OSIsoft products support ERG entering in the Italian electricity market

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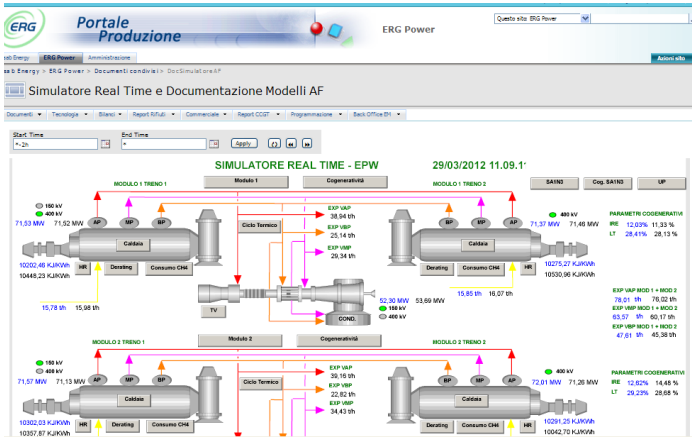
ERG: Downstream & Refining
Power Generation



"ERG Group wants to enter into the electricity market in order to increase the value of existing asset, and start a new profitable business"

P.Tittoni

ERG Power&Gas
General Manager

Business Challenge

- Entering into the Italian energy markets
- Increase the value of the existing assets
- Starting a new profitable business

Solution

Implement a new solution on PI System using

- PI AF
- PI WebPart
- PI SDK
- PI ACE

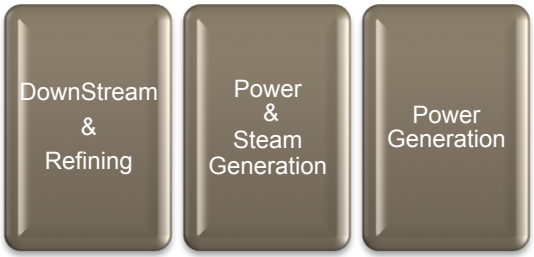
Customer result

- Aug 2010 – Oct 2011
- Optimize pricing strategy
- Minimize economic penalties
- Better Evaluation of performance & economics

Agenda

- Context
  The company - Trasmission Grid - Electricity Market – ERG Power Plant
- Business Challenge
- Business Process
- Solution
- Project
- Business Results
  Economics – Future Plan & Next Steps - Demo

The ERG Group



Employees: 750

Active in

- Downstream & Refining
- Power Generation & Steam with thermoelectric power
- Power Generation from renewable sources

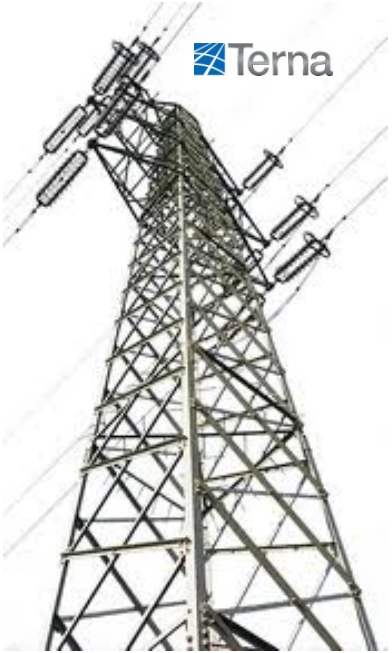
Power Plants

- Two thermoelectric plants of 1,000 MW

Italian Transmission Grid

Production Unit (UP)

- **Renewable 23 %** 76 TWh/Year
- **Thermoelectric 64 %** 207 TWh/Year
- **Foreign Countires 13 %** 44 TWh/Year



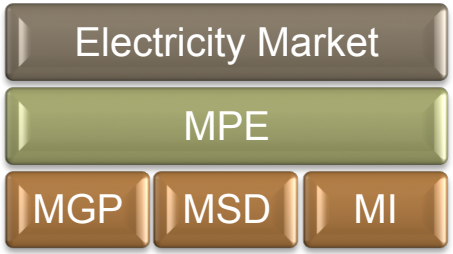
Terna is the primary owner of the National high-voltage Electricity Transmission Grid (RTN) and is also responsible for dispatching energy

Consumption Unit (UC)

- Network Loss 8%
- Agriculture 2 %
- Industrial 43 %
- Service industry 27 %
- Domestic Use 20 %

