INDUSTRY

WATCH

Monthly Newsletter for
World Geospatial Industry
Council (WGIC) Members

TECHNOLOGY AND
DATA PERMEATES
ALMOST EVERYTHING WE
DO TODAY. THIS ISSUE OF
INDUSTRY WATCH
UNRAVELS A FEW GOOD,
OBVIOUS AND MISSING
TRENDS IN THE MIDST OF
THIS GREAT TRANSITION –
A LIMINAL SPACE
BETWEEN THE ERAS -
WHEREIN THE
TRADITIONAL INDUSTRIAL
ORDER IS PHASING OUT
AND THE NEW
INFORMATION DRIVEN
AGE IS TAKING OVER.

February 2019
Volume 1 – Issue 4

In this Issue of Industry Watch

- *IoT data monetization – a burgeoning trend across industries*
- *Drone Market in India is ready to soar post new regulations*
- *The world needs to move to smart farming techniques – Developing countries more so*
- *Integration will be crucial for digitally connected utility assets*
- *A collaborative mindset could redefine the cities of the future*
- *Construction industry is shifting gears to ride on technology highway*
- *Geospatial data in transport and logistics – think beyond efficiency*
- *What is scaling up use of geospatial data in telecom networks?*

IOT DATA MONETIZATION – A BURGEONING TREND ACROSS INDUSTRIES

The reality of today is that every major company is, in a way, a technology company driven by data. True value of IoT (Internet of Things) is realized in volume of data that it provides and insights that it is able to deliver. Data ecosystems play a critical role in defining the future of competition, enabling not only creation of high-margin data businesses and revenue streams but also in providing competitive edge.

Unique value proposition of the new data driven products is unparalleled as it goes way beyond what any conventional hardware products of a company will offer. They help a company in securing a much guarded position due to economies of scale and scope - by better engagement with the customers and establishing strong entry barriers and positive ripple effect can be witnessed across all business verticals.

The majority of IoT solutions today are built around internal applications such as predictive maintenance, optimization of the processes, supply chain automation, and improvements in product designs. But to truly benefit from IoT data, companies need to think beyond themselves.

Factors in the value chain to Monetize Distinctive Value of IoT

Technologies	Platforms	Organizations	Things	Services
• Semiconductors • Computers • Software • Networks • Cloud • Big Data Analytics • Artificial Intelligence • Machine Learning	• CISCO • Microsoft • Google • Intel • Qualcom • ARM • Samsung • Arduino • Raspbhery Pi • Sigfox	• Retail Stores • Factories • Farming • Transportation • Utilites • Hospitals • Services • Defence • Industry Associations • NGOs • Govenments • Academic Institutions	• Appliances • Homes • Buildings • Vehicles • Phones • Machinery • Wearables • Cameras	• Health • Convenience • Travel • Shopping • Work • Security • Entertainment • Safety • Fitness

New data ecosystems can be formed in collaboration with key players from other sectors and industry stakeholders. These ecosystems give their participants access to valuable collective data assets, capabilities and necessary domain expertise to develop the assets into new data-driven products and services.

Leading companies of the world actually orchestrate data from various sources and build platform-based business models that leverage third party data ecosystems to reach enormous scale and establish dominant positions. They do this by scaling up rapidly, capitalizing on virtually zero marginal production costs, network effects, and low barriers to geographical expansion; by taking advantage of the *"data flywheel effect"* wherein digital ecosystems enable unprecedented data accumulation and analysis, fuelling improvements to products and business processes and stimulating further growth and data access; and by providing seamless and comprehensive digital experiences for customers by organizing business partners on a single platform to satisfy multiple customer needs.

For substantial data monetization, companies need domain expertise to develop new data-driven solutions as well as the customer relationships to monetize them. New, built-for-purpose data ecosystems are required to organize collective data assets, capabilities, and customer connections of a group of business partners to deliver new products and services—both within and across traditional industry verticals.

