



## STATE OF THE ART ANALYTICS

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SAS Technology Practice

# Business Analytics Framework

Business  
Solutions

Reporting

Analytics

Data Integration

sas

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# Business Analytics Framework

Business  
Solutions

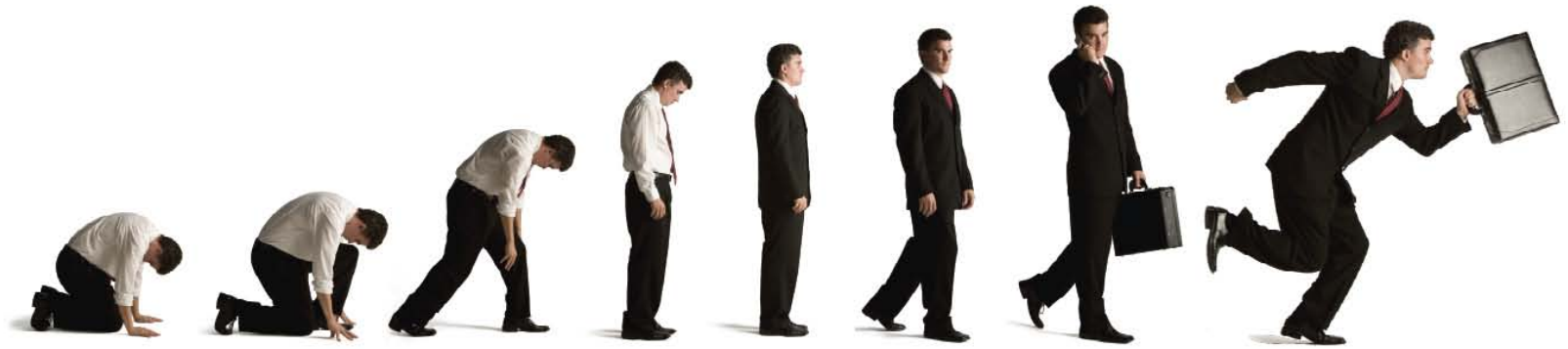
Reporting

Analytics

Data Integration


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# EIGHT LEVELS OF ANALYTICS

1




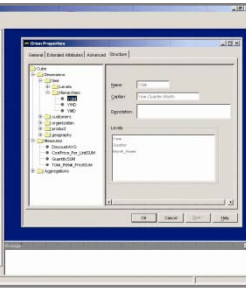
Number	Report Date	Expenditures
25-Oct-06		\$739.55
10-Oct-06		\$449.59
29-Sep-06		\$1,031.95
22-Sep-06		\$455.09
13-Sep-06		\$170.88
23-Aug-06		\$1,009.03
21-Aug-06		\$154.96
17-Aug-06		\$812.91
27-Jun-06		\$510.76
24-Jun-06		\$699.14
25-May-06		\$991.20
3-May-06		\$994.25
23-Feb-06		\$789.63
24-Jan-06		\$375.00
19-Dec-05		\$84.00
16-Dec-05		\$690.11
24-Nov-05		\$1,333.94
22-Nov-05		\$200.10
19-Nov-05		\$15.00
13-Nov-05		\$495.00
grand Total		\$11,902.09

## STANDARD REPORTS

**Answer the questions:** What happened? When did it happen?

**Example:** Monthly or quarterly financial reports

2





## AD HOC REPORTS

**Answer the questions:** How many? How often? Where?

**Example:** Custom reports that describe the number of hospital patients for every diagnosis code for each day of the week

