

More than 70% of companies use Excel® as their principal interface for budgets and forecasting. Many of these companies are in “Excel Hell”, a continuing state of inefficiency and disruption related to using Excel for collaborative planning. The spreadsheet symptoms of Excel Hell are broken formulas, consolidations that choke, and wrong numbers. The organizational symptoms are inefficiency, frustration and decisions based on bad information.

For the strategic CFO who needs better answers and more analysis, and for the financial planning manager who’s pulling too many late-nighters trying to get clean rollups, this white paper explores the root causes of Excel Hell and lays out criteria for solutions. Specific issues explored include: modeling using cell-based formulas; structures needed for activity-based plans, multiple user security and rollups; and the state of analysis, or the lack thereof, because there’s not enough time.

Alight Planning, a financial planning and analysis software package, delivers feature sets that address the most serious issues of Excel Hell.

Escaping Excel Hell: Budgets & Forecasting

By Rand Heer



It’s 8 p.m. Jennifer Hoover, the New England Sales Manager for Whitehorse Corp., a \$300 million manufacturer of electronic equipment, is reworking the Excel budget template due the next day.

Jennifer should be home with her family, but she’s not. She’s in Excel Hell and won’t escape soon:

- ▶ Jennifer inserts new line items for T&E for Conferences and for T&E for Customer Visits. The travel account total doesn’t pick up the added items.
- ▶ She links a line item for travel expenses for sales reps to a subtotal on the headcount worksheet. Values for months 9 through 12 are wrong. After 30 minutes, she gives up trying to find the problem.

It’s noon the next day. Peter Forrester, Financial Planning Manager for Whitehorse, is studying the Excel workbooks that the line managers have emailed him. They’re a mess. Peter is in Excel Hell and won’t be escaping soon:

- ▶ The first pass rollup chokes on Jennifer's workbook. The consolidation routine hits two #REF!s it can't handle. Peter fixes the same errors in seven other workbooks. Five workbooks have different problems. Only two come in clean.
- ▶ The next morning, Peter has an error free rollup. Revenues look good, but margins are too high. Two hours later he finds the problem: marketing set up a new product but it has no cost of sales.

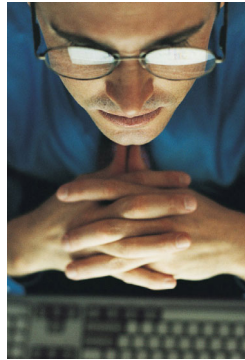
George Gladwell, the CFO of Whitehorse, is finishing up the budget review with the executive staff. The presentation isn't going well.

- ▶ The numbers add up, but George and Peter can't answer a number of questions about underlying assumptions. Much of the detail is offline in scratch notes or unconnected spreadsheets that the line managers built on the side.
- ▶ While Peter spent days pulling the presentation together, there clearly isn't enough analysis. Another review meeting is scheduled to follow up on the CEO's "what if" scenario questions. The budget deadline is pushed out two weeks.

Excel Hell Roots

If you Google "Excel Hell", you'll get over 15,000 hits. Most of these reference the kinds of problems experienced at Whitehorse and articulated by Steve McMinn, a partner at Accenture, in 2002:

"It's believed that some 80 percent of global companies use Excel almost exclusively as a planning tool. Often, that means finance folks spend weeks attempting to consolidate



hundreds of spreadsheets with inconsistent data definitions, altered formulas and extra rows added by creative managers. It's such a huge task just to get the numbers to add up properly that there's little time left for analysis or optimization of resource allocation."*

The situation hasn't improved much since. Despite advances in database technology, and in particular OLAP (online analytical processing), there hasn't been a meaningful exodus of mid-market companies from Excel to planning applications. Even in very large corporations spending millions on BPM (business performance management) software, a substantial number of managers at the business unit level still use Excel for building up budget detail.

Despite advances in database technology...there hasn't been a meaningful exodus of mid-market companies from Excel to planning applications.

This white paper explores the root causes of Excel Hell for line managers like Jennifer and financial managers like Peter and George. The issues we address include problems with cell-based linking, the need for planning structures, and ideas for analysis tools.

