

Process Prototyping in a DSDM Project

Table of Contents

1	INTRODUCTION.....	2
1.1	AIM.....	2
1.2	AUDIENCE.....	2
1.3	CONTRIBUTORS.....	2
2	THINKING “PROCESS”	3
2.1	WHAT IS PROCESS THINKING	3
2.2	KEYNOTES	3
3	PROCESS PROTOTYPING BASICS	5
3.1	WHAT IS IT?	5
3.2	WHY IS PROCESS PROTOTYPING USEFUL?	6
	<i>People</i>	6
	<i>Process</i>	6
	<i>Technology</i>	7
3.3	WHEN IS PROCESS PROTOTYPING USED?.....	7
3.4	WHO SHOULD TAKE PART?	7
3.5	WHERE ARE THE PROTOTYPING SESSIONS HELD?	8
4	HOW DO YOU GO ABOUT PROCESS PROTOTYPING?.....	9
4.1	THE FEEDBACK LOOP FOR PROCESS PROTOTYPING	9
4.2	OBJECTIVES	9
4.3	SCOPE	10
4.4	FACILITATING THE WORKSHOP	10
4.5	WORKSHOP CONTEXT AND CONSTRAINTS	11
4.6	MODELLING	11
4.7	THE ROLE OF TECHNOLOGY	11
4.8	SETTING PRIORITIES	12
4.9	PROTOTYPING THE SCENARIO AND GAINING FEEDBACK	12
5	HOW PROCESS PROTOTYPING RELATES TO DSDM.....	13
5.1	THE CONTRIBUTION OF PROCESS PROTOTYPING	13
5.2	PLACE IN THE DSDM LIFECYCLE AND PRODUCTS	13
	APPENDIX A - PROCESS MODELLING	15
	APPENDIX B - SOFT SKILLS.....	16

1 Introduction

This paper centres on the technique of process prototyping. The technique is intended as a useful counterbalance to IT-oriented models which are easy to visualise as IT solutions but which give the business world no real handle on the impact on its people and business processes.

The paper is not so much adding to DSDM (Scenario Modelling is already a recommended technique) but suggesting that a shift in project focus from IT delivery to business solution delivery, may make DSDM projects even more effective.

This paper is based on and reflects the business process and RAD experiences of the Business Process Task Group of DSDM, with learning accrued across many projects. Specific case studies are not included.

1.1 Aim

The aim is to help all DSDM team members to contribute to a holistic solution to a business problem through effective and imaginative use of process prototyping.

1.2 Audience

The intended readers are DSDM team members and so this paper uses DSDM terminology without further explanation.

If you are a business user of IT and you have been involved in IT prototyping workshops, then you may be familiar with the following sort of feeling:

‘Well this system looks very useful, it demonstrates the major features we have thought of, but will it actually allow our team to handle 20% more customers once it is in place? Will our use of this system generate unexpected side effects for field support? How will it affect morale, when we use it all the while?’ and many other similar questions. It comes down to - ‘How can I make more informed decisions?’.

1.3 Contributors

The original contributors to this White Paper were Peter Bradley, Jane Searles (Task Group Chair), Ian Smith, Linda Stacey, Neil Turner and Sami Zahran.

This White Paper has been updated to reflect DSDM V4.2 by Dorothy Tudor in March 2003.

2 Thinking “process”

2.1 *What is process thinking*

Building a process-based system is different from building conventional IT systems. Process thinking is different because:

- Process is about co-ordination and management of people, tasks and information, not the input and output of data.
- Process requires the capture and modelling of tasks, roles and relationships, not entities and attributes.
- Process has a more direct impact on users, their jobs and working practices because of its co-ordination and management role, than conventional IT systems.
- Process can be used to integrate information from a variety of other applications and systems for processing to users in the context of a business process.
- Process development is not well-supported by CASE tools and conventional development methods.
- Effective and successful implementations of process-based systems are usually the result of teamwork between business managers, users, analysts, and developers.

The implication of these points is that building and implementing process systems requires a totally different approach to conventional development. DSDM principles lend themselves as the nearest to satisfy the above points. The authors of this paper believe that by injecting the process focus into DSDM, the realisation of business benefits out of IT systems will be more achievable. This paper suggests process prototyping as a vehicle to inject process-focus into DSDM projects.

