



# Organisational discovery processes & software tools

*... building great organisations in a sea of change*

These notes will review some of the issues involved in organisational discovery processes, at individual, team and organisational levels. They will then go on to identify how computer technology can be used to deal with many of these issues, adding speed, rigour and insight to the discovery process.

## 1 The challenges

- 1.1 There are probably few people who would argue with the proposition that planning a journey requires at least some knowledge of the start position. Much the same observation applies to consultants, internal or external, who are about to launch some sort of change initiative or intervention intended to develop the organisation.
- 1.2 The difficulties in establishing the start point of a (geographical) journey are generally minimal; in respect of an organisational development journey they are formidable. Before reviewing some solutions, it will be helpful to summarise the difficulties that are often encountered.
- 1.3 The first is simply the time that is needed, when face to face interviewing is the main tactic used to collect data about the organisation's 'current state'. Related to this is the resource that may be needed to reduce the time scales involved, and additional resources bring their own problems, as will be seen later.
- 1.4 In a turbulent business world, excessively long time frames required to collect information may mean that the 'current state' that is defined through the data collection process is no longer 'current' by the time all the required data is available, and analysis is complete. (If the data collection process includes much collection and number crunching of hard, numerical market, economic, sociological and demographic data, then obsolescence is more or less a given).
- 1.5 If softer, attitude, process and relationship orientated data are collected by interview, by one person, then even exhaustive note taking is not likely to prevent important insights being lost, as connecting relationships between 'bits' of information can be missed during analysis. Moreover, the note taking and subsequent analysis delay the process even more.
- 1.6 If more than one person is involved, time frames may be shorter, but the risk of connections being missed increases almost exponentially as the number of people in the group approaches 8. Unless, that is, anyone has discovered some way of connecting a number of human brains in a parallel processing set-up, in real time ...
- 1.7 Even without these difficulties, there are other challenges to be overcome through an interview based data collection process. The fact is that the human brain is not a hard disk, as we find in computers. It does not just faithfully record input data, without

interpretation. All people process incoming data through a wide variety of filters, including those that are experiential, emotional and cognitive.

- 1.8 Much the same is true when the interviewer asks questions; the same data filtering also applies when the interviewee hears the questions – and when responses are offered. All this adds up to a high probability, if not certainty, of data contamination. If all the required skills are not present in the interviewer, this may add up to a case of a self fulfilling prophecy – the interviewer hears what is expected; that which is predicted by previous experience and pre-existing knowledge.
- 1.9 The final issue here is that of (sometimes) limited listening skills. In selling terms, the ability to 'hear flags' that are offered by potential buyers is more often honoured in the breach than the observance. In the selling context, 'flags' are expressions rather like a glimpse of the tip of a flag flying over the top of a hill, to a military observer – maybe there is an enemy battalion, just the other side of that hill. Perhaps a little reconnaissance would be a good idea, before charging over the top!
- 1.10 Take, for example, the buyer's comment, in response to a sales person's question about an existing supplier, that includes the following - "... I have to say that with very rare exceptions their service is absolutely fantastic ...". We wonder how many sales people would move right on to another topic, as it would appear not to be productive to pursue 'customer service' when the competitor is doing such an excellent job. Of course, there is always that little "very rare exceptions", but most sales people would miss it.
- 1.11 Research suggests that sales people miss such flags as often as 20 plus times per hour in typical 'selling' conversations. We hope that consultants are better at picking up the flags that fly, but we wonder. How about, for example, the respondent comment that includes - "Management style is very good here – we don't feel pressurised at all. Motivation is also pretty good, with good salaries, fringe benefits and a generous bonus scheme." There are at least four flags flying here that, like all flags, demand probing to get at hidden messages.
- 1.12 Add to these issues the political considerations that often apply, in many hierarchical organisations, that govern what is and what is not 'OK to say', and the difficulties are compounded yet again.
- 1.13 A quick summary may help here, before we move on to partial solutions – with yet more difficulties. The issues thus far include time frames in a turbulent world, missed connections in one or more human brains, data contamination, self fulfilling prophecies and missed flags.
- 1.14 One escape route is to use indirect questions, instead of direct questions. To illustrate, consider the case of just about any question on the subject of communications. In passing, note that it matters not whether the questions are open or closed, the result is much the same. "Tell me, are communications good in this organisation?" "How good are the communications in this organisation?"
- 1.15 It would be rare indeed to get "Absolutely" or "Fantastic" responses to these questions, quite apart from any other issue, simply because of the difficulties of 'getting it right' in respect of communications. Given the more likely responses of "Not really" or "Pretty poor, actually" or their like, what has the interviewer learned.? We suspect not a lot. OK – we could then probe, and try to establish what is not being communicated to whom by whom, but then a new problem arises.
- 1.16 Communication is a two way street. There are senders and receivers, and the duo

