

A large, abstract graphic in dark blue and navy blue occupies the left and bottom portions of the page. It features thick, curved lines and overlapping circular shapes, creating a dynamic, modern background.

WHITE PAPER

DATA DRIVEN PLANNING -
7 KEY MODELS FOR MANAGING PERFORMANCE





Introduction

Introduction

Planning is a vital activity for every organisation. In the past it was a seasonal activity driven by a date on a calendar – Spring for the annual strategic review; Autumn for preparing next year's budget; Quarter-end for collecting end-of-year forecasts, and so on. However the pace of change often invalidates plans that are tied to a calendar, which now calls for organisations to adopt continuous planning. Plans that are relevant; based on reality; that connect the whole organisation as a single entity; and that have a realistic chance of success.

This white paper looks at the challenges faced by corporate planners and proposes a planning framework that is data driven, which allows organisations to better respond to a volatile business environment. It starts out with the results of a recent survey that illustrates why planning often fails and outlines seven key planning models that every organisation needs to manage and monitor business performance. It then goes on to describe a data driven architecture for solutions that allow management to continually adapt their plans in response to changing market conditions.

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Planning environment

1. The Corporate Planning Environment

1.1 The purpose of planning

Planning is something that every organisation should do as it helps management set overall direction and outlines the role that stakeholders play in achieving corporate objectives. In larger organisations, planning takes place under a number of headings that include:

Strategic Planning is typically conducted by senior management and takes a long-term view of where the organisation should be, given where the market is heading. This view contrasts the organisations current capabilities and those of competitors to decide what it has to do in order to achieve its mission in the future.

Tactical Planning looks in more detail at the activities to be implemented in order to achieve strategic plan goals. These activities are typically associated with implementing new or changing existing business processes, and considers the timing of change as well as the resources required.

Budgeting is the process by which resources are allocated to ensure the day-to-day operation of the business. Budgets can be thought of those that support existing business processes ('business as usual'), and those that are allocated to strategic initiatives.

Financial / Capital planning, as the name implies, is concerned with the cash/capital requirements of the business and where any shortfalls are to be funded, or surpluses invested.

Forecasting is where the organisation gains a short-term view of what is actually going to happen. It takes into account current sales or income activity and operational expenditure to give a realistic assessment of what the organisation will achieve if the current course continues.

Operational planning also takes a short-term view and tries to optimize organisational activities. Production and logistics planning are good examples that recognize business decisions are typically a compromise between efficiency, customer satisfaction, future targets and available resources.

Planning can also be used to minimize the impact (or take advantage) of different tax regimes. But despite these differences, all types of corporate planning have a common purpose, which is to:

- Model the organisation in a way that can be used to make decisions over resource requirements and how activities are conducted.
- Challenge assumptions on the current mode of operation.
- Prepare management for a range of anticipated futures.
- Set a clear path through which change can be implemented and monitored for success.





Planning environment

1.2 The trouble with planning...

Unfortunately, corporate planning has a poor track record as was borne out in a recent survey conducted by Chartered Institute of Management Accountants (CIMA) in the UK and the American Institute of Certified Public Accountants (AICPA) in the US. In interviews with around 500 organisations, a number of issues were highlighted that included the following:

Dissatisfaction with the planning process:

The way in which planning is conducted was often seen as 'not fit for purpose'. With Strategic planning, 53% of respondents said that too little time was spent on this crucial area. In contrast, 40% said that too much time was spent on the annual process of budgeting where there is "... no integration with goals, objectives and accountability".

Issues with the planning culture:

Most people involved in planning saw its focus on achieving short-term goals rather than the long-term health of the organisation. They also saw a lack of accountability as being responsible for poor implementation and a reduced desire to plan properly. One respondent thought: "Planning should be based on the real numbers and not on what senior management want them to be."

Need for a holistic approach

Planning was seen by many to be an isolated process that lacked awareness of how different functions interact with each other. Similarly there was no discussion on how the budget tied departments together and as a result there was a lack of "... commitment to the interrelationships required to meet overall corporate goals."

Need for better planning technologies

Over 50% of respondents still use spreadsheets for planning, despite the benefits that can be achieved with modern planning technologies. As a direct consequence, the planning process was described as being "Too manual" and "Too error prone".

You can read more on the survey in the book 'Budgeting, Planning, and Forecasting in Uncertain Times' that is jointly published by CIMA and the AICPA.

It should be noted that plans are never going to be accurate as the world in which organisations operate is far too complex to implement models that determine every outcome. If you live in the UK you only have to look at weather forecasts to see that despite sophisticated mathematical models, forecasting the future with any level of detail seems impossible.

Even if an organisation could predict with accuracy, the very act of planning will cause the future to be different from what it would have been! But that doesn't mean management should give up on planning, but rather to be aware of where inaccuracies can creep in.

Donald Rumsfeld when US Secretary of Defense, was quoted as saying *"There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know."*

In a business context there are four areas of inaccuracy that can affect the accuracy of a plan:

- **Known unknowns:** – e.g. competitor actions, political surprises, social attitude, commodity prices - these can't be predicted in advance
- **Unknown unknowns:** – e.g. things that cannot be imagined or are treated as a constant such as a breakthrough technology or a paradigm shift in attitude.
- **Mistakes:** – e.g. errors that occur within mathematical models of the business. This can either be down to a coding error or not taking into account the right values such as a tax rate.
- **Personal bias:** This final source of inaccuracies recognise that people selectively use facts to bolster their own view of the future.

By being aware of these areas, the results produced by a planning model can be better interpreted. To help negate some of these factors, organisations should produce plans that contain a range of values (e.g. best case, worst case, expected) which can help the reader get a better sense of what may happen.

None of the above issues should be a surprise. The real challenge for organisations and those responsible for the planning process is on how these issues can be overcome.





Planning environment

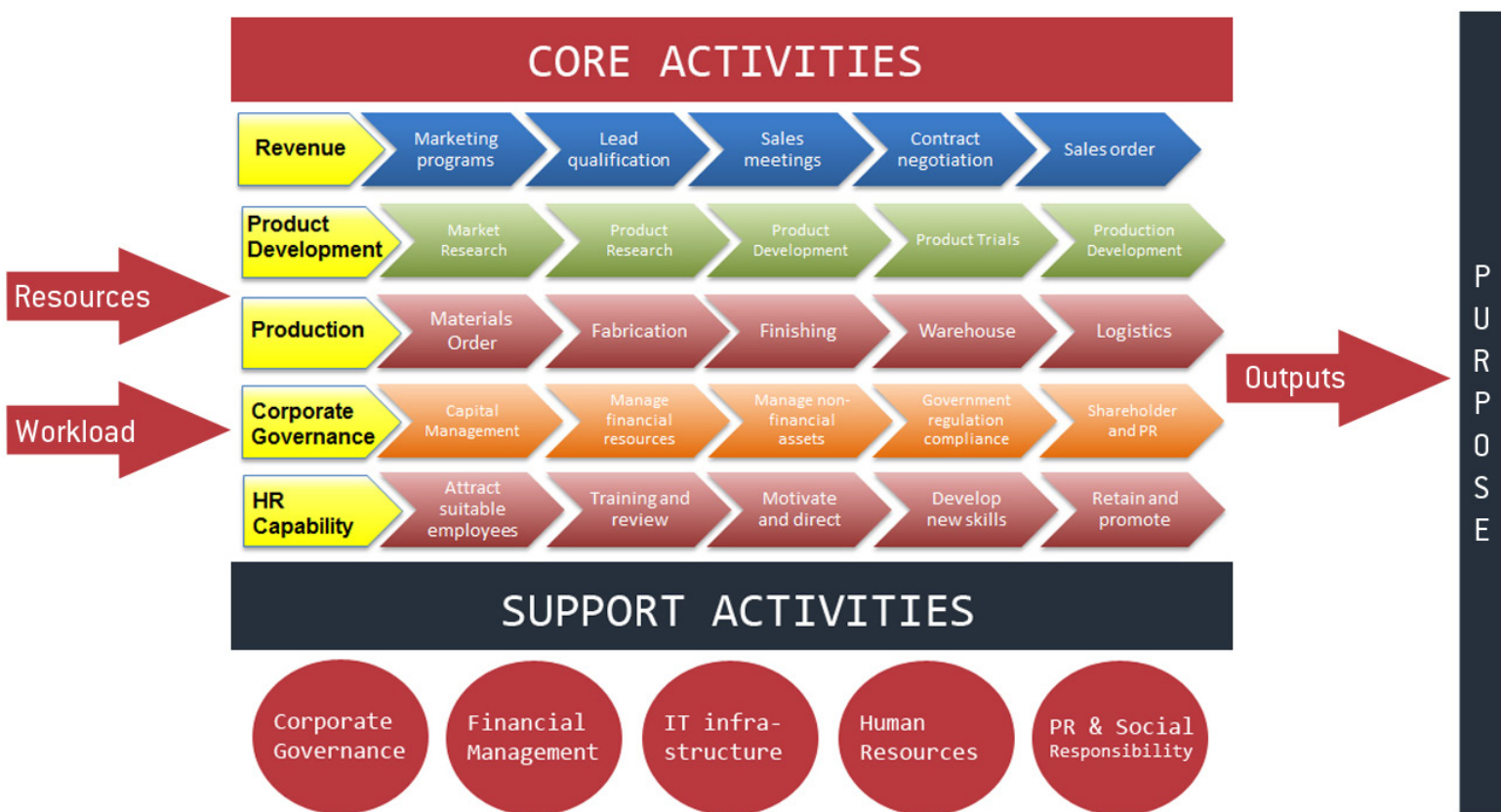
1.3 Planning Basics

In developing a better planning model and process, organisations must first return to the fundamentals of business planning. This starts out by realising that there are only three things management can control:

- The arrangement of business processes (sales, production, customer service, ...)
- The resources (money, people, assets) applied to those business processes
- The volume and quality of work carried out within those business processes

In looking at business processes, these can be split into:

- **'Core processes'** that typically consist of linked activities that directly relate to generating revenue; delivering products/services; supporting customers; and developing new products/services.
- **'Support processes'** such as those conducted by HR, IT, Finance, etc., who purpose is to ensure the smooth running of the organisation's core processes.



Throughout these different activities, outputs will be generated which eventually lead to products and services supplied to customers. It is hoped by senior management that these final outputs will be sufficient to achieve the organisation's purpose.

