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Straight answers for emerging issues

Eight lessons we learned about problem solving

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Eight lessons we learned about problem solving

Suggestions on how to structure, plan, analyze and present complex issues.

Problem solving has been coined as a buzzword, perhaps undeservedly so: whether alone or in teams, for academic or professional purposes, most of us are frequently required to solve problems. Some of them are part of our daily routine and can be dealt with fairly quickly; others are less orthodox and require more thought. This article suggests 8 rules to deal with the latter type, based on our own experience. As part of this learning process we have broken these rules many times (and still do, on occasion), so you will find both good and bad examples illustrating these guidelines:

1. Clearly define the problem

Many assignments start on the wrong foot by failing to clearly define the problem at hands. This can happen for a number of reasons, but in our experience it is usually due to miscommunication somewhere along the chain of command: from management to business unit, from client to supplier, from team leader to team members. Avoiding this issue is therefore relatively straightforward: ask as many questions and hold as many meetings as necessary to make sure everybody is at the same page.

While common sense is arguably the best tool for clearly defining a problem, there are some frameworks you can use. The Minto Pyramid Principle, for instance, is a structuring and communication technique that breaks down an issue in three parts (Exhibit

The SCQ™ framework	*Example 1* *An oil company looking to enter the renewable energy sector*	*Example 2* *A solar energy company looking for new markets*
Situation *What we want to do*	*Renewable energies will allow us to displace oil and future-proof our business*	*Our home market has stagnated, so we need to expand to new markets*
Complication *What is the obstacle preventing us from doing it*	*We do not have experience in renewable energies, and so far oil companies have enjoyed limited success in this sector*	*Our whole structure is geared towards our home market, expansion will take time and money*
Question *What we need to do to remove that obstacle*	*We need to identify the technologies, markets and value-chain steps that best suit our goals and experience*	*We need to identify the partners and the partnership model that will allow us to expand quickly and within a reasonable budget*

Source: X&Y Partners

Exhibit 1 – *The Situation-Complication-Question framework, a structuring and communication technique from the Minto Pyramid Principle*

1): the situation (*what we want to do*), the complication (*what is the obstacle preventing us from doing it*), and the question (*what we need to do to remove that obstacle*).

2. Take time to plan an approach

There is a tendency to jump directly into problem solving without first planning an approach, particularly when time pressed. However, it is exactly when time is of the essence that you should stop to think about the best way to address the issue at hands. This will save invaluable time and effort later on.

A good approach to problem solving will often follow the general rules of sound project management: break down the issue into smaller tasks, assign tasks to team members, define dependencies, milestones and deliverables (if your team is geographically dispersed you might want to read our article about managing virtual teams).

If you are dealing with large teams, or need to explain your approach to other people, it might be worthwhile to represent it visually, as this makes it easier to understand and remember (for instance, Exhibit 2 illustrates our approach to valuate and support the acquisition of a waste management company).

3. Combine different information sources and techniques

Combining different information sources and techniques can greatly improve the outcome of problem solving, as it will help to identify flaws in logic, unrealistic assumptions, inaccurate data and bias. This is particularly true for complex issues, such as forecasting (a topic we discuss here) or consensus-based decisions (which we address here).

