduardo Mondlane* in Mozambique and KNUST in Ghana.

Technical support

As the schools implement their plans, the *CapacityPlus* software development team will remain on call to provide technical development support in terms of adapting the software’s source code for customization and launch of the software at each school. This support will be coordinated through the TWG chair, in close collaboration with the MEPI-CC. *CapacityPlus* will document and report progress to the TWG.

Follow-up

Communication between the MEPI Graduate Tracking TWG, the MEPI-CC, and *CapacityPlus* will continue in order to follow up on the strategic implementation plans for feedback from the workshop facilitators, and also to coordinate with other participants either via the Facebook group (<https://www.facebook.com/groups/mepigt/>) or e-mail.

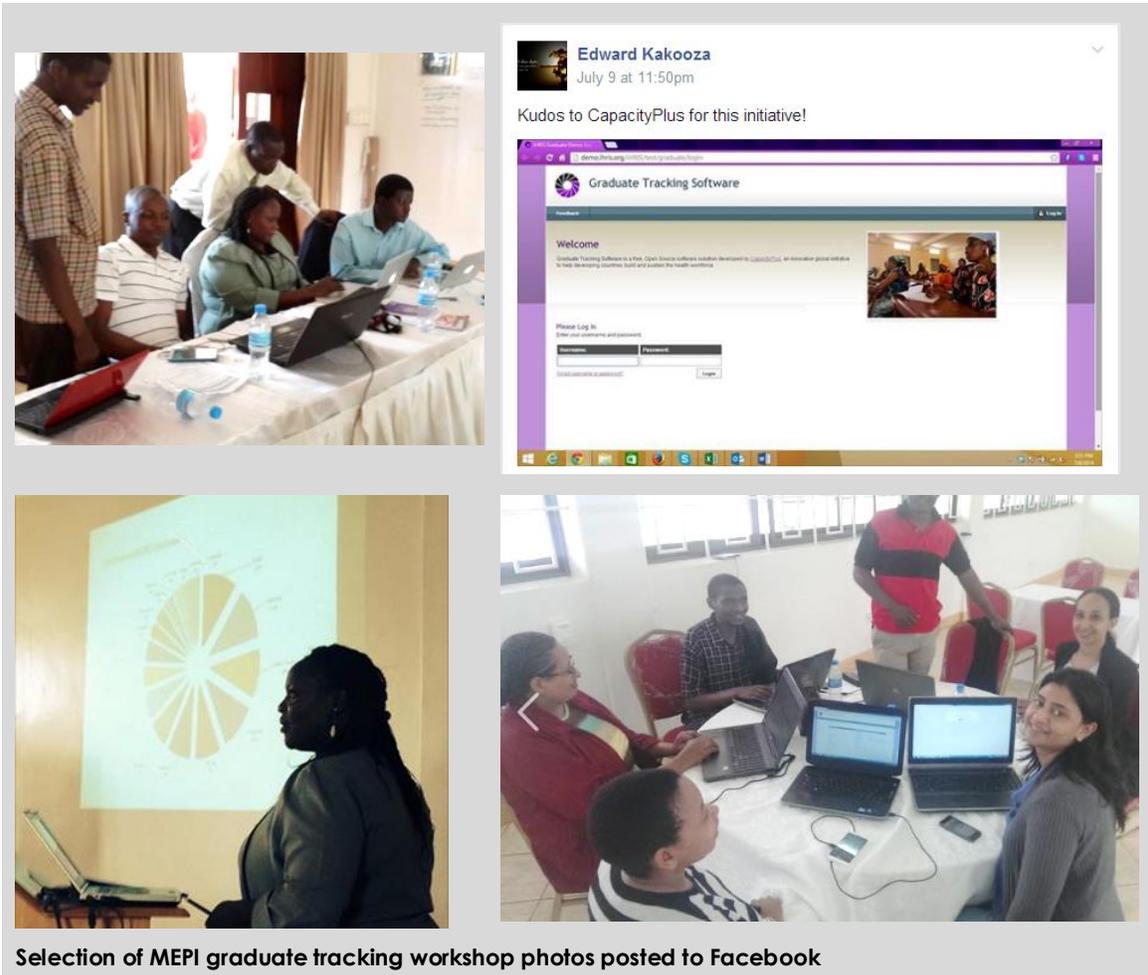
Website updates

Updates to the MEPI Physician Tracking page of the MEPI Network website will be completed upon the finalization of the first release of the software (September 2014). The effort will be

done in cooperation with the MEPI-CC (George Washington University) on the www.mepinetwork.org site.

Quarterly reports

The MEPI-CC will work with the TWG to develop and disseminate MEPI graduate tracking TWG quarterly reports.



Long-Term Next Steps

Over the next year, participants agreed on the following long-term steps:

- MEPI schools will continue implementing the graduate tracking software, advancing from the assessment/planning and deployment/pilot stages to scaling up and sustaining the software over time.
- The MEPI Graduate Tracking TWG will continue to communicate and collaborate on graduate tracking software implementation experiences.
- The MEPI Graduate Tracking TWG will evaluate effectiveness through the communication-related (e.g., input and processes) metrics outlined during the workshop.

- MEPI schools will build information and communication technology and developer capacity at implementing institutions or through local partnerships to continue to adapt and develop the software as needs change and new functionality is required.
- MEPI school software implementers will work to link MEPI Connect (Unganisha) with other human resources for health information systems within the eHealth enterprise architecture, including human resources information systems at ministries of health, professional councils, and in-service training institutions.

WORKSHOP EVALUATION

Most workshop participants (13 to 15) completed some or all of the workshop evaluation questions. Overall, 93% (14/15) of workshop participants expressed that the workshop either mostly or fully met their expectations. All 15 participants felt the workshop's goals were met to some extent or to a large extent. Concerning the workshop objectives:

- Two-thirds (67%) agreed that the workshop succeeded in improving and finalizing the graduate tracking software, while one participant would have preferred that the software be ready to use at the start of the workshop.
- Participants also agreed to a "large extent" (67%, 10/15) or "some extent" (33%, 5/15) that the workshop succeeded in building their capacity to use the graduate tracking software and install, customize, and roll out the system at their institution. Additional recommended discussions include helping MEPI schools to determine the longer-term costs of operating and sustaining software implementation, as this remained in question for participants but depends on the context and existing capacity at each school.
- Almost three-fourths (73% or 11/15) felt that the workshop succeeded to a "large extent" in reaching consensus on next steps for the software and TWG community, while the remaining quarter (27% or 4/15) expressed that the workshop achieved this to at least "some extent." Participants shared that "processes were democratic," with one member noting "I like the way you include members in decision-making."
- Nearly all participants (93%, 13/14)² cited the workshop as having strengthened the community of practice, allowing school representatives to "identify ourselves with a common mission and goal," "shared vision," and an "intensified working relationship." Participants also noted that the "community needs to be proactive."

