L&T Electrical & Automation
Control & Automation
CANVAS
INTEGRATING EXPERIENCES
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Editorial Message

Dear Reader,

Nearly quarter of a century back, the idea of intelligent building had surfaced. In the past 15 years or so, the idea evolved into smart buildings, thanks to breakthrough technologies. Today, the definition of 'Smart Buildings' has acquired new dimensions due to changing lifestyle, increasing awareness on energy efficiency, rapid urbanization and security concerns.

As India moves towards achieving its 100 Smart City goal, embracing technologies to achieve green, safe and productive environment will become the means for an increase in the demand for smart buildings.

Smart buildings employ communication and automation technologies to integrate different building subsystems, which enhance the quality of human life while ensuring the overall energy efficiency and security of the building infrastructure.

These sub-systems including HVAC, Lighting, Fire Protection, Access Control Systems, Surveillance, Smart Meters, Water, UPS, Elevators, etc. share information to optimize the performance of the building.

One of the biggest challenges, when it comes to making buildings smart on a large scale, is to integrate various systems with the latest generation of smart building equipment. This underlines the role of a system integrator who understands, deploys and integrates technologies like communication network, automation systems, and IT platforms that are critical components of any Smart Building with an objective to minimize operational cost in the long run.

We, at C&A, understand these challenges. Being a part of the L&T Group, we draw on the extensive domain and technical experience of working with customers in the infrastructure sector. This helps us to offer Integrated ELV system along with Building Management system and helps enhance customer experience while ensuring a greener environment.

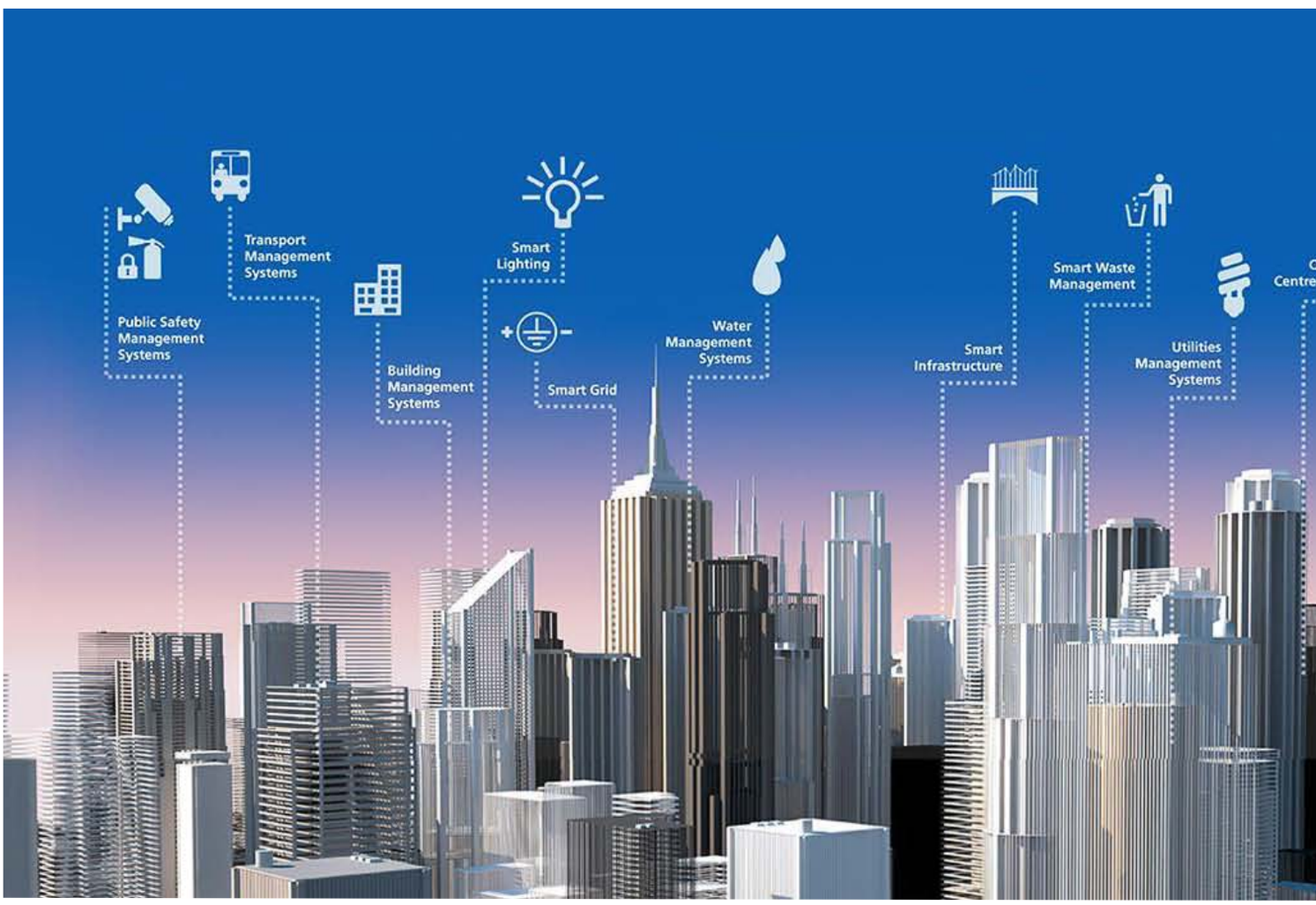
In keeping with C&A's unparalleled offerings of unique solutions and commitment to technology, we have covered our offering of ELV Systems which addresses every single need of Building infrastructure. We are credited with many significant achievements in this segment. A case study on ELV solutions to a Data Center client throws some lights on our capabilities in this area.

