Monsoon Pilot 2024

Digital & Blockchain Technologies in Anticipatory Action

DANISH RED CROSS

Nepal Red Cross Society

RUMSAN

Finnish Red Cross

IFRC

Use of digital and blockchain technologies in Anticipatory Action
2024 Monsoon Pilot Program

Early Action Activation 2024

On 11th September, readiness stage was activated for Babai and Karnali River Basin (Bardiya and Kailali district) with a two-day window leading to a forecasted flood. This triggered the early actions to be taken during the readiness stage in both districts.

On 13th September, based on the forecast analysis from multiple sources and ground data observations, the risk of flooding and its impact on downstream areas of the Babai River Basin was considered high. For the Karnali River Basin, the risk was lower.

At 10 AM, an emergency meeting comprising Danish Red Cross (DRC), NRCS, Finnish Red Cross (FRC), IFRC and the Red Cross Climate Centre validated that the thresholds for activation stage had been met. This information was relayed to the field (NRCS and municipal authorities).

At 11 AM, the Local Disaster Management Committee (LDMC), a decision-making body at the municipal level held an emergency meeting where the decision to take early actions were taken. Immediate early actions were taken including dissemination of early warning messages through multiple mediums including multi-hazard early warning sirens, official Facebook pages, mass sms, Interactive voice response (IVR), email etc. The municipalities also issued formal letters asking stakeholders and the community to take early actions as per the Early Action Framework (EAF).

At 3 PM, the first lot of cash transferred was transferred to 100 households. By 4 PM, majority of the cash had been transferred to persons with disabilities living in the flood exposed area.

For detail on the activation, please see the **report** here.

Piloting Rahat application for AA activation 2024

DRC, NRCS, and Rumsan partnered to develop an application with the aim of increasing efficiency, transparency, and accountability during the activation period, a very short period during which a lot of coordination and communication is required amongst multiple stakeholders. This application named Rahat was tested during the September 2024 activation. A review workshop and key informant interviews were conducted to generate the lessons from the activation. The Rahat application had 4 different modules:

1. Household data management module:
   - Implement robust data privacy and protection measures to safeguard all collected information.
   - Data analysis and visualization to support efficient and data driven decision-making.

2. Multi-signatory trigger activation module:
   - Transparent and accountable decision-making backed by evidence.

3. Early action tracking and reporting module:
   - Streamlined early action processes to deliver timely actions within limited lead time.
   - Digital dashboard enabled real-time monitoring, promoting accountability across board.

