Information Services

Information Systems for the High-Integrity Enterprise

A Monash Information Services White Paper

by

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About the Author

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About the Sponsor

Cognos is a world leader in business intelligence (BI) and performance planning software for the enterprise, and therefore in CPM (Corporate Performance Management). Its solutions let companies improve and direct corporate performance by enabling key steps in the management cycle—from planning and budgeting, to measuring and monitoring performance, to reporting and analysis. Founded in 1969, Cognos employs more than 3,000 people and serves more than 22,000 customers in over 135 countries. For more information please see www.cognos.com

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Introduction – The Integrity Mandate

Integrity (noun)

1. Incorruptibility. *There was no doubt as to the auditor's integrity, or to the integrity of her work.*
2. Soundness. *When hull integrity fell to critical levels, Captain Kirk ordered evacuation of the ship.*
3. Wholeness; completeness; consistency. *The SQL/92 standard mandates full referential integrity and other integrity constraints.*

Integrity is back in fashion.

Sizzle is out; substance is in. Integrity is back in fashion. Investors, consumers, and employees increasingly insist upon integrity in the enterprises they invest in, buy from, and work for. They want to feel that the people and organizations they do business with are trustworthy, sound, and reliable. And integrity is more than just an expedient stance to take with the public. Integrity is also crucial to competitiveness for a 21st Century enterprise.

False accounting and forecasts are punished harshly.

Integrity in financial reporting keeps you out of jail. It also helps keep you from being sued, taken over, or fired. For the past seventy years, legislation has increasingly mandated accurate financial reporting from publicly traded companies; the Sarbanes-Oxley Act in the US is just a recent example. And even when inaccurately reported or predicted numbers don't rise to the level of criminality, serious financial disappointments commonly lead to crashing stock prices. Falling stock, in turn, can lead to shareholder lawsuits, unwelcome merger attention, or new leadership for your company.

High-integrity numbers lead to better decisions.

Integrity in quantitative analysis leads to better business decisions. It also can make your decision processes much faster and cheaper. Business decisions are commonly based on the analysis of financial and other numerical data. But due to technological and human limitations, this analysis is often incomplete, subjective, or politically-driven. Objective analysis, based on complete, consistent, and accurate data, leads to better and less contentious decisions.

Integrity helps business relationships.

Business relationships work better if they're based on shared, accurate information. Just as internal company decisions work better with high-integrity information, so do relationships between suppliers and customers, manufacturers and resellers, and even employers and employees.

Information Technology for High-Integrity Enterprises

Since you need high-integrity information …

A high-integrity enterprise requires *high-integrity information.* You can't tell the truth if you don't know what the truth is. And you can't make sound, efficient business decisions if you don't have a reliable set of numbers to base them on.

... you need high-integrity information systems.

Business information can be regarded as high-integrity if it is:

- Accurate – otherwise it is pretty useless.
- Complete – at least, complete enough to form a basis for sound decision-making.
- Timely -- otherwise it is not really accurate or complete.
- In context -- so that it is not misleading or prone to misinterpretation.
- Consistent – if the other requirements are met this one will be too.

High-integrity information systems are those which reliably and securely produce high-integrity information.

Transactional apps aren't good at summary *numbers.*

Many of the elements of high-integrity information systems are already in nearly universal deployment. In particular, most sizable enterprises rely on transactional applications and application suites, such as ERP (Enterprise Resource Planning) and CRM (Customer Resource Management) systems. These do a solid job of managing low-level, detailed information. However, they're not so good at providing the summary-level numbers actually used in making important business and investment decisions.

CPM is great at summary numbers.

That's where CPM (Corporate Performance Management) comes in. CPM systems disseminate trustworthy, actionable, summary-level information to broad groups of decision makers. This information (along with any supporting detail the user desires) is presented with great interfaces that ensure it can be understood and used. Increasingly, CPM systems also have powerful features explicitly designed to assist in the creation of reliable, trustworthy forecasts and plans.

CPM supports integrity in four crucial areas.

Thus, CPM is a core technology for high-integrity information systems -- and hence for high-integrity organizations. In particular, CPM can help an enterprise achieve and maintain high levels of integrity in four important areas:

1. Integrity of financial reporting.
2. Integrity of operations.
3. Integrity of business relationships.
4. Integrity of management decision processes.

CPM: Key Components Defined

Gresham's Law of Currency: Bad money (i.e., debased coinage) drives out good.

Monash's Law of Marketing Jargon: Any term that describes a popular product category will eventually lose most of its meaning.

