



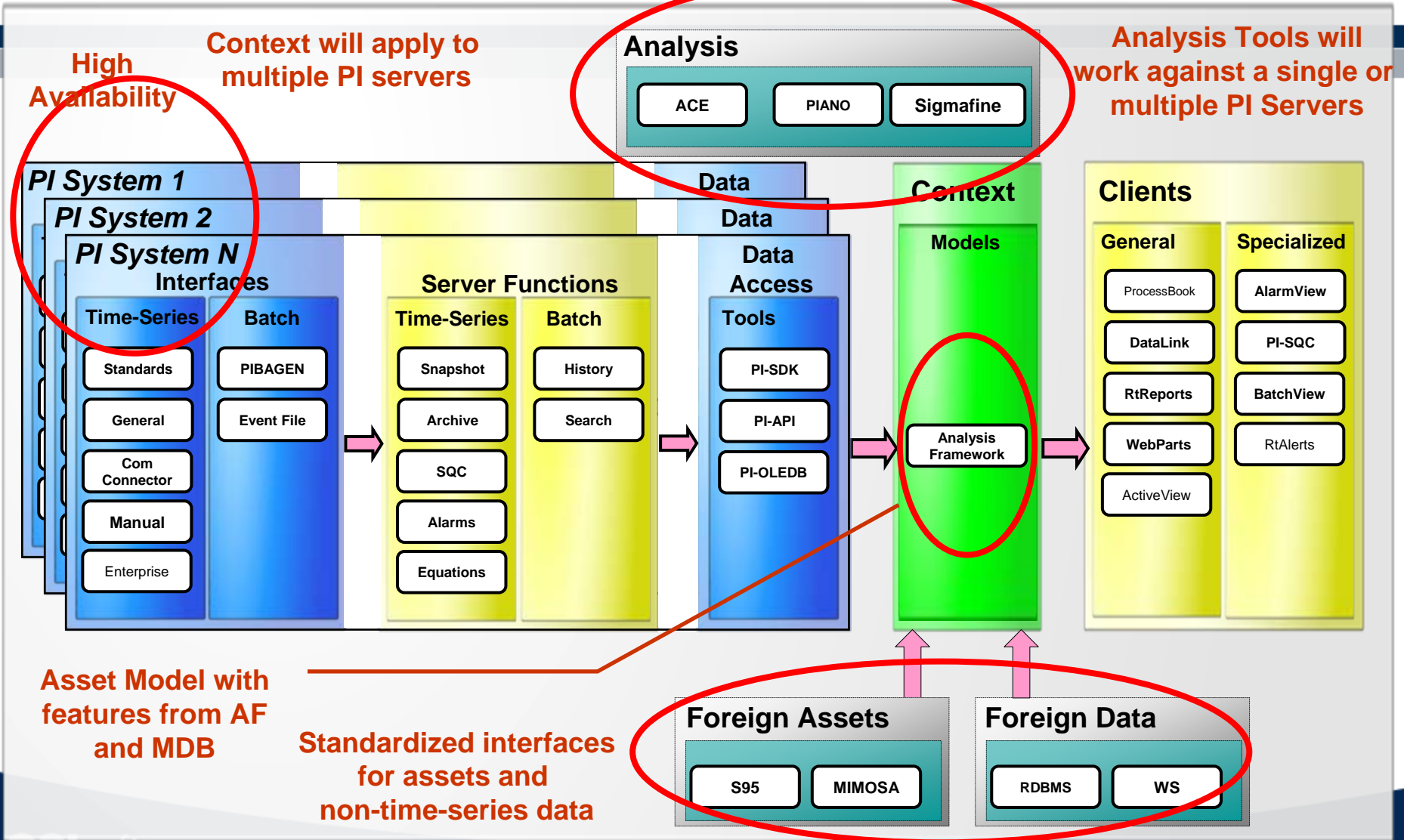
Getting Value Out Of Reconciled Data Using PI and Sigmafine