contains all the data contamination problems noted above. If communications are not working well, does the cause lie in the sender, the receiver or perhaps the medium that is being used? How can we tell? Not, we think, from the 'receiver' sitting in front of the interviewer.

- 1.17 Moreover, all questions about communications, motivation, management, styles and cultures contain judgements made by the respondent. Take, for example, the question about motivation, and the reply that the respondent's manager does not motivate well – a judgement. Motivation is also a two way street. If there is a problem, does the cause lie with the respondent; the respondent's manager; the respondent's managers' manager; formal processes or policies; the behaviour of the person at the top; economic conditions in the business? If the 'source' of the problem is the respondent's manager, is that a response conditioned by the behaviour of the respondent?
- 1.18 Again, it is unlikely that the respondent is the best source of insights into the real nature of the problem, if problem there is, at all.
- 1.19 To return to the example of communications to illustrate one possible solution, consider the indirect approach. This may be expressed as 'if you want to find out about topic A, then ask a question on topic B'. For example, suppose that 20 people are asked the question 'What are the current business priorities that Company X is facing?'.  
1.20 Further suppose that there is no common pattern at all within the 20 responses. In this case, we will have learned little about current business priorities, but we will have learned something about communications. The 'coherence test' applied this way neatly sidesteps all issues about data contamination, judgement and interpretation.
- 1.21 Take a more probable set of responses, and the idea will become clear. Suppose out of the sample of 20 people, 15 randomly distributed responses are offered, and 5 are closely similar to each other, **AND** to the priorities as expressed by the senior manager sponsoring the project, then we have learned a little more about communications. If the 5 people all happen to be in the Marketing department, then we can start to believe that communications, **ON THE NOMINATED TOPIC**, work well **DOWN** to the marketing department, and not so well elsewhere.
- 1.22 That still leaves on the table, of course, the open question about whether or not the sponsor's understanding of the priorities is valid ... Perhaps there is still a question of upward communications that needs to be explored in other ways.
- 1.23 Indirect questions and the use of the coherence test work well to eliminate some of the difficulties of data collection, but analysis becomes the new challenge. Imagine a sample of 50 respondents, each of whom was asked 20 questions. Note that the questions have to be identical, otherwise the coherence test cannot be used.
- 1.24 Now imagine the answers of the respondents being assembled in a matrix with a 20 by 50 structure, rather like a spreadsheet. Now all we have to do, after assembling the matrix from any number of pages of handwritten notes, is look for patterns of coherence and incoherence in respondents' answers, across the 50 strong sample, including all the departmental, level, location or other layers that we can build into the design.
- 1.25 This technique, which has been in use for over 25 years, and in one incarnation is known as the OrgScan, is actually very powerful and insightful, but it is still labour intensive. Moreover, practitioners still have worries about self fulfilling prophecies creeping in. So, while it is a partial solution, it is not yet the full answer to the challenges to operate more effective and more efficient discovery processes.

The idea of using a spreadsheet to capture data also opens the thinking door to a better solution, using technology, that can finally deal with most if not all of the challenges.

