MÉDECINS SANS FRONTIERES · tembo · BEEKEE

MSF Tembo in a Box: Powered by Beekee

Ensuring Offline-first Access to MSF Tembo's E-learning Catalog: Pre-Scale Pilots in Central African Republic & South Sudan

Two pilot projects in Bangui (Central African Republic) and Ulang (South Sudan) were conducted by MSF Tembo using Beekee during February-June 2024, provided effective access to essential training to 254 new Tembo learners in regions with limited connectivity.

Introduction

Two pilots, conducted in 2024 by Médecins Sans Frontières *(Doctors without Borders)*, tackled the challenge of ensuring digital learning in low-resource, remote regions. Beekee's solutions provided 91 learners in Central African Republic and 163 in South Sudan access to Tembo (MSF's e-learning platform), for the first time, delivering essential medical training to local medical staff, helping them to save lives.

Objectives

- **Expand access to training** in remote regions with limited connectivity, ensure learning continuity.
- **Evaluate the efficacy** of offline digital learning tools in contexts with minimal technical support.
- **Equip users with the skills** to navigate and manage the learning platform independently.
- **Assess system performance, scalability, and reliability** in real-world, low-resource environments.
- **Gather empirical data and feedback** to inform further technological iterations and field deployments.

● Methodology

🔧 **Iterative System Configuration, Improvement, and Deployment:** A sequential hardware and software iterative approach was followed based on MSF Tembo team feedback from the field, iterating from Pilot 1 (Central African Republic) to Pilot 2 (South Sudan).

💬 **Technical Performance Assessment:** Quantitative metrics on system reliability, network existing conditions connectivity, and user capacity were recorded under constrained environmental conditions.

👁 **User Experience and Training:** Qualitative feedback from user training sessions was collected to assess system usability and inform iterative design improvements.

📈 **Hardware and Network Testing:** Stress tests on hardware and network components were conducted to evaluate system stability and scalability.

📊 **Data Usage and Cost Efficiency Analysis:** Data consumption and synchronization metrics were tracked to quantify potential cost savings compared to existing internet access.

● Results

*Comparison based on N=20 users, as 20 tablets were used to download the course content, which were then shared across the 254 users.
**Beekee data usage reflects the amount of data synchronized between the device and the cloud.

Total data usage Comparison:

Compares data consumption for N=20* users downloading a 756MB course via traditional internet versus the Beekee device.

15.2 GB

0.1 GB

Beekee**   Traditional
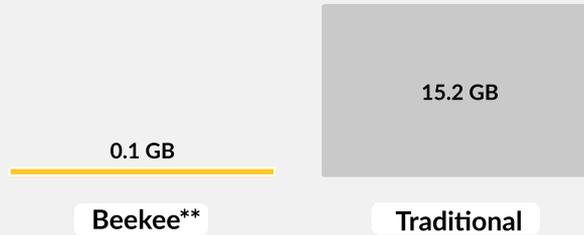
Data Efficiency Comparison

This graph shows the data usage for **N=20 users** downloading a **756MB course**. Traditional internet required **15.2GB**, while the Beekee device used just **0.1GB** for synchronization, *saving over 99% in data*. This demonstrates Beekee's efficiency in leveraging bandwidth usage in low-resource environments.

Total data cost and time Comparison:

Shows the cost and time differences for N=20* users downloading a 756MB course using traditional internet versus Beekee.

Beekee	Traditional
💲 €3.32 (sync costs) €0 (accessing courses)	💲 €480 +99.3%
🕐 <1 hour	🕐 203 hours +99.6%

Data Efficiency Comparison

This table compares the cost and time required for N=20 users downloading a 756MB course. Traditional internet costs were €480 and 203 hours, while Beekee's costs were €0 for immediate course delivery and €3.32 for sync (taking less than 1h) *saving over 99% in both cost and time*. Beekee's efficiency reduces both financial and time burdens in low-resource environments.

*"It's so motivating to know we're on such a **successful track - despite the challenges** of the location it's so good to know things went well!" (MSF Field Connectivity Staff)*
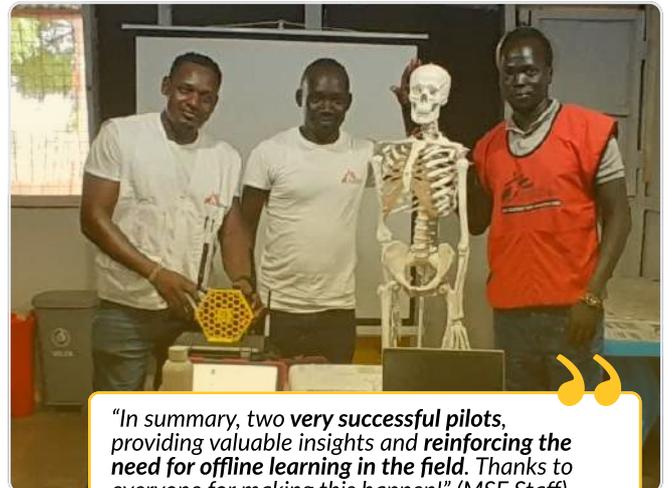
*"In summary, two **very successful pilots**, providing valuable insights and **reinforcing the need for offline learning in the field**. Thanks to everyone for making this happen!" (MSF Staff)*

● Conclusions

The pilots in were a sound success. They confirmed the value of offline-first learning in remote areas. Beekee was used to deliver training to 254 learners and increased participant's motivation to learn, reinforcing the for need this solution.

The pilots also provided insights into operational efficiency, scalability, and user engagement, showing the solution's promise for broader implementation. The success in overcoming logistical hurdles highlights the resilience and practicality of Beekee resource-limited environments, making it an essential tool for training in the field.

● Recommendations

- **Broad Implementation:** Proceed with scaffolded implementations of Beekee solutions in more low-resource contexts to ensure field accessibility offer to Tembo.

- **Service Plans:** Establish long-term service and maintenance plans for ensuring sustainability.

- **Data & Cost Analysis:** Regularly analyze data and assess cost-effectiveness with stakeholders.

- **System Integration:** Continue with large-scale integration with existing platforms and enhance hardware capabilities.