Year 2010

Italian Electricity market

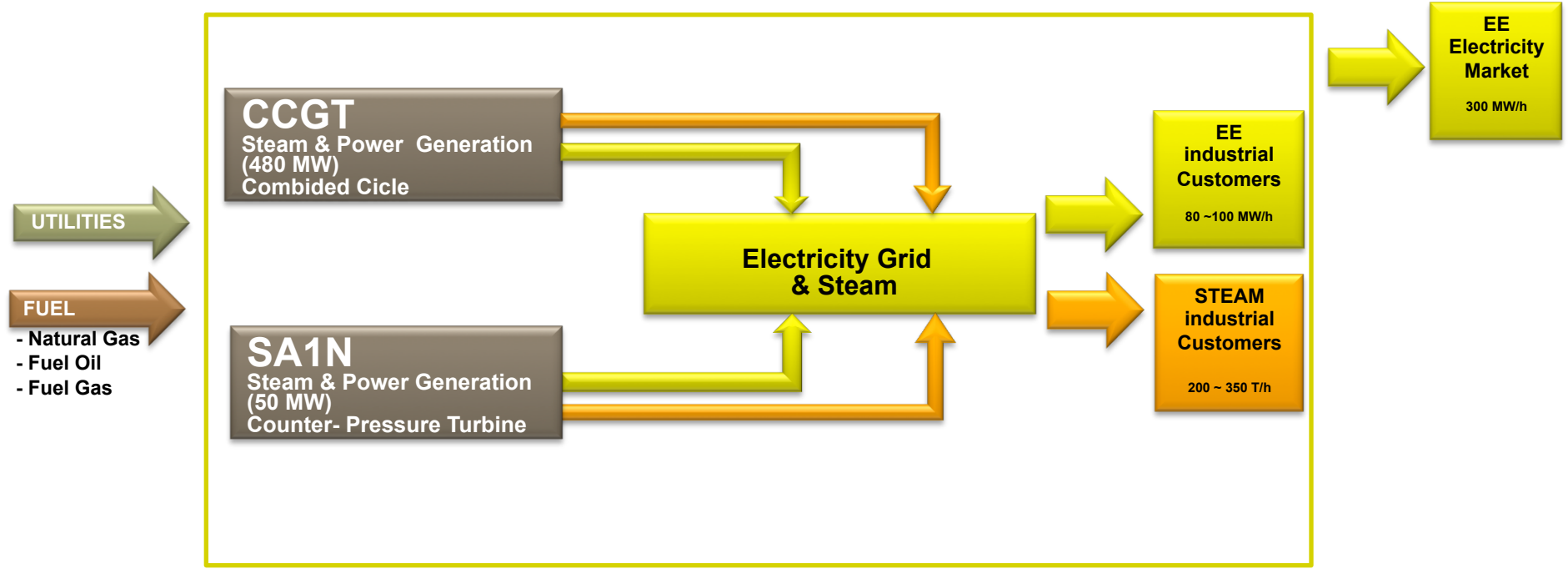


Electricity Market Liberalization:1999

Spot Electricity Market (MPE) components:

- **Day-Ahead Market -** MGP (energy market) granularity: 1 hour
- **Intra-Day Market** - MI (energy market) granularity: 1 hour
- **Ancillary Services Market** - MSD granularity: 15 min - remote control

ERG : Power Generation Plant



Business Challenge

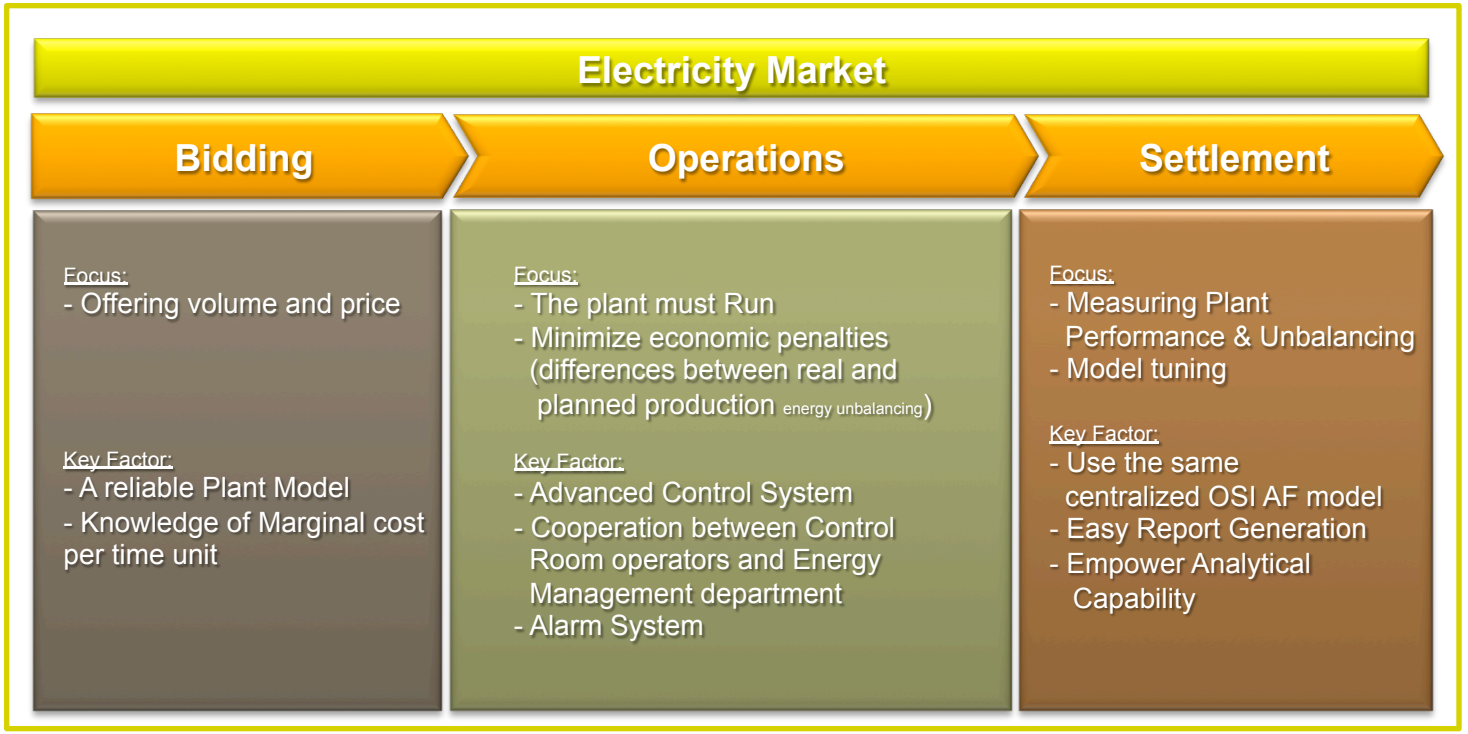
Entering into the energy & ancillary markets

