IT.Salute Heuristic Evaluation

Evaluator: Lucia Castellucci – lucia.castellucci2@studio.unibo.it

Project Description

IT.Salute is a digital health system that enables secure telemedicine through video consultations and messaging. It maintains an electronic health record, storing prescriptions, reports, and clinical data in a structured repository. The platform integrates patient workflows by allowing controlled exchange of medical documents with healthcare providers.

Evaluation Execution

Evaluation Context

The evaluation was conducted on a mobile device (iPhone 13) in a quiet setting to ensure focused analysis.

Materials Used

- The IT. Salute application installed on the mobile device
- Nielsen's 10 usability heuristics as the evaluation framework
- A digital notebook (Word document) for recording observations
- A predefined list of representative tasks serving as evaluation scenarios

Evaluation Tasks

The following tasks were used to assess the system's usability:

- **Task 1 - User Registration:** Create a new account, fill in required personal details, and confirm registration
- **Task 2 - Appointment Booking:** Search for a healthcare professional and book an appointment for a medical visit
- **Task 3 - Document Upload:** Upload a medical document using the camera, document scanner, or gallery, and locate it within the application

List of Violations

[Issue #1]. [Heuristic #9] Help users recognize, diagnose, and recover from errors

- **Where:** Task 1 - User Registration, Step 1 (Personal Details page), Form submission

- **What:** When only mandatory fields (Name, Surname, Date of Birth) are filled and all privacy consents are accepted, clicking "Continue" does not display clear error messages. Instead, the page simply repositions to the form without indicating what is wrong or which fields are missing.
- **Why:** This violates the heuristic because error messages should be expressed in plain language, precisely indicate the problem, and constructively suggest a solution. Users are left confused about why they cannot proceed, forcing them to guess what additional information is required.
- **Severity:** 4 (Major usability problem - prevents users from completing registration)

[Issue #2]. [Heuristic #8] Aesthetic and minimalist design / [Heuristic #5] Error prevention

- **Where:** Task 1 - User Registration, Step 1 (Personal Details page), Form behavior
- **What:** The form behavior is inconsistent. When "Continue" is clicked without filling certain mandatory fields, users are repositioned to the form. However, when fields like "Address" are modified and then required fields are deleted or left empty, error validation messages appear. This inconsistency makes the form's requirements unclear.
- **Why:** This violates error prevention and consistency principles because users cannot predict which fields are required and when validation will occur. The system provides different feedback for similar actions, creating confusion about form requirements.
- **Severity:** 3 (Major usability problem - significantly impacts user experience and task completion)

[Issue #3]. [Heuristic #7] Flexibility and efficiency of use

- **Where:** Task 1 - User Registration, Step 1 (Personal Details page), Privacy consent checkboxes
- **What:** Every time "Continue" is clicked and an error occurs (missing required fields), all privacy consent checkboxes are automatically unchecked. Users must re-check all consents each time they attempt to proceed, even though the error is unrelated to the privacy consents.
- **Why:** This violates efficiency principles by forcing users to repeat unnecessary actions. The system should preserve user input when errors occur in unrelated fields. This creates frustration and wastes time, especially if users need multiple attempts to identify the missing required fields.
- **Severity:** 3 (Major usability problem - causes significant frustration and inefficiency)

[Issue #4]. [Heuristic #9] Help users recognize, diagnose, and recover from errors

- **Where:** Task 1 - User Registration, Step 2 (Access Credentials page), Phone number field
- **What:** When a phone number is entered in an incorrect format (e.g., missing a digit), the system does not provide validation or error messages. Users can proceed by clicking "Continue" even with an invalid phone number.

- **Why:** This violates error prevention and recovery principles because the system should validate input format in real-time or before submission. Allowing users to proceed with invalid data will likely cause problems later (e.g., inability to receive SMS verification, account recovery issues).
- **Severity:** 3 (Major usability problem - will cause issues with account functionality and verification)

[Issue #5]. [Heuristic #7] Flexibility and efficiency of use

- **Where:** Task 1 - User Registration, Step 2 (Access Credentials page), Password field
- **What:** The password field lacks integration with Apple Keychain (or system password managers) to save and autofill passwords. Users must manually manage their password without the convenience of native password management tools.
- **Why:** This violates flexibility and efficiency principles because modern users expect password manager integration for secure and convenient password storage. The absence of this feature forces users to manually copy, remember, or store passwords less securely.
- **Severity:** 2 (Minor usability problem - causes inconvenience but users can work around it)

