Please analyze in detail how technology is managed in your organization highlighting the role played by technology in various Departments of the organization. As a Consultant, please suggest, in detail, areas of improvement

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My Employer - Engineers India Limited

Engineers India Limited is a construction design and engineering consultancy, specializing in Oil and Gas Production and Processing, Fertilizer Projects, LNG Terminals, Petrochemicals, Ports and Infrastructure Projects. Company desires to grow in these core business areas remain a high profit business.

Construction is the most diversified industry: A key player in this vast enterprise is the constructor, a term given to the leaders and managers in the construction industry having skills and knowledge, acquired through education and experience, to manage the planning, design, and construction of a project from inception to completion for the purpose of controlling time, cost and quality.

EIL is involved in the planning, design, and construction of many types of facilities:

- Commercial (i.e., office buildings and shopping centres),
- Institutional (i.e., hospitals and schools),
- Industrial (i.e., factories and refineries),
- Residential (i.e., homes and apartments),
- Civil (i.e., highways and utilities)

EIL's current portfolio includes: (1) Refinery up gradation and expansion projects, (2) Pipelines, Terminals and Storages (3) Infrastructure Sector Projects. EIL is working on Government Projects on National Highways, Air Ports, Special Economic Zones, Bharat Nirman Yojna, Metro Rail, etc

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EIL Construction Engineering Projects involves more than 17 different engineering disciplines: including Structural Engineering, Chemical Engineering, Architecture, Sub Surface Engineering, Marine Engineering, Geotechnical, Mechanical, Process, Pipeline, Offshore, Civil, Piping, Soil Engineering and Computer Science.

Construction Project Management

Construction Project Management involves: Overall planning, co-ordination and control of a project from inception to completion aimed at meeting a client's requirements in order to produce a functionally and financially viable project that will be completed on time within authorized cost and to the required quality standards.

EIL's Technology quotient should be in tune with the business thinking - About competition, emerging threats and opportunities, and the business technology implications of each. Technology priorities, investments, and capabilities are internally consistent with business priorities, investments, and capabilities.

EIL's principles for Technology Management are: Aimed to be a set of robust, flexible and repeatable processes. Simply defining these processes is insufficient though, to effectively implement business technology management requires that processes be defined and consistently optimized evaluated to ensure that:

1. General quality of business practice—Doing the right things
2. Efficiency—Doing things quickly with little redundancy
3. Effectiveness—Doing things well.

Technology Strategy - Not only enables execution of current business strategy but also anticipates and helps shape future business models and strategy. Business technology leadership, thinking, and investments may actually step out ahead of the business (that is, beyond what is "aligned" with today's business).

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The purpose of EIL's technology strategy should be to seed new opportunities and encourage far-sighted Management vision about technology's leverage on future business opportunities. Yet the business and technology are synchronized in that the requisite capabilities will be in place when it is time to "strike" the strategic option.

Areas of Technology Management

Technology Management in EIL is related to areas, such as:

- Modern Construction Materials
- Computer Aided design in Civil Engineering
- Construction Project Management, Project Planning, Control and Reporting
- Structural systems and design
- Construction Methods and Equipment
- Functional Efficiency of Buildings
- Acoustics and Lighting
- Corrosion of Materials, Material Testing
- Thermal conductivity
- Construction Project Management Software
- Computer Aided Designing, 3D Modelling and Visualization Development
- Managing of Patents
- Technology related to Construction Materials and Methods
- Methods of Preparation of Construction Drawings
- Documents related to Technological Development
- Cooperative Education in Technology
- Facilities Operation and Maintenance
- Engineering Graphics and Structural Design
- Material Management Methodologies
- Mechanical Systems for Buildings
- Electrical Systems for Buildings

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- Construction Surveying
- Construction Cost Estimating
- Construction Soils and Foundations
- Emerging Technologies in Materials and Processes

Who is responsible for setting up technology policy in EIL? Chairman and Board of Directors of the company are responsible for the having a good Strategic Policy Plan and guiding its implementation throughout the company.

Need for Technology Management Strategy - It is important that as organization EIL has a strategic plan that can fulfil the technology goals of the organization. These strategic goals should include various departments of the organization. They should be parsed and looked at generically as if they apply to the whole organization (where applicable) for purposes of the Strategic Technology Policy.

Objective of Technology policy: is also to unify business and technology decision-making at every level in an enterprise. Technology management build bridges between previously isolated tools and standards for business technology management by strategically incorporating both operational and infrastructure levels of technology management to ensure that an enterprise's business strategy can be realized by the technology it deploys.

This structured approach is used by enterprises to align, synchronize and even converge technology and business management for the purpose of ensuring better execution, risk control and profitability.

Technology Management in EIL is at four levels

The first area is Technology Governance: and EIL is focused on business executives concerned with enterprise-wide governance of business technology. The capabilities that must be developed to support this functional area ensure that required decisions are identified, assigned, and executed effectively.

