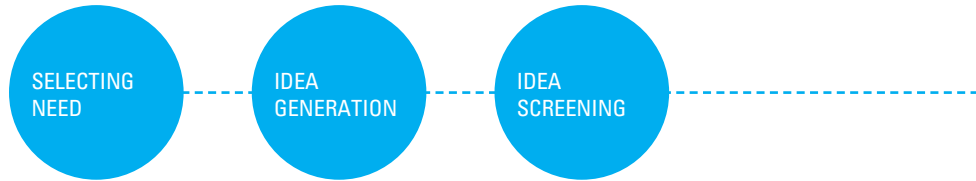


unicef
innovation
toolkit

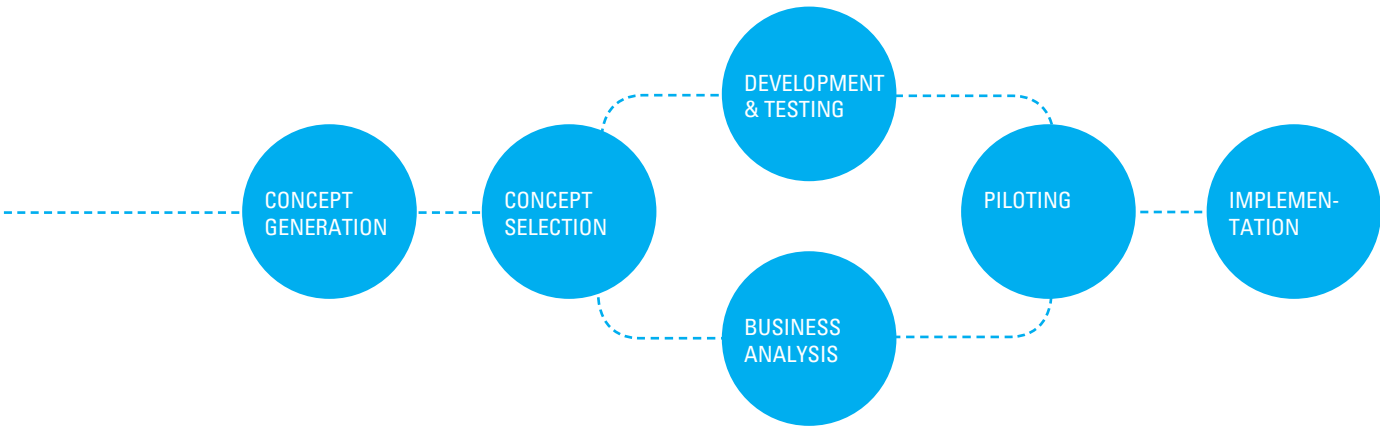
9 STEPS FOR UNICEF INNOVATIONS

Aalto University
IDBM Industrial Project
2012 - 2013

Ahrum Jeon
Alexandra Stadler
Heikki Marttila
Selim Özadar



Elephant Tap
Case Study



step one

selecting need

CHECKLIST

- Skilled personnel to do desk research
- Decision maker appointed
- Clear scope
- Design brief formulated based on results of secondary research
- Approval of project brief
- Decision to move forward



DESCRIPTION

The first phase will give the context and the need for bottom-up product development. At this stage the process does not require extensive resources.



GOAL

- To select a need based on existing research and UNICEF strategy
- To communicate the context and need for the team in charge of next phase



TOOLS

- Secondary research
- Project brief form



OUTCOME

Project brief for one need



COMPETENCE

UNICEF does a lot of research and has access to various databases and thus has great amount of available information for the process of need selection.



RESOURCES

- UNICEF personnel that is skilled to do secondary research and write the project brief
- UNICEF decision maker to give approval for project brief and to hand it to the team in charge of next phase
- Limited time and budget
- UNICEF project coordinator

↑ # TOOLS

SECONDARY RESEARCH

UNICEF Statistics

UNICEF Country Programmes

Public Information

- World bank - Data
- CIA - World Fact Book
- World Statistics

PROJECT BRIEF STRUCTURE

1. Title page

- Company Name

2. Context

- Stakeholder map (relevant external and internal stakeholders)
- Summary of secondary research
- Summary of relevant UNICEF strategies and programs

3. Problem Statement

- Problem statement
- Budget
- Time
- Constraints

4. Objectives

- Scope
- What you plan to accomplish?
- Due dates



EXECUTION 60%

DONE

SECONDARY RESEARCH

- Topics of WASH, Child safety, transportation (medicine, other health related issues), industry of fake medicine were given by UNICEF
- WASH was selected by the external team with particular topics concerning water transportation, biogas or alternative latrines designs, hand-washing, rainwater harvesting and implementation framework (specifically for intangible elements)
- The external team used an ethnographic approach (with specially designed cards) in order to narrow down and select one of the WASH topics as part of the project brief
- The approach implied assessment of needs stated by UNICEF offices throughout Uganda (comparison of what was stated with what was in the field)
- The result of the assessment was the topic choice: WASH in rural schools in Uganda, as well as the team composition. (7 potential student profiles)

PROJECT BRIEF

- The brief was drafted by the team based on the needs assessment
- It mainly underlined details about the joint venture (PDP & IDBM student profiles), and about the necessity of delivering both tangible and intangible concepts at the end of the project
- The problem statement and the scope were covered by the topic of WASH in schools in rural Uganda (rural schools were considered an epicenter)
- The time constraint was covered by the deadlines of the academic year

NOT DONE

PROJECT BRIEF

- The brief was not clearly stated, especially concerning elements related to budget and time constraints
- What was planned to be accomplished was to some extent fuzzy, considering the expectations about the implementation process at the end of the project
- A clear project brief stating responsibilities of both parties could have brought common understanding of the process (from beginning to the end of the project)
- The project brief was drafted by the external team and not by UNICEF, which created a gap from UNICEF's side in understanding the innovations cycle

step two

idea generation

CHECKLIST

- Allocation of human resources
- Many ideas
- Internally and externally generated ideas
- Ideas properly documented
- Ideas stored in the idea bank
- Budget in place



DESCRIPTION

Idea generation is a creative process for generating a large number of ideas where the quantity matters, not quality. An idea is understood as a product description in raw form - a rough match between a need and a possible solution.



