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Asset Integrity Management for Underground Natural Gas Storage Facilities

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WHY AIMS ? A fast changing Environment...

INCREASING QHSE REQUIREMENTS

Avoidance of catastrophic events

Regulatory constraints

Communication, company image & public perception issues...

GROWING COMPLEXITY

Technical Complexity

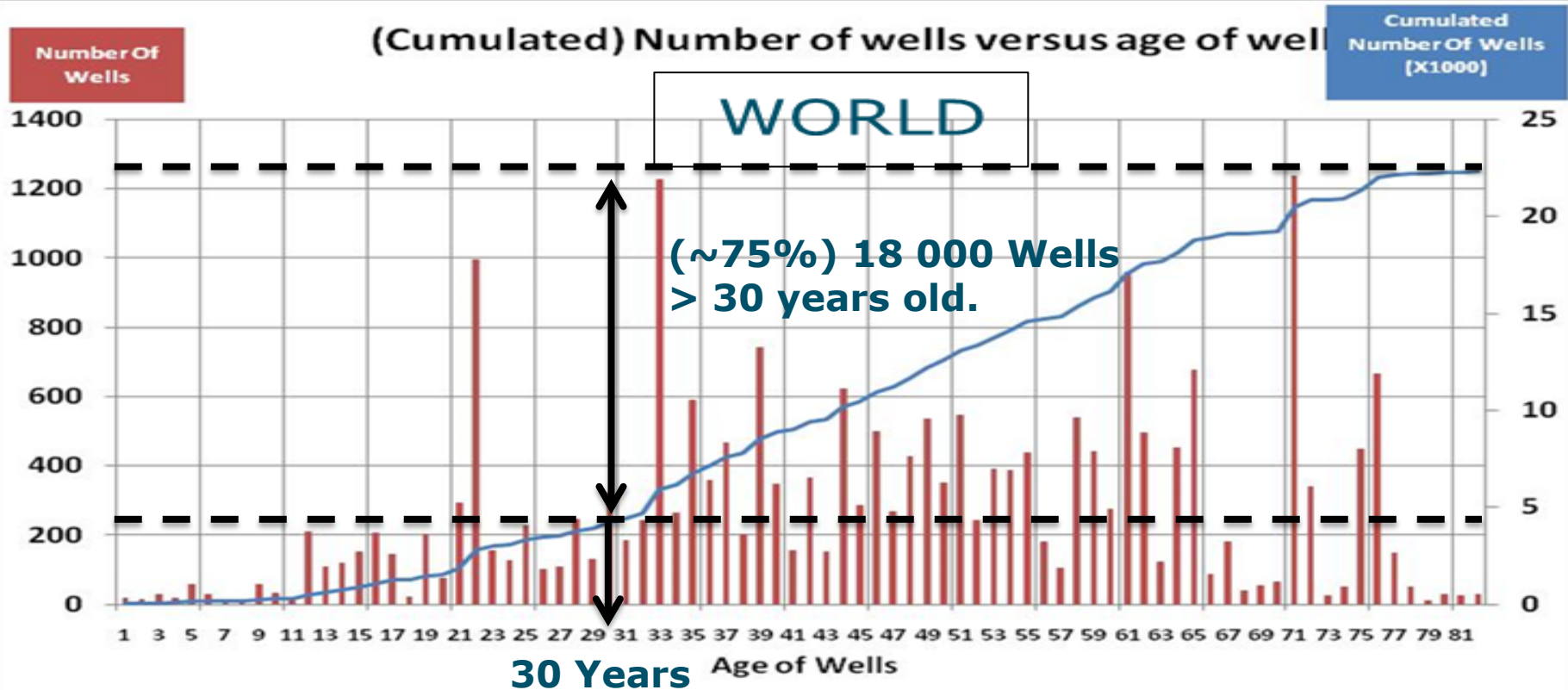
Fast changing market

Pressure on CAPEX and OPEX....
Do more for less...

RISK & ASSET INTEGRITY MANAGEMENT

Aging UGS facilities...

