Business Performance Management Analytics: The Future of Business Intelligence?

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Data Management Association

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"Business Performance Management Analytics: The Future of Business Intelligence?"

That title's a mouthful!

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BPM Analytics = BI's Future?

Agenda

In this talk, we'll consider the past, present, and future of mainstream data analysis

- Statistical techniques underlie the whole field, but the Statistics *per se* is daunting to many

- The term Decision Support captures many if not most analytical applications but is viewed as esoteric: narrow and often academic

- So the mainstream has adopted Business Intelligence (BI), consisting of techniques such as
  - Query & reporting, OLAP, visualization, and data mining
  - ETL, data warehousing, EAI, and packaged analytics

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BPM Analytics = BI's Future?

Agenda

Who is in the "mainstream"?

What are their goals?

How do they seek to attain these goals?

Who's going to help them?

Looking at these questions, as they are related to data analysis, will help us position Business Performance Management

– But first more of an introduction…

BPM Analytics = BI's Future?

Introduction

Seth Grimes

– President and Principal Consultant, Alta Plana Corporation

Alta Plana (altaplana.com)

– Data systems architecture, design, and development

– Applied especially to analysis & management of demographic, social, economic, marketing, and survey statistics

– Resell & support SuperSTAR analytical software (tabulation + Web query); US SS clients include

- US Census Bureau: Census 2000 tabulation system
- HRCP: a strategic market-research company

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BPM Analytics = BI's Future?

Introduction

BPM & BI -- don't relate much to do with Alta Plana's day-to-day work -- but they do relate to my broader interests as

- Contributing Editor and decision-support columnist, Intelligent Enterprise magazine (iemagazine.com)
- Speaker:
  - A later version of this talk to DAMA/Orlando in April
  - SuperSTAR + Census for SIGSTAT 12:30-1:30 tomorrow
  - Capital Area Business Intelligence Network (CABIN) networking 5:30-7:30 Tues 1/21, eCiti Café, http://www.webdatamining.net/pages/user_group.htm

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BPM Analytics = BI's Future?

Introduction

In a July 26, 2002 Intelligent Enterprise column titled "Process and Reality Through BPM," I wrote that

> data analysis researchers and vendors are promoting business performance management (BPM) as an evolutionary successor to BI, one that can provide a holistic view that surmounts operational category boundaries. (www.intelligententerprise.com/020726/512decision1_1.shtml)

BPM has gotten increasing analyst and trade-press attention in the last year. Leading vendors have issued white papers and made strategic acquisitions and product announcements.

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BPM Analytics = BI's Future?

Context

But is BPM the outcome of revolution, evolution, or simple marketing hype?

   This question is the subject matter of this talk

Statistical analysis techiques coupled with DBMSes and SQL underlie modern analytics

BPM relies on data integration and adds a process/activity oriented view

   So before tackling BPM, let's looks at the underlying technology and views…

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Context

Statistical analysis techiques include, selectively,

– descriptive statistics

– sample design and sampling-related error estimation

– univariate and multivariate analysis

– Linear and nonlinear models

– factor analysis

– time-series and stochastic modeling

Several of these techniques and others may be jointly applied to a given problem

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Context

Mainstream analytics -- that is, used commonly in business rather than science -- pulls from this rich field

Techiques include, again selectively,

– reporting

– aggregation (tabulation)

– multidimensional query (OLAP)

– Visualization

– data mining

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Context

This work is supported by
- dimensional models, implemented in data warehouses and "cubes"
- extraction, transformation, and loading (ETL) tools

and more recently by
- enterprise application integration (EAI)
- and Web services (?)

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Context

Collectively, mainstream analytical tools and techniques are classed under the Business Intelligence label

But BI doesn't easily accommodate unstructured data or the supposed need for "real-time" analytics

Context

The mainstream is embracing

– Knowledge management (KM), which focuses especially on categorizing, managing, and analyzing information from unstructured sources like documents, Web pages, e-mail, even images, video, and audio

and more recently

– enterprise application integration (EAI)
– real-time profiling and scoring
– and Web services (?)

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Context

What's supposedly lacking here -- what BI &
KM supposedly can't provide on their own -- is
a view …
- that binds disparate, sequential events, i.e., processes
- crosses operational domains
- provides activity-based and strategic views

We're offered Business Performance
Management as a methodologically based
solution that can provide this view

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BPM Background

BPM methodologies were created by academic and management gurus …

– Six Sigma

– Baldridge

– Balanced Scorecard

– Lean Manufacturing, Kaizen, TQM, others?

Many BPM-basis methodologies are about defect reduction

– Do they focus on the right goal?

– Could the key innovation be simply the creation of measurable processes?