GOAL

- To generate a large number of raw ideas around the problem statement given in the project brief
- To have all ideas properly documented in an idea bank



TOOLS

- Generating ideas
- Idea cards
- Idea bank



OUTCOME

Many raw ideas properly documented in the idea bank



COMPETENCE

It would be beneficial if the ideas would come from bottom-up instead of top-down in a sense being closer to the end user. Collaborative idea generation with end users could be facilitated by UNICEF personnel or external stakeholders. This stage could be also outsourced to get out-of-the-box ideas that are generally difficult to generate by people inside organizations.



RESOURCES

- A facilitator to take care of collaborative idea generation
- External multidisciplinary team, for example, a student team through university collaboration **OR** internal multidisciplinary UNICEF team with people from different departments, ages, areas of expertise, levels of seniority, mixture of experiences, different cultural backgrounds
- Time estimation 2-3 weeks
- Budget needed for traveling to the field (collaborative idea generation), opportunity cost for UNICEF team members, allocated budget for external team
- UNICEF project coordinator

S# TOOLS

GENERATING IDEAS

1. Establish an articulated statement based on the project brief
 - A narrow statement helps to avoid wasting effort on generating ideas in areas are unlikely to be pursued.
 - A broad statement will challenge the assumptions team may have.
 - e.g. Create a physical product in the sanitation category that we can launch in the market within a year through the existing distribution channels of UNICEF.
2. Consider the following rules for brainstorming
 - Defer judgment
 - Encourage wild ideas
 - Build on the ideas of others
 - Stay focused on the topic - charter
 - One conversation at a time
 - Be visual: use post-its, mind maps, drawings, sketches
 - Go for quantity
3. Consider few techniques to generate ideas*
 - Six thinking hats
 - SCAMPER
 - Reverse brainstorming
 - Imaginary brainstorming
 - Starbursting
 - Brainwriting

IDEA CARDS

1. First write a descriptive title
2. Write a narrative explanation of the ideas using 50 words. Write so that person who is not familiar with the idea would understand.
3. Also add a sketch, drawing or a picture of a possible product concept.
4. Use uniform style to make cards look similar and thus to make ideas less biased. Power Point is a good tool - one slide per one idea.

IDEA BANK

Store all idea cards in the same place so that they stay organised and easily available. (Power Point file, folder, etc.)



*description of the tools in the resources links



EXECUTION 80%

DONE

GENERATING IDEAS

- Techniques used were: PD6 (product development in 6 hours), ideation sessions and brainstorming sessions (idea mapping using post-its and categorizing)
- The idea generation process was facilitated by the project coordinator of the external team
- PDP & IDBM teams were involved as well as Unicef representatives (ideation process took place in Finland)
- The teams came up with several concepts under WASH (ideas generated were around usability of water taps, sanitation practices for wiping and cleaning yourself in the toilet, and water transportation)
- Students (4 persons) from Makerere University (Uganda) joined the team for better insights on the context of rural schools

IDEA CARDS & IDEA BANK

- Ideas documented through photo, video and Dropbox. For sharing ideas they had a lot of face to face meetings with the team members and used Skype with Ugandan students. (from Makerere University)

NOT DONE

GENERATING IDEAS

- Ideas were generated in Finland and not during a field trip due to budget constraints (to take the whole team of 12 members to Uganda)
- A statement was not properly articulated based on the project brief (in this case it was too wide)
- Not very clear how many ideas were generated at the end of this stage

IDEA CARDS & IDEA BANK

- Ideas were not categorised based on a similar pattern (e.g. narrative, drawing)

UNICEF TEAM

- Limitations from UNICEF's side because the process was new to them and didn't know how to support the team during this stage (existing knowledge, budget allocation, project coordinator - clear role)

step three

idea screening

CHECKLIST

- Facilitator that was involved in the idea generation phase
- Allocation of internal and external human resources
- Budget in place for external team
- Raw ideas grouped
- Selection of 1-3 groups for next phase



DESCRIPTION

This stage consists of successfully isolating the most promising ideas and eliminating the ones that are highly unlikely to result in creating value.



GOAL

- To make sense, organize and evaluate a large number of raw ideas generated in the previous stage
- To focus attention on the ideas worthy of further investigation



TOOLS

- KJ-method
- Multi-voting



OUTCOME

- Large number of raw ideas grouped into patterns
- Selection of 1-3 groups for next stage based on multi-voting



COMPETENCE

It would be beneficial if the idea screening process could be done by a mix of UNICEF and external people to avoid any biases and inside-the-box screening.



RESOURCES

- A facilitator to take care of idea screening process
- Team of 6 people
 - 3 UNICEF people from different departments, ages, areas of expertise, levels of seniority, mixture of experiences, different cultural backgrounds
 - 3 external people that were involved in the idea generation phase
- Time estimation: max 1 week
- Budget needed for opportunity cost for UNICEF team members, allocated budget for external team
- UNICEF project coordinator

3# TOOLS

KJ METHOD

The purpose is to make sense of, organize and evaluate tens to hundreds raw ideas

Steps Involved:

1. Collect all ideas on post-its or idea cards
2. Get internal and external people in the same space
3. Shuffle the cards, spread them out and read carefully aloud. Group cards that seem to look alike. Ignore the oddities. For each group create a title and place it on top of pile of cards.
4. Repeat until you have less than 10 groups
5. Arrange the groups on large sheet of paper or a wall that helps you to see and understand the overall picture.