3




## QUERY DRILLDOWN (OR OLAP)

**Answer the questions:** Where exactly is the problem? How do I find the answers?

**Example:** Sort and explore data about different types of cell phone users and their calling behaviors

4




## ALERTS

**Answer the questions:** When should I react? What actions are needed now?

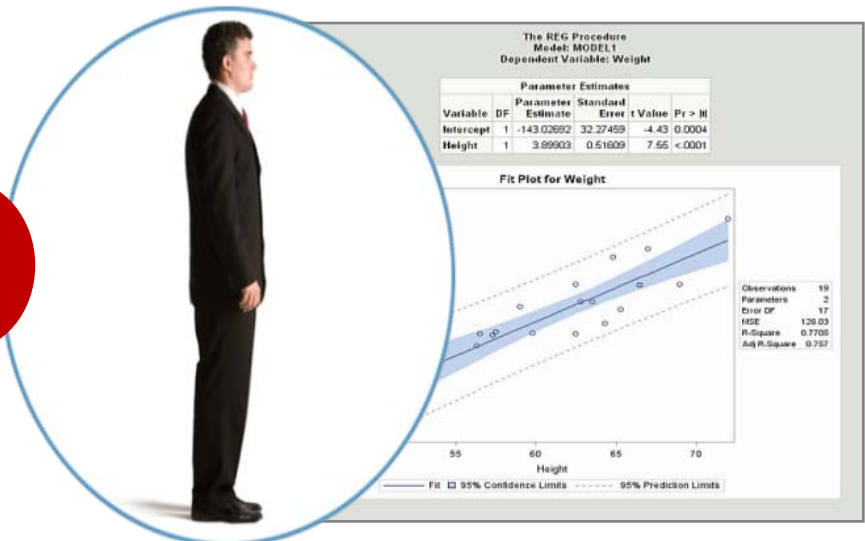
**Example:** Sales executives receive alerts when sales targets are falling behind

# STATISTICAL ANALYSIS

Answer the questions:  
Why is it happening? What opportunities am I missing?

**Example:** Banks can discover why an increasing number of customers are refinancing their homes.

5

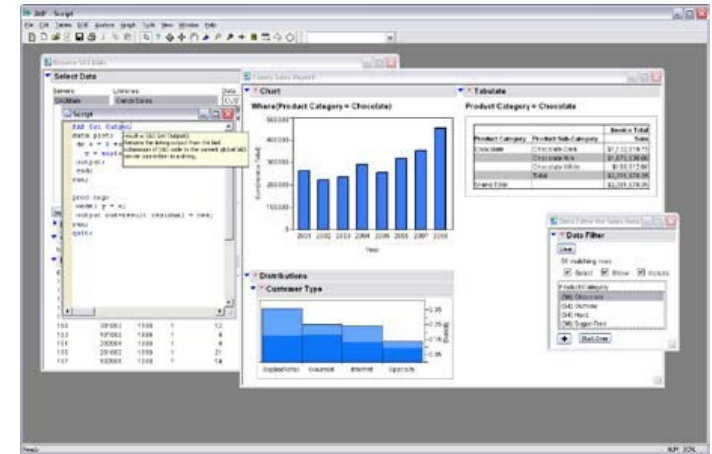


# SAS Visual Data Discovery

Advanced analytics and exploratory data analysis with statistical graphics

Interactive, non-programming environment

Robust solution for data management and running statistical analysis in batch



# High-End Data Analysts

Innovative problem-solvers familiar with SAS

Statisticians, researchers, and scientists

- Complex data
- Problems too difficult for standard models

Need richer SAS programming environment

- "I want to run SAS/STAT procedures from SAS/IML"
- "I want to implement an algorithm that goes beyond what is available in any SAS procedure – for example methods available in R."



# SAS/IML Studio 3.2

SAS Stat Studio - Colleges.sx

```

/* Create Data Object */
dobj = DataObject.CreateFromFile( "usnews.sas7bdat" );

/* Change observation colors:  BLACK & RED */
run ColorCode( dobj, "PubPriv", {0 0 0, 255 0 0}, 2 );

/* Create a scatter plot and change attributes */
%dolet ScatterPlot plot;
plot = ScatterPlot.Create( dobj, "TuitIn", "DollarPerStud" );
plot.ShowAxisReferenceLines( YAKIS );
plot.SetObsLabelVar( "College" );
/* add y=x line */
plot.DrawLine( 0, 0, 25000, 25000 );
plot.DrawUseDataCoordinates();

/* Create another plot that is linked to the first */
%dolet Histogram hist;
hist = Histogram.Create( dobj, "SAT" );
hist.SetWindowPosition(0, 50, 100, 50);
    
```

