EPCC 2011

Operation planning

Enabling opportunities from the overflow of smart-grid data

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SMART GRIDS DATA FLOW : CHALLENGE VS OPPORTUNITY

- Smart Grids generate a tremendous flow of data.
- This sea of data is a real asset to enable great business opportunities.

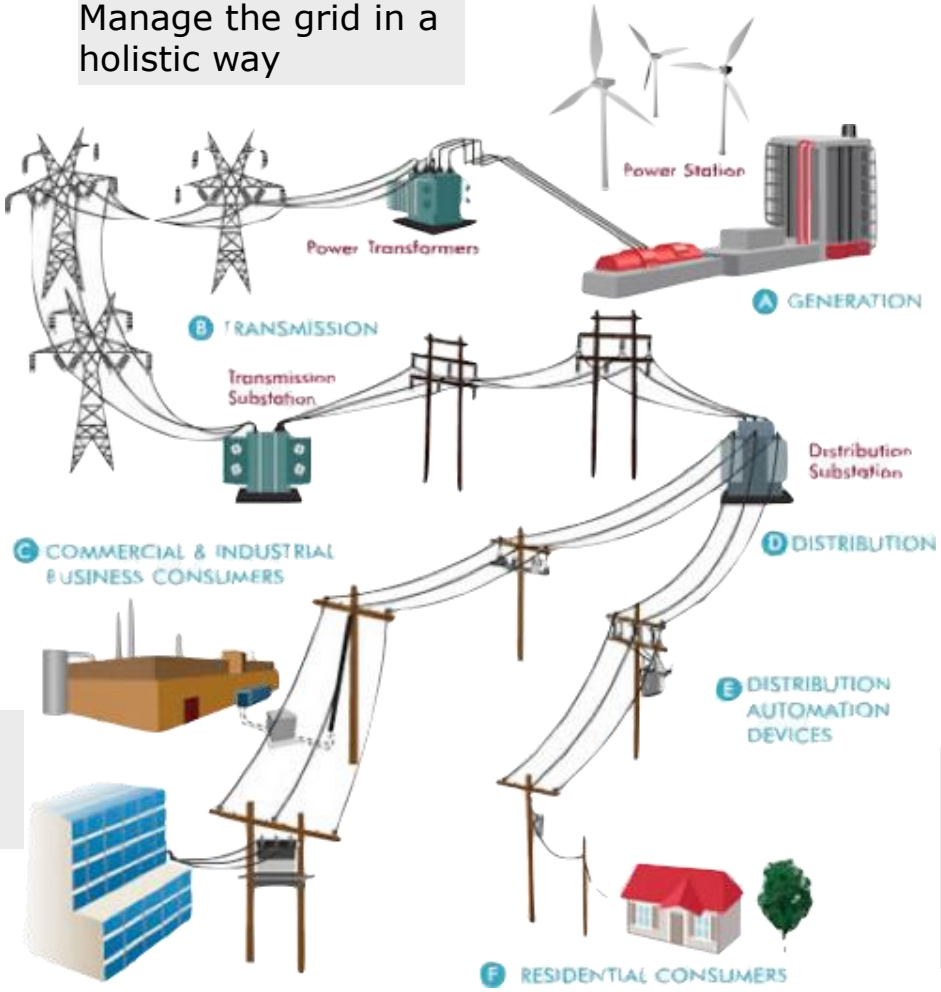
- Smart Grids has to provide the right information to the right decision maker.
- Data mining and predictive analytics will be key to support decision making in smarter grid.

