



SONAR
SINGLE VERSION OF TRUTH

„SONAR brings the **single version of truth** for better MOL Group Downstream Value Chain Management decision making through reliable and on-time information.”

SONAR - Agenda

- MOL Group
- Background
- Benefit
- Success factors
- Challenges
- Live Demo
- Q&A
- SLIDO



MOL Group



INTEGRATED CENTRALMOL GROUP IN BRIEF

EUROPEAN MID-CAP OIL & GAS COMPANY

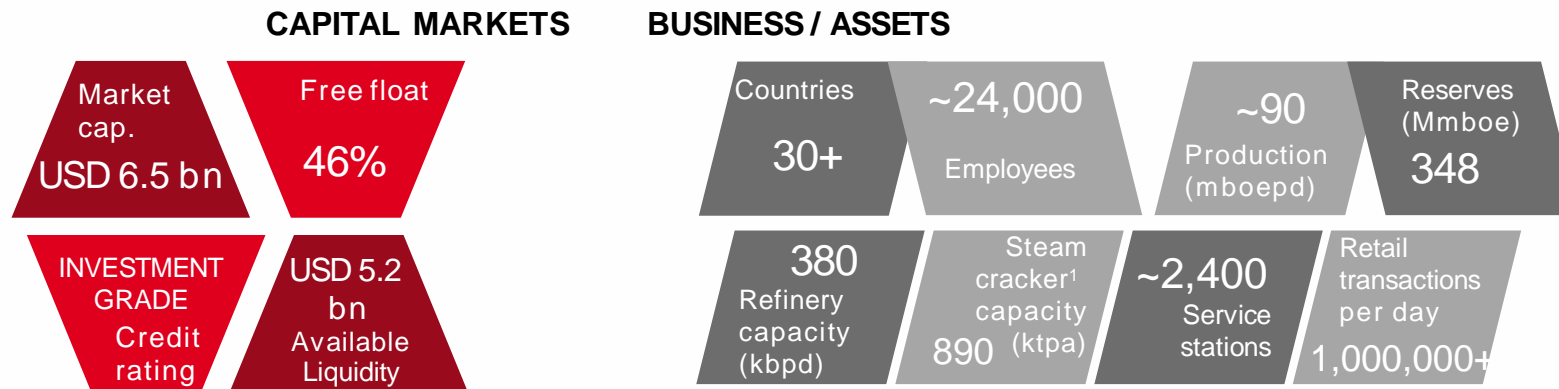
CORE ACTIVITIES



CLEAN CCS EBITDA BY SEGMENTS IN 2022 (USD MN)



KEY FIGURES



INTEGRATED DOWNSTREAM MODEL IN CEE

DOWNSTREAM IN NUMBERS

11 COUNTRIES

PRODUCTION UNITS

5



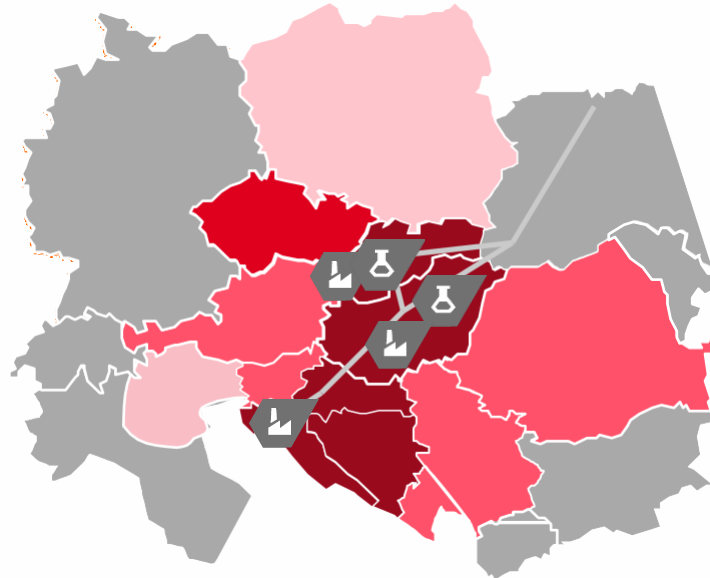
SALES OF **17.4 mtpa**
REFINED PRODUCTS

AND **1.2 mtpa**
PETROCHEMICALS

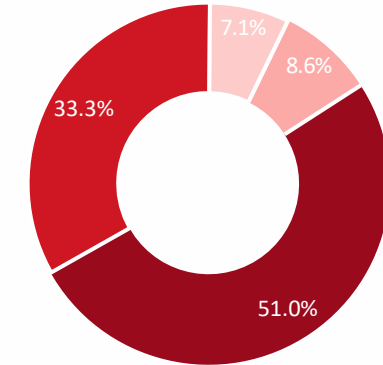
EMPLOYEES

~9,300

MARKET SHARE (%)

