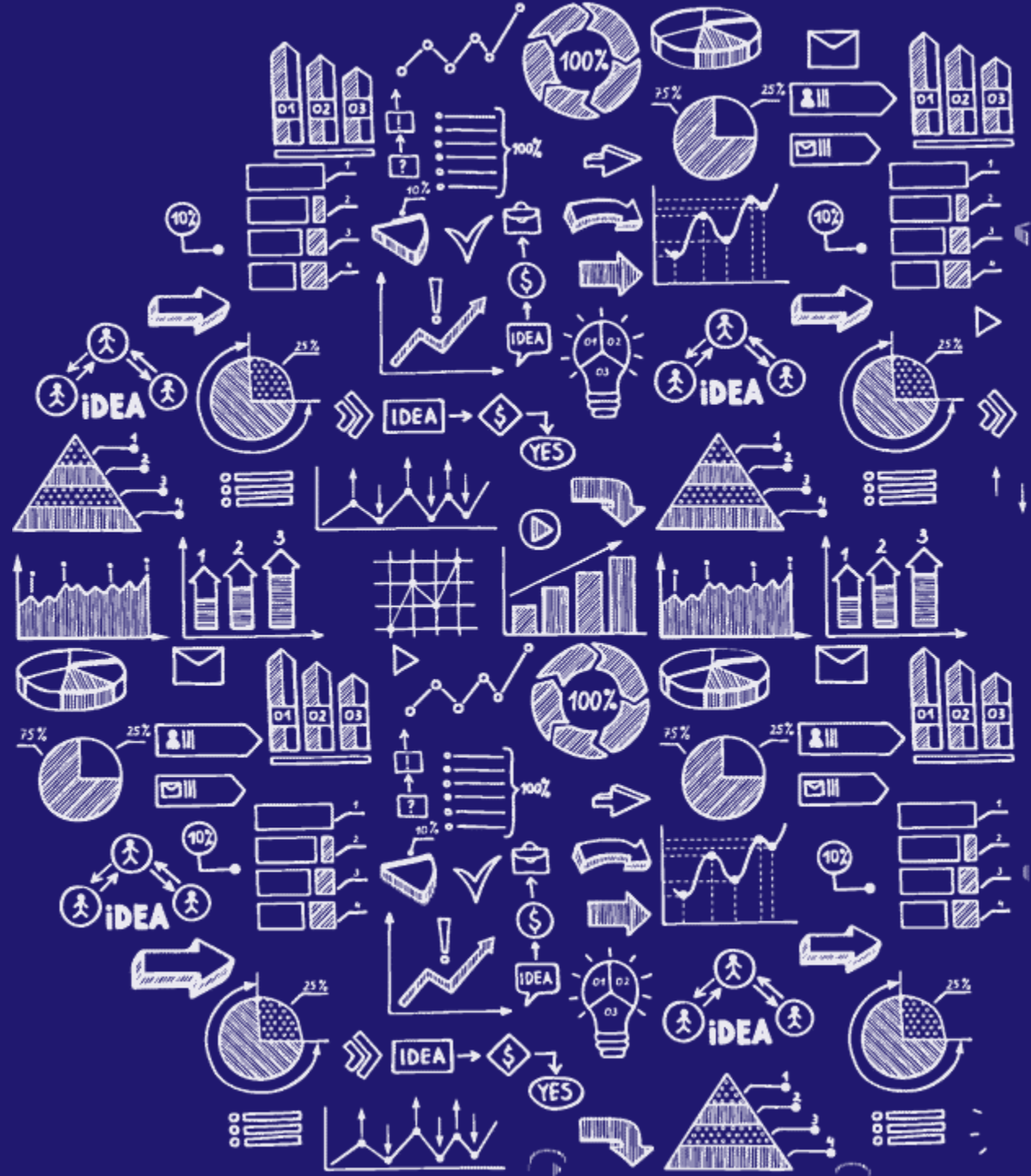


# Supply Chain & Logistics

## Capabilities overview

**Sunil Kardam**  
Supply Chain & Logistics SBU Head

Mar, 2022



# WE ARE A DATA SCIENCE COMPANY : ADVISE, BUILD CUSTOM DATA/AI SOLUTIONS

We help enterprises with data transformation journey

**120+**  
clients

**1500+**  
apps

**1M+**  
business users

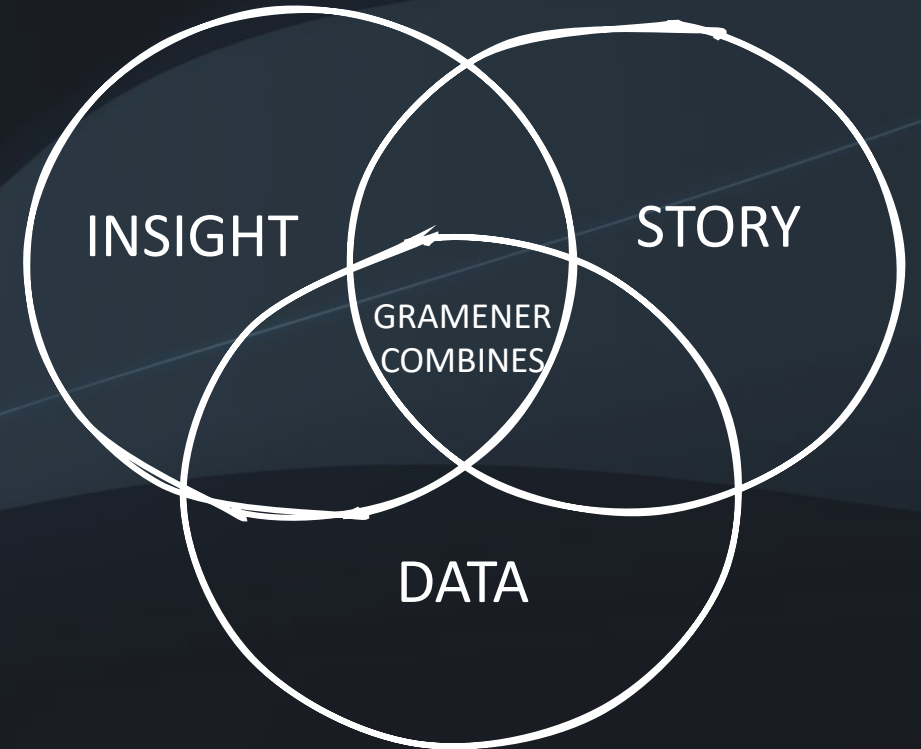
## Our strategic focus areas

**Computer Vision**

**NLP & NLG**  
(Natural language)

**Digital Twin**

**Hyper Automation**

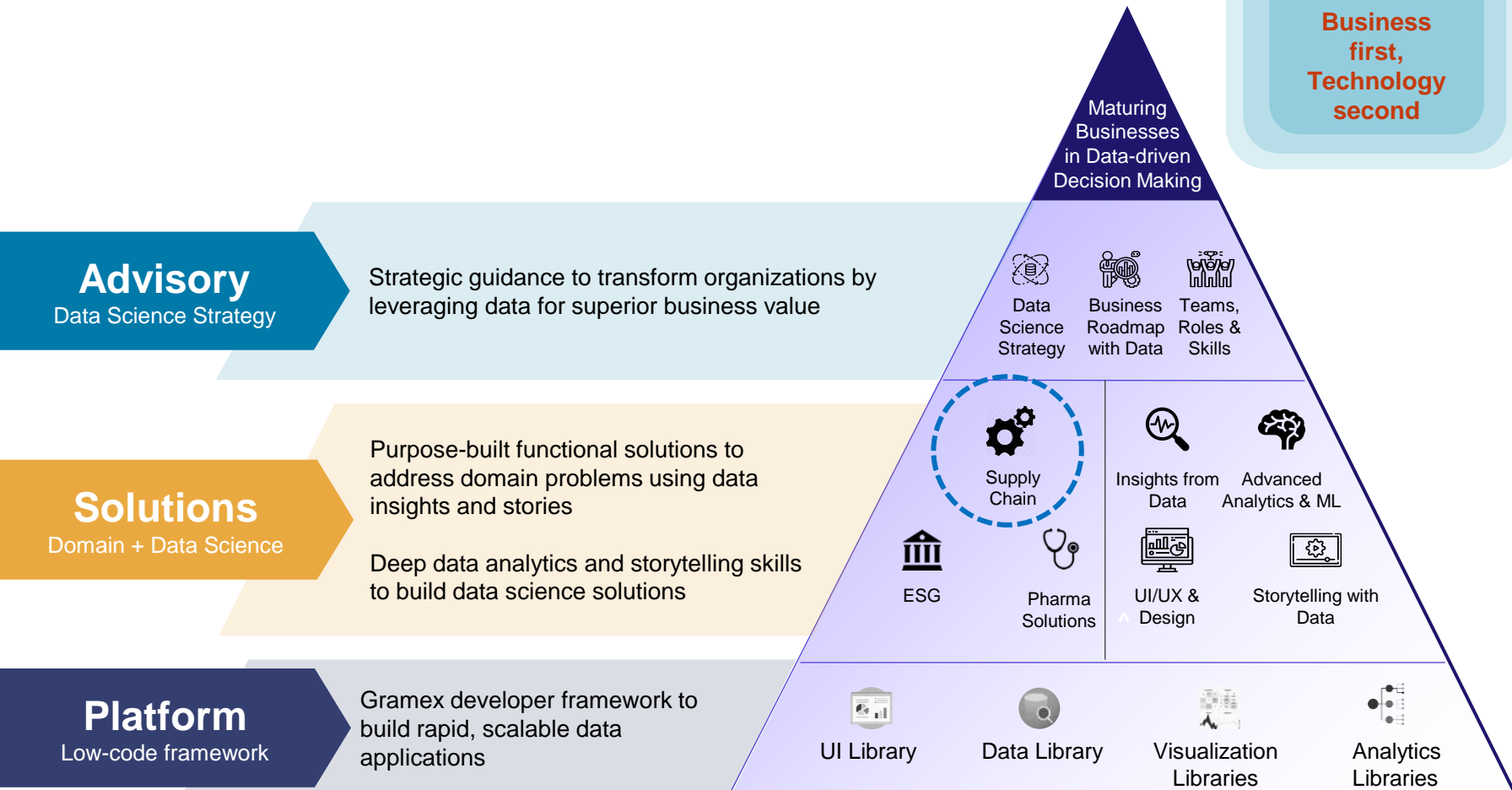


We bring the best of data **advisory**, implementation **solutions** and developer **platform** to help you scale up in data maturity

