ORGANIZATIONAL GUIDE TO ICT4D

Leveraging Technology for International Development

NetHope

CRS CATHOLIC RELIEF SERVICES

HEALTH COMMUNICATION CAPACITY COLLABORATIVE

Microsoft

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About this Guide

Transformative Power of ICT

Understand how increased access to technology is creating new opportunities for developing communities and the businesses, governments, and institutions that serve them.

Lead Organizational Change

Lead the organization in embracing the changes needed to take advantage of ICT4D solutions to improve the quality of development programs.

Drive Knowledge Exchange

Implement an ICT4D talent management program that supports people in building their capacity through knowledge exchange, learning, and technical assistance.

Build a Portfolio

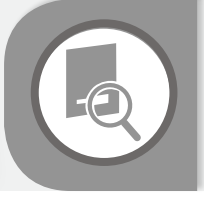
Manage a portfolio of field-proven ICT4D solutions that are quickly and easily adapted to project and community need, scaled, and sustained over time.

Manage Processes

Implement and continuously improve standard practices for ICT4D project implementation that adhere to the principles for digital development.

Develop an Advisory Service

Tie it all together by developing an advisory service which uses your ICT4D change agent network to build on the experience of colleagues, leverage the ICT4D portfolio, and develop ICT4D solution implementation plans that embody best practices.



References

See this section for the Glossary, References, and Additional Resources.

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Executive Summary

This guide gives practical guidance to building organizational capacity in ICT4D. Drawing from the experience of the international development community, this guide connects established principles with processes for implementing new technology.

1. Why should I be interested in ICT4D and what does it mean for my organization?
2. How do I build ICT4D capacity within my organization?
3. What are the practical approaches and best practices I can implement to improve success?

The growing access to ICT in developing communities is having a transformative effect on the way in which:

INTERNATIONAL DEVELOPMENT

International relief and development organizations carry out their work.

GOVERNMENTS

Governments transform their economies and provide services to their citizens.

BUSINESSES

Businesses are investing in high-growth opportunities at the bottom of the pyramid.

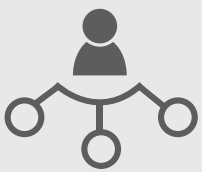
EDUCATION

Education and research institutes innovate and assess innovation impacts.

About this Guide

The world faces many challenges that require academic understanding, technological application, and program implementation to address. This guide is intended for internal change leaders and lays out an approach to using technology to improve development outcomes by a variety of stakeholders.

Who should use the guide



Senior Managers

Focused on ensuring their organization remains competitive and relevant over the next decades.

Senior Technical Advisors

Focused on improving the effectiveness of their organization in addressing issues of poverty and injustice.

Project Managers

Focused on leveraging their organization's ICT4D capacity to better serve beneficiaries.

Technologists

Focused on helping project managers and technical advisors build on their organization's ICT4D experience.

Symbol Key

- Implementation steps
- Tips & key considerations
- Recommended approaches

On accessing the guide:
This guide has been designed for both print and interactive platforms. Clicking on the tabs on the right side of each page will take the reader to different subsections within the guide, and each subsection can also be accessed from the Table of Contents. The Table of Contents is accessible by clicking the link on the bottom of any page.

About this Guide

Best Practices for building ICT4D capacity and solutions share common characteristics. Many of these are embodied in the **Principles for Digital Development**, developed in consultation with The Bill and Melinda Gates Foundation, USAID, UNICEF, The World Bank, SIDA, Omidiyar Foundation, The State Department, UNHCR, WFP, UNFPA, UNDP, Global Pulse, UNWomen, and OCHA.[1] This guide is designed to help organizations adopt processes, build knowledge, and ultimately develop solutions that are guided by the Principles for Digital Development.

Principles for Digital Development

1. Design with the User
2. Understand the Existing Ecosystem
3. Design for Scale
4. Build for Sustainability
5. Be Data Driven
6. Use Open Standards, Open Data, Open Source, and Open Innovation
7. Reuse and Improve
8. Address Privacy & Security
9. Be Collaborative

Transformative Power of ICT

Technology Trends

As global access to technology increases, developing communities are better able to build for the future.

Satya **Nadella,**
CEO, Microsoft

"We live in a mobile-first and cloud-first world. In this new world, there will soon be more than 3 billion people with Internet-connected devices – from a farmer in a remote part of the world with a smartphone, to a professional power user… Our passion is to enable people to thrive in this mobile-first and cloud-first world." [1]

Trends with the greatest potential impact on developing communities:

Mobile Devices	Developing community access to **mobile devices** is nearly ubiquitous. The number of now exceeds the number of people on earth and the penetration rate in the developing world will reach 90% in 2014.[2]
Internet	**Internet access** is improving quickly. Penetration is 78% and 32% for developed and developing regions, respectively, measured by number of people using the internet out of 100.[3]
Cloud Services	Through the internet, developing communities are gaining access to an array of **cloud services** including "Software as a Service" applications that provide critical information and services at a fraction of the cost.
Power	Communities are developing new strategies to **power** their mobile devices, through portable solar devices, increases in mobile device battery life, and by tapping into efforts to optimize energy grids and use distributed energy resources.
Internet of Things (IoT)	Over the next two decades the number of people accessing the Internet will be outpaced by an **Internet of Things (IoT),** millions of sensors that automatically communicate information in support of everything from remote medical diagnosis and treatment, to energy production, and early warning systems.

