4th ICEPIM & OMIC GAS 2018

accenture

Digital Technologies for Corrosion & Inpection management

High performance. Delivered.

Using our global services model and digital solutions for competitive advantage

Hari Padmanabhan
Managing Director, Energy Industry Practice Head

Strategy | Consulting | Digital | Technology | Operations

ACCENTURE'S RELIABILITY AND CORROSION MANAGEMENT SERVICES

WE ACCOMPANY OUR CLIENTS FROM STRATEGY, TO ROADMAP, TO IMPLEMENTATION/TRANSFORMATION OF CORROSION MANAGEMENT

accenture strategy

Shapes our clients' future, combining deep operational excellence insights with the understanding of how technology will improve performance

Strategy

accenture consulting

Transforms and brings the very best of Accenture to help our clients transforming the way they manage their plant and equipment against corrosion losses to compete in today's digital world.

Consulting

accenture digital

Digitizes and helps our clients to unleash the power of digital providing advanced analytics, digital plant and artificial intelligence

Digital

accenture technology

Powers our clients' businesses with "best in class" established and emerging solutions to manage their corrosion problems

Technology

accenture operations

Operates business processes as a service on behalf of our clients to provide more efficiency

Operations

CORROSION MANAGEMENT : TRANSLATING INDUSTRY CHALLENGES INTO VALUE DRIVERS

Key Industry Challenges

- Move towards **proactive** approach instead of reactive
- Incorporate cost of corrosion in crude indifference value and ranking
- Develop effective and efficient **Inspection Management** practice
- Decrease **cost** for inspections
- Gather adequate asset **data** to support Risk Based Inspection(RBI) approach
- Develop RBI tools and **capabilities**
- Structured and **integrated data system** that supports thickness monitoring
- Stringent Regulatory **Compliances & Norms**

Value Drivers

- **Increased Asset Integrity**
- **Reduced Cost of Inspection**
- **Reduced Cost of Turnarounds**
- **Reduced Production Loss**
- **Reduced safety and environmental Risk**

