Thinking **Tools for Successful Collaborative Initiatives - 13351**

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ABSTRACT

Successful collaboration requires effective communication and collective problem solving.   Regardless of the subject area --- environmental remediation, waste management, program planning and budgeting --- those involved must focus their efforts in an orderly and cooperative manner.   A thinking tool is a technique used to get individuals to focus on specific components of the task at the same time and to eliminate the "noise" that accompanies communications among individuals with different objectives and different styles of communicating.   For example, one of these thinking tools is a technique which enables a working group to delineate its roles, responsibilities and communication protocols so that it can deliver the right information to the right people at the right time.   Another enables a group to objectively and collectively evaluate and improve a policy, plan, or program.   A third technique enables a group to clarify its purpose and direction while generating interest and buy-in.   A fourth technique makes it possible for a group with polarized opinions to acknowledge their differences as well as what they have in common.   A fifth technique enables a group to consider a subject of importance from all perspectives so as to produce a more comprehensive and sustainable solution.   These thinking tools make effective communication and collective problem solving possible in radioactive waste management and remediation.   They can be used by a wide spectrum of professionals including policy specialists, program administrators, program and project managers, and technical specialists.

INTRODUCTION

Nuclear energy, radioactive waste management, and environmental remediation are topics that increasingly require consideration from global rather than provincial perspectives, and this in turn creates a greater need for policies, programs, and decisions to be made through collaborative rather than autocratic methods. Policy-makers, executives, scientists, engineers, administrators, and other professionals often initiate collaborations between different parties so that these parties can more easily or quickly accomplish important goals and objectives.

The work of collaboration is typically carried out by a working group comprised of individuals from each party.   The effective functioning of a working group requires that a level of structure be established.   For example, the structure of leadership as well as who makes what decisions and how these are made needs to be established.   Group membership needs to be established.   Group operating procedures need to be established.   Many of these and other structural factors have been discussed [1].

Effective working group functioning also relies on the group's ability to "think together" in order to define and agree to mutual objectives and to develop solutions to meet those objectives.   Individuals think in variety of ways.   They place emphasis on different facets of an issue.   For example, some individuals start out a thinking task through focusing on the bigger picture while others focus on the details.   A framework is needed to help working groups focus on the same type of thinking at the same time.   Thinking tools provide the framework.

What is a Thinking Tool?

A thinking tool is a technique used to get individuals to focus on specific components of the task at the same time and to eliminate the "noise" that accompanies communications among individuals with different objectives and different styles of communicating. If a working group tries to look at too much at one time, one thing may get done thoroughly while other things don't get done at all. Thinking tools provide individuals an opportunity to focus their attention in one area at a time knowing that other areas of interest will be addressed as well. This allows each area to be considered more fully, and it allows for a comprehensive scan and consideration of important issues.

Thinking tools require individuals to draw upon types of thinking they would normally avoid. For this reason, they exercise the mind, and this can be both rewarding and satisfying.

Because thinking tools are a means to systematically think as a group, the ideas and approaches and decisions developed through use of thinking tools are generally broader, well-thought out, and easier to implement.

The following five thinking tools are presented to cover a range of thinking tasks important to a collaborative working group's operation:

1. Communications and Responsibilities Group Mapping
2. Oral Interviews and Group Analysis of Data
3. Declaration
4. The Full Scan
5. Thinking Tool To Evaluate and/or Improve a Policy, Plan, or Program

DESCRIPTION OF FIVE THINKING TOOLS

These thinking tools are designed and intended for working groups to use during **face-to-face** working meetings. Several of the tools require a level of personal interaction to allow for some level of relationship-building while others require real time joint "mapping" of ideas and information.

Communications and Responsibilities Group Mapping

This is a thinking tool to help working groups map out their channels for communicating with one another as well as appropriate individual and organizational roles and responsibilities. This thinking tool is especially effective for:

- Initiatives that require a clear delineation between the roles and responsibilities of each respective agency (e.g., for multi-agency environmental remediation partnering teams, construction partnering between a federal/state agency and a private contractor)
- Programs experiencing new or changing roles or responsibilities
- Programs requiring effective communication and coordination between Headquarters, site offices, and contractors.