Transformative Power of ICT

Technology Trends

ICT provides an endless array of opportunities that have been shown to improve the quality of relief and development work.

Susan **Krenn,**
Director, Johns Hopkins University,
Center for Communication Program

"The change in the technology landscape has been extraordinary in the last few years and it continues to evolve at an incredible pace. And there are so many ways to apply ICTs to strengthen development. From interactive communication programming, to logistics management, to research and evaluation, to access to credit—the possibilities are endless.

The application of technology in the developing world are endless.

AGRICULTURE

Improve productivity on farms, help farmers access markets and value chains, and improve the delivery of agriculture extension services.

HEALTH

Strengthen the demand for health services, improve the ability of health workers to deliver those services, and strengthen health system capacity.

EMERGENCY

Improve early warning systems, conduct rapid assessments, and facilitate communication, coordination, and management of resources.

EDUCATION

Facilitate access to educational services, improve teacher capability to deliver those services, and strengthen education system capacity.

PEACEBUILDING AND GOVERNANCE

Monitor and report trends and events, engage citizens in dialog, and facilitate crisis management.

Development Implications

Developing communities are no longer isolated. They have access to information and digital services never before within their reach and they have new means to influence the world around them.

Radha **Basu,**
CEO, iMerit Technology Services

"The growing access to technology around the world is generating new livelihood opportunities in internet services for marginalized people through market-aligned skills training in information technology and micro entrepreneurship."

Let's look at some examples:

Access to digital services

"Farmers are getting a 13% revenue increase from market prices by SMS. As other weather and extension services are added, and as this is supplemented by voice messaging and live operator call experts, we anticipate greater impacts. We aim for a net gains in annual income for 3 million farmers by 2020." - **Mark Davies, CEO/Founder, Esoko**

Job creation

"In the developing world, it's hard to find good information about jobs; resources are scarce and social connections are limited. Mobile job matching services mean that youth and employers can be linked anytime and anywhere - even in areas without internet." - **Jacob Korenblum, President and CEO, Souktel**

Gaining a voice

"We must never underestimate the power of the social media. With more than 100 million Nigerians owning a mobile phone today, they can get the right information or ask their question and get real-time response from others as quickly as possible. This is how to engage the communities and promote necessary social change that people want."[4] - **Jean Gough, UNICEF Representation in Nigeria**

Extending reach

"Bangladesh, India, and South Africa have some of the highest maternal and newborn mortality rates in the world. MAMA reaches a million women across these countries with mobile messages over the course of their pregnancies that provide vital health information concerning maternal and child care."
- **Kirsten Gagnaire, Global Director, Mobile Alliance for Maternal Action (MAMA)**

Transformative Power of ICT

Development Implications

Technology solutions have demonstrated positive impacts on relief and development work.

INCREASED EFFICIENCY

The use of mobile phones in a resource-limited setting to send text message reminders to AIDS patients has been shown to raise the rate of adherence to antiretroviral treatment from 40% to 53%[5]

REDUCED RISKS

Mobile payments were rated to be 82.5% safer by Haitian participants in a "Cash for Work" program, that paid displaced persons in exchange for reconstruction work. [6]

IMPROVED OUTCOMES

Delivering vital health messages via mobile phones to new and expectant mothers enrolled in the MAMA Bangladesh program resulted in higher facility births (57%) among program participants compared to the national average (29%).[7]

IMPROVED DECISION MAKING

Using smart phones and cloud services in lieu of paper, CRS reduced data collection error rates by 53% and shortened the time required to analyze data to support decision making by 75%. [8-9]

REACHING SCALE

In Malaysia alone, Intel has assisted 70,000 teachers in learning how to integrate technology into their teaching, enabled low-income students through the use of netbooks and a distance learning program to achieve record breaking grades.[10]

Strategies & Partnerships

The use of technology in field programming is having a major impact on the strategies of organizations that have vested interests in developing communities. These shifts require new partnerships on the behalf of NGOs who wish to remain relevant.

Carolyn **Woo,**
President & CEO,
Catholic Relief Services

"Technology - mobile devices and cloud services - is a game-changer for us, a strategic enabler of sustainable and scalable programs. It has made us more accountable and effective by increasing the speed and accuracy of our data collection, analysis and reporting so that we have the information to strengthen project delivery, gauge our impact, and improve our programming over time."

How do progressive organizations realize the potential of ICT? Four perspectives.

GOVERNMENTS

Governments realize the potential of ICT to enhance citizen services and improve their economies, and are creating enabling ICT environments and investing in e-government initiatives.

BUSINESSES

Businesses recognize that ICT enables growth by providing new market opportunities, extending supply chains, and creating impact investment opportunities.