As a consequence, the role of planning is to help manage what can be controlled (business processes, resources, and workload) to produce outputs that will achieve organisational objectives, within an uncontrollable and unknowable external environment.





Planning environment

1.4 Data-driven planning

This paper has the title 'Data Driven Planning', and so before going any further we would like to define what this means and how it differs from the way planning is traditionally conducted.

As mentioned in the introduction, planning is often carried out according to a management calendar. Long-range and resource planning tends to take place on an annual basis, forecasting tends to be quarterly, while reporting is monthly driven. This timetable of planning events was established back in the 1920's where James McKinsey described budgeting as a way of setting standards of performance and a means of coordinating activities between departments. There's nothing wrong with this concept of planning, but today's business environment is very different from that of 100 years ago.

With the advent of the Internet and ecommerce, physical boundaries have been removed making it relatively easy for competitors to enter new markets with new products in a fraction of the time it took in the past. Consumers now have a 24/7 buying experience where the world is brought into their home with a few mouse clicks. Companies are able to tailor products for individual needs rather than the mass marketing of generic products found in the last century, all of which puts pressure on manufacturing and those that provide raw materials.

As if this wasn't enough, social networks and communities such as Facebook, Twitter, Tumblr and LinkedIn are able to exert significant influence over customer purchasing habits based on a range of non-product factors, such as social responsibility and fast changing fashion. These factors have combined to create a business environment that is complex and fast moving, which in turn has caused a rapid decrease in the time horizon that can be predicted with accuracy.

Because of this, traditional planning processes driven by a date on a calendar have become unsuitable for most organisational needs. Instead, planning now needs to be driven by activities, events and exceptions where just the affected parts of an organisation are involved. To support this view of planning requires data – both internal and external to the organisation – that is then used to drive planning or review processes with the aim of taking advantage (or negating the impact) of unexpected situations.

This is what this paper calls 'data driven planning'. An approach that covers all aspects of planning (strategic, tactical, financial, operational, etc), and that binds the whole organisation together with a focus on achieving strategic objectives.





Key Data Driven Business Models

2. Key Data Driven Business Models

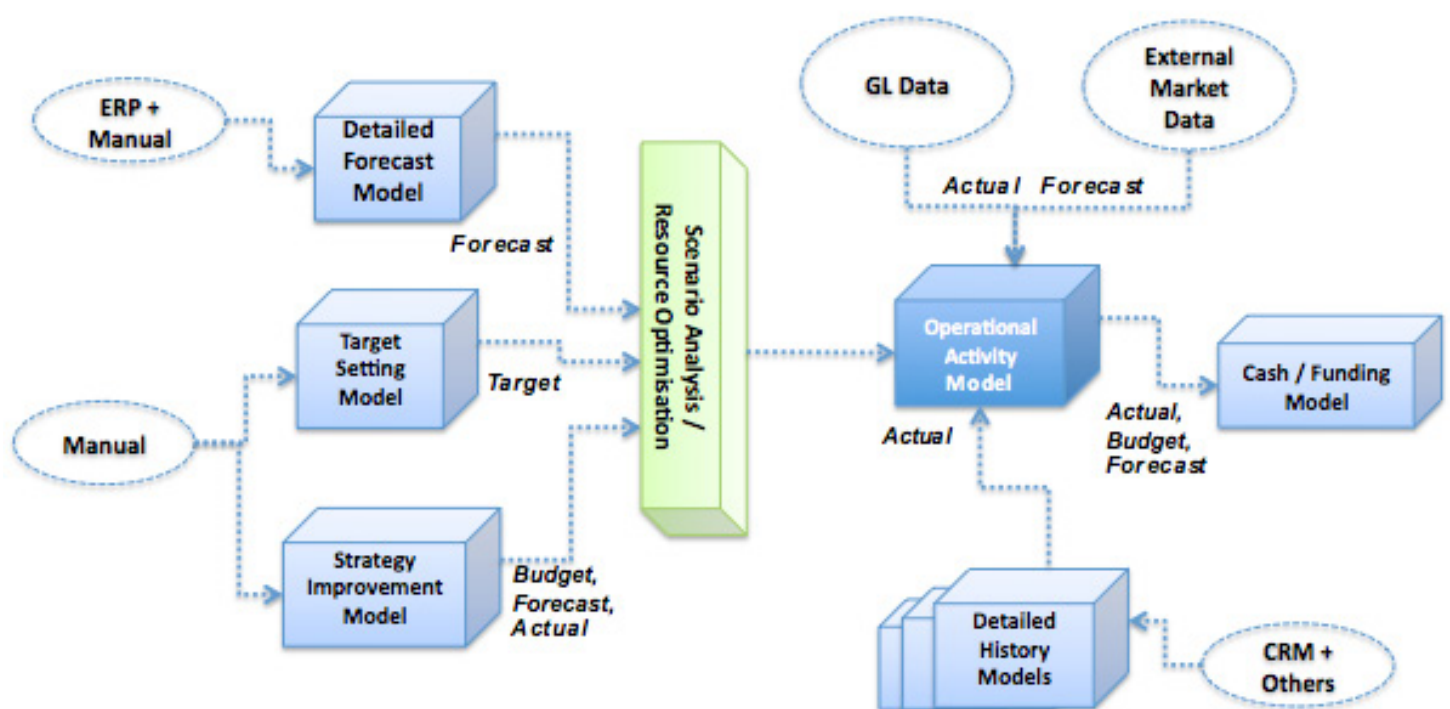
2.1 Overview

As discussed earlier, business processes are central to managing performance. From a planning and review perspective, there are 7 key things that management needs to know, each of which can be assessed in a range of analytical models:

- How efficient and effective are the organisation's business processes? (Operational Activity Model)
- What trends are 'hidden' in the detail? (Detailed History Model)
- What long-range targets should be set given where the market is heading? (Target Setting Model)
- Where is the organisation heading if it continues with its current business model? (Detailed Forecast Model)
- What could be done differently to better meet long-range targets and how much would it cost? (Strategy Improvement Model)
- What choices/risks do management face and what would be the impact on corporate goals? (Scenario / Optimization Model)
- How much funding is required to implement the plan and where will it come from? (Cash / Funding Model)

The models that answer each of these questions have different content, structures and are used by different people at different times. However none can be omitted or ignored, and all need to operate as a single, data-driven management system.

From a planning systems point of view, this network of models can be visualized as follows:



As can be seen, these models are fed with data from internal systems such as the general ledger, and from external sources such as market information, along with data supplied by end-users. Whether these models are separate entities will depend on the size and complexity of the organisation. Some may be combined, while others may need additional supporting models to enable them to function effectively. For now we will consider them to be separate but linked models, which from a user view operate as a single system.

For the remainder of this section we will go through each model in turn and explain its purpose and how it operates.





Key Data Driven Business Models

2.2 Operational Activity Model (OAM)

The Operating Activity Model (OAM) is central to organisational planning that, as the name suggests, has a departmental activity focus. Its purpose is to monitor business processes with a range of measures that allows management to evaluate their efficiency and effectiveness.

In particular it can be used to:

- Compare and contrast resources, workload and outputs both now and in the past
- Assign budgets for 'business as usual', i.e. assuming that there are no strategic initiatives

The model holds different versions of data, some of which flows from the other planning models. These versions include:

- Target – contains the high-level goals set during the strategic planning process
- Budget – contains the allocation of resources for the current year/period.
- Forecast – contains the latest 'best estimate' of future performance for the next couple of months
- Actual – contains past results

The model is multi-dimensional in nature and uses 'attributes' that allow measures to be assigned to specific business process activities and that categorizes them as being:

- **An Objective** – these define what the organisation is trying to achieve in the long-term;
- **A Business Process Goal** – these measure the success of the organisation's core business processes and support activities that directly lead to the achievement of objectives;
- **An Assumption** - these monitor key assumptions made about the prevailing and forecast business environment that relate to the value set for the Business Process Goals;
- **A Work measure** – these describe the volume (and sometimes the quality) of work performed by a particular department. e.g. the number of mailings sent out by the marketing department as part of its lead generation process;
- **An Outcome measure** – these measure what an activity should directly achieve, e.g. the number of people that respond to a mailing;
- **A Resource measure** – these track expenditure that flows out of the organisation.

By using these attributes, the model is able to display data by department but in relation to activity, outcome and resources used. Next are examples of the types of report that can be produced.

		Actual	Budget	Var	KPI	Last Year	Var	KPI
CORPORATE OBJECTIVES								
Return on Equity		-0.12	0.04	-308%	✗	-0.10	23%	👉
Shareholders Equity		2,500,000	2,500,000	100%	✓	2,089,000	120%	👉
Market Leadership		4	4	100%	✓	5	80%	👉
Total Cost		290078	272350	213%	✗	243333	238%	👉
BUSINESS PROCESSES								
Sales	Sales revenue	287,013	273,346	105%	✓	232,344	124%	👉
	Sales Revenue Growth	124%	118%	105%	✓	120%	103%	👉
	No. customers	742	707	105%	✓	600	124%	👉
	Total Cost	70,109	64,559	109%	✗	61,323	114%	👉
Production	Production cost as % sales	56%	56%	300%	✓	56%	300%	👉
	Total Cost	187,366	177,646	213%	✗	153,409	238%	👉
Customer Service	Customer retention rate	83%	83%	100%	🟡	83%	100%	👉
	Total Cost	9,345	8,625	108%	✗	8,180	114%	👉
Product Development	Revenue from new products	34,438	32,802	105%	✓	27,877	124%	👉
	Total Cost	7,022	6,554	107%	✗	6,206	113%	👉
IT	No. orders through website	5,229	4,974	105%	✓	4,227	124%	👉
	Total Cost	7,493	6,908	108%	✗	6,561	114%	👉
HR	Staff turnover rate	1%	2%	50%	✓	2%	50%	👉
	Total Cost	3,747	3,454	108%	✗	3,281	114%	👉
Finance	Debtor days	25	24	104%	🟡	20	125%	👉
	Total Cost	4,996	4,605	108%	✗	4,374	114%	👉





Key Data Driven Business Models

The first report shows the corporate objectives and business process goals for a selected period. This contains a mixture of outcome, work and resource measures for both the budget and actual performance, as well as for last year. Icon indicators are used to display whether results are getting 'better' or 'worse' than target.

The next report shows outcome, work and resource measures for a selected department. As with the last report, actual performance is contrasted with budget, while the end of year forecast is compared to the annual target. From this management can assess the relationship between workload and outcomes to judge whether the focus is on the right activities.

