



DIGITIZATION OF TELECOM INFRASTRUCTURE ROLLOUT

Introduction

Fiber Optic technology plays a key part in businesses today as everyone is dependent on a faster, more secure and larger communication network for their operations. It is capable of transmitting more data at faster speeds over longer distances and hence has become the foundation of modern data transmission.

With the last years of the pandemic, work from home has become a norm and most businesses are moving to either a hybrid mode of working or a full time from home model, resulting in very high consumption of broadband. Fiber is getting consumed as it is rolled out. Fiber optic networks are the path forward to getting terabytes of data to consumers homes and businesses instantly. Open Vault's Broadband Insights Report for Q1 2022 found that a huge number of users consuming more than 1 terabyte of data per month and that the average US household is consuming 514 GB.

The rollout and expansion of the 5G wireless network is made possible by fiber optics. Along with the 5G cells, the need for fiber increases even more drastically as there is a need for a 10x increase in fiber per cell. Operators have said that going forward, while transitioning from 4G to 5G, 60 percent or more of their efforts will be directed towards deploying fiber.

According to Report linker, the fiber optics market is projected to grow from USD 4.9 billion in 2022 to reach USD 8.2 billion by 2027 at a CAGR of 10.9%.

With projects like Facebook's Simba (an underwater cable encircling Africa offering access to a new market of users) and Alphabet's cable system targeting West Africa, the fiber deployments are going to only increase exponentially in future.

Current Infrastructure Challenge

Current IT infrastructure in operators was created in the late 1990s and early 2000s. The deployment management tools were essentially homegrown standalone solutions with manual configurations and tasks or in many cases in excel spreadsheets. There was no centralized place for site, inventory, projects, finance and permit management.

With large local and national level projects managed by multiple teams, it is time consuming to operate in silos. Coordination between project management teams, planners, workforce assignment, and task completion is mainly manual and leads to incorrect data capture and increased cycle times.

Industry has primarily focused on the cloudification and digitization of the network as well as customer and service centric IT applications. There has not been enough focus on deployment applications including Project Management. With the emergence of 5G and an exponential increase in fiber requirements, the complexity of projects and volumes have increased significantly. This has now brought focus on the need for more efficient project management to increase productivity and stay competitive.



Some of the key issues faced by the industry with regards to project management of infrastructure rollouts:

- Legacy tools or homegrown tools with minimal automation and in many cases manual spreadsheet-based project management.
- Mergers and acquisitions leading to different tools and processes across the unified entities.
- Cost leakage. Inability to reconcile costs and project level.
- Lack of visibility across projects for management teams.
- Manual processes leading to errors, delays, and inaccurate forecasting.
- Difficulty in coordinating across multiple projects and identifying dependencies.
- Lack of visibility and inefficient coordination due to information being available in disparate systems.
- Delays in project completions leading to customer dissatisfaction.
- Lack of skilled workforce.
- Chaotic permit management and tracking.
- Incorrect reporting due to incorrect data. Difficulty in forecasting projects and costs.

Way Forward

The industry will need to focus their attention on digitizing their infrastructure rollout process. Unless this process is optimized it will not be able to meet the market need for faster deployment. Additionally, automation and cloudification will reduce opex.

Some of the required steps to transform legacy solutions include:



Standardize your process.



Templatize high volume repeatable work.



Automate workflows.



Enhance collaboration and coordination.



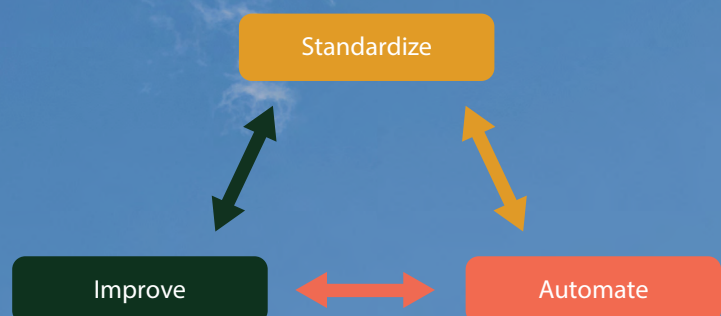
Standardize on a single application/integration ensuring full picture of the project including associated finances, cross projects, and workforce assignments.



Enable data availability and real-time reporting.



