



Developing a Project Finance Software Package White Paper

This paper describes the key features of a project finance software package and demolishes the widely held idea that a spreadsheet is the only tool for a project finance model

By Project Planning and Management Ltd
December 2008

TABLE OF CONTENTS

Summary.....	3
What is Project Finance?.....	3
Why is a model necessary?.....	3
History of Modelling	4
Weaknesses of Spreadsheets.....	4
Weaknesses Addressed.....	5
Alternatives to Spreadsheets.....	5
Basis for a New Software Package	5
Outline Specification.....	6
Configuration.....	6
Industries	7
Planning Phase model and Project Phase model	7
Deterministic and Stochastic Models.....	7
Key Project Evaluation criteria.....	8
Capital Cost Module.....	8
Schedule	8
Parametric Cost Estimate Capability	9
Project Evaluation Module	9
Revenue basis	9
Cost and Price Projections	9
Working Capital.....	10
Project Finance Module	10
Accounting Currency.....	10
Display Currency.....	10
Bank Accounts	10
“Cash Traps” (Dividend Policy) and “Cash Sweeps”	11
Cash Waterfall (or Waterfall of Accounts).....	11
Balance Sheet.....	12
Legal Structures.....	12
Funding Sources.....	13
Sinking Funds	13
Accounting Statements	13
Analysis Module.....	14
Cases (Scenarios)	14
Sensitivity Analyses, Monte Carlo Simulations, Break Even Analysis	14
Goal Seeking	14
Usability	15
Setup Wizard	15
Input of Data	15
Changing the Units of Measurement	16
Notes.....	16
Languages	16
Formulae.....	17
Projection Periods.....	17
Reader Version.....	17
“Pictures are worth a thousand words”	17
Development Platform.....	19
Development Language.....	19
How to store standard technical data	19
Software Testing.....	20
Black Box	20
Conclusion	20
Acknowledgements	21
About the Author	21

Introduction

Summary

In this paper we will look at the history of project finance models, the evolution of spreadsheet models, the weaknesses of such models, the alternatives proposed by others and finally the features which a “purpose made” software package must include.

Background

What is Project Finance?

Project finance is variously described as:

“a nonrecourse or limited recourse financing structure in which debt, equity, and credit enhancements are combined for the construction and operation, or refinancing, of a particular facility in a capital-intensive industry in which lenders base credit appraisals on the projected revenues from the operation of the facility, rather than the [value of] the general assets or the credit of the sponsor of the facility, and rely on the assets of the facility, including any revenue producing contracts and other cash flow generated by the facility , as collateral for the debt”¹ or

“The financing of a particular economic unit in which a lender is satisfied to look initially to the cash flows and earnings of that particular unit as the source of funds from which a loan will be repaid and to the assets of the economic unit as collateral for the loan”²

Why is a model necessary?

The above definitions have one thing in common, they all include the projected cash flows. Those cash flows can only be determined and analysed if a model is used to calculate the figures. The model will determine such key criteria as the internal rate of return (IRR) and net present value (NPV). More importantly, it will determine the loan cover ratios needed by the lenders to ensure that their loans are secure and show financial returns to the investor and it will be used to carry out the “What if” analyses so important in judging the robustness of the proposed financial structure.

Most loan, franchise and concession agreements will require a model to be used and kept up to date through the life of the project in order to show stakeholders the continuing viability of the project.

¹ Scott L Hoffman A Practical Guide to Transactional Project Finance Basic Concepts, Risk Identification and Contractual Considerations 45 BUS. LAW. 181 n.1 (1989)

² Peter K Nevitt Project Financing 3 (1983)

History of Modelling

Early project finance models were based on Visicalc and Lotus 1-2-3 which became available in the 1980s. These spreadsheet packages had a limited macro language to reproduce key sequences. When Microsoft initially developed Excel (for the Macintosh Apple) in the late 1980s they used a more powerful macro language (XLM). It later converted this to VBA (Visual basic for Applications). Today it comes with many advanced features and it is now the most popular spreadsheet for building project finance models.

Published literature is full of horror stories

Weaknesses of Spreadsheets

The use of spreadsheets is fraught with dangers which are well recorded in a variety of publications. The following quotes come from a recent publication³

...“end users are putting their companies at risk by setting up spreadsheets without realizing that this demands the discipline of traditional programming.”

