

# Survivable Social Network on a Chip

SA4-1025

An application deployed on a system-on-chip board allowing user to communicate with each other in case of emergency

## Technical Constraints

- No internet connection, power outage
- Computational and memory constraint on chip
- HTML,CSS, JS, Node.js, Express.js, Debian OS, RESTful,Socket.io

## High-Level Functional Requirements

- Users: join the community, chat publicly and privately, share status, search for information,send sticker/photo/clip
- Coordinator: Post announcement
- Admin: Update user profile
- Monitor: Measure system performance

## Top 3 Non-Functional Requirements

Usability > Compatibility > Manageability

- **Usability:** not enough time to figure out how to use
- **Compatibility:** must work on different devices
- **Manageability:** should be easy to manage the system

## Architectural Styles/Patterns with Rationale

- **Event-based:** transmit events among functions
- **MVC:** database - UI -control flow
- **Client-Server:** 2 main parts of the system
- **RESTful:** communicate between front-end and back-end
- **Repository:** 1 central server and database

## Design Patterns with Rationale

- **Singleton:** maintain online userlist
- **Observer:** update change of status
- **Facade:** isolate function requirements
- **Bridge:** initialize databases for testing and production

## Other Design/Architectural Decisions

- **Passport.js:** for authentication
- **Socket.io:** real-time communication
- **SQLite3:** light-weight database
- **jQuery:** javascript library
- **Bootstrap:** front-end framework for faster web development
- **Mocha, istanbul and supertest:** for unit testing and test coverage
- **Multer:** for upload images/video

## Responsibilities of Main Components

- **Node modules:** Packages supporting the technologies used in the application
- **Server:** Processes client requests
- **Client:** UI and Code supporting user interactions
- **Database:** Store persistent data
- **BBB:** The system-on-chip hardware to deploy the application