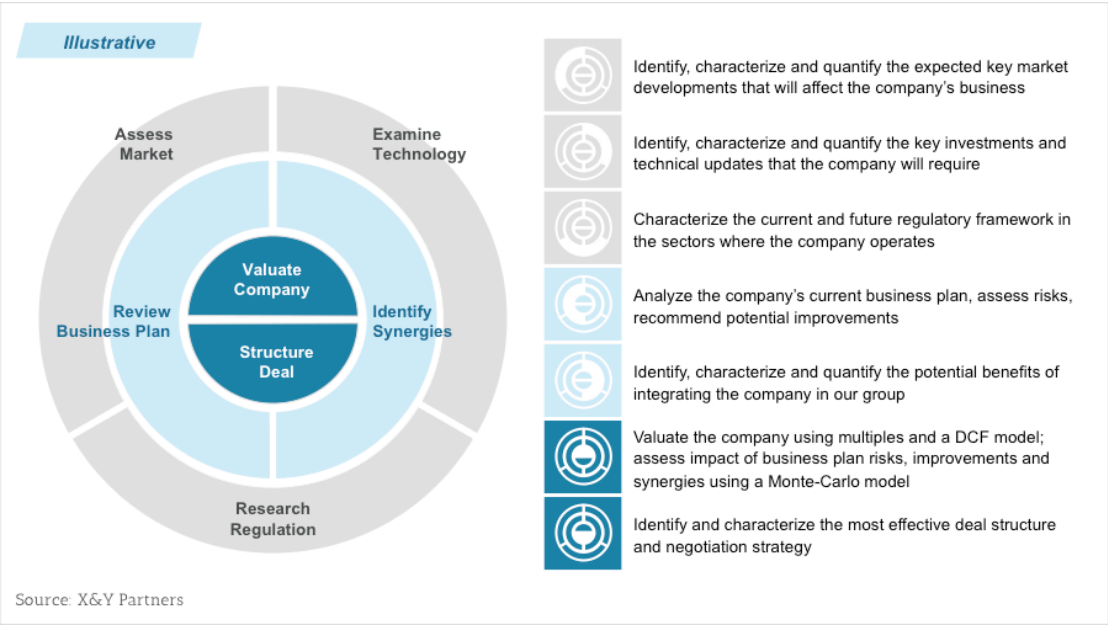


Exhibit 2 – *An example of a visual representation of a problem solving approach*

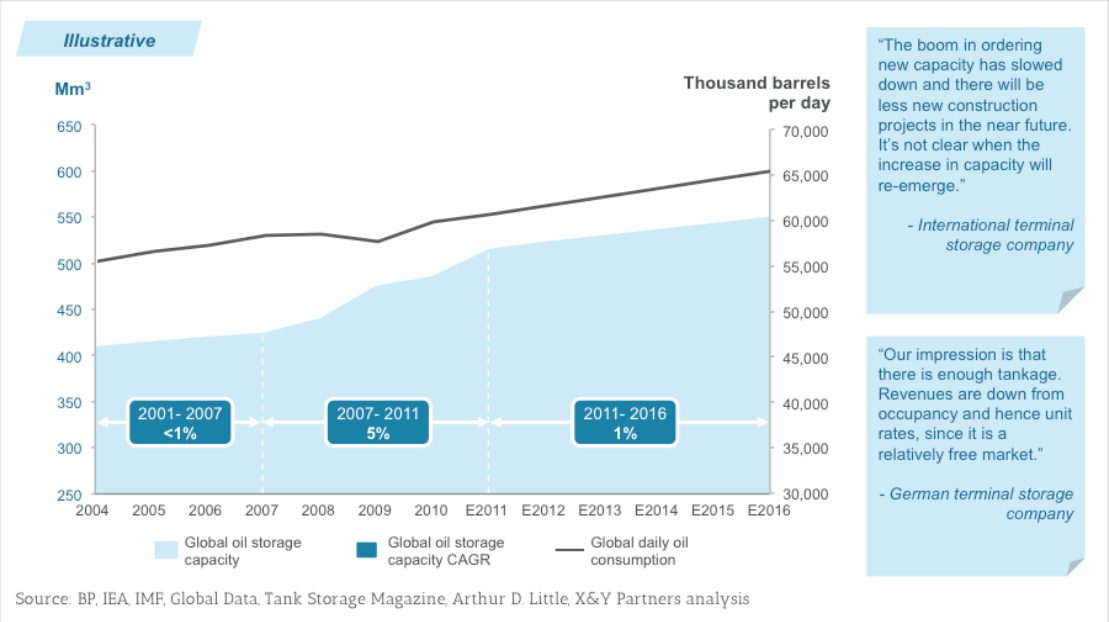


Exhibit 3 – *An example of a problem solving outcome that combines different information sources and techniques*

Exhibit 3 illustrates this approach with a global oil storage capacity forecast we did recently. The forecast combines different information sources (market reports, research, and expert interviews) and techniques (a "top-down" forecast based on oil demand, and a "bottom-up" forecast based on planned storage facilities).

