# RtAnalytics

## Get More Value Out of Your Data

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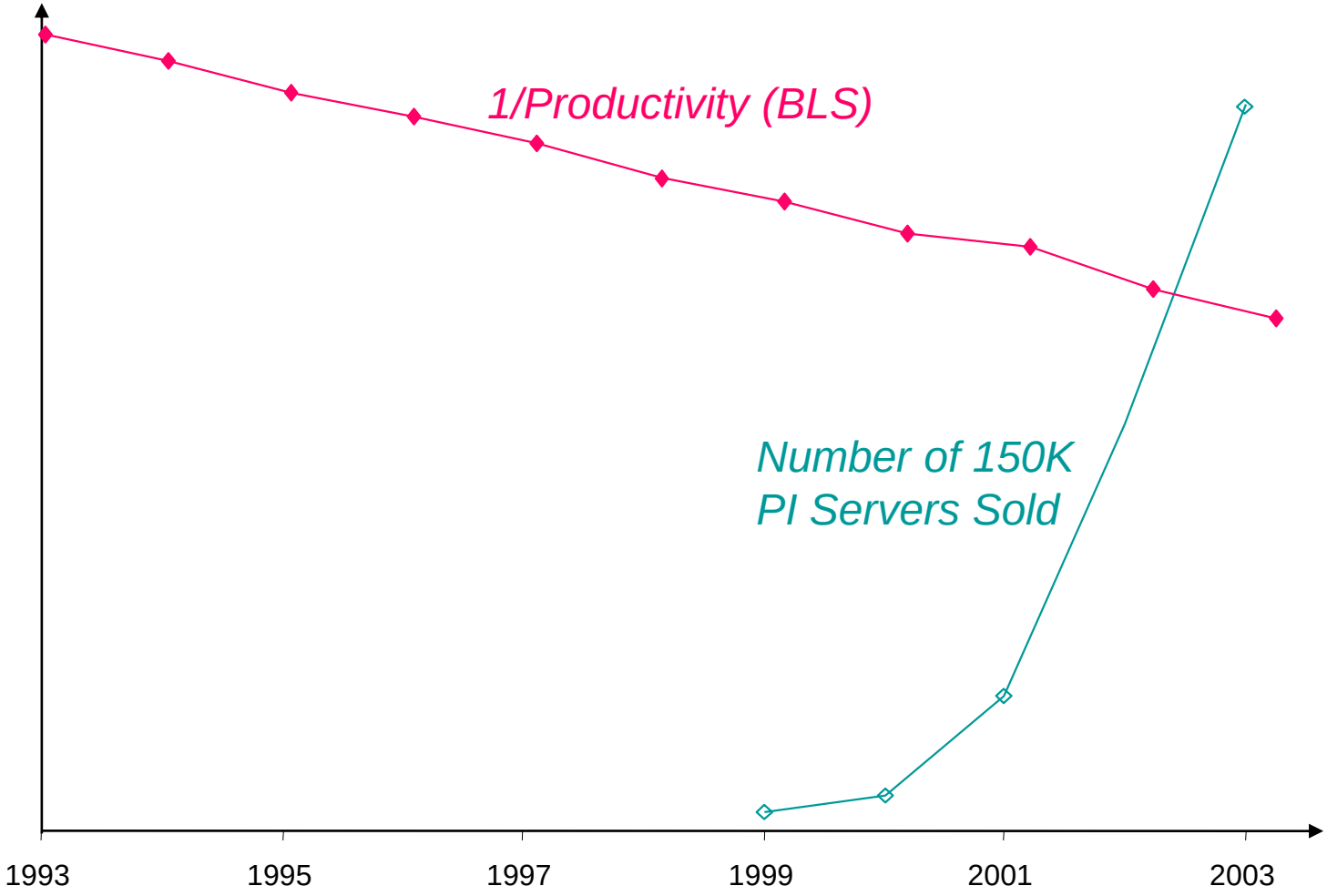
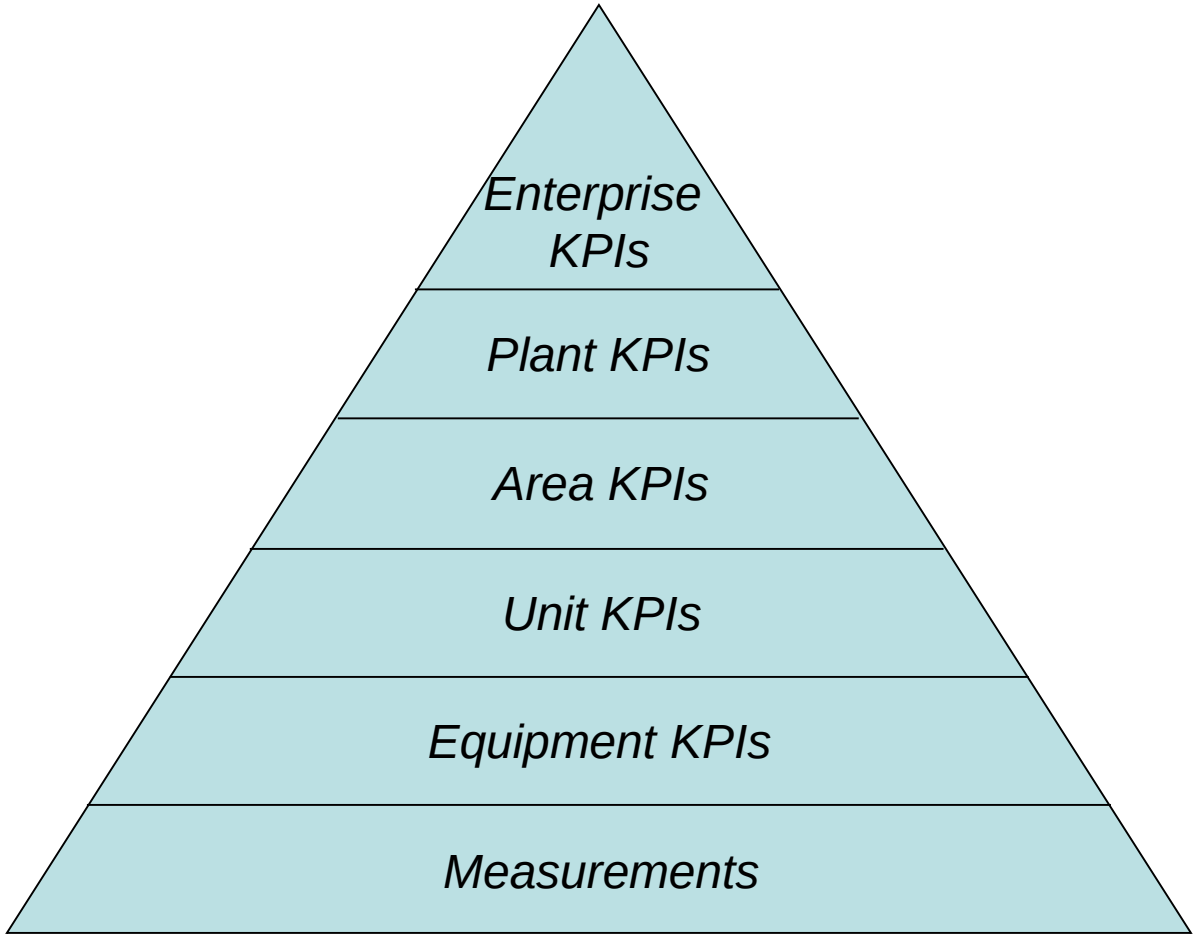
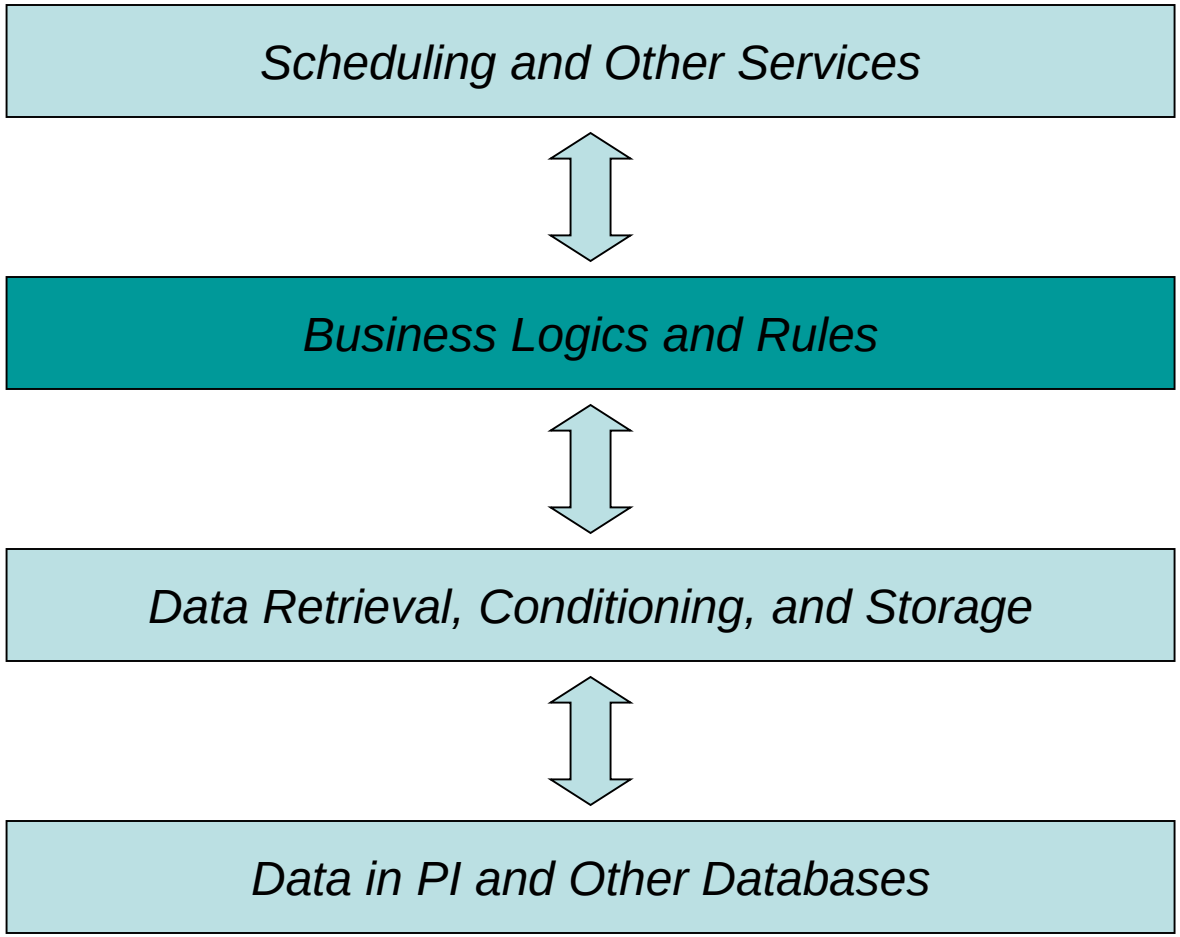
# Information Overload?