# GRAMENER'S OFFERINGS ENABLE YOU AT EVERY LEVEL OF YOUR DATA JOURNEY

We help businesses build data applications. We started in 2011 and have over 100 clients, 250+ employees and 5 offices across the globe

Our motto:  
**Business first,  
Technology second**



## GRAMEX

All our data/AI solutions are built on Gramex

**30%**  
More responsive

**3x**  
Innovation index



200+ reusable components & libraries

**Gramex** is a low code platform and based on open data standards (Python)

Our solution provides **AI driven recommendations** at every step of decision making



# OUR DIGITAL TWINS ARE BUILT ON GRAMEX THAT IS 30% MORE EFFICIENT THAN OTHER SOLUTIONS AVAILABLE IN THE MARKET



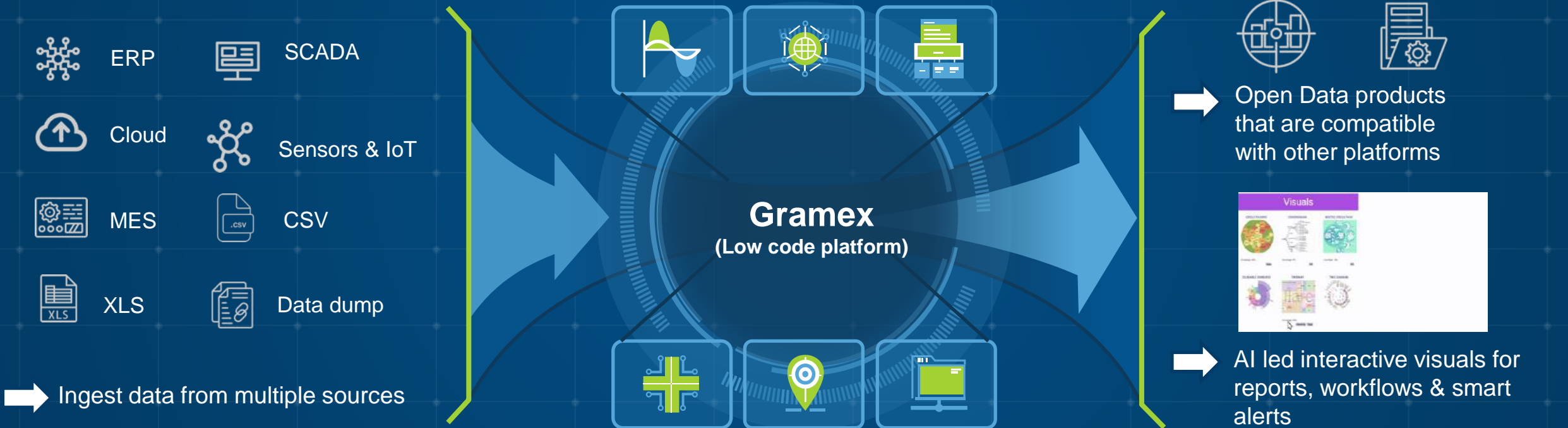
**Gramex**  
Rapid data/AI solution builder with exception storytelling