We also discuss criteria and application solutions needed to help companies escape

* As quoted by Alice Dragoon in "Escaping Excel Hell" in Darwin Magazine, May 2002.

from Excel Hell and describe features sets in Alight Planning, a financial planning and analysis software package, that address specific spreadsheet problems.

Issues with Modeling

The simplest models for budgets and forecasting are where salaries and headcount drive payroll taxes and benefits. Sophisticated financial plans typically include complex models for such items as: sales by channel, customer type and geography; direct and indirect product costs; activity-based headcount; variable bonuses; sales commissions; and similar items. A budget for a mid-sized company may include hundreds of such modeled relationships.

Cell-based formulas and linking

You build financial models in Excel using the formula bar and links to cells in the current or other worksheets. Below is an example of a formula that builds up a cost element for a service product in cell L67:

		Aug	Sep	Oct
4	All Centers Sessions	9	8	10
5	Student Days	450	400	500
6	Gross Revenue	\$ 202,500	\$ 180,000	\$ 225,000
7	Contribution	\$ 140,450	\$ 123,600	\$ 156,950
8	Cont %	69%	69%	70%
67	Student Costs	\$ 650	\$ -	\$ 650
68	Instructor	\$ 4,000	\$ -	\$ 4,000
69	Facility	\$ 2,500	\$ -	\$ 2,500
70	Total Costs	\$ 7,150	\$ -	\$ 7,150

The syntax of the formula is “cell-based” – that is, the references for calculation of the cell L67 point to cells notated by row and column headers on other worksheets.

Cell-based modeling is a root cause of Excel Hell. Below are several unavoidable issues:

1. Building formulas is an inherently inefficient and error prone process requiring clicking between worksheets, double

checking syntax, and auditing results. The cell-based syntax does not call out what the formula is actually doing. To audit, you need to trace back and look at the cell references.

2. The only person who understands an Excel financial model is the one who built it. With budget templates, users regularly destroy model subsets by mistakenly typing into formula cells.
3. Changing the structure—e.g. adding, moving or deleting rows and columns as Jennifer did—frequently creates errors such as incorrect subtotals or broken formulas. Broken formulas contain the notation #REF! which ripples through financial statement rollups making them unreadable.
4. Excel modeling requires specialized skills learned only through experience. For folks like Peter, Whitehorse’s planning manager, it’s their job. Line managers like Jennifer, however, typically don’t have modeling skills. Best of intentions aside, that’s why most errors occur.

Modeling criteria and solutions

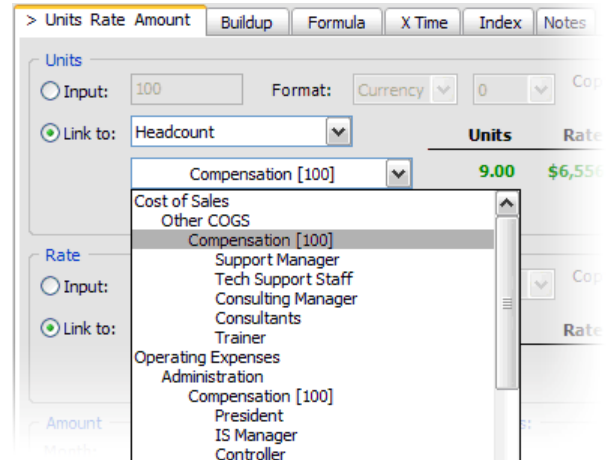
Planning applications typically support modeling for budgets and forecasting at some level. Most fall short, however, because they either maintain a cell-based formula interface like Excel (or even use Excel), or they simplify modeling interfaces and functionality at the expense of flexibility.

Following are criteria for software features needed to help both line managers and finance staff escape from Excel Hell for modeling. Examples of solutions using Alight Planning are also included.

