



# ***Databases for Use in Wind Plant Reliability Improvement***

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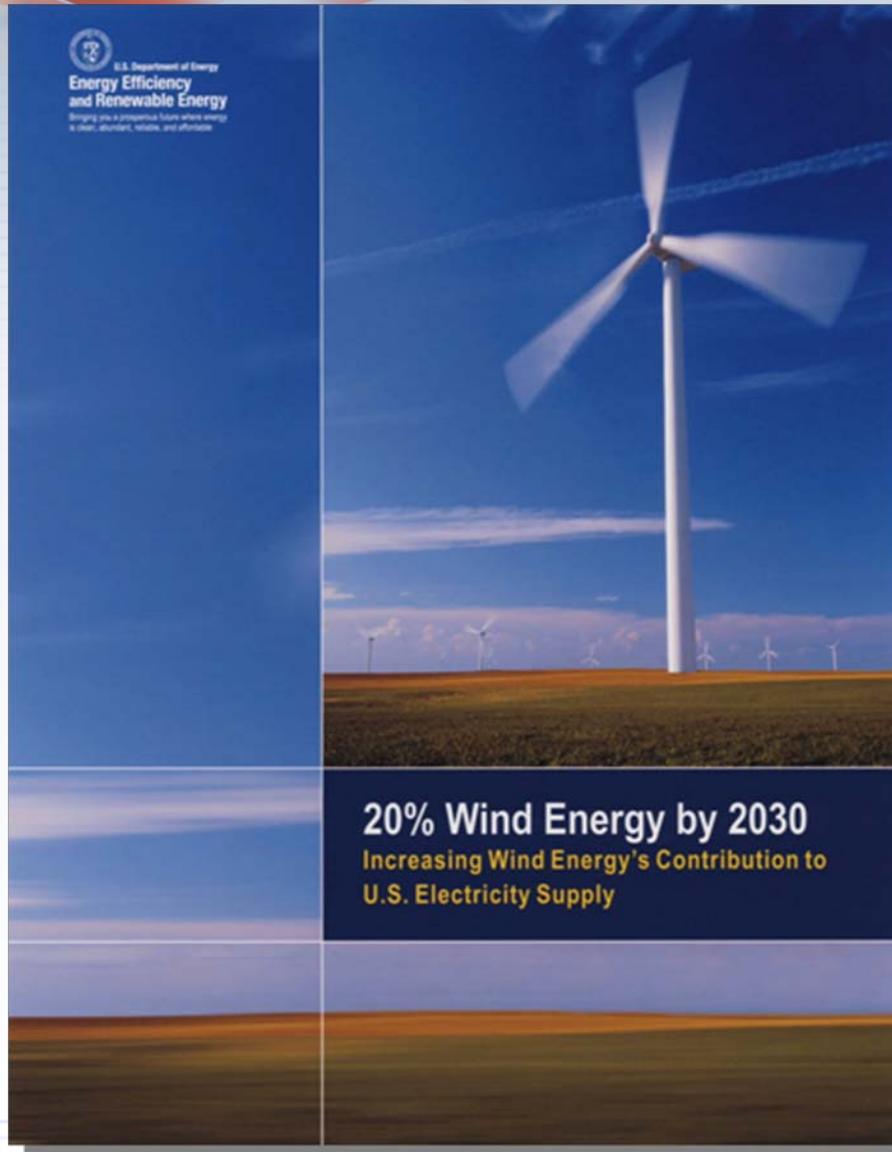
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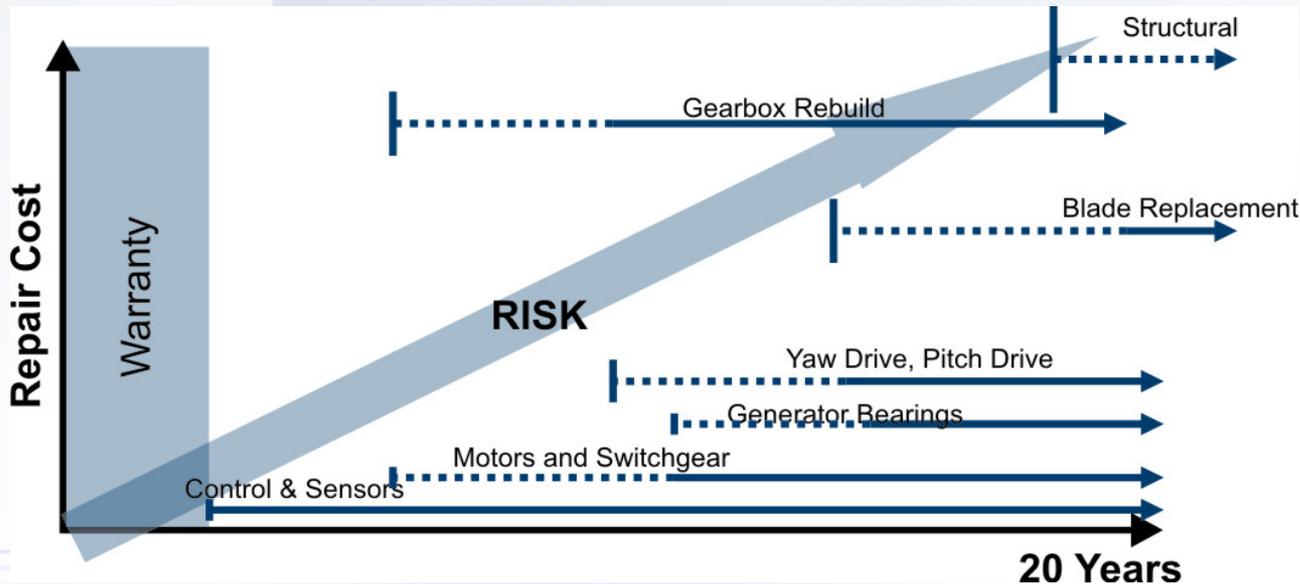
# 20% Scenario for the US