Efficiency reports feeding into process improvements.



Sitetracker has emerged as one of the best tools for project management related to infrastructure deployment. Sitetracker is specifically tailored to cater to the telecommunications industry.

Some key features provided by Sitetracker include:

1. Simplified Project Management by supporting templating of project management tasks.
2. Site and Asset Management with maps and geofencing.
3. Work Management capabilities that tie field operations, vendors, and scheduling to projects. Support for Mobile devices on Android & iOS platforms.
4. Integration capabilities for systems like ERP, CRM, GIS, OSS/BSS, etc.
5. Financial Management including budgeting, capital funds, timesheets, etc.
6. A complete Sitetracker platform that includes real-time analytics, document management and approvals.

Infosys and Sitetracker have partnered to provide their customers the digitized rollout benefits. Infosys has a strong Salesforce and Sitetracker certified pool of people. It has established Telco labs for innovation and training.

The Communications Media and Entertainment practice within Infosys has 240+ clients and 30 + years of expertise in the telecommunications space. Our consultants are well trained and certified in TMF SID, Open API, Process and closely work with TMF.



Infosys Association with Industry Forums & Open Source Communities

Infosys has won **10 TM Forum Catalyst awards for outstanding catalyst since 2016; 1 individual recognition award**

'Best New Catalyst in show' for **'Becoming Edgy'**, Edge Compute in 5G catalyst project in TM forum Digital Transformation Asia, Nov 12 - 14, 2019 in KL, Malaysia

5G Living Labs across the globe - Open Networking platforms, O-RAN focs

Contributions to varied **Open Source Communities** like Linux Foundation, OrientDB, ONAP, ONF, ...

Thought Leadership demonstration in varied Industry Forums and events

Collaborate with clients, eco system partners for joint innovations, execute POCs through living labs across the globe

First System Integrator to sign the Open API Manifesto of TM Forum TMF - ONAP - ETSI - MEF collaboration thro' TMF on standardization of data models, Open APIs, Contributions to varied working groups, specifications in TMForum like ODA, 5G, Blockchain, Open APIs

Select Catalyst Projects

- **'Skynet'** catalyst on Borderless Health care, inter-carrier slice management, ONAP won Outstanding Business Assurance catalyst award (2019)
- **'Digital Twins'** catalyst covered holistically the Telco organization, Technology (IT, Network), Customer, Operations (Process), Organization won Outstanding Innovation award (2019)
- **'BladeRunner'** Catalyst on 5G, Mobile Edge Computing, AR/VR and SDN/NFV won the Outstanding Innovation Catalyst Award (2018)
- **'Blockchain Unleashed'** demonstrating the Blockchain possibilities in Telecom won Outstanding eco system design (2018)
- **'5G Patisserie'** on Network Slicing, dynamic slice orchestration and cross industry digital bundles, won Outstanding Innovation (2018)
- **'NAAS in Action'**, won Outstanding Catalyst in using TMF assets (2018)



Highlights of Infosys work for Sitetracker project implementations

Infosys is working with Sitetracker bringing in digitization within the infrastructure rollout area. We have seamlessly taken over the Sitetracker development for tier one customers we are working with together.

Here are some ways Infosys has brought value to Sitetracker implementations:

Projects were delivered in Agile method with weekly deployments. We have introduced Show & Tell demos for our customer projects within the weekly deployment cycles.

Infosys has developed a dedicated Permitting module integrated with the GIS system that helped rationalize legacy systems. Permit configuration and assignment to projects helped accurately track and prevent any roadblocks.

Migration of Project Management data from legacy excel based systems into Sitetracker enabling better forecasting and centralized data.

Integration of ST solution with SAP & KAFKA to get real time inventory and financial data.

Sitracker instance integration for both Enterprise as well as Consumer application stack. Integration to support close coordination and reduced cycle time by automating interactions between Engineer & planner.

Infosys has supported customer process refinement by identifying automation opportunities and delivering cycle time benefits.

Delivered reports and Trackers for better forecasting of finance.



Sitracker Solution Overview for Fiber Deployment

What does fiber deployment entail?

Deploying a fiber network is an expensive and time-consuming process where the cost per home can vary depending on proximity of fiber to home and the density of the area. For large projects, FTTx network building and maintenance costs run into billions. Thus, making strategic decisions, optimal designs and strong deployment management crucial to optimize your budget.