DONORS

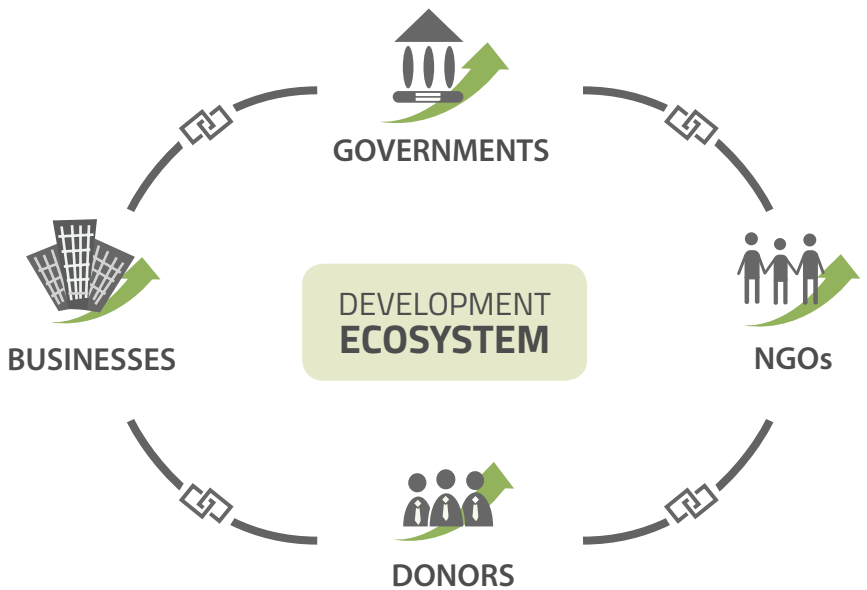
Donors realize the potential ICT offers to increase the impact of their investments in developing communities, and are eager to ensure the ICT solutions they fund are scalable and sustainable.

NGOs

NGOs realize the potential ICT has to improve the quality of their programming and are building their ICT4D capacity in order to remain relevant and competitive

Strategies & Partnerships

Cross-sector partnerships are key to eradicating poverty and dealing with some of world's most intractable problems.



Factors that drive the need for cross-sector partnerships

- ☑ Emerging markets will drive 50% of global business growth until 2020.[11]
- ☑ Impact investing and the growing success of social enterprises will increase capital used to address social issues.
- ☑ Growth offers new opportunities to improve developing communities' health, livelihoods, and social and financial inclusion.
- ☑ Growth is dependent on an enabling ICT environment that is supported by local government policies.
- ☑ Sustainable development relies on a strong ecosystem comprised of private and public sector partners, which together foster inclusive economic growth, peace, and social justice.

Lead Organizational Change

Role of Organizational Leaders

Leadership is the single most important factor in building an organization's ability to adapt to the technology-enabled transformation that is taking place in the humanitarian relief and development sector.

Organizational leaders have the power to accelerate implementation of the changes this transformation requires through five key actions:

Communicate Vision and Case for Action	Organizational leaders must understand and communicate a vision of the future. Be prepared to describe how the use of ICT4D solutions is aligned with the organization's strategy, how it will change how the organization works and how these changes will both benefit and impact the organization as a whole as well as individual groups of staff members.
Charter a Change Agent Network	Change management is hard and necessary work. Charter a network of change agents that cover the breadth of the organization and charge them with the responsibility of supporting you in preparing your staff to play new roles and to work in new ways through the design and implementation of communication, training, monitoring, feedback and incentive programs.
Build Sponsorship and Commitment	For ICT4D solutions to take root in development programs, individuals up and down the management chain must commit to and actively sponsor the solutions' use. Do not delegate sponsorship. Show commitment by investing time and resources in the activities needed to achieve ICT4D capacity, and by requiring those in your management chain to do the same.
Monitor Progress	The more frequently leaders evaluate progress of a program, the more importance their staff places on the program and the easier it is for them to overcome the natural inclination to resist new ways of working. Monitor the status of your ICT4D capacity building program, and barriers to success. Engage staff in plans to overcome those barriers.
Reward and Recognize Results	Leaders have a primary role in rewarding and recognizing the efforts of those that are using ICT4D solutions to improve their work. Make sure any reward and recognition system supports frequent and timely recognition of those that step up to this challenge.

Lead Organizational Change

Understanding Change Roles

Establishing a strong cross functional partnership between relief and development and ICT specialists is the single most important factor in forming an effective change agent network.

Attributes of a Strong Change Agent Network

Sponsors supervise individuals who will change the way they carry out relief and development projects. Sponsors must understand and communicate the benefits of using technology in development, provide the necessary resources for facilitating that change, and recognize their staff for achieving the change.

Change agents are chartered with responsibility for helping sponsors build ICT4D Capacity by building sponsorship, carrying out a communication program, preparing those that will perform work in a new way, and assisting sponsors in monitoring, recognizing and rewarding progress.

Solution users assume new roles and/or perform work in new ways.

Attributes of a strong change agent network include:

- Passionate about the use of technology in development.
- Solid understanding of the impacts and benefits of such use.
- Respected by and able to influence both sponsors and target staff members.
- Able to work in an environment with a fair degree of ambiguity.
- Demonstrate the communication and capacity building skills needed to carry out core change management activities.
- Representative of the business units and functions involved in carrying out work in new ways.

Lead Organizational Change

Building ICT4D Capacity

Building a strong ICT4D capability requires attention to processes, tools, and people.

Knowledge

Implement an ICT4D talent management program that supports people in building their capacity through knowledge exchange, learning, and technical assistance.

Portfolio

Manage a portfolio of field-proven ICT4D solutions that can be quickly and easily adapted to the need of individual projects and communities, scaled, and sustained over time.

Processes

Implement and continuously improve standard processes for ICT4D Project Implementation that adhere to the principles for digital development.

Advisory Services

Tie it all together by developing an advisory service which uses your ICT4D change agent network to build on the experience of colleagues, leverage the ICT4D portfolio, and develop ICT4D solution implementation plans that embody best practices.

