# Survivable Social Network on a Chip

# **SA4-1025**

(dependency)

Server

./routes

Database

Node

Modules

Client

./Public

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

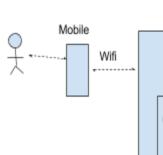
- *Event-based:* transmit events among functions
- MVC: database UI -control flow
- *Client-Server:* 2 main parts of the system
- RESTful: communicate between front-end and back-end
- Repository: 1 central server and database

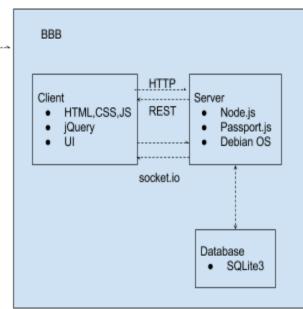
### **Design Patterns with Rationale**

- 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
- *iQuery*: 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