There are multiple routes that companies tend to take for IoT data monetization. Internal data monetization is a natural starting point because it can lead to direct cost savings and because implementation is fully within the control of the company. Most common IoT applications are focused on improving product quality or performance, improving decision-making, and lowering operational costs. External Data Monetization is the second channel. Building new businesses around external data monetization enables companies to generate incremental recurring revenue streams - often with financials that are more attractive than those of their core businesses. New revenues from data can have a big impact on a company's overall financial performance. Generating just 1% of incremental revenue through data could result in an earnings increase of 10% and a valuation increase of more than 25%.

All participants in data ecosystems stand to benefit, but the orchestrator—the player at the center that coordinates the activities of the other participants, aggregates their data and expertise, and delivers a consolidated data product or service to the end customer is the clear winner. Orchestrators control the total value of the ecosystem, steer margins, and determine value distribution among participants; they also benefit from the virtuous cycle in which ecosystem growth further solidifies their position.

For more information:

https://www.ey.com/en_gl/news/2018/01/monetization-of-data-among-key-trends-in-internet-of-things-in-2018

https://www.iottechnews.com/news/2018/jan/11/data-monetisation-highlighted-among-key-iot-trends-2018-according-ey/

https://www.bcg.com/en-in/publications/2018/how-internet-of-things-iot-data-ecosystems-transform-b2b-competition.aspx

DRONE MARKET IN INDIA IS READY TO SOAR POST NEW REGULATIONS

The Director General of Civil Aviation in India brings out a new drone regulation 1.0 and introduces an online portal for drone registration – Digital Sky. As per the new regulation, for all drones (except for nano / weighing less than 250 gms), operators will be required to procure a unique identification number, mandate for no-take off without clearance certificate, insurance, unmanned operator permit and an ID plate via this newly launched web portal.
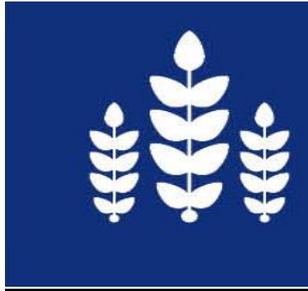
On December 1, 2018, new regulation came into enforcement. With regularization of the drone operations – the non-compliant drones will be phased out of the market from approx.. 40,000 drones to only about 150 drones that comply with the regulations. The new regulation curtails the use of drones with the limit of 400ft and operations only during the time to maintain visibility of line-of-sight. Unmanned Traffic Management (UTM) will work closely with defence and air traffic controllers and a permission to fly drone will be required, every time a drone has to take off. A mobile app will facilitate permission about the purpose, time and path for flying the drones. However, the states have requested the Civil Aviation ministry for more time to be able to decide about 'no-drone-flying zones' in each state. These no-fly zones will have to updated on the Digital Sky web portal. Even manufacturers have asked for some time for the drone retrofitting module in compliance with no-permission no take-off guidelines. This retrofitting flight module hardware is adapted from ministry of road transport and highways. After retrofitting of the required hardware in the drones, operators will be able to pre-program the drones for the existing no-fly zones and also update new such zones after states are able to update on such demarcations on the portal.

Despite a few shortcomings (mainly from the viewpoint of pre-work and functionality and ease of using the web portal), this new regulation that falls in the ambit of Remotely Piloted Aircraft System (RPAS) which was introduced in August 2018 - the moving out of the unorganized players will certainly ring in more prospects for growth for the drone industry in India. According to a recently published report by advisory firm BIS Research, the drone market in India will be worth $885.7 million by 2021, whereas the global market size is likely to be $21.47 billion by this time.

