REBUILDING SARAJEVO USING PARTNERSHIPS IN TECHNOLOGY

Zlatko Lagumdzija
University of Sarajevo
MIT Center
Trg Oslobodenja 1
Sarajevo, Bosnia-Herzegovina
387-71-447-559

Mark Adkins
University of Arizona
Center for the Management of Information
114 McClelland Hall
University of Arizona
Tucson, Arizona  85721
520-621-2603
adkins@arizona.edu

Doug Vogel
University of Arizona
Department of MIS
430EE McClelland Hall
University of Arizona
Tucson, Arizona  85721
520-621-4016
vogel@bpa.arizona.edu

Abstract
We live in a world of rapid change.  Nowhere has this been more evident over the past years than in Sarajevo.  Sarajevo, at the heart of Bosnia-Herzegovina, has experienced war and disruption of unprecedented proportions, as witnessed nightly on media world-wide.  Sarajevo is now in a rebuilding process using technology to stabilize peace internally and link to the rest of the world.  The purpose of this paper is to describe how Group Support Systems are being used in Sarajevo on various levels of government, business, and education for a wide variety of tasks and activities.  Lessons learned to date and a look into the future are presented.

Introduction
Building a country under the best of times in a world of rapid change is a daunting task. Imagine the infrastructure required in terms of banking, communication, postal, industry, government, and education systems to name a few.  Now imagine you have just gone through a war that has reduced your country to rubble.  Fortunately, affordable technology is available to assist in the transformation and building process.  Technology is increasingly available and cost effective to enable countries to develop internally with minor external assistance and without the burden of expensive maintenance and support from developed countries.

We have all seen nightly news footage of destruction and devastation in Bosnia-Herzegovina in general and Sarajevo in particular.  Currently a tenuous peace exists as business and government struggle to rebuild.  Survival on a day-by-day basis is being replaced with the urgency to reestablish an infrastructure and economy to provide respectable jobs accompanied by an effective governance structure.  The country and its people recognize the need to move rapidly into a global economy and are working to achieve economic stability.

Sarajevo has enlisted the aid of information technology in a variety of collaborative internal and external fashions to assist the building process.  Networked personal computing technology is readily available at affordable prices with flexible easy to use software with locally supported training and education.  Academics, the government, and private industry are working together.  The people in Bosnia-Herzegovina are working to be recognized by the rest of the world as being internationally competitive.

The purpose of this paper is to illustrate how technology is being used to help give Bosnia-Herzegovina an internal self-supporting infrastructure and an economic presence in the world.  Special attention is given to the use of a Group Support System (GSS) with accumulated evidence including examples from sessions held with business leaders, top government officials, and the prime minister.  Comparison and contrast is made with other developing countries.  Key issues and directions for the future are identified.
Background

Historically, Bosnia-Herzegovina was one of the six republics (Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, and Macedonia) in former Yugoslavia. Beginning in June of 1991, the republics began to establish independence. Some conflicts were brief in the “Land of the South Slavs” (Merrill, 1995). In Slovenia in the far northwest corner bordering Italy and Austria, the war was short (10 days) with little loss of life. After the war ended in early July a stand-still for a three-month period was defined and monitored by the European Communities. The last of the troops left Slovenia in October 1991. Slovenia is now successfully established as part of the international community and actively involved in electronic commerce and group support system use (Vogel, 1995).

Other conflicts were more prolonged. Croatia had a large Serbian population and a past association with the Ustasa regime in World War II (Merrill, 1995). The Yugoslav National Army (JNA) attacked Croatia in July of 1991 (Mousavizadeh, 1996) and began the worst fighting seen on the continent since World War II (Merrill, 1995). After one-third of Croatia had been captured by the Serbian army a cease fire was declared in January 1992.

There is not a clear distinction on whether the war in Bosnia-Herzegovina was an extension of the 1991 Serb-Croat war or something entirely separate (Gjelten, 1995). Bosnia-Herzegovina struggled with independence through February and passed a referendum on independence in March. Many Bosnian Serbs boycotted the referendum and teamed up with the JNA to attack Sarajevo in April 1992 after the European Community recognized the new state (Merrill, 1995). Over the past four years, Bosnia-Herzegovina and the city of Sarajevo experienced war and disruption of unprecedented proportions. Many have witnessed the destruction on the nightly television news shows world-wide.