The vast majority of participants rated the workshop methodology as "effective" or "very effective" vis-à-vis the pre-workshop activities, including elements such as the tone and direction set in the workshop opening sessions; the software demonstration, testing, and bug-fixing; the implementation planning; and facilitation.

All MEPI school representatives responded that they felt prepared to implement the software at their institution, with 77% (10/13) feeling prepared to a "large extent." Final comments on participants' preparedness for graduate tracking software implementation follow:

² Some percentages are out of fewer than 15 participants due to non-responses.

- "I understand more clearly on the rollout steps for graduate tracking by using the software and the whole rollout process."
- "I feel comfortable and competent with the whole process of planning, installation, and deployment of the system."
- "It has given me a platform to act as a catalyst for tracking community and population service enhancement for improved service outcomes."
- "I have a game plan; I am clear on the steps/plan I am going to take."
- "I feel ready to implement."

For more detailed workshop evaluation results, see Appendix 7.

APPENDIX 1: WORKSHOP AGENDA

MEPI Graduate Tracking Software Review & Implementation Workshop

Workshop Agenda
Kilimanjaro Christian Medical University College (KCMUCo)
Moshi, Tanzania
8 - 11 July 2014

Workshop Objectives:

- Improve the graduate tracking software and its features through collective review, testing, and evaluation of the system
- Build the capacity of the workshop participants to navigate and use the software system and to install, customize and roll out the system at their respective institutions
- Reach a consensus on the next steps for the software system and TWG community, including an agreement on the branding and sustainability of the system
- Strengthen the community of practice and determine ways to broaden the community's outreach.

Expected Outcomes:

- A highly functional version of the software that meets the graduate tracking needs of all participating institutions
- Draft 100-day strategic action plans for each MEPI school's graduate tracking software implementation
- An agreed way forward, including recommendations for the branding and sustainability of the software system, including next steps for strengthening the community of practice
- Agreed-upon revisions and updates to the Graduate Tracking page on the www.mepinetwork.org website, Facebook group and mailing lists.

Time	Activity	Facilitator/Speaker	Location
Pre-Workshop: Monday, July 7th, 2014			
19:00 – 21:00	Welcome Dinner <ul style="list-style-type: none"> • Discussion of expectations and desired outcomes 	All workshop delegates	Parkview Inn
Day 1: Tuesday, July 8th, 2014			
8:00 – 9:00	<i>Workshop Registration & Networking</i>		Main Conference Room
9:00 – 9:15	1A. Welcome and opening remarks	Prof. Egbert Kessi (Provost of KCMUCo) Ms. Sinit Mehtsun (MEPI CC) Dr. Kalay Moodley (MEPI TWG Chair)	Main Conference Room
9:15 – 9:25	1B. Introduction by workshop facilitators and guest participants	Michael Drane, Rachel Deussom, Luke Duncan, Nobert Mijumbi, Ally Shaban, Sofia Rogati	
9:25 – 10:15	1C. Introductions by MEPI school delegates (<i>5 minutes per delegate</i>): <ul style="list-style-type: none"> • Name and affiliation • Brief summary of graduate tracking activities since October 2013 workshop 	MEPI school delegates	
10:15 – 10:30	1D. Review of workshop <ul style="list-style-type: none"> • Agenda • Objectives • Expected outcomes • Q&A 	Michael Drane	
10:30 – 10:45	<i>Coffee/Tea Break</i>		
10:45-11:15	1E. Review of the graduate tracking software as identified at the October 2013 workshop in Lusaka, Zambia <ul style="list-style-type: none"> • Presentation of the software: <ul style="list-style-type: none"> ○ Business processes ○ Functional requirements ○ Data specifications • Group brainstorming on software purpose and additional functional requirements 	Michael Drane	Main Conference Room
11:15 – 12:15	1F. Hands-on demonstration of the graduate tracking software in its current state	Luke Duncan	Main Conference Room

12:15 – 13:15	<i>Group Photo and Lunch</i>		
13:15 – 14:00	1G. Presentation of software’s proof of concept at KCMUCo <ul style="list-style-type: none"> • Lessons learned (<i>All facilitators</i>) • New requirements discovered (<i>Michael</i>) • KCMUCo stakeholder feedback (<i>Rose</i>) • Role of ICT in software implementation (<i>Nobert, Ally, Frederick</i>) • Tour of KCMUCo installation and equipment for proof of concept 	Rose Mwangi Michael Drane Nobert Mijumbi Ally Shaban Fredrick Sigalla	Main Conference Room
14:00 – 15:00	1H. Round 1: Software testing and bug fixing <ul style="list-style-type: none"> • <i>Breaking into 2 groups:</i> Participants review, test and provide feedback for improvement to the software <ul style="list-style-type: none"> ○ Groups are assigned a separate set of modules, pages, and forms ○ Bugs and feature requests are documented 	Michael Drane and Rachel Deussom	MPH Computer lab
15:00 – 15:15	<i>Coffee/tea break</i>		
15:15 – 17:00	1I. Round 1: Software testing and bug fixing (continued) <ul style="list-style-type: none"> • <i>Breaking into 3 new groups:</i> Participants review, test and provide feedback for improvement to the software <ul style="list-style-type: none"> ○ Groups are assigned a separate set of modules, pages, and forms ○ Bugs and feature requests are documented • “Dot-mocracy” – preliminary vote to prioritize software’s <u>new feature requests</u> 	Michael Drane, Rachel Deussom, and Luke Duncan	MPH Computer lab
17:00 – 17:15	1J. Day 1 wrap-up <ul style="list-style-type: none"> • Review and evaluation of Day 1 <ul style="list-style-type: none"> ○ Meeting of expected outcomes ○ “Peaks and pits” • Brief introduction for Day 2 	Rachel Deussom	MPH Computer lab