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BPM Background

Six Sigma has two submethodologies
- DMAIC: Define, Measure, Analyze, Improve, Control -- for existing processes
- DMADV: Define, Measure, Analyze, Design, Verify -- for new products/processes

The goal is to reduce defect to 3.4 per million cases: six standard deviations from the norm
- Techniques applied include ANOVA, Design of Experiments, regression analysis
- Certified consultants hold yellow, green, black and master black belts

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BPM Background

Kaplan & Norton's Balanced Scorecard
- Entails creation of metrics for four perspectives: customer, internal, innovation & learning, and financial
- Allows leading and lagging metrics
- Can bring a strategic view to lower-level operational concerns
- Usually involves an analytical dashboard highlighting performance indicators
- Can encapsulate Six Sigma and other principles

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BPM Background

To go mainstream, BPM methodologies have to be more than hocus-pocus from high-priced consultants, they have to be implemented in software tools…

- that provide multi-scale display facilities …
- with the ability to define "key performance indicators" (KPIs) applying innovative analytical techniques …
- within and across business domains …
- according to one or more methological frameworks

I'm not much interested in tools requiring "master black belts"

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BPM Approaches

Who are the players? Let's look at three vendor categories:

- BI vendors
    - AlphaBlox, Brio, BusinessObjects, Cognos, Comshare, Epiphany, Hyperion, Informatica, Microstrategy, Oracle, SAS, SPSS
    - Microsoft and their camp: Crystal, Panorama, ProClarity
- Enterprise application vendors
    - We'll focus on PeopleSoft
    - Others include Microsoft, Oracle, SAP, Siebel
- BPM-specific analytics vendors
    - We'll focus on SeeRun
    - Others include OutlookSoft

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BPM Approaches

Before we get into them, two asides: on Microsoft and IBM and on terminology

Do a search for *performance management* at microsoft.com and you get:

- Performance Monitor (Platform SDK Documentation)
- Independent Lab Report: Windows XP Outperforms Earlier Versions
- Microsoft Windows XP Performance

– Put quotes around "performance management" and the results are no more relevant to our topic

– Search for "business performance management" and all you get is two XML for Analysis PR hits

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BPM Approaches

These microsoft.com searches support my take that MS has no BPM story
- Their enterprise operational systems capabilities, for instance through their Great Plains acquisition, are still modest
- They prefer to provide the platform for partners such as OutlookSoft
- So what will happen when they do enter the field?

IBM, by contrast, has a very strong consulting arm that does BPM using partner products …
- and they maintain stable partner relationships, for instance, with OLAP vendor Hyperion

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BPM Approaches

Business Performance Management is the usual term, but some companies offer alternative takes

- – SAS Institute is pushing Strategic Performance Management (www.sas.com/products/strategic_vision/)
- – PeopleSoft's term is Enterprise Performance Management (www.peoplesoft.com/corp/en/products/line/epm/index.asp)
- – Cognos and Comshare like Corporate Performance Management (www.cognos.com/products/index.html, www.comshare.com/index.cfm)

There actually is some difference in meaning

BPM Approaches

BPM flavors

- "Strategic" and "corporate" imply an overarching view that crosses business domains
- "Strategic" additionally implies forward-looking rather than simply operational
- Cognos, for instance, plays it two ways with "Enterprise Scorecarding" and "Enterprise BI," which imply scalability but not cross-domain application

None of the terms get at a big limitation: these are **enabling** applications that model, analyze, and report but **don't actually manage**

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BPM Approaches

BI vendors:

– Analytical platforms + domain-specific operational capabilities provide the foundation for strategic/enterprise PM

- Hyperion is leveraging established budgeting and financials and the Essbase engine; companies like BusinessObjects are building alliances with apps vendors
- Epiphany and SAS Institute provide their own apps
- Most major vendors are creating domain-tailored, "vertical" data models and metrics
- Acquisitions play a role, for instance, SAS's of ABC Technologies and their financials and scorecarding, Cognos's of Adaytum

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BPM Approaches

BI vendors:

- The goal is to assimilate data from disparate sources into cross-domain indicators and displays
  - Can pull data into an analytical DB (DW or mart), create live links via APIs, or maybe use Web services
- SAS and Hyperion are playing leading roles in development of metadata and analytical-interchange standards for both the .Net and J2EE platforms
  - Other vendors are in one camp or the other
- Harmonization is surely a bigger problem
- And how can they model and analyze processes?

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BPM Approaches

Enterprise application vendors have been busy the last few years adding analytical capabilities

- PeopleSoft Enterprise Warehouse provides "pre-packaged analytic content," "pre-defined data mart," and added value through "pre-defining processes"
- "The solution also includes more than 1,200 pre-defined business metrics that are delivered in portals, applications, or OLAP tools"
- Integration is via ETL… but they claim "real-time" capabilities
- Integration is at the "data level"

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BPM Approaches

PeopleSoft Enterprise scorecard provides financial, customer, internal processes, and learning and growth indicators

PeopleSoft Activity-Based Management gives a process-centric view

But what if you have a heterogeneous environment?