Ales Soudek
Business Development

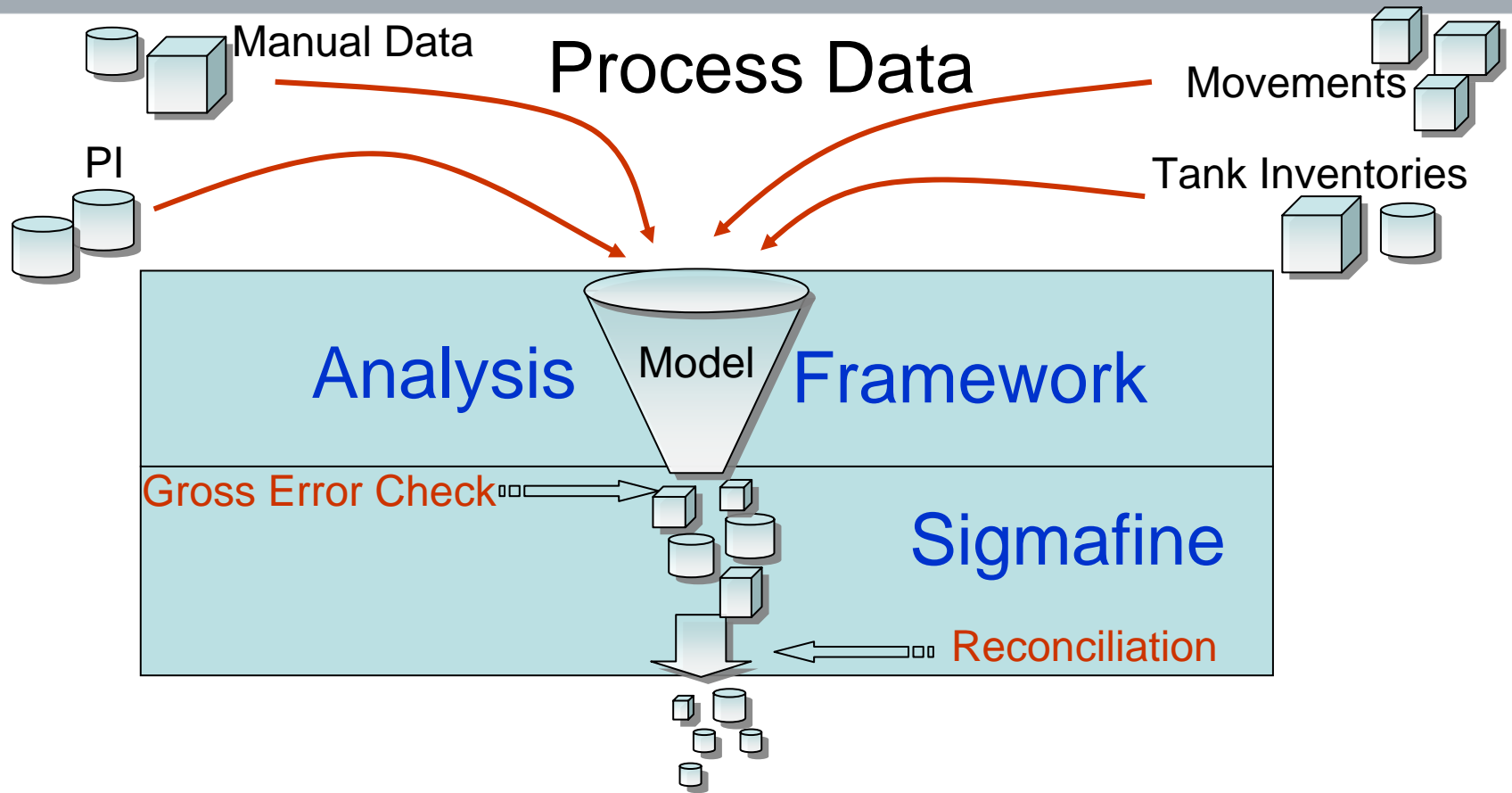
Outline

- What is the PI System?
- What is Reconciled Data/Sigmafine?
- Using PI to Manage Your Assets
- What Value to the Business?
- Examples from Companies

The PI System



Reconciled Data

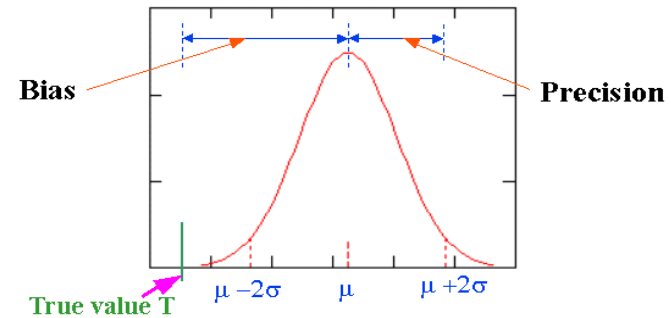


Reconciled Data

Sigmafine Analysis Principles

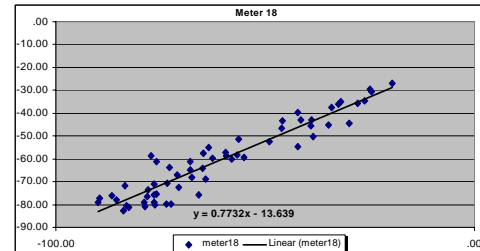
- Balance
- Gross Error Detection
- Weighted Least Squares Data Reconciliation

- Bias :- $\mu - T$ (True value)
- Precision:- 2σ (95% confidence)