2.2 *Keynotes*

- People, process and technology are the three major ingredients of a business solution. A holistic design approach should encompass all three.
- The empowered DSDM team should fully exploit their design skills. *‘If I am not there for the users (re. business process design), why should I expect them to be there for me (re. IT functionality design)?’*
- Soft skills (interpersonal and communications) are central to understanding people and process issues.
- A facilitated workshop approach to the Business Study can significantly cut its timescales.
- Techniques for ‘bridging the semantic gap’ between business objectives and IT solutions are essential support for the empowered users.
- Process prototyping is key to ‘bridging the semantic gap’ between IT and business people

- Having a growing prioritised catalogue of business process scenarios to work with, enables IT testing to address the business effectiveness of the solution.
- Business process thinking and process design help understanding and co-ordinating DSDM projects within the wider business context.

3 Process Prototyping Basics

3.1 What is it?

When a business change is undertaken, the three components of the business need to be re-aligned to focus on achieving the objectives of the change. These components are:

- the people (their jobs, organisation, culture),
- the business processes they follow
- the IT systems that they use

As the change is implemented, changes to these three components need to be synchronised.

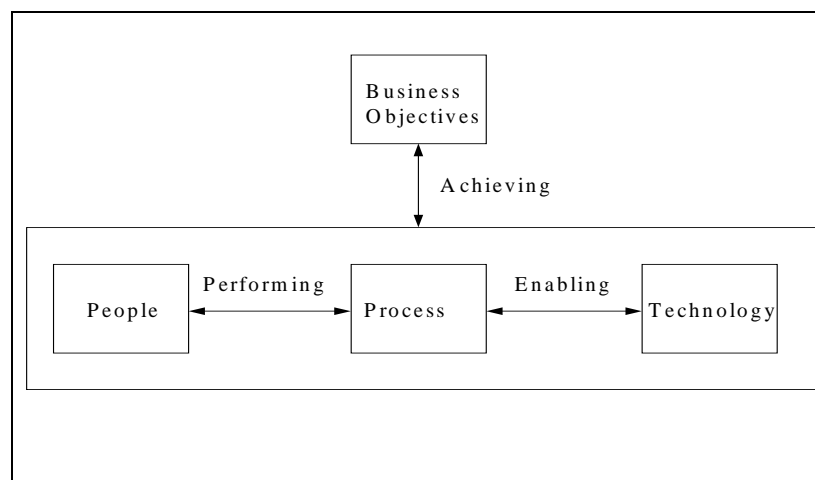


Figure 1. Components of a Business Solution

Process Prototyping is

“a technique for promoting a clear understanding of a proposed business process and can be used within a workshop.”

It involves taking a draft process design, developing scenarios based on key aspects of the proposed business change and exploring how the new business process will cope. As a result issues with the new process design are exposed and improvements made. It also enables the business staff to experience and refine their new ways of working. The scenarios will cover how people will be organised, how they will work and how they will be supported by IT after the change is implemented.

Scenarios are centred on specific situations derived to test out general purpose designs. Because they are specific, the scenarios can then be role played or walked through by the workshop participants. The scenarios will serve to illustrate the key ‘ability-to’s identified by the business staff. (e.g. The ability to respond to any complaint within an hour). They will be iteratively refined as development proceeds and are the prime mechanism for prioritised testing of the growing solution against its business objectives. The scenarios are used to identify that a phase is complete (i.e. its objective has been reached). In order

for scenarios to operate in this way it is essential that the project has clear business objectives.

3.2 Why is *Process Prototyping Useful*?

It focuses on the business objectives

- The technique enables the team to assess whether the emerging process will deliver measurable improvements in business performance and achieve its business goals.
- It promotes coherence in the solution, by ensuring that the working practices and IT systems support the cultural changes that are needed.

It is effective

- It encourages major mistakes to be discovered as early as possible and exposes risks. It cancels ineffective projects quickly.
- It reduces timescales for Feasibility and Business Studies.
- The team all share the same vocabulary, responsibility and ownership.

It addresses the issues

People

- It allows the whole business team to share the opportunity to shape and buy into the way that they will do business in future and to learn through iteration about what will and will not work.
- It reduces conflict and engenders creativity in deciding on a solution by encouraging examination of overall impacts as well as more local concerns.
- It provides the opportunity to explore the impacts of multiple inter-related changes.
- It allows the business staff to get involved in the change and understand how proposals will affect themselves. If you hear it or read it you forget, if you see it you remember it for a while, if you do it (i.e. prototype) you believe it is yours and you own it.

