Transformer Reliability – Taking Predictive Maintenance to the Next Level

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CIGRE SC A2 Colloquium – Cracow, Poland, October 1st- 6th, 2017

AEP

AEP is one of the largest electric utilities in the U.S., serving nearly 5.4 million customers ir 13 states.
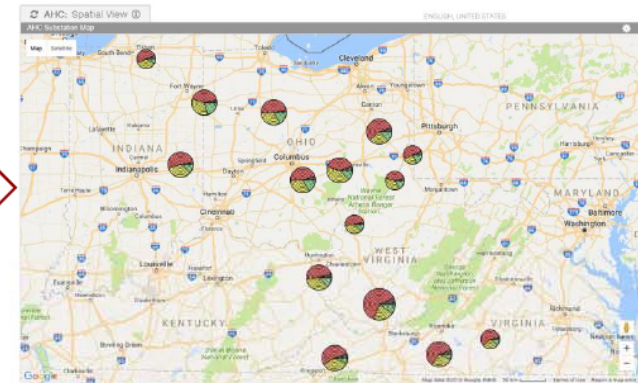
- A more than 40,000-mile electricity transmission network – the largest in the nation.
- More 765-kilovolt extra-high voltage transmission lines than all other U.S. transmission systems combined.
- Approximately 26,000 megawatts of generating capacity.

AEP

AHC Application

Operational, Sensor, Inspection, and Equipment Data → Asset Health Center →

Web Based Interface – Data Trending and Visualization
- ❑ Health Score
- ❑ Maintenance Priority
- ❑ Replacement Priority
- ❑ Mobile Application