The drone operators will be able to leverage new markets and capitalize on business opportunities by partnering with large enterprises who had so far been sceptical about the use of drones – in the areas such as power sector, industrial inspection, health care services, logistics, agriculture, mining, highway infrastructure development, asset mapping for the telecom sector and other utilities and railways – the opportunities are manifold and successful use case stories will unleash more untapped potential of the drone market.

https://www.financialexpress.com/industry/sme/drone-startups-finally-see-high-altitude-growth-with-new-regulations-in-place/1442327/

https://www.hindustantimes.com/india-news/wait-to-fly-drones-grows-longer-civil-aviation-ministry-pushes-date-to-april/story-vu1ZC4MkPABRZwmn3wwQjM.html

Agriculture

THE WORLD NEEDS TO MOVE TO SMART FARMING TECHNIQUES, DEVELOPING WORLD MORE SO

Where technology has touched almost every aspect of human existence, agriculture has, surprisingly, largely remained outside of technological ambit. It still follows age-old practices, rudimentary technologies and is heavily dependent on rains with very little exposure to modern irrigation techniques. Complicating the issues for the sector are problems like debt traps, marginal incomes and rising expenses. It is here that smart farming technologies (SFT) can actually help address these issues and enhance farm productivity.

Statistics indicate that in whereas in Europe 24% farmers use smart farming technologies in some form of the other and it is gradually scaling up; in the US over 80% farmers have switched to the use of smart technology in farming. The modern farming suite of Information and Communication Technology includes IoT, precision farming tools / techniques, geo-positioning systems, sensors and actuators. To ascertain specific needs and take up suitable measures – use of Big Data, drones, UAV's and robotics is also gaining momentum. These smart technologies help measure the weather conditions such as ambient temperature, humidity, dew point, rainfall, and other parameters that can aid farmers in planning plantation and ploughing requirements.

In the US Agriculture contributes 1.01% to the GDP and in UK Agriculture's contribution to the GDP is only 0.6%, whereas in developing economies such as India, agriculture has a major contribution to the gross domestic product (GDP) at 17.32% (which is much higher than the world average of 6.4%) and involves around 58% of the people in rural areas. While India has definitely increased the total agricultural output over the years, the number of cultivators however has gone down from 71.9% in 1951 to 45.1% in 2011. This is so because the sector is losing its next generation farmers who do not see it as a financially viable career choice.

For technology entrepreneurs the scope of introducing technology in farming is immense. The path to success will be determined by understanding collaboration needs with agriculture businesses and communities at the local level and design business models and organizational structure in alignment with such needs. Besides this being able to smoothly navigate through regulatory frameworks, political affiliations, personal aspirations and government programs will also be a key factor in the success of such enterprises.

Estimates suggest that technology in farming is potentially a $ 2.3 trillion a year business opportunity waiting to be tapped. $250 billion could come from the application of artificial intelligence and other analytics for precision farming alone – $195 billion of which would be in the developing world, with $45.6 billion in South Asia and $13.4 billion in East Africa. One estimate suggests that making changes in farming and food practices that enhance productivity, promote sustainable methods and reduce waste could produce commercial opportunities and new savings worth US$2.3 trillion overall worldwide annually. For more information: https://www.deccanherald.com/opinion/panorama/smart-farming-tech-new-age-700994.html