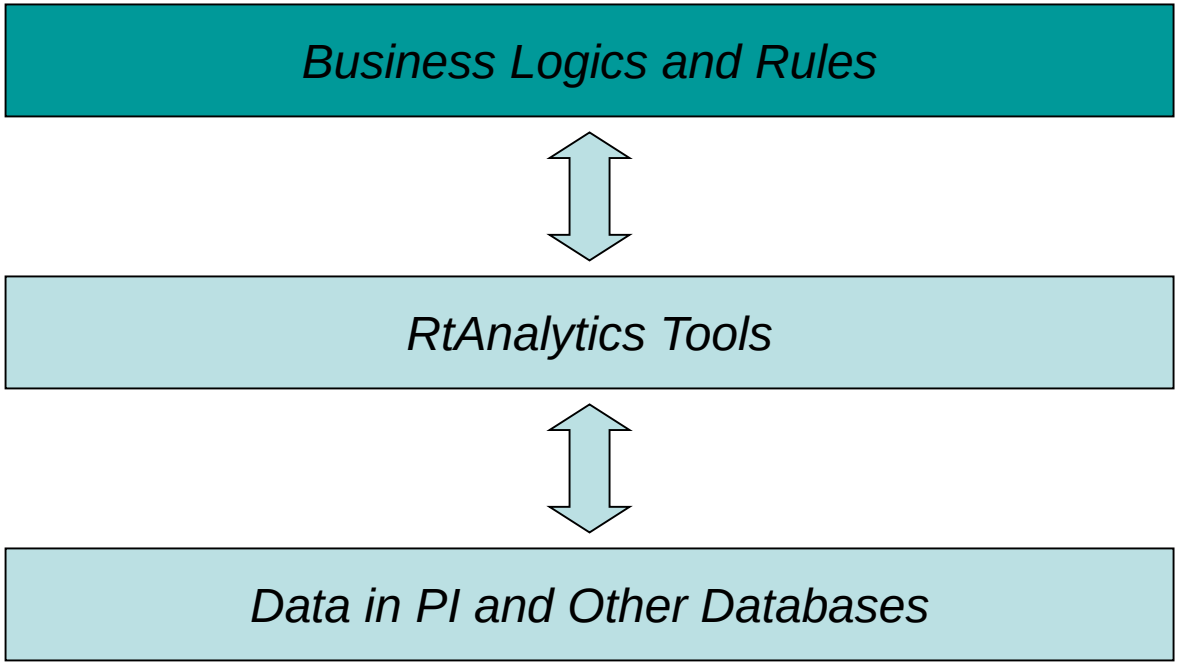
# Hierarchical Information Management



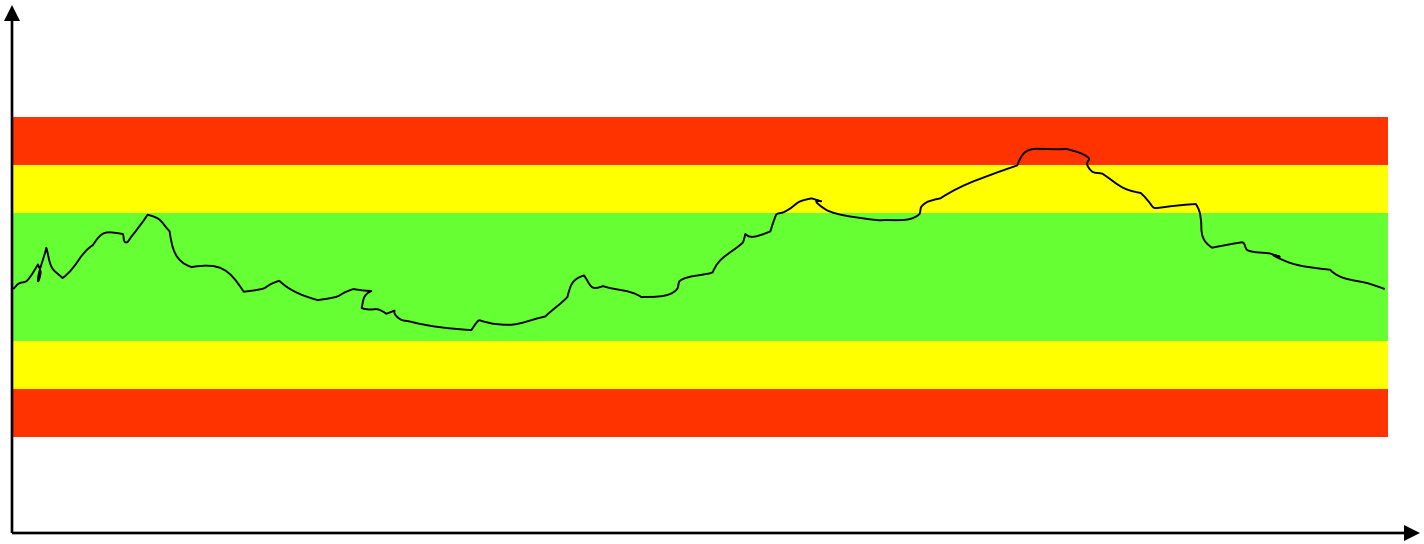
# Data Analysis



# RtAnalytics Tools

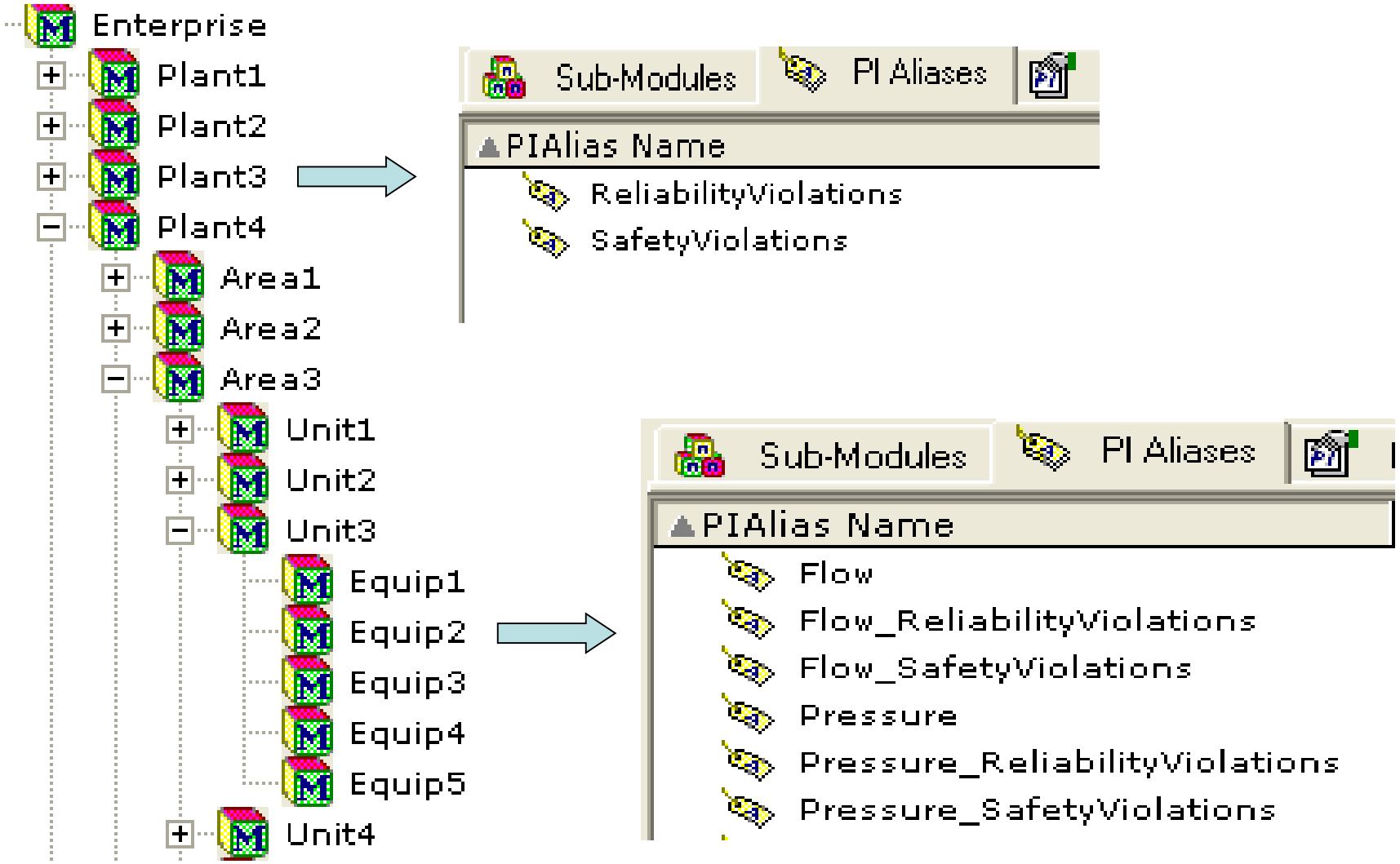


# Example: Process Monitoring

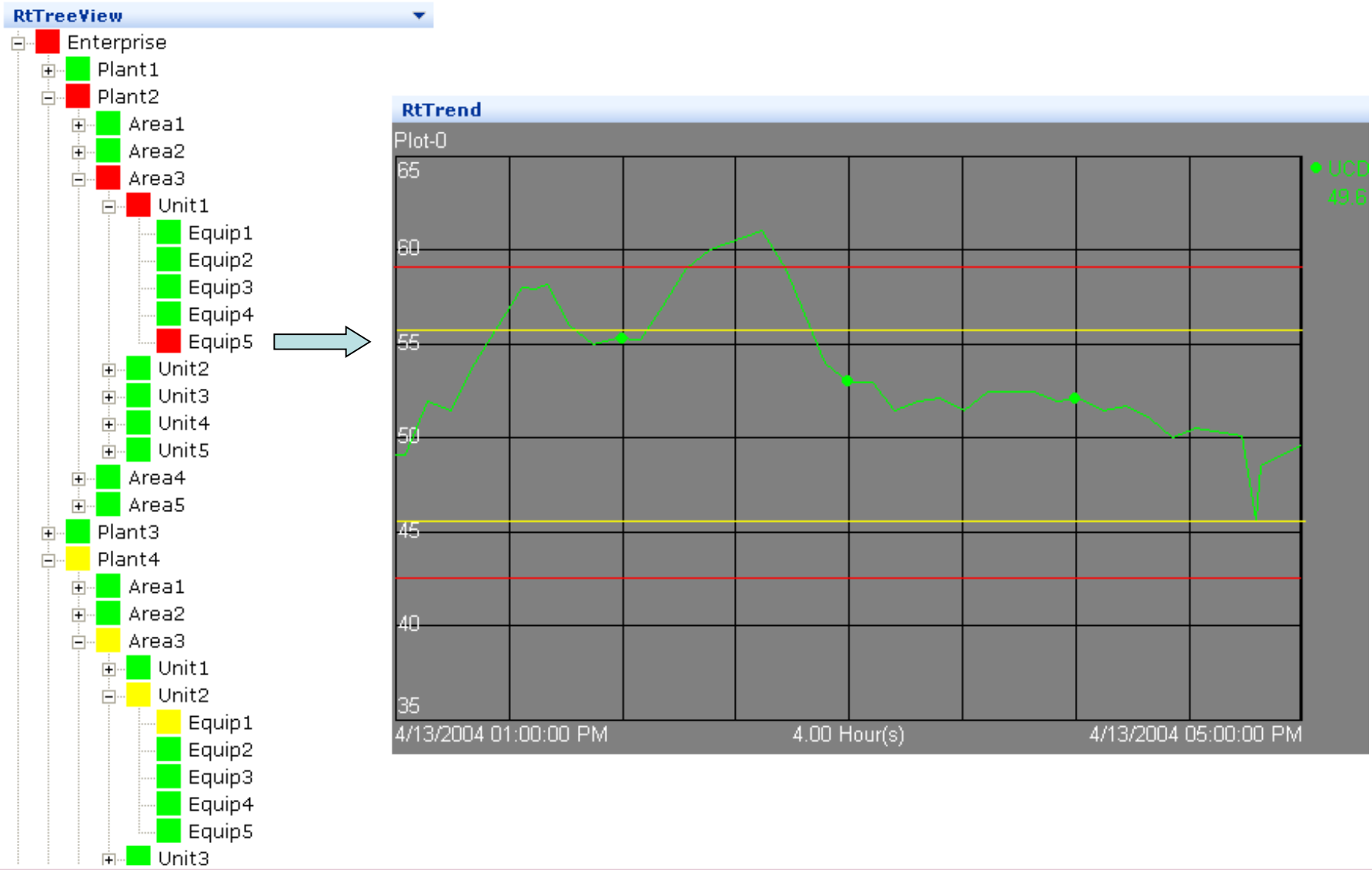


- Time excursion in each region
- Lots of measurements
- Arbitrary number of regions
- Multi-dimensional
- Other rules/logics

# PI Module Database Structure



# Visualizing Results



# ACE Implementation Details

- One calculation with 4 lines of code (+6 lines of initialization code):

```