- MGP
- MSD

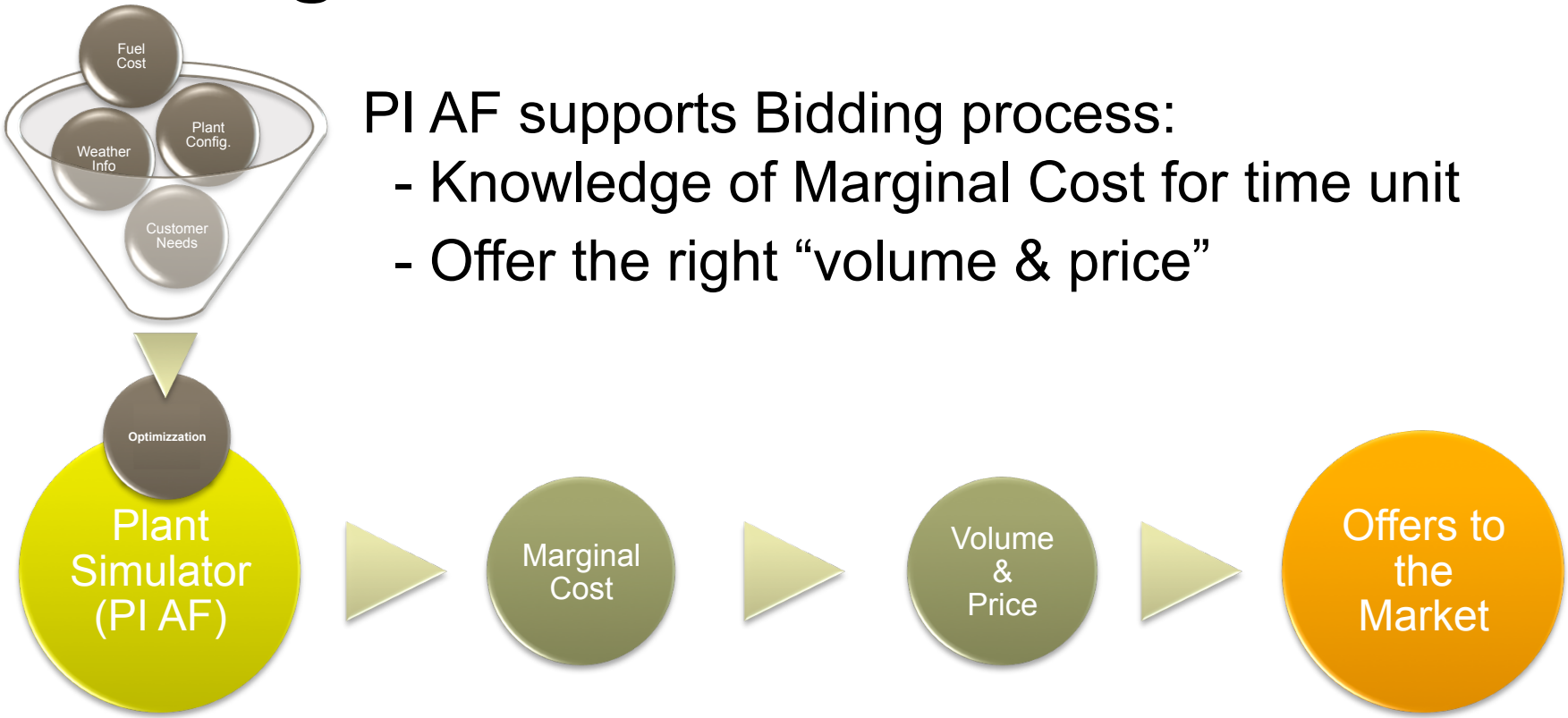
Why? Expected Goals:

- Increasing the value of the existing assets
- Starting a new profitable business

