Sigmafine 4.0

The Next Generation

Ales Soudek *May 2003*

Introduction

- *What is Sigmafine ?*
  - *Analysis Principles*
  - *Benefits*
- *Sigmafine 4.0 – The Next Generation*
  - *Configuration*
  - *Presentation Layer*
- *Leveraging AF*

What is Sigmafine ?

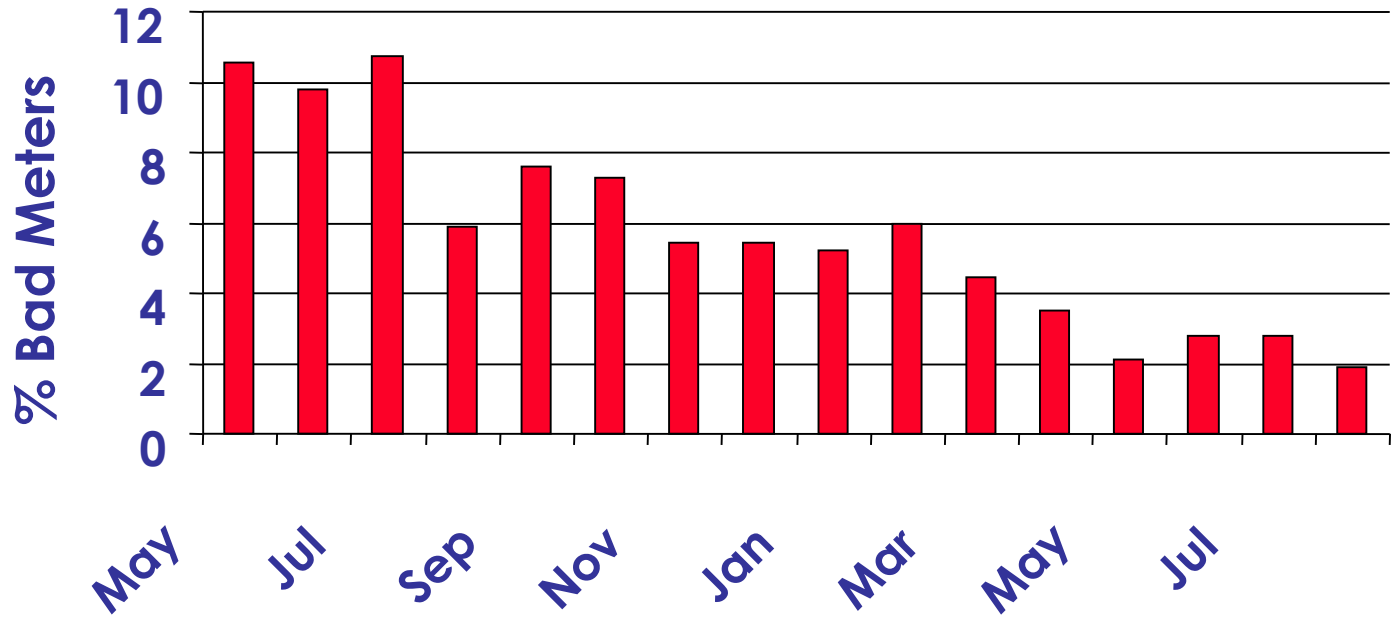
- *Tool for Production Accounting and Engineering Applications*
- *Data Unification and Validation Tool*
  - *ERP and other Applications*
- *Measurement Audit Tool*

Sigmafine Analysis Principles

- *Balance*
- *Gross Error Detection*
- *Weighted Least Squares Data Reconciliation*
  - *Redundant measurements*
  - *Measurement accuracy*
  - *Calculates “soft sensors” accurately*
  - *Minimization of total error*