4. Do not jump to conclusions

No matter how solid the planning and approach are, there will be a natural tendency to jump to conclusions early on in the process. This bias, often known as inference-observation confusion, will temp you to infer a conclusion with insufficient supporting information. Hanging on to a preliminary, and potentially wrong, conclusion will then limit your ability to analyze alternative answers impartially and objectively.

Exhibit 4 illustrates a well-known case of inference-observation confusion: recent data from meteorological stations show no relevant increase in the average surface air temperatures for the last 15 years, which prompted some people to conclude that global warming had stopped. That is, unfortunately, not the case: by analyzing the last 130 years, it becomes apparent that temperature has been increasing in the long-term, and that the slight decrease of the last 15 years is well within normal cyclical variations.

5. Favor quality over quantity

"The best way to solve a problem is often the simplest one" is a variation of the Occam's razor principle that we often apply to all stages of problem solving. Corollaries to this principle include: involve no more people than you need to; focus on the critical issue instead of spending time and energy on side issues; do not develop your reasoning beyond the point necessary to support your conclusions; communicate your reasoning and conclusions clearly, succinctly and using the least amount of industry jargon possible. In short, think Bauhaus instead of Baroque.

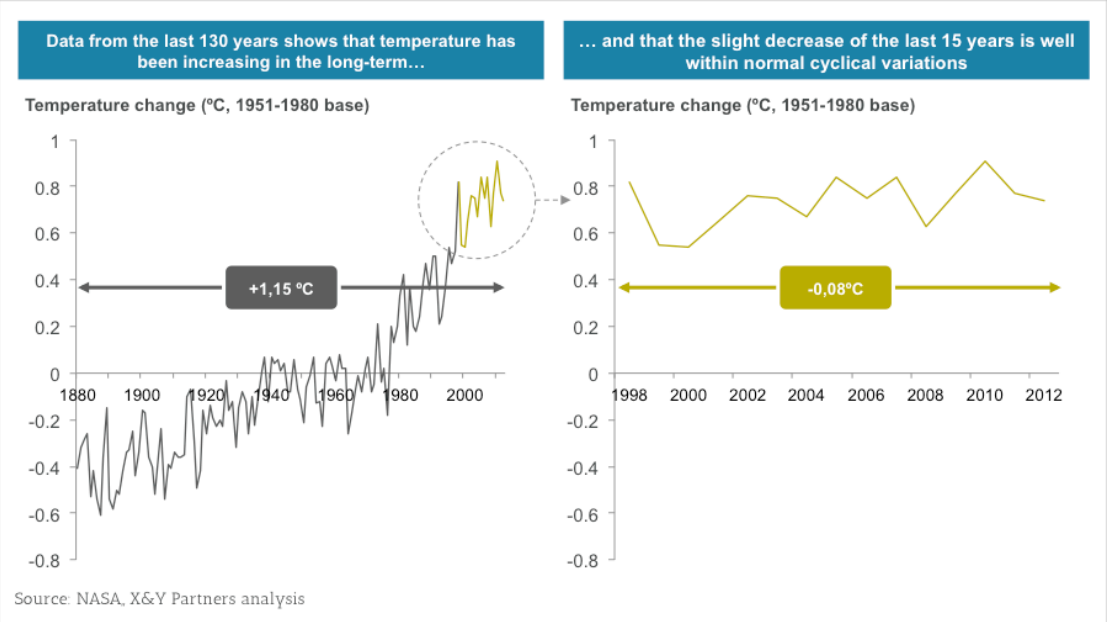


***Exhibit 4** – An example of inference-observation confusion: using only the last 15 years of temperature data to infer that global warming has stopped*

