Leveraging Technology in the Service of Diplomacy: Innovation in the Department of State

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T A B L E   O F   C O N T E N T S

The PricewaterhouseCoopers Endowment for
The Business of Government

FOREWORD

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On behalf of The PricewaterhouseCoopers Endowment for The Business of Government, we are pleased to present this report by Barry Fulton, "Leveraging Technology in the Service of Diplomacy: Innovation in the Department of State."

This report is aimed at several audiences. The first is government executives from all agencies and departments. Professor Fulton has a powerful message for them: Technology is a crucial tool in enabling government managers to do their jobs more effectively and efficiently. Technology, according to the Fulton report, is not an end in itself but a tool for dramatically improving the performance of government activities.

The second audience is the State Department itself. By describing innovative uses of technology in 12 different State Department activities, the report can be used by other State Department bureaus and offices to "benchmark" their own use of technology. The report describes the significant progress that the State Department has made over the last several years in implementing technology solutions to better deliver diplomacy.

Finally, the report is aimed at technology executives across government. Professor Fulton describes how technology innovation occurs when technology executives and program executives forge close working relationships to implement technology to improve the delivery of services. The report also includes recommendations regarding which information technology requirements might best be centralized and how the development and support of information technology applications should be decentralized.

We trust that this report will be useful and informative to all three audiences outlined above: government executives, State Department executives, and technology executives. There continues to be many technology innovations ripe for implementation throughout government that promise to improve the performance of activities and delivery of services.

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EXECUTIVE SUMMARY

The Department of State is on the cusp of an internal information revolution in support of diplomacy, driven by information-technology-savvy leadership and an organizational restlessness with the status quo. State's IT epiphany followed a two-decade fall from digital grace. The frustration of its employees and the consternation of the foreign affairs community signaled the call for action that is currently under way. The IT budget has been doubled to build infrastructure and improve connectivity. And it is increasingly understood that information technology not only enhances financial and personnel management, but also directly strengthens the conduct of diplomacy.

The purpose of this study was to examine those IT applications that directly support the conduct of diplomacy. Examples of best practices were sought by word of mouth and documented by interviews. In a few cases, including the use of digital technology leading to the Dayton Peace Accords, published firsthand accounts were the primary source.

Twelve examples were chosen for review and elucidation. They were selected both for their contribution to diplomacy and for their variety. There are numerous other examples that could have been selected, particularly from innovations at overseas missions. Even with all of the innovations that are changing the face of diplomacy, it is only in the past year that IT modernization has been broadly appreciated as a critical enabler of diplomacy.

What made the difference? Leadership, resources, and staff impatience with the status quo. As Secretary of State Colin Powell told employees on September 6, 2001, "The tools that we now have through Net Diplomacy are just remarkable, in the sense that they can go over political boundaries, they can go over cultural walls, they can break down any barrier that is out there to communication." That is the kind of enthusiasm that had been missing. However, most of the examples in this study preceded Secretary Powell's arrival and the infusion of new funds. So, their success represents a confluence of two factors: an inside champion and an outside catalyst.

Key Findings
The findings from this study include the following:

- Most of the innovations were driven by forces exterior to the Department of State, including the 1993 bombing of the World Trade Center, the fear of Y2K systems meltdown, and budget reductions requiring great efficiencies.

- Practically all of the innovations were initiated and developed by individuals who were part of the user community that they were designed to serve.

- Most of the applications were developed in areas of the Department of State traditionally thought to be out of the mainstream of political and economic analysis and policy making.

- Most of the innovations cannot be considered "mission critical"—that is, their development was not driven by an expressed need to improve the practice of diplomacy, even if that subsequently was the result.

The most important lesson from the 12 examples is the need to ensure a close alignment between the user community and the IT developers. The closest possible relation results when the two communities substantially overlap. Most of the innovations came from users who also have expertise in information technology. The text includes numerous project-specific lessons and highlights those that were common to two or more innovations.

