



Business Operations

Enterprise Data & Analytics Program Review

May 2023

Topic		Speaker
1. ED&A Overview	1.1 Project Roadmap	Michael Markman
	1.2 EDA Data Sources	Michael Markman / Enrique Lloret
2. Financials/OPEX	2.1 Global Variances Demo	Jan Dzubak
	2.2 ED&A Spend Tool Demo	Jan Dzubak
3. Go To Market	3.1 LAUNCH Revenue Tracker Demo	Carmen Tejada / Sergio Gomez
4. Business Specific	4.1 ITS Analytics POC	Ayreen Marin / Rohit Uttamchandani
5. Benefits Realization	5.1 ED&A Value Creation	Michael Markman

ED&A Projects

Legend



Not Started



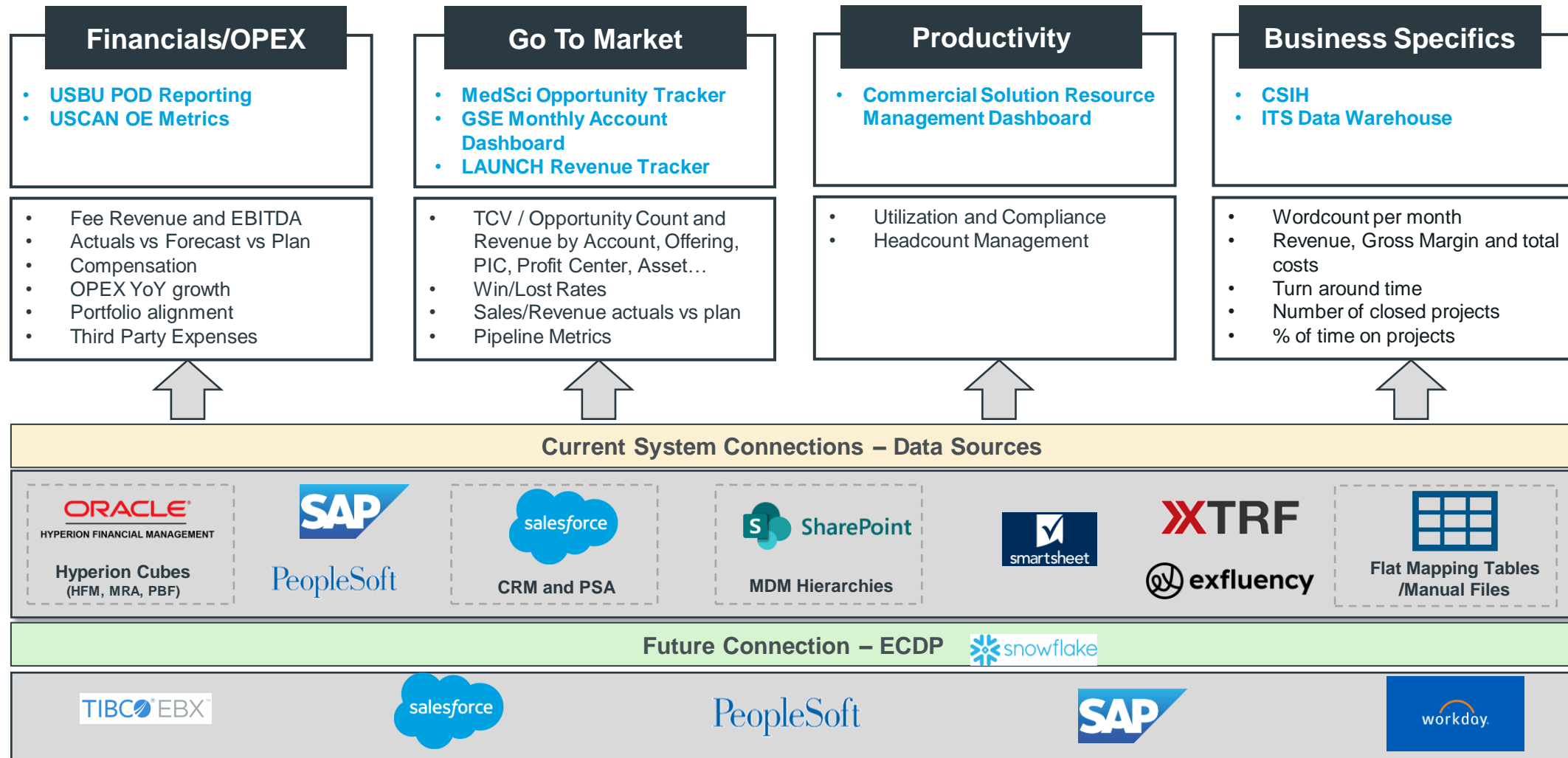
Completed



Ongoing

Area	Projects	Status	Source Systems	2022		2023						
				Nov	Dec	Jan	Feb	March	April	May	June	July – Dec (Q3/Q4)
Financials /OPEX	USBU POD Reporting	Done	SAP, PSA	POD Report Automation★								
	USCAN OE Metrics	Done	Hyperion (PBF)	Manual Slides Dashboard★	Slides recreation★	P1 metrics★	Priority 2★					
Go To Market	MedSci Opportunity Tracker	Done	Salesforce (CRM, PSA), Hyperion (MRA)	Main Dashboard★Quality Check /Analytics★Indiv. Report★								
	GSE Monthly Account Dashboard	Done	Salesforce (CRM), Hyperion (MRA), Other	Sample Dashboard★Integrated Dashboard + QC Report★								
	LAUNCH Revenue Tracker	Development	Salesforce (CRM), Hyperion (MRA)	President view★Dashboard Evolution								
Business Specific	ITS Data Warehouse	Development	XTRF, IQ Lingua, Stream	Data Lake – Raw Data>Data Warehouse – Curated DataDashboard creation★								
	CSIH	Done	Salesforce (PSA), Smartsheet	PSA/ Smartsheet integration★								
Snowflake Integration				Source System feeds								Snowflake feeds

Projects Under Discovery	Financials /OPEX	Go To Market	Business Specific	Productivity
	Financial Transparency Cloud Hosting	<ul style="list-style-type: none"> RWS US Opportunity Tracker (MedSci expansion) Sales Reporting for Digital Enablement 	<ul style="list-style-type: none"> Production Management Quality Control Globality Reporting for Purchasing 	Commercial Solution Resource Management Dashboard

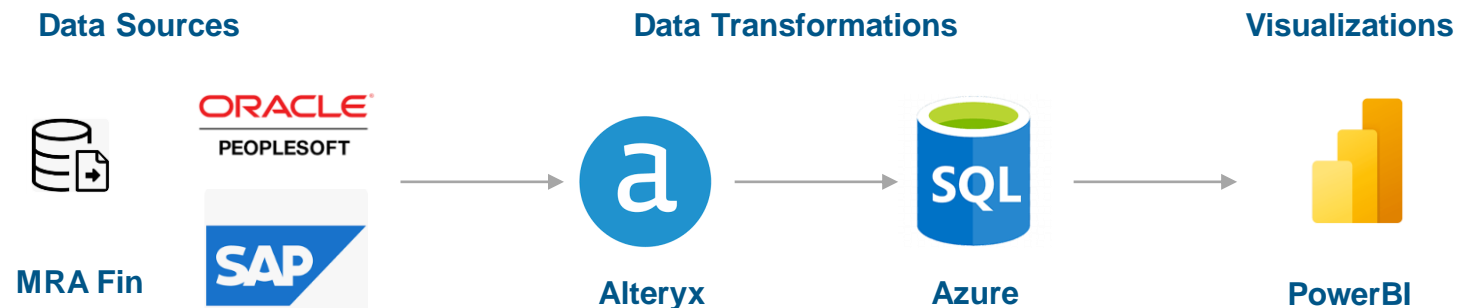
ED&A Data Sources

Financial Global Variance Reporting

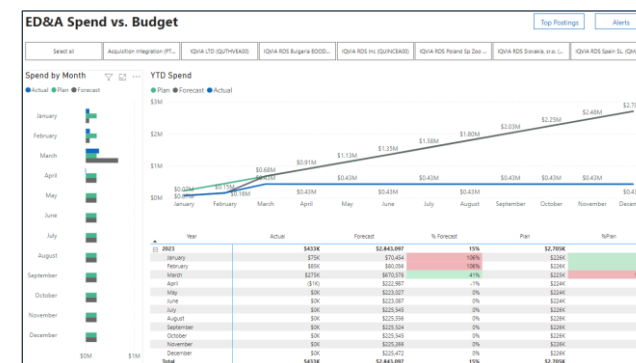
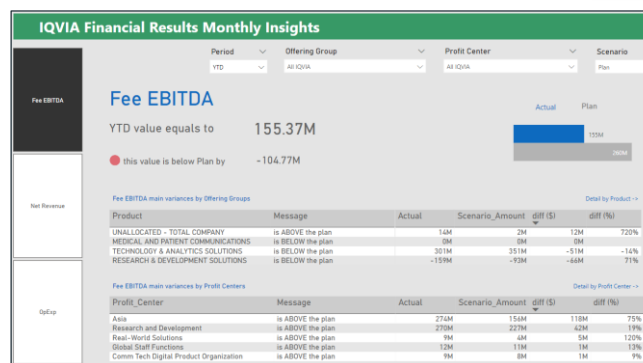
GOAL

- Report Actuals for
 - EBITDA
 - Net Revenue
 - Operating Expenses
- Compare to:
 - Plan
 - Forecast
 - Prior Year
- Visualize Variances:
 - On global IQVIA level
 - By Profit Center and Product
 - By Profit Center and Function
- Help users:
 - Spot unexpected results
 - Drive business decisions
 - Optimize operating expenses

DESIGN



VIEWS



Go To Market Reporting

GOAL

- Report Metrics for:

- Sales
 - TCV (Won, Lost, Pipe)
 - Opportunity Count (Won, Lost, Pipe)
- Revenue (In Hand + Backlog)

- Compare them to:

- Plan (GSE&I dashboard)
- Prior Year, Month, Quarter...

- Visualize KPIs:

- Account
- PIC (MedSci)
- Product and Asset (LAUNCH)
- Business Unit
- Opportunity
- ...

