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Optimizing the World's Infrastructure

Cartagena, Crossroad of World Commerce

Europe

USA – West Coast

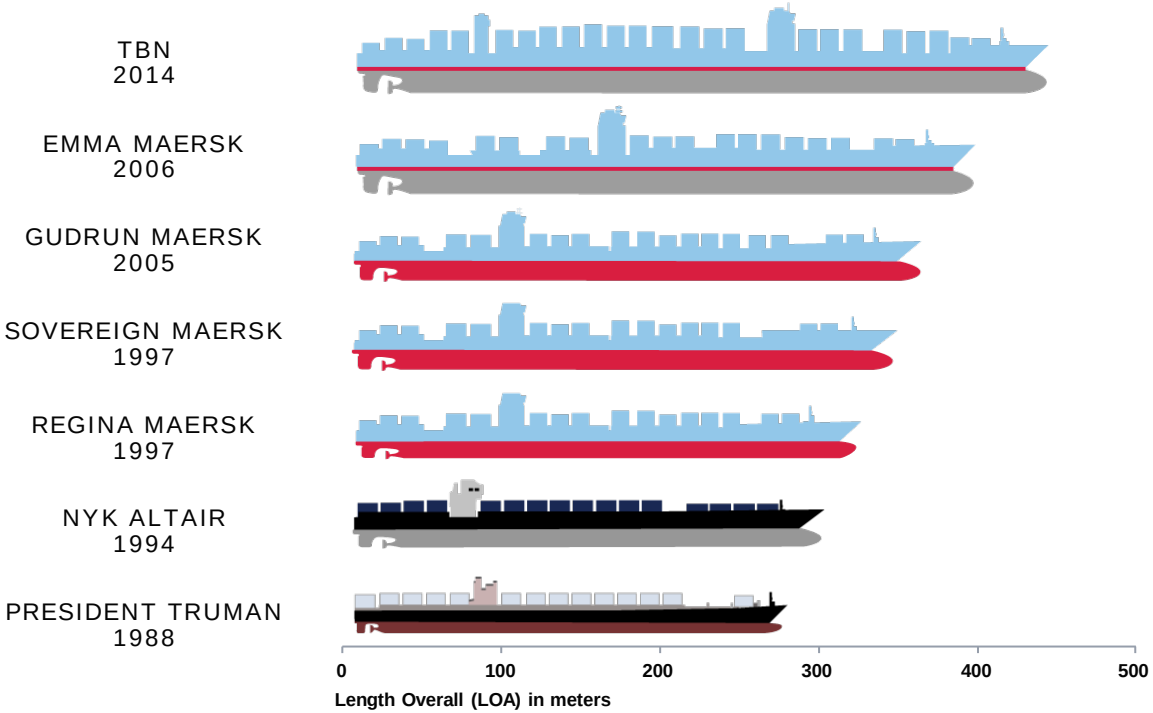
USA – East Coast

Asia

South Pacific

South Atlantic

Container Vessel Evolution 1988 – 2014



	TEU tdw	LOA m	Breath m	Draft m
TBN 2014	18,000-20,200 TEU 200,000-220,000	440	59.0	16.5
EMMA MAERSK 2006	15,200 TEU 175,000	397	56.4	16.0
GUDRUN MAERSK 2005	9,500 TEU 115,700	367	42.8	15.0
SOVEREIGN MAERSK 1997	8,200 TEU 105,000	347	42.8	15.0
REGINA MAERSK 1997	7,403 TEU 90,500	318	42.8	14.5
NYK ALTAIR 1994	4,953 TEU 63,000	300	37.1	13.0
PRESIDENT TRUMAN 1988	4,538 TEU 55,500	275	39.4	12.5

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Cartagena Terminal - Sociedad Portuaria

Cartagena Terminal - Contecar

Main Infrastructure for IT and Operations

IT - HARDWARE

Description	Qty
Servers (Equipment)	143
Cameras CCTV	250
Switches (Network)	87
Routers (Network)	4
Access Points (Wi-Fi)	89
UPS	12
Transfers Switch	13
Radio Links	6
Cooling Systems (Servers)	4
Weight Bridges	8
TOTAL	**616**