Since the beginning of 1996, following the Dayton peace accord, the shelling has subsided and destruction lessened (Mousavizadeh, 1996). Buildings are being patched. Roads and other links to the outside world have been established, albeit in primitive form in some situations, for example, pontoon bridges (see figure 1). The Dayton peace accords have established the beginnings of a process of re-establishment and rebuilding of Bosnia-Herzegovina (see figure 2). The United Nations, the World Bank and other organizations are providing assistance.

Settled in a river valley, Sarajevo is the capital of Bosnia-Herzegovina and has a rich and diverse history. The city historically has been a trading center and crossroads of the world leading to the development of a culturally diverse population. In medieval times the eastern half of the Balkan area was controlled by the Byzantine Empire and the western half was controlled by the Roman Catholics. Four major religions exist in close proximity in Sarajevo. Approximately one third of marriages are mixed (Gjelten, 1995). Sarajevo has traditionally been cosmopolitan and was one of the first major cities in Europe to have a tram line as well as a water system.

Strife is also not new to Sarajevo. The fall of the Ottoman Empire gave rise to the Balkan wars. Archduke Franz Ferdinand the Habsburg Crown Prince of Austria was assassinated in 1914 on the Latin bridge. This famous event is historically noted as the start of World War I. In more recent times, many people were introduced to Sarajevo through the 1984 Winter Olympics. In modern times the city has been a center of commerce servicing a broad region of the Balkan peninsula. Prior to the war, Sarajevo had approximately 500,000 residents (Gjelten, 1995). The area produced a variety of products from business in metallurgy, electronics, and pharmaceuticals as well
as vast amounts of trading and banking. The University of Sarajevo is a leading institution in the broader region for a variety of academic disciplines and specialties.

The current population in Sarajevo is difficult to estimate but some have suggested it to be over 400,000. Basic services, such as, water, gas, and electricity have been reliably reestablished for large portions of the city. The attitude of the people living in Sarajevo is upbeat although the remnants of massive destruction remain. Shops are reopening with a variety of goods. The university is operating successfully with students “hanging out” in the hall and going to classes. These behaviors are reminiscent of academic institutions worldwide. The challenge now is the continued reconstruction with a focus on business reconstruction, job creation and governance stabilization.

**Group support systems in Sarajevo**

GSSs were first introduced in Sarajevo at the University of Sarajevo prior to the war in cooperation with the Center for the Management of Information at the University of Arizona and other international partners. A small GSS room was constructed and GroupSystems was installed and officially opened for service on 4 April 1992. Two days later, the war erupted in Sarajevo. The facility was taken over by the former Yugoslavian army. They ripped apart the GSS room -- and destroyed the fabric that had been created through the systematic use of collaborative information technologies.

Near the end of the war, the group support system facility was rebuilt with the help of the SOROS Foundation (see http://www.sfos.ro). According the George Soros, "The goal of the foundation network is to promote an open society. The concept of open society is based on the recognition that people act on the basis of imperfect knowledge and nobody is in possession of the ultimate truth. This leads to a respect for the rule of law, to a society which is not dominated by the state, to the existence of democratic government, to a market economy and, above all, to respect minorities and minority opinions." (The Soros Foundations Network).

The GSS facility has now been situated in the Management and Information Technologies Center (MITC) in the school of business at the University of Sarajevo in the center of Sarajevo. The establishment of the facility was a feat of optimism, conviction and hope for the future. The concept was sketched out by candlelight in a bedroom, the best protected room from grenade fragments. Without heat and sometimes without electricity, plans were made and the facility was constructed. Carpenters worked using a small generator run on smuggled gasoline. At one point the windows were blown out and replaced by concrete blocks -- the ultimate in light-proof curtains. As illustrated in figure 3, the facility is striking in its capabilities and professional appearance.

