# 📝 NLP Project – Technical Lead Report (Week 7-8)

**Name**: Erin David Cullen

**Start Date**: 15 September

**End Date**: 28 September

## ✅ 1. Work Completed (Since Last Report)

\_What you’ve built, implemented, tested or reviewed and an estimate as to how many hours it took to complete

• Supervisor consultations and project clarification (~2 hr)

• Project direction assessment and planning (~2 hr)

• Gazebo simulation environment research (~3 hr)

* **Feature/Module:** Project Strategy Pivot
* Conducted team discussions on project constraints and limitations
* Evaluated feasibility of hardware-dependent implementation
* Developed proof-of-concept approach for project continuation
* Established dual-track development strategy (proof-of-concept + simulation)
* **Feature/Module:** Simulation Environment Planning
* Researched Gazebo simulation capabilities for drone automation
* Analyzed ROS2 integration options for simulated drone environments
* Evaluated existing drone simulation models and physics engines
* Planned automated flight testing framework within simulation
* **Tools/Libs Used:**
* Gazebo simulation documentation and tutorials
* ROS2 simulation packages and resources
* Team communication platforms for coordination
* **Outcome/Results:**
* Established clear project direction as proof-of-concept implementation
* Identified Gazebo simulation as viable alternative for automated testing
* Created framework for demonstrating automated drone capabilities
* Maintained project momentum despite hardware access limitations
* **Contributions (if applicable):**
* Led strategic planning for project adaptation
* Coordinated team consensus on dual development approach
* Initiated simulation environment research and planning

# 📌 2. Current Tasks in Progress

\_What you’re actively working on. Include blockers if any.\_

|  |  |  |  |
| --- | --- | --- | --- |
| Task | Description | ETA | Blockers |
| Gazebo simulation setup | Installing and configuring drone simulation environment | 1 week | Learning curve for Gazebo configuration |
| Proof-of-concept planning | Defining scope and deliverables for concept demonstration | 3 days | Team alignment on final objectives |
| Code architecture review | Adapting existing codebase for simulation integration | 1 week | Understanding simulation API requirements |

## 📅 3. Upcoming Tasks

\_Planned work for the next sprint or phase.\_

* **Task: Gazebo Simulation Implementation**
  + **Purpose/Goal:**
    - **Set up functional drone simulation environment**
    - **Integrate existing navigation and control systems with simulated drone**
    - **Demonstrate automated flight capabilities in controlled environment**
  + **Dependencies:**
    - **Gazebo installation and configuration**
    - **ROS2 simulation package compatibility**
    - **Existing codebase adaptation**
* **Task: Proof-of-Concept Development**
  + **Purpose/Goal:**
    - **Create demonstrable automated drone navigation system**
    - **Showcase key project features and capabilities**
    - **Document technical implementation and results**
  + **Dependencies:**
    - **Simulation environment functionality**
    - **Code integration completion**
    - **Performance testing framework**

## 🚨 4. Issues & Risks

\_Bugs, technical debt, resourcing, or anything threatening progress.\_

|  |  |  |  |
| --- | --- | --- | --- |
| Issue | Impact | Suggested Action | Owner |
| Hardware access limitations | Cannot test on physical drone systems | Focus on simulation-based development and proof-of-concept | Team |
| Simulation complexity | Gazebo setup may require significant learning investment | Allocate adequate time for environment configuration | Ed |
| Project scope uncertainty | Unclear final deliverable expectations | Define clear proof-of-concept objectives and success criteria | Team |
| Timeline constraints | Limited time for both simulation setup and feature implementation | Prioritize core functionality demonstration | Ed |

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## 📈 5. Key Insights / Recommendations

\_Lessons learned, suggestions, architecture notes, or optimizations.\_

* Simulation environments provide valuable alternatives for testing automated systems when hardware access is limited
* Proof-of-concept implementations can effectively demonstrate technical capabilities and system design
* Project adaptability is essential when external dependencies create unexpected constraints
* Gazebo simulation offers robust testing environment for ROS2-based drone automation systems
* Clear scope definition becomes critical when transitioning from hardware-dependent to simulation-based development
* Early simulation environment setup enables parallel development and testing workflows