Introduction

to activities of

CSI-DON Services LLC

Content

- Intro
- Aspen PIMS Reporting System
- APS (Aspen Petroleum Scheduler) Reporting System
- Interfaces
  - PIMS to APS
  - APS to IMM (PIMSoft Intelligent Movement Management)
  - Special file interfaces

Intro

- CSI-DON means:
  - **C**omputer **S**olution **I**nitiatives
  - **D**ata **O**ver **N**etwork
- Brief:

Data management and reporting of Aspen PIMS, Aspen Petroleum Scheduler data on SQL Server platform with connection to other systems (custom data, Aveva PI, LIMS) presented on Power BI, Excel Power Query output using graphical functionality of R or Python.

On following slides there are couple of examples how CSI-DON can contribute to your projects.

Data Falaj: Data droplets become information to make fertile the oazis

Aspen PIMS Reporting System

P-PIMS , X-PIMS

SQL Server database

Excel 365

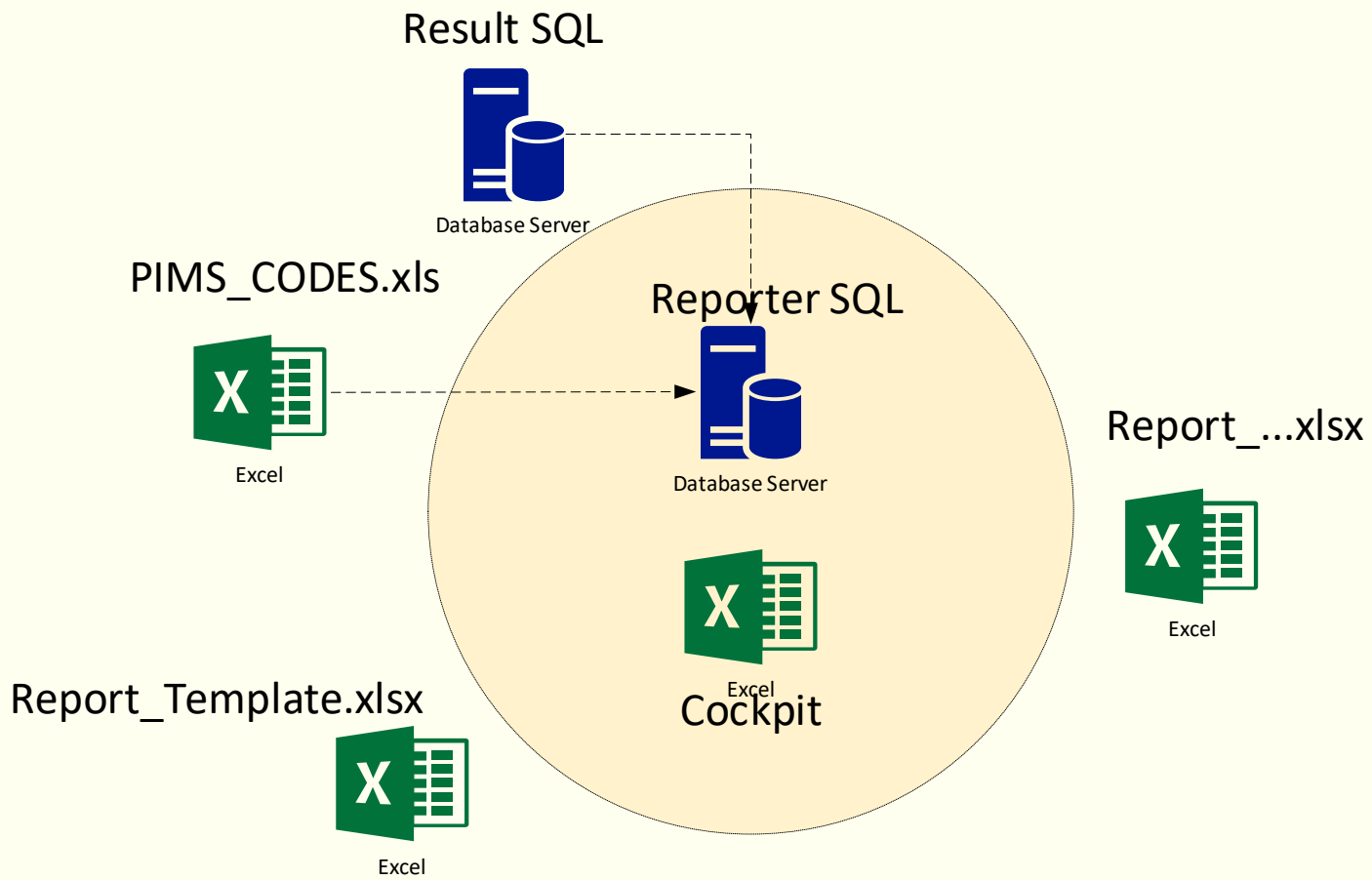
Aspen PIMS Reporting System

- Aspen PIMS provides the opportunity to direct its output to SQL Server database instead of traditional (and obsolete) MS Access mdb format database. To use SQL databases to publish LP results for the following reasons:

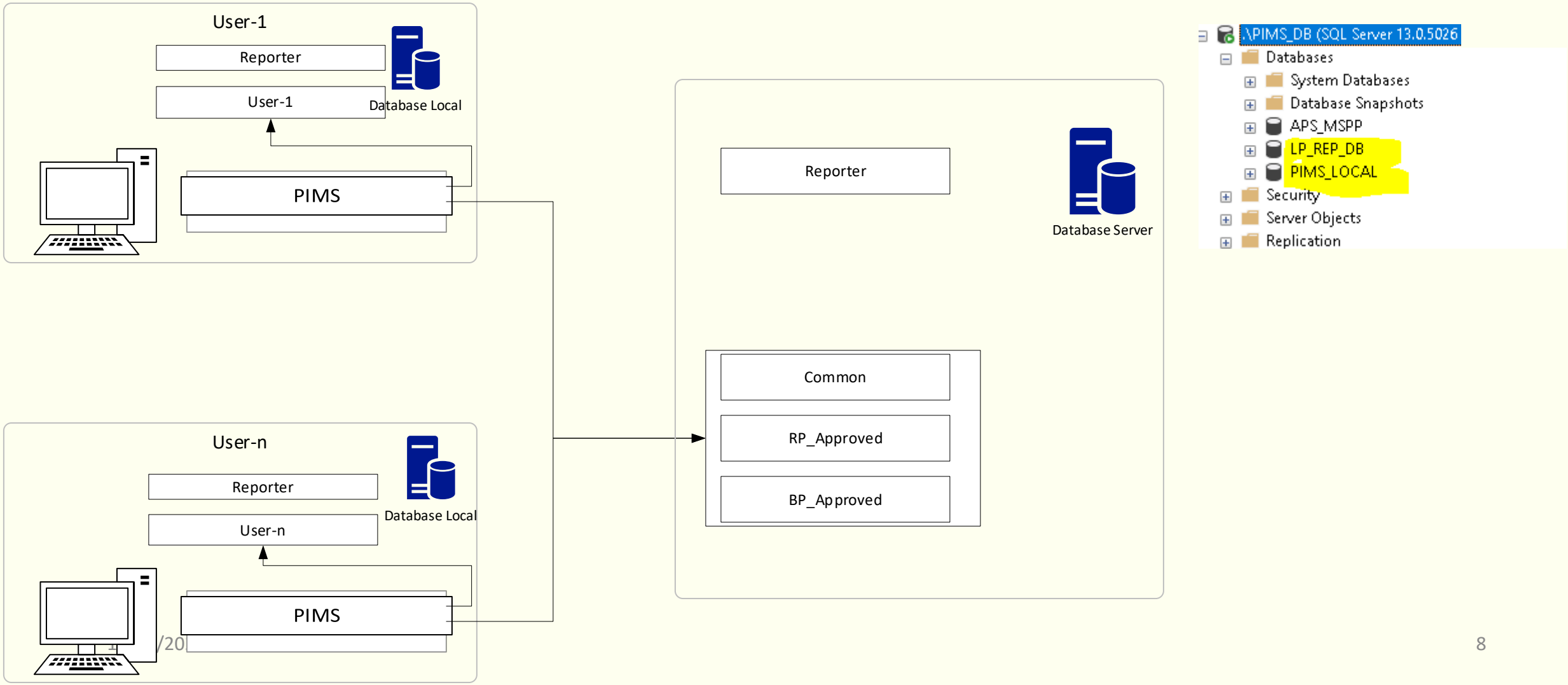
    1. The output and reporting can be centralized.
    2. Enable integration of other applications such as APS.
    3. Report writing is much faster reducing runtime.
    4. Will simplify structure and easier to maintain