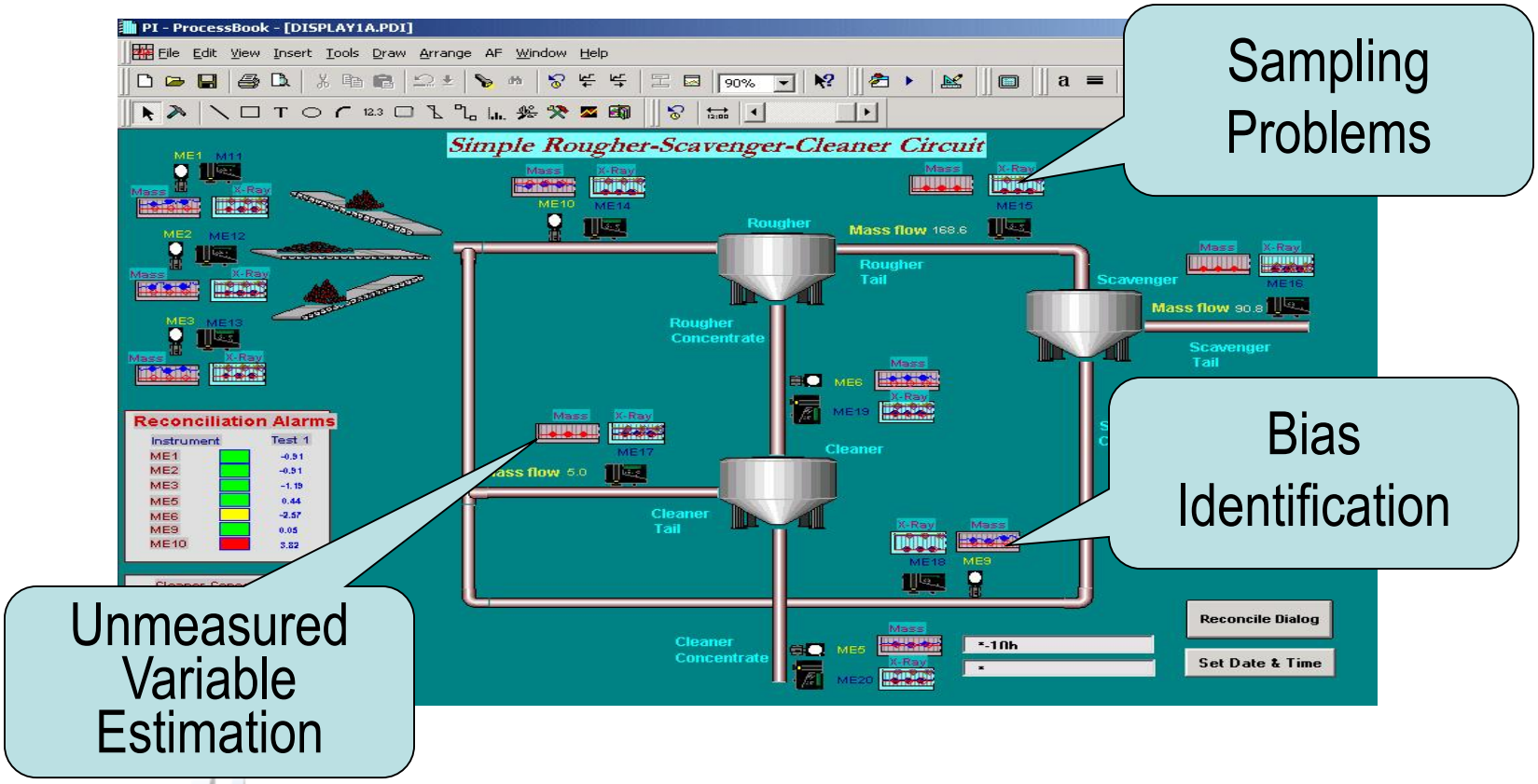
Benefits of Sigmafine

- *Monitor and Reduce Meter Maintenance*



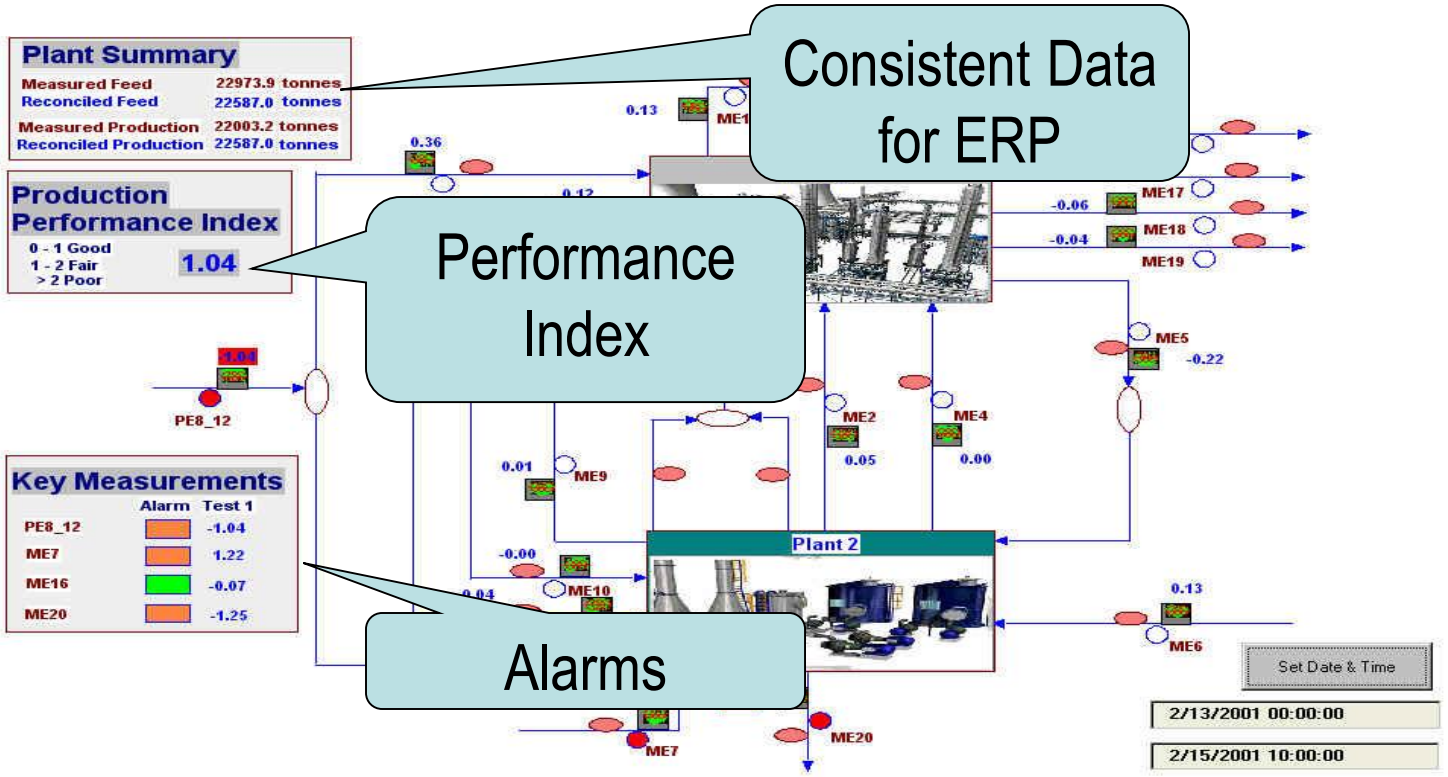
Benefits of Sigmafine

- *Identify location of data errors*



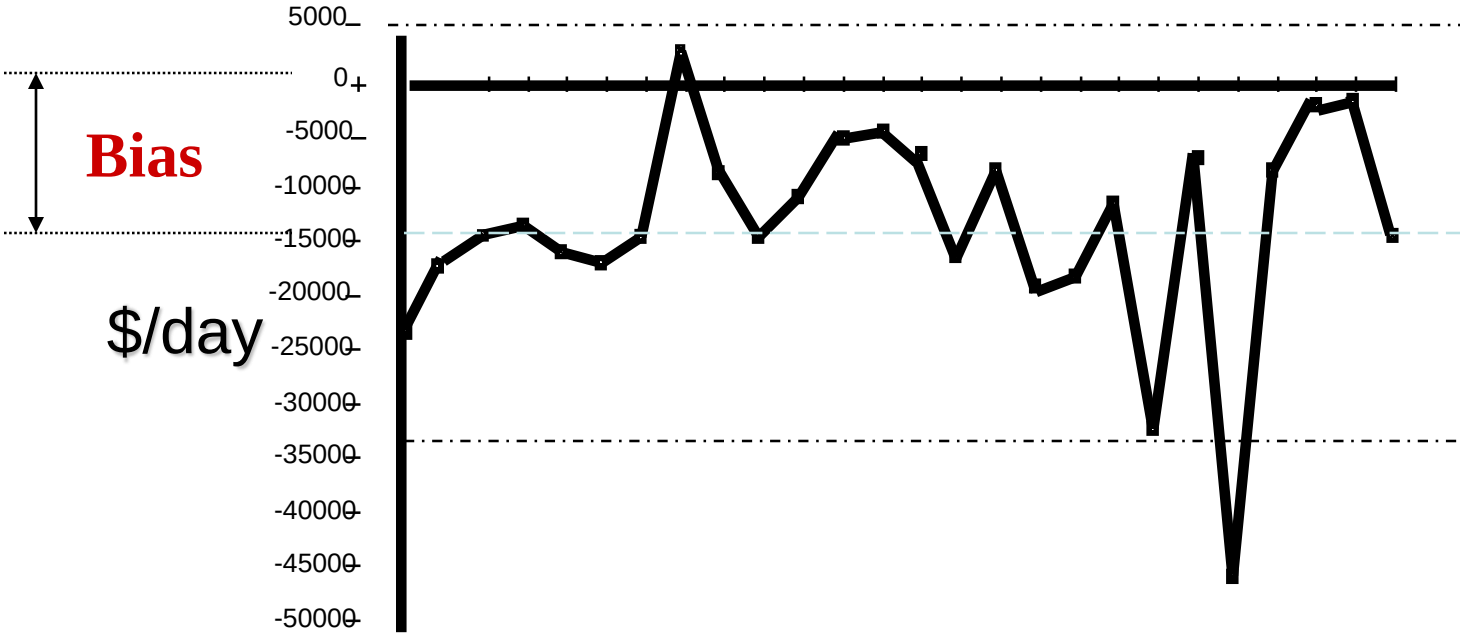
Benefits of Sigmafine

- *Monitor Plant Performance*



Benefits of Sigmafine

- *Verify Custody Transfer*

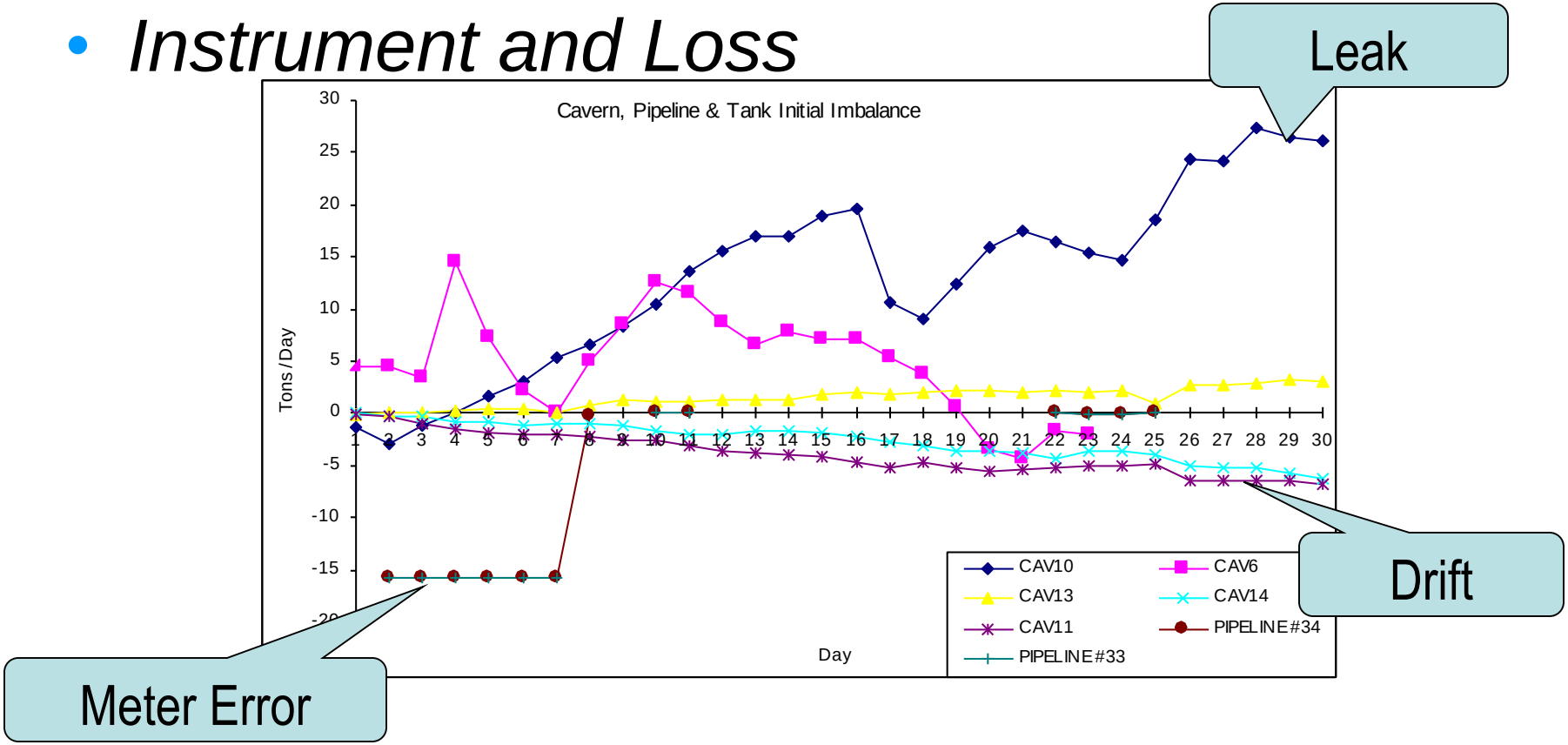


Daily "profit/loss" in $ over one month

Day of the Month

Benefits of Sigmafine

