**R1-01: Inventory Misalignment in Multi-Warehouse Logistics**

**Problem Overview:**  
A national logistics company faces inventory discrepancies across multiple warehouses, leading to overstock in some locations and stockouts in others, despite using ERP systems.

**Required Skill Sets:**

* Data Analysis & Forecasting
* Supply Chain Management
* ERP Integration
* Cloud Computing

**Technologies to Consider:**

* Python or R for data analysis
* Machine Learning libraries (e.g., scikit-learn, TensorFlow)
* Cloud platforms (e.g., AWS, Azure)
* APIs for ERP systems[IIT Jammu](https://iitjammu.ac.in/hackathon-isea/problem-statements.html?utm_source=chatgpt.com)

**R1-02: Unplanned Downtime in Mid-Sized Manufacturing Units**

**Problem Overview:**  
Mid-sized manufacturing units suffer from unplanned machine downtime due to lack of advanced monitoring systems and minimal digital infrastructure.[Scribd+1Reddit+1](https://www.scribd.com/document/839410834/Problem-Statements-Hackathon?utm_source=chatgpt.com)

**Required Skill Sets:**

* IoT and Sensor Integration
* Predictive Maintenance
* Data Analytics
* Embedded Systems[IIT Jammu+6Engineers Planet+6Studocu+6](https://engineersplanet.com/top-10-problem-statements-with-solution-ideas-for-smart-india-hackathon-2024-smart-automation/?utm_source=chatgpt.com)[https://hackathon.formidium.com/+2Engineers Planet+2Engineers Planet+2](https://engineersplanet.com/top-10-problem-statements-with-solution-ideas-for-smart-india-hackathon-2024-miscellaneous/?utm_source=chatgpt.com)[Studocu](https://www.studocu.com/in/document/institute-of-integrated-learning-in-management-university/computer-science/problem-statements/80744837?utm_source=chatgpt.com)

**Technologies to Consider:**

* Microcontrollers (e.g., Arduino, Raspberry Pi)
* Sensors for monitoring machine health
* Data visualization tools (e.g., Grafana)
* Cloud services for data storage and analysis

**R1-03: Digital Trust Without Digital Clutter**

**Problem Overview:**  
Users often share personal data online without understanding how it's stored or used. There's a need for solutions that empower users to control their digital identity and data relationships.

**Required Skill Sets:**

* Cybersecurity and Data Privacy
* User Experience (UX) Design
* API Development
* Blockchain (optional)[innovateyou.in+1Studocu+1](https://innovateyou.in/what-is-the-problem-statements-in-hackathon/?utm_source=chatgpt.com)

**Technologies to Consider:**

* OAuth 2.0 and OpenID Connect for authentication
* Privacy dashboards or browser extensions
* Blockchain platforms (e.g., Ethereum) for decentralized identity
* Frontend frameworks (e.g., React, Angular)

**R1-04: Trust Gaps in Supply Chain Traceability**

**Problem Overview:**  
Global supply chains lack transparency, making it difficult to track the origin and movement of goods, leading to vulnerabilities like fraud and counterfeiting.

**Required Skill Sets:**

* Blockchain and Distributed Ledger Technologies
* Supply Chain Management
* Data Integration
* Smart Contracts[Scribd](https://www.scribd.com/document/839410834/Problem-Statements-Hackathon?utm_source=chatgpt.com)

**Technologies to Consider:**

* Hyperledger Fabric or Ethereum for blockchain implementation
* Smart contract development using Solidity
* QR code or RFID integration for tracking
* APIs for data sharing among stakeholders

**R1-05: Enhancing Job Screening**

**Problem Overview:**  
The recruitment process is time-consuming, involving manual review of job descriptions and CVs. There's a need for an AI system to automate this process.

**Required Skill Sets:**

* Natural Language Processing (NLP)
* Machine Learning
* API Development
* Frontend and Backend Development[innovateyou.in+1Engineers Planet+1](https://innovateyou.in/what-is-the-problem-statements-in-hackathon/?utm_source=chatgpt.com)[pncnmnp.github.io+10Studocu+10Engineers Planet+10](https://www.studocu.com/in/document/institute-of-integrated-learning-in-management-university/computer-science/problem-statements/80744837?utm_source=chatgpt.com)

**Technologies to Consider:**

* NLP libraries (e.g., spaCy, NLTK)
* Machine Learning frameworks (e.g., TensorFlow, PyTorch)
* Web frameworks (e.g., Django, Flask)
* Databases (e.g., PostgreSQL, MongoDB)[Reddit](https://www.reddit.com/r/developersAhmedabad/comments/1c9ylt7?utm_source=chatgpt.com)

**R1-06: Defending National Web Infrastructure from Targeted Attacks**

**Problem Overview:**  
Government websites and public service platforms are frequently targeted by cyberattacks, necessitating solutions for proactive detection and rapid mitigation.

**Required Skill Sets:**

* Cybersecurity and Network Security
* Anomaly Detection
* Real-time Monitoring
* Scalable System Design[IIT Jammu](https://iitjammu.ac.in/hackathon-isea/problem-statements.html?utm_source=chatgpt.com)[Engineers Planet+3Studocu+3innovateyou.in+3](https://www.studocu.com/in/document/institute-of-integrated-learning-in-management-university/computer-science/problem-statements/80744837?utm_source=chatgpt.com)

**Technologies to Consider:**

* Intrusion Detection Systems (e.g., Snort, Suricata)
* Security Information and Event Management (SIEM) tools
* Machine Learning for anomaly detection
* Dashboard tools (e.g., Kibana, Grafana)

**General Recommendations:**

* **Team Composition:**
  + Data Scientists
  + Backend and Frontend Developers
  + UX/UI Designers
  + Domain Experts (e.g., Supply Chain, Cybersecurity)
* **Development Tools:**
  + Version Control: Git
  + Project Management: Jira, Trello
  + Collaboration: Slack, Microsoft Teams
* **Deployment Platforms:**
  + Cloud Services: AWS, Azure, Google Cloud
  + Containerization: Docker
  + Continuous Integration/Continuous Deployment (CI/CD): Jenkins, GitHub Actions