



RtPM in action at ErgMed

Luciano Mallia, ErgMed

Massimo Galli, Pimsoft

Agenda



- ② ErgMed profile
- ② ErgMed strategy
- ② Building the information platform
- ② Defining assets model and hierarchy
- ② Releasing value-added solutions
 - Test Run Sigmafine4 solution
 - Shipment order preparation tracking
 - KPI framework

VALUE NOW, VALUE OVER TIME



ERG group



- © ERG is the top independent operator in the Italian petroleum downstream market

- © ERG is now a “multi-energy” group committed to developing its presence also in electricity, natural gas and alternative energy markets

VALUE NOW, VALUE OVER TIME



ErgMed profile



- ③ Erg Raffinerie Mediterranee (ErgMed) is mainly geared towards the international market and it is also closely integrated with power generation and chemical activities in the Syracuse industrial zone (eastern Sicily).
- ③ The company was founded in order to unify the two refineries of Priolo Gargallo (Syracuse, Italy) – ISAB South and North plants - into the largest Italian oil refining facility (19 Mton/yr) and one of the foremost “supersite” plants in the world.
- ③ The two refineries have been interconnected via pipelines to operate jointly.



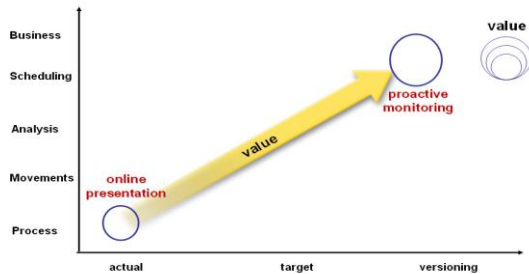
VALUE NOW, VALUE OVER TIME



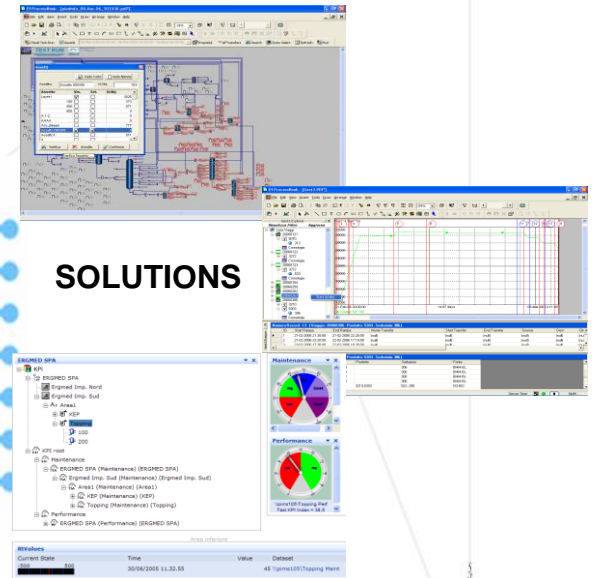
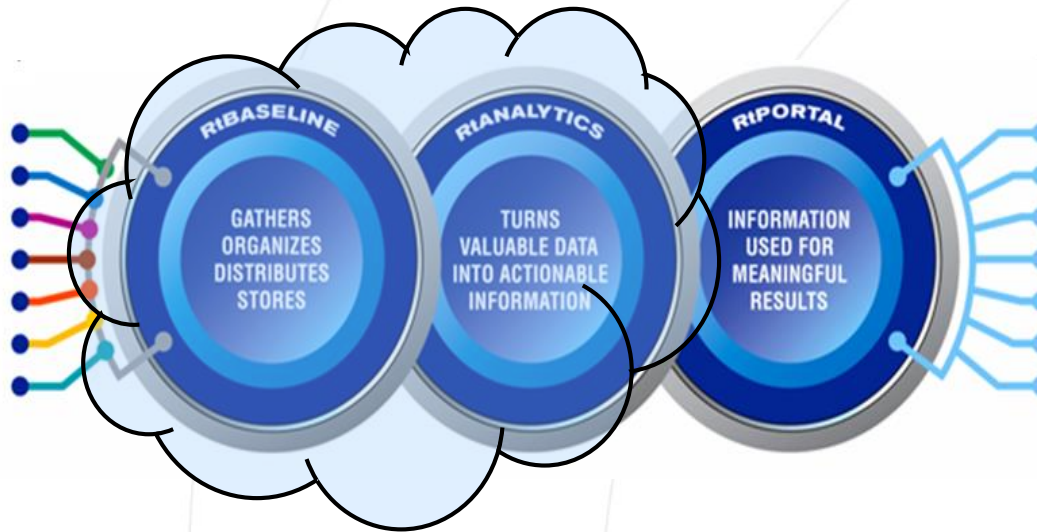
Releasing value-added solutions