![Figure 3](image_url)

The MITC has emerged through the cooperative efforts of the SOROS Foundation, the University of Sarajevo, and the Center for the Management of Information (CMI) at the University of Arizona. The strategic objective of the MIT Center is to assist and promote the transition of Bosnia-Herzegovina (B-H) to a democratic, market driven economy. The MITC is tasked with the support of B-H’s economic and cultural revival. MITC facilities provide the means to conduct educational programs and practical training sessions on information technologies and managerial decision support. Residents of B-H receive education and experience on state-of-the-art management technologies and techniques at the local level.

The goal of the MITC is to create a world class educational institution by reversing the emigration pattern of local experts. The MITC is lead by Dr. Zlatko Lagumdzija, Professor of Management and Information Systems, at the University of Sarajevo. The MITC program provides practical study in the following areas: parameters/characteristics of market oriented economies, private business organization & structure, assessment of the B-H economy training on modern office equipment and computing techniques, management information systems, electronic meetings and collaborative processes. Available equipment to MITC participants includes: networked computing hardware, Group Support Systems, support software.
real-time translation support, and audio and visual presentation devices.

**Session results**

Researchers from the Center for the Management of Information (CMI) at the University of Arizona combined efforts with the staff at the MITC to run a number of sessions in the GSS room at the MITC using GroupSystems software. CMI and MITC researchers ran several sessions in the newly constructed GSS facility with business, government and student groups. Two particular sessions accentuate the current attitude of the people in Sarajevo.

The first session was conducted with 18 key business and government leaders in Sarajevo. Attendees at this session included the owners and presidents from pre-war industries such as the lumber industry, mining, printing and publishing, auto and mechanical manufactures, banking, utilities (gas, water, electricity) and Prime Minister Hasan Muratovic. The session was held in the GSS room at the MITC (see figure 3) as part of a three day conference on the economic reconstruction of Sarajevo.

The first day of session involved presentations by Prime Minister Hasan Muratovic and academics on the economic issues which confront Sarajevo. During the second day’s session, a representative from the World Bank talked about financial issues associated with the reconstruction of Sarajevo and an information systems expert discussed the impact of information technology on business. The final day’s session used the GSS technology to ask the group to determine “what was needed from the government, World Bank, and themselves to economically reconstruct Sarajevo.”

To produce the session deliverable, the team from the MITC and CMI developed an agenda based on the information that was disseminated over the prior two days. Most of the group had no experience with personal computers, key boarding, or GSSs so there was a brief introduction to the technology and the days’ events. Although there was typing assistance available throughout the room, the participants chose to do their own “hunting and pecking.”

The first tool used in this session was a “group outliner” with four nodes: What does the B-H government need to do to assist with the economic reconstruction of B-H? What does the World Bank need to do to assist with the economic reconstruction of B-H? What does this group need to do to assist with the economic reconstruction of B-H? What other things need to do to assist with the economic reconstruction of B-H? Group outliner was used because it provides the opportunity for each group member to answer all the questions and allows participants to spend more time on the questions that interested them the most (Brashers, Adkins, & Meyers, 1994).

After ideas were collected, each node of the outline was moved into an individual categorizer session. First we worked with the question, “What does the B-H government need to do to assist with the economic reconstruction of B-H.” A chauffeured methodology was used to organize the ideas and gain group consensus on the categories. After significant verbal debate over a 30 minute period, 37 answers were moved into 11 distinct categories. When the categories were established they were moved into a polling utility and the group was asked to rate each of the categories based on their importance to the economic rebuilding of B-H. The results indicate strong agreement on the top three issues (see Table 1).

The remainder for the session was spent going through the other nodes that were in the outline. At the conclusion of the session with major government and business leaders, the prime minister stated to the group that he now had a direction and mandate to proceed forward and would do so. Newspaper and television coverage following the session was widespread at both local and national levels (see figure 4). One headline read “Hot Days For Hot Answers.”