CurTime = mdblExeTime
RLViol.Value = Source.TimeLE(PrevTime, CurTime, RLLowLimit)
        + Source.TimeGE(PrevTime, CurTime, RLUpperLimit)
SLViol.Value = Source.TimeLE(PrevTime, CurTime, SLLowLimit)
        + Source.TimeGE(PrevTime, CurTime, SLUpperLimit)
PrevTime = mdblExeTime
```

- Applied it to ~1600 measurements
- Another calculation summarizing “children”
- ~100,000 lines of ACE code

# Main ACE Features

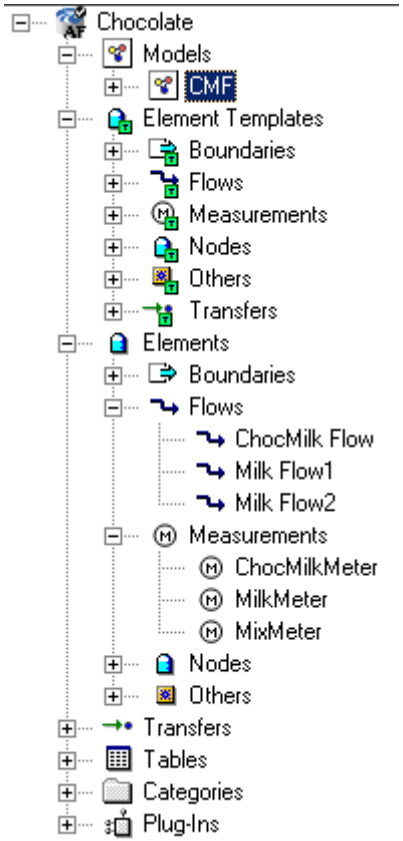
- VB 6 and VB .Net
- Cache server
- Recalculations
  - Manual
  - Automatic
- Multiple contexts
- Central management
- Web service