MULTI VOTING

Holistic judgment by a group of individuals if the idea is worth of few days further investigation. All team members have equal voting power.

Screening process has to be efficient, even at the cost of perfect accuracy. In this phase there are not many facts to justify the groups, thus intuition of team members from different back grounds is a good tool.

Steps Involved:

1. Make a voting form where all groups from KJ-method are written down
2. Let each team member vote if the groups are worth of few days further investigation (yes or no)
3. Count the number of "yes" and "no" to see which groups have the greatest potential to move to the next phase



EXECUTION 80%

DONE

- The team ran the screening phase in both Finland and in Uganda
- Benchmarking of each WASH topics was done in Finland (by using global perspective of the team members, by Googling, or by relying on the life experience of the Ugandan students from Makerere university)
- They tried to understand the school concept in Uganda (primary/secondary schools, church schools), to get facts on how many deaths are related to WASH practices, they studied problems that happen when going to the toilet (they had a microbiologist teacher in Finland telling how to simulate games with kids teaching them about diseases), they discussed with an expert in hand-washing about the importance of soap, and benchmarked flu epidemics
- The idea screening process was done through simulations (scenarios) on general hygiene practices in Design Factory, Finland, by means of rapid prototyping. They couldn't make decisions because they needed to look deeper (field research). They took all these scenarios on the field (Gulu) to see what works and what not
- The team was split in 4 mini-teams with a mix of background and sex), with 4 well defined roles: documenter, photographer, director and lead); the teams were trained by UNICEF and were given a mini toolkit for documentation
- Every day they would gather and have a debrief session (professionally – 3 insights and emotionally- 1 insight), and imported in a document.
- A second ideation session took place in Kampala to realize, categorize and critique what moves forward – and realize what it needs more research.
- Final choice of groups: water transportation, handwashing, real time mapping (IT solution, how to put smart technology in the products), and implementation (the IDBM team- clean school concept)

NOT DONE

- The team was too big (12 Aalto students+4 Makerere students) and needed constant coordination and daily debriefing
- Due to a wider scope (4 WASH topics) the screening phase required a longer time span (2 weeks on the field + 3 weeks in Design Factory for scenarios)
- Lack of budget to run the screening phase entirely on the field, and not partially in Finland
- The team used different tools but reached the same outcome

step four

concept generation

CHECKLIST

- External team
- Budget allocation
- Field study of user needs of 1-3 groups
- Hierarchy of needs
- Many concepts generated
- Representation of the product concepts



DESCRIPTION

In this phase user needs are studied on the field in the context of those 1-3 groups of ideas from the previous phase. The study will give a holistic understanding of the context so that many product concepts can be generated to answer the end user needs. A product concept is understood as an approximate description of the technology, working principles, and form of the product.



GOAL

- To have customer needs identified and documented
- To generate product concepts on the 1-3 groups from idea screening phase



TOOLS

- 5-steps to identify customer needs
- 4-step concept generation method



OUTCOME

Set of product concepts for each 1-3 groups well represented



COMPETENCE

Key strength for concept generation phase is the human centred design. Therefore it is recommended that the phase will be outsourced to a team capable to study the end user needs and to generate concepts.



RESOURCES

- External multidisciplinary team with skills in: human centered design, technical understanding, technical drawing and modelling, graphical representation, IPR and benchmarking research
- Budget allocated to the external team
- Time estimation: 1-3 months (ca. 1 month per each group from idea screening phase)
- UNICEF project coordinator

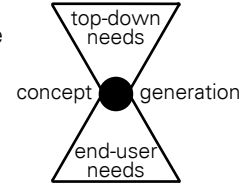
4# TOOLS

5 STEPS TO IDENTIFY END USER NEEDS

- 1. Gather** raw data from end user
 - E.g. interviews, focus groups, observing
 - Ask 5-whys -technique
 - Document: records, take pictures, video, notes
- 2. Interpret** the raw data in terms of customer needs
- 3. Organize** the ideas into a hierarchy
- 4. Establish** the relative importance of the needs
- 5. Reflect** on the results and the process in order to know if one has to go through the process again.
 - Was the user group the right one?
 - Was enough data gathered?
 - Is the data relevant?
 - Is the data analysed properly?
 - Does one have clear understanding on the end user needs?

CONCEPT GENERATION IN 4 STEPS

- 1. Clarify the end-user needs**
 - Start from the hierarchy and importance of end-user needs
 - State the top-down needs
 - How can one answer to both top-down and end user needs? Crosspoint of bottom-up and top-down needs
- 2. Search on existing concepts**
 - Lead users
 - Experts
 - Patents
 - Literature
 - Benchmarking
- 3. Generate new concepts internally**
 - Individual and group brainstorming
 - Collaborative concept generation with end users
 - Follow the brainstorming rules presented in the idea generating tools
- 4. Synthesize & organize the generated concepts**
 - Documented so that concepts can be screened in the next phase without being biased
 - Create a document for each concept that includes:
 - Product concept description
 - Drawings, sketches, rapid prototypes and 3D models
 - Value proposition of the concepts
 - Goals for time, cost and quality
 - Primary and secondary markets
 - Stakeholders
 - Assumptions and constraints





