

**2002 Command and Control Research and Technology Symposium
Cover Sheet**

Title: Lessons Learned from War Room Designs and Implementations

Track: IT Supporting DoD Business Processes

Author: Steven M. Shaker

Evidence Based Research, Inc.

1595 Spring Hill Road, Suite 250

Vienna, VA 22182-2216

Telephone: 703 893-6800; ext. 305

Fax: 703 821-7742

e-mail: shaker@ebrinc.com

Lessons Learned from War Room Designs and Implementations

Steven M. Shaker
Evidence Based Research, Inc.
1595 Spring Hill Road, Suite 250
Vienna, VA 22182-2216
Telephone: 703 893-6800; ext. 305
Fax: 703 821-7742
e-mail: shaker@ebrinc.com

Abstract

Maximizing the flow and control of information is key to competitiveness, whether it be on the battlefield, the campaign trail or in the boardroom. Both government and commercial organizations have set up “war rooms” as a means to handle and enhance decisionmaking and planning. There have been both failures and successes from which worthwhile lessons have been learned and can be applied to future war room developmental efforts. Successful war rooms are innovative tools used to manage information in a time-sensitive environment. They are dynamic facilities, which channel the collection, analysis and dissemination of information. They foster collaboration and team based decisionmaking. Command Posts and other optimized facilities supporting military and business decisionmaking (war rooms) can benefit from the experiences and lessons learned from war room designs and implementations developed for government, industry and political campaigns. This paper describes some of the author’s most recent and relevant developments and experiences in “analog”, “digital” and “virtual” war rooms. Case studies include: a counter-proliferation war room used by DARPA to influence their investment decisionmaking; an advocacy campaign war room used to support a CEO of a major utility in his efforts to slow the pace of deregulation; and a war room supporting a large telecommunication firm’s decisionmaking.

Text

From Battlefield to Board Room

For many years various organizations have experimented with the use of special rooms or facilities to assist in their decisionmaking. The military has been in the forefront of this approach. These rooms have been used in military campaigns to develop tactics and grand strategies. Throughout World War II, and into the 1960s, these rooms concentrated on maps, and on game tables with miniature flags and models representing force disposition and movement. With the advent of modern communications and near real-time reconnaissance and intelligence these rooms have refocused to concentrate on command and control rather than long range planning and strategy formulation.

Two recent developmental efforts are associated with military campaign applications. General Schwartzkopf became a celebrity during Desert Storm as his briefings were televised around the world. Although highly successful in both its tactical use, and in the public relations effort, there were those who were highly embarrassed that an American general was conducting his briefings from within a canvas tent using a map with a pointer. As a result, a “war room” was developed by the Defense Advanced Research Projects Agency (DARPA) called the Enterprise Room. It was no accident that this facility gave one the feeling of being on board a futuristic starship. The lead contractor hired the set designer/architect involved in one of the Star Trek movies to help design the layout of the room. This 60 by 60 foot black room, contained a number of modular structures, elevated viewing areas, and a very large central viewing screen. It was all designed so that it could be rapidly disassembled and reassembled in the field. The room was used primarily to test secure communications. Very little effort was put on decision support or team collaboration software tools or approaches. The aspiration for it to serve as the command and control room in the field eventually dissipated and the program was cancelled.

Recently DARPA initiated another program called the Command Post of the Future (CPOF). It was initially envisioned as an optimized facility, which would support command staff in the field utilizing the latest information technology, visualization techniques and associated tools. A change in philosophy and purpose moved the effort away from a team based collaborative vision to one which was individual centric, supporting the sole Commander in the field with new technology. Some of the tools and technology however, that were initially developed for the program, may prove beneficial to team based decision support¹.

In the military research and development and acquisition arenas, the business side of warfare, war rooms have seen some significant progress and innovation supporting decisionmaking. The cyberneticist Stafford Beer proposed in 1975 that computer technology could enable the development of an “opsroom,” in which real time information is laid out graphically to provide foresight to its users and to facilitate immediate, quality decisions. He envisioned such a tool to assist government economic planning. Beer provided some inventive thinking that combined an individual’s information processing capability (brain), group dynamics and ergonomics. His

¹ The website for CPOF containing programmatic and technical information is: <http://www-code44.spawar.navy.mil/cpof/>

notions of iconic representations served as a forerunner to today's visualizations. Beer was concerned with group and team collaboration, but adopted one misconception in that his opsroom only included seven chairs since he believed this to be the maximum number for a creative group.²

Senior officers and government executives must receive timely awareness of rapidly changing events in order to operate successfully within today's "information age. This includes information, which can be either internal or external to their organization. Officers are faced with shorter cycles for making increasingly important decisions. To support decisions, staffs have become gatherers of data to the point that they are often inundated by facts and figures. They have great difficulty separating the "wheat" from the "chaff" to determine what is important, and to manage this deluge of data. Senior officials, and their support staff, often have an inability to display complex relationships and linkages associated with planning, information and intelligence. The serial display of this information has often proved inadequate for comprehending complex activities, programs and processes. There is difficulty in articulating plans and generating support.