Recommendations

Based on this study, there are five key recommendations for introducing technology in support of diplomacy:

- Centralize common requirements such as network architecture, equipment procurement, security certification, and software standards.

- Decentralize the development and support of IT applications.

- Encourage a cadre of IT-literate diplomats, officers whose specialty is foreign affairs with IT competence.

- Share learning by encouraging user groups that function across institutional lines.

- Promote innovation by funding pilot projects and recognizing excellence.

Information technology is not a panacea. On the other hand, it is not an option in today's competitive environment. If diplomats do not have real-time connectivity to stay informed, if they do not have powerful tools to assist in analysis, if they do not have the means to improve their productivity, then those who do will best them.

With its current leadership and the new funding it has received, buttressed by a new focus on diplomatic requirements, the Department of State is a strong candidate for a turnaround within 24 months. It is, indeed, a plausible candidate to assume a leadership role in the use of information technology in the foreign affairs community.

Introduction: The Digital Challenge

I am determined that I'm going to get an Internet-accessible computer, with pipes to support it, at every desk in the State Department and every embassy in the world.

—Secretary of State Colin Powell, September 5, 2001

The Berlin Wall fell in 1989, and the remains of the Communist revolution disappeared in the early 1990s. The Information Revolution reached the tipping point as corporations embraced the new technologies and the Internet began its rapid diffusion throughout the industrial world. In the decade that followed, globalization has driven the world economy, new media have affected world politics, and private citizens have become increasingly engaged in international affairs.

The Department of State, while celebrating the end of the Cold War, was slow to apply the new technologies to the conduct of diplomacy. Indeed, in the last decade of the 20th century, decision making became more centralized, physical access more restricted, and information flow more inhibited. In frustration, a group of State Department officers issued a manifesto in which they wrote, "We are entering the uncharted waters of the 21st century in a rusted-out diplomatic hulk that is no longer seaworthy."[1]

This state of affairs has been richly documented by several studies including Reinventing *Diplomacy in the Information Age,*[2] *Equipped for the Future: Managing U.S. Foreign Affairs in the 21st Century,*[3] and *America's Overseas Presence in the 21st Century.*[4] In the first week of the George W. Bush administration, former Defense Secretary Frank Carlucci presented to Secretary of State Colin Powell

a "resources-for-reform" proposal calling for the Department of State to undertake fundamental change, including upgrading information technology and adopting modern management practices. Co-sponsored by the Council on Foreign Relations and the Center for Strategic and International Studies, the review, *State Department Reform,*[5] represents a consensus among research institutions, scholars, and professionals that the time has come for action. "In short," the task force said, "renewal of America's foreign policy making and implementing machinery is an urgent national security priority."

A common element in practically all of a dozen recent studies is the State Department's failure to deploy modern information technology in support of diplomacy. As information acquisition, analysis, management, and dissemination are central to every aspect of diplomacy, it is no surprise that American diplomacy has lost its primacy in the conduct of foreign policy. This criticism does not necessarily reflect on the many able diplomats who serve in the American Foreign Service; it is meant to highlight the inadequacy of the tools that are available to them, especially in a period when diplomatic roles are rapidly evolving. In a world of ever increasing complexity, the national interest will suffer unless the professionals who serve in 180 countries are supported by the best available information technology.

Additional resources alone will not ensure success. Examples of colossal failures from both government and industry are plentiful. The U.S. Agency for International Development (USAID), for example, was forced to abandon a multi-million-dollar central accounting system several years ago when it failed to serve its employees. The Department of State's once planned three-enclave system, which required three computers at every employee's desk for full connectivity, would not have efficiently connected diplomats across borders or even within embassies.

If the status quo is unacceptable and can't be cured by money alone, what is required? As this study suggests, the answer is a combination of leadership and grassroots initiatives. Secretary of State Powell set the tone in his first week in office when he told employees that he lived on the Internet. These were words of appreciation for the innovators who were already using the new technologies, and words of encouragement for those who had been pushing for change.

