Prodapt Chase Extraordinary

Bridging the gap between demand and capacity

Leverage AI-powered capacity planning to modernize field services

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Planning and allocating field technicians based on the demand vs capacity is a daunting task that leads to high OpEx for most service providers

Gartner says, "Balancing available resources against demand for those resources is essential to successful initiative completion".

Major challenges in the traditional field service capacity planning

1

Unavailability of tools to estimate capacity in real-time
Manual capacity planning and mapping of dispatches without a clear view of the site leads to errors and misinterpretations

2

Lack of strategy to identify the key influencing factors
Inability to identify the key factors such as weather, holidays and maintenance data, impacts the capacity planning decisions

3

Lack of mechanisms to assign the right technician for the right service
Failing to allocate field technicians with the right skillset results in repeated site visits and poor service delivery

4

No end-to-end visibility into field service capacity
Lack of visibility into the field service demand, procured capacity and available capacity

How an inefficient capacity planning **impact service providers?**

UNDER-STAFFING fails to address the huge amount of customer requests

OVER STAFFING leading to wastage of resources

- Missed SLAs
- Order fallouts and dissatisfied customers
- Higher OpEx
- Reduced NPS

To overcome these challenges and handle the diverse field data, service providers in the connectedness industry should move towards an **intelligent capacity planning** which helps in real-time mapping of dispatches and right usage of resources

Move to AI-powered capacity planning to reduce resource wastage by 20%, improve effectiveness of service response, and customer satisfaction

Traditional approach (sample scenario)

Manual estimation of work hours by field tech supervisor

Field tech supervisor estimates capacity for 'Brooklyn' service location → Collation of historic trends for the service area and product type → Perform a linear forecast → Manual estimation of required field tech hours

Human errors and field technician biasing

Request the contractor for estimated resources → Assign technicians for dispatch → Technician completes repair/installation

- Manual estimation of field-tech work hours is error-prone and cumbersome
- Inefficient capacity planning leads to over-staffing / under-staffing of field technicians
- Hard to extend to new service locations

Proposed AI-powered capacity planning approach

Field tech supervisor estimates capacity for 'Brooklyn' service location

Automatic estimation of field tech work hours by ML-Model

- Automatic collation of historical data and prediction of required field technician work hours
- Near real-time prediction of work hours considering the key factors that impact capacity planning

Operations team

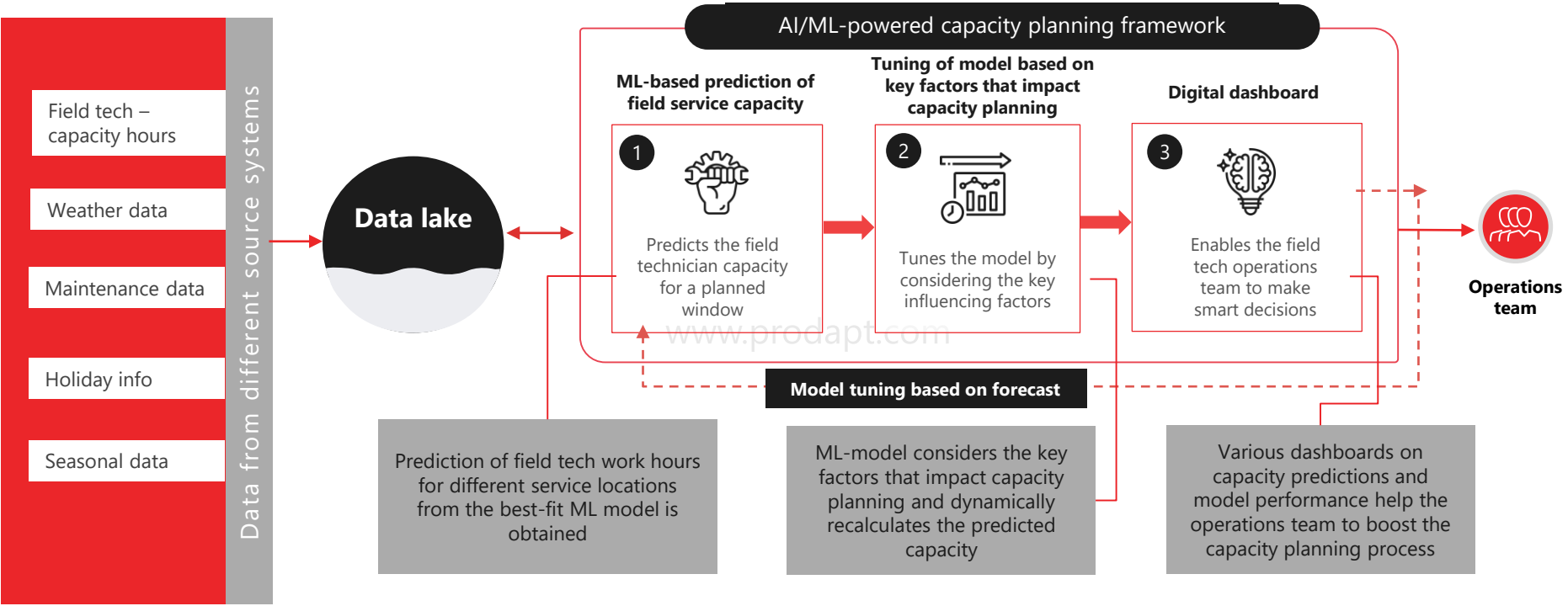
Automatic predictions from ML-model enables the operations team in effective assignment and usage of field tech resources