- *Instrument and Loss*



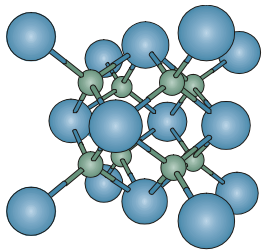
Sigmafine 4.0 - The Next Generation

Sigmafine 4.0

- *Fully integrated with PI System*
- *First Application Built on the Analysis Framework (AF)*
- *Modular and Reusable Structure*
- *.NET based*

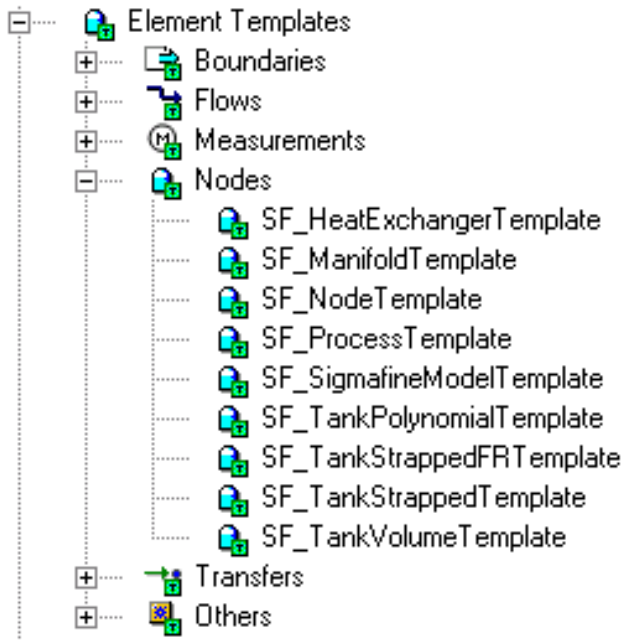
Sigmafine 4.0 - Configuration

- *Structure*
  - ***Element Templates***
  - *Elements*
  - *Plug-Ins*
    - *Data References*
    - *Analysis Rules*
    - *Time Rules*
  - *Models*