...“Sarbanes-Oxley implies managers can’t ignore un-controlled spreadsheets”

...“We nearly always find that modellers have no formal training in good modelling techniques, and that their organizations do not have even the most rudimentary internal modelling standards”

...“Spreadsheets are a powerful modelling language, mainly used by amateur programmers on a diversity of applications which are typically deployed throughout a wide range of different business functions”

Or even the following from another publication:⁴

...“Spreadsheets have been shown to be vulnerable, yet they underpin the operation of the financial system. If the uncontrolled use of spreadsheets continues to occur in highly leveraged markets and companies, it is only a matter of time before another “Black Swan” event occurs, causing catastrophic loss. It is completely within the realms of possibility that a single, large, complex but erroneous spreadsheet could directly cause the

³ Stop That Subversive Spreadsheet! 2004, Ray Butler and David Chadwick reporting on formation of EUSPRIG European Spreadsheet Risk Interest group

⁴ The Importance and Criticality of Spreadsheets in the City of London, Grenville J Cole, EUSPRIG

accidental loss of a corporation or institution, significantly damaging the City of London's reputation."

Numerous authors have published papers on the common errors which creep into spreadsheets.^{5 6}

Weaknesses Addressed

Many companies offer in-house and public training courses to improve the quality of project finance models. In recent years various organizations have developed auditing and other tools to reduce the risks, some generic and others devoted to project finance and PFI/PPP projects. Some of these problems can be mitigated by following well structured guidelines, such as those prepared by the ICAEW.⁷

But in all cases the underlying calculation engine is a spreadsheet.

Lack of alternatives

Alternatives to Spreadsheets

A simple search for the terms "project finance software" and "project finance models" conducted via the Internet as of late 2008 reveals many models but all of them appear to be based on spreadsheets.

Key features:

Basis for a New Software Package

Complete and easy to use

If we were to start with a blank sheet of paper, what would be the key features of such an alternative? We suggest the following two key desirable characteristics:

Complete

The package must incorporate all the variables which determine the project cash flows (some of which are rarely used in a spreadsheet model). So the package should handle many different technologies, legal configurations, funding bases and so on.

There are other considerations which are also important and

⁵ Spreadsheet Accuracy Theory, S E Cruck, Journal of Information Systems Education Vol 12(2)

⁶ What we Know about Spreadsheet Errors, Prof Raymond Panko, Journal of End User Computing Vol 10, 1998 Revised May 2008

⁷ Spreadsheet Modelling Best Practice 1999 by Nick Read and Jonathan Batson of IBM published by the Institute of Chartered Accountants for England and Wales

which we will describe in more detail in this paper.

Easy to Use

The package should have a “wizard type” set up when the user wants to create a new model. Once the wizard has created the structure of the model, the user should find it easy to insert the information into the model through a suitable method such as a series of dialog boxes. He/she should be able to make changes to the units of measurement without having to look up conversion factors and the software should advise of any unusual or unacceptable input data.

There are emergent beneficial side effects from using a dedicated package

There are side benefits to be gained from using a dedicated and standalone software package such as consistency and reliability. We will draw attention to these as we develop our thoughts in this paper.

We will now describe these two elements in more detail and then look “under the hood” or “bonnet” to see the considerations which go into the choice of a suitable software development platform.

Outline Specification

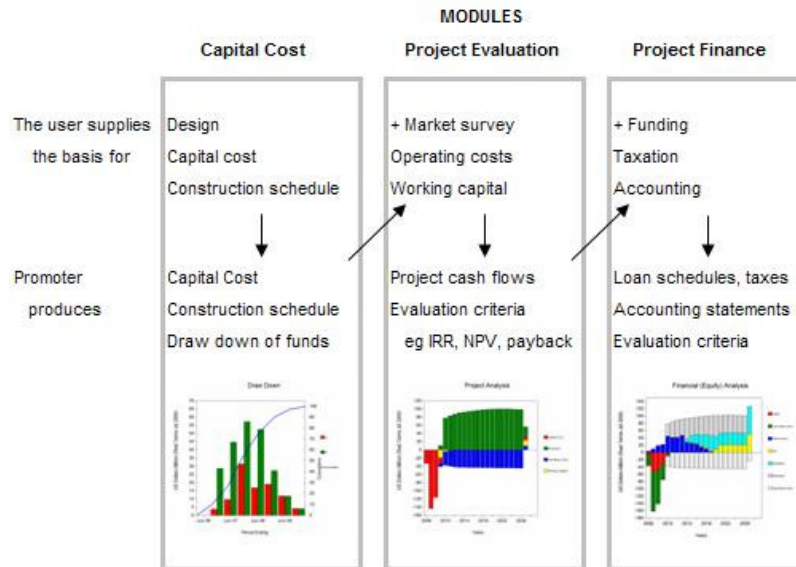
A complex model can be simplified by breaking it down into three critical areas

Configuration

The main output from the package is the Net Present Value (NPV), Internal Rate of Return (IRR), Loan Cover Ratios and other key criteria. There are two sets of criteria, those calculated on the basis of the project cash flows and those based on the equity cash flows. The latter include the effects of funding, taxation and accounting.