**30%**  
effort reduction

Rapid solution development

Cross compatible AWS, Snowflake

Compatible & integrated with IOT Systems, SCADA



**Challenges**

- Data governance
- Data integrity
- Data quality
- Data culture adoption

**Benefits**

- Rapid development
- Continuous & iterative
- Tailor made solution
- Automated insights

# Today, we work with over 125+ global clients across 5 key verticals

Pharma & Life Sciences						
Supply Chain, Logistics & Manufacturing						
Technology & Consulting						
Environment, Social & Governance						
Emerging						

# Supply Chain & Logistics Solutions

We provide targeted solutions for Supply Chain & Logistics and implement them leveraging pool of domain experts

## Manufacturing & Logistics

**1**

Production Performance Improvement
Process Digital Twin - Pharma

**2**

Cost Optimization
Cost command center

**3**

Defects Detection
Species Detection Tool*

**4**

Supply Chain Visibility
SCM simulator – Retail, Cargo delay

**5**

Pricing Optimization
Pricing Optimization Tool**

## Warehouse Management

**6**

Demand & Capacity Planning
Operations Planning Tool

**7**

Warehouse Dispatch
Intelligent appointment scheduler



**8**

Warehouse labor allocation
Smart task allocation



\*Under development

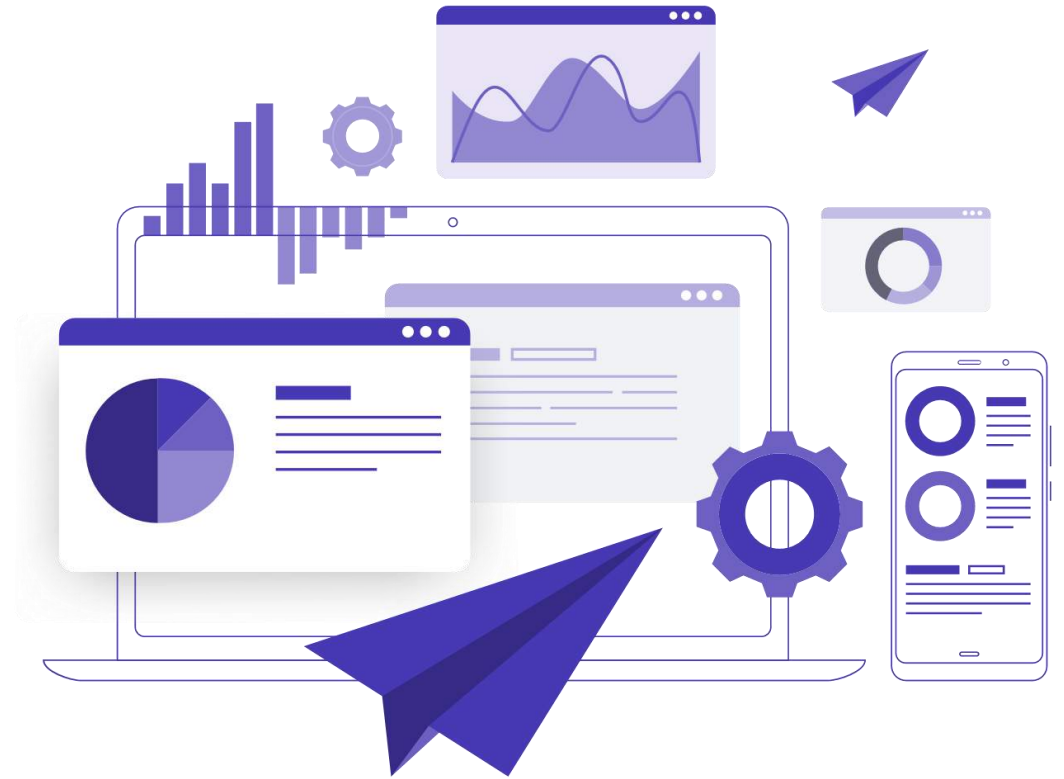
\*\* Can be customized for manufacturing industry

Functional area   
Gramener asset 



# MANUFACTURING & LOGISTICS

SOLUTIONS & CASE STUDIES



# 1. A Pharma Enterprise increased yield of drug manufacturing by 2.6%

Our client business objective was to **improve the yield quantity of the Drug product** manufacturing  
Three months of historical data were available

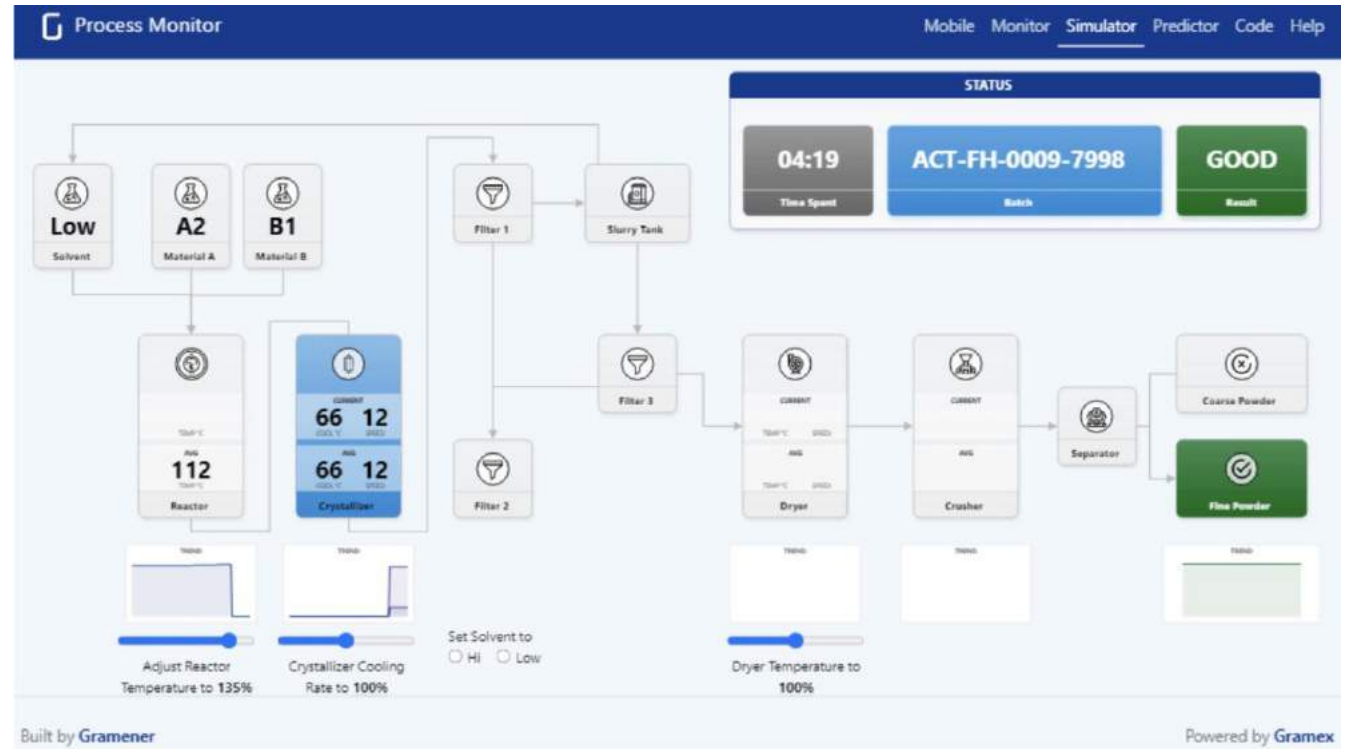
Gramener used Exploratory Data Analysis to understand various patterns  
But since the key question was which operational and material parameters are important, we applied classification and regression models for rules and variable importance