Day 2: Wednesday, July 9th, 2014

9:00 – 10:00	2A. Introduction to drafting a 100-day work plan <ul style="list-style-type: none"> • Developing short- and medium-term objectives • Key activities • Stakeholder roles and responsibilities • Resource requirements • Measuring success 	Rachel Deussom	Main Conference Room
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10:00 – 11:00	2B. Round 2: Software testing and bug fixing <ul style="list-style-type: none"> • <i>Breaking into 2 groups:</i> Participants review, test, and provide feedback for improvement to the software <ul style="list-style-type: none"> ○ Groups are assigned a separate set of modules, pages, and forms ○ Bugs and feature requests are documented ○ Clarifying questions from hackers 	Michael Drane and Rachel Deussom	MPH Computer lab
11:00 – 11:30	<i>Coffee/Tea Break</i>		
11:30 – 12:30	2C. Round 2: Software testing and bug fixing (continued) <ul style="list-style-type: none"> • <i>Breaking into 3 new groups:</i> Participants review, test, and provide feedback for improvement to the software <ul style="list-style-type: none"> ○ Groups are assigned a separate set of modules, pages, and forms ○ Bugs and feature requests are documented • “Dot-mocracy” – preliminary vote to prioritize software’s <u>new feature requests</u> 	Michael Drane and Rachel Deussom	MPH Computer lab
12:30 – 13:30	<i>Lunch</i>		
13:30-14:30	2D. Graduate tracking evaluation <ul style="list-style-type: none"> • Group discussion on the process by which graduate tracking will be evaluated 	Dr. Kalay Moodley, Michael Drane	Main Conference Room
14:30-15:00	2E. Introduction to software implementation process <ul style="list-style-type: none"> • Six stages of implementation: Assess, plan, deploy, pilot, scale up, sustain 	Michael Drane	Main Conference Room
15:00 – 15:30	<i>Coffee/Tea Break</i>		
15:30 – 16:00	2F. Interoperability: Linking the graduate tracking software with other health workforce systems <ul style="list-style-type: none"> • Using health worker registries to obtain health worker metadata 	Michael Drane	Main Conference Room
16:00-16:30	2G. Web-based applications for graduate tracking in Ghana <ul style="list-style-type: none"> • KNUST web application • Student self-service to provide software data 	Dr. Joslin Dogbe	Main Conference Room
16:30-17:00	2H. SARIS presentation: Student and academic tracking	Ms. Sofia Rogati	Main Conference Room
17:00 – 17:30	2I. Day 2 wrap-up <ul style="list-style-type: none"> • Review and evaluation of Day 2 <ul style="list-style-type: none"> ○ Clarification of proposed software changes (<i>Luke</i>) ○ Meeting of expected outcomes ○ “Peaks and pits” • Brief introduction for Day 3 	Rachel Deussom and Luke Duncan	Main Conference Room

Day 3: Thursday, July 10th, 2014

9:00 – 10:30	3A. Implementation training: Part 1 <ul style="list-style-type: none"> • <u>Step 1: Assess</u> (<i>Rachel</i>) <ul style="list-style-type: none"> ○ Graduate data sources ○ Stakeholder leadership groups • <u>Step 2: Plan</u> (<i>Michael</i>) <ul style="list-style-type: none"> ○ Developing use cases ○ Determining data sets 	Rachel Deussom and Michael Drane	Main Conference Room / Breakout Rooms
10:30 – 11:00	<i>Coffee/Tea Break</i>		
11:00 – 11:30	3B. Stakeholder engagement for graduate tracking implementation in South Africa <ul style="list-style-type: none"> • Role of stakeholder leadership groups (SLGs) • Stellenbosch University stakeholder engagement in South Africa 	Dr. Kalay Moodley	Main Conference Room
11:30-12:30	3C. Implementation training: Part 2 <ul style="list-style-type: none"> • <u>Step 3: Deploy</u> <ul style="list-style-type: none"> ○ Cloud versus local instance ○ Customizing data fields ○ Standard operating procedures ○ Installation requirements 	Nobert Mijumbi, Ally Shaban, and Luke Duncan	Main Conference Room
12:30 – 13:30	<i>Lunch</i>		
13:30 – 15:00	3D. Presentation of general survey tool <ul style="list-style-type: none"> • Overview of common survey (<i>Mumbi</i>) • Paper-based versus online surveys • Using Survey Monkey data for software (<i>Michael</i>) • Recommendations for survey dissemination, including social media 	Michael Drane and Mumbi Chola	Main Conference Room
15:00 – 15:30	<i>Coffee/Tea Break</i>		
15:30 – 16:30	3E. Implementation training: Part 3 <ul style="list-style-type: none"> • <u>Step 4: Pilot</u> <ul style="list-style-type: none"> ○ Creating a data-sharing agreement ○ Data collection forms/surveys ○ Data quality guidelines ○ Activities and reporting to SLG • <u>Step 5: Scale up</u> <ul style="list-style-type: none"> ○ Technology, data storage, and resource requirements 	Michael Drane, Rachel Deussom, and Luke Duncan	Main Conference Room / Breakout Rooms
16:30-17:15	3F. Implementation training: Part 4 <ul style="list-style-type: none"> • <u>Step 6: Sustain</u> <ul style="list-style-type: none"> ○ Planning the way forward <ul style="list-style-type: none"> ○ Software branding, accessibility, maintenance, content for MEPI Graduate Tracking website ○ Community of practice 	Michael Drane and Dr. Kalay Moodley	Main Conference Room

17:15-17:30	3G. Day 3 wrap-up <ul style="list-style-type: none"> • Review and evaluation of Day 2 <ul style="list-style-type: none"> ○ Clarification of proposed software changes (<i>Luke</i>) ○ Meeting of expected outcomes ○ “Peaks and pits” • Brief introduction for Day 4 	Rachel Deussom and Luke Duncan	Main Conference Room
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Day 4: Friday, July 11th, 2014

9:00 – 10:30	4A. 100-day workplan development <ul style="list-style-type: none"> • MEPI school delegates draft their schools’ 100-day workplan with support from facilitators 		Main Conference Room / Breakout Rooms
10:30 – 11:00	<i>Coffee/Tea Break</i>		
11:00-12:00	4B. 100-day workplan development (continued) <ul style="list-style-type: none"> • MEPI school delegates draft their schools’ 100-day workplan with support from facilitators 		Main Conference Room / Breakout Rooms
12:00 – 13:00	<i>Lunch</i>		
13:00 – 14:00	4C. Presentation of latest version of the software	Nobert Mijumbi, Luke Duncan, Ally Shaban	MPH Computer lab
14:00 – 15:00	4D. Closing remarks <ul style="list-style-type: none"> • Review of workshop objectives and outcomes • Next steps 	All facilitators, guests, & delegates	Main Conference Room
15:00-15:30	4E. Workshop evaluation	MEPI school delegates	Main Conference Room