Process

- It allows the team to explore and understand:
 - how the business currently works
 - how it could work (vision)
 - the implications of actually making the change (reality).
- It tests that the growing solution is coherent and likely to achieve its business goals.
- It exposes risks and weaknesses in the overall solution.

Technology

- It allows the technology to be viewed from a business viewpoint, and described in business language, providing an improved basis for assessing benefit, priorities, acceptability and risk.
- It tips the focus away from detailed functionality and user interface concerns in favour of determining the principles of the solution first.
- The scenarios prescribe and develop test situations which can be used to validate the ongoing IT prototyping.

3.3 When is Process Prototyping used?

Process prototyping takes place within process programmes and projects based on DSDM, whenever the way people work needs to change, and particularly when this impacts teamwork. This can either be as part of a process redesign or improvement programme *or* due to the introduction of new or improved technology - or both.

A large scale process change project which addresses an entire end-to-end process may be too large to be tackled by a single DSDM team in a single phase. Multiple teams and phased development may be required. In this case, there are likely to be teams focused on business architecture and integration testing. (See white paper on Large Projects.)

Process prototyping can operate at any level of detail, so it is just as applicable to evaluating the overall business architecture and integrated solution, as it is to validating a component business process.

Process prototyping takes place throughout the whole project, as a means of testing and measuring progress. It can begin as soon as there is an outline design and the key personnel are convinced by and committed to the value of the incremental approach. It will then continue for the rest of the project.

It is beneficial to start before the project objectives are finally agreed as it can throw light on the project feasibility. One can start by prototyping the vision as articulated by the Executive Sponsor or Visionary, and then repeat the exercise as the vision is gradually fleshed out into the implemented solution. In this way the IT development and manual procedures can be developed side by side, with trading between the manual and IT elements.

The initial process prototype can be turned into a demonstration of the vision, to obtain stakeholder buy in and demonstrate the value of the solution to the business, for cost/benefit assessment.

Process prototyping is particularly useful when the growing solution is evaluated by its potential users and as a means of evaluating alternative solutions. The final versions of the business scenarios will then form the basis for defining successful implementation.

3.4 Who should take part?

Process prototyping is steered by the Executive Sponsor and the user representatives, with the creative input of the IT representatives (and the support of the Coach and Change

Councillor, if these specialist roles exist for the project). The results will be captured and disseminated by the Scribe. As with any facilitated workshop, it is essential to have the appropriate staff for effective empowered decision-making (MARK - Motivation, Authority, Responsibility, Knowledge). Further useful techniques for selecting workshop participants is given in the Appendix B - Soft Skills.

Another important specialist role is that of the Process Co-ordinator. A Process Co-ordinator should:

- Bridge the gap between IT and Business
- Have knowledge of the vision of the business
- Develop, validate, and manages the achievement towards the vision.
- Maintain on a day-to-day basis the vision and the solutions and relate them to each other.
- Have a wider view of the end-to-end process (but he/she should not be the process owner).

3.5 Where are the prototyping sessions held?

The initial prototyping workshops will be best held in a facilitated workshop environment. This should be away from the normal place of work, to support changing relationships. Final sessions will be held (if appropriate) in the live environment, for final tuning. It may be useful to provide a prototyping facility near to the normal working environment, to encourage exercising of prototypes in odd moments. A useful variant of this is a 'model working environment' where all relevant workplace features are present and the team can be separated from seeing each other, to simulate different locations, whilst still being able to talk to each other to analyse how things can be improved.

