Module Management Presentation

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Abstract

This module addresses the presentation of architectural issues to higher management teams.

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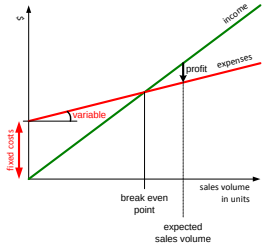
Contents

Chapter 1

Simplistic Financial Computations for System Architects.



1.1 Introduction

Many system architects shy away from the financial considerations of the product creation. In this document a very much simplified set of models is offered to help the architect in exploring the financial aspects as well. This will help the architect to make a ”sharper” design, by understanding earlier the financial aspects.

The architect should always be aware of the many simplifications in the models presented here. Interaction with real financial experts, such as controllers, will help to understand shortcomings of these models and the finesses of the highly virtualized financial world.

In Section 1.2 a very basic cost and margin model is described. Section 1.3 refines the model at the cost side and the income side. In Section 1.4 the time dimension is added to the model. Section 1.5 provides a number of criteria for making finacial decisions.

1.2 Cost and Margin

The simplest financial model looks only at the selling price (what does the customer pay), the cost price (how much does the manufacturing of the product actually cost). The difference of the selling price and the cost price is the margin. Figure 1.1 shows these simple relations. The figure also adds some annotations, to make the notions more useful:

- the cost price can be further decomposed in material, labor and other costs
- the margin (”profit per product”) must cover all other company expenses, such as research and development costs, before a real profit is generated
- most products are sold as one of the elements of a value chain. In this figure a retailer is added to show that the street price, as paid by the consumer, is different from the price paid by the retailer[1].

The annotation of the other costs, into transportation, insurance, and royalties per product, show that the model can be refined more and more. The model without such a refinement happens to be rather useful already.

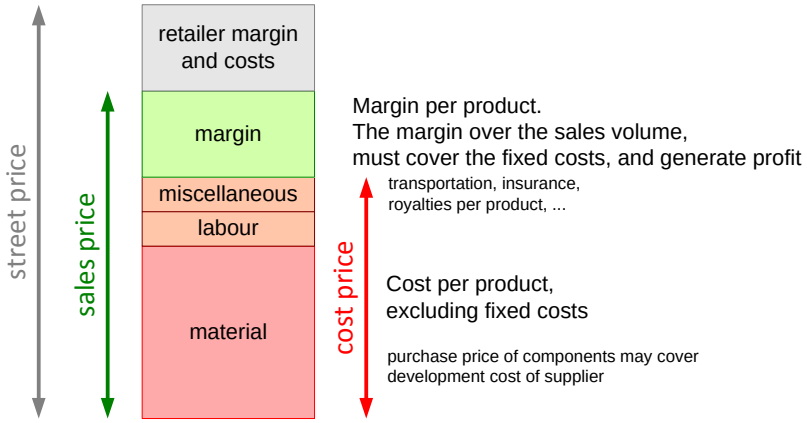


Figure 1.1: The relation between sales price, cost price and margin per product

The translation of margin into profit can be done by plotting income and expenses in one figure, as shown in Figure 1.2, as function of the sales volume. The slope of the expenses line is proportional with the costs per product. The slope of the income line is proportional with the sales price. The vertical offset of the expenses line are the fixed organizational costs, such as research, development, and overhead costs. The figure shows immediately that the sales volume must exceed the break even point to make a profit. The profit is the vertical distance between expenses

and income for a given sales volume. The figure is very useful to obtain insight in the robustness of the profit: variations in the sales volume are horizontal shifts in the figure. If the sales volume is far away from the break even point than the profit is not so sensitive for the the volume.