APPENDIX 2: WORKSHOP PARTICIPANTS

#	Workshop Participants	Country	Name of Institution	Email
1	Ms. Kagiso Sebina	Botswana	University of Botswana School of Medicine	kagiso.Sebina@mopipi.ub.bw
2	Ms. Tsion Assefa	Ethiopia	Addis Ababa University	tsionassefa21@yahoo.com
3	Dr. Joslin Dogbe	Ghana	Kwame Nkrumah University of Science and Technology	slimdogbe@gmail.com
4	Amilcar Joaquim Inguane	Mozambique	Universidade Eduardo Mondlane	pfumba@gmail.com
5	Dr. Ademola Oladipo	Nigeria	MEPIN consortium	aoladipo@apin.org.ng
6	Dr. Kalavani Moodley	South Africa	Stellenbosch University	moodleyk@sun.ac.za
7	Dr. Kintu Mugagga	Uganda	Kampala International University	kmugagga@yahoo.com
8	Mr. Edward Kakooza	Uganda	MESAU consortium	esteddie@gmail.com
9	Dr. Mumbi Chola	Zambia	University of Zambia School of Medicine	mumbi24@gmail.com
10	Mr. Jonathan Gandari	Zimbabwe	University of Zimbabwe College of Health Sciences	jgandari@gmail.com
11	Rose Mwangi	Tanzania	Kilimanjaro Christian Medical University College	mwangirose2000@yahoo.co.uk
12	Sabina Mtweve	Tanzania	Kilimanjaro Christian Medical University College	spmtweve@yahoo.com
13	Dr. Ahaz Kulanga	Tanzania	Kilimanjaro Christian Medical University College	ahaz47@gmail.com
14	Mr. Frederick Sigalla	Tanzania	Kilimanjaro Christian Medical University College	mwakaswanga@gmail.com
#	Facilitators	Country	Name of Institution	Email
14	Mr. Michael Drane	United States	CapacityPlus, IntraHealth International	mdrane@intrahealth.org
15	Ms. Rachel Deussom	United States	CapacityPlus, IntraHealth International	rdeussom@capacityplus.org
16	Mr. Nobert Mijumbi	Uganda	IntraHealth International	nmijumbi@intrahealth.org
17	Mr. Ally Shaban	Tanzania	CapacityPlus, IntraHealth International	allyshaban5@yahoo.com
18	Mr. Luke Duncan	United States	CapacityPlus, IntraHealth International	lduncan@intrahealth.org
19	Ms. Sinit Mehtsun	United States	George Washington University, MEPI-CC	smehtsun@gmail.com
#	Guest participant	Country	Name of Institution	Email
20	Ms. Sofia Rogati	Tanzania	Zalongwa	sophia.rogati@zalongwa.com

APPENDIX 3: GRADUATE TRACKING SOFTWARE FUNCTIONAL REQUIREMENTS (FROM OCTOBER 2013 LUSAKA WORKSHOP)

ACTIVITY	REQUIREMENT (The system must or should...)	COMMENTS
Record/update graduate information	Allow user to grant viewing permission to others	Temporary system access, etc.
Record/update graduate information	Have ability to flag newly updated information	Highlight, bold, etc.
Distribute survey to selected graduates	Have ability to print and address envelopes	
Distribute survey to selected graduates	Have ability to save a list of toll-free numbers	
Follow up with graduates	Have ability to suggest graduates for the user to follow up with	
Follow up with graduates	Have ability to suggest questions/topics for follow-up	
	Support real-time notifications on data entry for quality control	
	Support real-time validation on data entry, preventing errors from being recorded	
Identify report purpose	Allow user to schedule common reports to run at predetermined dates and time	
Identify report purpose	Allow user to select/enter report purpose	
Complete review	Have ability to notify reviewer that feedback has been received	
Identify report purpose	Have ability to notify user if a request for information is received	Email, social media alerts, telephone, fax, text, etc.
Send report to the report end user	Have ability to notify user that report has been received electronically by the report end users	
Complete review	Have ability to notify user that the report has been received electronically by the reviewers	
Define report criteria	Have ability to prompt user to confirm the generation of a report at a later time if required	
Receive report and provide feedback	Have ability to receive feedback on report	
Receive report and provide feedback	Have ability to record additional report recipients and contact information	
Define report criteria	Have ability to suggest report criteria based on report purpose	
Complete review	Store reviewer contact information	
Complete review	Suggest a list of potential report reviewers	Based on reviewer knowledge of the report content, frequency they have been asked to review reports, etc.
Identify report purpose	Have ability to receive requests for information from various stakeholders	
Identify report purpose	Have ability to store list of stakeholders	Including contact details
Obtain graduate information using other means	Allow user to save events to a calendar	To be updated with association events, social events, etc.

ACTIVITY	REQUIREMENT (The system must or should...)	COMMENTS
Update graduate information	Allow user to update graduate contact status	Contacted, unreachable, etc.
Obtain graduate information using other means	Have ability to alert user when a graduate responds to social media contact attempts	Posting, direct messaging, etc.
Obtain graduate information using other means	Have ability to alert user when a potential networking event is happening in X time frame	Enables the user to contact the event sponsor to get permission to attend and gather information from graduates
Merge/deduplicate graduate information	Have ability to automatically update identified data issues	Update formatting, spelling, etc.
Update graduate information	Have ability to display graduate contact status	
Contact graduate	Have ability to draft letter to graduate requesting an update of information	
Request list of graduates	Have ability to generate a request for list of graduates and their contact information using a template	Request will include specific graduate cohort(s) information needed, specific data elements needed, etc. The template request is user-defined.
Obtain graduate information using other means	Have ability to interface with social media platforms	Facebook, LinkedIn, Twitter, etc.
Contact graduate	Have ability to send letter to graduate	Email, mail, fax, etc.
Obtain graduate information using other means	Have ability to stop automatic attempts of contact after X time frame	
Obtain graduate information using other means	Provide user the option to automatically generate an email to send to previously contacted graduates to ask if they have information about a graduate not yet located	Snowball email
Clean data	Have ability to automatically update identified data issues	Update formatting, spelling, etc.
Clean data	Support built-in statistical analysis software	
	Support a help function	User-activated support for the current process activity (i.e., training videos, FAQs, step-by-step instructions, etc.)
	Support auto-save functionality and ability to restore the last saved transaction	
Identify search criteria	Allow stakeholders to request graduate information	
Identify search criteria	Allow user to enter free text searches	Google-type search capabilities
Identify search criteria	Have ability to auto-complete entered search criteria	Smart search
Identify search criteria	Have ability to auto-suggest search criteria	Suggest previous common searches, etc.
Identify search criteria	Have ability to mark requests as complete once the search has been completed	
Alternate search criteria available?	Have ability to prompt user to begin Locate Graduates or the Collect/Update Graduate Information processes	Will only occur if no alternate search criteria are available
Identify search criteria	Have ability to receive and store requests to search for	Requests could come from

ACTIVITY	REQUIREMENT (The system must or should...)	COMMENTS
	graduate information	other graduate tracking stakeholders in multiple formats (email, fax, written, verbal, etc.)
Identify search criteria	Have ability to save search criteria	
Alternate search criteria available?	Provide user the option to automatically generate an email to send to previously contacted graduates to ask if they have information about a graduate not yet located	Snowball email
	Support definitions of roles with assigned levels of access, viewing, data entry, editing, and auditing	
	Terminate user login screen after determined number of unsuccessful attempts to log in	
	Provide breadcrumbs (trail) to easily identify and track location	