  - *Unit of Measure Classes*
  - *Tables*



Element Templates

- *Element Templates*
  - *Boundaries*
  - *Flows*
  - *Measurements*
  - *Nodes*
  - *Transfers*
  - *Others*
  - *User Definable*



Element Templates

- *Attribute Configuration*
  - *Type*
  - *Units of Measure*
  - *Data Reference*
  - *Settings*
  - *Default Value*

Sigmafine 4.0 - Configuration

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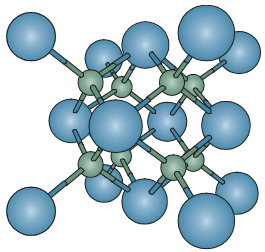
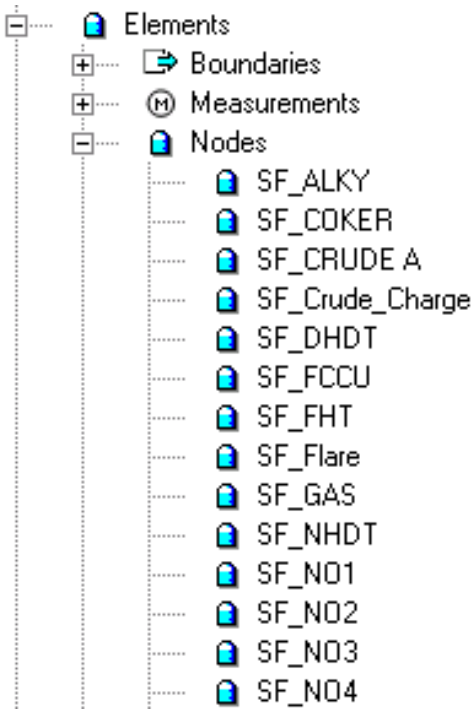