Key elements of CPM include: CPM is a hot marketing term these days, defined somewhat differently by every major vendor, consulting company, or analyst in the space. By most accounts, a full-blown CPM system comprises both technology and business processes that use the technology. But let's start by defining the key parts of the technology, which has the following major end-user components:

BI, aka reporting and analysis, *Business intelligence (BI).* Also known as *reporting and analysis,* this is the capability for end-users to query relational databases or *multi-dimensional* OLAP (OnLine Analytic Processing) *cubes,* via a friendly, relatively non-technical user interface. The results are displayed in a table or graph, either onscreen or in a printed report.

metrics and dashboards, *Metrics, KPIs, dashboards, and balanced scorecards.* A *metric* is a number that measures the health or performance of some aspect of an enterprise. A *dashboard* is a convenient online display that tracks a range of metrics. *KPIs* (Key Performance Indicators) and *balanced scorecards* are basically special cases of metrics and dashboards respectively.

analytic tools, *Analytic tools (chiefly statistical).* In most cases, all you have to do is get to the right query in a BI tool, and what you need to know jumps out at you. But sometimes sophisticated calculations are in order, and CPM vendors provide tools to help with those.

analytic apps, *Analytic applications.* Generally, these are CPM tools preconfigured to address specific kinds of business problems, including a set of metrics, the associated data mappings, and where appropriate a dashboard.

and planning applications. *Planning applications.* These combine planning, budgeting, and forecasting inputs from many parts of an enterprise – and from the rest of the CPM system -- into a hopefully coherent whole.

Using CPM to Get High-Integrity Numbers

There are three kinds of lies: lies, damn lies, and statistics. – Benjamin Disraeli

Summary numbers are of questionable integrity.

Businesses run on numbers. If the numbers aren't sound and trustworthy, the business is unlikely to be sound or trustworthy either. Most of a typical enterprise's IT budget is indeed devoted to insuring that detailed transaction records are accurate and uncorrupted. That kind of detail, however, is rarely used in business and investment decisions. Instead, decision makers rely on summary numbers, which typically come with no similar integrity guarantee.

Spreadsheets lose too much information.

Summary numbers are typically generated in spreadsheets, and then transferred to text documents and slide presentations. This sudden jump from transactional systems to personal productivity applications creates a damaging loss of information. While the calculations of summary numbers may be arithmetically accurate, without underlying detail and context their meaning may be far from clear.

CPM can present high-integrity summary numbers.

That's where CPM comes in. Unlike spreadsheets – or human beings! -- CPM systems are designed to handle the quantities of data generated by transactional applications. They far outshine other methods of generating numbers for decision-making, due to their superiority in:

Dashboards convey a wealth of information.

- *The quantities of summary information they provide.* A well-designed dashboard provides more information upon-demand than can be found in any but the most detailed Microsoft PowerPoint presentation.

CPM tools have informative user interfaces.

- *The informative and visually compelling ways they present the information.* Interactive reports, tables, and graphics are much more helpful than static ones printed on paper. And color-coded alerts are a great help in figuring out which business areas need prompt attention.

Drilldown helps assure information integrity.

- *The immediate access they provide to details that validate, explain, or add context to the high-level summaries.* BI tools support *drilldown*, which lets the user navigate to exactly the right information that is needed to answer a question. Drilldown is also crucial for assuring information integrity, because it provides verification that the summary data means what it seems to mean.

CPM helps ensure "one version of the truth".

- *The ability to ensure that everybody in an organization is operating from the same assumptions – and therefore conclusions! – in calculating business metrics.* This is sometimes referred to as the "one (version of the) truth" benefit.

Assuring Integrity in Financial Reporting

Accurate financial statements are a must.

Consider the numbers used for financial reporting and investment decisions. The penalties for getting these numbers wrong are immense. There are severe civil and even criminal consequences for false or misleading reports and forecasts. Bad numbers also lead to collapsing stock prices, which can demolish careers, employees' wealth, and even the viability of the firm. Simply put: The integrity of a firm's financial statements is used to judge the integrity of the company itself, and of its management team.

CPM helps avoid IR pitfalls.

There are two basic ways to screw up your investor relations – misstating your historical numbers, or making serious errors in your forecasts of future performance. CPM is an excellent means to prevent both these problems.

Using CPM to Avert False Accounting

Revenue is liable to being exaggerated.

The easiest way to cook a company's books is often by inflating revenue. What's more, there's often a built-in incentive for lower-level employees to exaggerate sales, as commissions and bonuses are often tied to revenue performance. A closely related problem is the understatement of variable costs or reserves associated with sales, such as return allowances, bad debt reserves, or estimated future costs of service commitments.

Exception-driven auditing smokes out fake revenue.

