

HACKATHON: Youth hacks for DRR



November 29, 2019

Venue

Library Hall, Pulchowk Campus, Center for Disaster Studies, Institute of Engineering, Tribhuvan University, Lalitpur, Nepal

Date and Time

Friday, November 29, 2019
12:00 PM Onwards

Organizer

UINSPIRE Nepal

Co-organizers

Center for Disaster Studies (CDS), Institute of Engineering, Tribhuvan University
Himalayan Risk Research Institute (HRI), Bhaktapur, Nepal
Institute of Himalayan Risk Reduction (IHRR), Lalitpur, Nepal

Supported by

National Technical Committee, Asian Civil Engineering Coordination Committee (ACECC)
Nepal Engineers' Association (NEA), Province 3
Free Students' Union (FSU), Pulchowk Campus, Lalitpur Nepal

Media Partner

Engineer Khabar (EngineerKhabar.com)

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Country Lead

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CONCEPT

Hackathon is a type of experience sharing and idea generating workshop. Within a workshop, the professionals from different fields will share their experiences and problems. The experiences and problems will be analyzed by the participants and the potential solutions will be suggested by different groups formed among the participants. Similarly, the modern innovative but raw ideas of youths are structured by the professionals.

Thousands of young professionals are working for hundreds of national and international level social organizations are working in the field of disaster risk reduction (DRR) in Nepal. However, the network of such youth has not been formed yet. Because of the lack of network, there is a difficulty in disseminating the learning from one project among other projects. Hence, the similar problems are repeated in many similar projects while similar learning is common in different project.

Youth Hacks for DRR, a hackathon is expected to bring young professionals working in the field of DRR to work together and formulate new coordination mechanisms between them and their organizations.

THEMES



Early warning system



Urban disaster risk reduction



Youths capacity development



National youths initiative for DRR



Disaster information and management system

Five themes were assigned for the hackathon which were related to three rooms of UINSPIRE (innovation room, advocacy room, knowledge room).

PROGRAM MODALITY

Half day program was organized in Pulchowk campus periphery which is one of the best technical knowledge hub in the country. The attainable objectives were set for the program. The program was led by the youths and young professionals in the field of disaster risk reduction (DRR). The sharing and learning platform was developed during the program. The sharing was done through the presentation, experience sharing and the spider-web game. The aim of presentation and experience sharing is to inspire youth participants while the aim of spider-web game was to make them realize the responsibilities of different stakeholders in disaster risk reduction.

PARTICIPANTS

Total number of participants: 29

Professions of participant:

- Professionals
- Young graduates
- Students
- Academicians

EMMERGED PROJECT CONCEPTS

1. SMART PLASTIC WASTE MANAGEMENT

BACKGROUND

- GLOBAL PRODUCTION 370 M. TONNES
- GLOBAL WASTE 275 M. TONNES
- PRODUCTION IN KTM 47 TONNES
- USE IN KTM 24 PLASTIC BAGS
- LIFE: 500YR

PROBLEM IDENTIFICATION

- INCREASE IN FERTILITY OF SOIL
- ADVERSE EFFECT IN AQUATIC LIFE
- AESTHETICALLY UNPLEASING
- TAKES TIME TO DEGRADE
- BURNING PLASTICS NOT BEING
- SOIL OF ERADICATION BUT HARMS AIR PURITY

MARKET SEGMENT

- URBAN (KATHMANDU)
- CA
- KHALI SISTI, JOKO RECYCLERS

OBJECTIVES

- EMPLOYMENT (UNDER PRIVILEGED)
- YOUTH INVOLVEMENT
- SOCIAL CREDIT
- SOCIAL INVOLVEMENT

ROADMAP

- DATA COLLECTION
- ↓
- SOCIAL TECHNICAL ECONOMICAL PLANNING
- ↓
- SEED INVESTMENT COLLECTION
- ↓
- MACHINE PROTOTYPE (TEST SITES)
- ↓
- DATA ANALYSIS & TEST OF HYPOTHESIS
- ↓
- FINAL PLAN