Elements

- *Element*
  - *Created from Element Template*
  - *Inherit configuration from Template*
  - *Override Configuration*
  - *Global or Local to Model*



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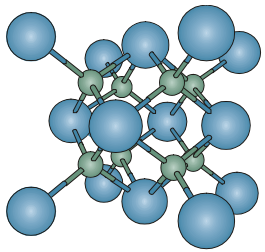
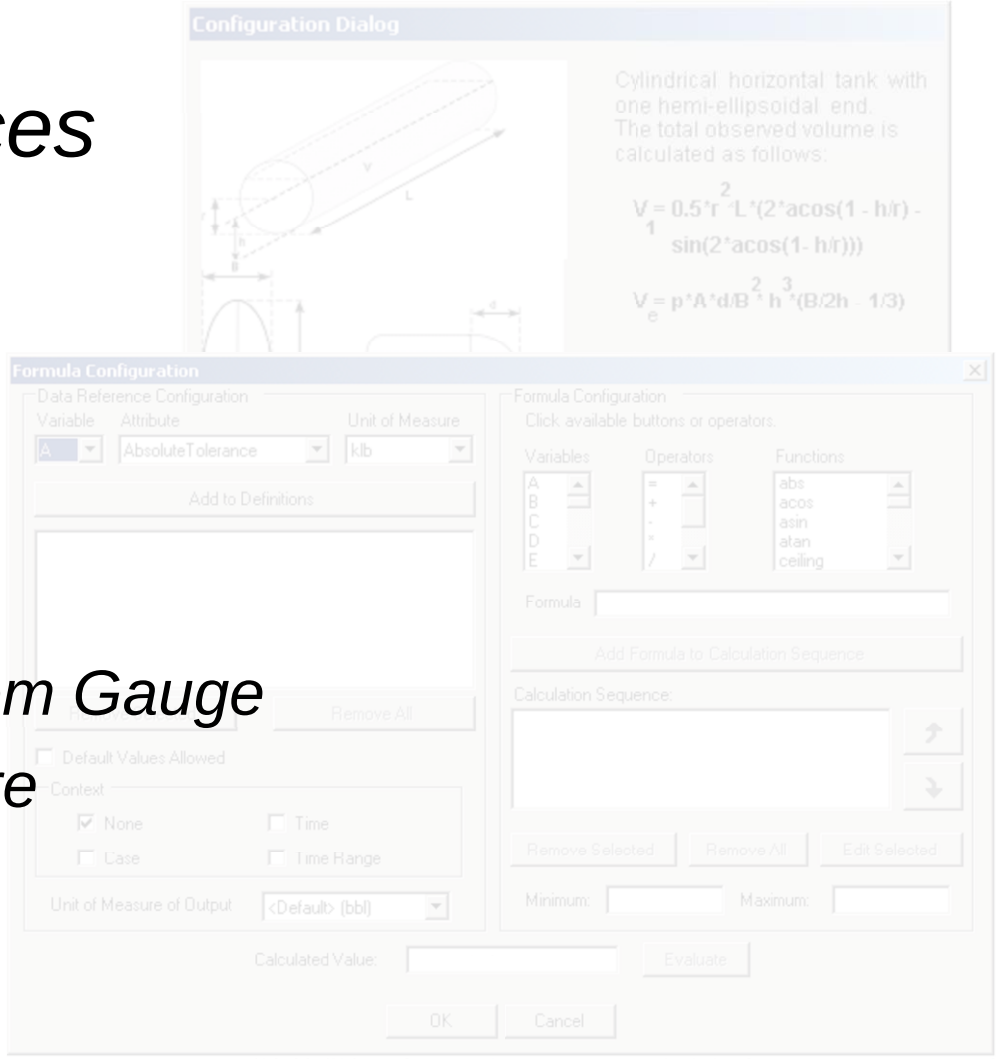


Plug-Ins

- *Data References*
  - *How Attributes get/put Data*
- *Analysis Rules*
  - *Collection of Elements (Model Context)*
- *Time Rules*
  - *Cases*

Plug-Ins

- *Data References*
  - *Formula*
  - *PI Point*
  - *PI Point Array*
  - *Sigmafine*
  - *Table Lookup*
  - *Tank Volume from Gauge*
  - *Units Of Measure*
  - *User Defined*

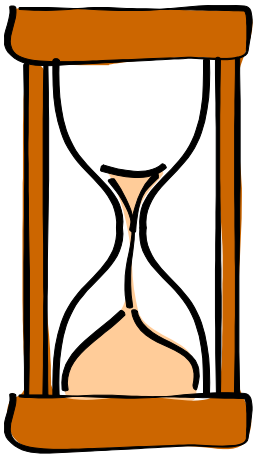


Plug-Ins

- *Analysis Rules*
  - *Gross Error Detection*
  - *Mass Balance*
  - *Volume Balance*
  - *Component Balance*
  - *Energy Balance*
  - *Stoichiometric Balance*
  - *Constraint Mass Balance*
  - *Composition Tracking*
  - *User Definable*

