

**EPRI**

ELECTRIC POWER  
RESEARCH INSTITUTE

## **DOE/NRC/NEI/EPRI Workshop on LWRS Program**

## **Centralized Monitoring Strategic Plan Update**

**Richard Rusaw**  
EPRI Senior Project Manager  
**Washington, DC**

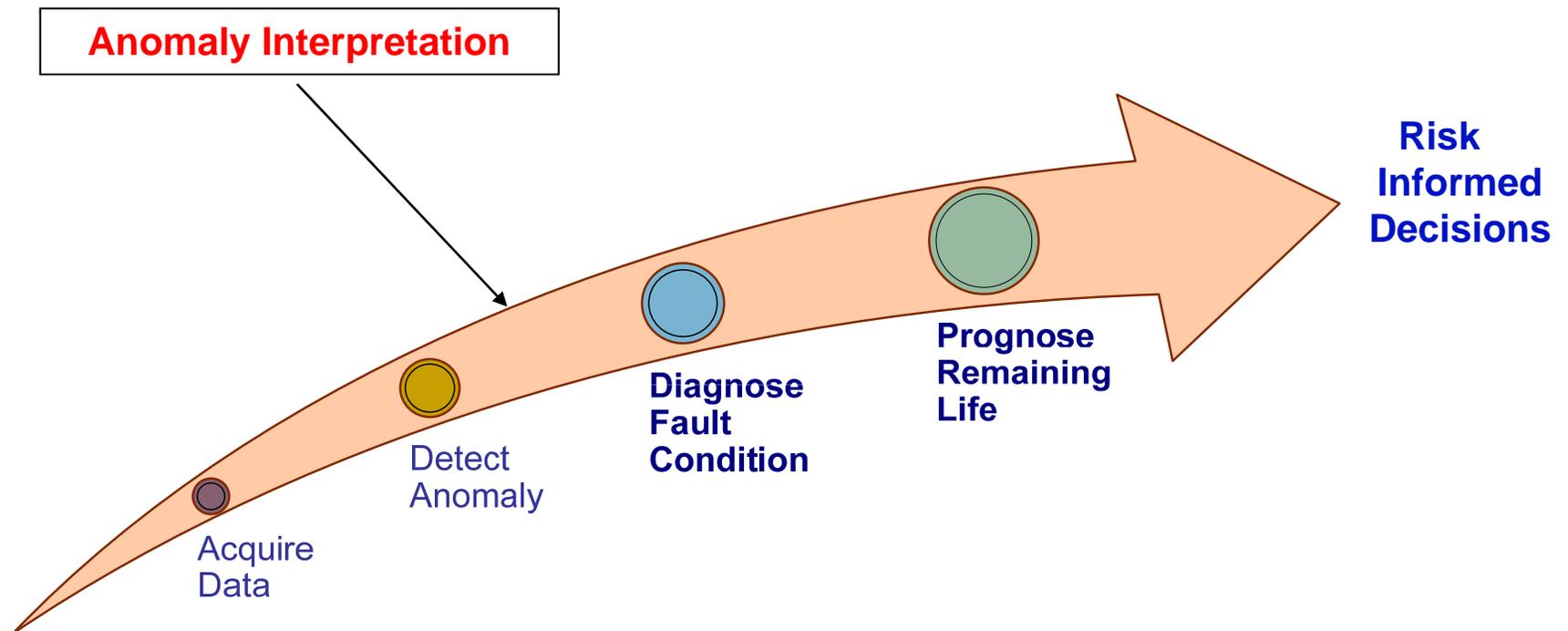
February 22-24, 2011

# EPRI LTO Centralized On-Line Monitoring Strategic