# What is Sigmafine 4.0 ?

- Object Model of the Facility
  - Graphical View
  - Flowsheet Connectivity
  - Rules
  - Analyses
- Built on the PI Analysis Framework
  - New released product
  - Platform for Flowsheeting Applications

# What is PI Analysis Framework ?

- Modular and Reusable Structure
  - Templates
  - Elements
  - Plug-Ins
  - Units of Measure
- .NET based



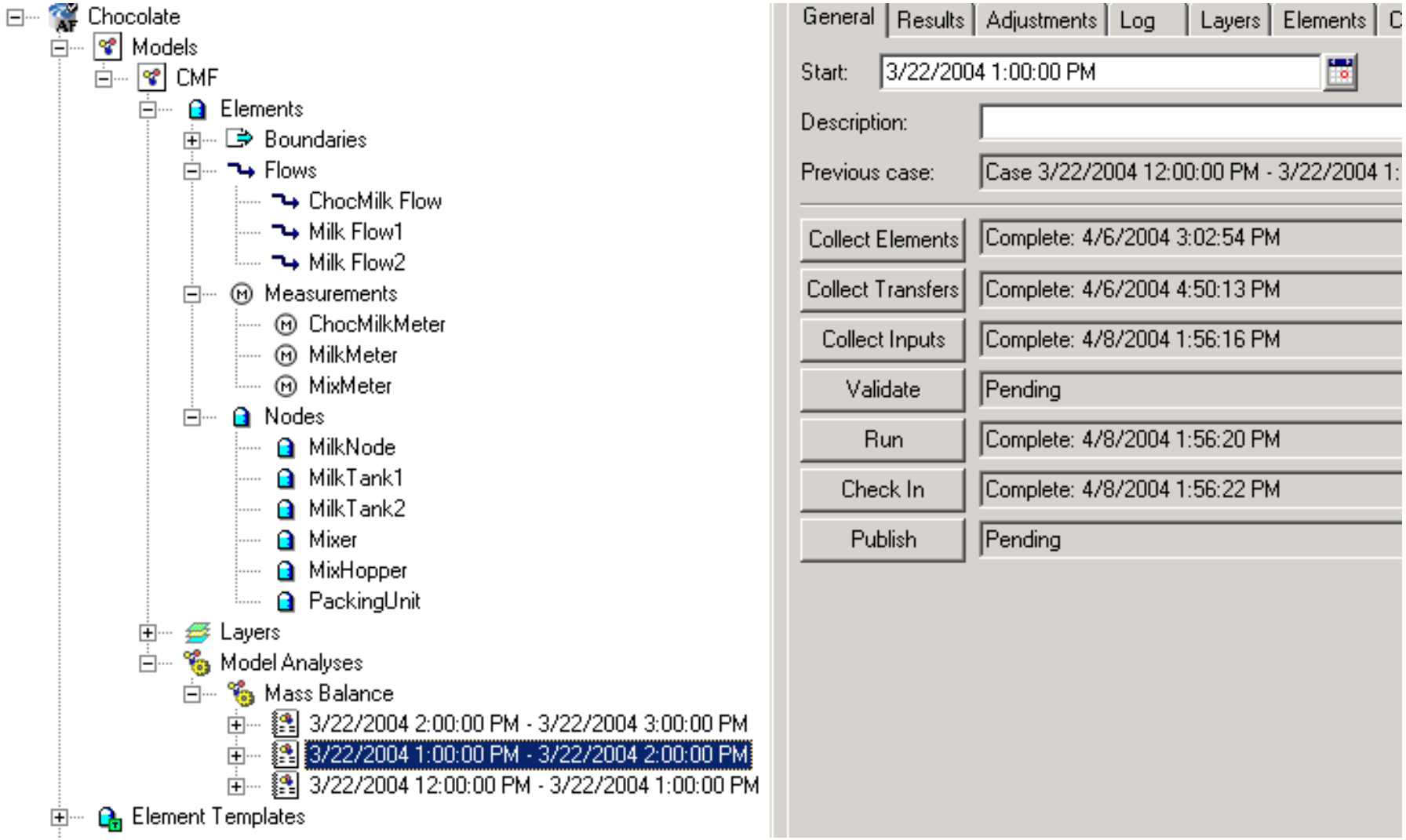
# What does Sigmafine 4.0 do?

- Identifies Data Error
- Data Validation and Unification Tool
  - ERP systems and other Applications
- Measurement Audit Tool

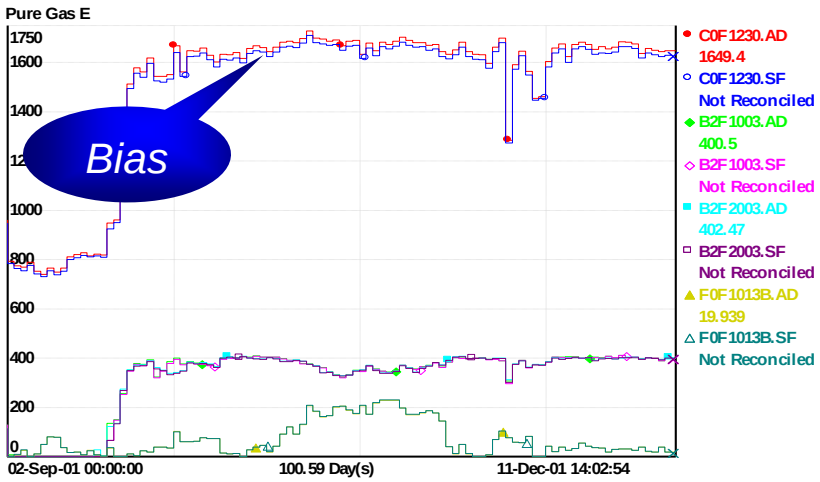
# How does Sigmafine 4.0 do it?