Under Secretary for Political Affairs Marc Grossman told fellow diplomats that the revolution in information technology "is absolutely, utterly, and profoundly changing" the way diplomats do business. "Without the capacity to manage and master IT," he said, "we will not succeed." Under Secretary for Management Grant Green speaking of "e-diplomacy" at a George Washington University forum, promised to "create a desktop for diplomats with instant access to all the applications and information diplomats need to do their jobs." As new funding was made available, the State Department began deploying the Internet to every desktop and increasing its classified connectivity.

The Department of State identifies 57 major information systems[6] that it maintains to support its business practices. They range from an unclassified e-mail system to the Nuclear Risk Reduction Center system—and encompass an array of functions from communication to administration to the facilitation of diplomatic practices.

The single most important technological requirement for the State Department is secure communications between Washington and 250 embassies and consulates abroad. Legacy telegram systems continue to serve as the primary means of official secure communications, although an increasing amount of informal correspondence is carried over unclassified and classified e-mail systems.

Like most organizations, State's first use of data processing was in support of financial management and payroll operations supported by mainframe computers. Its initial foray into word processing was taken in the mid-1970s when it awarded a contract for the worldwide installation and maintenance of Wang word processors. Although State has been rightly criticized for holding on to the Wang technology for two decades, its initial decision was prudent, as Wang offered a reliable, low-maintenance system that offered efficiencies in word processing over the Selectric typewriters they replaced. E-mail and the World Wide Web were not candidates for diplomatic tools when the word processors were first installed.

Moving from stand-alone Wang word processors to Pentium-powered computers running on Local Area Networks (LANs) was a painful and time-consuming process because of budgetary limitations, personnel shortages, and security requirements. Modern computers operating on robust networks are now the norm. The last Wang word processors will soon be retired.

The purpose of this study was to look at recent initiatives that promise to transform the conduct of diplomacy. While examples of excellence are not widespread, there are a number scattered throughout the State Department that warrant recognition. Systems that support consular services, including the processing and issuance of visas, are very robust. Public diplomacy applications represent state-of-the-art technology. Refugee processing is being expedited by new IT applications. The study is intended to expand the circle of supporters by illustrating that information technology is already facilitating the conduct of diplomacy. By stimulating interest among diplomats, it is hoped that there will be a further incentive for internal reform.

Diplomacy and information technology intersect at three levels. The first is that which promotes efficiency in existing business practices including payrolling, accounting, and contracting. The second level directly supports the conduct of diplomacy including reporting, negotiation, representation,

and advocacy. The third level is the substance rather than the practice of diplomacy. It includes U.S. negotiations to open telecommunications markets in China, analysis of the impact of software production in India, and advancement of telecommunications deregulation in the Caribbean. The State Department has applied its information technology predominantly at the first level, directed at improving administrative efficiency. The second level, with the exception of word processing and e-mail, has been largely ignored. The third level has commanded U.S. government attention, but is not a priority at the Department of State.

This study focuses on the second level—diplomatic support—by seeking and reporting examples of applications that advance the practice of diplomacy. Best practices were sought to illustrate the categories below:

- Knowledge management

- Database management

- Specialized intranets

- Multimedia reporting

- Customized hyper-linked virtual desktops

- Collaborative software

- Videoconferencing

- Digital imagery

- Presentation software

- Personal Digital Assistants (PDAs), cellphones, and wireless applications

- Language translation software

- Speech recognition software

- GPS (Global Positioning System)

- GIS (Geographic Information System)

- Remote sensing

- Digital communication systems

- Encryption

Research was conducted primarily through personal interviews, augmented by written exchanges and the examination of published accounts. Particular attention is given to the relation between

the IT applications and the diplomats for whom (and by whom) they are designed. Have the systems enhanced the quality or efficiency of diplomacy? Are diplomats better prepared to cope with the requirements of the 21st century? Is the Department of State better prepared to communicate outside of traditional government-to-government channels? In short, can it be demonstrated that the national interest is served by the wise use of information technology?