4 How do you go about Process Prototyping?

4.1 The Feedback Loop for Process Prototyping

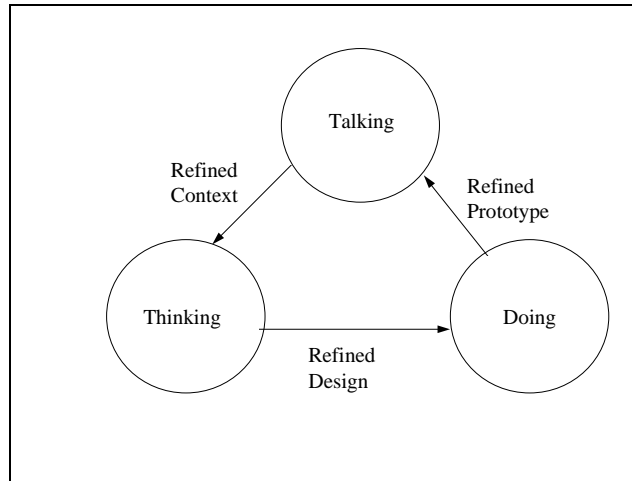


Figure 2 The feedback loop

Process prototyping is that easy and that difficult! It is a simple concept, but hard to practice i.e. instigate and sustain. It is a succession of evolutionary feedback loops of “Talking and Listening - Thinking - Doing”.

Talking and Listening

Initially establishing the scope, objectives and issues to be addressed. Thereafter testing the solution and exemplifying ways in which the current solution succeeds and fails to meet the objectives, leading to focus on areas for further improvement. This activity creates feedback on the process scenarios.

Thinking

Identifying alternative approaches, to resolving the issues to be addressed, then looking for synergy, and establishing the chosen design. This activity creates feedback on the process design based on experience with the process scenarios.

Doing

Building or improving a solution to reflect the current thinking. Then configuring it to specific scenarios and operating it to see how it works. This activity creates feedback on the process implementation based on experience with the process scenarios and design.

4.2 Objectives

The objective of a process prototyping workshop is to identify improvements to a solution by enacting scenario models of that solution, which span people, business process and IT.

4.3 Scope

The design and its related scenarios can be used by projects and/or teams with wide or narrow scope, to answer questions such as:

- How will we design and build a ship to current standards, whilst achieving improved timescale and profit targets?
- How will we paint the ship more quickly and cheaply without increasing the risk of rusting?

The first is an example question to be asked by a large scale project, within which the business architecture team would identify the component processes to be improved, and each component could be addressed by a separate team and/or phase of delivery. One of these teams could be empowered to address ship painting and would thus ask questions such as the second example. The level of detail in the process prototype will correspond to the level of detail being addressed by the project/team at that time.

It is essential that there is an effective co-ordination process for change teams to liaise with each other and their overall project. The teams must be clear about their own role in the overall solution and must have the channels to recommend improvements which extend beyond their own project. This process is then available whenever an innovative solution from a group exceeds their problem scope. It is therefore important that all workshop members keep their eyes on the big picture and not just concentrate on their own process component.

Initial sessions will focus on key features of the solution, and brainstorming problem areas. Later sessions will provide more detail.

4.4 Facilitating the Workshop

Brainstorming tools and techniques are used to encourage creativity, as are evaluation and decision-making techniques for making progress. See Appendix B - Soft Skills.

Workshop members need to be encouraged to express how they wish to work, and their ideas explored by challenge, debate and active listening. For a new team it may be beneficial to run a team building exercise prior to the first workshop, in order for the group to function effectively. To manage expectation, the team members must be open and honest with each other about constraints and whether a change is feasible.

The group will need support in:

- coping with uncertainty;
- focusing on goals;
- being aware of timescale and resource constraints.

The process prototyping workshops are not just about process but are also about team building.

4.5 Workshop Context and Constraints

There follow some examples of external factors which will modify the style and content of the workshops.

Some approaches focus on capturing scenarios of current practice before brainstorming improvements; others focus on designing the new solution from square one, relying on the participants' knowledge of the pros and cons of how things are being done currently. The second type of approach is much faster but may not always be practical. The first type of approach is effective when the current position is not well understood or requires too many people to take part in one workshop.

Some approaches will have a separate re-design stage which will precede the process prototyping activity and therefore key features of the solution will already be identified. Other approaches will tackle design of a solution within the workshop.

Again the second approach is faster, but the first is preferable if the change needs to be extensive or radical or hard to find. In the pre-designed case it is important to leave the solution incomplete in some respects in order to give opportunities for creativity and further development during the workshop. It is often valuable to examine a number of alternatives in terms of their contribution to the business objectives.

The constraints on use of IT systems will affect the scenarios. In some cases a specific package or legacy system must be treated as a given, and should be identified as part of the prototype. In other cases the IT members of the workshop will be required to innovate in terms of applying possible technologies to the scenarios.

It is therefore important to identify the appropriate approach for the workshop in hand, what aspects will be addressed and how progress will be achieved. The facilitator must ensure that there is understanding and buy-in to the approach chosen.