APPENDIX 4: MEPI GRADUATE TRACKING TWG VISION, UPDATE, AND EXPECTATIONS

Country	Institution	Functional Requirements and Data Specifications Development Workshop Lusaka, Zambia October 2013	Graduate Tracking Software and Implementation Workshop Moshi, Tanzania July 2014
		Vision for Graduate Tracking	Institutional Update, Workshop Expectations & Software Goals
Botswana	University of Botswana	<ul style="list-style-type: none"> <input type="checkbox"/> Design a tool for graduate tracking <input type="checkbox"/> Collect data from all 5 groups of MBBS students prior to graduation 	<p>With a national population of 2.3 million people, there are only 20 Motswana doctors; about 90% of MDs are from outside of country, thus they are not always culturally and linguistically aware. The high proportion of PLHIV (almost 20%) has been a great challenge, and now that ARVs are saving lives, a high quality of care must be maintained. Outsourced graduates have not tended to come back, and as such the University of Botswana launched a School of Medicine in 2009, with the first cohort of 33 medical graduates expected in October. The first-year class of students is 58. This software is opportune to reach the first cohort.</p> <p>Since the October 2013 workshop, the university's main focus has been on stakeholder discussions. Still, people aren't dedicated to graduate tracking. It is their goal to have the software in place by October 2014. Their overall goal is to improve retention with the MOH and public sector.</p>
Ethiopia	Federal Ministry of Health	<ul style="list-style-type: none"> <input type="checkbox"/> Establish a national (vs. institutional) plan for graduate tracking <input type="checkbox"/> Establish list of all medical graduates in the country since 1967 <input type="checkbox"/> Create a social media website to track the address of each medical graduate 	<p>There are many groups and institutions with a high stake in graduate tracking, and high volumes of graduates to track. Professional councils in Ethiopia are quite strong, and a lot of information resides with them. They envision a potential opportunity for retrospective analysis of graduates that can help shape how to improve their future medical education approaches.</p>
Ghana	Kwame Nkrumah University of Science and Technology School of Medical Sciences (KNUST SMS)	<ul style="list-style-type: none"> <input type="checkbox"/> Establish graduate tracking office <input type="checkbox"/> Employ staff <input type="checkbox"/> Make existing graduate tracking website fully operational <input type="checkbox"/> Establish national alumni engagement 	<p>KNUST first began graduate tracking with MEPI last year. KNUST believes that graduates are important stakeholders and the software will build off of their current efforts in alumni networking. They take a bidirectional grad/institution approach. He will discuss the website and their experience; it's now live. They use social media to connect with alumni. They are forming regional alumni associations on the ground to build work. In August 2014, there is also a Ghana Medical Association annual conference and an oath-swearing ceremony where new graduates will take pledge that will represent the opportunity to promote the software. Currently, their regional associations have constitutions with interim executives, and they will soon choose inauguration dates to start. The MOH and medical and dental councils are among the other stakeholders.</p> <p>The alumni networking site is: http://smsknustalumni.org</p>

Country	Institution	Functional Requirements and Data Specifications Development Workshop Lusaka, Zambia October 2013	Graduate Tracking Software and Implementation Workshop Moshi, Tanzania July 2014
		Vision for Graduate Tracking	Institutional Update, Workshop Expectations & Software Goals
Mozambique	Universidade de Eduardo Mondlane (UEM)	N/A - UEM did not participate in the October 2013 workshop.	They are working with the Ministry of Health (MISAU) to show what the tracking software can do. The university is 50 years old, and there are about 2,000 graduates. In light of the next MEPI Symposium to take place in Maputo, Mozambique from August 5-8, 2014, UEM is interested to demonstrate their progress in deploying an initial software version that is branded. They have 2012 and 2013 graduate data readily available electronically, and seek support from the CapacityPlus team to customize this initial software for demonstration.
Nigeria	MEPI- Nigeria /AIDS Prevention Initiative Nigeria (APIN)	N/A – MEPI-Nigeria did not participate in the October 2013 workshop.	Graduate tracking is a key component of their grant. They have started using iHRIS for nurses; now want to replicate with medical and dental councils as they have the councils’ buy-in now. They started by trying to transcribe the paper-based forms and hope to back-log more data soon. They are tracking both graduates and postgraduates to consider both attraction and retention to job posts with a year-to-year modular assessment, seeking updates on doctors’ location and status. MEPI-N is the coordination of six different universities of which one is 40 years old. It’s estimated that 40% of graduates work out of the country.
South Africa	Stellenbosch University	<input type="checkbox"/> Increase buy-in to the process of graduate tracking	They already have a system to track graduates, but follow-up is hard. They use email and telephone follow-ups, alumni FB page, but not all grads provide data. They recently took the GT process nationally by involving the Department of Health (DOH) and professional councils. They have achieved buy-in with national councils. MEPI will initiate the system layout with the DOH and professional councils along with the Department of Higher Education.
Tanzania	Kilimanjaro Christian Medical University College (KCMUCo)	<input type="checkbox"/> To have a successful graduate tracking system at the institution	<p>Students use not just paper and pen, but tablets, ICT and access to higher quality education. Thanks to MEPI, students aspire to seek medical education over other institutions. The threshold for admissions has been raised from 5 points to 7 points and KCMUCo has met enrollment targets for 2015 already. There is a hope that better training and tracking of doctors will contribute to better retention. KCMUCo now has an electronic library, diversified teaching, and government support of ICT. They are seeking to go beyond the 5-year funding cycle. They express gratitude to USG and IntraHealth for their support as well.</p> <p>They are building off of a simple database; 700 grads entered in the proof of concept, which is already 38% of contact list. They have piloted communication methods with graduates; emails have worked. Graduates could also be used for mentorship role within alumni networking. One challenge they are facing is that data are paper-based, but the software will be useful to enter them electronically. Many interested stakeholders are already involved. They are interested in developing a mapping system to gauge the geographic location of graduate in terms of distance.</p>

Country	Institution	Functional Requirements and Data Specifications Development Workshop Lusaka, Zambia October 2013	Graduate Tracking Software and Implementation Workshop Moshi, Tanzania July 2014
		Vision for Graduate Tracking	Institutional Update, Workshop Expectations & Software Goals
Uganda	Medical Education for Services to All Ugandans (MESAU) – Kampala International University	<input type="checkbox"/> Compare all entrants, undergraduates, and graduates to the validated data bank at the respective MEPI institutions <input type="checkbox"/> Make regular evaluation reports available and use reports to develop policy briefs for allied ministries and institutions	<p>Both representatives are from Kampala International University, one of the five universities in the consortium. They have remarked an increase in the multinationality and age diversification of their students. In February 2014 they had 240 graduates. There is an increase in those advancing from a diploma to a degree, and it has been noted that their graduates have a higher retention in rural areas. Graduate tracking exists in localized paper forms, and it is the consortium’s goal to find ways to integrate the software into the broader system, including with professional councils. MESAU is also seeking financial sustainability and ways to gather information where there are existing gaps in their graduate tracking systems.</p> <p>They plan to pilot the software first at their own institution where they can have greater influence and control to positively shape the implementation process.</p>
Zambia	University of Zambia (UNZA)	<input type="checkbox"/> Complete graduate tracking database <input type="checkbox"/> Institutionalized tracking system from enrollment of students to graduation <input type="checkbox"/> Well established database of students to graduate <input type="checkbox"/> Greater involvement of stakeholders	<p>UNZA is pooling resources with the MOH and medical professional council. They have the expectation for a functional version of the software; their data collection has been on hold since the October 2013 workshop, since the software needs to be finalized first. They have a target to have 1,600 entries within the first 100 days.</p>
Zimbabwe	University of Zimbabwe College of Health Sciences (UZCHS)	<input type="checkbox"/> Establish an all-stakeholder approach between the MOH, UZ, and Medical Council	<p>Since October 2013, they have worked to market graduate tracking and its benefits. They met with the UZCHS Dean and medical professional councils and delivered PowerPoint presentations with key groups. They provided a write-up to the Dean about ideas to ensure acceptance in all departments. They then were directed to the Registrar’s office to get data on graduates. They have hard copies of graduate data from all 23 departments, but no collated database. They then built a team with relevant skills to enter data. HI-TECH with Medical/Dental Professional Council is helping to track physicians but they have already built another database and did not want to give him their data. In light of this, it will be important for the MEPI graduate tracking team to review and reassess their stakeholders in moving forward with software implementation.</p>