4. Communication module:
   - Using multiple mediums of communication for consistent messaging.

1. Household data management module for secure data management.

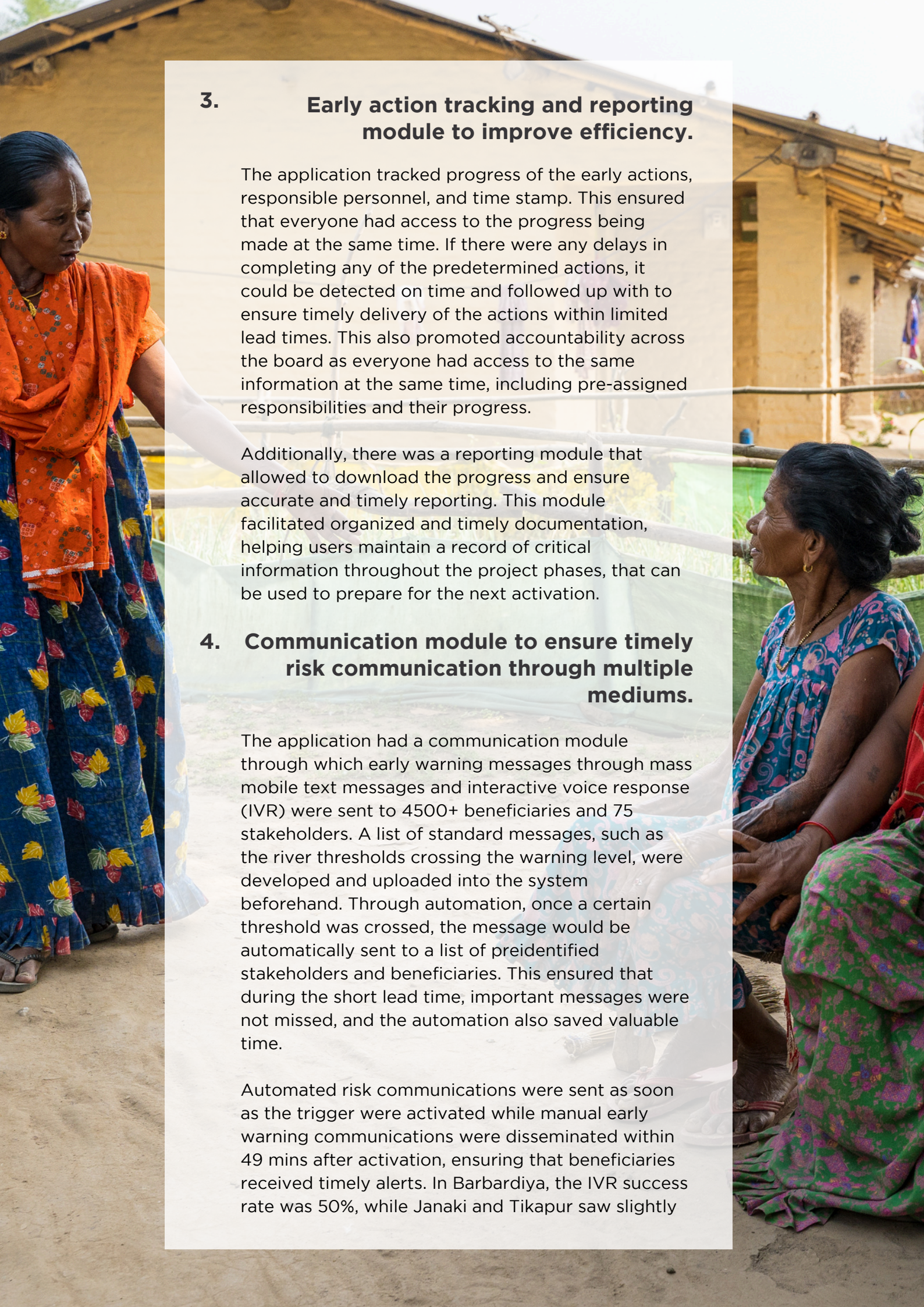
The application had a separate data management module which could only be accessed by the Information management officers. This way, the other users who could access the main dashboard could not access the Personal Identifiable Information of the household. This ensured data privacy of the households.

Household data collected in Kobo was moved to this module for processing and storage. This avoided the need to process data in excel sheet, avoiding creation of multiple excel versions and storage in multiple locations. The module eased data validation process by automating identification of data duplication and error based on predefined criteria.

2. Multi-signatory trigger activation module to ensure transparent and accountable decision making.

There are several layers within the Red Cross movement and the government involved in the decision making and its validation. A multi-signatory trigger activation module was set up where each actor had to sign off the role they were authorized with. The module also allowed to upload files (JPG, PNG etc.) to capture the decision minutes and official communication, photographs etc. as evidence of the decisions. This made the decision-making process transparent and made it possible to track the process in real-time. It also included timestamps to facilitate the tracking and evaluation of response efficiency.

A weather forecast information module was developed to help users access information from multiple sources from a single dashboard. The GLOFAS forecast data and DHM real-time data are already available on the platform. DHM 3-day bulletin and NCUM's data were qualitative and available in image/pdf forms, because of which integration was not possible. During the monsoon, as GLOFAS threshold set for readiness phase was met, the system automatically alerted the users. This then trigger the human decision-making process.