4.6 Modelling

When a project involves design of a business process, then the design techniques need to be primarily process oriented rather than data oriented. Introduction of data objects and definitions at a very early stage of process definition can hamper creativity in further design of the solution. Building a data model before the process model can lead to setting the current practices in concrete. The best choice of technique will vary dependent on the project and developer skills. This is still an emerging area with plenty of opportunity for creativity. If it works for your project, then use it.

4.7 The Role of Technology

Most types of process flow model and role/interaction model allow for identification of IT systems and assignment of automated activities to them. At an early stage of process prototyping such references will be to a generic type of technology playing a particular role, e.g. a database - providing customer contract data. When the operational characteristics are detailed, then the actual IT component to be used can be substituted in the prototype set-up and IT prototyping can operate jointly with further process refinement and organisational design. Data modelling techniques are best used to identify

database components and the services they provide, rather than being a means to understanding the business process. The process itself can be supported by IT in the guise of a workflow or Process Management system. The value of such a system can be assessed in the context of the scenarios generated and the characteristics required by such a system can be established.

4.8 Setting Priorities

This aspect often proves difficult, due to the participants desire to thoroughly describe the whole process. The team must focus on business impact and make difficult decisions.

4.9 Prototyping the Scenario and Gaining Feedback

The planned scenario can be displayed on the wall (using white board, post-it pads, fuzzy felts, a story board etc.), captured electronically or on paper as a written description, or as a diagram/model or any combination of these that is available and appropriate. The scenario can then be animated and evaluated by the workshop group, either as a role play or as a walk-through. If tools are available then it is possible to provide computer support for the role play or walk-through. Success is achieved when the process design and its scenarios are actually exercised in some way (such that they are experienced from the viewpoints of teamwork, manual and computerised process and IT components, overall coherence and achievement of business objectives) and improved in the light of feedback. When this happens then process prototyping is taking place.

5 How Process Prototyping Relates to DSDM

5.1 *The Contribution of Process Prototyping*

DSDM aims to produce solutions that meet business needs. Process prototyping may provide the vehicle for measuring and evaluating to what extent the business objectives will be achieved. It puts the business users in the position of being able to measure progress for themselves, by capturing metrics against scenarios and aggregating these into the overall design.

The process prototype comes under the category of a business prototype (as long as the definition is extended to encompass the people and process as well as the IT elements).

5.2 *Place in the DSDM Lifecycle and Products*

This section provides additional notes to the existing DSDM lifecycle. Iteration etc. is not addressed as it is covered adequately in the current lifecycle models. The initial process prototyping activities may begin during the Pre-project phase. The initial vision of the Executive Sponsor or Visionary can be prototyped in order to clarify the vision and define the objective for the project. Process Prototyping may then form a major part of the Feasibility and Business Studies. The techniques can be used both at programme and project levels. The use of a workshop approach will reduce the analysis effort required to produce the Feasibility Report and Business Area Definition and to establish the Prioritised Requirements List and Non-functional Requirements.

During the Pre-project phase, process prototyping can be used to clarify the vision and to illustrate it to stakeholders to secure “buy-in” to the project. It also provides a baseline for the scope of the project and initial constraints. During the Feasibility Study, process prototyping is used to demonstrate the vision and explain concepts to the wider world. It allows the feasibility of constraints and objectives to be tested, and provides a basis on which rough costing can take place. The process element of the Feasibility Study will identify the processes that are within scope, their objectives and outcomes.

During the Business Study, process prototyping will be used to scope more precisely the parts of the business to be changed. It is also used to identify the types of participant (roles) for which representatives are required and to scope the functionality of the IT components in the solution. The process design developed during the Business Study can provide the structure of the business architecture. At this stage the prototype provides the basis for better estimates and more detailed plans. The repertoire of scenarios will be increased to cover all critical features of the business solution. The process element of the Business Study will identify the processes more precisely, along with the aspects to be changed and priorities of related business benefit. There will be a mapping between the process and IT components.

During the Functional Model Iteration, the features of the manual and IT support elements will be identified in more detail and prototyped together. The scenarios are extended to cover exceptions. By the end of the functional model iteration, the working process will be complete and have been used to validate the IT functionality to be provided. The process element of the Functional Model Iteration will be fully integrated

with the IT and will demonstrate how the process will operate. Detailed non-functional aspects and working practices will be investigated.