Before the user can consider the project financing, the project cash flows must demonstrate that the project is viable (no amount of creative financing can convert a poor project into a viable one). For this he/she needs to know the draw down of funds during the construction phase and the revenues and operating costs during the operating phase. He/she can then consider the funding and fiscal bases.

The above observation suggests that any software package be split into three modules as illustrated below.



Usable in a wide variety of industries

Industries

The following industries frequently use project finance: oil and gas developments, petrochemicals, fertilizers, oil refineries, pulp and paper, transportation (including ports, airports, toll roads), power, mining, infrastructure and telecommunications. The package should handle models for one or more of these industries in some form or another.

Different types of model depending on project phase

Planning Phase model and Project Phase model

In the planning phases, the model should generate the capital cost estimate (based on standard figures) and should generate the draw down of funds during the construction phase split into local and foreign currency elements. It should also calculate the funding drawdowns based on an initial debt to equity ratio set by the user.

Once the project has reached the stage where contractors have submitted their bids, the model should take as input the proposed draw down of funds. The same applies with the loans. In this case the package will calculate the initial debt to equity ratio. The model should also know how to handle a shortfall of funds (or excess). This second model is somewhat different from the first.

Deterministic and stochastic model

Deterministic and Stochastic Models

Most project finance models are deterministic models. The results are based on a single set of input figures using a most

likely scenario. The model may include a low and a high case (or scenario) but the results are always the same each time the model is recalculated.

The alternative is a stochastic model. In this case the model sets each relevant input as a random number between pre determined limits before it calculates the cash flows. These limits must be carefully reviewed for the results to be meaningful. A single calculation is not useful by itself for decision making. By repeating the calculation a thousand or more times and keeping a record of the results each time a Monte Carlo analysis may be generated showing a probabilistic element for each factor. The risk assessed figures are the average of the calculated numbers. The package should also calculate confidence levels.

*Include all key
project criteria*

Key Project Evaluation criteria

Different organizations use different criteria when evaluating a project. These criteria include the net present value (NPV), the internal rate of return (IRR), the payback period, the profitability index and the loan cover ratios. It is worth making some observations on these figures.

Any figure must make it clear what it refers to and how it is calculated. The IRR can be calculated on the project and the equity cash flows. It can be calculated on the nominal cash flows and the real cash flows. And it can be calculated with a deterministic and a stochastic model. The package should calculate it on all these bases. Similar considerations apply to the other criteria.

Note too that different companies calculate the profitability index on different bases.

Capital Cost Module

Schedule

The user should be able to set any date as the start date for the project (that is, the date when the main contract becomes effective). He/she should also be able to set the construction period to any number of days and the software should adapt its display to suit.

Parametric cost estimate capability is useful for optimizing project

Parametric Cost Estimate Capability

In the early phases of the project, it is common practice for the developer to analyse alternative design configurations and plant capacities. Ideally, the package should therefore include suitable routines for calculating the capital cost with differing capacities. In effect, the package should contain a parametric capital cost estimate which produces a rough order of magnitude cost appropriate to the industry. The user should be able to adjust this estimate with the results of a more thorough external estimate if required.

Side benefit: Design routines can be used throughout the operating phase

There are benefits to be obtained from including simple design routines into the software. For instance, in a transportation project, the software may calculate the number of trains (or buses) needed to meet the projected demand at the start of the project. With an increasing demand through the life of the project, the same routines can be used to estimate when additional investments must be made to ensure a constant level of service. The user can specify that a reserve fund is specified to ensure that the operator can make the additional investments without recourse to further outside funding.

Project Evaluation Module

Capability to handle different revenue bases

Revenue basis

In some projects, the price of the product may be negotiated. In others it is subject to market forces. Where negotiated, the formula for the price is typically the sum of two elements, the capital cost and the running costs. Occasionally some of the running costs are reimbursable. Where it is subject to market forces it may be necessary to calculate net back prices from different markets.

Cost and Price Projections

All costs and prices should be accompanied by a corresponding currency and validity date. The validity date may typically be the start of the project, but some figures may be negotiated with a different date. It is safer therefore to ensure that all costs and prices have a corresponding validity date.

The package should calculate the projected prices with the inflation rate appropriate to the currency in which the cost or price is expressed. There should be factors for the partial or total recovery of inflation.

Working capital is too often forgotten in financial models

Working Capital

The working capital is often forgotten in a project finance model. The package should include all current assets and liabilities. In on some projects such as an oil refinery with a large inventory (stock) of both the feed crude oil and the products, the value of the working capital will represent over one quarter of the total investment and it needs to be included in the funding calculations.

