# SPIT SHIELD

Advanced Cyber Security Research & Training Laboratory

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October 2025

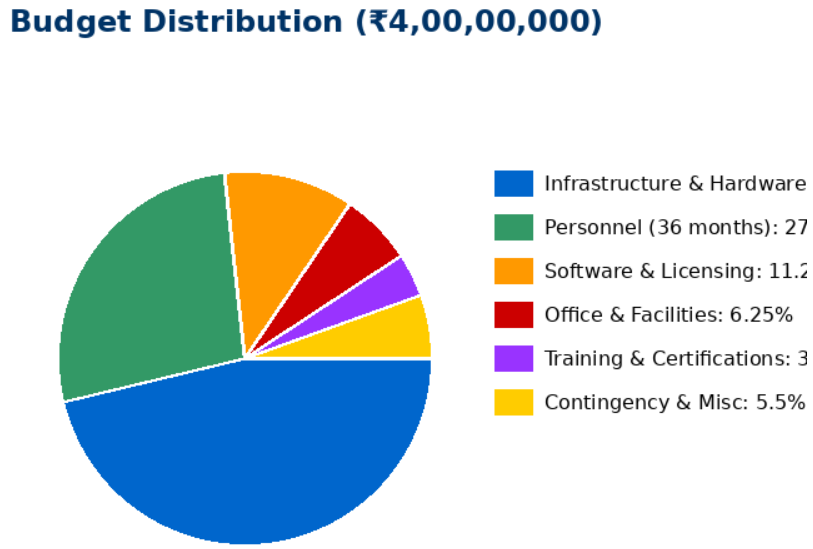
## Contents

# 1 Executive Summary

## 1.1 Project Overview

**Project Name:** SPIT SHIELD (Securing Hardware & Infrastructure through Education, Labs & Defense)

**Total Budget:** Rs 4,00,00,000 (Four Crores)
**Duration:** 36 Months (June 2026 - May 2029)




## 1.2 Vision Statement

To establish a **world-class, enterprise-grade Cyber Security Research and Training Laboratory** that serves as a hub for cutting-edge research, industry collaboration, and development of next-generation cybersecurity professionals.