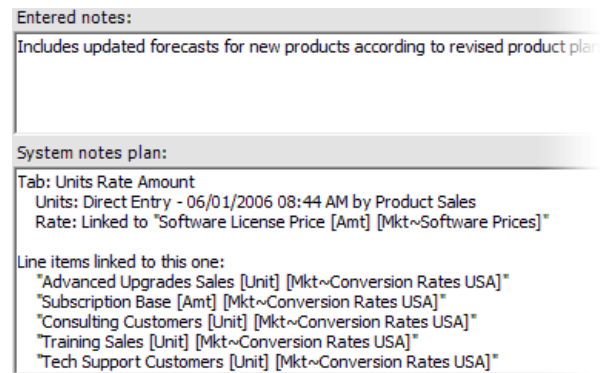
Object-based linking. An effective solution for dealing with the problems of cell-based syntax is to make linking object-based. For example, instead of =Admin!L25 * Assumptions!\$H\$21, computing payroll tax would be in the form of: Salaries * Payroll Tax Rate. In addition, such linked relationships would automatically function across all time periods without having to be manually repeated with fill operations.

Audit trails. Financial models are inherently complex. Audit trails should be available to help users trace how objects relate to each other including what the current line item is linked to and what line items are linked to it. Audit trails should also let users enter notes, identify who last changed an item and when, and be easily viewed.

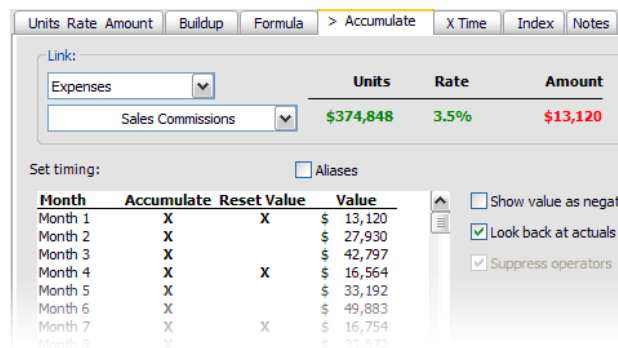
Modeling interfaces. The modeling environment should be intuitive and easy to use. Modeling tools should be flexible enough to let users create any planning model they would otherwise create in Excel but without the problems of a cell-based syntax. Interfaces should let finance *and* line managers create models focusing on important activity-driver relationships, not syntax.



Alight Planning's modeling is object-based using a company's own business terminology. Line items may be linked to the units, rate or amount of any other line item or subtotal. Links automatically operate across time periods—i.e. one object-based link does it all.



Alight Planning tracks everything happening in a model and makes the information available to users. For example, system notes display all linking relationships plus who last modified the item with a time stamp.



Alight Planning incorporates six intuitive modeling interfaces for building any complex model you would create in Excel, but without a cell based syntax. In the example, the Accumulate tab interface lets you create cross time period accumulations for subscription models and balance sheet accruals.

Report management. Planning applications should protect users from themselves. Operations such as inserting a new line item, adding total and variance columns, and spreading values across total columns should be automatic and error free. Input cells should be easily distinguished from formula cells, and users should be prevented from overwriting formulas without having to manually set protection cell by cell.

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Alight Planning creates reports using “intelligent operator” columns which compute subtotals, variances and other analyses without formulas. In addition to traditional variance analysis, Alight includes a Causal Analysis operator, as shown below, that automatically computes the volume and rate impacts of actual versus plan variances. Shaded cells are inputs, or in the case of actuals, imported values from outside databases.

	Jan 06 Act			Jan Plan			Variance			Causal		
	Units	Rate	Amount	Units	Rate	Amount	Units	Rate	Amount	Units	Rate	Amount
Gross Sales												
USA												
Software USA												
Software Licenses	89	\$3,353	\$ 298,400	100	\$3,500	\$ 350,000	(11)	\$ (147)	\$ (51,600)	\$ (38,500)	\$ (13,100)	\$ (51,600)
Advanced Upgrades	82	\$1,348	\$ 110,500	50	\$1,500	\$ 75,000	32	\$ (152)	\$ 35,500	\$ 48,000	\$ (12,500)	\$ 35,500
Software USA Plug			\$ 600						\$ 600	\$ 600	\$ -	\$ 600
Total Software USA			\$ 409,500			\$ 425,000			\$ (15,500)	\$ 10,100	\$ (25,600)	\$ (15,500)
Services USA												
Consulting	356	\$ 216	\$ 76,800	500	\$ 150	\$ 75,000	(144)	\$ 66	\$ 1,800	\$ (21,600)	\$ 23,400	\$ 1,800
Training	98	\$ 276	\$ 27,000	60	\$1,500	\$ 90,000	38	\$ (1,224)	\$ (63,000)	\$ 57,000	\$ (120,000)	\$ (63,000)
Services USA Plug			\$ (240)						\$ (240)	\$ (240)	\$ -	\$ (240)
Total Services USA			\$ 103,560			\$ 165,000			\$ (61,440)	\$ 25,160	\$ (96,600)	\$ (61,440)
Total USA			\$513,060			\$590,000			\$ (76,940)	\$45,260	\$ (122,200)	\$ (76,940)

