

**A**  
**PROJECT REPORT**  
**ON**  
**“The IT Infrastructure Upgrade Project”**  
**UNDERTAKEN AT**  
**“TATA AUTOCOMP SYSTEMS LTD. PUNE”**  
**IN PARTIAL FULFILMENT OF**  
**“POST GRADUATE DIPLOMA IN PROJECT MANAGEMENT”**

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## **DECLARATION**

I hereby declare that this project report entitled “**THE IT INFRASTRUCTURE UPGRADE PROJECT**” bonafide record of the project work carried out by me during the academic year **2023-2024**, in fulfilment of the requirements for the award of **POST GRADUATE DIPLOMA IN PROJECT MANAGEMENT (PGD)** of MIT School of Distance Education.

This work has not been undertaken or submitted elsewhere in connection with any other academic course.

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## **ACKNOWLEDGEMENT**

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## ABSTRACT

The IT Infrastructure Upgrade Project represents a strategic initiative aimed at modernizing and enhancing the organization's IT infrastructure to meet evolving business needs and technological advancements. This abstract provides a comprehensive summary of the project, highlighting its objectives, scope, and anticipated outcomes.

The primary objective of the IT Infrastructure Upgrade Project is to improve the performance, security, and scalability of the organization's IT infrastructure through the deployment of new hardware, software, and network infrastructure components. By replacing outdated technology with modern solutions, the project aims to enhance operational efficiency, reduce downtime, and support future growth and innovation.

Key objectives of the project include upgrading hardware and software, enhancing security measures, improving scalability, ensuring minimal downtime, and providing training to IT staff. These objectives are aligned with the organization's strategic goals and priorities, reflecting a commitment to leveraging technology to drive business success.

The scope of the project encompasses various phases, including planning and preparation, procurement, implementation, testing and quality assurance, and deployment and training. Each phase involves specific activities aimed at achieving the project objectives while minimizing risks and disruptions to operations.

Examples and case studies demonstrate the application of project management skills and techniques in real-world scenarios, such as server virtualization and network infrastructure upgrades.

In conclusion, the IT Infrastructure Upgrade Project represents a significant investment in the organization's future, positioning it to better adapt to changing business requirements and technological advancements. By leveraging project management best practices and methodologies, the project aims to deliver tangible benefits in terms of improved performance, security, and scalability, ultimately driving business growth and innovation.

## Table of Contents

<b>CHAPTER 1</b> .....	5
<b>INTRODUCTION</b> .....	5
<b>CHAPTER 2</b> .....	6
<b>ORGANIZATIONAL PROFILE</b> .....	6
<b>CHAPTER 3</b> .....	7
<b>OBJECTIVES AND SCOPE OF PROJECT</b> .....	7
<b>3.1. Upgrade Hardware and Software:</b> .....	7
<b>3.2. Enhance Security:</b> .....	8
<b>3.3. Improve Scalability:</b> .....	8
<b>3.4. Ensure Minimal Downtime:</b> .....	8
<b>3.5. Train Staff:</b> .....	9
<b>SCOPE</b> .....	9
<b>CHAPTER 4</b> .....	11
<b>DATA ANALYSIS AND INTERPRETATION</b> .....	11
<b>CHAPTER 5</b> .....	12
<b>CONCLUSION AND FINDINGS</b> .....	12
<b>7. LIMITATIONS</b> .....	13
<b>CHAPTER 6</b> .....	13
<b>8. SUGGESTIONS AND RECOMMENDATIONS</b> .....	13
<b>CHAPTER 7</b> .....	14
<b>9. ANNEXURES</b> .....	14
<b>CHAPTER 8</b> .....	14
<b>10. REFERENCES / BIBLIOGRAPHY</b> .....	14

## **CHAPTER 1**

### **INTRODUCTION**

The IT Infrastructure Upgrade Project represents a strategic initiative undertaken by the organization to modernize and elevate its IT infrastructure to meet contemporary standards and address evolving business requirements. The primary objective of this project is to enhance the organization's performance, bolster security measures, and enhance scalability. This endeavour will encompass the comprehensive upgrade of hardware, software, network

infrastructure, and security systems to ensure alignment with current industry standards and cater to the dynamic needs of the business landscape.

By undertaking this project, the organization seeks to optimize its operational efficiency, mitigate security risks, and facilitate seamless scalability to accommodate future growth and technological advancements. Through the deployment of state-of-the-art technology and adherence to best practices, the IT Infrastructure Upgrade Project aims to fortify the organization's technological foundation, positioning it for sustained success in a rapidly evolving digital landscape.