EXECUTION 60%

DONE

- The team generated concepts for each of the four groups chosen in the previous phase: water transportation, handwashing, the monitoring system and implementation (Clean School); however they highlighted that the handwashing topic was a massive issue
- The concepts generated were tested with users in Finland (in Design Factory, MoA event through interaction of 1000 users for latrine painting (communication through art), and with Ugandans living in Finland by means of a live Lego map)
- All 4 categories had iterations (prototypes) of the concepts, but some of them could not be reproduced later in Uganda, during the development phase, due to lack of raw materials and manufacturing capabilities
- The team had 3 iterations for the type of tap (hard core tap for rainwater harvesting tank, the push type and the rod type), and a couple for the water transportation system and the monitoring system, as well as for the implementation process (business model) - switching it to Clean School Concept (as an umbrella to host all the tangible concepts that were to be developed)
- Only one team (the IDBM team) joined by only one team member (the project manager of the other teams) went back to Uganda for deep user research concerning the concepts generated and to test the rapid prototypes with users in the field
- The need of hygiene and sanitation was kept in mind when generating concepts
- UNICEF representatives could not bring any relevant expertise at this stage since this type of project was new to them and did not know what type of support to offer; the only direction given was the need of scaling up (local adoption and sustainability)
- Among the KPI's that would show success the number of lives saved was the only one that mattered but this was difficult to prove at this stage

NOT DONE

- The concepts have been generated and tested for technical problems in Finland and NOT in the field
- The user needs were not addressed in the field mainly due to lack of budget allocation
- The fact that each team generated concepts lead to a competition among teams members
- The concepts generated were not properly organized and synthesized
- This phase was seen as concept development and testing instead of concept generation

step five

concept selection

CHECKLIST

- External team
- Decision maker
- Allocation of budget
- Allocation of resources
- Early phase end user test
- Impact and resources estimation
- Final decision on the concept

concept generation > **concept selection** > development & testing
business analysis



DESCRIPTION

In this phase concepts generated are screened against potential impact and estimated resources, so that the concepts that have the highest impact with the lowest amount of resources needed for development are selected.



GOAL

- To test user adoption at an early phase before allocating costly resources in the concept development phase
- To screen the concepts based on educated guesses of potential impact and estimated resources



TOOLS

- LMH screening tool
- Testing concepts with end-users



OUTCOME

Selection of one or more concepts for concept development



COMPETENCE

For the end user testing it is recommended to have a team with skills in human centred design, resource and market size estimation. However, for the selection process the team should be accompanied by a decision maker from UNICEF's side.



RESOURCES

- External multidisciplinary team with skills in: human centered design, technical understanding, resource estimation
- Budget allocated to the external team
- Time estimation: 1-4 weeks (ca. 1 week per each set of concepts)
- UNICEF project coordinator
- UNICEF decision maker

#TOOLS

LMH SCREENING

Step 1

Assign values 1-3 where
1=Low (L), 2=Medium (M) and 3=High (H)

Total resource and impact ranking
1-3 = L, 4-6 = M, 7-9 = H

What is the estimated level of IMPACT that can be achieved with the concept?

- How well the concept answers for the top-down and bottom-up needs? Reflect on the needs.
- How many people would be affected by the concept? Perform a quick market size research.
- What is the estimated end user adoption? Test the concepts with end users. Use the Testing concepts with end-users -tool.

For example:

Level of needs answered = 3 (H)
Number of people affected = 2 (M)
Tested user adoption rate = 2 (M)
Total impact = $3+2+2 = 7$ (H)

What is the rough estimation of RESOURCES needed to develop the concept into a final product?

- The estimated amount of time
- The estimated amount of budget
- The estimated number of people

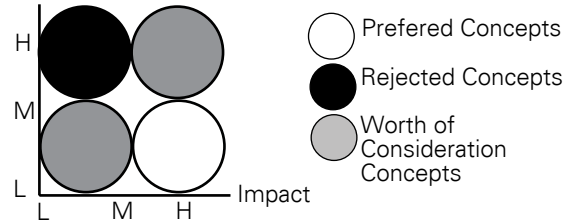
For example:

Time resource = 2 (M)
Budget resource = 3 (H)
Human resource = 1 (L)
Total = $2+3+1=6$ (M)

Step 2

Place the concept on the graph based on the estimations from Step 1: level of impact and level of resources

Resources



TESTING CONCEPTS WITH END-USERS

- Define the purpose of the concept test
- Choose a survey population and survey format
- Communicate the concept using the representations created in concept generation phase (aim for uniform representations to avoid biased test results)
- Measure customer response
- Interpret the results
- Reflect on the results and the process
 - Was the testing unbiased?
 - Did the end users understand the concepts?

DONE

- The team selected one concept for each group of WASH topics: the tap and latrine painting for hand-washing needs, the water transportation system, the monitoring system for latrines usage and the clean school concept.
- However the selection of these concepts was a result of iterations keeping in mind the hygiene and sanitation issues in rural schools in Uganda and not by impact and resources assessment
- User testing took place during the following phase (concept development) due to lack of budget allocated for the field trip

NOT DONE

- The team did not have a decision maker from UNICEF side joining the team in the selection process
- The lack of budget for the field trip also lead to difficulties in estimating available resources in the field to actually develop these concepts
- In ideal case the LMH tool would be used to select the most promising concepts based on the same group (e.g. within the tap group screen the push button tap, the tap for rainwater harvesting tanks and the rod tap). In this case, the concepts chosen by the team could have been assessed as follows (numbers used are examples):

Elephant Tap

Total impact = $3+2+2 = 7$ (high)
Total resources = $1+2+2=5$ (medium)