APPENDIX 5: 100-DAY STRATEGIC ACTION PLAN TEMPLATE

OUTCOME OBJECTIVE 1: ASSESS - Build/achieve consensus from key stakeholders on how to apply the GT software										
Activity	Persons responsible & other stakeholders involved	Resources & inputs required	Desired output from activity	Timeframe					Comments	
				Jul-14	A	S	O	N		D
Identify the functional teams for software deployment	GT coordinator (LEAD) Technical/ IT people M&E people Data entry CapacityPlus (whether in-country, TA or virtual support)	<i>Implementation team terms of reference</i> document	Team identified							
Sensitize and mobilize functional team	GT Coordinator		Functional team mobilized							
Identify key stakeholders	GT Coordinator, functional team	(Stakeholder mapping)	Key stakeholders identified							
Sensitize and mobilize key stakeholders	<i>E.g., Administrators Registrar Deans of Students Admissions MOH Professional councils Graduates Current students</i>	Outline of key questions for stakeholders; Advocacy plan/guidelines as necessary	Stakeholders' interest in data, customized data sets & data for decision-making understood and documented for customization							
Invite SLG members to review and validate ToRs and Principles of Operation	GT Coordinator, SLG	<i>SLG Principles of Operation & Terms of Reference</i> documents	Stakeholder Leadership Group (SLG) formed; TORs and Principles validated							
Validate draft strategic workplan with SLG	GT Coordinator, SLG	Meeting space, tea, stationery, draft action plan	Strategic action plan validated							

OUTCOME OBJECTIVE 2: PLAN - Define needs for customizing, deploying, and maintaining the GT software										
Activity	Persons responsible & other stakeholders involved	Resources & inputs required	Desired Output from Activity	Timeframe						Comments
				Jul-14	A	S	O	N	D	
Identify all data sources	GT coordinator, functional teams, SLG		Data sources identified							
Identify all resource needs and gaps		Total Cost of Ownership template	Resources and gaps identified							
Customization			Software customized to meet school's needs							
<i>_User Requirements Specifications</i>										
<i>_Identify useful Standardized Data Lists (List of hospitals or standard list of competencies).</i>										
<i>_Determine Standard Data Sets-answer choices for drop down windows or check boxes</i>										
<i>_Reporting Requirements</i>										
<i>_Add new data elements to data dictionary</i>										
<i>_Identify technical support needed for customization</i>										
Determine where GT software will be piloted										
Define maintenance plan										
Define monitoring and evaluation (M&E) plan										

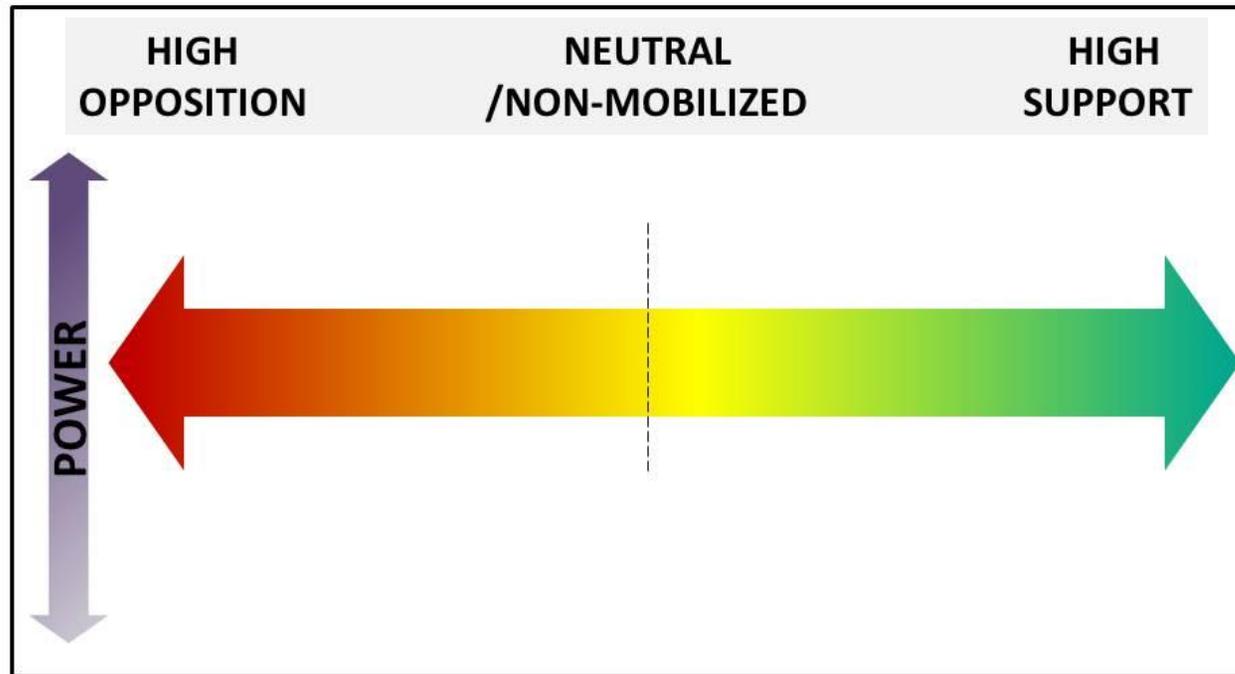
OUTCOME OBJECTIVE 3: DEPLOY GT software										
Activity	Persons responsible & other stakeholders involved	Resources & inputs required	Desired Output from Activity	Timeframe					Comments	
				Jul-14	A	S	O	N		D
Train functional team to apply the software	GT coordinator, functional team, TA as needed	<i>As identified above in planning phase.</i>	Functional team trained to deploy software							

APPENDIX 6: STAKEHOLDER ANALYSIS TEMPLATE

STEP 1: List all stakeholders					STEP 2: Rate stakeholders			STEP 3: Place stakeholder on support spectrum (see next page) >>>
Institution	Name	Activity	Role	INTEREST	POWER	VOLATILITY	STEP 4: Develop strategic action & integrate in plan	
				<i>High, medium or low? (Add comments or more details here.)</i>			Strategic Action	
EXAMPLE	Medical professional council	President, A. Gawande	Locating students	Need buy-in for graduates lost to follow-up	<i>Low to medium: Already uses a paper-based approach, and not convinced of GTS's added value but understands importance of tracking</i>	<i>High: Strong influence over medical doctors and MOH HRH directorate</i>	<i>Medium to high: A. Gawande reaches retirement age in 2015, and buy-in of predecessor would be required (Who will this be?)</i>	<i>Involve early on in data element review process; demonstrate value of computer-based (e.g., instantaneous reporting) ...</i>

STEP 3: Place stakeholder on support spectrum

Stakeholder Mapping – STEP 3 Place stakeholder on support spectrum



APPENDIX 7: WORKSHOP EVALUATION FORM AND RESPONSE ANALYSIS

Workshop Evaluation (*n=15*)³

Medical Education Partnership Initiative (MEPI)
 Graduate Tracking Software Review & Implementation Workshop
 Kilimanjaro Christian Medical Center – Moshi, Tanzania – 8-11 July 2014

Note: Figures in the tables indicate the number of participants who selected that response choice.