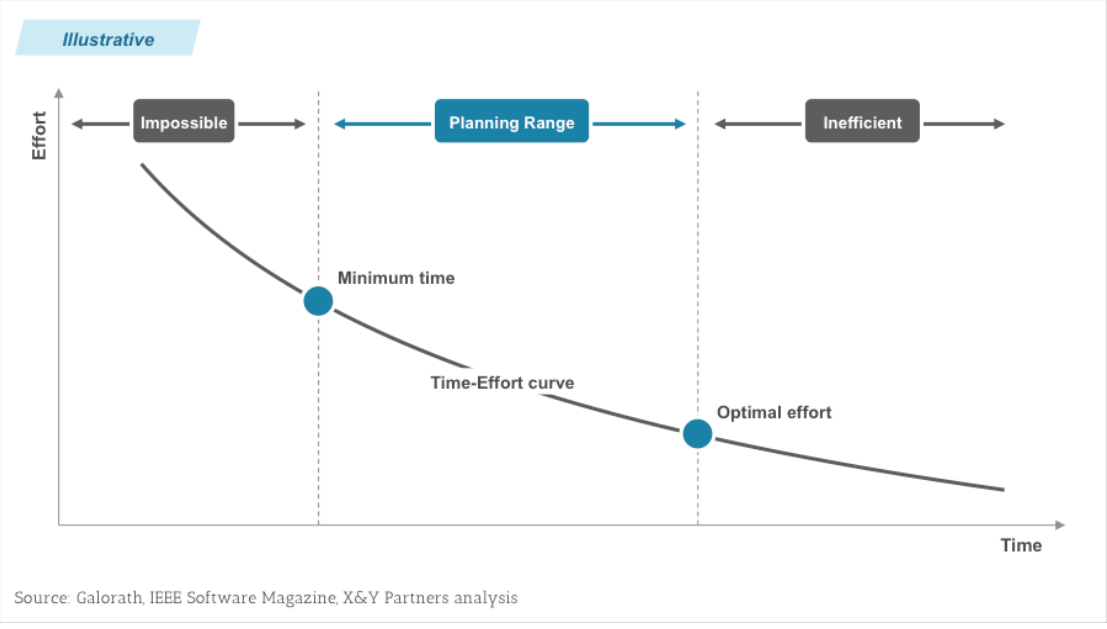


***Exhibit 5** – A graphical representation of Brook's Law, originally created for software development but applied today in many fields*

6. More time and more resources are not necessarily a good thing

In 1975, Fred Brooks postulated a principle that continues to be widely used in software development today: *"Adding manpower to a late software project makes it later"* or, more informally, *"Nine women can't make a baby in one month"*. Brooks argues that every software project has a minimum completion time, below which the benefits of adding more resources are negated by ramp-up time and communication overheads (Exhibit 5).

It can be argued that the same principle is applicable to other collaborative activities that cannot be easily partitioned into independent and isolated tasks, such as problem solving. It can also be argued that, beyond a certain point, having more time to solve a complex problem can be counterproductive, since team members risk loosing focus or being sidetracked to solve more urgent issues.

7. A good framework is an invisible framework

There is often a fine line between a well-structured analysis and a sterile one. From our own experience, that line is crossed when the framework used to support the analysis assumes more importance that the analysis itself. When communicating your outcome, focus on the reasoning and conclusions, and leave any methodologies and tools behind.

Exhibit 6 compares two possible ways of summarizing the conclusions of a Commercial Due Diligence we performed recently. The initial version, on the left, was awkward and telegraphic, because it highlighted the framework instead of the conclusions.

