



# Smart Grids: the Innovation Challenge

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# We can't just perfect yesterday's approaches

- We want Smart Grids to be engines of innovation for Green Tech
- New technology is today gated by the most risk-adverse entities
- Free exchange of market information is the enabler of disruptive technology change

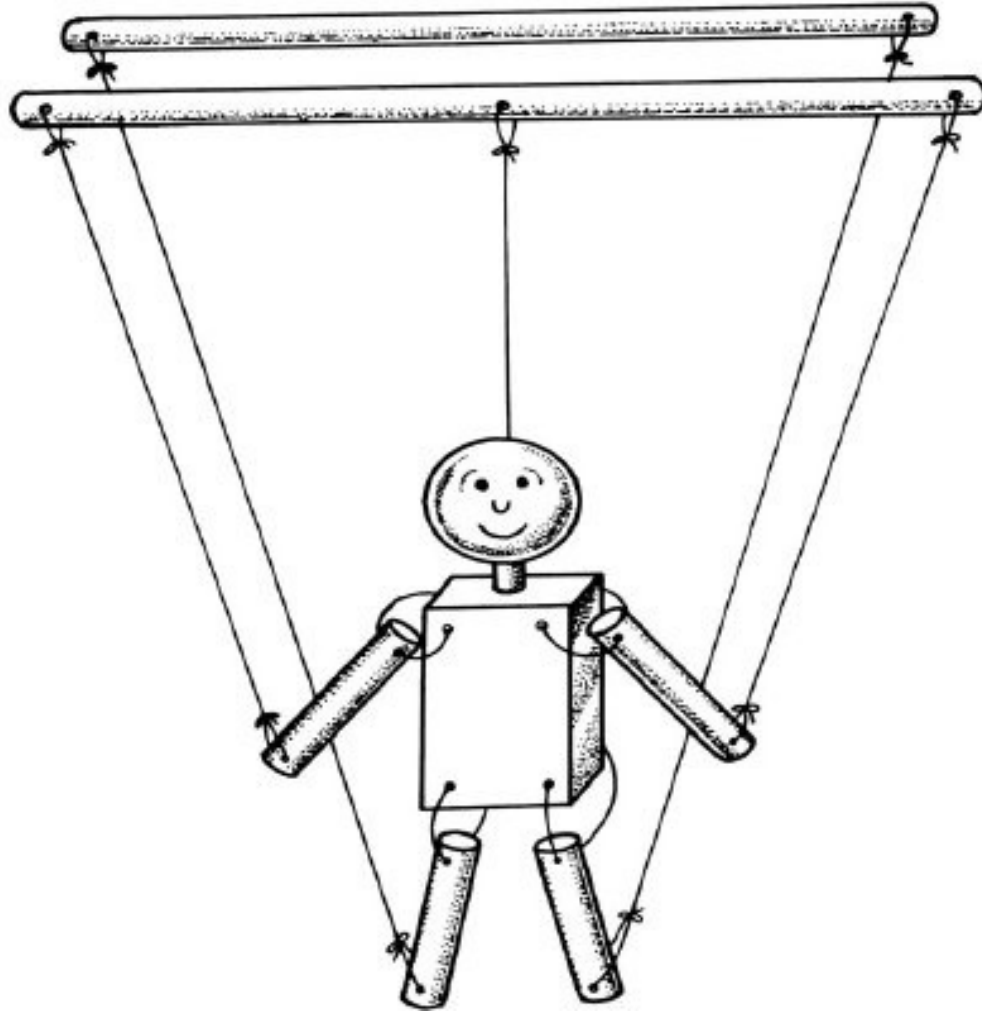


# Three fundamental decisions will fracture full requirements markets

- Continued reduction of operating margins
- Inadequate new transmission and distribution to support anticipated growth
- Switch from constant to intermittent generation



The grid cannot provide and Industry does not want direct load control



# Smart grids will unbundle ancillary services that are hidden today

- Unbundling of the key services:
  - Price Risk Arbitrage
  - Availability Risk Arbitrage
  - Distribution network support
  - Energy Supply Management