Both government and commercial organizations have set up "war rooms" as a means to handle and enhance decisionmaking and planning. However, there have been many failures, often leading to the development of a "hi-tech" glitzy facility used merely to present PowerPoint briefings. There have also been some noted successes, from which worthwhile lessons have been learned, which can be applied to future war room developmental efforts.

For the past decade, this author has been involved in designing and implementing war rooms for a number of applications including: military acquisition programs, defense investment decisionmaking, government and commercial strategic planning, corporate competitive intelligence, mergers and acquisition, and bids and proposals. This paper provides case studies and the associated lessons learned from the war room experiences which the author considers to be of most importance in shaping future thinking for war room design and implementation. It is hoped that this will aid in advancing the "art and science" of developing war rooms.

War Room Fundamentals

A war room is a very focused, intense effort to organize complex programs, to develop program and strategic plans, and to visualize and assimilate data and linkages between information that impact multidimensional plans. The war room enables a collaborative team to break down complex programs and information processes into comprehensible parts, to promote structured dialogue and brainstorming, to comprehend program intricacies, and to establish program concepts quickly.

War Rooms can be vary from glitzy "hi-tech" rooms, in which computer generated information is conveyed through hi-resolution displays, to a "low-tech" approach utilizing foam boards, or magnetic white boards. They can be optimized for the specific needs, applications and budget of the organization. This author has developed a war room typology consisting of the following varieties:

² Stafford Beers, *Platform for Change*, John Wiley & Sons, New York, 1975, pp. 447-451.

- Analog (low tech, paper based; map logic flow and presented on paper or boards)
- Digital (displays and decision support software and tools are embedded into facility)
- Virtual (Web-based portal system; downloadable template of process; digital content and information feeds)
- Hybrid – combinations of prior war room types.

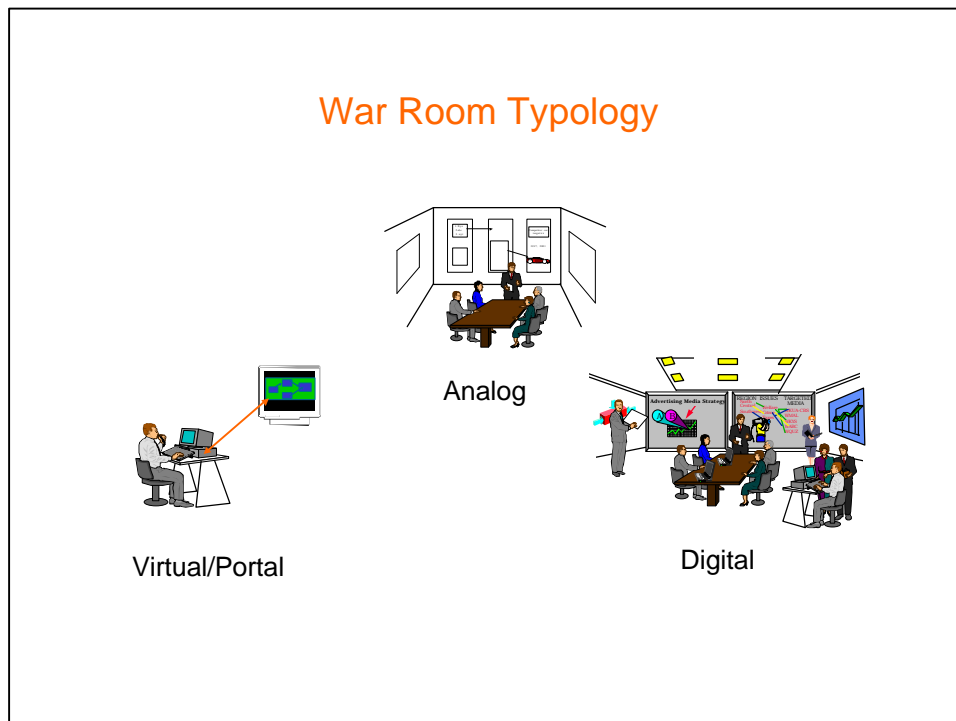


Figure 1. Depiction of the types of war rooms including analog, digital and virtual.