An important tool to control such shady accounting is *exception-driven auditing*. This entails running queries designed to turn up sales results, receivables growth, etc. that are either:

A. Outside historical and normal limits. or
B. Among the highest in the company, irrespective of normal limits.

These queries should be segmented in a fine-grained way, as appropriate – e.g., by sales territory or customer or geographic territory or type of product. Once the areas most likely to show a discrepancy are flagged, you can follow standard careful audit procedures to ensure that no funny business is occurring.

For example:

CPM helps detect problems in AR …

1. Accounts receivable. Fictitious revenue is often associated with large accounts receivables; customers who haven't bought something are naturally reluctant to pay for it. Such transactions can sometimes be smoked out if accounts receivable are correlated with low prices on other offerings, such as professional services. Customers may be (quite naturally!) refusing to pay for what they nominally "bought" until they get the other services they were additionally promised.

… and in bad-debt reserves.

2. *Bad-debt reserves*. From capital goods accounts receivable to consumer loans, understated bad-debt reserves not only inflate earnings directly, but also serve as a warning that the original transactions may have been fishy. Accordingly, they should be sliced, diced, and correlated in a myriad of ways to see if they can give a window into questionable revenue (and, equally important, into unwise business decisions).

BI tools can uncover bogus barter deals.

3. *Barter deals.* During and slightly before the internet boom, it became common for technology companies to sell each other products that were unneeded or overpriced, in offsetting transactions. Not only did this inflate revenue, but since the purchases were amortized over several years as capital equipment, most of the revenue went straight to the bottom line. (Informix and AOL both followed this practice and later suffered from its exposure.) Auditors or board members could have unearthed this practice easily if they had the results of a query that correlated customers with vendors, and flagged any instances in which there were large sales to and from the same enterprise.

BI tools excel at exception-driven auditing.

Many of these queries would be difficult to run in a typical ERP or other transactional application system, as they combine and compare information from very different parts of the database. However, a strong relational query tool running against a well-populated data warehouse should be able to handle all of them, as well as most or all of the other queries that a sound industry-specific auditing program would require.

Historical note: In the early 1970s, one of the first report writers was Cullinane Software's Culprit. It became much more successful when it was repackaged as an auditing tool called EDP Auditor.

Using CPM to Develop Reliable Forecasts

Investor relations require responsible forecasting.

You can't have high-integrity investor relations without responsible forecasting. Not only must you set investors' expectations accurately, to whatever extent that's possible, but forecasting is also a key part of reporting historical numbers. While ostensibly backward-looking, financial accounting is actually full of assumptions about the future, in areas such as the expected collection rate of debts and accounts receivable, the expected costs of fulfilling contractual service commitments, or the ultimate realizable value of inventory on hand.

CPM helps analyze and confirm trends.

CPM helps with forecasting in two major ways – trend spotting and outright planning. Usually, when we make forecasts about the future, we simply assume that past trends will continue. That's a good start, but it works even better the more we understand what actually occurred in the past. CPM can be a great help in that regard.

There are many examples.

For example:

- If you sell through distributors and retailers, a careful analysis of *when* in the quarter you make the sales can help estimate whether you're actually getting sell-through, or whether you've instead just been inadvertently stuffing the channel.

- In industries such as retail, tourism, etc., sophisticated analyses of the effect of weather, holidays, etc. can reveal underlying business trends more accurately than a simple-minded adjustment for "seasonality" might produce.

- Any kind of data mining or segmentation analysis that helps you focus on your most profitable customers and prospects or the most beneficial possible promotion can also help you in forecasting what the results of that focus and those promotions will be.

Plan based on sound budgets and real data.

Besides trend analysis, the CPM arsenal includes actual enterprise collaborative planning software. On its own, this software provides a major improvement over traditional top-down budgeting. It allows detailed departmental or other segment budgets and plans to be rolled up into a consistent enterprise whole, reflecting consistent enterprise-wide assumptions. And those departmental plans can be made – or at least checked and rechecked – by the line managers responsible for and knowledgeable about each particular area. Even better, planning software is increasingly being integrated with the rest of CPM. Thus, departmental and high-level plans can be validated against trend analysis based on actual operating data.

CPM-based plans are better, cheaper, and timelier.

By compressing the painful budgeting cycle that most enterprises endure, CPM can make planning not just more accurate, but cheaper and timelier as well. Timeliness is an important benefit; out of date forecasts are unreliable to the point of uselessness. You can't have high-integrity investor relations or high-integrity operational control without high-integrity plans. And -- unless you are in a particularly slow-moving industry segment -- high-integrity plans are hard to develop and maintain without state of the art planning software.

Performance Monitoring for High-Integrity Operations

This above all: to thine own self be true,
And it must follow, as the night the day,
Thou canst not then be false to any man.

-- William Shakespeare, Hamlet, Act I, Scene iii

High-integrity operations need high-integrity info.