Sitracker is a managed package on Salesforce and as such inherits all security and cloud features of the platform. Sitracker is a single destination for sites, projects, inventory, finances and resources.

One of the key advantages is the ability to quickly adapt to the changes in business processes (e.g. changing the predecessor of a step or updating the rendering logic for a step or changing the owner of a step). All these are config changes (no code) only.



1. Project Management Capabilities

Creation of project templates is possible using Sitracker's powerful template engine. Different templates were created for different types of use cases for the fiber projects. Templates were categorized based on Market Segments like Consumer or Enterprise and further based on work type such as augmenting splitter, fiber design service, relocation, damages and maintenance.

This helped reduce the effort of creating the project tasks and activities manually each time. Milestones were easily assigned for the project templates and tracked. Formulas and dependencies within the templates helped in better forecasting and auto-calculated dates.

Project managers were able to better track their projects and worked on multiple projects at a time. Collaboration with multiple teams across location was easier and task hand off of information and tasks simpler.

For any resources required for the project, cost of resources was tracked and budgeted. This ensured expenditure was closely tracked and the project was within budget.

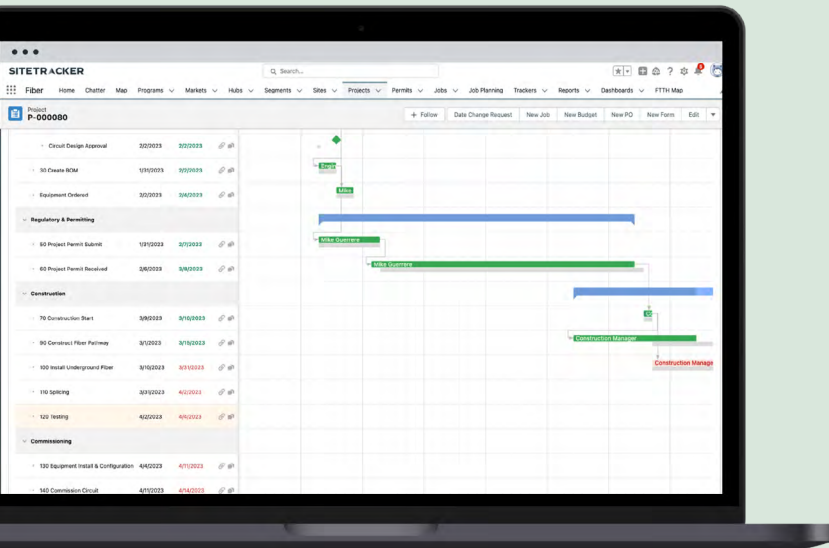
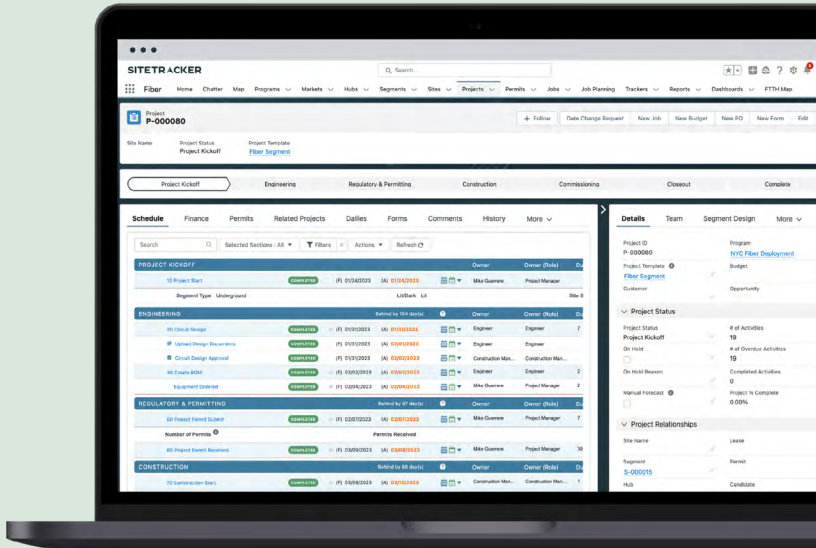
Separate and dedicated Permitting module integrated with the GIS system helped rationalize legacy systems. Permit configuration and assignment to projects helped accurately track and prevent any roadblocks.