Scatter Plot of usnews (Colleges):1

usnews (Colleges):3

SI	College	State	PubPriv	SATM
[107]		Non	Non	
491	Harding University	AR	2	5
492	Grand Canyon University	AZ	2	4
493	Prescott College	AZ	2	
494	Azuza Pacific University	CA	2	4
495	Biola University	CA	2	5
496	California Baptist College	CA	2	4
497	California Institute of Technology	CA	2	
498	California Lutheran University	CA	2	4
499	United States International University	CA	2	4
500	Chapman University	CA	2	
501	Claremont McKenna College	CA	2	6
502	Harvey Mudd College	CA	2	
503	Pitzer College	CA	2	7
504	Pomona College	CA	2	7
505	Scorpius College	CA	2	6
506	College of Notre Dame	CA	2	
507	Holy Names College	CA	2	4
508	Dominican College of San Rafael	CA	2	4
509	La Sierra University	CA	2	4
510	University of La Verne	CA	2	4
511	Menlo College	CA	2	4

Histogram of usnews (Colleges):2

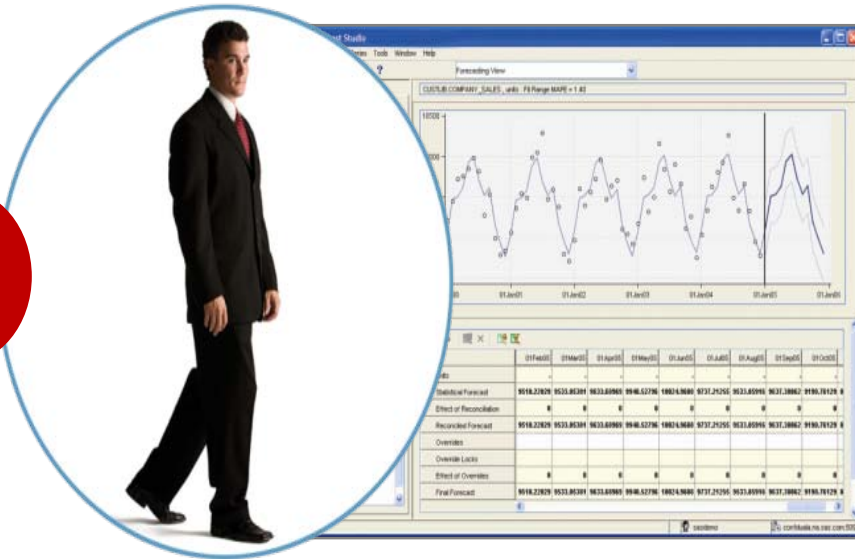
# FORECASTING

Answer the questions:

What if these trends continue?  
How much is needed? When  
will it be needed?

**Example:** Retailers can  
predict how demand for  
individual products will vary  
from store to store

6

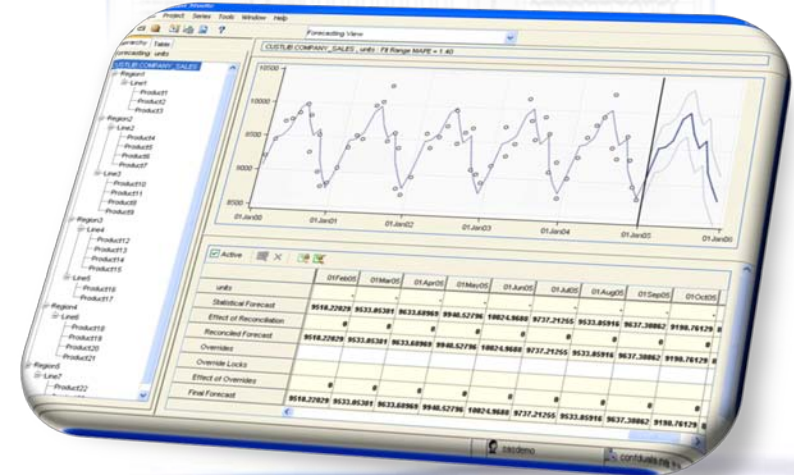
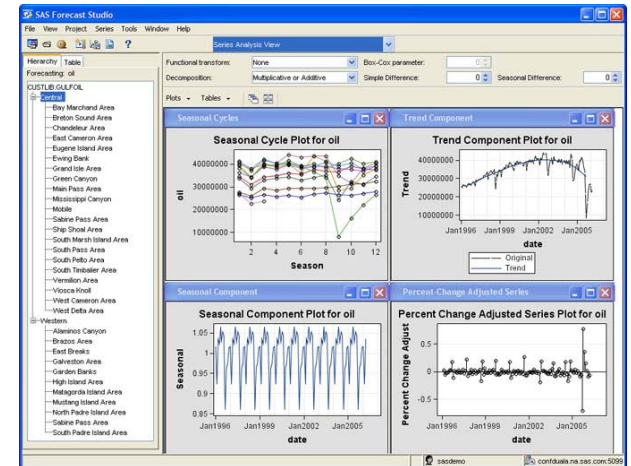