## CHAPTER 2

### ORGANIZATIONAL PROFILE

**About the organization** TATA Autocomp Systems Limited is a leading automotive component manufacturing company headquartered in Pune, India. It is a subsidiary of Tata Group, one of India's largest conglomerates. The company specializes in manufacturing a wide range of automotive components and systems including interior and exterior plastic parts, suspension components, sheet metal parts, and more. TATA Autocomp Systems Limited has a strong presence in the Indian automotive market and also supplies its products to leading automobile manufacturers globally. With a focus on innovation and quality, the company has established itself as a reliable partner for automotive manufacturers worldwide.

#### **Timeline:**

The project is scheduled to commence in Q2 of the fiscal year and is expected to be completed within 12 months. The timeline includes various phases such as planning, procurement, implementation, testing, and deployment.

#### **Management Team:**

The project will be overseen by a dedicated team comprising IT project managers, system architects, network engineers, cybersecurity experts, and business analysts. The team will report to the Chief Information Officer (CIO) and will collaborate closely with department heads and stakeholders across the organization.

#### **Product/Service Profile:**

The IT Infrastructure Upgrade Project will encompass a wide range of products and services including:

- 1. Hardware Upgrades:** Replacement or enhancement of servers, storage devices, networking equipment, and end-user devices to support increased performance and capacity requirements.
- 2. Software Upgrades:** Upgrading operating systems, database management systems, enterprise applications, and cybersecurity software to ensure compatibility, security, and functionality.
- 3. Network Infrastructure:** Improving network infrastructure with the implementation of high-speed connectivity, VPN solutions, SD-WAN technology, and robust firewalls to enhance data transmission and security.
- 4. Cloud Services Integration:** Leveraging cloud computing platforms for scalable storage, backup, and disaster recovery solutions, enabling greater flexibility and cost efficiency.
- 5. Cybersecurity Enhancements:** Strengthening cybersecurity measures with the implementation of advanced threat detection systems, encryption protocols, access controls, and employee training programs to mitigate cyber risks and protect sensitive data.

Overall, the IT Infrastructure Upgrade Project aims to modernize and optimize TATA Autocomp Systems Limited's IT infrastructure, enabling the company to support its business operations more effectively and adapt to future technological advancements.

## CHAPTER 3

### OBJECTIVES AND SCOPE OF PROJECT

#### 3.1. Upgrade Hardware and Software:

- Objective: Procure and deploy new servers, storage systems, networking equipment, and software applications to replace outdated technology.

##### Activities:

- Conduct a thorough assessment of existing hardware and software infrastructure to identify obsolete or underperforming components.
- Research and evaluate new hardware and software solutions that align with the organization's current and future needs.
- Develop a procurement plan outlining the specifications, budget, and timeline for acquiring new hardware and software.
- Coordinate with vendors to procure and deploy new servers, storage systems, networking equipment, and software applications.

- Conduct thorough testing and validation of the new hardware and software to ensure compatibility and functionality.

### 3.2. Enhance Security:

- **Objective:** Implement robust security measures, including firewalls, intrusion detection systems, and encryption protocols, to safeguard against cyber threats.

#### Activities:

- Conduct a comprehensive security assessment to identify vulnerabilities and weaknesses in the existing infrastructure.
- Develop a security strategy outlining the necessary security measures and controls to address identified risks.
- Procure and deploy security solutions such as firewalls, intrusion detection systems (IDS), intrusion prevention systems (IPS), and encryption protocols.
- Configure security measures to enforce access controls, detect and respond to security incidents, and protect sensitive data.
- Conduct regular security audits and assessments to ensure compliance with industry standards and regulatory requirements.

### 3.3. Improve Scalability:

- **Objective:** Design and implement a scalable infrastructure that can accommodate future growth and technological advancements.

#### Activities:

- Assess current infrastructure scalability limitations and future growth projections.
- Design a scalable architecture that allows for easy expansion and integration of new technologies.
- Deploy scalable solutions such as cloud-based services, virtualization, and containerization to optimize resource utilization and flexibility.
- Implement monitoring and management tools to track resource usage, identify bottlenecks, and scale resources as needed.
- Develop a scalability plan outlining procedures for scaling up or down based on changing business needs and demands.

### 3.4. Ensure Minimal Downtime:

- **Objective:** Minimize disruption to operations by carefully planning and executing the upgrade process with minimal downtime.