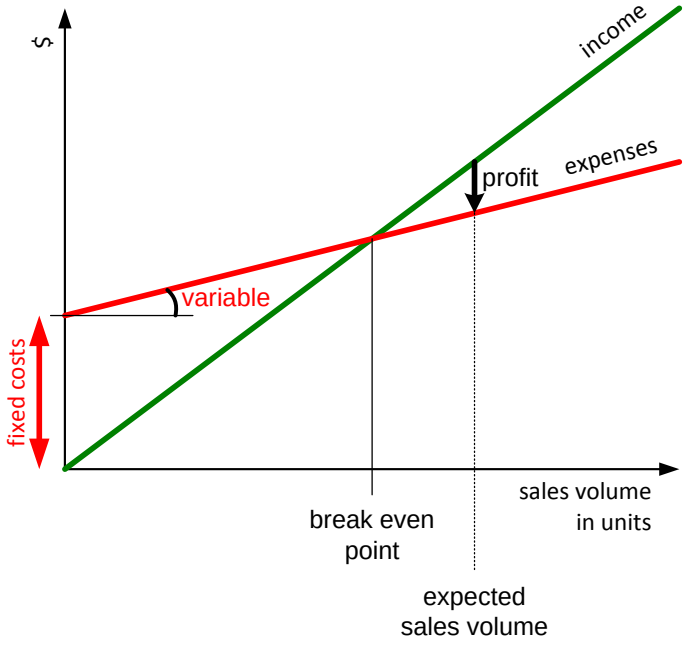


Figure 1.2: Profit as function of sales volume

1.3 Refining investments and income

The investments as mentioned before may be much more than the research and development costs only, depending strongly on the business domain. Figure 1.3 shows a decomposition of the investments. The R&D investments are often calculated in a simple way, by using a standard rate for development personnel that includes overhead costs such as housing, infrastructure, management and so on. The investment in R&D is then easily calculated as the product of the amount of effort in hours times the rate (=standardized cost per hour). The danger of this type of simplification is that overhead costs become invisible and are not managed explicitly anymore.

Not all development costs need to be financed as investments. For outsourced developments an explicit decision has to be made about the financing model:

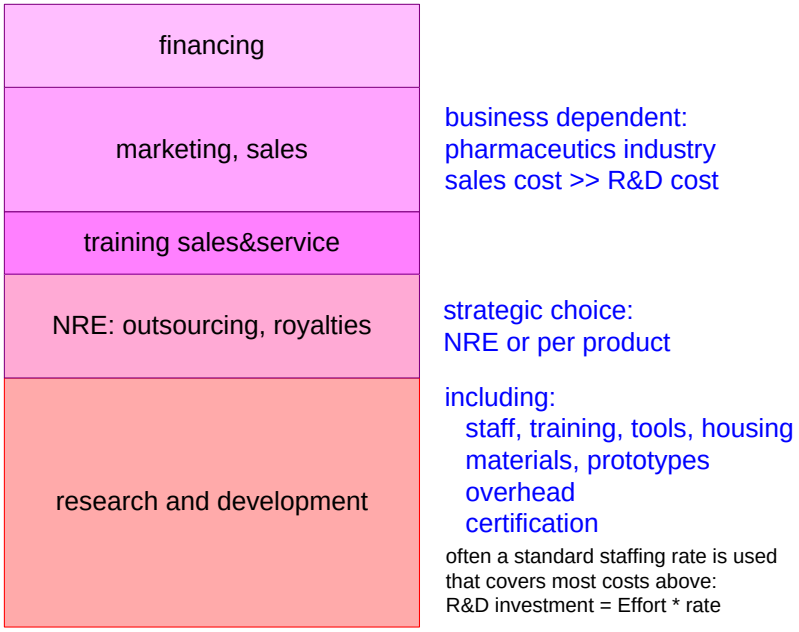


Figure 1.3: Investments, more than R&D

- the supplier takes a risk by making the investments, but also benefits from larger sales volumes
- the company pays the investment, the so called Non Recurring Engineering (NRE) costs. In this case the supplier takes less risks, but will also benefit less from larger sales volumes.

If the supplier does the investment than the development costs of the component are part of the purchasing price and become part of the material price. For the NRE case the component development costs are a straightforward investment.

Other investments to be made are needed to prepare the company to scale all customer oriented processes to the expected sales volume, ranging from manufacturing and customer support to sales staff. In some business segments the marketing costs of introducing new products is very significant. For example, the pharmaceutical industry spends 4 times as much money on marketing than on R&D. The financial costs of making investments, such as interest on the capital being used, must also be taken into account.

We have started by simplifying the income side to the sales price of the products. The model can be refined by taking other sources of income into account, as shown in Figure 1.4. The options and accessories are sold as separate entities, generating a significant revenue for many products. For many products the base products are