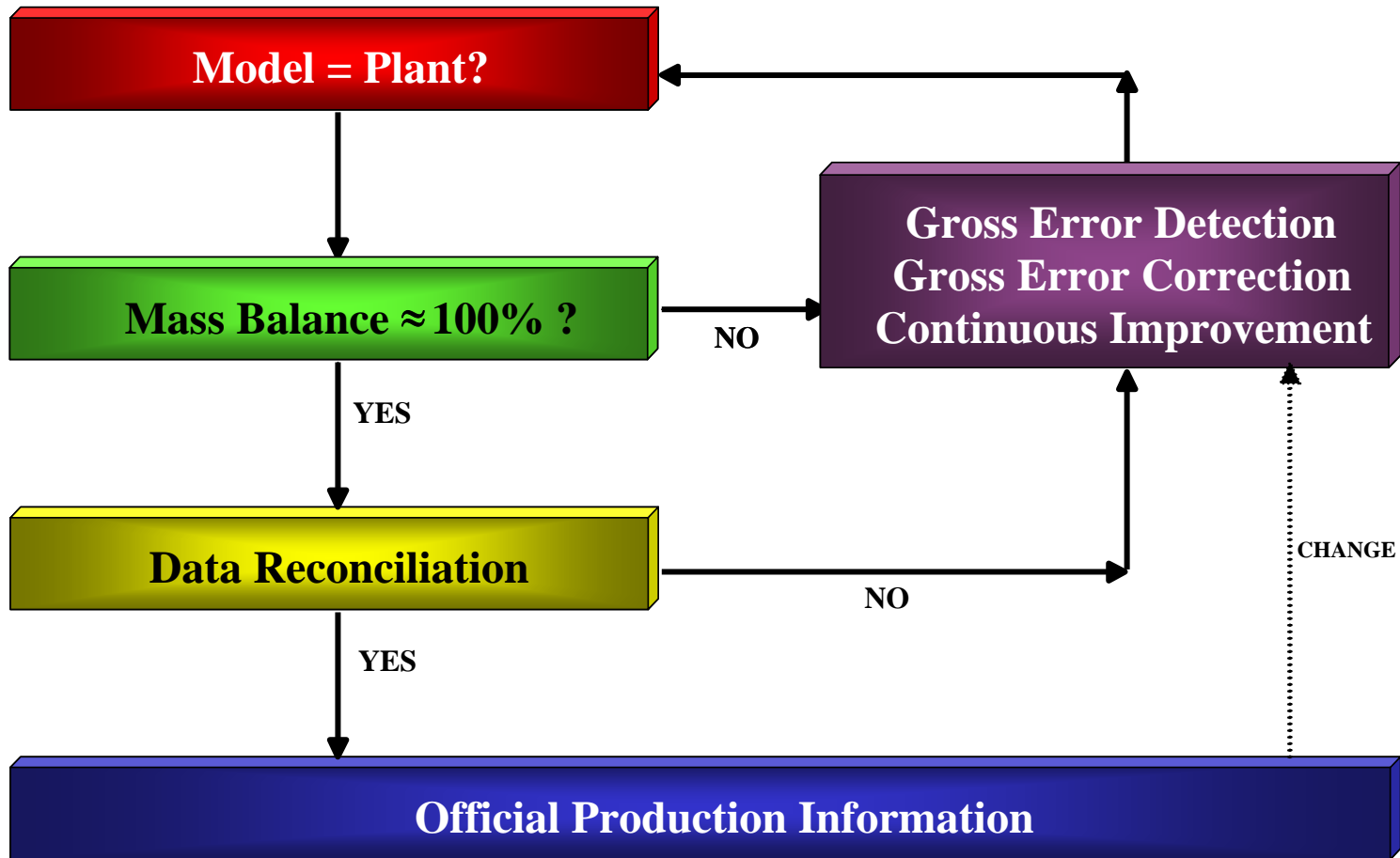


$$\text{Uncertainty} := (\text{Bias}^2 + \text{Precision}^2)^{0.5}$$

$$Fn := \sum_{i=1}^N \left[\frac{\text{Meas}_i - \text{Recon}_i}{\text{Tol}_i} \right]^2$$

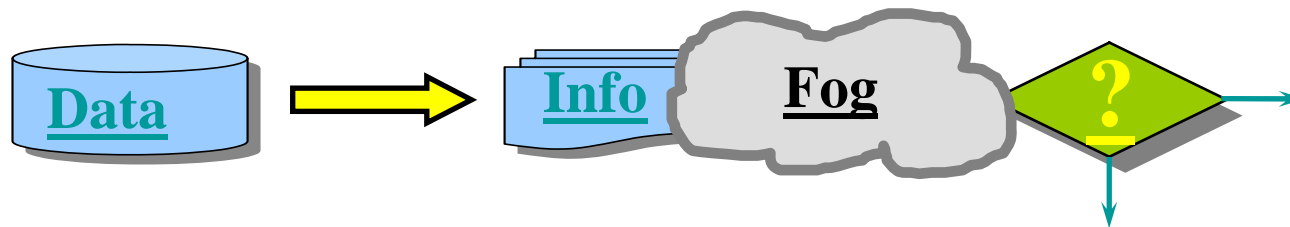


The Reconciliation Process



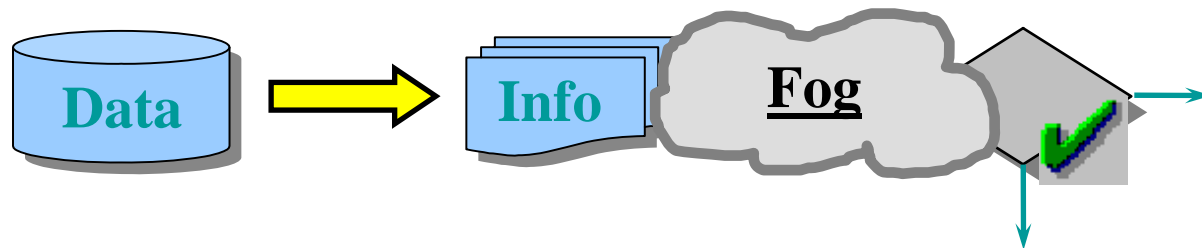
The Data Fog

- Need for better information and faster access
 - Flood of data
- Poor data quality - loss of confidence in reported results
 - Data does not balance
 - Manipulation by different groups
- Direct financial impact
 - Custody transfer errors go undetected
 - Plant operation is sub-optimal



Lifting the Data Fog - Sigmafine

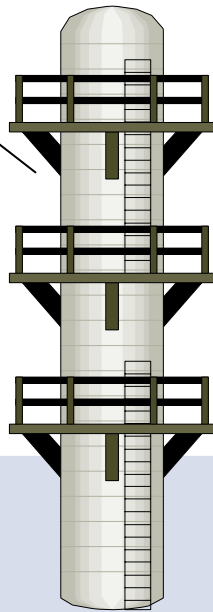
- Validated data for ERP
- Standardization – One Set of Numbers
- Detect Measurement Problems
- Better Business Decision



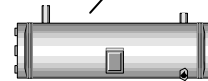
Templates of Assets

These assets can be made into a template for reuse.