# SAS Forecast Server

Enterprise environment for large-scale automated forecasting

Work interactively using SAS Forecast Studio or run in a batch

Enhances forecasting process – lets analysts focus on exceptions



# What's New in Forecast Server 3.1? Highlights

Integration with SAS 9.2

User Interface enhancements for

- Forecasting View
- Model View
- Series View

Scenario Analysis

Enhanced project management



# Complementing SAP-APO with SAS Forecasting

The screenshot displays the SAS Forecasting interface for SAP APO. The 'Run Forecast' menu is open, showing options like 'Export from liveCache', 'Import to liveCache', 'Reports', and 'Options...'. The 'Selected Objects' table lists 'DF100' and 'DF200'. The main data table shows the following data:

	Pack Size	Unit	M 04.2008	M 05.2008	M 06.2008	M 07.2008
Actual Sales	Total	EA	1,764	1,681	1,577	
	DF100	EA	1,552	1,519	1,476	
	DF200	EA	212	162	101	
Clean History	Total	EA				
	DF100	EA				
	DF200	EA				
Base History	Total	EA	1,764	1,681	1,577	
	DF100	EA	1,552	1,519	1,476	
	DF200	EA	212	162	101	
Baseline Forecast	Total	EA				
	DF100	EA				
	DF200	EA				

SAS Forecasting for SAP APO seamlessly integrates with SAP-APO providing businesses with a **balance** of forecasting functionality and integration of planning components.

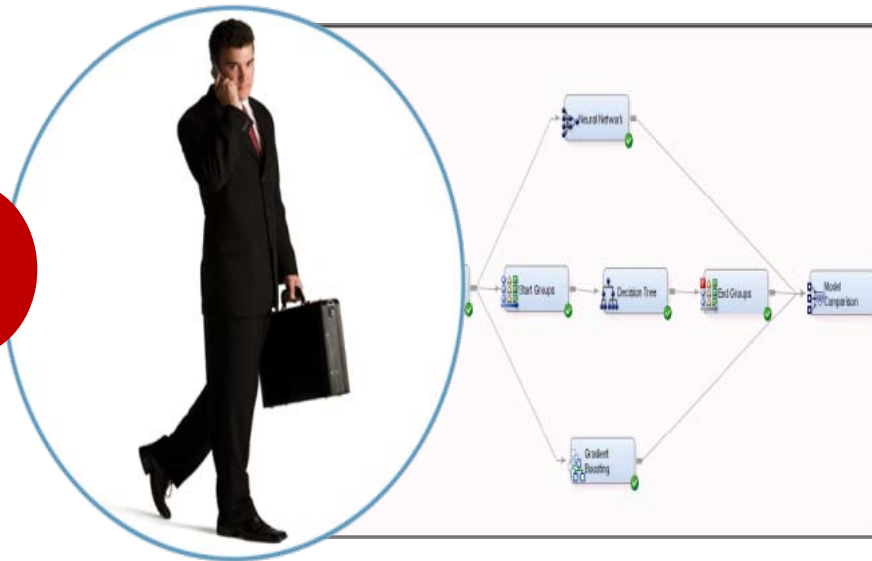
# PREDICTIVE MODELING

Answer the questions:

What will happen next? How will it affect my business?