Block scheme

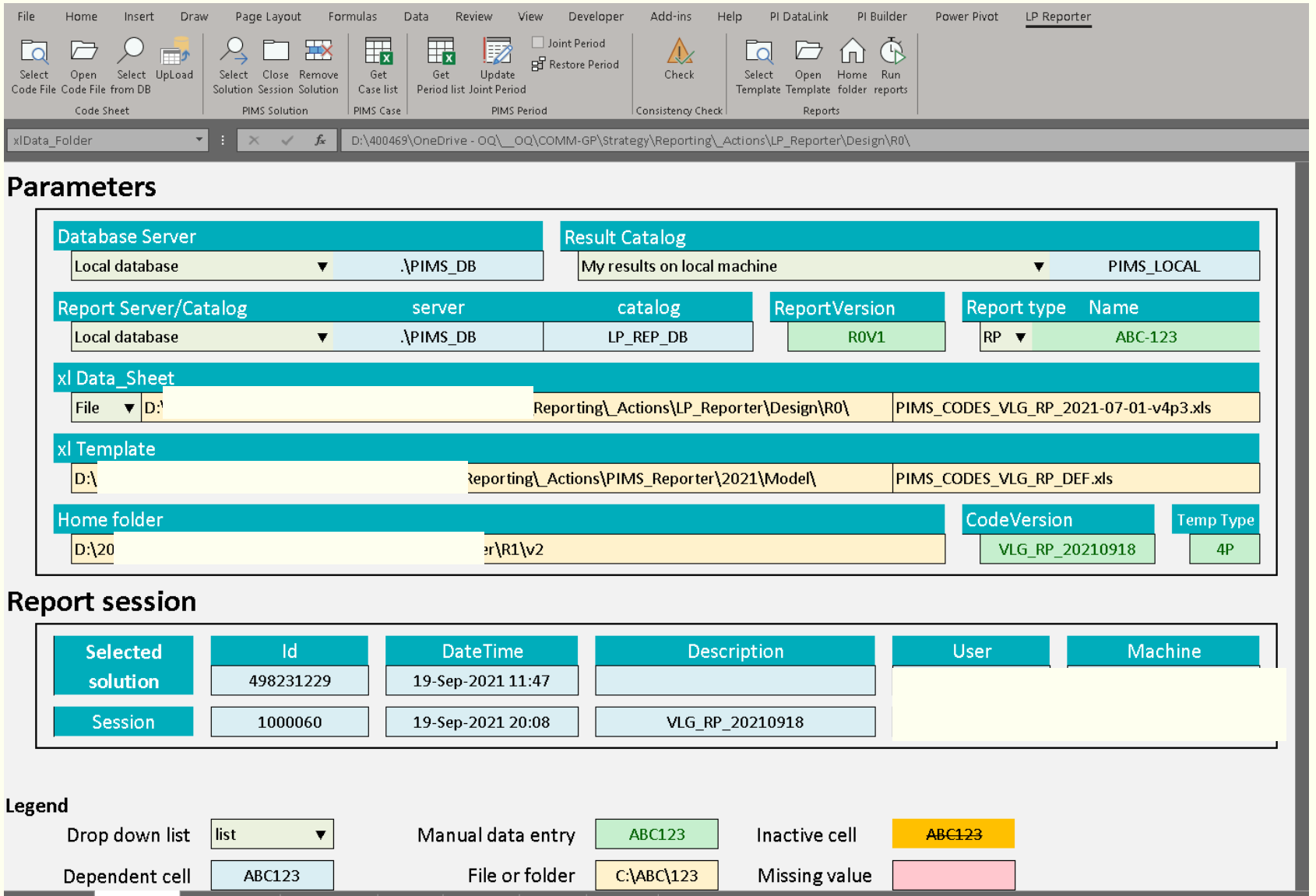
- Result SQL: PIMS output database
- PIMS_Codes: Customer specific configuration
- Report_Template: template to add additional report sheets in output file
- Reporter SQL: The Reporter database
- Cockpit: Control of parameters and required reports
- Report_..: Output with report sheets



Multiclient architecture



Cockpit


File Home Insert Draw Page Layout Formulas Data Review View Developer Add-ins Help PI DataLink PI Builder Power Pivot LP Reporter
Select Code File
Open Code File
Select from DB
UpLoad
Code Sheet
Select Solution
Close Session
Remove Solution
PIMS Solution
Get Case list
PIMS Case
Get Period list
Update Joint Period
Joint Period
Restore Period
PIMS Period
Check
Consistency Check
Select Template
Open Template
Home folder
Run reports
Reports
xlData_Folder
D:\400469\OneDrive - OQ__OQ\COMM-GP\Strategy\Reporting_Actions\LP_Reporter\Design\R0\
Parameters
Database Server
Local database
.\PIMS_DB
Result Catalog
My results on local machine
PIMS_LOCAL
Report Server/Catalog
server
catalog
Local database
.\PIMS_DB
LP_REP_DB
ReportVersion
R0V1
Report type
Name
RP
ABC-123
xl Data_Sheet
File
D:\
Reporting_Actions\LP_Reporter\Design\R0\
PIMS_CODES_VLG_RP_2021-07-01-v4p3.xls
xl Template
D:\
eporting_Actions\PIMS_Reporter\2021\Model\
PIMS_CODES_VLG_RP_DEF.xls
Home folder
D:\20
er\R1\v2
CodeVersion
VLG_RP_20210918
Temp Type
4P
Report session
Selected solution
Id
DateTime
Description
User
Machine
498231229
19-Sep-2021 11:47
Session
1000060
19-Sep-2021 20:08
VLG_RP_20210918
Legend
Drop down list
list
Manual data entry
ABC123
Inactive cell
ABC123
Dependent cell
ABC123
File or folder
C:\ABC\123
Missing value

List of reports

Reports	select to run	Status	Base Sheet	Title
Plan Reports				
Inventory	x	Completed	Inventory	INVENTORY
Transfers	x	Completed	Transfers	TRANSFERS
Group Capacities	x	Completed	Group_Caps	GROUP CAPS
MatBal all	x	Completed	MatBal	MATERIAL BALANCE
Unit Op	x	Completed	UnitOp	UNIT OPERATION
Quality	x	Completed	Qual_Mat	QUALITIES by material order
Local Cost/Price	x	Completed	LocalCostPrice	LOCAL TRANSFER COST AND PRICE
Process Cap. Limit	x	Completed	ProcCapLimits	PROCESS CAPACITY LIMITS
Process Parameters	x	Completed	ProcParams	PROCESS PARAMETERS
Objective Function	x	Completed	Objective_Function	OBJECTIVE FUNCTION
Blendings	x	Completed	Blendings	Blendings
Recipe & Quality	x	Completed	Recipe	Recipe & Quality
Margin Reports				
ProdBal	x	Completed	PROD_kt_and_GM	PRODUCTION BALANCE
GroupProdBal_REF	x	Completed	ProdBal	PRODUCTION BALANCE of MAF + SR Refinerie
GroupProdBal_PRD	x	Completed	ProdBal	PRODUCTION BALANCE of All production site
MarginalValue	x	Completed	MargValue	Marginal Value
Finance Reports				
Treasury	x	Completed	Treasury	CashFlow forecast for Treasury
Diagnostic Reports				
Dynamic IPB	x	Completed	Dynamic_IPB	Dynamic IPB
Stream Density	x	Completed	Stream_Density	Stream Density
UnGrouped Streams	x	Completed	UnGrouped_Streams	UnGrouped Streams In Prodbal_PRD