- Help Users to:

- Improve Go To Market Strategy
- Support and track business growth
- Replace and upgrade IPM

DESIGN

Data Sources



ORACLE®
HYPERION FINANCIAL MANAGEMENT

Data Transformations



Alteryx



Azure

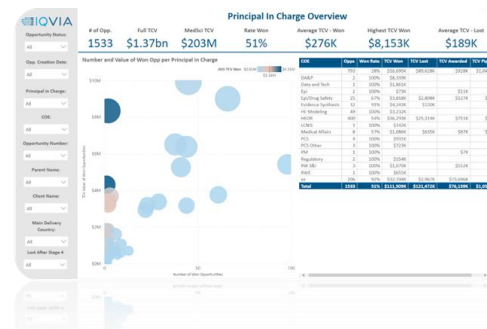
Visualizations



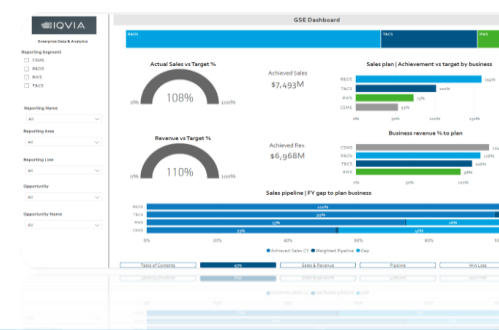
PowerBI

DASHBOARDS

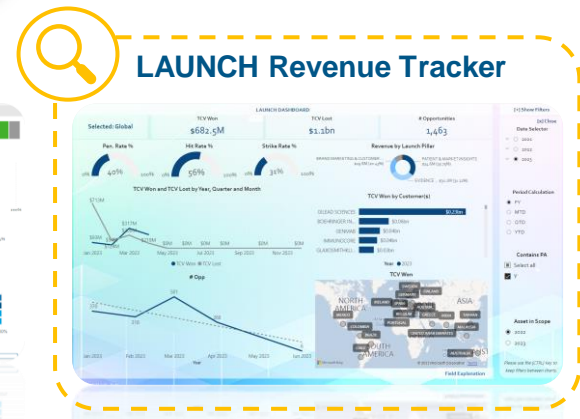
MedSci Opp Tracker



GSE Account Dashboard



LAUNCH Revenue Tracker



ITS Data Warehouse

BUSINESS CASE

The Translations team has 3 different data bases in different infrastructures, with inability to integrate to other systems and concerns with data quality.

The goal for this project is to create a data warehouse combining data from the 3 systems, curating data and recreate current reports.

Data quality

Improve current reports

Combined data

STAKEHOLDERS

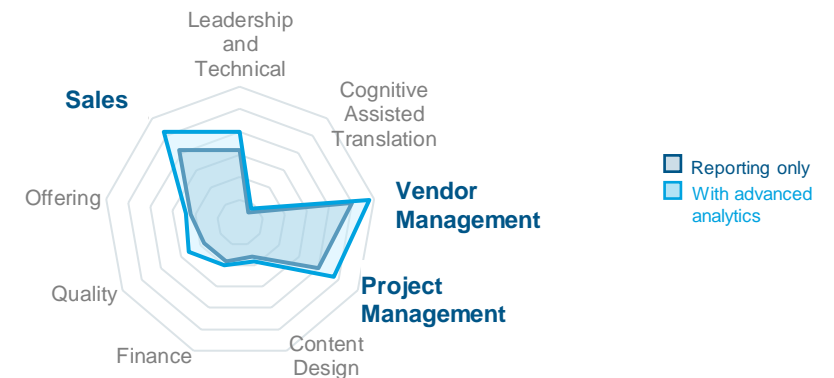
- **Key Sponsor:** Ajith Nair, Head of Technology
- **End Users:** IQVIA Translations team

DATA SOURCES

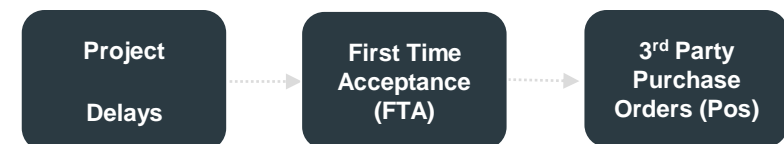


Deliverables

As a first Phase, we'll recreate the dashboards that have been prioritized. Covering PM, Sales & VM KPIs



As part of the advanced-analytics initiative, three proof-of-concepts (POCs) have been completed:



ITS Data Warehouse

BUSINESS CASE

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STAKEHOLDERS

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DATA SOURCES



KPIs requested

Project Management

- Wordcount
- ITP Value
- Gross Margin
- Number of closed projects
- % of on time projects

Sales

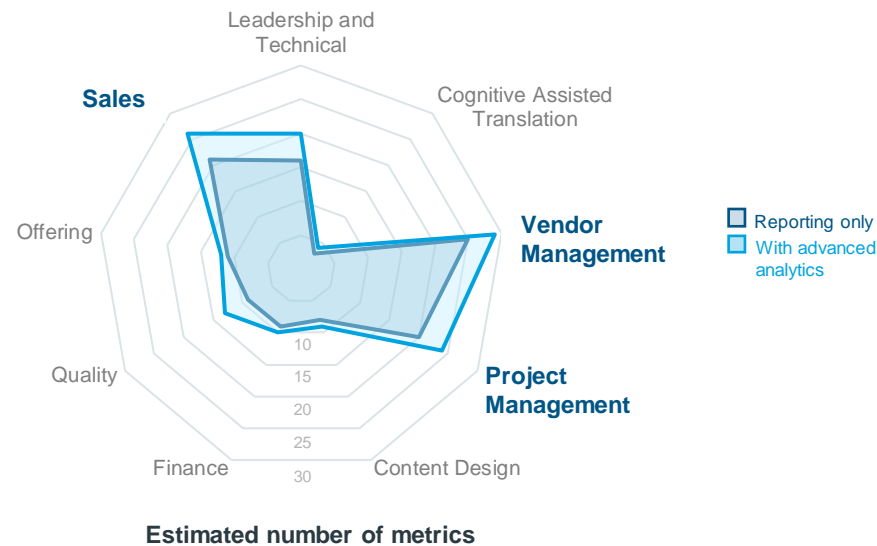
- Wordcount
- ITP Value/Costs
- Feedback
- Number of Errors
- On time delivery / FTA
- Quotes

Vendor Management

- Total vendors recruited
- Volumes per language
- Evolution of costs & rates
- Payments
- Quality

Executive summary

After consulting with all relevant teams, we have identified the projected number of metrics to be delivered in a priority-1 phase:



As part of the advanced-analytics initiative, three proof-of-concepts (POCs) have been completed:



Highlights

- Project delays and projects not accepted at first delivery are **increasing at the same rate that business growing**.
- Number of planned days is having an impact in both, indicating that **optimizing planning** could improve performance.
- Services of type “**LV ECOA**” have the lowest on-time delivery rates and services of type “**Backtranslation**” have the lowest FTA ratio.
- Through the interaction of different variables, patterns that account for **+22% of delays** and **+10% of tasks not accepted at first delivery** have been identified.
- On the topic of third-party expenses, **RWI still has high value POs**, totaling 3.2M in the past 12 months. Expenditure on vendor “**Oxford Conversis Ltd.**” **does not seem to be decreasing**, amounting to 4.1M in the same period.

Project Delays

17th May 2023

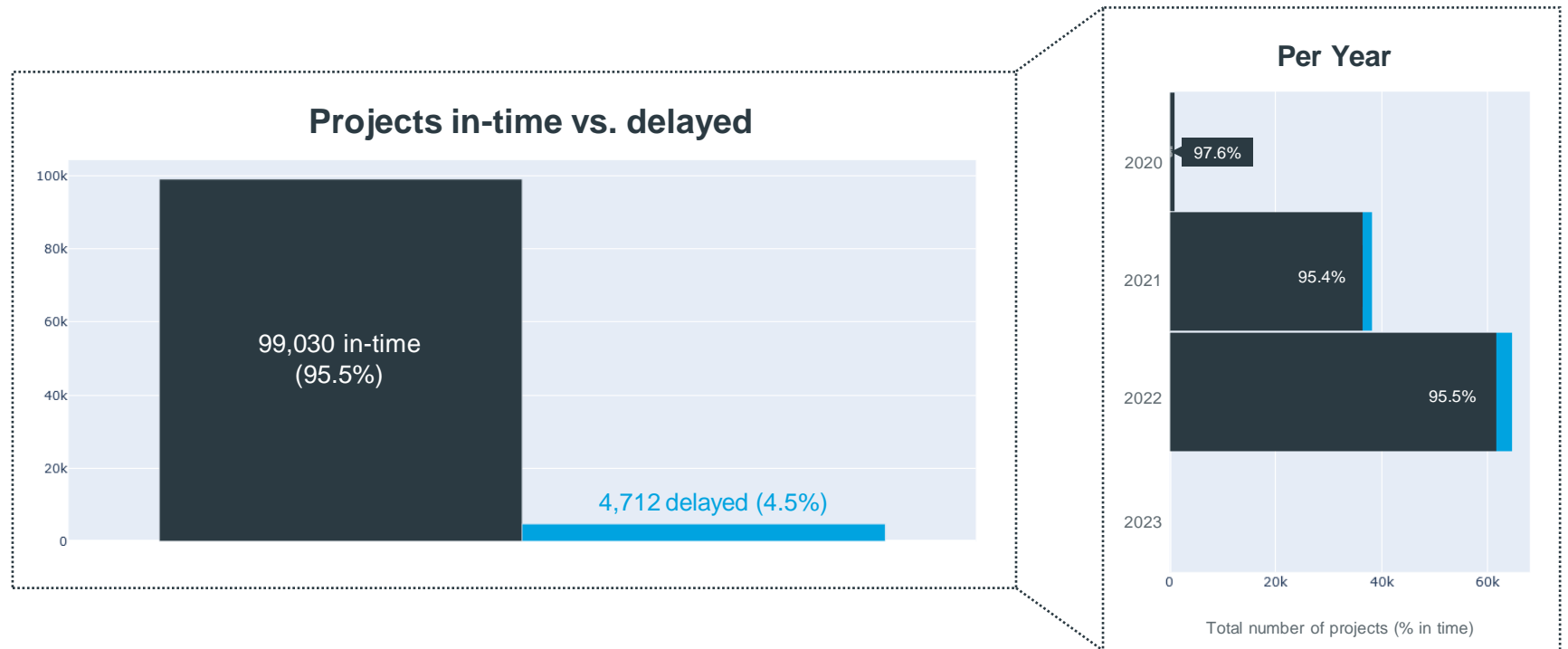
Enterprise Data Analytics

How many projects are delayed?

Customer satisfaction decreases as project delays increase. With a growing number of projects and customers, the number of **delayed projects also increases**. Delays have been measured by the number of days beyond the project deadline.