Issues with Structure

Having the flexibility to do anything you want isn't helpful when you're staring at a blank worksheet. Budgets and forecasting require structure, lots of it: activity planning interfaces; accounting rollups to GAAP compliant financial statements; multiple user support; integration of actuals; and much more. Called budget templates, you build such structures from scratch in Excel using cell-based formulas and macros. These templates take weeks or months to develop; they're difficult to maintain; and they frequently break when well intentioned managers like Jennifer do things that cause errors.

Structure criteria and solutions

Most budget and forecasting applications are heavy on structure but light on modeling support and interfaces. Price tag and ROI aside, a typical trade-off is to sacrifice modeling flexibility – i.e. Excel's inherent capability for building any type of financial model – for the benefits of gaining structure which Excel severely lacks. Following are criteria for structure elements of planning applications:

Activity planning. Budgeted amounts typically have underlying activity assumptions about units and rates. For revenue planning, units sold * selling price = the sales amount. For headcount, # heads * salary rate = salary amount. Planning applications should support unit/rate/amount activity planning for any type of financial and opera-

tional planning. Some applications achieve this by using a multi-dimensional database for plans and actuals.

Rollup structures. This includes minimum multi-dimensional support for product groups, cost centers, and natural class accounts which then roll up to integrated financial statements—P&L, balance sheet and cash flow. Within the rollup structure, line managers should be able to add any number of line items on-the-fly to document underlying assumptions and thinking. This is what Jennifer tried to do and what George and Peter were missing—line item detail and assumptions that are otherwise lost if not incorporated into the plan file and rollup.

	Units	Rate	Jan Plan Amount
Gross Sales			
USA			
Software USA			
Software Licenses	100	\$3,500	\$ 350,000
Advanced Upgrades	50	\$1,500	\$ 75,000
Total Software USA			\$ 425,000
Services USA			
Consulting	500	\$ 150	\$ 75,000
Training	60	\$1,500	\$ 90,000
Total Services USA			\$ 165,000
Total USA			\$590,000

	Units	Rate	Jan Plan Amount
Cost of Sales			
Other COGS			
Compensation [100]			
Support Manager	1.00	\$ 6,000	\$ 6,000
Tech Support Staff	2.00	\$ 4,500	\$ 9,000
Consulting Manager	1.00	\$ 9,000	\$ 9,000
Consultants	5.00	\$ 7,000	\$ 35,000
Trainer	-	\$ 5,000	\$ -
Total Compensation [100]	9.00	\$ 6,556	\$ 59,000
Total Other COGS	9.00	\$ 6,556	\$ 59,000

Alight Planning's architecture is based on units, rates and amounts thereby allowing any type of activity planning with linking at any level of detail.

Who Moved My Excel?

Excel's lack of structure is the principal reason companies move from spreadsheet planning to budget and forecast applications. The tradeoff is this: the costs of wasted staff time, delays, errors and frustration finally exceed the capital and ongoing costs of buying a planning application.

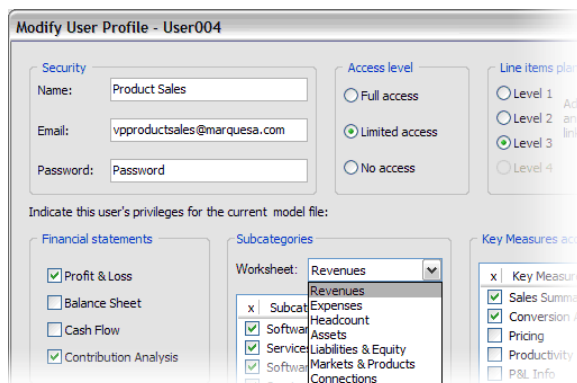
Most mid-sized companies never reach the cross over point because robust planning and reporting packages cost six figures or more for the software, implementation and ongoing IT support.

