**ELECTA - Architecture Workshop: Session 2 Report (v2.0)**

**Date:** July 25, 2025

**Session Focus:** Critical Workflow & Load Simulation

# Objective

The primary objective of this session was to quantify and create an operational plan for the most significant risk identified for the MVP: the Manual NID Review Bottleneck. By modeling the workflow under peak load, we can determine staffing requirements and define system monitoring thresholds to ensure our service level targets are met.

# Input **Assumptions**

The following baseline estimates were established for the simulation model:

* **Average Review Time per Submission:** 3 minutes
* **Peak Submissions per Day:** 2,500
* **Target Turnaround Time:** 24 hours

# Core Load & Staffing Analysis

The analysis was conducted in two steps to determine the required staffing levels.

* **Step A: Calculate Total Daily Workload**
  + **Formula:** (Peak Submissions per Day) × (Avg. Review Time per Submission)
  + **Calculation:** 2,500 submissions × 3 minutes/submission = **7,500 minutes of total work**.
* **Step B: Calculate Required Staffing**
  + The total workload was divided by the realistic productive time of a single officer in a standard workday (assuming 7 productive hours, or 420 minutes).
  + **Formula:** (Total Daily Workload) / (Productive Minutes per Officer per Day)
  + **Calculation:** 7,500 minutes / 420 minutes/officer ≈ **17.86 Officers**.
* **Conclusion of Simulation**
  + To successfully process an estimated peak load of 2,500 submissions per day within the 24-hour target turnaround, the platform requires an operational team of approximately **18 full-time Verification Officers**.

# Stress-Test & Scenario Planning

To prepare for scenarios beyond the daily average, two additional high-stress situations were modeled:

* A. Hourly "Burst Risk" Scenario:

This simulates a concentrated spike in submissions.

* + **Assumption:** 1,200 submissions arrive within a 6-hour window (360 minutes).
  + **Implication:** This requires a team of **10 Verification Officers** to be active simultaneously to clear the queue in time, highlighting the need for hourly readiness.
* B. Daily Surge "Stress-Test" Scenario:

This simulates a day with double the anticipated peak load.

* + **Assumption:** 5,000 submissions arrive in one day.
  + **Required Staffing:** This workload would require approximately **36 Verification Officers**, demonstrating that a doubling of submissions requires a doubling of staff.

# Final Operational Recommendations

Based on the full analysis, the following operational strategies are recommended:

## **Hybrid Staffing & Scheduling Strategy**

A nuanced staffing strategy is required to be cost-effective and prevent burnout.

* **Baseline Team:** A permanent, year-round team of **5 Verification Officers** will handle normal operational load and maintain institutional knowledge.
* **Peak Scaling:** During election periods, the team will scale up with **13+ temporary hires**. Partnering with local universities for pre-trained student pools is a recommended sourcing strategy.
* **Shift Scheduling:** To maintain 24/7 coverage and reduce burnout, the 18-person peak team should be organized into at least two 8-hour shifts (9 officers per shift).

## **Prioritization of Admin Panel UI/UX**

The efficiency of the verification interface is a critical factor in managing operational costs. The design must be highly optimized for speed and accuracy to minimize the average review time per submission.

## **Tiered Queue Monitoring & Alerts**

The single alert threshold will be replaced by a tiered Service Level Agreement (SLA) system to provide more granular operational insight.

| SLA Tier | Queue Size (Pending NID) | Recommended Action |
| --- | --- | --- |
| ✅ **Green** | < 250 | Normal operations. Team is meeting the 24-hour target. |
| ⚠️ **Yellow** | 250 - 500 | Team leads are notified. Consider authorizing overtime or scheduling the next shift early. |
| 🔴 **Red** | > 500 | A high-priority alert is sent to the Super Admin. The pre-defined backup staffing plan is activated immediately. |

## **Financial Planning Model (Estimate)**

To assist with budgeting and resource allocation, a simple cost model is established.

* **Formula:** Daily Staff Cost = (Number of Active Officers) × (Daily Rate per Officer)
* **Example Peak Cost:** Assuming a provisional rate of $30/day for a temporary officer, the peak operational cost would be: 18 officers × $30/day = **$540 per day**, or approximately **$16,200 for a 30-day peak election month.**

## **Failure Mode & Fallback Strategies**

In the event of an unmanageable queue surge that exceeds our scaling capacity, a "break-glass" procedure must be in place. Potential strategies include:

* **Temporarily Pausing New Submissions:** Display a message in the app asking users to try again later due to exceptionally high volume.
* **Provisional Approval:** For lower-risk submissions, a temporary "Provisional" status could be granted, pending a full review when the queue subsides.
* **Auto-Expiration:** Unverified requests in the queue for an extended period (e.g., 7 days) may be expired, with a notification sent to the user to resubmit.