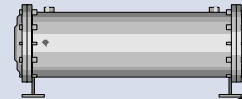
Asset Attributes:
Name plate information
Trays
Related data references
Limits



Asset Attributes:
Name plate information
Related data references
Limits

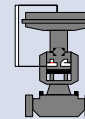
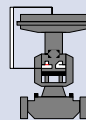
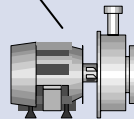


Asset Attributes:
Name plate information
Related data references
Limits



Asset Attributes:
Name plate information
Related data references
Maintenance information

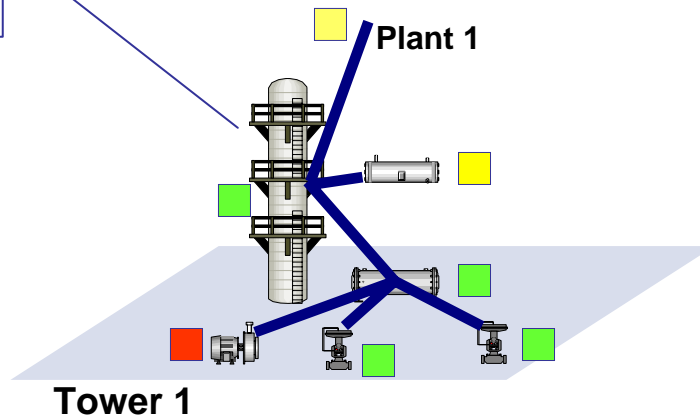
Asset Attributes:
Name plate information
Related data references
Operating limits