Request the contractor for estimated resources → Assign technicians for dispatch → Technician completes repair/installation

- Real-time and automated estimation of field tech hours
- Efficient and optimal capacity planning considering the key influencing factors
- Automatically scalable to new service locations

This insight details on how service providers could leverage an AI-powered capacity planning framework and provides best practices for its effective implementation.

Leverage an AI-powered capacity planning framework for real-time field tech resource management



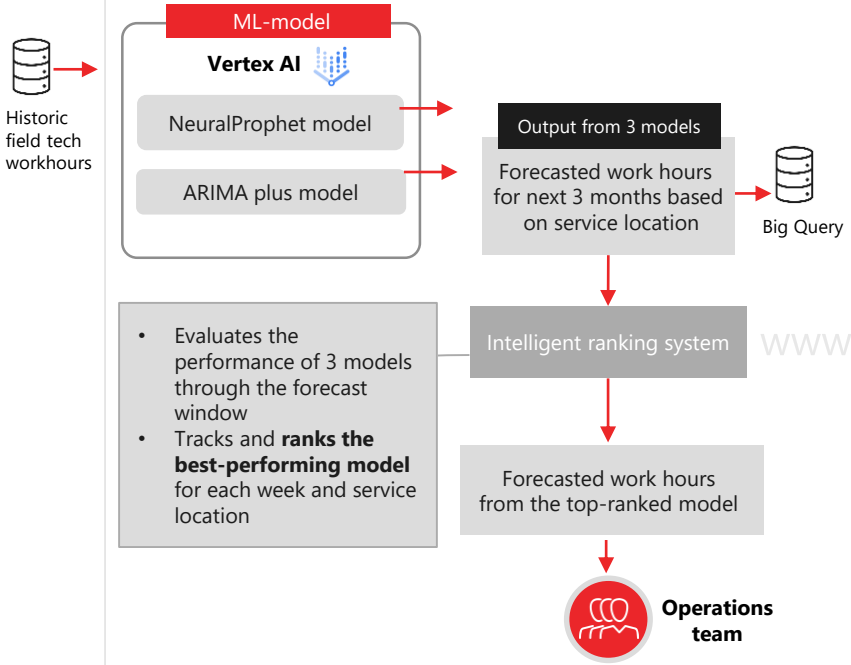
The following slides deep-dive into each of these components and show how the ML-model can be built for an effective and accelerated capacity planning process.