ErgMed strategy: improving solutions value



RtPM & SOA



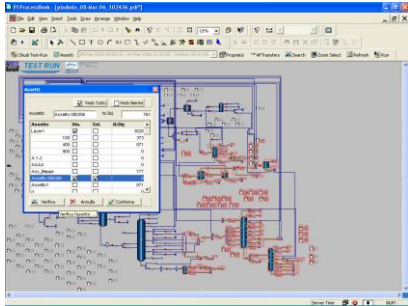
VALUE NOW, VALUE OVER TIME



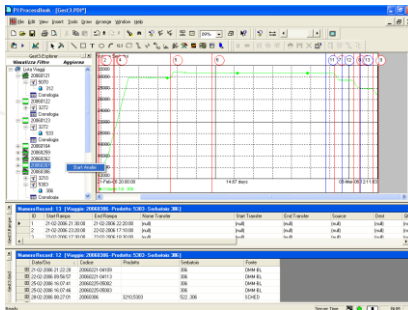
Releasing value-added solutions



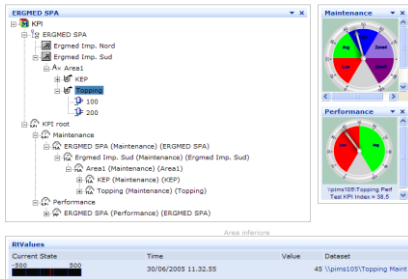
Test Run environment Sigmafine-based



Shipment orders tracking solution



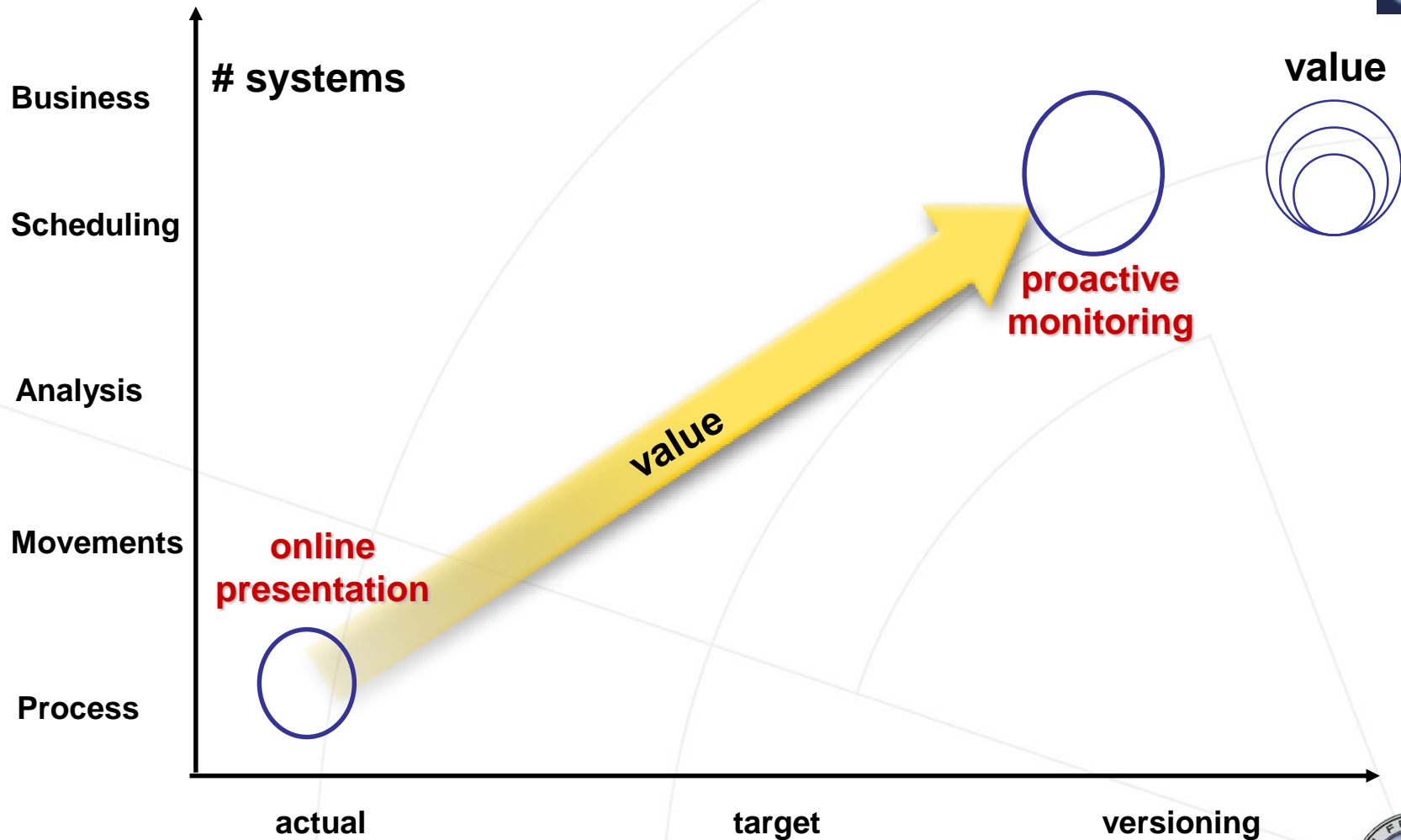
KPI framework



VALUE NOW, VALUE OVER TIME



ErgMed strategy: improving solutions value



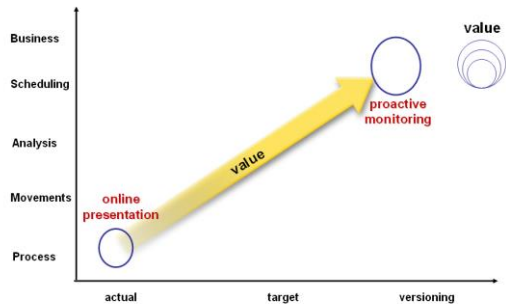
VALUE NOW, VALUE OVER TIME



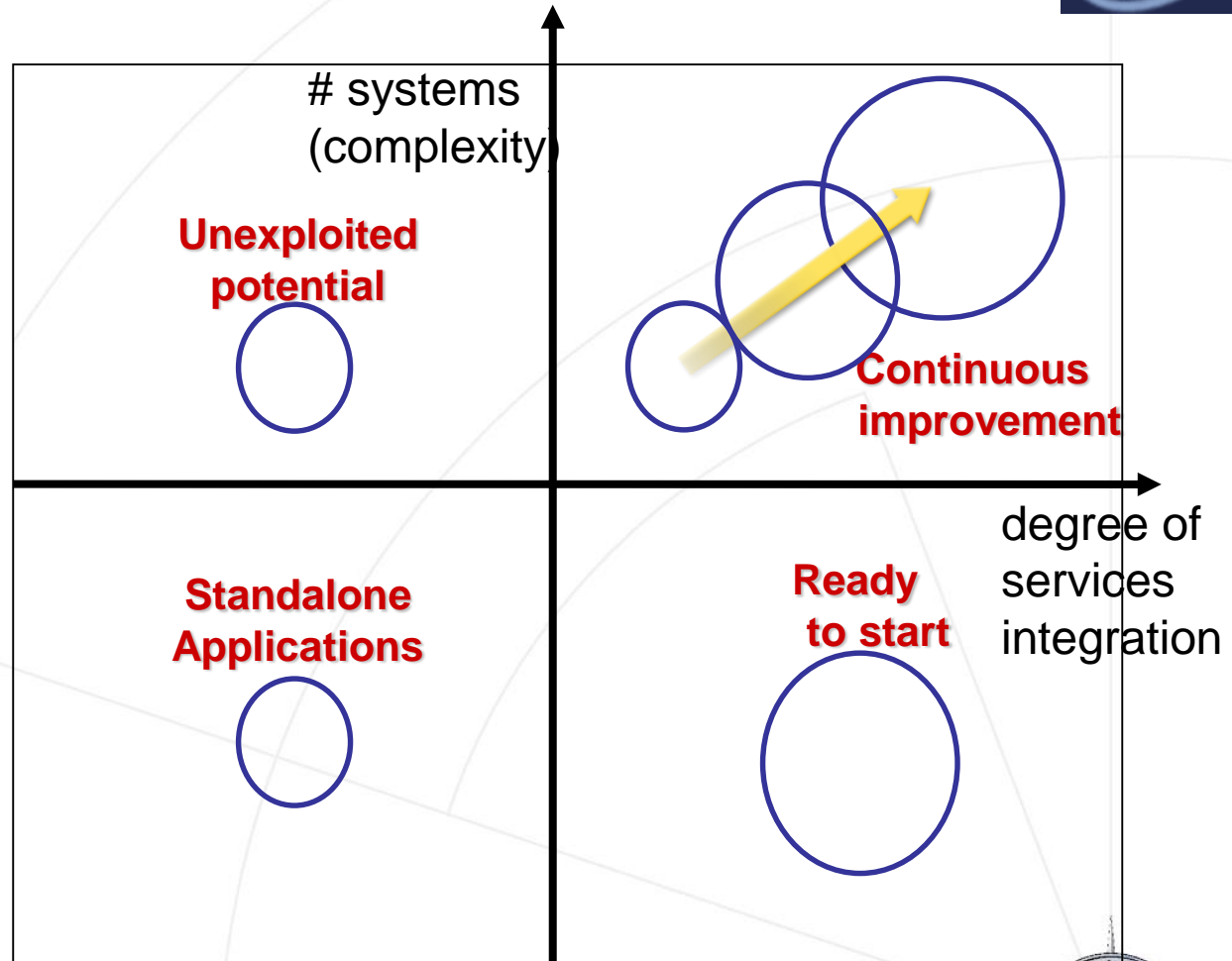
ErgMed strategy: improving solutions value



ErgMed strategy: improving solutions value



value



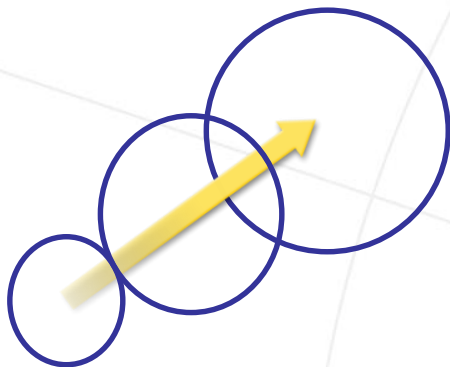
VALUE NOW, VALUE OVER TIME



ErgMed strategy: objectives



- Ⓢ Release “solutions” as composition of services (not applications but solutions able to grow according company needs)
- Ⓢ Protect investment through reusability/re-composition
- Ⓢ Support company wan accessibility scenarios



Ready to change / evolve / improve
One plug-in away to a further solution

**The scenario identified is based on
OSIsoft RtPM infrastructure and SOA techniques**

VALUE NOW, VALUE OVER TIME



ErgMed strategy



- From PI System to RtPM
 - ErgMed started using the PI System in the 1992 collecting data from the process to support technology and operations departments
 - Driven by the refineries integration plan, PI System was introduced also in the North plant in 2004
 - According the strategy, ErgMed moved from PI System to RtPM using new modules AF/Sigmafine in order to improve the ability to analyze performance against the defined targets