AEP

Change Agents & Management

- ✓ Management Support

- ✓ AEP AHC team is a CHANGE AGENT for AEP Transmission

- ✓ Dedicated AHC team to implement project

- ✓ Dedicated Regional AHC employees to train stakeholders

- ✓ Share the Business Case with ALL stakeholders

- ✓ Assume success and then share the successes at all levels

- ✓ Become ingrained in the process and culture of AEP

  - ✓ Create standards for monitoring packages

  - ✓ Create standards for monitoring deployments

  - ✓ Create standards for AHC software usage

  - ✓ Become critical to AEP (failure prevention, safety, maintenance optimization, and asset renewal prioritization)
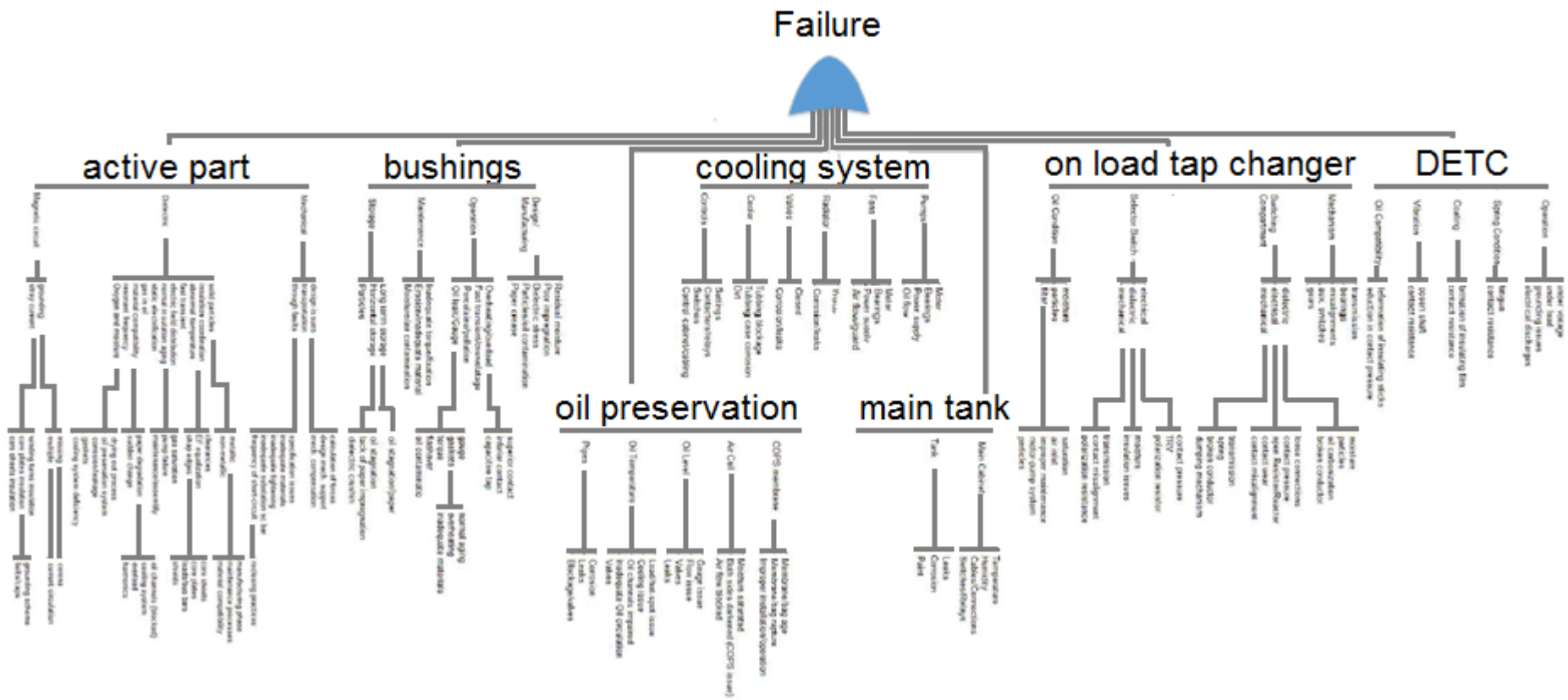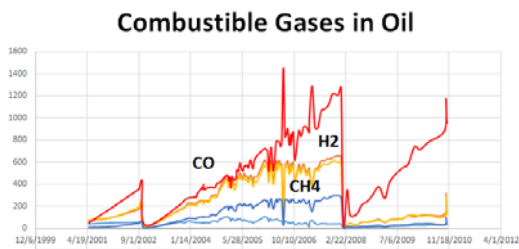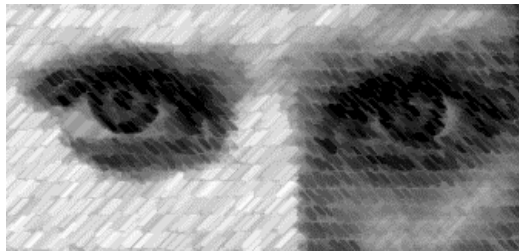
Objective of AHC Project:

Failure
Prevention

Replacement
strategy

Maintenance
Optimization
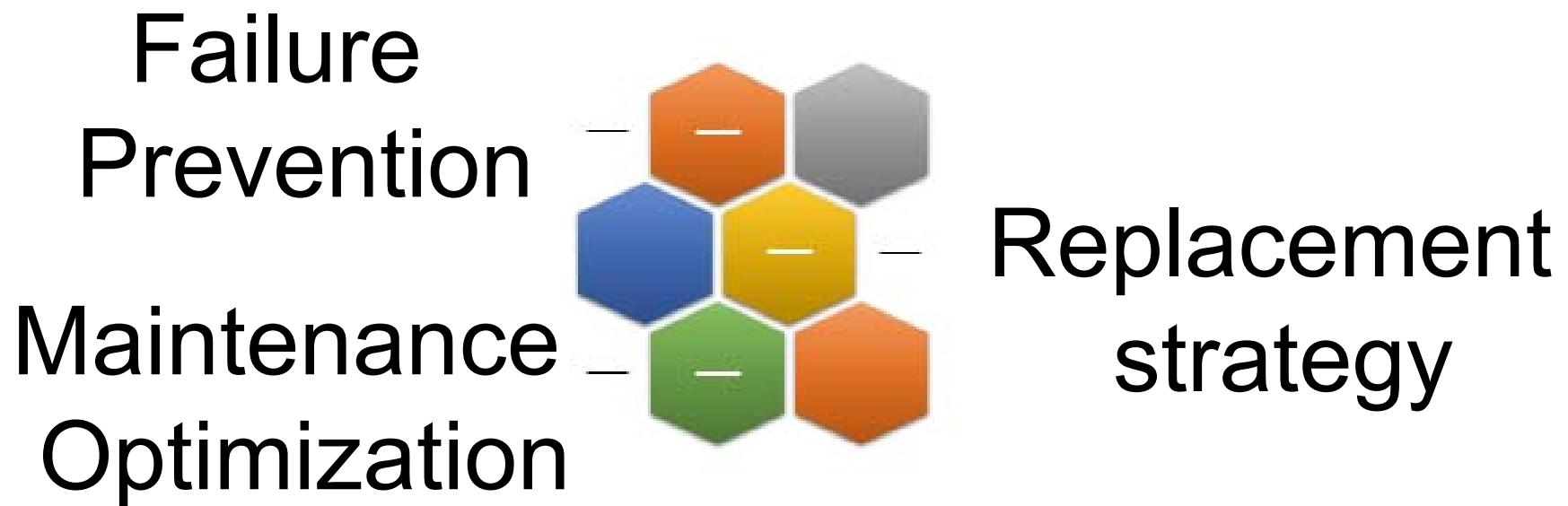
Building the trxf solution:
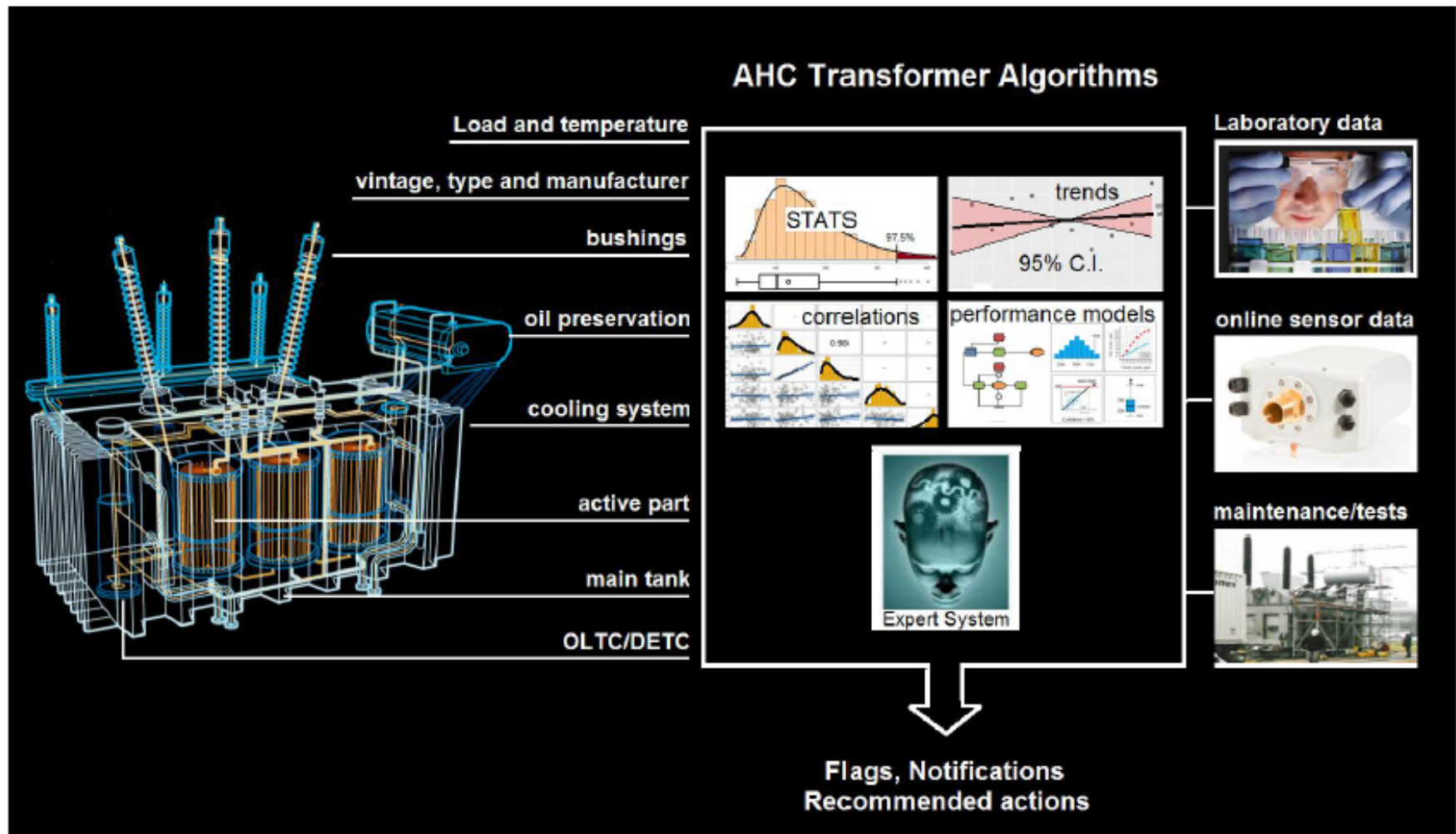
Failure mode algorithms

