

<b>ACERA Project</b>		
0809a		
<b>Title</b>		
Community of Practice for Structured Decision-Making. Phase II.		
<b>Author(s) / Address (es)</b>		
Rochelle Christian and members of the community of practice for structured decision-making		
<b>Material Type and Status (Internal draft, Final Technical or Project report, Manuscript, Manual, Software)</b>		
Final Report		
<b>Summary</b>		
<p>The Australian Centre of Excellence for Risk Analysis (ACERA) has supported research that includes projects on multi-criteria decision analysis (MCDA) that have shown proof-of-concept application of MCDA to aspects of Department of Agriculture, Fisheries and Forestry (DAFF) business where it is not currently applied.</p> <p>MCDA is one approach to structured decision-making that helps assess priorities between competing options by evaluating them against a set of criteria of differing relative importance. The effective application of structured decision-making depends on trained and experienced practitioners who are skilled in communication, relationship management and systems thinking.</p> <p>As part of ACERA Project 0809 to establish a 'MCDA Practitioner Network', ACERA, in partnership with the Bureau of Rural Sciences, held a workshop in Melbourne in August 2008 to train 22 selected practitioners in MCDA and other approaches to structured decision-making. This provided the core skills to establish what was instead described as a Community of Practice for Structured Decision-Making.</p> <p>The stated objectives of the current project (0809a) were:</p> <p style="padding-left: 40px;">'...to maintain and develop the newly established Community of Practice for Structured Decision-Making within DAFF and partner organisations. The community of practice will provide for discussion and collegiality amongst members, enable them to share knowledge and experience of the theory and practice of structured decision-making, learn from and assist each other through shared problem-solving, and develop corporate knowledge of the application of structured decision-making to the activities of the Australian Government.'</p> <p>This statement of objectives was drawn from terms of reference agreed by members of the Community of Practice for Structured Decision-Making subsequent to the initial training workshop. Here, we report on our activities to further these objectives as part of the current project over the period since October 2008.</p> <p>As of 31 May 2009, the Community of Practice for Structured Decision-Making has 41 members spanning DAFF (including the three biosecurity divisions), other Australian Public Service (APS) agencies, research institutions and consultancies. An email list has been established as well as a collaborative workspace on GovDex to facilitate communication and information-sharing.</p> <p>Regular bimonthly meetings have been scheduled, at which presentations and facilitated discussions have been led by speakers on topics of interest to members. For example, on spatial decision-support systems, uncertainty and risk, addressing intangible values, and operationalising structured decision-making. The Bureau of Rural Sciences also ran a half-day workshop for Biosecurity Australia on the application of structured decision-making to pest risk analysis.</p>		
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# **Community of Practice for Structured Decision-Making. Phase II; ACERA Project No 0809a.**

Rochelle Christian; Bureau of Rural Sciences

Final Report

June 2009



**Australian Government**  
**Bureau of Rural Sciences**

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## **Disclaimer**

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## 1. Summary

The Australian Centre of Excellence for Risk Analysis (ACERA) has supported research that includes projects on multi-criteria decision analysis (MCDA) that have shown proof-of-concept application of MCDA to aspects of Department of Agriculture, Fisheries and Forestry (DAFF) business where it is not currently applied.

MCDA is one approach to structured decision-making that helps assess priorities between competing options by evaluating them against a set of criteria of differing relative importance. The effective application of structured decision-making depends on trained and experienced practitioners who are skilled in communication, relationship management and systems thinking.

As part of ACERA Project 0809 to establish a 'MCDA Practitioner Network', ACERA, in partnership with the Bureau of Rural Sciences, held a workshop in Melbourne in August 2008 to train 22 selected practitioners in MCDA and other approaches to structured decision-making. This provided the core skills to establish what was instead described as a Community of Practice for Structured Decision-Making.

The stated objectives of the current project (0809a) were:

'...to maintain and develop the newly established Community of Practice for Structured Decision-Making within DAFF and partner organisations. The community of practice will provide for discussion and collegiality amongst members, enable them to share knowledge and experience of the theory and practice of structured decision-making, learn from and assist each other through shared problem-solving, and develop corporate knowledge of the application of structured decision-making to the activities of the Australian Government.'

This statement of objectives was drawn from terms of reference agreed by members of the Community of Practice for Structured Decision-Making subsequent to the initial training workshop. Here, we report on our activities to further these objectives as part of the current project over the period since October 2008.

As of 31 May 2009, the Community of Practice for Structured Decision-Making has 41 members spanning DAFF (including the three biosecurity divisions), other Australian Public Service (APS) agencies, research institutions and consultancies. An email list has been established as well as a collaborative workspace on GovDex to facilitate communication and information-sharing.

Regular bimonthly meetings have been scheduled, at which presentations and facilitated discussions have been led by speakers on topics of interest to members. For example, on spatial decision-support systems, uncertainty and risk, addressing intangible values, and operationalising structured decision-making. The Bureau of Rural Sciences also ran a half-day workshop for Biosecurity Australia on the application of structured decision-making to pest risk analysis.