Drive Knowledge Exchange

Community of Practice

A Community of Practice is a key tool for helping to accelerate organizational change surrounding ICT4D.

The goal of a CoP is more than establishing a Community of Interest. It is action and output oriented. It should:

Lead to and reinforce best practices and approaches to technology implementation.

Build consensus around a standardized set of tools appropriate for your agency.

Build interest in ICT4D through real life case studies and demonstrations.

Help to identify regional or local ICT4D champions.

Steps

Identify and solicit active participation from individuals who should be a part of the CoP. A CoP may be self-forming but will require leadership and funding in order to ensure sustainability.

Confirm or identify goals of the CoP. Set a CoP goal aligned with organizational strategy.

Identify individuals or groups who can provide appropriate input.

When planning and scheduling activities, consistency is key. CoPs take regular collaboration through blogs, social media, posts or meetings.

Understand the Ecosystem. Be Collaborative.

Tips for CoPs

Consider online webinars to bridge geographies and time zones.

Use technologies that work well in lower bandwidth environments.

Solicit presenters and topics that represent geographical, technological, and programmatic focuses.

Capture presentations for viewing at a later date.

Drive Knowledge Exchange

Knowledge Exchange Forums

In-person forums or events, including conferences, are valuable tools for both driving organizational change and building brand.

Benefits of In-Person Knowledge Exchange Forums

Building Relationships

NGOs are global, often decentralized, and consensus-driven. In-person events provide an opportunity to bring together these organizations, as well as build and strengthen partnerships between the public and private sectors.

Building Brand

Attending or hosting ICT4D events is an effective way to build an organization's brand. As donors increasingly expect data -driven decisionmaking and efficient resource use, establishing an organization as a leader in ICT4D will not only be helpful in winning awards, but a prerequisite to continued success.

Broad Communication

Large in-person events provide a unique opportunity to communicate ideas and knowledge broadly, build consensus and legitimacy in the ICT4D field..

Understand the Ecosystem.

Tips for Successful Conferences

- Bring together organizations from a wide variety of industries - both public and private.
- Bring together individuals with a wide variety of functional expertise spanning relief and development sectors and business functions.
- Feature field proven technology solutions that address a wide range of business needs and that have demonstrated impacts on improving peoples' lives.
- Share lessons learned from successful ICT4D implementations.
- Offer opportunities to discuss and contribute to ICT4D capacity building both at a local and global level.
- Offer perspectives on current trends and future uses of technology in development.

Drive Knowledge Exchange

Training

Integrating ICT4D related orientation and training into formal on-boarding and staff development programs is an important step in mainstreaming the use of ICT4D solutions.

Objectives

Value Proposition

Staff develop the skills needed to identify the type of development problems that benefit from ICT4D-enabled programming and to integrate ICT4D solutions into their project design.

Technology Landscape

Staff develop the skills needed to tradeoff and select field-proven technology solutions to meet development challenges that are scalable and sustainable and to fully leverage an organization's ICT4D portfolio and partnerships.

Best Practices

Staff develop the skills needed to trade-off and select field-proven, scalable, and sustainable technology solutions to meet development challenges, and learn to leverage an organization's ICT4D portfolio.

Partnerships and Expertise

Staff develop an understanding of the skills needed to implement, deploy, and support ICT4D solutions and the technical support and the partnerships they can leverage to provide and develop those skills.

Build a Portfolio

Build a Portfolio

Portfolio management is a holistic and proactive approach to managing and supporting the technology needs of an organization and is driven by identifying common business needs and operating constraints. It ultimately seeks to identify a set of adaptable and scalable solutions that can be used widely within an organization.

Characteristics of a Portfolio

Portfolio management is **proactive** rather than reactive and seeks to identify solutions that can support current and future business needs.

Partnerships are necessary to ensure that portfolio solutions are scalable and sustainable.

A portfolio **focuses on commonalities** across projects and seeks to create solutions that are adaptable to specific needs.

It is supported by a **network of partners.**

It **speeds up implementation time** for individual projects.

It **reduces the cost, time, and risk** involved in implementing solutions and offers opportunities to improve their quality over time.

Reuse and Improve.
Design for Scale.
Build for Sustainability.

Build a Portfolio

Build a Portfolio

Analysis

1. Inventory the ICT4D solutions your organization already uses successfully and have had demonstrated impacts.
2. Conduct a landscape analysis to identify variations in local constraints where such solutions might be used.
3. Assess ability to easily adapt solutions within those constraints.
4. Identify and eliminate unnecessary redundancies.
5. Negotiate partnerships to support scalability and sustainability.
6. Identify portfolio gaps based on business needs.
7. Identify and pilot technologies to fill gaps.
8. Pilot technologies to fill gaps.

Cloud Based Services

Cloud based services, particularly Software as a Service (SAAS) with offline capabilities, are highly attractive technologies, even in the most remote areas.

Four advantages of SaaS

- No need to invest in local infrastructure.
- No need to invest in application maintenance.
- Presents a cost model with no large upfront investment.
- Can be easily assumed by another organization.