The State Department's messaging systems, including a legacy cable system and classified and unclassified e-mail systems, are ignored in this study for two reasons. They are neither unique nor imaginatively integrated, so do not serve to illustrate the centers of IT excellence to which this study is directed. Likewise, the department's numerous administrative systems have not been examined, as the focus is on diplomatic practices.

Twelve examples have been selected to illustrate how information technology has been applied to enhance diplomatic practices. Ranging from refugee processing to the Dayton Peace Accords, the IT applications fall into three categories represented in the chapters that follow: diplomatic interaction, public access, and internal communication. None of the systems is universally used in the Department of State, and most are unknown except to the user community that developed the system.

To the extent that the cases illustrate excellence, this report may also serve to stimulate the transformation of American diplomacy, which would require changing its closed culture, reshaping core processes, and addressing third-level digital challenges.

Case Studies: Using Technology to Improve Diplomatic Interaction

Consular Consolidated Database (CCD)

The Consular Consolidated Database is a world-wide database of databases, consolidating data from every U.S. consular office in the world. The data is replicated in Washington and made available to consular officers around the globe.

Built on an Oracle database, it operates over the Department of State's sensitive but unclassified intranet known as OpenNet. All consular officers have had access to the CCD since mid-2001. Whenever an officer carries out any consular function—such as receiving data from a visa applicant or issuing a visa—these actions are recorded in the local database. Within five minutes selected data are available to authorized personnel worldwide.

The CCD serves several purposes critical to the efficient operation of American consular services. In the first instance, it provides a secure record of transactions in case local records are lost or destroyed or unavailable in an emergency. Equally important, it serves consular officers in sharing data with their colleagues at other posts, in responding to queries about the authenticity of questionable visas, and in allowing a check of prior information when a new visa application is received.

In case of emergencies, the CCD allows consular officers to continue services to American citizens through the central database or by downloading the data to a mobile site. The CCD also makes it much easier to share information with other agencies, as the data are already in a format that can be

Start Date: Fully operational in 2001

Originating Office: Bureau of Consular Affairs

Brief Description: Database aggregating data from all U.S. consular activities abroad including visa issuance, passport replacement, births and deaths of American citizens

exported. The existence of the CCD has made it relatively easy for State to begin sharing all of its CCD-held visa information with the Immigration and Naturalization Service (INS) in the Department of Justice.

A separate but complementary system is the Consular Lookout and Support System, which automatically notifies the consular officer when an applicant has been previously turned down for a visa or when other lookout information is recorded in the system. This computerized system has been in existence since the mid-1960s, but was more extensively deployed by congressional mandate following the 1993 bombing of the World Trade Center. It also operates on the same intranet platform, OpenNet, which hosts the CCD.

Diplomacy is far more than government-to-government interactions. Increasingly it involves the interactions of officials and publics. As one Foreign Service officer said, "Being able to interact with the public as a representative of the United States and present official decisions of the United States concerning a foreign national's application for a U.S.

government service constitutes diplomacy. The more informed a consular officer is, the better the interaction will be, the better the service will be, the better perception the foreign public is going to have of the U.S. presence there. A lot of it depends on the consular officer's ability to express him or herself, but this gives the officer tools to make a more informed, authoritative decision."

Since its introduction, the Consolidated Consular Database has been well received by consular officers. The use of the CCD is intuitive and requires little or no training. A systems integrator designed the structure of the database and the replication system, created the consolidated database, and then created the web interface to the database. Since CCD's launch, consular officers have filed numerous unsolicited reports of the system's utility.

Other benefits to users are envisioned with the maturation of the system. Prior to the availability of the CCD, an ad hoc reporting tool (ART), based on Microsoft Access, was developed to enable consular personnel overseas to query their local consular databases. Because of its complexity and the inadequacy of training, ART did not enjoy the receptivity of CCD. As the CCD is not a data-mining tool, however, it cannot be easily queried for aggregate data. Although a small minority uses it for analysis, new analytic tools will be better crafted to satisfy user needs.