DATA MINING BENEFITS: MAKE THE GRID EVEN SMARTER

Increase peoples capabilities to operate smart grids more efficiently

Plan the power system with better risk awareness

Manage the grid in a holistic way



Understand and forecast impact of renewables on grid management

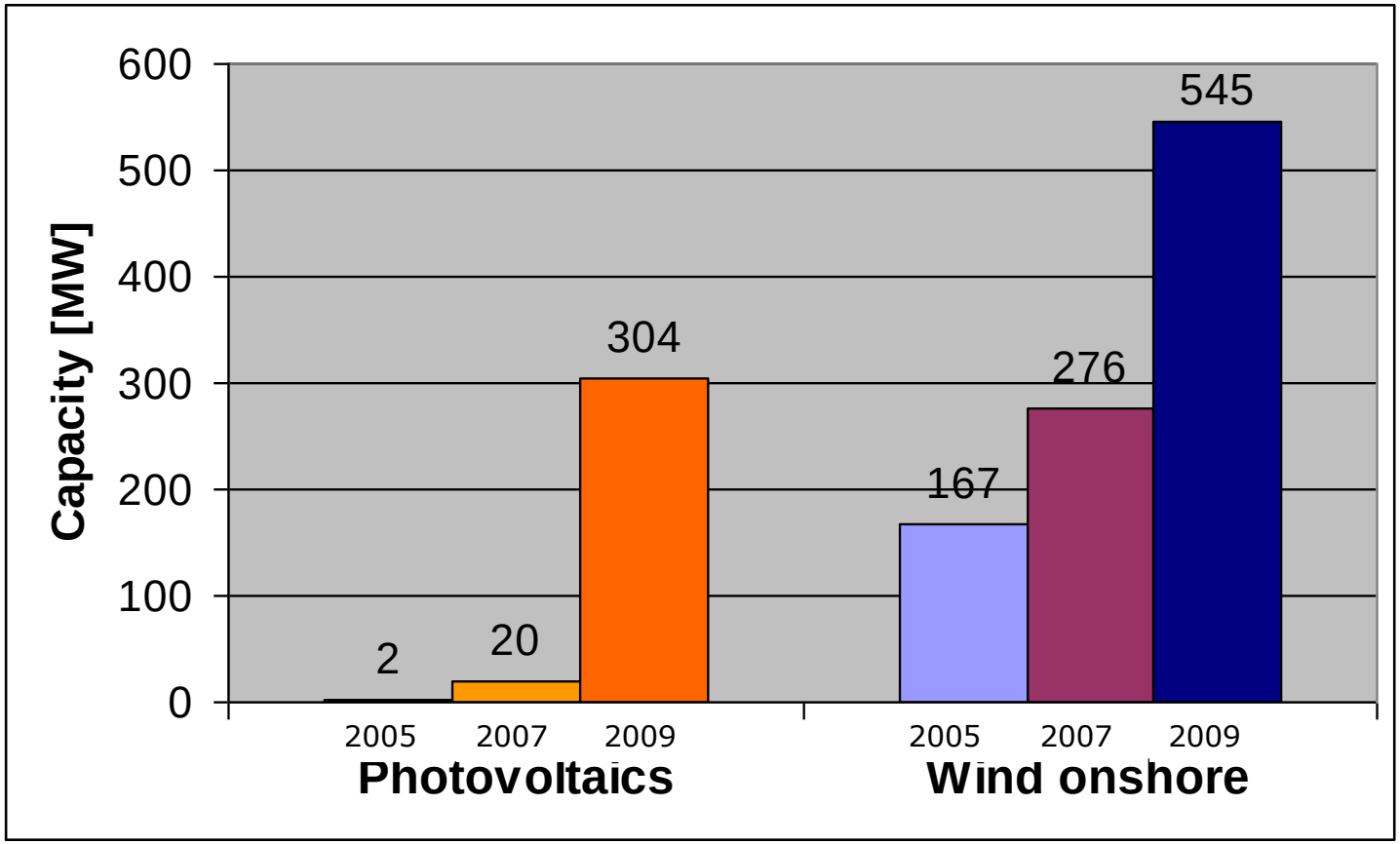
Pinpoint critical assets and forecast performance drifts