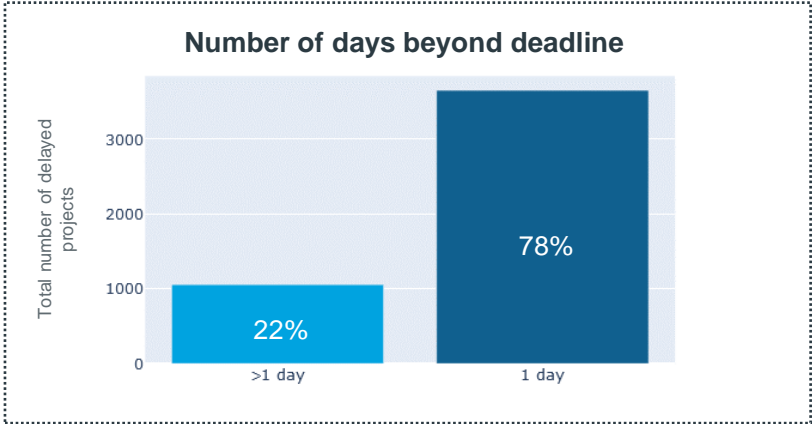
Highlights

- Deadline misses are consistent across years, averaging at ~5% in the past 2 years.
- The number of delayed projects is increasing per year, following business growth trends.

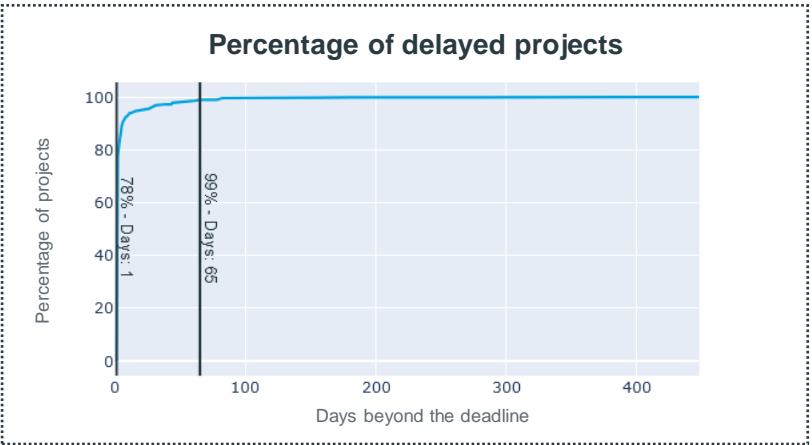


How many days over deadline?

Out of 4712 delayed projects, **most miss the deadline by 1 day (78%)**:



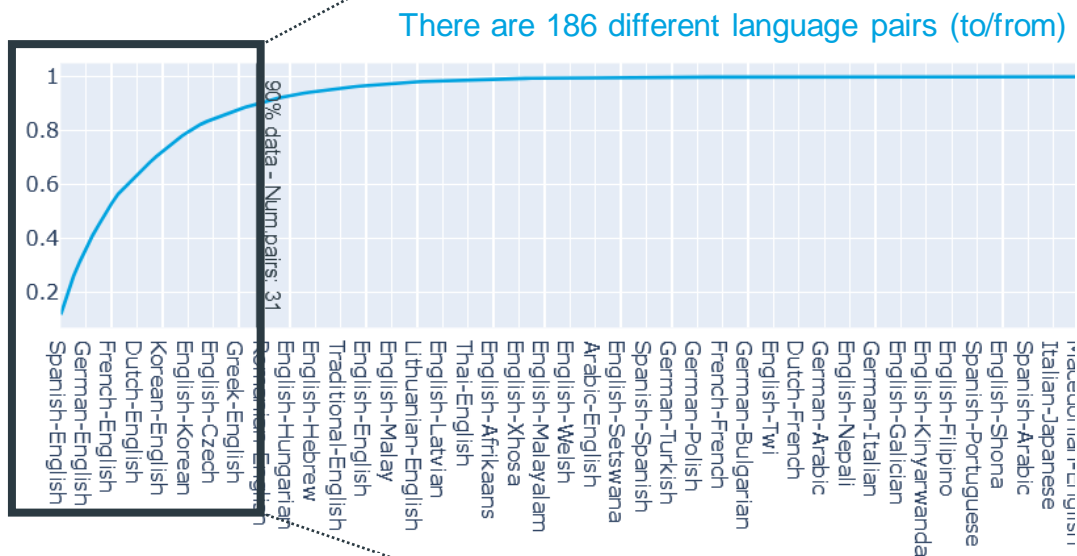
99% of delayed projects miss the deadline by less than 65 days:



Key assumption

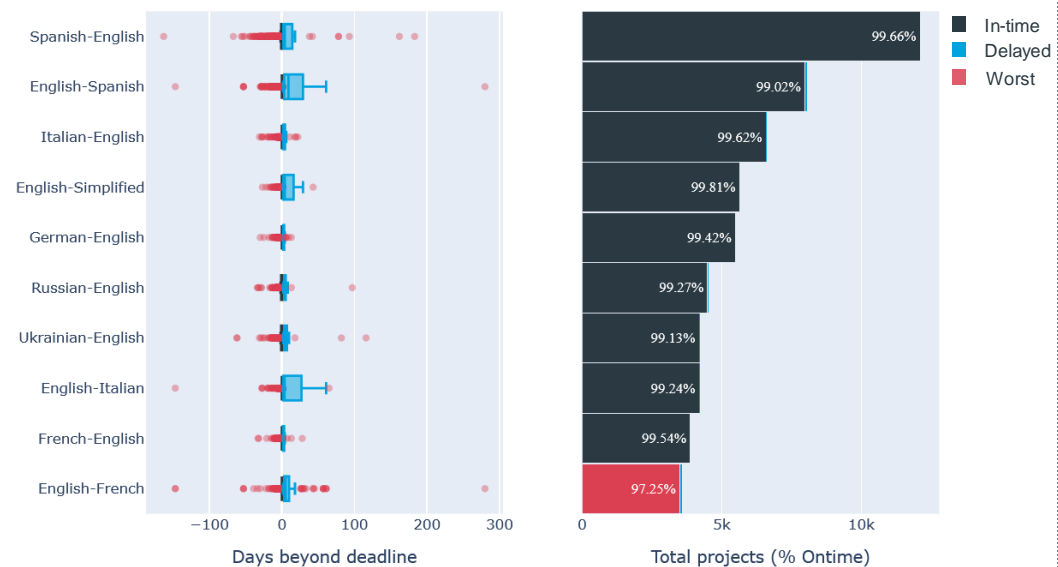
Deadline misses over 1 day will have greater impact in customer satisfaction. Therefore, the focus of the remainder of this report will be on understanding deadline misses that are greater than 1 day (delayed projects). The rest will be considered "in time".

Breakout per language

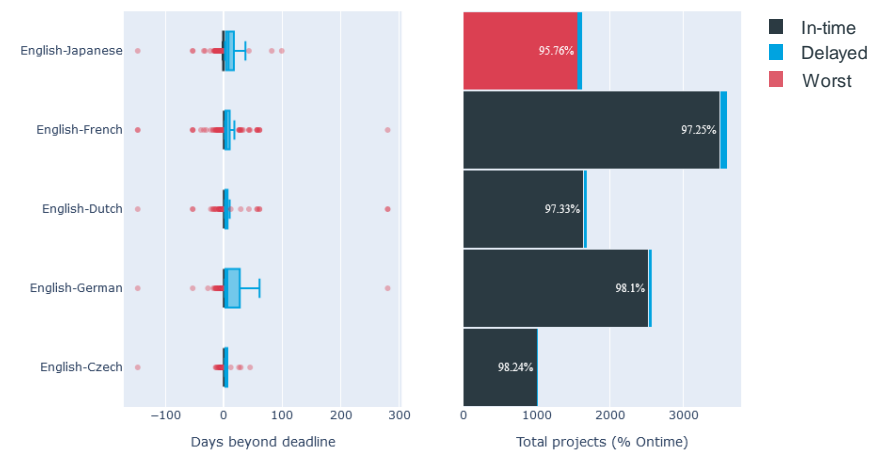


90% of projects come from the same 31 language pairs

Top 10 Language by Num. projects



Worst 5 Language by percentage

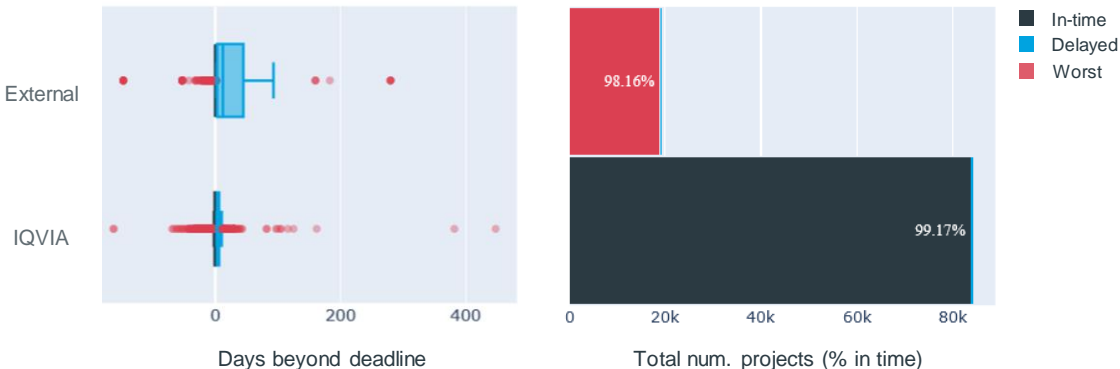


Breakout per end customer

Highlights:

- Projects that have customers different than “IQVIA” have been considered as External and found out to have a higher percentage of delayed projects (1.84%) vs. internal (0.83%)
- Most projects today are delivered to internal customers (81.47%) vs. external (18.53%).