CCD now includes photographs of all visa recipients, and plans are under way to photograph all applicants, against which facial recognition software could be run to detect known terrorists and criminals. One-piece flat-screen computers are

Figure 1: Consular Section web page from the American Embassy in Paris
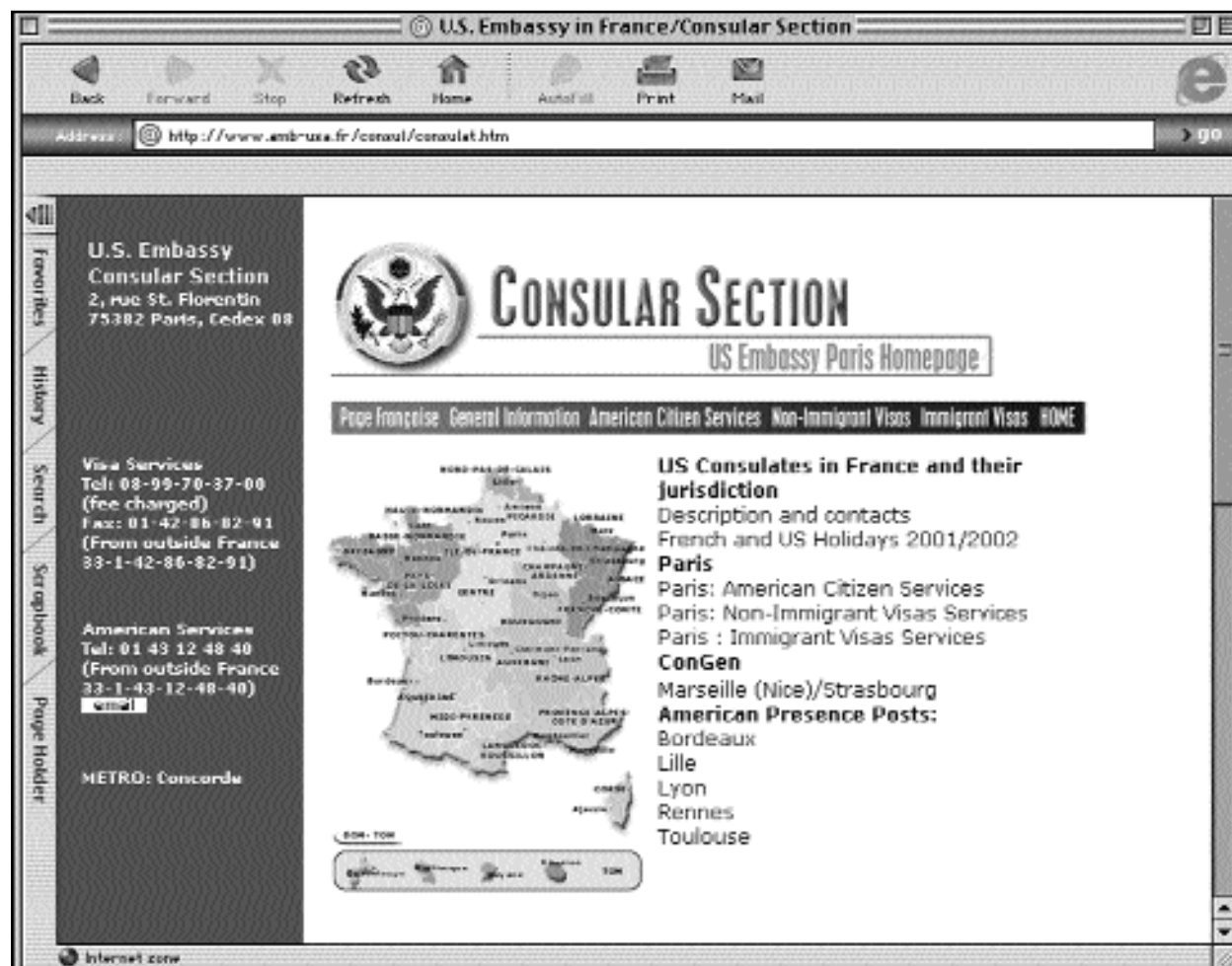
being procured so that consular officers can access relevant databases during the visa interview and record adjudications and informal notes directly into the database. Both of these enhancements represent changes in work practices that will be well received by some and resisted by others. Other future plans include eliminating paper files by scanning documents and generating workload statistics centrally instead of tasking each post to produce them.