It is difficult to succeed as an organization unless your operations are fundamentally sound. And it's hard to have high-integrity operations without having high-integrity information to support them. Too often, people hide from problems rather than admitting and then solving them. But if you measure your operations with integrity, and disseminate the resulting information widely in your organization, hiding isn't an option. So instead of getting concealed, problems actually get solved.

CPM makes performance monitoring practical.

Thus, high-performance operations depend upon information systems that can do high-integrity *performance monitoring*. In theory, a perfect suite of ERP, CRM, and/or supply-chain applications might fill this role. In practice, however, CPM is often essential – or at least vastly cheaper and easier to implement – if you want to make your operations as efficient as possible while providing the best possible service for your customers.

Examples span multiple industries and applications.

For example:

- Binney & Smith Canada, makers of Crayola crayons, uses Cognos' BI tools to check the timeliness and accuracy of their order-filling and customer deliveries – even though they have J. D. Edwards' ERP software to run their basic operations.

- Agile Software uses Cognos software to analyze the operating performance of its call centers and to correlate that performance with customer satisfaction and loyalty – despite using Onyx Software for basic CRM.

- Trimac Corporation, a leading bulk shipper, uses Cognos' software to estimate the costs of any particular job and to track whether the estimates turn out to be accurate. It estimates over $1 million in annual cost savings from its use of CPM.

- Keycorp, a major consumer financial services company, uses CPM tools to track performance down to the individual loan manager, across the entire lifecycle of their loans.

Good info supports high-integrity customer relations.

Even more important, if you understand your operations more accurately, your expectations become more accurate as well. Not only is this good for planning and forecasting, but it helps you set accurate expectations in your promises to your customers. And so it makes you, from their standpoint, a high-integrity vendor.

High-Integrity Business Relationships

The most important persuasion tool you have in your entire arsenal is integrity. – Zig Ziglar

CPM helps you be a trustworthy partner …

A consistent theme in this paper has been that if you have trustworthy information yourself, you can be a trustworthy partner to your stakeholders. And this is good for business, because people prefer to buy from, sell to, work for, or invest in high-integrity enterprises. Now let's step back and generalize the point.

… in three essential ways.

The key aspects of a high-integrity business relationship are:

- Clear and reasonable goals and expectations.
- Agreement as to whether goals and expectations are met.
- Truthful and sufficient information sharing.

CPM systems can be a big help in all of these areas. Planning tools ensure that expectations are realistic. Dashboards, scorecards, and other metric-based technologies both communicate goals and measure whether they are reached. And since CPM systems are based upon information extraction and presentation technologies, they are ideally suited for sophisticated information sharing -- providing robust and timely information those to who need it, while still preserving confidentially and security of proprietary data.

Using CPM for High-Integrity Cooperation

CPM aids supply chain cooperation.

Some of the best examples to date of using CPM to enhance inter-company cooperation fall under the general headings "supply chain" or "distribution channel". For example:

- Tibbett & Britten, PLC, a distribution/logistics company serving famed retailer Marks & Spencer, uses Cognos' tools to monitor operations and predict future trends and needs. It also shares this data with its customer Marks & Spencer and many of the Marks & Spencer suppliers whose goods it transports.

- Brayton International, a manufacturer of high-end office furniture, uses Cognos' tools to perform detailed analysis of buying patterns at both dealers

and end-customers. This allows it to support its dealers better in their sales efforts and also to get information back which helps in its future product development strategies. Financial service companies also use Cognos software to support their agents and dealers.

CPM can help optimize compensation.

In the future, CPM may also become a major aid in optimizing compensation, both to employees and channel partners.

Using CPM for High-Integrity Stakeholder Relations

Openness creates trust.

Sometimes, demonstrating high integrity simply amounts to letting your customers and other stakeholders know what you're doing. We discussed the case of investor relations above. In other examples:

Crime data is available online.

- A number of city, state, and national governments are putting crime statistics directly online for citizens to examine. Some, such as Albuquerque, New Mexico, provide fully interactive access via BI tools.

Utilities can report on power outages.

- Hydro Quebec uses Cognos software to provide detailed hourly information about electricity outages during weather-induced blackouts. (Any power company in northeastern North America would be well advised to do the same thing. The audience isn't just consumers, but also local politicians and, above all, regulators.)

B2B customers get useful information.

- Many B2B companies -- from credit card processors to office supply vendors to travel agents to mutual fund wholesalers -- use BI-based extranets to extract useful information from their internal information systems and provide it to their customers.

While it's difficult to quantify the benefit of such efforts, the result is probably a much higher level of trust between the enterprise providing the information and the stakeholders it most needs to impress.

High-Integrity Decision Processes

A committee is a life form with six or more legs and no brain. – Robert Heinlein

Enterprise decision-making is fraught with problems.

