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leading the digital transformation

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Digit.Ally Forum

Launching soon!

**LET'S GO DIGITAL.
IT'S WHERE THE
WORLD IS GOING!**

GOING DIGITAL

Transformation of any kind is only possible through effective communication and I am very happy that with 'Digit.Ally' we have created a forum where information can be shared as we prepare ourselves to take advantage of the tremendous possibilities that the digital world now gives us.

We are in an ever-evolving scenario, confronted with new challenges and excited by fresh opportunities every passing day and therefore we need to develop the right mind set to welcome and leverage them.

As an organization, I see huge potential to make digital technologies work for us. Every minute aspect of our business can be transformed to make us more efficient, more productive, more competent and thereby more competitive and profitable. Digitizing project management, controlling and monitoring work progress with digital tools, using LIDAR to conduct surveys, placing sensors to monitor work hours of equipment, to manage inventories are all now very possible. Collecting data and using it for predictive analytics offer huge potential to understand our human capital better. The possibilities are endless if we have the mind and the will to avail off them.

Our aim is to transform ourselves from a manual controlled to a highly computer based and digital organization and evolve seamlessly into a system where we have a huge amount of relevant and useful data for decision making, for analytics and to drive the right outcomes.

A major step in the right direction has been the setting up of a Digital Group at Divisional Corporate which will ideate, initiate solutions and manage technology deployment. Success will only be possible if each and every one of you appreciates and acknowledges the need and whole-heartedly embraces it, shares experiences and ideas for improvement and collaborates in designing and implementing solutions. All round participation will surely result in all round gains.

So let's go digital. It's where the world is going!

Best wishes!

S N Subrahmanyan
Deputy Managing Director & President

LAYING THE ROAD TO A DIGITAL FUTURE

A road map to go digital has been drawn up at L&T Construction on multiple fronts to implement a plethora of solutions to improve productivity, increase visibility of various operations-related activities and parameters and to modify some business processes using technology to speed up cycle times to positively impact profitability and revenues. As technologies evolve and businesses expand, the digital road map will reflect the same evolution and change.

① PMTPM - Performance Monitoring & Tracking of Plant & Machinery

Objective – Optimize utilization, increase uptime and performance, identify and reduce wastages and losses, real time information availability to all stakeholders on the field and for management to drive actions.

Method – Install sensors and communication gateways on P&M to extract information about location, operating parameters in real time without human intervention which will be received into a monitoring portal to enable remote monitoring and alerts. Enhance the P&M platform and database and perform analytics with a combination of data from the field and project operations. Mobile devices on the field to receive maintenance alerts, guidance and capture events.

Technologies – IoT (Internet of Things), GPS, Cloud, Mobility and Analytics

② PM&C - Project Monitoring & Control

Objective – Provide real time visibility of the status of activities and costs in a project vis a vis plan to all stakeholders both at the sites and for management, enable capture of activities close to real time on the field, dashboards that aggregate or detail as per need to spur performance through accurate, relevant and timely information.

Method – Provide mobile devices to field staff with display of plan, backlog and capture activity completion close to real time. Calculation of all DPRs and other progress reports by the system for display on dashboards, mobile and larger devices for all stake holders. Enhance the system to include visuals through cameras and drones and also resources over the next phases.

Technologies –Mobility, Dashboards, Cloud, Analytics and Drones

③ Survey, Engineering & Design

Objective – Shorten the engineering cycle time, reduce rework and errors, improve design quality, improve engineering productivity. Enable gains of 3D and BIM throughout the lifecycle including construction sites and field staff there. Make surveys holistic and accurate.

Method – Fine tune the Engineering & Design processes to suit the 3D environment from end to end. Adopt BIM for all projects. Create infrastructure at sites to view 3D models and use VR. Acquire/develop niche complementary software to aid engineering. Adopt a holistic approach to GIS using advanced technologies like GNSS, LIDAR, UAVs and specialized software.

Technologies – BIM, Virtual/Augmented Reality, Collaboration Software, GIS technologies, Drones, Cloud, Mobility and Analytics

4 Safety & Optimization

Objective – To improve optimum deployment of workmen and their productivity. Profile workmen and sub-contractors for skills and experience, leverage previous trainings, improve multiple redeployment of trained workmen, improve compliance to PPE norms and improve safety.