Business Process



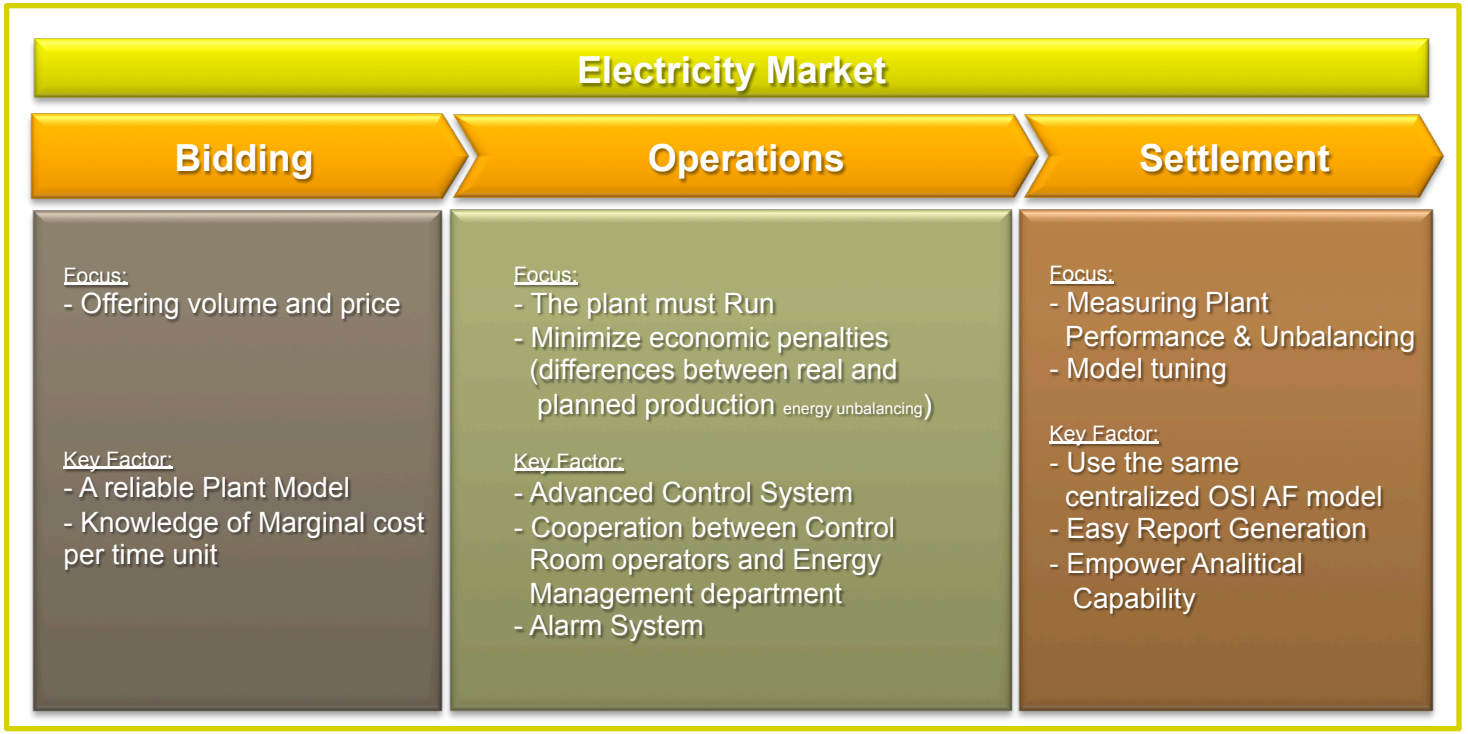
Bidding Process



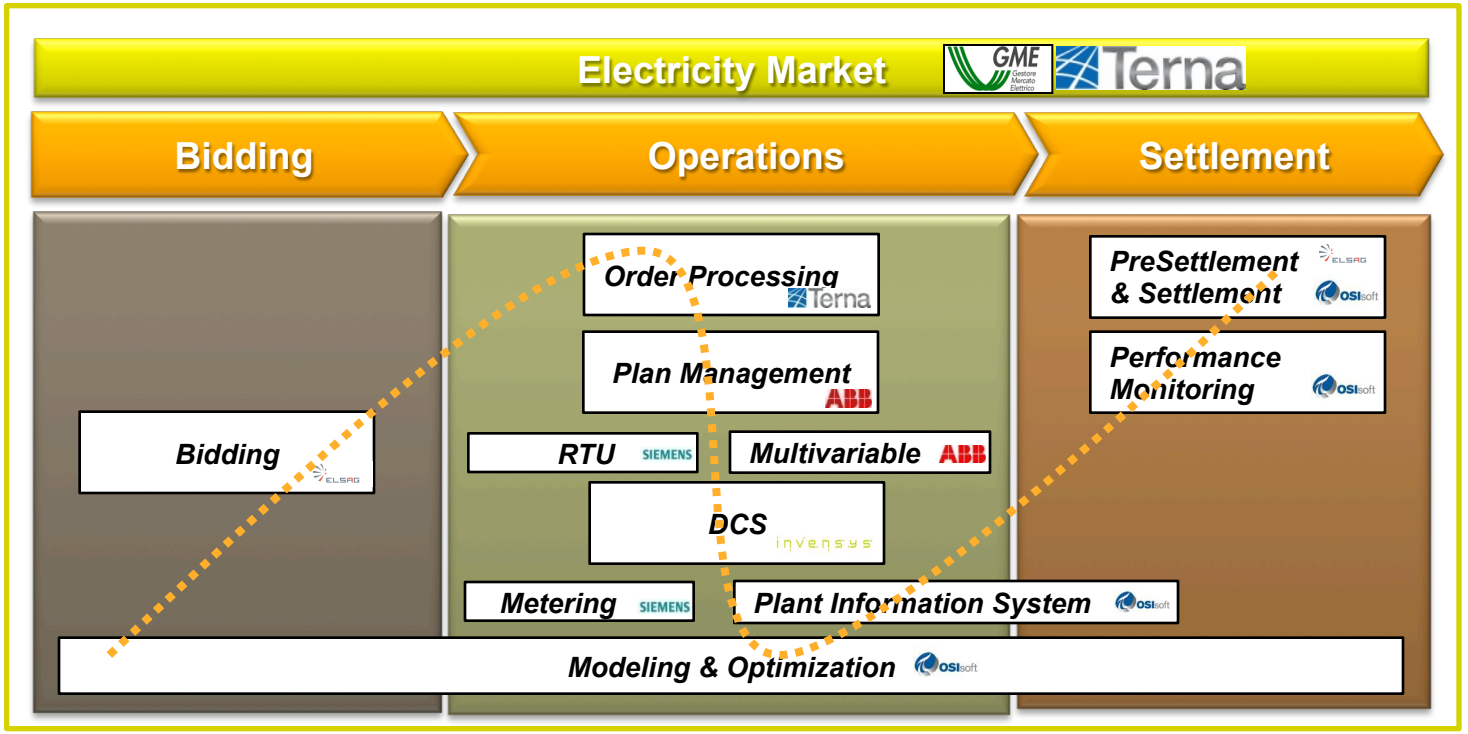
PI AF supports Bidding process:

- Knowledge of Marginal Cost for time unit
- Offer the right “volume & price”