ICT4D Solutions: Selection Criteria

- Good fit to user needs
- Successfully implemented in the field
- Demonstrated impact
- Affordable
- Has significant user demand
- Can be quickly adapted and easily used in a wide variety of environments
- Suitable in areas with limited connectivity and power
- Has robust technical support
- Easily integrates and exchanges data with other technology platforms
- Compatible with multiple devices and operating systems
- Easily transitioned from one organization to another
- Adheres to privacy and security best practices
- Improves data available for decision-making

Reuse and Improve.
Design for Scale.
Build for Sustainability.
Address Privacy & Security.
Be Data Driven.
Use Open Standards.

Build a Portfolio

Put a Portfolio to Work

In determining portfolio use, ensuring organizational knowledge and capacity to implement and support solutions is key.

Steps

Develop Capacity to Adapt Solutions

A comprehensive portfolio will present a set of tools and solutions that can be used throughout an organization. Building capacity to use and implement these solutions is critical.

Develop a Support Structure

Having an effective support structure in place is critical to user adoption and satisfaction, and ultimately realizing the benefits of the portfolio.

Develop Demand

Ensuring broad knowledge about the portfolio and its related solutions through marketing solutions will promote demand and legitimize investments.

Reuse and Improve.
Design for Scale.
Build for Sustainability.

Strategies and Considerations

Internal Advisory Services. A dedicated internal advisory service or solutions team is valuable in building capacity, promoting knowledge exchange, and implementing solutions throughout an organizations.

Training. Establishing a solutions training program is also key, and should include both onsite and remote training, as well as self-directed learning. Trainings should also focus on user roles.

Pay special attention to issues surrounding **uptake or initialization** of a particular solution, including device and license procurement and related provisioning.

Institute a **tiered support structure**, with basic and routine issues (e.g. logon issues) addressed by tier one, and more complicated issues addressed by higher levels.

Depending on the organizational culture and structure, **marketing solutions** could include webinars, emails, policy statements, community of practice, and conferences.

Aggregate demand for solutions components to reduce per project costs.

Build a Portfolio

Evolve a Portfolio

A technology portfolio is not static. For a portfolio to continually support an organization and take advantage of technology advances and trends it must continue to evolve. The following are some tools, strategies and considerations to help evolve an ICT4D portfolio.

Strategies to Evolving a Portfolio

Keep an eye on the field. Watch how organizations and others are using technology to support their work, and evaluate whether those tools and approaches might work for other geographies or program areas.

Monitor changes in technology uses. Consider how changes in technology uses may permit a new or more effective solution.

Don't throw it all out. A systems based approach will allow you to explore replacing a single component or element of a solution in order to increase functionality, reduce costs, or scale.

Listen to the program people. Continually work and listen to those within the organization who are directly involved in delivering services or assistance in health, agriculture and other program areas.

Pilot and prototype. Find opportunities to try new technologies. Both successes and failures are valuable sources of information.

Make room for innovation. All of the above take time and resources. Involve a dedicated advisory service in helping to build and evolve an ICT4D portfolio.

Reuse and Improve.
Design with the User.
Be Collaborative.
Understand the Ecosystem.

Build a Portfolio

Achieve Sustainability

Two equally essential components in a holistic approach to sustainability include operational sustainability and ownership sustainability. A program may be continued for the sake of scale and reach, but it must also have meaningful local buy-in to build ownership and facilitate behavior change.

Operational (Financial) Sustainability

ICT4D projects' operational sustainability requires an understanding of the function of the system and consideration of external factors, which can facilitate a more lucrative conversation around planning stages and broader programmatic adoption. The following recommendations can assist implementers before project launch and in promoting long-term operational sustainability beyond the life of a funded intervention.

Understand the value chain.
Understand the users your ICT4D solution is intended to benefit and the value chain they participate in.

Build the business case and articulate the value chain to stakeholders.
The intervention may have a strong business case for many stakeholders. Present this business case to stakeholders and highlight the portfolio's entire value proposition.

Build partnerships.
Consider partners in investing in the use of technology.

Monitor for adjustments.
Monitor the system for changes and make adjustments accordingly.

Build for Sustainability.

Build a Portfolio

Achieve Sustainability

Ownership Sustainability

Local partner ownership and local state leadership are other essential component in the sustainability dialogue. While having lasting financial support ensures operational viability, meaningful local partnerships can ensure buy in towards comprehensive sustainability.

Build local support and trust for ICT4D. Building a sustainable solutions involves more than designing with the user. It requires working with local ecosystem partners, such as mobile network operators, other businesses, and local NGOs to build their trust in and support for the use of the solution.

Build with state partners. Coordinating with local government agencies facilitates buy-in for a solution from the outset, lowering barriers to national scale. Local governments are in position to advocate ICT4D solutions and promote their use to beneficiaries and financial stakeholders.

Set expectations. Change management takes time, so it is important to set realistic expectations. While reach is important, do not overcommit to an ICT4D intervention until support and trust are established.

Build for Sustainability.
Build for Scale.

