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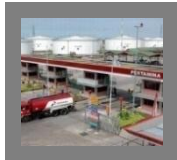
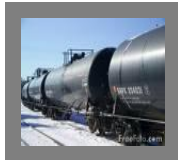
**Real Time Information** — Currency of the New Decade

Hilton San Francisco Union Square | San Francisco, CA

**April 26-28, 2010**

OSIsoft®

UC 2010



# Integrated Downstream Dashboard

Toto Nugroho Prantastyasto

Manager Performance Mgt. & Systems Development  
INTEGRATED SUPPLY CHAIN DIVISION

[www.pertamina.com](http://www.pertamina.com)



# Agenda



- PERTAMINA Overview
- Business Challenge
- Downstream Transformation
- Integrated Downstream Dashboard
  - ❑ Planning & Optimization
  - ❑ Integration Architecture
  - ❑ Wall Display & Room Design
  - ❑ Screen shots
  - ❑ Case examples
- Benefits
- Q & A

# Pertamina Downstream

## Assets

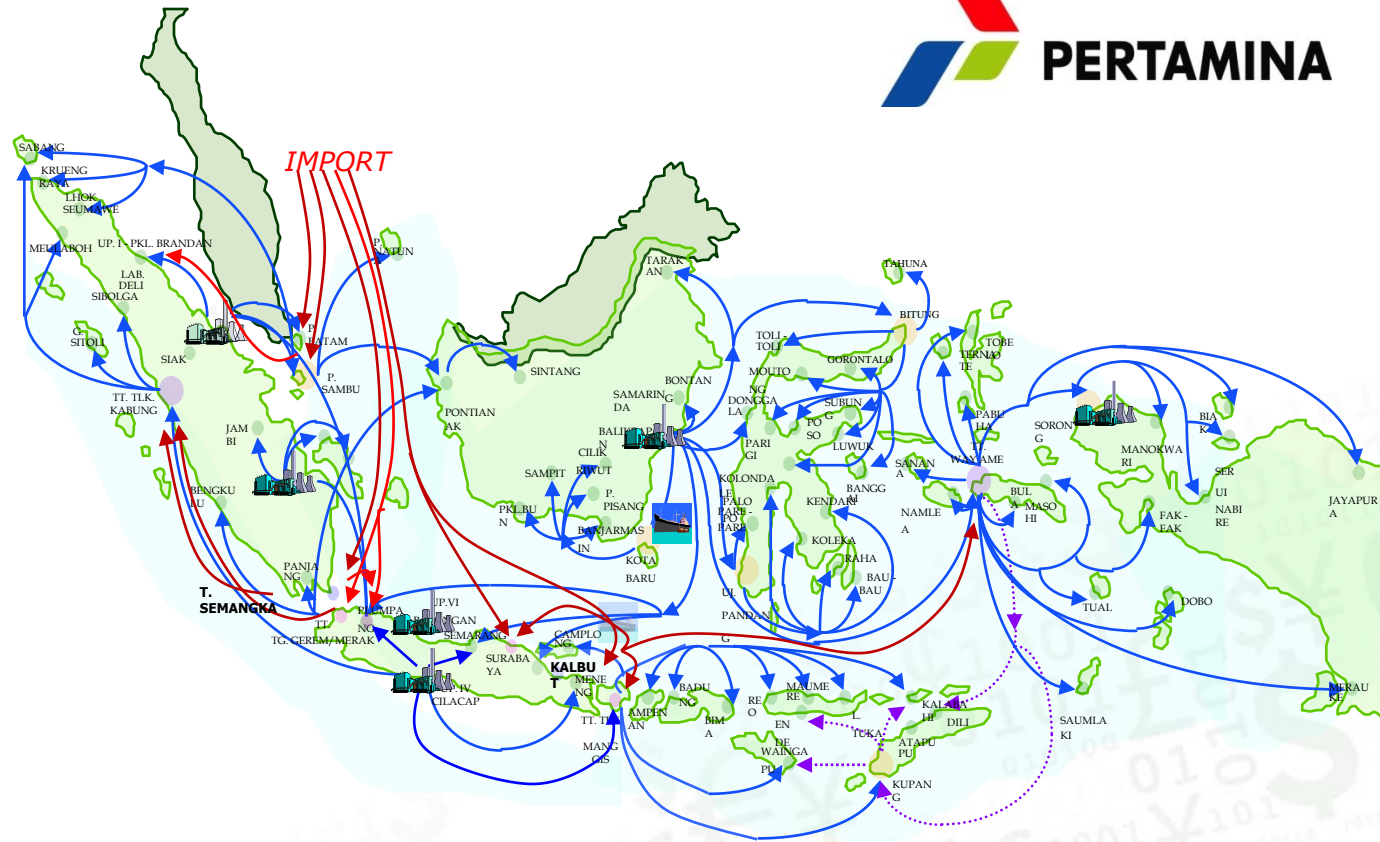
6 Refineries :  
1,034 Million bbl/day

120 + Depots

98 Vessels

3,400 Fuel Stations

Sales Volume :  
1,200 Million bbl/day  
(92 % Market Share)



One of the most complex Downstream Supply Chains in the world

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# BUSINESS CHALLENGE : “ A Balancing Act...”

## REGULATED (before 2006)

### Security of Supply

Complex geography – 13,000 islands, rivers, mountains

Supply chain disruptions (shipping, ports, refinery)

Variability of Demands



## DEREGULATED (2006 onwards)

### Economics of Supply

Low Downstream Margin

Competition from Oil Majors

High product import costs

## CHALLENGE / PROBLEM DETAILS (early 2007)

### Process, People, Structure

- Business process based on functional units, planning based on functional target, no one is accountable for downstream margin.
- “Legacy” structure, rigid interfaces between Refining & Marketing, creating silos within the organization.
- No single point of coordination for Supply operations.

### Systems

- Lack of integrated system for planning optimization and scheduling
- No coherent single view of downstream timely operational data
- Unable to track Plan vs Actual