Department Operational Support		Standard Calendar Split Year 2014						Currency euro						
	May							Dec						
	Actual	Budget	Var	KPI	Last Year	Var	KPI	Forecast	Target	Var	KPI	Last Year	Var	KPI
Outcome Measures														
No. errors reported	15		∞	✖	11	136%	↗			NaN	NaN	29	0%	↗
Staff satisfaction rating	98	98	100%	✔	98	100%	↗	98	99	99%	♦	97	101%	↗
No. senior positions vacant	15		∞	✖	11	136%	↗	38	20	190%	✖	29	131%	↗
Workload Measures														
No. pages updated	347	329	105%	✔	280	124%	↗	867	900	96%	♦	721	120%	↗
No. staff reviewed	98	100	98%	♦	89	110%	↗	234	250	94%	✖	222	105%	↗
No. staff training days	694	658	105%	✔	560	124%	↗	1,734	1,800	96%	♦	1,442	120%	↗
No invoices processed	8,696	8,277	105%	✔	7,033	124%	↗	21,749	22,000	99%	♦	18,073	120%	↗
No. customer investigations	241	231	104%	✔	194	124%	↗	606	600	101%	✔	500	121%	↗
Resource Measures														
Salaries & wages	14,810	13,650	109%	✖	12,968	114%	↗	35,872	36,600	98%	✔	31,122	115%	↗
Bonuses	239	221	108%	✖	210	114%	↗	580	600	97%	✔	504	115%	↗
Rent	454	419	108%	✖	398	114%	↗	1,101	1,120	98%	✔	955	115%	↗
Utilities	134	124	108%	✖	117	114%	↗	324	340	95%	✔	281	116%	↗
Telephone	134	124	108%	✖	117	114%	↗	324	340	95%	✔	281	116%	↗
Insurance	246	228	108%	✖	216	114%	↗	597	605	99%	✔	518	115%	↗
Office supplies	162	150	108%	✖	142	114%	↗	392	390	100%	♦	340	115%	↗
Other goods and services	56	52	108%	✖	49	113%	↗	136	130	104%	♦	119	114%	↗
Total operating expenses	16236	14966	108%	✖	14216	114%	↗	39,328	40,125	98%	✔	34,119	115%	↗

By using attributes as a filter, the above report is able to automatically display the appropriate measures as they apply to the selected department.

These two reports just touch the surface of what can be displayed from the OAM. Interestingly, most organisations have much of this data already, although it is typically shown in separate budgeting and scorecard/dashboard reports, without making a connection between them. When treated in this way, the data can't be used to model organisational value and so much of its worth is lost.





Key Data Driven Business Models

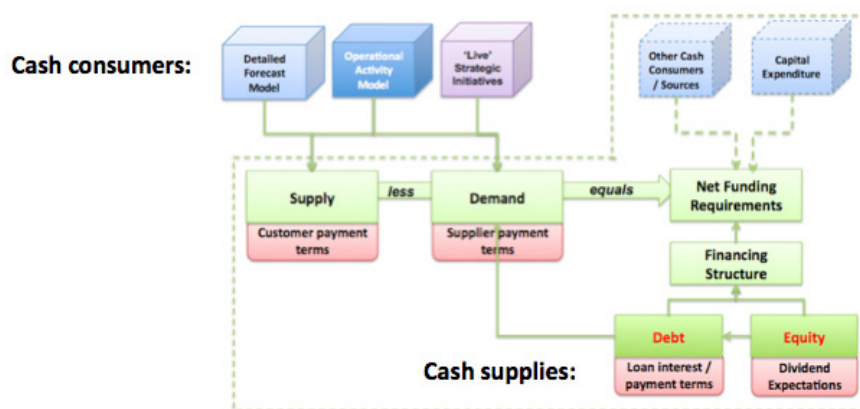
2.3 Cash / Funding Model (CFM)

The purpose of the cash/funding model (CFM) is to assess the organisation's need for financial resources. Some of those resources will be used to support operating expenses, and others will be required for capital investment or strategic initiatives. This model is linked to the operational activity model (OAM) that contains budgets and forecasts in order to predict future cash flows. It then goes on to help management assess the best source for any cash shortfalls.

Although it is true that most internal financial systems hold data relating to the flow of cash, what they do not allow is for management to model the data from a planning point of view. For example:

- to see a revised cash flow based on new supplier credit terms or a change to customer payment profiles;
- to consider the cost of funding an increase in production capacity to meet the projected demand for new products; or
- to assess the impact on resources by outsourcing a particular function.

Similarly, financial systems do not hold the key assumptions that affect cash flow. For instance, inflation has a major impact on cash resources, yet the underlying data supporting any inflation assumptions is not contained within those systems. Modelling cash flows and balances require different sets of information, as shown below:



The dotted line indicates information stored within the CFM, while the bold lines indicate the data flows from other models in the planning framework. Data held can be summarised as follows:

Customer and supplier payment terms. The CFM contains details about each major supplier and customer where the cash flow effect is to be calculated. Depending on how payment terms are defined (for example, in weeks or months), the time intervals in this model may be at a shorter increment than that of the OAM.

Cash supply. Cash is modelled for budgets and forecasts. The supply side of cash is taken from the OAM where the level of detail allows individual supplier or customer movements to be identified so they can match up with the appropriate customer details.

Cash demand. Similarly, the demand side for cash is also taken from the OAM and takes into account all operational expenses, which for a manufacturer would include the supply of raw materials and manufacturing costs. It also includes any cash flows that arise in relation to capital expenditure. As with supply, these outflows are at a level where they can be linked to the payment profiles held within the CFM.

Net funding requirements. Rules within the CFM are used to 'time-shift' the imported cash supply and demand data into the time periods in which cash will flow in and out of the organisation's treasury bank account(s). To this, other cash consumers and income streams not covered are added. This may include items such as interest payments and dividend accruals. These details are entered directly into the CFM. By subtracting the demand for cash from the supply, management can review the financial resources required.

To address any cash shortfall, or to reduce the amount of borrowings, budget and forecast data within the OAM can be reassessed to see which activities could be changed. The model also allows management to gauge the impact of changing customer and supplier payment terms. Assuming this has been done, the model can now be used to assess how any cash shortfall should be financed with the two obvious financing sources being debt and equity.

When reporting actual results, much of the data within the cash flow model will be loaded directly from the underlying transaction systems, so there is little need for modelling other than to produce a comparison between budget and forecast versions.



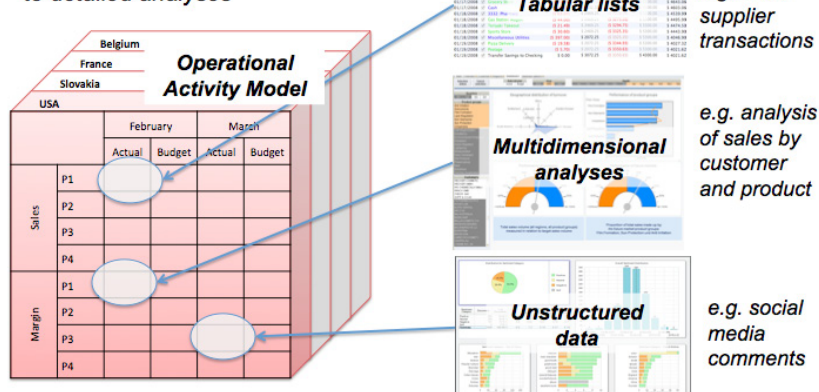


Key Data Driven Business Models

2.4 Detailed History Model (DHM)

The role of the Detailed History Model (DHM) is to back up the OAM when comparing actual results with budget. The DHM has a much lower level of detail than the OAM and supports investigations into past performance. This will almost certainly include income and resources, as these will be made up of transactions held within the general ledger. Some of the workload and outcome measures may also have further details, which can be used to analyse business process activity.

Summary actual data linked to detailed analyses



There is likely to be more than one DHM, with each focusing on a specific area of performance such as revenue or production costs. However, it is not desirable to create DHMs for every measure, as this could distract management from what is important. Instead, DHMs should be created for those measures whose values play a significant part in either directly resourcing or monitoring a business process.

When defining a DHM, the question should be asked, 'What information do I need in order to understand the actual results being presented in the OAM?' The answer determines the level of detail, the analyses that are required, and the type of history model that will meet those needs.

DHM's can be of different model types that include:

Transaction data set. These are tables of data that can be queried and summarised. An example of this type could contain the general ledger transactions behind each account code. These would be loaded from the General Ledger (GL) on a regular basis and could consist of date, department, account code, supplier, and amount. Capabilities within the DHM would summarise this data by department, month, and account codes that are then fed into the appropriate place within the OAM.

The DHM could then be used to support expense queries. For example, from a variance in the travel budget, a user would be able to drill down into the supporting DHM to see the transactions that made up the actual result. They could then issue another query that extracts transactions for a prior month to see if any expenses had been held over and hence had caused this month's variance.

As with the other types of DHM, the ease of use and capabilities provided to an end user will depend on the technology solution being used. As a minimum, this type of DHM should support the following examples:

- Filters. E.g. list all transactions making up a particular account code.
- Summaries. E.g. total all transactions for a particular account code and over a selected period.
- Sorting and ranking. E.g. show the top 10 departments as ranked by travel expenditure.

Multi-dimensional model. This type of DHM allows users to produce cross-tabular analyses. Data is stored and referred to by its business dimensions. Users then have free access to the way in which data is presented, which can incorporate charts, additional calculations, and colour-coded exceptions. Examples of this type of model include sales analyses that could include types of customers, products sold, discounts provided, returns, and shipping costs.

Unlike the transaction data set, a multi-dimensional model is able to provide the following:

- Multiple views of the data. E.g. show sales revenue by product and customer, customer profitability, returns by product and location.
- Trends. E.g. calculate a rolling 12-month average and show this by month for the current year versus last year.
- Exceptions. E.g. show all customers whose year-on-year growth has been negative.

Unstructured data model. This final type of model provides support for non-numeric data, such as notes, news reports, social media discussions, and competitor product videos. By linking these into the OAM, qualitative information can be provided that can make a substantial difference in the way results are perceived.

For all the DHM types shown above, a security system is required that will automatically filter out data that the user is not allowed to see.