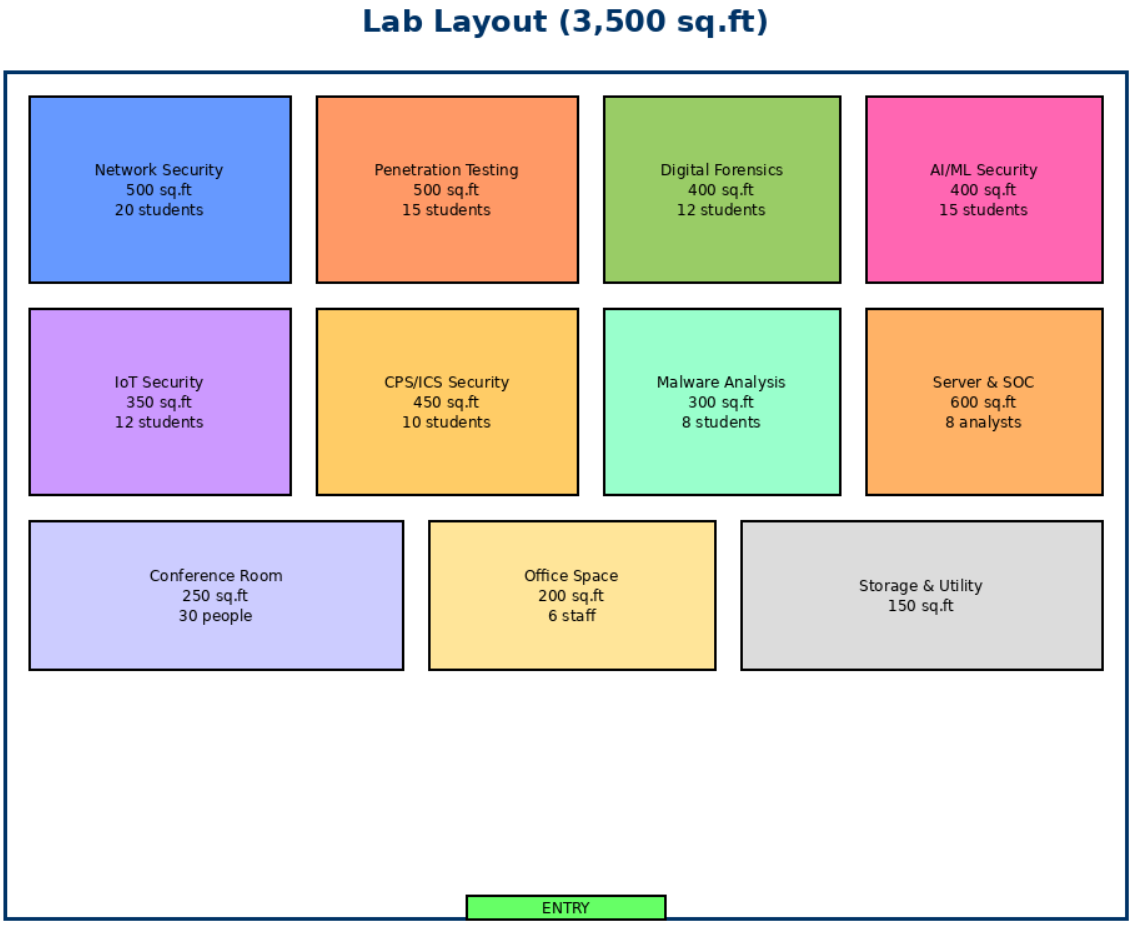
## 1.3 Key Deliverables

- 60+ High-performance Cyber Security Workstations
- 10 Specialized Labs covering all cybersecurity domains
- 1,500+ Students trained over 3 years
- 50+ Research Papers published
- 3+ Patents filed
- 100+ Industry Collaborations

# 2 Infrastructure and Lab Layout

## 2.1 Laboratory Distribution

The lab spans 3,500 sq. ft. with 10 specialized areas:

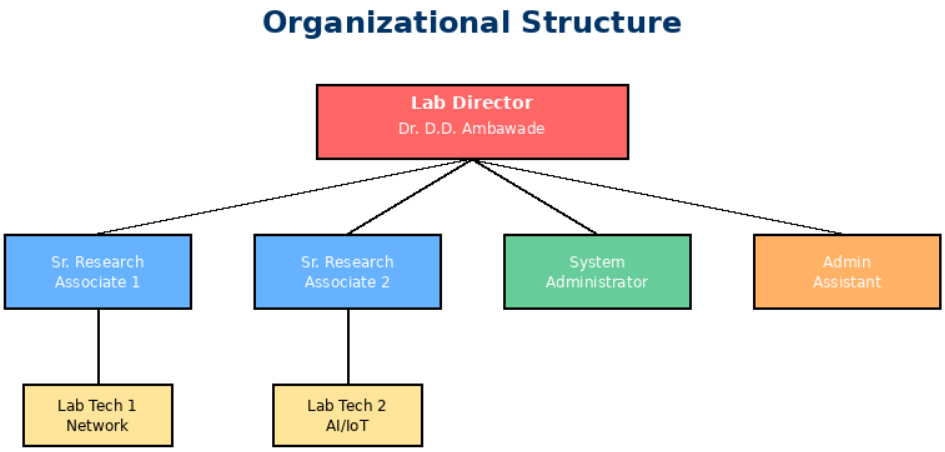



| Lab Name | Area (sq.ft) | Capacity | Primary Focus |
|---|---|---|---|
| Network Security Lab | 500 | 20 students | Firewall, IDS/IPS Analysis |
| Penetration Testing Lab | 500 | 15 students | Ethical Hacking |
| Digital Forensics Lab | 400 | 12 students | Evidence Analysis |
| AI/ML Security Lab | 400 | 15 students | Threat Detection |
| IoT Security Lab | 350 | 12 students | Device Security |
| CPS/ICS Security Lab | 450 | 10 students | SCADA Systems |

| Lab Name | Area (sq.ft) | Capacity | Primary Focus |
|---|---|---|---|
| Server Room & SOC | 600 | 8 analysts | Infrastructure |
| Malware Analysis Lab | 300 | 8 students | Reverse Engineering |
| Conference Room | 250 | 30 people | Meetings |
| Office & Storage | 350 | 6 staff | Admin |