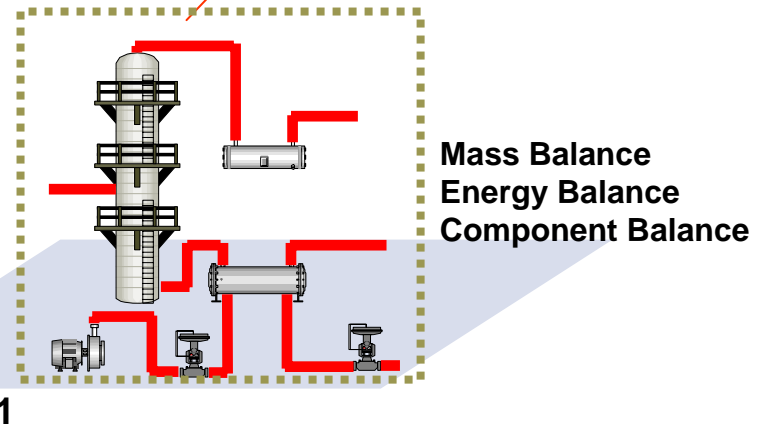
Tower 1

Use and Manage Assets

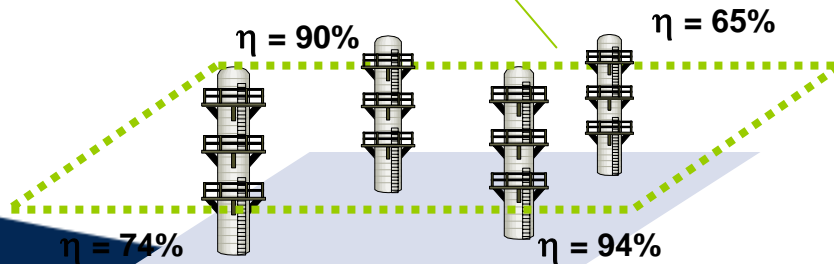
Collection Based Analyses



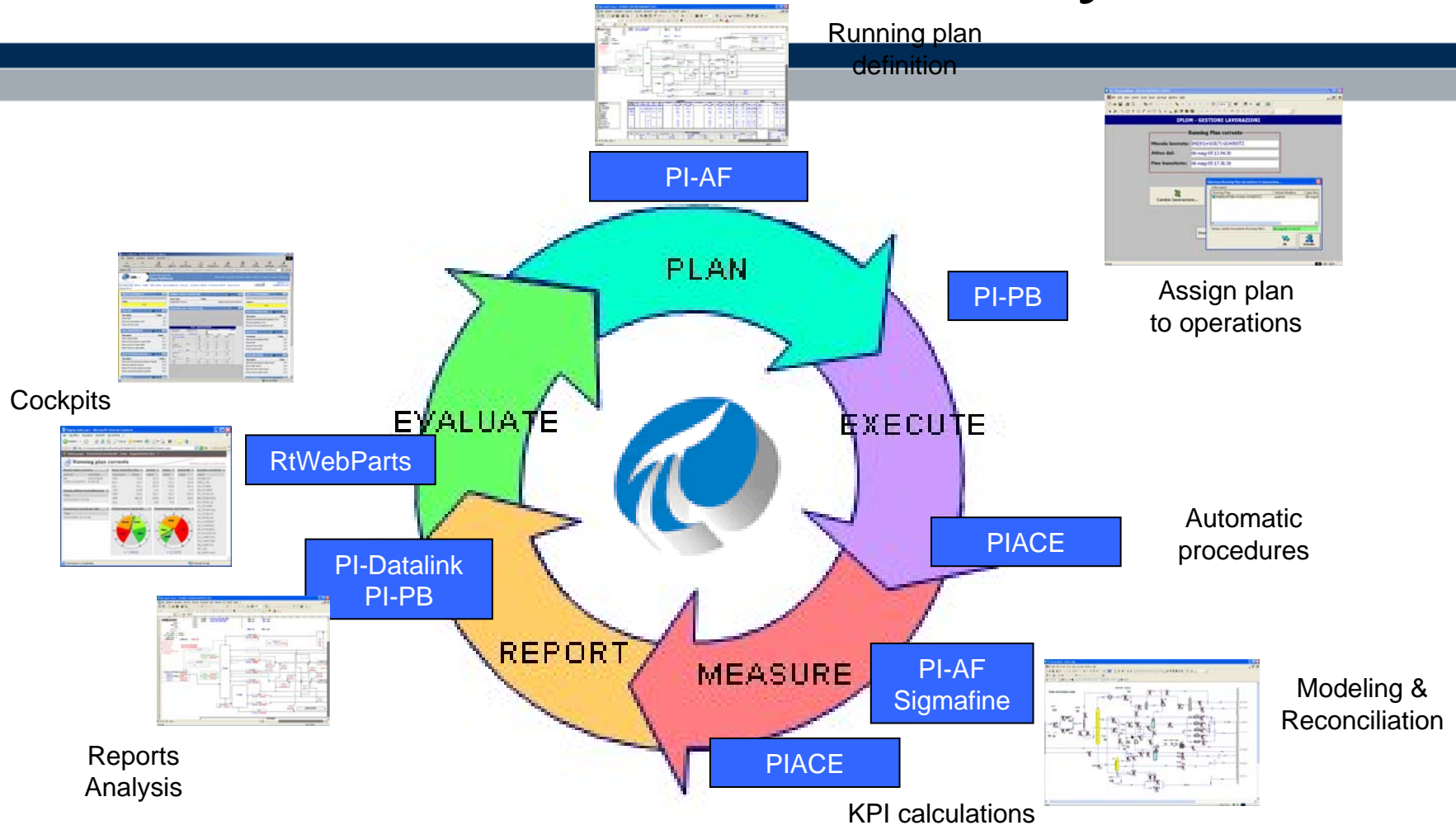
Connectivity Based Analyses



Equipment Based Analyses



PI in the Business Cycle



- Consistency through OSIsoft infrastructure

Return on Investment

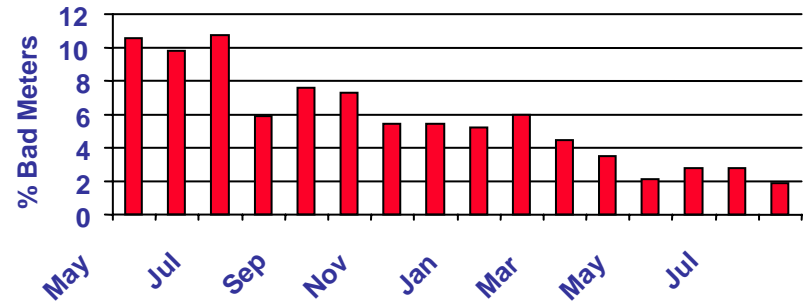
- Keep Focus on Target Objectives
- Rapid Identification of Yield Degradation
- Historical Analysis – Redefine Targets for Improved Performance
- Increased Diesel Yield – 2.2% on Feed
 - \$1,200,000

Organizational Value

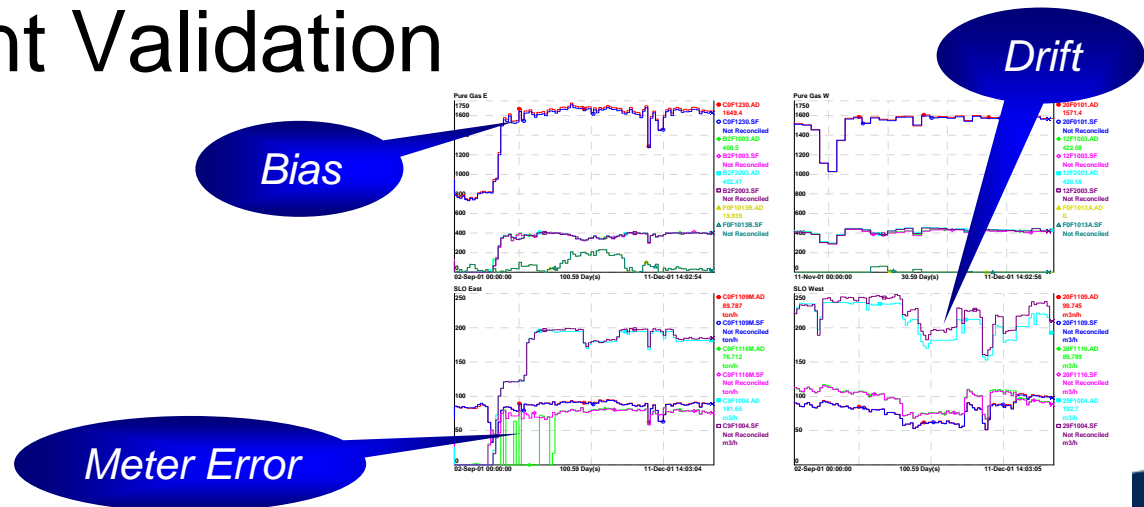
- Reduction in Deviation Between Planned vs Actual Yields (e.g. diesel from 2.2% to 1.3%)
Demonstrated how sharing information and involving people helped to reach the refinery targets
- PI System allowed engineers to focus on the real business objectives
- Performance management approach allowed to keep production and plant management under control with a lean organization