Aspen Petroleum Scheduler Reporting System

APS

SQL Server database

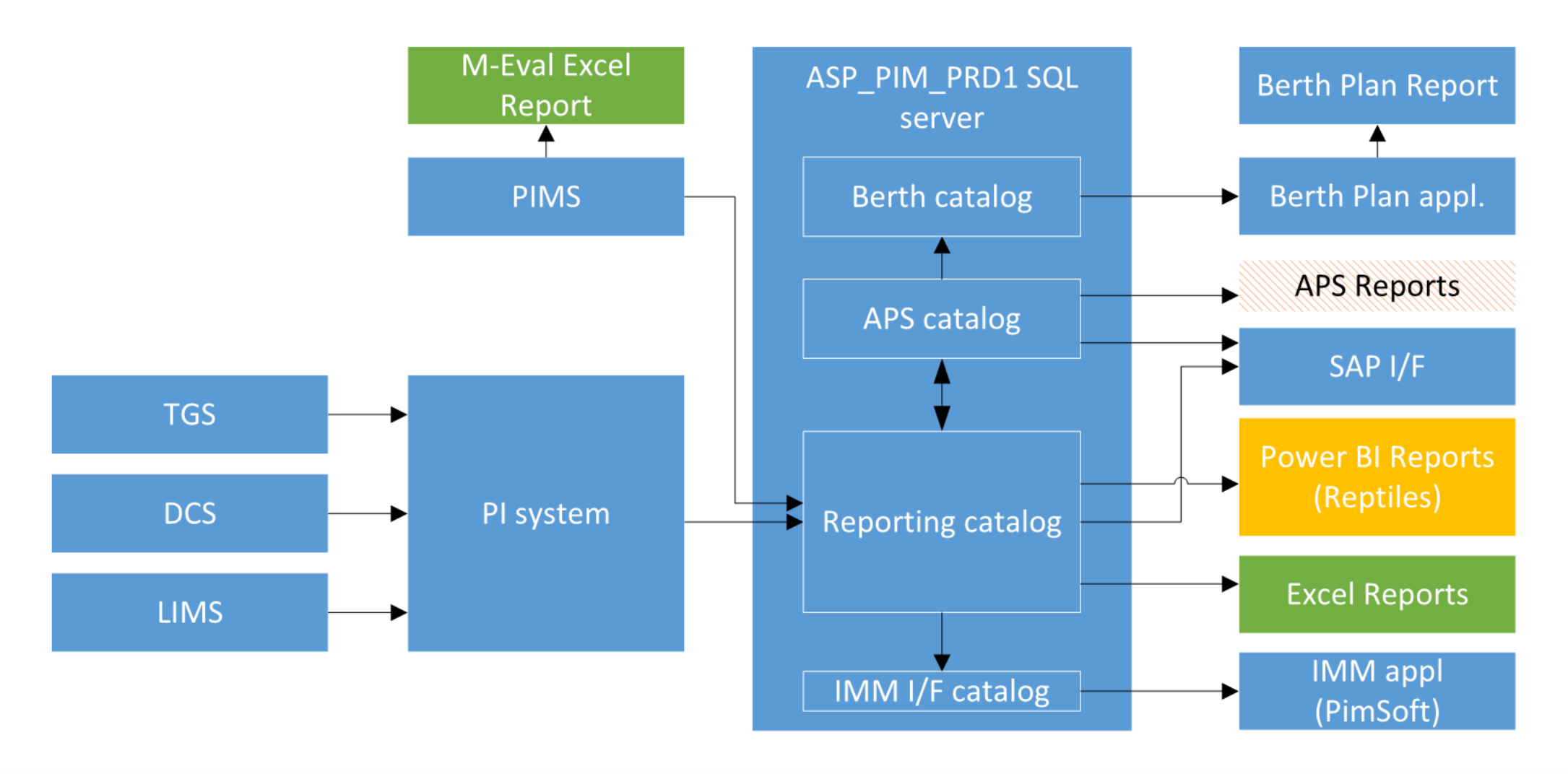
Excel 365

Power BI

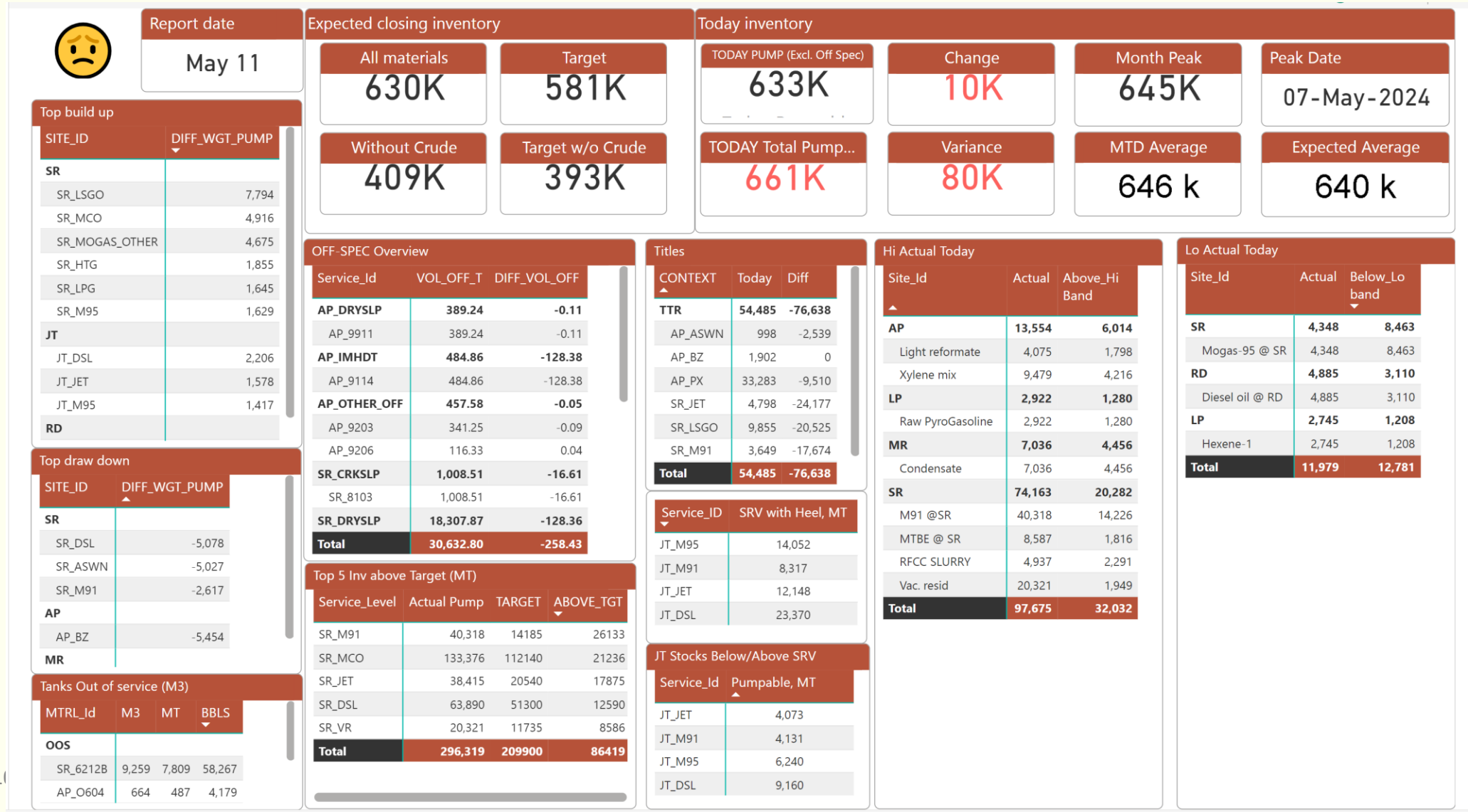
APS Reporting System

- To prepare Plan vs Schedule vs Actual reports on following areas:
  - Inventory management
  - Unit operations
  - Product lifting and jetty schedule
- Actuals are based on real time data from PI undergone by calculation, correction, aggregation procedures (e.g. tank inventory calculated from tank levels corrected by temperature and pressure as well as ASTM volume correction factor).
- Plan figures come from PIMS database via PIMS-APS interface.
- Scheduling data from APS database combined with customer specific information and configuration tables supported by SQL procedures and functions.

Architecture



Examples: Inventory Daily Dashboard



Report date: May 11

Expected closing inventory

All materials	Target	Without Crude	Target w/o Crude
630K	581K	409K	393K

Today inventory

TODAY PUMP (Excl. Off Spec)	Change	Month Peak	Peak Date
633K	10K	645K	07-May-2024

TODAY Total Pump...	Variance	MTD Average	Expected Average
661K	80K	646 k	640 k

Top build up

SITE_ID	DIFF_WGT_PUMP
SR	
SR_LSGO	7,794
SR_MCO	4,916
SR_MOGAS_OTHER	4,675
SR_HTG	1,855
SR_LPG	1,645
SR_M95	1,629
JT	
JT_DSL	2,206
JT_JET	1,578
JT_M95	1,417
RD	

Top draw down

SITE_ID	DIFF_WGT_PUMP
SR	
SR_DSL	-5,078
SR_ASWN	-5,027
SR_M91	-2,617
AP	
AP_BZ	-5,454
MR	

Tanks Out of service (M3)

MTRL_Id	M3	MT	BBLS
OOS			
SR_6212B	9,259	7,809	58,267
AP_O604	664	487	4,179

OFF-SPEC Overview

Service_Id	VOL_OFF_T	DIFF_VOL_OFF
AP_DRYSLP	**389.24**	**-0.11**
AP_9911	389.24	-0.11
AP_IMHDT	**484.86**	**-128.38**
AP_9114	484.86	-128.38
AP_OTHER_OFF	**457.58**	**-0.05**
AP_9203	341.25	-0.09
AP_9206	116.33	0.04
SR_CRKSLP	**1,008.51**	**-16.61**
SR_8103	1,008.51	-16.61
SR_DRYSLP	**18,307.87**	**-128.36**
Total	**30,632.80**	**-258.43**

Top 5 Inv above Target (MT)

Service_Level	Actual Pump	TARGET	ABOVE_TGT
SR_M91	40,318	14185	26133
SR_MCO	133,376	112140	21236
SR_JET	38,415	20540	17875
SR_DSL	63,890	51300	12590
SR_VR	20,321	11735	8586
Total	**296,319**	**209900**	**86419**

Titles

CONTEXT	Today	Diff
TTR	**54,485**	**-76,638**
AP_ASWN	998	-2,539
AP_BZ	1,902	0
AP_PX	33,283	-9,510
SR_JET	4,798	-24,177
SR_LSGO	9,855	-20,525
SR_M91	3,649	-17,674
Total	**54,485**	**-76,638**

Service_ID	SRV with Heel, MT
JT_M95	14,052
JT_M91	8,317
JT_JET	12,148
JT_DSL	23,370