## 2. Introduction

The Australian Government-funded Australian Centre of Excellence for Risk Analysis (ACERA) has been researching and developing state-of-the-art risk analysis methods since March 2006. ACERA's research has included projects on multi-criteria decision analysis (MCDA) that have shown ways to make multi-criteria decision analysis more robust (Regan 2007; Steele *et al.* 2009) and applied multi-criteria decision analysis to aspects of Department of Agriculture, Fisheries and Forestry (DAFF) business, including prioritisation of pest threats (Baker and Stuckey 2007).

The Australian Public Service is increasingly charged with making decisions about 'wicked' problems that are difficult to resolve, have internally conflicting goals or objectives, and involve differing beliefs about the nature and extent of the problem which are neither complete or verifiably right or wrong (Rittel and Weber 1973; Australian Public Service Commission 2007). Multi-criteria decision analysis is an approach that can help solve such problems because it is:

- participatory
- engages citizens and stakeholders in the search for solutions
- results in shared understanding of problems
- supports collaboration and flexibility
- supports iterative problem-solving and adaptive management.

Multi-criteria decision analysis is one approach to structured decision-making (SDM) that helps set priorities between competing options by evaluating them against a set of criteria of differing relative importance (Maguire 2004; Failing *et al.* 2007; Hajkowitz 2008b). MCDA provides a structured, rational, defensible method for assessing consequences/utility. Alternatives such as cost-benefit analysis are often too narrow in scope because they rely on a single measure of utility (\$). MCDA can incorporate stakeholder values, help reconcile differences of opinion, and makes the bases for differences transparent. MCDA can be useful for many kinds of decisions and has particular relevance to DAFF's responsibilities in biosecurity and natural resource management.

Multicriteria decision analysis has been used in many domains, including assisting decisions about management of invasive species (Maguire 2004); management of endangered species (Gregory and Long 2009); management of water resources (Failing *et al.* 2004; Failing *et al.* 2007; Hajkowitz and Higgins 2008); and investment in natural resource management (Hajkowitz 2007; Hajkowitz 2008a; Cotsell *et al.* 2009).

ACERA's aims include the communication of research findings to ensure governments and others engaged in risk analysis have access to state-of-the-art risk analysis methods. ACERA obtained DAFF support for a business proposal (0809) for a 'MCDA practitioner network'. Aims of project 0809 included:

1. train Government professionals in decision analysis and consensus facilitation, particularly Multicriteria Decision Analysis, initially in DAFF areas related to plant protection, including both technical training in methods and software, and training in group facilitation and elicitation techniques.
- ...
4. create a professional network of MCDA facilitators, and make their capabilities known to DAFF more broadly...

ACERA, with the assistance of the Bureau of Rural Sciences, held a seminar for DAFF Senior Executive Service and their nominees on the 9 April 2008 on MCDA. The seminar: included past examples of the use of MCDA in combination with citizen's juries in Deliberative Multicriteria Evaluation, and the Analytical Hierarchy Process; worked through an application of these techniques to a decision; and made arguments for the formation of a practitioner network. Participants included staff from other organisations, including CSIRO Entomology; CSIRO Land and Water; the Department of the Environment, Water, Heritage, and the Arts (DEWHA); Plant Health Australia; the Office of the Gene Technology Regulator; the Department of Agriculture and Food-Western Australia; Department of Primary Industries-Victoria; and the Australian National University.

Expressions of interest were then invited for members to participate in a practitioner network and be trained in MCDA. Invitations were open to staff in DAFF, the Environmental Resources and Information Network (ERIN) of the DEWHA, and the DAFF/DEWHA Natural Resource Management Joint Team. Applicants were asked to indicate their availability to attend training, how the techniques learnt would benefit their business area, their potential for ongoing participation in the network over the 2008/2009 financial year, and the support of their business area.

In August 2008, ACERA, in partnership with the Bureau of Rural Sciences, held a three-day workshop in Melbourne to train the 22 selected practitioners; providing the core skills to establish the Community of Practice for Structured Decision-making. Training was delivered largely by Canadian consultants from Compass Resource Management Ltd. who guided participants through their approach to structured decision-making, emphasizing the importance of the decision context in structuring the problem (e.g. Figure 1). In addition, ACERA, the Bureau of Rural Sciences and CSIRO staff with relevant expertise and experience briefly introduced trainees to a suite of other structured decision-making approaches that can be used to assist government decision-making including Deliberative Multicriteria Evaluation, the Analytical Hierarchy Process, Bayesian belief networks, cognitive mapping and the Delphi technique.

