

# Business Intelligence Reporting & KPIs

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PUBLIC

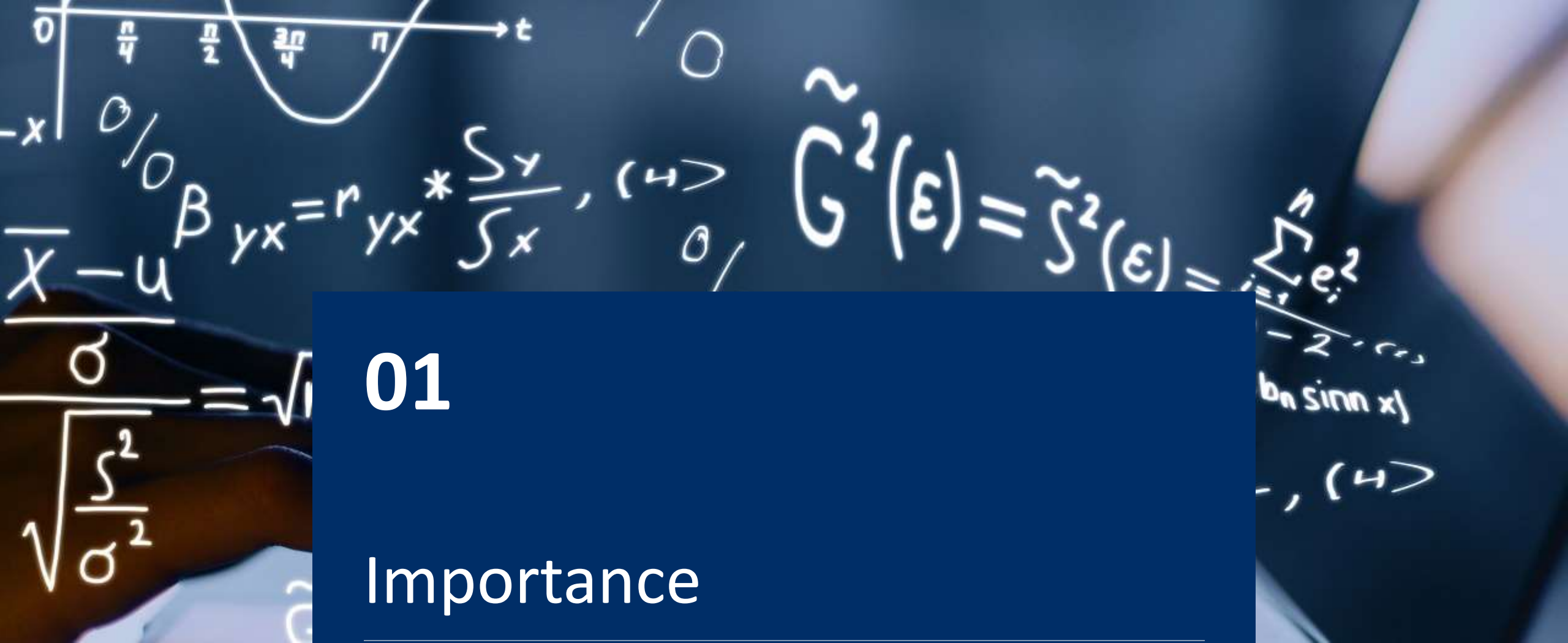
**ORTEC**





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# 01

## Importance

Why people like reporting & analytics



# Difference between data and information



# Data

1	id_shift	t3_shift	id_order	id_task	actionKindId	startInstant	finishAddressId	actionState	complete	ownerID	name	contextID	startCapacity
	5584	NULL	NULL	NULL	20	2019-01-28 09:25:57.000	31	finished	1	255278	couple	255278	NULL
	5584	NULL	NULL	NULL	21	2019-01-28 09:25:57.000	31	finished	1	255278	coupling	255278	1=4300.0000,2=11040.0000,8
	5584	NULL	NULL	NULL	36	2019-01-28 09:30:57.000	31	finished	1	255995	stop	255995	1=4300.0000,2=11040.0000,8
	5584	NULL	47975	95948	4	2019-01-28 09:30:57.000	31	finished	1	255995	pickup	255995	1=4300.0000,2=11040.0000,8
	5584	NULL	48488	96974	4	2019-01-28 09:30:57.000	31	finished	1	255995	pickup	255995	1=4300.0000,2=11040.0000,8
	5584	NULL	48539	97076	4	2019-01-28 09:30:57.000	31	finished	1	255995	pickup	255995	1=4300.0000,2=11040.0000,8
	5584	NULL	45697	91392	4	2019-01-28 09:30:57.000	31	finished	1	255995	pickup	255995	1=4300.0000,2=11040.0000,8
	5584	NULL	45709	91416	4	2019-01-28 09:30:57.000	31	finished	1	255995	pickup	255995	1=4300.0000,2=11040.0000,8
	5584	NULL	48046	96090	4	2019-01-28 09:30:57.000	31	finished	1	255995	pickup	255995	1=4300.0000,2=11040.0000,8
	5584	NULL	48047	96092	4	2019-01-28 09:30:57.000	31	finished	1	255995	pickup	255995	1=4300.0000,2=11040.0000,8
	5584	NULL	NULL	NULL	38	2019-01-28 09:30:57.000	14807	finished	1	255996	travel	255996	1=4300.0000,2=11040.0000,8
	5584	NULL	NULL	NULL	36	2019-01-28 10:00:00.000	14807	finished	1	255996	stop	255996	1=4300.0000,2=11040.0000,8
	5584	NULL	48047	96091	5	2019-01-28 10:00:00.000	14807	finished	1	255996	deliver	255996	1=4300.0000,2=11040.0000,8
	5584	NULL	48046	96089	5	2019-01-28 10:25:05.000	14807	finished	1	255996	deliver	255996	1=4300.0000,2=11040.0000,8