Energy

INTEGRATION WILL BE CRUCIAL FOR DIGITALLY CONNECTED UTILITY ASSETS

Extensive digitization of utility assets offers pro-active end consumers with more alternatives to choose which energy they use and how much they pay for it, equally important is how consumers can store access energy and sell it back as prosumers. This creates more complexity for the energy and utility companies and this necessitates accessibility of the data throughout the process.
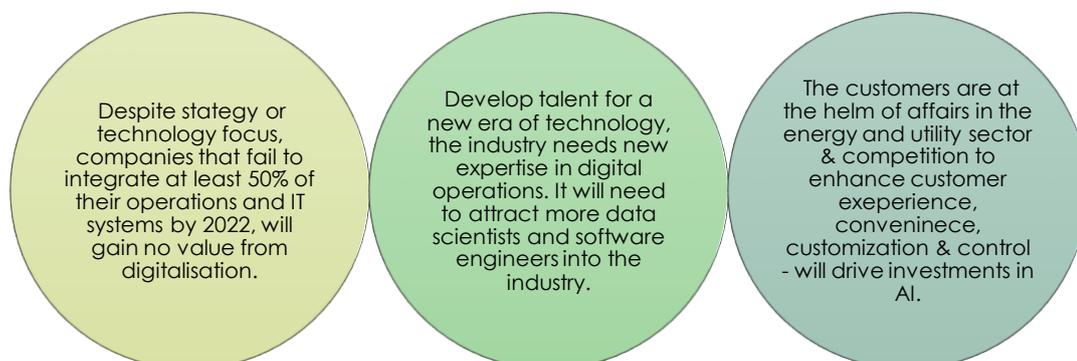
As per a recent IDC Report in the next five years 75% of critical utilities assets will be digitally connected to address growing need to power predictive maintenance and extend asset life cycle. A seamlessly integrated system to capture precise data will definitely enhance efficiency, improve quality and reduce operational costs. Moreover, equally important factor will be - to ultimately turn all this data into value. integrated AI and IoT technologies will be a boon to discern valuable insights from this fast flowing sea of data from digital assets.

Why integration?

By 2022, 55% of utilities will be required to use a core digital platform in order to optimize efficiencies through automated business processes, deepen engagement with customers and employees and integrate assets. The utilities will 'need to overcome siloed initiatives by integrating and orchestrating change across the organization' in their planning horizon.

In 2018, a growing number of energy and utilities companies upgraded their applications and this need for advanced capabilities and integration will continue to be a key determinant in the future. To cite an example of a mining industry, in 2018, majority of the mining companies focused on investments in IoT sensors and allied technologies. In 2019 these investments must begin to deliver positive RoIs.*

Integration imperatives in 2019

Despite stategy or technology focus, companies that fail to integrate at least 50% of their operations and IT systems by 2022, will gain no value from digitalisation.

Develop talent for a new era of technology, the industry needs new expertise in digital operations. It will need to attract more data scientists and software engineers into the industry.

The customers are at the helm of affairs in the energy and utility sector & competition to enhance customer exeperience, conveninece, customization & control - will drive investments in AI.

*Data from IDC Report 2018

Urban Development and Smart Cities

A COLLABORATIVE MINDSET COULD REDEFINE THE CITIES OF THE FUTURE

The technology continues to disrupt many sectors. Businesses that are able to innovate and re-invent their business models and products by carefully understanding uncertainties of the fast changing complex environments; collaborate with research agencies, city planners and businesses across the value chain; will have the advantage of being more responsive to current and evolving needs of the urban dwellers.

By 2030, it is estimated that more than 66% percent of world's population will be living in the cities. In the developing economies of Asia region – fast emerging urban spaces bring forth new complexities and intricacies of urban planning. The cities are required to deal innovatively with the age old issues of urban planning – be it for the housing, commercial spaces, space for industries, utilities such as hospitals, airports, water reservoirs or need for security, planning of roads and various modes of transport. Key determinants for success will be - how well urban planners are able to make best use of new technologies such as geospatial and data analytics in taking stock of current and future scenarios.

A case in point here is Singapore – a small-city-state with a land area of just 721 square kilometres – is setting examples of meticulous planning and exemplary implementation of the insights and by carefully selecting from various models or the hypothesis that the data analytics offer through geospatial tools.

Understanding about the system within a system in a city will help urban planners in pragmatically innovating for smart cities of the future by harnessing full potential of geospatial data and analytics – by bringing together cross-domain expertise and effectively collaborating for solutions not just by looking at single pieces of the jigsaw puzzle but by a careful study of full spectrum of planning and each player / decision maker able to collaborate for a 360 degree view of each component and factor of urban planning.