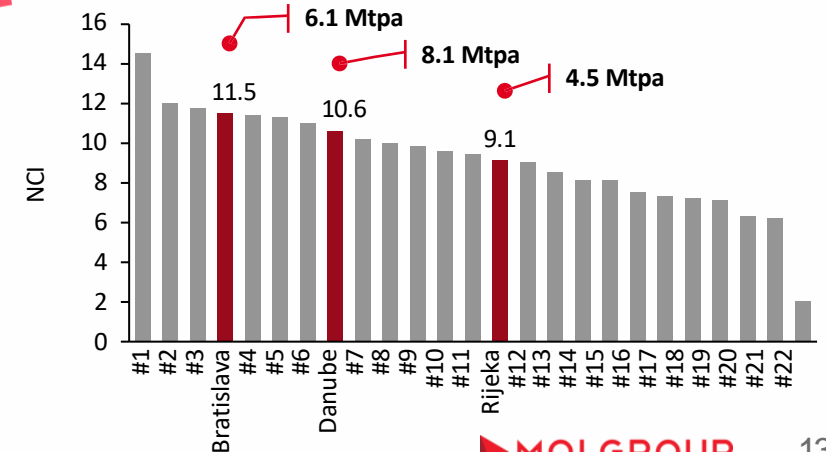


GROUP REFINERY YIELD 2022 (%)



■ Middle distillates
■ Light-products
■ Other products
■ Heavy-products

REFINERY NELSON COMPLEXITY OF PEERS¹



Background



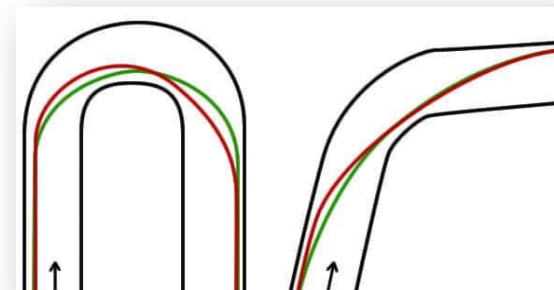
MOL Group's journey in the last 8 years to handle the VUCA business environment

Organization
redesign

Process redesign

Tool redesign

Steer the perfect path

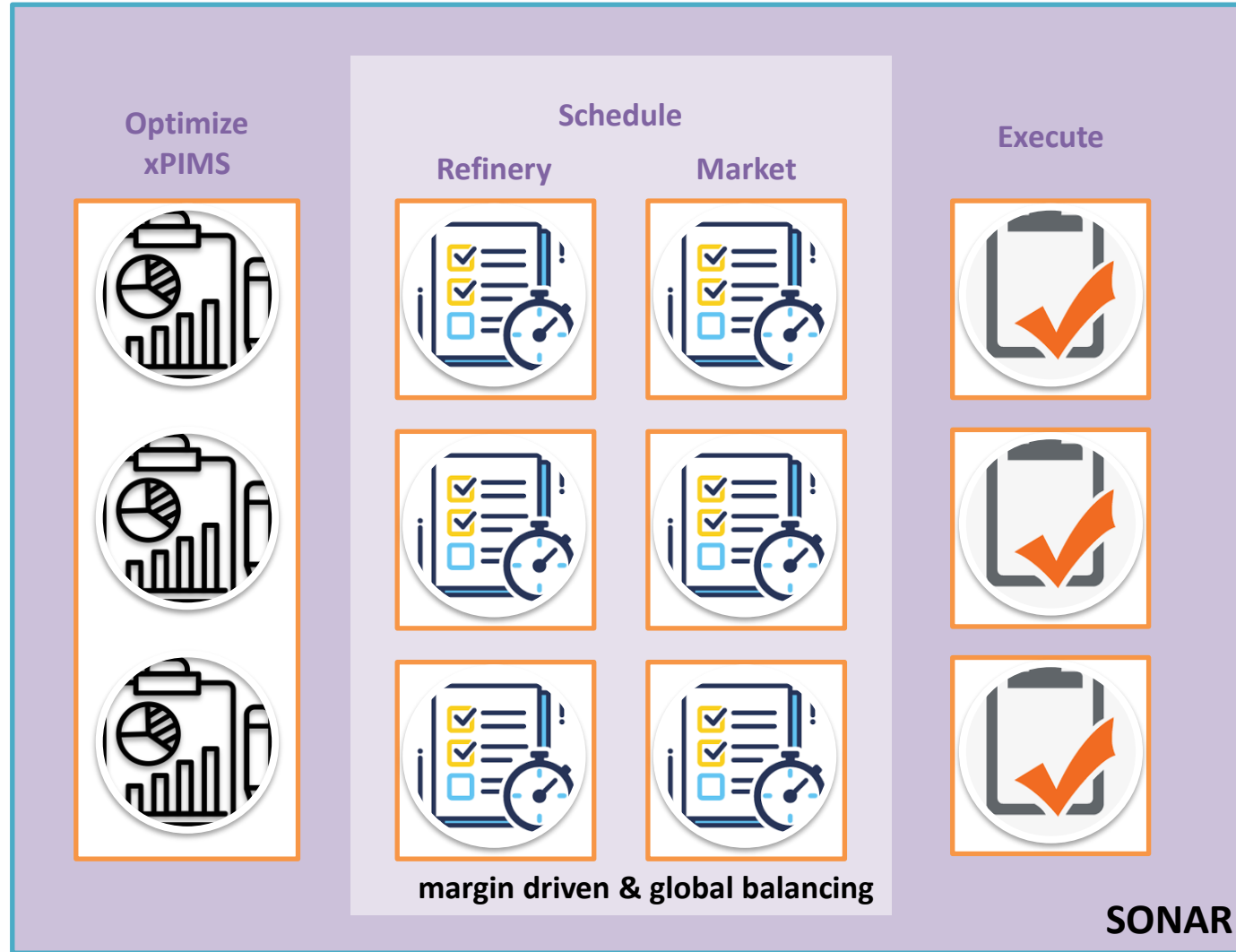


Daily Navigation Board
established
as main operative
decision making body.
Other names: WAR
ROOM/CONTROL
TOWER

Daily Margin Management
process introduced to
manage plan deviations in
agile way

SONAR project to support
the process and organization

How MOL should manage the margin along the value chain?