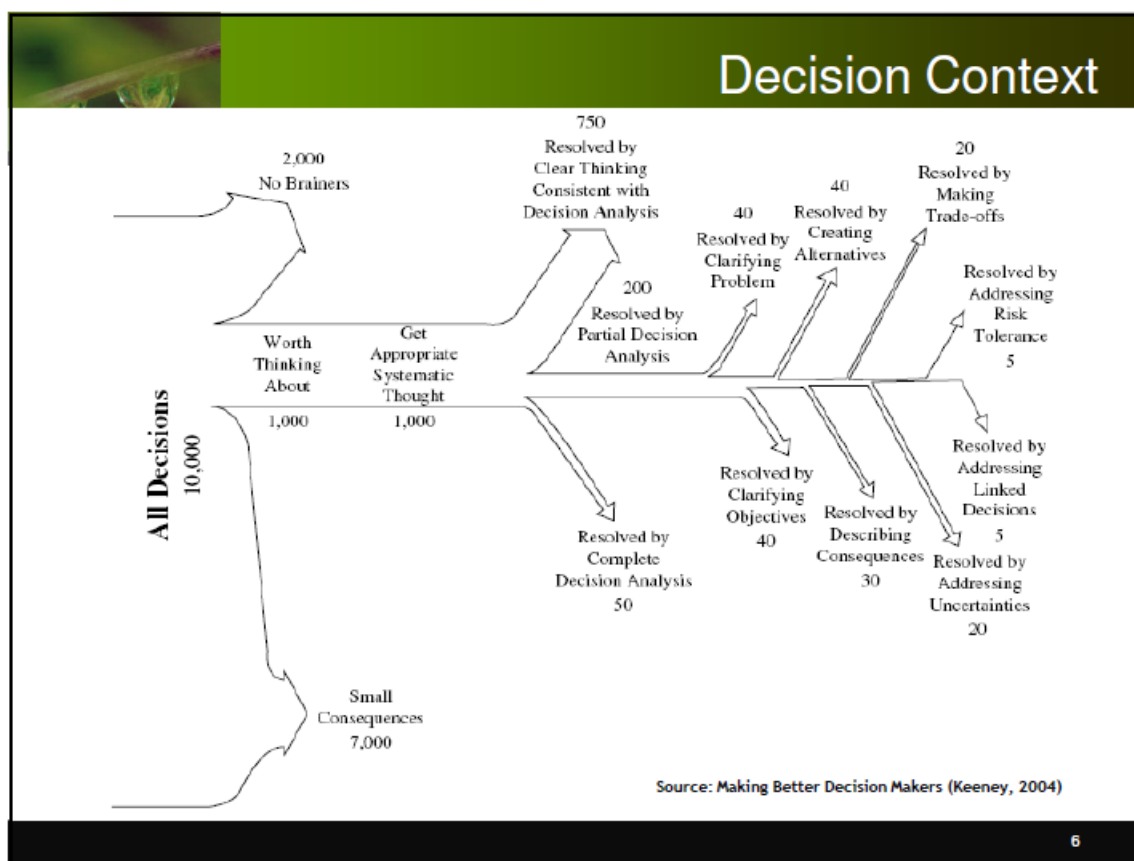


Figure 1. Framework for considering the decision context. Image from Compass Resource Management Ltd. training materials.

The project (0809) which delivered the training workshop is also responsible for post-workshop deliverables related to its aim of:

- ‘5. support the trained Government facilitators to develop a guide to MCDA and its applications for inclusion in DAFF procedural documents (e.g. as part of an Emergency Response tool kit, in Plant Plan), including an overview of methods and guidelines for their application.’



At the workshop held in August, participants identified a broad range of problems to which structured decision-making might be applied in their business areas. These included prioritising investments, risk analysis for invasive species, decision-making during emergency pest responses, and identifying areas for land management practice change.

Trainees at the workshop believed that numerous benefits would arise from the use of structured decision-making in their business areas, including increased transparency, repeatability and defensibility of decisions; enhanced capacity to identify trade-offs and areas of multiple benefit; and enhanced engagement of experts, stakeholders and policy-makers.

To feel confident in applying structured decision-making in their business areas, trainees identified the following needs: executive support; means of communication between network members; access to experts; practical experience starting with simple problems; skill in facilitation; and software tools.

Trainees foresaw challenges in applying structured decision-making in their business areas including: lack of time available to draw on the help of staff with established expertise; lack of practical experience; and a need for stakeholder education in the approach.

To succeed in developing the Community of Practice for Structured Decision-Making, the trainees identified the following actions: establish an on-line community (on the Australian Government Collaborative Workspace, GovDex); seek management support; obtain training in facilitation; demonstrate application of the techniques to real problems; and make use of the collective skill and experience of community members.

The stated objectives of the current project (0809a) followed from these discussions and were  
‘...to maintain and develop the newly established Community of Practice for Structured Decision-Making within DAFF and partner organisations. The community of practice will provide for discussion and collegiality amongst members, enable them to share knowledge and experience of the theory and practice of structured decision-making, learn from and assist each other through shared problem-solving, and develop corporate knowledge of the application of structured decision-making to the activities of the Australian Government.’

### 3. Methodology

This project (0809a) supported the following activities to maintain and develop the community of practice:

- Contributed to the cost a coordinator for the Community of Practice for Structured Decision-Making who has:
  - kept members up-to-date with the activities of other members of the community of practice
  - developed and maintained an online collaborative workspace
  - managed membership
  - organised and facilitated meetings
  - sought the support of senior management for CPSDM.
- Delivery by BRS members of CPSDM of a half-day workshop on multi-criteria decision analysis to Biosecurity Australia staff.

## 4. Progress to date: coordinator's report

### 4.1. Strategic vision

Members of the Community of Practice for Structured Decision-Making agreed terms of reference shortly after the training workshop. These can be found on the public pages of our collaborative workspace ([https://www.govdex.gov.au/confluence/display/Community of Practice for Structured Decision-Making/Terms+of+Reference](https://www.govdex.gov.au/confluence/display/Community+of+Practice+for+Structured+Decision-Making/Terms+of+Reference)). Our stated purpose is:

‘Community of Practice for Structured Decision-Making provides a practitioner-driven forum for communication and information-sharing between people practising MCDA within DAFF and collaborating organisations. Community of Practice for Structured Decision-Making aspires to become a key resource for decision-making in DAFF. Members are encouraged to build a community of practice through sharing knowledge and experience, discussion and collegiality across the network. Members can help each other stay up-to-date with current techniques, assist each other in problem-solving, and develop corporate knowledge of the application of MCDA to Australian Government decision-making.’