1. Workshop Objectives and Expected Outcomes

1.1 Did the workshop meet your expectations? (*circle only one response*)

Did not meet expectations	Somewhat met expectations	Uncertain	Mostly met expectations	Fully met expectations
0	0	1	9	5

Briefly explain your response in the space below:

- *The workshop objectives were met as per the plan.*
- *Developed a 100-days workplan for own institution; functionality of the software; customize the software according to our needs.*
- *The workshop brought out clearly how graduate tracking shall be done with the application of the software system. But how costs of operating and implementation by institutions is not clear. This may lead to show progress.*
- *All my objectives were met and even more.*
- *I was happy that the software is now in place.*
- *Attending the GT workshop for the first time, I was looking to also understand how the TWG has been working, therefore I had few expectations.*
- *All the objectives were met. I learned how to use the software. However, the software needs some more work before we can start using it. I expected to have a software ready for immediate use.*

1.2 Overall, to what extent were the workshop's goals and objectives met?

Not at all	Limited extent	Uncertain	Some extent	Large extent
0	0	0	9	7

1.3 To what extent did the workshop succeed in improving and finalizing the graduate tracking software that are relevant to the needs of your institution?

Not at all	Limited extent	Uncertain	Some extent	Large extent
0	0	2	3	10

³ Number of responses noted for each question in parentheses may be less than 15 due to non-responses.

Briefly explain your response in the space below:

- *The discussions about the different fields; customization and functional requirements were very useful.*
- *Good tool for use to bring all graduates under one umbrella*
- *All cardinal steps were well explained.*
- *The software is ready to be installed and more feedback will be received from the stakeholders*
- *The inputs were adequate and the final product should be perfect with individual customizations*
- *Key concepts and steps were clearly explained.*
- *I am looking forward to seeing the final software as we have given extra details of what to improve & will not see it before the end of this workshop.*
- *To the extent that the TWG has agreed on basic data sets and elements I think the software is ready to go. I will need to return home to involve stakeholders, then we can finalize.*
- *The software still needs to be customized to meet our institutional needs so there's still quite a bit to be done.*
- *Uncertainty around additional qualitative questions*
- *We now have graduate tracking activities in our institution and it's a chance to determine where graduates are.*

1.4 To what extent did the workshop succeed in building your capacity to use the graduate tracking software to install, customize, and roll out the system at your institution?

Not at all	Limited extent	Uncertain	Some extent	Large extent
0	1 ⁴	0	5	10

Briefly explain your response in the space below:

- *The installation of software and customization requires IT background but my capacity to roll out the system was improved to a large extent.*
- *Able to use the software; able to customize according to my institution's needs.*
- *I know what to do at all stages.*
- *I can fully and comfortably work with the software which all happened during the workshop.*
- *A lot of tools, knowledge and competencies were added.*
- *I can now navigate the system and will be able to help with customizing it.*
- *I believe I can run the software & manage the data with very little challenges*
- *I had some information about grad-tracking but I was impressed with the sessions on stakeholder involvement and implementation.*
- *I fully understand the software having participated in its development.*
- *I am having trouble understanding the technical support arrangement for customization. How will this be arranged? Funded?*

1.5 To what extent did the workshop succeed in reaching consensus on next steps for the software and TWG community?

Not at all	Limited extent	Uncertain	Some extent	Large extent
0	0	0	4	11

⁴ One respondent circled two aspects: for sustaining, s/he circled 1 (Unsure) and for customizing, s/he circled 4 (Large extent).

Briefly explain your response in the space below:

- *Agreed on the general objectives to use*
- *Agreed on having a general workplan which can be customized to the different institutions*
- *An agreed implementation plan and timeframe is in place.*
- *Every group (college representatives) personally us, have been left a position where they can easily kick off to the deployment of the software without much complication*
- *I like the way you include members in decision-making so everything was agreed by the group.*
- *Processes were democratic*
- *Schools are at different levels so consensus is not easy*
- *Most dimensions ended with consensus from the different schools*
- *We are agreed on all aspects and updates made to the software.*
- *The community is clear about the direction it's taking and how to get there. The workshop has consolidated this understanding and how to help each institution how to get there.*
- *The group came to a consensus on the general steps on the implementation plan.*
- *Now we have the software and plan for next 100 days and I believe that this workshop gave us the chance to reach important consensus for TWG community.*

1.6 To what extent did the workshop succeed in strengthening the community of practice?

Not at all	Limited extent	Uncertain	Some extent	Large extent
0	0	1	5	8

Briefly explain your response in the space below:

- *Coming together as a team is very helpful in planning the way forward; sharing ideas and collective learning. It makes it much easier to learn.*
- *We all can identify ourselves (MEPI representatives) with a common mission and goal.*
- *It's a good idea that you involve the group in generating the software. For me that is a good thing I could talk about.*
- *It did not incorporate other institutions who have already done graduate tracking in the country.*
- *(4)... but community needs to be proactive*
- *The group had a shared vision.*
- *More will happen as we implement @ different institutions.*
- *The group has intensified their working relationship. Hopefully this will translate to engaging on the virtual platforms.*

1.7 What is the most valuable skill, concept, or piece of knowledge that you gained from this workshop? (write your response in the space below)

- *Rolling out the system to the institution; data sources and involvement of multiple stakeholders in the roll out step-by-step*
- *Using the GT software; team working*
- *How to develop the tracking software & how to apply it.*
- *What proof of concept is and its relevance to the software; how to check for the user-friendliness of the system/software; Software/system are not about codes only, the views of end users are important before the release of the system.*

- *The workplan we agreed together to go and implement the system. How to approach the stakeholders and materials for presentation and training*
- *General understanding of information technology with regards to graduate tracking; Analytical skills with regard to graduate tracking.*
- *Strategic implementation plan was very well articulated.*
- *Have good understanding of GT software; the need of ICT people to work/install the software; experiences from what others are doing.*
- *Business plan*
- *The impact of open source to software development in Africa (moving away from proprietary software)*
- *How to use the software, particularly how to install it and how to customize it.*
- *A clear understanding of open source software and integrating this into a new institution-wide initiative.*
- *This workshop helped me to change a vision about the possibilities to extend this process for another stakeholder.*

2. Workshop Methodology

2.1 How effective were the pre-workshop activities in preparing you to work productively during this workshop?

Very ineffective	Ineffective	Neutral	Effective	Very effective
0	0	0	7	6

2.2 How effective were the opening sessions of the workshop in setting the tone and direction of the workshop?

Very ineffective	Ineffective	Neutral	Effective	Very effective
0	0	1	6	7

2.3 How effective were the sessions on software demonstration, software-testing and bug fixing?

Very ineffective	Ineffective	Neutral	Effective	Very effective
0	0	1	6	7

2.4 How effective were the sessions on implementation planning?

Very ineffective	Ineffective	Neutral	Effective	Very effective
0	0	2	5	7

2.5 How effective were the facilitators in developing your understanding of how to use the graduate tracking and plan for software implementation?