Plug-Ins

- *Time Rules*
  - *Hourly*
  - *Daily*
  - *Monthly*
  - *User Definable*



Sigmafine 4.0 - Configuration

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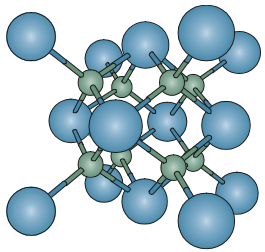
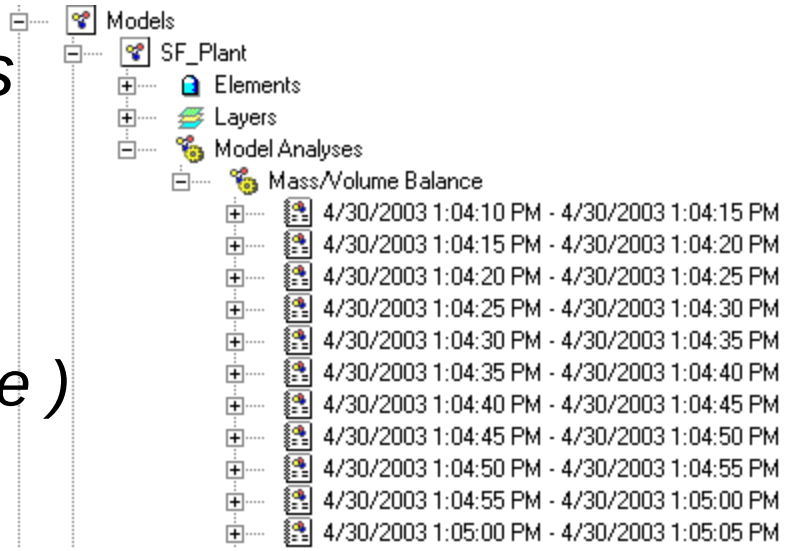


Models

- *Collection of*
  - *Connected Elements*
  - *Layers*
  - *Model Analyses*
    - *Cases (period of time)*



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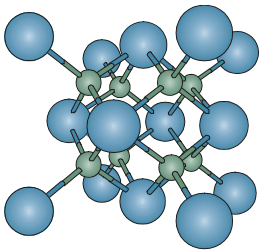
  - ***Tables***



