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STAR Awards 2023

2023 TSIA STAR Awards
Featured Application

Category Name: Field Service Excellence

Dell Intelligent Capacity Planning through dynamic competence scoring

What We Did

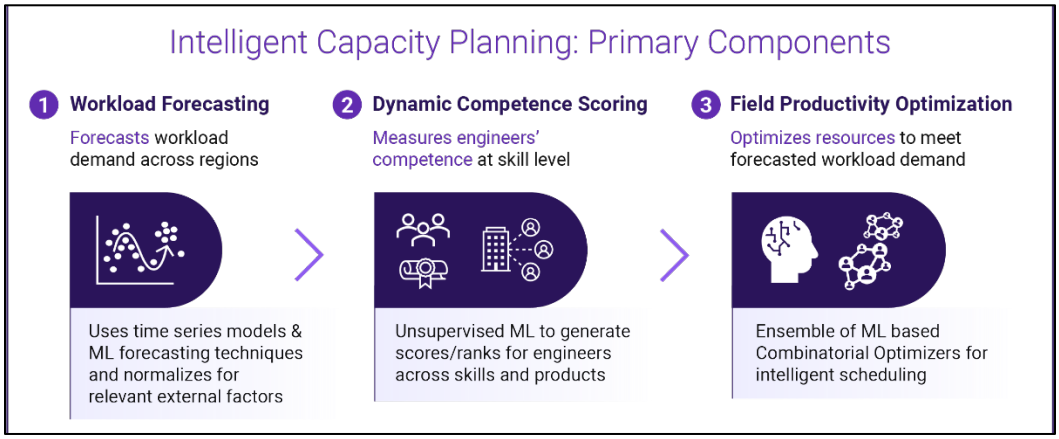
One of the biggest challenges that Field Services businesses face today is ensuring that engineers with the appropriate skills are available at the right place and time to address customer cases and dispatches.

Dell Field Services is committed to delivering an enhanced customer experience by effectively planning and managing workloads while reducing costs associated with items such as unmet workloads and overtime costs. This objective heavily relies on field engineer skills and availability, dispatch types, and information regarding their trainings and certifications.

To proactively address this challenge, our team has developed an intelligent Machine Learning (ML) driven solution for field capacity planning. The solution enables efficient handling of future workload demands, ensuring the readiness of field operations, and that skilled engineers are readily available for dispatches. Moreover, it aims to maximize the utilization of our workforce to drive superior financial performance.

Solution Overview

- Ranks engineers based on competence; calculated using historical work performances, past dispatch characteristics, and existing set of skills
- Identifies the most skilled engineers in each category, product, and line of business (LOB), enabling swift auto assignment to cases and dispatches, driving quicker resolutions for customers
- Identifies which engineers need upskilling in each product/LOB
- Provides skills training recommendations for engineers
- Helps to measure the effectiveness of trainings, certifications, and ROI



1 The demand/**workload forecasting** component utilizes robust time series models to accurately predict future workloads, considering factors such as dispatch reduction initiatives, in/out of warranty systems, new sales, contract renewals, and the impact of field incidents. The historical workload segregated by dispatch types across geographies is fed into a forward-looking machine learning model that learns the seasonal variations in dispatches, the dispatch trend over time, and the irregularities in incoming dispatches across historical weeks. The forecasting process considers the significance of external factors such as holidays and major global events (e.g., catastrophic weather, COVID'19, etc.).

2 This accurate workload forecast is fed into a **dynamic competence scoring** unsupervised machine learning module that considers past performance of engineers in relation to future demand and generates ranks for engineers for each skill/product. This dynamic competence scoring module:

- Identifies the top 'n' engineers across each skill/product for each geography to be auto assigned to customer-initiated dispatches
- Identifies the bottom 'n' engineers who require training and certifications to better equip themselves to manage the future workload efficiently
- Curates list of engineers by skillset across geographies that operations and field managers can utilize for resource assignment

- Facilitates the measurement of training/certification effectiveness by pivoting competence calculated against the trainings/certification details of engineers

3 The available capacity of the top-ranked engineers is then optimized given the expected future workload across products/geographies to maximize their efficiencies and enhance their productive utilization. This **field productivity optimization** results in cost savings by reducing repeat customer site visits and associated overtime. The outcome of leveraging this solution has a targeted impact on costs while improving the customer led experience.

Dell Business Impact

Quantitative impact:

- **10% average increase** in the First Time Fixes (FTF)
- **30% average increase** in engineers' competence
- **3.4% average reduction** in Repeat Dispatch Rate (RDR)

Qualitative impact:

- Automated skill routing of engineers potentially impacting resolution efficiencies
- Best capability mix (skills) deployment
- Better engineer engagement and enhanced utilization for higher throughput
- Enhanced employee experience and improved employee retention due to clear career growth path
- High solution adoption propensity across the organization post roll-out

Customer Impact

Quantitative impact:

- **+14% YoY increase** in productive utilization rate globally resulting in improved productivity, facilitating seamless resolution journeys for customers
- **First Time Fixes (FTF) improved by ~10%** leading to reduced customer effort, enhanced customer trust, and increased service credibility

Qualitative impact:

- Improvement in overall customer experience owing to better engineer performance and productivity
- Reduced customer effort during case resolution
- Better management of service level obligations with customers
- Increased ability to delight customers with accelerated product launches made possible by enhanced resource readiness

Testimonials

"I would like to express appreciation for the time and effort that the team has put in for setting up the APJC Field Services Demand Forecast and Capacity Planning solution…the team came together, understood the business requirements, worked through multiple reiterations…has been innovative, worked on feedback, and met the timelines. The solution gives us a preview / forecast of…where we have capacity and where we need to improve our training plan. The work that the team has done has been well received by APJC leadership."

APJC Business Ops Director, Dell

"Good work team! Impressive development! Looking forward to the full-scale roll out and possibly in near future, adoption as a global tool!"

VP, Enterprise Services, Dell

"Solution with high potential to impact teams across the organization and would love to see this in dynamic routing"

VP, Enterprise Support, Dell

Next Steps

This solution has received positive feedback from Dell leadership, field engineers, and agents, and is being scoped for global adoption. We plan to work with the business teams to build out the roadmap for broader cross-organizational usage. Expected impact from next steps includes:

- Targeted impact ~11% increase in productive utilization per engineer YoY for a total of 300K productive hours
- Enhanced field resolution capabilities and customer experiences due to AI advancements

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