(Cumulated) Number of wells versus age of well



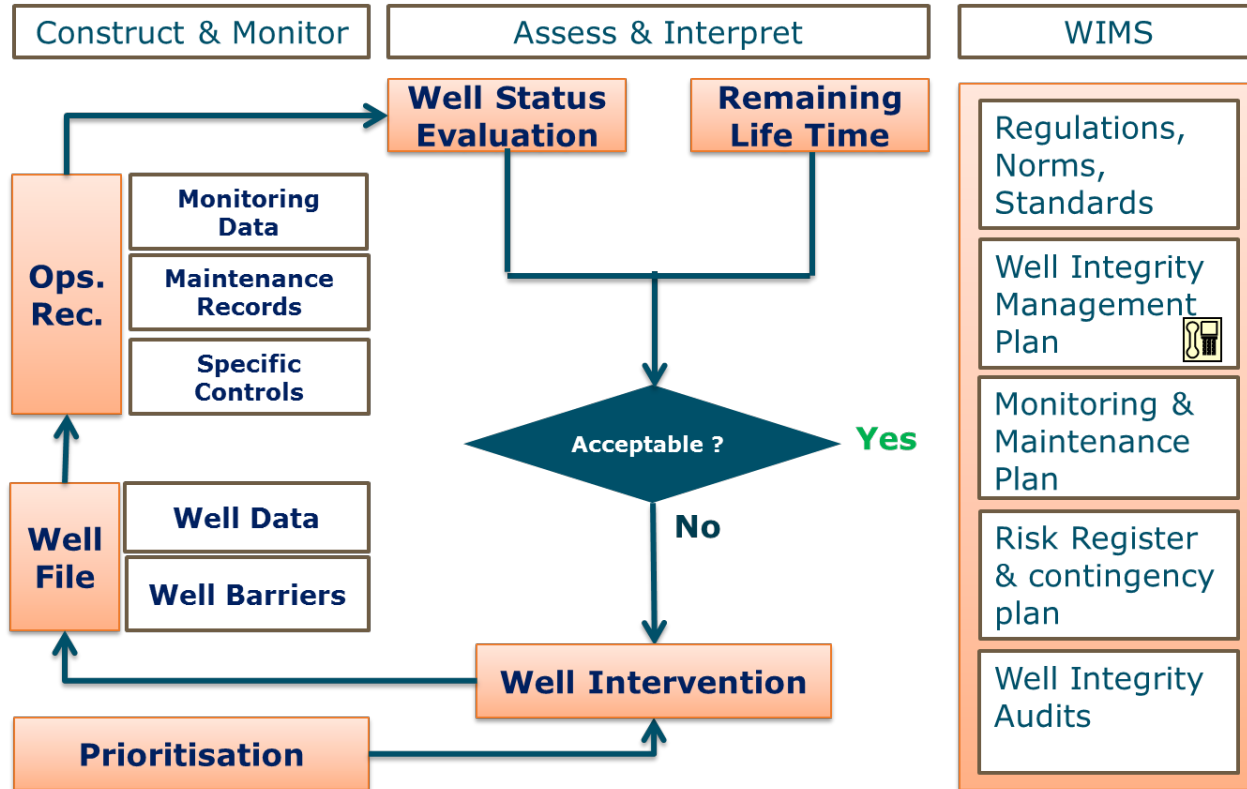
HOW : Methods and Tools

The UGS Industry needs Methods & Tools as a support to AIMS implementation:

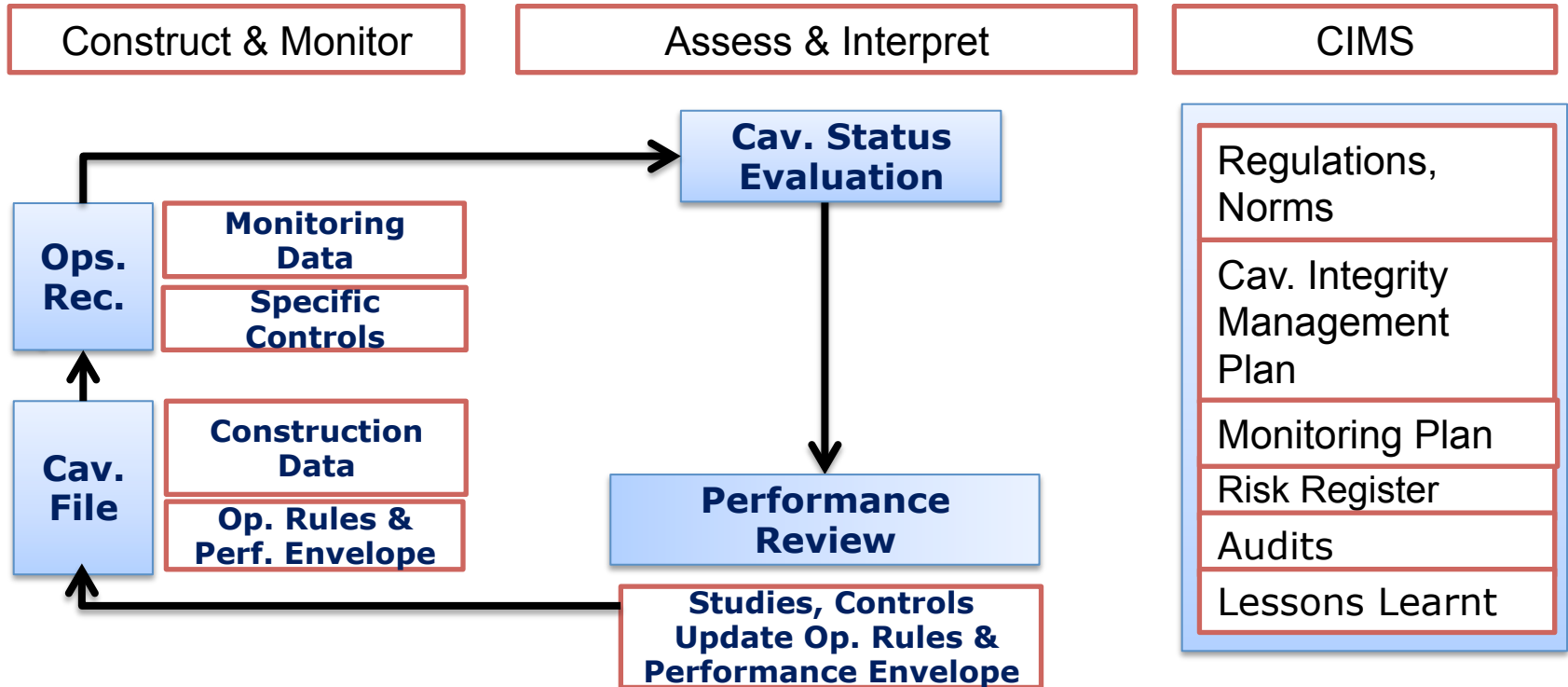
- Inspired by the E&P
- Tailored to its specific constraints:
 - Long lifetime of the assets under severe operating conditions (high flowrate, alternate cyclic loading)
 - Cost effectiveness and utmost reliability, operability, sustainability, availability of the asset, requiring planned, risk based prioritized maintenance & repair
 - Large exposure to public and Authorities
- Applicable to greenfield and ageing facilities (salt caverns, reservoirs, mined caverns)

COMBINING E&P BEST PRACTICES WITH UGS SPECIFIC NEEDS AND OPERATION FEEDBACK INTO A ROBUST AND FLEXIBLE WORKFLOW

HOW (Wells Integrity Monitoring System = WIMS)



HOW (Caverns Integrity Monitoring System = CIMS)



Benefits: two birds with one stone

- **Assessment & Demonstration of the Asset Integrity & Compliance during operation**
- **Enhanced safety through early identification of risk of failure**
- **Improved reliability through risk based proactive, planned maintenance.**
- **Efficient contingency planning and emergency response**
- **Collection and dissemination of lessons learned**

and

Optimized asset operating performance, availability and lifetime at optimized cost