**Example:** Hotels and casinos can predict which VIP customers will be more interested in particular vacation packages

7



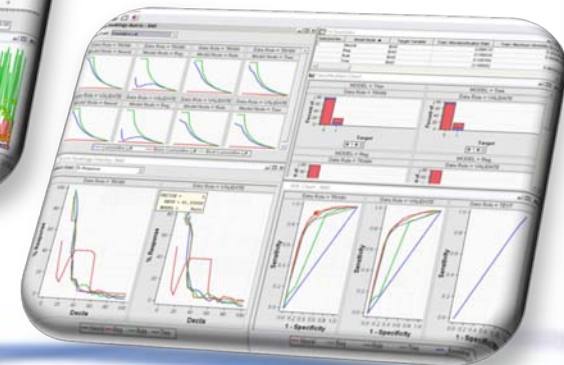
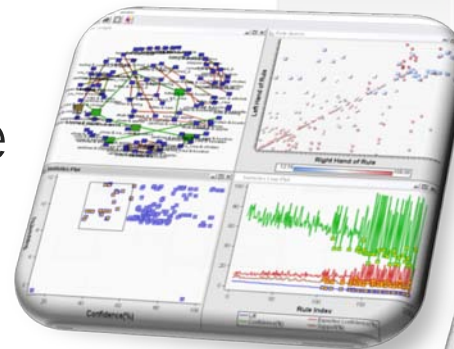
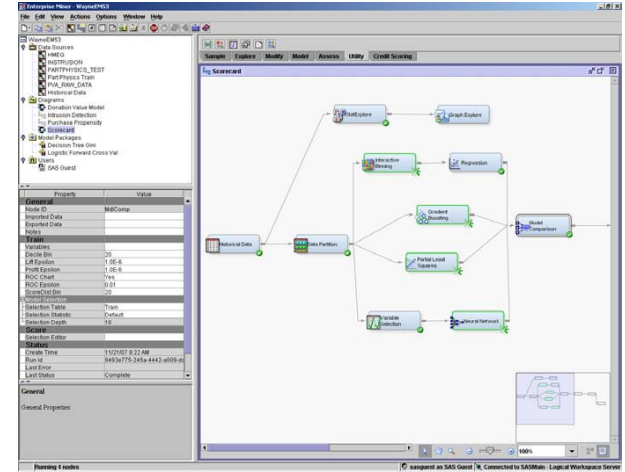
# SAS Enterprise Miner

Modern, distributable data mining system suited for large enterprises

Unmatched suite of modeling techniques and methods

High-performance grid-enabled workbench

Open, extensible design for ultimate flexibility



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# What's New in SAS Enterprise Miner 6.1? Highlights

