SINHGAD TECHNICAL EDUCATION SOCIETY'S

SINHGAD INSTITUTE OF TECHNOLOGY, LONAVALA

INSTITUTION'S INNOVATION COUNCIL (IIC)

WEB DEVELOPMENT & DIGITAL ARCHITECTURE CONSTITUTION
2026 − 2036

Master SOP for Portal Sovereignty, IoT Integration, and Cybersecurity Certification

The Definitive Spoon-Feeding Manual for the Council's Digital Gateway: A Comprehensive Deep-Dive into Full-Stack Architecture, SEO Dominance, and Secure System Lifecycle Management.

Custodians:
Web Head & Co-Head
IIC SIT Lonavala

Approving Authority:
Dr. M.S. Chaudhari
Dean R&D and President IIC

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1　ARTICLE I: FOUNDATIONAL MISSION AND SCOPE

1.1　The "Digital Gateway" Mandate

The Web Development (WebDev) Team is the architect and custodian of the IIC's primary interface with the global community. Their mission is to maintain a high-performance, secure, and aesthetically superior digital portal (**iicsit.in**) that serves as the mission control for registrations, team transparency, and technical showcases. They are responsible for the entire lifecycle of the Council's web infrastructure, including back-end database integrity, front-end visual standards, and the integration of specialized software for R&D telemetry and Technical team support.

1.2　The "Zero-Downtime" Web Standard

In the IIC, the portal is the heartbeat of operations. A crashed registration form during a national competition or an outdated "Team Section" is treated as a critical operational failure. The WebDev team must ensure 99.9% uptime and maintain "Clean Code" standards that allow for seamless handovers for the next decade.

2　ARTICLE II: DETAILED ROLES AND SQUAD HIERARCHY

To manage the complexity of full-stack systems and IoT integrations, the WebDev team follows a military-grade hierarchy.

2.1　The Web Head (Chief Technology Officer)

- **Identity Guardian:** Owns the tech-stack selection (MERN/Django/Next.js).

- **Quality Controller:** Personally verifies and approves every code "Commit" to the production server.

- **Strategic Liaison:** Coordinates with the PR Head for marketing synchronization and the Cyber Security Head for mandatory audit clearances.

2.2　The Web Co-Head (DevOps & Database Lead)

- **Execution Oversight:** Directly manages the internal "Squads" (Frontend, Backend, and IoT Integration).

- **Database Guardian:** Responsible for user data encryption, member logs, and secure snapshots.

- **Optimization Officer:** Manages SEO (Search Engine Optimization) and ensures Google PageSpeed scores remain above 90.

3 ARTICLE III: THE OFFICIAL PORTAL (IICSIT.IN) OPERATIONS

3.1 Mandatory Section Management

The WebDev team is responsible for the 24/7 accuracy of the following:

1. **The Team Section:** Must be updated within 72 hours of any recruitment, resignation, or promotion. High-resolution images and verified LinkedIn profiles are mandatory.

2. **Event Marketing Hub:** Every IIC event must have a dedicated, mobile-responsive landing page with integrated registration forms.

3. **Innovation Gallery:** Real-time updates of R&D prototypes, 3D models, and event recaps in collaboration with the Multimedia team.

3.2 The "Registration Sprint" Protocol

During major event launches:

- **Stress Testing:** WebDev must verify the server can handle 500+ concurrent requests.

- **Live Dashboard:** Provide the PR Team with a live dashboard to track conversion rates and registration geographics.

4 ARTICLE IV: CROSS-FUNCTIONAL TECHNICAL COLLABORATION

4.1 R&D Integration (IoT Dashboards)

WebDev is the bridge between hardware and the end-user.

- **Telemetry Visualization:** Developing web-based dashboards for R&D prototypes (e.g., real-time graphs of Drone battery voltage or Rover GPS coordinates).

- **Protocol Support:** Collaborating with R&D to integrate MQTT or WebSocket protocols for sub-second latency IoT communication.