ML-based prediction of field service capacity

Enable seamless service delivery and effective completion of customer service requests

1 2 3

ML-model building for field tech capacity prediction



Sample use case: How ML model predicts the required capacity for next four weeks to achieve cost savings?

Field tech supervisor plans the required capacity for 'Brooklyn, New York' service location

Behind the screens

ML-model pulls the historic field technician work hours and predicts the capacity for the next 3 months based on the service location

Forecasted workhours for 'Brooklyn' service location

Week	Manual capacity prediction (hrs)	ML capacity prediction (hrs)	
		NeuralProphet Model	ARIMA Plus model
Week1	20	28	35
Week2	40	56	62
Week3	44	36	34
Week4	52	40	32

Week	Actual capacity utilized (hrs)
Week1	34
Week2	58
Week3	28
Week4	34

Forecasted work hours from the model with high accuracy is taken as the final prediction for each week

	Accuracy %		
Week	Manual prediction	NeuralProphet Model	ARIMA Plus model
Week1	59%	82%	97%
Week2	69%	97%	93%
Week3	43%	71%	79%
Week4	47%	82%	94%

Intelligent ranking system

Key recommendations

- Different models can handle different data sets. Implement multiple models to choose the best-fit model and address diverse data from various service locations
- Leverage imputation mechanism for the service locations which miss field technician information. It helps in filling the missing fields with substitute values to improve the accuracy of the model

Intelligent capacity prediction by choosing the best-fit model **avoids field technician biasing and improves the model accuracy.** This enables service providers with effective completion of customer requests, improve customer satisfaction and cost savings.

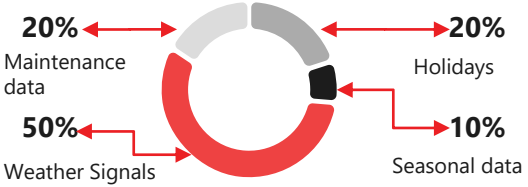
Tuning of model based on the key factors that impact capacity planning

Improve field technician productivity and reduce resource wastage by 20%

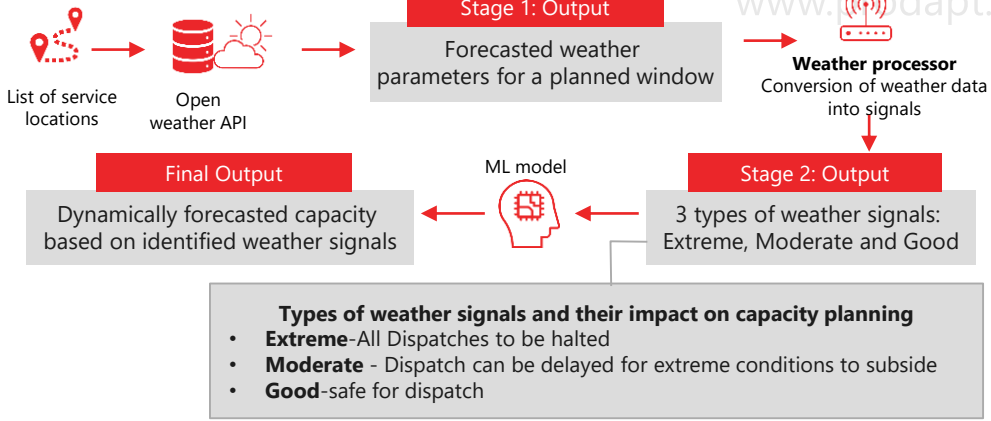
1 2 3

Field technician capacity planning can be affected by various factors such as weather, maintenance, and holidays. These conditions vary based on the service locations, and **field technicians may not be able to access the location during extreme weather conditions**. This results in resource wastage and incomplete service requests.