Beneficial side effect: Ability to set the accounting currency

Project Finance Module

Accounting Currency

The accounting currency may not necessarily be the same as the currency in which the cash projections are displayed in the model. The accounting currency is usually the local currency (but exceptions can be sometimes negotiated with the host government). This is important because the corporate tax calculations carry the undepreciated assets on the balance sheet forward in the accounting currency, not the display currency. Additionally, the exchange rate may change from year to year, particularly if there is a high local inflation rate.

Failure to take note of the accounting currency produces lower tax calculations when the local inflation rate is high. It is a common mistake in many spreadsheet models. The package must allow the user to set the accounting currency.

Choice of display currencies

Display Currency

Most spreadsheet models display the cash flows in millions of US Dollars, but some do so in the local currency. It would be highly advantageous to display in any suitable currency and in billions, millions, thousands as appropriate. The user should be able to input costs and prices in whatever currency is most appropriate.

Bank Accounts

A project financing inevitably needs a local bank account to handle day to day operating costs, usually in the local currency; and an escrow account usually offshore in a foreign currency, into which the project revenues are paid and from which the main disbursements are made. The user should be able to set the currency of the accounts and any target balances.

Include the capability to handle cash traps and cash sweeps

“Cash Traps” (Dividend Policy) and “Cash Sweeps”

Cash traps are covenants in the loan documentation which restrict the payment of dividends when certain accounting ratios deviate from the planned figures. They effectively constitute a dividend policy. In a given loan there may be one or more cash traps. The ratios may be calculated from the balance sheet or from the cash flows.

Cash sweeps are the use of surplus cash during the operating phase to prepay debt or to provide extra security for lenders instead of paying it out to shareholders.

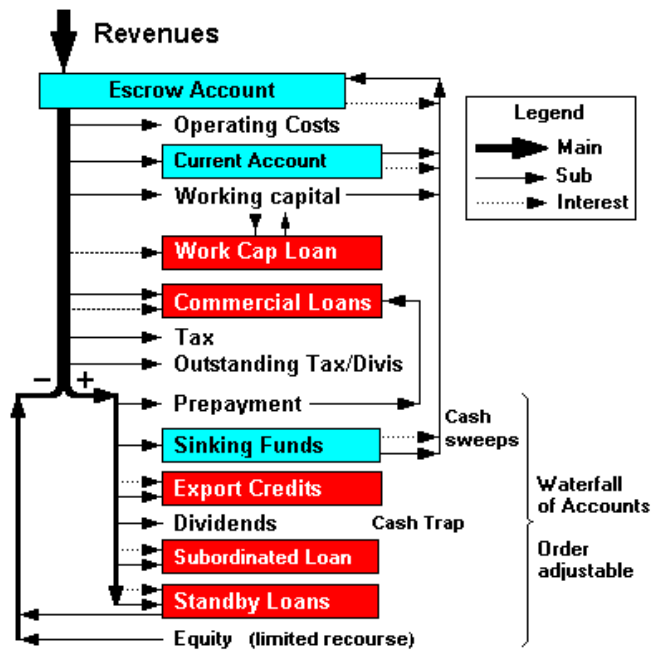
Side benefit: correct calculation of loan restrictions

Loan agreements typically restrict cash flows if the minimum loan (or project) life ratio is projected to fall below a minimum level in **any** future year. A spreadsheet model will have trouble with circular references if it attempts calculate this provision. The package should solve this problem by iterating through future balance sheets for each year when necessary.

Include the capability to adjust the cash waterfall

Cash Waterfall (or Waterfall of Accounts)

The cash waterfall is the term used in the loan agreement which describes the order in which funds are disbursed from the escrow account. Typically, senior loans have priority, but the order of other cash flows such as prepayment and subordinated loan principals and interests may typically be negotiable. It would be useful for the software to give the user the option to change the order.



*Generates the
project
balance sheet*

Balance Sheet

Analysing the financing of projects is all about the cash flows, however there is still a need for a balance sheet. Loan agreements may typically specify that dividends cannot be paid until the debt to equity ratio falls below a certain amount. It should also contain currency adjustment factors whenever there is more than one currency in the project. Failure to include a balance sheet and to display the currency adjustments on a multiple currency project is a sure sign that the accounting currency has not been considered and is an important warning sign.

*The legal
structure has
an effect on
the cash flows*

Legal Structures

Most project financings involve a Special Purpose Vehicle (SPV) which is set up as a corporation, though there are other legal structures which would affect the modelling.

Partnership. A partnership may enjoy special corporate tax status, and tax payments are made by the partners. The package should display the partnership's cash flows as well as the cash flows for each of the partners.