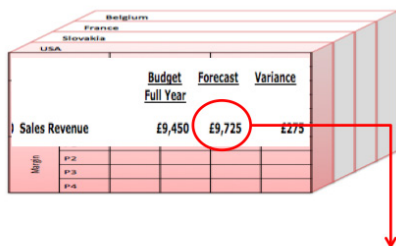


Key Data Driven Business Models

2.5 Detailed Forecast Model (DFM)

Detailed Forecast Models (DFM) are typically used in conjunction with the OAM to collect forecasts that operational managers believe they will achieve in the short term. This can include a range of measures including workload, outcomes, and resources.

Although the OAM can collect forecasts at a summary level, there are measures that benefit from having this at a more detailed level. For example, revenue for a manufacturer can come from a range of customers and products, each of which has their individual profitability profile. As a result, the product mix can have huge implications on total revenue and costs. Therefore, to predict profitability with any degree of accuracy requires detailed knowledge of what is being sold, its volume, and to whom.



DATE	REGION	SALES EXEC	COMPANY	TYPE	PRODUCT	VALUE	DUE DATE	CHANCE	NOTES
23-Jun-14	US	D Rodney	Tango Solutions	Prospect	Custom pens	£2,340	Oct-14	90%	In final negotiations on price and delivery
28-Jun-14	Asia	K Choi	Bethesda Inc	Customer	Flip charts	£1,460	Oct-14	70%	Had 2 visits - looking good
29-Jun-14	Asia	K Choi	James & Sons	Prospect	Stationery	£1,450	Nov-14	60%	Initial call completed
02-Jul-14	Europe	G Jones	Smith & Co	Prospect	Pens	£1,320	Nov-14	85%	Final presentation next week
05-Jul-14	US	T Griffiths	Hanks Industries	Prospect	Stationery	£1,210	Nov-14	70%	Had 2 meetings so far
07-Jul-14	US	D Rodney	Endis Inc	Customer	Stationery	£870	Dec-14	45%	Initial call completed - stiff competition
09-Jul-14	Europe	G Jones	Smithfields	Prospect	Flip charts	£540	Dec-14	65%	Follow up meeting due next week
11-Jul-14	US	D Boake	Challenge Inc	Prospect	Pencils	£335	Dec-14	75%	Proposal to be submitted
						£9,725			

Similarly, sales of high value items or those that relate to a project are often dependent on timing. In these cases the sales process may be long and when the business is won, the resultant impact on costs and revenues in a particular time period can be significant. Without knowledge of the detail, it is easy to jump to the conclusion that an over or underperformance is exceptional rather than expected. For this reason, collecting information concerning the sales order pipeline and using this to populate the sales forecast not only improves accuracy, but also provides insight should any variances occur.

As with DHMs, different measures can have a wide range of supporting detail and so there are likely to be multiple forecast models where each has a focus on a particular measure. Again, not every measure warrants its own forecast model. Ideally, they are only created for measures where the underlying mix of detailed transactions can have a large impact on results when compared to plan.

DFMs will typically hold just a forecast version of data, as actual results will be held in the detailed history model. (Remember, we are using the word model in a logical sense; the actual implementation may combine these into one physical model.) For some measures, data may exist in another system (for example, many companies use Salesforce.com to collect sales information). If this is so, then the DFM may simply be a place where the latest data is stored that is then cleared out and repopulated each period. Alternatively, the DFM may be a system in its own right that is used to hold and track forecasts.

DFM's can hold a range of data, not all of which is numeric. For example sales forecasts may include the following fields:

- Date that the sales forecast was entered.
- Region responsible for the sale and where any revenue will be credited.
- Sales executive involved.
- Company being sold to.
- Sales type (for example, whether the sale is to an existing customer or a new prospect).
- Product(s) being sold.
- Value of the order.
- Date contract is due to be signed and revenues recognised in the P&L summary.
- Percent chance of the deal going ahead.
- Any notes to describe the current situation.

As with DHM's, data within a DFM can sorted, summarised and reported. For example, show all sales due in the next three months ranked by the percentage chance of them being signed. This enables management to look in detail at a forecast so they can form their own opinion as to what could happen and to take remedial action should they fall short of what is expected.

As an option, a sales DFM could apply the per cent chance measure to the value of each sales situation to produce a modified forecast value within the OAM, or the OAM could contain two measures—one holding a value that assumes all sales opportunities will materialise as held, and the other using the per cent chance. This provides a range of values that could be used to assess future performance.

It is also worth storing prior forecast versions so that over time, a picture can be built up on the reliability of forecasts. For example, which sales people are able to forecast with an accuracy of 5 per cent three months in advance? Which measures produce the most variability when viewed six months in advance?

Knowing how trustworthy a forecast is can help determine which measures need regular inspection and the level of caution required when making decisions based on them. Also, if managers are aware that forecasts are being monitored closely, then they are more likely to pay attention to the values they submit, which in turn are more likely to be trusted.





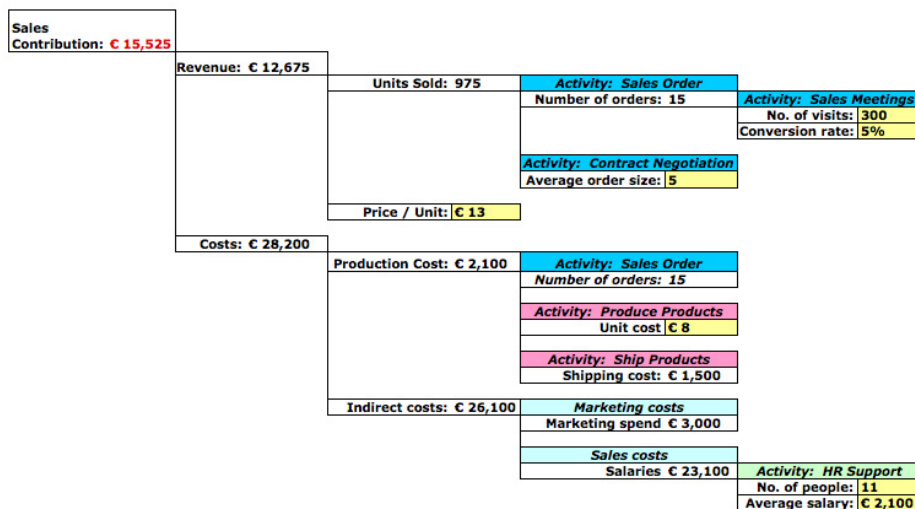
Key Data Driven Business Models

2.6 Target Setting Model (TSM)

The Target Setting Model (TSM) is a mathematical model that allows management to simulate different business environments as well as the way in which it conducts its business processes. Its purpose is to generate target values that will challenge the organisation as to what its performance could be in the future.

The TSM typically relates the outcomes of organisational business processes (for example, products made, new customers acquired, and customers supported) to long-term objectives and resources. In many ways, it is similar to the OAM, except its rules are used to generate targets from a range of base data. This is also known as driver-based modelling. In effect, there are a few independent variables, such as forecasted unit sales volume, which are driven by dependent variables (e.g. price, material unit cost), which are based on assumptions about the business environment (e.g. market size and growth).

Measures for these models can be selected by taking long-range targets and determining what drives their value. The answers to these are then subject to the same question and so on until a base 'driver' is encountered, i.e. a measure whose value determines the targets it supports. More sophisticated models recognise constraints, such as production volumes, the impact of discounts, late delivery penalties, or that more staff will be needed at certain levels of sales. They also recognise that there is nearly always a time lag between the driver and the result it creates.



Sample relationship map on what drives sales growth. Measures on the right-hand side are drivers.

It should also be noted that these models only work for those measures that can be directly related to drivers, such as costs and revenues. Other data, such as overheads, will still need to be included to produce a full P&L summary.

Because of their simplistic nature, driver-based models are not able to take into account unpredictable external influences, such as the unexpected market growth or changes in government legislation that impact taxes.

This is where versions come into play. To see the impact of uncontrollable influences, the TSM is set up to hold a variety of scenarios where management can re-run the calculations with different driver values that simulate changing assumptions.

For example, the model can be run with different sales conversion rates or unit costs, each of which will generate a new version of the P&L summary. These can then be displayed side-by-side so management can see the impact of each change.

The aim in doing this is to allow a range of options to be evaluated concerning the future. These options will revolve around business drivers, which, if based on business process outcomes, will cause management to rethink how these are conducted and what could be improved. The end result of the TSM is a scenario that management believes will give them the best outcomes for the available resources. These values are then used to set top-down targets within the OAM that can be referenced by individual departments during the budget process.



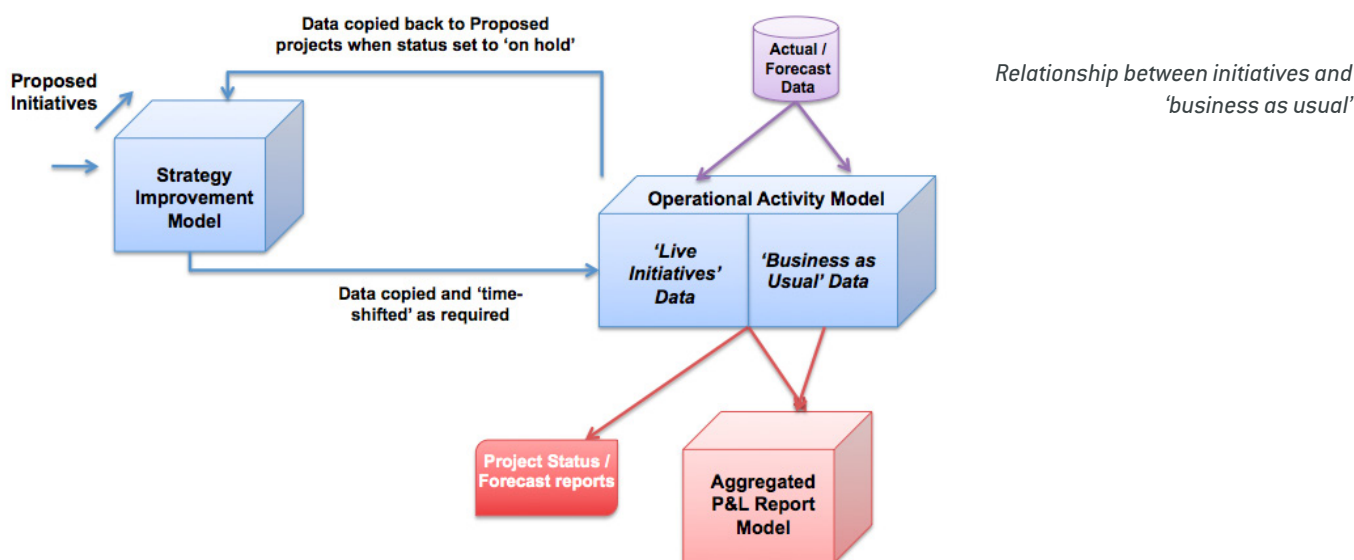


Key Data Driven Business Models

2.7 Strategy Improvement Model (SIM)

The Strategy Improvement Model (SIM) is used to evaluate how the current performance of an organisation as forecast in the OAM ('business as usual') can be transformed into one that supports the targets set by the TSM. The model allows managers to propose initiatives that can then be assessed, approved or rejected for implementation. Initiatives could involve improvements to current operations, such as replacing old machinery, or something entirely new, such as developing a new range of services or entering new geographic markets. In both cases, initiatives typically represent a set of activities that are not part of current business processes.