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The second area is Managing Technology Investments. Focus is to ensure selection and execution of the right business technology initiatives. This ensures that organization understands what it owns from an Technology standpoint, what it is working on, and who is available. EIL must make certain that business technology investment decisions are closely aligned with the needs of the business and that technology initiatives are executed using proven methodologies and available technology.

The third area is Strategy & Planning. This refers to synchronization of business technology with the business. The capabilities that must be developed to support this functional area ensure that a target set of applications will meet the needs of the business and reduce overall complexity. In addition, annual planning and budgeting must incorporate elements of business technology strategy and other evolving needs of the business.

The fourth area is Strategic Enterprise Architecture. This is about overall architecture and standards for the enterprise. The capabilities that must be developed to support this functional area ensure that appropriate information and documentation exists to describe the current and future-state environments.

Also, it is necessary to verify that business and technology people can implement strategies and plans and make recommendations simplifying the existing business technology environ

Further, these strategic Policy goals should be prioritized. A good Strategic Policy addresses not only each technologies in use but also how they interact and inter work with each other. Strategic Policy Plan should prioritize and assign funding for all technology development and related projects throughout the organization.

A good Strategic Policy Plan is a living plan, changing as technologies become available, become implemented & are better understood and as organizational goals change.

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Technology Management for Marketing Department

Technology is taking on an increasingly significant role within marketing/ Marketing leaders who embrace the use of technology in day-to-day analytics and execution of marketing strategy and foster a collaborative environment with the IT department are likely to be more efficient and effective in achieving their goals.

Internet Based Communication, Power Presentations, 3 Modelling, Computer Images and 3D rendered Pictures of a Refinery plant or Chemical Fertilzer Project make a lot of difference in way company present its case to the clients.

Another Example - Software called "Analytics" shapes your perception of your audience. Automation and optimization software influences the design of your marketing operations. A plethora of new advertising, social media and web technologies directly affect the experiences your customers have with you. These aren't mere implementation details -- increasingly, they're important strategic and brand-positioning choices.

Marketing has become deeply entwined with technology. However, the organizational structure of marketing has been slow to adjust to this new technology-centric reality.

Technology Management for Project Management Department

Technology is used in Project Communication, Project Document Sharing, Document Handling and Distribution, Document Repository, Project Management Softwares, Project Schedules Making and Up dations, Material Management, Drawing and Material Availability Management, Coordination of data between head office, site

office and warehouses, Engineering Support Services. Further, business process outsourcing has made possible outsourcing of some work like engineering drawing preparation to third party contractors.

Technology Management for Accounts & Administration Department

Computer supported Administrative and Management Activities, which were earlier managed by manual record keeping was first replaced by computerized record keeping, and desktop softwares is today being replaced by softwares like SAP, ERP, BAAN, a single networked yet unified and customized software solutions for entire work system, all work processes, various department, altogether.

Similarly the revolution of Information Technology Management has changed the way work was done in departments of Administration, Personnel, Human Resource, Vigilance and Risk Management.

Technology Management for Patents, Licences and Packages

Several of the processes of chemical plants, fertilizer plants, oil refineries and nuclear power projects are purchased as licensed products/package. These licensed technological packages are patented properties of their respective companies.

Although EIL may have business agreements with many of the licensor package providers for various refinery units and product manufacturing but considering the future world energy scene and new international business development, EIL should consider purchasing some of the technology patents, licences and packages for offering better business solutions.

Effects of Poorly Managing Technology

1. Significant Expenses (that could have been avoided)
2. Poor Technology Integration
3. Failure to Achieve Corporate Goals
4. Competitive Disadvantage with those who do
5. Lack of Flexibility to Adapt Technologies to new uses/services
6. Inability to Stop bad Projects early

SUGGESTIONS FOR IMPROVEMENT IN TECHNOLOGY MANAGEMENT FOR EIL

Three steps for implementing organizational change:

1. Diagnose the current state of the EIL: That is identifying problems the related to technology that EIL faces, assigning a level of importance to each one, and assessing the kinds of changes needed to solve the problems.

2. Design the desired future state of the EIL: This involves picturing the ideal situation for the EIL after the change is implemented, conveying this vision clearly to everyone involved in the change effort, and designing a means of transition to the new state. An important part of the transition should be maintaining some sort of stability; some things—such as the company's over-all mission or key personnel—should re-main constant in the midst of turmoil to help reduce people's anxiety.

3. Implement the technological change in EIL: This involves managing the transition effectively. It might be helpful to draw up a plan, allocate resources, and appoint a key person to take charge of the change process. The EIL Management should try to generate enthusiasm for the change by sharing their goals and vision and acting as role models. In some cases, it may be useful to try for small victories first in order to pave the way for later successes.

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