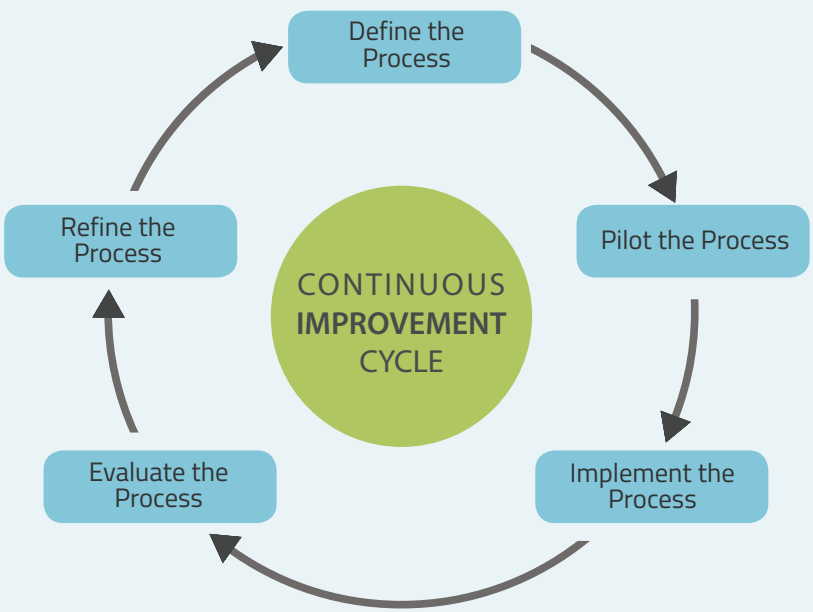
Manage Processes

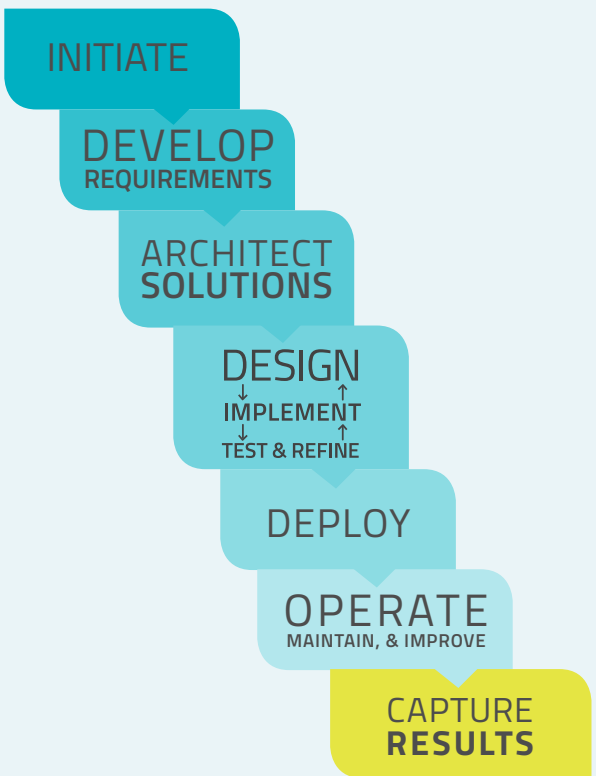
Best Practices - Overview

An organization's standard processes for ICT4D implementation at the project level must take into account the full lifecycle of an ICT4D System.

Process maturity, the extent to which an organization's practices are explicitly defined, managed, measured, and continually improved underpin an organization's ability to achieve operational excellence.

A standard process for implementing ICT4D solutions should span all solution life cycle phases and should embody the Principles for Digital Design.





Manage Processes

Best Practices - Initiate

Successful ICT4D implementations start with a clear understanding among all stakeholder groups of purpose and scope of the ICT4D solution, the benefits sought, and the roles and responsibilities of stakeholders in achieving those benefits.

Click here to navigate through the processes

Initiate | Develop Requirements | Architect Solutions | Design,Implement, Test & Refine | Deploy | Operate, Maintain & Improve | Capture Results

Steps

Identity Solution Goals, Scope, and Context. Define the solution's purpose, the outcomes and benefits anticipated through its use, and the measures of its success. Define its programmatic, functional and geographic scope, and identify its stakeholders and their roles in its use. Identify the context in which it will be used and any cultural, environmental, technological, legal or regulatory constraints that context imposes.

Design with the User.

Develop a Stakeholder Engagement Strategy. Once a solution's stakeholders have been identified, develop a strategy for engaging them in the design, development, and deployment of the solution. Plan to engage local advocates and institutions that are in a position to play a key role in scaling and sustaining the solution early.

Understand the Ecosystem.

Form a Project Team and Develop a Project Charter. Form a multidisciplinary team that brings together a range of business analysis, change management, programmatic, and ICT skills needed to successfully implement ICT4D solutions. Develop a project charter documenting the project goals, scope, context, roles and responsibilities, lays out a high-level implementation schedule, and defines budgetary constraints.

Be Collaborative. Build for Sustainability.

Overview

Best Practices

Manage Processes

Best Practices - Develop Requirements

ICT4D solutions change the way people work and interact with each other. In designing a solution it is important to understand this change, the impact on each user group, and the benefits they will experience.

Steps

Identify Current Business Practices. Develop a high level model of future solution users' current practices – who does what, in what sequence,and with what information. Identify pain points and opportunities for improvement.

Design with the User.

Develop Future Business Practices. Work with each user group to develop a model of their future business practices using technology. Identify changes introduced, their benefits and impact on user group roles, responsibilities, work activities, and work locations. Understand both the benefits of these changes. Pay particular attention the most vulnerable user groups.

Design with the User.

Develop Functional Requirements. Identify the functions that the ICT4D solution applications must perform to support future business practices. Identify the information that the solution will provide to support those practices.

Design with the User.
Be Data Driven.

Develop Technical Requirements. Identify devices required to access the solution, databases and facilities required to house information, and communication networks needed to connect them. Understand constraints the solution must meet as well as security, privacy, business continuity, and performance standards.