Global Balancing needed

SONAR before & after

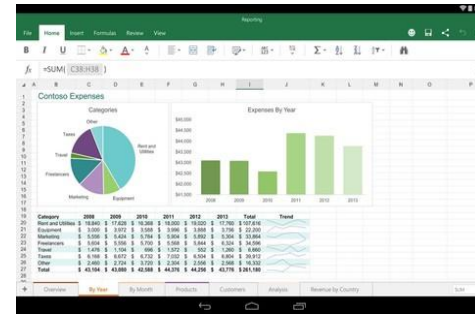
Before SONAR



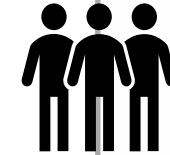
250+ excel sheets
base systems



300+ employees
Crunching numbers



Excel „Control Tower”



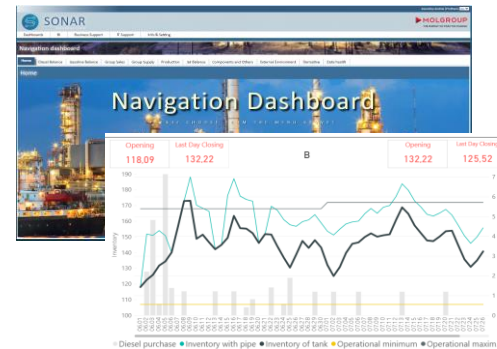
SONAR



Base systems



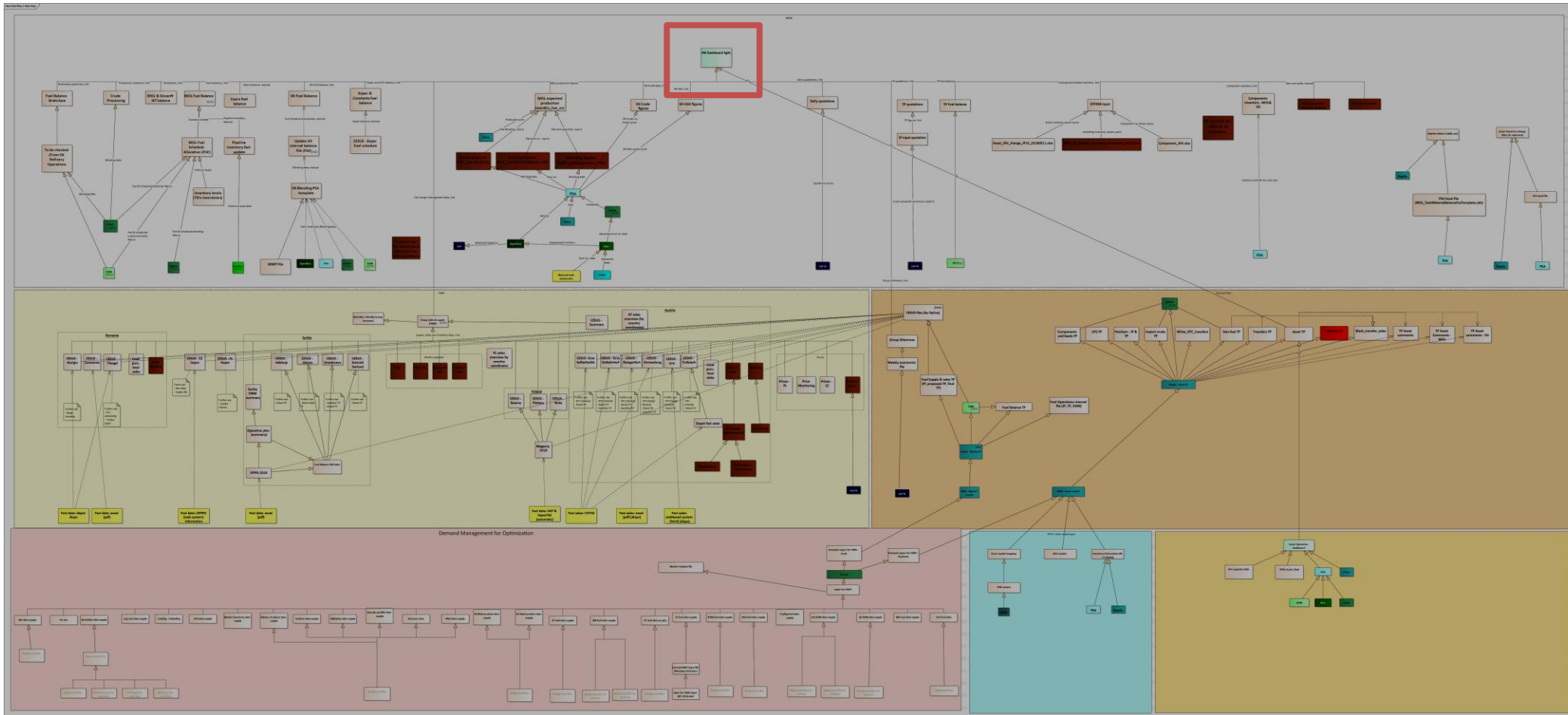
300+ employees
Analyzing data,
creating value