Client has better visibility on which parameters are driving the yield of the product  
This enabled them to target for their 'Golden' batch to achieve output of 117 kg against 114 kg per year previously

Pharma process laid out from left to right. The raw material once blended pass-through multiple equipment for processing

The process parameters are passed through digital twin algorithm to understand the optimum operation range

Anomaly once detected raises alert in real time making supervisor aware to take pre-emptive actions



**2.6%**  
Increase in achieving output

**\$6M**  
Annual savings





# 2. A global manufacturing reduced manufacturing cost 2.5% leveraging analytics

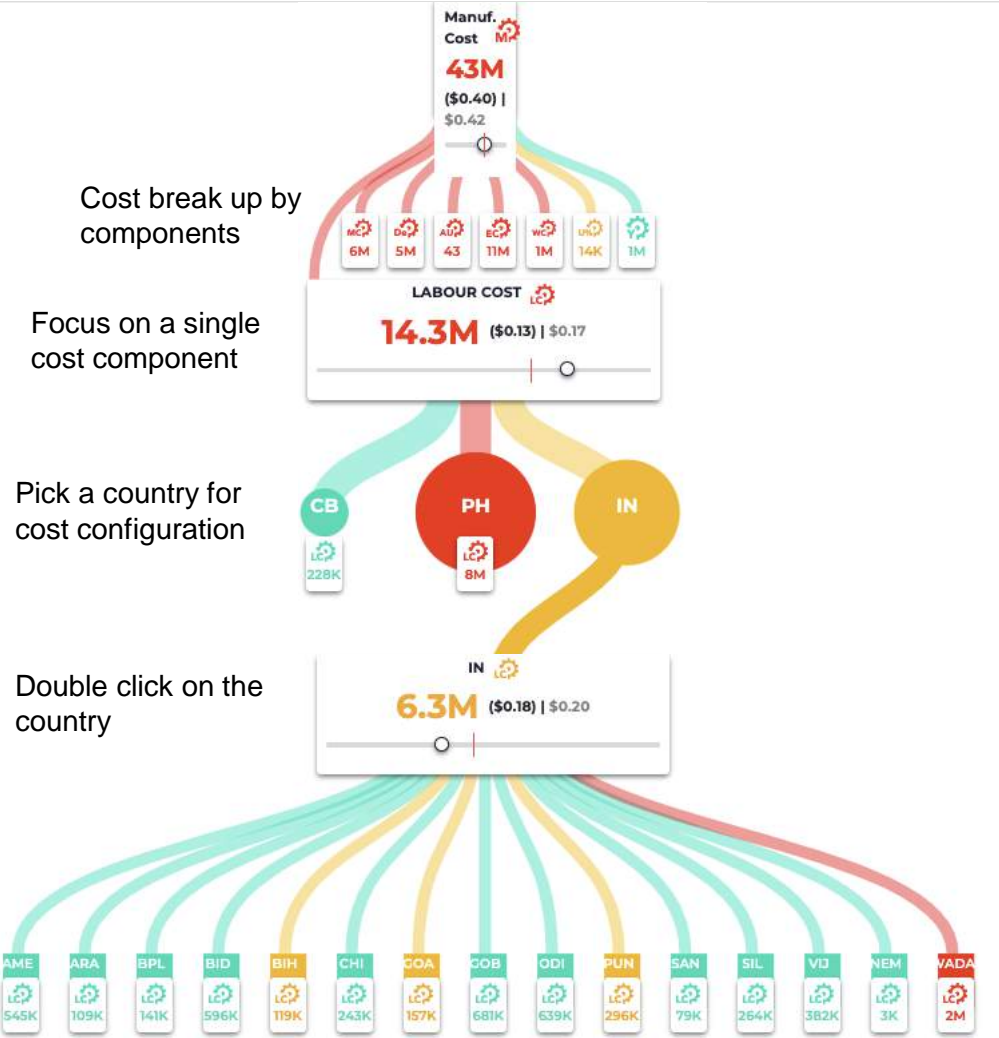
Our client business objective was to **improve the yield quantity of the Drug product** manufacturing  
 Three months of historical data were available

Gramener used Exploratory Data Analysis to understand various patterns  
 But since the key question was which operational and material parameters are important, we applied classification and regression models for rules and variable importance

Client has better visibility on which parameters are driving the yield of the product  
 This enabled them to target for their 'Golden' batch to achieve output of 117 kg against 114 kg per year previously

**2.5%**  
 Manufacturing cost reduction

Regression analysis is performed on cost components to understand inter dependencies.  
 E.g; How energy cost would change when labor cost is reduced by 20%