IT - SOFTWARE

Description	Qty
Database Engines	8
WEB Servers	26
Mail Servers	2
Domain Servers	8
iSeries Applications	66
TOTAL	**110**

EQUIPOS PORTUARIOS

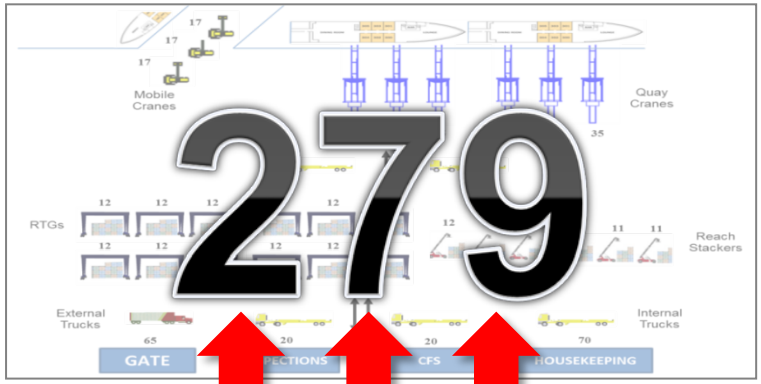
Description	Qty
Cranes	15
Trucks	162
RTG (Rubber Tyre Gantry)	55
Reach Stackers	21
Power Engines	5
Electrical Substations	21
TOTAL	**279**