SONAR



Excel „control tower” to manage margin

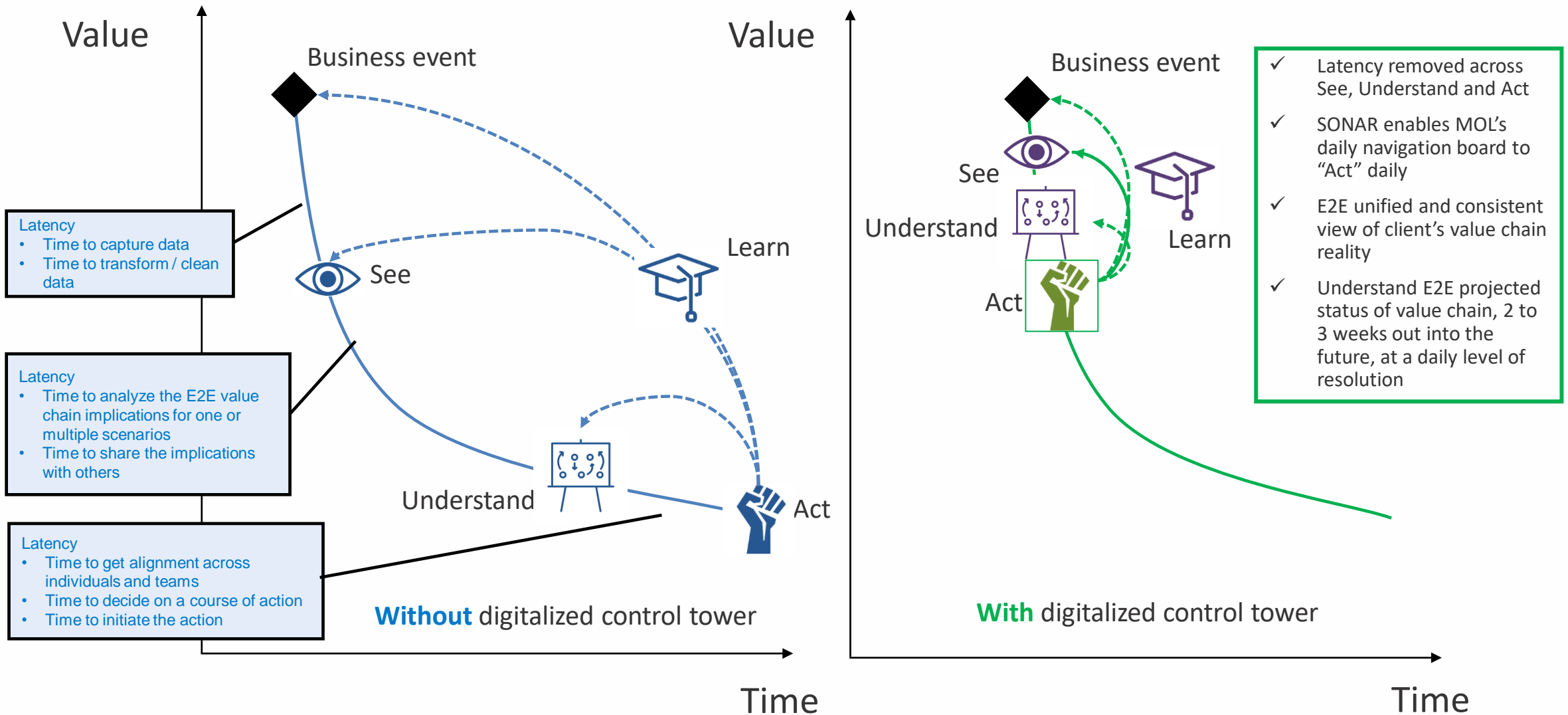


- Every box on the above picture represents a spreadsheet or an application
- The connection between the boxes are also represented via lines in between.
- Between excels outer reference were used to combine them together
- Audit of business processes found that MOL were too dependent on this fragile jungle of Excel spreadsheets

Benefits



SONAR benefits in daily margin management*



*Framework inspired by Gartner concepts to illustrate control tower value - the value lost or gained curve varies depending on the business event (demand changes, price fluctuations, natural disaster, production problem, transportation delays, force majeure declaration, pandemic, etc.)



Success factors

SONAR – Success factors



Started with process review

Prior to development during the Next Gen project fit to purpose organization and processes were already established (Navi Board / Control Tower concept)



Strong core team

Strong, hybrid competencies were available in the core team covering both business and IT aspects coupled with the must have go above and beyond attitude



Agile framework

Right methodology selected for the complex scope where exact requirements were not defined



Co-located environment

Co-located environment created in Margit Palace together with internal SMEs and vendor to accelerate the speed and quality of delivery



SVP C&O support

Good SVP C&O support available to support the internal approval processes and the change of adaption to the new software



Ecosystem focus

Instead of working on 1 software with the connected processes, end-to-end ecosystem was in the focus

Challenges

SONAR – Challenges



Business to IT translation

There was no single person who understood the end-to-end supply chain for any product and could create the vision behind



Agile adoption

Users behaviour was to accept only perfectly working products/features. Continuous handover of the product failed.