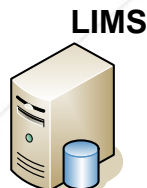
VALUE NOW, VALUE OVER TIME



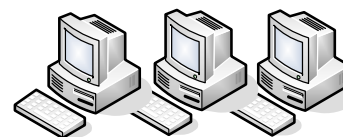
ErgMed strategy: the infrastructure



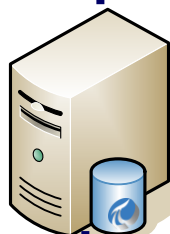
INFOIL
Shipment orders



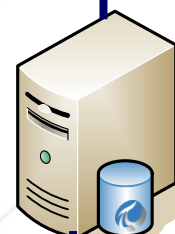
LIMS



Corporate Network



**South
Refinery**



**North
Refinery**



**DCS
Process**



**DCS
Offsite**



**DCS
Tanks**



**DCS
Process**



**DCS
Tanks**

VALUE NOW, VALUE OVER TIME



Building the information platform: the requirements



- Define the information platform in the RtPM infrastructure
 - Integrating external systems (not just DCSs)
 - Organizing data into assets
 - Organizing assets into models and/or hierarchies
- To enable the release of integrated solutions across the company

VALUE NOW, VALUE OVER TIME



Building the information platform



- Several heterogeneous islands to be integrated
 - Operational (DCSs)
 - Analysis data (LIMS)
 - Oil movement data (OMM)
 - Blending data (BOSS)
 - Shipment orders data
 - Scheduling data
 - Fiscal communications (INFOIL)
- At different level of complexity
 - Actual data
 - Target data (e.g. planned movements, finished-product specifications)
 - Target versioning (e.g. recording changes in scheduling operations)

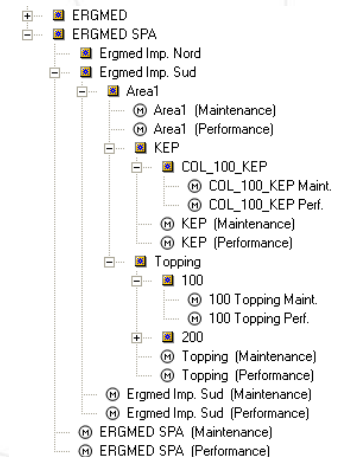
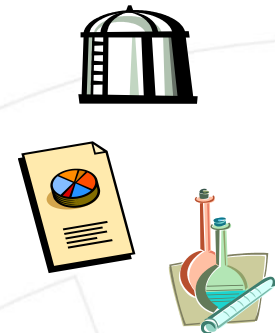
VALUE NOW, VALUE OVER TIME



Define the company assets model



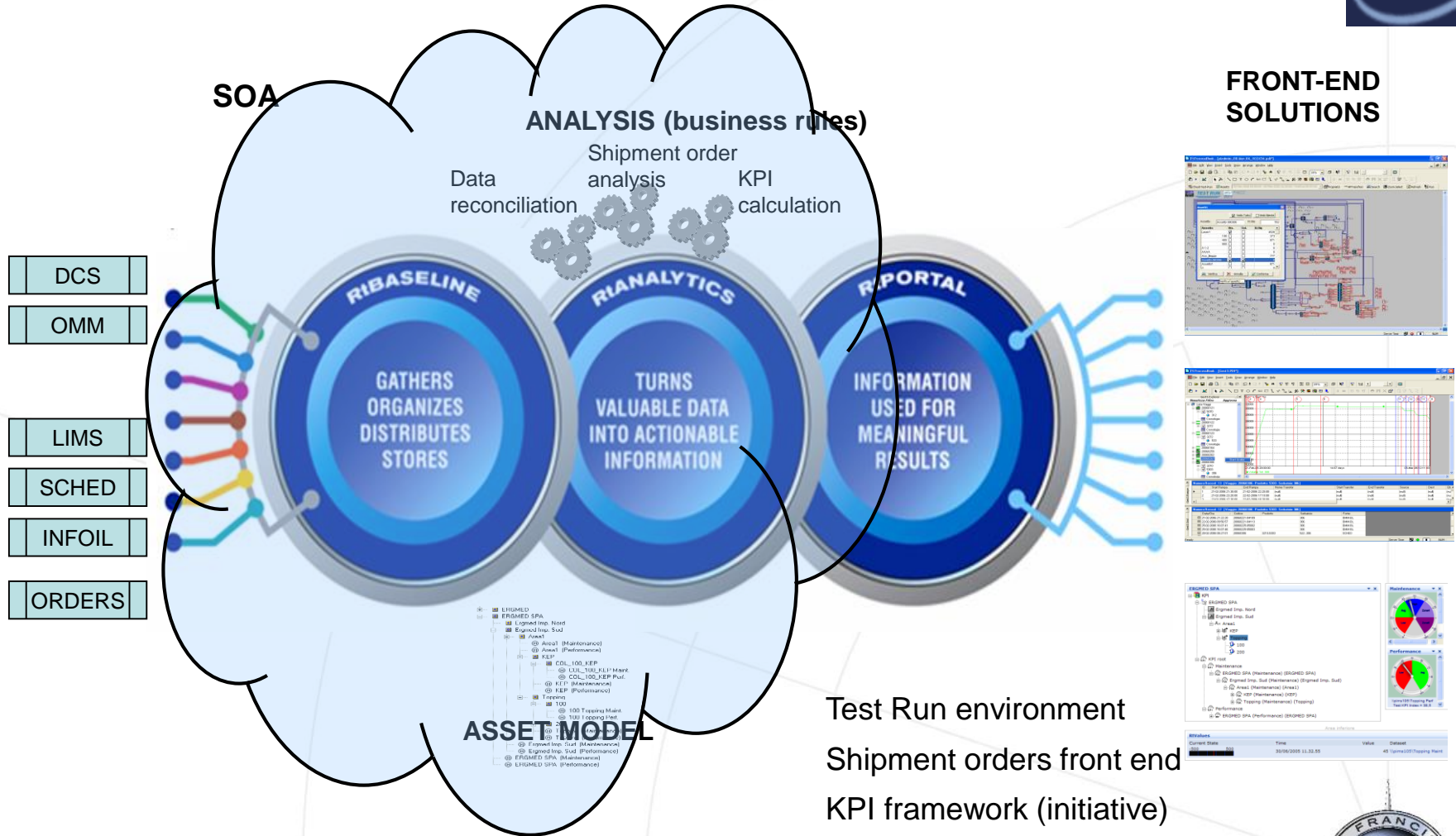
- Organize data into assets
 - Physical: Meters, Tanks, Process Unit
 - Logical: Shipment Order, Products
 - Organizational: Company, Sites, Areas
- Organize assets into model
 - Refinery model for data reconciliation
- Organize assets into company hierarchies



VALUE NOW, VALUE OVER TIME



Releasing value-added solutions



VALUE NOW, VALUE OVER TIME



Test Run solution: objectives

- Manage the Company Test Run “official library”:
a unique repository, easy to maintain and to search, for all the data related to Test Run operations evaluating plant performances when processing specific crudes
- Provide a common environment to allow technologists to perform on-demand data reconciliation around the interested plants to calculate unit yields