Cost break up by components

Focus on a single cost component

Pick a country for cost configuration

Double click on the country

Cost exploded view by manufacturing plants

Cost Command Center

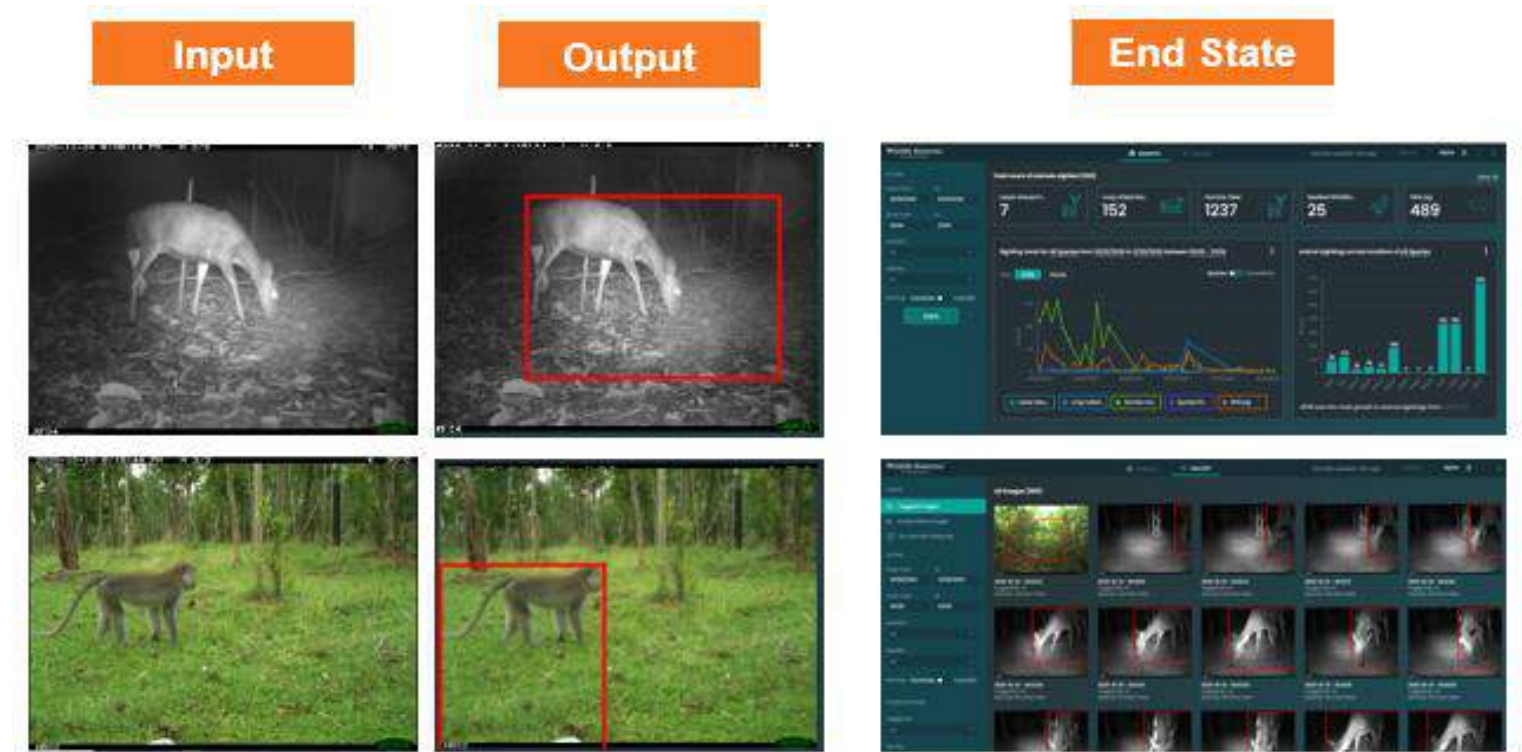


### 3. Automate the Detection & Classification of Species

Capturing animal movement in the Zoo vicinity and Fragile forest & Highlight interesting data insight regarding the problem area

- Use computer vision technology/AI to automate the tagging process in the captured images. Prove the performance and accuracy of AI in tagging animals
- Present summary information of all animal sightings via a User-friendly Web application
- Drastically reduce manual intervention in tagging images

Gramener's AI solution helped in reducing the time taken to tag the images significantly with zero physical effortse IT



Species Detection Tool

# 98%

Reduction in time taken to tag images

# 100%

No Manual collection of Data (from 15 days to near real time)

**Note:**

**The same concept can be applied in manufacturing set up to AI led detection of defects**

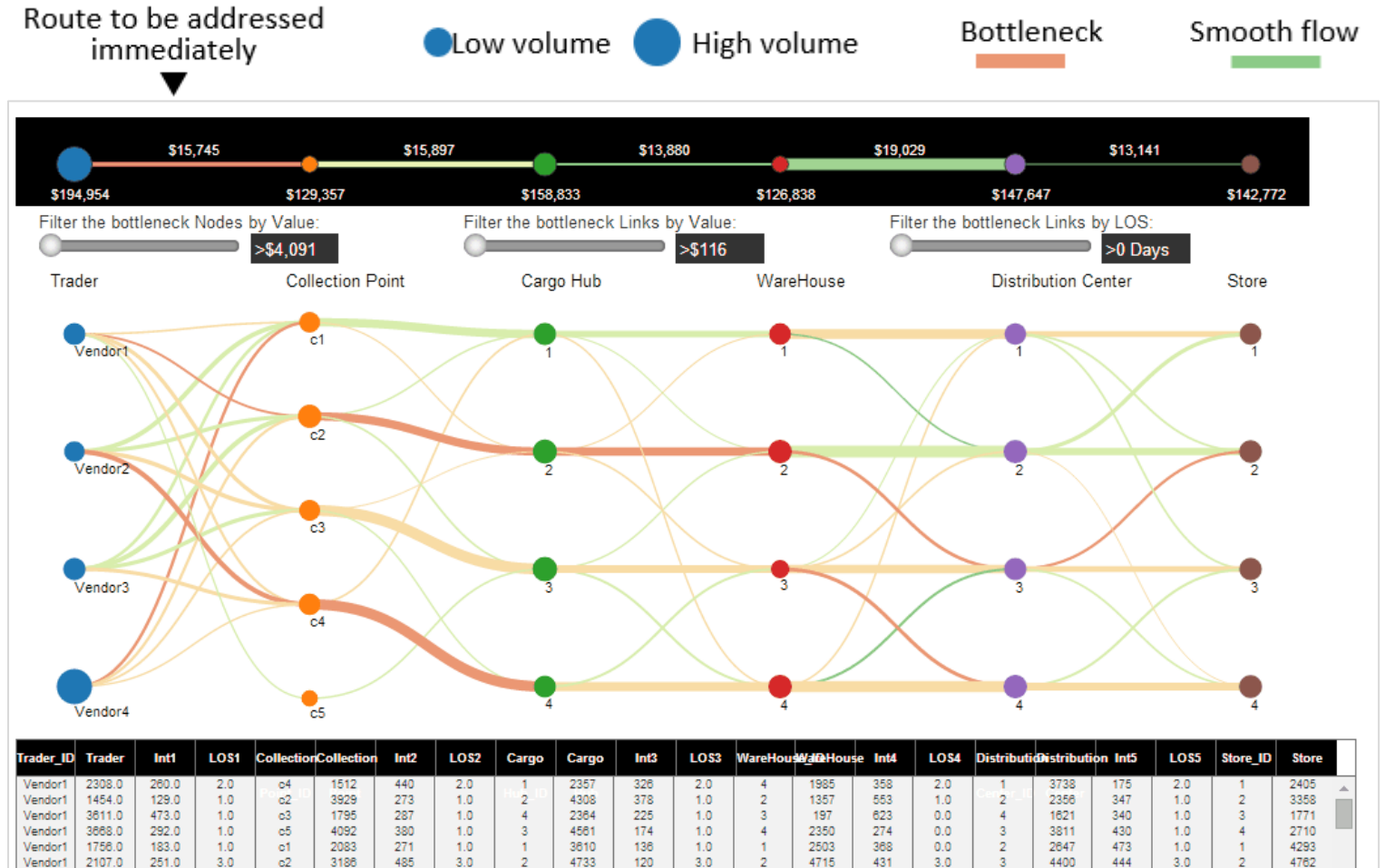
## 4.1 A leading retailer improves supply chain visibility and reduces bottlenecks