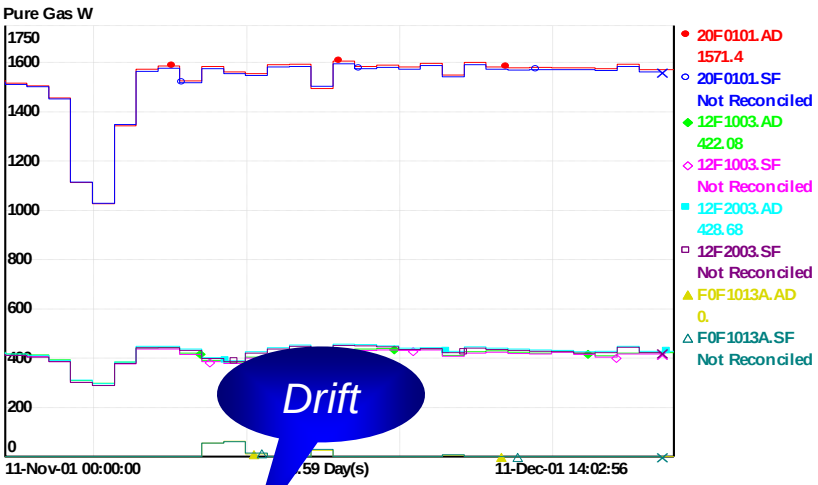
- Measurement Accuracy
- Connectivity logic
- Balance
  - Reconciliation