For Fortune 1000 divisions, it's a different story: enterprise BPM (business performance management) packages focus on corporate level rollups and reporting. This often short changes division level modeling and analysis requirements. As a result, Excel is frequently used alongside BPM packages at business units for modeling and documenting plan detail.

	Jan 07		Feb 07	
	Amount	% Sales	Amount	% Sales
Gross Sales				
USA	\$ 635,000	113.6%	\$ 653,000	78.3%
International	\$ -	0.0%	\$ 251,752	30.2%
Total Gross Sales	\$635,000	113.6%	\$904,752	108.6%
Deductions	\$ 75,900	13.6%	\$ 71,280	8.6%
Net Sales	\$559,100	100.0%	\$833,472	100.0%
Variable Costs				
Administration	\$ 11,183	2.0%	\$ 16,669	2.0%
Depreciation & Interest	\$ -	0.0%	\$ -	0.0%
Development	\$ -	0.0%	\$ -	0.0%
Federal & State Income Tax	\$ -	0.0%	\$ -	0.0%
Marketing	\$ 55,910	10.0%	\$ 83,347	10.0%
Other COGS	\$ 90,529	16.2%	\$ 117,223	14.1%
Sales	\$ 83,980	15.0%	\$ 106,813	12.8%
Software COGS	\$ 3,651	0.7%	\$ 4,921	0.6%
Total Variable Costs	\$245,253	43.9%	\$328,973	39.5%
Contribution Margin	\$313,847	56.1%	\$504,499	60.5%

In addition to integrated P&L, balance sheet and cash flow, Alight Planning's financial statements include a contribution analysis which segregates fixed and variable costs based on algorithms that identify underlying links to revenues.

Multi-user structures. Planning managers like Peter need to set security controls to define what plan elements each user may access and the level of access; for example, changing values only versus adding line items. Process controls should provide approval levels, version management and audit trails to identify line items changed since a cutoff date, and who changed them. Users need to work from a complete model set to view the impact of changes interactively.



Align Planning's multi-user capabilities allow a broad range of security controls. After consolidation of user inputs, Align automatically identifies added and changed line items since the last version cutoff.

Import actuals structures. Planning applications should be able to import and integrate financial *and* operating actuals data from any source at any level of detail. Such import capabilities need to be automated with maintenance routines that update import templates for structure changes in the planning file. Applications should also provide tools for modeling and linking imported actuals data and for plan data to “look back” or reference actuals data in forward looking projections.

Issues with Analysis

Finance staff like Peter and George are so consumed by the problems of Excel Hell that there is little time for analysis. Too often budgets go to press without any real analysis of linkages to strategy. Rolling forecasts, caught in the squeeze between the

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month end close and due dates for the management report, are too frequently finalized without adequate analysis of the future impact of variances or updates from line managers.

As an alternative to Excel, planning applications *should* cut the cycle time for budgets and forecasting, thereby freeing time for analysis. Most do. In addition, applications should automate critical analytic jobs such as sensitivity analysis and scenario analysis.

Sensitivity analysis is the process of changing individual input assumptions and observing the financial impact. This is difficult in Excel because inputs are typically spread across multiple worksheets separate from the financial statement rollup. Planning packages can streamline sensitivity analysis by identify the most critical assumptions in a plan and provide interfaces for testing impacts. Otherwise, it's hunt and peck.

Scenario analysis is the process of changing multiple input assumptions to create an alternate financial plan. This is supported by most planning packages. Scenario analysis should allow an unlimited number of scenarios with easy switching between scenarios to compare and analyze results.

Alight Planning's sensitivity analysis interface lets users automatically create a ranked list of inputs that impact a specified target, such as operating profit or net sales, providing an instant picture of the most sensitive assumptions in a financial plan.