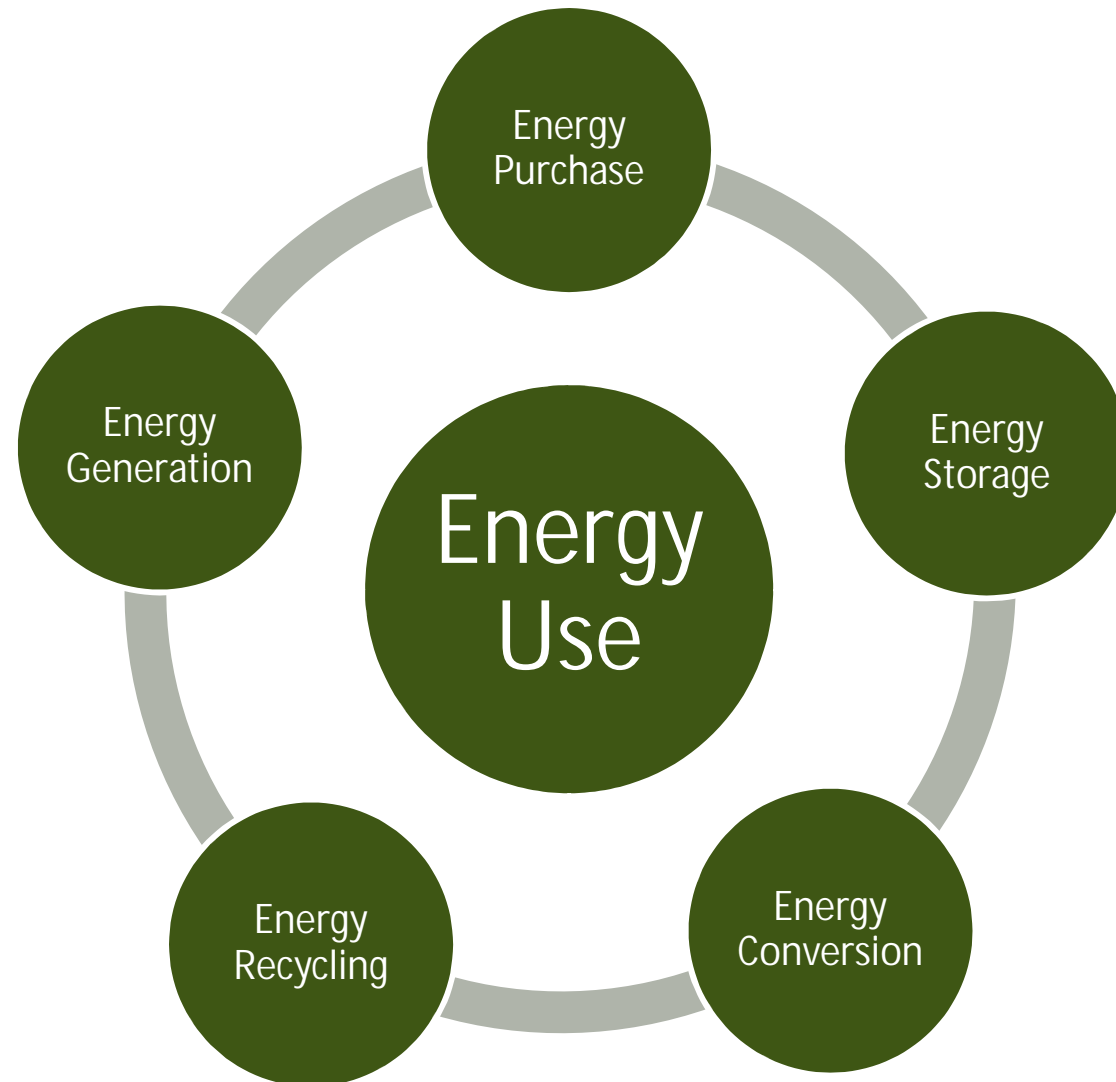
Interfaces that hide details let dissimilar systems interoperate

# E-commerce interfaces define the minimal communication needed between domains

- WS-Calendar
  - Communication of Schedule & Sequence
  - National Priority Action Plan 04
- Energy Market Information Exchange (EMIX)
  - National Priority Action Plan 03
- Energy Interoperation
  - National Priority Action Plan 09
- Energy Usage Information
  - National Priority Action Plan 10



# Zero net energy buildings will require ever more integration





# Industrial Sites will act as day traders in new energy markets

- Defend system mission
- Enterprise (or home) defines value & schedule
- Production and building agents choreograph response
- Power Grid offers clearing market

. . . Abundance . . .





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# Questions



# Toby Considine

## Perspectives

- Infrastructure Analyst, UNC Facilities
- NIST Smart Grid Roadmap team
- NIST Smart Grid Business & Policy WG
- Chair, OASIS oBIX TC
- Editor, OASIS Energy Interaction TC
- Editor, OASIS EMIX TC
- Chair, OASIS WS-Calendar
- Member, SGIP Architectural Council
- NAESB Smart Grid Task Force



# Specifications

- WS-Calendar
  - <http://www.oasis-open.org/committees/ws-calendar>
- EMIX
  - <http://www.oasis-open.org/committees/emix>
- Energy Interoperation
  - <http://www.oasis-open.org/committees/energyinterop>
- oBIX
  - <http://www.oasis-open.org/committees/obix>