Understand customer behavior to design efficient demand side management

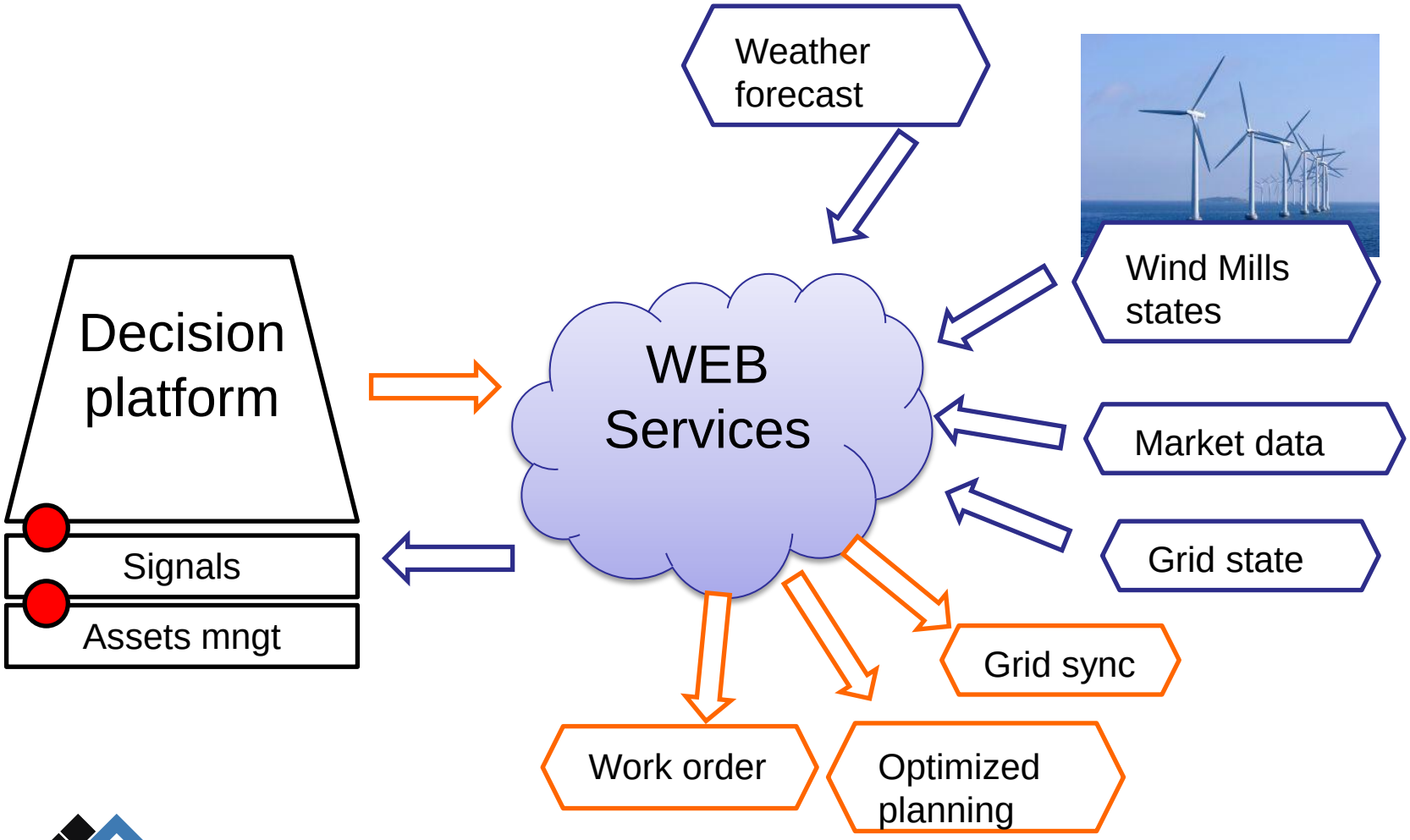
EXAMPLES OF OPPORTUNITIES

- Smarter supplier :
  - Forecasting day(s) ahead PV energy capacity and increase market value;
  - optimized planning of wind mills maintenance.
- Smarter operation :
  - reduce uncertainties in system operation planning and increase predictability
- Smarter consumer :
  - smart monitoring of energy efficiency in industry