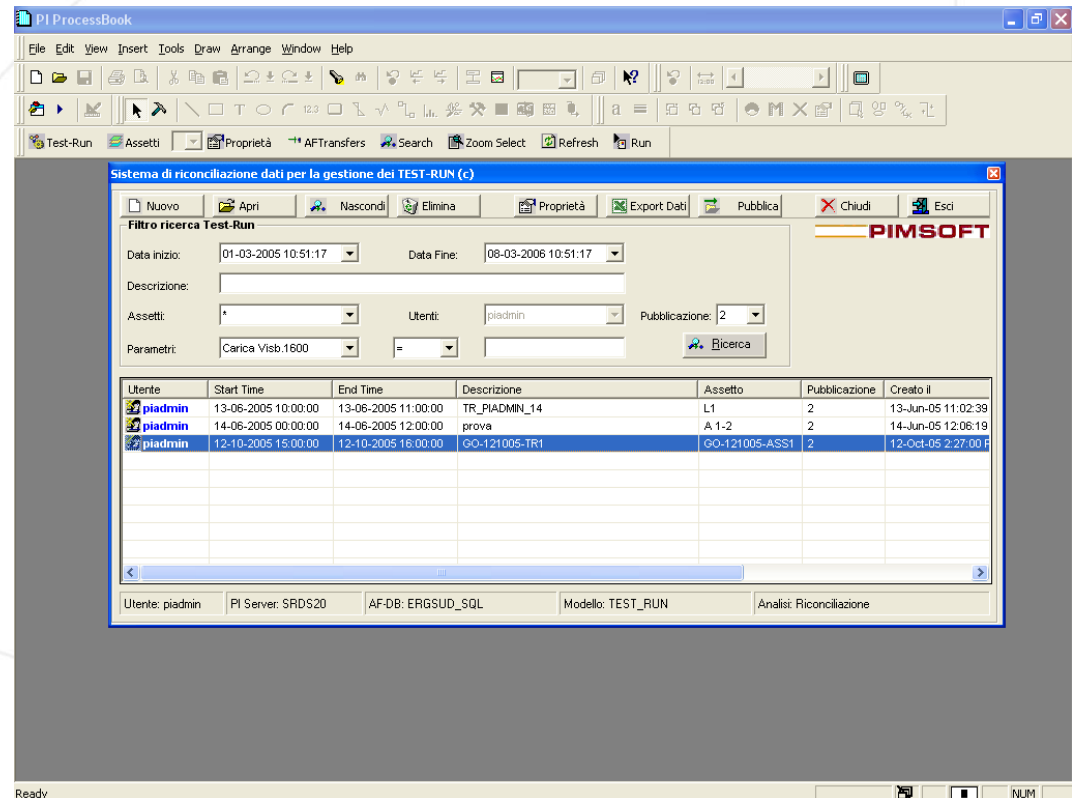
VALUE NOW, VALUE OVER TIME



Defining Test Run



- Using PI-ProcessBook as front end
- Define a Test Run in terms of:
 - time frame
 - refinery configuration
 - relevant parameters



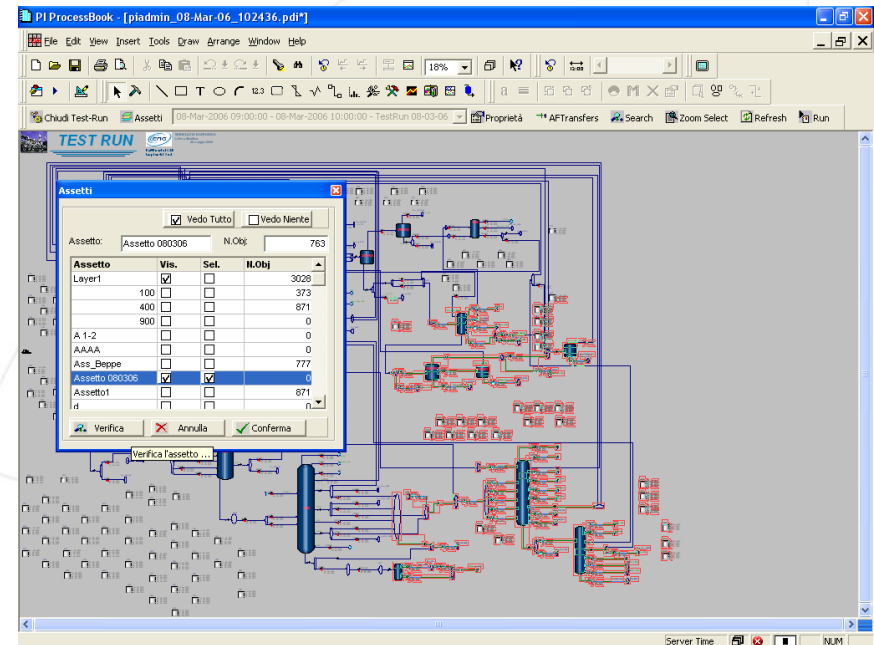
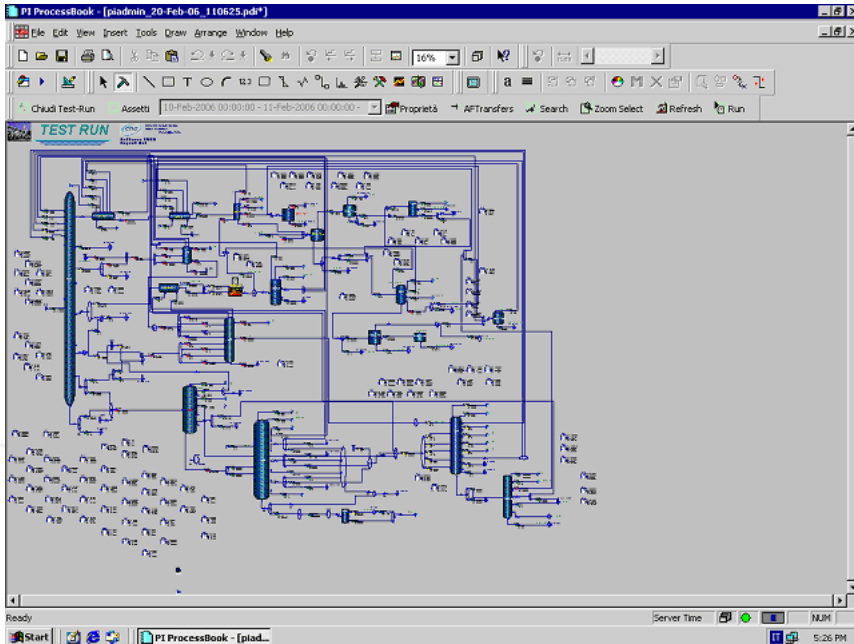
VALUE NOW, VALUE OVER TIME



Free selection of Test Run scope



Graphically select
area of interests



Store the selection
as predefined view
in the library

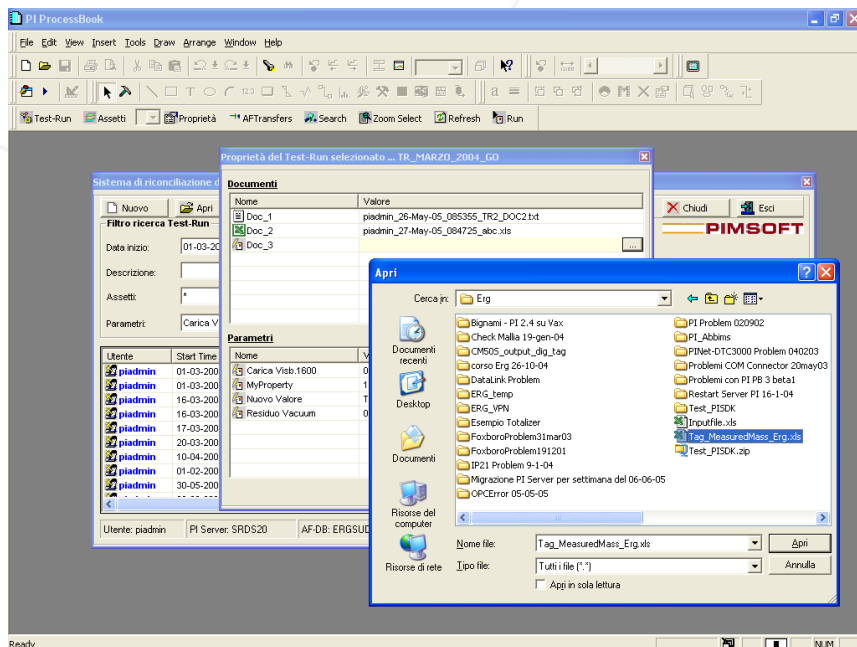
VALUE NOW, VALUE OVER TIME





Test Run additional information

- Associate other data / comment (freely extendible using AF modeling features)
- Link external documents to the Test Run
- Test Run reporting