Very ineffective	Ineffective	Neutral	Effective	Very effective
0	0	0	6	7

3. Logistics

3.1 How satisfied are you with the following workshop logistics?

	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
1. Communication about and invitation to the workshop	0	0	1	6	7
2. Pre-workshop information package	0	0	2	6	6
3. Travel arrangements	0	0	4	4	4
4. Airport transfer/ transportation	0	2	7	0	3
5. Lodging	0	0	5	3	4
6. Reception dinner	0	0	4	3	6
7. Lunches/tea breaks	0	0	1	5	7
8. Meeting rooms	0	0	1	3	7
9. Workshop materials	0	1	2	6	5
10. Audio visual equipment	0	0	2	4	7
11. Responsiveness to questions and needs	0	0	1	5	8

If you have any comments or suggestions, please let us know in the space below:

- *It would help to have host institution deal with some local specific logistics to avoid disappointment and retain credibility of the institution.*
- *Internet was not good despite all that was done; this should be worked on next time especially if working with software.*
- *The email I received said that you will cover for meals and accommodation. But unfortunately I have to pay for dinner meal for my own, in which I didn't prepared for that. (This was Amilcar; we spoke about this and resolved)*
- *The flight itinerary was a bit of a hassle*
- *First night of arrival, accommodation changed without notice & the cab driver was not good with English to communicate the changes which was unsettling. Suggestion: travel arrangements should avoid long/overnight layovers in foreign countries.*
- *Information about plans and logistics could be sent earlier. The change in hotel for the first night (Lutheran) could have been mentioned to me in an email earlier. Particular attention can be paid to understand arrival time for pick-up arrangement.*
- *In the event that there are new arrangements, they should be communicated with us in advance rather than surprise us with new arrangements.*

4. Impact and Next Steps

4.1 To what extent did this workshop prepare you to implement graduate tracking software at your institution?

Not at all	Limited extent	Uncertain	Some extent	Large extent
0	0	0	3	10

Briefly explain your response in the space below:

- *I understand more clearly on the roll out steps for graduate tracking by using the software and the whole roll out process*
- *Planning to sensitize stakeholders; Working with ICT teams; planning to deploy software; involving all stakeholders*
- *I am ready to take lead in implementation. Thanks!*
- *I feel comfortable and competent with the whole process of planning, installation, and deployment of the system*
- *It has given me a platform to act as a catalyst for tracking community and population service enhancement for improved service outcome.*
- *Back up results from facilitators will be available at all times.*
- *I have a game plan; I am clear on the steps/plan I am going to take.*
- *I feel ready to implement.*
- *I am leaving the workshop with great ideas to implement. I hope MEPI funds can take us through the plan, play and pilot stages. Once it is up and running, I believe universities might want to run with it.*
- *In line with what we intend to do, the implementation of the software as discussed in the workshop will help us effectively implement its use.*

4.2 In the next six months, how will you use what you learned from this workshop?

- *Review previous plans; adopt the new knowledge and implement.*
- *Planning to set up servers and computers for the software; sensitizing of stakeholders; involving the ICT team to help customize the software*
- *I will stick to the action plan and further think outside the box to be more innovative especially in attracting participation of the alumni.*
- *Use different approaches learned during the week in introducing new software to the end user; make graduate tracking system sustainable*
- *It is a good thing I know that software its features that I can customize it on own to be used in any university not only that for medical school.*
- *Get interested students to discuss and come up with a version which will fit for intra-cohort networking; while faculty facilitate inter-cohort mentoring for population health*
- *Deploy software, use implementation strategic process to perform other tasks*
- *Through refining the data collection tools; talking to other stakeholders*
- *Identifying champions; team building; deploying software; trial/piloting with smaller targets*
- *Engage the stakeholders, build buy-in for graduate tracking which will hopefully allocate more resources to work with, followed by implementation of software to track 100% of our graduates.*
- *I will implement the strategic plan already developed and submitted.*
- *We will engage stakeholders in order to customize our software, resume data collection, and deploy the software.*

4.3 In the next six months, how will you work with others in the MEPI network to strengthen your school's graduate tracking?

- *I will keep contact and share activities of graduate tracking from my institution, learn from their experiences and through cross-cutting consultations.*
- *Sharing progress and challenges from my institution*

- *Through regular communication, I will share development with the sister institutions to learn means of perfecting on any relevant issues.*
- *Sharing the progress of other schools and learn from their failures and successes.*
- *It is a good thing I joined the group, as a software consultant I will proceed with testing it and in case of any features or improvements to be made I will share with the groups as long as we are connected.*
- *Refine the tracer study and incorporate into MEPI network at KCMUCo in line with WHO Five-Star Doctor.*
- *Not sure.*
- *Through email and Facebook.*
- *Share updates; conduct conference calls; seek and offer support to the TWG*
- *Keeping in touch with the rest of the team to exchange ideas and brainstorm for problem-solving.*
- *The Facebook page is exciting. This platform will be used for sharing ideas and learning from others. The quarterly newsletter will be a good platform overall.*
- *By constantly sharing experiences (lessons and challenges) as we implement graduate tracking.*

4.4 What additional information, resources, or support from the MEPI network does your institution need to achieve its graduate tracking goals?

- *Need to be able to consult the CapacityPlus for further guidance, any recent literature or publication on graduate tracking and additional resources to institutionalize graduate tracking.*
- *Funding!! Most of these activities don't have a budget attached, so funding becomes a challenge... Technical support!! This is very much needed if we are to move forward.*
- *Innovations and workable solutions to possible impediments.*
- *More technical workshops for IT teams*
- *Network with South Africa to understand how they are implementing Graduate attributes into the curriculum with the respective project for follow up.*
- *Nothing obvious for now.*
- *Technical support on software customization; software installation.*
- *Constant/regular updates*
- *Keeping communication channels open to share achievements, challenges, research done around GT as well as technical support available.*
- *I will determine these as we implement.*
- *Technical support with regard to software maintenance.*

Thank you!



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