	5584	NULL	45709	91415	5	2019-01-28 10:26:21.000	14807	finished	1	255996	deliver	255996	1=4300.0000,2=11040.0000,8
	5584	NULL	45697	91391	5	2019-01-28 10:26:40.000	14807	finished	1	255996	deliver	255996	1=4300.0000,2=11040.0000,8
	5584	NULL	NULL	NULL	38	2019-01-28 10:27:44.000	10197	finished	1	256071	travel	256071	1=4300.0000,2=11040.0000,8
	5584	NULL	NULL	NULL	36	2019-01-28 10:41:39.000	10197	finished	1	256071	stop	256071	1=4300.0000,2=11040.0000,8
	5584	NULL	47975	95947	5	2019-01-28 10:41:39.000	10197	finished	1	256071	deliver	256071	1=4300.0000,2=11040.0000,8
	5584	NULL	NULL	NULL	38	2019-01-28 11:04:25.000	4221	finished	1	256016	travel	256072	1=4300.0000,2=11040.0000,8
	5584	NULL	NULL	NULL	36	2019-01-28 11:23:59.000	4221	finished	1	256016	stop	256016	1=4300.0000,2=11040.0000,8
	5584	NULL	48539	97075	5	2019-01-28 11:23:59.000	4221	finished	1	256016	deliver	256016	1=4300.0000,2=11040.0000,8
	5584	NULL	48488	96973	5	2019-01-28 11:58:08.000	4221	finished	1	256016	deliver	256016	1=4300.0000,2=11040.0000,8

**This is not okay!**



# Information

## Realized On Time - Arrival within Window



**72 %**

12/1/2019 - 11/30/2020

-8 % gap with target at 80 %

## Planned Utilization



**87 %**

12/1/2019 - 11/30/2020

7 % gap with target at 80 %

## Planned RC per Day



**4,232**

12/1/2019 - 11/30/2020

3,232 gap with target at 1,000

## Planned Cost per Route



**\$1,105**

12/1/2019 - 11/30/2020

-\$855 gap with target at \$250

## Planned Miles per Stop



**175.8**

12/1/2019 - 11/30/2020

-125.8 gap with target at 50

## Planned Resource Utilization



**71 %**

12/1/2019 - 11/30/2020

-19 % gap with target at 90 %

# Data

- Collection of facts
  - Numbers
  - Measurements
  - Graphs
- 
- Temperature measurements across 100 years indicate upward trend
  - Surface area of glaciers and ice caps shrinking
  - Sea levels are rising
  - Concentration of greenhouse gases is rising