Water Transportation System

Total impact = $3+3+2 = 8$ (high)
Total resources = $2+2+2=6$ (medium)

Latrine painting

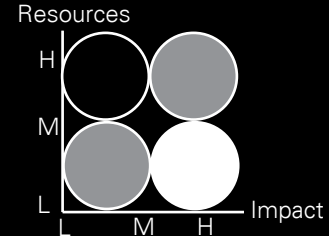
Total impact = $3+1+1 = 5$ (medium)
Total resources = $3+3+3=9$ (high)

Monitoring system

Total impact = $1+1+1 = 3$ (low)
Total resources = $3+3+2=8$ (high)

Clean School Concept

Total impact = $3+2+2 = 7$ (high)



- **Preferred Concepts:**
- **Rejected Concepts:** Monitoring System, Latrine Painting
- **Worth of Consideration:** Clean School, Water Transportation Elephant Tap



DESCRIPTION

In this phase the concept will be developed into final product. The phase covers iteration cycles around designing, prototyping, testing and market research around materials, production capabilities, distribution channels and cost analysis. The best time to resolve implementation issues is during design, not during use.



GOAL

- To reduce the risk of possible technical failures of the product before manufacturing
- To include ownership into the product design
- To design the product for available manufacturing capabilities
- To reduce the risks of manufacturing financially unviable products



TOOLS

- Iteration cycle
- Business analysis (can be found from the separate Business Analysis section)



OUTCOME

A comprehensive physical prototype that is desirable, feasible and viable for manufacturing purposes



COMPETENCE

Currently UNICEF is learning the product development process and thus it is not their core competence. It is therefore recommended to outsource this phase to an experienced product design team.

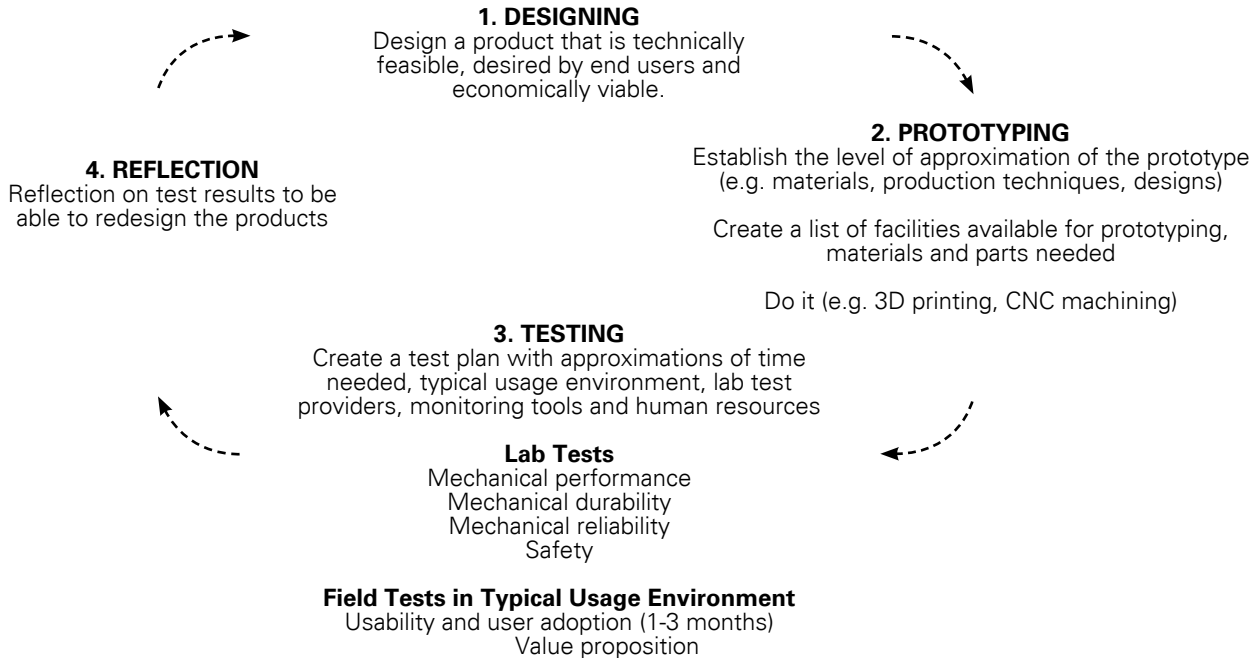


RESOURCES

- External product design team with skills in: mechanical engineering, industrial design, user centred design
- Testing service providers
- Prototyping service providers
- Budget allocated to the external product design team, to prototyping and testing
- UNICEF project coordinator
- Time estimation: 2 - 12 months (depending on the product)

@# TOOLS

ITERATION CYCLE





EXECUTION 60%

DONE

The team views this step as the implementation stage.

Design & Technical improvement

- Changing design from a Push type to Rod type
- Daily based iterations in Design factory
- Defining the problems
- Trials to make a lighter version of the tap in Uganda

Prototyping in Design factory and Uganda

- Making quick prototypes such as 3D printing, aluminum welding in Design Factory with a technical engineer
- Making aluminum prototypes at a vocational school in Gulu and at UNICEF Innovation center in Kampala

Technical Testing

- Test the amount of water for handwashing ; 20-25 seconds (200 ml)
- Test in MOA exhibition with 10,000 visitors

Field Testing in Uganda

- 2 elephant taps have been tested in Lyibi primary school and TAKS center in Gulu, Uganda.

Getting user Feedback

- Quick feedback from teachers & children in the school & visitors in TAKS center
- Feedback on Global Handwashing Day event.