Breakout per end customer type*:

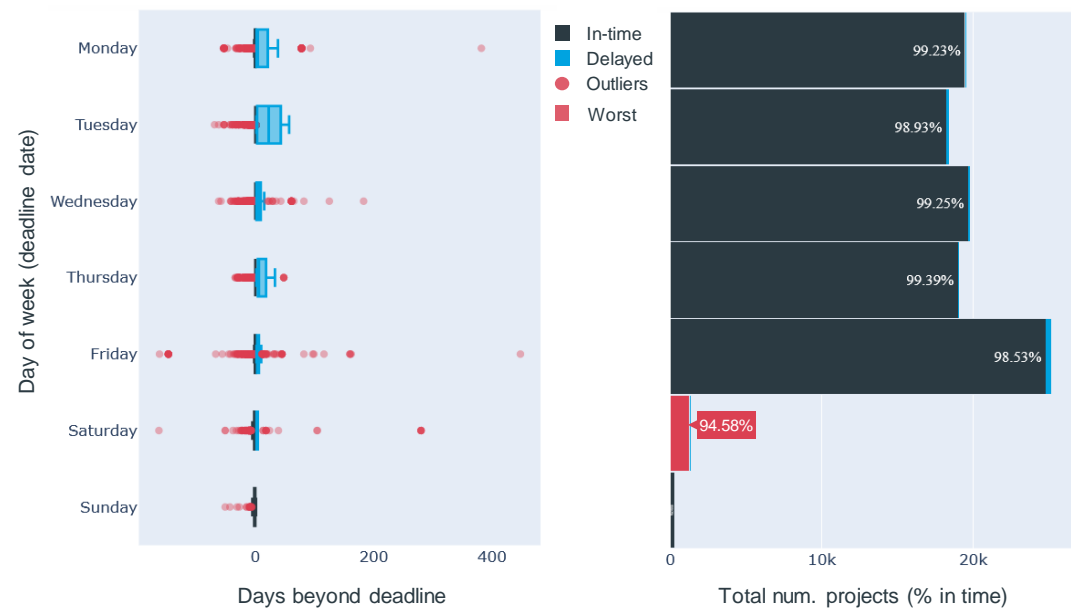


Largest external customers	Percentage of external projects (%)
Moderna PV	31.81
GSK PHV Ops requesters	20.97
Takeda	12.11
Study Hub	8.58
Boehringer Ingelheim	6.96

*Assumptions were made when grouping document types into these categories.

Breakout per weekday

There are deadlines set for Saturdays and Sundays (non-workdays in most countries):



Number of delayed projects with deadline on Saturday	Delivered by the following Monday
49	No
24	Yes

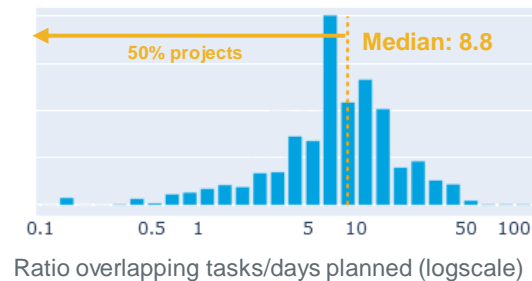
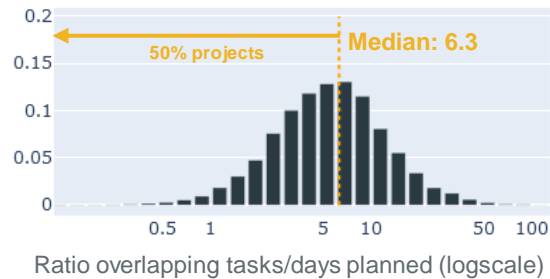
Highlights:

- Projects that have deadlines set on a Saturday are delayed more often. Still 94.58% deliver in time.
- Also, there are few deadlines set for Sunday.
- Deadlines set for Tuesday are missed the most among weekdays.

Number of overlapping tasks

Having the same project manager (email field) attached to a number of tasks/projects at the same time could have an effect in the duration of projects.

Ratio of overlapping tasks/days planned



■ In-time
■ Delayed

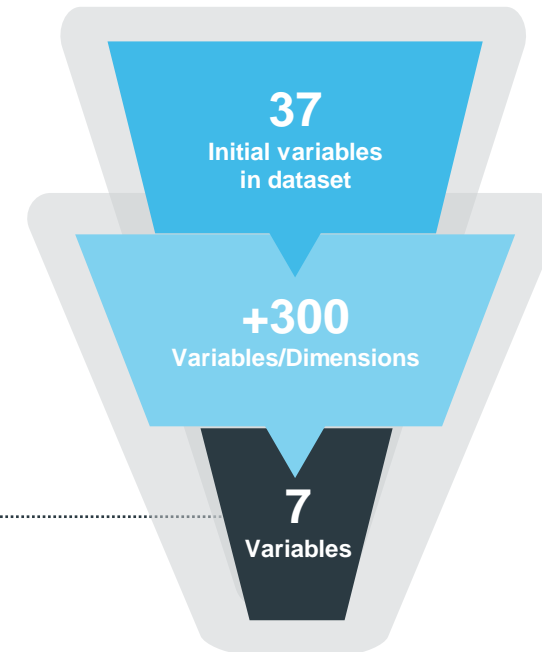
Highlights:

- The number of overlapping tasks (projects) in which a PM is working on at the same time, could have an impact on project delays.
- 50% of delayed projects have project managers assigned working at the same time in over 53 projects.

What impacts the likelihood of a project being delayed?

In the translations process, some **variables have a greater impact on the likelihood of a project being delayed** than others. By identifying these key variables, efforts can be shifted to optimizing them, leading to a higher rate of customer success.

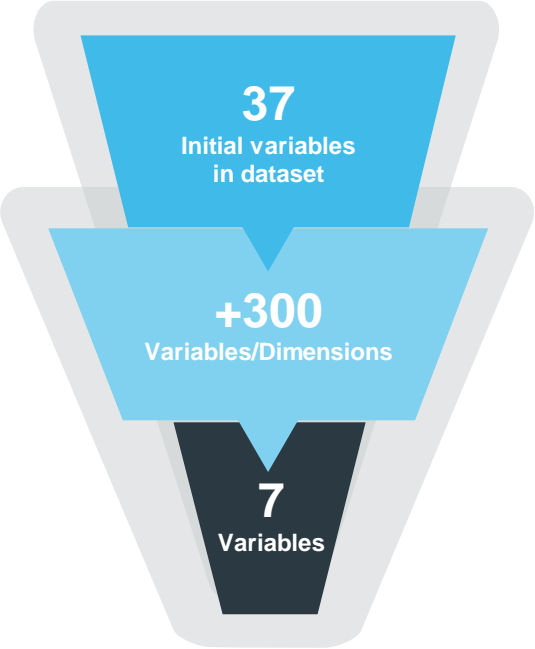
By dimensionizing variables and applying Machine Learning (ML) techniques, we identified the most influential variables, prioritizing those with the highest impact on our target variable.



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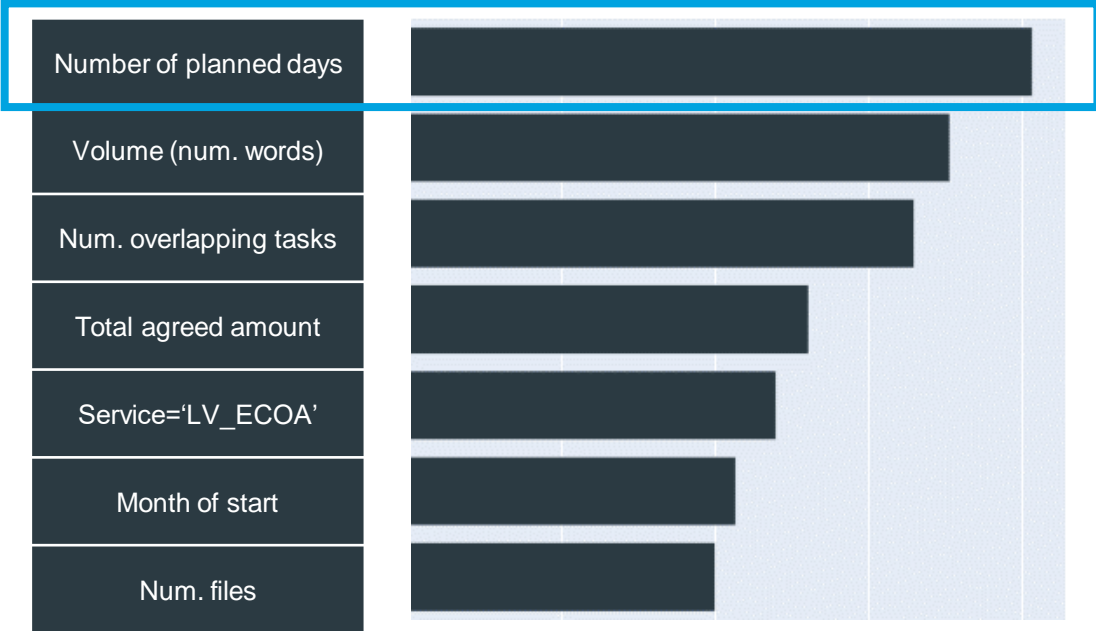
Variable importance



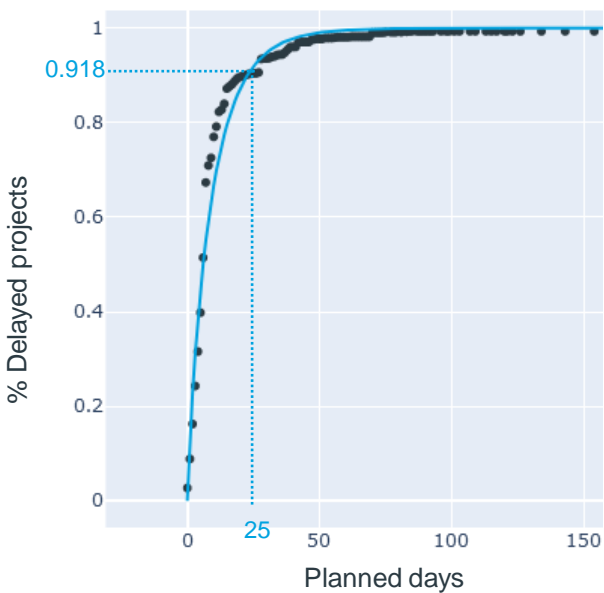
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Variable importance