Sensitivity	Goal seek	Tops down	Impact Items	Type	Path	Jan 07 value	+20%	Impact \$ ^
1. Choose target:	Operating Profit		Software Licenses	Units	Rev ~ Software USA	115	138.00	\$ 60,588
Current value:	\$12,158		Software License Price	Amount	Mkt ~ Software Prices	\$ 3,500	\$ 4,200.00	\$ 49,044
2. Select time period:	Jan 07		Consulting Hrs w/ Utilization	Rate	Conn ~ Productivity	75%	90.00%	\$ 21,728
3. Set modifier %:	20		Software Engineer	Units	HC ~ Development~Compensation	7.00	8.40	\$ (16,828)
4. Set value cutoff:	1000		Training Sales	Rate	Mkt ~ Conversion Rates USA	75%	90.00%	\$ 14,039
5. Run sensitivity analysis			Training Price	Amount	Mkt ~ Services Prices	\$ 1,500	\$ 1,800.00	\$ 13,025
			Variable Marketing	Rate	Exp ~ Marketing~Marketing Expenses	10%	12.00%	\$ (11,182)
			Software Engineer	Rate	HC ~ Development~Compensation	\$ 7,000	\$ 8,400.00	\$ (10,628)
			Software Discounts	Rate	Rev ~ Discounts USA	15%	18.00%	\$ (10,202)
			Sales Reps	Rate	Conn ~ Productivity	\$ 75,000	\$90,000.00	\$ 8,776
			Consultants	Rate	HC ~ Other COGS~Compensation	\$ 7,000	\$ 8,400.00	\$ (7,592)
			Consulting Charge Rate	Amount	Mkt ~ Services Prices	\$ 150	\$ 180.00	\$ 6,094
			Sales Reps	Rate	HC ~ Sales~Compensation	\$ 4,000	\$ 4,800.00	\$ (6,073)

Alight Planning's scenario analysis interface lets plan managers create up to 100 alternate financial plans all within the same plan file. Scenarios can be automatically updated for the timing of key events such as launching new products, opening new channels or raising capital.

	Aug 06 Amount	Sep 06 Amount	Oct 06 Amount	Nov 06 Amount	Dec 06 Amount	Jan 07 Amount	Feb 07 Amount	Mar 07 Amount
Net Sales	\$430,000	\$559,100	\$559,100	\$559,100	\$559,100	\$559,100	\$833,472	\$834,294
Cost of Sales								
Software COGS	\$ 3,175	\$ 3,651	\$ 3,651	\$ 3,651	\$ 3,651	\$ 3,651	\$ 4,921	\$ 4,921
Other COGS	\$ 105,457	\$ 105,999	\$ 105,999	\$ 111,529	\$ 111,529	\$ 111,529	\$ 138,223	\$ 138,223
Total Cost of Sales	\$108,632	\$109,650	\$109,650	\$115,180	\$115,180	\$115,180	\$143,144	\$143,144
Gross Margin	\$321,368	\$449,450	\$449,450	\$443,920	\$443,920	\$443,920	\$690,328	\$691,150

Scenarios	Plan stages	Aug 06	Sep 06	Oct 06	Nov 06	Dec 06	Jan 07	Feb 07	Mar 07	Apr 07	May 07
Fixed											
*Budget Final		X									
Current			X	X	X	X	X				
Year End								X	X	X	X
Add Int'l											
*Base											

Summary

Escaping Excel Hell for budgets and forecasting is a growing priority for companies in today's fast changing and competitive economy. Application software companies need to deliver improved structures for activity-based planning, integrated financials, multiple-user processes and integrating actuals that address Excel's greatest weaknesses. At the same time, they must design more powerful and intuitive modeling interfaces that provide the flexibility of Excel for building any kind of financial model. Finally, there is a world of analytic tools yet to be invented for moving financial planning and analysis to a new level of thoroughness and insight. This is what Alight is working on next.

Rand Heer is President of Alight LLC and the creative force behind Alight Planning. He was a contributing author to "Business Intelligence: Making Better Decisions Faster" published by Microsoft Press. He was also the founder of Pillar Corporation and designer of Hyperion Pillar, the first enterprise software for budgets and forecasting, and founder of FP&A Train, the original Essbase training company.

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