NOT DONE

Needs of Design & Technical improvement

- Water splash through the air hole
- Heavy weight of the tap
- Pushing rod can be stolen easily
- Leaking
- Size of the water hole and length of the water flow time.
- Location adjustment of the tap on a tank
- Needs of different types of design (e.g. Unibody vs. separated tap)
- First users don't know to use the tap properly

More prototyping

- Needs of comprehensive physical prototypes with different materials and techniques outside of Uganda and in Uganda
- Responsible industrial designer or technical engineer is required
- Working with a prototyping company

Enough Lab Testing and Field testing

- Contamination lab test
- Water usage test (e.g. robotic test)
- Tap testing on different tanks.(material, size, shape, etc)
- Test plan with clear goals ; Field testing in schools close to
- UNICEF Innovation center or UNICEF offices (in order to check the tap easily and get fast feedback)
- Observing children's behavior with the tap

Wide range of users' feedback

- Getting enough user feedback and reflect it on the design of the tap

step seven*

business analysis

CHECKLIST

- Business human resource
- Budget allocation for business analysis
- Iteration of business calculations and research based on the concept development phase
- Decision on product choice and manufacturing options based on business tools
- Outline pre-implementation business plan

*Steps 6 & 7 are parallel

concept selection > **business analysis** > piloting
development & testing



DESCRIPTION

This phase will give insights for the concept development phase in terms of financial viability and reducing the risk of financial failure in the implementation phase.



GOAL

- To make accurate calculations for different product concepts
- To be able to evaluate product concepts from the financial aspects



TOOLS

- Cost analysis
- Market research study
- Value framework
- Unit lifetime cost
- Consideration list
- Business model canvas
- ROI vs. ROI



OUTCOME

The best possible mix of product attributes in a cost efficient manner, in order to come up with a product with a higher value compared to the standard offer on the market.



COMPETENCE

Since this phase is strongly connected to the concept development phase it is recommended that a business resource joins the design team. Currently UNICEF has a broad understanding of its business processes. Therefore it might be beneficial if the resource comes from inside UNICEF.



RESOURCES

- Personnel skilled in business analysis and UNICEF business processes working as a member of the concept development team
- Budget allocated to the business analysis
- UNICEF project coordinator
- Time estimation: 2 - 12 months (depending the concept development phase)

#TOOLS

COST ANALYSIS

This tool can be used to maximise the impact of the products with the given budget.

Steps:

1. Overall budget (how much money there is available?)
2. Cost structure of the product concepts including materials, manufacturing, distribution, labour costs, maintenance costs

RETURN ON INNOVATION

ROI = (Future savings* - cost) / cost

* *future savings: maintenance, ownership creation & campaigns costs, etc.*

VALUE FRAMEWORK

Value framework can be used to compare product concepts in terms of values offered and help to make the best decision along with the financial figures. (e.g. one matrix/concept & ticking the values met).

	Economy	Psychology	Sociology	Ecology
Society	Wealth	Wellbeing	Meaningful Life	Livability
Eco system	Stability	Shared drivers	Raciprocity	Sustainability
Org.	Profit	Core values	Social Responsibility	Effectiveness
User	Value for money	Happiness	Belonging	Footprint

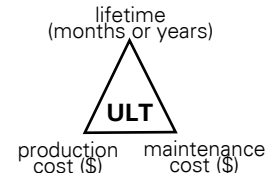
CONSIDERATION LIST

- Market Research Study: Market demographics, Disposable income, Switching cost, Shopping basket
- Mass manufacturing versus microfactories
- Distribution network (The 'last mile' local distribution)
- Product cost bundle with services such as implementation, distribution, technical assistance, maintenance, financing and monitoring
- Sunk costs such as end user education on how to use the product and/or ownership creation
- Long term market potential on the secondary markets
- SWOT analysis about the product
- Alignment of business models between UNICEF and manufacturers.
- Partnerships for optimisation and economics of scale as well as getting access to particular resources
- Purchasing power of UNICEF against market price
- Patents, IP rights and Memorandum of Understanding (MOU)
- Ownership creation (selling price), free aid vs. percentage of price paid
- Long term vs. short term investment

UNIT LIFE TIME COST

Unit lifetime cost = $\frac{\text{Total cost (\$)}}{\text{Life time}}$

Total cost = Production cost + Maintenance cost





EXECUTION 40%

DONE

Clear goal for Production

- Focuses on small scale/ local production, local materials, local manpower
- Trials to utilize vocational schools as local manufactures
- Believes in local production which brings peoples' engagement and ownership

Budget management

- The head of the project is responsible for monitoring the budget, review better prices, etc
- Categorize based on workshop materials, prototype materials, salaries for human resources (refused to have volunteers)

Rough Cost Estimation of the Aluminum Elephant tap

- Total Cost of one tap in Gulu ; 29,500 UGX
- Total Cost of one tap in Kampala : 70,000 UGX

Market research

- Low material availability in Gulu
- Difficulties in finding proper machines and skillful workers
- Difficulties in finding reliable suppliers and manufacturers
- Barrier of cash flow for the team because of cash availability in ATM