Organizational decision-making is hamstrung by a variety of problems. People may be too afraid of change or too enamored of it. Information may be hoarded in various power games, rather than being freely shared with those who need it. Decisions may be based on organizational politics rather than the actual best interests of the enterprise. Worst of all, there are endless committee meetings.

CPM solves some of them.

Ideally, CPM technology could solve every one of those problems, even if such a revolutionary cultural change would take years or decades. On a more limited basis, high-integrity decision processes – supported by CPM – are operating in enterprises all over the world today.

Examples include:

Market test with CPM.

1. *Testing of marketing campaigns and promotions.* The key to successful mass-marketing campaigns and promotions is to test, test, and test some more. Even before the immediacy and interactivity of the World-Wide Web, this observation was true for a broad range of direct-response industries, from catalog retailing to subscription marketing. Now it's true for every organization that has a Web presence – i.e., everybody. Examples include Canadian Blood Services, which uses Cognos software to analyze and increase the response rate on its donation solicitations, to Hardys and Hansons, a UK pub chain that analyzes the effect of price specials and T-shirt giveaways.

Customer segmentation can yield huge returns.

2. *Customer segmentation.* A particularly effective tool in planning promotions and marketing strategies is customer segmentation – analyzing which groups of customers are likely to respond well to which kind of offers. Harrah's Entertainment Inc. says it increased profits $50 million in a year by using Cognos tools to estimate which customers would be most easily persuaded to visit multiple Harrah's properties.

Save cash by pruning less profitable products.

3. *Product line optimization.* Royal Doulton (the famous maker of fine china) used Cognos' OLAP tools to analyze product-by-product and pattern-by-pattern profitability. The analysis resulted in the product line being trimmed from 31,000 to 6,000 items, freeing up nearly thirty million British Pounds in working capital.

CPM helps optimize credit policies.

4. *Credit policy optimization.* Keycorp uses CPM technology from Cognos and SAS to fine-tune its credit-granting policies.

CPM can help fine-tune pricing.

5. *Pricing optimization.* The perfect profit-maximizing price-setting software doesn't yet exist; economics is too imprecise a science for that to be possible. However, many enterprises fine-tune their prices for greater profitability, with strong assistance from CPM. For example, the airline KLM UK uses Cognos tools for "What-if" pricing analysis. And Dow Chemical uses Cognos CPM tools for customer-by-customer profitability analysis, a key step in negotiating commodity pricing.

Overall, CPM supports sound decision analysis.

In each of these cases, solid numerical analysis leads to fairly straightforward decisions. There's still plenty of room for creativity -- e.g., coming up with new kinds of promotions and marketing strategies. And wherever there's room for creativity, there's also room for some debate. But even so, CPM is being

used to transform seat-of-the-pants subjective decisions into ones that are based on -- and therefore certainly consistent with -- the available objective data.

Objective decision processes are both faster and better.

Generalizing, a high-integrity decision process is one in which:

- The foundation is data that is accurate and, to the extent possible, complete.
- All participants agree (or promptly reach agreement) on what to measure and how to measure it.
- Objective tests are run to validate the most important assumptions, and to choose among competing assumptions if there are significant disagreements.

A process that meets these criteria will make it much harder for colleagues to deceive each other, or to argue at length for false and unsubstantiated positions, or to make decisions that aren't based on objective analysis at all. And CPM technology can be a huge help in establishing such a high-integrity process.

Implementing High-Integrity Information Systems

Much of CPM is inexpensive and easy to implement.

Compared with other software, most CPM technology is remarkably inexpensive and easy to implement, if the transactional underpinnings are already in place. The same is true of some of the CPM business processes that the software enables. And at enterprises with a particularly unfortunate set of heterogeneous or poorly documented transactional applications, CPM will often at least be a lower-cost way of meeting key business needs than would full application integration investment in CPM technology.

This is a fairly recent development.

Our blanket claim that most CPM technology is inexpensive to implement has only recently become valid. CPM, at its BI core, involves running complex queries against large amounts of data, which is only affordable due to tremendous reduction in the costs of both processing power and data storage. Also crucial is the ability of DBMS (DataBase Management System) vendors to harness that hardware power without showstopping bottlenecks. Similarly, many enterprises, especially outside North America, have only recently found it cost-effective to put powerful PCs on managers' desks and to connect them by high-speed networks. And most enterprises have sharply upgraded their transactional applications over the past decade, a trend that was fueled both by the Y2K crisis and the internet boom.

Most enterprises are still under-invested in CPM.