# Agenda

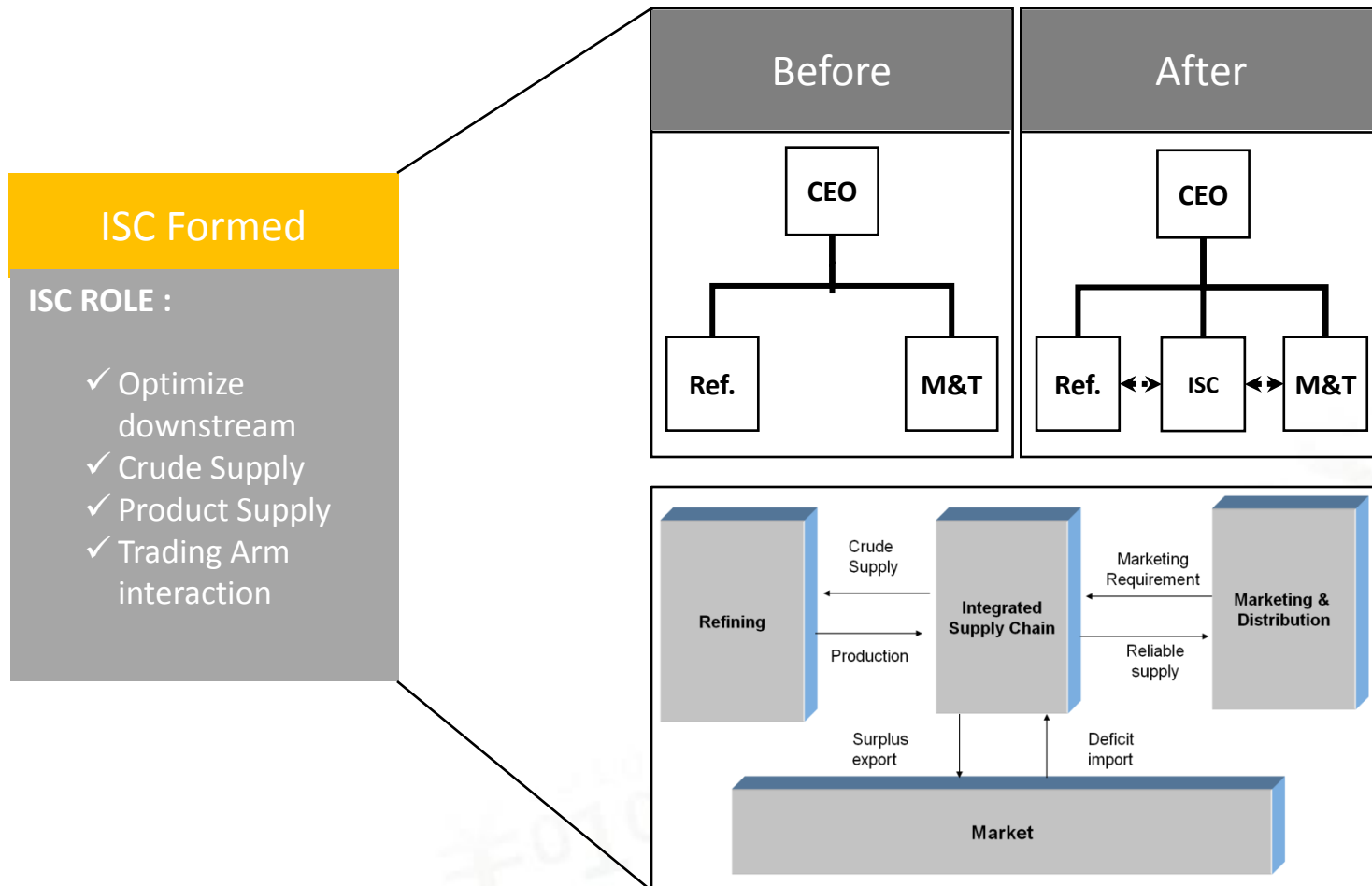


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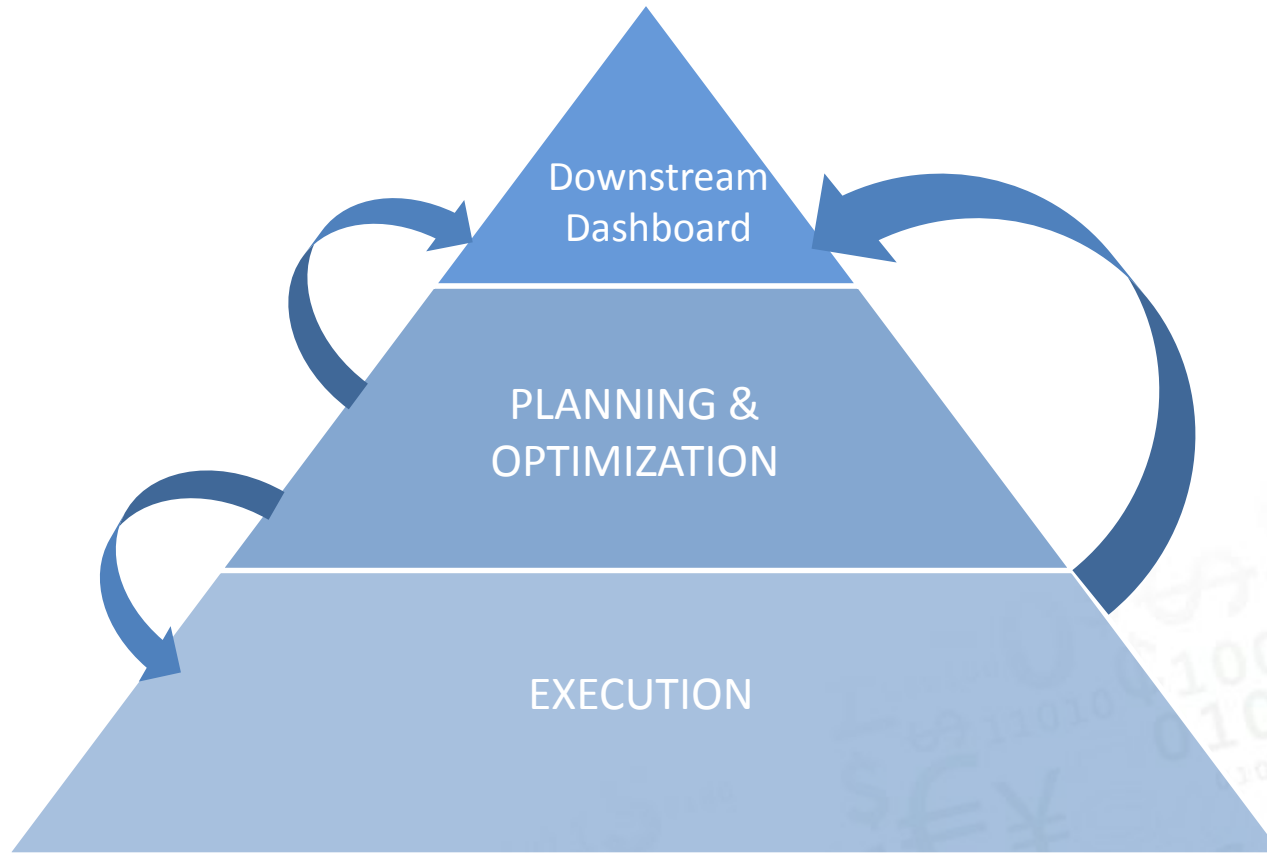