Method – Build a database of workmen with Aadhaar numbers as the primary identifier. Install RFID tags on the ID card / jacket of the worker and readers at all work locations to identify workers and work done to measure productivity. A combination of programmes of tags on workers and PPE to alert unsafe situations. Install Safety App on workmen phones to train and provide safety tips. Install CSTI certification on phones.

Technologies – RFID /IoT (Internet of Things), Cloud, Mobility and Analytics

5 AaS - Analytics as a Service

Objective – Utilize existing data to generate insights that can drive action. Identify gaps in data in an organized manner in the enterprise and go after getting it. Perform predictive analytics for project risk and completion costs. Provide actionable insights from analytics and alerts on portals and mobile devices.

Method – Create an Analytics CoE (Center of Excellence) equipped with necessary tools and methodologies. Staff the CoE with people trained in Analytics and eventually data scientists. Identify various areas and scenarios for analytics and extract data from inside and outside. Improve systems and processes to systematically gather data needed and data that is missing.

Technologies –Cloud, Mobility and Analytics

Other identified areas of focus: Material Tracking and Optimization, Customer Interaction and Employee Involvement and Engagement.

Digitalization is not a destination but a journey and, for us at the Digital Centre, the view through the windscreen is of an exciting road ahead. But we cannot travel alone; we have to do it together! **We welcome your thoughts, ideas, your suggestions and feedback at sayana@lntecc. com and let's make it a wonderfully enjoyable and rewarding journey to go digital!**

ASSET MONITORING … DIGITALLY!

Efficient project management in construction, as in many other industries, rests largely on the efficient utilization of the 3Ms – Men, Machine and Material.

In an asset intensive business like construction, the ready availability of the appropriate equipment in perfect health is a crucial determinant of the productivity of a project since it has a direct bearing on the time and effort required to complete a particular task hence it is no surprise that one often hears questions like:

- Where is the equipment located?
- When and how often is it being operated?
- Who is operating it?
- How is it being used?
- Whether it is being maintained or requires maintenance?
- ...

Earlier, the answers to such queries lay in a physical visit to the site or reaching out to perhaps a Site In-charge. More recently, ERP systems like EIP had the potential to provide these answers online but there was always the danger that the data could be outdated and not real time since it was individual-dependent and how promptly that person updated the system. Digital technology is now all set to change this paradigm.

Enter IoT (Internet of Things)

IoT, according to TechTarget.com, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. Simply put, just like the Internet which is also a network of computers, IoT is a network of physical objects with the object embedded with electronics, sensors and network connectivity to enable them to collect and exchange data. With IoT, real time communication with objects becomes possible. More pertinently, all the answers to the abovementioned questions are available instantly, with zero / minimal dependency on human interface and ensure efficient and effective usage of assets.

Putting IoT to work

The fundamental components of IoT are the hardware (device, equipment, sensor, gateway, etc.), the software (enables data collection, processing) and the communication infrastructure (platforms to exchange data). Quite simply, a sensor placed on the equipment collects and streams data continuously through a gateway device to a mobile app or a huge data server that is located either on the premises or on the cloud.
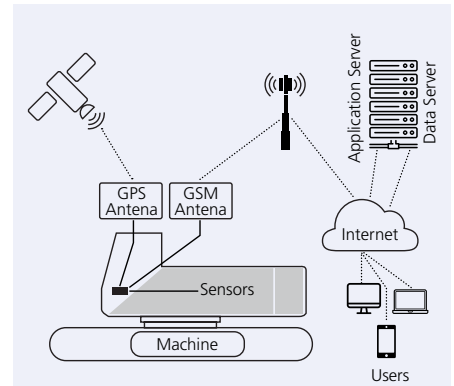
IoT on a diesel generator set, for example, can provide real time data on various parameters like fuel consumption, power generation, engine oil pressure, temperature, coolant temperature, etc. Such data collected over a period of time and analyzed across a family of equipment can throw up meaningful insights on working conditions, efficiency of the equipment for necessary action like preventive and predictive maintenance or ascertain performance by comparing effective usage against intended benchmarks.

