Role of ICT tools for needs assessment

Needs assessment in low resource settings and in high-income countries towards the Open Source Design
Knowledge!

Shared Knowledge - Grows

SHARED KNOWLEDGE
Role of ICT tools for needs assessment

ICT
- we have used different technologies/ways of communication or to inform each other since ages!

Tools
- OpenSource alternatives for
  - **AutoCAD**: BRL-CAD, FreeCAD, LibreCAD, etc.
  - Calculation programs: GNU Octave, Scilab, Sage
  - Software development: PHP, Python, Apache
  - Project work: Kanboard, Taiga, Wekan, Planter

Is there OpenSource tools: YES
Needs assessment in low resource settings and in high-income countries towards the Open Source Design

Low resource settings
  – typically characterized by a lack of funds to cover health care costs

High-income countries
  – a country with Gross National Income per capita US$12,056 (according to World Bank 2017)

Needs assessment
  – a systematic process for determining and addressing needs
Why training is needed?

- There is a lack of clinical and biomedical engineers, who can support
  - Health care technology management
  - Research
  - Development of new technology,

- **Clinical Engineers** give important contribution to the improvement of the health care system.

- The lack of clinical and biomedical engineers is a problem for the Governments when they try to provide modern health care to all citizens.
Health Technology Management in a developing country like the Philippines

- Miguel O. Gutierrez,
  - Electronics and Communications Engineering Department/Manufacturing Engineering and Management-Biomedical Engineering Department, College of Engineering, De La Salle University, Manila, Philippines

![Department of Biomedical Engineering Organisation Diagram](image)

**Fig. 2.** The organizational chart of the BME department of the Karolinska University Hospital in Huddinge, Sweden.
Clinical Engineering Training Program in Emerging Countries
Example from Albania

- Specifically aimed at training for careers within the public and/or private medical sector.

- To prepare the student with knowledge and experience in equipment maintenance, patient safety and medical applications.

- After the programme, the student shall be familiar with the technology and the clinical application, context and problems, and be able to communicate and work with experts.
Clinical Engineering Management Program in Emerging Countries
Example from Albania

– The Ministry of Health had decided to implement several reform programs in the primary health care, in the hospital sector, in the pharmaceutical distribution etc.

– Through government investments and co-operation with donor organisations more and more modern medical devices are introduced in Albanian health care, in hospitals as well as in primary health care.

– The operation of already established health care facilities and structures, including maintenance of medical devices, has usually not been supported.
TeleMedicine, TeleHealth, e-Health…

ICT4MPOWER
Improved Effectiveness of Health Systems and Empowerment of Healthcare Communities in Uganda for Better Health Outcomes of Rural Population using Information and Communication Technologies

Ministry of Health Project proposal
TeleMedicine, TeleHealth, e-Health...

ICT4MPOWER Progress

...  

– 3) Alvin while on vacation in Barcelona came up with a brilliant idea on how to make apps better. He would like to integrate mind mapping into the application with an idea that the doctors can choose which type of interface they want to work with. Good ideas always come when you are outside of the office. Good job.

– 4) Alvin has come up with a change in technical architecture and is implementing it, so that apps can be developed in any language as long as it is written in Perl, Python, PHP, Ruby and Java. This gives us freedom to utilize skills of programmers in the best way. We will test this possibility when developing HIV and Maternity System. Fantastic.
TeleMedicine, TeleHealth, e-Health...

ICT4MPOWER Progress

- ... 
  - 9) Nargis and Shahnoza have finished with Mockup of App for HIV for Adults, Children and Pregnant Women. This is great. A lot of hard work was done to review all the materials developed in Uganda (clinical guidelines, literature, communication with experts), and putting it into an App. We shall hear from them lessons learned, and how we can develop disease based Apps in the future.

- Dr. Luis Sambo, Regional Director Africa, World Health Organization
  - “Five years before the Millennium Development Goal deadline of 2015, there is growing concern that MDG 5 – Improve maternal health – is the one that is furthest off track. Effort to improve maternal and child health requires action on all factors that affect the health of women and children.”
We have used a well known project model.

Detailed steps are outlined in a process flow divided into responsible/role who will perform the specific part.

Activities and expected results are described in a detailed task list.

### Fas & Syfte

<table>
<thead>
<tr>
<th>Fas</th>
<th>Syfte</th>
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<tbody>
<tr>
<td>0. Idéformulering</td>
<td>Mottagning av förfrågan samt initiering av ärendehantering</td>
</tr>
<tr>
<td>1. Initiering</td>
<td>Etablering</td>
</tr>
<tr>
<td>2. Etablering</td>
<td>Genomförande</td>
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<tr>
<td>3. Genomförande</td>
<td>Avveckling</td>
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<tr>
<td>4. Avveckling</td>
<td>Uppföljning</td>
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<tr>
<td>5. Uppföljning</td>
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### Ingående moment

<table>
<thead>
<tr>
<th>Ingående moment</th>
<th>Beskrivning</th>
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<tbody>
<tr>
<td>0.1 Mottagning</td>
<td>Ta emot och registrera förfrågan i Kundsystem(CRM)/Ärendehanteringssystem(ÄHS) med uppdragetspec. och kundinfo. Vid behov upprätta sekretessavtal</td>
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</tbody>
</table>
| 0.2 Initial värdering | Prövning av uppdraget utifrån Innovationsplatens ramvillkor. I tillämpliga fall:  
  • upprätta sekretessavtal  
  • kundmöte för informationsöverföring |
| 0.3 Instudering av relevant material (exempelvis kliniska studier, produktinfo, patent, grundforskning etc.) | Bedöma om uppdraget ska och kan genomföras. Beröende på typ av förfrågan litteraturstudier etc. för att förstå sammanhang, syfte och relevans med tillänt produkt. |

### Trigger

<table>
<thead>
<tr>
<th>Trigger</th>
<th>Underlag</th>
<th>Resultat</th>
<th>HUKI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Förfrågan</td>
<td>Checklista för uppdrag (nödvändig info för uppläggning av ärendet)</td>
<td>Initiering av ärende</td>
<td>H-SPOC U-SPOC K-NA I-NA</td>
</tr>
<tr>
<td>Förfrågan och ärendeinformation</td>
<td>Beslut Go/No Go</td>
<td>H-SPOC U-SPOC K-NA I-NA</td>
<td></td>
</tr>
<tr>
<td>Förfrågan</td>
<td>Blankett för uppdrag</td>
<td>Förståelse för sammanhang/bakgrund, funktion, syfte, nytt, vetenskaplig grund etc.</td>
<td>H-FOU-chef U-Teknisk expertis K-Klinisk expertis I-Kund</td>
</tr>
</tbody>
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Example by Zack Akil who used Arduino and Raspberry Pi to turn a fiber optic neural network into wall art