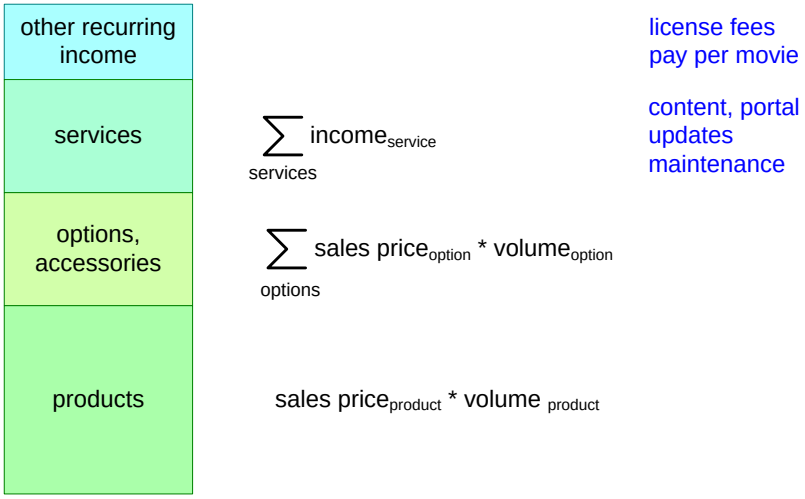


Figure 1.4: Income, more than product sales only

sold with a loss. This loss is later compensated by the profit on options and accessories.

Many companies strive for a business model where a recurring stream of revenues is created, for instance by providing services (access to updates or content), or by selling consumables (ink for prink jet printers, lamps for beamers, et cetera).

One step further is to tap the income of other players of the value chain. Example is the license income for MPEG4 usage by service and content providers. The chip or box supplier may generate additional income by partnering with the downstream value chain players.

1.4 Adding the time dimension

All financial parameters are a function of time: income, expenses, cash-flow, profit, et cetera. The financial future can be estimated over time, for example in table form as shown in Figure 1.5. This table shows the investments, sales volume, variable costs, income, and profit (loss) per quarter. At the bottom the accumulated profit is shown.

The cost price and sales price per unit are assumed to be constant in this example, respectively 20k$ and 50k$. The formulas for variable costs, income and profit are very simple:

$$variable\ costs = sales\ volume * cost\ price$$

$$income = sales\ volume * sales\ price$$

	Q1	Q2	Q3	Q4	Q1	Q2	Q3
investments	100k$	400k$	500k$	100k$	100k$	60k$	20k$
sales volume (units)	-	-	2	10	20	30	30
material & labour costs	-	-	40k$	200k$	400k$	600k$	600k$
income	-	-	100k$	500k$	1000k$	1500k$	1500k$
quarter profit (loss)	(100k$)	(400k$)	(440k$)	200k$	500k$	840k$	880k$
cumulative profit	(100k$)	(500k$)	(940k$)	(740k$)	(240k$)	600k$	1480k$

cost price / unit = 20k$
sales price / unit = 50k$

variable cost = sales volume * cost price / unit
income = sales volume * sales price / unit
quarter profit = income - (investments + variable costs)

Figure 1.5: The Time Dimension

$$profit = income - (investments + variable\ costs)$$

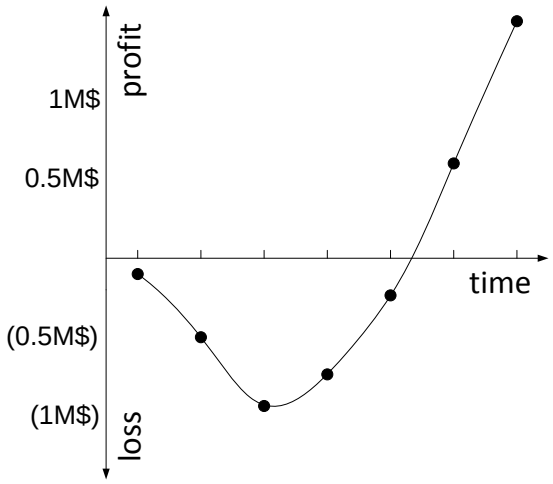


Figure 1.6: The “Hockey” Stick

Figure 1.6 shows the cumulative profit from Figure 1.5 as a graph. This graph is often called a ”hockey” stick: it starts with going down, making a loss, but when the sales increase it goes up, and the company starts to make a profit. Relevant questions for such a graph are:

- when is profit expected?
- how much loss can be permitted in the beginning?
- what will the sustainable profit be in later phases?

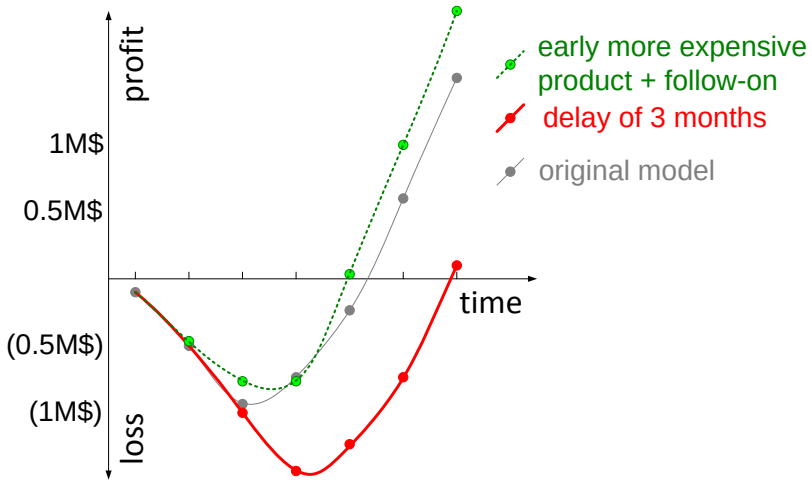


Figure 1.7: What if ...?