[Issue #6]. [Heuristic #7] Flexibility and efficiency of use

- **Where:** Task 1 - User Registration, Step 3 (Account Verification page), Email verification code input
- **What:** When the verification code is received via email and an attempt is made to paste it into the verification field, the paste function is disabled. Users must manually type the code digit by digit.
- **Why:** This violates efficiency principles by forcing users to perform unnecessary manual work. Disabling paste functionality for verification codes is considered a dark pattern that reduces usability without meaningful security benefits. Users are more likely to make transcription errors when typing codes manually.
- **Severity:** 3 (Major usability problem - significantly reduces efficiency and increases error probability)

[Issue #7]. [Heuristic #6] Recognition rather than recall

- **Where:** Task 2 - Appointment Booking, Initial step, Search functionality
- **What:** To book an appointment, the interface requires clicking on "Contact our professionals" and performing a search that yields results. However, the system provides no suggestions, hints, or guidance on how to conduct a successful search. Users frequently get no results and are left without direction on how to modify their search.
- **Why:** This violates the recognition principle because users are forced to recall what terms might work rather than being guided through recognition-based options (e.g.,

categories, specialties, auto-suggestions). The system should minimize the user's memory load by providing helpful suggestions and examples.
- **Severity:** 4 (Major usability problem - prevents users from initiating the booking process)

[Issue #8]. [Heuristic #7] Flexibility and efficiency of use

- **Where:** Task 2 - Appointment Booking, Search results page
- **What:** From the search results list, there are shortcuts only to message professionals directly, but no shortcuts to book appointments. The interface requires clicking on an individual professional's profile before the "Book an appointment" button appears, adding unnecessary steps.
- **Why:** This violates efficiency principles by forcing users to take extra navigation steps to accomplish their primary goal (booking an appointment). Direct booking shortcuts from the search results would significantly accelerate task completion.
- **Severity:** 3 (Major usability problem - significantly reduces efficiency and adds friction to the booking process)

[Issue #9]. [Heuristic #8] Aesthetic and minimalist design

- **Where:** Task 2 - Appointment Booking, Search results page
- **What:** In the search results list, the first doctor result appears after scrolling past half the screen. There is excessive visual noise and irrelevant content before reaching the actual professionals.
- **Why:** This violates the minimalist design principle because the interface presents irrelevant or secondary information that obscures the primary content users are seeking. Users should be able to quickly scan and find relevant professionals without unnecessary scrolling.
- **Severity:** 3 (Major usability problem - wastes user time and creates frustration)

[Issue #10]. [Heuristic #8] Aesthetic and minimalist design

- **Where:** Task 2 - Appointment Booking, Professional profile page, Services selection
- **What:** The list of available services starts from the bottom of the screen, leaving half the screen empty above it. This creates an awkward layout that wastes screen space.
- **Why:** This violates aesthetic and minimalist design principles by inefficiently using screen real estate. Important content should be prominently displayed without unnecessary empty space that forces users to scroll or search for information.
- **Severity:** 2 (Minor usability problem - cosmetic issue that slightly impacts user experience)

[Issue #11]. [Heuristic #1] Visibility of system status

- **Where:** Task 2 - Appointment Booking, Throughout the booking flow

- **What:** During the booking process, there is a back button but no visible progress indicator showing which step the user is on or how many steps remain. Users lack feedback about their position in the booking workflow.
- **Why:** This violates the visibility of system status principle because users should always be informed about what is happening through appropriate feedback within a reasonable time. A progress indicator (e.g., "Step 2 of 5") would help users understand where they are in the process.
- **Severity:** 2 (Minor usability problem - causes mild disorientation but doesn't prevent task completion)

[Issue #12]. [Heuristic #5] Error prevention

- **Where:** Task 2 - Appointment Booking, Calendar/date selection page
- **What:** When the calendar opens, all dates have the same visual appearance, making them all look bookable. Only after selecting a date is it revealed whether it's actually available. If the date is unavailable, an error message appears. After this interaction, the calendar updates to show bookable vs. non-bookable dates with different visual indicators.
- **Why:** This violates error prevention principles because the system should prevent errors before they occur rather than allowing users to make invalid selections. Available and unavailable dates should be clearly distinguished from the first view of the calendar, eliminating the need for trial-and-error interaction.
- **Severity:** 3 (Major usability problem - forces users into a frustrating trial-and-error process)

[Issue #13]. [Heuristic #9] Help users recognize, diagnose, and recover from errors

- **Where:** Task 3 - Document Upload, Upload step (from camera/document/gallery)
- **What:** When an uploaded image does not contain a detectable document, the system produces no error messages. It simply fails to provide suggestions for title, date, or categorization, leaving users uncertain whether the upload succeeded or failed.
- **Why:** This violates error recovery principles because the system should clearly communicate when something goes wrong and why. Users are left confused about whether their document was successfully processed or if they need to take corrective action.
- **Severity:** 3 (Major usability problem - creates confusion about task success/failure)

[Issue #14]. [Heuristic #1] Visibility of system status

- **Where:** Task 3 - Document Upload, After successful upload
- **What:** After uploading a document, the system does not open or indicate the storage location of the document. Users are not informed where the document can be found and must search for it themselves.