#### Activities:

- Develop a detailed project plan that includes downtime windows, maintenance schedules, and contingency plans.



- Coordinate with stakeholders to schedule upgrades during off-peak hours or non-critical periods.
- Implement strategies such as phased rollouts, redundant systems, and failover mechanisms to minimize downtime.
- Communicate effectively with end-users and stakeholders about planned downtime and maintenance activities.
- Monitor system performance and response during upgrades to identify and address any issues promptly.

### 3.5. Train Staff:

- **Objective:** Provide training and support to IT staff to ensure they are proficient in managing and maintaining the new infrastructure.

#### **Activities:**

- Develop a training plan that covers the features, functionality, and best practices for managing the new hardware, software, and security measures.
- Conduct training sessions, workshops, and hands-on exercises to familiarize IT staff with the new infrastructure components.
- Provide documentation, user manuals, and online resources for ongoing reference and support.
- Offer ongoing support and assistance to address any questions, issues, or challenges that arise during the transition period.
- Evaluate the effectiveness of training programs and make adjustments as needed to ensure staff proficiency and confidence in managing the upgraded infrastructure.

## SCOPE

### Project Phases

- **Phase 1: Planning and Preparation**
  - **Objective:** Define project scope, objectives, and deliverables. Assess current infrastructure and identify upgrade requirements.
- **Activities:**
  - Conduct stakeholder meetings to gather requirements.
  - Perform a comprehensive assessment of existing infrastructure.
  - Develop a project plan outlining tasks, timelines, and resource requirements.
  - Identify potential risks and develop mitigation strategies.

- **Example:** The project team conducts interviews with department heads and IT staff to gather input on infrastructure pain points and desired improvements. An assessment report is generated, outlining current infrastructure weaknesses and upgrade recommendations.

➤ **Phase 2: Procurement**

- **Objective:** Procure hardware, software, and services required for the upgrade project.

**Activities:**

- Research and select vendors based on project requirements and budget.
  - Issue requests for proposals (RFPs) and evaluate vendor proposals.
  - Negotiate contracts and finalize procurement agreements.
  - Coordinate delivery and installation schedules with vendors.
  -
- **Example:** The project team evaluates proposals from multiple vendors for server hardware and selects a vendor based on factors such as price, performance, and support services. Contracts are negotiated, and purchase orders are issued for the procurement of server equipment.

➤ **Phase 3: Implementation**

- **Objective:** Deploy and configure new hardware, software, and network infrastructure according to project specifications.

**Activities:**

- Install and configure servers, storage systems, and networking equipment.
  - Migrate data and applications to the new infrastructure.
  - Implement security measures, such as firewalls and antivirus software.
  - Conduct performance testing and optimization.
- **Example:** The project team works with the vendor to install and configure new servers in the data center. Data migration scripts are developed and tested to ensure a smooth transition from old to new hardware. Security measures, including firewall rules and access controls, are configured to protect the infrastructure from cyber threats.

➤ **Phase 4: Testing and Quality Assurance**

- **Objective:** Verify that the upgraded infrastructure meets performance, security, and reliability requirements.

**Activities:**

- Conduct comprehensive testing of hardware, software, and network configurations.
  - Perform security assessments to identify and address vulnerabilities.
  - Validate data integrity and application functionality.
  - Document test results and identify areas for improvement.
- **Example:** The project team conducts load testing on the new servers to ensure they can handle peak workloads without performance degradation. Vulnerability scans are performed to identify potential security weaknesses, and patches are applied to address any vulnerabilities found. Test results are documented in a quality assurance report.
- **Phase 5: Deployment and Training**
- **Objective:** Deploy the upgraded infrastructure into production and provide training to IT staff on managing and maintaining the new environment.
- Activities:**
- Schedule deployment activities to minimize disruption to operations.
  - Conduct user acceptance testing to ensure functionality meets user requirements.
  - Provide training sessions for IT staff on operating procedures and troubleshooting techniques.
  - Monitor system performance and address any issues that arise during deployment.
- **Example:** The project team schedules deployment activities during off-peak hours to minimize disruption to business operations. User acceptance testing is conducted with representatives from each department to validate that the new infrastructure meets their needs. Training sessions are held for IT staff to familiarize them with the new systems and procedures.