How to Build a War Room

Choice of the war room location and its dimensions is very important, since it impacts accessibility and utility. Ideally, it should be co-located with the planning group that is overseeing the specific application of the war room. It should be large enough to support the number of planning sessions, monitoring the status of the program and respective efforts, and to serve as an advocacy tool for selling the program to upper management. Therefore, a conference table should be located in the room. The table is also needed in the room for staging the information intended on the walls. Sufficient space must be provided for a manager responsible for the effort, to walk other managers around the room, explain certain facets, and gather their input. Locating the room on an inside wall has the advantage of not "wasting" display space to windows, and also reduces the security threat that your planning will be compromised if it incorporates sensitive information.

The war room can be located within a fixed, dedicated site in which the structure can be altered and modified. There is however, great value in being able quickly put up and disassemble the war room. Making it modular, and easy to move, allows the information to be presented in other locales and to groups that cannot get to the fixed site. For example, the war room could be quickly relocated to an executive boardroom for a special briefing. Making it modular also enables multiple war rooms to be in use, with one being taken down within minutes to be replaced with another.

There are several approaches to developing a low cost analog war room framework. In all of them, the war room walls are organized into sections and panels. In a fixed site, bulletin boards for affixing paper information, or magnetic boards for attaching magnetic backed information, can be used. Another approach, suitable for both fixed and mobile analog war rooms, is the use of light foam boards, which are available from many office supply mail-order companies. The foam boards can be attached to the walls, either by either using Velcro snaps, or attached from the ceiling with paperclips.

The first, and most important step in developing a war room, is to capture and then map the information flow, and the process through which the functions and activities are to be carried out and the specific tasks that will need to be performed.

Typically a core team develops the first “straw man” logic flow for the war room. They may use input from a combination of primary and secondary sources, including a literature review and Internet search, surveys and interviews with key officials and outside experts.

After this initial process is mapped out on the walls of the room, other knowledgeable people and experts are invited and “walked” through the room. Their advice on correcting specific “logic train” flaws and enhancing the process can be easily captured and then displayed in the room. After obtaining the input from many knowledgeable sources, the end result is a very robust war room, reflecting a clear and logical information process. This in essence becomes the analog war room, and it in itself, may suffice for certain applications and uses.

The next phase of the development involves the infusion of information technology into the war room facility. This involves the selection of specific tools, hardware and software which transforms the information flow captured on paper, and displayed on the walls of the analog war room, into a digital format, thus creating the digital war room. The basic approach is to use off-the-shelf-software tools that are then integrated together using an open architecture approach. This allows the war room team to choose the specific tools that are needed, as well as upgrade or change these tools as the state of the art advances. The tools selected will perform tasks such as automated text retrieval, data mining, decision modeling, data visualization, data storage and linking.

It has been this author’s experience that the best war rooms are in fact hybrids, integrating computer generated information on displays with some static boards. Innovations such as electronic whiteboards have also proved to be very useful tools.

Case Studies

War Room Case Study 1. Counterproliferation Investment War Room

In the mid 1990s there was an effort undertaken throughout much of the Intelligence Community, and the Department of Defense, to come up with the technical means to assist in countering the proliferation of weapons of mass destruction (WMD). DARPA was experiencing great uncertainty as to where they could best put their resources and key talent to support the counterproliferation effort. It was particularly difficult since numerous other agencies were engaged in similar and often duplicated efforts. DARPA decided to set up an investment decision war room to help guide their funding and project management. Panels were placed around the walls within a conference room, which was dedicated to this effort. A logic flow was mapped out and displayed across these panels. Sections of the wall included:

- Threat (descriptions detailing how weapons of mass destruction were, or could be proliferated)
- Need/Requirements (capabilities needed in order to thwart the proliferation).
- Concepts of Employment (Approaches, techniques in which to achieve the capabilities to hinder the proliferation.)
- Operational Performance Characteristics (The performance levels needed for the concepts of employment to prove effective; such as speed, sensor range, duration, etc.)
- Technological Requirements (The technology needed to achieve the performance characteristics.)
- Open Source Intelligence (Information on where and who is working to achieve these technologies capable of achieving the performance characteristics.)
- Leveraging Strategy (How DARPA can leverage research and technology developments conducted elsewhere into their counterproliferation program.)
- Funding and Investment Strategy (Determining the costs associated with leveraging the technology, and grouping and consolidating into program elements, and into an overall investment program.)