A leading retailer wanted to identify operational bottlenecks in transportation of products from manufacturers / suppliers (vendor partners) to DCs / warehouses all the way to the stores covering the entire supply chain network.

Several parameters like Transit Value (COGS), Product Type and Transit Time were analyzed to identify potential paths leading to high costs in the supply chain network. Gramener also deployed interactive controls for aided visual exploration of supply chain hotspots.

The visualization clearly identified the bottleneck along one strand of the supply chain, on which shipments were delayed by more than 200% of the normal shipment duration.

*A real-time visualization for transfer of goods from vendor to warehouse to store*



~50%

Reduction in stock over risk

# 4.2 A global Airline reduces delay in cargo delivery

A global airline wanted to identify the factors driving delay in cargo delivery. Specifically, the time from when the flight lands to when the cargo reaches the warehouse is the bottleneck. This needed to be optimized.

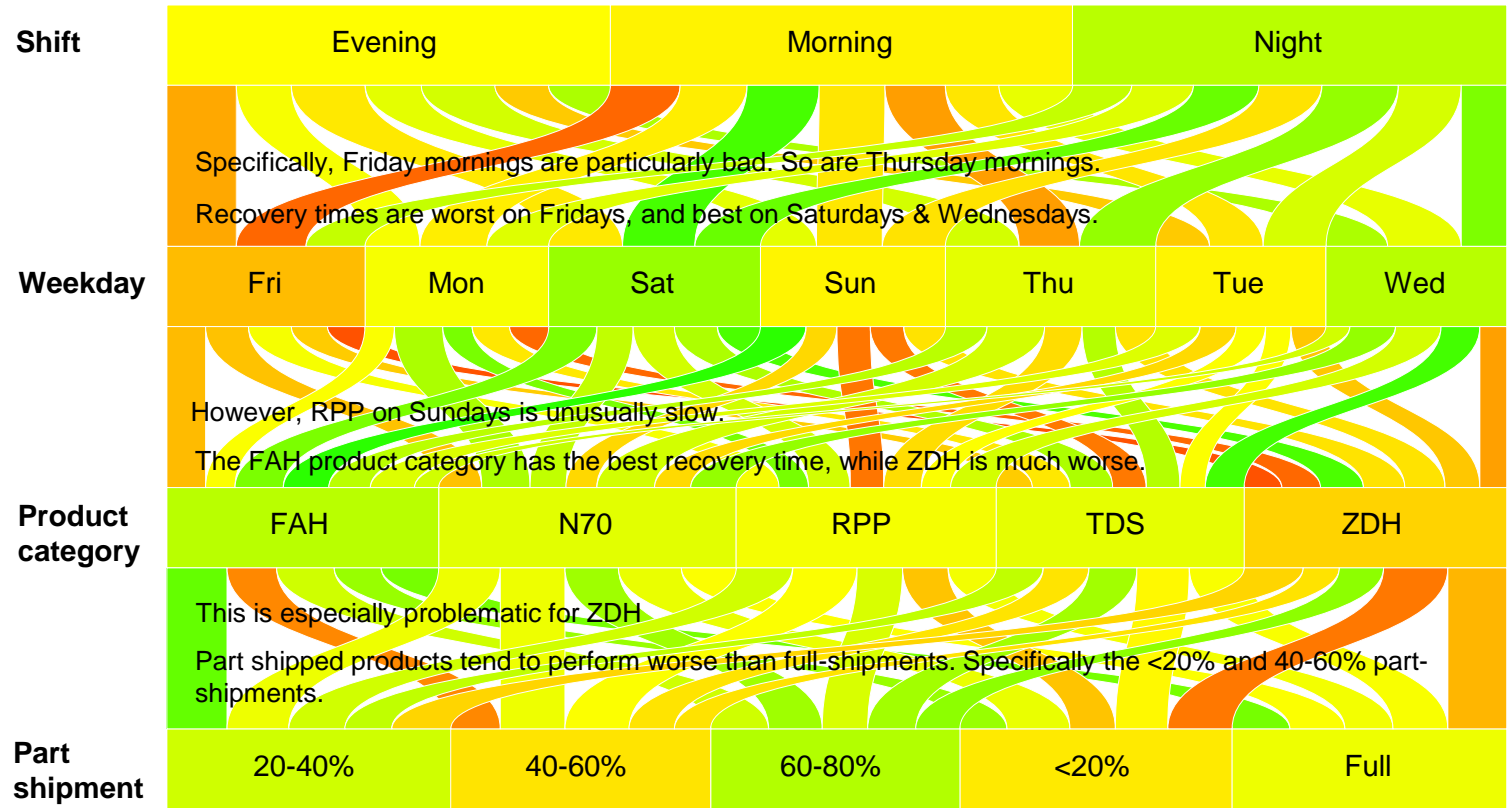
Gramener built a model that identified the drivers of delay and created a what-if model that showed the impact of changing the underlying drivers.

The number of trained staff and number of forklifts (among others) emerged as the biggest drivers. Visualizing the impact of changing staffing levels and forklifts, airports re-structured their budgets and met all SLAs.