Change management

Business had lack of interest to change existing business processes and rather pushed complex ones to be digitalized



Financial benefits

It was hard to prove financial benefits in digital projects such as SONAR, especially when the base for comparison was not reliable



Business and data definitions

Project suffered a lot to align on simple definitions and terms such as „what does domestic fuel sales mean?“, or „what we consider as mobile or immobile inventory?“



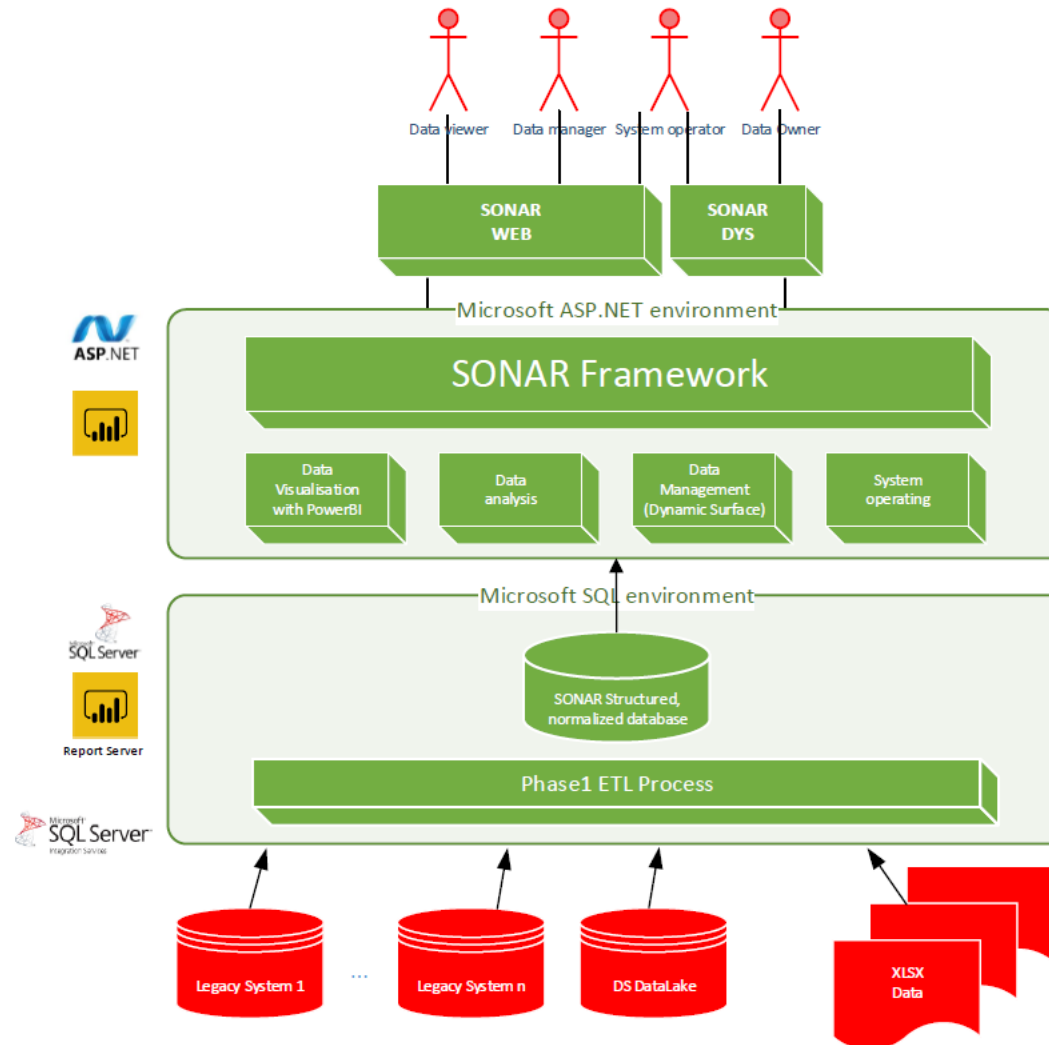
systems' data correctness outside of C&O

SONAR was counting on e.g. on MILES to come and bring single version of truth in logistics data, but it was not the case at the end.