This thinking tool has two equally important objectives. The first objective is that the working group develops an **illustration(s)** of the desired lines of communication and roles and responsibilities between the various groups and individuals represented in the collaborative initiative. This illustration(s) serves as a

"map" of the lines of communication and roles and responsibilities to help guide and inform the working group's efforts.   The second objective is that the working group begins to develop a level of comfort and confidence in their ability to work together in an informal manner.

This thinking tool is best used when working in a group of **seven or fewer people**.   Since most working groups involved in a collaborative initiative are larger in number, a larger working group is broken down into smaller subgroups.   Each subgroup is most effective when it contains at least one individual from each represented agency/entity.   Individuals with similar levels of decision-making authority are grouped together as much as possible.   Group size is important as it provides for all individuals to more actively engage, it creates a sense of informality, and it provides working group members to work more directly with those of other agencies/entities.   Subgroups convene using informal seating arrangements to encourage informal conversation and interaction.

Each subgroup is provided with poster-size paper and marking pens and is given the same task:

> *"As a group, draw an illustration of what would be the appropriate formal and informal communication pathways within and between each of the parties represented here.   As part of this, clarify key roles and responsibilities.   Please be prepared to report this out to the larger group."*

Each subgroup is instructed to nominate an informal facilitator.   And each subgroup determines how best to illustrate the information.   Approximately one hour (more if needed) is given to complete this task.

When complete, each subgroup presents their output to the larger group.   Typically the outputs are similar in content yet different in the how the content is illustrated.

The task for the larger group is then to:

> *"List those characteristics among illustrations that are similar, the characteristics that are different, and any communication procedures/protocols everyone can agree to."*

A group of volunteers, ideally with one from each group, is then tasked to create one illustration to incorporate and reflect the characteristics and themes found within the illustrations.

This thinking task can be modified to suit different situations.   For example, if roles and responsibilities within a program are changing or needing to change, the initial thinking task is modified.   For example:

> *"As a group, draw an illustration of the roles and responsibilities and formal and informal lines of communication as they currently exist.   Once this is complete, draw an illustration of an alternative (new, preferred, proposed) roles and responsibilities and formal and informal lines of communication.   Highlight the merits of each."*

When done informally in small groups containing individuals from each agency/entity, this thinking tool is highly effective in meeting its objectives.

Oral Interviews and Group Analysis of Data

This thinking tool is the most complex of those presented here, and its use involves considerable planning and resources.   It is extremely effective in increasing the level of transparency and helping individuals perceive situations from a broader point of view.   Often parties/individuals gain knowledge through

applying this thinking tool that they would otherwise not have, and given this information they are in a better position to make educated choices.

This is an effective thinking tool for:

- The initial stages of a collaborative initiative
- Situations in which miscommunication and misinformation are prevalent
- Situations in which parties are known or likely to have polarized opinions
- When it's necessary to explore new ideas.

This thinking tool has two components: the **oral interviews** and the **group review and analysis of the interview data**.   Later in this paper, the role of an independent professional facilitator in applying this thinking tool is addressed.

The objective of the oral interviews is to gather information from across the spectrum of those involved in a collaborative effort.   Information is gathered via oral interviews rather than a questionnaire in order to more actively engage the parties in the collaborative initiative as well as to build a more in-depth data set.   In this process, respondents provide oral responses to open-ended statements which are designed to draw out the respondents' thoughts, feelings, and perspectives.

If this thinking tool is used at the very beginning of a collaborative initiative, it is typically appropriate to gather information regarding expectations, concerns, and objectives.   These are examples of appropriate open-ended statements used in the oral interviews:

- ***"The three most urgent and important challenges I would like for us to address are ...." or "The top three objectives, in order of priority, are …."***
- ***"Expectations I have for what we are about to undertake include …."***
- ***"Within the next nine months, I would like for us to accomplish the following …."***
- ***"The way I would define 'success' for this initiative is …."***

It is appropriate to apply this thinking tool at a midpoint in a collaborative initiative to help the working group gather and analyze progress made, what is working, what is not working, and what changes could be made.   These are examples of appropriate open-ended statements for oral interviews in this stage:

- ***"We have made progress in these areas …."***
- ***"To move this activity forward, we need to start …."   "We need to stop …."   "We need to continue …."***
- ***"The areas that seem most difficult are …."***
- ***"What we tend to lose sight of is …."***
- ***"Changes that will help us be successful are …."***
- ***"Ways to approach this situation that we have not yet identified are …."***

A final or "catch all" statement is included – ***"Is there anything else you would like to say or add?"*** to elicit any final thoughts.