**DOE Report Shows  
the Costs and  
Benefits of building  
the infrastructure to  
generate 20% of our  
electrical energy  
from wind by the  
year 2030.**

# Risks to Continued Growth

- **Direct impacts – Poor performance**
  - Energy payments – lost revenue
  - O&M costs – above expectations
  - Component failure – early replacement
- **Indirect impacts – Loss of confidence**
  - Cost of financing and insurance
  - Slowing development
  - Loss of public support (drives policies)

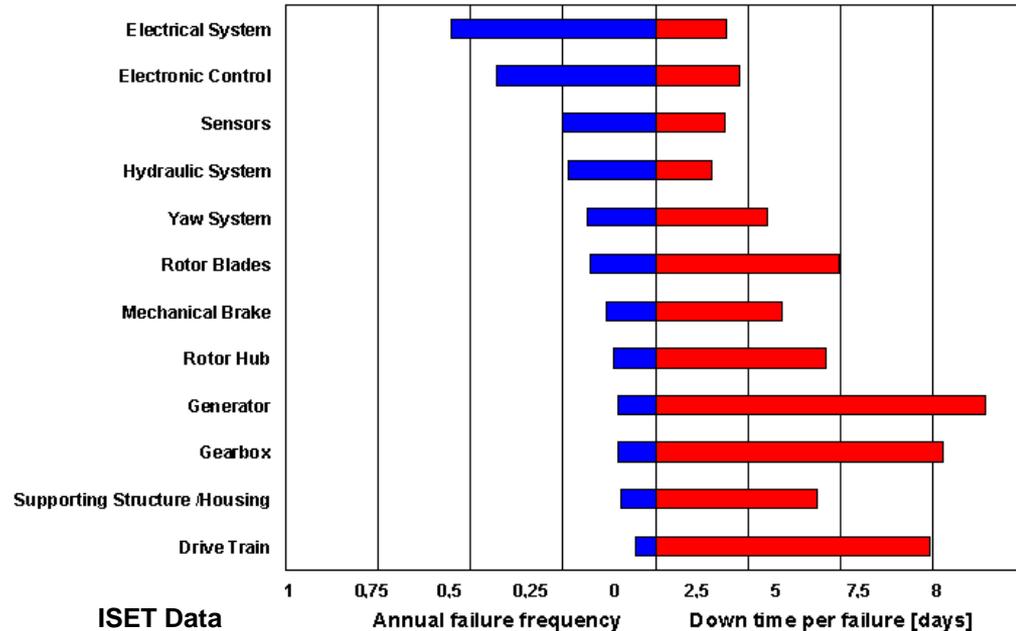