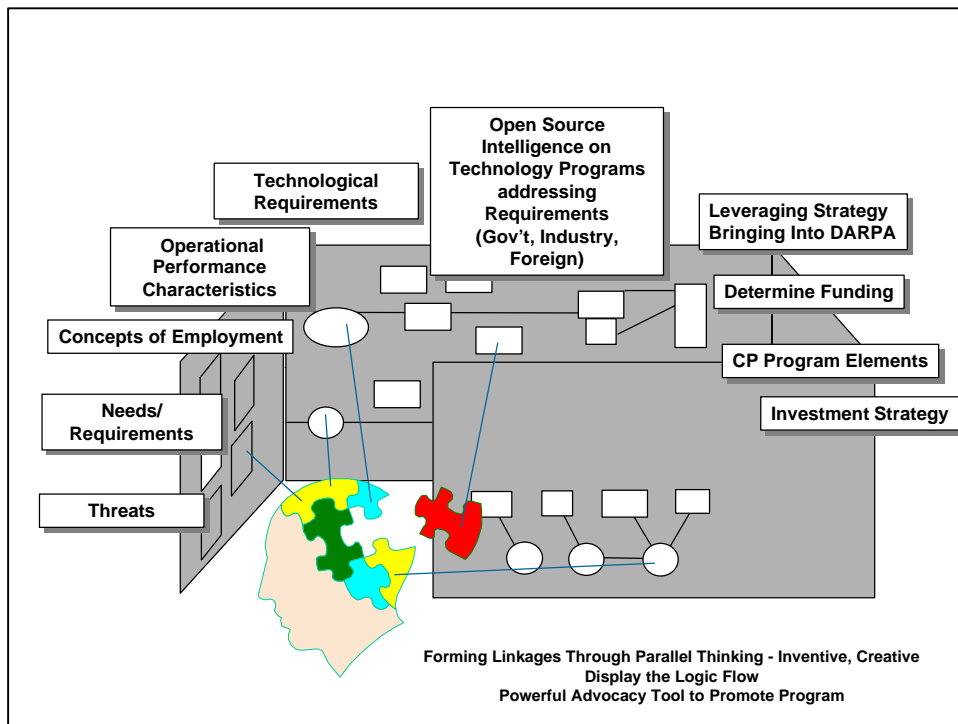


Figure 2: Displays the logic flow within the DARPA Counterproliferation Investment War Room.

The information from each section was color coded and linked to the subsequent section so that individuals could follow the logic train from a specific threat all the way around to the investment strategy associated with countering that threat. A link analysis software tool, called Netmap, was used to link all the information, enabling the information to be somewhat portable, facilitating briefings outside of the war room.

An initial straw man framework for this investment strategy was presented in the war room on the various panels. Numerous project managers and senior decision-makers from within DARPA and other government agencies were walked through the war room. Initially many gaps and flaws were found and pointed out by the individuals who toured the room. Their input and views were captured and inserted within the room. Over time, as more “knowledgeable individuals” and key counterproliferation experts were walked through the room, the war room became increasingly detailed and sound from an analytic perspective. Eventually, it enabled DARPA’s Counterproliferation Program Manager to produce a very coherent investment strategy, whose logic could be readily displayed and advocated to key decisionmakers.