Key Metrics

Estimated annual cost of **USD $2.5 trillion** globally across all industries*

USD 12 -13 billion across process industries

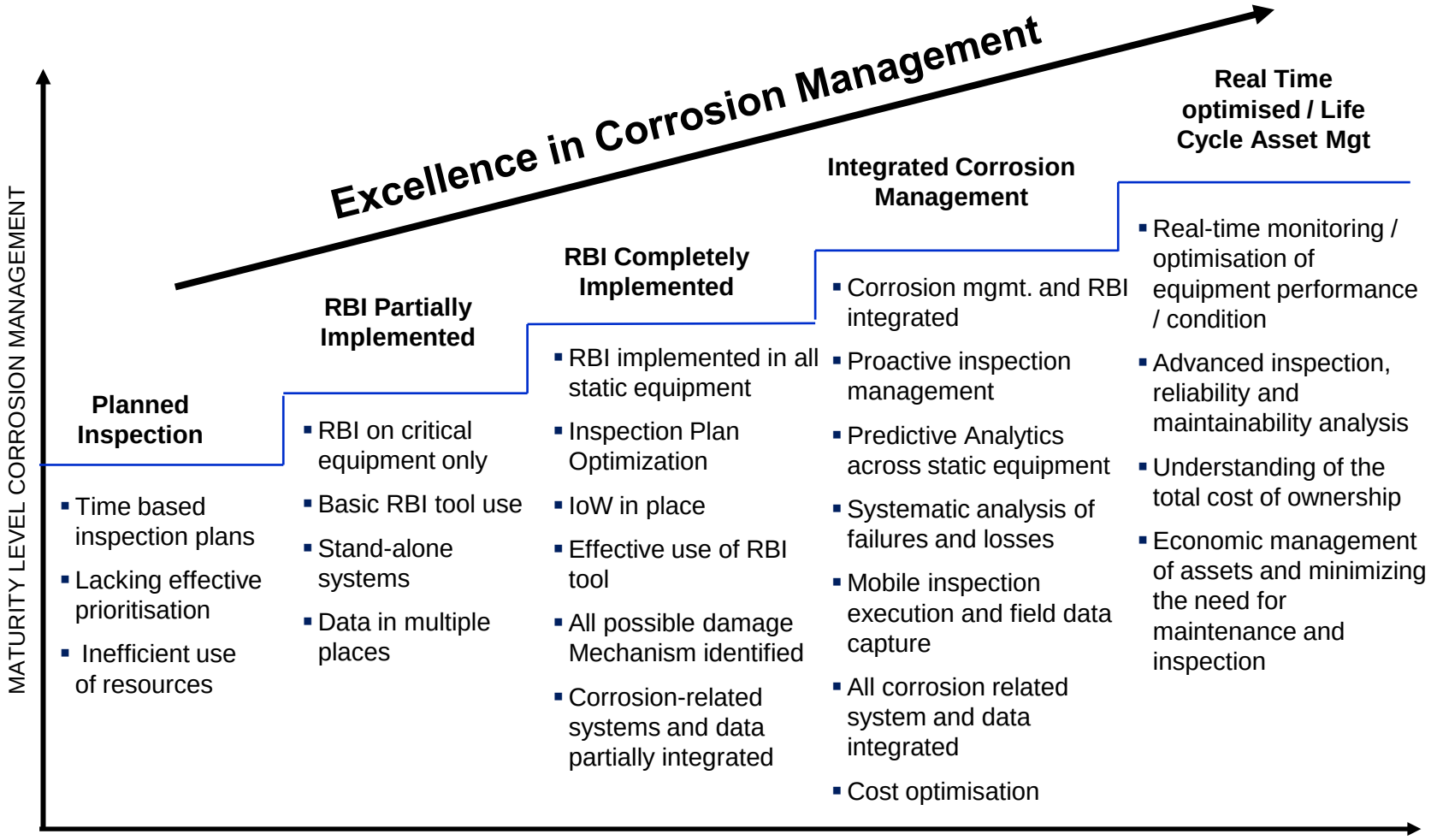
3.4% Global GDP

Nearly 50% of the reports studied described Corrosion incidents had high / very high consequences

Corrosion failure predominantly in pipe works, causing 71% of the accidents studied

CORROSION MANAGEMENT JOURNEY

AS COMPANIES STEP TOWARD IMPROVED CORROSION MANAGEMENT AND REDUCED M&I COSTS, THEY CAN LEVERAGE INCREASINGLY ADVANCED CAPABILITIES



FROM DAMAGE RESOLUTION TO PREDICTIVE AND PROACTIVE RISK MANAGEMENT

ACCENTURE SYSTEMATIC APPROACH AND METHODOLOGY TO CORROSION MANAGEMENT EXCELLENCE – DETAILS

Digital Solutions

- Mobile field inspection data capture
- Accenture set of Advanced Models
- Corrosion/Erosion Analytics Overlay
- Inspection optimization through AI
- Risk of failure Predictive Analytics

RBI and Corrosion Management Capabilities

- Damage Mechanism Id. & Review
- Corrosion & Materials Diagram
- Corrosion Control Manual
- IOWs at equipment level
- Risk Mgmt. at equipment level