Joint Ventures. The term "joint venture" has many meanings and relates to the ownership and governance structure of a project where multiple partners may or may not elect to have a single ownership and management structure that is formally incorporated. Each partner may have different funding and fiscal arrangements and the software should be able to display these separately for each entity.

Multiple Corporations. The development of natural gas often requires a chain of plants and companies to commercialise the gas. The investments consist of the gas production facilities, the LNG/LPG plant, the LNG ships and the regasification terminal. Each may be owned by a different company with different shareholders, located in different countries, but all linked to one another. The package should handle such a chain of projects, allowing say, the price of the product pipeline gas to change and the user can see the ripple effect through the companies.

Leases. A lease is the process by which one party (the lessor) owns an asset and makes it available to another party (the lessee) for a consideration often a rent. The purpose of using a lease is to take advantage of potential tax benefits which a lessor can access and pass on to the lessee. The lessor may fund the project from its own funds or may seek loans from third parties (a

leveraged lease). There are various types of leases such as financing and operating leases. The software should display the project from the view of the lessor as well as the lessee. It should also display the project without a lease. The benefits of leasing are often country and industry specific and can change at short notice. The user must always take proper tax advice before modelling a lease.

Reserve based financing. Natural resource industries feature a number of funding arrangements which can be described as project finance including service agreements, buy backs, leases etc in which there is not necessarily any external financing. In these types of financing arrangements, the software package should include the ability to model the cash flows as seen from the perspective of the reserve owner and separately from the point of view of the investor.

Software should include different forms of equity and loans to fund the project

Funding Sources

Project funding typically comes from a combination of potentially several different classes of equity and loans. These may include preferred stock, senior and subordinated loans, export credits and bonds. Export credits are funds for the supply of equipment and material supported by the government of the country supplying them. The package should calculate the draw down in-line with the delivery and since this must occur before the construction starts, the package should show the export credits drawn down early in the project construction phase.

There may be other classes of loans used mainly during the operating phase, such as working capital facilities and feed supply credits.

Software should include sinking funds

Sinking Funds

Sinking funds are typically needed for loans (debt service reserve account), reinstatement costs, abandonment on oil and gas and other natural resource projects, dry docking on shipping projects, plant closures etc. The user should be able to specify the target balance and currency of the fund.

Software should be compliant with IFRS and other relevant

Accounting Statements

Accounting bodies are encouraging major corporations to adopt the IFRS (International Finance Reporting Standards) in their reporting. These standards allow several different forms of

standards

presentation of the main accounting sheets (income/profit and loss, cash flow statements and balance sheets). One side effect is that they will be able to present their accounts on the web in an XBRL format. (Extensible Business Reporting Language). The package should ideally be compliant with IFRS and should be capable of applying other relevant standards.

Analysis Module

Capability to include different cases or scenarios

Cases (Scenarios)

During the development of the project, it is useful to consider various alternative cases (or scenarios) in addition to the base case. In the planning phases the different cases may contain different project configurations. During the contractor bidding phase they may contain the different contractors' offers. During later phases they may contain different funding bases and in subsequent phases they may contain "high" and "low" cases (or "extra high" and "extra low"). The user should be able to add and delete cases as required.

Capability to include the "what if" analyses

Sensitivity Analyses, Monte Carlo Simulations, Break Even Analysis

The package should have the capability to produce the expected sensitivity analyses including spider diagrams, tornado diagrams, break even analyses and risk analyses using Monte Carlo techniques without any additional issues, (see the separate white paper on carrying out a risk analysis with a project finance model).