Cumulative probability of delayed projects

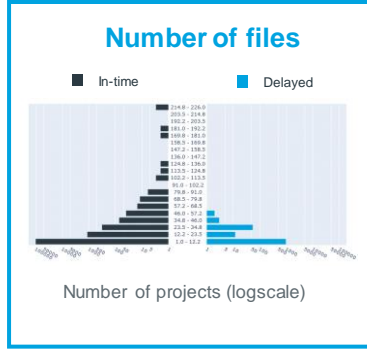
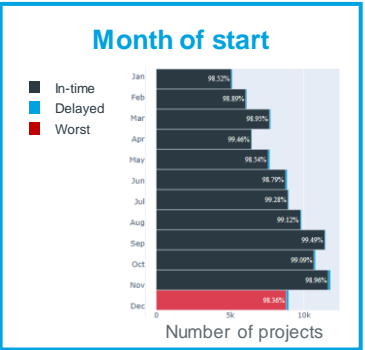
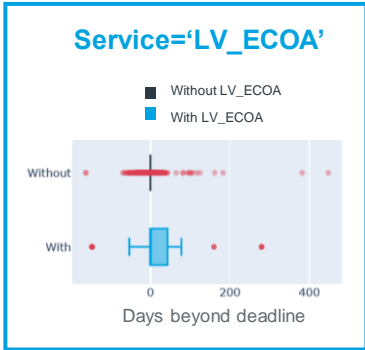
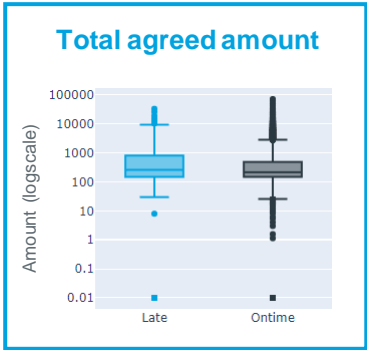
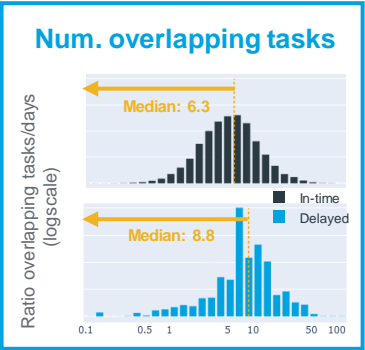
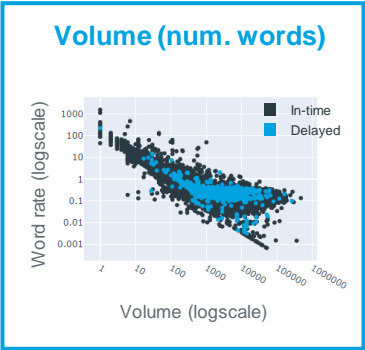


Approximately, **91.8%** of delayed projects have less or equal than **25 planned days**.

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Variable importance



What impacts the likelihood of a project being delayed?

In the translations process, some **variables have a greater impact on the likelihood of a project being delayed** than others. By identifying these key variables, efforts can be shifted to optimizing them, leading to a higher rate of customer success.

Most frequent patterns identified that increase the likelihood of delays:

Service LV ECOA	Num. Files	Planned days	Volume (words)	Start Month	Num. Overlapping Tasks	Projects Late	Projects Overtime	% Overall Delays	Rule Precision (%)
Yes		<=8	>=423		>=23	122	0	11.5%	100%
Yes		<=8	>=423	Feb - Nov	in between 9-22	24	0	2.3%	100%
Yes	in between 4-11	>8			in between 44-55	30	0	2.8%	100%
No		>=15	in between 516-825	Nov -Dec	>=118	61	0	5.8%	100%
					Overall total	237	0	22.4%	100%



First Time Acceptance

17th May 2023

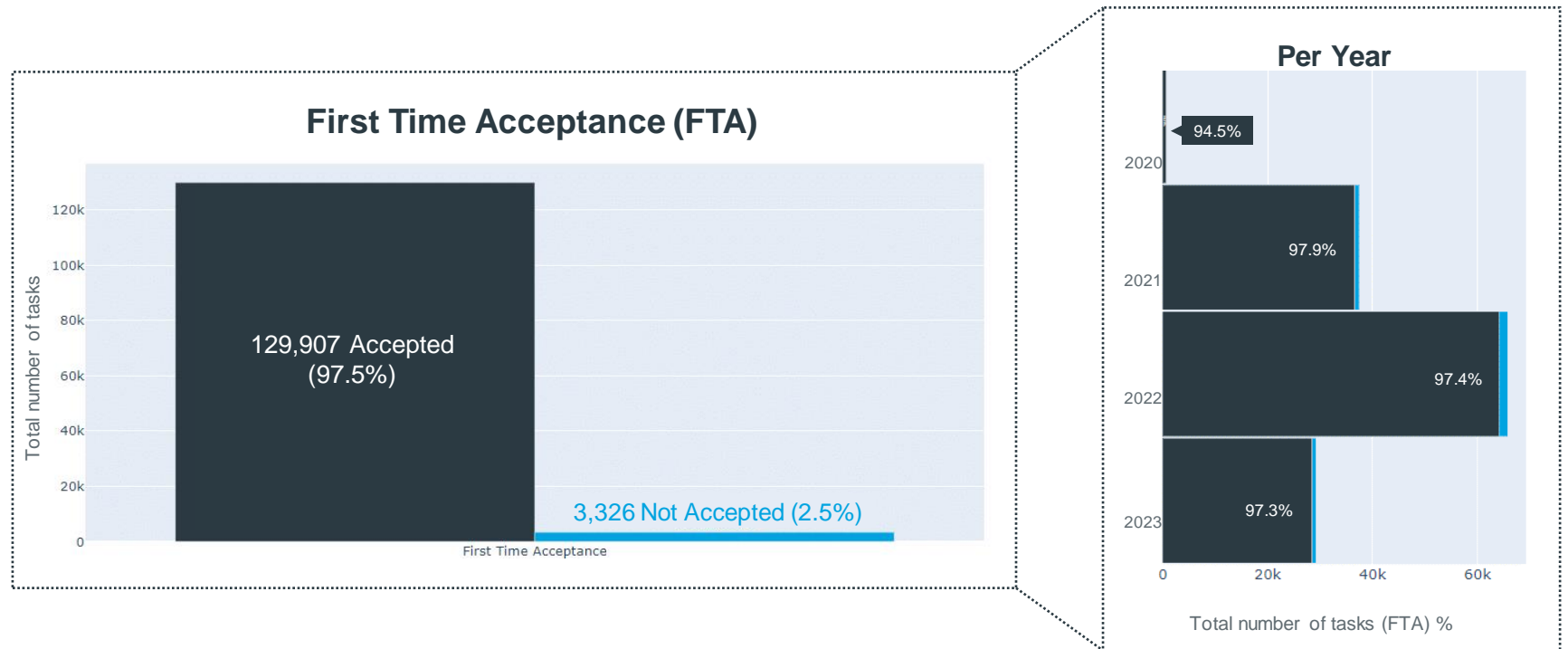
Enterprise Data Analytics

How many projects are accepted at first delivery?

Customer satisfaction decreases when completed tasks don't meet their expectations. With a growing number of projects and customers, the number of **tasks that are not accepted at first delivery, also increases**.

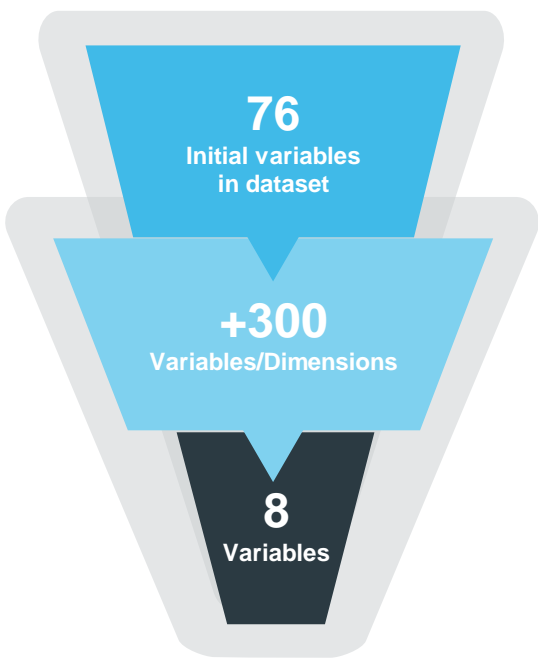
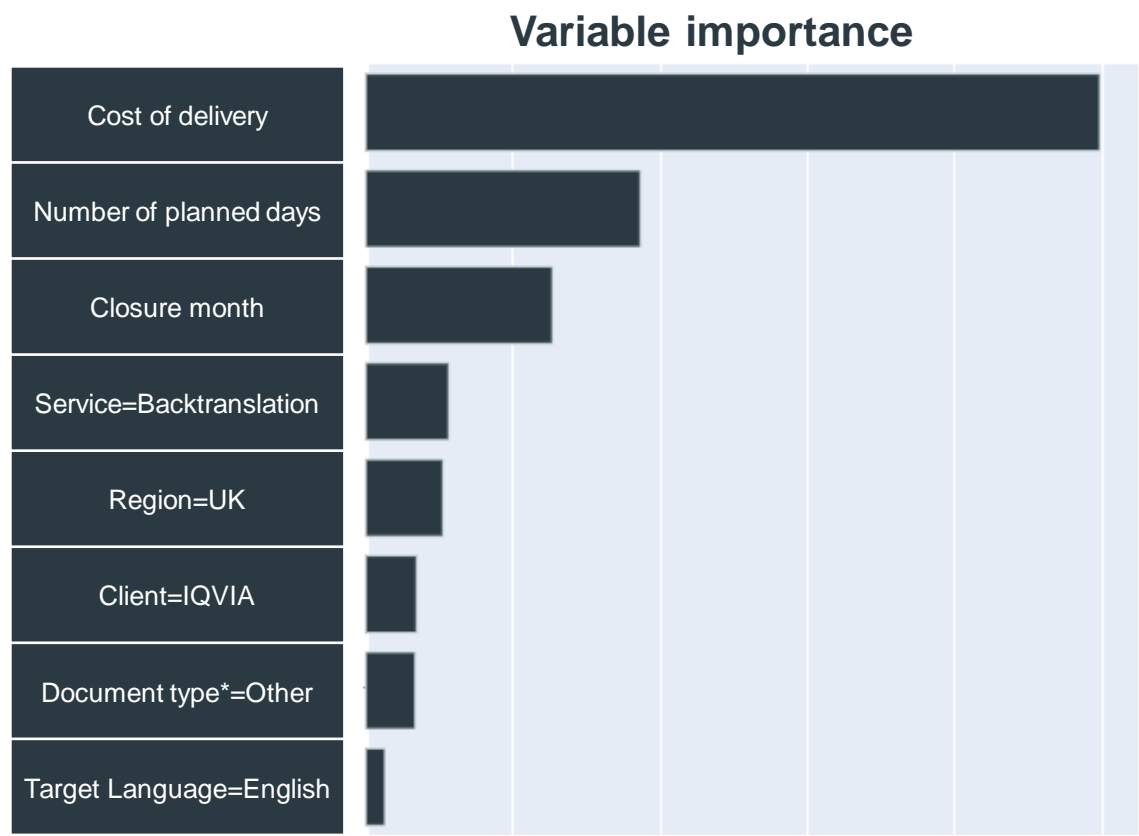
Highlights

- FTA is consistent across years, averaging at 97.5% in the past years.
- The number of not accepted projects is increasing per year, following business growth trends.