RENEWABLE IN BELGIUM



“POWER” -WIND MILLS O&M PLANNING



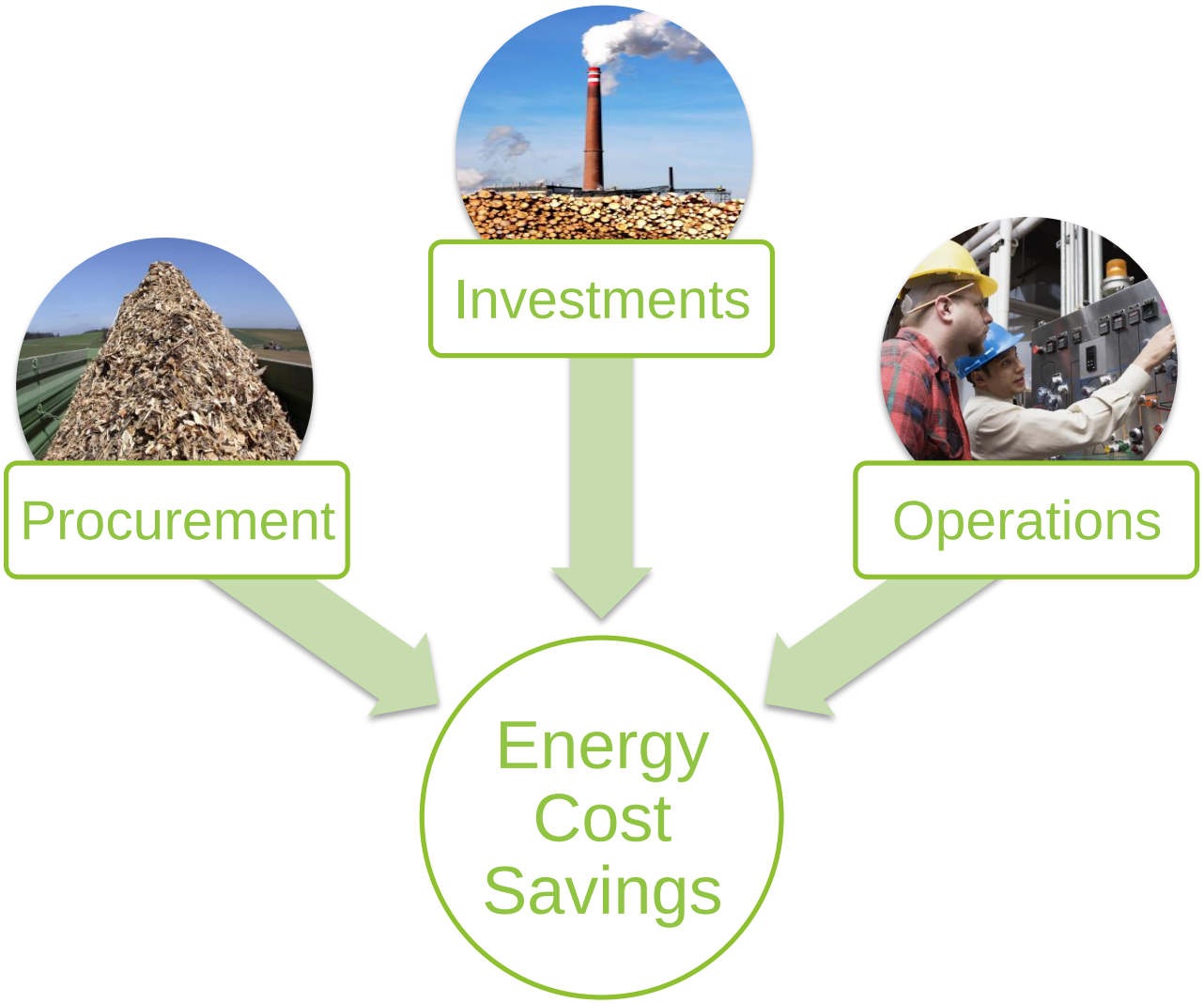
“PREMASOL” – INCREASE MARKET VALUE OF SOLAR ENERGY

- Predict accurately the energy produced from renewable sources to increase market value
- Diagnose the performance drifts of production and benchmark suppliers/technologies
- Use these predictions to provide ancillary services:
  - Voltage control
  - Frequency control
- Simulate impacts of renewable on legacy distribution system (what-if curtail generation vs investment in new distributiion infrastructure)