Capability to include a goal seeking facility

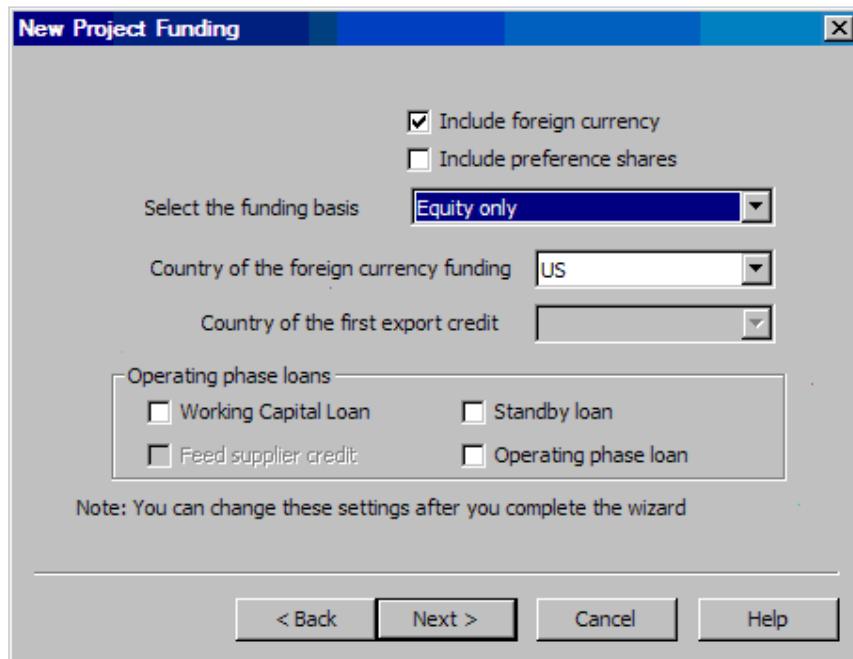
Goal Seeking

The package should also include a goal seeking facility in which the user specifies the required figure for the result and the variable to be altered. For instance, the user may want to know what the product price should be in order for the project to produce a real equity IRR of 15%. The software should present him/her with a suitable dialog box with the possible input variables (e.g. product price) and results (e.g. real equity IRR) and it should carry out the iterative calculations without further user intervention.

Usability

Setup Wizard

The package should have a “wizard type” set up for ease of use when the user wants to create a new model. This wizard must allow the user to configure the model for different technologies, revenue bases, legal entities, funding bases, fiscal bases and accounting bases. It should take barely a minute or two to make the right decisions and the user should be able to change most of these decisions at a later stage if he/she wants to do so, without starting afresh.

A screenshot of a software dialog box titled "New Project Funding". The dialog has a blue title bar with a close button. The main area is light gray and contains several settings. At the top right, there are two checkboxes: "Include foreign currency" (checked) and "Include preference shares" (unchecked). Below these is a dropdown menu labeled "Select the funding basis" with "Equity only" selected. Underneath is another dropdown menu labeled "Country of the foreign currency funding" with "US" selected. Below that is a third dropdown menu labeled "Country of the first export credit" which is currently empty. A section titled "Operating phase loans" is enclosed in a rounded rectangle and contains four checkboxes: "Working Capital Loan" (unchecked), "Standby loan" (unchecked), "Feed supplier credit" (unchecked), and "Operating phase loan" (unchecked). At the bottom of the dialog, there is a note: "Note: You can change these settings after you complete the wizard". Below the note are four buttons: "< Back", "Next >", "Cancel", and "Help".

*Beneficial side effect:
Audit trail*

Input of Data

Once the user has set up the model with the wizard, he/she will need to insert the project specific data into the model. The preferred method for inputting relatively large amounts of data into a programme is through tabbed dialogue boxes which allow data entry validation. In addition, they can be used to record the name of the user who made the latest change and the date when he/she made it, together with a brief note which he/she can introduce to explain the figures. This feature addresses issues of who did what, why and when and it helps others to review and audit the model.

Beneficial side effect: Simple conversion of units

Changing the Units of Measurement

What is the difference between a higher heating value and a lower heating value and what factor do you use when you convert from one to another? And how do you convert from say 1000 tpd (tonnes per day) to Mtpa (1000 tonnes per annum)? Modellers are not always engineers and even experienced engineers make mistakes here. Thus, a conversion routine which allows the user to change the units of measurement and have the recalculated figure displayed immediately is a useful feature.

Intelligent feedback

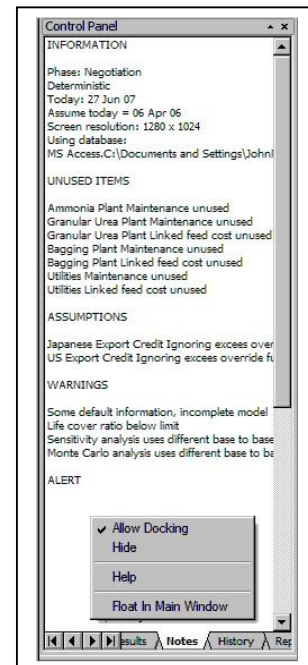
Notes

There are certain locations in the calculation sequence where the software may make decisions about which the user needs to be aware.

A well conceived package will advise the user of any assumptions and display them in a separate window. They can then be examined in further detail. It will do the same with any inputs which may lead to problems.

The diagram on the right displays feedback to the user under the following headings:

- Information
- Unused Items
- Assumptions
- Warnings
- Alerts



Include capability to support different languages

Languages

Project finance is used throughout the world and in different languages. Whilst English and specifically US English is a common language in this industry, users still need to understand technical terms in their own language. It would be therefore be highly helpful if the package could display information in several languages other than English.