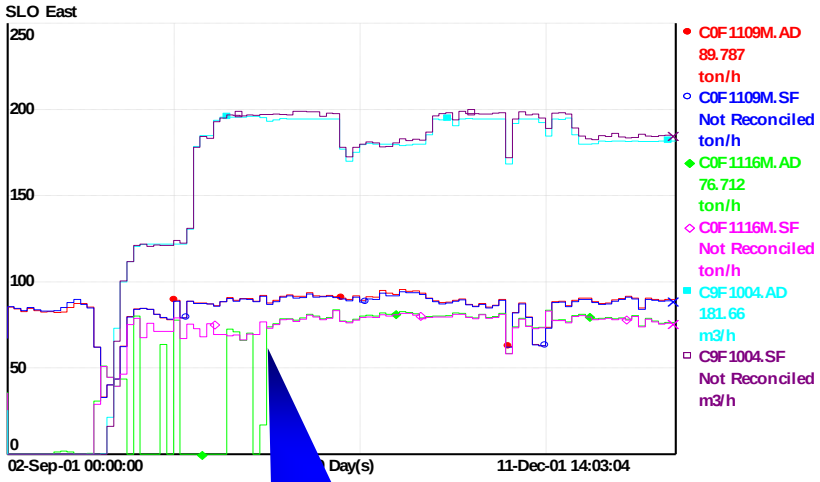
# Assign Context

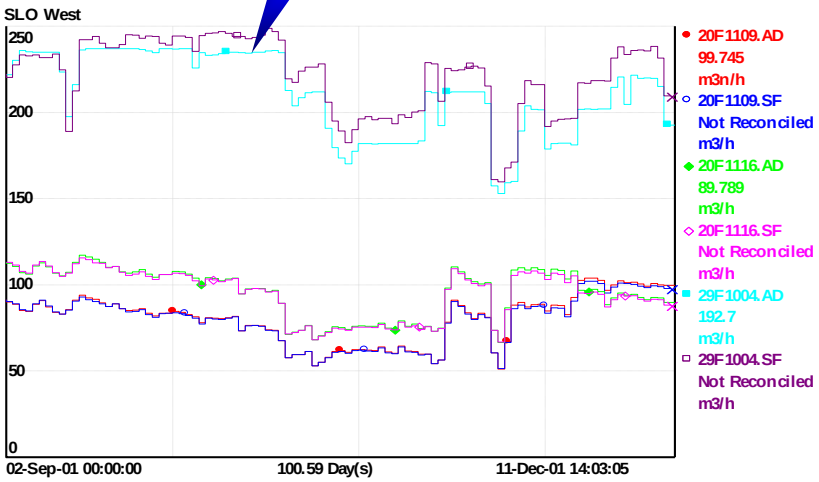


# Analyze



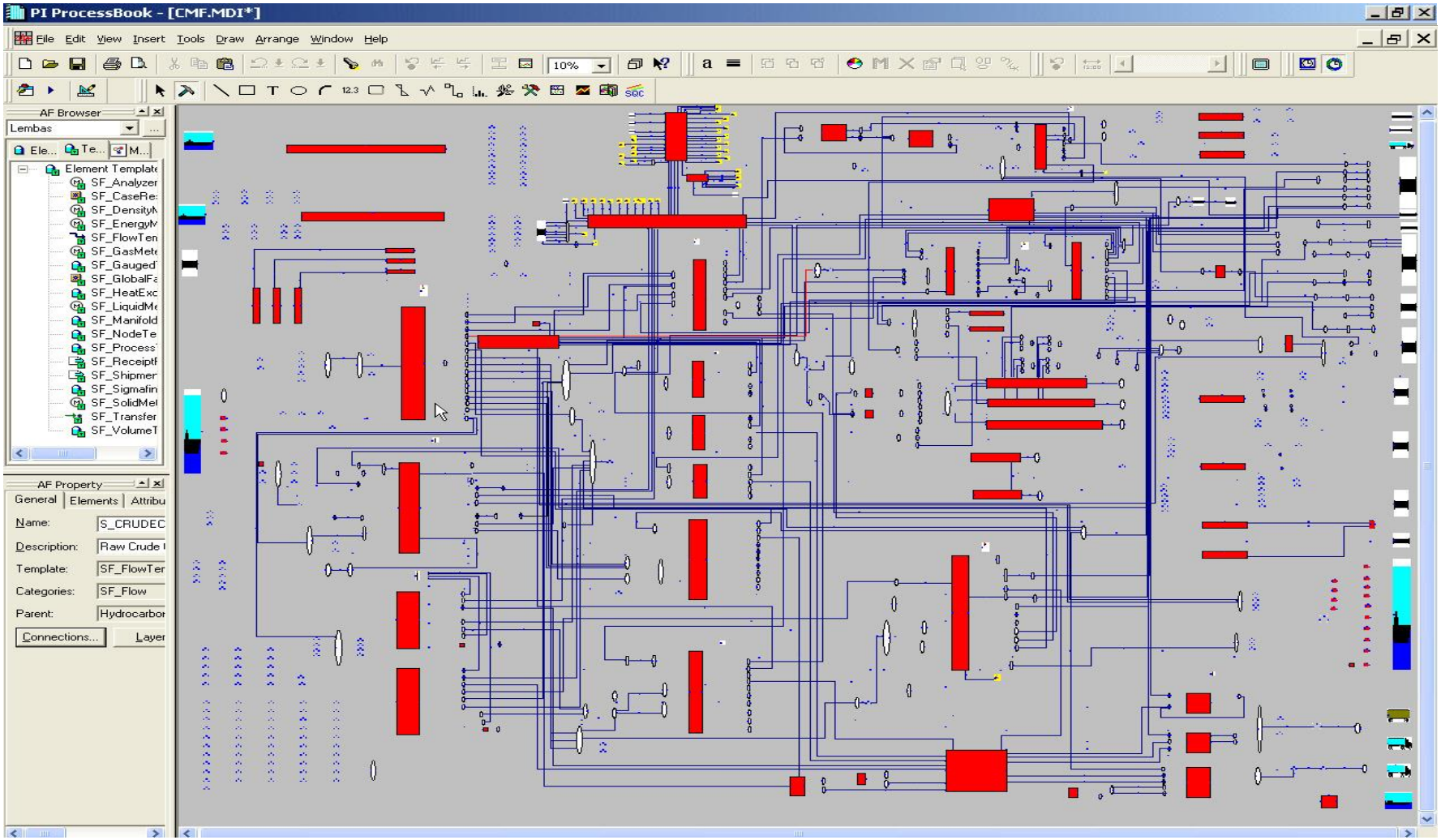



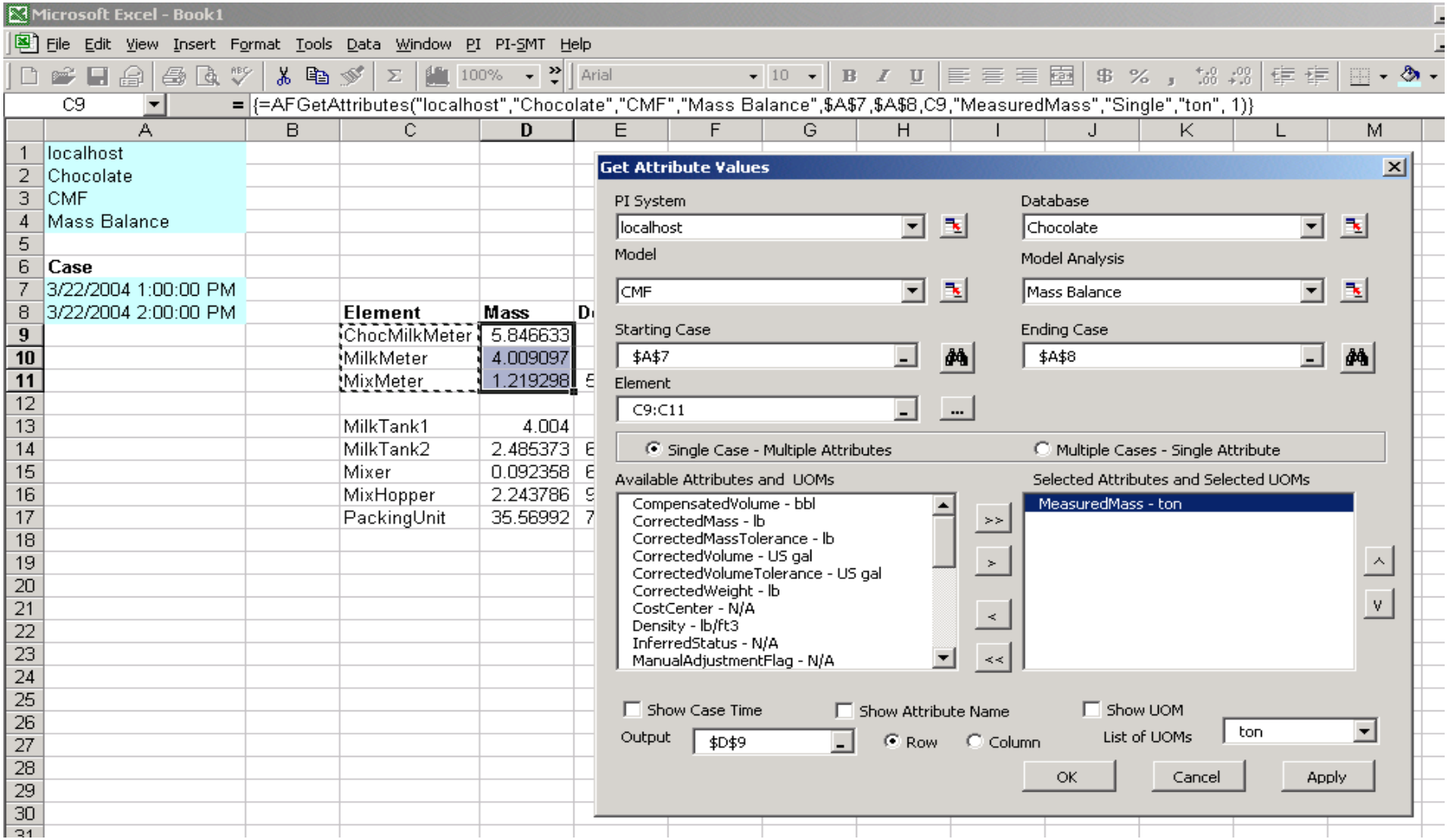




Meter Error

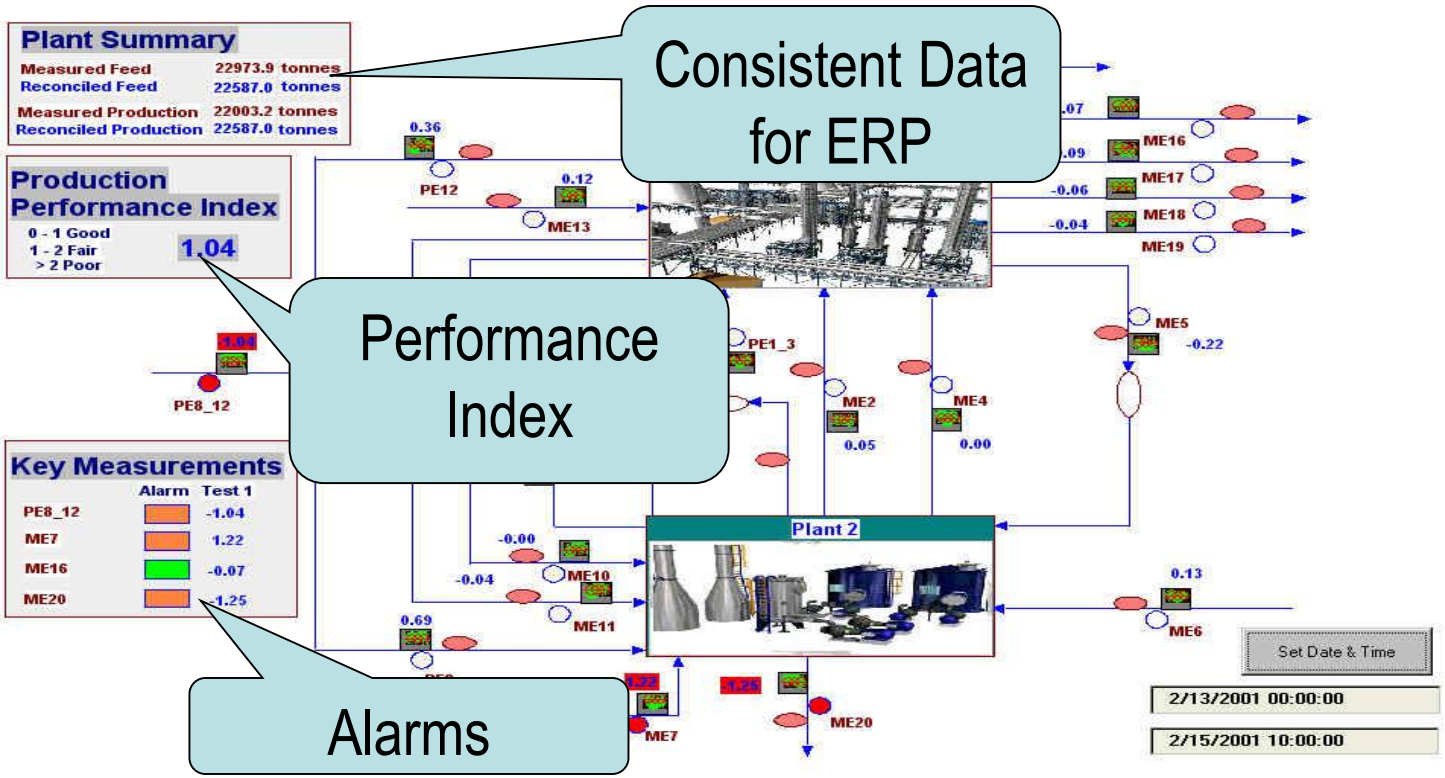