Objective

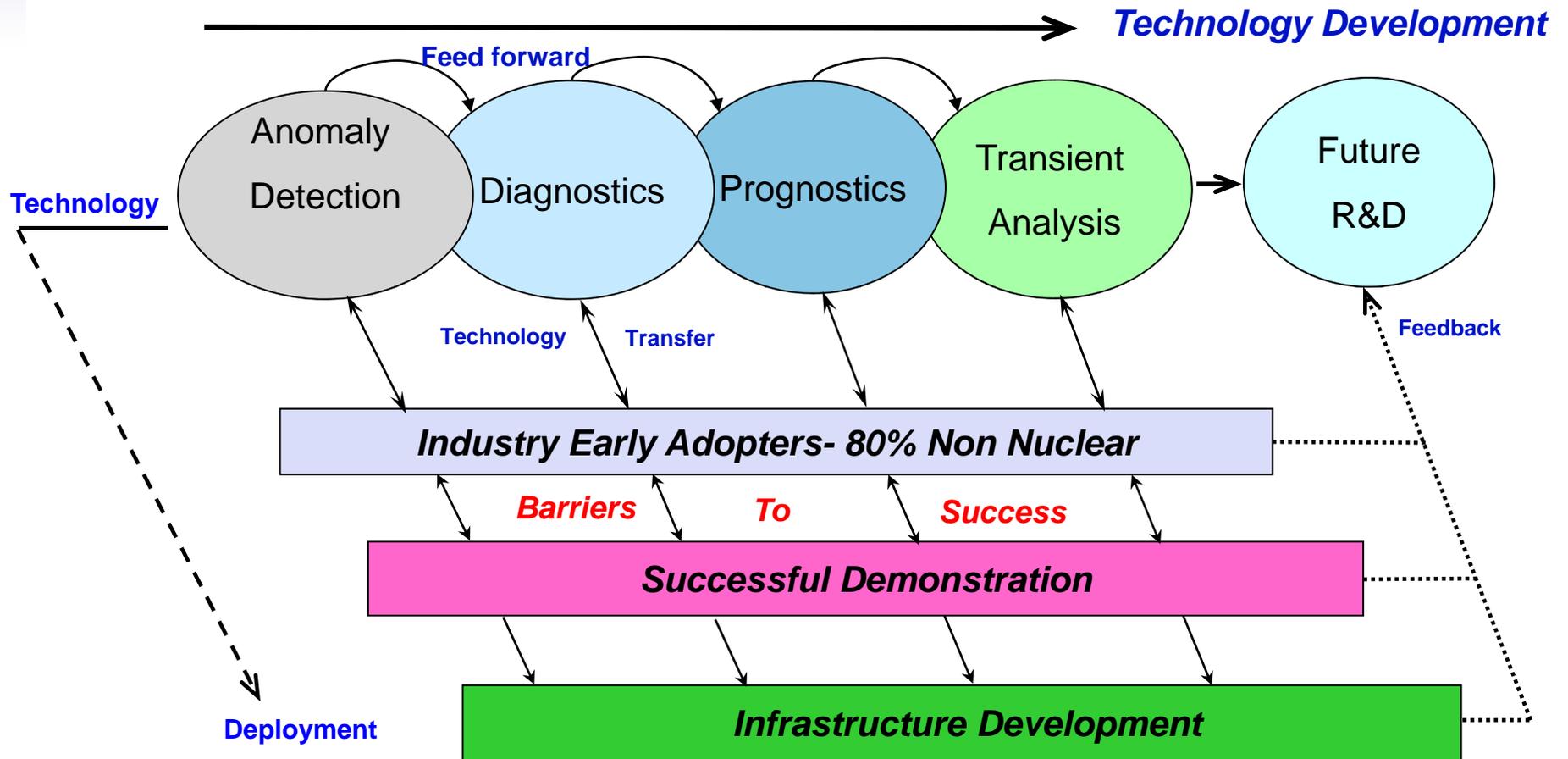
Develop a self sustaining monitoring technology infrastructure to modernize the current fleet of Nuclear Power Plants utilizing advanced information technologies, featuring automated OLM to support operational and long term management of Systems Structures and Components. (SSC's)