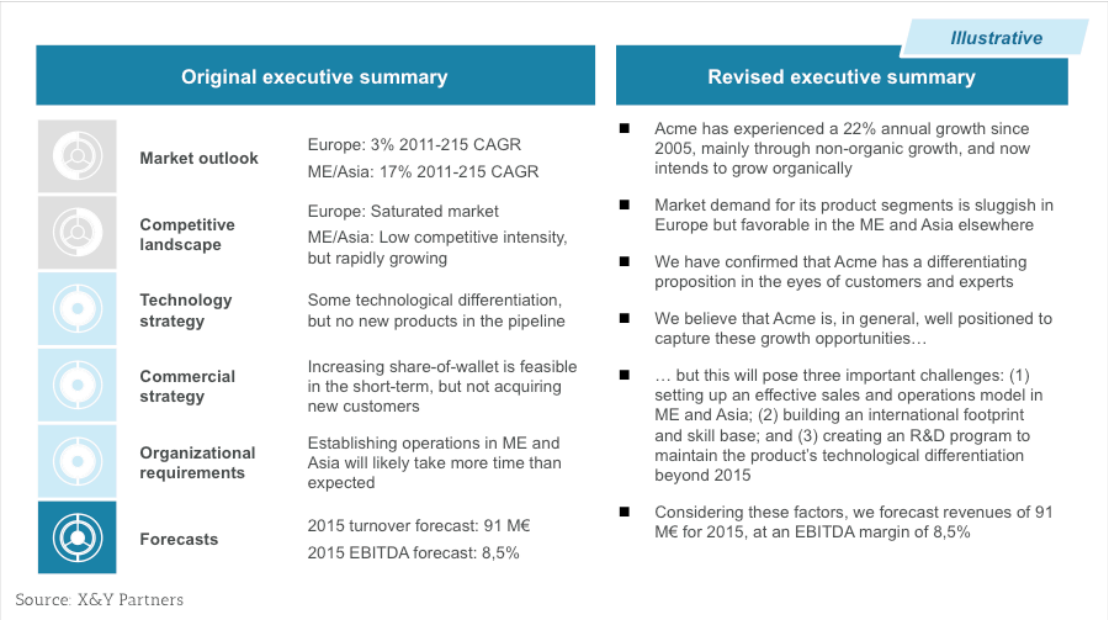


***Exhibit 6** – An example of what happens when the analysis framework assumes more importance than the analysis itself (on the left), and how this can be solved (on the right)*

