**Design Docs of ICCPRA**

The International Community CPR Alliance (ICCPRA) is a global organization dedicated to supporting community-based philanthropy. We provide innovative first-aid certification training courses to further enhance life-saving skills. Additionally, we offer a platform for community engagement services to individuals who have earned CPR/ICPIS certificate-related qualifications and MBA-PI Candidates.

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# *Context and Scope #*

In an increasingly interconnected world, the International Community CPR Alliance (ICCPRA) plays a crucial role in promoting community-based philanthropy and empowering individuals with life-saving skills. Our organization offers cutting-edge first-aid certification training courses, designed to elevate the proficiency of individuals in emergency response and care.

Our scope extends beyond training, as we also provide a platform for community engagement services to those who have earned CPR/ICPIS certificate-related qualifications and MBA-PI Candidates.

As a global organization, ICCPRA is committed to fostering a network of certified professionals who are equipped to handle emergencies and support their communities. By focusing on both skill development and community engagement, ICCPRA aims to create a safer, better-prepared society where individuals are empowered to make a tangible difference in the lives of others.

## Goals #

* Establish an MIS system that encompasses students, teachers, class schedules, and administrators.

* Define distinct access permissions for different roles within the management system.

* Enable users to perform actions such as registration and payment, course selection, course adjustment, class attendance, and course withdrawal.

* Optimize the current UI/UX design by consolidating the functionalities of iccpra.org and iccprastore.org.

* Focus on including only course selection, shopping, and evaluation systems to ensure a seamless user experience.

## Non-goals #

* Integrate with the Red Cross Learning Center platform.

* During system design, ensure modularity and encapsulation, with a system design that can accommodate smooth operation even under large scale conditions in the future.

* Allow users to register and access real-time information, including product availability, CPR certification status, and course catalogs.

# *Overview #*

* Status: In progress
* Stakeholders:
  + @Kenny (Design, development)
  + @daniel (Support)

This project aims to create a comprehensive online platform designed to streamline and enhance the user experience for both students and teachers. The platform will offer a range of features, including student registration, course management, and an integrated emergency product sales system. The development process will be carried out in three distinct phases to ensure an efficient and effective implementation.

In the first phase, the primary focus will be on developing the core functionality, such as the student registration system and essential course management modules.

The second phase will involve refining the platform's UI/UX and adding user review and CSS decoration features to create a more engaging and visually appealing user experience.

Finally, the third phase will incorporate the emergency product sales system, rounding out the platform's offerings and making it a one-stop solution for users.

Overall, this platform aims to provide a seamless and user-friendly experience, catering to the needs of both students and teachers while offering a unique range of features and services.

# *Detailed design #*

The specific design and development process should be carried out in a distributed manner, with the development sequence adjusted according to the difficulty, importance, and urgency of implementation.

In the first phase, the focus will be on developing the student registration system. After a simple UI design, modules for student payment and registration, roster management, course adjustments, course completion, cancellations, and teacher registration will be developed and implemented.

In the second phase, once the platform is functioning properly, the UI/UX will be redesigned, and user reviews and CSS decorations will be added.

In the third phase, an emergency product sales system will be incorporated.

## Features #

## Functional Requirements #

### *User Interface Design #*

#### Design Plan:

Use awards (<https://www.awwwards.com/>) for whole UI Design

Use ui-pattern (<https://ui-patterns.com/explore>) for Nav Design

Use colorhunt awards (<https://colorhunt.co/>) for Website Color Tone Design

#### Tools:

**Design**:

Figma for UI design, Flickr for image storage, Balsamiq for UI structure Design.

**Development**:

JavaScript (React) for interact design, HTML for fundamental, CSS (Bootstrap) for styling.

### *Architectural Design #*

* Architectural Patterns: Describe the architectural patterns used, such as client-server, layered, microservices, etc.
* System Components: Define the main components or modules of the system, their responsibilities, and interactions.

### *Data Model and Storage #*

#### Data Model #

\*As for cpr student MIS system:

We use a Relational Model.

Reason: The student management system is a very classic relational Model case.

Table

Description automatically generated

[Figma Design](https://www.figma.com/file/WV218THd1wp2kDSmwvQWaN/ICCPRA-Student-Relational-Date-Model?node-id=0%3A1&t=66jWRlRMWAoQEQ0J-1)

#### Storage Solution & Database Type #

\*As for cpr student MIS system:

**Relational Database (MySQL)**

Reason: The date is highly structured; MySQL will be very easy and efficient.

\*As for e-commerce part:

**NoSQL Database (MongoDB)**

Reason: The first aid products’ data is very messy, different category have different attributes. Then MySQL will not be useful.

So the current plan is to use two sets of databases to manage the ICCPRA platform. In the first phase, MySQL will be used to implement the student registration system. In the second phase, MongoDB will be utilized to manage the online store.

## Non-Functional Requirements #

Scale (QPS)\performance\accuacy\freshness\consistency\security

### *Performance and Scalability #*

* Performance Optimization: Describe performance optimization techniques and strategies used in the system.
* Scalability Considerations: Explain how the system can handle increased load and growth.