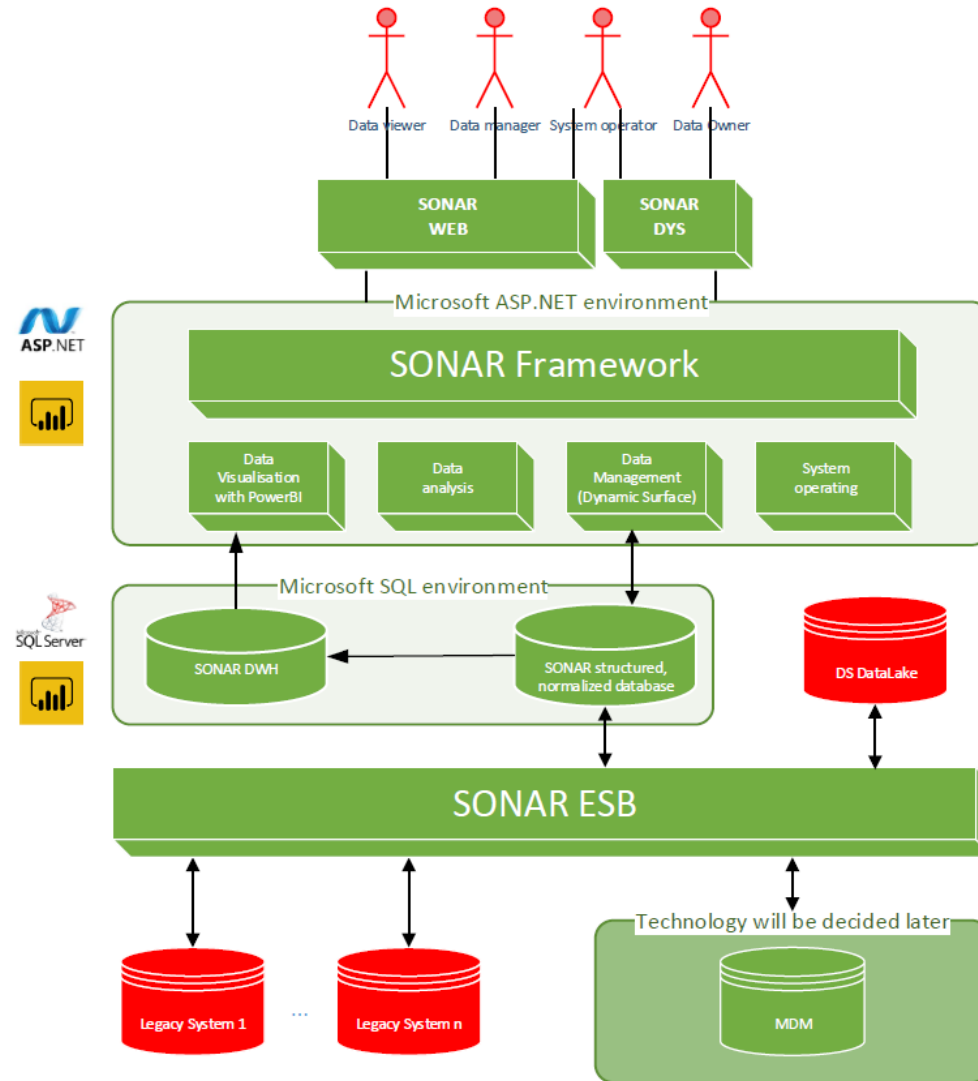
Architecture



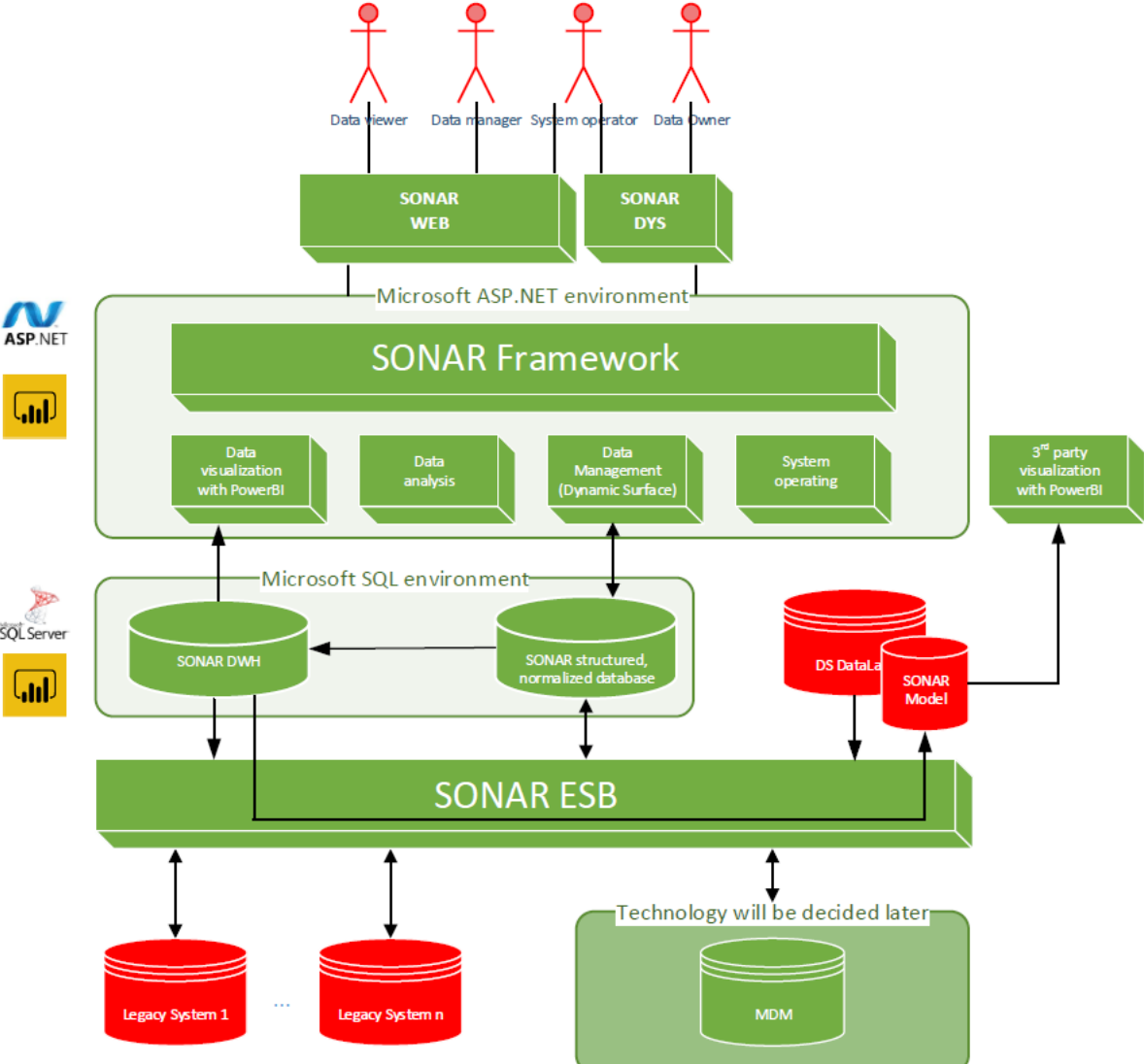
SONAR Phase I



SONAR Phase II/a



SONAR Phase II/b



Live demo



MDM



SONAR MDM

- Central MDM solution for master data management
- Support for Pull/Push mechanism, depending on the source system
- Subscription based data synchronization
- Two level material structure
 - Source system + SONAR internal usage)