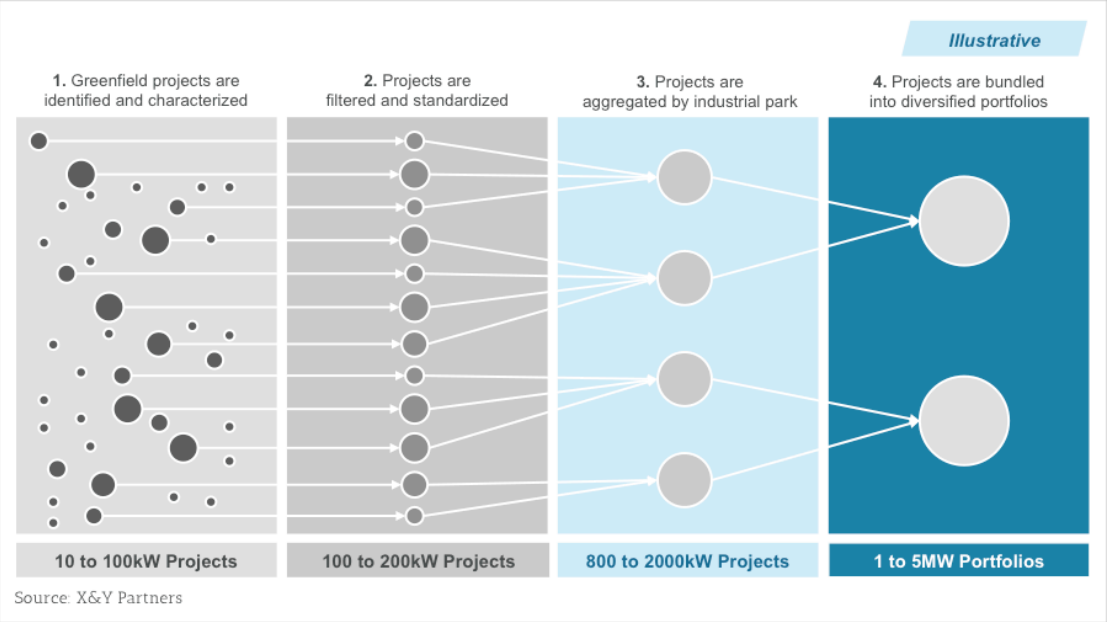


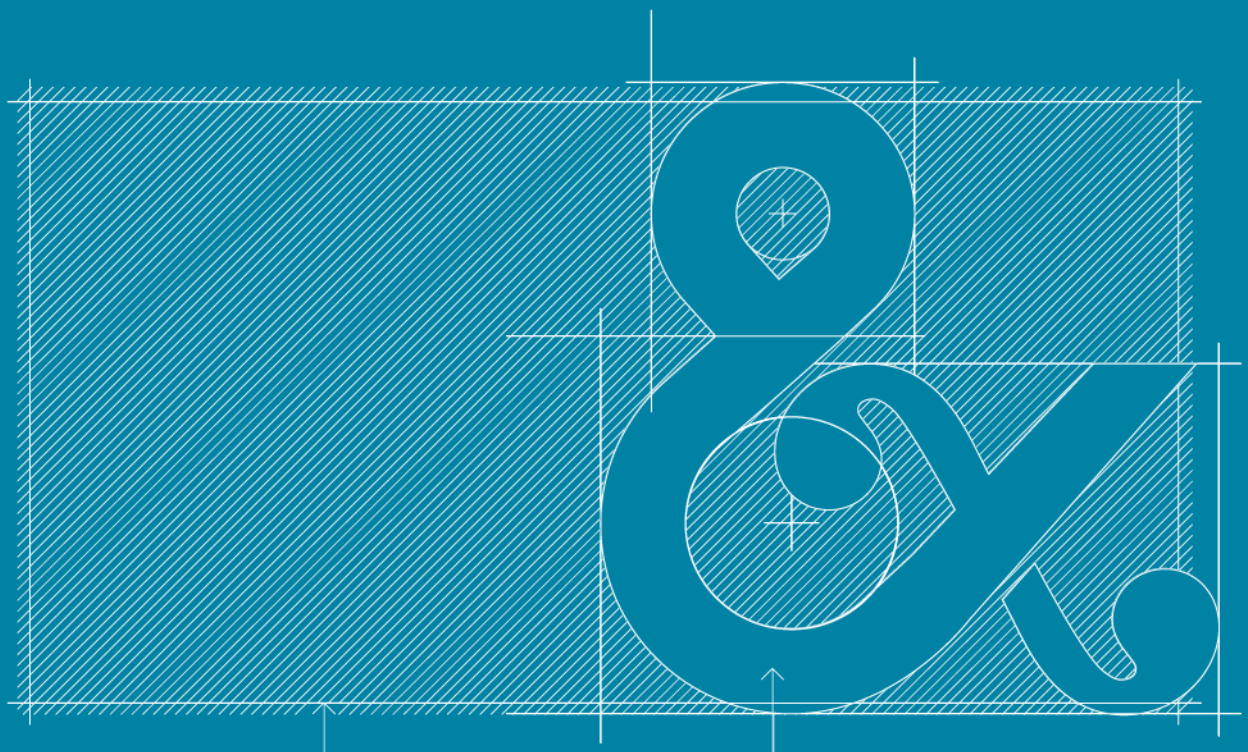
Exhibit 7 – *Example of how a visual representation can make the problem solving outcome easier to understand and remember*

The revised version, on the right, focused solely on the conclusions, making it much more enticing and easier to read.

8. Save time to carefully structure and present the conclusions

No matter how good the reasoning and conclusions, they amount to very little if they are not clearly communicated to decision-makers. As in Rule #2, a visual representation can make the outcome easier to understand and remember (Exhibit 7 summarizes our recommendation for an investment fund interested in acquiring commercial-scale solar PV plants).

In our next article we will discuss in more detail the issue of structuring, preparing and delivering a solid presentation.



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