### *Testing and Quality Assurance #*

* Testing Strategy: Outline the testing strategy, including unit tests, integration tests, system tests, and performance tests.
* Quality Assurance: Explain the quality assurance processes and tools, such as code reviews, static analysis, etc.

### *Deployment and Monitoring #*

* Deployment Strategy: Describe the deployment strategy, including environments, CI/CD pipelines, and configuration management.
* Monitoring and Alerting: Explain the monitoring and alerting mechanisms implemented to ensure system stability and reliability.

### *Maintenance and Support #*

* Maintenance Plan: Outline the plan for system maintenance, including regular updates, bug fixes, and performance improvements.
* Support Strategy: Describe the support provided to users, such as documentation, training, and helpdesk services.

## API #

RESTFUL API

submitStudentsInformation (studentID, studentFirstName, studentLastName, studentEmailAddress, studentPhoneNumber, classID)      → all cpr related students submit their info and register for a new class

Each submit will create a new student file that contain all the required students’ info from red cross and iccpra.

newClassGenerate ( classICCPRAID, classRedCrossID, classStartDate, classEndDate, instructorID, numberOfStudents, addressCode)      → all cpr related classes created

Each new class session created, and class instructor info restored.

newInstructorRegister (instuctorName, instructorID, address, certificationInfo, availableDate, instructorLevel)      → every new instructor join iccpra

Each new instructor info should be created and saved use this.

studentRescheduleCourse (oldClassICCPRAID, oldClassRedCrossID, newClassICCPRAID, newClassRedCrossID, studentID)   →  every reschedule action

Every reschedule call should execute this.

# *Relationship to other systems #*

## Whiteboard Sessions #

*#Further content will be continuously added as needed.*

## Design Reviews #

*#Further content will be continuously added as needed.*

## Red Cross Learning Center API #

*#Further content will be continuously added as needed.*

# *Security and privacy considerations #*

Ensure user data security by implementing password encryption, safeguarding the registration system from spam bots, and preventing the feedback section from being inundated with spam content.

*#Further security measures will be continuously added as needed.*

# *Alternatives considered #*

*#Continuously update and enhance this section with new ideas and features resulting from brainstorming sessions throughout the development process.*

# *Milestones*

Starting from 04/24:

Week 1: Requirement Analysis and Research

1. Determine the target user group, requirements, and core features of the platform (currently basically determined, just need to sort out the existing icppra and question collation)
2. Collect competitor information and analyze market conditions (thoroughly understand Focus Health and sort out its success core)
3. Write project requirement documents (mainly simplified, sort out points 1 and 2)

Week 2-3: Interface Design and Overall Design

1. Design the platform's interaction framework and establish user operation process (System Design file, including two aspects: user usage topology, platform building topology)
2. Design the visual style of the platform, including colors, fonts, icons, etc. (find the most suitable award-winning UI design on<https://www.awwwards.com/>, select our theme color scheme on<https://colorhunt.co/>, and find the template for each Nav on<https://ui-patterns.com/explore>)
3. Create specific interface prototypes (design a visual UI interface using Balsamiq or Canva)
4. Write design documentation for future development reference (keep it as simple as possible, just explain clearly)

Week 4-6: Platform Prototype Development (Prototype)

1. Select technology stack and development tools (first develop the front end, React/HTML/CSS can be completed in about a week; CSS specific adjustments are mainly based on the Bootstrap library)
2. Build the basic framework and page structure of the platform (use Spring frame for the backend logic part, and Prisma for the database to build a simple registration and sign-up function)
3. Implement core functions and interaction logic (debug the relationship between front, back, and database)
4. Complete prototype development and conduct internal testing

Week 7-10: Platform Interaction and Function Optimization

1. Adjust and optimize the prototype based on internal test results (strictly follow the 28 law, first solve 80% of the problems with 20% of the time)
2. Develop other functions of the platform, such as payment, search, and comments (payment is the most important, comments are secondary, and search is the least important)
3. Enhance the platform's user experience, such as animation effects and response speed (React is fast, Spring completes encapsulation, and there is not much to do for SEO optimization)
4. Integrate third-party services, such as maps and social media (ChatGPT API can be integrated later, which is currently free, not difficult to integrate, but the practicality is not high because the data volume is too small)

Week 11-12: System Testing and Repair

1. Perform system function tests to ensure functional correctness (test various corner cases)
2. Perform performance tests and optimize system response speed and resource usage (directly deploy on AWS, saving many operations)
3. Conduct security tests to guard against potential security risks (customer password security encryption)
4. Fix problems found during testing

Week 13-14: Official Platform Launch and Promotion

1. Deploy the platform to the production environment (officially replace the WordPress-developed iccpra)
2. Conduct final testing before launch
3. Launch the platform and promote it (can be replicated at various points across the US)
4. Collect user feedback and continuously optimize

WebSocket (stateful)