# Monitoring Technology Development

Monitoring Applies to both Active & Passive Assets



# Monitoring Infrastructure Development

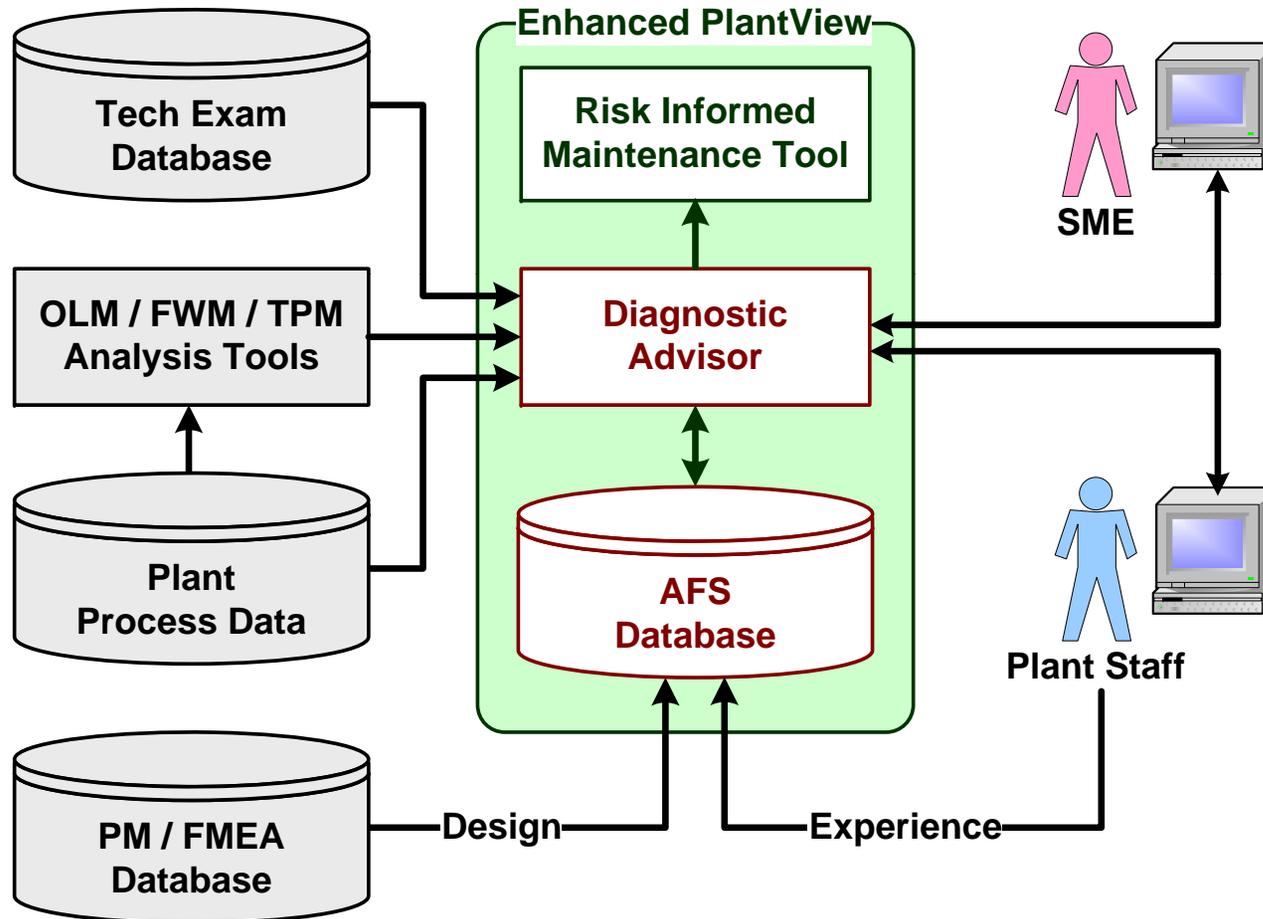


# LTO COLM Program Functional Activities

- Monitoring Analysis Methods R&D

- Anomaly Detection & Interpretation
- Diagnostic Analysis
  - Diagnostic Advisor
  - Asset Fault Signature Database
- Prognostics/Remaining Useful Life (RUL)
- Transient Analysis –U of Tennessee

# Diagnostic Advisor Integrated With AFS DB



# One Objective is to Determine & Monitor Risk based on Current Asset Condition

- Reliably identify a faulty or excessively worn plant asset *before* a failure occurs
  - Define **asset fault signatures** that reliably indicate a fault or wear out condition prior to failure
  - Use the asset fault signatures to troubleshoot and **diagnose** anomalies in plant data
- *Predict the **remaining useful life** of an aging asset*
  - *Remaining life depends on the type of fault or degradation conditions*
- *Determine and monitor the **risk** of operating an aging asset for a given future period*
  - *Risk = Probability of Failure \* Consequence*

# Program Support Activities

- **Field Applications R&D**

- GSU Transformers
- Diagnostic Advisor
- Asset Fault Signature Database
- Main Turbine- Future R&D
- Pumps & Motors- Future R&D
- Main Generator- Future R&D
- MOV's- Future R&D