# 3 Personnel Structure

## 3.1 Organizational Hierarchy



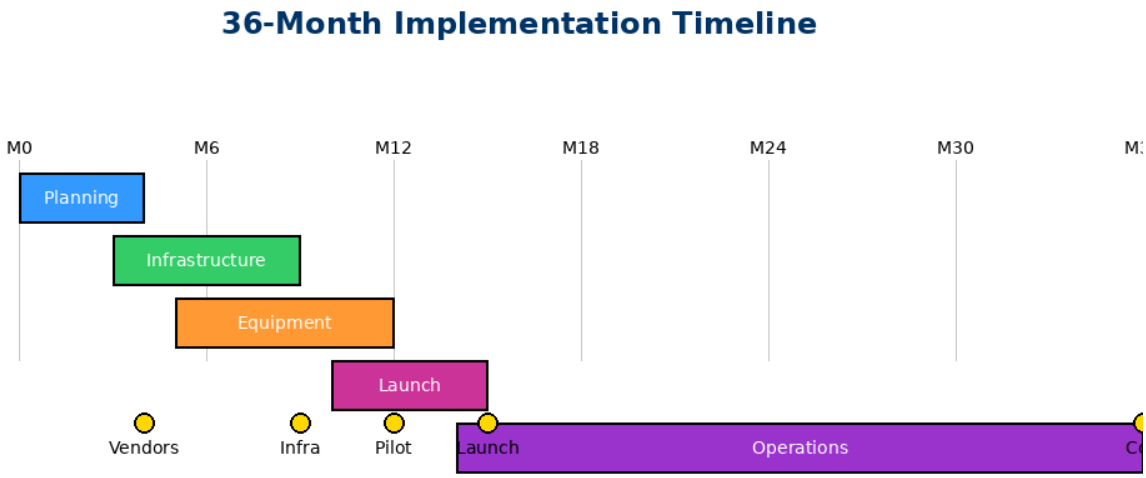

## 3.2 Team Composition (7 Members + Student Assistants)

1. **Lab Director** - Dr. D.D. Ambawade (Rs 27,00,000/36M)
2. **Sr. Research Associate 1** - Network Security (Rs 28,80,000)
3. **Sr. Research Associate 2** - AI/ML & IoT Security (Rs 24,00,000)
4. **System Administrator** - Infrastructure (Rs 21,60,000)
5. **Lab Technician 1** - Network Labs (Rs 14,40,000)
6. **Lab Technician 2** - AI/IoT Labs (Rs 9,60,000)
7. **Administrative Assistant** - Operations (Rs 12,60,000)

**Total Personnel Budget:** Rs 1,08,00,000

# 4 Implementation Timeline

## 4.1 36-Month Roadmap




## 4.2 Key Milestones

### 4.2.1 Phase 1: Planning (Months 1-4)

- DPR approval, vendor selection

### 4.2.2 Phase 2: Infrastructure (Months 3-9)

- Civil work, electrical, HVAC, networking

### 4.2.3 Phase 3: Equipment (Months 5-12)

- Hardware procurement in 3 batches

### 4.2.4 Phase 4: Launch (Months 10-15)

- Pilot testing, soft launch, full operations

### 4.2.5 Phase 5: Operations & Research (Months 14-36)

- Active research, publications, partnerships

# 5 Budget Breakdown

## 5.1 Total Budget: Rs 4,00,00,000

| Category | Allocation | Percentage |
|---|---|---|
| Infrastructure & Hardware | Rs 1,85,00,000 | 46.25% |
| Personnel (36 months) | Rs 1,08,00,000 | 27.00% |
| Software & Licensing | Rs 45,00,000 | 11.25% |
| Office & Facilities | Rs 25,00,000 | 6.25% |
| Training & Certifications | Rs 15,00,000 | 3.75% |
| Contingency & Misc | Rs 22,00,000 | 5.50% |

## 5.2 Hardware Investment (Rs 1,85,00,000)

### 5.2.1 Workstations (60 units - Rs 75,00,000)

- 15x High-Performance (i7, 32GB, RTX 4060) @ Rs 2,00,000
- 25x Standard Security (i5, 16GB, GTX 1650) @ Rs 1,20,000
- 20x Basic Lab (i3, 16GB) @ Rs 60,000