Reconciled Data Value

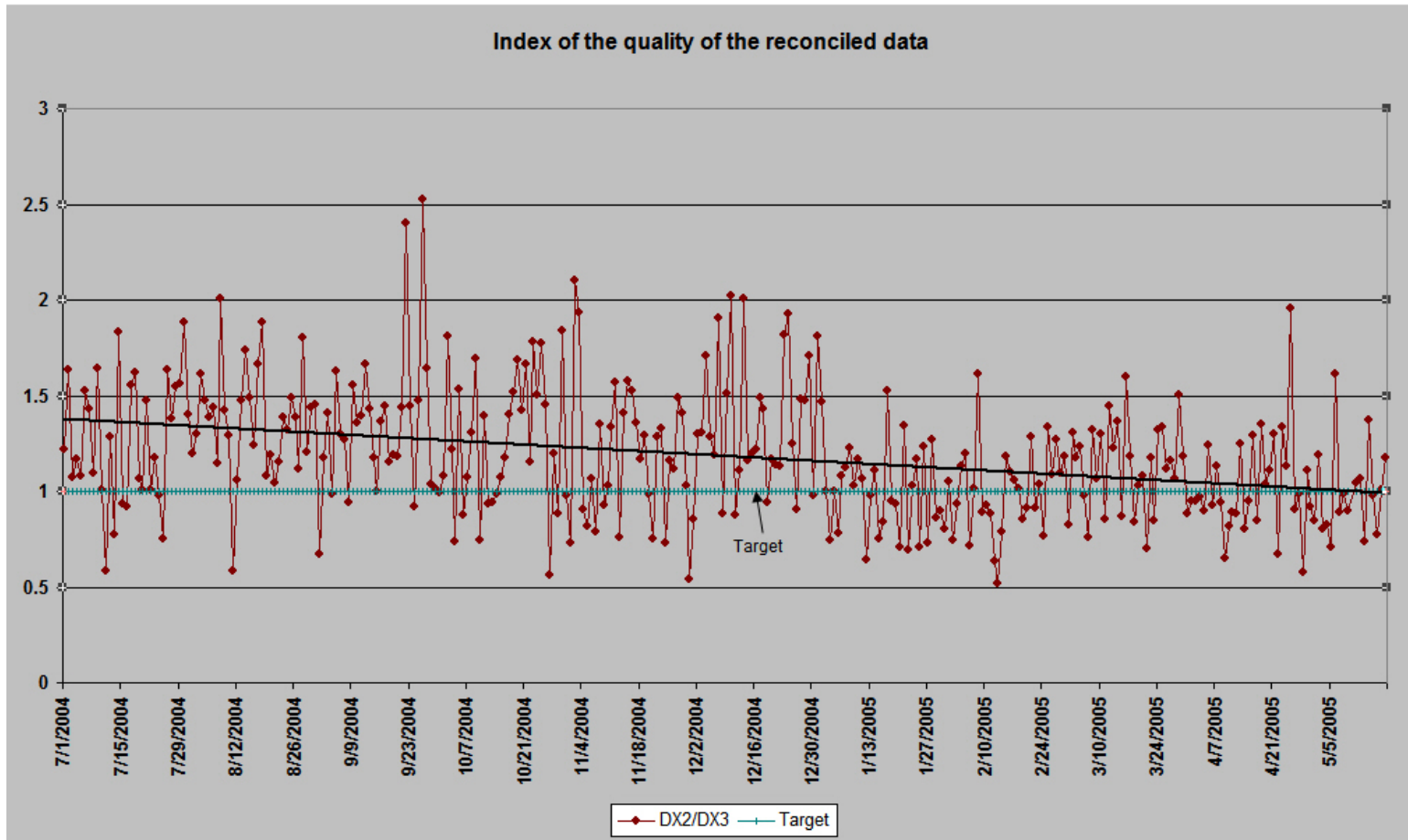
- Monitor and Reduce Meter Maintenance



- Measurement Validation



Tracking Data Quality

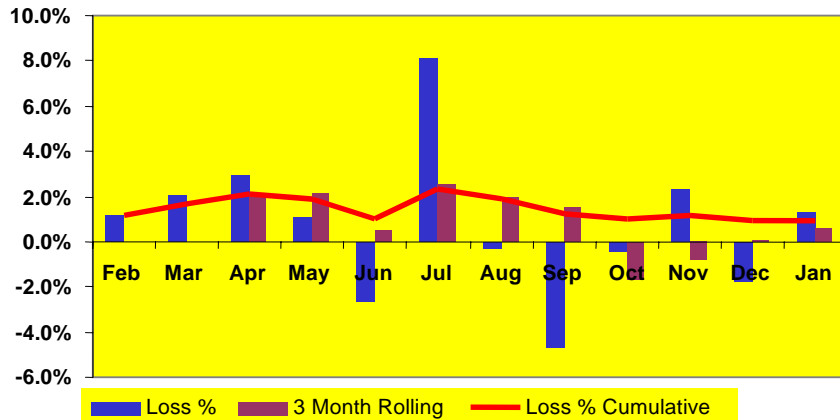


Reconciled Data Value

Mass Balance before Sigmafine Feb/01 - Jan/02

(Loss % Cumulative = 1.09%)