War Room Case Study 2. Advocacy Campaign War Room

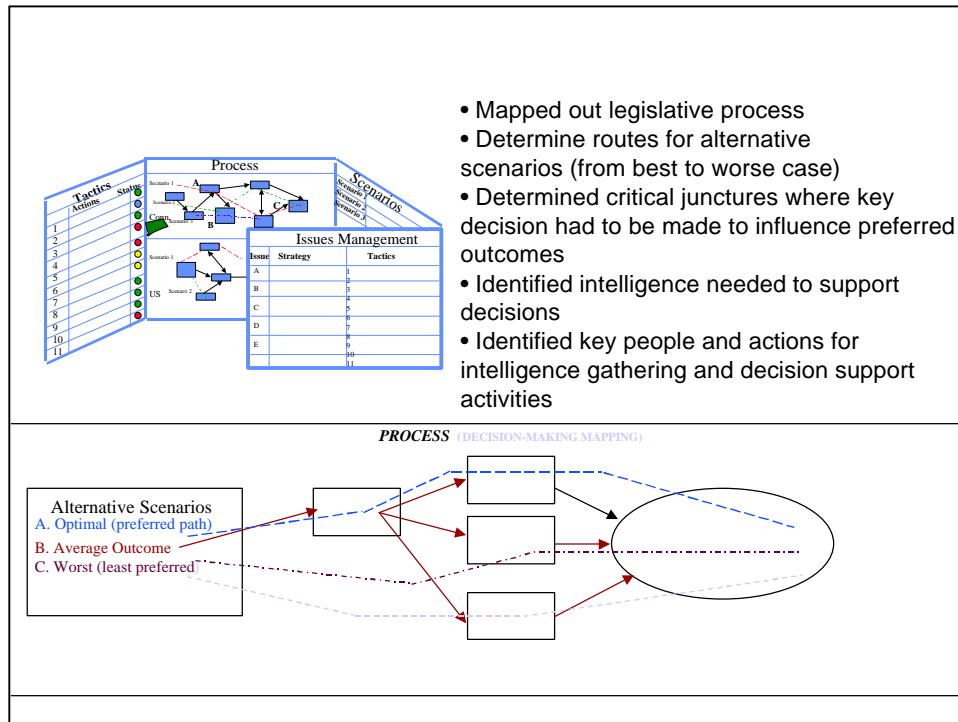
A major public utilities company located in the south was engaged in a fight for its survival. For years it was able to take for granted that its captive market, and with no competition, would continue to fund its very large nuclear infrastructure. Environmental concerns, coupled with a desire by consumers for more options, dramatically altered the business and political landscape. The company’s leadership believed that they could not prevent the move towards deregulation, but if they could slow its pace by about two years, then that would give the company enough “breathing room” to refocus and to better compete in the new marketplace. The CEO desired a

strategy and advocacy war room in which his team could plan, implement and wage his advocacy campaign to forestall the pace of deregulation. It would serve to monitor and track the competitors and opposition coalition trying to force deregulation legislation through the state legislature and the US Congress.

Because of the importance placed on the effort, a major conference facility was dedicated to this effort. It was a secure facility that featured magnetic white boards that wrapped around all the walls. The company's war room team had tried to assemble some informational boards that looked at their competitors/opposition's strengths and weaknesses. They were however, having great difficulty in putting the information in any meaningful context that impacted on decisions and actions. This author's team was brought in to develop a new design, approach and implementation plan for the war room to assist in the advocacy campaign.

Placed in the center of the war room, which was clearly visible to someone when they first entered was a process board. Utilizing magnetic panels which had graphics and wording displayed on the front side, the process board captured the legislative process through which deregulation laws would be enacted. On the top was the state legislative process, and on the bottom was the federal process. Our team worked with the corporate lobbyists and campaign team experts to fully capture and present these processes. The process depicted how the legislation would be initially introduced, what outside groups would be interacting with various legislators, and what committees the legislation had to proceed through. It eventually wound its way to the chief executive to sign. The panels included the sequential steps in order to navigate through the legislative process. The team identified the best possible scenario to forestall or delay the legislation from working its way through the process to enactment. Dotted lines revealed certain pathways that displayed how this scenario would occur. There were also alternative routes or pathways which allowed the legislation to be delayed. A worst case scenario was also captured, and displayed showing how deregulation legislation could be pushed through in record time. This came to represent the optimal scenario for the competitor and its allies. Several different scenarios were postulated, including optimal, worse case and mixed results.

Another board on the side of the war room displayed the various scenarios with supporting data. The middle process boards identified critical junctures along each of the scenario's dotted line. These were the critical points where a decision or action had to be made for the scenario to ensue. Another sideboard was used to describe what strategy and tactics could be used to influence decisionmakers at these critical junctures. These were examined from both the utility's and its allies' perception, as well as from the standpoint of their competitor and its partners. Another sideboard described the intelligence required to support the decisions and actions needed for these strategies and tactics. An intelligence collection plan was built around these actions. A tactics action board was used to track and monitor each development as it occurred during the legislative process.



- Mapped out legislative process
- Determine routes for alternative scenarios (from best to worse case)
- Determined critical junctures where key decision had to be made to influence preferred outcomes
- Identified intelligence needed to support decisions
- Identified key people and actions for intelligence gathering and decision support activities

Figure 3: Depiction of advocacy campaign war room, alternative scenarios and highlights of its key attributes

A status monitoring board was also used to track the actions of the key corporate players needed to support the decisions and actions. Initially names with stop light type displays (red - in trouble, yellow – warning, green – everything going well) were set in place. The team members and others in the company resented having their names so boldly shown next to the status display. These displays were soon removed. Outside of this, all the other elements of the war room worked quite well, and the Corporate CEO gave credit to the war room for helping to delay some of the pace of deregulation at the state and national level.