### 5.2.2 Network Infrastructure (Rs 35,00,000)

- Enterprise Firewalls (FortiGate/Sophos)
- Core & Access Switches
- WiFi 6 Infrastructure
- IDS/IPS Systems

### 5.2.3 Server Infrastructure (Rs 30,00,000)

- 3x Hypervisor Servers (Dell R650, 256GB RAM)
- Storage Server (48TB RAID10)
- Backup NAS (24TB)
- Server Racks & KVM

### 5.2.4 Specialized Equipment

- GPU Cluster for AI/ML: Rs 15,00,000
- CPS Lab Equipment: Rs 10,00,000
- Digital Forensics Tools: Rs 8,00,000
- IoT Security Equipment: Rs 5,00,000

# 6 Research Objectives

## 6.1 Focus Areas

1. **AI/ML Security** - Adversarial ML, Threat Detection
2. **IoT Security** - Firmware Analysis, Hardware Security
3. **CPS/ICS Security** - SCADA, Industrial Protocols
4. **Network Security** - 5G/6G, Zero-Trust, APT Detection
5. **Blockchain Security** - Smart Contracts, DeFi
6. **Cloud Security** - Container, Serverless, Multi-cloud
7. **Digital Forensics** - Mobile, Cloud, Memory Forensics

## 6.2 Expected Research Output (3 Years)

- **50+ Publications** in top-tier conferences and journals
- **3+ Patents** filed
- **7+ Open-source Tools** developed
- **Rs 1.6 Cr+ External Funding** secured

## 6.3 Target Publication Venues

**Top-Tier Conferences:** - USENIX Security, IEEE S&P (Oakland), ACM CCS, NDSS

**Quality Conferences:** - ACSAC, AsiaCCS, RAID, ESORICS, IoTDI

**Journals:** - IEEE TIFS, IEEE TDSC, ACM TOPS, Computers & Security

# 7 Expected Impact

## 7.1 Quantitative Outcomes (3 Years)

- **1,500+ Students** trained in advanced cybersecurity
- **50+ Research Papers** published
- **100+ Industry Collaborations** established
- **500+ Professional Certifications** awarded
- **Rs 2 Cr+ External Grants** secured
- **3+ Patents** filed
- **7+ Open-source Tools** developed

## 7.2 Qualitative Impact

### 7.2.1 For Students

- Hands-on experience with enterprise-grade tools
- Industry-recognized certifications
- Enhanced employability (100% placement target)
- Research opportunities

### 7.2.2 For Institution (SPIT)

- First comprehensive cybersecurity lab in region
- Enhanced NAAC/NBA ratings
- Improved rankings
- Stronger industry partnerships

### 7.2.3 For Nation

- Contribution to Digital India Mission
- Support for National Cyber Security Policy 2023
- Strengthening critical infrastructure security
- Development of indigenous security solutions

# 8 Strategic Alignment

## 8.1 National Priorities

- **Digital India Initiative** - Supporting digital transformation security
- **National Cyber Security Policy 2023** - Contributing to policy implementation
- **NEP 2020** - Skill development goals alignment
- **Atmanirbhar Bharat** - Strengthening indigenous cybersecurity capabilities

## 8.2 Industry Relevance

- Addresses **500,000+ cybersecurity job gap** in India
- Industry 4.0 security requirements
- Critical infrastructure protection
- 5G/6G security research

# 9 Conclusion

The **SPIT SHIELD project** represents a strategic investment in India's cybersecurity infrastructure and human capital. With a comprehensive budget of Rs 4 Crores over 36 months, this initiative will:

1. Establish a **world-class cybersecurity lab** with 10 specialized facilities
2. Train **1,500+ students** in advanced cybersecurity
3. Produce **50+ research publications** in top-tier venues
4. Secure **Rs 2 Cr+ external funding**
5. File **3+ patents** and develop 7+ open-source tools
6. Establish **100+ industry partnerships**
7. Position SPIT as a **Centre of Excellence**

## 9.1 Strategic Value

This project perfectly aligns with national priorities, industry needs, and academic excellence goals, while contributing significantly to India's digital security and sovereignty.

## 9.2 Contact Information

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**SPIT SHIELD**

*"Securing Tomorrow's Digital Infrastructure"*

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**Proposal Version:** 1.0
**Date:** October 2025
**Status:** Ready for Submission