Information Management

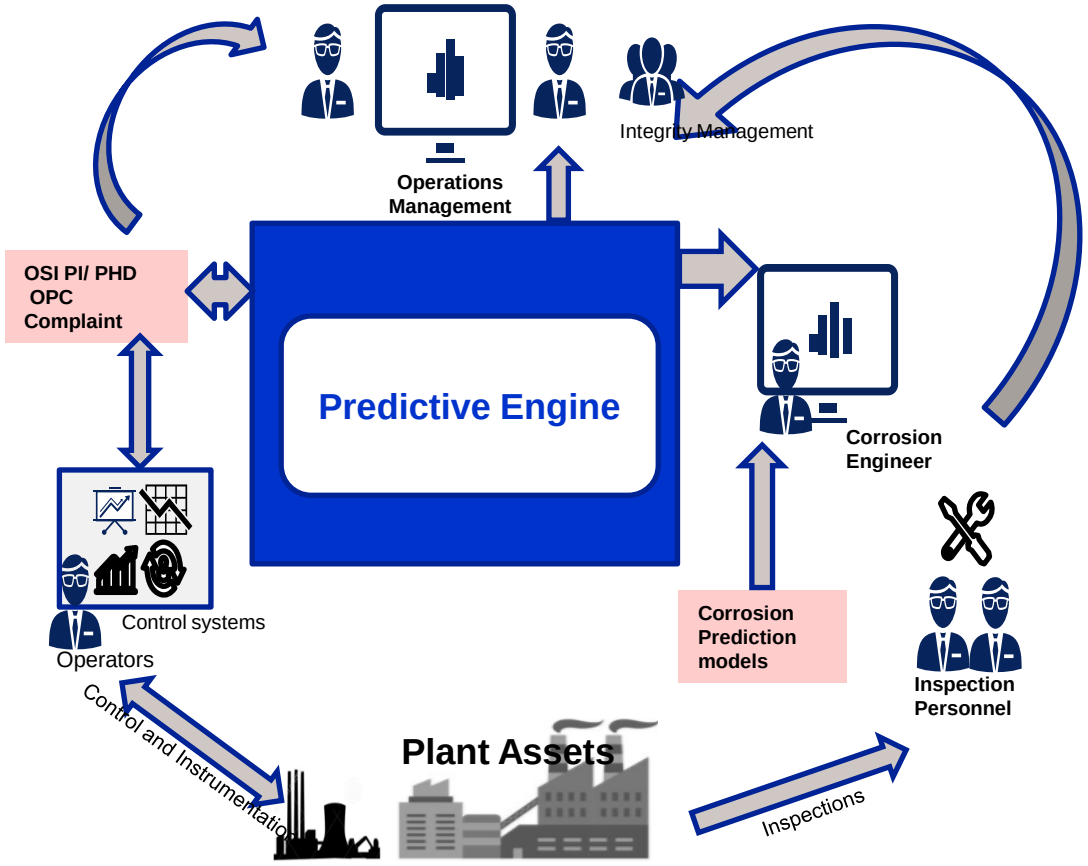
- Master Asset List
- RBI results in 3D View
- P&IDs, PFDs, Isometrics, Engineering data
- Asset Replacement Value
- Maintenance Costs

Technology Foundation

- Data collection and processing tool
- Static equipment management tool
- API compliant RBI tool
- Intelligent P&IDs
- KPIs Mgmt. functionality

ACCENTURE'S DIGITAL INITIATIVES IN CORROSION MANAGEMENT

CORROSION PREDICTION IN REFINERY EQUIPMENT & PIPELINE



Typical corrosion types in a refinery

- *Naphthenic acid Corrosion*
- *Ammonium Bi Sulphide*
- *Corrosion under insulation*
- *Optimization of Chemical inhibitors*