### 4.2. Activities and achievements

#### 4.2.1. Membership

As at June 2009 the Community of Practice for Structured Decision-Making has 41 members. These span six divisions of DAFF:

- Bureau of Rural Sciences (BRS)
- Product Integrity, Animal and Plant Health
- Biosecurity Australia (BA)
- Australian Quarantine and Inspection Service (AQIS)
- Agricultural Productivity Division
- Sustainable Resource Management.

Members also belong to other APS and state government agencies, consultancies and research institutions, as follows:

- Department of the Environment, Water, Heritage and the Arts
- Department of Health and Ageing
- Land and Water Australia
- Australian Taxation Office
- Department of Primary Industries – Victoria
- EPA Victoria – Environment Protection Authority
- Compass Resource Management Ltd., Vancouver, B.C. Canada
- Melbourne University
- The Australian National University
- CSIRO.

#### 4.2.2. Meetings

Our first public event took place on 8 October 2008 and was advertised through Community of Practice for Structured Decision-Making members and the DAFF electronic bulletin. Land and Water International Fellows, Dr Burghard Meyer (Olanis Expert Systems GmbH, Leipzig, Germany) and Dr Ralf Grabaum (University of Dortmund, Germany), gave a 30 minute presentation on ‘Multi-criteria Landscape Assessment and Optimisation (MULBO)’. They showed how they have developed spatially-referenced planning by modelling land use and assessing landscape functions in accordance with community and stakeholder preferences and interests. They demonstrated the application of their spatial decision support system–MULBO–to develop optimal land use combinations that achieve sustainable landscape policy objectives in Europe and spatially-resolve conflict between ecological,

economic and social functions. They also described their newly-established collaboration with the Department of Sustainability and Environment–Victoria.

Our first bimonthly meeting took place on the 31 October 2008. Professor Gabriele Bammer (National Centre for Epidemiology and Population Health, The Australian National University) and Professor Michael Smithson (School of Psychology, The Australian National University) gave a 30 minute presentation on ‘Uncertainty, Risk and Policy-Making’. They highlighted the fragmented understanding of uncertainty; the qualitatively different kinds of uncertainty, its different meanings for researchers, policy-makers and stakeholders; and discipline-specific methods for dealing with uncertainty. They proposed an overarching framework for understanding uncertainty; described their work to catalyse the interchange of ideas about uncertainty among specialists and practitioners which led to publication of their book, *Uncertainty and Risk: Multidisciplinary Perspectives*; and proposed that the study of uncertainty should sit within the cross-cutting discipline of integration and implementation sciences.

On 18 November 2008 the Bureau of Rural Sciences ran a half-day workshop for Biosecurity Australia on the application of structured decision-making to pest risk analysis. The workshop introduced participants to decision analysis and covered the use of formal models of probabilities and values, including multiattribute utility analysis, Deliberative Multicriteria Evaluation, Bayesian belief networks, and structured methods for eliciting expert opinion. BA selected participants from their Plant Biosecurity and Animal Biosecurity branches, and twelve people attended.

On the 16 January 2009, Rob Delane, the Executive Director of AQIS, officially launched our online collaborative workspace (on GovDex) and the coordinator gave attendees at the launch a virtual tour of the workspace.

On the 27 February 2009, two Community of Practice for Structured Decision-Making members gave presentations on their work towards ‘Operationalising Structured Decision-Making’. Leanne Brown, formerly located in the Bureau of Rural Sciences and now employed in the Food Programs Team of the Agricultural Productivity Division, DAFF, described the teams assessment of over 170 expressions of interest for Regional Food Producers Innovation and Productivity Program funding. The process to shortlist successful applicants and planned improvements for future funding rounds used a structured decision-making process to: clarify the problem, define the objectives, consider alternatives, estimate consequences and make tradeoffs and choices. Paul Keese of the Office of the Gene Technology Regulator (OGTR) discussed his efforts in introducing multicriteria decision analysis to the OGTR, ways of getting staff comfortable with MCDA, and exploring opportunities to apply MCDA.

On the 24 April 2009, Lee Failing and Graham Long of Compass Resource Management Ltd. led a meeting on ‘Addressing the Intangible: Accounting for the Things that Matter in Decision Making’. They described some approaches for dealing with hard-to-quantify objectives. They provided some tips for getting the right objectives, measuring them, and using them in decision-making. They used examples from their work in British Columbia; and briefly covered topics such as cultural/spiritual values, risk perception, dealing with losses, and ‘taboo’ trade-offs.

On the 24 April 2009 Graham Long and Lee Failing also presented a Australian Bureau of Agriculture and Resource Economics (ABARE)/BRS seminar on ‘Structured decision making as conflict resolution: fisheries management applications’. They described how structured decision-making techniques can assist in the creation and analysis of alternative strategies for tackling endangered species protection in the context of multiple competing objectives. They used a case study of a multi-stakeholder committee charged with protection of endangered Cultus Lake salmon on the Canadian west coast. Although managers were required to adopt a precautionary approach, little attention had been given to how quantitative analyses could be used to help define the concept or to how a precautionary approach might be implemented in the face of difficult economic, social and biological tradeoffs. Key steps in a structured decision-making process were outlined. Graham and Lee discussed how this approach was implemented to help scope the problem, define objectives and performance

measures, develop management alternatives, and evaluate their consequences. They highlighted the role of strategy tables, employed to help participants identify alternative management options.