We hope you would enjoy reading this issue of Canvas. And, we look forward to your ongoing support, encouragement and feedback.

Happy Reading !!

J. K. Chattopadhyay

iELV : Makes operation simple



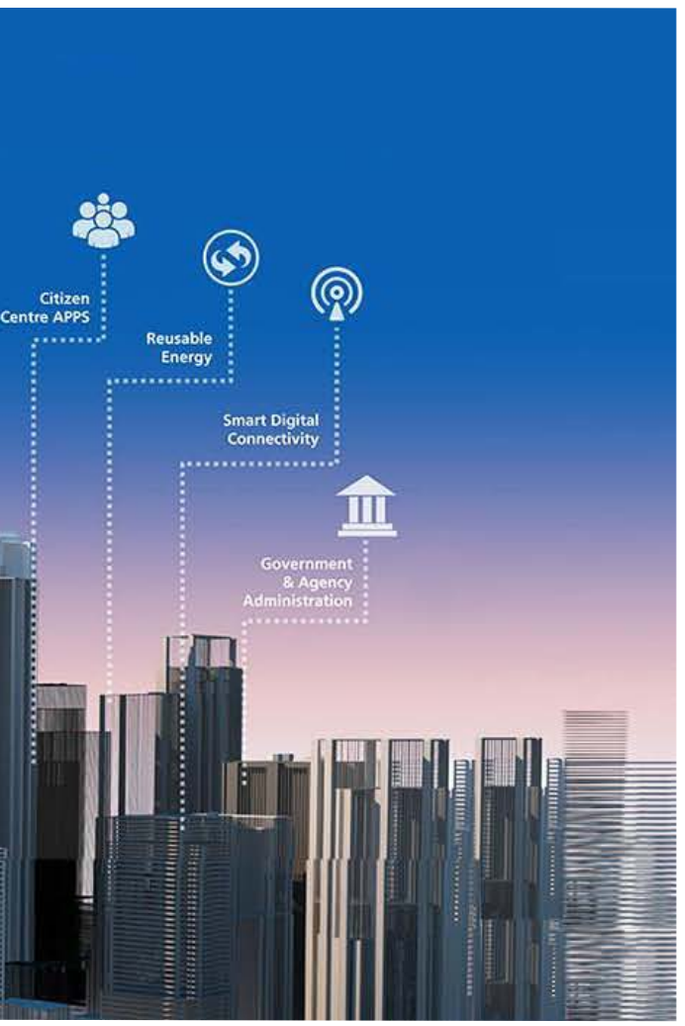
Smart Buildings are becoming more and more popular as they reduce energy costs, enhance productivity and building operations and support sustainability efforts. If one were to ask: What makes a building smart? the answer is simple: A building is smart if it makes you feel comfortable and secure and is economical in terms of operational costs.