OUR GOALS ARE

- Long term sustainability
- Automatic interfaces
- Single version of truth
- Easy transition for the requested changes

The screenshot displays the SONAR MDM web application interface. At the top, there is a navigation bar with the SONAR logo and the tagline 'SINGLE VERSION OF TRUTH'. The user is logged in as 'Dániel Csaba (MOL Nyrt.)' with an 'EN' language selector. The main menu includes 'Master Data Search', 'MDM Administration', 'Event Module', 'Workflow Module', 'IT Support', and 'Info & Setting'. The 'Master data search' section is active, showing a search for 'MDM Material'. The search criteria include 'Reference date and time' (yyyy. hh. nn. --:--), 'Data validity status', 'Maximum items to show', 'Show inactive', 'Show drafts only', and 'Batch id'. The search results are displayed in a table with columns: Code, Name, MDM ID, Version, Version status, Status, Batch id, Following batch id, and Created date and time. The table shows 11 rows of data, all with a status of 'Active' and a version of '0.0'. Below the table, there are buttons for 'New', 'Details', 'Deactivate', 'Commit', 'Version history', 'Create draft for all', 'Commit all', 'Data Import', and 'Data Export'. The footer contains the MOLGROUP logo, user information, and contact details.

Code	Name	MDM ID	Version	Version status	Status	Batch id	Following batch id	Created date and ...
SAP_GOP_11010002	BA BOB	4157413	0.0	Committed	Active			2022.09.26. 14:39:44
SAP_GOP_11010003	BA EuroBOB	4157414	0.0	Committed	Active			2022.09.26. 14:39:44
SAP_GOP_11010004	BA SUPER 95 bio SHR with ETBE	4157415	0.0	Committed	Active			2022.09.26. 14:39:44
SAP_GOP_11010005	BA SUPER 95 bio class 1	4157416	0.0	Committed	Active			2022.09.26. 14:39:45
SAP_GOP_11010006	BA SUPER 95 bio class 2	4157417	0.0	Committed	Active			2022.09.26. 14:39:45
SAP_GOP_11010007	EVO 95	4157418	0.0	Committed	Active			2022.09.26. 14:39:45
SAP_GOP_11010008	BA SUPER 95 V-POWER bio class 2	4157419	0.0	Committed	Active			2022.09.26. 14:39:45
SAP_GOP_11010009	BA SUPER 95 SHELL bio class 2	4157420	0.0	Committed	Active			2022.09.26. 14:39:46
SAP_GOP_11010010	BA SUPER 95 with OMV add. bio class 2	4157421	0.0	Committed	Active			2022.09.26. 14:39:46
SAP_GOP_11010011	BA SUPER 95 Carrera 95 bio class 2	4157422	0.0	Committed	Active			2022.09.26. 14:39:46