Users need to see the underlying formulae

Formulae

Users want to know how the package calculated a figure in a particular cell. The package should display the formula used to arrive at the figure. In certain circumstances, the user needs to change the basis for the formula. For instance, the formula for a loan cover ratio may contain different elements in the numerator and denominator. The tabbed dialog boxes should enable the user to make this adjustment to the formula.

Pros and cons of the projection period size

Projection Periods

Should the cash flow projections be done on a yearly basis or more frequently? And if so at what time intervals? A yearly projection typically allows the cash flows on a 20 year project to be printed landscape on a single page. There is much merit in seeing all the figures for the project life printed on a single page. However, lenders like to see the loan cover ratios on a half yearly basis and some developers like to see them on a quarterly or even monthly basis. There is some benefit but the files start to become very large, so a suitable compromise is usually the best solution.

Secondary software should be available to open and print the model file

Reader Version

The developer of the model may want to send a version of the project model to a bank or a prospective investor, but the recipient may not have a licence for the software. The recipient should be able to obtain a "Reader version" of the software which does not contain the calculation engine but allows him/her to open the files and review the input basis and the results. This version of the software should also allow the user to print out the model.

Use of charts and diagrams to describe the project

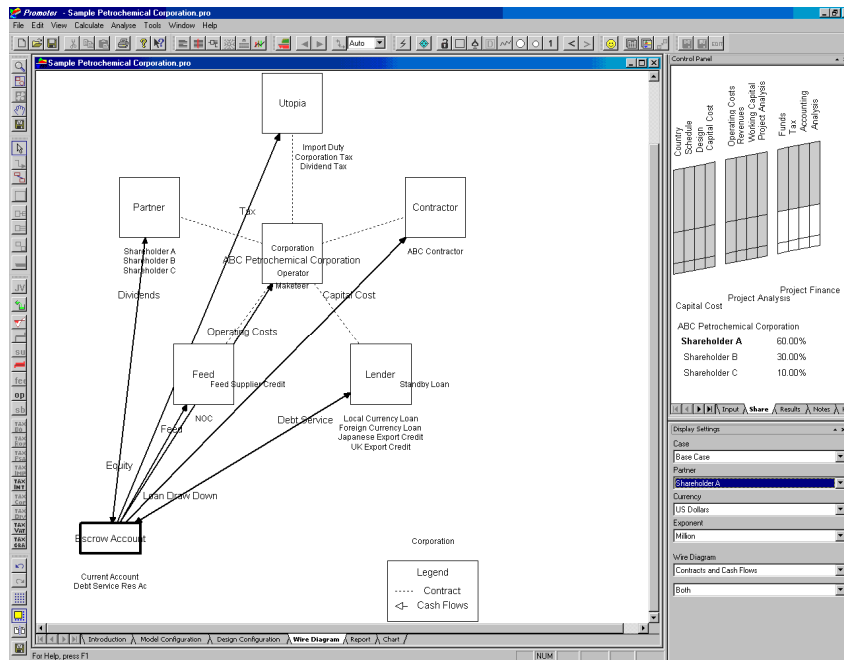
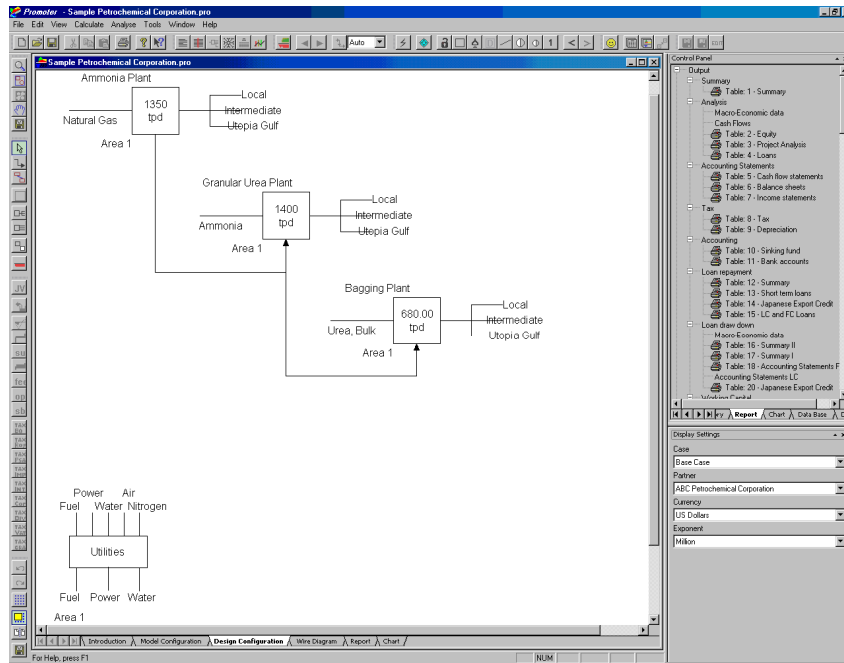
"Pictures are worth a thousand words"

Any form of illustration of the input and results makes it much easier for the user to understand the model and the project. The following all contribute to such an understanding:

- The design configuration in a simple block form
- The "wire diagram" showing the legal relationships between the key parties and the flow of funds during the construction and operating phases
- Charts illustrating both the input and output figures. The lack of such charts in a typical spreadsheet model makes it

difficult for a first time user to understand what is going on.