Limitations in Business Analysis

- Not enough allocation of human resources

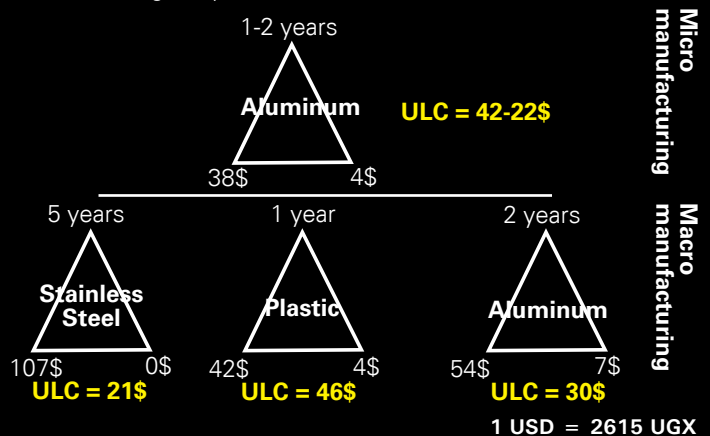
NOT DONE

Broad Business Analysis

- Responsible Business analysis person in the team
- List of feasible manufacture, suppliers in different scales
- Need of Comparison of Micro Production vs. Mass production (e.g. Vocational school vs. Crestanks)
- Specific cost calculation of each prototype production
- Production Cost Analysis of different materials (e.g. stainless steel, aluminum, plastic)
- Considerations list (see tools)
- Market research study (see tools)
- Cost analysis (see tools)
- Value framework (see tools)

UNIT LIFETIME COST COMPARISON FOR THE TAP

(Including the price of the tank)



step eight

piloting

CHECKLIST

- Different regions across the country selected for pilot testing
- Monitoring plan in place
- Adoption rate across regions
- Decision either to move into implementation phase, to kill the project or to redevelop the product
- Preliminary agreement with a manufacturing company
- Proven benefits are communicated to the decision makers



DESCRIPTION

In this phase the final product concept that has been developed through previous phases will be tested across several regions in real usage situation to ensure that the adoption rate is high enough in the pilot region spots to start implementation around them.



GOAL

- To ensure that the adoption rate is equally distributed across regions
- To test the manufacturing process
- To raise the product awareness among end users
- To persuade decision makers (UNICEF, government, potential partners)



TOOLS

- Pilot plan
- Adoption rate
- Manufacturing test run
- Social return on investment (SROI)
- Cost-effectiveness analysis (CEA)
- Cost Utility Analysis (CUA)



OUTCOME

- Highly adopted product that is ready for manufacturing and implementation
- Redevelopment of the product (going back to concept development phase) or killed project if the adoption rate is not high enough



COMPETENCE

UNICEF has wide distribution of regional offices that have expertise and resources to conduct the piloting phase. The necessary tools needed for monitoring the adoption rate are recommended to be designed together with the concept development team.



RESOURCES

- Concept development team
- UNICEF regional offices
- Partner NGOs from other geographical regions
- Budget allocated to prototypes or manufacturing test run, concept development team, transportation and monitoring
- UNICEF project coordinator
- Time estimation: 3 - 6 months (depending on the product)
- UNICEF decision maker
- Manufacturer for pilot testing (prototyping company or preliminary producer depending on the nature of the product)

8# TOOLS

PILOT PLAN

- Hypothesis
- What to expect?
- What might be the unexpected results?
- What, where, when, how many, how long, how to distribute, how to monitor and collect data, how to analyse data?

MANUFACTURING TEST RUN

- In ideal situation the products delivered in the field for pilot testing would be manufactured by the same manufacturer as the final products in the implementation phase.
- That might not be worthwhile in all cases (e.g. if the final product production requires costly moulds)

ADOPTATION RATE

- Create a monitoring system to measure the adoption
- Gather data from all pilot regions
- Analyse data by comparing the rates from regions
- Reflect on results

SOCIAL RETURN ON INVESTMENT (SROI)

Metric used to quantify the positive impacts institutions generate per \$ invested over time. It subtracts the outcomes that would have occurred anyway and calculates the returns to society. Investment could finance number of microenterprises and small businesses and create number of jobs.

Microenterprises = (Dollar amount of investment) x (Number of microenterprises financed/Dollars lent to microenterprises during the last fiscal year) x (Investment Term)

Jobs Created = (Dollar amount of investment) / (Number of microenterprises jobs created/Dollars lent to microenterprises during the last fiscal year) x (Investment Term)

COST UTILITY ANALYSIS (CUA)

Purpose is to estimate the ratio between the cost of a health-related intervention and the benefit it produces in terms of the number of years lived in full health by the beneficiaries. Cost is measured in monetary units. It is usually expressed in quality-adjusted life years (QALYs).

COST EFFECTIVENESS ANALYSIS (CEA)

Compares the relative costs and outcomes (effects) of two or more courses of action.

$CEA = (\text{gain in health from a measure}^*) / (\text{cost associated with the health gain})$

*e.g. years of life, premature births averted, diarrhoea mortality rates averted



NOT DONE

Pilot Test Plan

- Goal: Whether the adoption rate is equally distributed across regions
- Area: Schools in 3 different regions
- Duration: Minimum 1 term (3 months) - Maximum 2 terms (6 months)
- Number of schools: 8 type of Schools* x 3 regions = 24 schools
- (*8 type of schools; Primary (private, public, boarding, non-boarding) and secondary (private, public, boarding, non-boarding))
- Number of taps: 2-3 taps X 24 schools = 48~72 taps
- Expected Results
 - Results to bring government on board to approve programs & advertise the concept
 - Success rate in different region in Uganda, but also opportunity for other African countries in the future

Collecting Adoption Rate Through Monitoring

- Monitoring plan: Monitoring network with other aid agencies such as World Bank (World bank is interested in Hand-washing units), Uganda scouts.
- Means: Checklist form for head teachers, interviewing students and teachers, Observation, random visits (without notice)

Final Manufacturing Test Run

- Quality check: whether the quality of the tap is the same for all units produced
- Capacity of manufacturing

Social Return on Innovation

- e.g: if micro manufacturing would be chosen as a manufacturing option then a return to society could be calculated in terms of micro-companies and jobs created

Cost Effectiveness Analysis

- Should the Elephant Tap be piloted, and as result a number of certain diseases decrease in a particular area, such a gain could be calculated by applying the CEA ratio (e.g no of lives saved)

step nine

implementation

CHECKLIST

- Implementation plan in place
- Monitoring plan in place
- UNICEF decision maker
- Manufacturer selected
- Distributor selected
- Updated business analysis
- Budget allocation and approval for production
- Legal issues in place
- Implementation plan executed
- Products distributed
- Product impact assessed



DESCRIPTION

In this phase an implementation plan is first drafted in order to throw the product into manufacturing and distribution. In addition post-delivery monitoring is put in place in order to provide data of the real impact on the long term.