What impacts the likelihood of a project not being accepted?

In the translations process, some **variables have a greater impact on the likelihood of a project not being accepted** than others. By identifying these key variables, efforts can be shifted to optimizing them, leading to a higher rate of customer success.

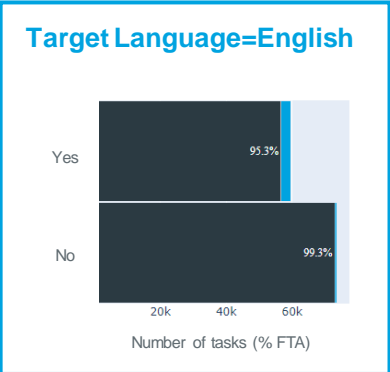
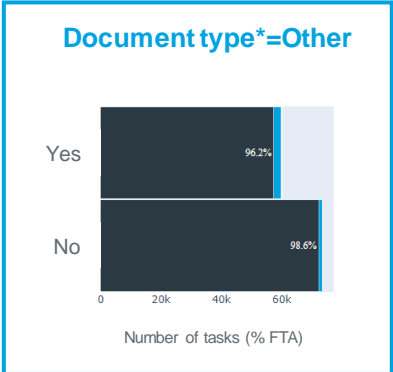
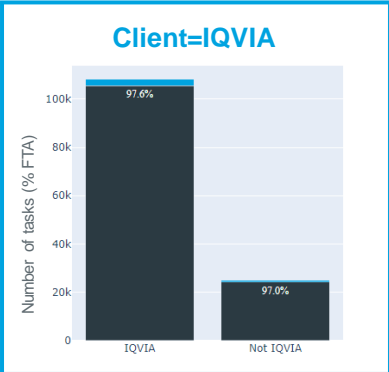
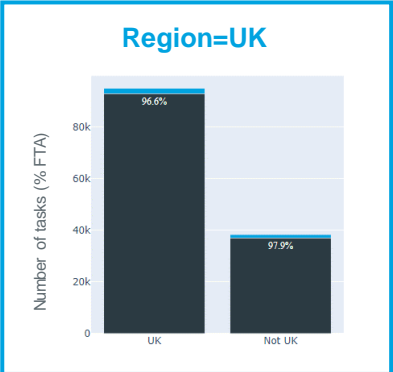
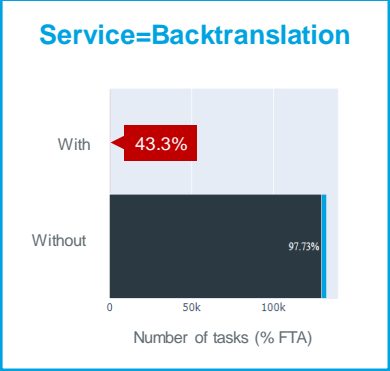
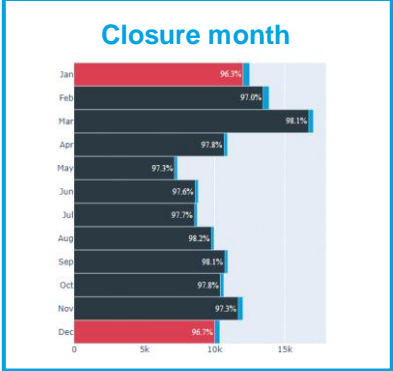
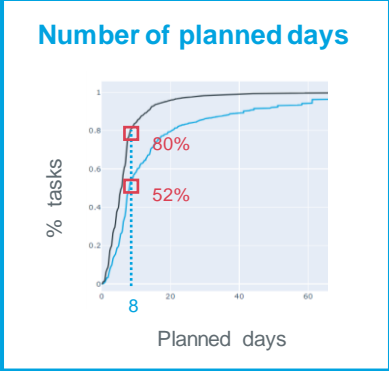
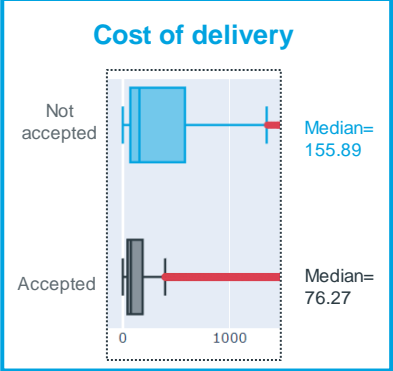


*Assumptions were made when grouping document types into categories.

What impacts the likelihood of a project not being accepted?

In the translations process, some **variables have a greater impact on the likelihood of a project not being accepted** than others. By identifying these key variables, efforts can be shifted to optimizing them, leading to a higher rate of customer success.

Cost of delivery
Number of planned days
Closure month
Service=Backtranslation
Region=UK
Client=IQVIA
Document type*=Other
Target Language=English



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What impacts the likelihood of a project not being accepted?

In the translations process, some **variables have a greater impact on the likelihood of a project not being accepted** than others. By identifying these key variables, efforts can be shifted to optimizing them, leading to a higher rate of customer success.

Most frequent patterns identified that increase the likelihood of tasks not being accepted at first delivery:

Backtranslation service	Planned days	Region	Closure Month	Cost of delivery	Doc. Type*	Num not accepted tasks	Num Accepted tasks	Rule Precision (%)	% overall tasks not accepted
No	>40	UK	Not Dec	<=226.5	Other	148	0	100%	4.5%
Yes		UK			Other	119	4	96.8%	3.6%
Yes		Not UK		in between 210-2972	Other	69	4	94.5%	2.1%
Overall Total						336	8	97.7%	10.1%

*Assumptions were made when grouping document types into categories.

Third-Party Translations

17th May 2023

Enterprise Data Analytics

Which data was used for this analysis?

In order to analyze third-party translation expenses, **two datasets** were leveraged:

Workday data

Email Address	Business Unit	Department	Country
xxx.xxxx@iqvia.com	USC US and Canada Region	470038 GBO Proposals and Contracts	United States of America
xxx.xxxx@iqvia.com	USC US and Canada Region	999030 Local Q-Mgd Primary Care Sales	United States of America
...
xxx.xxxx@iqvia.com	CSE Asia Pacific RBU	999440 RDS IT – ClinOps Engineering	India
xxx.xxxx@iqvia.com	TES Tech & Commercial Solutions	999999 IMS	India

Total data (rows): 99,909

Celonis – Purchase Order data

Source System	Company Code	PO Number	Vendor Name	Commodity	PO Creation Date	Amount	Email Address
COUPA	COUPA	16864	OXFORD CONVERSIS	services	2020-01-02	3798	xxx.xxxx@iqvia.com
COUPA	COUPA	16891	TRANSPERFECT	services	2020-01-02	360014	xxx.xxxx@iqvia.com
...
SAP	US45	4300...	TRANSPERFECT	Written Translation Services	2020-01-22	27000	xxx.xxxx@iqvia.com
SAP	US45	4300...	TRANSPERFECT	Written Translation Services	2020-01-22	22800	xxx.xxxx@iqvia.com

Total data (rows): 8,367

Notes on Celonis data extraction:

- Dataset: TPS - Business Pack. Filter applied: "PO – Commodity" to include 'translation'.
- Caveat: The dataset was created for the Sourcing team (additional filters might have been applied at prior stages).

Business Units: Top 4

Understanding which business units are looking to outsource translation services, could help **detect new opportunities** within IQVIA for ITS.

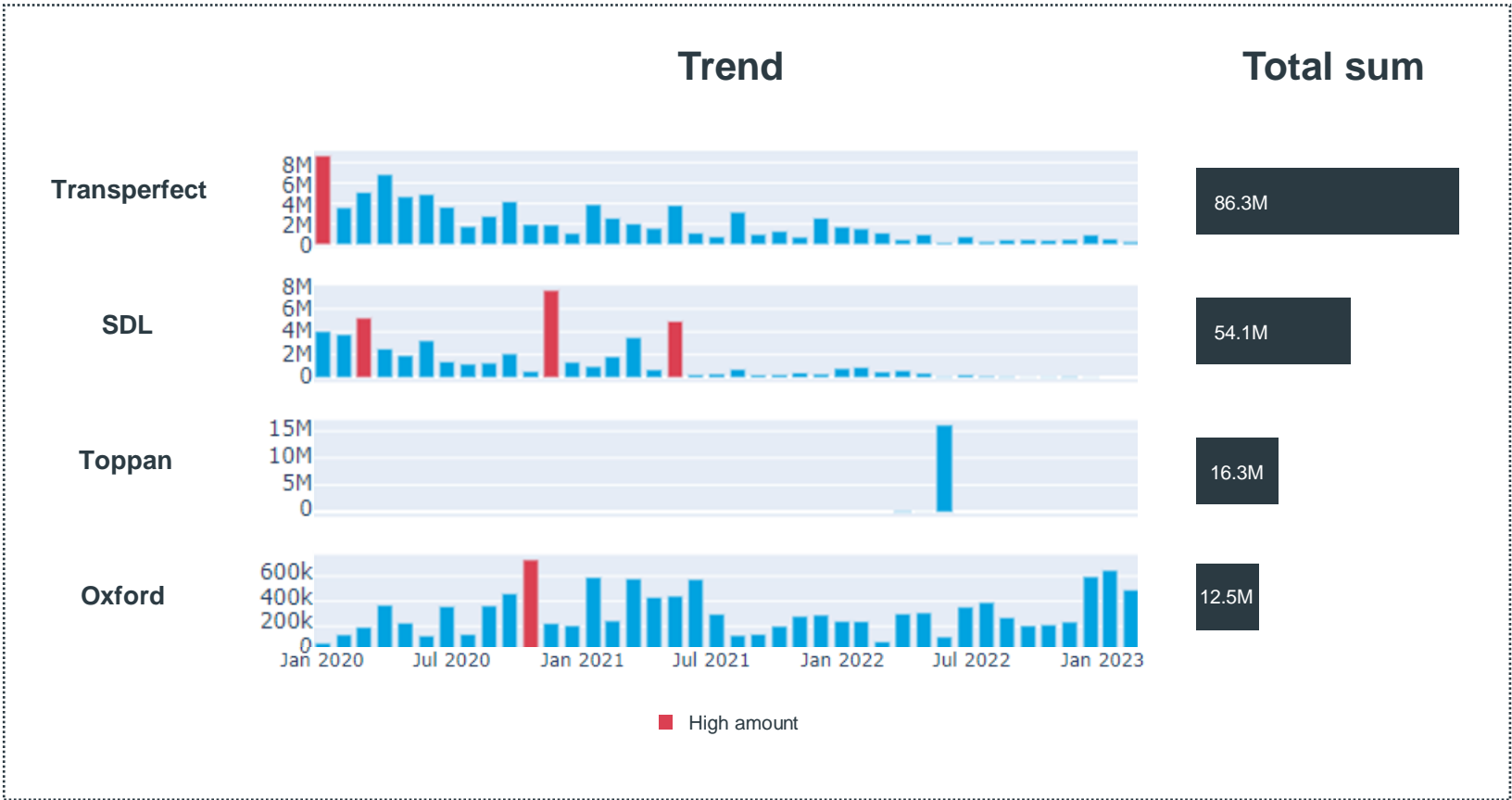


Highlights

- The overall trend of third-party expenses for translation services is decreasing
- GSF spent more than 16M in July 2022.
- RWI's expense has decreased but its stable, averaging at 265k per month in the past 12 months.