<table>
<thead>
<tr>
<th>Ballot Item</th>
<th>10</th>
<th>9</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>Total</th>
<th>Mean</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zakonska regulativa</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>144</td>
<td>9</td>
<td>1.71</td>
<td>16</td>
</tr>
<tr>
<td>organizacija drzave</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>139</td>
<td>8.69</td>
<td>1.54</td>
<td>16</td>
</tr>
<tr>
<td>Finansijski aspeki</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>133</td>
<td>8.31</td>
<td>1.82</td>
<td>16</td>
</tr>
<tr>
<td>privatizacija</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>131</td>
<td>8.19</td>
<td>2.37</td>
<td>16</td>
</tr>
<tr>
<td>socijalna pitanja</td>
<td>6</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>124</td>
<td>7.75</td>
<td>2.24</td>
<td>16</td>
</tr>
<tr>
<td>planiranje</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>112</td>
<td>7</td>
<td>2.07</td>
<td>16</td>
</tr>
<tr>
<td>Kredit</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>109</td>
<td>6.81</td>
<td>2.29</td>
<td>16</td>
</tr>
<tr>
<td>Privatni sektor</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>94</td>
<td>5.88</td>
<td>2.58</td>
<td>16</td>
</tr>
</tbody>
</table>
The second session involved a University of Sarajevo class. After a demonstration of what GroupSystems was, there was period for questions. An individual in the class responded to the question, “How can we use GroupSystems in B-H right now.” This individual stated that she wants to use the GroupSystems software to facilitate a session with other members of her chess association. The chess association is spread throughout the former republic. This student is already planning for the future and determining that she can have a meeting in a distributed forum. Videoconferencing was also introduced to the class as a way to assist in enabling distributed interaction.

Other sessions have illustrated additional GSS applications and MITC outreach. For example, in a televised event, GroupSystems was used to deliver the questions to people who are prominent designers of the Bosnian future. As such, not only journalists but executives and concerned citizens were able to participate. Higher levels of involvement resulted in multiple perspectives being addressed and opened new areas of concern with a sense of stakeholder ownership. This prevented the designers from debating and quarreling with each other and focused attention on the broader issues at hand.

Lessons learned

The following lessons learned represent a composite of group support system use in Sarajevo. Some are generalizable to organizations worldwide while others are particular to Bosnia-Herzegovina and Sarajevo as the rebuilding process continues.

Vision

When surrounded by craziness you can not be afraid to dream and think big. The ability to visualize a seemingly unrealistic future helps you make life livable and allows one to take action in that direction. This prevents one from going crazy and gives a substantial advantage in being able to quickly and thoughtfully respond as situations change.

Trust

People who are ready to accept the things that are unknown to them at that moment are essential. In the presence of adversity, people have to trust in themselves and then “go for it.” Concerted effort from dedicated people coupled with positive thinking reinforces trust in yourself and vision.

World standards

It is important to set world-class goals and criteria and go for them and not be unhappy if today only achieves 10%. It is much better than reaching 100% of local goals. Only this way is there a chance to rapidly improve and meet world standards. Regardless of how bad a situation is, or the fact that it looks like you will not survive, the only way to thrive is not to deal with survival but to have vision and conviction on the top standards -- otherwise you won’t survive.

Techno-leap

Technology allows you to quickly leap over physical obstacles that may take years to overcome. For example, access to the Internet and the World Wide Web can provide an immediate source of information and links to the rest of the world. Cellular communications can quickly establish phone service without repairing existing infrastructure. If you are stopped technologically for any circumstances, and after years you have a chance again, do not continue from where you have been stopped. Jump to a new height based on current situations and available technology.

Impact

In the process of rebuilding, you cannot address every situation in need simultaneously. It is important to choose opportunities that yield maximal impact. A relative small number of computers placed in a modern facility can have a large impact. A relatively modest investment in technology in a center such as the MITC can host a wide variety of
sessions and expose thousands of people to new ways of working. From that starting point, use in business and government contexts can spread rapidly.

**Media leverage**

Small glimmers of success can yield great rewards. A facility like the MITC can reach out to millions through media coverage. Sessions bringing together key business and government leaders can establish the foundation for policy that will last years, if not decades. Major national and international TV networks, newspapers, and radio stations help in spreading news of success and hope for the future. During the war, a local newspaper was published daily under incredibly adverse circumstances. The trend continues as rebuilding commences.

**Education**

Education must play a key role in the rebuilding process. Managers from small and once-large organizations must participate in accelerated programs to quickly come up to speed on how to effectively interact with world economies. The focus is on international business and communication and interaction with other US and international institutions and faculties. Students recognize the need to get new skills and that just doing things the way they were previously done will not meet the needs of the present or future.