GOAL

- Products manufactured
- Products distributed on the targeted areas
- Monitor the impact
- Evaluate the process



TOOLS

- Implementation plan
- Economic impact analysis
- Project evaluation plan



OUTCOME

- Products distributed on the field
- Product impact data
- Evaluation report



COMPETENCE

Manufacturing and distribution are recommended to be outsourced, because UNICEF does not have production capabilities nor designated distribution resources for such purposes. It is preferred that the distribution costs and associated risks are handed over to a third party (e.g manufacturer, local districts or some other service provider).



RESOURCES

- UNICEF personnel with negotiation and decision making power
- Personnel with skills in business analysis
- Personnel with skills in legal issues
- Product manufacturer
- Distributor
- Budget allocated to production, distribution and monitoring
- Time estimation: 1 - 12 months (depending on the product and allocated resources)

e# TOOLS

IMPLEMENTATION PLAN

- Consider: timeline, schedule (e.g. Gantt chart), roles, decision making, target areas (or markets)
- Define key processes for the action plan
- Identify and decide on potential partnerships (manufacturers, distributors and/or other collaborators)
- To agree on an implementation approach (e.g. start from the pilot region spot)
- Quantify the actual resources
- Identify risk
- Update previous business calculations with final inputs
- Consider micro-level implementation planning and budgeting
- Ensure implementation budget is approved
- Settlement of legal issues
- Design monitoring processes

ECONOMIC IMPACT ANALYSIS (EIA)

Examines the effect of a policy, program, project, activity or event on the economy of a given area. The area can range from a neighbourhood to the entire globe. Economic impact is usually measured in terms of changes in economic growth (output or value added) and associated changes in jobs (employment), income (wages) and health (quality of life). The judgments fall into **four main categories**:

- 1. Strategic fit** (how well the proposed innovation meets the needs of the health service)
- 2. Potential health outcomes** (including likely impact on quality-adjusted life years and end user satisfaction)
- 3. Cost savings** and economic effects
- 4. Risks** associated with implementation

PROJECT EVALUATION PLAN

- 1.** Identify what are you evaluating and why
- 2.** Form evaluation questions based on focus areas
- 3.** Identify the indicators and data sources
- 4.** Assign responsibility for data collection and timeline
- 5.** Identify who will evaluate the data, how it will be reported and when
- 6.** Draft the evaluation report

	Evaluation Questions
Process	- How well was the project designed and implemented (i.e. its quality)
Outcome	- To what extent did the project meet the overall needs?
Learnings	- What worked and what did not? - What were unintended consequences?
Investment	- Was the project cost effective?
What Next	- Can the project be scaled up? - Is the change self-sustaining?
Effectiveness	- To what extent was did the engagement method encourage the target group to take part in the project?
Relevance	- To what extent is the intervention goal in line with the needs and priorities of the community?
Outcome	- To what extent has the project led to more sustainable behaviours in the target group? - Were there any other unintended positive or negative outcomes from the project?
Sustainability	- To what extent has the project led to the long-term behaviour change?



NOT DONE

Implementation Plan

- Area: Ugandan schools
- Process: Slowly widen implementation area based on the pilot testing regional spots
- Distribution : A company manufacturing the elephant tap is in charge of distributing all over the Uganda
- Expected Results
 - Success rate in Uganda
 - Giving a possible opportunity for implementation in other African countries

Monitoring and Inspecting

- Utilizing current government offices' inspecting system such as Ministry of Water, Ministry of Health, Ministry of Education, and districts of Water, Health and Education (however, the system needs to be improved otherwise monitoring step will fail)
- Networking with other aid agencies such as World vision and Uganda Scouts (Uganda Scouts has great network systems and conducts surveys every term regarding hygiene and sanitation in schools)
- Clear monitoring schedules during every term
- Means : Checklist form for inspectors, interview students and teachers, observation, random inspection visit (without notice).

Economic Impact Analysis

- Done after implementation (e.g. 1 year) to assess economic growth and/or health improvement

Project Evaluation Plan

UNICEF regional offices should be in charge of data collection & clear evaluation guideline is required

	Evaluation Questions
Process	- How well was the project designed and implemented (i.e. its quality)
Outcome	- To what extent did the project meet the overall needs?
Learnings	- What worked and what did not? - What were unintended consequences?
Investment	- Was the elephant tap cost effective?
What Next	- Can the elephant tap be scaled up? - Is the change self-sustaining or does it require continued intervention?
Effectiveness	- To what extent was did the engagement method encourage the students to take part in the project?
Relevance	- To what extent is the intervention goal in line with the needs and priorities of the community?
Outcome	- To what extent has the project led to more sustainable behaviours in the target group? - Were there any other unintended positive or negative outcomes from the project?
Sustainability	- To what extent has the project led to the long-term behaviour change?

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