War Room Case Study 3. Telecommunications Competitive Intelligence War Room

A competitive intelligence (CI) unit for a telecommunications giant was struggling to find in-house consumers for its reporting and work products. Like many government and commercial intelligence organizations, often there is a “disconnect” between the provision of intelligence, and its real value to core decisionmaking activities impacting the organization. This corporation’s CI manager thought a war room might help elevate the use and importance placed on competitive intelligence by senior decisionmakers.

The war room effort began with an initiative to identify what were some of the key decision activities and processes, which could benefit from decision support furnished through a war room in which competitive intelligence would also be funneled. In addition to reviewing a number of internal documents, some 16 key executives were interviewed from various

organizations within the company. Six core decisionmaking processes emerged, which were considered essential to the corporation's success. These included:

1. Alliance Management (i.e. the selection of partners to fill customer or the corporation's needs and/or to enhance its overall competitiveness).
2. Sales Solution/Selling Training (i.e. understanding customer needs and market segment, benchmark the corporation against the competitor solutions, determine competitor sales strategy and the company's optimal sales strategy, and counter-strategy. Also provide visualized logic train to lead the potential customer to the corporation's solution).
3. Mergers & Acquisition (i.e. the selection of candidate companies to acquire; and the provision to support due diligence and negotiation).
4. Bid & Proposal (i.e. understanding the criteria and other factors in which the customer will be utilizing in its selection, determining how competitors will respond, and supporting the corporation's "win" strategy.)
5. Technology Assessment (i.e. the determination of which technologies can address specific customer needs, and how these can be best acquired by the corporation).
6. Scenario Planning (i.e. determining likely future market dynamics and opportunities; how competitors are likely to respond; and how the corporation can best position itself in this postulated environment).

The next step involved the mapping of each of the six decision processes to include capturing the information flow; the identification of decision support tools which could facilitate that flow; and the description of what activity would occur within the war room.

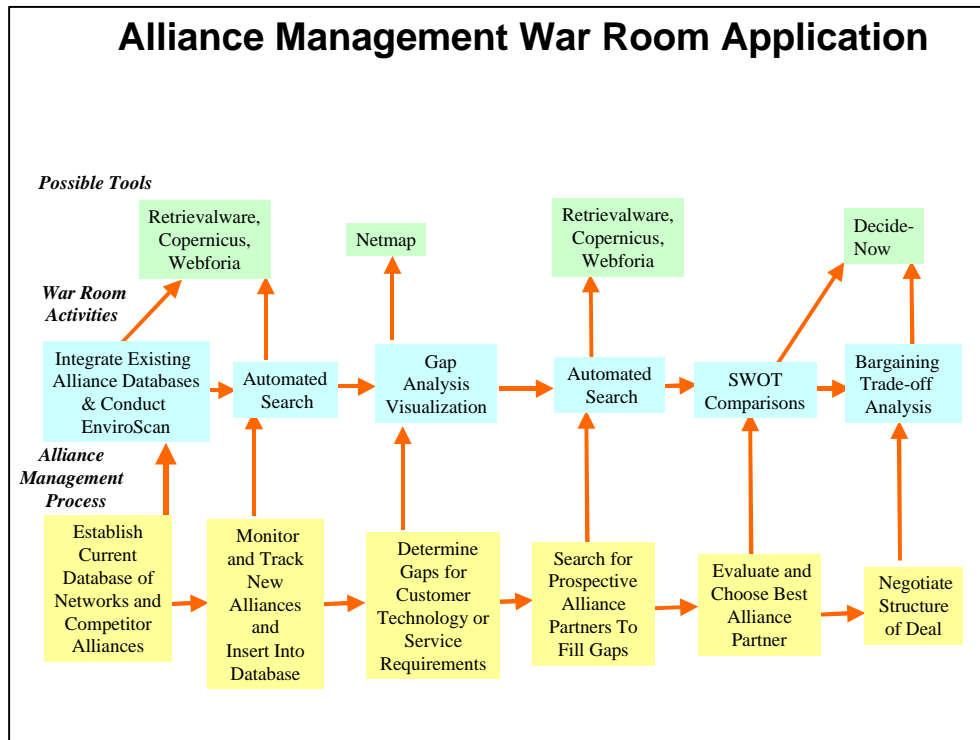


Figure 4: Displays the mapping of the alliance management decision process, which is juxtaposed to the war room activities required to conduct the process and the various tools needed for its implementation.