Different types of forms were templated and created as required by projects. Examples include: SOW forms, Reimbursement forms, and Leasing abstracts. Once the project is initiated, associated forms can be created and linked with the project. Relevant teams can fill out the required forms from any location.

Schedule Projects & Set Milestones

Gain a clear, centralized view into project schedules and key milestones across your entire portfolio to quickly understand what's on track and why a project might be stalling, all in an effort to shorten your path to revenue.

- Manage activities with various conditionality, comment, and re-forecasting features
- Search and filter to focus on what's important
- Auto-update milestone date fields with scheduling logic



Manage Timelines & Dependencies

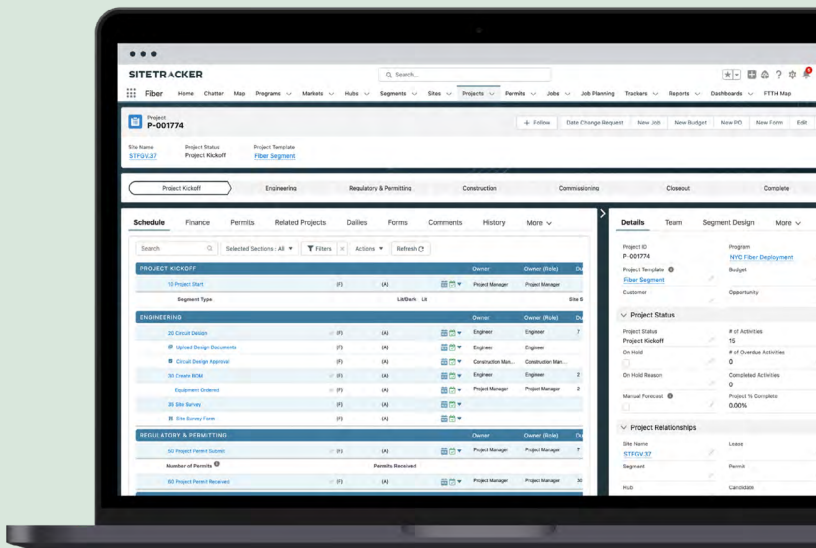
From monitoring individual jobs to keeping the pulse of a portfolio-wide project, securely manage jobs, resources, contracts and more to ensure you're tracking to the projected timeline.

- Streamline the process with familiar Gantt views that are focused on status, dependencies, durations, ownership and more
- Assign automated start dates to seamlessly manage across milestones
- Utilize existing forecasting logic to recalculate start dates

Measure Project Performance

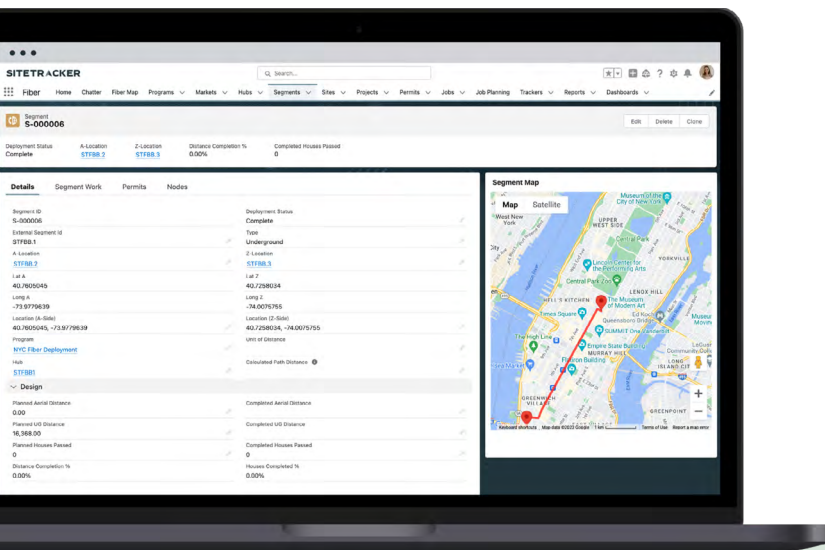
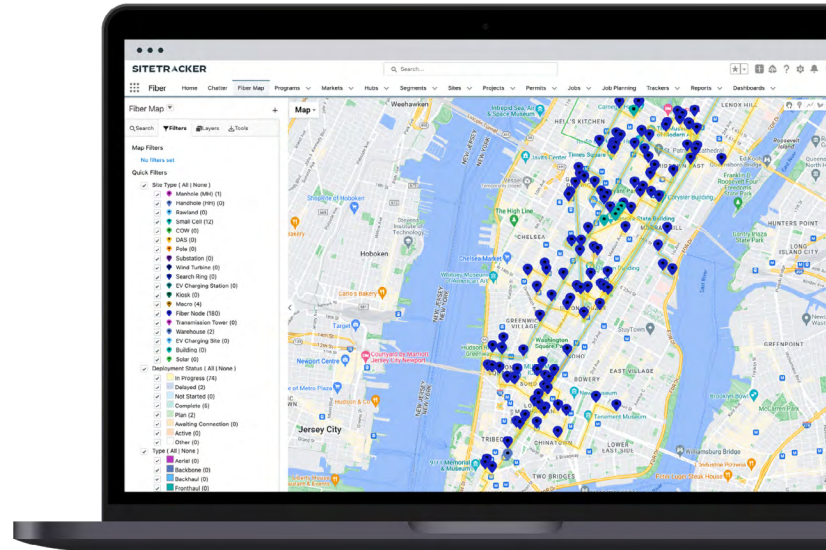
With powerful insights, create data-backed forecasting predictions to build confidence around timelines, budgets, vendors and more.