JT Stocks Below/Above SRV

Service_Id	Pumpable, MT
JT_JET	4,073
JT_M91	4,131
JT_M95	6,240
JT_DSL	9,160

Hi Actual Today

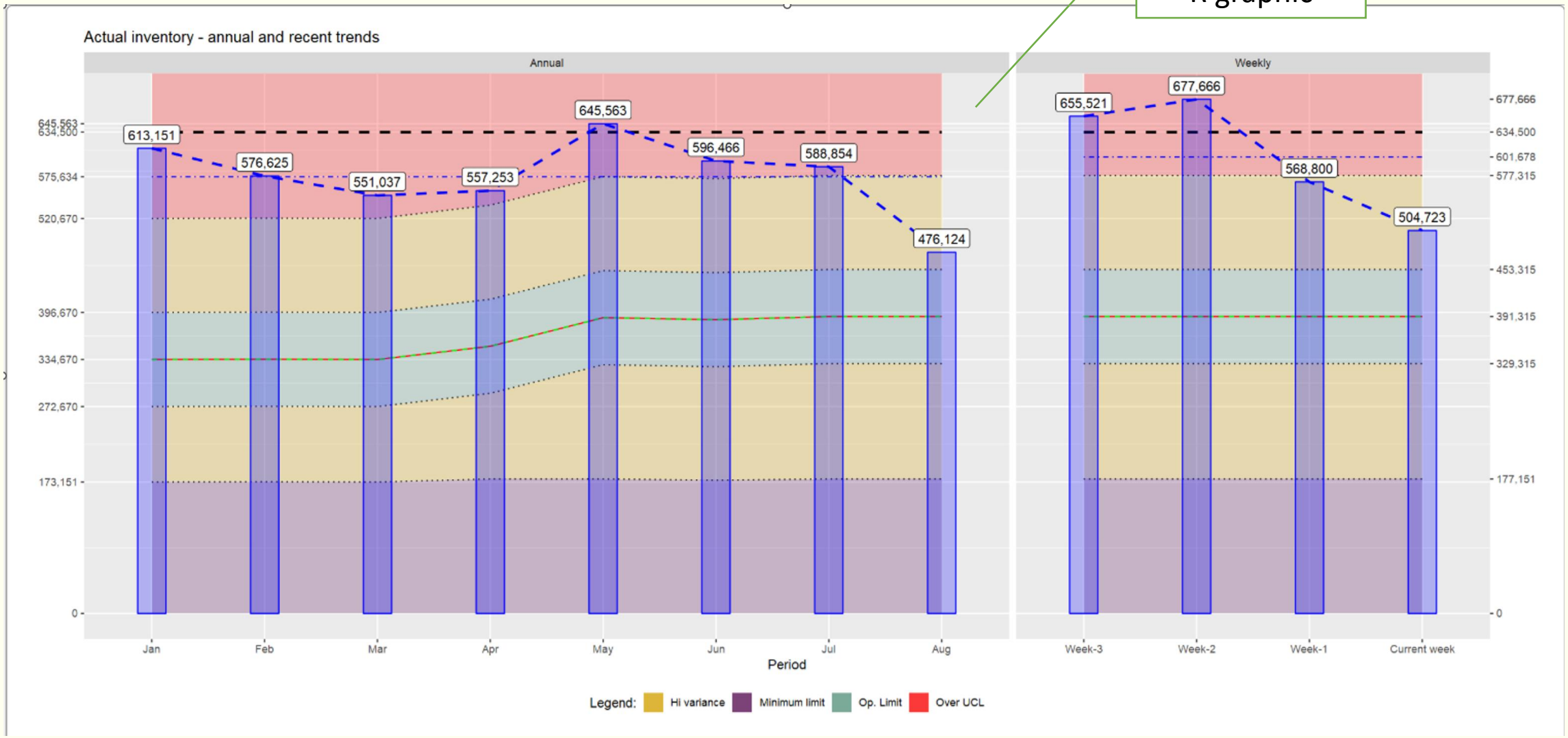
Site_Id	Actual	Above_Hi Band
AP	**13,554**	**6,014**
Light reformate	4,075	1,798
Xylene mix	9,479	4,216
LP	**2,922**	**1,280**
Raw PyroGasoline	2,922	1,280
MR	**7,036**	**4,456**
Condensate	7,036	4,456
SR	**74,163**	**20,282**
M91 @SR	40,318	14,226
MTBE @ SR	8,587	1,816
RFCC SLURRY	4,937	2,291
Vac. resid	20,321	1,949
Total	**97,675**	**32,032**

Lo Actual Today

Site_Id	Actual	Below_Lo band
SR	**4,348**	**8,463**
Mogas-95 @ SR	4,348	8,463
RD	**4,885**	**3,110**
Diesel oil @ RD	4,885	3,110
LP	**2,745**	**1,208**
Hexene-1	2,745	1,208
Total	**11,979**	**12,781**