Integration with SAS 9.2

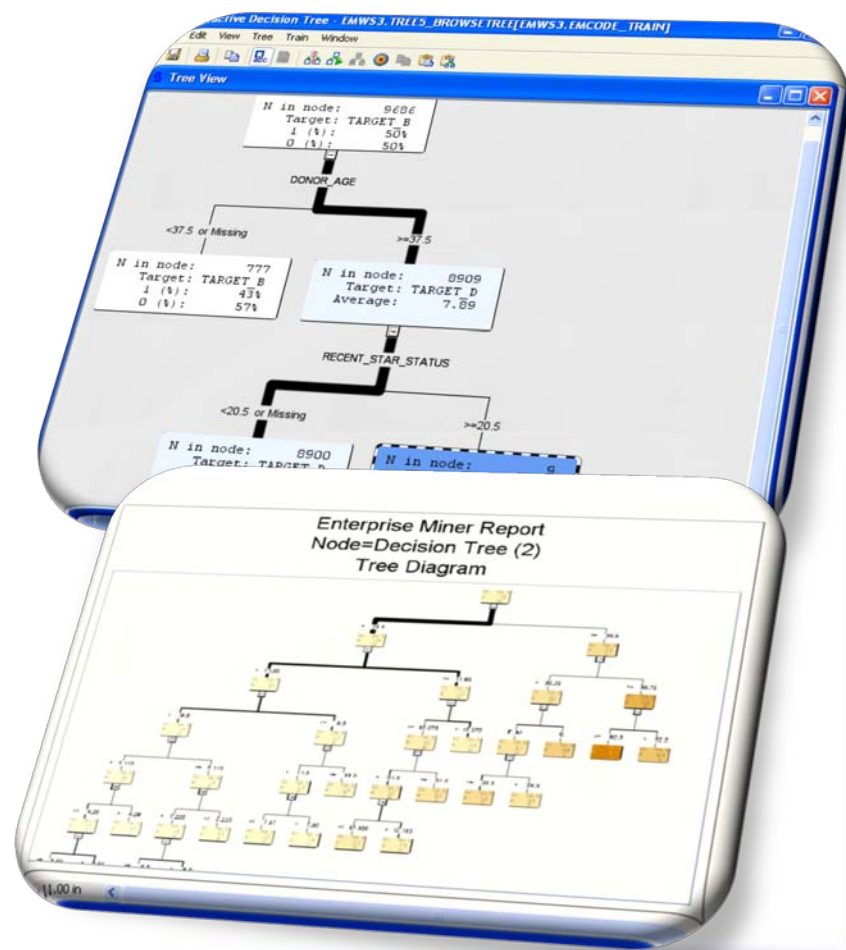
Extended data import capabilities

New modeling methods

Native Interactive Tree

Analysis Ready Report

Optimize the scoring code



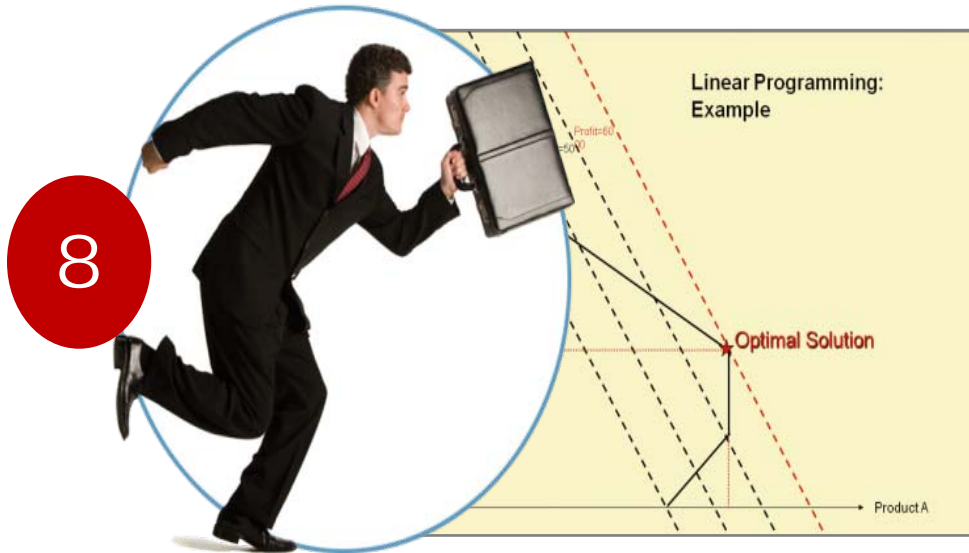


# OPTIMIZATION

Answer the questions:

How do we do things better?  
What is the best decision for a complex problem?

**Example:** Given business priorities, resource constraints and available technology, determine the best way to optimize your IT platform to satisfy the needs of every user