### 4.2.3. Collaborative workspace

The coordinator has kept members of the Community of Practice for Structured Decision-Making up-to-date with activities through face-to-face contact with members, phone calls, and an email list and has also established a collaborative workspace (on GovDex) for identifying and discussing issues, and sharing resources out-of-session. The collaborative workspace aims to facilitate communication and information-sharing amongst members. A membership list, copies of presentations, tools for structured decision-making, a calendar, a forum, and links to website on structured decision-making are among the resources located there.

GovDex is managed by the Australian Government Information Management Office within the Department of Finance and Deregulation. It provides a secure internet-based one-stop-shop where Community of Practice for Structured Decision-Making members can manage meetings and projects, and share files and documents. The coordinator attended GovDex administrator training in December 2008. As ‘owner’ of the Community of Practice for Structured Decision-Making GovDex collaborative workspace, the coordinator can design and manage user access to meet business needs. Members have assisted in developing the workspace—including designing logos and page mock-ups—and two members are co-administrators. The coordinator liaised with Bureau of Rural Sciences Information Technology and Communications staff and DAFF Corporate Policy to ensure departmental and legal requirements are met. This initiative attracted interest from other DAFF staff, in particular from PIAPH and the Bureau of Rural Sciences who are developing a similar initiative for their ‘Engaging in Biosecurity’ project. The Community of Practice for Structured Decision-Making collaborative workspace has been up and running since mid-December 2008.

Some pages of the Community of Practice for Structured Decision-Making’s collaborative workspace are accessible to the public ([https://www.govdex.gov.au/confluence/display/Community of Practice for Structured Decision-Making/Home](https://www.govdex.gov.au/confluence/display/Community+of+Practice+for+Structured+Decision-Making/Home)). These pages have seen the most activity, and have been useful in promoting the Community of Practice for Structured Decision-Making inside and outside DAFF.

All other pages are private to community members and secure to In-Confidence level. They have provided an important means for members located at different sites to share information and promote activities of interest to members.

**Table 1.** Views of the collaborative workspace of the Community of Practice for Structured Decision-making

<b>Most Popular Top Ten Monthly Content (*public page)</b>	<b>December</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>April</b>	<b>May</b>	<b>Total to 31 May 2009</b>
Home*	50	217	148	102	122	89	728
Community of Practice for Structured Decision-Making*	21	152	144	108	146	134	705
Links*	28	56	50	26	31	20	211
About Community of Practice for Structured Decision-Making*	13	26	18	11		5	73
Tools		22		10	12	4	48
Community of Practice for Structured Decision-Making	11		17		18		46

<b>Most Popular Top Ten Monthly Content (*public page)</b>	<b>December</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>April</b>	<b>May</b>	<b>Total to 31 May 2009</b>
Meetings, Events and Presentations							
Forum	10	35					45
Resources		24	14	5			43
Conferences and Events		35				4	39
How we are funded		27		7		4	38
Contacts and membership	13		11	10			34
Forum					24		24
Readings		22					22
Terms of Reference			13	9			22
'20090424'					11	6	17
'20090227'			15				15
Calendar	10					5	15
'20080826'	12						12
'20080827'	12						12
Courses			12				12
Download or update contact details				5			5
Upcoming events						4	4

#### **4.2.4. Community of Practice for Structured Decision-Making extension and engagement**

The Community of Practice for Structured Decision-Making is working with policy and program areas in DAFF and DEWHA to apply structured decision-making to their business. The coordinator has handled requests and enquiries from ACERA, and staff in DAFF and other agencies regarding the activities of the Community of Practice for Structured Decision-Making.

Within the public sector, communities of practice are increasingly recognised as a means of promoting, rewarding and demonstrating the value of innovative practices. For example, the coordinator's discussions with a team in DAFF Human Resources, which is developing a 'People Development Strategy' for the department, has also revealed a common interest in the use of communities of practice as means to share best practices in the workplace. Through the activities of its members, Community of Practice for Structured Decision-Making provides a mechanism to improve communication across the divisions of DAFF, which can lead to a more integrated and efficient approach to decision-making in the department.

The coordinator has sought to promote Community of Practice for Structured Decision-Making among organisations whose skills and experience would be of benefit to the work and learning of current members. On 30 September 2008 the coordinator presented a poster at the Third Annual Conference of the Australian and New Zealand Chapter of the Society for Risk Analysis (SRA) on the Community of Practice for Structured Decision-making. The original business case (0809) proposed that the SRA might host a register of MCDA facilitators linked to the project.

The coordinator presented a talk on Community of Practice for Structured Decision-Making at the Sydney Tilburg Conference on Evidence, Science and Public Policy in March 2009.