Vendors: Top 4

Identifying main competitors can be leveraged when defining ITS' offering and services:



Highlights

- There is a clear decrease in the usage of third-party vendors.
- Oxford Conversis Ltd. Expense has increased the past couple of months (578k, 3-month average)



Summary

17th May 2022

Enterprise Data Analytics

Revenue 2022

60.4M\$

Potential benefits

Project Delays

-22.4%

First Time Acceptance

+10.1%

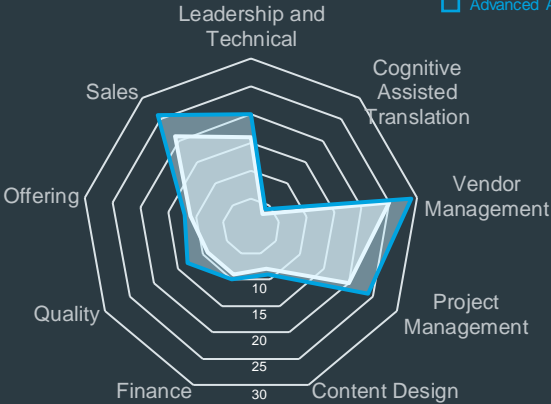
Third-party PO opportunity size*

32M

*based on past 12 months

Which areas will be impacted*?

Reporting
Advanced Analytics



Estimated number of metrics to be delivered
*Priority 1 only

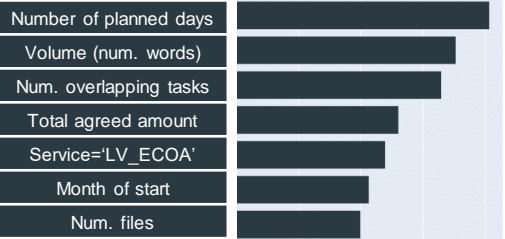
Executive Summary

- Projects delays and projects not accepted at first delivery have been increasing, following business trends, at 1.8x year over year.
- Patterns and variable impact for each metric have been identified.
- Outsourced translation expenses are decreasing in general. Purchase Orders (POs) for the past 12 months, have amounted to 32M still.

Project Delays

Service LV ECOA	Num. Files	Planned days	Volume (words)	Start Month	Num. Overlapping Tasks	Projects Late	Projects Ontime	% Overall Delays	Rule Precision (%)
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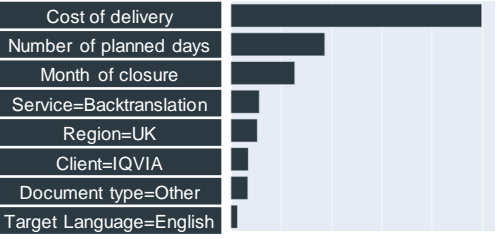
Variable importance



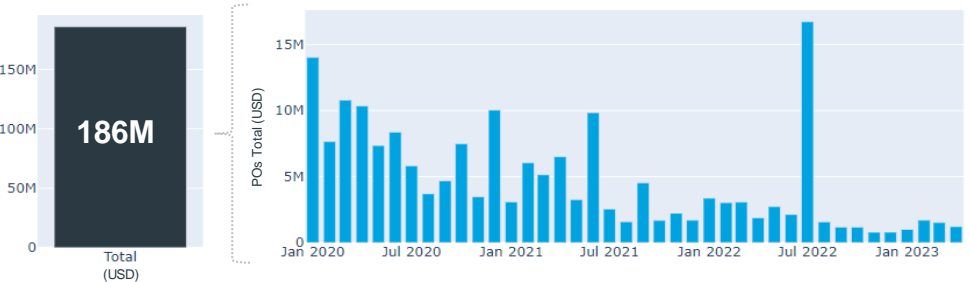
First Time Acceptance

Back translation service	Planned days	Region	Closure Month	Cost of delivery	Doc. Type	Num not accepted tasks	Num Accepted tasks	% Not accepted	Rule Precision (%)
No	>40	UK	Not Dec	<=226.5	Other	148	0	4.5%	100%
Yes		UK			Other	119	4	3.6%	96.8%
Yes		Not UK		in between 210-2972	Other	69	4	2.1%	94.5%
Overall Total						336	8	10.1%	97.7%

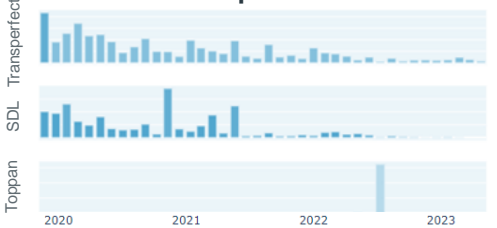
Variable importance



Third-party POs

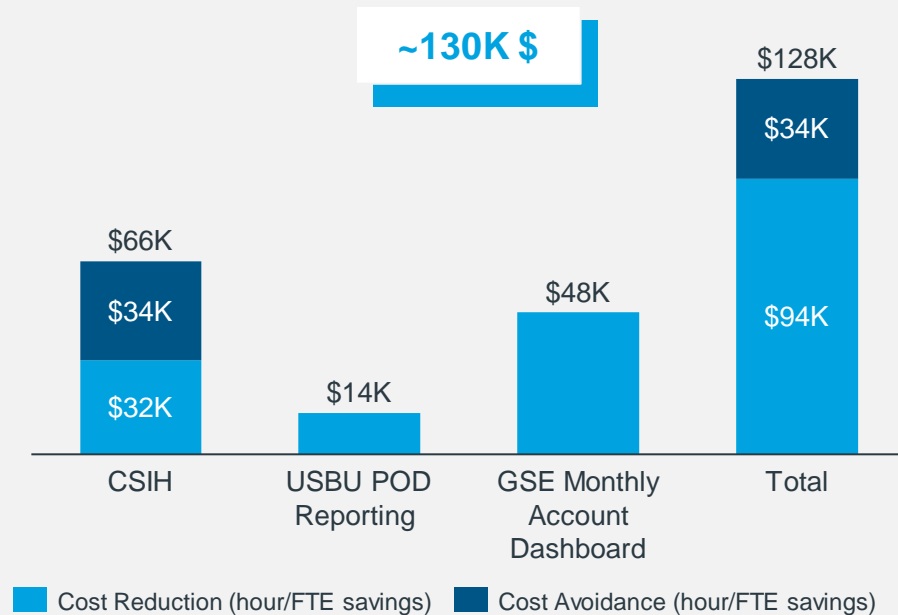


Trends per vendor



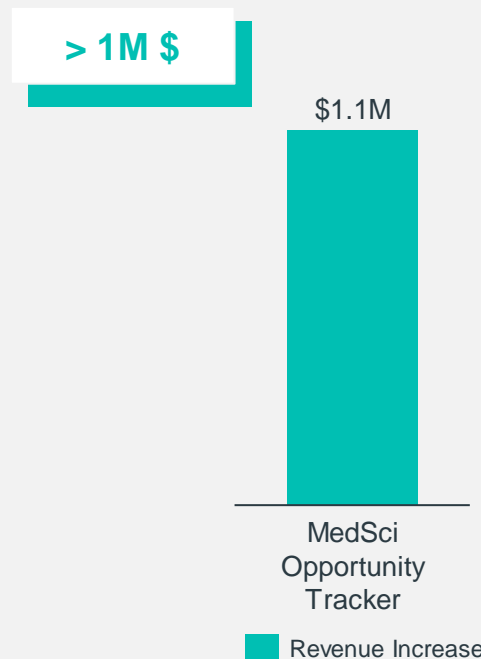
Value Creation

Direct Cost Reduction and Cost Avoidance (Yearly)



Cost reduction/avoidance managed by ED&A team by automating reporting tasks previously performed manually by other teams

Revenue Increase (Q1 YoY)



Support Business Units on identifying and tracking opportunities to increase revenue and reduce cost through the integration of enterprise data and provision of real time analytics and reporting.

Business Units Targets

- LAUNCH Revenue Tracker: Revenue increase of + 44M \$
- USCAN OE Metrics: Cost reduction of 57M \$
- ITS Data Warehouse: TBD



MedSci - Opportunity Tracker

Project Manager: Carmen Tejada Status: Complete Go Live: 17/02/2023

[Link to the main dashboard](#)

