Wicked problem analysis – enterprise search

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In 1973 Horst Wittel and Melvin Webber authored a paper entitled 'Dilemmas in a General Theory of Planning' (Policy Sciences 4 (1973), 155-169). In this paper they set out the basis for what they regarded as 'wicked problems', which were beyond the capacity of traditional methods to resolve.

In particular wicked problems cannot be addressed by a linear project management methodology because of the multi-dimensional nature of the problems that need to be resolved. Over the last few years a design thinking approach has been used with some success. Design thinking in management is a creative process, in which after gathering information (often through ethnographic techniques) the manager approaches problems through imagining possible solutions, rather than analysing the existing issue reductively. A key element in resolving wicked problems is that the leader's role is in asking questions in order to help define the complexity of the problem facing the organisation and create conditions for 'collective responsibility' in addressing it, rather than the traditional expectation that they will offer a solution.

The table below maps enterprise search (ES) to the characteristics of a 'wicked problem' and shows a very high degree of alignment. This helps to explain why an approach which takes individual elements of a search solution and tries to solve them will almost certainly fail. The requirement is to work as a team across multiple elements of an ES implementation with a leader with the experience to challenge and then work with a team to resolve an element. Even then there is a high probability that not all the elements can be resolved, which is why ES applications need to be well supported with a search team post a nominal implementation.

Characteristic	**Justification for ES as a wicked problem**
1. There is no definitive formulation of a wicked problem. Different approaches to the problem see it differently. Different proposed solutions reflect the fact that it is defined differently.	The core problem is usually user dissatisfaction with the ES application. However this dissatisfaction is often only identified through narratives and it is very difficult to arrive at a defined reason for this dissatisfaction.
2. There is a 'no stopping rule'. Unlike in an experiment where you can stop natural processes and control variables, you cannot step outside a wicked problem or stop it to contemplate an approach to answering it. Things keep changing as policy makers are trying to formulate their answers.	New content is being added, and business requirements are changing in response to opportunities, challenges and process changes. Once launched switching off an ES application is not feasible because of the impact on users and the business
3. Solutions are not true or false, rather they are good or bad. There is no right answer and no one is in the position to say what is a right answer. The many stakeholders focus on whether proposed solutions are ones they like from their point of view.	There are multiple stakeholders in different departments and locations, and the needs of each user are specific to the user.
4. There is no test of whether a solution will work or has worked. After a solution is tried the complex and unpredictable ramifications of the intervention will change the context in such a way that the problem is now different.	Changing (for example) the ranking algorithms may benefit one group of users but provide others with less satisfactory outcome
5. Every solution is a 'one-shot operation'. There can be no gradual learning by trial and error, because each intervention changes the problem in an irreversible way.	A change in (for example) the user interface, perhaps by adding new filter, may open up an unexpectedly beneficial solution to a user requirement which may not have been defined at the outset

6. There is no comprehensive list of possible solutions.	ES applications have very rich user interfaces and the multiplicity of the elements of these interfaces results in potentially thousands of different possible solutions
7. Each wicked problem is unique, so that it is hard to learn from previous problems because they were different in significant ways.	Experience gained with similar search technology in a similar company is of limited benefit because (for example) the content is totally different in topic and quality
8. A wicked problem is itself a symptom of other problems. Incremental solutions run the risk of not really addressing the underlying problem.	Problems with ES implementations almost invariably arise from a lack of an information management strategy that treats information as a collection of assets
9. There is a choice about how to see the problem, but how we see the problem determines which type of solution we will try and apply.	With ES problems IT and multiple business departments each have a view on a potential solution
10. Wicked societal problems have effects on real people, so one cannot conduct experiments to see what works without having tangible effects on people's lives	If a change in ES results in someone making an incorrect decision based on the information presented then trust will be lost in the ES and business performance could also be affected. These impacts are irreversible.
11. As well as there being no single definition of the problem, there are multiple value conflicts wrapped up in it	The value conflicts arise out of having no framework for the value of information as an asset, and therefore the importance of ES against other systems where the value can be defined
12. There are also multiple ideological, political or economic constraints on possible solutions.	Invariably ES applications are jointly funded and jointly managed. Management is often by Steering Committee where the Chair of the Committee often has no defined authority
13. There is great resistance to change	Because of the complexity of ES solutions, especially in terms of content scope and scale, there is a tendency to 'make do' with what exists
14. With social messes, in addition to the complexity of the problem itself, data to describe the problem is often uncertain or missing. It may be difficult actually to collect information. There is no one expert with the answer.	Although there is a range of direct quantitative measurements (server uptime, search analytics) there are also many qualitative metrics, often second order, such as an employee engagement survey
15. Because the problems are complex, there are multiple possible intervention points.	ES applications are modular, and often involve less-than-perfect connections to content and other applications. It can be immensely difficult to isolate a single cause of the problem and the optimum intervention point.
16. The consequences of any particular intervention are difficult to imagine	ES problems cannot be gamed as they are probabilistic, so scenarios and outcomes cannot be developed to predict the outcome of any change, especially when the outcome cannot be quantified.