Oral interviews are conducted in person (if practical) or via phone interview.   Those directly involved are interviewed.   In instances in which several individuals from the same organization are involved, a group

may be interviewed at one time.   In such instances, individual responses to the same question are encouraged.

Oral interviews provide these benefits:

1. The oral interviews encourage participants to express any issues and concerns to an independent professional facilitator.   Doing so typically provides a level of psychological satisfaction in being "heard" and listened to.
2. Because the facilitator is able to ask clarifying questions, the value of the information gathered is typically far beyond what could be obtained through a questionnaire.
3. The working group has for its use a large body of information and ideas which would not be available without such interviews.
4. The open-ended statements help shift the attention toward solutions.

Oral interviews are anonymous but not confidential.   They are anonymous in that any reference to the originator of any oral survey responses is anonymous.   They are not confidential in that the oral interview data in **non-attributed** form is presented (see below) to the larger group of those interviewed.

The **facilitator** prepares the interview data for presentation.   Responses are presented using the words of the individual or group interviewed.   Responses are randomly sorted so as to conceal their author.   The interview data is printed on poster-size paper in a print large enough to allow viewing of the data from several feet away.

The **facilitator** leads a **group review and analysis of the interview data**.   The objective is to expand the awareness of working group members so as to include other perspectives and points of view.   The facilitator establishes two agreements with the working group:

1. Individuals may direct <u>clarifying</u> questions to the facilitator regarding the interview data.
2. Any debate or lengthy discussion is reserved until a later point when individual ideas are being considered.

These operating agreements help insure a productive and non-adversarial working group review of the data.

This review and analysis may last from one to several hours depending on how the data is to be used.   For example, after responding to clarifying questions the facilitator may lead the working group in sorting the data according to themes and priorities.   Subgroups may explore different options or ideas presented through the oral survey data and present their results to the larger group.   In all cases, the oral survey data serves as a focal point to help the working group navigate its efforts.

The group analysis of the oral interview data has several benefits:

1. It allows everyone access to the same information, it helps equalize the power within the working group.
2. The information helps broaden individuals' perspectives as information of which they were unaware is revealed to them.
3. Is helps a working group identify mutual goals and areas for further analysis and discussion.

Declaration

A collaborative initiative is established for a purpose, and often the purpose is articulated through a Charter or a Mission Statement.   The "Declaration" thinking tool is a framework through which a working group develops a statement of its purpose, articulates a vision of what it is attempting to accomplish, and states its values.   This thinking tool engages multiple areas of perception (the five senses, intuition, logic, and values).   Consequently, the resulting goals statement is more comprehensive, impactful, and meaningful.

This is an effective thinking tool to:

- Clarify the direction and purpose of a collaborative initiative involving several distinct groups (e.g., different government agencies, government and the private sector, government and the public sector)
- Use during the beginning of a collaborative initiative
- Develop interest and buy-in to a collaborative endeavor.

The objective is for the working group, within a group activity, to complete each of the following sentences:

1. *"The desired end result or objective is ..."*
2. *"The approximate timeframe for meeting this objective is …"*
3. *"The evidence that our objective has been met --- what will physically be in place --- is …"*
4. *"This objective is important because …"*
5. *"In attaining our objective, we expect to feel (e.g., proud, relieved, responsible, thrilled, enthusiastic, constructive, resourceful, confident, grateful) …"*
6. *"We expect to meet our objective because …"*

These open-ended statements encourage a level of thinking beyond what is customarily required in developing a charter statement.   For example, many working groups do not clarify how they will know when the goals are met, why the goals are important, how they expect to feel when they attain the goals, or why it's likely they will be successful.

Responses are combined in the following order written from the vantage point of having achieved the goal(s):

> *"It is (insert response to 2.), and what is in place is (insert response to 1.).   This is evident by (insert response to 3.).   This is important because (insert response to 4.).   We feel (insert response to 5.).   Our objective was met because (insert response to 6.)."*

This is an example:

> *It is 2014, and we have implemented the terms of the Acme dispute resolution to the satisfaction of the (parties).   This was important to protect human health and the environment and to provide a publicly-accepted and cost-effective means for dealing with radioactive waste.   What is in place is a long-term strategy that addresses the migration of contamination on the banks of the Sleigh-Bell River. We elected to use a consensus-building approach because it was a transparent and productive way to address the project, one in which the stakeholders could participate in meaningful and constructive ways.   We were successful due to the professional abilities and commitment of those who worked together to create a plan that takes into account the interests of all parties.*