## 5. Members' visions, activities and achievements to 31 May 2009

Members' Organisation	Community of Practice for Structured Decision-Making visions, activities and achievements
Bureau of Rural Sciences (BRS), DAFF	<p>The Bureau of Rural Sciences is working to increase its in-house capacity for supporting multi-criteria decision analysis by DAFF and to promote awareness of Structured Decision-Making in the department.</p> <p>The BRS supports the activities of the Community of Practice for Structured Decision-Making coordinator. Activities have included delivered a workshop on structured decision-making to Biosecurity Australia.</p> <p>The BRS ran an in-house course for staff on 11 December 2008 on using the Multi-criteria analysis shell for spatial decision support (MCAS-S).</p> <p>The BRS is applying MCDA and using the MCAS-S tool in DAFF decision-making, including the Reef Rescue initiative of the Caring for our Country Program. The BRS has applied their learnings about structured decision-making to a current fisheries project on 'Reducing Uncertainty in Stock Status'. In addition, MCDA is one of the tools being reviewed as part of a project for the Murray-Darling Basin Authority. In collaboration with ABARE and the Australian Bureau of Statistics, the Bureau of Rural Sciences is identifying tools and processes that could support the Authority in the development and implementation of the Basin Plan.</p>
Product Integrity, Animal and Plant Health (PIAPH), DAFF	<p>PIAPH is working with ACERA to develop projects as exemplars of structured decision-making for specific work areas as part of project 0809. Consultants from Compass Resource Management Ltd. visited DAFF and Plant Health Australia in the week of 20-24 April 2009 and applied structured decision making to help determine the priorities in the action plan for implementation of the National Fruit Fly Strategy. The Implementation Committee needs to identify priorities and correlate their value against a range of parameters, including benefit-cost analysis to 'sell' investment in the action plan to governments and multiple industries. Parameters and subsequent analysis will include regional versus national value, gains to market access for a range of individual commodity industries in competition with each other for research and development resources, negotiation capacity in government etc. Overlaying this with potential national investments such as sterile insect technologies creates a very complex mix suited to the application of structured decision-making.</p> <p>PIAPH is also interested in applying deliberative multi-criteria evaluation (DMCE) to emergency decision-making by the Consultative Committee on Emergency Plant Pests and has discussed this with CSIRO experts. Expert assistance is required to feel confident in applying DMCE to improve the consultative process within decision contexts that may be unique and are currently handled largely on a case-by-case basis within legislative constraints.</p>
Biosecurity Australia (BA), DAFF	<p>BA supported the Bureau of Rural Sciences in delivering a half-day workshop on structured decision-making to selected staff and is exploring the application of MCDA to consequence assessment in import risk</p>

<b>Members' Organisation</b>	<b>Community of Practice for Structured Decision-Making visions, activities and achievements</b>
	<p>analysis.</p> <p>BA is exploring the potential for application of structured decision-making and other risk assessment tools to its work.</p>
Australian Quarantine and Inspection Service (AQIS), DAFF	AQIS has an Operational Framework (AOF) risk assessment tool that is broadly similar to MCDA but differs in aspects such as criteria weightings, consideration of historical data (where available), and structured stakeholder consultation.
Climate Change Division, DAFF	<p>The Office of Rural and Financial Counselling (ORFC) is using structured decision-making to conduct needs analysis for resource allocation. ORFC is applying key principles and techniques such as defining objectives, swing weights, normalisation, understanding and communicating trade-offs, utilising natural indicators, and building consequence tables. Once stakeholders have commented, the process will be finalised for the next funding period. In future, risk and sensitivity analysis will be introduced. The process has brought better structure to ORFC's design.</p> <p>ORFC has discussed with the Bureau of Rural Sciences the use of MCAS-S for some analysis and reporting .</p>
Agricultural Productivity Division, DAFF	<p>Food Programs is applying structured decision-making principles including stakeholder consultation and un-weighted scoring (but use of defined categories to standardise assessments across assessors) for assessment of applications for funding. Automated assessment forms have been constructed to feed into spreadsheets for structured assessment of funding applications.</p> <p>Food Programs is seeking other opportunities to apply structured decision-making to improve transparency and repeatability.</p>
Sustainable Resource Management (SRM) Division, DAFF	Reef Rescue is applying MCDA to DAFF decision-making for the Great Barrier Reef as part of the Caring for our Country Program, and is drawing on the expertise of Community of Practice for Structured Decision-Making members in the Bureau of Rural Sciences and CSIRO to do so.
Environmental Resources Information Network (ERIN), DEWHA	<p>Two project areas have benefited from involvement in Community of Practice for Structured Decision-Making:</p> <p>ERIN REGIONAL PROFILES: Application of key principles of structured decision-making to scope a new ERIN project, in particular, establishing the decision context and identifying objectives and criteria. Project stakeholders were engaged in the practice of structured-decision making through workshops that aimed to reach consensus on the direction and scope of the project.</p> <p>WATER TEAM: The Water Team in ERIN has developed spatial models to support complex decision-making in the water resources and biodiversity areas. These spatial models are using principles of structured decision-making to analyse the decision-making problem. The models are: flexible to incorporate new decision-related parameters into the model;</p>