1,005

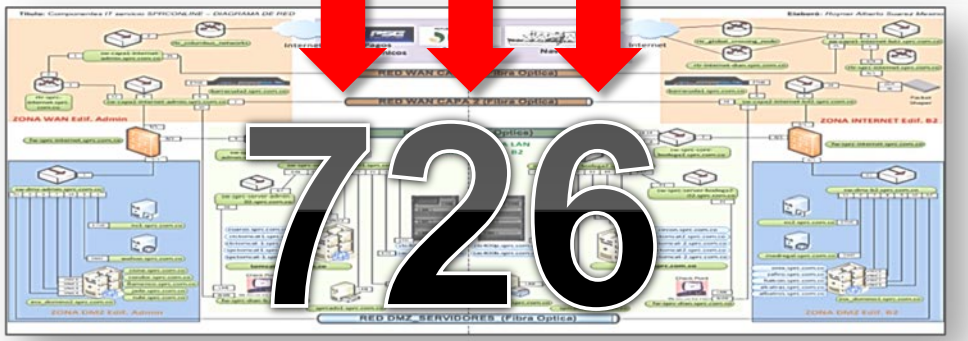
Comply with service level agreements

Container Terminal Operations – Reliability Challenge

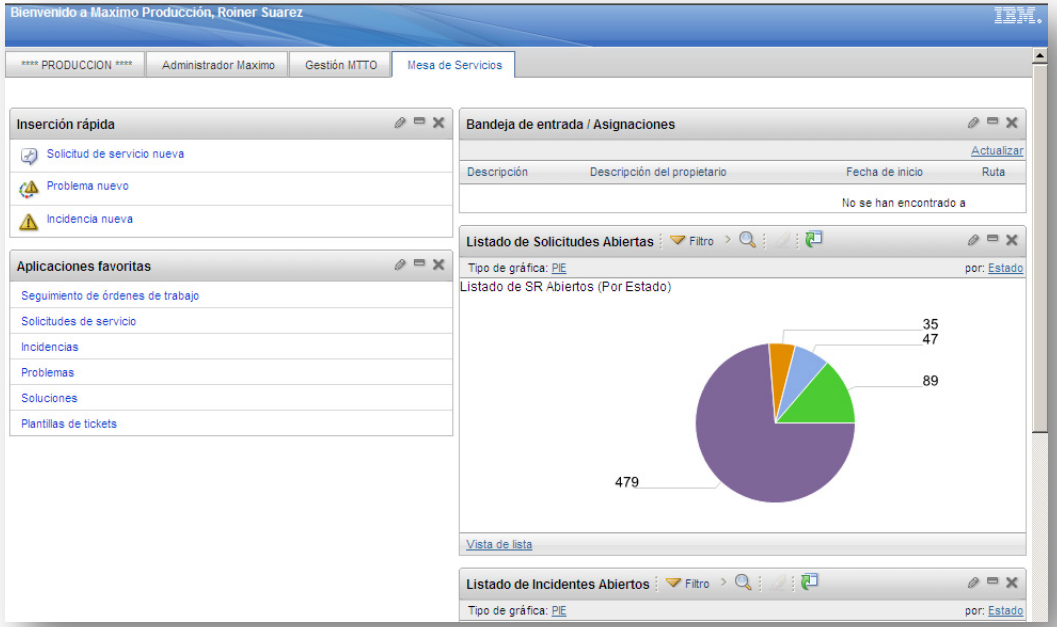
Container Handling Equipments



IT Infrastructure



IBM maximo® 7.5 (October 2012)

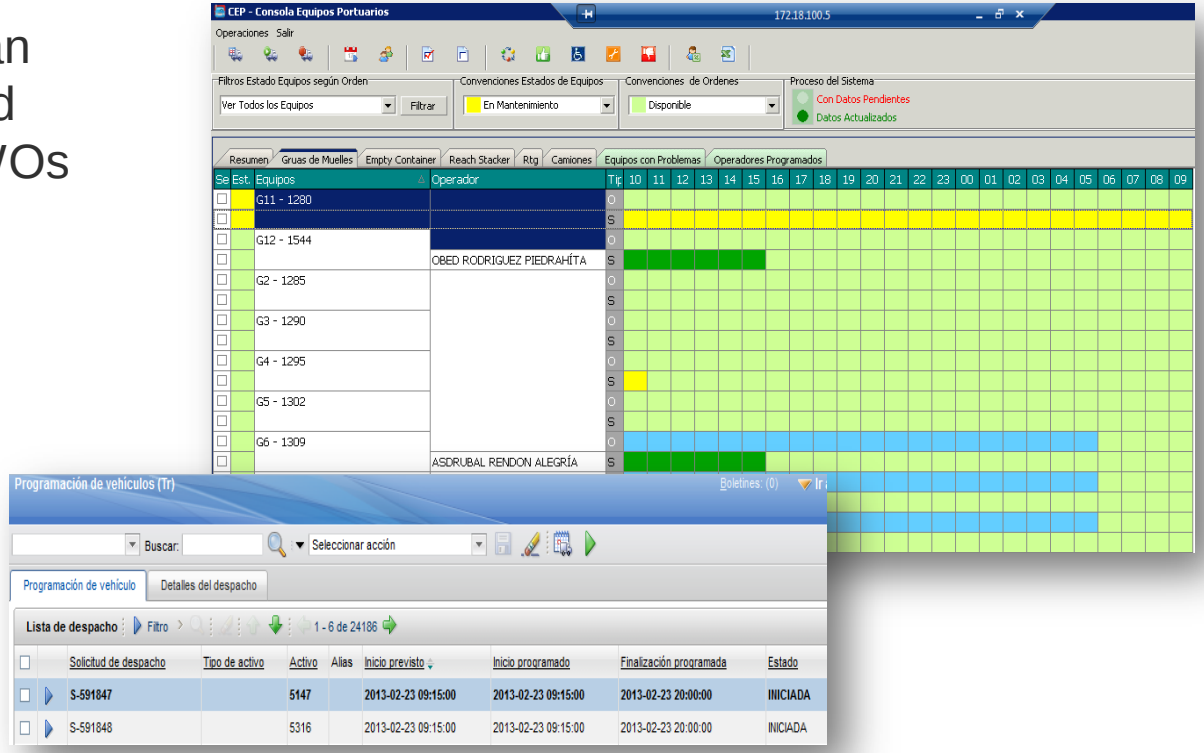


- Maximo 7.1, implementation lasted 10 months
- Live since October 1st 2010
- Supported and advised by IBM Global Services
- 5 Organizations in 1 Maximo instance, 2 different financial systems
- Two people trained for in house support, improvement and new developments

Equipment Availability - Operations vs. Maintenance

IBM maximo Usage

- Quay Crane working plan (WOs) are amalgamated with QC maintenance WOs
- QC status is shown and updated from a central console on “real time”
- QC are dispatched using “Transportation”