These questions can also be refined by performing a simple sensitivity analysis. Figure 1.7 shows an example of such an analysis. Two variations of the original plan are shown:

- a development delay of 3 months
- an intermediate more expensive product in the beginning, followed by a more cost optimized product later

The delay of 3 months in development causes a much later profitability. The investment level continues for a longer time, while the income is delayed. Unfortunately development delays occur quite often, so this delayed profitability is rather common. Reality is sometimes worse, due to loss of market share and sales price erosion. This example brings two messages:

- a go decision is based on the combination of the profit expectation and the risk assessment
- development delays are financially very bad

The scenario starting with a more expensive product is based on an initial product cost price of 30k$. The 20k$ cost price level is reached after 1 year. The benefit of an early product availability is that market share is build up. In this example the final market share in the first example is assumed to be 30 units, while in the latter scenario 35 units is used. The benefits of this scenario are mostly risk related. The loss in the beginning is somewhat less and the time to profit is somewhat better, but the most important gain is be in the market early and to reduce

the risk in that way. An important side effect of being early in the market is that early market feedback is obtained that will be used in the follow on products.

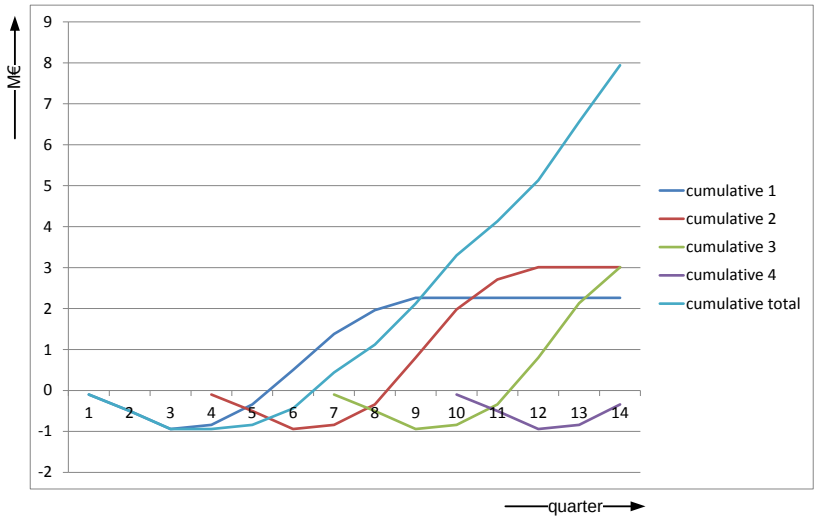


Figure 1.8: Stacking Multiple Developments

In reality, a company does not develop a single product or system. After developing an initial product, it will develop successors and may be expand into a product family. Figure reffig:SFCmultipleDevelopments shows how the cumulative profits are stacked, creating an integral hockey stick for the succession of products. In this graph the sales of the first product is reduced, while the sales of the second product is starting. This gradual ramp-up and down is repated for the next products. The sales volume for the later products is increasing gradually.

1.5 Financial yardsticks

How to assess the outcome of the presented simple financial models? What are *good* scenarios from financial point of view? The expectation to be profitable is not sufficient to start a new product development. One of the problems in answering these questions is that the financial criteria appear to be rather dynamic themselves. A management fashion influences the emphasis in these criteria. Figure 1.9 shows a number of metrics that have been fashionable in the last decade.

The list is not complete, but it shows the many financial considerations that play a role in decision making.

Return On Investments is a metric from the point of view of the shareholder or the investor. The decision these stakeholders make is: what investment is the most attractive.