Visuals

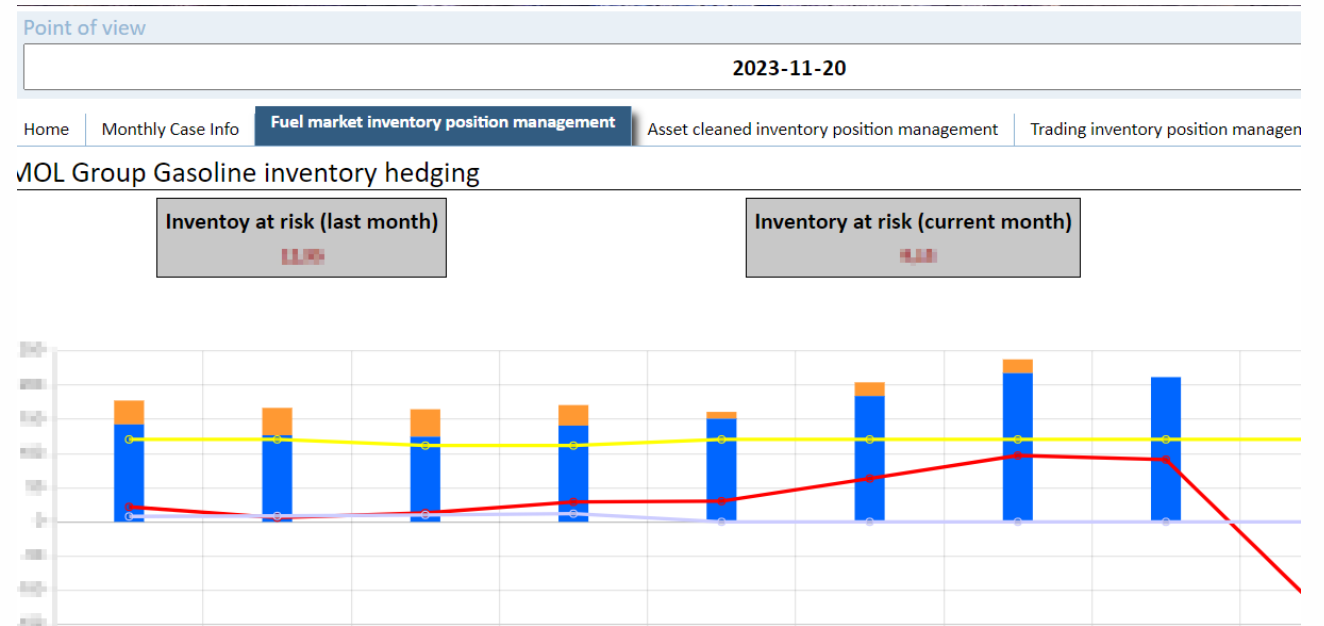


SONAR Visuals

SONAR Visuals was the first component in SONAR Ecosystem.

The main functionalities are to **store** and **visualize** information.

- Data storage
 - Versioning/Technical validity handling.
 - Data structure harmonization
 - Single version of truth – data
- Visualization
 - Dashboarding with analytical capabilities
- Data processing
 - Input/Output performance
- Standardization/Simplification
 - Single version of truth – definition



Fuel market inventory hedging details

Measure type.Measure type name	2023/08	2023/09	2023/10	2023/11	2
Total physical stock	100.0	100.0	100.0	100.0	
Diesel and domestic heating oil (finished products)	100.0	100.0	100.0	100.0	
Diesel and domestic heating oil blending components	100.0	100.0	100.0	100.0	
Motor gasoline (finished products)	100.0	100.0	100.0	100.0	
Motor gasoline blending components	100.0	100.0	100.0	100.0	
Fuel market hedge	100.0	100.0	100.0	100.0	
Market mogas	100.0	100.0	100.0	100.0	
Market diesel	100.0	100.0	100.0	100.0	
Fuel rotation effect	100.0	100.0	100.0	100.0	
Inventory at risk	11.95	11.95	11.95	9.11	
Hedging baseline	100.0	100.0	100.0	100.0	
Pipeline inventory	100.0	100.0	100.0	100.0	
Unhedged physical stock	100.0	100.0	100.0	100.0	



Dynamic Surface



SONAR DYS

- Dynamic Surface
- Controlled input interface
- Direct connection between SONAR and MDM
- Support of templates for faster data loading

OUR GOALS ARE

- To create an easy-to-use tool
- Replace manual Excel solutions
- Avoid data „manipulation“

The screenshot shows a web application interface for 'Depot balance - Total DIESEL'. The interface includes a header with filters for Country, Depot, Product (Total DIESEL), Date (2023), and Month (November). Below the filters, there are tabs for 'Depot view', 'IP-TP-Expected', and 'General Overview'. The main content is a data table with columns for Date, Opening inventory, Incoming, Outgoing, and Total Sales, grouped under three categories: B7 Diesel 10 ppm, Diesel 10 ppm, and Total DIESEL. The table displays data for dates from 01-11-2023 to 22-11-2023.

Date	B7 Diesel 10 ppm				Diesel 10 ppm				Total DIESEL			
	Opening inventory	Incoming	Outgoing	Total Sales	Opening inventory	Incoming	Outgoing	Total Sales	Opening inventory	Incoming	Outgoing	Total Sales
01-11-2023	626.4	0	0	0	394.3	0	0	0	1020.7	0	0	0
02-11-2023	626.4	0	113	113	394.3	0	31.7	8	1020.7	0	144.7	121
03-11-2023	513.4	0	104	104	362.6	0	33.5	0	876	0	137.5	104
04-11-2023	409.4	0	34	34	329.1	0	0	0	738.5	0	34	34
05-11-2023	375.4	0	0	0	329.1	0	0	0	704.5	0	0	0
06-11-2023	375.4	0	102	102	329.1	0	47.6	19	704.5	0	149.6	121
07-11-2023	272.3	0	39	39	281.5	0	20.8	5	553.8	0	59.8	44
08-11-2023	233.3	0	42.6	42.6	260.7	0	54.5	5	494	0	97.1	47.6
09-11-2023	190.7	194	78	78	206.2	258	30	0	396.9	452	108	78
10-11-2023	307.2	258	147	147	436.8	0	25.4	0	744	258	172.4	147
11-11-2023	418.2	0	20	20	411.4	0	0	0	829.6	0	20	20
12-11-2023	398.2	0	0	0	411.4	0	0	0	809.6	0	0	0
13-11-2023	398.2	348	74	74	411.4	62	39	0	809.6	410	113	74
14-11-2023	672.2	0	95	95	434.4	0	42	3	1106.6	0	137	98
15-11-2023	577.2	0	95	95	392.4	0	42	3	969.6	0	137	98
16-11-2023	482.2	0	95	95	350.4	0	42	3	832.6	0	137	98
17-11-2023	387.2	0	95	95	308.4	0	42	3	695.6	0	137	98
18-11-2023	292.2	0	0	0	266.4	0	0	0	558.6	0	0	0
19-11-2023	292.2	0	0	0	266.4	0	0	0	558.6	0	0	0
20-11-2023	292.2	0	95	95	266.4	0	45	6	558.6	0	140	101
21-11-2023	197.2	0	95	95	221.4	0	42	3	418.6	0	137	98
22-11-2023	102.2	0	95	95	179.4	0	42	3	281.6	0	137	98



Q&A

Thank You!