Case	Meter	Descrizione	Un. Mis.	Misurato	Riconciliato	%Peso
Process	Meter	Descrizione	Un. Mis.	Misurato	Riconciliato	%Peso
1	01F005I	GREZZO USCITA E110	Tonn	31.295	31.166	96.44
2	01F459R	NAFTA A TOPPING	Tonn	108	108	0.93
3	03F019R	VIRGIN NAFTA A IMP. 100	Tonn	213	217	0.67
4	04F226RC	WILD-NAFTA DA 400 A 100	Tonn	110	111	0.94
5	07F171R	BENZ DA 700D104 A IMP. 100	Tonn	111	112	0.95
6	07F186R	NAFTA A 100-T101	Tonn	579	604	1.87
Totale Portata entrante				32.415	32.316	100
Process	Meter	Descrizione	Un. Mis.	Misurato	Riconciliato	%Peso
7	04F174T	WILD-NAFTA PRODOTTA	Tonn	47	47	
8	01F060R	FUEL GAS DA D103 A F101	Tonn	7	7	
9	01F944R	GAS DA IMP.100 D104	Tonn	0	0	
10	F. ENG. T101	VN A IMP. 200	Tonn	3.928	3.928	11.84
11	01F040T	KERO LEG. A STOCCAGGIO	Tonn	2.348	2.348	7.27
12	01F197R	KERO P. A STOCCAGGIO	Tonn	752	698	2.16
13	01F038T	KEP A TOP A 300	Tonn	2.615	1.971	6.10
14	01F356T	GOL NON DESOLF. A STOCC.	Tonn	-	-	-
15	01F351RC	GOL TOPPING A D301	Tonn	5.101	4.295	13.29
16	01F198R	GASOLIO L. A STOCCAGGIO	Tonn	-	-	-
17	01F033T	GOM A UNITA 400	Tonn	1.441	1.498	4.63
18	01F248RC	GOP A 600	Tonn	895	895	2.77
19	01F199R	GASOLIO P. A STOCCAGGIO	Tonn	-	-	-
20	01F028T	GASOLIO PES A UNITA 400	Tonn	-	-	-
21	01F255T	RT A STOCCAGGIO DA E1002	Tonn	-	-	-
22	01F024T	RESIDUO A UNITA 600	Tonn	14.242	16.785	51.94
Totale Portata uscente				27.394	32.316	100

VALUE NOW, VALUE OVER TIME





Test Run solution: main features

- Provide a graphical representation for the Test Run
- Provide data reconciliation features to process engineers (as a commodity)
- Freely select the interested portion of refinery subject to the Test Run
- Freely select the interested time frame
- Link other kind of information (documents, comment, analysis,...)
- Provide intuitive searching facilities
- Store the “Test Run” for future review and comparison

VALUE NOW, VALUE OVER TIME





TestRun: leveraging AF

- The solution leverages the flexibility given by PI-Analysis Framework and Sigmafine4
 - Allows definition of a unique refinery model suitable to support any Test Run configuration (layering)
 - AF template allows to define additional information for the Test Run
 - Test Run “objects” stored as Cases packing all the needed information

VALUE NOW, VALUE OVER TIME



Operations tracking: requirements



- Objective is to provide a single environment able to support online and a-posteriori analysis around the Shipment Order cycle-of-life
- The major challenge was to organize and propose a wide range of heterogeneous information coming from different company systems into one screen in order to provide a decision-support system to the user

VALUE NOW, VALUE OVER TIME



Operations tracking: the process

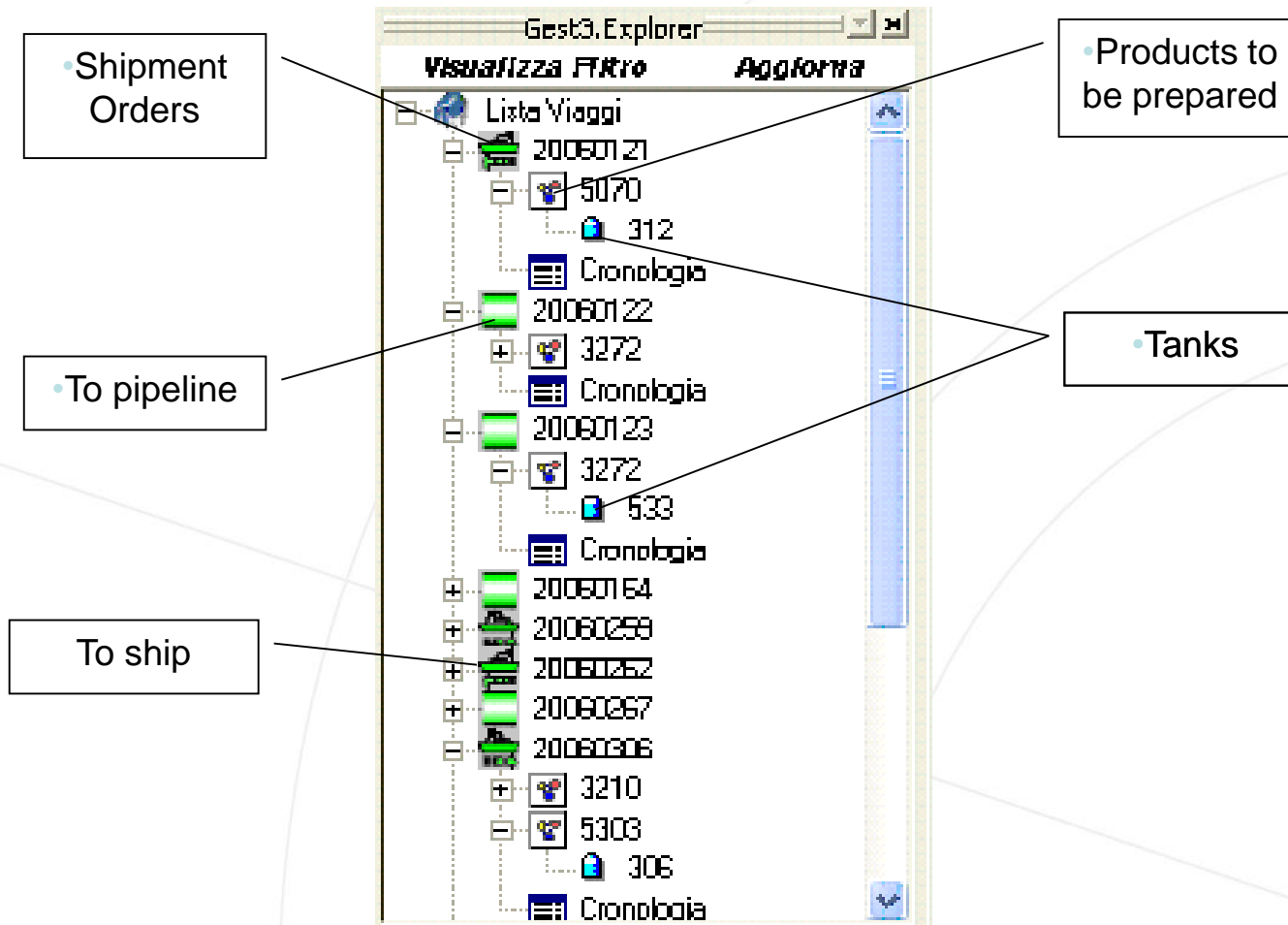
- Shipment is the results of a complex process involving:
 - Operations scheduling
 - Finished product blending
 - Quality analysis control
 - Fiscal communications
- Objective is to monitor process phases in order to activate timely corrective actions (e.g. delays on product shipment may results in economic penalties)



VALUE NOW, VALUE OVER TIME



Shipment orders



VALUE NOW, VALUE OVER TIME



Navigating consistent information from heterogenous systems



• Scheduling and versioning

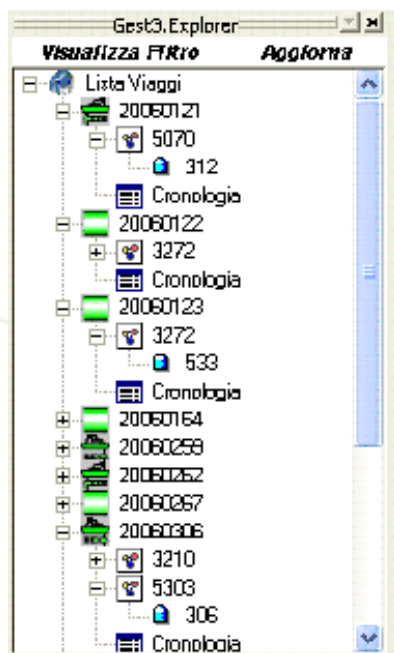
Numero Record Viaggi: 47										
N° Vg	Nome	Cod.	Prodotto	Qta	Serbalcoi	DL	Pf	Cancello da GG	Cancello a GG	ETA
20050132	VALDARNO	3141	LCN (N->S)	24000	533 534	DL14	2	27-04-2005 00:00:00	29-04-2005 00:00:00	27-0
20050167	VALPADAN	3210	BZ M.I.(INV)	82500	522 523 533	DL13 DL	1	08-02-2005 00:00:00	10-02-2005 00:00:00	10-0
20050209	ACQUAVIVA	3210	BZ M.I.(INV)	18000	522 533	DL13	1	16-02-2005 00:00:00	17-02-2005 00:00:00	20-0
20050209	ACQUAVIVA	5303	6.AUT Q M(INV)	16500	302	DL24	[null]	16-02-2005 00:00:00	17-02-2005 00:00:00	20-0
20050267	MAPITEA	3212	BZ M.I.(INT)	36000	524 533	DL13	[null]	01-03-2005 00:00:00	03-03-2005 00:00:00	27-0