Working closely with each partner agency will help to identify and prioritize areas of intervention, and also evaluate alternatives and trade-offs. It is quite interesting to study how well Singapore and Beijing are capitalizing on geospatial technology for optimum use of scarce resources and constraints of available land area – to accommodate every aspect of city planning and to cater to the requirements of multiple amenities for citizens in all age groups and socio-economic conditions.

Each city has its own dynamics and development challenges – however, collaboration will be the 'key' to unlock full potential of available resources and technologies.
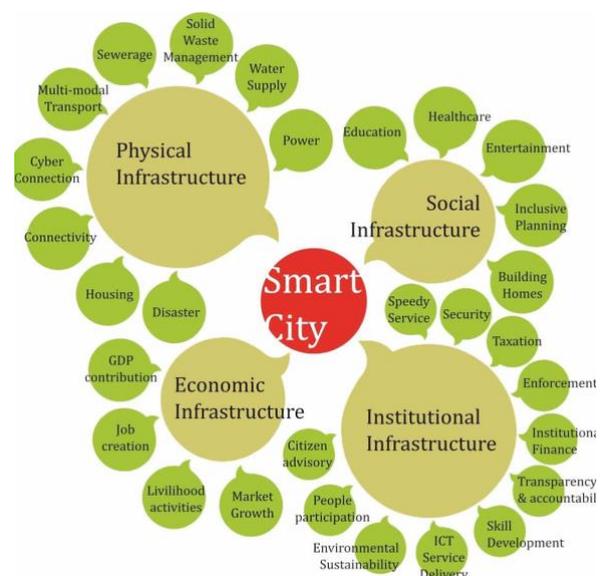
Engineering and Infrastructure

CONSTRUCTION INDUSTRTY IS SHIFTING GEARS TO RIDE ON TECHNOLOGY HIGHWAY

Technologies are impacting construction industry like never seen before – re-constructing a sector that shapes how every human being is able to live their lives. Robots to wearable technology, cloud based collaborations to development of digital twins, super materials to pre-fabricated constructions, 3D printing technology to AI, BIM, VR – AR to autonomous vehicles; the sector is witnessing technology penetration with successful trials; and these technologies are already paying important dividends for the early adopters; offering a promising path to innovation and business transformations for those who have yet to.

As the industry pursues its endeavour for technology transformation, various breakthroughs signal out positive perspectives for collaboration within the geospatial industry - along the construction value chain – suppliers of building materials, chemicals and construction equipment; contractors; and engineering, architecture and planning firms – as well as project owners and developers, academics, and leaders from government, civil society, and industry organizations.

As the construction industry continues to experience digital transformation, project and asset-intensive organizations must prepare itself to embrace best practices for collaboration to successfully navigate changing landscape. Business decision-makers should talk to early adopters and be ready to experiment with emerging technologies. This move will steer their businesses into an industry leadership position and be fully prepared to harness these advancements for even greater integration and success.

The future of construction industry will depend upon how Multiple elements – people, processes, technology – come together to unlock productivity. Geospatial technologies with superior data analytics, can play a pivotal role in bringing integration (a few factors enumerated below):

- To explore best strategies and solutions to the challenges & innovations that are affecting the industry
- By helping the industry align itself to harness the wider social, economic and environmental benefits of a new roadmap for construction
- Initiating strategic leadership in deliberating discussions with high level forums to drive industry-wide transformations
- Labour safety and productivity is a major concern area despite breakthroughs made in technology, much of such advancements are eroded due to lack of best practices on the job site
- Capturing precise & accurate data during design and construction lifecycle to reduce huge costs that the industry incurs due to project delays and lifecycle operations.