The Full Scan

This thinking tool encourages a working group to seek out information and decision-making criteria they might otherwise miss or avoid.   It is based on the Myers-Briggs Type Indicator, a psychometric tool that measures an individual's preference for one type of information over another as well as decision-making preferences.   Some individuals prefer factual, tangible information.   Others prefer information that consists of trends and patterns and possibilities.   Some individuals, when making a decision, prefer applying a logical and objective analysis whereas other individuals value a more subjective, values and people-focused approach.

A collaborative working group comprised of individuals with primarily the same preferences often misses or ignores certain information, and this can prove detrimental to the results of the collaboration.   A collaborative working group comprised of individuals with different preferences often competes in terms of what information or criteria should be considered as relevant or important.   A working group benefits by directing its attention to all preferences, and this is the objective of the Full Scan.   This is an effective thinking tool:

- For a working group comprised primarily of individuals of the same vocational background
- For a working group is experiencing conflicts and negative judgments as to "what is important" in terms of information or decision-making.

The group can readily apply this thinking tool as they address an area of importance.   They do so by scanning the area of importance **in each of** in these four areas:

- *Sensing Scan* – What are the facts?   What is the problem we are solving?   What data is available?   What data is needed?   What past experience could we draw upon?   What are the important details?   What ideas are most practical?
- *Intuitive Scan* – What patterns or trends do we notice?   What are the opportunities?   What is possible?   What are some new ideas or directions we may not yet have considered?   What might be an innovate approach?   What are some relevant theories we could draw upon?
- *Logic Scan* – What are the logical considerations?   What are the relevant criteria?   What are possible consequences?   What does an objective analysis suggest?   If we didn't need to account for anyone's feelings, what option might we choose?
- *Values Scan* – How does the proposed decision fit with our values?   How does the proposed option impact us personally?   How might it impact other people?   Which option will most readily gain maximum acceptance?   How might we include more people in our decision-making?

Figure 4 illustrates one order in which this scan can be conducted.   The scan begins with the Sensory Scan and moves to the Intuitive Scan, the Logic Scan, and finally the Values Scan.   Each scan is conducted prior to moving on to the next.
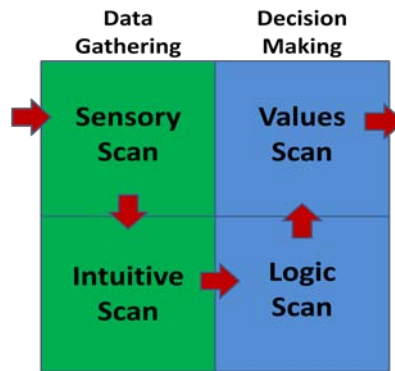
Figure 4. The Full Scan

Each scan is preceded by a few minutes to allow individuals in the group to develop their responses to the scan. This provides a natural break between the four different scans. Each person in the group provides a response, even if the response is that they elect to "pass." All responses are recorded either on flipchart paper or a laptop connected to a screen which everyone can view.

The correct use of the Full Scan requires that a working group direct its attention to one scan at a time and be prepared to observe where and when it is directing its attention to another scan. Groups that are accustomed to using the Full Scan routinely find it easier to focus on one scan (area of thinking) knowing the other areas will also be addressed.

Some working groups may elect to use a different order. For example, many scientific and technical working groups prefer the Sensory Scan and the Logic Scan:
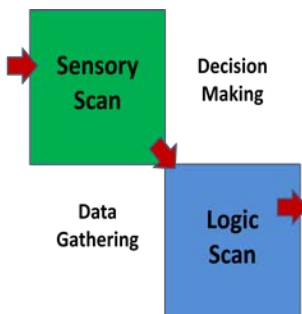
However, to fully consider all areas, using this thinking tool they would take their recommended course of action and put it through both the Intuitive and Values scans:
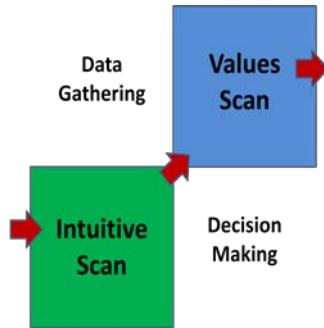
Thinking Tool to Evaluate and/or Improve a Policy, Plan, or Program

This thinking tool enables a working group to evaluate and improve upon:

- A policy currently in effect
- A plan prior to or during its implementation period
- A program as it's being designed or once it's already in place.