Key factors impacting the prediction of capacity planning



Sample dynamic capacity forecast considering the weather impact



Types of weather signals and their impact on capacity planning

- **Extreme**-All Dispatches to be halted
- **Moderate** - Dispatch can be delayed for extreme conditions to subside
- **Good**-safe for dispatch

Sample use case: Dynamic capacity forecast based on weather impact to avoid overstaffing of field technicians

Service location: Brooklyn,NY	
Week	**Weather signal**
Week1	Good
Week2	Moderate
Week3	Extreme
Week4	Moderate

Identified weather signals are fed to the ML model

Actual capacity vs dynamic forecast of work hours based on weather impact

Service location: Brooklyn,NY				
Week	**Weather signal**	**Predicted capacity by ML model (hrs)**	**Dynamic forecasted capacity by model (hrs)**	**Actual capacity utilized (hrs)**
Week1	Good	35	35	34
Week2	Moderate	56	58	58
Week3	Extreme	34	30	28
Week4	Moderate	32	32	34

Based on dynamic forecast from ML model, Operations team understands that field technicians can be reduced for the service location due to "extreme" weather condition

Dynamic calibration of the predicted capacity considering the impact of key influencing factors helps in reducing the resource wastage by 20%.

Digital dashboard- Enabling operations team to make smart decisions and boost the capacity planning process

- Provides the ability to track the available capacity for different service locations and plan the dispatches
- Helps in gaining an end-to-end view of the model performance
- Provides accuracy in the distribution of models across service locations to focus and improve capacity planning

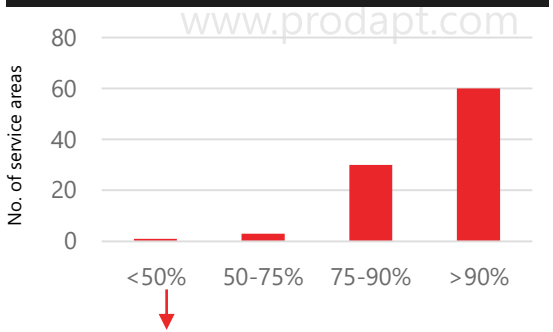
With the digital dashboard, the field tech operations team can have end-to-end visibility of capacity planning and models' performance.

Operations dashboard showing SLA adherence for manual vs ML capacity predictions for different service areas

Region	Service area	Day1					Day 2				
		Actual capacity (hrs)	Manual capacity prediction (hrs)	SLA adherence for manual prediction	ML capacity prediction (hrs)	SLA adherence for ML prediction	Actual capacity (hrs)	Manual capacity prediction (hrs)	SLA adherence for manual prediction	ML capacity prediction (hrs)	SLA adherence for ML prediction
Region1	SA1	34	20	59%	35	97%	58	40	69%	56	96%
Region1	SA2	28	44	43%	30	93%	36	48	67%	32	89%
Region1	SA3	34	44	70%	30	88%	40	30	75%	35	88%

Enables field tech operations team to achieve improved SLA with ML predictions. It further helps to focus on areas where SLA adherence is less than 90% and fine tune the model

Accuracy distribution of models across service areas

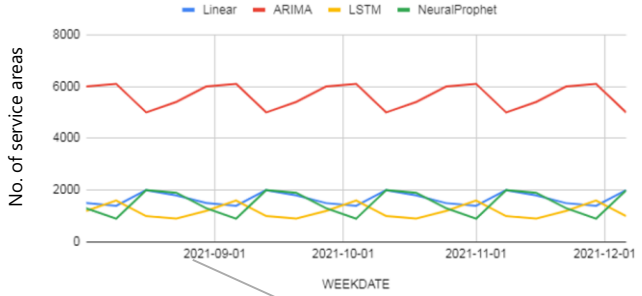


Drill down to the service location

Service Area	Accuracy %	Week
SA4	43	Week 2

Enables field tech operations team to focus and optimize the service area where the model accuracy is less

Performance of different models across service areas



Gain visibility on the performance of different models across different service locations

Business benefits achieved by a leading service provider in North America after the successful implementation of AI-powered capacity planning framework

Reduced resource wastage by **20%**

Achieved SLA compliance by **90%**

Increased cost savings by **25%**

Improvement in **customer experience**

THANKS!

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THANK YOU!