In this paper, we've described a number of major reasons for adopting CPM-based high-integrity information systems. In the next two subsections, we'll switch focus from "why" to "how". First we'll outline the components of a fairly idealized system; then we'll discuss the practicalities of which parts to adopt first. Frankly, there are probably a few enterprises that shouldn't adopt

CPM at all, due to more pressing problems and issues. But we believe most others should be exploiting recent technology cost declines to significantly upgrade their CPM capabilities. Here's an overview of how to go about it.

Ten Layers of High-Integrity Information Systems

The ten layers of an ideal high-integrity information system:

From the bottom up, the ten layers of an idealized high-integrity information system are shown in Figure 1 (please see next page). These layers, including both technology and business processes, are:

Infrastructure;

1. *Computing and networking infrastructure.* This comprises servers, PCs, network hardware, security appliances, operating systems, DBMS, other system software, telecommunications services, and everything else not directly tied to applications and their use. Most large enterprises have a robust infrastructure in place, and are continually upgrading it.

Transactional apps, such as ERP, CRM, and SCM;

2. Transactional applications. These are the basic transactional apps that run the details of your business, in areas such as order processing, customer care, purchasing, inventory management, manufacturing scheduling, accounting, human resources management, etc. Examples include ERP, CRM, SCM (Supply Chain Management), and industry-specific functions such as insurance claims processing, telecom service provisioning, etc. Most large enterprises invested heavily in these over the past decade.

Transactional business processes;

3. Transactional business processes. These are the streamlined business processes that take advantage of the transactional applications, and are generally in place or being implemented where the apps themselves are in place. Examples of such processes include inventory management; purchasing, telephone/website order processing, or telecom service provisioning.

Data warehousing;

4. Data warehousing. This comprises the data warehouses, data marts, and related technology that assemble the data maintained by transactional apps and business processes and make it available for CPM uses. Most large enterprises have some kind of data warehouse or data marts in place, albeit not necessarily ones that would support all the CPM systems the enterprise could ideally use. At enterprises with a messy set of transactional applications, building a rich data warehouse can be quite expensive; but in those cases the expense is still much lower than what it would cost to integrate or replace all the underlying transactional applications themselves.

BI/CPM tools;

5. *BI/CPM tools.* This level comprises business intelligence and other CPM tools, as opposed to the actual applications discussed below. The main subcategories are: relational BI; multidimensional/OLAP BI; statistical tools (including "data mining", an already faded buzzword); and visualization tools