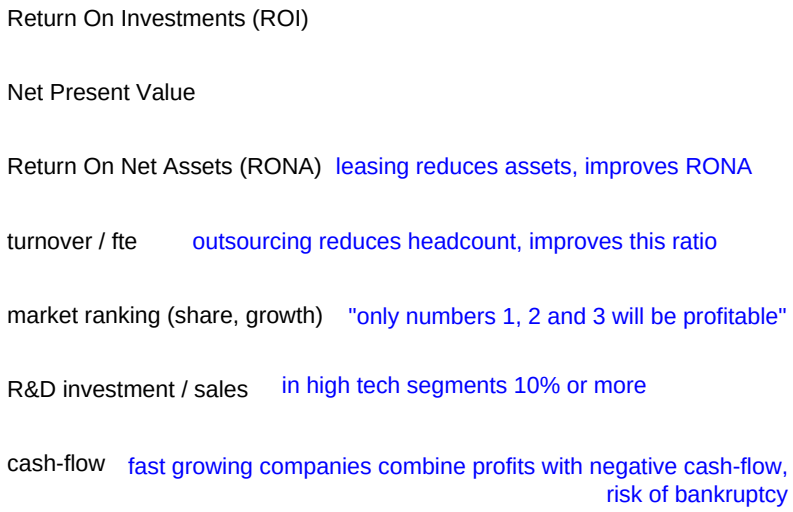


Figure 1.9: Fashionable financial yardsticks

Return On Net Assets (RONA) is basically the same as ROI, but it looks at all the capital involved, not only the investments. It is a more integral metric than ROI.

turnover / fte is a metric that measures the efficiency of the human capital. Optimization of this metric results in a maximum added value per employee. It helps companies to focus on the core activities, by outsourcing the non-core activities.

market ranking (share, growth) has been used heavily by the former CEO of General Electric, Jack Welch. Only business units in rank 1, 2 or 3 were allowed. Too small business units were expanded aggressively if sufficient potential was available. Otherwise the business units were closed or sold. The growth figure is related to the shareholder value: only growing companies create more shareholder value.

R&D investment / sales is a metric at company macro level. For high-tech companies 10% is commonly used. Low investments carry the risk of insufficient product innovation. Higher investments may not be affordable.

cashflow is a metric of the actual liquid assets that are available. The profit of a company is defined by the growth of all assets of a company. In fast growing companies a lot of working capital can be unavailable in stocks or other non salable assets. Fast growing, profit making, companies can go bankrupt by a

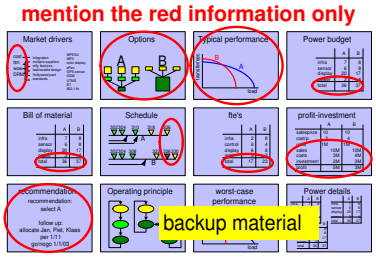
negative cash-flow. The crisis of Philips in 1992 was caused by this effect: years of profit combined with a negative cash-flow.

1.6 Acknowledgements

William van der Sterren provided feedback and references. Hans Barella, former CEO of Philips medical Systems, always stressed the importance of Figure 1.2, and especially the importance of a robust profit. Ad van den Langenberg pointed out a number of spelling errors.

Chapter 2

How to present architecture issues to higher management



2.1 Introduction

The architect bridges the technology world with the other business related worlds, by understanding these other worlds and by having ample know-how of technologies. Management teams are responsible for the overall business performance, which in the end is expressed in financial results.

Many architects and management teams are captured in a vicious circle:

- architects complain about management decisions and lack of know-how of managers
- managers complain about lack of input data and invisible architects

One way to break this vicious circle is to improve the managerial communication skills of architects. We address a frequently needed skill: presenting an architecture issue to a management team.

The architect should contribute to the managerial decision process by communicating technology options and consequences of technological decisions. Figure 2.1

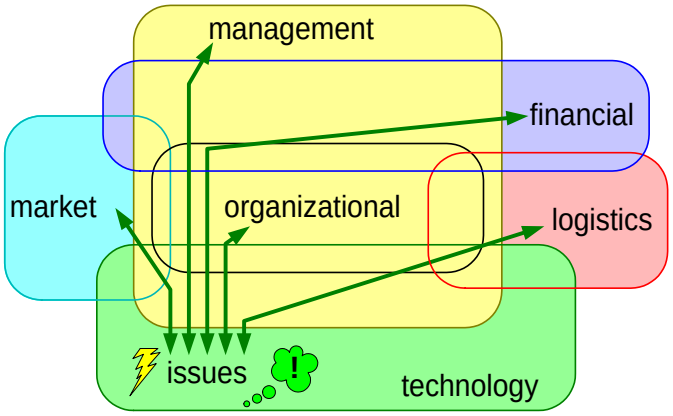


Figure 2.1: Architectural issues related to managerial viewpoints

shows a number of the relevant, somewhat overlapping, viewpoints. The figure indicates what links architects should communicate to management teams.

common characteristics	*highly variable characteristics*
+ action-oriented	? technology knowledge from extensive to shallow
+ solution rather than problem	? style from power play to inspirational leadership
+ impatient, busy	
+ want facts not beliefs	
+ operate in a political context	
+ bottom-line oriented: profit, return on investment, market share, etc.	