Consolidated view of equipment’s status, offer and demand

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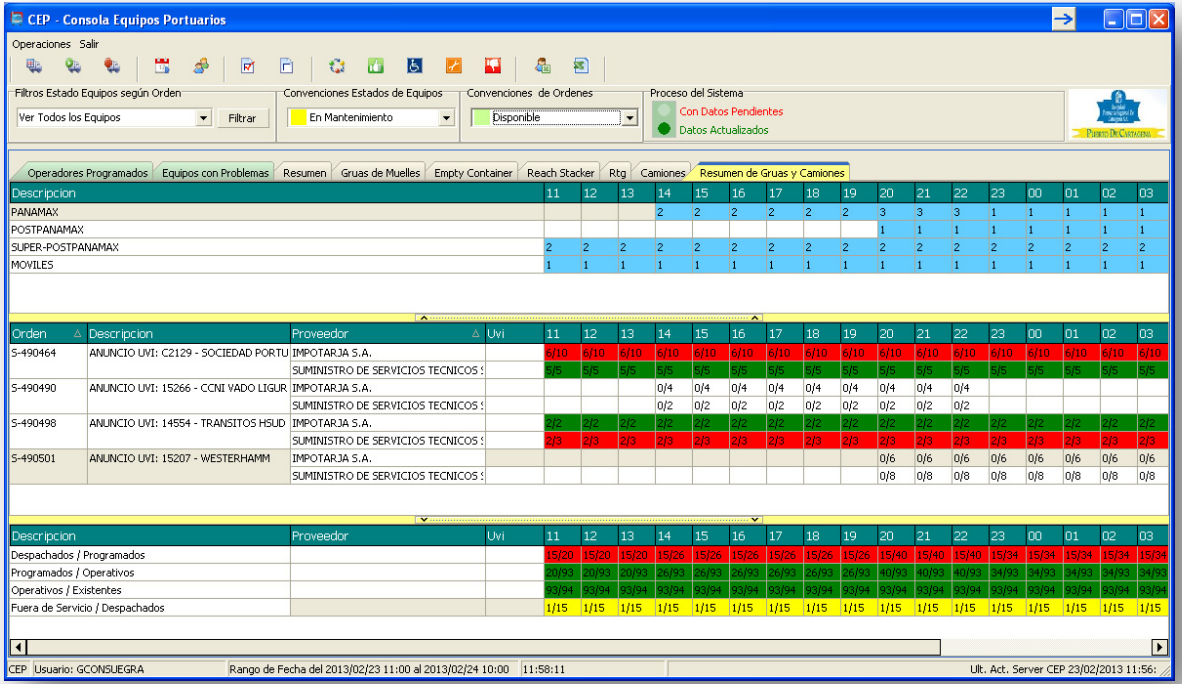
Truck Availability and Dispatch Control

IBM maximo Usage

- Trucks are required in quantities and related to QC plans
- Trucks are dispatched by Manpower outsourcing companies
- QC plans, dispatched and available trucks are displayed

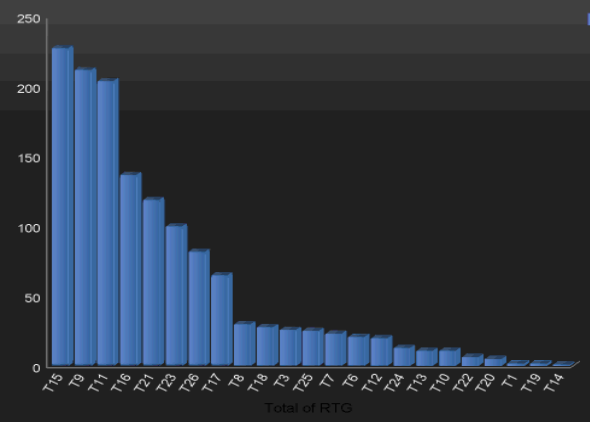


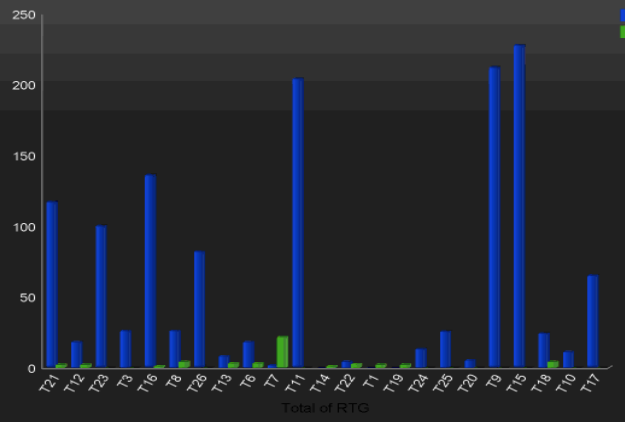
Consolidated view of quantities and status of dispatched trucks