• Movement/blending data

Numero Record: 10 [Viaggio: 20060123 - Prodotto: 3272 - Serbalcoi: 533]					
Data/Ora	Codice	Prodotto	Serbalcoi	Fonte	
14-02-2006 20:37:11	20060214-05205		533	OIM-BL	
14-02-2006 20:37:14	20060214-05206		533	OIM-BL	
21-02-2006 00:00:00	20060221-00202		533	OIM-D-B	
21-02-2006 00:00:00	20060221-00201		533	OIM-D-B	
21-02-2006 09:12:00	20060123	3272	533	SCHED	
23-02-2006 20:00:01	20060223-05404		533	OIM-BL	
23-02-2006 20:00:09	20060223-05405		533	OIM-BL	
24-02-2006 04:48:09	20060224-03901		533	OIM-RC	
24-02-2006 04:48:09	20060224-03901		533	OIM-RC	
01-03-2006 00:12:32	20060228-04404		533	OIM-BL	

• Analysis data

Numero Record: 10 [Viaggio: 20060123 - Prodotto: 3272 - Serbalcoi: 533]							
Cronologia: Data/Ora: 14-02-2006 20:37:11 Codice: 20060214-05205 Prodotto: Serbalcoi: 533 Fonte: OIM-BL ID: O_3_20060214-05205							
Data/Ora	Codice	Vol. Iniziale	Analisi	Val. finale	Val. min	Val. max	
14-02-2006 20:37:11	20060214-05205	1325.42627	APD	44.455313	30	49	
14-02-2006 20:37:11	20060214-05205	1325.42627	BEN	0.527935	0.4	0.9	
14-02-2006 20:37:11	20060214-05205	1325.42627	DENSITY	764.968606	720	778	
14-02-2006 20:37:11	20060214-05205	1325.42627	E70	30.698975	22	50	
14-02-2006 20:37:11	20060214-05205	1325.42627	IMON	1.055827	0.9	3	
14-02-2006 20:37:11	20060214-05205	1325.42627	IRON	0.768609	0.7	3	
14-02-2006 20:37:11	20060214-05205	1325.42627	MON	87.527954	85.2	90	
14-02-2006 20:37:11	20060214-05205	1325.42627	POW	87.663673	86.0	87.0	