SCALING

IMPLEMENTATION

ANGEL INVESTMENT

SOLN/PRODUCT

- LOW COST IOT BASED SMART GARBAGE COLLECTOR.
- DIGITAL PAYMENT PLATFORM ON CREDIT ACCUMULATION BASIS.
- LOCALLY COLLECTED WASTE IS USED IN LOCAL COMMUNITY. (PLASTIC CAN BE USED WITH BITUMENS FOR BLACK TOPPED ROADS IN THE COMMUNITY THROUGH COMMUNITY PARTNERSHIPS)
- HEALTHY INTER-COMMUNITY COMPETITION AMONG YOUTHS PROMOTING PROPER WASTE MANAGEMENT CULTURE
- RECYCLED PRO-WASTE CAN BE USED TO MAKE PEPES, HEAT INSULATORS, ROADS.

IMPLEMENTATION PLAN

- Investment
 - Crowdfunding
 - VC
 - Investment
- Marketing
 - Visual marketing
 - Behavioral Marketing
 - FB Page Boosting
 - Social credit and awareness
- Revenue Generation
 - In-bagge collection sales
 - Sell of in-bagges
 - Ads on Application

CROSS CUTTING ISSUES

- Environmental Issue
- Economic Issue
- Health Sector Issue

INFOGRAPHICS

RECYCLE ROAD

CENTRAL COLLECTOR

WASTE COLLECTOR

UIC

YG

PRODUCTS

INTERFACE

APP SCREEN

YOUTH

CREDIT

2. URBAN FIRE REDUCTION

Urban Fire Reduction

Team Name - Team UPAYA
Members name - Nishal Chaudhary, Anagya Das G.C, Anur Sapkota, Anshu Mahapatra

Background

Urban fire is one of the burning problems in the present context. Fire has a severe effect on those physical structures and nature. It has drawn attention among all societies and over countries. We have been hearing about fire in various places in urban areas. Recently, we have heard about fire in #SUBISU. So we are preparing an idea for urban fire reduction.

Problem Identification

We have short-listed some of the problems causing fire in the urban regions. Primarily, there are numerous petrol stations in the city areas. Also, unplanned electrical plans, burning of plastic wastes, gas leaks and improper ventilation results in urban fire. Increasing densification of buildings, narrow roads and lack of open spaces also adds further problems.

Current Activity and Objectives

In the present context, there are very few fire extinguisher in a petrol station.

Idea Infographics

Unplanned petrol stations lacking safety policy

Causes harm to lives and physical property

Underground wiring systems

Proper petroleum tanks placement

Fire fighting trainings

Proper policy

Safety Measures

Problems Solution

- Underground wiring system
- Fire fighting workshops/trainings in localities/schools
- Proper petroleum tanks placement.
- Provision of chemical foam in petrol stations.
- A sufficient fire extinguisher should be available in petrol station.

Implementation plan

- Safety plans for underground wiring systems and public awareness.
- Skilled manpower for extinguishing fire should be trained.
- Area with minimum risks should be allocated for petrol stations.
- There should be proper policy regarding safety measures.

3. EARTHQUAKE EARLY WARNING SYSTEM

TEAM NAME: QUARE
MEMBER NAME: Anshu Subedi, Ashutosh Nepal, Prayush Paudyal, Anshu Raj Shrestha, Sagar Pantaleon

CELL PHONE E EWS

(Earthquake Early Warning System)

BACKGROUND

- Nepal, a Himalayan country is situated in a seismic fault zones.
- Possibility of great earthquakes may occur at any time though not frequent.
- Occurrence of many devastating earthquakes leading to destruction of many lives and properties.
- The period between rupture and re-occur may be used with great advantage to minimize the loss.
- Accelerometer already provided in the mobile can be provided with great advantage for early warning.