From a logical point of view, the SIM consists of two sets of data linked to the OAM where 'business as usual' is kept.



The first part of the model is where managers propose initiatives that are linked to business process goals, departmental structures, and resource. Here initiatives can be reviewed, assessed, and gain approval.

When an approved initiative becomes 'live', its set of activities and associated data are transferred into the OAM, where it is kept separate from existing operational data. However, the OAM allows the accumulation of resources and other measures to give a total 'business as usual' plus 'strategic initiatives' position.

This is achieved by defining a new dimension in the OAM for strategy, which is made up of the following members:

Total strategy. This is a consolidation member that accumulates 'business as usual' data with 'total initiatives' data.

- Business as usual. This member contains all of the data for current business processes, but without applying any strategic initiatives.
- Total initiatives. This is a consolidation member that contains the accumulation of data from its members; that is, the individual initiatives.
 - Initiative 1. This contains the data for a selected initiative as transferred from the SIM.
 - Initiative 2. This contains the data for a second selected initiative, and so on.

Keeping initiatives separate allows them to be monitored individually so management can keep a watchful eye on their implementation and resource usage versus expected benefits. Too often, initiatives are assumed to be responsible for an improvement in performance when no attempt has ever been made to actually measure whether this was true or whether the costs involved were worthwhile.

Linking the SIM to the OAM helps organisations to:

- Accurately define 'business as usual' (or baseline) performance of the current organisational business processes.
- Capture plan versus actual cost of strategy implementation and the benefits being realised.
- Provide a transparent way of assessing priorities in the areas where performance improvement is most needed.
- Avoid vague claims or estimates for initiatives, as the SIM requires clarity.

As time passes, it should be possible to re-plan, suspend, delete, or select new initiatives as required. Should an initiative be suspended, it can be moved back to the SIM until required at a later date.





Planning Technologies

2.8 Scenario / Optimization Model (SOM)

The last model in the planning framework is associated with Risk Management and enables managers to assess the impact of unexpected change and how it impacts corporate goals. In the book 'Best Practices in Planning and Performance Management', author David Axson comments that "Planning is not about developing a singular view of the future: one of the most valuable elements of any planning activity is the ability to factor in the impact of risk on assumptions, initiatives and targeted results." He went on to say "A scenario is a story that describes a possible future. It identifies significant events, the main actors and their motivations, and it conveys how the world functions." As with DHM and DFMs, there may be more than one SOM. For example, when balancing manufacturing costs with sales forecasts, some organisation's employ sophisticated production models that determine which machines should produce which products and as a result what materials need to be ordered.

Similarly, when looking at the impact of a rise in commodity prices, it would be beneficial to assess a range of price values and to then compare the cost outcomes that these would generate. From this management can then decide on how they would respond. For example they may want to evaluate changing the current business structure or implement a new initiative.

The aim of the SOM is to allow management to 'play' around with different scenarios, each of which is documented as to the assumptions made about the future business environment and the change that could be made in response. These are the presented back as a 'side-by-side' comparison from which decisions on the value set by the TSM can be evaluated, or what adjustments may be required to the current budget in order to keep the original plan on track.

3. Planning Technologies

For the models described in this paper to work effectively, some form of planning technology will be required. For most organisations that technology today is the spreadsheet.

3.1 The Spreadsheet Dilemma

Spreadsheets have been the dominant tool within organisations for planning, forecasting and management reporting for the past 20 years. And despite the availability of systems aimed at finance, Gartner estimate that around 50% of large and 75% of mid-size organisations still use spreadsheets for enterprise planning and reporting.

This is due to a number of reasons including their relatively low cost of deployment - everyone has access to a spreadsheet; simplicity in setup and use - most accountants know how to use a spreadsheet without the need for specialist training; and because of their extensive reporting and analysis capabilities. But as an organisation grows in both users and information requirements, those same spreadsheets systems quickly turn into a liability and a major source of concern. The limitations of a spreadsheet are well known and are due to their fundamental design, which can be summarized as the following basic issues:

Single User

'Single user' means that only one person can update the contents of a spreadsheet file at a time. That's not a problem for personal use, but when used as an enterprise application where data is to be collected and consolidated from across the organisation, this presents a major problem. To get round this limitation, spreadsheets are typically split into multiple files so that users are provided with just their portion of the data for updating. But even with small organisations the number of spreadsheets can rapidly increase to 10s or even 100s of files.

This proliferation of files now causes its own maintenance and control issues. For example, if someone is given a spreadsheet to fill in their budget or forecast, there is no control that the version they send back is the latest one, and that it has the same contents as the one they currently possess.

To consolidate answers from multiple spreadsheets requires 'links' to those other sheets to get the 'latest' data. But if that latest data is not actually the latest data held by managers, then the integrity of the consolidated result is always in question. Similarly, if a revised sheet is issued with new rules/accounts – there is no way to ensure that it will be used. For these reasons version control becomes an unmanageable nightmare.





Planning Technologies

Lack of workflow capabilities

Most planning applications require a distinct set of operations to be carried out in a set order. For example, there is no point planning raw materials until after the sales forecast has been entered and approved. When a budget or forecast has been submitted then it shouldn't be changed until the next round of planning. Likewise, data on current actual spend should be loaded before departments are asked to review and forecast their spend in future periods.

The order in which things take place needs to be carefully controlled and orchestrated so that everyone knows what they need to do and when. And those overseeing the process need to know what the status is and where there may be 'bottlenecks' that are holding up others in the planning process. None of these capabilities exist within a spreadsheet-based system.

Cell meaning

All data held in a spreadsheet is typically referenced by an intersection of row, column and sheet. A particular cell reference 'C23' has no particular meaning - it is only by applying rules or macros that the content of any cell takes on its meaning. It is true that Excel has the capability to define range names, but as this facility involves a high degree of maintenance and can't be used to track how Excel calculates a particular value, they are rarely used.

Cell references are fine when the system is dealing with a relatively simple analysis, such as displaying the P&L for a single company for one year. But when the data has to deal with multiple companies, with multiple versions (actual, budget, forecast) over multiple years, with a mixture of Balance Sheet, P&L and statistical accounts, then controlling the meaning of a particular cell and the way it should be treated within a calculation becomes increasingly difficult.

For example, creating a variance or adding up accounts over time, needs knowledge about the account type in order to create the correct formula. Balance Sheet accounts can't be accumulated over time; creating a budget/actual variance with P&L accounts isn't a simple subtraction, as the rules need to take into account whether the account is a debit or credit. Copying formula between measurement types is bound to give the wrong answer so it's not even safe to 'drag' formulae between rows and columns!

And if a new row/column is inserted to cope with a new service/product line, there is a real danger that the existing rule logic will be compromised. If the administrator is lucky, then the spreadsheet will return a #VALUE error message to inform that there is an issue. If unlucky, then the error will go undetected until a crucial decision is taken and the error becomes apparent.

Limited Business View

Spreadsheets only hold one view of the data, unless that data is duplicated via cell links. This view is fixed by determining what the rows and columns represent. For example columns may be set up as time, with accounts displayed as rows, and the different sheets representing departments. Of course dimensions can be mixed such as displaying actual and budget values within a particular time period as columns.

The way a spreadsheet is laid out only gives one view of the business, for example, the budget is typically entered and reported with columns representing each period of next year. But if a different view is required, for example to report actual results, then that view will require just one of those budget periods (the 'current' period) where it is then compared with actual or forecast results. Of course things are never simple as the period that is picked up will change each month and so any cell references to the original budget figures will also have to change.

If an analysis is required by market sector or product, then more spreadsheets will need to be created where row and columns represent different items. This also will involve either duplicating the content or creating a large number of error-prone cell links to switch the data around.

Finally, as no organisation is static, this network of interconnected sheets will then have to be updated for new departments/products, or changes to the business structure, without impacting integrity.

As mentioned earlier, these limitations are caused by the fundamental architecture of a spreadsheet and are the direct cause of a number of major issues when used for enterprise planning and reporting. Issues that will lead to wrong results, many of which will go undetected.





Planning Technologies

3.2 Enterprise Systems: The Alternative to Spreadsheets

Specialist enterprise planning and reporting systems have been available for many years. They were developed specifically to overcome the limitations of spreadsheets and possess a number of common capabilities:

Multi-dimensional

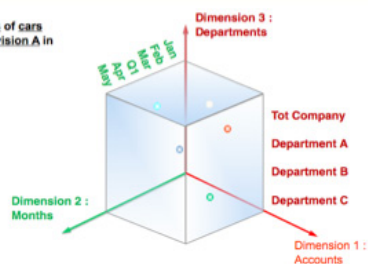
Modern planning systems are set up in terms of the business dimensions in which they operate. This will include:

- Organisation structure;
- Accounts used to hold budget values and report actual results;
- Time periods for which data is to be reported – e.g. weekly, monthly, season;
- Versions of data to be held e.g. actual, budget, forecast;
- Line of business or major product grouping, etc.

it is the intersection of these 'dimensions' that define a particular value – for example, actual sales of product A by department north, in July 2014. each underlined item is a member of a business dimension.

Models are created by defining individual business dimensions and members.

Actual sales of cars made by Division A in June 2012



Business rules use dimension / member names

Data can be presented / analysed in different ways depending on the 'slice' of the cube chosen.

Characteristics of a multi-dimensional database

When it comes to reporting, the user simply states which dimension[s] are to form the column, row and 'off grid' member. For example, a report can be set up to show actual vs budget for each month as columns; the accounts making up the P&L as rows, and the 'off-grid' member coming from the department dimension, which means the report will display each department on a new page.