Current Year Revenue

\$19M

Total Dashboard Views

158

Unique Dashboard Views

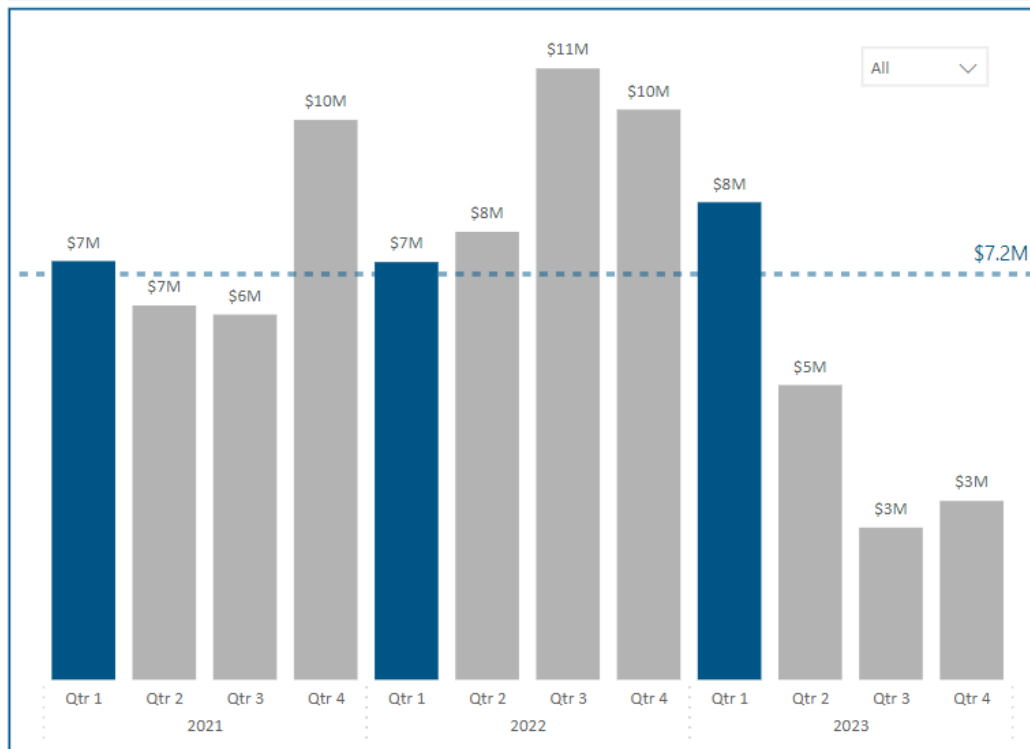
72

Individualized Emails

42

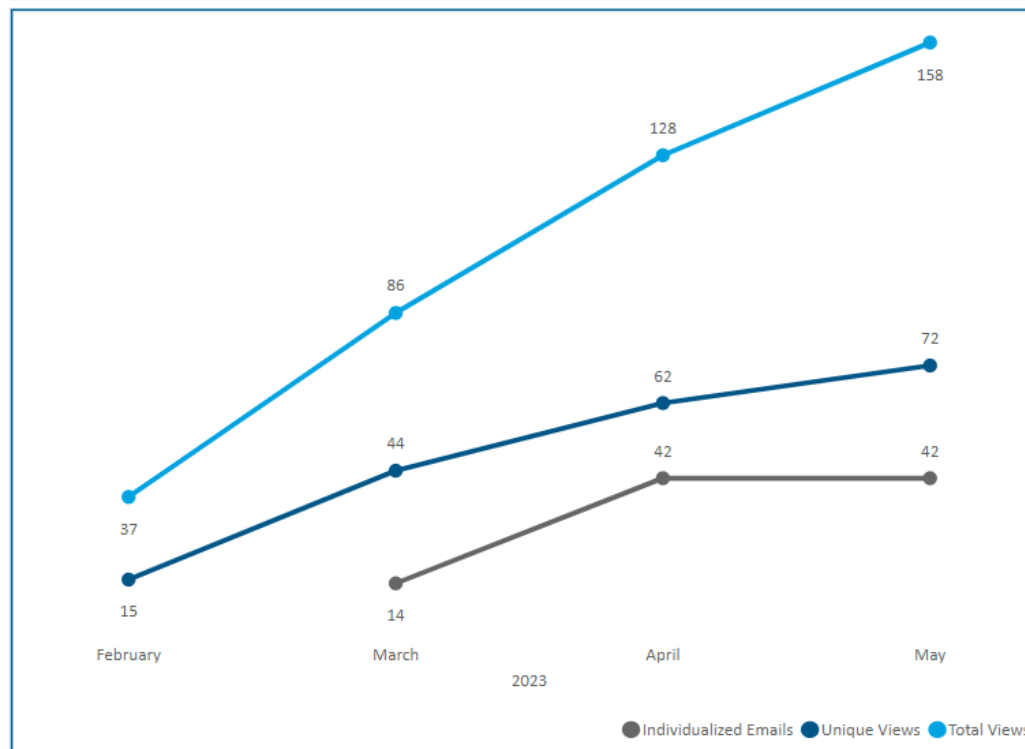
Revenue Trend

2023 contracted revenue is at \$19,486,492, which represents 54% of prior year revenue.



Reporting Statistics

42 personalized reporting emails sent to 14 PICs. 26 of those emails contained opportunities in pipeline with no updates in the past 3 months.

[Link to Dashboard](#)

Total Views: number of dashboard pages views / Unique views: dashboard views

IQVIA US&CAN - OE Metrics

Project Manager: Ayreen Marin Status: Complete Go Live: 01/05/2023

[Link to the main dashboard](#)

Current Year EBITDA

\$145M

Total Dashboard Views

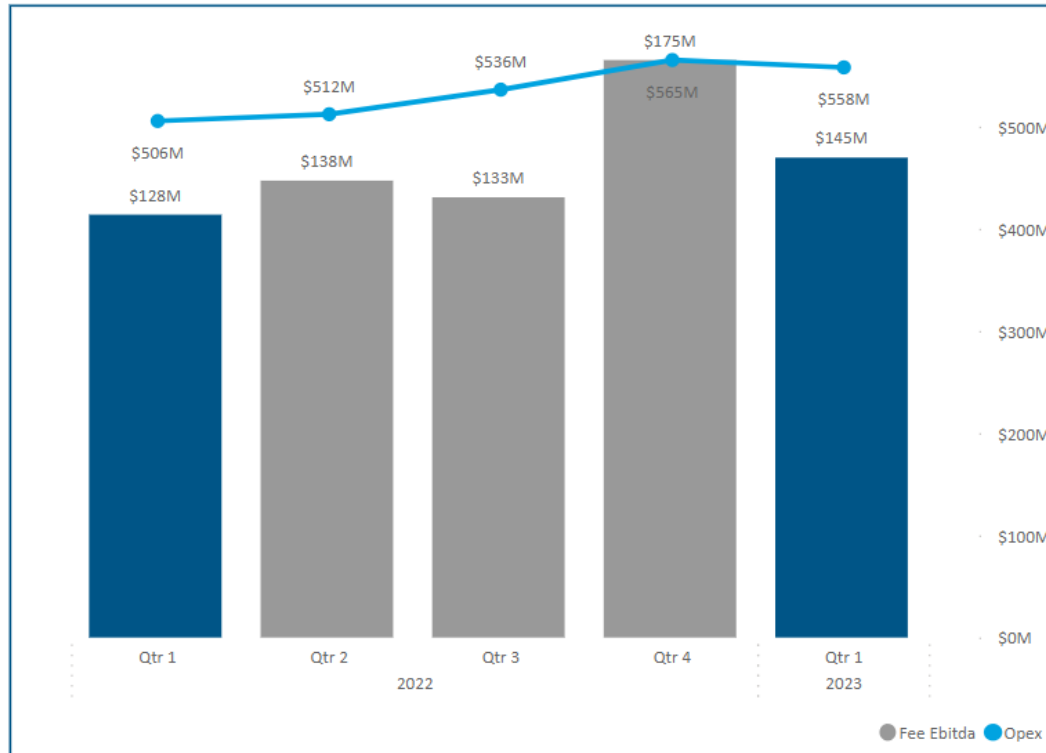
160

Unique Dashboard Views

39

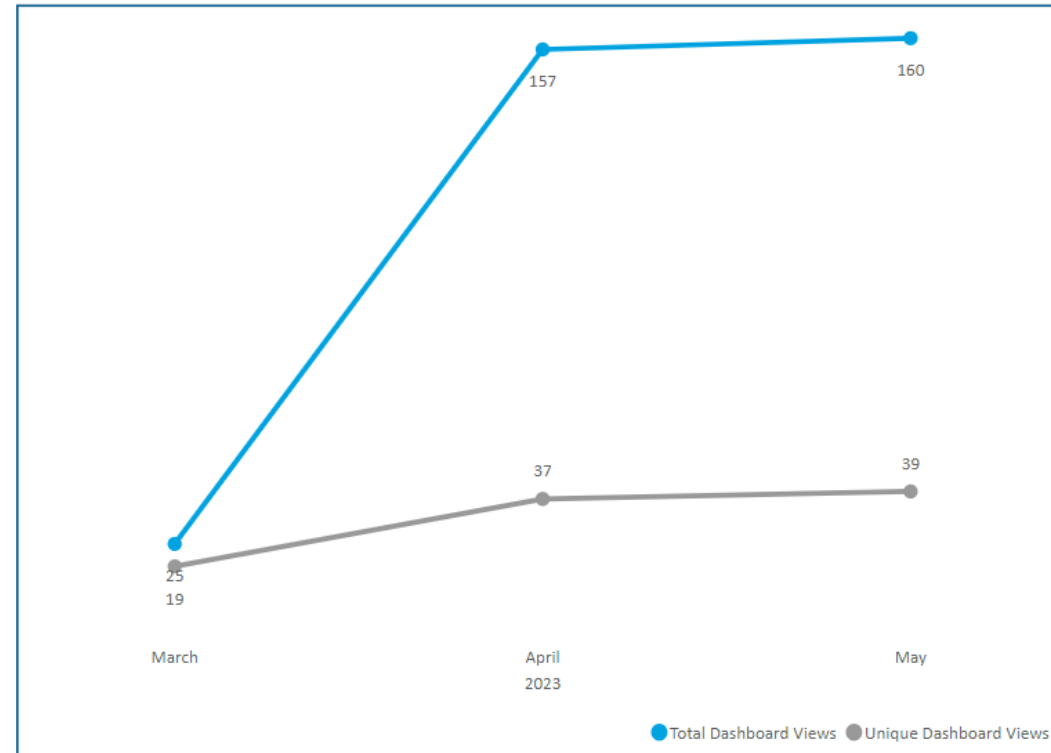
EBITDA Trend

2023 EBITDA YTD is 145M\$, which is 13% higher than PYTD.



Reporting Statistics

US&CAN dashboard has been reviewed 39 times, a total of 160 if we consider all total views. A total of 24 users are actively reviewing the dashboard.



Financial Global Variance Reporting

Q1 IQVIA 10-K Results

IQVIAFIN

Table 1
IQVIA HOLDINGS INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF INCOME
(preliminary and unaudited)

(in millions, except per share data)	Three Months Ended March 31,	
	2023	2022
Revenues	\$ 3,652	\$ 3,568
Cost of revenues, exclusive of depreciation and amortization	2,398	2,323
Selling, general and administrative expenses	513	488
Depreciation and amortization	253	255
Restructuring costs	17	7
Income from operations	471	495

- Revenue of \$3,652 million
- GAAP Net Income of \$289 million, Adjusted EBITDA of \$851 million
- GAAP Diluted Earnings per Share of \$1.53, Adjusted Diluted Earnings per Share of \$2.45
- R&D Solutions quarterly bookings of \$2.6 billion, representing book-to-bill ratio of 1.28x
- R&D Solutions contracted backlog of \$27.9 billion grew 10.1 percent year-over-year and 11.3 percent excluding the impact of foreign exchange

Results as per MRA:

Revenues

YTD spend equals to 3.65bn

diff. ~ 0.05 %

OpExp

YTD spend equals to 2.81bn

diff. ~ 3.6 %

EBITDA

YTD spend equals to 840.73M

diff. ~ 1.2 %