4.2 Technical Team Support

- **On-Ground Software:** WebDev is responsible for providing browser-based tools for event attendance tracking and QR-code verification.

- **Network Optimization:** Advising the Tech team on high-bandwidth needs for web-based live streams on the portal.

5　ARTICLE V: MANDATORY CYBER SECURITY CERTIFICA-TION

5.1　The "Secure-by-Design" Rule

No system integration or new portal feature can go live without the **Cyber Security Audit**.

1. **Verification Phase:** Submit the code/system to the Cyber Security Head for penetration testing 72 hours before deployment.

2. **The Certificate:** A formal "Secure System Certificate" must be issued by the CS Head.

3. **Violation Penalty:** Deploying an uncertified form that leads to a data leak results in immediate removal of the lead developer.

6　ARTICLE VI: DATA SOVEREIGNTY & DATABASE ETHICS

6.1　Accountability and Logs

- **Member Database:** Maintaining an encrypted database of all past and present IIC members with role histories.

- **Audit Trails:** Detailed logs of who edited the website content. "Anonymous Edits" are strictly prohibited.

- **GDPR Compliance:** Ensuring all student registration data is handled according to legal privacy standards.

7　ARTICLE VII: SEO & STANDARDIZED OPTIMIZATION

7.1　The "Global Presence" Mandate

IIC SIT Lonavala must dominate search engine results.

- **On-Page SEO:** Meta-descriptions, Alt-text for all innovation photos, and semantic HTML structure.

- **Speed Optimization:** Images must be WebP format; assets must be minified for $< 1.5s$ load times on mobile devices.

- **Analytics:** Weekly Google Search Console reports to track global reach and keyword ranking.

8 ARTICLE VIII: DEPLOYMENT & BACKUPS

8.1 The Git Standard

- **Version Control:** 100% of code must reside on the official IIC SIT GitHub. No personal repositories.

- **Branch Protection:** Commits to the "Production" branch require approval from the Web Head and a "Pass" from the automated testing suite.

8.2 Backup Frequency

- **Database:** Daily automated snapshots.

- **File System:** Weekly full backups stored on the physical "Legacy Technical HDD."

9 ARTICLE IX: CONTINUOUS LEARNING & TECHNICAL SPRINTS

9.1 Spoon-Feeding Technical Excellence

The Web Head must ensure the team stays at the bleeding edge.

- **Weekly Dev-Sprints:** 2-hour sessions every Sunday to teach volunteers new stacks (e.g., Tailwind CSS, Serverless Functions, or AI API integration).

- **Software Installation:** Managing the web-hosting environments and ensuring all team members have standardized IDE configurations (VS Code extensions, Prettier, ESLint).

10 ARTICLE X: REAL-WORLD SCENARIO MITIGATION

10.1 Scenario A: The "High-Traffic" Crash

If the portal crashes during the ISRO Mock Round registration:

- **Action:** WebDev must switch to a "High-Availability" backup (e.g., a static Google Form landing page) within 120 seconds.

- **Fix:** Scale the cloud resources or fix the bottleneck and redeploy within 30 minutes.

10.2 Scenario B: The SEO Hijack

If an external site outranks the official portal for an IIC keyword:

- **Action:** WebDev must conduct a "Backlink Audit" and request the PR team to drive traffic via institutional emails and LinkedIn.

11 ARTICLE XI: STEWARDSHIP AND MULTI-CAMPUS LEGACY

11.1 Dual-Campus Synchronization

- **Multi-Tenancy:** The portal architecture must support sub-sections for both campus chapters without code duplication.

- **The Legacy Dev-HDD:** Outgoing leads must provide a physical HDD containing the full "Dev-Book"—READMEs, environment variables, hosting credentials, and renewal schedules for the next 5 years.

SIGNATORIES OF THE 2026 WEBDEV CONSTITUTION

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Web Head (Architect)   *Student President*   *Cyber Security Head*