The war room processes for this effort encompassed the use of five tools as part of its tool suite. The tools included *Copernic 2000 Pro*, *DOORS*, *Netmap*, *Decide-Now*, and *Inspiration*. These five tools provided the core functions of competitive intelligence collection and analysis needed to support the six decision processes. These functions included:

- Being able to plan and manage intelligence support for the decision
- Collecting the intelligence
- Being able to sort and store the intelligence, information and data collected
- Visualizing and displaying the information, enhancing its comprehension and conveyance to others.
- Analyzing the information, thus deducing important findings
- Making evaluations of different options and choices
- Providing recommendations to the decision-makers

The chart below depicts the various functions which took place within the war room to accomplish each step of the process, and how the various software were linked to facilitate its implementation.

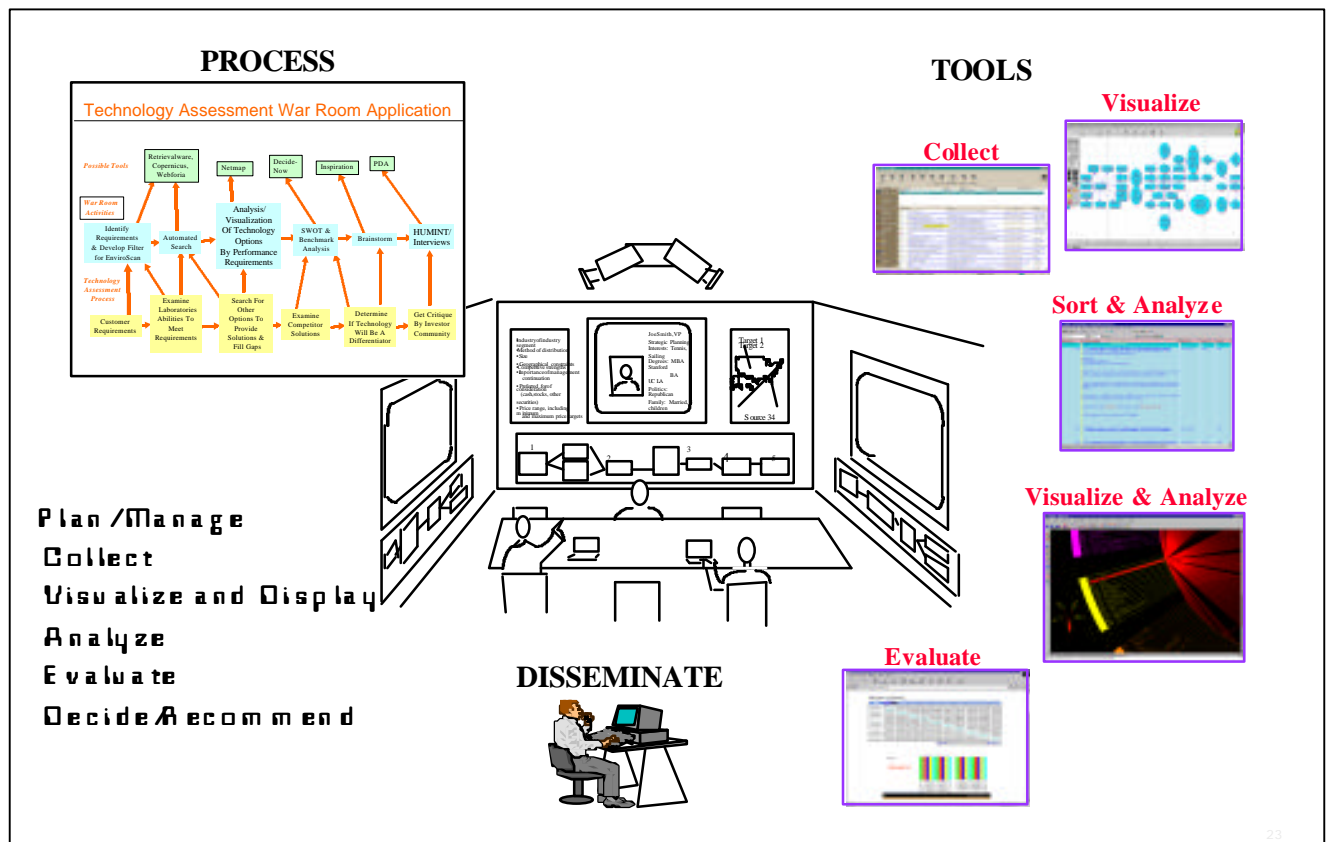


Figure 5: Depicts the linkage of various tools within a war room framework to accomplish a decision process.