VALUE NOW, VALUE OVER TIME



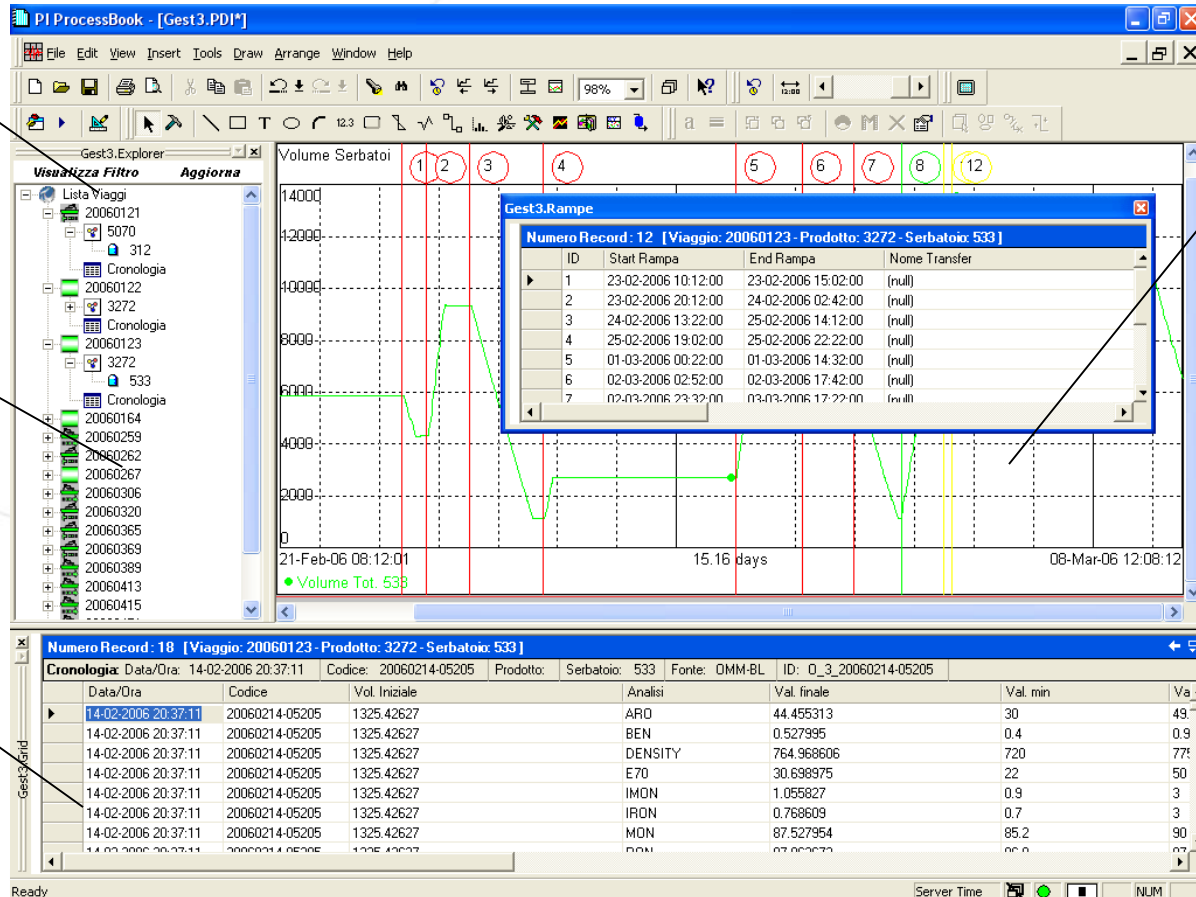
Operations tracking front end



Searching
features

Order & tank
navigation

Order
cronology and
Information
views



Tank
analysis

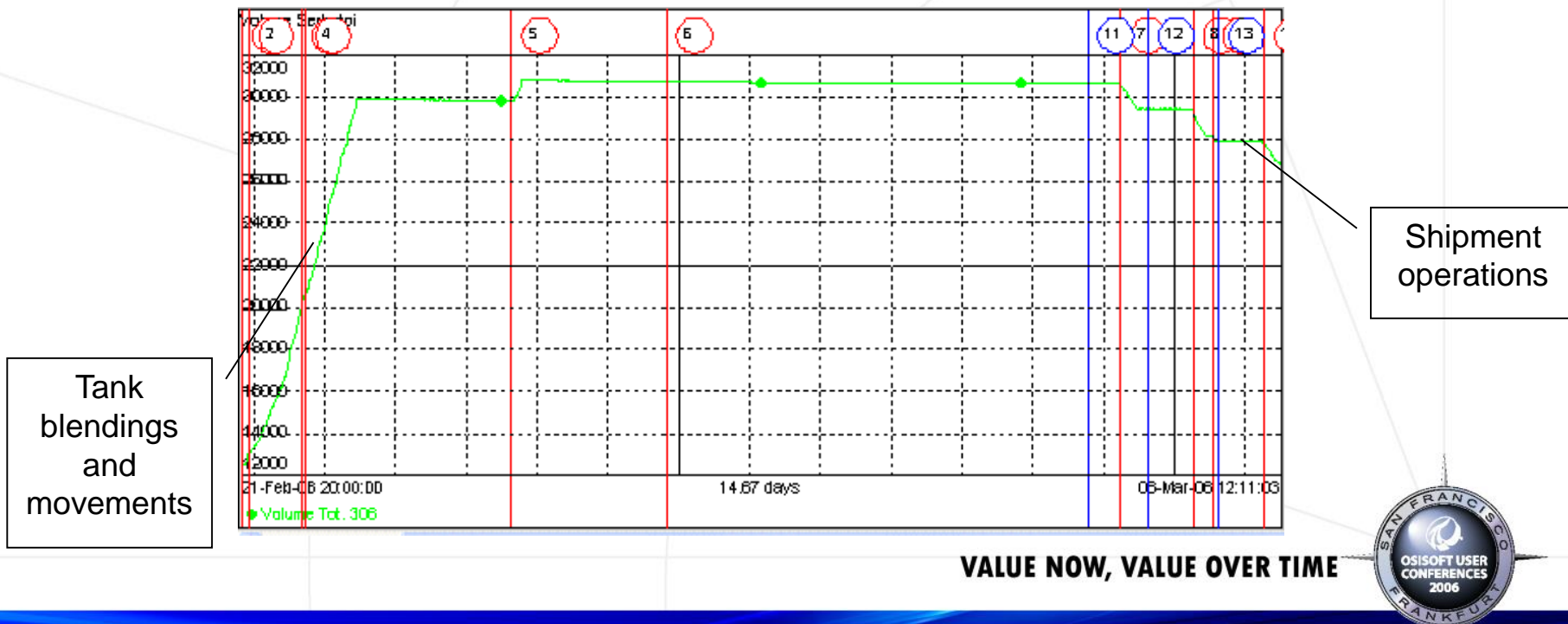
VALUE NOW, VALUE OVER TIME



Finished-product tank analysis



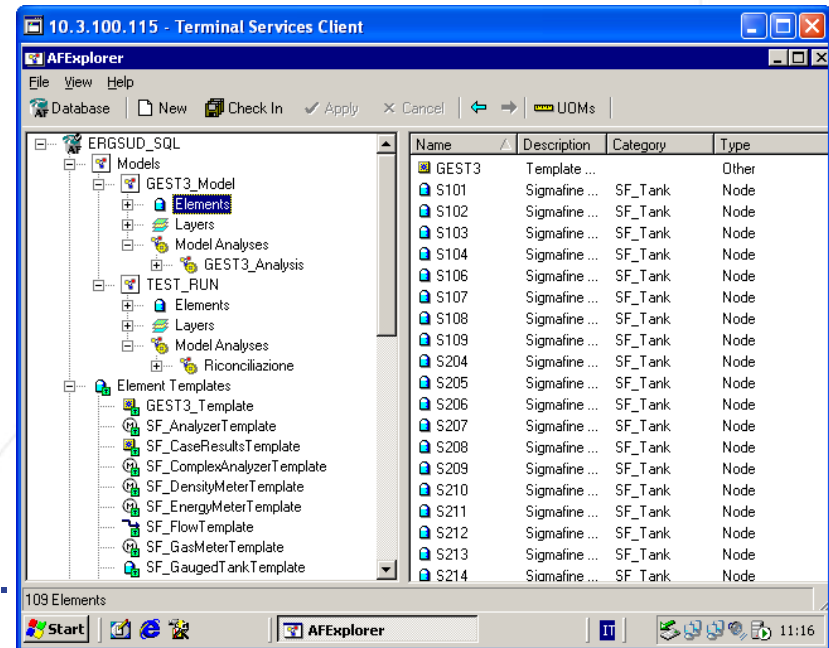
- Identifies time range of analysis according to fiscal operations
- Justify tank ramps with recorded movements and blending records highlighting missing/inconsistent information
- Evidentiate relevant events (fiscal operations, lab analysis)



Leveraging AF and SOA



- The solution leverages the Analysis Framework and SOA techniques
 - Shipment order analysis released as an AF Analysis Rule plugin and exposed as service
 - Company system integration achieved through web services (e.g. fiscal information from Oracle)
 - Services expose methods for shipment orders storing and retrieval to/from RtPM



VALUE NOW, VALUE OVER TIME



KPI framework initiative

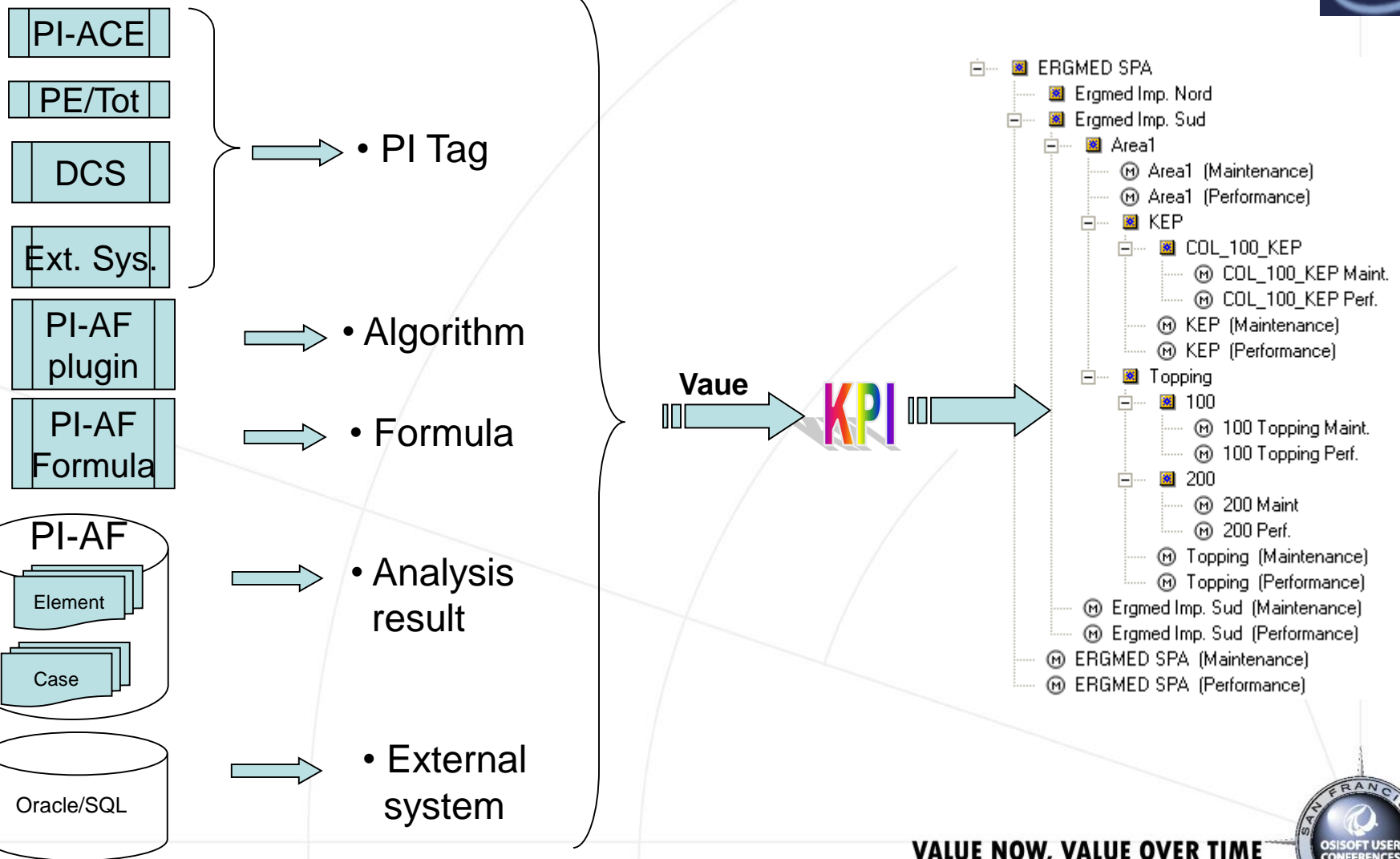


- An ErgMed ongoing initiative to provide a RtPM-based framework to easily
 - Define asset hierarchy to navigate valuable information
 - Elect any kind of information to be an indicator
 - Aggregate consistent information along the hierarchy

