HEALTHCARE INNOVATION AND TECHNOLOGY LAB (HITLAB)

# Simplifying Breast Imaging for Patients & Providers with Send Mammogram

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## ABSTRACT

Send Mammogram offers a secure, digital-first platform designed to streamline the sharing and retrieval of prior mammograms—addressing long-standing inefficiencies in breast imaging workflows. The solution includes the MammoVault® App for patients and a Facility Platform for providers, replacing outdated methods like mailed CDs and fax requests. Comparing current and prior mammograms is essential for diagnostic accuracy and reducing false positives, yet outdated sharing methods—CDs, faxes, paper forms, and non-standardized processes—often delay access to prior images by weeks. These inefficiencies lead to higher recall rates, repeat imaging, increased costs, and unnecessary patient anxiety.

This heuristic evaluation, conducted by HITLAB, assessed the usability, functionality, and overall user experience of both components using Jakob Nielsen's 10 usability heuristics. The results indicate that Send Mammogram is a thoughtfully designed, patient-centered tool that enhances access, coordination, and visibility across breast imaging workflows.

Recommendations focus on strengthening system feedback, real-time data validation, and error prevention to further improve user trust and efficiency.

## OBJECTIVES

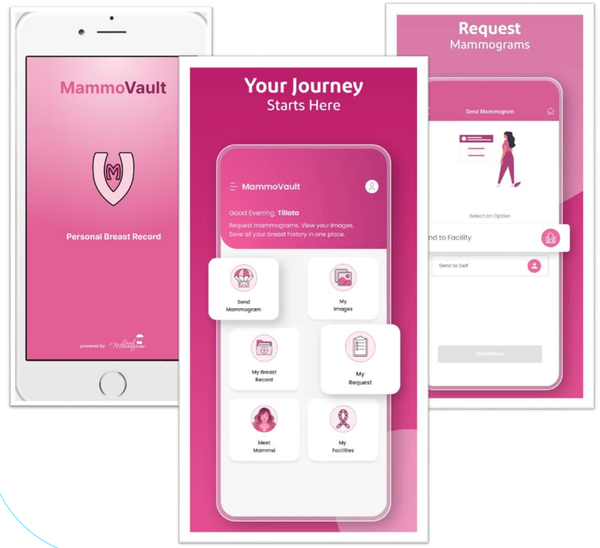
- Evaluate the usability and functionality of the Send Mammogram platform using established heuristic principles.
- Identify usability gaps and opportunities for design improvement.
- Provide actionable recommendations to enhance user experience for patients, providers, and facilities.

## STUDY METHODOLOGY

- ***Framework***: Jakob Nielsen's 10 Usability Heuristics
- ***Evaluation*** *Approach*: Expert inspection and heuristic evaluation
- ***Test Scenarios*** *(Personas Evaluated):* Patient requesting and tracking prior mammograms (42-year-old breast cancer patient); Facility managing incoming and outgoing requests (40-year-old facility manager); Radiologist accessing prior studies for interpretation (48-year-old breast imaging radiologist)

## The Send Mammogram Platform

**Send Mammogram addresses the "Hidden Delays" in Breast Cancer Care and other systemic gaps through a secure, digital-first, patient-centered solution.**




### MammoVault® App (for Patients):

- One-tap requests for prior images with digital authorization and e-signatures.
- Track requests in real time with confirmations, timestamps, and notifications.
- Store mammograms, ultrasounds, and MRIs in a private "My Breast Record" vault.
- Guided support via upcoming Mammsi™ AI assistant for easy onboarding.

### Facility Platform (for Providers):

- No more faxes or CDs—fully digital image exchange and tracking.
- HIPAA-compliant, encrypted sharing between facilities.
- Real-time dashboards, search, and automated audit trails.
- Reduced administrative burden—staff focus more on patients, not paperwork.

## RESULTS

### Strengths Identified

**Intuitive and Logical Navigation:**
Tasks such as requesting, tracking, and sharing prior mammograms follow a simple, stepwise flow that supports ease of learning.

**Patient Empowerment:**
Users can independently request prior images, e-sign consent forms, and access their complete breast health record securely.

**Transparency and Feedback:**
Real-time request tracking, confirmations, and timestamps enhance system visibility and reduce uncertainty.

**Consistency and Standardization:**
Unified layouts, familiar icons, and standardized digital forms ensure predictable user experience across app and web interfaces.

**Efficiency and Security:**
HIPAA-compliant architecture, automated image exchange, and centralized records reduce administrative load and safeguard patient data.

### Recommendations

- **Enhanced Real-Time Validation:** Input fields (address, date, file formats) require stronger data validation to prevent incomplete or incorrect entries.
- **Clearer Error Messaging:** Replace generic alerts with descriptive, solution-oriented feedback.
- **Improved Onboarding and Help:** Introduce tooltips, contextual tutorials, and quick-access support to guide new users.
- **Navigation Flexibility:** Add Back and Home buttons to key windows for smoother task reversal.
- **Facility Identification:** Visually distinguish registered from unregistered facilities to reduce confusion.

### Evaluation Ratings for Usability Heuristics (out of 5)

| | |
|---|---|
| *Visibility of System Status* 3 / 5 | Real-time updates and confirmation messages keep users informed, provide instant feedback. |
| *Match Between System & Real World* 4 / 5 | Familiar terms and workflows align with patients' mental models and make it intuitive. |
| *User Control & Freedom* 4 / 5 | Digital requests and centralized records empower patients with full control, flexibility, and autonomy. |
| *Consistency & Standards* 4 / 5 | Consistent layouts, standardized forms, and digital signatures ensure a uniform and seamless experience. |
| *Error Prevention* 3 / 5 | Secure cloud infrastructure and regulatory compliance ensure data protection. |
| *Recognition Rather Than Recall* 4 / 5 | Saved records and organized layouts enable users to recognize actions easily, minimizing the need for memory recall. |
| *Flexibility & Efficiency of Use* 3 / 5 | Centralized access and streamlined workflows let users manage requests and records efficiently without excessive navigation. |
| *Aesthetic & Minimalist Design* 4 / 5 | Clean, organized layouts enhance readability and usability. |
| *Help Users Recognize, Diagnose, Recover from Errors* 3 / 5 | Secure storage and organized records minimize errors and streamline sending or reviewing images. |
| *Help & Documentation* 3 / 5 | Mammsi™ guidance and step-by-step help can prevent errors and boost user confidence. |

## CONCLUSIONS

- HITLAB's evaluation found that Send Mammogram platform significantly advances the accessibility and coordination of breast imaging.
- Its secure digital platform empowers patients, reduces administrative burden, and improves diagnostic efficiency.
- Implementing the recommended refinements will further enhance usability, promote adoption, and strengthen Send Mammogram's role in modernizing breast health management.

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