# Downstream Transformation Program (started in 2008)

## 1. Improve Structure and Business Process



## 2. Implement Tools & Systems

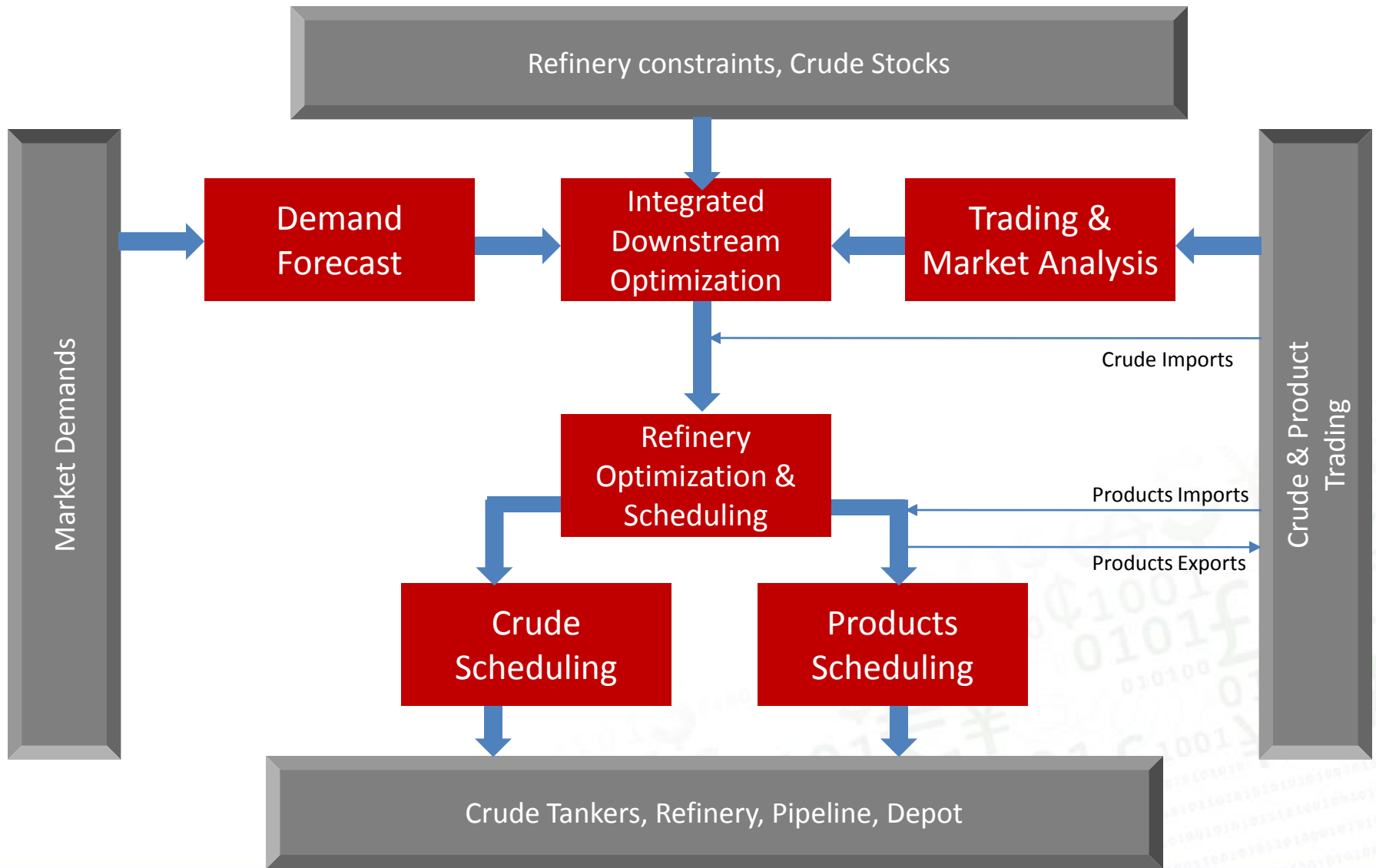


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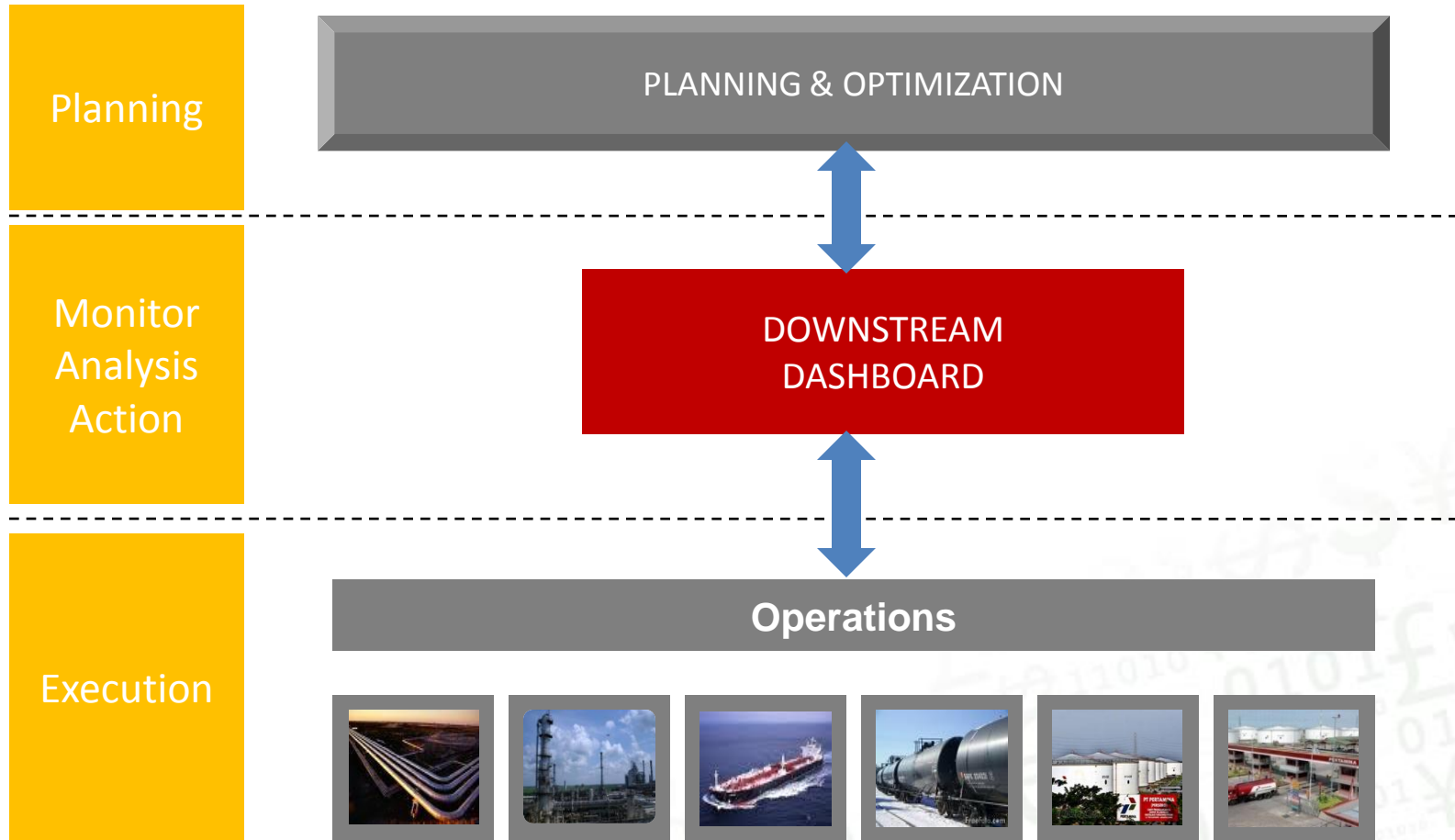


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# Planning & Optimization Systems