Another related expansion of intranet use is interactive collaboration, which some see as a primary vehicle for consular officers to work with each other across distances. The question is how best to tap into the reservoir of knowledge held by experienced officers. Several newsgroups were established, but after a few comments, users stopped contributing. There was reluctance for officers to attach their names to documents going to an amorphous group, as well as a tendency not to read incoming postings. An ongoing experiment with an off-the-shelf collaboration tool, E-room, is showing mixed results. With projects or tasks moderated by a leader, collaboration has worked well. Collaborative groups that do not have the focus of a project have been less utilized. With well-defined tasks and increasingly heavy workloads, consular officers have been in the forefront of IT experimentation and adoption.

Lessons Learned

- **Simplicity, ease of access, and breadth of data are far more beneficial than tools that provide deeper, more flexible, more complex analysis.** Busy officers turn to the simpler systems. The experience in implementing CCD, as well as the Lookout System and ART, suggests it is better to introduce applications that are simple but effective, without bells and whistles. To the extent that routine processes can be automated, user satisfaction is axiomatic.

- **Systems, particularly in the introductory stages, should be built to accommodate existing work practices.** After the system is accepted it can be expanded to change existing work practices. A new system (e.g., CCD) can be thought of as a stepping-stone on which future development can be based.

Kosovo Repatriation Information Support (KRIS)

Among the many initiatives to assist Kosovar refugees after the withdrawal of Serbian forces in 1999 was a multi-agency effort in integrating information in a common geographical database. It was, in the first instance, an attempt to use Geographic Information System (GIS) software to catalog the extent of the humanitarian tragedy and to assist in the safe return of refugees. In the simplest terms, GIS is a means of displaying information on a map. Better defined, GIS is a database management system for the display and analysis of digital geospatial data. It combines mapping capabilities, databases of geographic and other relevant information, and spatial analysis to allow users to look at an area in relation to other areas, in relation to changes over time, and in relation to other relevant factors. By combining digital maps, satellite and aircraft imagery, and data collected from field workers on the ground, a GIS-based network can provide accurate and timely information for governments and nongovernmental organizations (NGOs) to respond to complex contingencies.

The State Department became involved in supporting a GIS system in Kosovo through the Office of the Geographer and Global Issues, although there were numerous other players including the National Imagery and Mapping Agency (NIMA), the Office of Foreign Disaster Assistance (OFDA) of the USAID, and the United Nations High Commissioner for Refugees (UNHCR).

The State Department's contribution was to assist in the development of the Kosovo Repatriation Information Support system (KRIS). The foundation for KRIS was the construction of an electronic base

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Start Date: Deployed in 1999

Originating Office: Office of the Geographer and Global Issues

Brief Description: Geographic information system deployed to support the repatriation of Kosovars after the withdrawal of Serbian forces from Kosovo

map by NIMA in 1998. It included multiple data layers such as topography, roads, place names, and administrative units. OFDA commissioned a NIMA-produced "humanitarian-planning map" and distributed it in paper form to relief agencies working in Kosovo.

After the Yugoslav army withdrew from Kosovo following its spring 1999 offensive against the ethnic Albanians in Kosovo, UNHCR established a GIS unit in Pristina supported by a multi-agency team composed of U.N. agencies and OFDA. In June 1999, the State Department deployed the KRIS team to Macedonia. The team arrived with laptops loaded with GIS software and updated data from NIMA. Its purpose was to support UNHCR in developing data sets that would assist the repatriation process. The team was able to obtain and use U-2 photographic imagery depicting damage to homes in Kosovo.