<b>Members' Organisation</b>	<b>Community of Practice for Structured Decision-Making visions, activities and achievements</b>
	easy to simulate different requests using different weights and trade-off rates for used parameters; and allow multiple outputs for different scenarios. These models have allowed the decision-makers to better understand the decision-making process and the way a result has been derived.
Compass Resource Management Ltd., Vancouver, B.C. Canada	Compass Resource Management visited DAFF in the week of 20-24 April 2009. As part of an exemplar project that forms part of project 0809 they worked with Plant Health Australia in conjunction with PIAPH and ACERA on implementation of the National Fruit Fly Strategy. They also delivered an ABARE/BRS seminar to DAFF, and led a Community of Practice for Structured Decision-Making discussion.
Office of the Gene Technology Regulator, Department of Health and Ageing	The main follow up on structured decision-making for OGTR includes: <ul style="list-style-type: none"> <li>• gave a seminar to OGTR on structured decision-making</li> <li>• ran a workshop on structured decision-making</li> <li>• initiated discussions about incorporating structured decision-making methodology into risk assessments and risk management plans</li> <li>• described the value of structured decision-making in a presentation at the 10<sup>th</sup> International Symposium on the Biosafety of GMOs, New Zealand in a session on 'Novel approaches to environmental risk assessment'.</li> </ul>
Australian Taxation Office (ATO)	The ATO set up a data mining capability four years ago with a corporate team of 15 experts in Canberra and training of over 120 data analysts around the country. The leader of the ATO's Community of Practise in Data Mining, who runs weekly meetings across the ATO has joined the Community of Practice for Structured Decision-Making. Cross-membership creates the opportunity for the Community of Practice for Structured Decision-Making to learn from the ATO's experience and vice versa.
Department of Primary Industries–Victoria	Future Farming Systems Research Division, Landscape Systems, has developed tools to facilitate the application of Deliberative Multicriteria Evaluation (DMCE) to prioritise biosecurity pests for emergency planning as part of their project for the Cooperative Research Centre for National Plant Biosecurity on <i>Enhanced Risk Analysis Tools</i> . The project team invited members of the Community of Practice for Structured Decision-Making to participate as members of a citizens jury, at a workshop on the 29-30 April 2009 that showcased their project and applied DCME.
EPA Victoria-Environmental Protection Authority	Many EPA activities involve mediating between the demands of competing interests. Managing these competing demands in an open, transparent and consistent manner is key to the success of EPA achieving its vision of the 'Victorian community living sustainably'. In order to properly address these factors there is a need to devise a systematic, structured, transparent and consistent process for decision-making which will deliver more sustainable decision outcomes for EPA and its clients.  EPA Victoria is interested in the regulatory application of structured

<b>Members' Organisation</b>	<b>Community of Practice for Structured Decision-Making visions, activities and achievements</b>
	<p>decision support tools to inform its statutory and strategic decision making, ranging from Corporate Licensing to major infrastructure projects, in particular in articulating across a variety of decision options according to environmental, financial, and social criteria that have different units (e.g. \$, tonne emission, etc.).</p>
<p>Commonwealth Scientific and Industrial Research Organisation (CSIRO)</p>	<p>For CSIRO Sustainable Ecosystems, Canberra, the biggest benefit has been, and will continue to be, the link to policy-makers in finding out what they want and how CSIRO's research can help in this. A lot of this has been gained from the formal workshops and presentations but also from the informal networking that the Community of Practice for Structured Decision-Making supports. Another key benefit has been the access to others' research activities and experiences and learning from this. A good example is learning about MCAS-S. As well, getting the messages out about what CSIRO does has been very beneficial.</p> <p>CSIRO Sustainable Ecosystems, Canberra, has offered to host and lead a Community of Practice for Structured Decision-Making discussion in 2009 on vulnerability, risk and decision-making in the context of climate change and adaptation.</p> <p>CSIRO Sustainable Ecosystems, Brisbane, is working with SRM and the Bureau of Rural Sciences to apply MCDA to DAFF decision-making for the Reef Rescue initiative.</p> <p>CSIRO Entomology members are part of the Enhanced Risk Analysis Tools project team, noted above. Other activities of relevance to the Community of Practice for Structured Decision-Making have included:</p> <ul style="list-style-type: none"> <li>• conducted a comprehensive review of literature surrounding the use of economic information in invasive species risk management activities (Jun 2008)</li> <li>• outlined a Deliberative Multi-Criteria Evaluation (DMCE) methodology for use in invasive species response decision-making involving non-market impacts (Jun 2008)</li> <li>• trialled a DMCE workshop with a citizens jury in WA to choose an appropriate regulatory response option for European house borer (Dec 2008). The written report of the DMCE workshop is to be reviewed by Compass Resource Management Ltd. with a view to publication in an ISI journal.</li> </ul>
<p>Australian National University (ANU)</p>	<p>ANU members presented at at the Community of Practice for Structured Decision-Making first bimonthly meeting. Membership of the Community of Practice for Structured Decision-Making has facilitated engagement with DAFF. At the invitation of the coordinator ANU members presented an ABARE/BRS seminar on the 'Integration and Implementation Sciences: A way forward on complex societal problems?' and were subsequently invited to speak to the Bureau of Rural Sciences Executive and Program Leaders on this topic.</p>

## 6. Conclusion

This project has sought to maintain and develop the newly established Community of Practice for Structured Decision-Making within DAFF and partner organisations, provide for discussion and collegiality amongst members who include researchers and practitioners, enable them to share knowledge and experience of the theory and practice of structured decision-making, learn from and assist each other through shared problem-solving, and develop corporate knowledge of the application of structured decision-making to the activities of the Australian Government.