# Analyze/Visualize



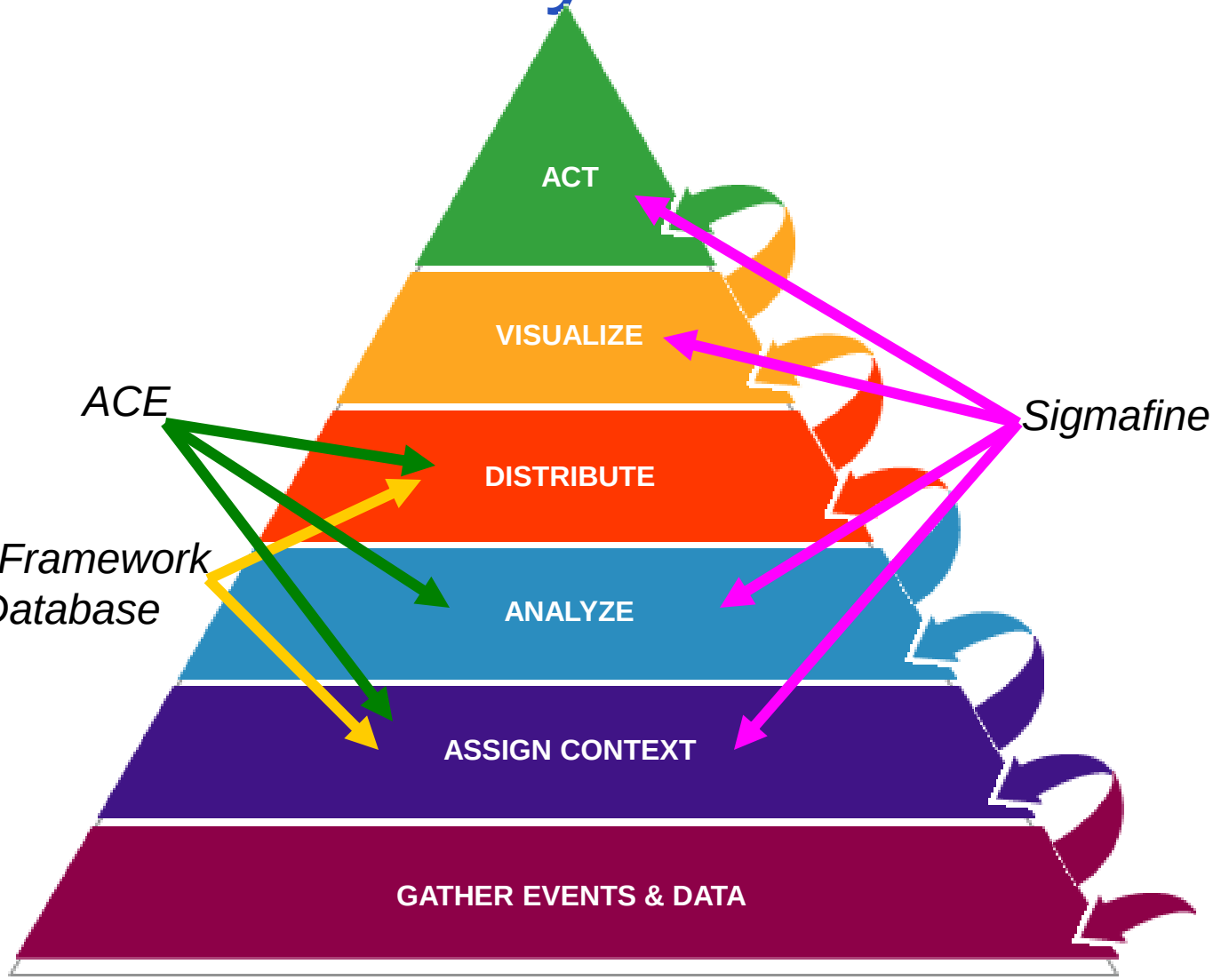
# Analyze/Visualize



# Sigmafine – Act



# RtPM Pyramid



# Yearly Puzzle

| | | | | | | |
|---|---|---|---|---|---|---|
| 6R | 4R | 3D | 2D | 2L | 2L | 2D |
| 2D | 1U | 4R | 4D | 3L | 2L | 2L |
| 1U | 1R | 3R | 3L | 2U | E | 2D |
| 1R | 1U | 3R | 1D | 2D | 1L | 3L |
| 4U | 1L | 3U | 2D | 2U | 3U | 2D |
| 1D | 1U | 1D | 3L | 2R | 3L | 2U |
| 1R | 1U | 2U | 2R | 2U | 1U | 2L |

**End on the square** E

**Each square must be stepped on only once**

**For example, 1R means move 1 square to the right**

**Which square must you start at?**