PROBLEM IDENTIFICATION

- Loss of valuable life and property.
- Use of high cost sensors is possible but not economic.
- Hence need of economic, easy and robust system.

CURRENT ACTIVITY AND OBJECTIVES

- Implementation of earthquake sensors, which came to be costly.
- Required number of sensors is minimum of three and has sophisticated operation.
- These system were than can information distribution centre robust (10m).
- To reduce cost as small earthquake sensors.
- To improve the as 2-5 from earthquake sensors.
- To enhance information for getting.
- To find alternative sophisticated EQ sensor.

IDEA INFOGRAPHICS

Development of algorithm
 ↓
 Integration into mobile app
 ↓
 Publicity of mobile app
 ↓
 Central server
 ↓
 Development of alert transmission

Future
 - integration with national grid of seismometers
 - Exponentially better signal filters being developed each year due to AI boom.

SOLUTION / PRODUCT

- Early Warning System
- A mobile app
- Mobile seismometer from accelerometer
- Accelerometer Frequency Separator
- 6 seconds to develop and receive.

Sensor
 10 m x 2mm
 high quality sensors in every pocket

LEAD TIME

BENEFITS

- MASSIVE CAPITAL & OLM CUTTING
- IMMEDIATE EXECUTION
- LARGE AREA COVERAGE

IMPLEMENTATION PLAN

- Bettering of filter & attenuation of waves in accelerometer.
- Machine learning dev for differentiation and integration in mobile app.
- Development of mobile app.
- Promotion & marketing of mobile application.
- Construction of central server.
- Alert propagation equipment & collaboration with mobile networks and government.
- Social awareness to locals & authority.

CROSS CUTTING ISSUES

- Cost
- Better Septet
- Low quality
- Low unlimited plans and less wifi usage due to relatively social standing.
- Concentrated population group.

RESEARCH ECONOMY
 CAPABILITY

INFOGRAPHICS

4. YOUTH NETWORK FOR DISASTER INFORMATION AND MANAGEMENT SYSTEM

YOUTH NETWORK FOR DISASTER INFORMATION & MANAGEMENT SYSTEM
Team Name: B.S.M.S.
Member Name: Lavata, Padma, Anmol, Rajani, Satyam

Youth Network

BACKGROUND

Nepal lies in an area prone to disaster. However, the country is ill-prepared to deal with them. The Gorkha Earthquake, 2015 showed us how ineffective disaster information and management system affects the response provided. A robust D.I.M.M can greatly reduce the loss incurred due to a hazard.

PROBLEM IDENTIFICATION

- Lack of efficient flow of authentic information.
- Lack of information collection center in local level.
- Inadequate focus on risk assessment.
- Inadequate awareness about the existing information sources.

CURRENT ACTIVITIES AND OBJECTIVES

- Existing information sources about disaster.
- B.H.M → River Watch, Rain Watch.
- Hazard, Vulnerability Map → Govt. (National Disaster Risk Reduction & Management Authority).
- Organizations like ICIMOB, JICA, JICA.
- Objectives: Mobilization of youth for the utilization and development of existing information related to disaster to facilitate disaster risk reduction.

IDEA INFOGRAPHICS

Collection of pre-existing data on disaster event (e.g. hospital, schools, health security office)
 ↓
 Preparation of disaster prone zone map (e.g. earthquake, fire, flood, landslide, etc.)
 ↓
 Supervision and Monitoring

SOLUTIONS

- Establishment of information center for collection of information related to HR (e.g. risk area, nearest hospitals, open spaces etc.) in local level.
- Increasing awareness in youth about the application of softwares such as Open Street Maps.
- Formation of a robust youth network in local level for effective dissemination of relevant information.