VALUE NOW, VALUE OVER TIME

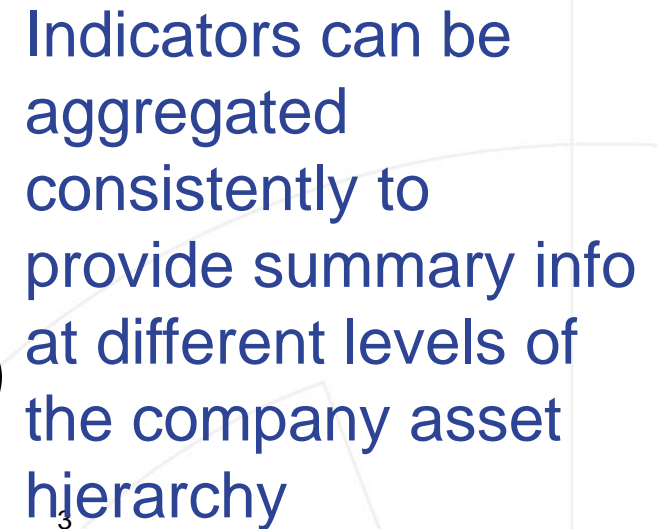


Indicators definition



VALUE NOW, VALUE OVER TIME





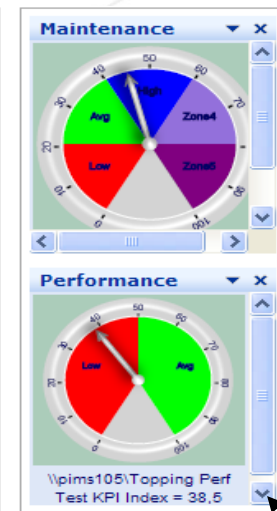
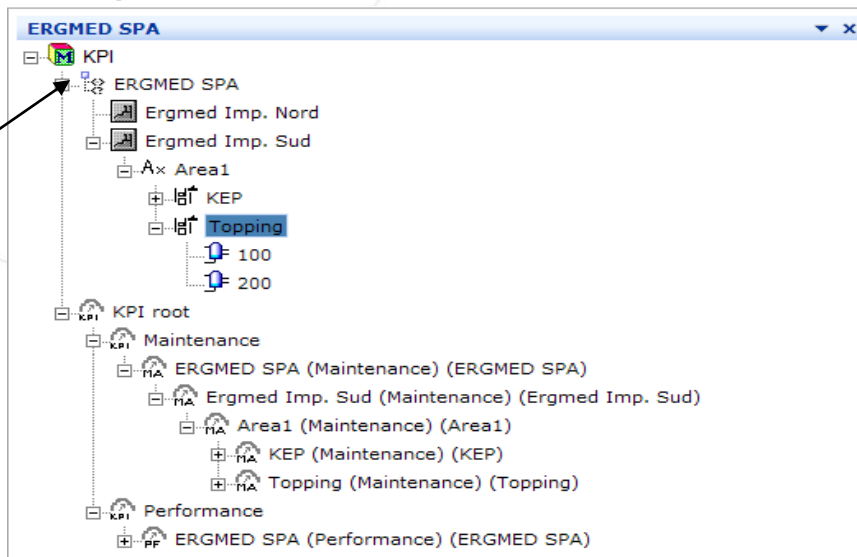
How 100 Topping performance indicator
Is propagated and made available at all
structure levels integrated with all other
performance indicator
(like 200 Topping Perf.)



KPI presentation

- Suitable for ProcessBook and RtWebParts
- Supporting overview and drill-down navigation
- Supporting more hierarchical views

Hierarchy provided by AF



RtValues			
Current State	Time	Value	Dataset
<div> <div style="width: 50%;"></div> </div>	30/06/2005 11.32.55	45	\\pims105\Topping Maint

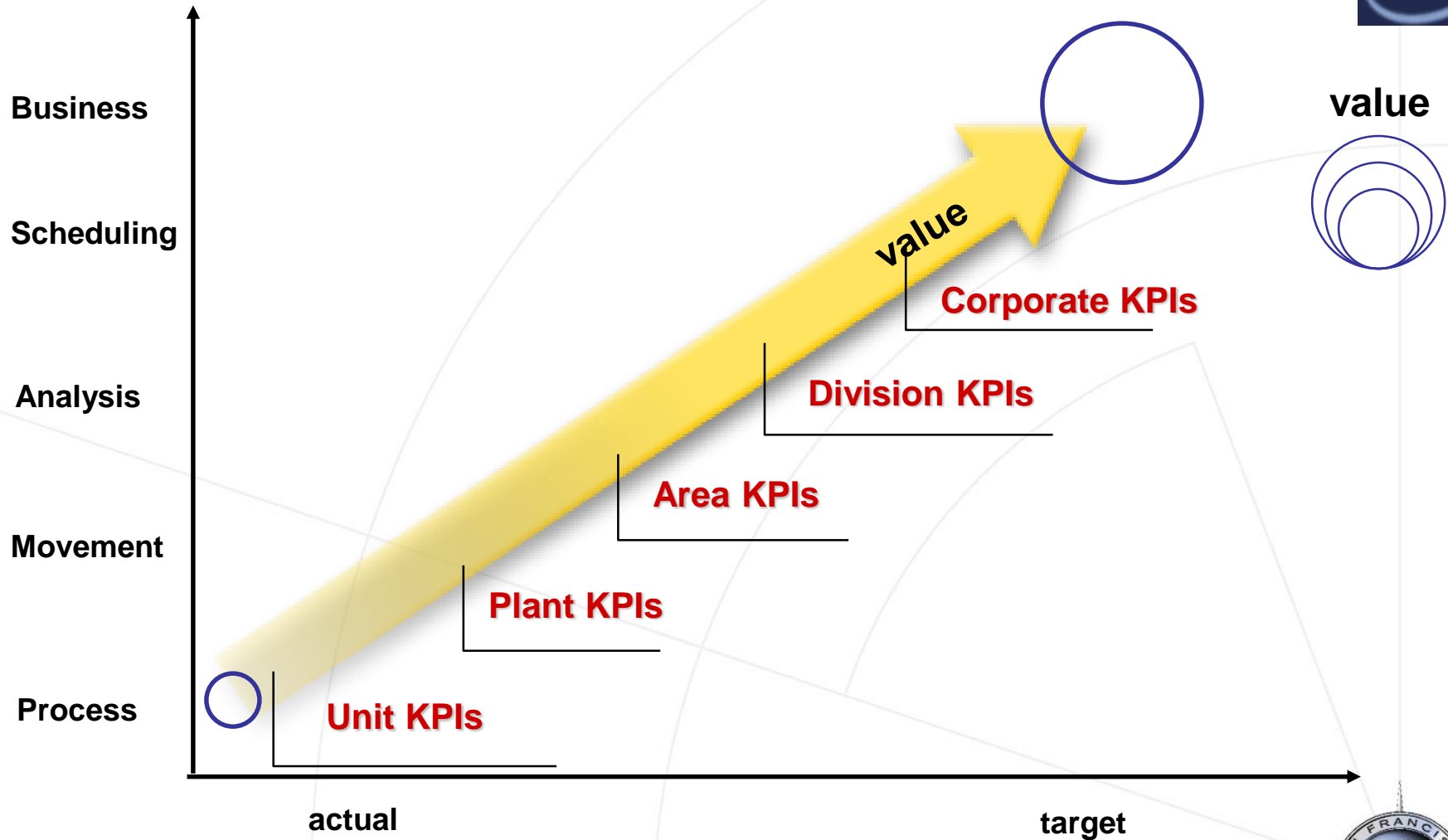
Value

VALUE NOW, VALUE OVER TIME





Next steps: getting value from KPIs



VALUE NOW, VALUE OVER TIME





Next steps

- Keep integrating both refineries
- Focus on the KPI initiative: getting added value from the information platform
- Evaluating the introduction of RtWebParts
- Expectations around OSIsoft Foundation

VALUE NOW, VALUE OVER TIME





Thank you

VALUE NOW, VALUE OVER TIME