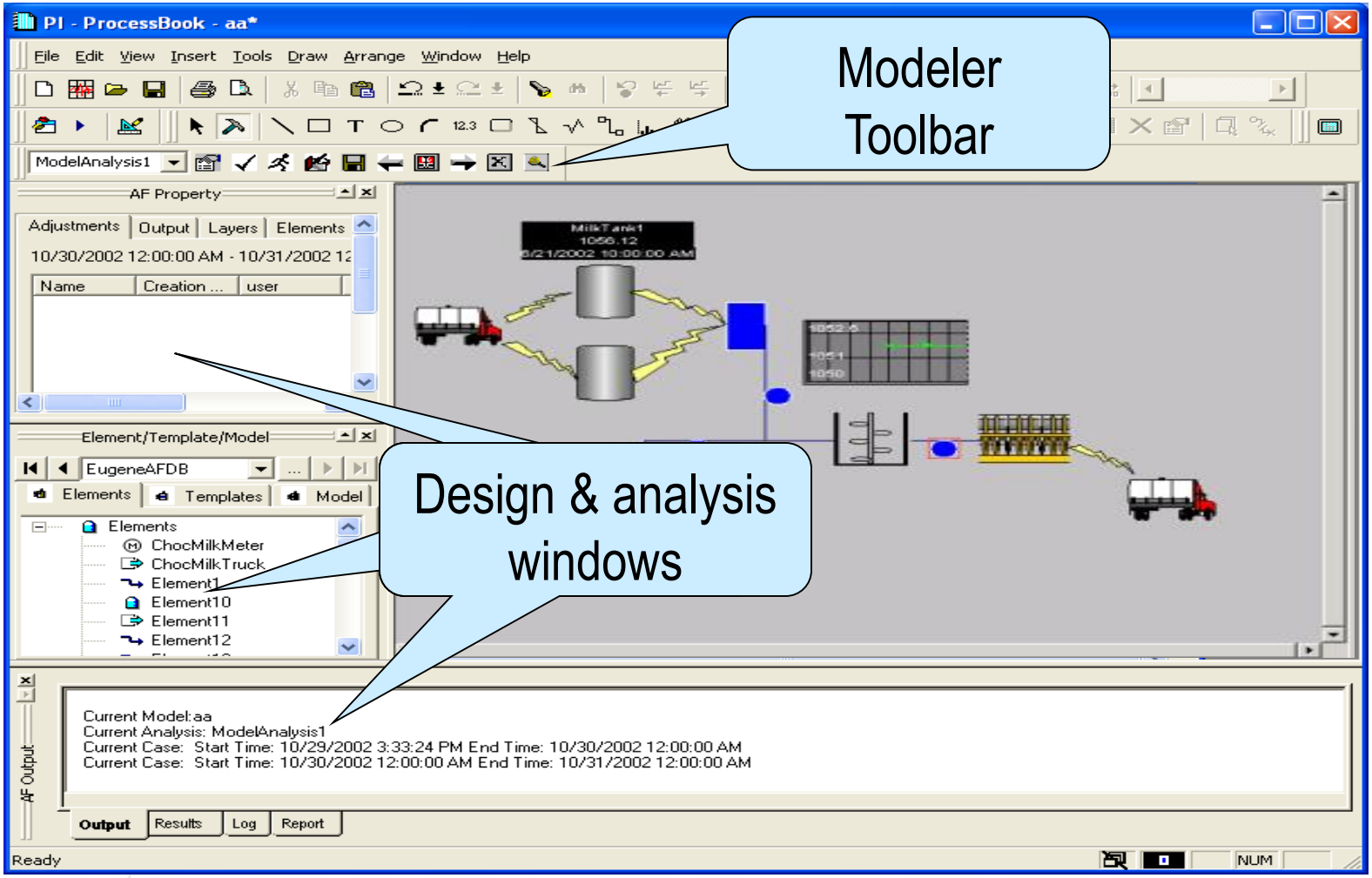
Units of Measure

- *Units of Measure*
  - *Class to Class*
- *Tables*
  - *Component Table*
  - *Material Table*
  - *Strapping Tables*
  - *User Definable*

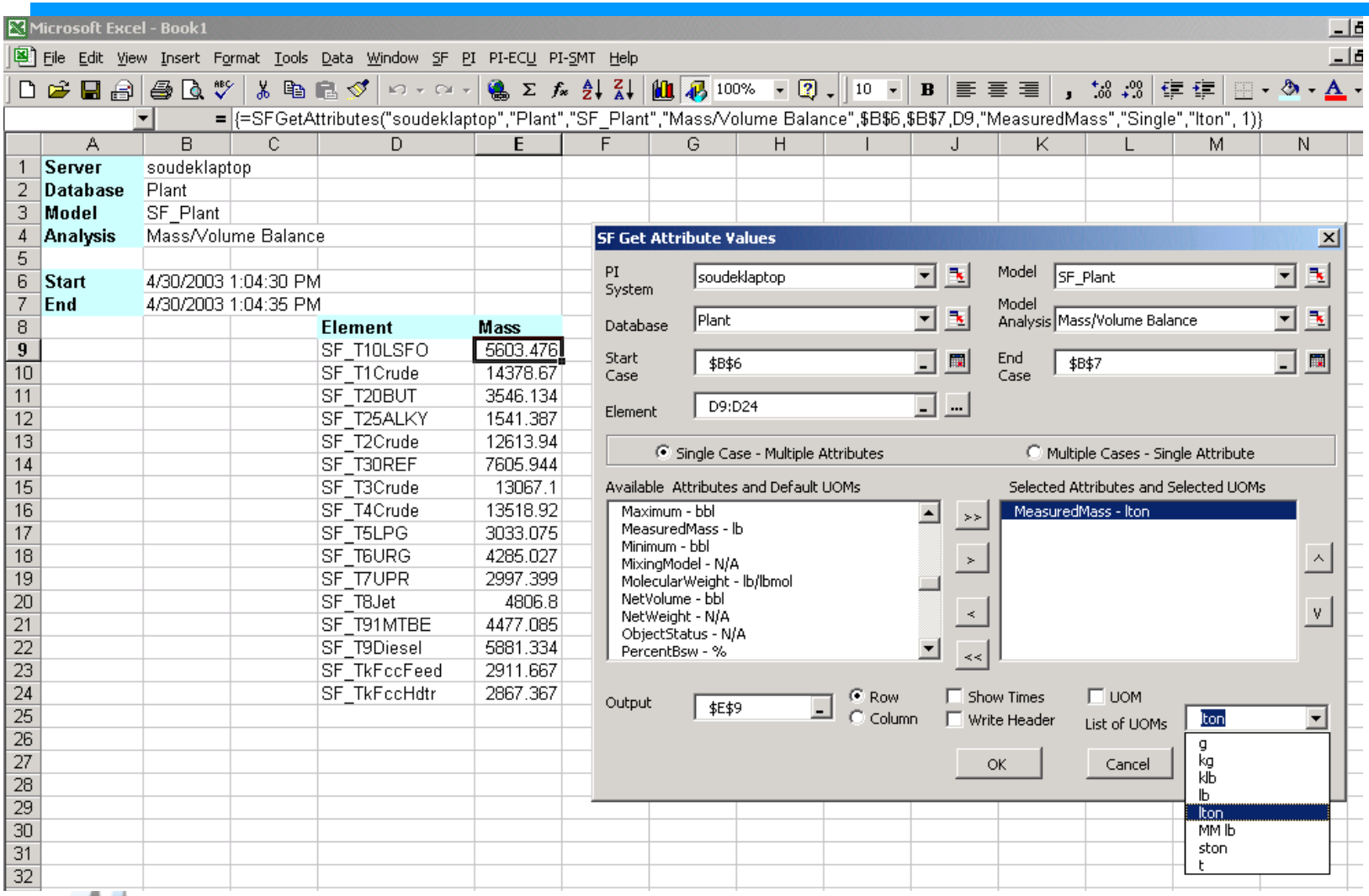
Presentation Layer

- *PI ProcessBook 3.0*
  - *Modeling Add-In*
  - *Create/Import/View Models*
- *SF Excel Add-In*
  - *Built in knowledge of the AF SDK*
  - *Report Templates*
  - *Run Analysis*
  - *Ad hoc Data Retrieval*