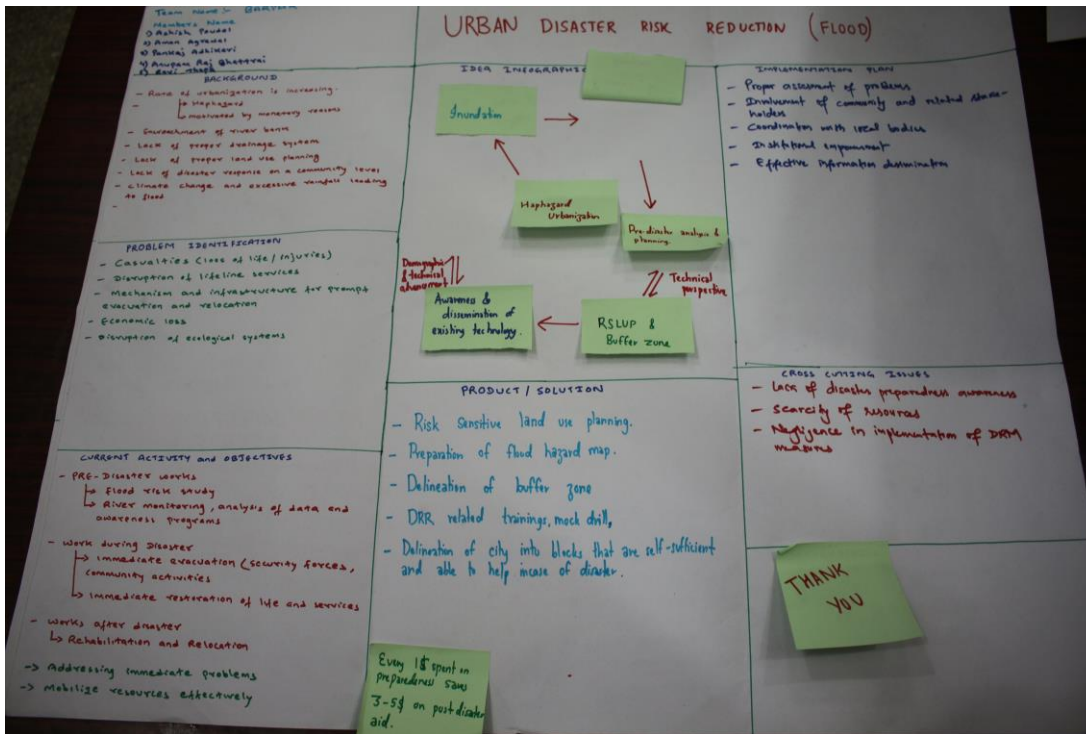
IMPLEMENTATION PLAN

- Formation of youth network within local bodies.
- Information sharing sessions with high level authority of the community.
- Co-ordination of formed youth network with local bodies.
- Capacity build-up of youth network and community.
- Outsourcing of funding for establishment of information centre and workshop with the help of local body.

Cross-Cutting Issues

- Sustainability of the Information Centre.
- Supervision and Commitment from local body for information centre.
- Inadequate knowledge about disaster among high level.

5. URBAN DISASTER RISK REDUCTION (FLOOD)



6. YOUTH CAPACITY DEVELOPMENT



OUTPUTS

Program outputs:

- **Knowledge and experience platform:** Youths shared about modern technology and possible integration to different fields based on their knowledge. Young professionals from various organizations; research institutes, non-government organizations, universities, etc. shared their experience and lesson learned during their youth age and their evolution as a professional and at the end structured the innovative ideas of youths to form a feasible projects.
- **Bridging of youths and young professionals:** Youths got an opportunity to learn from the young professionals for collaborating with different stakeholder to shape their innovative ideas.
- Youths learn to collaborate with other youths,
- Identify problems and suggest solutions,
- Identify potential youth-led projects for Nepal,
- Youth's commitment for further collaborations, and
- Development of six project concepts

Reference links

Video highlights: https://youtu.be/3_64y-07J_g

Photo Highlights