During Design and Build Iteration, the scenarios are used for further IT solution testing along with preparation of the job descriptions, working practices and location information..

The process element of the Design and Build Iteration will be fully integrated with the IT and will demonstrate the process operating with the integrated IT solution.

During Implementation, training is prepared, and can be based on the scenarios prototyped. The scenarios are run through in the actual working environment to ensure no logistics issues have been overlooked. The process element of implementation puts the new process into practice.

During Post-project, the effectiveness of the process prototyping, and lessons learned, will be reviewed.

APPENDIX A - Process Modelling

Three sorts of modelling techniques are particularly relevant to Process Prototyping:

- *Process flow models* whereby the component activities are identified and ordering constraints on a process can be examined to see if they are all essential to achieving the business objectives. Wall-charting and role/activity diagrams would also fall into this category. This type of model is useful for process simulation using computer based tools which predict the efficiency of the model under operational load.
- *Role/interaction modelling* whereby the way that individuals and groups will interact is modelled to identify effective teamworking and to analyse points in the process where it crosses organisational/location/process boundaries. Stratification diagrams are used similarly to focus in on process boundaries and role/activity models mentioned above also cover this aspect.
- *Rich picture building* whereby the situation is viewed from the perspectives of all the stakeholders, freehand cartoons or mindmaps are used to understand the relationships between the stakeholders.

APPENDIX B - Soft Skills

The following list is by no means comprehensive but identifies techniques which the task group have found useful in their own experience.

Ah! Hah! Ha-Ha!

The prototyping cycle can be helped by the use of three soft skills:

- 1) encouraging creativity (ah!)
- 2) encouraging improving, extrapolation and association of ideas by teamwork (hah!)
- 3) encouraging evaluation, by relaxing the atmosphere by use of humour (ha-ha!).

Comfy Board

Dividing the results of a brainstorm into areas of comfort and discomfort can help to identify and begin to tackle issues. When the business process tackled crosses functional/organisational silos this can be very useful.

Five Why's

It is important to get behind 'how things are done' to 'why they are done' in order to expose the need for change. Asking why five times in succession to a statement and subsequent answers can achieve this.

Force Field Analysis

By analysing those factors which support the required change and those which will inhibit it a more effective process implementation plan can be developed. The size of the arrow drawn on the white-board will indicate the strength of the factor.

The 7S Model

This model by Waterman, Peters and Phillips describes the interaction between the elements of an overall business change and can be a useful guide to charting the knock-on effects of one specific change. The elements around the circle are:- skills, strategy, staff, style, structure and systems, with super-ordinate goals in the centre

Behavioural Model of Change

The main phases of a reaction to change: Denial -> defence -> discard -> adapt -> accept are important in understanding the stages of cultural shift and therefore managing the expectations at each stage.

Myers-Briggs

This is a technique to analyse outward behaviour and thinking types.

Creative Thinking

Brainstorming techniques with post-it notes and a succession of divergence and convergence. Divergence through brainstorming and convergence through grouping and voting.

Belbin

The application of Belbin team analysis can be useful in selecting an effective team. It identifies the preferred role and second preference role(s) for individuals engaged in team activity.

Choice of workshop participants

Another cross check is that personality types cover both positive and negative individuals and both experienced and inexperienced staff. Further useful characteristics for participants are that they are open, honest, tough, challenging, and prepared to play devil's advocate. A creative outsider can be an asset, as can a strategic thinker and person with understanding of operational constraints. If new ideas or technology are appropriate then specialists will be needed.

Disney

It is clear that a cast of thousands for a workshop is impractical, so one way of overcoming this is to ask people to wear different hats at different times. One such scheme involves hats for :- the critic, the idealist and the pragmatist. These aspects can be applied to the whole team and moved on cyclically or used to create different viewpoints at the same time.

Stakeholder mapping

The stakeholders in a situation can be plotted on a grid, with importance on one axis and influence on the other. This can help with planning change.

Score

Symptom, Causes, Outcomes, Resources, Effect. These aspects of a situation can be laid out on the floor with players taking it in turns to where the hats.

Rich Pictures and Story Boarding

Metaphors, analogies and cartoons are very effective at taking the emotive element out of a discussion and describing the issue in a less personal way and can also be fun!