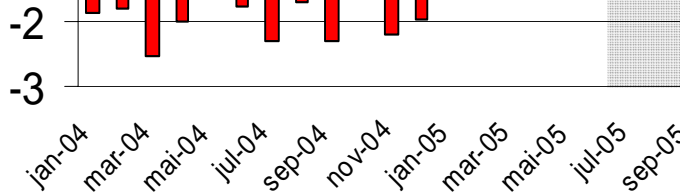
Loss Accountability



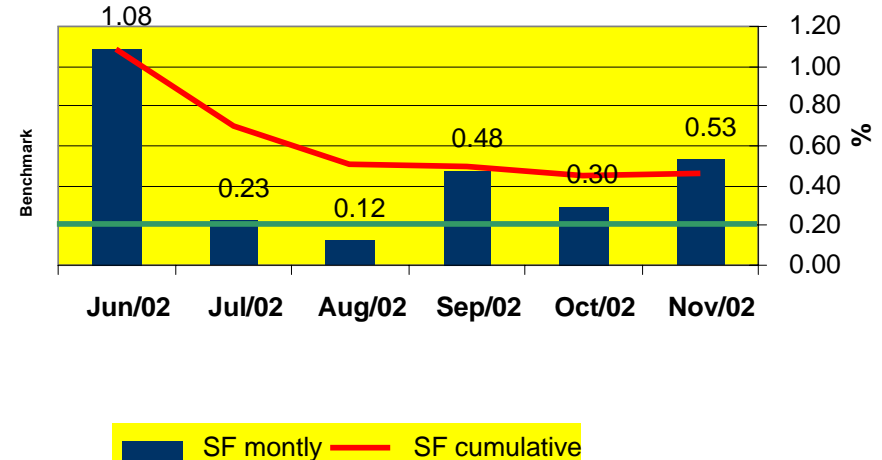
Loss Accountability

Sigmafine available

Oil loss figures after Sigmafine implementation

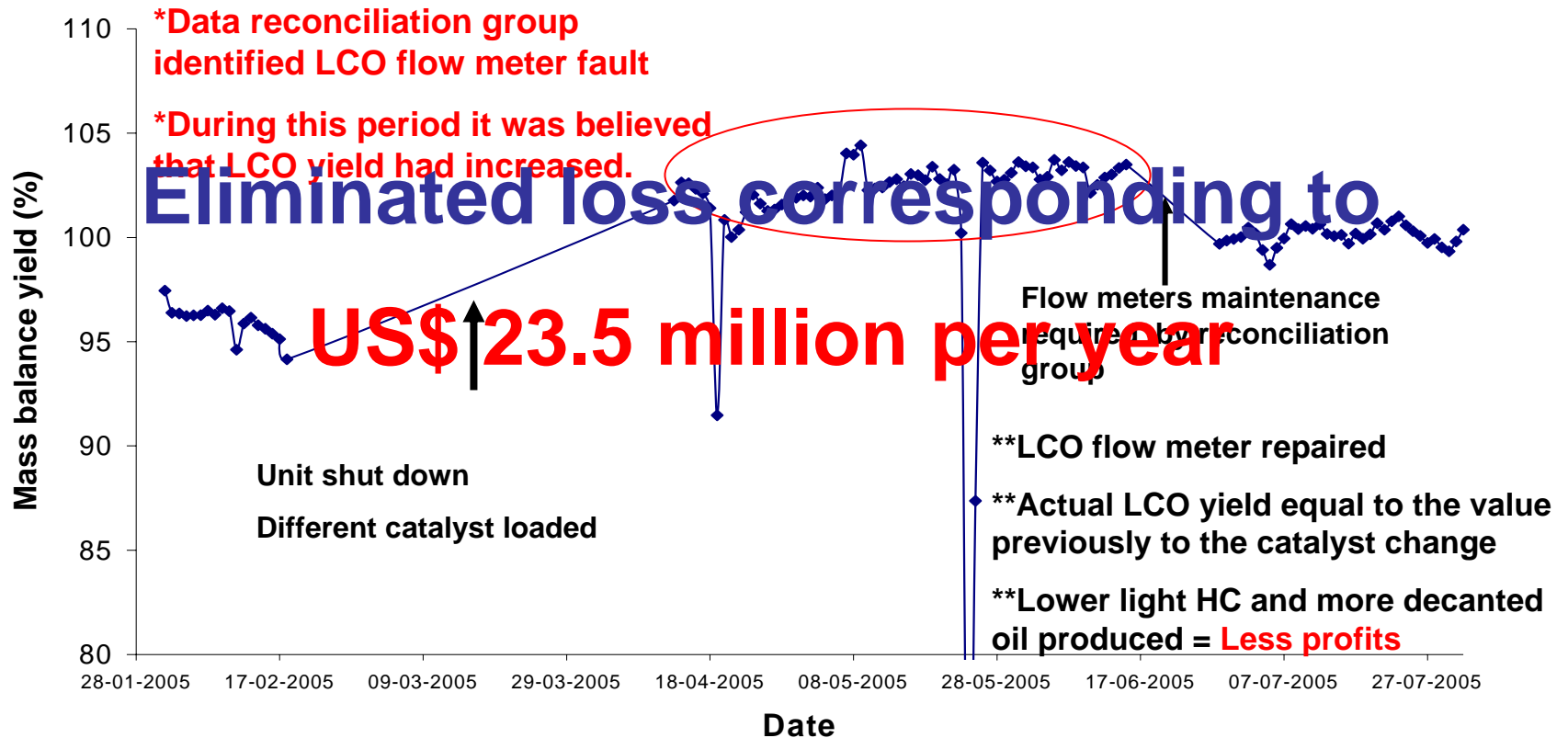


SF Losses



Reconciled Data Value

Mass balance yield - FCC (Fluidized Catalytic Cracking Unit)



Conclusions

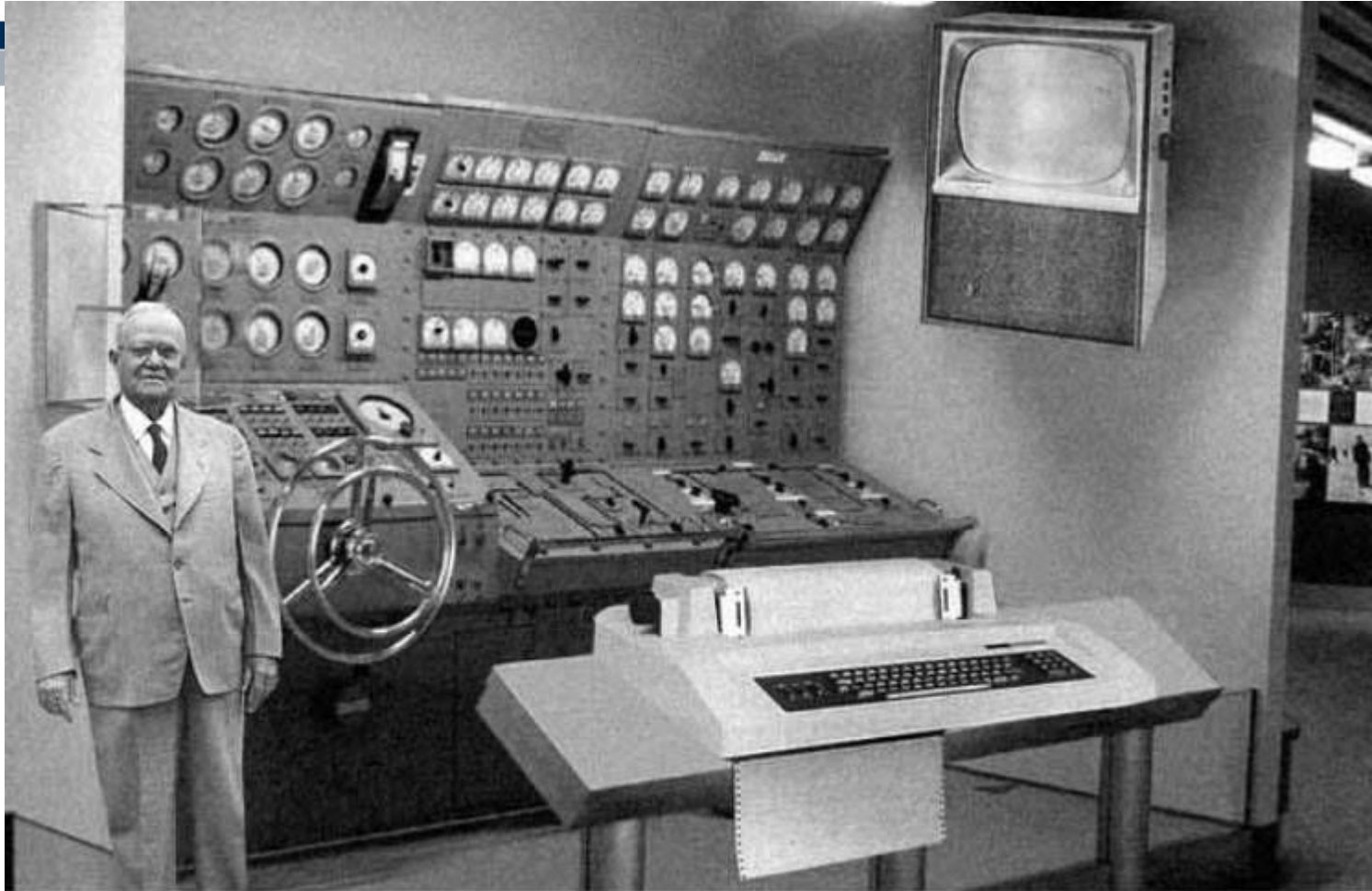
- Monitor and reduce meter maintenance
- Measurement stewardship
- Verify custody transfer
- Monitor plant performance
- Identify operations problems
- Loss identification and tracking
- Business Decisions Based on Better Data



Trivia

History Lesson

Computer of the “Future” (1954)



Scientists from the RAND Corporation have created this model to illustrate how a “home computer” could look like in the year 2004. However the needed technology will not be economically feasible for the average home. Also the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language, the computer will be easy to use.

Computer of the “Future”