The eyes of the expert…

Combustible Gases in Oil

AHC is «human-blind»

EXPERT SYSTEM
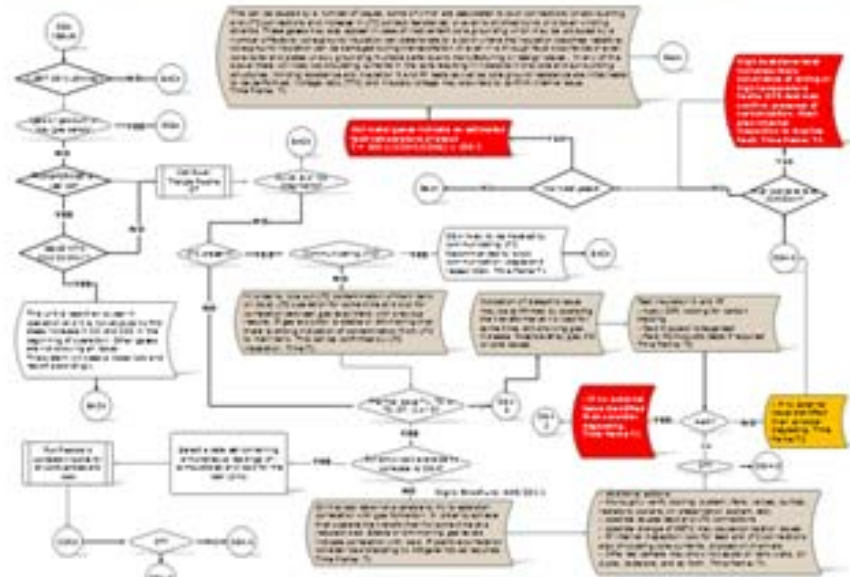
AHC Top View (enterprise):

Figure 6 – The asset health solution top level screen of the solution showing classification of transformers and other assets in the red (requiring immediate attention), yellow (requiring some attention but not urgent) and in the green zones (may require attention but does not impact operational risk as is).
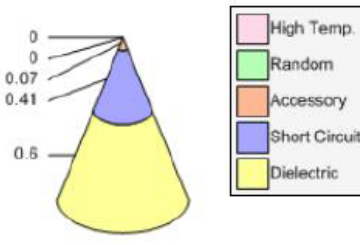
Asset Detail View:

Success stories:

4. Success Stories

The business case for the Asset Health Center was based on three main areas: Failure Prevention & Safety, Maintenance Optimization, and Prioritizing Asset Renewal. The benefits achieved at this point have exceeded the original business case model in the last 3 years.

Important Challenge:

Another challenge was creating support for the asset health solution project across the organizations. The software product was new to the Utility and our engineering teams. The engineering organizations were not convinced of the benefit possibilities. Also, monitoring devices had been tried at various times in the past with little success. Field resources were very apprehensive to support the monitoring initiative. To combat this challenge, the utility created a dedicated project team to support the asset health solution project. The dedicated team worked across organizations on communication, benefit confirmation, funding approvals, change management, process integration, organizational training, and technical assistance. The project would not have been successful without a team of dedicated change agents.

Dziękuję

(Thank you)!