Figure 2.2: Characteristics of managers in higher management teams

Architects must have a good understanding of their target audience. Figure 2.2 characterizes the managers in management teams. Their main job is to run a healthy business, which explains many of these characterizations: *action oriented*, *solution rather than problem*, *impatient, busy*, *bottom-line oriented:* profit, return on investment, market share, et cetera, and *want facts not believes*. These managers operate with many people all with their own personal interests. This means that managers *operate in a political context* (something which architects like to ignore).

Some characteristics of management teams depend on the company culture. For example, the amount of technology know-how can vary from extensive to shallow. Or, for example, the management style can vary from power play to inspi-

rational leadership.

2.2 Preparation

Presentations to higher management teams must always be prepared with multiple people: a small preparation team. The combined insights of the preparation team enlarge the coverage of important issues, both technical as well as business. the combined understanding of the target audience is also quite valuable. Figure 2.3 shows how to prepare the content of the presentation as well as how to prepare for the audience.

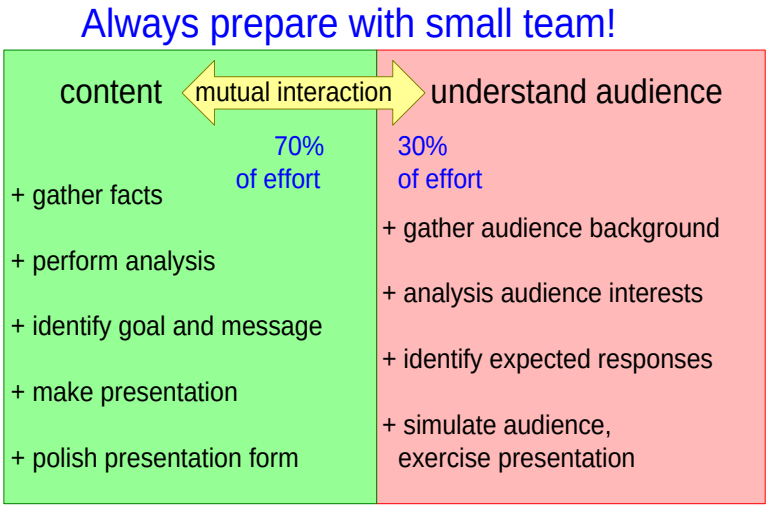


Figure 2.3: How to prepare

The content of the presentation must be clear, address the main issues, and convey the message, see also 2.3. The message must have substance for managers, which means that it should be *fact based*. The first steps are *gathering facts* and *performing analysis*. Based on these facts the *goal* and *message* of the presentation must be articulated. All this information must be combined in a *presentation*. When the presentation content is satisfactory the form must be polished (templates, colors, readability, et cetera). Although this has been described as a sequential process, the normal incremental spiral approach should be followed, going through these steps in 2-3 passes.

The members of management teams operate normally in a highly political context, mutually as well as with people in their context. This politics interferes significantly with the decision making. The political situation should be mapped by the preparation team, the political forces must be identified and understood. This is done by *analyzing the audience*, their *background* and their *interests*. The prepa-

ration team can gain a lot of insight by discussing the *expected responses* of the management team. At some moment the preparation team can *simulate* (role-play) the management team in a proof-run of the presentation. The understanding of the audience must be used to select and structure the content part of the presentation. This activity should be time-multiplexed with the content preparation; 70% of the time working on content, 30% of the time for reflection and understanding of the audience.

2.3 The presentation material

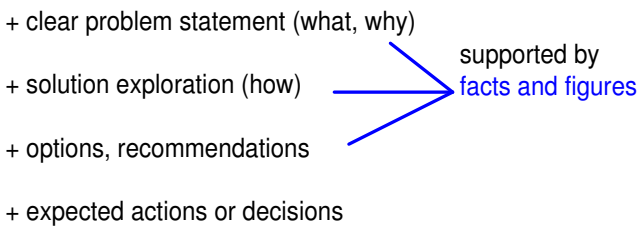


Figure 2.4: Recommended content

Figure 2.4 provides guidelines for the contents of the presentation. A clear *problem statement* and an *exploration of solution(s)* should address the technical issues as well as the translation to the business consequences. Normally a range of options are *provided* The options are *compared* and *recommendations* are provided. Note that options that are unfavorable from architectural point of view are nevertheless options. It is the challenge for the architect to articulate why these options are bad and should not be chosen. Architect enable and streamline the decision making by providing clear recommendations and by indicating what *actions* or *decisions* are required.