# Program Functional Activities

- *Utility Support Functions*

- Fleet wide Monitoring Interest Group

- Education & Training

- Guidelines-

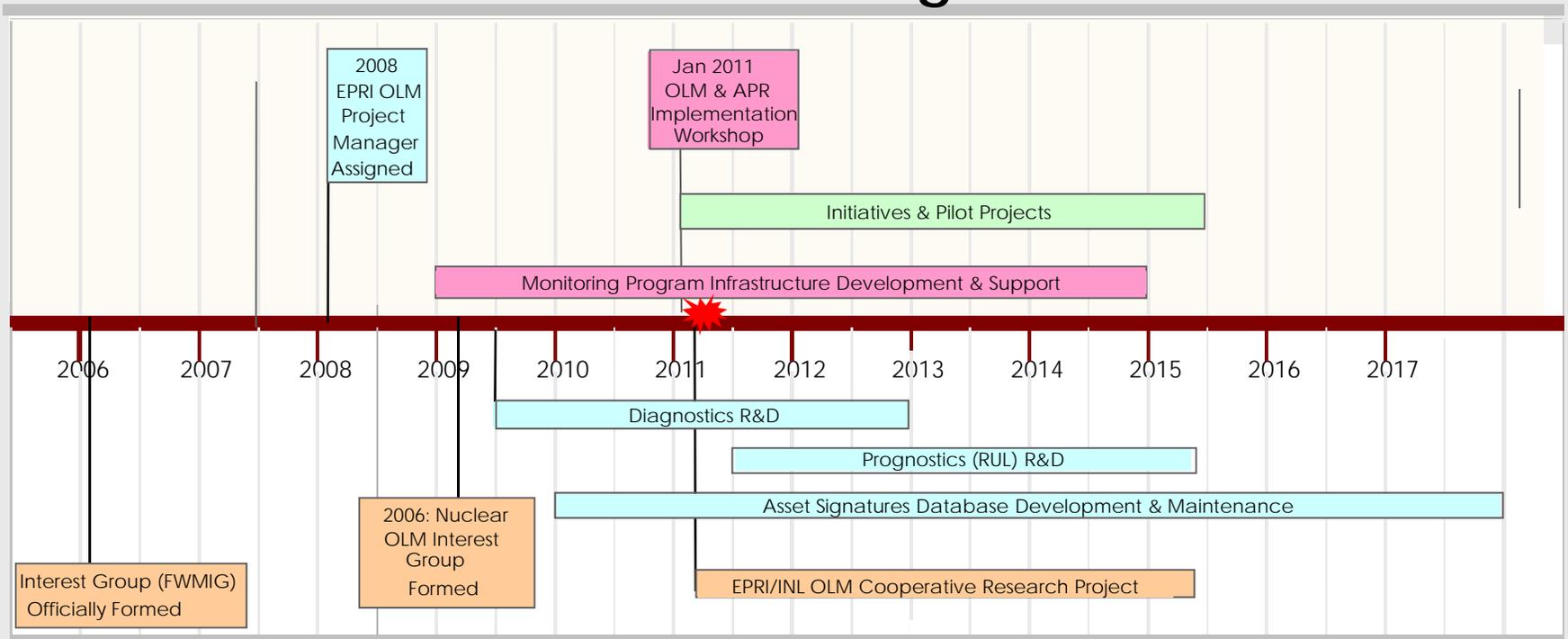
- *Guideline for Initiating an Online Monitoring Program for Nuclear Power Plants, EPRI 1021116, June 2010.*

- Workshops

- *OLM and Advanced Pattern Recognition Technology Implementation for Nuclear Power Generation Companies*
      - *January 27-28, 2011, Atlanta GA*

# LTO OLM Timeline

## LTO On-Line Monitoring Timeline



# Recent Events

- EPRI & INL/DOE Cooperative Research Plan
  - Asset Fault Signature Development
  - Pilot Projects to support implementation of advanced technologies.
  - Prognostics R&D
  - TBD
- LTO-COLM Workshop
  - *OLM and Advanced Pattern Recognition Technology Implementation for Nuclear Power Generation Companies*
    - *January 27-28, 2011, Atlanta GA*
    - *9/18 LTO Program Utilities Participated*
    - *15 Utilities Represented*
    - *5 Vendors Participated/Presented*
    - *4 Utilities Presented Monitoring Programs*



# Together...Shaping the Future of Electricity