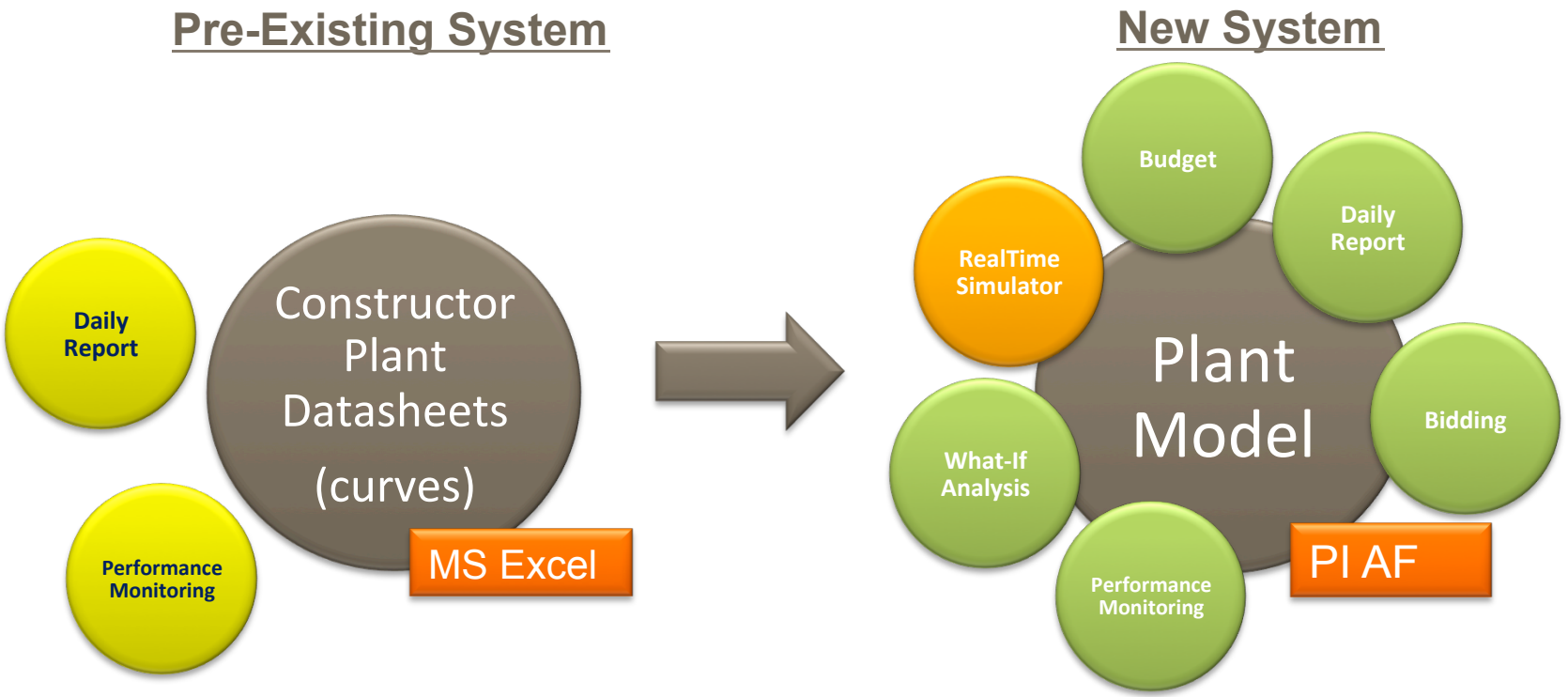
Business Process



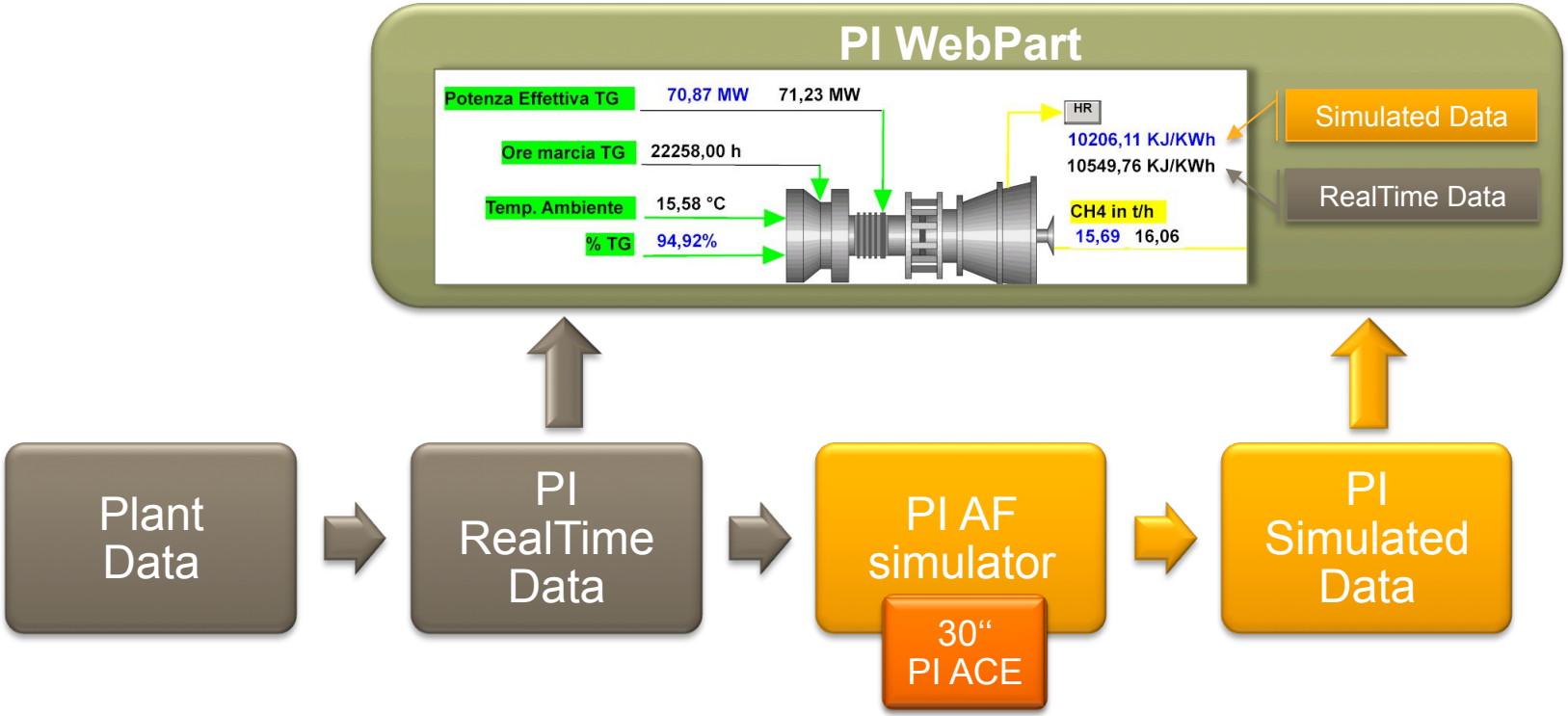
Business Process Architecture (SOLUTION)