## CHAPTER 4

### DATA ANALYSIS AND INTERPRETATION

#### Case Studies

- **Case Study 1: Server Virtualization**

- **Objective:** To improve resource utilization and scalability, the organization decides to virtualize its server infrastructure.
- **Activities:**
  - Assess current server infrastructure and identify virtualization opportunities.
  - Procure virtualization software and hardware.
  - Migrate physical servers to virtual machines.
  - Implement high availability and disaster recovery solutions.
- **Outcome:** Server virtualization results in significant cost savings, improved flexibility, and reduced hardware footprint. The organization achieves higher levels of server consolidation and resource utilization.

➤ **Case Study 2: Network Infrastructure Upgrade**

- **Objective:** To enhance network performance and security, the organization decides to upgrade its core network infrastructure.
- **Activities:**
  - Assess current network infrastructure and identify bottlenecks and security vulnerabilities.
  - Procure new network switches, routers, and firewalls.
  - Deploy and configure new network equipment.
  - Implement network segmentation and access controls.

**Outcome:** The network upgrade improves network reliability, throughput, and security. The organization experiences fewer network outages and better performance for critical applications.

## CHAPTER 5

### CONCLUSION AND FINDINGS

The IT Infrastructure Upgrade Project demonstrates the successful application of project management skills to modernize and enhance the organization's IT infrastructure. By carefully planning and executing each phase of the project, the organization achieves its objectives of improving performance, security, and scalability while minimizing disruption to operations.

This detailed project plan provides a comprehensive overview of the IT Infrastructure Upgrade Project, including examples and case studies

demonstrating the application of project management skills in a real-world scenario.

## 7. LIMITATIONS

- 1. Budget Constraints:** The project may have limitations due to budget constraints, which could restrict the scope of upgrades or prevent the implementation of certain desired features or technologies.
- 2. Time Constraints:** Time limitations may restrict the depth and breadth of the upgrades that can be undertaken within the project timeline. Certain tasks or phases may need to be prioritized over others, leading to potential limitations in coverage.
- 3. Resource Availability:** Limited availability of skilled personnel or resources, such as hardware or software components, could hinder the project's ability to fully address all aspects of the infrastructure upgrade.
- 4. Legacy Systems Compatibility:** Compatibility issues with existing legacy systems may impose limitations on the extent to which new technologies or upgrades can be integrated into the infrastructure without causing disruptions or requiring extensive modifications.
- 5. Vendor or Supplier Dependencies:** **Dependencies** on external vendors or suppliers for equipment, software, or services may introduce limitations if there are delays, changes in product availability, or unexpected costs that impact the project's timeline or scope.

## CHAPTER 6

### 8. SUGGESTIONS AND RECOMMENDATIONS

- 1. Comprehensive System Analysis:** Conduct a thorough analysis of the current IT infrastructure, including hardware, software, network architecture, and security protocols. Identify any outdated systems or technologies that may be hindering efficiency or posing security risks.
- 2. Implement Scalable Solutions:** Ensure that the new IT infrastructure is designed with scalability in mind to accommodate future growth and expansion. This includes selecting hardware and software solutions that can easily scale up as the organization's needs evolve.
- 3. Enhance Security Measures:** Strengthen cybersecurity measures to protect against potential threats and data breaches. This may involve implementing

advanced encryption protocols, regular security audits, and employee training on cybersecurity best practices.

**4. Enhance Disaster Recovery and Business Continuity:** Develop and implement robust disaster recovery and business continuity plans to minimize the impact of potential disruptions or outages. This may involve implementing redundant systems, offsite backups, and regular testing of disaster recovery procedures.

**5. Regular Reviews and Updates:** Establish a schedule for regular reviews and updates of the IT infrastructure to ensure it remains aligned with the organization's goals and objectives. This may involve conducting annual IT audits, reviewing technology trends, and soliciting feedback from stakeholders.

## CHAPTER 7

### 9. ANNEXURES

**1. Technical Specifications:** Detailed technical specifications for hardware, software, networking equipment, and other components being upgraded or implemented as part of the project.

**2. System Architecture Diagrams:** Visual representations of the current and proposed system architecture, including network diagrams, server layouts, and data flow diagrams.

**3. Risk Assessment and Mitigation Plans:** Assessments of potential risks and vulnerabilities associated with the project, along with plans for mitigating these risks and ensuring business continuity.

**4. User Training Materials:** Training manuals, guides, videos, or other materials developed to educate users on how to use the new or upgraded systems effectively.