It provides two distinct values:

1. The end result is a list of specific improvement ideas for a policy, plan, or program.
2. Areas of agreement, disagreement, importance, and unimportance are clarified, and the group is less likely to make faulty assumptions.

The objective is for a working group to first evaluate a policy, plan or program strategically before moving on to a tactical analysis.

The group carries out this exercise in the following manner:

- Draw three columns on a poster size sheet of paper or a computer file projected on to a large screen so as to be viewed by the working group. Label the center column "O&A's" which stands for "Objectives and Aims."

- Each individual provides the working group with his or her response to the following sentence: **"The objectives and aims of (the policy, plan, or program being addressed), from my perspective, are …."** This input is recorded in the center column (Figure 1).

- Once the working group identifies the O&A's, it **rates the extent to which each O&A is being met**. Asterisks indicate the rating (Figure 2). One asterisk implies an O&A is marginally being met. Five asterisks imply an O&A is fully being met. Two, three, and four asterisks provide a means for a measurement in-between. The group is encouraged to come to a consensus on the rating. Occasionally, individuals may disagree as to the appropriate number of asterisks, and this highlights the need for further clarification of the individual points of view. In these instances, the O&A may be indicated multiple times to account for the different ratings.

- Next, label the left-hand column "+" and the right-hand column "-".   Record the O&A's that score four or five asterisks in the left-hand column and those that score one or two asterisks in the right-hand column (Figure 3).

O&A's (Objectives & Aims)	
1. _____	
2. _____	
3. _____	
4. _____	
5. _____	
6. _____	
7. _____	

Figure 1. Identifying Objectives & Aims

O&A's (Objectives & Aims)	
1. _____ ★ ★ ★ ★	
2. _____ ★	
3. _____ ★ ★	
4. _____ ★ ★ ★ ★ ★	
5. _____ ★	
6. _____ ★ ★	
7. _____ ★ ★ ★	

Figure 2. Rating Objectives & Aims

+ (Being Met)	O&A's (Objectives & Aims)	- (Not Being Met)
1. _____ ★ ★ ★ ★ 4. _____★ ★ ★ ★ ★		2. _____ ★ 3. _____ ★ ★ 5. _____★ 6. _____ ★ ★
	7. _____★ ★ ★	

Figure 3.   O&A's Being Met and Not Being Met

- As a group, prioritize the O&A's in the right-hand column according to their **urgency and importance**.   Beginning with the highest priority, the working group is to deliberately search for alternative means to meet that particular O&A.   They might inquire of themselves, "What are some obvious alternatives.   What are some not-so-obvious alternatives?   What ideas or alternatives might others offer?"   The working group is to develop an alternate way(s) in which the O&A can be met such that the O&A can conceivably shift to the left-hand column.

- The group uses this same process to address the remaining O&A's listed in the right-hand column, in order of priority.

DISCUSSION

Thinking tools add value in any area in which a working group needs to work together on a mutual goal or goals.   For example, thinking tools add value in such areas such as:

- Waste management – e.g., to evaluate or improve existing policies and programs
- Environmental remediation – e.g., to more successfully integrate early and ongoing regulatory involvement
- Business or acquisition services – e.g., to improve or streamline processes
- Program planning and budgeting – e.g., to maintain stability in light of funding constraints
- Headquarters, field offices, contractors – e.g., to clarify and solidify new or changing roles or responsibilities
- Cross-cutting programs – e.g., to integrate more effectively into the line programs
- Integrated project teams – e.g., to improve management of Project Execution Plans.

Some examples of where these and other thinking tools have proven effective include:

- The Idaho Operations Office and Idaho National Laboratory cyber security program
- The U.S. Army/Ohio Environment Protection Agency in the Dispute Resolution process for the Formerly Used Defense Sites Erie Army Depot

- Numerous Department of Defense partnering initiatives for environmental remediation (sites include: Joliet Army Ammunition Plant, Ravenna Army Ammunition Plant, Yorktown Naval Weapons Station, Cheatham Annex, Oceana Naval Weapons Station, Shaw Air Force Base, Andrews Air Force Base and many others)
- U.S. Department of Energy, New Mexico Environment Department, U.S. Environmental Protection Agency, Los Alamos National Laboratory, and Sandia National Laboratory partnering initiative for environmental remediation
- SLAC National Accelerator Laboratory environmental remediation program
- The Hanford 100BC Area and Hanford TWRS cleanup
- Department of Defense senior Environmental Coordinators coordination and business processes
- Department of Defense Office of Nuclear Energy Office of Human Capital and Business Services annual planning.