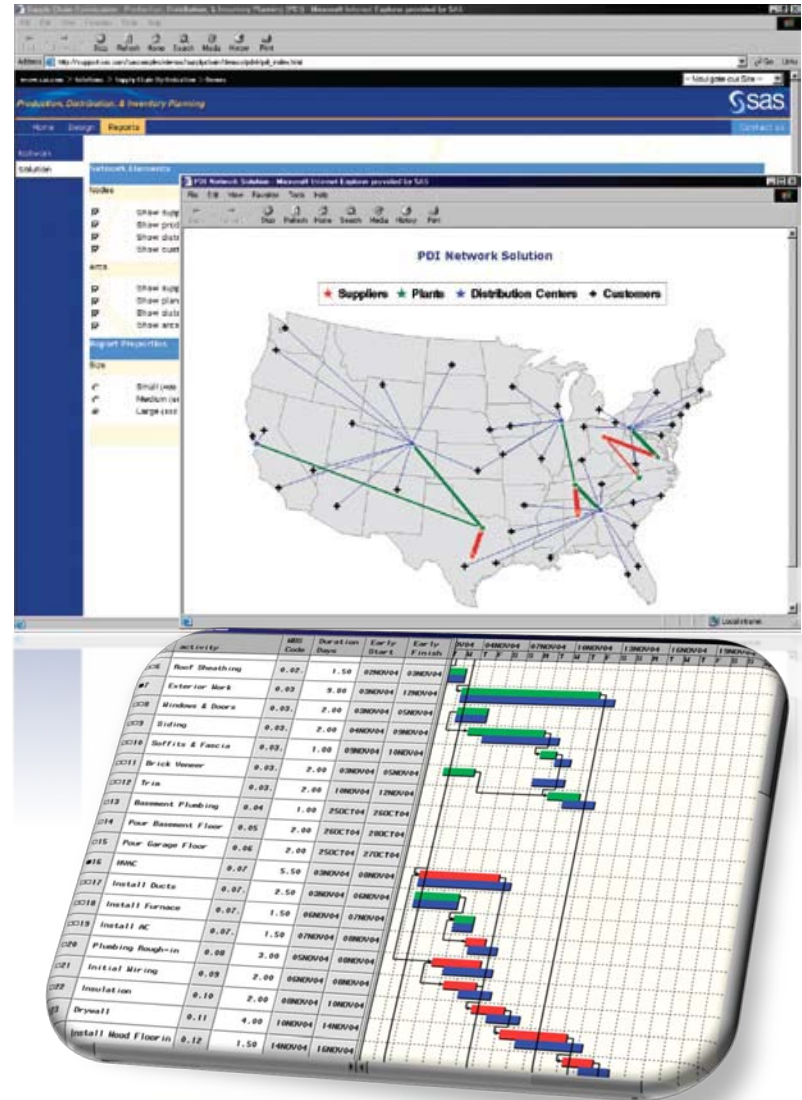


# SAS/OR

Brings together essential

- Optimization
- Scheduling
- Discrete Event Simulation

modeling and solution capabilities in an integrated and adaptable environment



# SAS Simulation Studio 1.5

**experiment0**

PointName	StartTime	EndTime	NumQC	NumRepair	NumService	Replicates	NumFixed	AvgUtilQC	AvgWaitQC	AvgUtilRepair	AvgUtilService	AvgWaitRepair	AvgWaitService
point 1	0	2,700	1	1	3	5	55.8	98.11737214...	640.5978125...	32.90100201...	22.77699022...	1.681556156...	0.114440806...
point 2	0	2,700	3	2	1	5	105.6	61.73580320...	3.659030038...	16.41700430...	67.95401912...	0.0	16.76477298...
point 3	0	2,700	2	3	1	5	100.2	88.31749933...	84.87422154...	10.92994215...	67.89921806...	0.0	16.76477298...
point 4	0	2,700	2	1	3	5	100.6	88.50820663...	97.36996144...	32.90100201...	22.77699022...	1.681556156...	0.114440806...

# The best analytics for your business problem



Majority of analytic offerings available today report historical data

When looking for predictive insight, you need to look at the second half of the spectrum

By identifying what type of analytics to use for every individual situation, you'll really be increasing your chances for true business analytics

The logo features the text 'sas forum' in a white, lowercase, sans-serif font. The 'sas' part is bolded, and a registered trademark symbol (®) is positioned to the upper right of the 's'. Below this, 'SWITZERLAND 2009 baden' is written in a smaller, all-caps, sans-serif font. The 'baden' part is bolded. The background is a dark blue gradient with a bright, multi-pointed starburst light in the upper right quadrant and faint, glowing lines and patterns.