ProcessBook Modeling Add-In



SF Excel Add-In

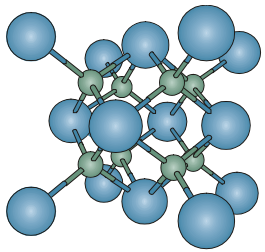


Running an Analysis

- *Run From*
  - *AF Explorer*
  - *Process Book*
  - *SF Excel Add-In*

Leveraging AF

- *Structure*
  - ***Element Templates** (Done)*
  - ***Elements** (Done)*
  - ***Plug-Ins***
    - ***Data References** (Done/New)*
    - ***Analysis Rules** (New)*
    - ***Time Rules** (Done/New)*
  - ***Models** (New)*
  - ***Unit of Measure Classes** (Done)*
  - ***Tables** (Done)*



Leveraging AF

- *Build new (if necessary)*
  - *Data References*
  - *Time Rules*
- *Build new Model*

Summary – Sigmafine 4.0

- *Customized by users for specific industry*
- *Flexible analysis rules*
- *Flexible time rules*
- *Data References*
  - *Data comes from anywhere*
- *User definable templates, attributes, rules, …*

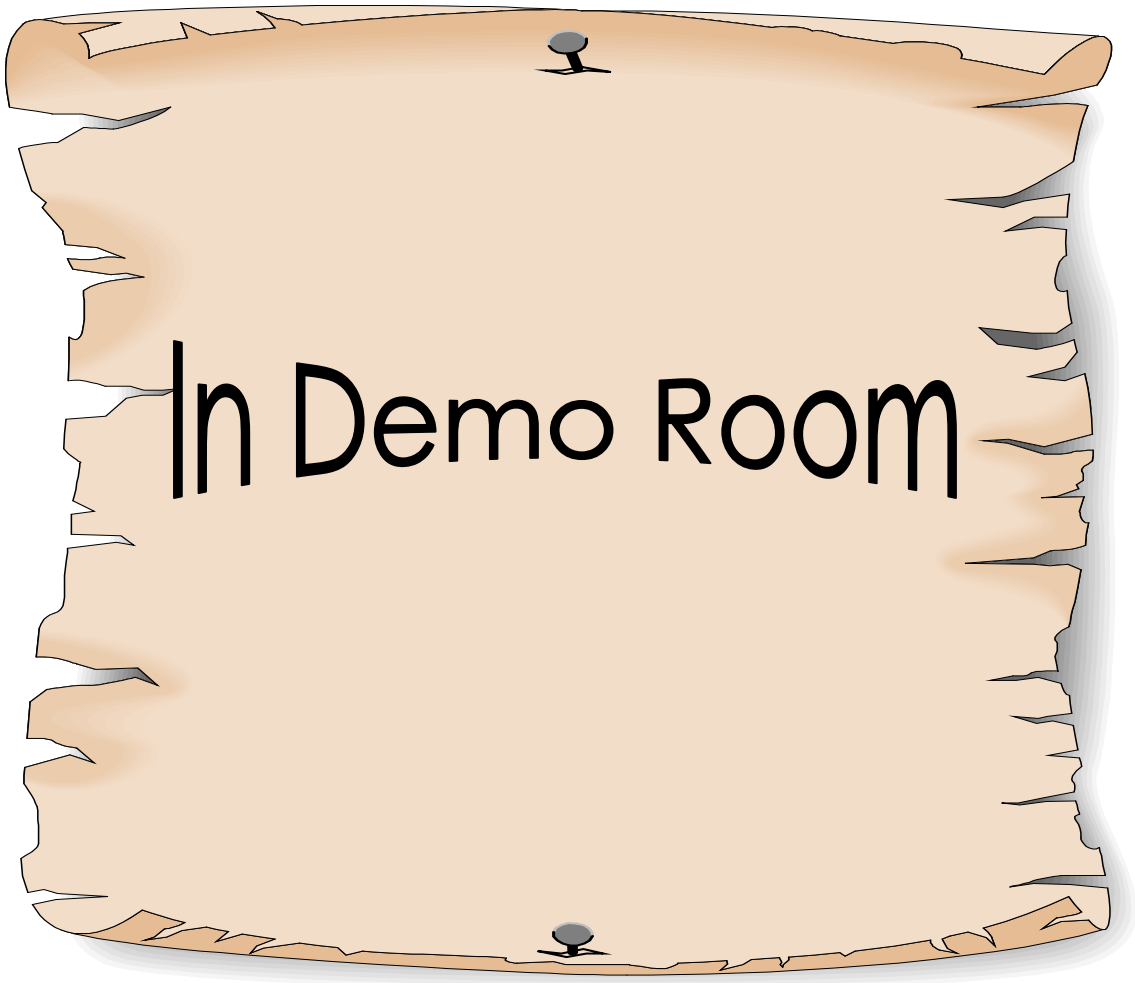
Summary – Analysis Framework

- *Infrastructure for Deploying and Sharing Business, Process and Manufacturing Rules in the PI System*
- *Framework for Building Generalized and Reusable Solutions*

What's It All Mean?

- *One global model*
  - *Different views of global model*
  - *Maintenance in one location*
- *Presentation*
  - *Excel*
  - *Process Book*
- *Applications insulated from data infrastructure*

More Details?



Yearly Puzzle

Remove 6 sacks to leave even number in each row and column

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