# Initiatives to Mitigate Risk

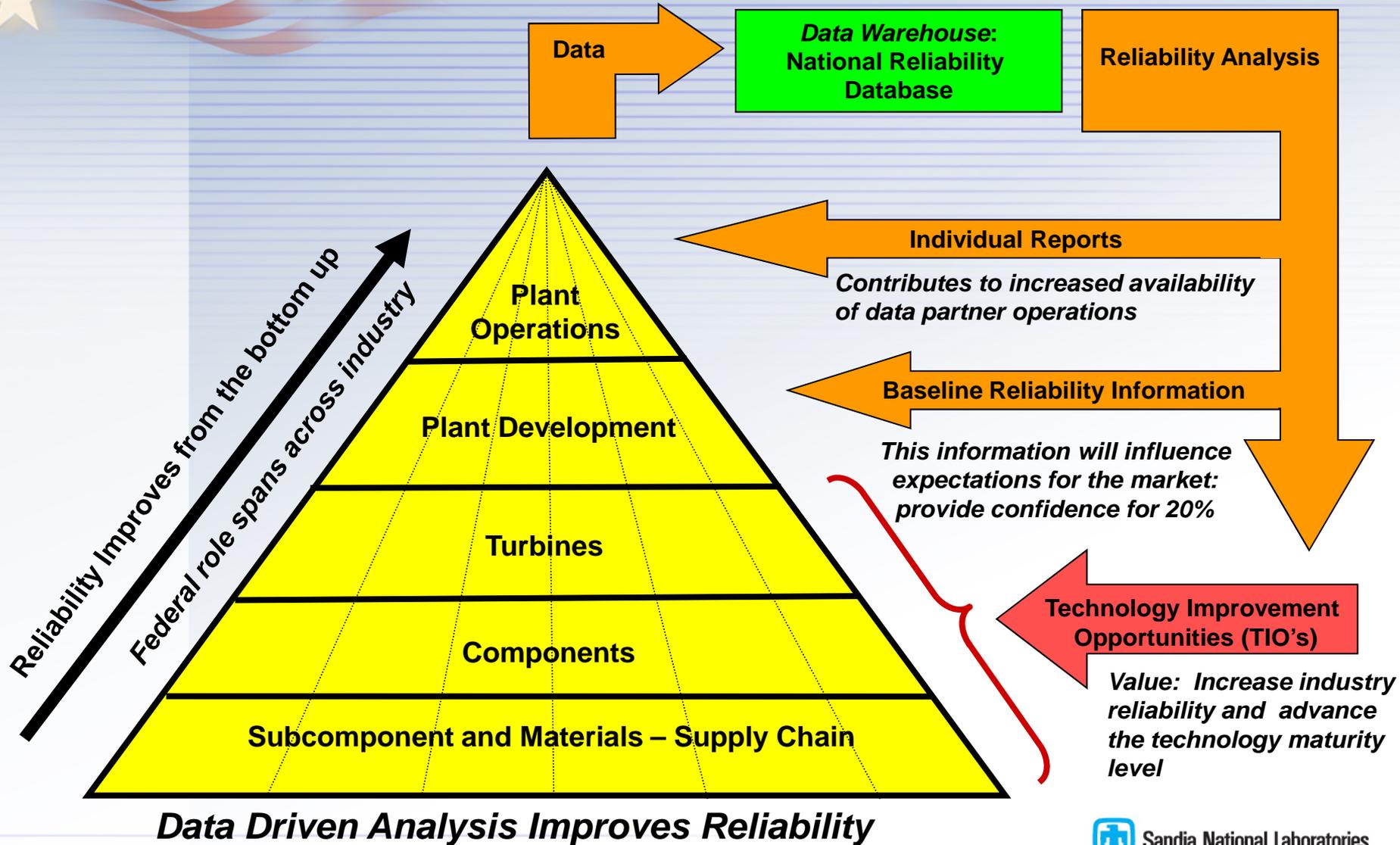
- **Avoid problems before they get installed**
  - Full Scale Testing
  - Appropriate design criteria (specifications and standards)
  - Validated design evaluation tools
- **Problem Resolution Initiatives**
  - Targeted activities in to address critical issues
  - Examples: Gearbox & Blade Reliability Collaboratives
- **Monitor Performance**
  - “Tracking, tracking, tracking”
  - Maintain reliability performance database
  - Define the problems early