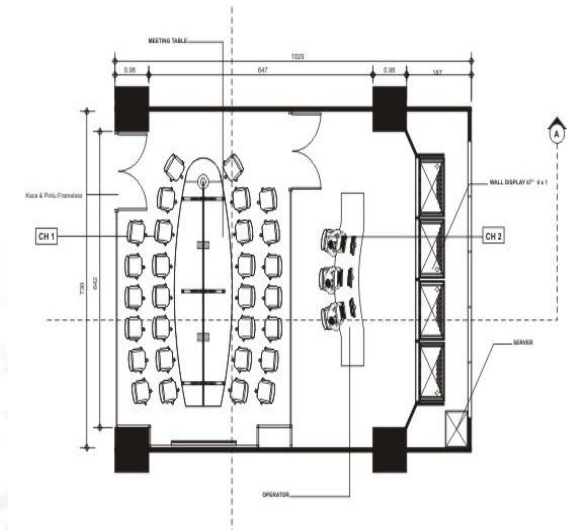
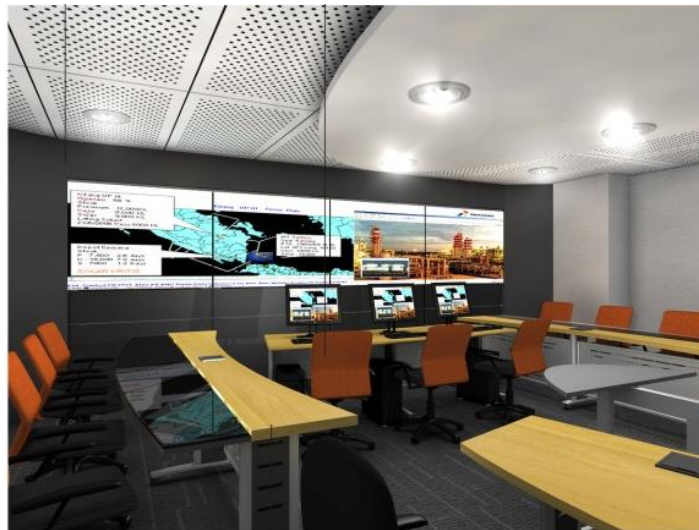
# INTEGRATED DOWNSTREAM DASHBOARD



# Hardware Selection & HQ Control Room Design

## Design Objectives

- Single operations room for Refining, Supply, Shipping & Marketing.
- Ergonomic working environment.
- Direct communication to refineries, vessels and depots.
- Single wall display



# Hardware Selection & Control Room Construction

## Wall Display Selection Criteria

Screen GAP less than 0.1 mm

SXGA Resolution

Dual Lamp (hot and cold standby)

Colors 16.7 Million

Contrast ratio min 500:1

TCP/IP based management system

Controller software Windows® NT@4.0, Windows 2000, Windows XP, X Window System.