3. Early action tracking and reporting module to improve efficiency.

The application tracked progress of the early actions, responsible personnel, and time stamp. This ensured that everyone had access to the progress being made at the same time. If there were any delays in completing any of the predetermined actions, it could be detected on time and followed up with to ensure timely delivery of the actions within limited lead times. This also promoted accountability across the board as everyone had access to the same information at the same time, including pre-assigned responsibilities and their progress.

Additionally, there was a reporting module that allowed to download the progress and ensure accurate and timely reporting. This module facilitated organized and timely documentation, helping users maintain a record of critical information throughout the project phases, that can be used to prepare for the next activation.

4. Communication module to ensure timely risk communication through multiple mediums.

The application had a communication module through which early warning messages through mass mobile text messages and interactive voice response (IVR) were sent to 4500+ beneficiaries and 75 stakeholders. A list of standard messages, such as the river thresholds crossing the warning level, were developed and uploaded into the system beforehand. Through automation, once a certain threshold was crossed, the message would be automatically sent to a list of preidentified stakeholders and beneficiaries. This ensured that during the short lead time, important messages were not missed, and the automation also saved valuable time.

Automated risk communications were sent as soon as the trigger were activated while manual early warning communications were disseminated within 49 mins after activation, ensuring that beneficiaries received timely alerts. In Barbardiya, the IVR success rate was 50%, while Janaki and Tikapur saw slightly

higher success at 55%, indicating that over half of the target beneficiaries were able to access critical information through voice messaging.

On average, each IVR message was sent out for five attempts to successfully connect with beneficiaries. When connected, recipients listened to approximately 75% of the message content, suggesting that beneficiaries found the information relevant and stayed engaged for the majority of the message.

Meanwhile, stakeholders received early warnings within 48 mins post-trigger, allowing them to make rapid decisions and preparations. Stakeholders demonstrated a high IVR success rate of 90%, suggesting strong engagement and attentiveness to EW communications. Similar to beneficiaries, stakeholders required an average of five IVR attempts for successful delivery, with an engagement rate of 70-80% of the message content.

5. Map for data-driven decision-making.

The application also supported data visualization by overlaying maps with critical information such as flood-exposed areas, evacuation sites, safe routes, banks, etc. Although this module was not yet functional during the activation, it has been identified as having supported data-driven decision-making during the short time. For instance, it can help to identify which is the high-risk area and what would be the safest evacuation route they can take. Based on this, security and volunteers can be mobilized immediately for safe evacuations.

Good Practices

- **User centric design:** Involving stakeholders, particularly the Red Cross, in system development helped address their specific needs in anticipatory action (AA) projects, tailoring the tool for greater relevance and usability.

- **Partners' Coordination:** The openness to learning, adapting, and innovating from the team was important to collaborative for the fast-paced development of the dashboard and its utilization during the activation.

Benefits achieved through the Rahat platform

- The ability of Rahat to track and follow up on early action tasks allowed the project team to work more systematically and effectively.

- The system facilitated organized and essential documentation, helping users maintain a record of critical information throughout the project phases.

- Enhanced data analysis and visualization capabilities enabled the team to make quick, informed decisions during activations.

- The platform generated real-time automated reports, because of which the activation report could be generated and disseminated on time.

- Rahat dashboard allowed real-time activity tracking, fostering greater transparency and accountability among team members.

- Using multiple communication methods (SMS, IVR, door-to-door) ensured that messages reached more beneficiaries, verifying that they received early warnings and improving inclusivity.

- The system's ability to manage multiple activations in a short time, as well as its archival and recording functionalities, proved reliable and durable.

- The system supported seamless communication among team members, promoting situational awareness of ongoing activities and clarifying individual responsibilities.

Challenges

- The dashboard was actively used during activation phases only, leading to user unfamiliarity and unease in usage.