Be it a Metro Station, Airport or Shopping mall, to make such facilities smart, infrastructure owners invest in various systems - HVAC, Lighting, Security and Access Controls. These systems are packaged under Extra Low Voltage (ELV) systems.

ELV systems are becoming a necessity for smart buildings to make building infrastructure more intelligent, interconnected and efficient. They are used for security, communication, lighting, air-conditioning and heating. It includes systems such as fire detection and alarms, voice evacuation, voice and data communications, public address, access controls, intrusion detection, CCTV, audio-visual, cell phone and wireless distribution, plus other such auxiliary systems.

Traditionally, ELV systems are supplied by various OEMS under different contracts: HVAC controls with mechanical services; access control and lighting in electrical services, etc., which run on proprietary networks as well separate telephone, data and television networks. To operate and run these systems, OEMs provide their own workstations along with software application. Each system has its own control system which communicates over different communication protocols.

This involves incurring of huge costs towards separate software applications, PCs, plus there will be duplication of hardware, software, cabling and



networking equipment with limited functionality and control facility. In such a scenario, the operator has to manage multiple platforms to monitor and control the facility as information is distributed and available at each ELV sub-system.

The integration of these multiple sub-systems on a common network platform is therefore, becoming essential. The ELV systems integration approach supports the installation of common cabling and pathways instead of individual systems, thus resulting in improved total system monitoring and management, and significant cost reductions.

It requires in-depth knowledge of technologies and a strong team of domain experts who design, integrate and deliver Integrated ELV Systems that meet diverse needs.

A fully integrated ELV system operates on a common platform where every connected system communicates and shares all of its data via standard open protocol which improves the operation of the facility. It also ensures that the data collected from every system is made available for use by other client applications.

Information technology has a key role to play in the development and operations of dynamic Smart Buildings. For example, a Smart Building HVAC system can automatically precool a building or regulate temperature based on number of occupants inside the building or outside temperature. Based on operational conditions, the system will take corrective actions which lead to reduced energy demand / consumption. Further information can be shared with the electricity grid to support grid reliability through demand response.

The major features of an IELVS design are:

- Modern ELV System runs on IP based communication which reduces investment in cables and cables trays (pathways).
- Reduces major efforts required during design and installation which cause unexpected delays on project time lines.
- Open architecture uses open communication protocol, standards and specifications which avoids dependency on single vendor.
- Expansion, upgrades and installation of news systems becomes easy and can be sourced from different suppliers.
- Integrated ELV solutions are considerably easier to troubleshoot in case of failure as it involves minimal cabling and interconnection.
- These systems can be operated remotely as well as managed and reconfigured which saves maintenance costs.
- It offers additional features and functionalities compared to traditional ELV Systems.
- In conclusion, rapid deployment of cost-effective ELV Systems, integration of IT, building automation and controls are playing a significant role in the facilities management industry. Asset owners are realising the importance of Integrated ELV systems which are scalable, secure and open platforms that offer cost savings and enable energy savings as well as sustainable improvements.

Integrated Offerings for Smart Buildings...

When setting up a mall, airport, SEZ, metro station, educational institution or large corporate campus, one always needs to focus on optimizing energy consumption and reducing operational and maintenance costs, so that the users of these facilities enjoy the benefits of comfort, safety and convenience.

Smart Buildings equipped with modern technologies answer these needs. Building design today needs to be integrated in a manner that ensures suitability of a building for users to work and live safely, comfortably, effectively and efficiently. Integrated Building Management System (IBMS) provides building operators a unified platform for effortlessly and effectively managing the building's operation.

With over three decades of experience in the field of Electrical & Automation, L&T is a reliable partner for providing IBMS for Smart Building operations

.At L&T, we deliver IBMS by seamlessly integrating various systems such as HVAC, lighting, lifts, utility metering, PA systems, electrical power distribution systems, Fire Alarms & fire protection systems, CCTV and access control, to make facilities smarter and more secure.