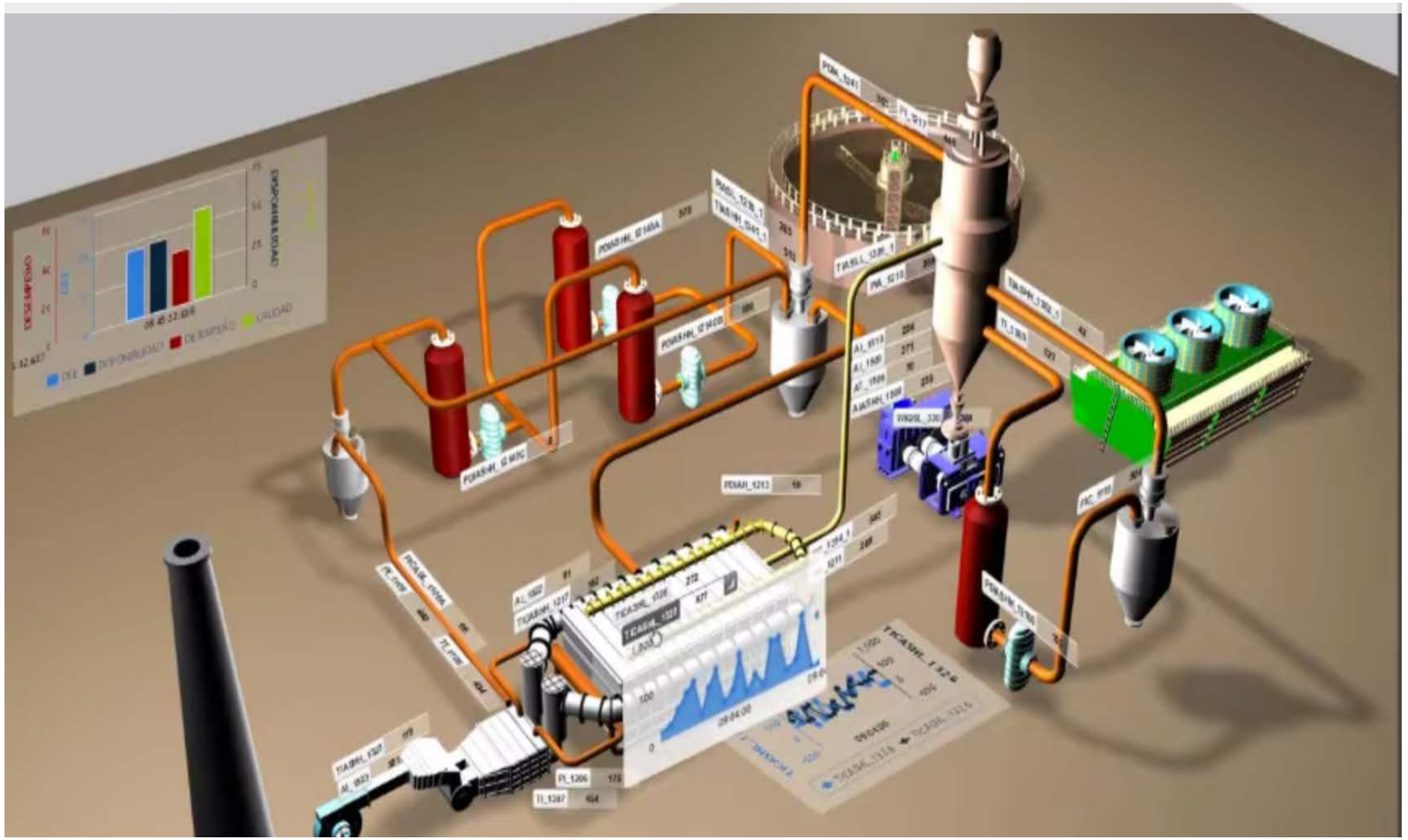
Value Proposition

- **Determines corrosion rate mmpy**
- **Ability to evaluate crude from crude assay for corrosion**
- **Help optimize inhibitor injection**

3D VISUALIZATION OF RBI RESULTS

FOR EASY IDENTIFICATION OF PLANT RISK EXCELLENCE IN CORROSION MANAGEMENT

- **3D Plant Model:** Today, plants are designed in 3D and the model is directly available and well-known by the engineers
- **Accenture Methodologies (Predictive Analytics)**: Using real-time data identifies upcoming hotspots and RBI results in the plant in 3D View



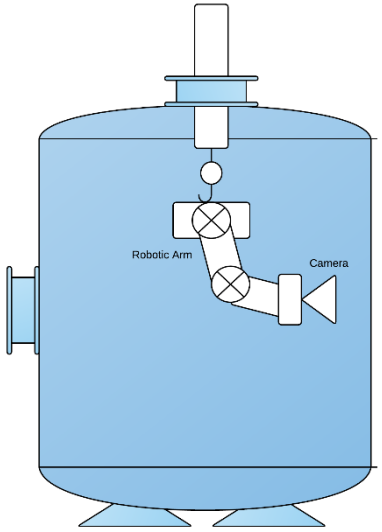
CORROSION INSPECTION MANAGEMENT

PRACTICE, PROBLEMS AND SOLUTION USING VIDEO ANALYTICS

From Issue

- Huge number of process equipment in the plant
- Hectic inspection schedule in shutdowns
- Limited availability of experienced resources
- Hazardous environment inside those equipment
- Access restrictions due to size, approach level
- Lengthy preparatory activities
- Complex post inspection activities

Inspection Management using Robotics and Video Analytics



To Outcome

- Early equipment inspection using robots and video aids in faster decisions and optimized schedule
- Reduces shutdown period
- Eliminates safety risks
- Reduces extra preparation time
- Higher productivity of inspection
- More accurate and realistic data / information for RBI modeling
- Provides traceability to trending and severity of degradation with images / videos

DEMO
Corrosion Inspection Optimization through Video Analytics /ROBOTICS

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