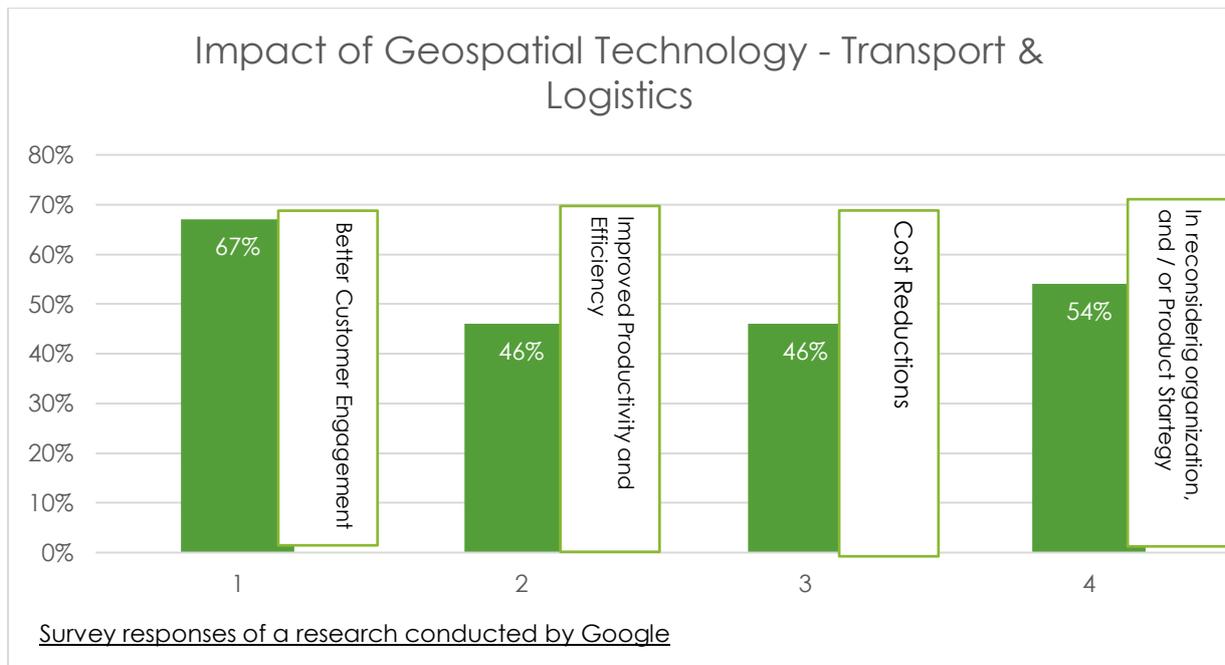https://blog.plangrid.com/2018/08/construction-industry-statistics-to-improve-productivity/

https://www.mdpi.com/2071-1050/11/1/189/htm

Intelligent Transport and Logistics

GEOSPATIAL DATA IN LOGISTICS AND
TRANSPORTATION - THINK BEYOND EFFICIENCY

Logistics sector has become a key performance indicator of the economy, with an estimated market size of this sector at USD 90 – 125 billion as an average for each country.

Geospatial data has been most commonly associated with transportation - through the utilization of maps for navigation and transit. With the advent of digital maps, there are plenty of new applications that are influencing business expansion of companies by reducing complexity of navigating large geographic areas. Geospatial data is also a key factor in providing solutions to achieve cost effective and faster results by implementing better business decisions and ensuring better use of limited funding for various projects.

Geospatial and mapping technology has had a dramatic impact on the transport and logistics organizations that have embraced it.

Impact of Geospatial Technology - Transport & Logistics

- 1: Better Customer Engagement — 67%
- 2: Improved Productivity and Efficiency — 46%
- 3: Cost Reductions — 46%
- 4: In reconsidering organization, and / or Product Strategy — 54%

Survey responses of a research conducted by Google

Another research by MDPI indicates that AI coupled with geospatial technologies helps leveraging incremental 'Economical, Social and Business Value' of 89% in Transport and Logistics sector, against the average of 62% across the industries, making it the second largest beneficiary of such technologies – first being travel & tourism.