## **2 Technology, indirect questions and inference engines**

- 2.1 Expert systems have been around for many years, and are used extensively in credit rating systems and for medical diagnosis applications. Effectively, an 'expert' writes a series of 'rules' that take input data and increment or decrement a number of output scores. The outputs may be 'simple' such as an individual's credit rating, where a financial number is the sole output. They may be more complex - for example, a medical diagnosis program that has to select and score one or more from a number of possible outputs.
- 2.2 Inference engines are expert systems with several additional layers of reasoning built in, generally as 'rules' and often in many-to-many relationships. Moreover, inference engines generally operate by applying probability theory, and produce multiple, complex outputs. These outputs may be direct, in the sense of a set of rules linking a series of inputs to a series of outputs, or they may be indirect. In the latter case, intermediate outputs, which may or may not be reported, are treated as inputs to a second layer of rule based processing to produce a new set of outputs, and so on.
- 2.3 Inference engines themselves are generally complex. Small engines may have as few as two or three thousand formulae; more complex products may need as many as 100,000 rules. The very complexity leads to the development of what may be regarded as 'robust systems'. Most inference engines include lines of 'tuning code'. With adequate testing and tuning, using real data against known organisational models, high degrees of reliability are achieved, even if small errors in a few rules exist. Which is a complicated way of saying that if 500 transactions are employed to produce one output score, with broadly similar contributions to the output score, and one of the transactions is 'wrong', the effect on the end result is always insignificant.
- 2.4 One, sometimes overlooked, aspect of inference engines application is the effect of 'developed in slow time; applied in fast time'. In the development stage, each decision about each rule is individually considered; all the possible relationships are reviewed and either used or not, as the case may be. If used, the definition of each of several possible rules to be applied is equally carefully considered, and stored as an 'if/then/else' formula.
- 2.5 During this process any number of well researched models, (in this case describing aspects of organisational performance), may be considered, tested for applicability and then used in the design of rules. There are two key effects of rules being 'developed in slow time'. The first is that there is time to consider all key aspects of the rule being formulated, without deadlines or other sources of pressure to think and act quickly. The second is that the probability of relationships between topics being missed is very small, for a similar reason.
- 2.6 It may be considered that processing a simple set of inputs about an individual's financial status and producing a simple output demands little processing power. Processing 100,000 rules demands rather more. The fact is that computer technology is now available that consumes tasks of the latter proportion while hardly breaking into a gallop. This makes it possible to use rule based systems to handle logical constructs of far greater complexity than was ever needed for simple expert systems. One such case in point is the use of inference engines for discovery applications in business organisations.
- 2.7 Combining the use of inference engines with indirect questions and coherence tests, and using Internet based data collection processes, handles most if not all of the difficulties described in section 1 of these notes. Moreover, larger samples can be polled than would

generally be regarded as appropriate in the case of manual data collection, for economic reasons at least. This suggests that discovering 'current state' conditions can be made both fast and rigorous at the same time.

- 2.8 (In passing, there is no implication in these notes that one to one interviews or workshops of some sort should not be used, as part of discovery processes. If technology provides enhanced 'reach' to the discovery process, face to face conversations will always add 'richness'. It is likely that the ideal solution will generally include both technology-enhanced data capture and face to face conversations. The caveat is, however, that face to face conversations introduce the potential for data contamination, as described in section 1. Practitioners need to be aware of this potential and design their interactions accordingly.)
- 2.9 Inference engines combine neatly with indirect questions – described above – as the engines take the data generated by the indirect questions and reason (infer) the outputs from those data. This is the normal approach used by expert systems and inference engines alike. (It would not be very useful to ask applicants directly what their credit rating is, any more than it is useful for doctors to ask their patients "... and what's wrong with you then?". Credit rating agencies never use direct questions; amazingly, many doctors still do! Maybe there is a lesson in there somewhere!)
- 2.10 Moreover, inference engines provide the opportunity to go beyond the insights generated through more traditional staff surveys. With few exceptions, the latter identify symptoms of problems and not the causes of the problems. Whatever else may be true about organisational interventions, those that offer to treat symptoms of problems are seldom successful. They would be analogous to offering a pain killing pill to a patient suffering from constantly recurring headaches.
- 2.11 Where multiple possible and actual causes of any one problem may exist, tools based on inference engines offer two possibilities. The first is the usual drill-down querying capabilities to locate differences in assessed patterns throughout the whole sample. Combined with graphical reports, these are very powerful for stimulating open conversation about effects and causes – and developmental actions to address them.
- 2.12 The second is the development of diagnostic tools that enable facilitated conversations to be targeted directly on to the possible causes of organisational ills. As a generalisation, these will include structural design decisions, process design decisions and the behaviour of managers. Implicitly covered in these are the technical, political and cultural systems, both hard and soft, that are operating.
- 2.13 In summary, inference engine technology provides:
- Speed – of data collection and processing
  - Robust systems – that provide rigour in analysis
  - 'Clean data' - avoidance of data contamination problems
  - Identification of causes – for direct treatment
  - Graphical reports – they convey complex messages in an understandable way
  - Diagnostic tools – to help with the identification of complex causes and possible fixes
  - A complete intervention process – that will stimulate healthy change processes