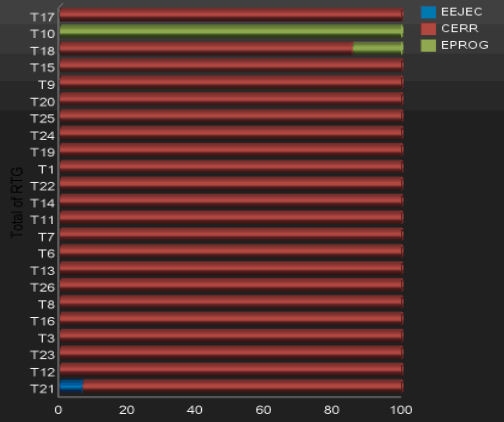
Work Orders Analysis

IBM maximo Usage

SPRC Work Orders Analysis

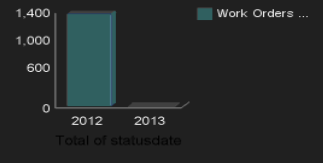






	T21	T12	T23	T3	T16	T8	T26	T13	T6	T7	T11	T14	T22	T1	T19	T24	T25
Total of description	119	20	100	26	137	30	82	11	21	23	204	1	6	2	2	13	25
Pruebas funcionales y registro	8	1	7	2	10	2	8		1		16		1			1	2
Pruebas funcionales y registros					1		1				3						
Prueba funcional y registro	2	1	1	1	2	1	1		1	1	3						1
Verificar ruidos anormales	2		2		2						2						
Pruebas funcionales y registro.	2		3		2		2				2						
Verificar y calibrar holgura de trabajo de los...	1		1		1						2						
Pruebas funcionales y registros.							1				2						
MANTENIMIENTO PREVENTIVO ILUMINACION ...	1		1		1						1						
Verificar y cuantificar hilos rotos	1	1		1	1	1			1		1						1
Toma de diametro de guaya	1	1		1	1	1			1		1						1
Realizar limpieza de sesion de guayas	1	1		1	1	1			1		1						1
MANTENIMIENTO PREVENTIVO TOMA DATOS ...	1	1			1						1						1
Mantenimiento lamparas vigas Trolley	1		1		1						1						
Verificar caja de conexiones motor actuador	1	1		1	1	1			1		1					1	1
Verificar funcionamiento del actuador	1	1		1	1	1			1		1					1	1