– Is this a reprise, albeit with more flexibility, of Henry Ford's famous line about the Model T: "You can have any color you want so long as it's black"?
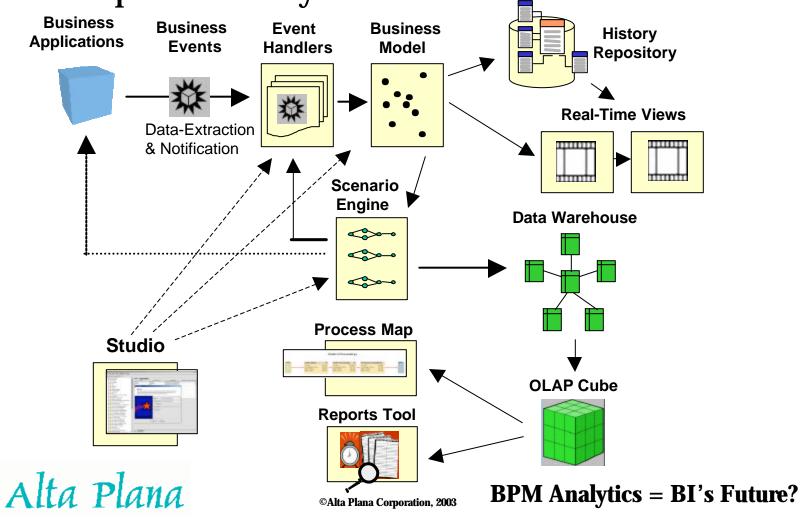
BPM Approaches

SeeRun supports three classes of analytics:

- Behavioral, tracking multi-stream sequences of events via a scenario engine and state model
- OLAP and related via a dimensional data warehouse (currently only Microsoft Analysis Services) shared with dedicated analytical tools
- "TrueTime," combining behavioral and DW-centered using rules

Process modeling and integration provide the framework for integration of operational and analytical applications

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BPM Approaches

BPM-specific analytics vendors: SeeRun

Business Applications → **Business Events** (Data-Extraction & Notification) → **Event Handlers** → **Business Model** → **History Repository** → **Real-Time Views**

Scenario Engine → **Data Warehouse** → **OLAP Cube** → **Process Map** / **Reports Tool**

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Conclusions

What about data mining?

- Nope, BPM still relies on what I'll call pre-categorized analysis

What about application of multivariate, time based techniques (which are often best modeled with auto-regressive components) and automated process optimization?

- Nope, BPM models are still by-and-large static

Is process-orientation the only direction for mainstream analytics?

- No, there are a variety of other notable initiatives

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Conclusions

What will it take for BPM to deliver on its promises?

- Standardization and uniformity of meaning
- Better interchange and integration facilities
- Enhanced, integrated process modeling
- Process optimization capabilities (which involve…)
- Cross-domain scenario ("what if") analysis (and …)
- Goal seeking, that is, factor analysis
- Production of "actionable" outputs and not just reports

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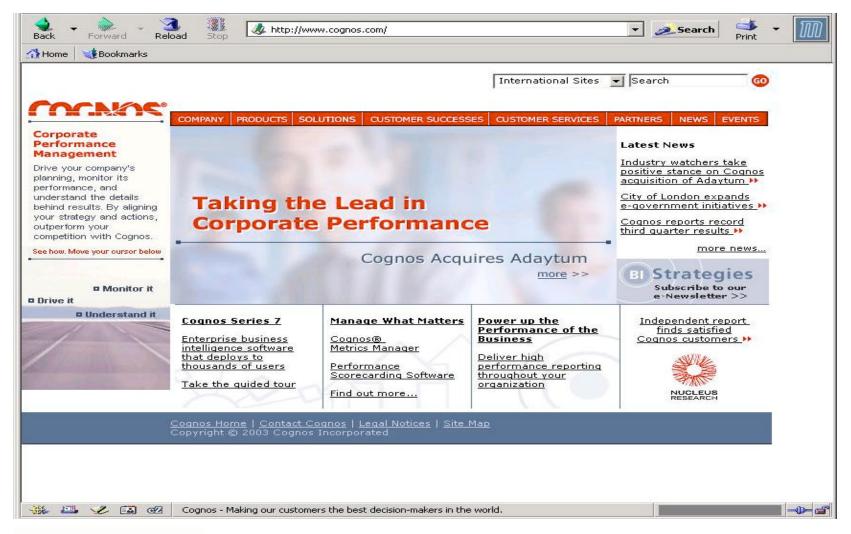
Conclusions

Is this stuff happening?
 – Some: let's run down the list
 – Market forces are key
 – Web services may play a significant role

What about BI and its subfields?
 – Analytical innovations are in BI & stats, not BPM
 – Capabilities will be increasing folded or linked into BPM tools
 – Need for domain-specific analytics won't go away any time in the foreseeable future

What about the vendors?

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Conclusions

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Conclusions

Vendors market what sells, but
- The BI field is mature
- Operational vendors can not deviate from in-built process models

so
- For BI vendors, BPM is a differentiator but there's plenty of life in conventional number crunching
- For operational vendors, BPM is a natural although inflexibility limits what can be done

and
- There's an open field if you start with a process view

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