# Information

- Data aggregated and put into a context
- 
- Global warming is a thing

# Importance of reporting and analytics

- The ability to perform sophisticated and innovative reporting and analytics is becoming critical for all organizations.
- Data analytics strategy - plan for how the organization will use data and analytics to drive business decisions.
- The right reporting, analytics and information delivery strategy can have a significant impact on an organization, fundamentally changing the way people perform their jobs and how decisions are made.
- The benefits of a successful strategy include:
  - Increased productivity
  - Employee satisfaction
  - Improved analysis and decision-making
  - Increased organizational communication and collaboration





The background features a chalkboard with various mathematical notations. At the top left, a graph shows a sine wave on a coordinate system with the horizontal axis labeled 't' and tick marks at  $0$ ,  $\frac{\pi}{4}$ ,  $\frac{\pi}{2}$ ,  $\frac{3\pi}{4}$ , and  $\pi$ . Below the graph, there are several equations:  $\beta_{yx} = r_{yx} \cdot \frac{S_y}{S_x}$ ,  $G^2(\epsilon) = \tilde{J}^2(\epsilon) = \sum_{i=1}^n e_i^2$ , and  $\frac{\sigma}{\sqrt{\frac{S^2}{\sigma^2}}} = \sqrt{\dots}$ . Other visible terms include  $\frac{x-u}{\sigma}$ ,  $\frac{0}{0}$ , and  $(4)$ .

# 02

## Tactical tool (on-premise)

SQL Server Reporting Services

# SQL Server Reporting Services

- Comes with SQL Server and requires Report Builder 3.0 to build the actual reports
- Run queries on the application database (Routing & Dispatch, Inventory Routing, Workforce Scheduling, Service Planner, etc.)
- Parse results into a table / document / dashboard / chart
- Helps replicate critical documents in business flow or create KPIs
- Support front-line personnel in day-to-day activities
- Or provide insightful data that is no longer visible in the app but retained in the database



# Drawback – amount of data

- Good tool until it isn't (unless performance is not a concern)
- Not the best for reporting over wide time horizons or very large data sets on an operational database (can work on a data warehouse)
- Knowledge of target database's data model is mandatory for performance
- Can degrade performance of the database and application
- Jack of all trades, master of none
- Can still get difficult jobs done on operational environments\*
  - \*if you are willing to sacrifice your soul to the devil



# 03

## Example on-premise

Driver papers



TRIP 1

WEDNESDAY AM 06/11/2019

NCP T002 - TR013

LOAD # 1	LOAD # 2	PRODUCTS	COMP
NCP		DSL / ULP	1, 2, 3, 4, 5

COMP	LITRES	PRODUCT	TARE WEIGHT	NET WEIGHT	ACTUAL GCM	MAX GCM
1	4800	DSL	14.68	15.41	30.09	40.00
2	4000	ULP				
3	3200	DSL				
4	6400	DSL				
5	800	DSL				

CUSTOMER	ORDER NR	PRODUCTS	LITRES	COMPS & DELIVERY DETAILS	LTR DEL
	930917119	DSL	800	Fill - 3 - INTO TANK - 100223_1 Extra comment on the orderline Storage comment	
	930917119	ULP	800	Fill - 2 - INTO TANK - 100223_2	
	930917120	DSL	800	Fill - 4 - INTO TANK - 100230_1	
	930917131	DSL	800	Fill - 4 - INTO TANK - 100250_1	
	930917132	DSL	800	Fill - 4 - INTO TANK - 100270_1	
	930917133	DSL	800	Fill - 4 - INTO TANK - 100277_1	
	930917134	DSL	800	Fill - 4 - INTO TANK - 100328_1	
	930917134	ULP	800	Fill - 2 - INTO TANK - 100328_2	
	930917135	DSL	800	Fill - 3 - INTO TANK - 100379_1	
	930917116	DSL	800	Fill - 3 - INTO TANK - 100399_1	
	930917136	DSL	800	Fill - 5 - INTO TANK - 100428_1	

# Driver papers – route run sheet

- Company delivers fuel across Australia
- Paper printed and handed to drivers before leaving the depot
- Generated based on planning with our Inventory Routing application
- Shows product amounts on board tanker truck by compartment
- Shows orders per customer assigned to deliver by this driver