Examples: Inventory averages

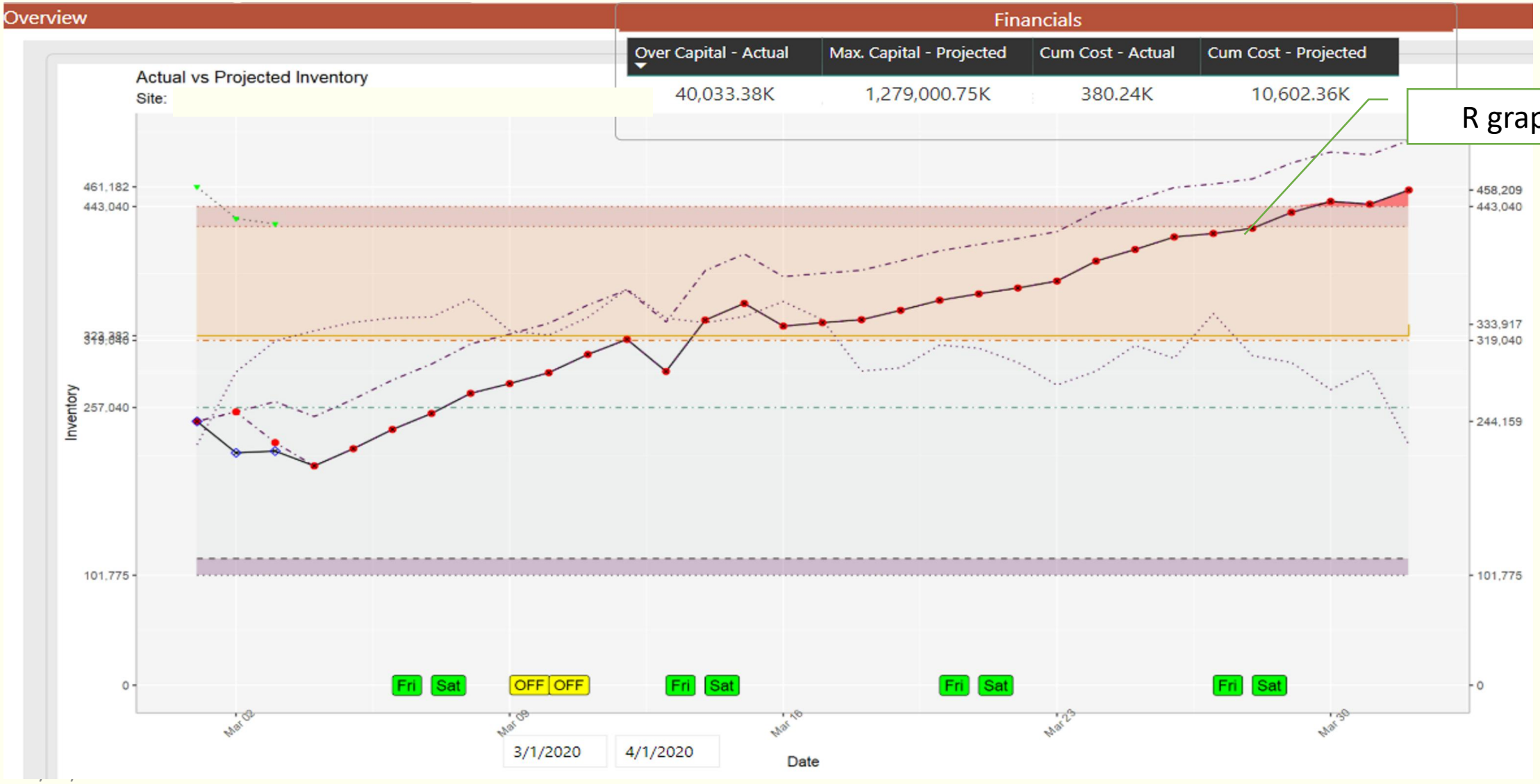
R graphic



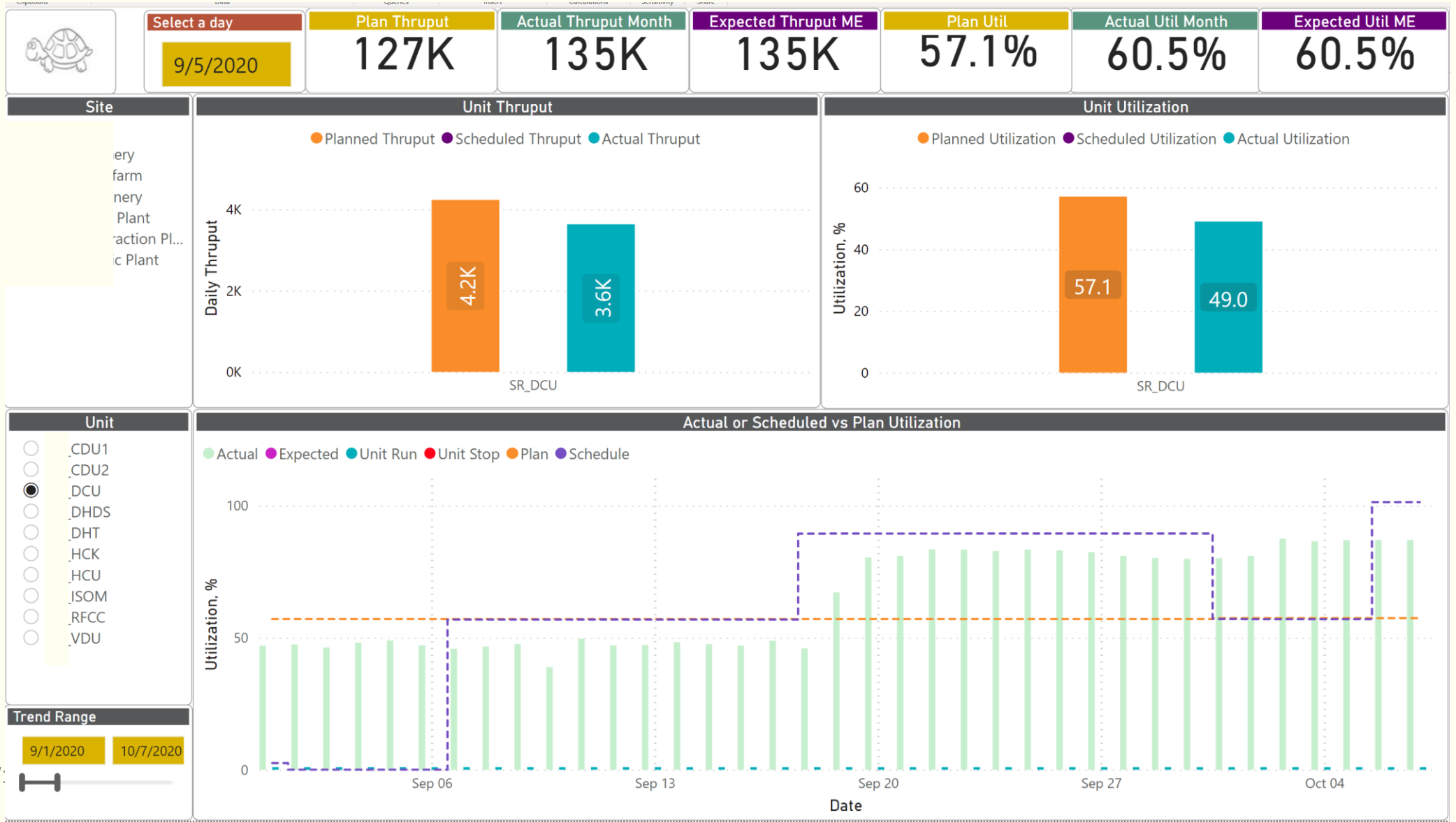
Examples: Inventory categories

R graphic

Examples: Inventory trend



Examples: Unit Operation

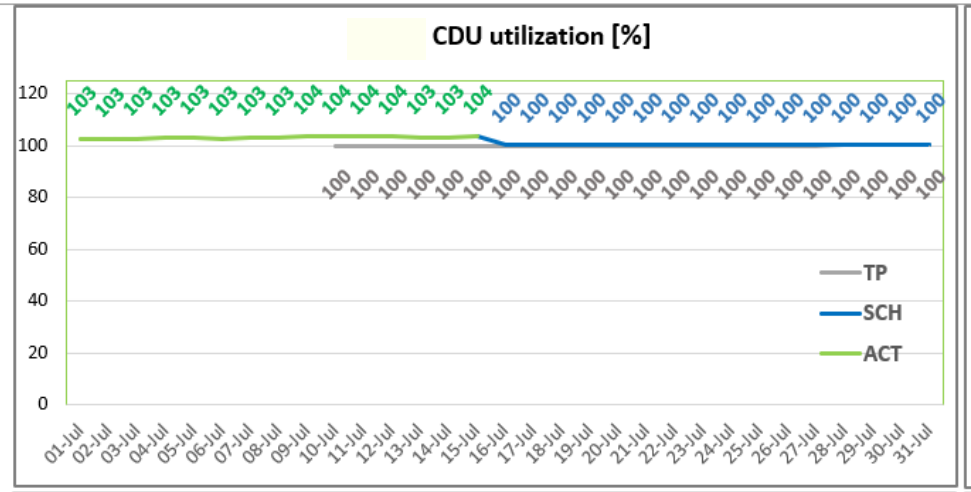


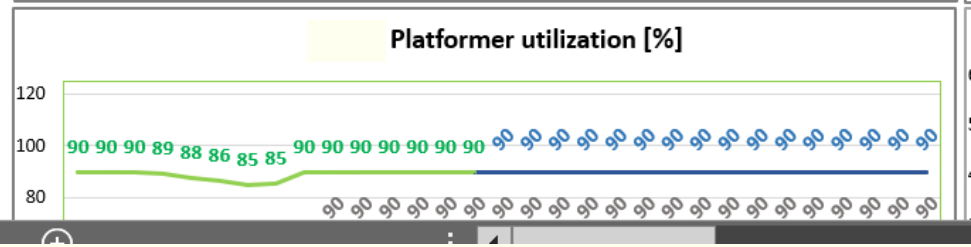
SMART Scheduling reports

Monthly Thruput report

REFINERY

Date	Context	CDU		NHT		Penex		Platformer		Kero Merox		DHDS	
		[MT/D]	[%]	[MT/D]	[%]	[MT/D]	[%]	[MT/D]	[%]	[MT/D]	[%]	[MT/D]	[%]
01-07-24	ACT	14,981	103	2,590	81	846	79	1,750	90	1,299	93	3,200	100
02-07-24	ACT	14,942	103	2,565	81	849	79	1,750	90	1,304	93	3,200	100
03-07-24	ACT	14,979	103	2,609	82	851	80	1,750	90	1,304	93	3,200	100
04-07-24	ACT	15,012	103	2,677	84	872	82	1,735	89	1,307	93	3,200	100
05-07-24	ACT	15,039	103	2,696	85	876	82	1,710	88	1,287	92	3,200	100
06-07-24	ACT	14,983	103	2,638	83	864	81	1,686	86	1,312	94	3,200	100
07-07-24	ACT	14,998	103	2,687	84	865	81	1,650	85	1,312	94	3,200	100
08-07-24	ACT	14,984	103	2,754	86	859	80	1,664	85	1,302	93	3,200	100
09-07-24	ACT	15,093	104	2,720	85	826	77	1,747	90	1,285	92	3,201	100
10-07-24	ACT	15,112	104	2,743	86	857	80	1,750	90	1,298	93	3,200	100
11-07-24	ACT	15,096	104	2,718	85	861	81	1,750	90	1,284	92	3,200	100
12-07-24	ACT	15,093	104	2,718	85	880	82	1,750	90	1,296	93	3,200	100
13-07-24	ACT	15,058	103	2,692	85	906	85	1,750	90	1,300	93	3,200	100
14-07-24	ACT	15,051	103	2,674	84	877	82	1,750	90	1,305	93	3,200	100
15-07-24	ACT	15,093	104	2,704	85	870	81	1,750	90	1,312	94	3,200	100
16-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100
17-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100
18-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100
19-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100
20-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100
21-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100
22-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100
23-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100
24-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100
25-07-24	SCH	14,600	100	2,669	84	777	73	1,750	90	1,300	93	3,200	100





Expected Tracking & Overview

		Jul-2024	UOM	RP	TP	EXPECTED MONTHLY FIGURES																																TP
						1	2	3	4	5	6	7	8	9	10	13	13	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	km3
SOHAR		Total CDU processing	km3	1,000		1,025	1,025	1,025	1,025	1,025	1,025	1,025	1,025	1,024	1,022	1,022	1,022	1,022	1,022	1,022																	-1000
	KEY UNITS	CDU-1 throughput	km3	613		625	625	625	625	625	625	625	625	625	624	624	624	624	624	624																	-613
		CDU-2 throughput	km3	387		400	400	400	400	400	400	400	400	399	398	398	398	398	397	397																	-387
		DHDS throughput	km3	122		120	120	120	120	120	120	120	120	127	135	136	136	136	136	132																	-122
		HCU throughput	km3	397		462	462	462	462	462	462	462	462	455	454	454	454	454	453	453																	-397
		RFCC throughput	km3	371		317	317	317	317	317	317	317	317	361	361	361	361	361	369	369																	-371
		DCU throughput	km3	204		240	240	240	240	240	240	240	240	240	240	216	216	216	202	195																	-204
		AP - Aromatizer throughput	km3	161		112	112	112	112	112	112	112	112	116	180	181	181	181	181	180																	-161
	CLOSING INV.	Atmos Res.	km3	61		247	247	247	247	247	247	247	247	73	74	79	79	79	80	82																	-61
		VGO	km3	17		144	144	144	144	144	144	144	144	22	22	25	25	25	25	26																	-17
		Vac. Res.	km3	39		20	20	20	20	20	20	20	20	20	20	19	19	19	19	19																	-39
MAF		Crude processing	km3	529		530	530	530	530	530	530	530	530	531	531	533	533	533	533	534																	-529
	KEY UNITS	Platformer	km3	69		74	74	74	74	74	74	74	74	74	74	74	74	74	74	74																	-69
		Isom	km3	40		38	38	38	38	38	38	38	38	38	38	38	38	38	39	39																	-40
		Diesel HDS	km3	116		118	118	118	118	118	118	118	118	118	118	118	118	118	119	119																	-116
		Kero MU	km3	50		51	51	51	51	51	51	51	51	51	51	51	51	51	51	51																	-50
	KEY PROD	JET A1	km3	50		51	51	51	51	51	51	51	51	51	51	51	51	51	51	51																	-50
		MOGAS blending	km3	96		102	102	102	102	102	102	102	102	104	103	103	103	103	106	105																	-96
		Gasoil	km3	115		117	117	117	117	117	117	117	117	117	117	118	118	118	118	118																	-115