- **Why:** This violates the visibility of system status principle because the system should provide clear feedback about the outcome of user actions. After a successful upload, users should either be taken directly to where the document is stored or receive a clear message indicating its location.
- **Severity:** 3 (Major usability problem - leaves users uncertain and forces unnecessary searching)

[Issue #15]. [Heuristic #2] Match between system and the real world

- **Where:** Task 3 - Document Upload, Navigation to stored documents
- **What:** The location where uploaded documents are stored is not intuitive. The section is called "Fascicolo" (Dossier/File) and uses an unclear icon (a card-like shape with a heart and two lines beneath to represent text) that doesn't clearly communicate its purpose.
- **Why:** This violates the match between system and real world principle because the interface should speak the users' language with familiar concepts. The term "Fascicolo" and the abstract icon do not clearly convey that this is where medical documents are stored, causing users to struggle finding their uploaded files.
- **Severity:** 3 (Major usability problem - significantly impacts discoverability of uploaded documents)

[Issue #16]. [Heuristic #3] User control and freedom

- **Where:** Task 3 - Document Upload, Document management in storage location
- **What:** Once a document is uploaded and stored, it cannot be modified or removed. There are no options to edit document details, replace the file, or delete it.
- **Why:** This violates user control and freedom principles because users should have the ability to undo or correct their actions. Mistakes happen during upload (wrong file, incorrect categorization), and users need the ability to manage their documents without being locked into permanent decisions.
- **Severity:** 4 (Major usability problem - removes essential user control and can lead to cluttered, incorrect document storage)

Summary and Recommendations

Heuristic Violation Distribution

Heuristic	# Violations
H1: Visibility of system status	2
H2: Match between system and the real world	1

Heuristic	# Violations
H3: User control and freedom	1
H4: Consistency and standards	0
H5: Error prevention	2
H6: Recognition rather than recall	1
H7: Flexibility and efficiency of use	4
H8: Aesthetic and minimalist design	3
H9: Help users recognize, diagnose, and recover from errors	3
H10: Help and documentation	0
HN: Non-heuristic issue	0

Overall Assessment

The heuristic evaluation revealed significant usability issues across all three tested tasks, with a total of 16 violations identified. The most prevalent problems relate to Flexibility and efficiency of use (H7) with 4 violations, followed by Aesthetic and minimalist design (H8) and Help users recognize, diagnose, and recover from errors (H9), each with 3 violations. The severity distribution is concerning, with 4 critical issues rated at severity level 4, which completely prevent users from completing essential tasks such as registration and document management. These critical failures, combined with 7 severity-3 issues, suggest that the application requires substantial usability improvements before it can provide a satisfactory user experience.

The most significant pattern across all tasks is the lack of clear feedback and error prevention mechanisms. Users are consistently left uncertain about system status, whether actions have succeeded or failed, and what steps are required to proceed. The registration process forces users into a frustrating guessing game due to unclear error messages and inconsistent form validation behavior. The appointment booking flow suffers from poor search functionality without guidance, hidden booking options, and a calendar that requires trial-and-error to identify available dates. The document upload feature provides minimal feedback about upload success and makes it nearly impossible for users to find or manage their uploaded files. These issues collectively create an experience where users feel they are fighting against the system rather than being guided through their tasks.

Key Recommendations for Improvement

Immediate Priority Actions:

1. **Implement comprehensive real-time form validation** with clear, actionable error messages that specify exactly which fields are required and why
2. **Add progress indicators** throughout multi-step processes to help users understand where they are and how many steps remain
3. **Provide autocomplete suggestions, search hints, and filtering options** for the professional search functionality
4. **Visually distinguish available from unavailable calendar dates** before user interaction to prevent errors
5. **Enable paste functionality** for verification codes and integrate password manager support
6. **Provide clear confirmation messages and navigation links** after document uploads, showing users exactly where their files are stored
7. **Add edit and delete functionality** for uploaded documents to give users proper control over their content
8. **Redesign the interface** to prioritize primary content over decorative elements, ensuring that critical information (search results, available services) is immediately visible without excessive scrolling

Addressing these issues would significantly improve task completion rates, reduce user frustration, and create a more trustworthy healthcare application experience.