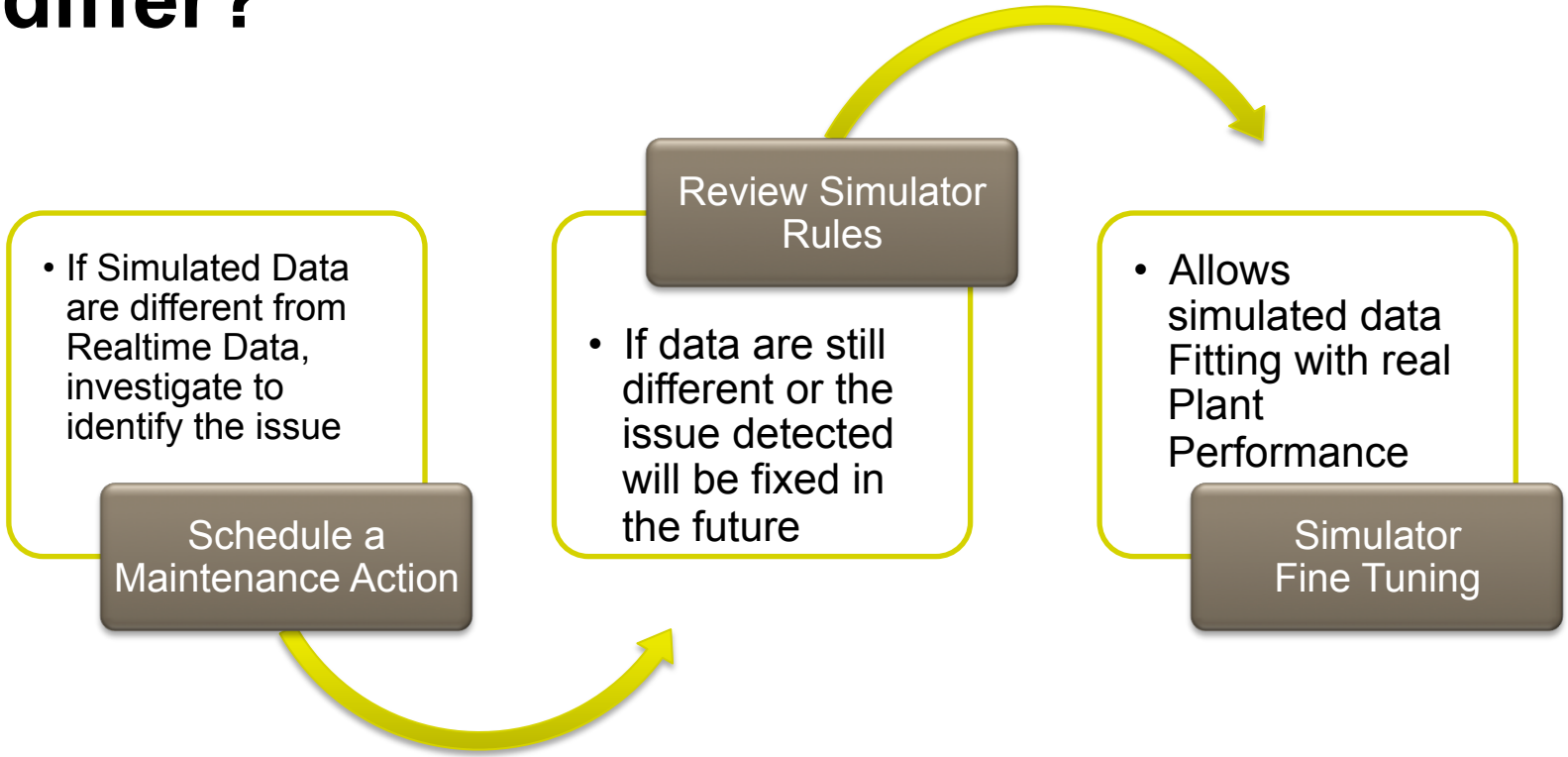
Modeling (SOLUTION)



RealTime Simulator



What If RealTime & Simulated data differ?

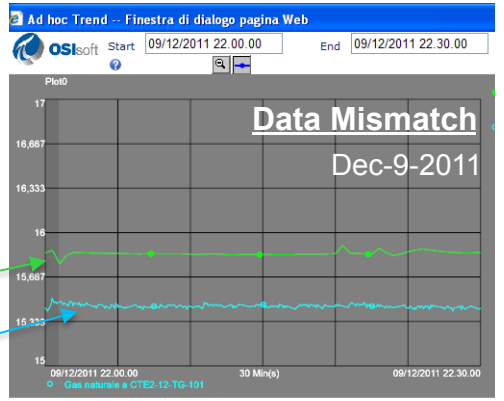


Example: Identify & Fix a Plant issue

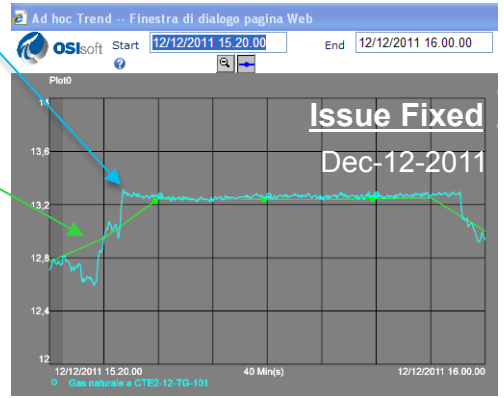
1. Gas Turbine Consumption RealTime values differ from the simulated (9/11/2011)
2. Maintenance Team recognize an issue on the GasTurbine