See the figures below for some examples.



Development Platform

Choice of development language set by the nature of the software

Development Language

A project finance model must be able to run on a laptop when the user is travelling, perhaps negotiating a contract in a far off country. There is no need to be connected to a server or the internet, in fact, the confidential nature of the information in the model suggests that it should be running directly on the user's machine. So the potential problems with memory leaks on a server are not a consideration and the .NET framework or equivalent is not appropriate.

The subject of project finance is complex and lends itself to an object oriented approach, hence the obvious choice in these circumstances is to use a high level language such as C++. The use of an object oriented language has the additional advantage of making the software easier to maintain, extend and reuse.

Data storage considerations

How to store standard technical data

When you use the setup wizard, the software needs to obtain technical data for the technology which the user selects. These data could be hard-coded into the software or they could be stored in a database. There are significant disadvantages in hard-coding any significant amounts of data in the software - a database is much better suited to this task. The question then arises, what type of database, which one and how to communicate with it? A relational database is the most widely used and probably the most appropriate and there are many commercial products which fit this task. The most appropriate means of communication is probably the OLEDB technology which works with most databases. It works with say a simple Access database on the user's hard drive or with MSSQL on a corporate server.

*Beneficial side effects:
Use of a database ensures:
- consistency between models for different projects
- audit trail.*

Once a decision is made to use a database as the repository for key technical data, it becomes a simple matter of extending the software and database to incorporate all input data for the model. The model can then be saved to the database and regenerated from the same source (in addition to the more normal method of saving it and opening it from the disk) which opens up a host of opportunities.

For example:

- a) consistency across models: in an oil company, say, you

could ensure that all models use a common forecast of the oil price.

b) an audit trail is an automatic feature in MS SQL Server.

Testing is vital and must be carried out as the software is developed

Software Testing

Any software which relies on heavy computation must be tested thoroughly throughout the development and maintenance phases. Such testing will include unit (regression) testing, fuzz tests and integration tests.

Side benefit: reliability

The reliability resulting from this testing is a further side benefit which is rarely found in a spreadsheet model.

Black Box?

Black Box

Yes, certainly... and with good reason

Is the software described above a “Black Box”? Yes, in as much as an accounting package is a black box. No self respecting chief financial officer of a multi-million dollar corporation would expect a junior employee to prepare and present the accounts on a spreadsheet.

However, the software has a transparency which allows the user to understand what is going on. There are few instances when the user needs to change a formula. The calculation of the cover ratios is a case in point. This ratio is typically defined by the lenders in the loan agreement. It is a relatively simple matter for the user to decide (through a suitable dialog box) which items go into the numerator and denominator.

Project finance modelling does not need to use a spreadsheet.

Conclusion

This paper examines a brief history of project finance models, the evolution of spreadsheet models, their strengths and weaknesses, the alternatives and finally the features which a “purpose made” software package must include.

There is an alternative tool already available in Promoter

Such a package is now in existence and available in a number of different formats. It is supplied in a matrix of planning and project models, specific industry models, single user stand alone models and corporate models with a database connection. They are all based on the same underlying technology.

This white paper is the first in a series of white papers which will look at other aspects of the same subject.



Acknowledgements

Many thanks are due to Carmel de Nahlik who has been a constant source of encouragement and ideas. She has reviewed this paper and suggested many important improvements.

About the Author

John Macgillivray is the creator of a range of project finance software tools based on Promoter. This software incorporates most of the features described in this paper.

Project Planning and Management Ltd is a group of consultants based in London with the primary objective of producing and marketing project finance models for a number of different industries and countries.

Project Planning and Management Ltd.
4 Wyndham Mews
London W1H 2PN
United Kingdom
e-mail: sales@promoter.com
Tel +44 (0)20 7262 4172

Copyright © 2008 Project Planning and Management Ltd. All rights reserved.

This white paper is for informational purposes only. No statement in this document should be construed as warranting that any version of the Promoter range of software products will have the features described. PPM MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AS TO THE INFORMATION IN THIS WHITE PAPER.

PPM may have trademarks, copyrights or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from PPM, the furnishing of this document does not give any license to these trademarks, copyrights or other intellectual property.