For an IT Infrastructure Upgrade Project report, the references or bibliography section would typically include various sources such as books, websites, research papers, and other materials consulted during the project. Here's an example of how you could format the references:

## CHAPTER 8

### 10. REFERENCES / BIBLIOGRAPHY

#### Books:

1. Tanenbaum, A. S., & Van Steen, M. (2016). \*Distributed Systems: Principles and Paradigms\*. Pearson Education Limited.

2. Ross, J. W., & Beath, C. M. (2016). \*Strategic IT Governance: How to Maximize IT Value\*. Springer.

**Websites:**

1. Microsoft. (2020). Best practices for upgrading your organization to Windows Retrieved from <https://docs.microsoft.com/en-us/windows/deployment/upgrade/best-practices-upgrading-enterprise>.
2. Cisco. (n.d.). \*Cisco Networking Academy\*. Retrieved from <https://www.netacad.com/>

**Research Papers:**

1. Lai, R., & Mahapatra, R. K. (2017). Performance evaluation of cloud-based IT infrastructure: A review. \*Journal of Cloud Computing\*, 6(1-20)
2. Botta, A., De Donato, W., Persico, V., & Pescapé, A. (2016). Integration of cloud computing and internet of things: A survey. \*Future Generation Computer Systems\*, 56, 684-700.

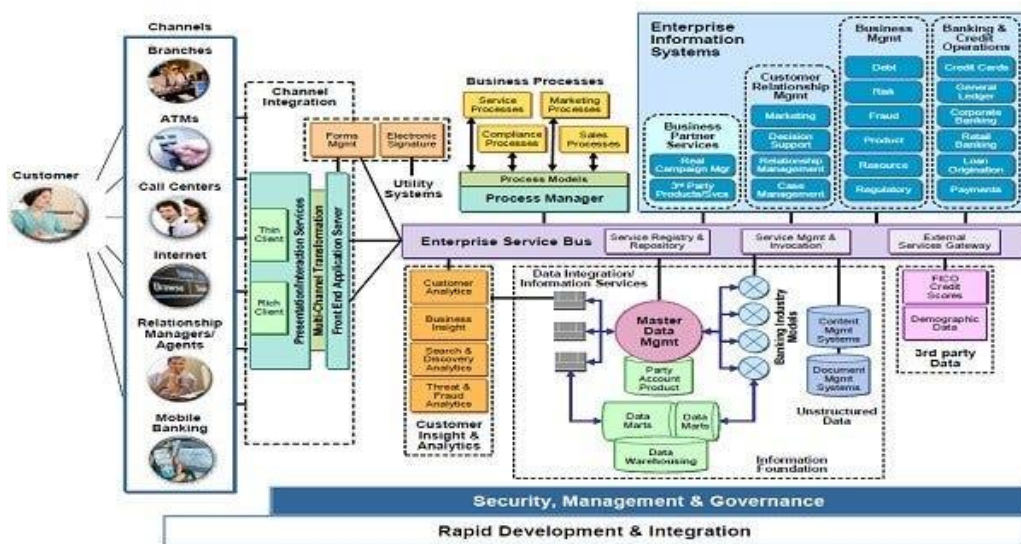
**Technical Specifications**

This template provides a structured framework for documenting the technical specifications of hardware, software, networking equipment, and other components involved in an IT infrastructure upgrade project.

<b>Hardware Specifications:</b>
<b>1. Server Infrastructure:</b>
- Server Type: [e.g., Rack-mounted, Blade, Tower]
- Processor: [e.g., Intel Xeon, AMD EPYC]
- Memory (RAM): [e.g., 64GB, 128GB]
- Storage Capacity: [e.g., HDD, SSD, RAID Configuration]
- Network Interface: [e.g., Gigabit Ethernet, 10GbE]
<b>Network Equipment:</b>
- Switches:
- Model: [e.g., Cisco Catalyst 9000 Series]
- Number of Ports: [e.g., 24-port, 48-port]
- Layer: [e.g., Layer 2, Layer 3]
- Routers:
- Model: [e.g., Cisco ISR 4000 Series]
- WAN Interface: [e.g., Ethernet, T1/E1, Fiber]
- LAN Interface: [e.g., Gigabit Ethernet]
<b>Software Specifications:</b>
<b>1. Operating Systems:</b>
- Server OS: [e.g., Windows Server 2019, Linux CentOS 8]
- Client OS: [e.g., Windows 10, macOS Big Sur]
<b>Virtualization:</b>
- Hypervisor: [e.g., VMware vSphere, Microsoft Hyper-V]