**\$ 180k**  
Budget savings with automation

**70%**  
Net SLA achievement

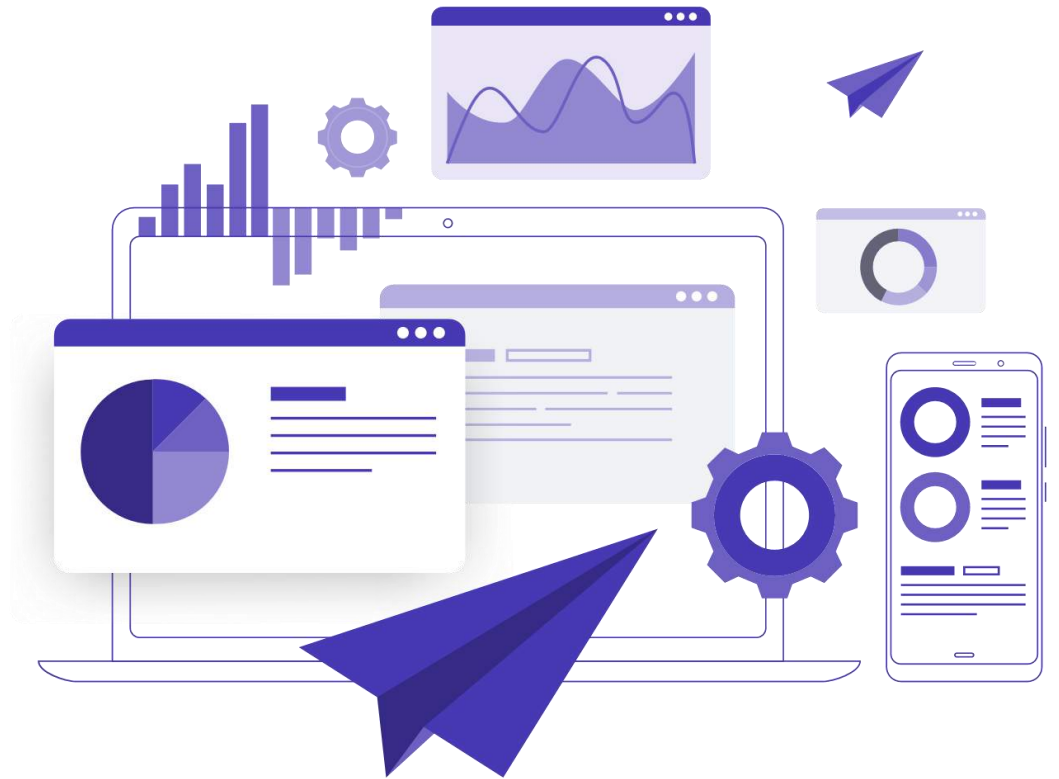
Recovery times are neutral during the evening and morning shifts (mornings are slightly worse), night times are the best.



Supply Chain Simulator

# WAREHOUSE MANAGEMENT

## SOLUTIONS & CASE STUDIES





# 6. Warehouse Capacity against Demand Forecasts improved beyond 95%

A leading US based logistic services organization wanted to forecast the demand of the cases to be shipped from the warehouse. The goal was to align warehouse capacity to meet the demand.

Several factors affect warehouse capacity. Availability of staff, Working Hours, Hours spent on Picking, Efficiency of staff, Bulk Ratio of Orders. It is critical to optimize these factors for desired capacity

Gramener built a custom analytics solution that leverages time series forecasting and capacity simulation to identify gap between weekly demand forecasts and warehouse capacity simulated from staffing levers.

This allowed the warehouse managers to identify risks much before a significant gap is created between the demand and the capacity on a given day.

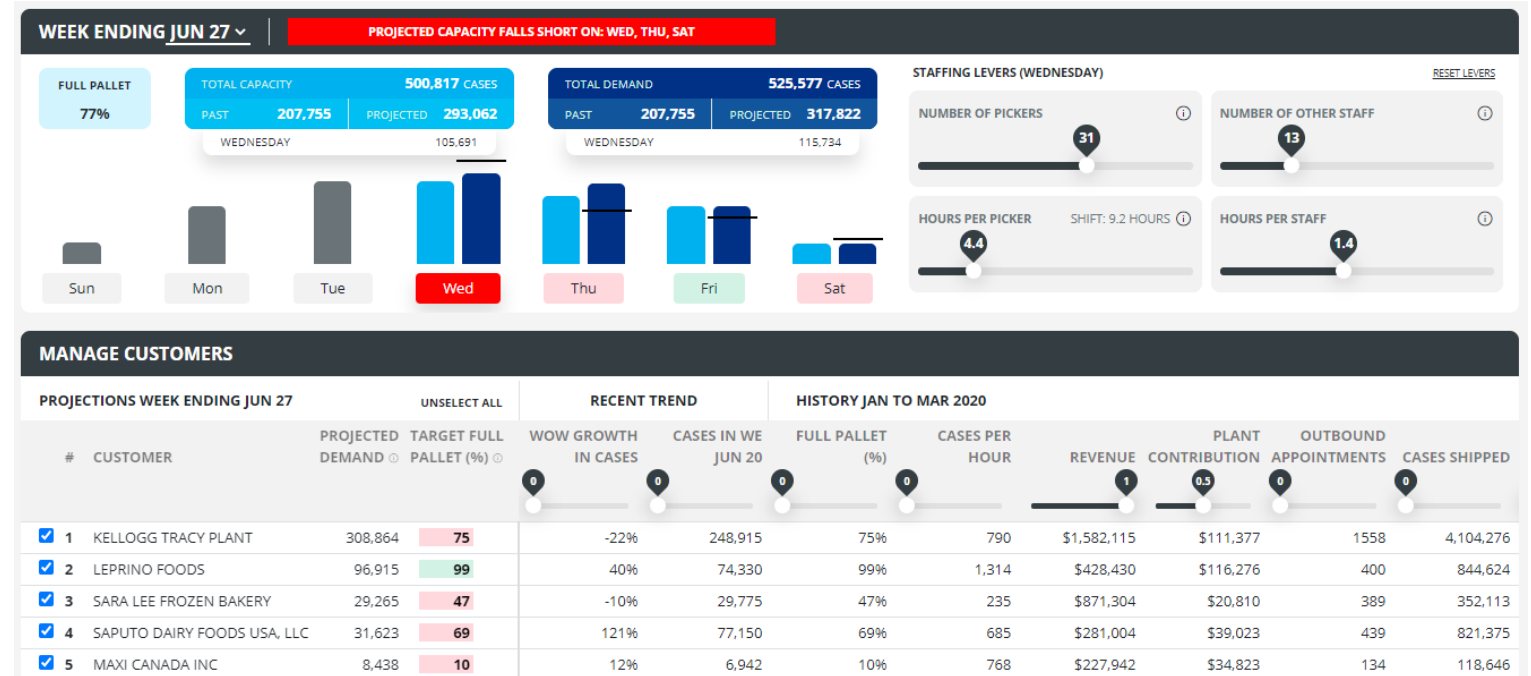
**7%**  
Average gap identified between projected demand and simulated capacity

**95%**  
Accuracy of demand forecasts across weekdays

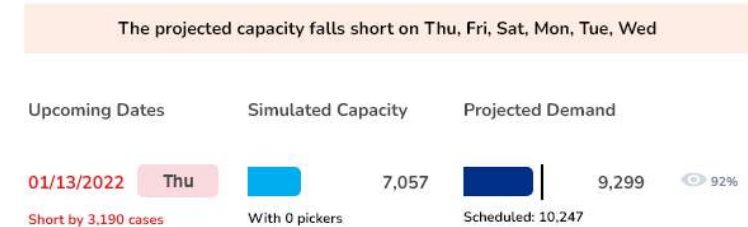
Capacity forecast by weeks

Demand forecast by weeks

Scenarios planning interface. E.g; adjust workforce to meet the demand



An automated alert gets generated everyday to highlight the gap between the simulated capacity and the projected demand. The projected demand is also compared against the actual demand recorded in the system.