Photo by Lee Jay Fingersh, NREL



# National Reliability Database: Approach



# *Strategic Power Systems - Sandia*

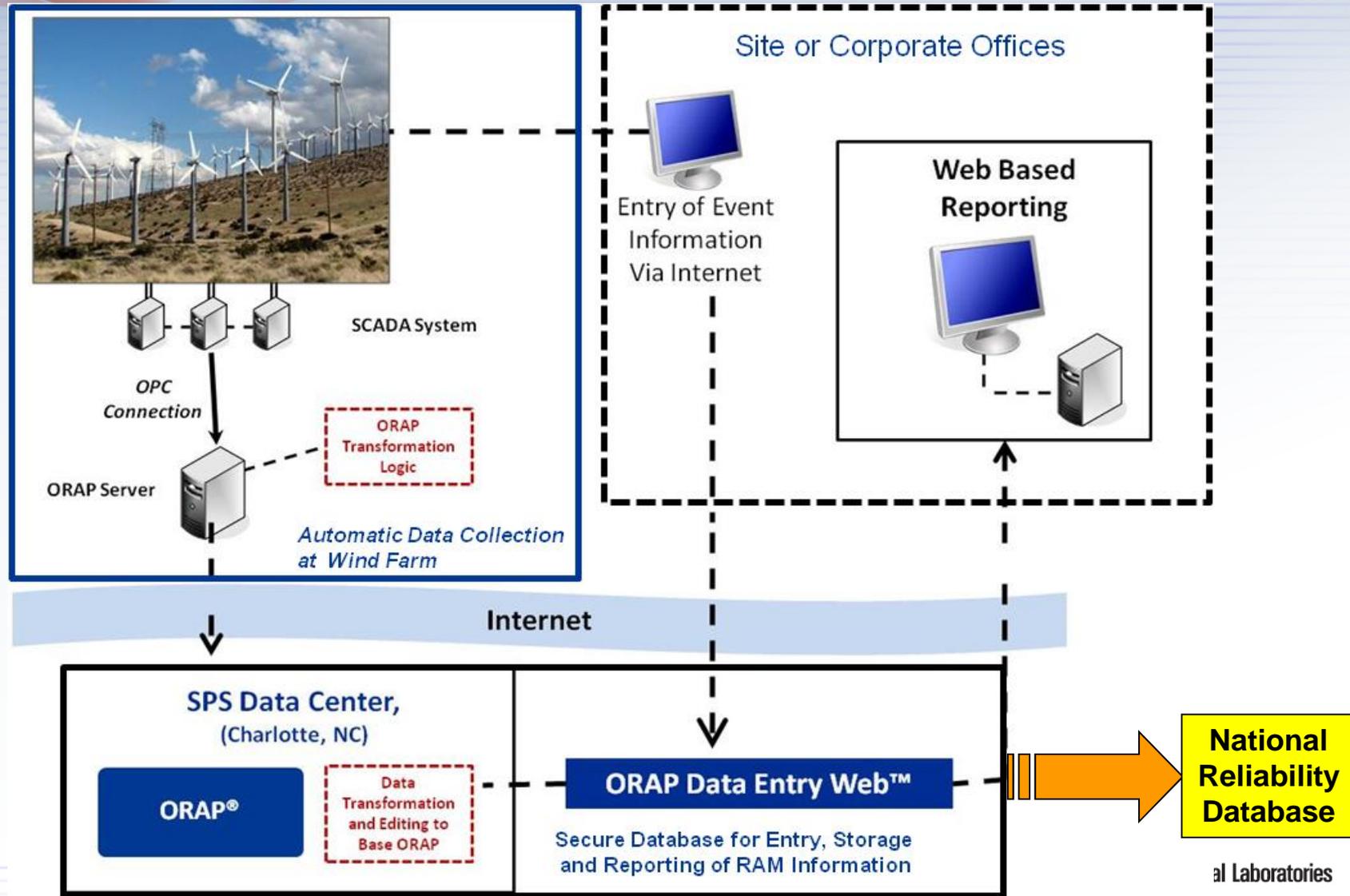
## *RAM Database Pilot Project*

*Address the need for an integrated Reliability, Availability & Maintainability (RAM) information system for the Wind Industry*

- **ORAP (Operational Reliability Analysis Program) Proven approach to tracking and documenting RAM performance for Gas Turbines**
- **Feed into a National Reliability Database at the plant, system, component, and part levels**
- **Establish Industry Benchmarks**
- **Protect Proprietary information**
- **Feedback to operators, turbine manufacturers, component suppliers, and other stakeholders - identification of issues**
- **Cost reduction through improved O&M and RAM**

*Leverage ORAP and SPS Tools to Meet Need for RAM Data at the System and Component Level*