**Expertise**

During a rebuilding process it is specially important to not ignore the “experts in your midst.” There is sometimes a tendency to over-rely on external advice and not involve the people who will ultimately have to implement new ways of working and make things work. Using technologies such as GSS to encourage the capture and sharing of expertise and viewpoints from the people who will ultimately do the work lasts long after the consultants have gone.

**Support**

Continued support and interaction are key to sustaining a rebuilding process. A “drop and run” approach to help are ineffective. The MITC is creating a network of support that will be a logical rather than a physical unit -- not caring who works where and when -- not giving people skills but privileges and opportunities through being members of the broader community. The objective is that regardless of where you are, whom you are, and when you are, you can feel confident that you have a support network.

**Attitude**

Some seemingly well intended visitors to Sarajevo in its period of reconstruction have tended to be smug and to “look down” on the people and situations they encounter. The attitude of visitors to Sarajevo has, on occasion, been one of helping “those people” and overly promoting outside achievement. As can well be imagined, this quickly invokes a hostile local response. Institutions that have recognized Bosnians as people like themselves and who have every desire and motivation to be part of the rest of the world have had much better levels of reception and success.

**Sense of Humor**

On numerous occasions, keeping a sense of humor and positive thinking has kept the people of Sarajevo and Bosnia-Herzegovina sane and hopeful for the future over the past years of turmoil. As one former freedom fighter noted, “Look at your father’s and friends graves with respect but don’t go down with them.” Bullet holes in offices and car doors become memories of the past but often invoke humorous responses and recollections from those relating characteristics of the incident. Six months in Sarajevo is often retold as “a popular weight loss program.”

**Looking to the future**

Sarajevo is a city of contrasts. It is neither the best of times nor the worst of times. What you see in Sarajevo today depends on which way you look and your point of focus. You see bombed out modern buildings as well as stately stone buildings that have survived the current conflict and two world wars. You see lively markets, but also memorials with fresh flowers remembering those who were killed standing in line for bread. You see crowded streets with lots of happy upbeat people but often-told apprehension for the future. You see business magazines touting the future but closed factories. You see new cars but also burned wrecks and IFOR military vehicles. You see polite police officer but not hidden thugs.

A journey of a thousand miles begins with a single step but you have to know where you are headed. Technology has enabled Sarajevo to move towards the future and provides degrees of freedom and opportunities for quantum leaps in the rebuilding process. Internet and World Wide Web
connections are being established. Videoconference capabilities have been installed to enable broader degrees of interaction with other organizations. Plans are underway to create value added partnerships between educational institutions similar to those established in the US (e.g., Alavi, 1995). A new breed of world class executives and managers has been created and will be recognized and support by world agencies. Concepts of the international office of the future are alive and well in Sarajevo. International representatives are positively surprised by the quality and abilities of the people. They are, indeed, survivors.

Technology can quickly impact an economy. A quantum leap is possible using technological support. In Sarajevo, telecommunications infrastructure is being put in place to assist in electronic commerce. Technology alone, however, will not determine the fate of the rebuilding process. Political stability and the creation of respectable jobs are but two of many challenges facing this emerging country. Military unrest looms as a threat to the future. Appropriately applied, technology can help. Inappropriately applied, it can more strongly have a negative impact. A small country such as Bosnia-Herzegovina provided with a lot of money and technology that does function properly can dramatically self destruct. In some ways, technology is fashion or style. Do not become caught up in style over substance.

Conclusion

None of us would ever want to experience what Sarajevo has gone through over the past four years. The city is going from “Mad Max” to an organized society, something that is not easy in the best of times. It was a war fought over tolerance. Some citizens wanted an open environment with high levels of personal and economic freedom. Others, fearful of the unknown, wanted a more closed and controlled society. This situation is not unique. This division and variance in levels of tolerance exist in the United States of America and other countries worldwide. The extent to which Sarajevo is able to stabilize and move forward is of importance to us all. Technology like GSSs and desktop video can help Sarajevo develop partnerships to rebuild. The world has a responsibility to work together to preserve peace and enhance the quality of life.

References