## Wall Display Construction



## Commissioning



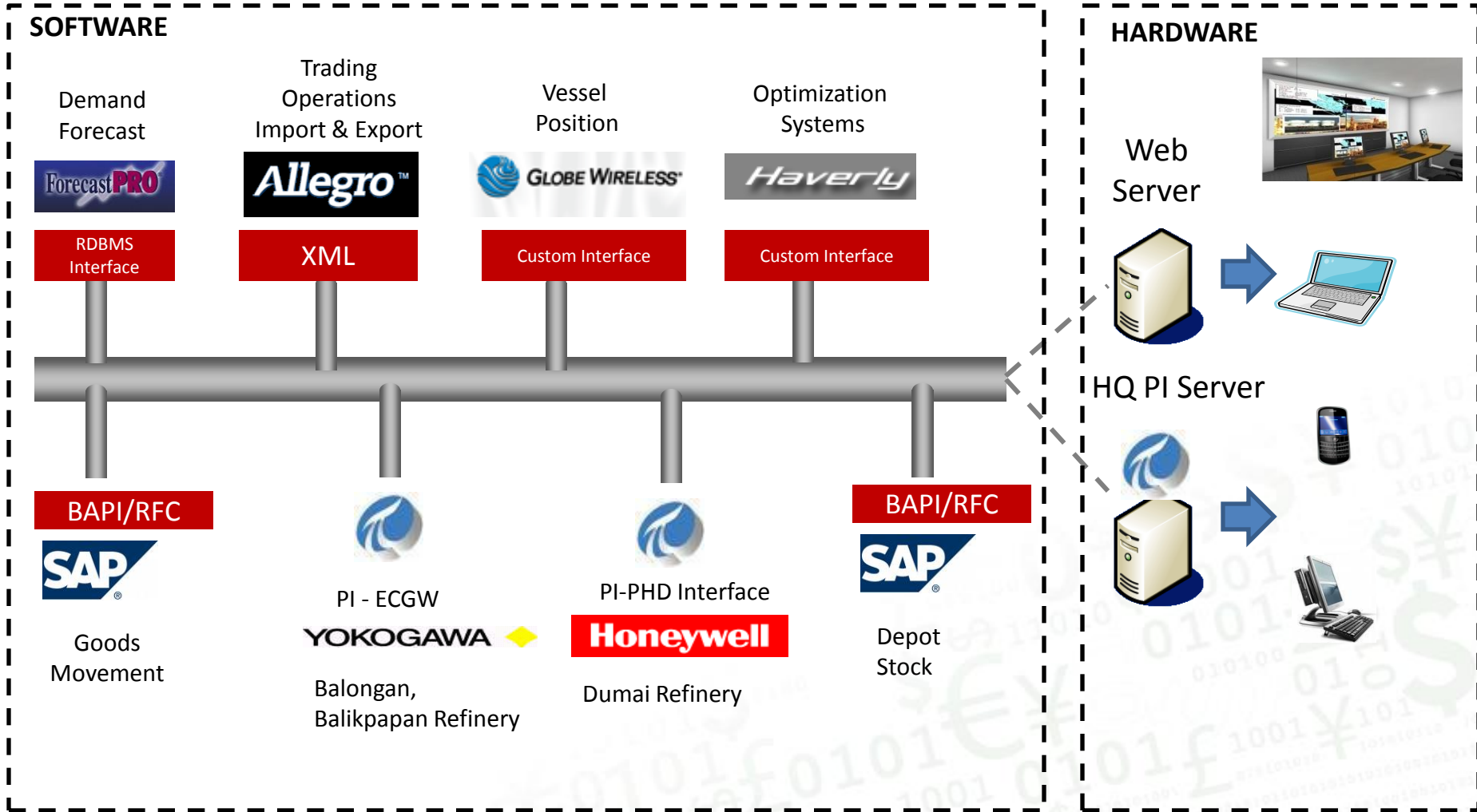
# *Integrated Downstream Dashboard*

## Objectives :

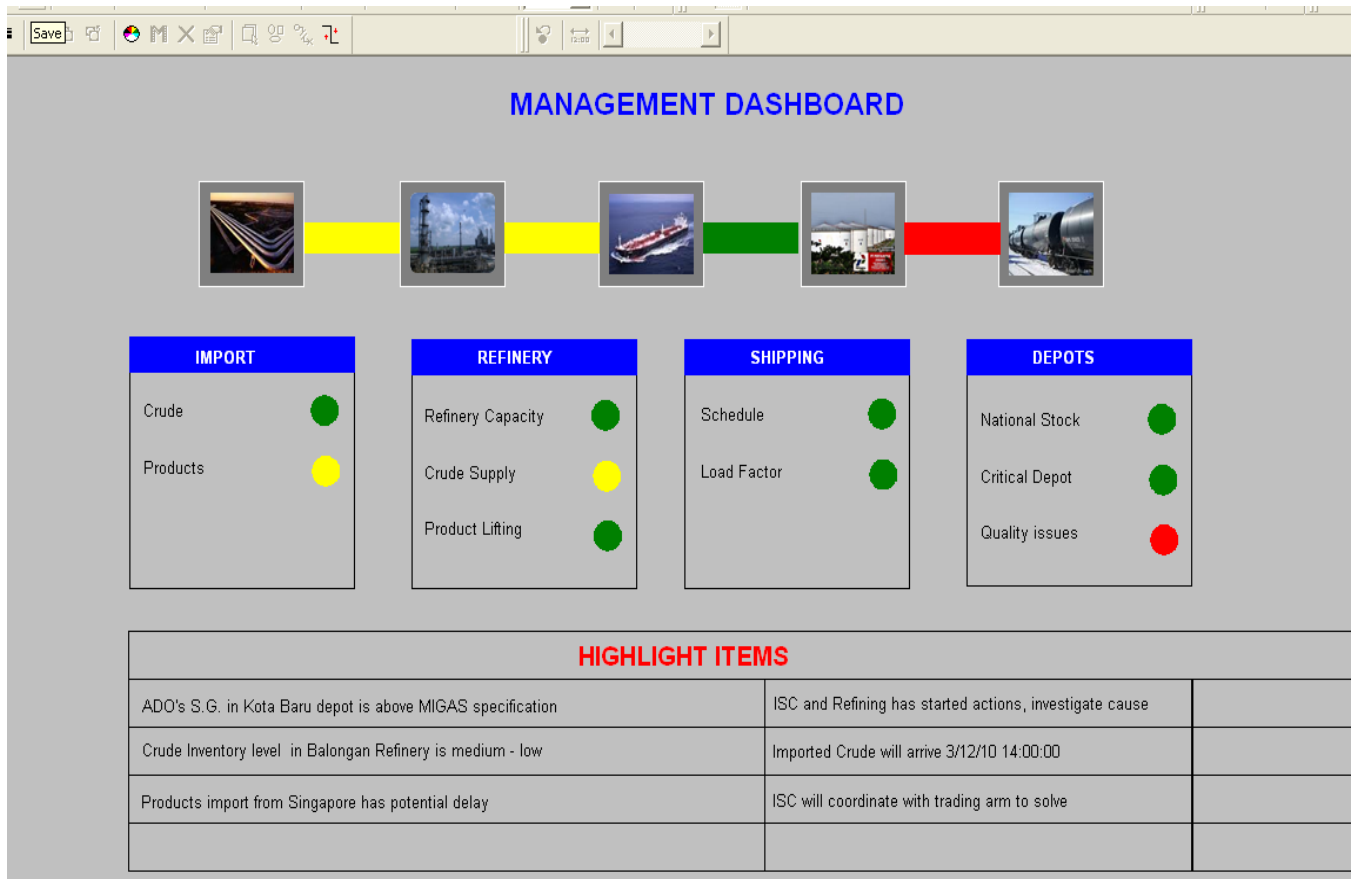
- Consistent single view of entire downstream supply chain.
- Integrated real time data from Crude Purchases to Secondary Distribution.
- Decision making support (normal operations, supply chain disruptions)



# Integration Architecture



# Main Dashboard Display



## Objective

- Management view of Entire Supply Chain

## Features

- Easy to understand “traffic lights”
- Highlighted items
- Drill down capabilities

# Crude and Product Imports

PI ProcessBook - [ImportMonitoring]

File Edit View Insert Tools Draw Arrange Window Help

100%

## IMPORT SCHEDULE MONITORING

### CRUDE IMPORT

STATUS	VESSEL NAME	VOLUME (MBBLS)	GRADE	PLAN		ACTUAL		DESTINATION	STOCK LEVEL
				ALD	ADD	ALD	ADD		
■	VALIANT1	600,000	LIGHT	10/3	12/3	10/3		CILACAP	●
■	VALIANT2	1,200,000	MEDIUM	11/3	13/3	12/3		BALIKPAPAN	●
■								BALONGAN	●
■									●

### PRODUCT IMPORT

STATUS	VESSEL NAME	VOLUME (MBBLS)	GRADE	PLAN		ACTUAL		DESTINATION	STOCK LEVEL
				ALD	ADD	ALD	ADD		
■	SUNFLOWER	200,000	MOGAS	10/3	12/3	10/3	14/3	MEDAN	●
■	VJAYANTI	185,000	MOGAS	11/3	13/3	12/3	13/3	JAKARTA	●
■	GANDARI	300,000	ADO	10/3	12/3	10/3		KOTA BARU	●
■	PROVIDENCE	200,000	MOGAS	11/3	13/3	12/3		T. UBAN	●

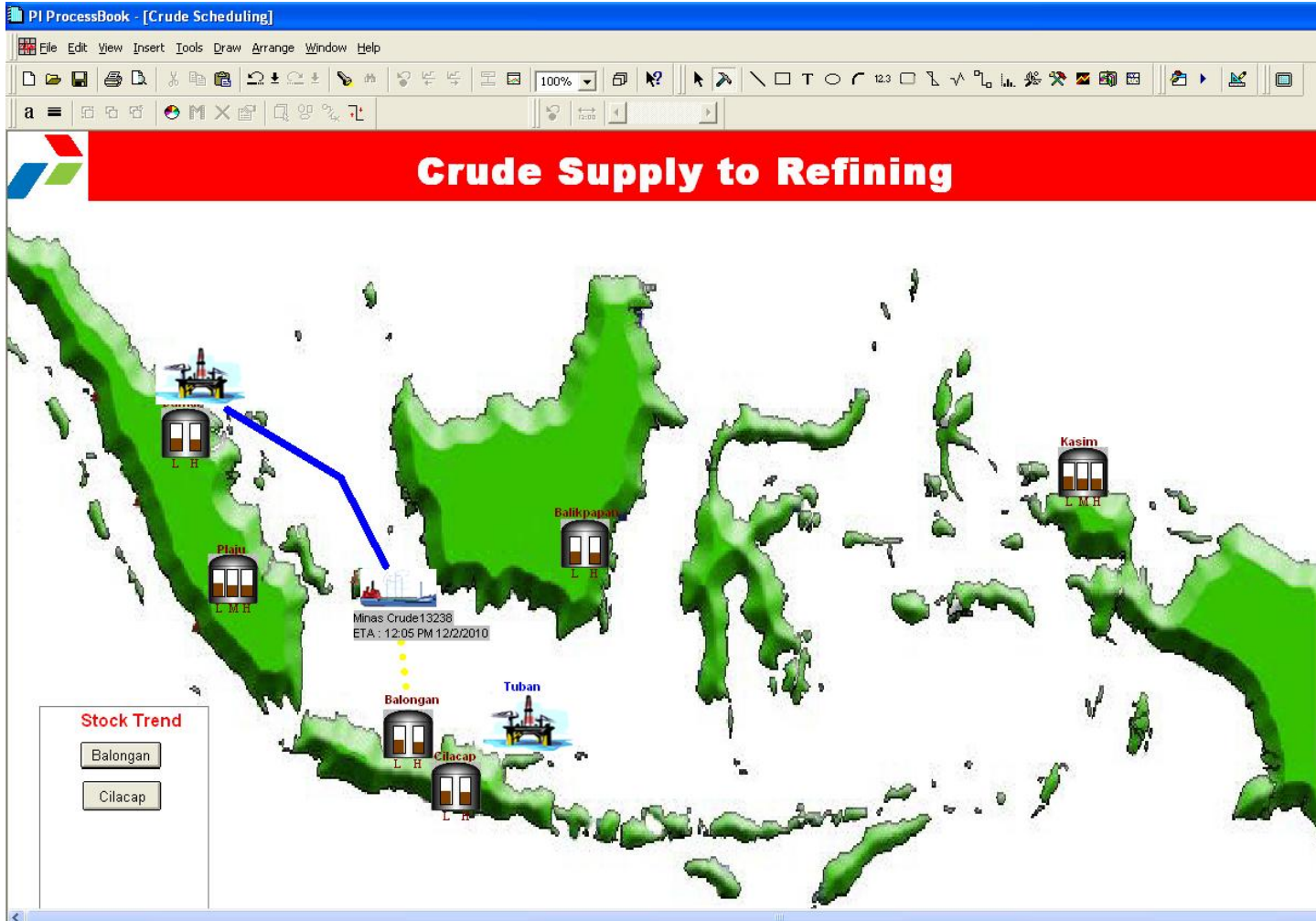
## Objective

- Track Crude & Products Imports Schedule

## Features

- Tracks ETA of incoming shipments
- Tankage and Jetty Availability
- Summary of committed and pending cargoes