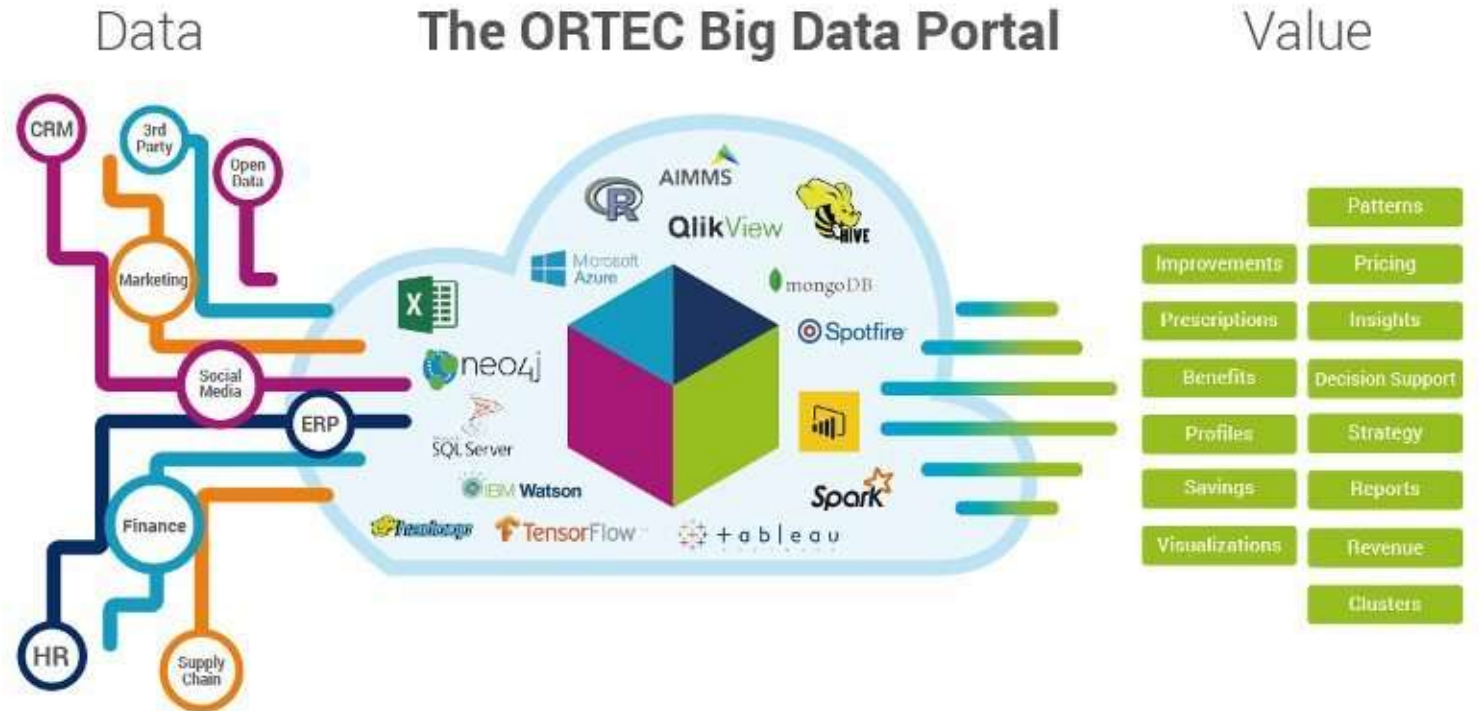
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## Cloud tool (strategic)

Big Data Portal

# Big Data

- Provides big data analytics as a service
- Good at handling large amount of data over wide time horizons
- Hosted in cloud & runs based on ETL processes
- Can focus on whole horizon or on a small time frame
- Can also drill down into details



# ETL

- Extract
  - Identify what data changed in the application database
  - Upload the changes to cloud based on a predefined schedule
  - Supports upload from third parties
- Transform
  - Take the data and process it into information
  - Happens in cloud with the help of scripts
- Load
  - The output of the transformation (the information) is inserted into containers
  - A container can be a file or a cloud database table
  - The dashboards load this data into visualizations



# 05

## Example of Big Data

Big Data Portal