	2012	2013
Work Orders Count	1,364	8



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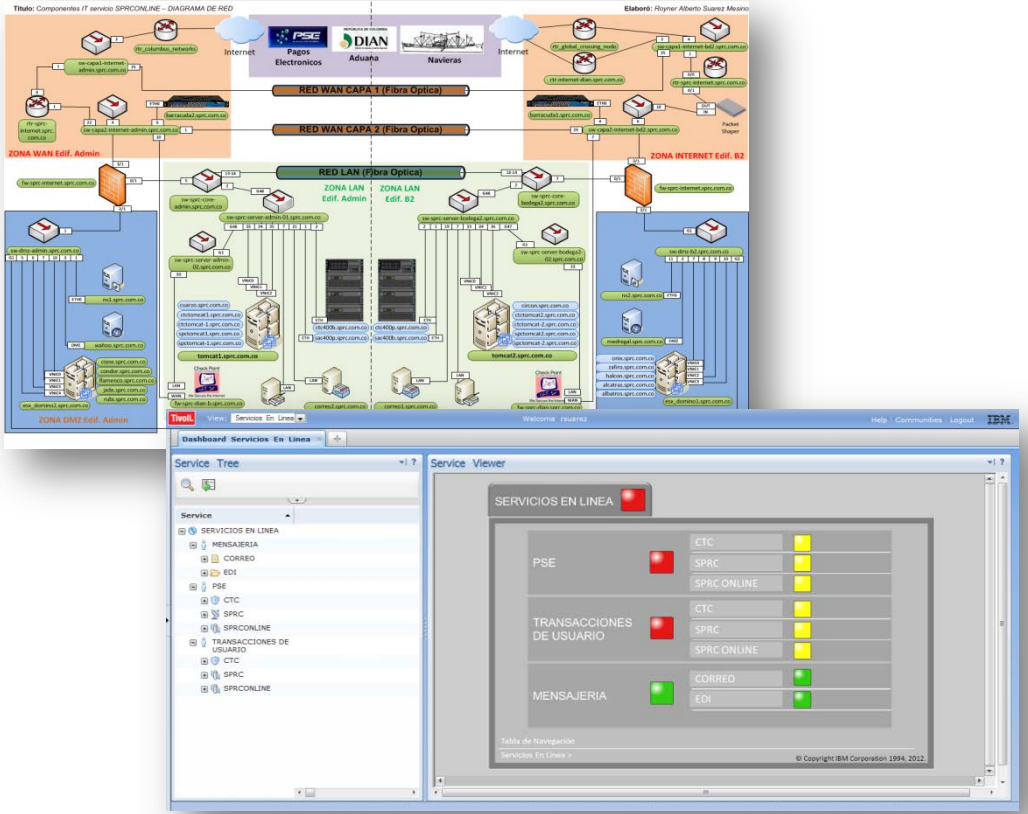
Puerto De Cartagena

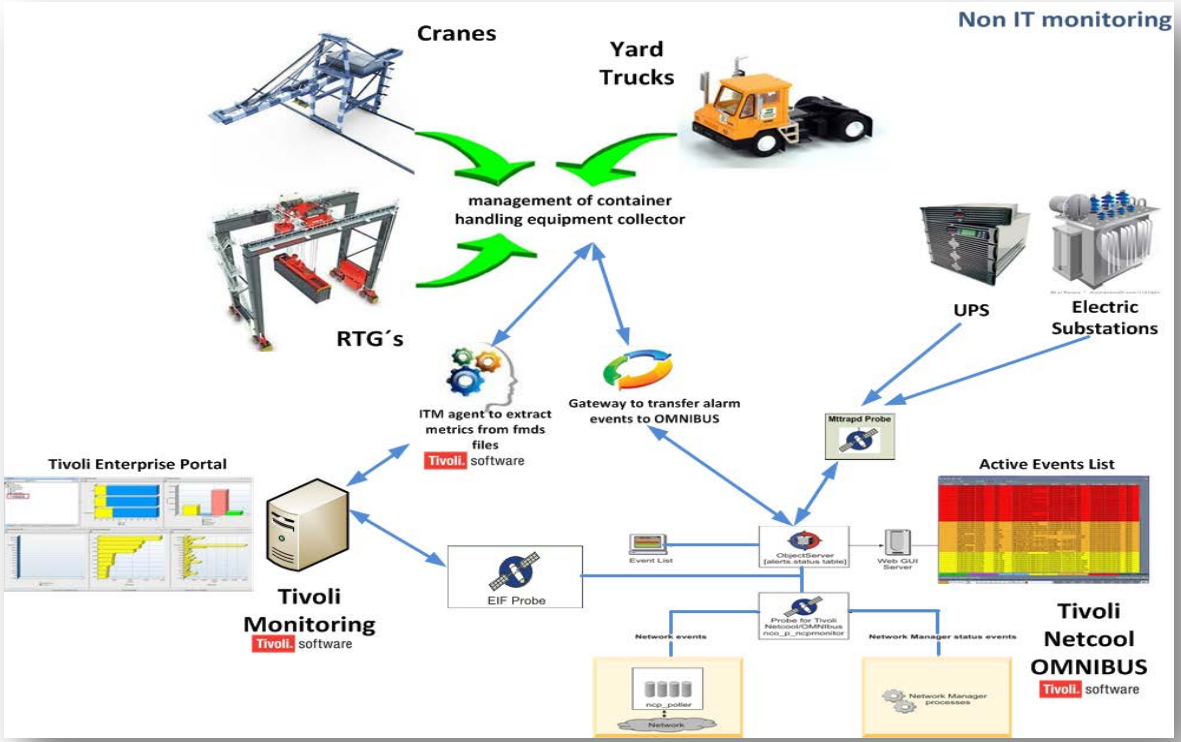
Tivoli - ISM Implementation

- IT related Services
  - More “complex” one
  - 4 months implementation time
- Maximo Integration triggers automatic WOs
- Learning process for IT people and starting point for rest of business areas