# Crude Supply to Refinery



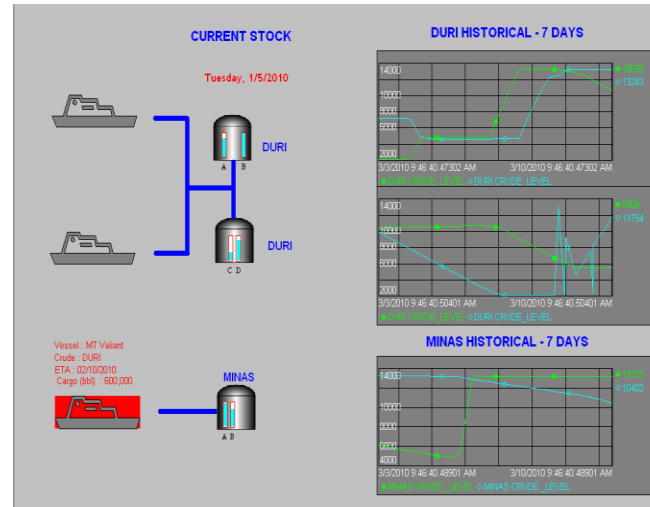
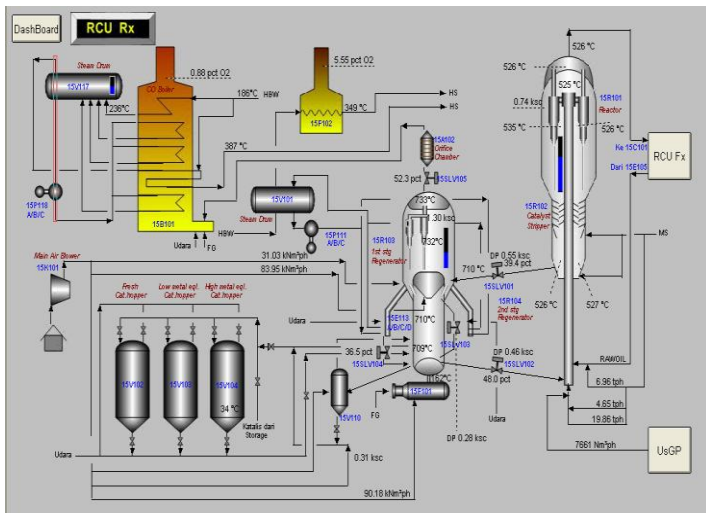
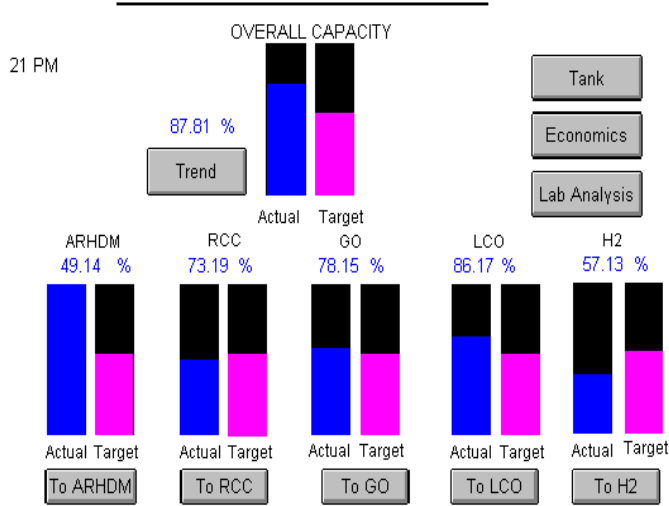
## Objective

- Track shipments
- Maintain Crude stock levels

## Features

- Plan vs Actual
- Refinery upsets notification
- Vessel alarms

# Refinery Operations



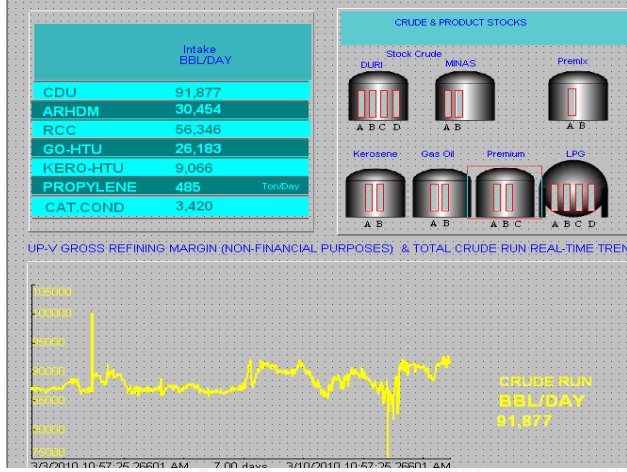
## Objective

- Real time monitoring refinery operations

## Features

- Plan vs Actual Production
- Stock levels of crude and finished products
- Detail DCS level view
- Refinery Problem EWS