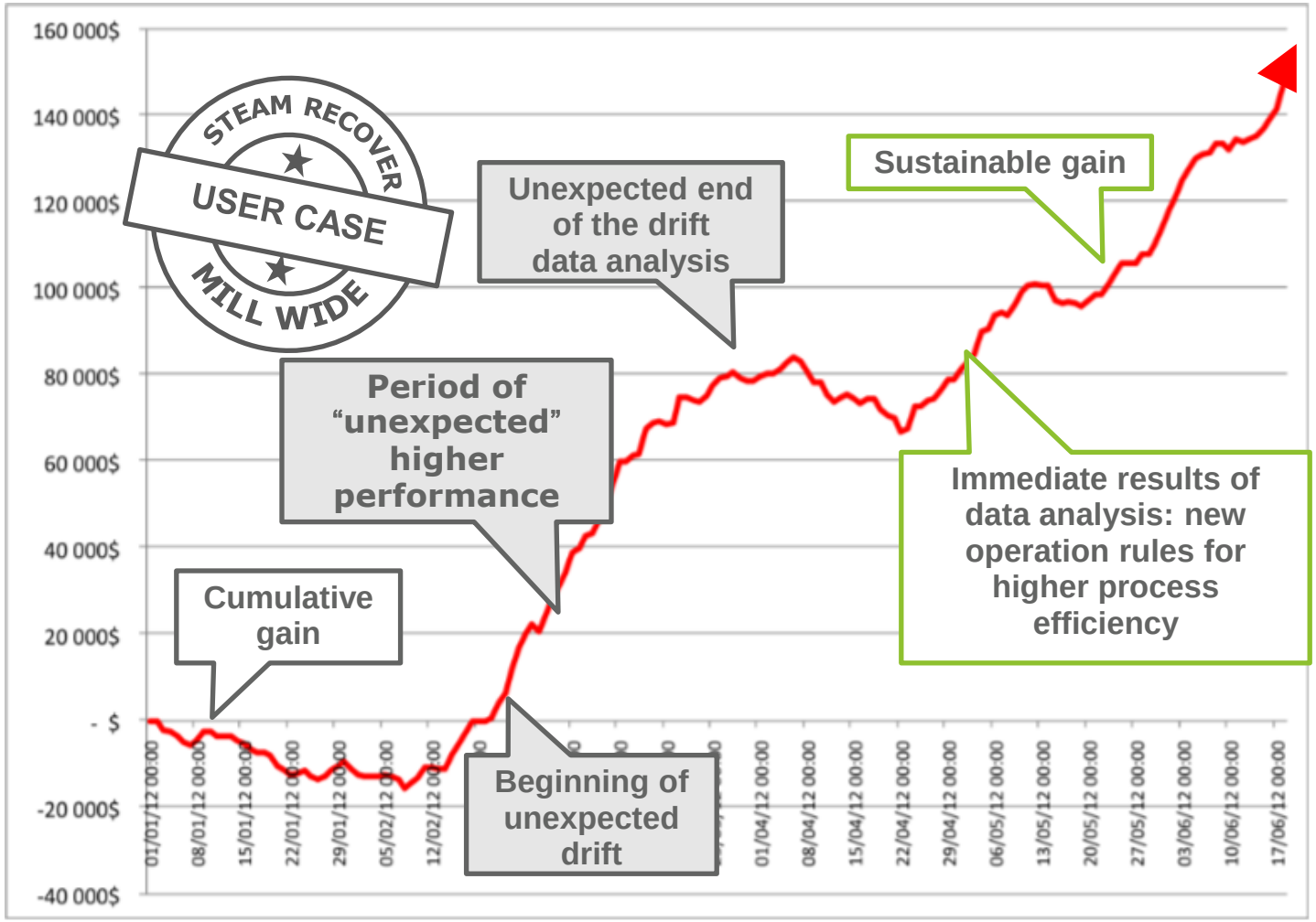
“ITESLA” – NEW TOOLBOX FOR OPERATION PLANNING

- Toolbox to increase the predictability of dynamic security at european level
  - Use of cloud computing
  - Use of accurate offline dynamic simulations
  - Offline & online data mining
  - New predictive indicators for operation planning

SMARTER CONSUMER



SMART ENERGY EFFICIENCY MONITORING



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QUESTIONS