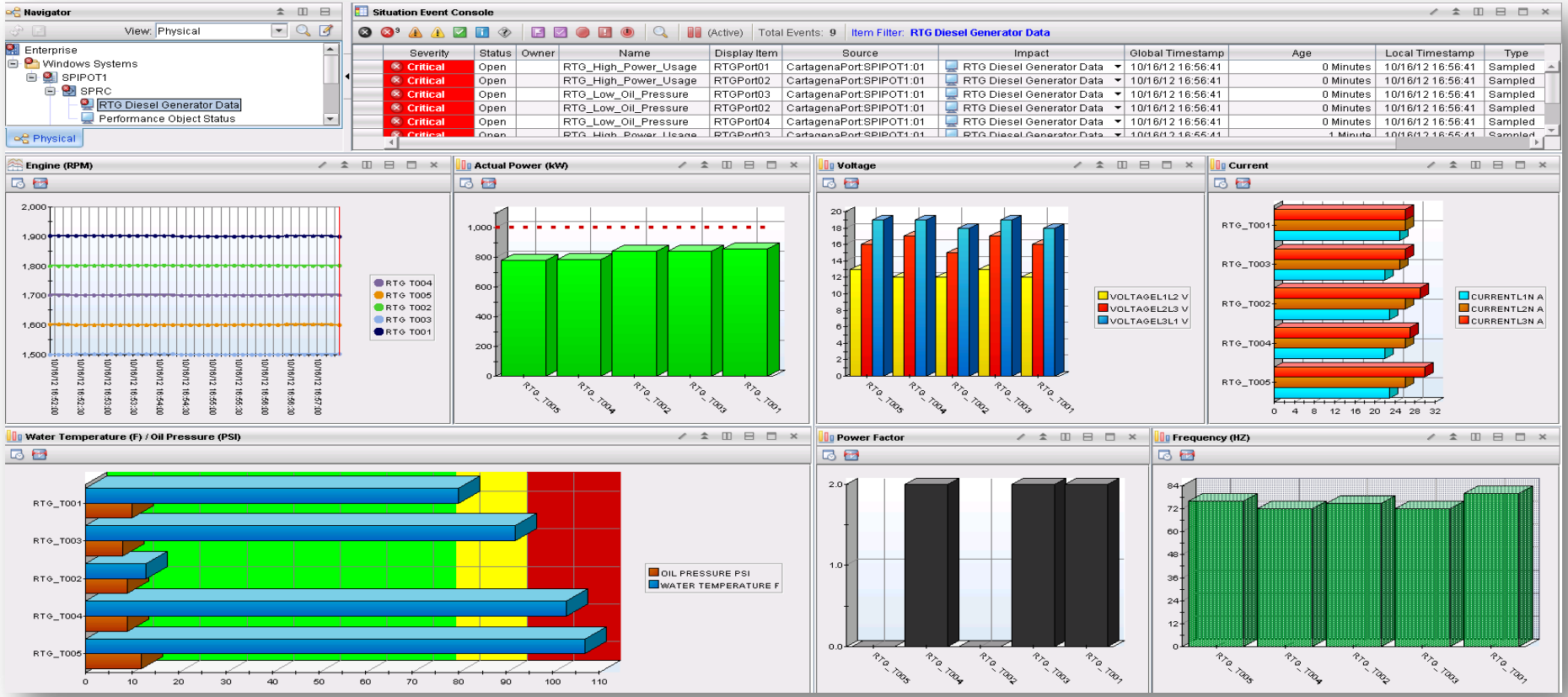


Monitoring of Non IT Equipment

- Non IT equipment metrics and events collector
- Business Services Dashboards combining IT and non IT assets
- Predictive Analytics for preventive maintenance
- iLOG for events correlation and automation



Cranes (Non IT Equipment)



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