The sector is innovating to overcome new challenges of ever increasing demand for travel, CO_2 emissions, safety concerns and environmental degradation. Collaborative platforms or applications that seamlessly weave data from satellite, sensors, mobile networks will continue to gain eminence in addressing these concerns - more efficiently and effectively.
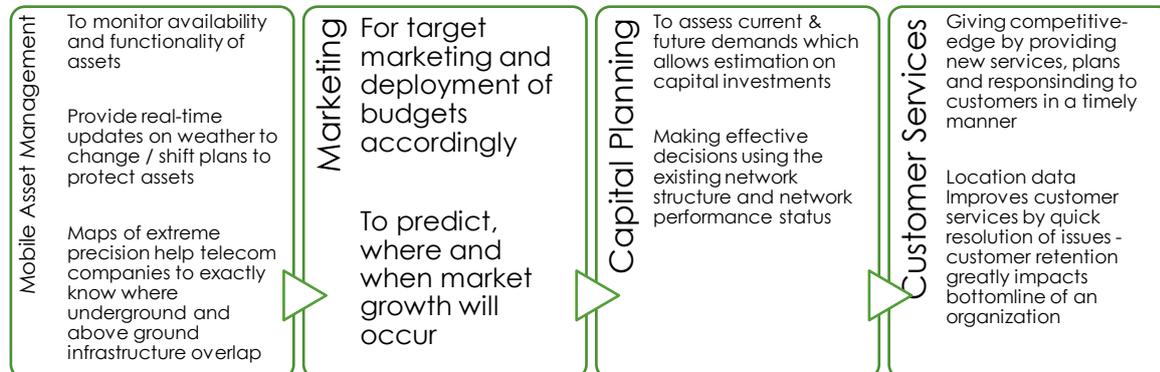
Telecommunications

WHAT IS SCALING UP USE OF GEOSPATIAL DATA IN TELECOM NETWORKS?

Use of GIS in telecom sector is scaling up gradually over the past two decades. The sector that had been using its own information gathering system, however information sharing between / across such systems was not an integral part of the design. Currently, interoperability is becoming essential and the system of networks sourced from different vendors and operated by telecom companies on their own – do not fully comply to address such need. Need for flawless network portability across nations adds another dimension of complexity for interoperability.

Telecom Management Network system addresses this need for interoperability with industry-wide protocols as the backbone of such systems. GIS applications need to be designed to work well within such widely accepted standards of TMN defined system.

The Global GIS Market in the Telecommunication Industry is one of the fastest-growing GIS markets worldwide, with a **CAGR of 10.89 percent** from 2013-2018. This growth in due, in large part, to a huge need for stakeholders to understand the network structure on a near real-time basis and for better capacity planning.

Top reasons for GIS uptake in the Telecom sector?

Mobile Asset Management	Marketing	Capital Planning	Customer Services
To monitor availability and functionality of assets Provide real-time updates on weather to change / shift plans to protect assets Maps of extreme precision help telecom companies to exactly know where underground and above ground infrastructure overlap	For target marketing and deployment of budgets accordingly To predict, where and when market growth will occur	To assess current & future demands which allows estimation on capital investments Making effective decisions using the existing network structure and network performance status	Giving competitive-edge by providing new services, plans and responsinding to customers in a timely manner Location data Improves customer services by quick resolution of issues - customer retention greatly impacts bottomline of an organization

In 2019, geospatial industry needs to consider a few important factors. With exponentially growing demand for bandwidth from small businesses in urban, suburban and rural settings - there will be pressure to deploy more density & capacity in wireless networks. Designing a wireless network undergoes several iterations of planning and testing, hence it is a costly process all around. As mobile carriers begin to roll out new networks, they will face the challenge of parallelly maintaining their current networks for 3G & 4G for which they have already paid the license fees. Since network is spread out widely, GIS data and analysis will extensively support in proactive identification of problem spots for the existing networks as well as testing of configuration of new networks using a simulation of wireless coverage areas. Well planned investments in this sector, specifically in developing economies and 5G applications; will pay higher & faster dividends - *'the first-movers'* advantage will be obvious.