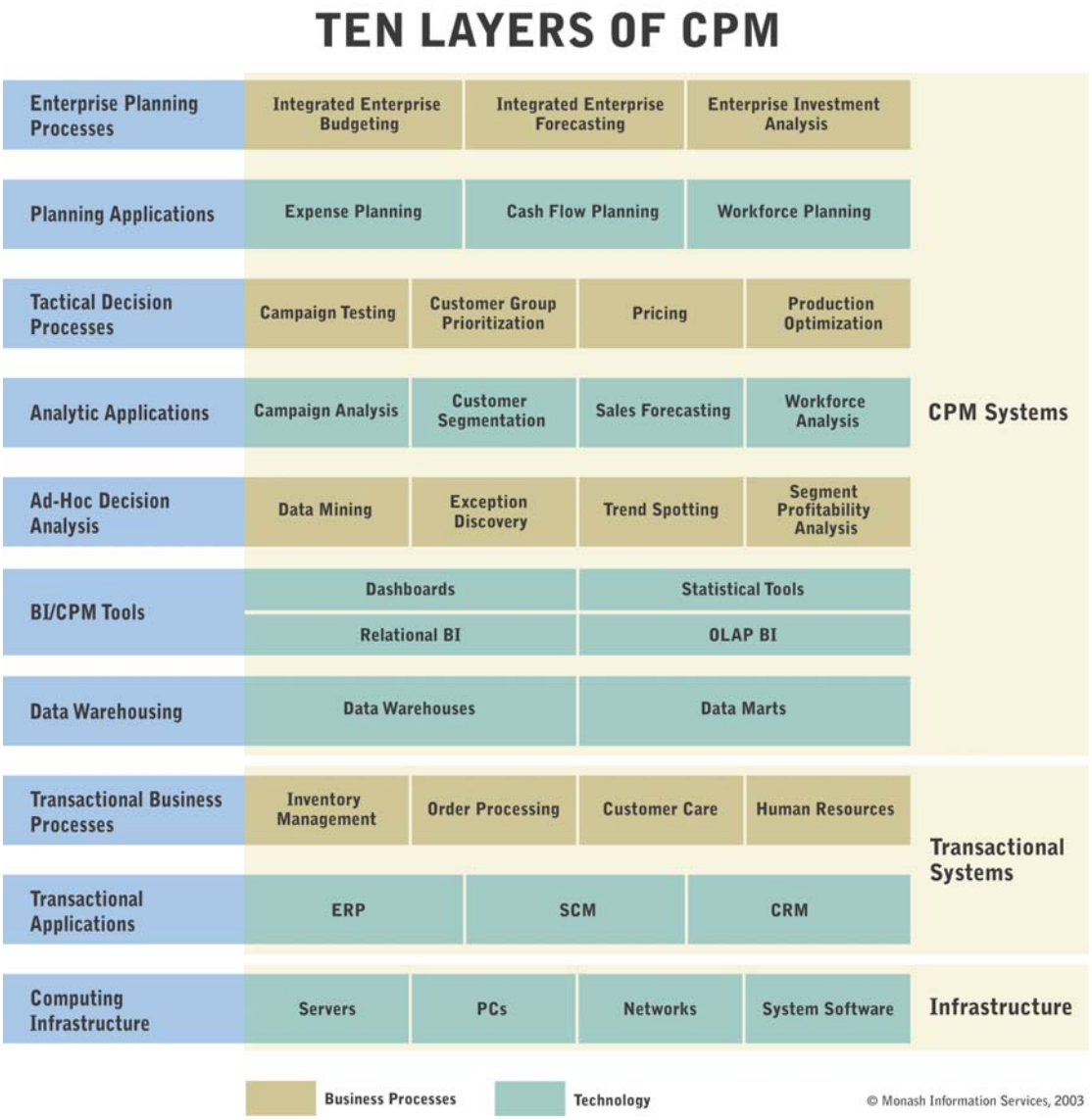

Figure 1: The ideal enterprise CPM system would comprise ten layers, with each layer touching most departments of the company.

such as balanced scorecards, dashboards, and other displays of metrics and KPIs. Many large enterprises have implemented some of these tools in specific departments or for specific applications, but true enterprise-wide adoption is generally still in the early stages.

Ad-hoc decision analysis processes;

6. *Ad-hoc decision analysis.* This is the primary use to which BI tools are put today. Managers are given, or create for themselves, reports and visual displays. Rifling through these numbers, they may somewhat discover a trend, correlation, or anomaly that leads them to a business improvement. Or they may carefully analyze a particular issue, an effort which sometimes provides huge returns, such as in some of the data mining successes that were reported a few years back.

Analytic applications;

7. Analytic applications. These are CPM tools preconfigured to address specific kinds of business problems, including a set of metrics, the associated data mappings, and where appropriate a dashboard. BI vendors and sellers of transactional applications are both trying to compete in this space. Off-the-shelf analytic apps can be found in areas such as marketing campaign analysis; customer segmentation; sales forecasting; and workforce analysis.

Tactical decision processes;

8. Tactical decision processes. Where there's an application that helps with decision-making, there's a decision process to take advantage of it. And where there's a repeatable decision process, there's at least the potential of an application to support it. Fertile areas for CPM-supported tactical decision processes include campaign testing, customer group prioritization, production and logistics optimization, and the all-important black art of pricing.

Enterprise planning applications;

9. Planning applications. These are applications focused on planning – examples include expense planning, cash flow planning, and headcount/ compensation planning. Their antecedents lie both in BI and in enterprise collaborative budgeting apps, two closely-related technology areas that are often pursued by the same vendors.

Enterprise planning processes.

10. Enterprise planning processes. This is the Holy Grail of CPM. Just as MRP/ERP revolutionized inventory management, production management, and eventually many business processes, CPM promises to revolutionize higher-level planning and management decision-making. (MRP stood for Materials Requirements Planning and then Manufacturing Resource Planning, which can be regarded as subsets of or precursors to ERP.) Truly integrated, analytically objective, enterprise-wide forecasting, planning, and budgeting are wonderful things. They are also very rare, since they require a dramatic cultural change from the more subjective way decisions are generally made today. In its most ideal form, enterprise planning would include objective analysis of any kind of large- or medium-scale investment, such as making an acquisition, building a plant, or changing a research priority.

Prioritizing High-Integrity Systems

The basis for high-integrity systems should be in place.

While complete high-integrity information systems are almost nowhere to be found, most enterprises are at least partway toward the goal. ERP and other transactional apps are generally implemented, at least in their core modules; if nothing else, almost every enterprise at least has 1980s state-of-the-art systems for accounting, human resources, and, if appropriate, manufacturing planning. Decision makers typically have networked PCs on their desks. Most large companies have at least dabbled with data warehouses and business intelligence tools. Hardware, networking, and DBMS infrastructure are getting ever more reliable and cost-effective. And as scary as security concerns are in theory, in practice crucial data generally remains secret and uncorrupted.

Selectively adopt CPM for low costs and high benefits.