As well as providing fixed reports, multi-dimensional systems can be set up to allow some users to swap the rows and columns in the same way as in Excel pivot tables. This enables them to view performance from a range of business perspectives but without having to duplicate the data or ask for new reports to be developed.

Business hierarchies

Dimension members can be arranged as one of more hierarchies. For example, the total company member can be defined as the aggregation of 4 divisions, which themselves can be defined as the aggregation of other departments. These hierarchies can then be used to consolidate data from those entities at the bottom of the structure to give intermediate consolidated results.

Some of the more advanced systems can also store multiple hierarchies to hold, for example, this year and last year's organisation structure. This then enables results from last year to be consolidated according to this year's structure while still preserving results in last year's format.

Named-based rules

Calculation rules are defined using the member name. This typically happens on the accounts dimension where they can be used to create ratios. Rules can also access members in other dimensions and at different hierarchy levels so allowing the creation of allocations that span multiple structures. What makes these rules different from a spreadsheet is that each rule uses specific member names, so users and administrators alike easily understand what is being calculated. It also means that as new members are added, existing rules don't change and the integrity of results is preserved.

Multi-user, role based security

Enterprise systems recognize that multiple people will be accessing them, each with different roles and responsibilities. As a user identifies them self, the system automatically controls access to the data they are allowed to see and features they can use.





Planning Technologies

Unlimited size

Today's systems have limits that are way greater than those found in a spreadsheet. It means that the design of the system need not be limited by the technology, although performance may be compromised if they are allowed to become too large.

Integrated reporting

These systems usually have their own reporting capabilities that make it easy for users to define reports and analyses. These reports can be 'fixed' so that report data is always for the same department, time, version, etc., or they can be dynamic in that the user can select the appropriate department, month, etc., with the report then returning that selection of data. This selection is sometimes accomplished through 'keywords' that are used for all reports. For example, setting the keyword 'current month' to June will then cause June to be selected in all reports but without user or administrator intervention.

Similarly, when viewing time, the content of the report can also have 'relative references', e.g. the user (or keyword) can set the current month as 'June' with the report showing the columns 'current month', 'current month +1', 'current month +2'. In this case the report would now show June, July and August.

Finally, users like spreadsheets. They like its formatting, charting and note making capabilities. Because of this most planning systems allow direct access from a spreadsheet through specific functions, where the data can then be enhanced through formatting, additional calculations and charts. But like the systems own reporting capabilities, this link is usually secure that limits users to what they are allowed to see as defined in the application security system.

Many of the above capabilities are found in a range of general BI applications. However to support financial planning and reporting, these BI tools have additional capabilities that bring them into the category of Performance Management. These additional capabilities include:

Financial Intelligence

Financial intelligence refers to the ability to deal with financial numbers. That includes dealing with different currencies; performing currency conversion at multiple rate types, e.g. average, opening, closing rate; detecting and posting exchange gain/losses, as well as the recognition of different account types, e.g. Balance Sheet, P&L and Statistical types. This greatly simplifies the setting up of calculation rules as these then automatically deal with data in the right way – e.g. whether accounts are summed over time, converted or consolidated.

This knowledge is also used by the reporting system to create summations over time and variances that are correct, as the type of measure is 'known'. This makes the setting up of reports easy as the user does not need to be concerned with the type being reported.

Workflow

The last capability is in the area of workflow that controls the interaction of users. For example, when collecting a budget, users will need to be informed as to what is required and by which date. Performance Management systems perform this role and automatically chase up users as deadlines approach. As they complete their submissions the workflow informs those involved in approval, and prevents users from making changes unless the approver rejects their submissions.

Spreadsheets Vs FP&A Applications

- **Multi-user database (data, set-up):**
 - Architectures: Relational, Multi-dimensional, Hybrid, Big Data
- **Security:**
 - Data, Role, time-dependent
- **Model builder:**
 - Hierarchy-based: Department, Product, Channel
 - Non-hierarchy (flat): Version
- **Business rules:**
 - Named-based
 - Ratios, percentages, summations,
- **Data acquisition:**
 - Transform, summarise, match and load
- **Financial / application 'intelligence':**
 - E.g. Currency conversion, time aggregation...
- **Data manipulation**
 - Intercompany, initiative planning, scenario planning, goal seek, top-down spread...
- **Presentation tools:**
 - Static / dynamic reports with charts, grids
 - Drill-down, drill-through, slice/dice/rotate
- **Data / User control:**
 - Workflow: order of events, approval,...
- **Collaboration:**
 - Notes, comments, alert,...
- **User access methods:**
 - Web, mobile, spreadsheet, ...

At all times administrators are able to see the status of the data – has data entry started, has it been approved, is the submission late, and so on. Some of the more sophisticated systems also provide audit trails so management can see how data has changed over time.

*Comparison of enterprise system capabilities
Vs. a spreadsheet*





Data Driven Activity

3.3 Enterprise Systems: Architectural Issues

Despite the advantages of enterprise systems over spreadsheets, there are still some fundamental issues that stop them from supporting the data driven planning framework outlined in this paper.

To begin with, planning systems are often sold as discreet products aimed at particular processes or applications. For example, many software vendors offer budgeting systems but require further systems to enable results to be analysed or reported as a scorecard. Although some vendors offer 'suites' that contain the promise of an integrated solution, quite often that integration is limited to moving data between applications that increase the complexity (and cost) of the overall solution.

Similarly, throughout the description of the 7 planning models, it is obvious that the underlying data structures of each are quite different. Some are multi-dimensional in nature while others are relational, and all are associated with text/dates and other data types. Most mainstream planning systems only support one type of database and if multiple sets of data are supported then it's up to the user to decide when data 'moves' between models. This can lead to integrity issues and greatly increases the complexity of the final solution.

As a consequence, to implement the 7 models described here, organisations find themselves implementing multiple products, with different architectures and setup procedures. But things are changing and new systems are appearing that are more able to support planning as a single, enterprise solution. In the same way that ERP transformed the 'back office' requirements of general ledger, stock and production by combining them into a true, single solution controlled through workflow, so these new breed of systems are set to transform the way in which organisations plan and manage performance.

4. Transforming Planning into a Data Driven Activity

4.1 Data Driven Architecture

A new generation of planning systems are emerging that are data driven. These systems are very different from traditional planning systems and have an architecture that enables them to support the 7 models covered in this paper. From a user perspective they operate as a single management system where planning can be driven by events and exceptions in the business environment. For example, a change in the competitor landscape may lead the system to collect more data for the affected areas, which leads to new initiatives being proposed, selected and budgets changed accordingly. This can happen at any time and on a continuous basis.

To support this 'data-driven' view, these systems have totally integrated capabilities for:

- **Business modelling:** They support multiple data formats that links resources, workload and business activities to outcomes.
- **Methodology support:** They fully support an organisation's chosen strategy methodology and are able to directly link strategy with every day activities.
- **Dynamic workflow management:** They control how users interact with the planning models and can automatically trigger the allocation / adjustment of resources based on events and exceptions.
- **Adaptable security:** They automatically restrict access through individual user profiles and involve people as required in the planning/ review process through automated, personalised 'To Do' lists.
- **Initiative management:** They enable the collection, assessment and approval of projects/initiatives focused on improving business processes, and then go on to monitor their implementation.
- **Scenario planning:** They allow management to assess the impact of unknowable and uncontrollable events by simulating different business conditions and how they impact corporate goals.
- **Reports, analyses, scorecards and dashboards:** They provide a range of report formats that are automatically distributed throughout the organisation based on individual responsibilities.

Rather than go through a detailed specification of all the capabilities required by a data driven planning system, we will look at one vendor [CorPeuM] and focus on a few areas where its approach is fundamentally different from today's mainstream planning systems.





Data Driven Activity

4.2 Support for multi-cube architecture

CorPeuM fully supports the planning framework outlined in this paper. It allows users to create multiple models with different content and structures, but that operate as a single system.

To simplify setup and maintenance, models are built from a standard set of definitions that define the current and future state of the organisation. These definitions include:

Business dimensions and members: This includes the traditional Business Intelligence dimensions of organisational departments, version, product, channel, and so on.

Calendars: This is a special dimension where time is defined and used to hold data. In CorPeuM this is not just a silo to hold data but a true date to which data is attached, which can be a particular date, week, month and any other passage of time. Data entered is then automatically consolidated to any span of time, e.g. months and quarters and seasons. This aggregation recognises how the business defines things such as holidays, weekends, which may vary between geographic locations.

Hierarchy effective dates: Each business dimension can have multiple hierarchies that define how data is to be consolidated for that dimension. E.g. how data is aggregated across divisions or departments. These hierarchy relationships can be given an effective “from” and “to” date, so that when reporting results, consolidations can reflect:

- the current business structure.
- a structure from any given point in time.
- how relationships within a structure have evolved over time.

Models are built by selecting combinations of standard definitions to create one or more data models. Each data model represents a particular grouping of data at the right, appropriate level of detail. For example, a sales forecast model would have details about sales people, customers, products and an estimate of volume/price. A strategic initiatives model would consist of a cause and effect hierarchy that links initiatives with corporate objectives and contain details of milestones, resources and those responsible for delivery.

Each of the 7 models outlined in this paper would be built in this way and then linked to each other as well as a variety of external data sources where the raw data can be loaded. Where models are linked, data automatically flows between models so there is no need to manually move data or set up data transfer routines.

As hierarchies and standard definitions change, the models built from them automatically inherit those changes from the assigned date. In this way, data models need little or no maintenance and the system ensures the integrity of results.

4.3 Intelligent attributes

The second major area that makes CorPeuM different is something they call ‘intelligent attributes’.

Attributes are nothing new. They allow model dimension members, which are typically organized by hierarchy, to also be associated with an alternative grouping. For example, a member of the product dimension may be organised by product groups, but it could also, via an attribute, be associated with a particular colour or customer segment. This attribute can then be used to ‘filter’ the members of that dimension irrespective of where it fits in its hierarchy. For example, display all products that are ‘red’ in colour.

Intelligent attributes within CorPeuM takes this a step further and allow models to be data driven. To begin with, dimension members can be associated with multiple user attributes, which themselves can refer to existing dimension members. For example, they allow an individual measure, to be associated with a type (e.g. objective, workload, resource, etc.) as well as particular dimension members, e.g. a specific strategic initiative and a specific number of departments.