- Updating activities and uploading documents in real time was difficult, as the system is web-based, it would be impractical for the field team if the internet connectivity is disrupted.

- Delays occurred during data collection and validation due to unclear understanding of roles between Rumsan and NRCS.

- There was no centralized communication and documentation process, and thus multiple mediums were used, which led to users using multiple mediums, adding to the workload and delays.

Recommendations on the application

- Integrating the dashboard into NRCS' existing system and its use during the preparedness phase, and not just during readiness or activation, would increase familiarity and ease of use. Also, intensive training programs can be conducted to help users become proficient.
- Explore options for offline and mobile-compatible features to track the activities and triggers for easy data recording in emergency situations.
- Starting preparation immediately after the current monsoon season would improve readiness for subsequent monsoon periods.
- Develop TOR for data collection and validation and have a combined meeting before data collection starts if multiple parties are involved.
- Participants recommended applying the Rahat system to other monsoon-related hazards, such as cold waves, heatwaves, and droughts, as well as in regions prone to flash floods where early warning systems are established.
- A single, streamlined communication and documentation mechanism through the system would simplify data entry and reduce duplicative work for users, facilitating more consistent record-keeping and reporting.
- Enhance the user experience of the application by simplifying interfaces and providing more visualization options. This will ensure that users can easily navigate and operate the platform, increasing its effectiveness.
- Incorporate a color-coded system (Red, Yellow, Green) for trigger alerts, providing an immediate visual reference for the severity of the situation and required response actions. This intuitive approach will help users understand the urgency and type of response at a glance.
- Integration of cash delivery mechanisms (mobile wallet and banks) to track the timestamp of cash flow.
- API integration of weather forecast information from various sources to ease the access of information from a single dashboard.

Recommendations on sustainability

To sustain the lessons and gain from the testing of the Rahat Application, the following action points are recommended:

- The technology can be used in the overall disaster preparedness and response function such as cash or in-kind relief distribution, stakeholder coordination etc. Rahat's functionalities and its technology can be integrated with NRCS's Disaster Management Information System (DMIS) to ensure cohesive data flows, real-time information sharing, and coordinated responses. This integration would streamline processes and enhance data-driven decision-making while also sustaining and institutionalizing the technology and its utilization across the humanitarian work done by NRCS.

- Close collaboration with the NRCS Information Management Officer and Emergency Operation Center to oversee the information management aspects to develop the application and its integration within the NRCS DMIS.

Recommendations on scalability

Several advantages of using this technology have been highlighted above based on the testing of monsoon 2024. However, there are certain conditions under which users can reap the maximum benefits of block chain technology.

- In consortiums where multiple actors and multiple layers are involved in decision-making, there is an additional need to ensure transparency and accountability. Blockchain ensures that all changes and user actions are recorded immutably, promoting trust among consortium members. Shared ledgers streamline collaboration, minimizing conflicts and allocating resources effectively. By providing a unified database for all actors, blockchain eliminates redundant activities, saving time and resources.

- For the technology to be utilized and sustained, it should be built within the organization's existing systems rather than as a separate application. This technology can particularly be used by the government or humanitarian agencies for shared information management, enabling real-time access to verified data by multiple stakeholders. A unified database can drastically reduce response times and improve aid allocation.

- In case people do not have their legal documentation during a crisis or emergency, they will be deprived of life saving humanitarian assistances. Using block chain, unique recipients' identities can be generated based on their mobile phones, or if they do not have one, we can provide them with a unique digital ID card that acts as their identity. Use of blockchain ensures that these identities are secure, preventing misuse or duplication. This ensures that even undocumented individuals can access the aid they need, creating a more equitable distribution system.

@Peter Biro

Monsoon Pilot 2024

Digital & Blockchain Technologies in Anticipatory Action

DANISH RED CROSS

Nepal Red Cross Society

RUMSAN

Finnish Red Cross

IFRC