Monthly Unit Report

Date	Context	Feed	Utili-zation	SPG	LPG			R/D		Naphta			R/D			Kerosene			R/D			Gasoil			R/D				Atomspheric residue			R/D		
		[m3/d]	[%]	[-]	[m3/d]	[%]	SPG	LPG Merox	Off-spec	[m3/d]	[%]	SPG	NHT unit	Tank	off-spec	[m3/d]	[%]	SPG	KM	Tank	Slop	[m3/d]	[%]	SPG	HCU	DHDS	Tank	Slop	[m3/d]	[%]	SPG	VDU	RFCC	T
01-07-24	ACT	12,729	97	0.876	135	1.1%	0.564	135		2,052	16.1%	0.709	1,875	177		1,183	9.3%	0.790	1,183			2,200	17.3%	0.843	2,148	137	57		8,143	64.0%	0.949	6,476	1,480	
02-07-24	ACT	12,951	99	0.876	119	0.9%	0.564	119		2,136	16.5%	0.710	1,960	176		1,172	9.0%	0.790	1,172			2,231	17.2%	0.841	2,150	137	84		8,300	64.1%	0.949	6,860	1,200	
03-07-24	ACT	12,976	99	0.877	119	0.9%	0.564	119		2,134	16.4%	0.709	1,956	178		1,165	9.0%	0.790	1,165			2,231	17.2%	0.840	2,179	133	57		8,352	64.4%	0.949	6,912	1,200	
04-07-24	ACT	12,913	99	0.877	127	1.0%	0.559	127		2,104	16.3%	0.710	1,922	182		1,179	9.1%	0.789	1,179			2,189	17.0%	0.841	2,087	135	104		8,323	64.5%	0.953	6,883	1,200	
05-07-24	ACT	13,013	99	0.878	116	0.9%	0.559	116		2,171	16.7%	0.709	1,992	179		1,185	9.1%	0.788	1,185			2,247	17.3%	0.841	2,133	138	115		8,316	63.9%	0.953	6,877	1,199	
06-07-24	ACT	12,898	99	0.877	112	0.9%	0.559	112		2,178	16.9%	0.711	1,998	179		1,148	8.9%	0.789	1,148			2,232	17.3%	0.839	2,137	138	97		8,200	63.6%	0.953	6,867	1,199	
07-07-24	ACT	12,178	93	0.876	116	1.0%	0.559	116		2,072	17.0%	0.711	1,892	180		1,146	9.4%	0.789	1,146			2,075	17.0%	0.839	2,055	136	28		7,647	62.8%	0.953	6,356	1,172	
08-07-24	ACT	10,560	81	0.877	117	1.1%	0.559	117		1,774	16.8%	0.711	1,596	178		1,144	10.8%	0.789	1,144			1,850	17.5%	0.840	1,862	135	0		6,391	60.5%	0.953	5,190	1,080	
09-07-24	ACT	10,586	81	0.877	116	1.1%	0.559	116		1,771	16.7%	0.711	1,597	174		950	9.0%	0.794	950			2,042	19.3%	0.839	2,030	138	21		6,403	60.5%	0.953	5,203	1,080	
10-07-24	ACT	12,402	95	0.879	98	0.8%	0.559	98		2,139	17.2%	0.710	1,965	174		964	7.8%	0.790	964			2,336	18.8%	0.841	2,225	138	111		7,752	62.5%	0.953	6,552	1,080	
11-07-24	ACT	12,963	99	0.877	100	0.8%	0.559	100		2,234	17.2%	0.709	2,058	176		1,198	9.2%	0.785	1,198			2,173	16.8%	0.839	2,163	139	18		8,199	63.3%	0.953	6,984	1,095	
12-07-24	ACT	12,916	99	0.878	113	0.9%	0.559	113		2,220	17.2%	0.711	2,042	178		1,143	8.8%	0.788	1,143			2,224	17.2%	0.840	2,125	139	101		8,153	63.1%	0.953	6,952	1,080	
13-07-24	ACT	12,961	99	0.876	112	0.9%	0.559	112		2,233	17.2%	0.709	2,056	177		1,159	8.9%	0.789	1,159			2,244	17.3%	0.840	2,178	138	69		8,165	63.0%	0.953	6,965	1,080	
14-07-24	ACT																																	
15-07-24	ACT																																	
16-07-24	SCH	13,085	100	0.881	196	1.5%	0.563	180		2,274	#####	#####	255	1,987		1,178	9.0%	#####	1,167			2,098	#####	#####	2,082				7,647	58.4%	0.952	7,647		
17-07-24	SCH	13,085	100	0.881	196	1.5%	0.563	180		2,275	#####	#####	256	1,987		1,178	9.0%	#####	1,167			2,099	#####	#####	2,083				7,644	58.4%	0.952	7,644		
18-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,282	#####	#####	263	1,987		1,182	9.0%	#####	1,171			2,111	#####	#####	2,095				7,622	58.2%	0.952	7,622		
19-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,282	#####	#####	263	1,987		1,182	9.0%	#####	1,171			2,111	#####	#####	2,095				7,622	58.2%	0.952	7,622		
20-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,282	#####	#####	263	1,987		1,182	9.0%	#####	1,171			2,111	#####	#####	2,095				7,621	58.2%	0.952	7,621		
21-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,285	#####	#####	266	1,987		1,183	9.0%	#####	1,172			2,117	#####	#####	2,100				7,612	58.2%	0.952	7,612		
22-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,285	#####	#####	266	1,987		1,183	9.0%	#####	1,172			2,117	#####	#####	2,100				7,612	58.2%	0.952	7,612		
23-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,285	#####	#####	266	1,987		1,183	9.0%	#####	1,172			2,117	#####	#####	2,100				7,612	58.2%	0.952	7,612		
24-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,283	#####	#####	264	1,987		1,182	9.0%	#####	1,171			2,113	#####	#####	2,097				7,619	58.2%	0.952	7,619		
25-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,283	#####	#####	264	1,987		1,182	9.0%	#####	1,171			2,113	#####	#####	2,097				7,619	58.2%	0.952	7,619		
26-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,283	#####	#####	264	1,987		1,182	9.0%	#####	1,171			2,113	#####	#####	2,097				7,619	58.2%	0.952	7,619		
27-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,283	#####	#####	264	1,987		1,182	9.0%	#####	1,172			2,115	#####	#####	2,099				7,616	58.2%	0.952	7,616		
28-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,283	#####	#####	264	1,987		1,182	9.0%	#####	1,172			2,115	#####	#####	2,099				7,616	58.2%	0.952	7,616		
29-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,283	#####	#####	264	1,987		1,182	9.0%	#####	1,172			2,115	#####	#####	2,099				7,616	58.2%	0.952	7,616		
30-07-24	SCH	13,085	100	0.881	197	1.5%	0.563	180		2,284	#####	#####	265	1,987		1,183	9.0%	#####	1,172			2,116	#####	#####	2,100				7,614	58.2%	0.952	7,614		
31-07-24	SCH	13,085	100	0.881	197	1.5%	0.563			2,284	#####	#####	265	1,987		1,183	9.0%	#####	1,172			2,116	#####	#####	2,100				7,614	58.2%	0.952	7,614		
BP	PLN	387,231	96	0.881	5,037	1.3%	0.563	5,037		61,787	16.0%	0.713				29,567	7.6%	0.791	36,755			65,463	16.9%	0.845					226,033	58.4%	0.952			