Simulation

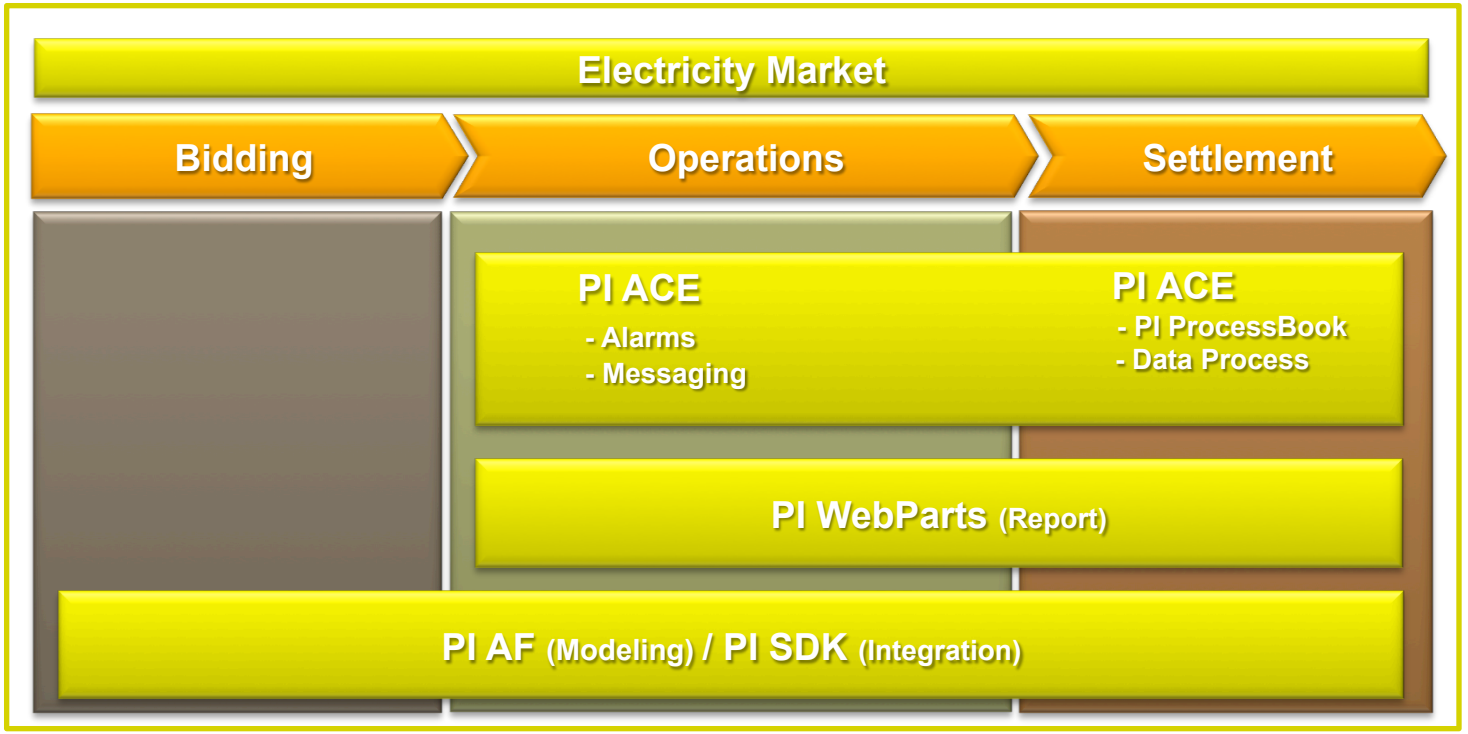
RealTime



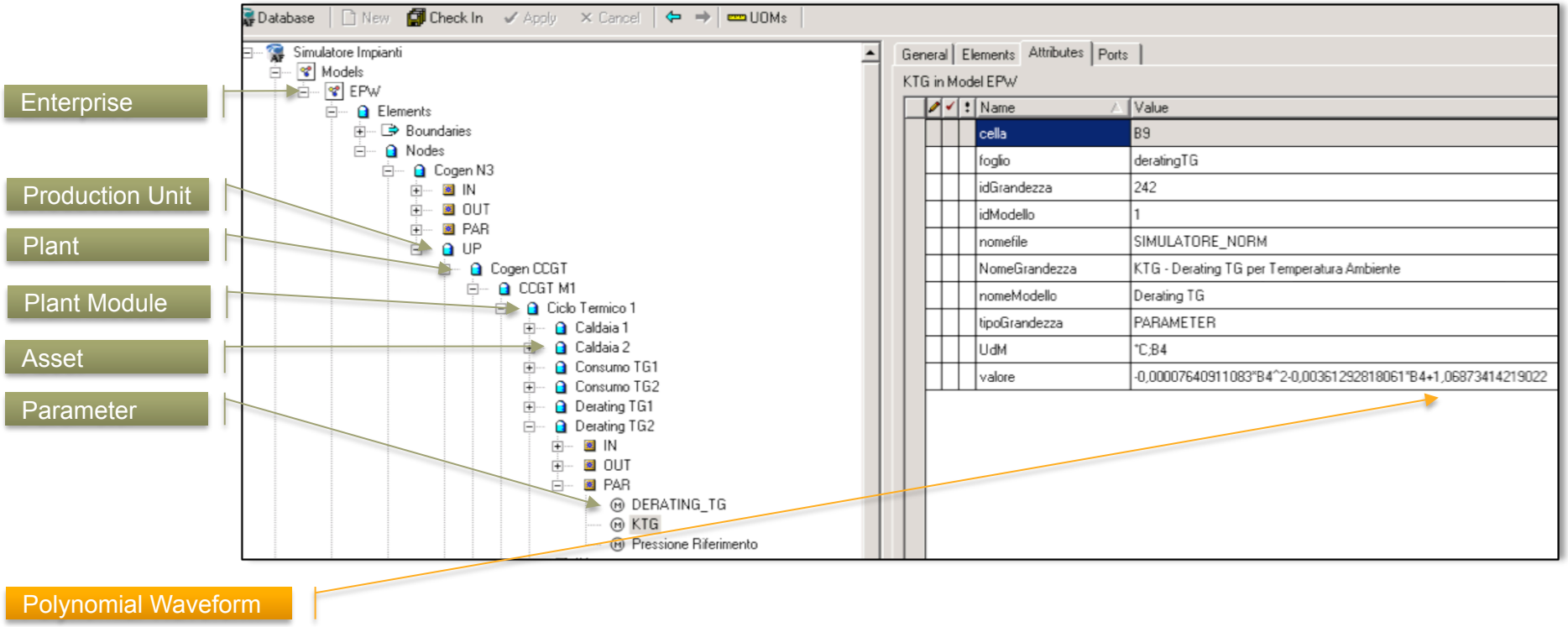
3. Maintenance Team decides to wash the GasTurbine compressor as Maintenance Action
4. After the Maintenance Action (10/11/2011) RealTime Power and Simulator Power are in the same range (12/11/2011)