All content of the presentation should be to the point, *factual* and *quantified*. Quantified does not mean certain, often quite the opposite, future numbers are estimates based on many assumptions. The reliability of the information should be evident in the presentation. Many facts can be derived from the past. *Figures* from the past are useful to "calibrate" future options. Deviations from trends in the past are suspect and should be explained.

The presentation material should cover more than is actually being presented during the presentation itself. Some supporting data should be present on the sheets, without mentioning the data explicitly during the presentation. This allows the audience to assess the validity of the presented numbers, without the need to zoom in on all the details.

It is also useful to have additional backup material available with more in depth

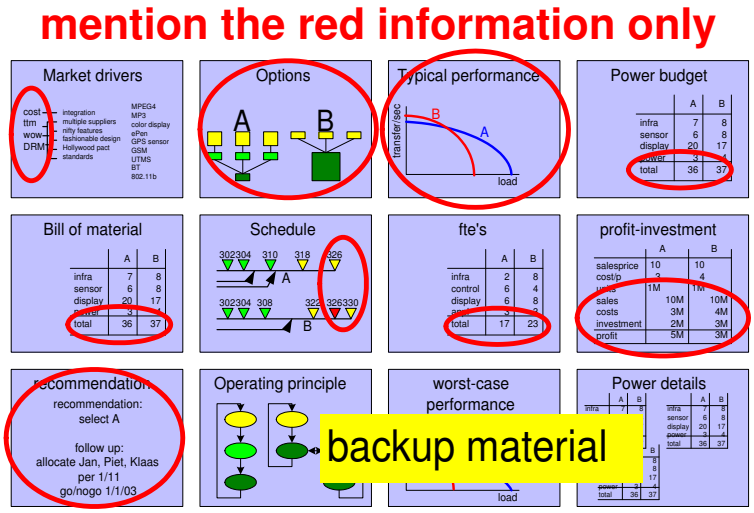


Figure 2.5: Mentioned info, shown info and backup info

supporting data. This can be used to answer questions or to focus the discussion: speculation can be prevented by providing actual data.

The use of demonstrators and the show of artifacts (components, mock-ups) makes the presentation more lively. The demonstrations should be short and attractive (from customer point of view), while illustrating the value and technological possibilities and issues.

poor form can easily distract from purpose and content

presentation material	presenter's appearance
+ professional	+ well dressed
+ moderate use of color and animations	+ self confident but open
+ readable	
+ use demos and show artifacts	but stay yourself, stay authentic

Figure 2.6: Form is important

Architects prefer to focus on the content, form is supportive to transfer the content. However architects should be aware that managers can be distracted by the form of a presentation, potentially spoiling the entire meeting by small issues.

Figure 2.6 gives a number of recommendations with respect to the form of the presentation and the appearance of the presenter.

The presentation material (slides, demonstrators, video, drawings, et cetera) has to look professional. Slides will use color and other presentation features. However, moderation in the use of colors, animations and other presentation features is recommended; an overload of these colors and features does not look professional and will distract the audience from the actual content. Information on the slides has to be readable: use large enough fonts and use sufficient contrast with the background. Pay special attention to quality and readability, when copy-pasting information from other sources. Sometimes it is better to recreate a high quality table or graph than to save effort by copy-pasting an unreadable table or graph.

The appearance of the presenter can also make or break the presentation. The presenter should give sufficient attention to clothes and overall appearance. Don't exaggerate this, you should stay yourself and still be authentic. Other people immediately sense it when the appearance is too exaggerated, which is also damaging for your image.

2.4 The Presentation

do not	*do*
- preach beliefs	+ quantify, show figures and facts
- underestimate technology knowledge of managers	+ create faith in your knowledge
- tell them what they did wrong	+ focus on objectives
- oversell	+ manage expectations

Figure 2.7: Don't force your opinion, understand the audience

Figures 2.7 and 2.8 show in the *don't* column a number of pitfalls for an architect when presenting to higher management teams. The preferred interaction pattern is given in the *do* column.

The pitfalls in Figure 2.7, *preaching believes*, *underestimating know-how of managers*, and *telling managers what they did wrong*, are caused by insufficient understanding of the target audience. In these cases the opinion of the architect is too dominant, opinions work counterproductive. *Overselling* creates a problem for the future: expectations are created that can not be met. The consequence of overselling is loss of credibility and potentially lack of support in tougher times. Architects must *manage* the *expectations* of the audience.