LPG Report

Not schedule
APS currentl

Date	Context	Total daily Production	PRU C3			InAlk C4			CDU1 LPG			SHP ByPass	CDU2 LPG			DCU LPG			LMU3-C3C4 to Tank		HCU LPG			Aromizer LPG		
		[m3/d]	[m3/d]	Utilization [%]	Yield [%]	[m3/d]	Utilization [%]	Yield [%]	[m3/d]	Utilization [%]	Yield [%]	[m3/d]	[m3/d]	Utilization [%]	Yield [%]	[m3/d]	Utilization [%]	Yield [%]	[m3/d]	Utilizatio.. [%]	[m3/d]	Utilization [%]	Yield [%]	[m3/d]	Utilization [%]	Yield [%]
01-07-24	ACT	2,261	200	62	6.9%	418	37	46.7%	291	110	1.4%	344	135	97	1.1%	252	92	3.9%	396	65	194	94	1.3%	417	96	6.6%
02-07-24	ACT	2,881	444	93	10.2%	954	88	45.1%	286	110	1.4%	268	119	99	0.9%	247	103	3.5%	313	62	200	94	1.4%	416	97	6.6%
03-07-24	ACT	3,105	472	105	9.6%	1,069	95	46.6%	285	110	1.4%	357	119	99	0.9%	244	105	3.4%	306	62	202	95	1.4%	416	96	6.6%
04-07-24	ACT	3,156	548	105	11.2%	1,205	101	49.6%	289	110	1.4%	188	127	99	1.0%	271	105	3.8%	303	66	211	95	1.4%	414	96	6.6%
05-07-24	ACT	3,125	546	103	11.3%	1,268	103	51.3%	296	110	1.5%	89	116	99	0.9%	283	105	4.1%	305	65	211	95	1.4%	411	97	6.5%
06-07-24	ACT	3,210	507	103	10.5%	1,288	103	52.1%	298	109	1.5%	127	112	99	0.9%	279	103	3.9%	354	64	217	95	1.5%	419	97	6.7%
07-07-24	ACT	3,312	507	98	11.1%	1,265	98	53.7%	286	105	1.5%	159	116	93	1.0%	264	103	3.7%	350	64	223	95	1.5%	413	96	6.6%
08-07-24	ACT	3,099	422	91	10.0%	1,360	99	56.9%	252	95	1.4%	-3	117	81	1.1%	294	104	4.9%	340	67	221	94	1.5%	420	96	6.7%
09-07-24	ACT	3,289	532	97	11.7%	1,424	105	56.3%	274	99	1.5%	82	116	81	1.1%	276	105	4.6%	335	64	214	94	1.5%	428	97	6.8%
10-07-24	SCH	4,111	832	105	17.1%	1,178	97	50.3%	274	110	1.3%	312	193	100	1.5%	434	105	5.6%	1,018	140	334	95	2.3%	163	45	6.1%
11-07-24	SCH	4,121	836	105	17.1%	1,178	97	50.3%	275	110	1.4%	317	193	100	1.5%	434	105	5.6%	1,018	140	334	95	2.3%	163	45	6.1%
12-07-24	SCH	4,129	836	105	17.1%	1,178	97	50.3%	279	110	1.4%	321	194	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
13-07-24	SCH	4,133	837	105	17.1%	1,178	97	50.3%	279	110	1.4%	323	196	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
14-07-24	SCH	4,136	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	325	196	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
15-07-24	SCH	4,136	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	325	196	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
16-07-24	SCH	4,137	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	325	196	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
17-07-24	SCH	4,137	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	325	196	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
18-07-24	SCH	4,136	837	105	17.1%	1,178	97	50.3%	280	110	1.4%	325	196	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
19-07-24	SCH	4,136	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	325	196	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
20-07-24	SCH	4,137	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	325	196	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
21-07-24	SCH	4,137	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	326	197	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
22-07-24	SCH	4,137	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	326	197	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
23-07-24	SCH	4,137	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	326	197	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
24-07-24	SCH	4,137	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	326	197	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
25-07-24	SCH	4,137	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	326	197	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%
26-07-24	SCH	4,137	837	105	17.1%	1,178	97	50.3%	281	110	1.4%	326	197	100	1.5%	434	105	5.6%	1,019	140	334	95	2.3%	163	45	6.1%

PIMS-APS Interface

Aspen PIMS output

SQL server database

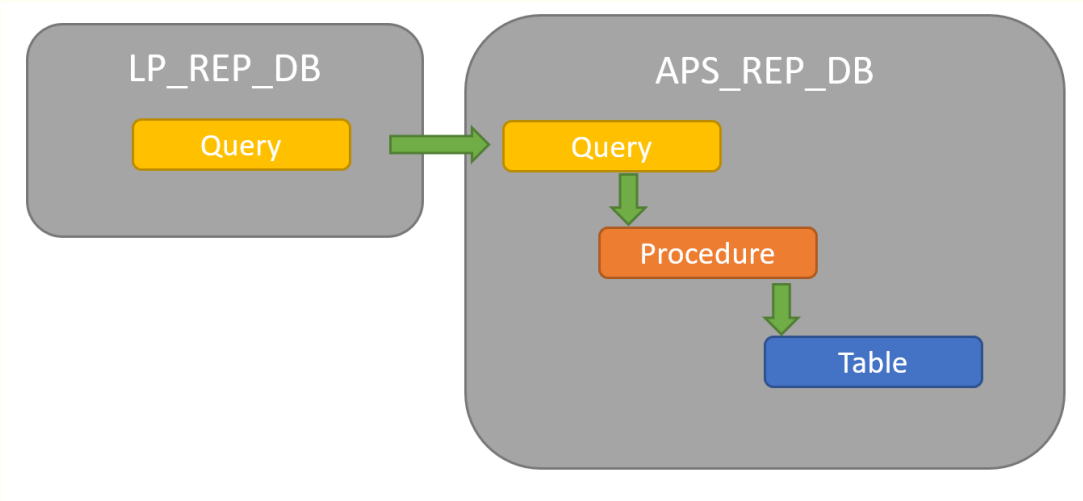
Excel 365

PIMS-APS Interface

- Beyond inbuilt PIMS-APS interface more data were required for Plan vs Schedule vs Actual reports:
  - Purchase
  - Sales
  - Transfers
  - Blend Products
  - Blend Components
  - Unit Operations
  - Inventory
  - Stream Quality, Density
  - Capacity

PIMS-APS Interface

Every context follows the same structure. A query at LP_REP_DB catalog collects necessary data from PIMS of selected solution-case. Another query at APS Reporting side linked to that and the procedure pushes data into the table for APS reporting use.