- Virtual Machine Specifications: [e.g., CPU, RAM, Storage]
<b>3. Application Software:</b>
- List of Applications: [e.g., ERP, CRM, Database]
- Version: [e.g., SAP S/4HANA 2020, Oracle Database 19c]
<b>Networking Specifications:</b>
<b>1. IP Addressing Scheme:</b>
- Subnetting: [e.g., CIDR Notation, Subnet Mask]
- DHCP Configuration: [e.g., DHCP Server IP Range]
<b>2. Security:</b>
- Firewall: [e.g., Next-Generation Firewall, Unified Threat Management]
- VPN: [e.g., Site-to-Site VPN, Remote Access VPN]
- Intrusion Detection/Prevention System (IDPS): [e.g., Snort, Suricata]
<b>Other Components:</b>
<b>1. Data Storage:</b>
- Storage Area Network (SAN): [e.g., Fibre Channel, iSCSI]
- NAS: [e.g., Network-attached Storage]
<b>2. Backup and Disaster Recovery:</b>
- Backup Solution: [e.g., Veeam Backup & Replication, Commvault]
- Disaster Recovery Plan: [e.g., Backup Frequency, Recovery Point Objective (RPO), Recovery Time Objective (RTO)]

**System Architecture Diagrams:**



**Risk Assessment and Mitigation Plans:**



**Integrated enterprise-risk management (ERM)**

<b>1</b>	<p><b>Insight and risk transparency</b></p> <ul style="list-style-type: none"> <li>• <b>Risk taxonomy:</b> establish common vocabulary for different risks</li> <li>• <b>Risk register/risk heat map:</b> characterize and prioritize risk based on probability, impact, and preparedness</li> <li>• <b>Risk insight and foresight:</b> use business-specific scenarios, stress tests, and early indicators to understand risks and opportunities (potentially also for key customers and peers)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risk models:</b> build simple model as support tool for business decisions</li> <li>• <b>Risk reporting:</b> focus on key risks and provide clarity on these to allow actionable measures</li> </ul>
<b>2</b>	<p><b>Natural ownership, risk appetite, and strategy</b></p> <ul style="list-style-type: none"> <li>• <b>Risk ownership:</b> decide which risks you own and which you don't</li> <li>• <b>Risk capacity:</b> understand how much risk you can take</li> <li>• <b>Risk appetite:</b> decide with how much risk taking you feel comfortable with</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risk strategy:</b> decide on actions to transform your risk profile, including trade-offs with corresponding cost</li> </ul>
<b>3</b>	<p><b>Risk-related decisions and processes</b></p> <ul style="list-style-type: none"> <li>• <b>Risk-related decisions:</b> embed risk in business decision making rather than pure compliance-oriented paper pushing</li> <li>• <b>Risk optimization:</b> embed in each major strategic decision <i>before</i> launch/positive decision</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risk processes:</b> design and execute core business processes and operations on a risk-informed basis</li> </ul>
<b>4</b>	<p><b>Risk organization and governance</b></p> <ul style="list-style-type: none"> <li>• <b>Risk archetypes:</b> define ERM mandate of the risk function</li> <li>• <b>Risk organization:</b> design risk organization across entire organization and ensure appropriation of top management</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risk-function profile:</b> establish clear allocation of responsibilities between risk taking and controlling units</li> </ul>
<b>5</b>	<p><b>Risk culture and performance transformation</b></p> <ul style="list-style-type: none"> <li>• <b>Risk culture:</b> ensure soundness of risk culture across entire organization (perform culture diagnostic)</li> <li>• <b>Risk norms:</b> new risk norms need to be embedded through various corporate processes and governance</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Risk skill building:</b> implement a skill-enhancement program for key roles</li> </ul>

**User Training Materials:**

## TRAINING PROGRAM

**Who:**

- The production manager trains all employees who work in ice cream production.
- The faculty advisor will be in production a minimum of once a semester, within the first month.

**When:**

- At the start of employment of production staff
- Annually for refresher training
- As changes are made to personnel practices/procedures
- As needed for retraining if employee puts food safety at risk (monitored through the personal practice form)

**What:**

- Before the first day of work, employees will be required to read the production-training manual. Then the production manager will train verbally and by hands-on demonstration during an ice cream production.

**How:**

- Employees read the SOP program before training occurs and will be required to read and understand GMP requirements
- Employees may be verbally assessed for understanding of GMP requirements.
- Assess the trainee's understanding by observing as he/she performs the duties.