- Set the Forecast and Actual dates for an Activity task
- Set baselines for one or multiple projects
- Gain dynamic forecasting and task inclusion tied to financials



2. Sites and Maps

Sitetracker provides the ability to identify sites and track at individual site levels. Users are able to view site details, tenants and history in a single view. Associated approvals and drawings can be updated against the site.



3. Workforce

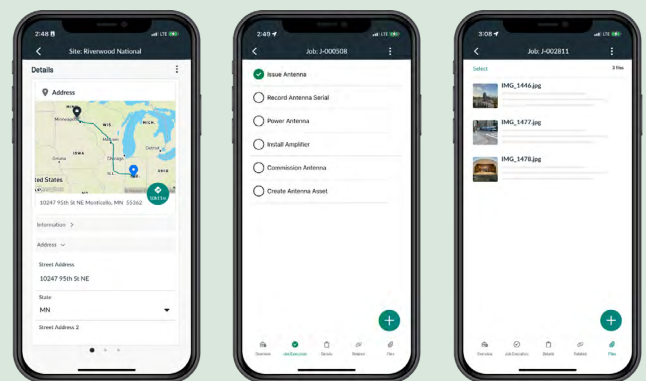
Sitetracker is supported on Mobile and the workforce can work on Android as well as IOS devices. The workforce can be closely tracked using automated check-ins and their time managed better. Crews can be assigned tasks, which will appear in their bucket automatically. They can execute tasks and track their associated timesheets. Forms can be filled in by crews with task statuses updated in real time and synced back to cloud.



Manage & Execute Jobs

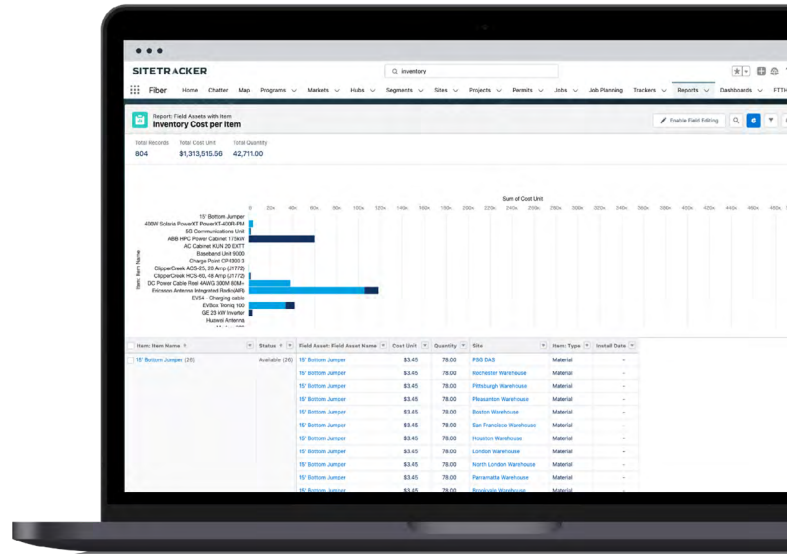
Give field teams the tools to manage jobs quickly and efficiently through field-centric mobile apps and dynamic forms. Effective, transparent communication in one platform reduces truck rolls and time to revenue.