Examples of the Application of These Thinking Tools

The following examples illustrate where thinking tools have or are being used to help make for more robust collaborations in the radioactive waste management and environment remediation arenas.

Idaho Operations Office and the Idaho National Laboratory cyber security program.   Several of these thinking tools were applied during a series of summit meetings (Cyber I, II, and III) help by the U.S. Department of Energy Office of Nuclear Energy, the Idaho Operations Office, and the Idaho National Laboratory in 2007 and 2008.   The purpose of these summits was to arrive at a comprehensive and realistic plan to ensure a secure cyber security operating environment.   The "Oral Interviews" and the "Communications and Responsibilities Group Mapping" thinking tools were used.   Tangible outcomes included agreement as to what defined the baseline cyber security budget, a formal delineation of duties between these parties for the cyber security program, a prioritization of the Top 5 cyber security priorities, and a "green scorecard" in accomplishing key tasks.

U.S. Army/Ohio Environment Protection Agency Dispute Resolution for the FUDS Erie Army Depot.
Representatives of the U.S. Army Corps of Engineers, the Ohio Environmental Protection Agency, the U.S. Army National Guard, and ERT Corp. (an Army contractor) are working in a series of collaborative workshops and conference calls to implement the terms of the Level 3 Dispute Resolution for addressing the Lake Erie Off-Range cleanup.   To date they have used the "Oral Interviews and Group Analysis of Data," the "Declaration" thinking tool.   To date, they have developed a high level of transparency and are closely synchronizing current and future activities needed to meet the terms of the Level 3 Dispute Resolution.   Their Statement of Objectives has been useful in communicating the goals and objectives to those overseeing the Level 3 Dispute Resolution. These agencies are currently on target to meet the stated goals and objectives.

Department of Defense Office of Nuclear Energy Office of Human Capital and Business Office Annual planning initiative.   The Office of Human Capital and Business Office is a customer service organization in the areas of Information Technology, Human Resources, and Security.   The intent of this annual planning initiative was to "raise the bar" in the level of customer service in these areas.   The "Declaration," thinking tool helped this office define and develop several **Customer Service Initiatives**, and an earlier version of "The Full Scan" thinking tool was used extensively.   Three of the more notable outcomes

included the provision of on-site services that had previously been provided remotely, an upgrade to the organization's Internet Portal, and improved methods of making organizational information available to current and incoming employees.

The Role of an Independent Professional Facilitator

Many scientific and technical working groups are typically preoccupied with the subject matter of their profession or vocation.   A skilled professional facilitator can help these working groups direct their attention for a time to areas that need to be addressed for the group's effective functioning.   A professional facilitator can assist a collaborative working group to:

1. *Assess* which thinking tools or other methods would benefit the workgroup
2. *Tailor* the thinking tools; for example, develop appropriate questions for use in the Oral Interviews, sort larger groups into appropriate subgroups
3. *Conduct* tasks appropriately conducted by a third party (e.g., Oral Interviews)
4. *Facilitate* the application of the thinking tool
5. *Arrange* meeting spaces so as to encourage informality and an even distribution of power.

Constraints

A constraint in the use of thinking tools is that many working groups are pre-occupied with their work at hand and fail to see the value of thinking tools.   Promoting the benefits of thinking tools as well as their successful application may reduce this constraint.

CONCLUSIONS

Thinking tools help people "think together" and therefore have an important role in any collaborative initiative.   Successes have been demonstrated in a wide variety of applications including environmental remediation, inter-agency partnering, cyber security program budgeting, and roles and responsibilities between the Department of Energy and its National Laboratories.   These thinking tools help working groups in these and other areas achieve their mutual objectives.

The new direction provided by this paper is that it provides working groups with several tools that are traditionally the methods furnished by a professional facilitator.   While such groups may still work with the assistance of a professional facilitator, these thinking tools are now directly available for use.   They need be applied with flexibility and consideration for the circumstances of each situation.

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