**LIFE IS SET TO CHANGE:
A refrigerator can actually remind you on the mobile to buy milk if it is IoT-enabled!**

There's a lot going for IoT

IoT can pinpoint the exact location of a piece of equipment through GPS, enable / disable its operations based on geo fencing, it can monitor fuel consumption and thereby ensure against theft and misuse, it can auto record working hours / idle time / productive utilization, it can restrict unauthorized usage, monitor working conditions, equipment health, provide maintenance information, fleet information, etc. The performance and activity of equipment can thus be continually monitored and adjusted for improvement.

IoT can be used intelligently too in areas like soil compaction, satellite-based grader production control systems, etc., and even to ensure various safety standards to be followed while operating an equipment.

IN ESSENCE, ASSET MANAGEMENT IS GOING DIGITAL!

HANDYMAN CALCULATOR

As the name suggests, this app hosts series of calculation tools that are very handy at construction sites. It even hosts niche calculators like attic ventilation, tongue and groove flooring, and brick and block wall calculators. The app also includes:

- US and Metric calculator modes
- Detailed outputs and flexible inputs
- Diagrams
- A clean interface
- Built-in results sharing

It's currently available only on Android OS. The free version of this app shows ads at the bottom. To get rid of the ads, the Handyman Calculator Pro can be purchased for Rs. 331.45 and used as license to this app.

Appstore link

GOOGLE TRANSLATE

Semi-skilled and unskilled migrant labor is common across the country, having left their native places in search of gainful employment. Deployed by sub-contractors at various job sites, they find themselves in places where they rarely speak the local language though they are generally conversant with Hindi.

Since not all project teams/managers are entirely at home with Hindi, there is a need for other methods to translate voice from one language to another to ensure effective communication. Various mobile apps these days serve this purpose and Google Translate is one of them.

Google Translate does two-way automatic speech translation in 40 languages. It can also capture images and translate text instantly into 26 languages. Google Translate is available for devices running on Android and iOS. For users at remote sites, where network connectivity could be an issue, Google Translate provides an option to download language packs and translate offline.

DON'T STRUGGLE WITH A LANGUAGE YOU DON'T KNOW. GOOGLE TRANSLATE IT!!

Appstore link

GEOSPATIAL TECHNOLOGIES

In many ways, it is not incorrect to say that construction, as an industry, is rooted on terra firma because everything that is constructed is either above, on the ground or below it. Geography therefore is an important aspect in the construction scheme of things.

Geospatial technology is the discipline of capturing, storing, processing, manipulating, analyzing and delivering geographic information. Usefulness of these technologies starts from executing topographic/geographic surveys and expands right up to Operation and Maintenance of various construction, infrastructure and utility projects.

GPS/GNSS, LIDAR, Photogrammetry with Manned and Unmanned Aerial Vehicle, Satellite Remote Sensing, Digital Image Processing and Cartography are some GeoSpatial Technologies

used to capture and analyze geographical data. GIS an acronym of Geographic Information System integrates all this geographical data with other enterprise level systems like SCADA, CRM, VTS, ERP, etc., web/cloud based map interface, enabling the user to understand information interrelationship, control sharing of information through multiple access rights.

Geospatial Technologies in Digital, Divisional Corporate, L&T Construction, offers Geospatial survey and enterprise GIS based services for all construction, infrastructure and utility projects.

Some of the areas of work in Geospatial include

- Establishment of DGNSS based Ground Control Network and execution of topographic survey

- Geographic information for GeoDesign
- WebGIS based Progress Monitoring Systems
- WebGIS based Utility Management Systems for Water supply Operations & Maintenance
- WebGIS based Asset Management Systems for CCTV Operations and Maintenance
- WebGIS based Vehicle Tracking & Management Systems
- WebGIS based Campus Information Systems
- WebGIS based Resources and Facility Management Systems

We are most eager to hear your ideas on GIS in your business. Please write to Dr. Y Pari & his team @ **pari@lntecc.com.**
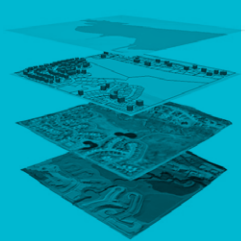
MEET THE TEAM !!!

We @Digital come from varied engineering backgrounds - Civil to Electronics to IT!

We solve problems - all things…digital!

Find us in Outlook

Anantha Sayana S

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