- Gain real-time visibility between the field and the office to prevent rework and ensure data accuracy
- Work smarter with a field-centric mobile app that includes forms, geo-fencing, document markup, and offline work
- Track performance and field activity across vendors and internal teams to improve efficiency, optimize resource selection and improve the bottom line



4. Inventory

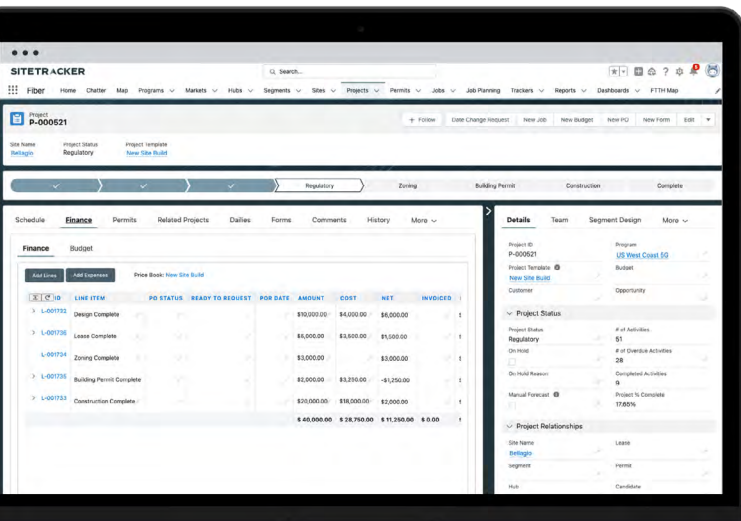
The system provides a central place to manage field resources. The workforce can Install, uninstall, and replace field assets via mobile. The resources can be managed and tracked accurately. Sitetracker provides the ability to track Installed resources across sites. The equipment used and availability can be easily tracked.



5. Financial Module

The financial module allows you to track the cost of the workforce and inventory against the project. The capabilities within this module allow more efficient management of funds and future forecasting. The Finance module features include:

1. Ability to budget the finance requirements
2. Automate the creation of expense line items based on rules
3. Track expenditures against milestones
4. Real time financial reports



About the Authors:

Paul Butterworth- Vice President, Asia Pacific at Sitetracker

Paul Butterworth is Vice President, Asia Pacific at Sitetracker. Paul has spent 25 years working in Telecoms Infrastructure across many technologies and related software platforms. Currently working with global telecom service providers and many Fiber and Wireless operators across Asia and South Pacific, Paul leads the team focussed on Sitetracker's mission to build, deploy, and maintain the next generation of critical infrastructure.

Shri Krishan - Senior Industry Principal, Infosys Limited

"24+ Years of Experience of working with communication service provider globally in OSS/BSS domain. Has rich experience of leading multiple digital transformations and process improvement programs across B2B and mass market as E2E solution architect creating architecture blueprints, solution roadmaps and process maps. He has worked on multiple consulting engagements with CSP to define new ways of working, operational models, customer journey improvements. He is responsible for CMT focused Ecommerce, Order Management, CRM, CPQ, Product Catalogue and Marketplace practices in Infosys and collaborating with CSP to make right solution/technology choices. He leads on multiple TMForum initiatives and is active contributor to TMForum Software Marketplace track."

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"20+ years of Experience of working with communication service provider globally in OSS/BSS domain. Akhil has led multiple transformation programs working as Business Analyst, Solution Designer and E2E Architect role in eCommerce, CRM, CPQ, Order Management, Product Catalogue, Service Management Platform, assurance domain and led multiple package implementations. He is a certified TMForum Business Development Manager and Sitetracker professional and leads the Sitetracker Practice at Infosys.

Suman Bagde- Senior Consultant, Infosys Limited

Telecommunications consultant and have more than 17 years' experience with global Organizations. I have worked in multiple Lead to cash transformation programs. Expertise lies in CPQ, CRM and fulfillment process, as such worked in most areas within OSS-BSS space.

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