Building a true high-integrity culture across a large enterprise is clearly a long-term effort. But that shouldn't be an excuse to delay those steps that are practical today. CPM technology lends itself to low-cost, high-benefit tactical implementations. Even some of the more strategic uses are surprisingly easy to implement. So most enterprises should move aggressively to implement ever higher-integrity information systems, while bringing along the organization's overall culture and decision processes however quickly is practical.

Using BI to check your accounting is prudent and cheap.

First of all, if your stock is publicly traded, you have to have high-integrity investor relations. It doesn't matter what country you're based in -- the world is moving toward consistent accounting and disclosure standards, with increasingly severe penalties for malfeasance. So using business intelligence tools to analyze and validate your accounting is a no-brainer, at least if you have any kind of basic data warehouse fed by a functioning ERP system. It's vastly cheaper than what you already paid to buy and implement your transactional apps. And besides minimizing your legal risk, exception-based auditing also warns you of surprising business trends before they explode out of control.

Implement performance monitoring one area at a time.

High-integrity operations can be boosted by CPM-based performance monitoring. This can, and usually should, be implemented one operational area at a time. At most enterprises, there's still plenty of opportunity for quick payback from better understanding and control of operations. Also, many industries could benefit from upgrading their ability to make accurate promises to customers. This latter point is especially true for companies that make deliveries, provide repair services, or do on-demand manufacturing. Even if you have great operational systems in place that do most of the hard work, a CPM overlay will usually provide better visibility at low additional cost.

Use CPM to check marketing programs and strategies.

Any business that can subject its marketing strategies to statistical analysis should do so. While marketing usually has a strong creative and/or qualitative element, many kinds of marketing programs and other tactics are subject to rigorous testing. And in the internet era, that testing can often be fast. CPM technology – including whole analytic applications – can be a huge help in such tests. The same goes for customer segmentation analyses not tied to any particular marketing program. Depending on what industry you're in, more advanced quantitative analysis could also be helpful in anything from product research to employee recruiting to manufacturing quality control.

BI tools can enable cost-effective customer-facing systems.

Exposing information to your customers actually could be expensive, depending on how much bandwidth will be required. Also, usability requirements for customer-facing systems may add significant costs to application development. But Cognos and other major vendors invest enormous resources in making their BI tools highly user-friendly. So in some cases, valuable and inexpensive customer-facing systems can be built today.

Dashboards provide many CPM benefits, inexpensively.

Changing your organization's entire style of management decision processes is neither cheap nor easy. But at many organizations, enterprise-wide rollout of dashboards will lead to better operations and decisions even in advance of major cultural change. It is relatively simple to put accurate, informative numbers on every manager's desktop via a metric-filled dashboard. This allows top management to focus the whole company on the operating issues it deems most important. What's more, if everybody sees the same numbers, a lot of disagreement and wasted discussion will almost automatically be averted. Decisions may be better informed as well, depending on how committed your organization already is to analytic rigor.

Planning software has a quick payback for some buyers.

Finally, the benefits of planning software should not be overlooked. It can have a quick payback if you need it for accurate investor guidance, or if your budgeting process is a significant drag on managers' productivity and effectiveness. It also can be very valuable if timelier insight into future business needs has a significant effect on your capital investments, hiring plans, or other major financial commitments. The complete transition to a high-integrity, integrated enterprise planning culture will probably take years or even decades. But many of the benefits are achievable within the low-cost, quick-payback framework that today's enterprise technology buyers demand.

High-integrity systems should be built incrementally.

In many cases, the key to cost-effective, quick-payback implementations of CPM is to focus on specific departments and business challenges. For example, it might make sense for the marketing department to be much higher up the ten-layer stack than, say, the human resources department. Installing BI-based supply chain analytics might forestall the need to acquire much costlier and harder to implement full supply chain applications. And, even if your company is years away from implementing a theoretically ideal enterprise planning process, it might make sense to implement a good-enough enterprise

forecasting system, if just to protect you from grossly misleading investor relations,

Conclusion

Integrity is a major competitive advantage.

For the foreseeable future, integrity will be a major competitive advantage, if not an absolute requirement. Competition is fierce today in almost every industry, and it will just get tougher, especially as developing countries are fully included in the global economy.

It should pervade your enterprise and info systems.

To win, you will need strong customer relationships, low costs, and shrewd, agile decision-making. Excellence in those areas will require high-integrity operations, relationships, and decision processes. These in turn depend on high-integrity information systems, as does the high-integrity investor relations required of every publicly-traded company.

CPM is the key to high-integrity information systems.

High-integrity information systems depend heavily on BI/CPM technology. Fortunately, many of the benefits of BI and CPM can be attained through low-cost, quick-payback incremental adoption. Therefore, most enterprises should be increasing their investment in CPM technology and the associated business processes.