OSIsoft Technology



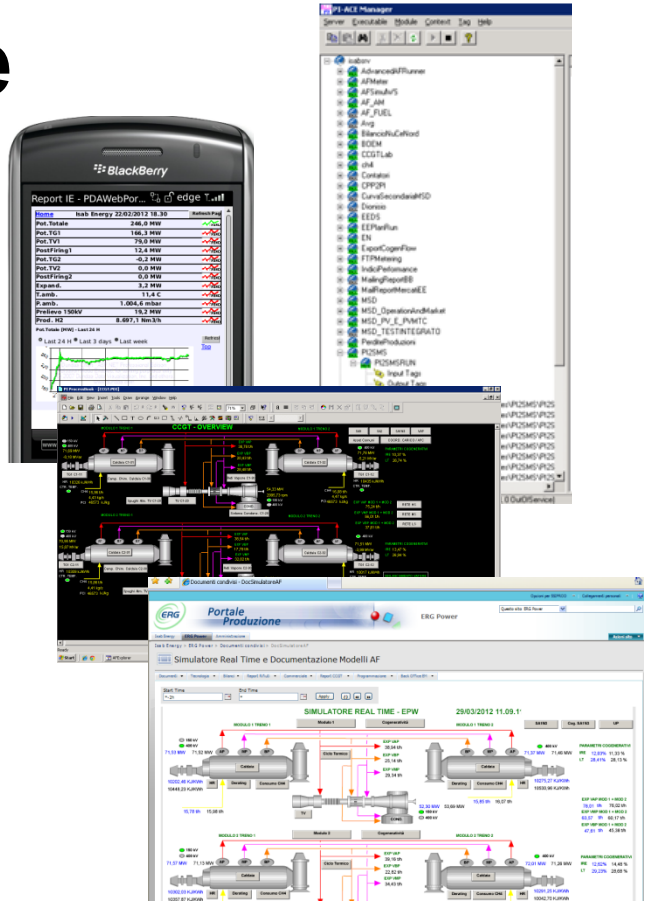
Plant Model on PI AF



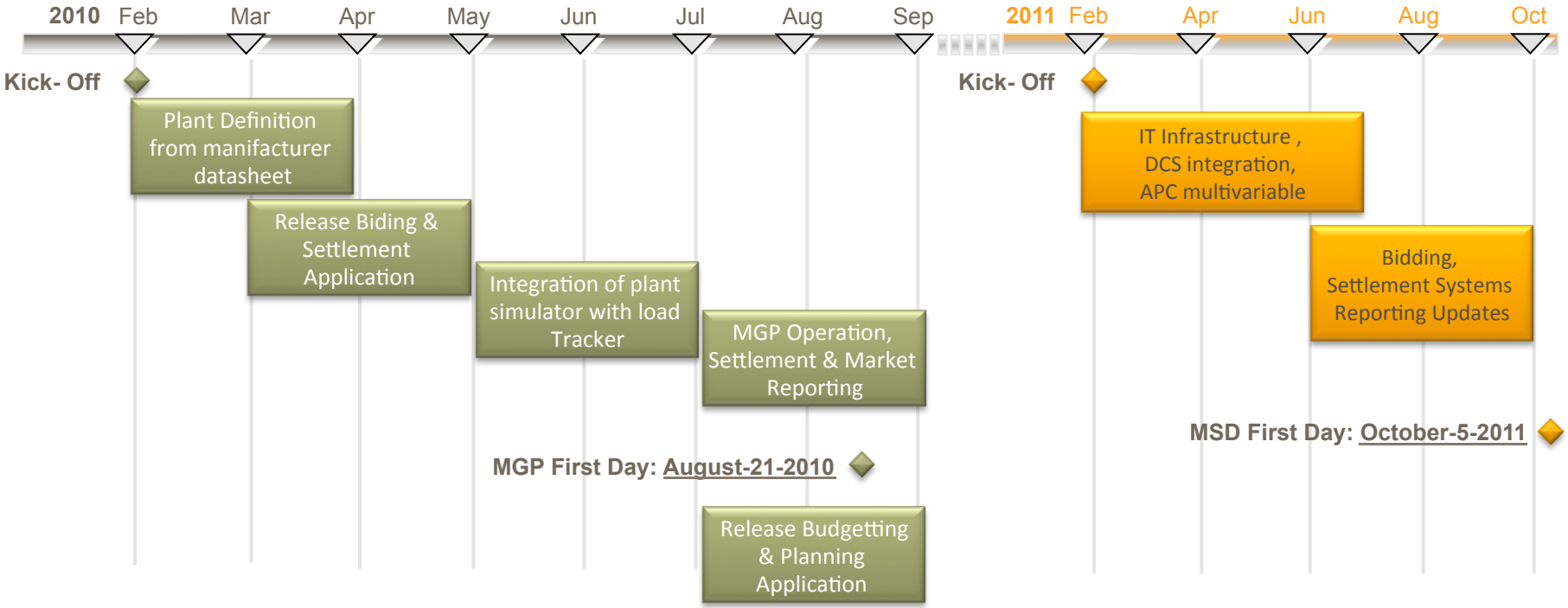
ERG OSIsoft Experience

PI System user since 1999

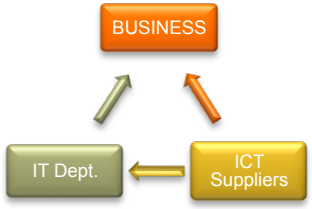
- PI server with 40,000 tags
- PI to PI interface
- More than
  - 500 PI ProcessBook Displays
  - 100 PI ACE Context
  - 10 PI AF Databases
  - 40 application with PI SDK
  - 50 web report with PI WebParts



Project Plan



Project Team



- Internal:
  - IT Department: Project Management and Software Selection
  - Energy Management: main Bidding and Settlement dept.
  - Operation: in charge of Unit Operation
  - Maintenance Engineering: in charge of Equipment
  - Human Resources: in charge of Change Management
- External:
  - Main Suppliers: ABB, Invensys, Siemens, IT Telco Operator
  - OSI Developer Supplier: ITER

Business Results

Future Plan & Next steps

- PI AF Model connection with thermodynamic simulator
- Enhancement of PI AF Model Tuning and Maintenance
- Economic Optimization Centralization

Video-Demo

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THANK YOU

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