A novel automated solution to enable anytime anywhere access of personal Advance Healthcare Directives

The current approach and available solutions for providing and obtaining advance directives are static, manual and asynchronous. For example, the Engraved Medical ID bracelet and/or wallet cards used currently can aid in manual recognition of patient information in case of emergency. But, the procedure is time consuming and potentially inaccurate.

To be specific, the task of a first responder and/or health service provider is to do the following:

Gain access to the engraving on the patient's wrist band or ID
Invoke emergency response access to remote server based on the retrieved ID
Review the patient's advance directives
Conduct the required emergency response

The above sequence of steps makes the existing approach static, in that obtaining the required and complete information during a critical situation is either time consuming or infeasible. Furthermore, up to date information could be missing from the patient's perspective (asynchronous information). Additionally, access to remote servers by first responders and/or service providers could not be a feasible approach during a critical care situation, especially outside the host healthcare service environment.

Application Design Approach**: **(Dynamic, Automated, Real-time [synchronized]):

To address these shortcomings, the goal of this research is to develop a technology solution (in the form of a smartphone/smartwatch application) that would record patients' advance directives and a host of additional relevant health information onto a remote application server. The information could then be retrieved anytime, anywhere onto the patient's smart device or smart watch and carried around for easy access. The application could also be functional via RFID enabled technology, and include up to date information from their respective care/service providers. The proposed technology solution would be designed to ensure compliance with necessary state guidelines during the design, development, assessment and deployment phases. In the first iteration, the team plans to focus on the states of Maryland and Pennsylvania.

To achieve the first steps towards the design of such an application the team plans to conduct a thorough market study in all potential service environments, such as in-patient, out-patient, and community care centers. The goal is to identify the potential pilot customer base for conducting pre-evaluation of the planned design and feedback to aid in the development of a usable and compliant application. The team, comprised of three experienced faculty and their respective graduate student research assistants, is well placed with past and current collaboration from various health service providers to conduct the needs assessment and design the appropriate market study to support technology development. The team also plans to include an external mentor to help guide and evaluate the stages of the market study, as well as advise the technology development and assessment phases.

Strengths of the proposed Application:

COMPLIANCE:

The proposed application would adhere to Maryland State Advance Directive Guidelines;

SECURITY & PRIVACY:

The technology solution will provide state of the art Confidentiality, Integrity and Availability of the application via authorized and authenticated access to information;

STORAGE, ACCESS, & TRANSMISSION:

Advance directive order is safely stored in a secure remote database (i.e., secure storage over cloud services and/or secure remote server);

ACCESS:

Anytime and Anywhere secure and authenticated access of the Advance Directive order

- **CONSULT:**

  Designated Healthcare Provider communication would be available anytime/anywhere

- **PATIENT CENTRIC:**

  Family Notification Service would be enabled and available to patients based on their preferences and specifically preserving patient rights and consent;

- **REAL-TIME RESPONSE:**

  Alerts and additional instant communication mechanisms invoked during emergency events;

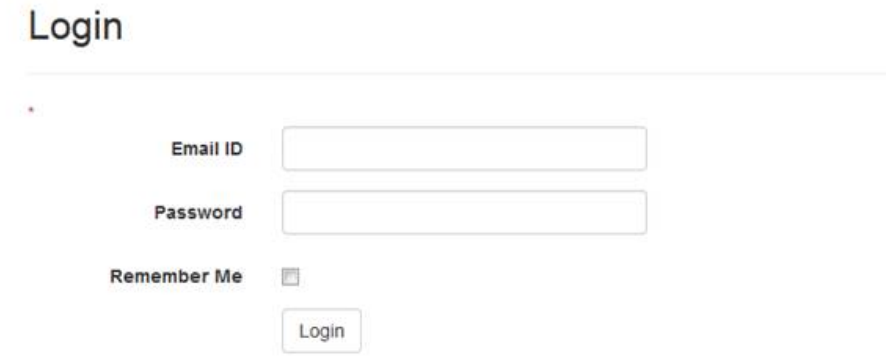
- **BROAD APPLICATION/UTILITY:**

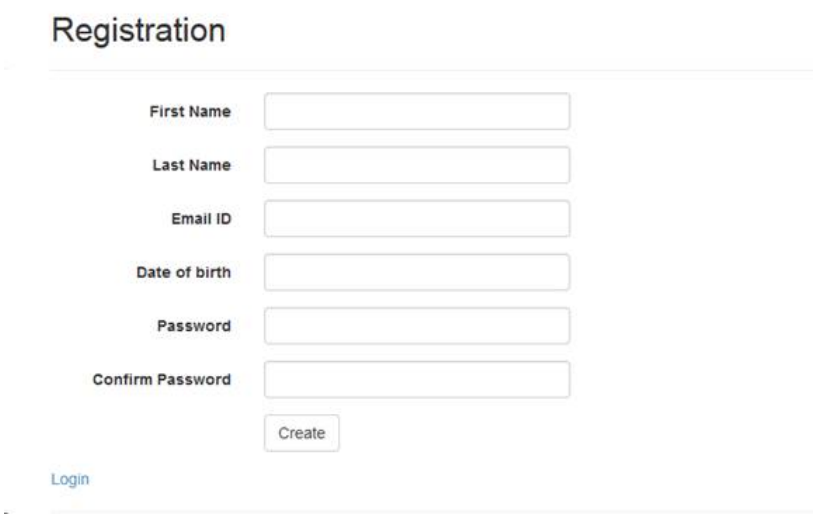
  Patient information is available anytime, anywhere both in the local patient (client) device as well as in the remote server location.

Patient Information includes the following:

Advance Directives; Medical Conditions; Medication and Dosage; Allergies; Previous Medical and Surgical Information; Medical Imaging and Diagnostic Results; Emergency Contacts; Physical and Mental Health Information; Health Insurance Information; Primary Care Physician Information; Implanted Device Information; Clinical Trial Information; Organ Donation Information; Other Personal Preferences.

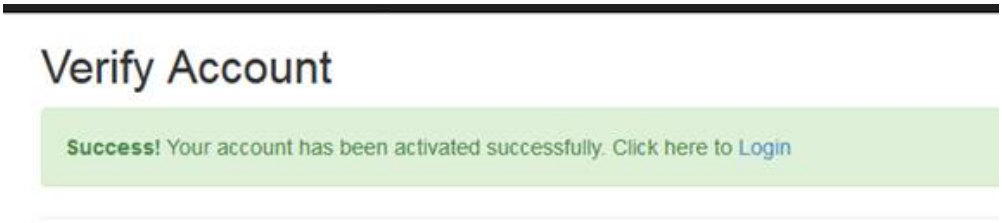
Application Prototype Design Templates:





3) User will receive an email to verify the email and create the account successfully:
We are excited to tell you that your "Application Name" account is successfully created. Please click on the below link to verify your account.

4) After clicking on the verification email, they would see:



5) Client/Patient login by clicking on "Login"

6) Redirection to "Welcome [Username]" and a "Logout" button. This page would be the data entry page that is the next phase.