The Community of Practice for Structured Decision-Making provides an opportunity for DAFF and ACERA to explore alternatives to conventional ‘transfer and translate’ models by which to link their research and practice (Fig. 2. van Kerkhoff and Lebel 2006).

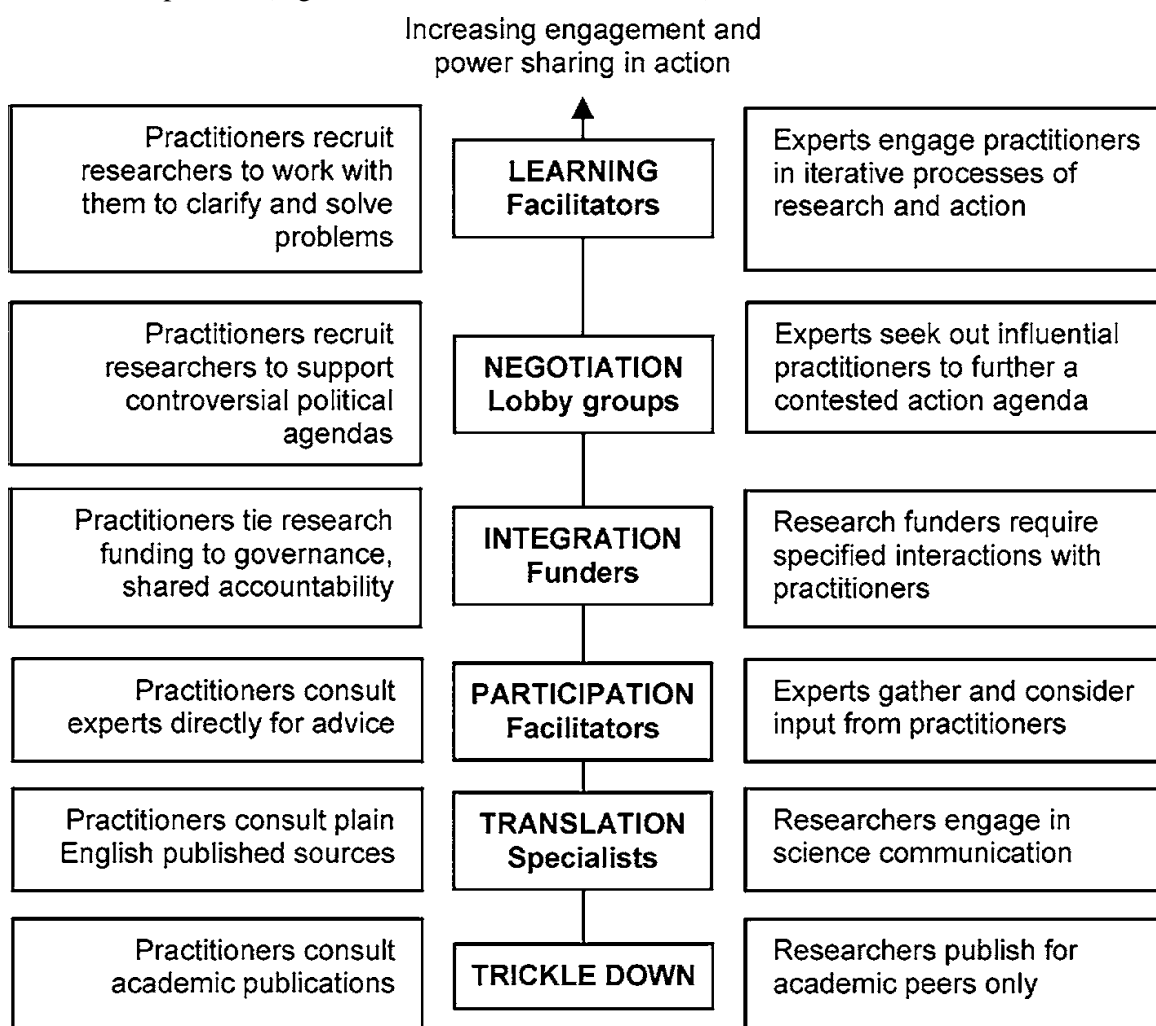


Fig. 2. Models of linkages between research and practice reproduced from van Kerkhoff and Lebel (2006).

The ‘participation’ model involves practitioners in conceptualising problem-setting and problem-solving, places emphasis on the process as well as the output, enables researchers and practitioners to gain access to less easily available sources of knowledge, builds support, shares responsibility, and develops capacity. The ‘negotiation’ model involves ‘mode 2’ research, i.e. research which actively involves research users and those affected by the outcomes of research. While the authority of science may be strengthened by autonomy from decision-makers; organisations accountable to both scientific

and political interests play an important role in maintaining a balance across the boundaries of multiple realities/authoritative sources of advice. At the most sophisticated level of engagement, the 'learning' model, DAFF participation in ACERA research through Community of Practice for Structured Decision-Making could aim to foster the perception of participants as a knowledge system. Members can experiment, monitor and adaptively manage their approaches to decision-making (or in the future, risk analysis, policy development and implementation). This model capitalises on the shared learning of groups that may emerge through using specific methods, and practitioners recruiting researchers to help solve problems in an iterative ongoing process of research and practice, managed by highly skilled facilitators.

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