The various tools were configured and integrated into one tool suite, enabling the output of one tool to flow as seamless as possible into the next tool. The tool suite was replicated and housed in several different conference facilities that became functional war rooms.

It is important to understand that these tools and processes did not automate, eliminate or significantly reduce the human *analytical* involvement in the decision-making process. Rather, they served to enhance and augment the analyst's abilities. These tools did take some time and energy to learn how to use effectively. This required practice and experimentation in addition to classroom training. There was a sharp learning curve so that after several weeks of practice and use in some initial projects, the CI staff became adept at their use. Their effectiveness increased greatly and the teams became more efficient in future analytical endeavors. Whereas without this tool suite CI would typically involve "bits and pieces" of overall support to a decision, this war room tool suite enabled total support for the "lifecycle" of a decision, from defining the problem to implementing the solution.

Current War Room Initiative

Evidence Based Research, Inc. (EBR) is currently engaged in war room developmental activity for a client to enable their analysts to effectively track, monitor, and forecast the market dynamics within a key technology sector. Knowledge of the key players, by both product and geographical segmentation, is essential to accomplish this task. The client's analysts also need to be able to determine who may dramatically alter and shape the future environment. Discerning emerging technologies, and being able to identify who the "first movers" and early adopters" are, is also critical to performing this effort.

Development of this war room first requires the ability to identify and describe the key industry market characteristics. These characteristics comprise the activity and dynamics shaping and influencing the industry which the analysts need to know in order to support the key decisions within the organization. This involves, not only the determination of the market characteristics, but also the associated metrics which enable an analyst to determine, weigh and evaluate the status and situation of the given characteristic within the market place. For example if a market characteristic is determining the key corporate players within a particular market space or sector, then size of market share would be one metric. Another metric may be sales revenue, and a third could be profitability.

The second step is to capture and then map the information flow and the process through which the functions and activities are to be carried out and the specific tasks that will need to be performed. This involves identifying the types of collection activity, including the use of search engines, intelligent agents, surveys and associated techniques, as well as the identification of informational sources that could be used to mine information that would "feed" the analytical tools used to address the metrics.

After this process is mapped out, the next step is the infusion of information technology. This involves the selection of specific tools, hardware and software which transforms the information flow captured on paper into a digital format. The basic "modular" approach is to use off-the-shelf software tools that are then integrated together using an open architecture. This allows the selection of specific tools that are needed as well as the ability to upgrade or change these tools as the state of the art advances.

The next step involves the integration of the decision support information technology within an optimized new facility or back-fitting into a pre-existing facility. This facility will be a state-of-the-art collaboration center that is flexible enough to support decision support war room processes, analysis and decision-making, as well as serving as a presentation and briefing room for key decision-makers.

Lessons Learned

The case studies highlight that a war room is not just the facility or tools and technology that exist within its confines. It is the people, their interactions and the total process, which is core to its character and attributes. War room design is an art and science, and we learn more from each development and implementation. Truly effective war rooms provide a structured and disciplined

approach to decisionmaking. There were some important lessons learned from these case studies, that should be incorporated when thinking about the design and planning of future war rooms.

- The foundation, on which all else is based on in the war room, is the capture and mapping of the decisionmaking process and logic flow. Effective war rooms graphically capture and lay out this process within the facility.
- A high degree of information density and lots of dimensionality are incorporated in the war room utilizing advanced visualization techniques. These can be used for both paper and digital formats, and if neglected, reduce the effectiveness of the war room.
- The war room is not a one-person tool or operation. Its real utility is as a facility to enable team-based thinking and decisionmaking. Much of its benefit is serving as a means for others to quickly gain comprehension and to develop a common frame of reference. It can also serve as an effective tool for team brainstorming.
- War rooms also serve as effective advocacy tools in which to gain senior management and peer level support. The most effective technique in doing so is to walk someone through the war room. They will find some gaps and flaws. Incorporating their thoughts and enhancements will often serve to gain their interest, participation and support.
- The war room is not just a planning device. Once a plan is prepared, the war room should be used as the mechanism to implement the program and to track and monitor events and activities.
- The war room should be used as a mechanism for proactive involvement, and as a means to delineate courses of action.
- Once courses of actions are determined, the war room can also be used as a device to assign responsibility and accountability.

The war room does not in itself guarantee success of a project, program or activity. It is however a highly effective tool for team based collaboration, which people can use to control and act on information.