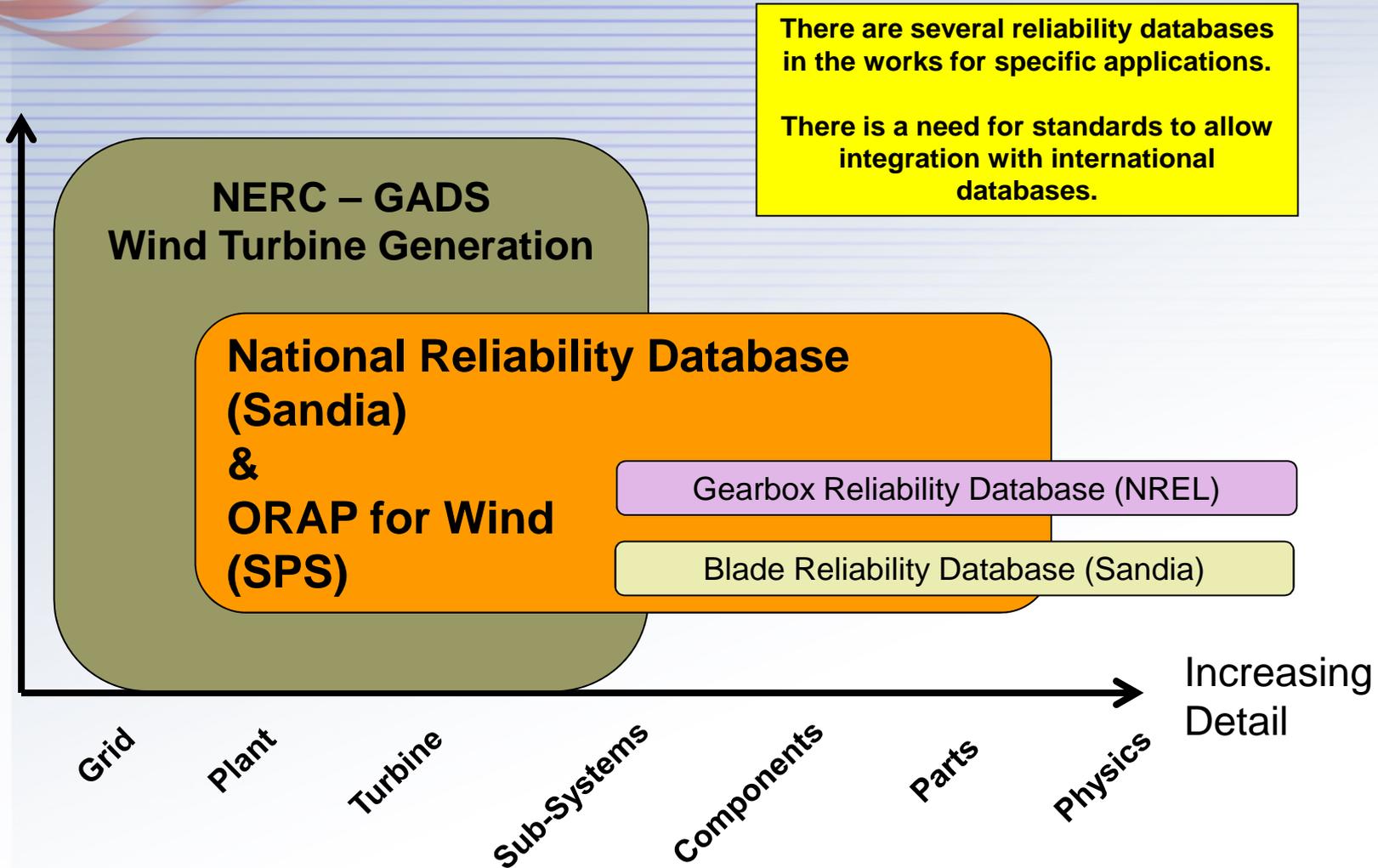
# Data Collection Concept for Wind



# Relationship of Reliability Databases

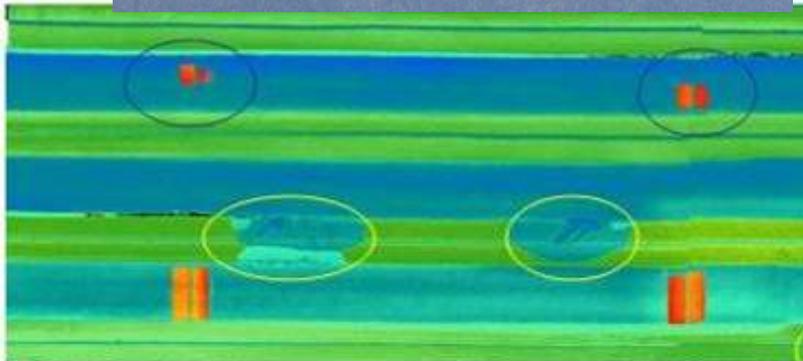
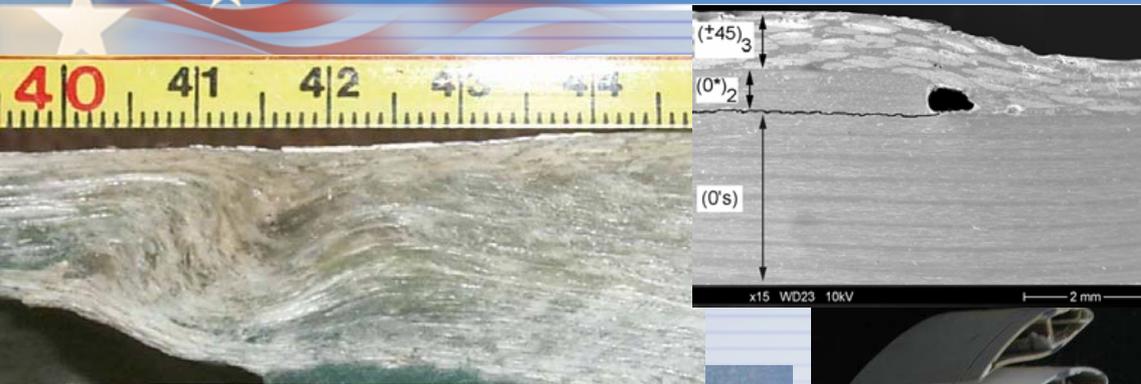
Increasing  
Breadth

Portion of National Fleet



Databases solve nothing, but are essential elements for documenting and improving performance.

# Blade Reliability Collaborative



- Field Surveys - Database
- Inspection Validation
- Effects of Defects
- Analysis Validation
- Blade Certification



# *Thank You*



The view from where we now stand is encouraging...