APS-IMM interface

SQL Server database

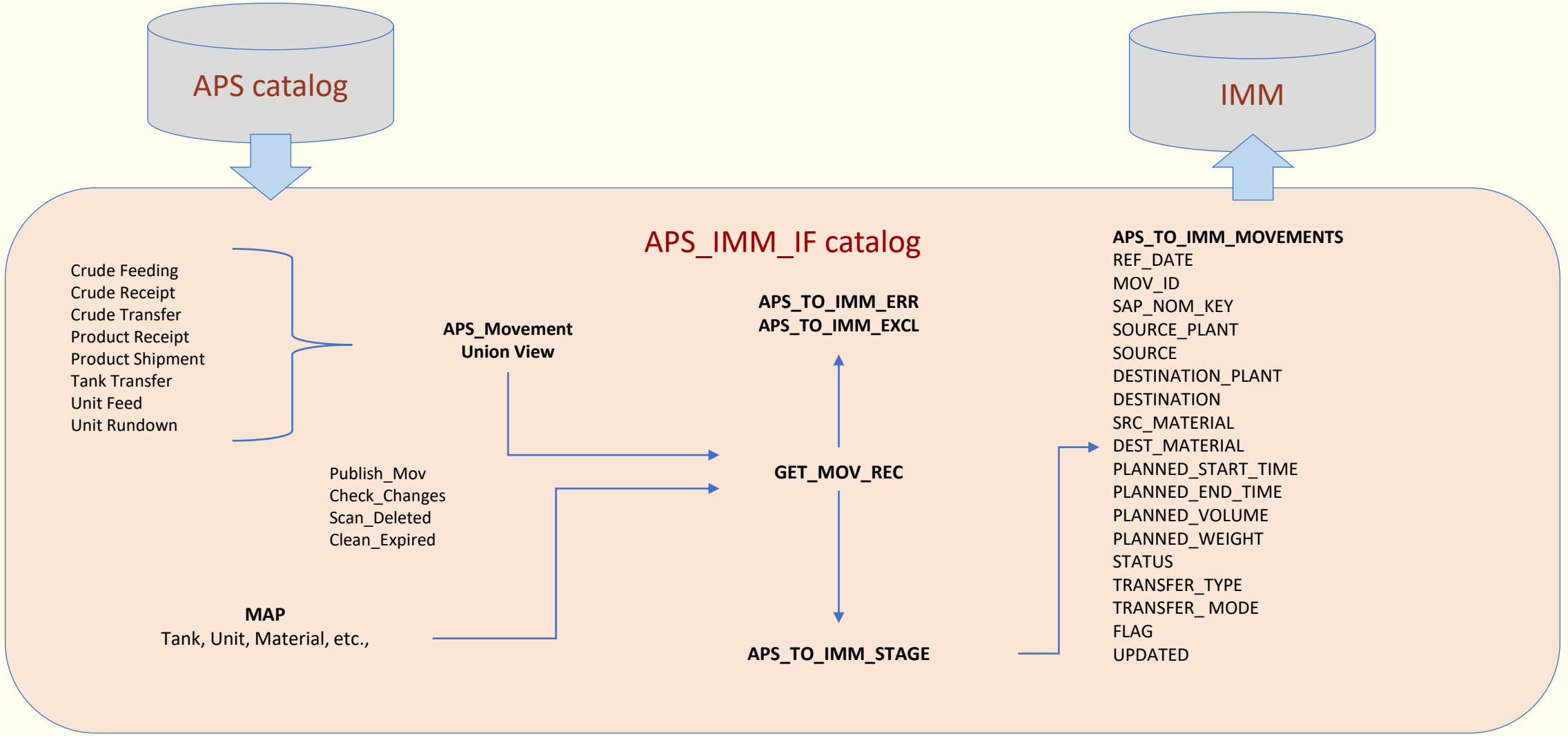
PIMSoft IMM

Custom manager application

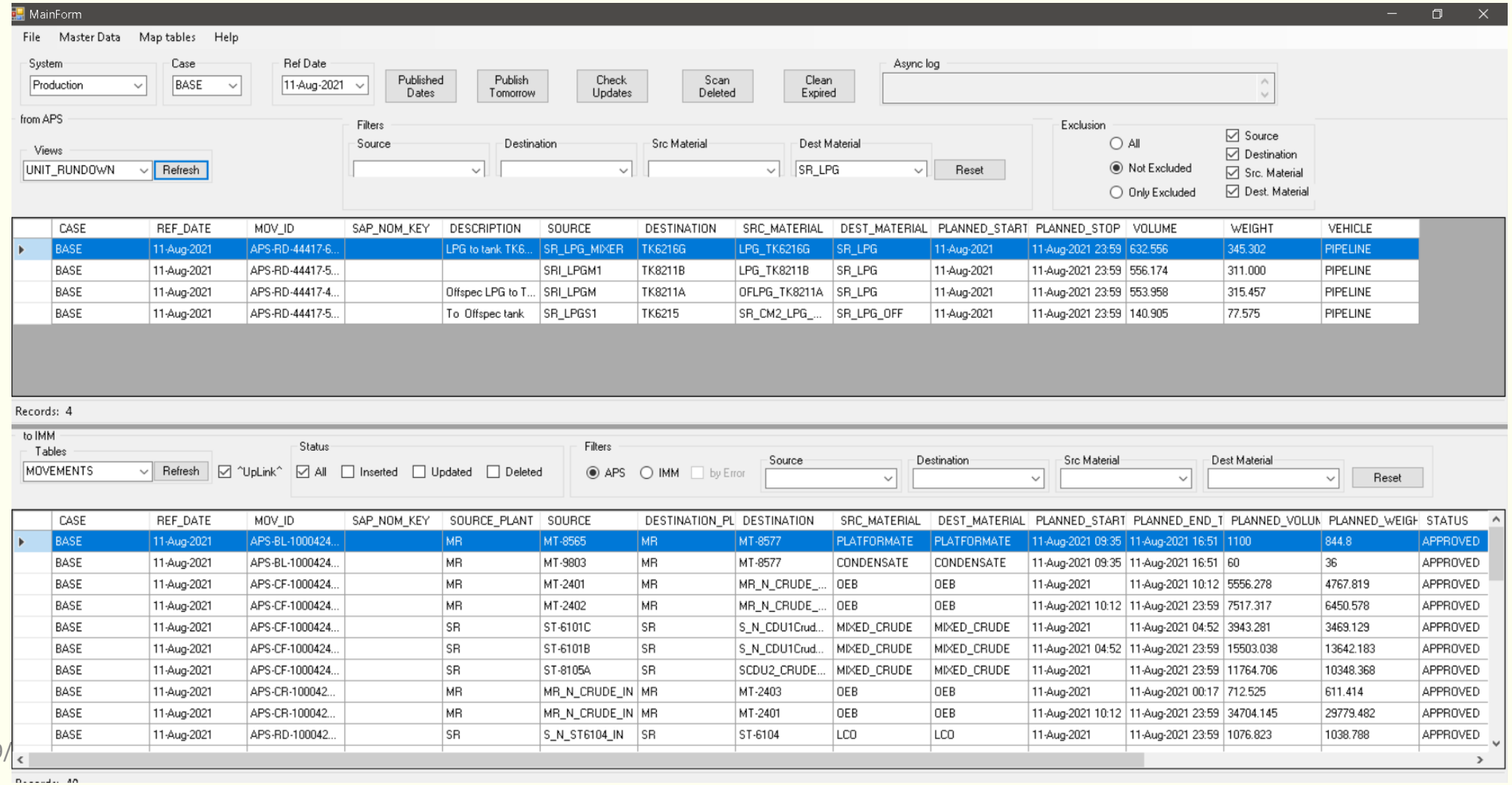
APS-IMM interface

- To provide information on scheduled movements to PIMSoft IMM (Intelligent Movement Management) system.
- Built in SQL Server database connected to APS datatables; special query presents required data to IMM system.
- There is a custom application to manage the configuration of the interface.

Architecture



Manager app


MainForm
File
Master Data
Map tables
Help
System
Production
Case
BASE
Ref Date
11-Aug-2021
Published Dates
Publish Tomorrow
Check Updates
Scan Deleted
Clean Expired
Async log
from APS
Views
UNIT_RUNDOWN
Refresh
Filters
Source
Destination
Src Material
Dest Material
SR_LPG
Reset
Exclusion
All
Not Excluded
Only Excluded
Source
Destination
Src. Material
Dest. Material
CASE REF_DATE MOV_ID SAP_NOM_KEY DESCRIPTION SOURCE DESTINATION SRC_MATERIAL DEST_MATERIAL PLANNED_START PLANNED_STOP VOLUME WEIGHT VEHICLE
BASE 11-Aug-2021 APS-RD-44417-6... LPG to tank TK6... SR_LPG_MIXER TK6216G LPG_TK6216G SR_LPG 11-Aug-2021 11-Aug-2021 23:59 632.556 345.302 PIPELINE
BASE 11-Aug-2021 APS-RD-44417-5... SRI_LPGM1 TK8211B LPG_TK8211B SR_LPG 11-Aug-2021 11-Aug-2021 23:59 556.174 311.000 PIPELINE
BASE 11-Aug-2021 APS-RD-44417-4... Offspec LPG to T... SRI_LPGM TK8211A OFLPG_TK8211A SR_LPG 11-Aug-2021 11-Aug-2021 23:59 553.958 315.457 PIPELINE
BASE 11-Aug-2021 APS-RD-44417-5... To Offspec tank SR_LPGS1 TK6215 SR_CM2_LPG_... SR_LPG_OFF 11-Aug-2021 11-Aug-2021 23:59 140.905 77.575 PIPELINE
Records: 4
to IMM
Tables
MOVEMENTS
Refresh
^UpLink^
Status
All
Inserted
Updated
Deleted
Filters
APS
IMM
by Error
Source
Destination
Src Material
Dest Material
Reset
CASE REF_DATE MOV_ID SAP_NOM_KEY SOURCE_PLANT SOURCE DESTINATION_PL DESTINATION SRC_MATERIAL DEST_MATERIAL PLANNED_START PLANNED_END_T PLANNED_VOLUM PLANNED_WEIGH STATUS
BASE 11-Aug-2021 APS-BL-1000424... MR MT-8565 MR MT-8577 PLATFORMATE PLATFORMATE 11-Aug-2021 09:35 11-Aug-2021 16:51 1100 844.8 APPROVED
BASE 11-Aug-2021 APS-BL-1000424... MR MT-9803 MR MT-8577 CONDENSATE CONDENSATE 11-Aug-2021 09:35 11-Aug-2021 16:51 60 36 APPROVED
BASE 11-Aug-2021 APS-CF-1000424... MR MT-2401 MR MR_N_CRUDE_... OEB OEB 11-Aug-2021 11-Aug-2021 10:12 5556.278 4767.819 APPROVED
BASE 11-Aug-2021 APS-CF-1000424... MR MT-2402 MR MR_N_CRUDE_... OEB OEB 11-Aug-2021 10:12 11-Aug-2021 23:59 7517.317 6450.578 APPROVED
BASE 11-Aug-2021 APS-CF-1000424... SR ST-6101C SR S_N_CDU1Crud... MIXED_CRUDE MIXED_CRUDE 11-Aug-2021 11-Aug-2021 04:52 3943.281 3469.129 APPROVED
BASE 11-Aug-2021 APS-CF-1000424... SR ST-6101B SR S_N_CDU1Crud... MIXED_CRUDE MIXED_CRUDE 11-Aug-2021 04:52 11-Aug-2021 23:59 15503.038 13642.183 APPROVED
BASE 11-Aug-2021 APS-CF-1000424... SR ST-8105A SR SCDU2_CRUDE... MIXED_CRUDE MIXED_CRUDE 11-Aug-2021 11-Aug-2021 23:59 11764.706 10348.368 APPROVED
BASE 11-Aug-2021 APS-CR-100042... MR MR_N_CRUDE_IN MR MT-2403 OEB OEB 11-Aug-2021 11-Aug-2021 00:17 712.525 611.414 APPROVED
BASE 11-Aug-2021 APS-CR-100042... MR MR_N_CRUDE_IN MR MT-2401 OEB OEB 11-Aug-2021 10:12 11-Aug-2021 23:59 34704.145 29779.482 APPROVED
BASE 11-Aug-2021 APS-RD-100042... SR S_N_ST6104_IN SR ST-6104 LCO LCO 11-Aug-2021 11-Aug-2021 23:59 1076.823 1038.788 APPROVED

Special interfaces

- Data Loaders
- Processing external data of 3rd party contractors on product loading:
  - Petcoke
  - Sulphur
- Automation: using Microsoft power automation tool:
  - Files arrive via email
  - Automated process upload into database
  - Data available for reporting

Thank you for your attention!