## UP VI Real Time Performance Dashboard



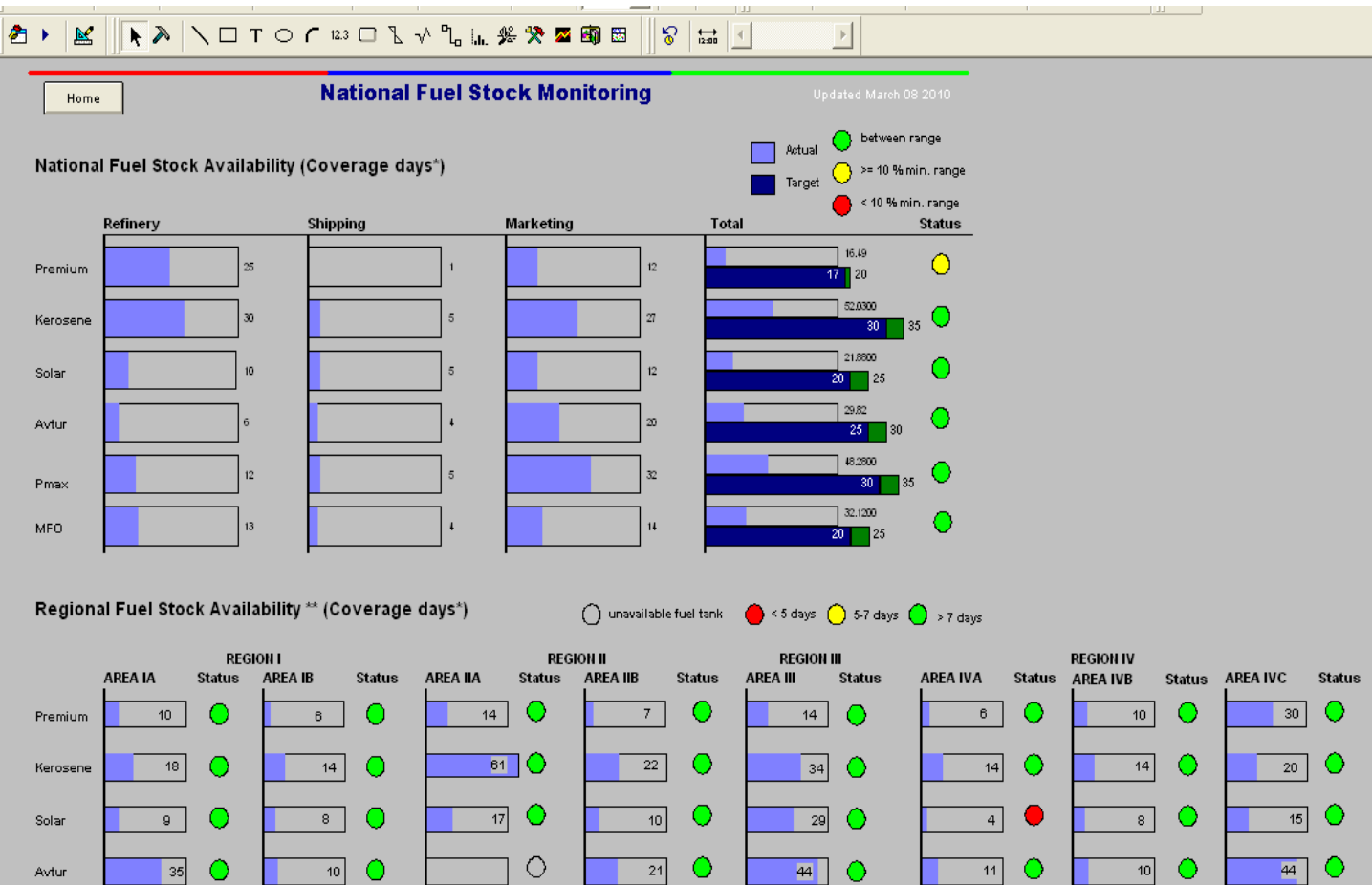
# National Stock

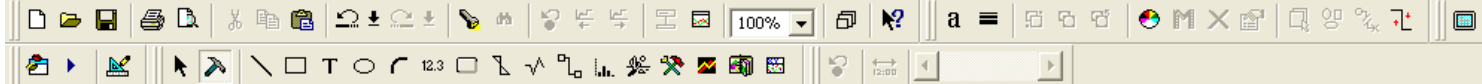
## Objective

- Maintain National fuel stock levels
- Management View

## Features

- Identify potential critical depots
- Actions taken
- Deviation highlights





Home

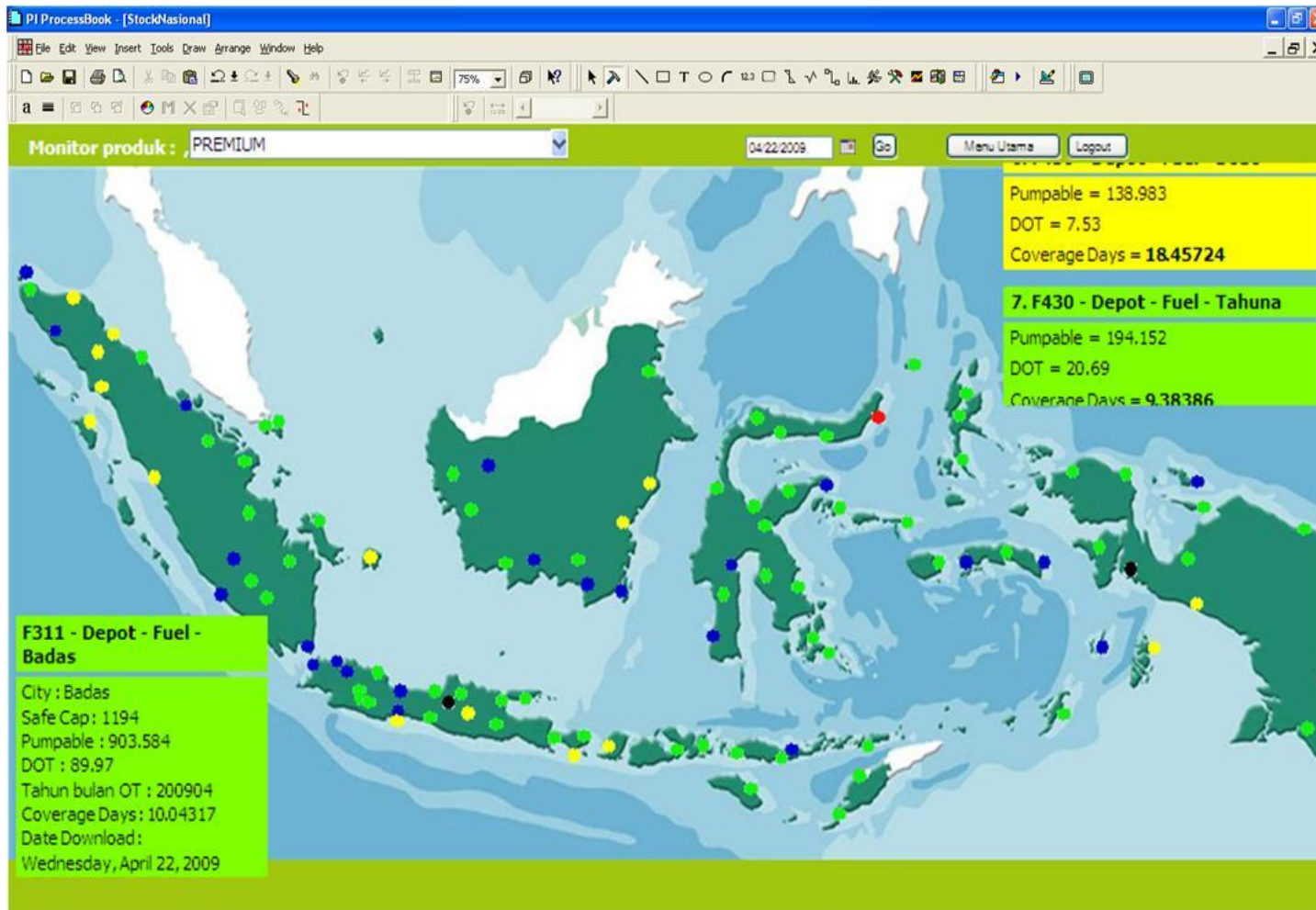
## Potensial Critical Depot & Next Action

Updated March 08 2010

- On Track
- Slight Delays
- Major Delays

Product	Depot	Area	CD/DOT	Next Action	Status
PREMIUM	Semarang	II A	5,7 / 2.200 KL	MT. Gandaria ex Sin, ETA 03.03, cargo 19.080 KL, Stock tgl 03.03 menjadi 12,4 hari	<span style="color: green;">●</span>
	Teluk Kabung	I B	6,3 / 3.022 KL	MT. Griya Asmat ex Bal, ETA 05.03, cargo 7.000 KL, stock tgl 05.03 menjadi 4,5 hari MT. Falcon Star ex Sin, ETA 07.03, cargo 32.000 KL, stock tgl 07.03 menjadi 13,1 hari	<span style="color: green;">●</span>
SOLAR	Makassar	IV B	4,0 / 1.800 KL	MT. Golden Pearl ex Bpp, ETA 03.03, cargo 7.000 KL, Stock tgl 03.03 menjadi 6,0 hari MT. Pegaden ex TT Tuban, ETA 04.03, cargo 10.000 KL, Stock tgl 04.03 menjadi 10,5 hari MT. Paluh Tabuhan ex Kalbut, ETA 05.03, cargo 20.000 KL, Stock tgl 03.03 menjadi 20,6 hari	<span style="color: green;">●</span>