L&T's IBMS operates on a unified platform which collects, exchanges and archives data. It facilitates a common user interface for monitoring, displaying, archiving, reporting and controlling Extra Low Voltage (ELV) services. The solution allows building managers to quickly improve utilisation of resources, which in turn enhances occupants' comfort, increases energy efficiency and drives value throughout the life cycle of a facility

Features of Integrated Building Management

- Open architecture, highly customizable and scalable
- Integrated platform that enables control of all building equipment and systems
- Single interface for managing multiple systems
- Pre-configured GUI and configuration facilitate automation/ control, operation, maintenance and management of building systems, including HVAC, safety and intrusion alarms, access control and lighting
- Data visualisation: Management Dashboards, User Specific configurable reports
- Alarm configuration: activate, deactivate and reset alarms
- Trends, Charts

With a combination of modern technologies, project management expertise, decades of experience and domain

knowledge, L&T offers a single window for addressing aspects ranging from equipment selection, system design, installation, to round-the-clock maintenance services. It has collaborated with leading industry partners to provide comprehensive solutions as part of its constant endeavour to enhance customer satisfaction.

L&T's solutions include:

- Fire Alarm & Suppression
- Access Control
- Lighting Control
- Video Surveillance
- PA Systems
- Field Devices
- Structured Cabling
- IT Backbone

Our IBMS is not only easier to operate, but also delivers significant cost savings – both during operations and upgradations.

Integrated BMS

Video Surveillance

- Digital video surveillance system utilises digital compression technologies to bring high quality pictures and video performance and simplifies video storage on hard disks or optical storage devices
- CCTV systems range from fixed, pan-tilt-zoom to infrared cameras for different types of application based on customer requirements in the commercial, industrial, residential and infrastructure segment
- Perimeter Intrusion Detection
- Situational Awareness Platforms / Security Incident Operations Management

PA System

- Electronic sound amplification and distribution system with a microphone, amplifier and loudspeakers facilitate general announcements and emergency control
- It can be deployed in standard building applications and high-rise buildings, where the latter could include an interface with the fire alarm system for safety enhancement

Fire detection & Alarm systems

- Addressable & conventional control panels and detectors
- Smoke, heat, linear heat and flame detectors
- Emergency lighting systems
- Alarm equipment

Access Control Systems

- Easy control of access points—doors, gates, parking garages, elevators, production areas, data centers
- System provides entry / exit to a building / room or facility through the authorisation of valid personnel
- System ranges from standard proximity card to biometrics (e.g. finger print and retina scanning)
- Inter Communication Systems
- Video and voice or voice only communication system between two (2) or multiple points in a building
- Our Intercom systems can also be integrated with PA systems and fire alarm systems

Case Study

L&T's iBMS enhances Data Center operational efficiency

About Customer

Sify Technologies Limited (Sify), an Indian information and communications technology company, offers end to end ICT solutions encompassing Telecom Services, Data Center Services, Cloud & Managed Services, Transformation Integration Services and Application Integration Services.

With over 13 years of operational and technical experience, Sify has an impressive portfolio comprising over 2,00,000 sq. ft. of white space spread across 6 Tier III Data Centres, 15 Tier II Data Centres and 6 State Data Centres, built to exacting specifications and best-in-class global standards.

Need

In today's IT landscape, business requirements are changing rapidly. Due to growing demand of storage capacity and digitalisation, every enterprise is looking for solutions where massive data can be stored and utilised with efficiency and security. This has contributed to the rapid growth of the data center segment.

To leverage this business opportunity, Sify decided to setup 'ClouDCentre', a next-generation cloud-enabled Data Centre at Rabale - Navi Mumbai. The 'ClouDCentre' boasts of modular design with advanced technology to cater to high density load and offers 65,000 sq ft of built up space.

Solutions

Managing and operating a data center facility is very different from managing a commercial office building or a factory. For most data centers, failure is not an option. It needs to run 24x7 without any interruption. Another challenge is to reduce energy consumption as they consume 25 to 50 times more power as compared to an average office.

To address such challenges, Sify decided to implement an Integrated Building Management System that would help in centralised monitoring and control of the data center facility.

Rapid project execution was a key requirement of this project to ensure high yield from the investment. L&T was selected by Sify for its ability to deliver integrated solutions within a very challenging time frame of three months for every 10,000 sq ft area of each floor.