The intention of using KRIS as a planning tool for repatriation was overtaken by the spontaneous return of the Kosovars. Nonetheless, KRIS databases assisted in coordinating repatriation activities and contributed to a survey by UNHCR of the damage to housing and other infrastructure in Kosovo within weeks after the Serb withdrawal. It served as a precursor to the U.N.'s Humanitarian Community Information Center (HCIC), which represented a major breakthrough in information sharing.

After repatriation, HCIC's role changed to supporting reconstruction planning and budgeting, election planning, and civil administration—all of which could be supported by the geographic databases that had been developed. The State officers who supported the initiative report that an effort "to develop a more systematic information-sharing regime for future complex contingencies has begun to gather momentum." USAID has issued a draft information-sharing plan that anticipates requirements for sharing geo-spatial data in future humanitarian assistance efforts.

With scores of players involved in international humanitarian relief, coordination between civilian and military agencies, between government and nongovernmental organizations, between international organizations and numerous governments is always a challenge. If they can all contribute to, and draw on, a common data set, coordination is likely to improve markedly. GIS software provides the opportunity for unprecedented collaboration if the various actors can agree on common standards.

Lessons Learned
In a presentation at the U.S. Institute of Peace, Col. Michael Dziedzic and Dr. William Wood drew the following lessons from their experience in Kosovo:[7]

Figure 2: GIS for repatriation planning
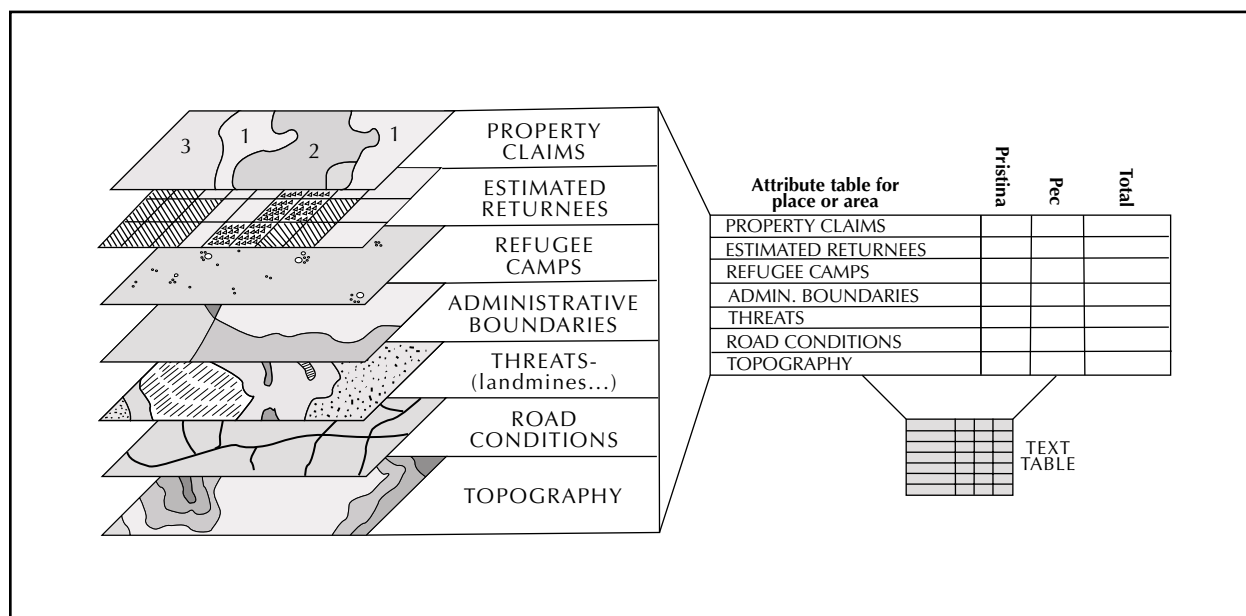
- **Develop a strategic information plan.** Use of GIS alone does not mean there is an information-sharing regime. An information strategy needs to be developed involving all major participating organizations to address data requirements, information security, and field constraints.