# Supply To Marketing



## Objective

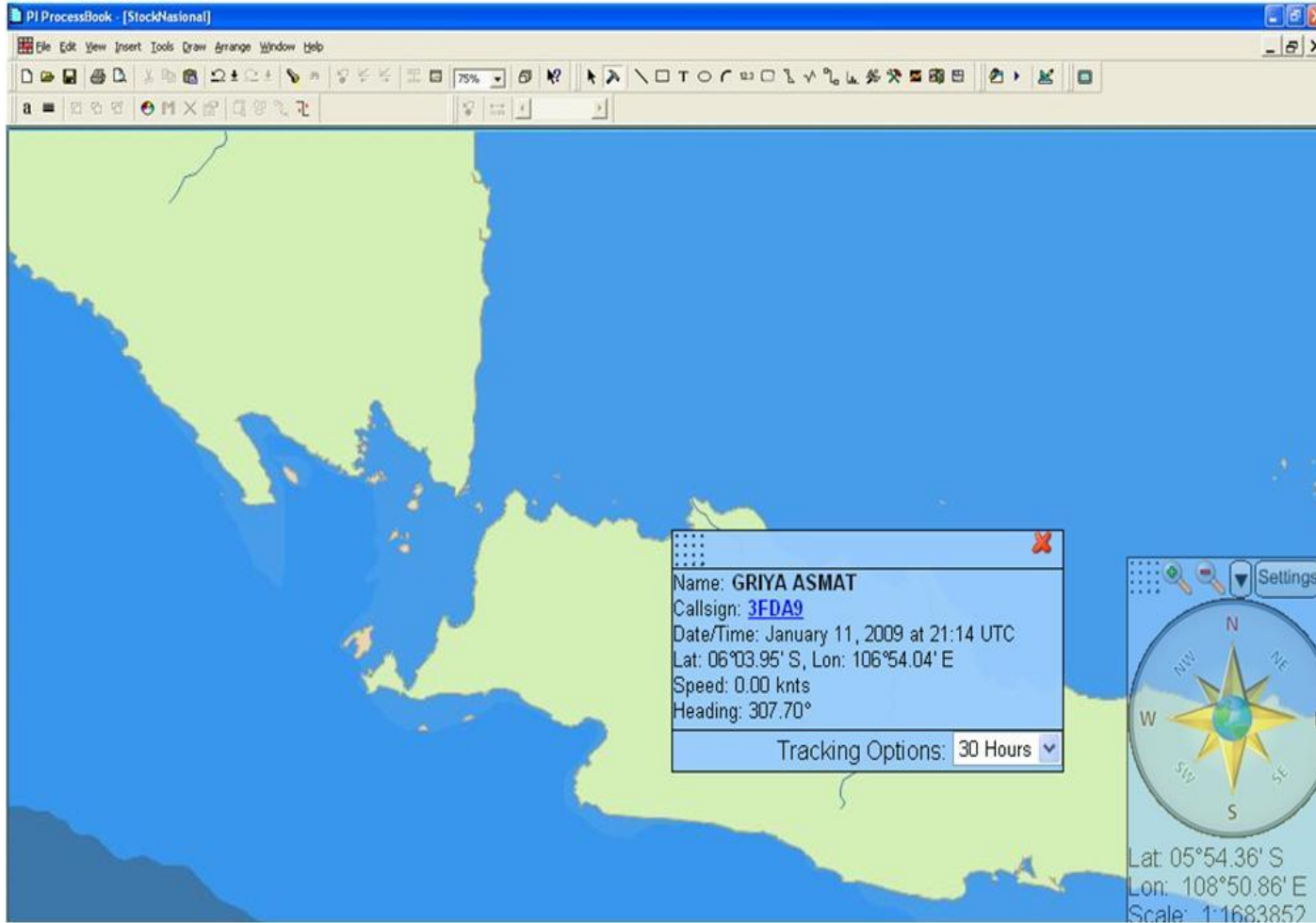
- Maintain National fuel stock levels

## Features

- Identify potential critical depots
- Top 10 critical depots
- Single click to access detail depot data



# Vessel Tracking



## Objective

- Real time vessel position monitoring

## Features

- Track Shipments
- Real time updates of ETA
- Vessel deviation highlights

# Does real time data matter ?

## Case Examples :

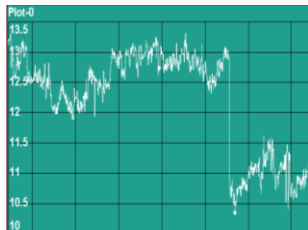
Unscheduled  
Refinery shutdown

Confirm w Refinery  
Total Loss Production

Check  
Current Stock

Trading Arm  
Confirms cargo  
availability

Import  
Arrived



### Result

- Stock maintained, critical depots avoided
- "Prompt " cargo avoided ->  
**US\$ 1 -2/barrel difference**

00:00

00:05

02:00

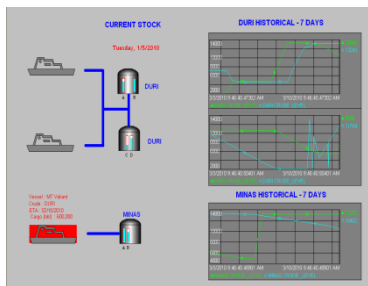
06:00

48:00

# Does real time data matter ?

## Case Examples :

Incoming import crude  
unable to unload -> no  
ullage



Coordinate with  
other Refineries



Check  
Refinery Stock  
& Economics



Divert vessel



Crude Import  
Arrived



### Result

- Imported crude unloaded & processed
- **Demurrage avoided (US\$ 40-50,000/day)**

00:00

02:00

05:00

07:30

36:00

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# SUMMARY – Integrated Downstream Dashboard

	BEFORE - 2007	AFTER - 2009
Working Environment	4 Operating Group, Separate floors	Single floor, in Control Room
Planning process	Functional Silos	Integrated planning and operations from end to end
Data Timeliness	Outdated, not synchronized data	Real time and near real time data
Data Visibility	Limited view of supply chain data	Single coherent view
Monitoring tools	Manual monitoring - Excel	Track plan vs actual through Processbook, Web

# BENEFITS

## Tangible Benefits

- National stocks maintained at optimal level
- Reduced Critical Depots (stock outs) by 65 %
- Reduced Demurrage by 40 %
- Better loss monitoring & control

US\$ 25 – 30  
Million/Year

## Intangible Benefits

- Better Team Work & Coordination
- Better Decision Making
- Faster response to supply chain problems
- Integrated end to end downstream visibility

“Downstream First”  
Mindset

## CONCLUSION

- Consistent single view of entire supply chain is essential for downstream operations.
- “Downstream First” mindsets enables better coordination and collaboration.
- Real time data across the supply chain has significant effects on the bottom line.



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Thank you

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