Design with the User.
Address Security & Privacy.
Understand the Ecosystem.

Develop a Change Management Plan. Develop a communications, training, and support plan for preparing each user group for solution adoption. Build in feedback loops, follow-up activities, and incentive programs to monitor concerns and reward solution adoption.

Manage Processes

Best Practices - Architect Solution

Choose technologies for each component of an ICT4D solution that are modular, easily adapted, and exhibit a high degree of interoperability with other systems. Where possible, use those that have already been successfully deployed and scaled sustainably within your organization.

Steps

Develop a Conceptual Model. Model the solution by identifying components essential to implementation of requirements: applications, databases, hardware, communication networks, and services required to configure, deploy, operate, support and maintain the solution.	**Reuse and Improve.**
Identify Potential ICT4D Solutions. Identify ICT4D portfolio solutions that can be potentially used to implement model components and additional technologies needed to address gaps. Define one or more options that meet or can be adapted to requirements.	**Reuse and Improve.** **Understand the Ecosystem.**
Develop Deployment and Support Strategy. Identify services required to adapt and or configure, test, deploy, operate, and maintain the solution, and those needed to support users over time. Leverage partnerships to provide those services.	**Reuse and Improve.** **Build for Sustainability.**
Cost/Benefit Analysis. Analyze the full life cycle cost of each solution and identify solution benefit (improvements in cost, data quality and timeliness, risks, scalability, sustainability, and interoperability). Compare the costs and benefits of each solution with traditional, non-ICT enabled, practices.	**Reuse and Improve.** **Use Open Standards.** **Build for Sustainability.** **Build for Scale.**
Compare and Select Solutions. Compare the solution costs and benefits to select the one providing the best value for money within budget and schedule constraints. Engage users and other stakeholders in the decision.	**Design with the User.** **Reuse and Improve.**

Manage Processes

Best Practices - Design, Implement, Test, and Refine

An agile, incremental approach to designing, developing, testing, and refining the ICT4D solution goes a long way to producing solutions that are acceptable to users and meet their needs.

Initiate	Develop Requirements	Architect Solutions	**Design,Implement, Test & Refine**	Deploy	Operate, Maintain & Improve	Capture Results

Steps

Design and Configure Solution. Work with users and service providers to design, develop, and/or configure selected technologies to meet solution requirements. Use an iterative approach to building the system. Design, develop, and test a system increment, demonstrate results to the users, and incorporate user feedback into a subsequent build cycle.

Design with the User.

Test Solution. Integrate system increments resulting from a build cycle with those of prior cycles. Involve users in conducting an end-to-end acceptance test prior to system release.

Design with the User.

Refine Solution. Be prepared to adjust requirements and even add, delete, or switch out technologies in response to user feedback.

Design with the User.

Develop Support Materials. Create the user and support staff training materials, knowledge base articles, and stakeholder communication and marketing materials necessary to support deployment and adoption of the system.

Design for Scale.
Build for Sustainability.

Manage Processes

Best Practices - Deploy Solution

An incremental deployment approach that allows adequate time to address solution issues and respond to user feedback is preferable to a "big-bang" approach.

Steps

Prepare Users and Support Staff. Communicate with users and support staff throughout the solution implementation period to keep them informed about progress, issues encountered and actions taken to respond. Conduct training for each group in the topics relevant to their job responsibilities (e.g., data collection, data analysis and reporting, mobile device management, etc.). Plan for both upfront and on-going training. Ensure strong feedback loops.

Design with the User.

Pilot Solution. If possible, pilot solution with a small group of users before attempting to scale it. Test both the use of the system and the ability of the organization to support is use. Use pilot results to refine the solution and ensure that it is ready to rollout. Use pilot results to update and/or reinforce the business case for investing in the solution.

Design with the User.
Be Data Driven.
Build for Sustainability.
Design for Scale.

Rollout Solution, Monitor, and Support Adoption. If possible, rollout the solution incrementally. Monitor and report solution usage, user feedback, support requests, and volume of solution defects. Use this information to improve user support, to address root causes of technology failures, and to refine the solution to address user feedback.

Design with the User.

Manage Processes

Best Practices - On-going Operations

Putting an ICT4D solution to work is only a small portion of the total effort. Building and sustaining the capacity to operate, maintain, support and improve the ICT4D solution over its lifecycle is critical.

Steps

On-board New Users, Projects, and/or Organizations. Implement an organized and streamlined process for onboarding new solution users and providing on-going user support and training in order to improve solution adoption. Both new and existing users expect to have responsive support throughout the solution lifecycle.

Design with the User.

Maintain and Improve Solution. Deliver on-going operations and maintenance (e.g., data backup, bug fixes, security updates, hardware replacement). Track maintenance activities and use this information to improve user support and address root causes of technology failures. In addition, monitor user experience and feedback and implement enhancements that are needed to maintain adoption and improve solution usage over time.

Design with the User.
Be Data Driven.
Build for Sustainability.
Design for Scale.

Adapt Solution to Changing Environment. Account for changes in the social, political, cultural, and technological environment of an ICT4D solution in order to improve its long-term viability.

Build for Sustainability.
Understand the Ecosystem.

Manage Processes

Best Practices - Capture Results

Results and lessons learned from the implementation of ICT4D solutions are critical to accelerating the pace of their adoption and ensuring future success.