L&T was assigned the responsibility of implementing an Integrated Building Management system for 40,000 sq ft area covering four floors, including engineering, project management, installation and commissioning.

L&T delivered a complete building management system which included subsystems like Access Control System, Gas Based Fire Suppression System, Fire Alarm System, High Sensitivity Smoke Detection System, Rodent Repellent System, Addressable Water Leak Detection System, PA System CCTV, BMS Controllers and BMS Software.

The solution is based on L&T's widely proven BMS platform – LTAB, which combines a high level of customisation, user friendly and open platform technologies which enables integration of various third party platforms over open protocol.

The biggest challenge faced during execution was to integrate all data center systems and equipment into a single, cohesive control & monitoring system. L&T successfully configured and interfaced LTAB Uses open protocol technologies commonly used for BMS applications including BACnet and MODbus.

LTAB software with third party systems like Power distribution units, UPS, CRAH unit (Computer room air handlers) - 26 nos, DG sets, DG Pumping System (CAT), HT & LT Panels Energy Meters, Fan coil units, Addressable Water Leak Detection system, Fire Alarm System and Gas suppression system. It operates on open protocols over the IP network to monitor and control.

The continuous operation of Data Center being critical, redundancy feature (hot active standby) was deployed at server level to ensure that in the event of one server failing, a stand-by server would immediately take over.

LTAB allows facility managers to team with IT, thus bridging a traditional gap between these two functions. It monitors and facilitates various conditions like power, airflow, ambient and server rack temperatures, humidity, physical security, fire, water, smoke and life safety to identity problems before they affect uptime. The LTAB has the facility of providing managers with alerts at the approach of critical parameters or cross control limits.

Integration with energy meters, DG sets and LV & MV Switchgear allows utility staff to monitor floor wise energy consumption, power load and availability of backup power.

It monitors energy performance in real time and generates usage charts analysis, alarms and reports.

LTAB's webserver is configured and hosted on Internet which facilitates remote monitoring of operations by users.

Benefits

- Real Time Monitoring of Energy Consumption encourages savings by enabling comparison against target
- Improves operational reliability by planned preventive maintenance based on run-hours and breakdown history
- Reduces Manpower cost by various means e.g. Centralised control & monitoring,
- Improves safety, comfort and security of the facility
- Enables energy saving

Result

Sify now enjoys centralised control & monitoring of the multiple systems inside its mission-critical data center. L&T's LTAB system is the most important contributor to keeping a

C&A bags R-APDRP project from CESU of Odisha

The Control & Automation (C&A) business of L&T Electrical & Automation, a leading Systems Integrator company in India, was awarded a project by Central Electricity Supply Utility (CESU) of Odisha under Government of India's Restructured Accelerated Power Development and Reform Programme (RAPDRP).

The deployment will cover 12 towns including the twin cities of Bhubaneshwar and Cuttack. The project's main objective is to help CESU in ascertaining the AT&C (Aggregate Technical & Commercial) losses in these towns, which will be a base line for taking measures to further reduce the losses.

The scope of work includes setting up of IT & Communication backbone, Data Center, Disaster Recovery Center, Customer Care Center and implementation of Application software modules like Metering, Billing, Collection, Energy Audit, New connection/disconnection, CRM, Mail messaging, MIS, Identity & access management, etc., GIS mapping of around 5 lakh consumers, Meter data acquisition of 10000 consumers and providing facility management support for 5 years from the date of 'Go live' of the project. The Project will be executed within a stringent 18 months' time line.

Speaking on the occasion, Head of the C&A Business, Mr. Jayanta Chattopadhyay said, "After successful implementation of the R-APDRP project for Maharashtra Utility, we are delighted to receive a second order, from CESU which is similar in nature. We are geared up and feel proud to collaborate with Odisha Govt. in this journey. This project is the recognition of our understanding and leadership in setting up IT based solutions for such critical projects in the country that will help in reducing losses and adding greater efficiency".

C&A has successfully executed India's first R-APDRP project, which it won in 2010 from the Maharashtra State Electricity Distribution Company Limited (MSEDCL).