When it comes to reporting or providing data entry screens, intelligent attributes can be used to automatically select the right combination of dimensions and members for particular users but without having to manually select them. In the above example, by selecting a particular initiative in the SIM, the system will automatically display the right measures for the right departments and only display them to the right users. Only one report is required to be set up for all users and initiatives as the content is being controlled by attributes.

As more dimension members / initiatives are added to the standard definitions, or changes made to the assigned attributes, then reports are automatically reconfigured to present the right information to the right people.

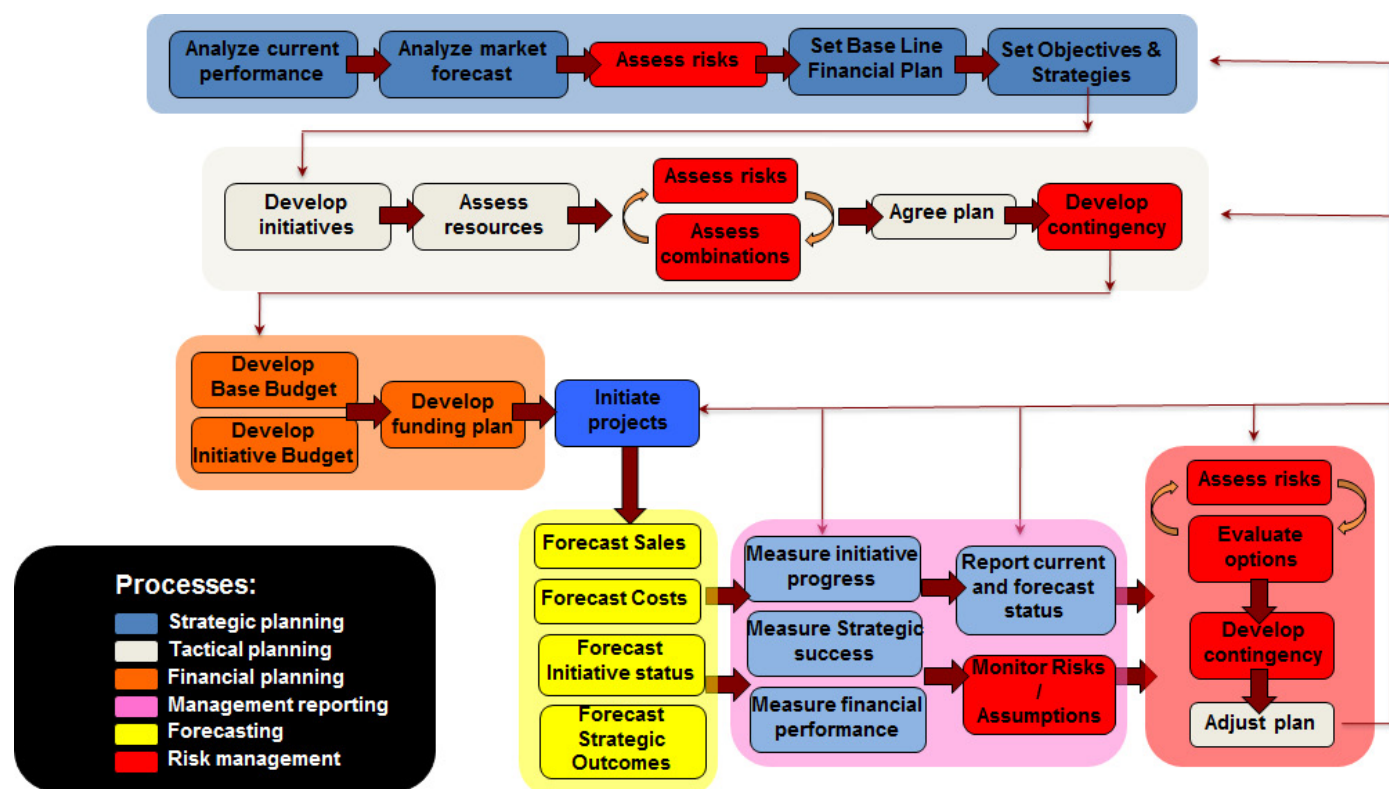




Data Driven Activity

4.4 Dynamic workflow

Dynamic workflow is crucial for a data driven architecture. In general, management processes are typically seen and implemented as the six distinct processes of Strategic Planning, Tactical Planning, Financial Planning, Forecasting, Management Reporting, and Risk Management. However these processes consist of a number of interconnected sub-processes that together form the basis for managing performance.



Performance Management processes combine to form a single process aimed at the execution of strategy.

Each sub-process is key to the management of the organisation – none can be left out. They need to be performed in a particular order, where each activity will connect with one (or a number) of the models within the planning framework, by different parts of the organisation. Even within an activity, there may be interconnected tasks that each department has to perform, in a specific order, and at specific times.

For example, budgeting may start off with the setting of a high level goal (TSM) to which sales will decide on how this will be delivered throughout the year (OAM). To do this they may need to work in collaboration with marketing and production on particular initiatives (SIM) to achieve the goal. Once this has been completed, other areas of the organisation can start allocating resources that fit in with the sales and marketing plan.

Workflow is what controls user actions and ensures that things are done in the right order and at the right time. Most systems achieve this with a set of menus or a preconfigured set of tasks that users work through. The problem is that this does not take into account what happens if the data (e.g. a forecast) shows that something isn't working and needs to be changed. That will rely on an administrator manually setting up a new workflow to cope with specific issues. Also, most systems only have workflow for their particular application. What is required is a workflow capability that goes across all applications.

CorPeuM's workflow is very different in that it covers the complete management planning/reporting cycle. It is driven by a combination of activities directed by an administrator as well as exceptions (e.g. the variance between the end of year forecast and the budget is greater than 10%) and events (e.g. a task has not been completed on time or a competitor has just announced a new product). In each of these cases, CorPeuM can reconfigure the workflow according to a set of rules, making the process dynamic but without administrators having to continually set up new workflow.

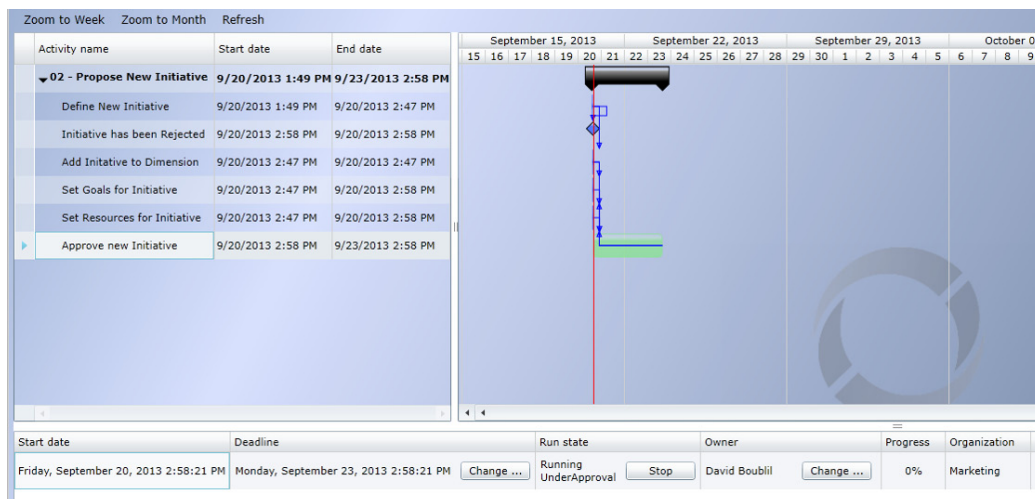
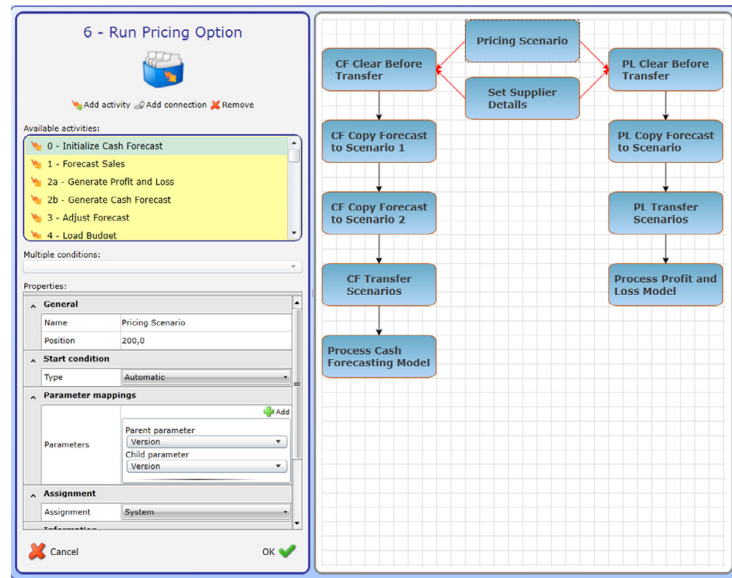




Data Driven Activity

CorPauM's workflow is created by an administrator 'drag and dropping' a number of pre-built tasks onto a time line. These tasks include information on:

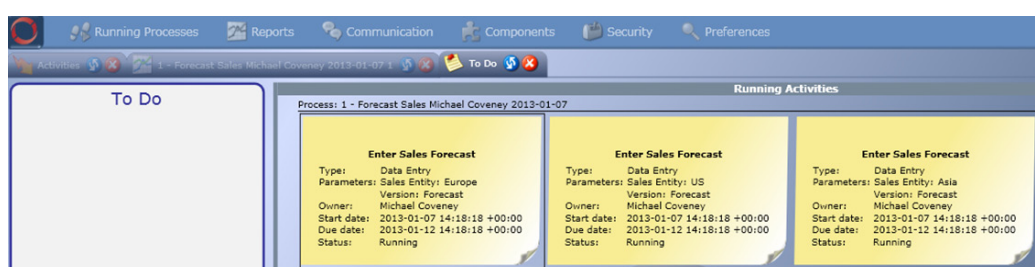
- **Task trigger.** i.e. what causes the task to start. This could involve multiple triggers such as the completion of a previous task; a set date on the calendar; or a variance.
- **Department and person involved.** This identifies those responsible for carrying out the task, which could include multiple people in multiple departments. For example, there may be a product manager for each product category who needs to review their area of responsibility. This activity could happen in parallel, but each would need to be complete before the start of the next task.
- **Planning model and data view.** This describes for each task the planning model to be accessed and the 'slice' of data to be presented. Because models contain data for multiple departments that span multiple processes, it is important that only the right people can access the right information at the right time. In some instances, users may need access to multiple models. For example, when reviewing performance, they may need access to the detailed history models in a way that enables them to carry out detailed analyses and to compare those analyses with data in the detailed forecast models before they come to any conclusions.
- **Processing required.** Once access has been granted, users need to be directed as to what they can do with the data. As mentioned in the last point, we may want to grant access so the users can perform their own analyses. Similarly, we may want them to load their current forecast from an external file.
- **Action or output required.** Tasks require an output. This could be a submission of data for approval, as in the case of entering a budget; making a comment, such as following the review of actual results; or approving a submission, as in the case of creating a forecast. In most cases, output will be compulsory and so the expected format needs to be clearly explained. For data submissions, this should include the planning model and data slice that needs to be completed.
- **Completion notification.** This final piece of information indicates when the task has been completed and is no longer available, which could include:
 - when a particular action has been performed, such as the approval of a budget.
 - a date or time. For example, forecasts can be entered up until the last day of the month, after which data entry will be blocked.
 - a set condition. For example, budget submissions can be altered up until all submissions have been received.
 - any combination of the above.



