# BCON Arcade

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# Project Inception and Motivation

- Shortcomings of existing arcade deployments
- Designing a centralized system for running an arcade
- Elimination of physical tokens and tickets
- Removing difficulties of enjoying an arcade

# Project Vision

- Network of interconnected games, kiosks, and displays
- Updates communicated among components in real time
- Centralized display(s) of interesting data (i.e. statistics)
- Collection and organization of data for client analysis

# Design

- Layered architecture at the component level
- Client-Server architecture across subsystems
  - Each client interacts with the backend (server)
- Developed starting at bottom layer and working up
- Technologies
  - Kiosk and Game: Qt and QML, C++
  - Backend: Node.js, Express.js, MongoDB
  - Display: Node.js, Express.js, Socket.IO, Bootstrap

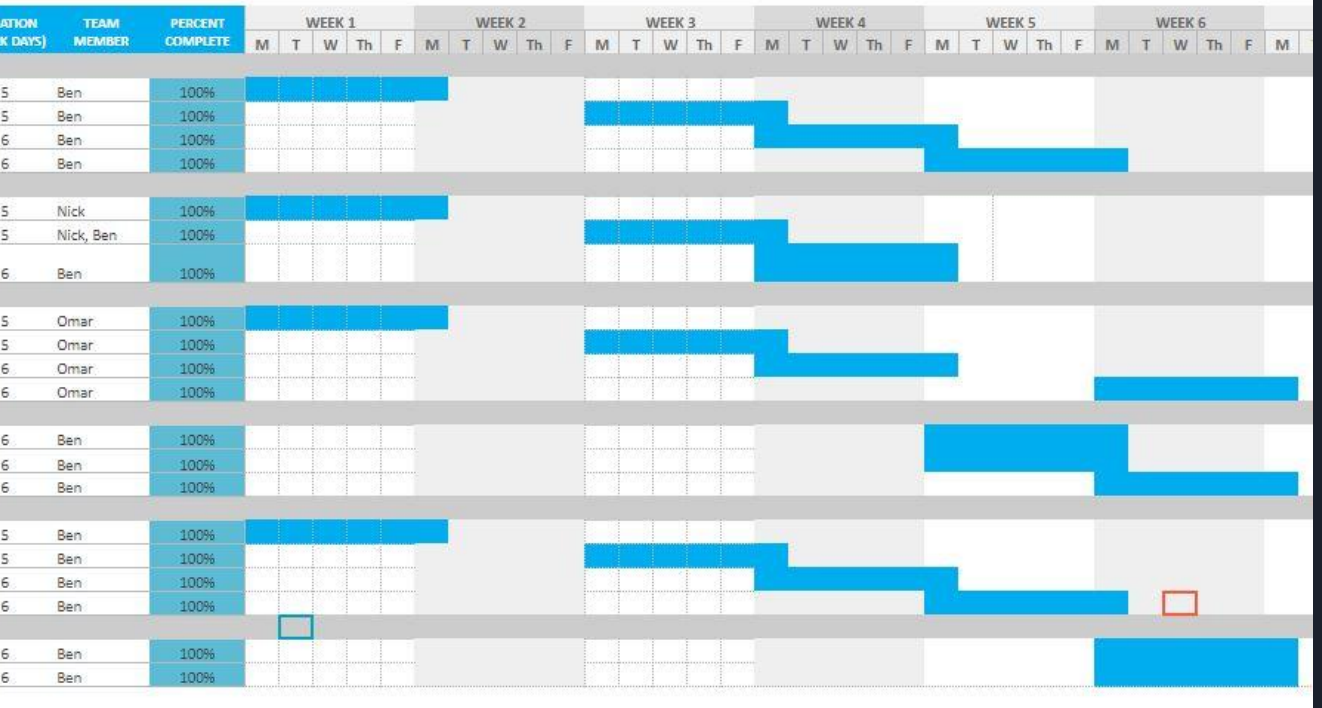
# Challenges

- Learning curves with new technologies
  - Qt and QML
  - Skeleton project structures to ease learning curve
- Resource allocation
  - Time
- Roles shifted as a result

# Gantt Chart

## GANTT CHART RFID ARCADE

| TASK NAME | START DATE | END DATE | DURATION (WORK DAYS) | TEAM MEMBER | PERCENT COMPLETE |
|---|---|---|---|---|---|
| **Develop Backend** | | | | | |
| Creating Database of Users | 2/25 | 3/4 | 5 | Ben | 100% |
| Tracking Player usage | 3/11 | 3/18 | 5 | Ben | 100% |
| Display Kiosk Info | 3/18 | 3/25 | 6 | Ben | 100% |
| Prize listings and prices | 3/25 | 4/1 | 6 | Ben | 100% |
| **Develop RFID System** | | | | | |
| Test RFID readers | 2/25 | 3/4 | 5 | Nick | 100% |
| Program RFID cards with RFID writers | 3/11 | 3/18 | 5 | Nick, Ben | 100% |
| Develop API for interfacing with RFID readers in games and kiosks | 3/18 | 3/25 | 6 | Ben | 100% |
| **Develop Arcade Game** | | | | | |
| Pay Tokens | 2/25 | 3/4 | 5 | Omar | 100% |
| Play Game | 3/11 | 3/18 | 5 | Omar | 100% |
| Update Ticket info | 3/18 | 3/25 | 6 | Omar | 100% |
| Display new Ticket info | 4/1 | 4/8 | 6 | Omar | 100% |
| **Develop Kiosk** | | | | | |
| Add Tokens to Card | 3/25 | 4/1 | 6 | Ben | 100% |
| Issue Card | 3/25 | 4/1 | 6 | Ben | 100% |
| Display Card Info | 4/1 | 4/8 | 6 | Ben | 100% |
| **Develop Reward Center** | | | | | |
| List prizes | 2/25 | 3/4 | 5 | Ben | 100% |
| Pay for Prizes | 3/11 | 3/18 | 5 | Ben | 100% |
| Alert staff | 3/18 | 3/25 | 6 | Ben | 100% |
| Update prize listing | 3/25 | 4/1 | 6 | Ben | 100% |
| **Develop Display** | | | | | |
| Listen for backend events | 4/1 | 4/8 | 6 | Ben | 100% |
| Display statistics and game info | 4/1 | 4/8 | 6 | Ben | 100% |



# The BCON Benefit

- Centralized data display with real-time updating
- Scalability and flexibility with component configuration
- Ease of data management
- Potential for user insight and feedback to drive business decisions
    - Promotions, popular games, etc.

# Demo

# Moving Forward

- Data collection and feedback
  - Archive and analyze the published data
- Staff notification and integration with Rewards Center
- DevOps improvements
  - Automated testing and integration

# Retrospective - What we learned

- Designing a software
  - UML
  - System design
- Managing complexity with software
  - Design decisions
- The importance of team communication