When presenting the architect tries to achieve multiple objectives:

- Create awareness of the problem and potential solutions by *quantification* and by *showing figures and facts*.
- Show architecting competence in these areas, with the message being: "you, the manager, can delegate the technical responsibility to me". This creates *faith* in the *architect's know-how*.
- Facilitate decision making by translating the problem and solution(s) in business consequences, with the *focus on objectives*.

This means that sufficient technological content need to be shown, at least to create faith in the architect's competence. Underestimation of the managerial know-how is arrogant, but mostly very dangerous. Some managers have a significant historic know-how, which enable them to assess strengths and weaknesses quickly. Providing sufficient depth to this type of manager is rewarding. The less informed manager does not need to fully understand the technical part, but at least should get the feeling that he or she understands the issues.

do not	*do*
- let one of the managers hijack the meeting	+ maintain the lead
- build up tensions by withholding facts or solutions	+ be to the point and direct
- be lost or panic at unexpected inputs or alternatives	+ acknowledge input, indicate consequences (facts based)

Figure 2.8: How to cope with managerial dominance

The impatience and action orientation of managers makes them very dominant, with the risk that they take over the meeting or presentation. Figure 2.8 shows a number of these risks and the possible counter measures:

Managers hijacking the meeting can be prevented by maintaining the lead as presenter.

Build up tensions by withholding facts or solutions, but be to the point and direct. For example, it can be wise to start with a summary of the main facts and conclusions, so that the audience know where the presentation is heading.

Be lost or panic at unexpected inputs or alternatives. Most managers are fast and have a broad perspective that helps them to come with unforeseen options.

Acknowledge inputs and indicate the consequences of alternatives as far as you can see them (fact based!).

An example of an unexpected input might be to outsource a proposed development to a low-cost country. The outsourcing of developments of core components might require lots of communication and traveling, creating costs. Such consequence has to be put on the table, but refrain from concluding that it is (im)possible.

2.5 Exercise

The SARCH course [2] on System Architecting contains an exercise, where the participants can apply then lessons learned by giving a presentation to a (simulated) management team. The presenter gives his presentation for the participants and the teacher, who play the role of this higher management team.

+ Bring a clear architecture message to

+ a Management team at least 2 hierarchical levels higher

+ with 10 minutes for presentation including discussion
  (no limitation on number of slides)

* architecture message =
  technology options in relation with market/product

* address the concerns of the management stakeholders :
  translation required from technology issues into
  business consequences (months, fte's, turnover, profit, investments)

Figure 2.9: Exercise presentation to higher management

Figure 2.9 shows the description of this exercise. The group of participants is divided in 4 teams of about 4 people, preferably from the same domain. These teams have somewhat less than 2 hours for the preparation of the presentation. The exercise is explained to them several days before and the teams are also formed days before. This enables the team to determine a subject and message in a background process, during lunch and in the breaks. Determining the subject and message requires quite some elapsed time. It is highly recommended to take a subject from *real-life*: ”What you always wanted to tell topmanagement”.

Figure 2.10 shows the schedule of the exercise. Every presentation is 10 minutes sharp, **including** the interaction with the management team. Directly after the presentation feedback is given by the participants as well as by the teacher. This feedback should follow the normal feedback guidelines: mentioning the strong points, before discussing the options for improvement. The teacher must ensure that sufficient feedback is given, the material in this exercise can be used as guideline.

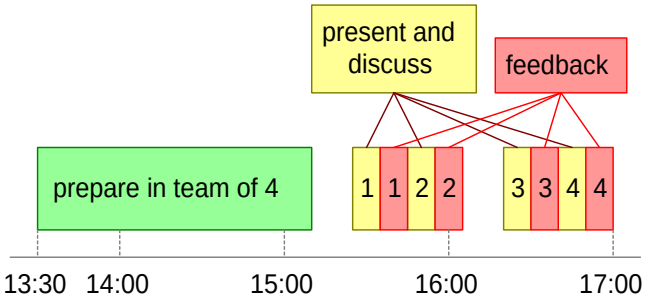


Figure 2.10: Schedule of the presentation exercise

The limited preparation time implies that the result will also be limited. The form will be limited (handwritten flipovers) and most of the historical data will be made up.

The teacher should stimulate the complete group to really participate in the role play, it can also be a lot of fun.

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History

Version: 1.1, date: January 18, 2015 changed by: Gerrit Muller

- added summary

Version: 1.0, date: May 19, 2004 changed by: Gerrit Muller

- created this module