

ITAS 164

Project Charter

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1. Project Purpose and Justification

The Arcane Armory aims to enhance in-person Dungeons & Dragons gameplay by reducing immersion-breaking distractions caused by paper sheets and individual digital devices.

Current solutions either:

- Require each player to use a personal device
- Replace the tabletop experience entirely
- Are overly complex and unrealistic for small teams

This project introduces a shared dual-screen system that centralizes key gameplay data (HP, spell slots, initiative) while preserving the social and tactile aspects of tabletop gaming.

2. Project Description

The system will consist of:

- A Raspberry Pi 4
- A 10-inch player-facing display
- A secondary DM control display
- Physical push buttons for HP adjustment
- Flask + SQLite backend
- Web-based DM dashboard

Players will adjust HP using physical buttons.

The Dungeon Master will manage initiative and spell slots via mouse and keyboard.

The system will display:

- Character names
 - Health points
 - Spell slots
 - Initiative order
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3. High-Level Requirements

- Display minimum 3 characters simultaneously
 - HP updates register within 0.5 seconds
 - Spell slots tracked with validation
 - Initiative order clearly displayed
 - Data persists across system restarts
 - System runs continuously for 3 hours without crash
 - UI readable from 3 feet away
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4. High-Level Risks

Risk	Impact	Mitigation
Shipping delays	High	Order components Week 1
Scope creep	High	Feature freeze Week 3
GPIO input issues	Medium	Early hardware testing
Team availability	Medium	Modular task division
Hardware failure	Medium	Backup components

5. Scope Boundaries

Out of Scope:

- Full D&D rules automation
- Remote multiplayer support
- AI dungeon master tools
- Dice rolling automation
- D&D Beyond API integration
- RFID systems

6. Timeline

Project Duration: January – April 2026

MVP Feature Freeze: Week 3

Testing Phase: Weeks 9–10

Final Demonstration: Final Week of Semester

7. Success Criteria

The project will be considered successful if:

- All core features function during live demonstration
 - System runs 3 hours without failure
 - Minimum 75% of testers state it improves gameplay
 - Documentation is complete and reproducible
 - All artifacts are committed to GitHub repository
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8. Assumptions

- Components arrive within 2 weeks
- Team members remain available
- Raspberry Pi supports dual HDMI
- Required libraries function as expected
- Access to testing group is available