Once activated, this definition generates a timeline of activities and their status. This can be used by administrators to lookout for bottlenecks in a process as well as change priorities and send notes to those involved.

Workflow timeline showing allowable duration and status of activities

Users interact with the system via their own personalised 'To Do' lists that lead them through any actions they are required to perform.



CorPauM provides each user with their own personal 'To Do' list

In this way, CorPauM is able to support a continuous planning process that covers the 7 planning models described in this paper.





Data Driven Activity

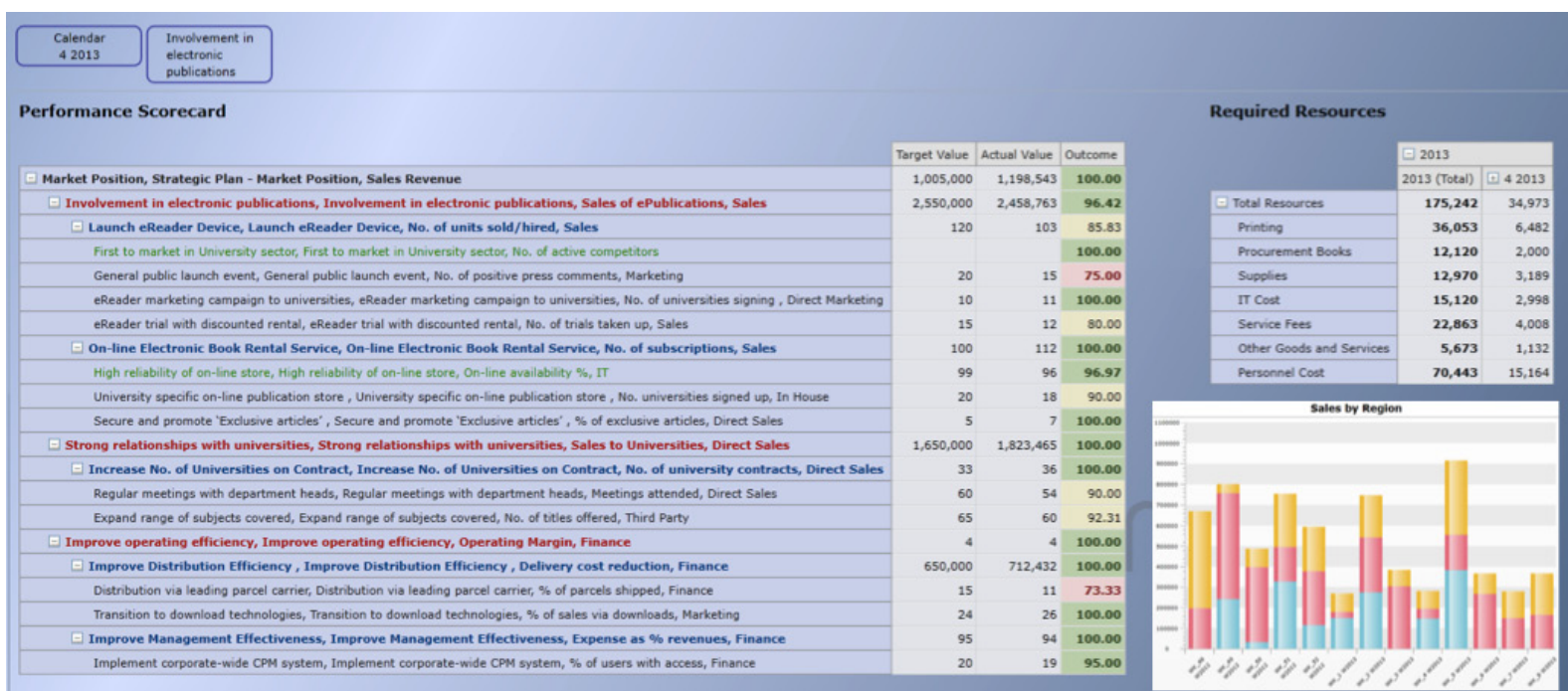
4.5 Timeshifting of data

Planning is primarily concerned with the timing of actions. This is particularly true when considering the implementation of initiatives – when should they start, how long should they go on for? But it's also true for organisations whose work is project based and where income and expenditure is dependent on milestones. In both cases, initiatives and projects represent a package of work and associated resources that cover a period of time. For planning purposes managers will need to know the impact of delay. What happens if the project is put back by 3 weeks? What resources would we need if we brought forward some of the projects and cancelled others?

Because CorPeuM uses a true calendar and has in-built time-shifting capabilities, this type of analysis is easy to do. With a single command, the entire content of a project or initiative can be 'moved' in time, although its original start and end dates can be retained for comparative purposes. This delay can be expressed in days, weeks, and so on, with CorPeuM working out how this gets reported in terms of months or other reporting periods.

4.6 Integrated reporting

Reporting is a vital component of any planning system as it is through reports and analyses that managers interpret results and take action. It should enable any type of report, and allow access to data from anywhere in the planning framework, but ensuring that only the right users can see the right data. To support this, CorPeuM comes with its own reporting and analysis capabilities that include charts, grids, formal reports and specialised components for formats such as strategy maps. Reports and analyses can take data from one or more models. Most reports are defined as a combination of multiple simple reports that they refer to as blocks. Blocks can be positioned anywhere on a page whose 'off grid' dimensions can be linked so that they act as one report.



CorPeuM enables any kind of report to be placed anywhere on a page

Reports can contain data, notes and comments as well as information about the process that generated the data. It can also include the data as it existed on any past date (CorPeuM keeps a full audit trail of all changes), and the structures that were used to produce consolidated results.

Reports can be combined into books that can be published in many formats such as PDF, Excel, HTML. Excel can also be used to report directly from a model.





Conclusion & Next steps

5. Conclusions & Next Steps

Data driven planning is fast becoming an essential requirement for organisations operating in today's volatile, global business environment. It requires organisations to rethink the way its business processes are managed, the way strategy is implemented and monitored, and they need a modern architecture that transforms planning into a continuous data driven process.

Relying on outdated management processes makes no sense and will cause organisations to fail in their quest. Similarly, inflexible, silo-based planning systems will slow down organisational decision-making and prevent organisations from reacting to critical external events. It's time to change. To let go of ineffective management practices and to embrace common sense, supported by architectures designed for today's business environment. In terms of 'next steps' we suggest the following:

Clearly define the role of planning

Ask management within the organisation as to the purpose of planning. This will naturally lead to a discussion about the future and where the organisation sees itself, which may be different depending on whether the short or long-term is being considered. One thing is for sure is that while the content and structure of the plan may differ, they should all involve modelling business processes. The short-term view will be focused on available resources and market opportunities with current business processes, while the long-term view is less constrained and can consider far-reaching changes to the same business processes.

However, both views are connected, as what happens in the short-term will ultimately lead to what is achieved in the long-term. Business processes are at the heart of both.

Decide on the network of planning models required by the organisation

For short-term planning to support long-term planning, organisations will require multiple models that operate on a common set of data. That data will include historic trends and structures alongside short and long term forecasts on both the market direction and the organisation's capabilities. This network of models tells a story, but whose theme – organisational objectives – provides a common basis for all.

We suggest that you take the framework outlined in this paper and map out the models your organisation needs. This doesn't have to be in much detail to begin with. The aim is to get agreement on the complete picture that is required after which time can be spent on what content is required by each model and how data is passed between them.

Assess the issues with the current planning process

Now we have a planning framework that is based on what the business needs, the next step is to assess the current planning models and process. How well do they fit as to what is really required? What effort is required to link them together (if at all) and how well do they connect the organisation around the topic of strategy execution?

As part of this review process, highlight areas that are weak (or missing) and what it would mean for the organisation if those areas were fixed.

Discuss your findings with colleagues.

Change does not happen overnight. In our experience it takes many years as change involves changing culture – i.e. the way things are currently done. To make the change being proposed in this paper requires senior management commitment and a general consensus among operational managers that this is not only worthwhile but essential for the future of the organisation.

An attempt should be made to set priorities – e.g. what planning models need to be addressed first and how the process can be conducted (or triggered) on a continuous basis.

Partner with a vendor offering a data driven planning solution

Lastly, a modern planning system is essential in bringing organisations together that can communicate with individual managers on the role they play and that can easily adapt to a constantly changing business environment.

The systems mentioned in this paper are not common. Carefully describe to a potential vendor your vision for planning and the capabilities that are required. You could use this paper to explain how such a network of models holds different data but need to work as a single system. Get vendors to outline their vision for their solutions and how they would meet your requirements. Then contrast the investment required and how this compares with the benefits that such a solution would bring.





About CorPeuM

7. About CorPeuM

CorPeuM is made up of an international team of acknowledged experts in the field of corporate performance management. Our experience in designing, using and implementing 'best practice' systems for planning, budgeting, reporting and analysis in some of the world's leading organisations, led us to design and build a new and better breed of application that is more able to cope with today's uncertain business environment. The result is the CorPeuM approach that allows organisations to focus on the execution of strategy by redefining the way they manage corporate performance.

If you would like to know more about our approach to budgeting and corporate performance management, get in contact with us via our web site or by email to info@corpeum.com

More whitepapers: <http://www.corpeum.com/white-papers/>

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