Initiate	Develop Requirements	Architect Solutions	Design,Implement, Test & Refine	Deploy	Operate, Maintain & Improve	**Capture Results**

Steps

Measure Benefits and Impacts. Plan to monitor and report the benefits and impact of ICT4D solution use. Consider measuring solution costs and outcomes such as data timeliness, quality, solution usage, and number of beneficiaries served. Where feasible, measure and compare the impacts achieved by technology-enabled versus non-technology enabled relief and development programs.

Be Data Driven.

Document and Share Lessons Learned. Publish descriptions of ICT4D solutions, process used to implement them, results achieved, best practices, and lessons learned. Share them widely through your organization's knowledge exchange program. If possible, publish materials under a Creative Commons license.

Be Collaborative.

Develop an Advisory Service

Approaches

Having a dedicated internal ICT4D advisory service is a highly effective way to support, reinforce, and drive many of the activities discussed in this guide. With constrained resources, it is critical to consider how best to structure an advisory service.

Common Approaches

Augment existing jobs. Organizations may choose to make a health, agriculture, or other Subject Matter Expert (SME) an 'ICT4D Expert,' as they are well-versed in the challenges organizations face, and well-suited to adapt technology to meet needs.

Drawbacks :

- Subject matter experts will not likely have adequate time to devote to a systematic approach to building ICT4D capacity.
- Lacks specialized skills related to ICT4D planning and design.

Hire external consultants or external vendors. External ICT4D consultants and vendors are often experts in design, planning, budgeting, and implementation processes.

Drawbacks :

- May not be able to provide systematic and long term support required to develop overall ICT4D capacity.
- Low incentive to share best practices or lessons learned if hired on a per-project basis.
- May become expensive if consistently engaged.

Recommended Approach

Establish an internal advisory or consulting service focused on driving ICT4D within the organization. An ICT4D advisory service is an internal advisory service dedicated to supporting ICT4D projects and activities throughout an organization in design trade-offs, analysis, planning, budgeting, implementation, and training.

Like external consultants and vendors, internal advisors assist in the implementation of ICT4D projects, but as *internal* consultants committed to the success of the organization as a whole. They are uniquely positioned to build capacity across the organization and play a strong role in each of the areas discussed in this guide.

Develop an Advisory Service

Tips

Advisory services are an integral part to effecting change, from driving knowledge exchange, building a portfolio, and managing processes.

Driving Knowledge Exchange

The internal ICT4D Advisory Service plays a key role in all of an organization's knowledge exchange activities. By having broad insight into ICT4D projects and established relationships, this team is a key contributor to developing CoP and knowledge exchange forums, and is critical to helping capture and share lessons learned, best practices, and ICT4D impact. Through training and project oversight they also are key change agents in establishing and reinforcing standardized, replicable processes.

Building a Portfolio

The ICT4D Advisory Service is integral to building, using, and evolving the ICT4D portfolio. With sustained interaction with projects and teams throughout the organization, this advisory service is critical in helping to introduce and rollout the portfolio, observe local and regional ICT4D trends that might lead to new opportunities, and evaluate new locally-built solutions for integration into the portfolio.

Managing Processes

The ICT4D Advisory Service is an important development and delivery mechanism for the established processes. By following standardized processes while implementing a solution with local teams, the advisory service also acts as a catalyst for driving change within the organization.

Tips for Establishing an Advisory Service

Report globally. While an organization's advisory service might be geographically distributed with good regional coverage (time zones and primary languages), it should report at a global level.

Strong communication skills. Being able to work across cultures and in a variety of contexts, and being able to work with local teams to provide necessary support while building capacity is critical.

Cohesive team. A culture of sharing is a prerequisite to facilitating knowledge exchange.

Organizational knowledge. Hiring from within an organization can promote organizational knowledge, history, and commitment that drives change.

Reference Material

Glossary

Change agents
Those chartered with responsibility for helping sponsors build ICT4D capacity by carrying out a communication program, preparing those that will perform work in a new way, and assisting sponsors in monitoring, recognizing and rewarding progress.

Cloud services
Services provided and available to users over the internet, such as storage, and not necessarily on site.

Ecosystem
The system, comprised of private and public sector partners, which together fosters and supports all stages of developing, implementing, and managing an ICT4D portfolio.

ICT4D
An acronym for Information and Communications Technologies for Development.

Impact investing
A form of investment which emphasizes social responsibility as a core guiding strategy.

Internet of Things (IoT)
Embedded devices which foster automation and interconnectedness across fields, including health, energy, and environmental monitoring.

Portfolio
A set of tools managed at the organizational level which guides the implementation and management of ICT4D solutions.

Glossary

Process
A standard method for implementing ICT4D solutions that spans all solution life cycle phases, in which an organization's practices are explicitly defined, managed, measured, and continually improved to achieve operational excellence.

SaaS
An acronym for "Software as a Service," whereby subscription-based software is licensed, centrally hosted, and is accessed by users via the internet.

Social enterprises
Organizations that use business strategies to promote better development outcomes and overall well-being as a core operations strategy.

Sponsors
Those who supervise individuals who will change the way they carry out relief and development projects. Sponsors must understand and communicate the benefits of using technology in development, provide the necessary resources for facilitating that change, and recognize their staff for achieving the change.

Value chain
A chain of organizations in a system with inputs and outputs and associated costs and profits.

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