# 7. USCS saved \$1.2 Mn in Potential Detention Cost by 16% Decline in Facility Turn Time

Warehouse Dispatch

Intelligent Appointment Scheduler

A leading US based refrigerated warehousing and related logistics service provider wanted to decrease their facility turn time for outbound trucks. High facility turn times would lead to potential detention charges.

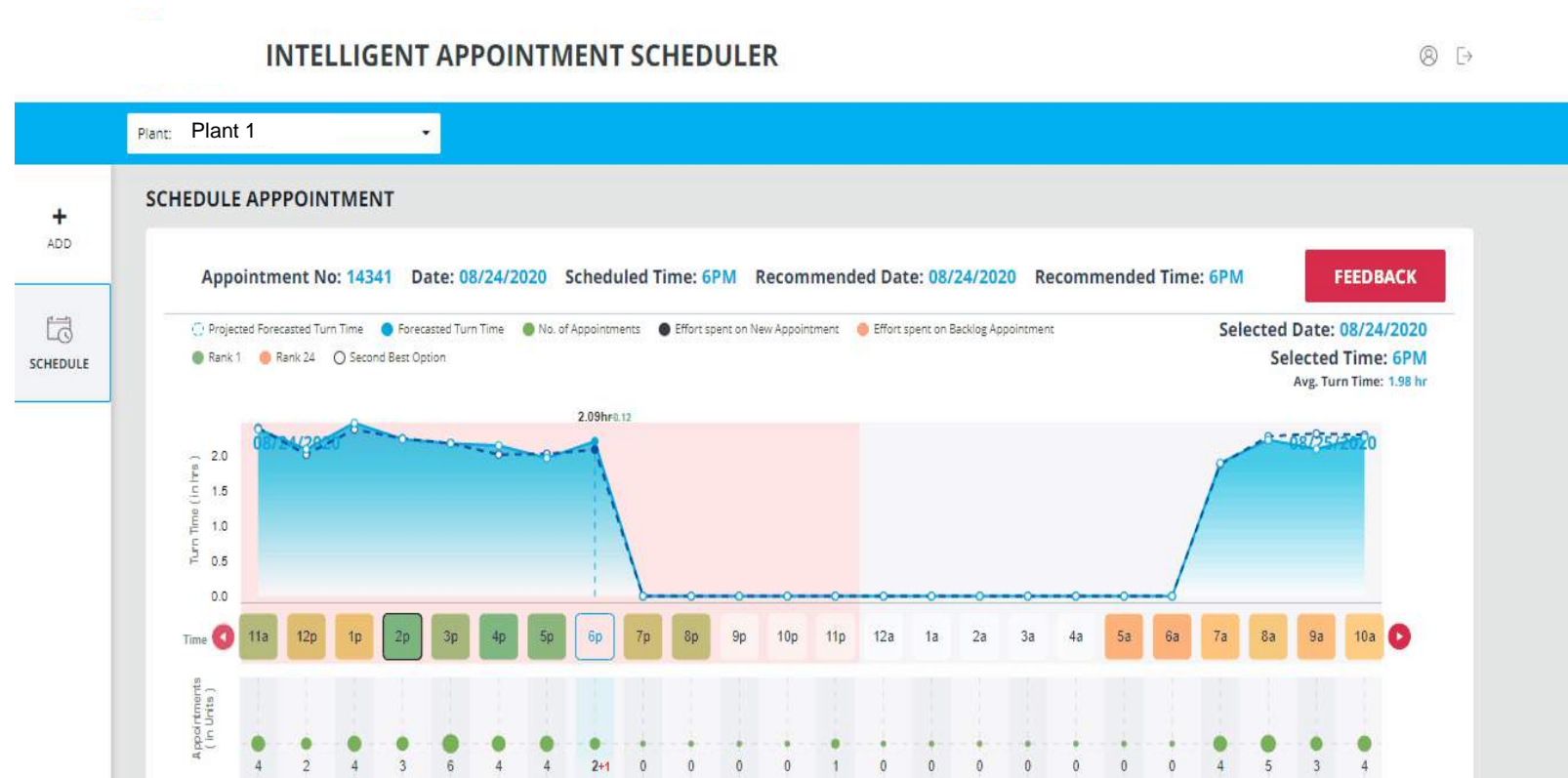
Gramener designed and developed an intelligent appointment scheduler for the warehouse staff to schedule appointments.

This solution generated schedule recommendations based on impact of the scheduled appointment on other appointments of the day.

The system used machine learning based algorithms to predicts the turn time of the outbound truck.

The solution was integrated with the warehouse management system and deployed across 26 facilities.

The solution enabled facilities to decrease their facility turn time by 16% which led to a potential saving in Annual Detention Cost of \$ 1.2M.



## Intelligent Appointment Scheduler

The application leverages **machine learning** to recommend optimal schedule for all **Outbound Appointments** based on Order Complexity, Estimated Picking Effort, Warehouse Load

**\$1.2M**

Savings in Annual Potential Detention Cost

**16%**

Decline in Facility Turn Time for Outbound Trucks



# 8. Warehouse staff's productivity & traffic management improved by intelligent task allocation

A leading US based refrigerated warehousing and related logistics service provider wanted to improve staff productivity and reduce travel distance between tasks. Low staff productivity would lead to high overtime charges.

Gramener designed and developed a smart task allocation command center to automate the task assignment to the available staff

This solution generated recommendations for tasks by evaluating all the staff based on their historical task performance data & their current location in the warehouse.

The system used machine learning based algorithms to estimate the time taken by all staff member to complete a particular task & assign the best person who would complete the task in the lowest time.

The solution was integrated with the warehouse management system and deployed across 2 facilities.

The solution enabled automated assignment of tasks thus reducing supervisor's administrative effort , reduction in warehouse traffic



Smart Task Allocation

The application leverages **machine learning** to recommend optimal staff assignment for all **picking tasks** based on historical staff data and the closeness to the picking location



**Gramener**  
Insights as Stories

**THANK YOU!**