- **Designate an information-sharing coordinator.** Each organization should be responsible for developing and maintaining its own data sets, using common standards for the data and place names to ensure that the data sets can be integrated.

- **Build GIS foundation maps in anticipation of future complex contingencies.** This needs to be done by a technical agency such as NIMA in advance of a humanitarian intervention because of the time required.

- **Improve response time.** Major international relief organizations need to develop emergency response capabilities with the necessary GIS expertise, hardware, and communications equipment to facilitate the rapid establishment of information-sharing networks in the field.

Worldwide Refugee Admissions Processing System (WRAPS)

The Worldwide Refugee Admissions Processing System (WRAPS) supports a network of 15 Overseas Processing Entities (OPEs) that operate on contract with the Department of State through the Bureau of Population, Refugees, and Migration. From Havana to Moscow, the OPEs are the first point of contact for the 70,000 refugees that immigrate to the United States each year. WRAPS is a virtual private network for capturing information needed to process refugee applications, track movement, and, finally, to re-locate refugees to the United States.

WRAPS also provides comprehensive information to volunteer organizations (e.g., Church World Service, International Rescue Committee, U.S. Catholic Conference) that help resettle the refugees in the United States after they arrive. WRAPS will provide access to case data on the refugees, so they can be efficiently assisted by the volunteer organizations. Each of the 10 volunteer agencies connected to the system have from 10 to 100 local affiliates, which also draw on the information. Other government agencies that require access to WRAPS include the Centers for Disease Control, the Department of Health and Human Services, and the Immigration and Naturalization Service. International partners with which interconnectivity will be possible in the future include the International Organization for Migration and the U.N. High Commissioner for Refugees.

Data is encrypted, transmitted over the Internet, and accessed through a web browser. Because so many users are external to the State Department, its proprietary connectivity has not been used to link the various system users. Necessary changes to the software can be made centrally from Washington, thereby minimizing maintenance at the OPEs and volunteer organizations.

This homegrown system was based on well-defined business needs, triggered by the uncertain guesswork of estimating the number of refugees arriving each month, the requirements for making airline reservations, and the need to comply with legislated ceilings. With thousands of employees involved from contract organizations, NGOs, government, and international organizations, it was impossible to plan and track refugee movement with precision. A host of logistical, personal, and medical problems had to be accommodated.

The project manager—whose expertise was in international relations, not information technology—proposed a real-time, centralized database. A consulting firm was engaged to develop baseline requirements, a timeline, and a budget, which were completed in 1998. Through a competitive bid, a contract was awarded to build the system. Both the consulting firm and the contractor had

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Start Date: First installation in 2001; additional sites to be completed in 2002

Originating Office: Bureau of Population, Refugees, and Migration

Brief Description: Web-enabled database to facilitate movement of refugees to the United States

extensive and continuing contact with the end users at the 15 OPEs and with the stakeholders. During the process of system design, there were some organizational changes as well to better support the new processes.

WRAPS replaced a collection of disparate stand-alone systems that did not provide uniform data to those responsible for managing refugee resettlement. The new system was designed to allow a migration from uneven statistics and educated guesswork to a uniform database. It was first deployed in Russia in December 2001, at an OPE that processes some 16,000 refugees annually. The 100 Moscow employees welcomed the new system, which began full operation as scheduled, with only a few minor bugs. As of this writing, WRAPS remains to be deployed in the remaining 14 centers, scheduled for completion by December 2002. Refugee referrals from the UNHCR, which are currently processed manually, will also be electronically processed in another 18 months when the two systems will be fully compatible.

For system users, WRAPS is a welcome tool for processing applicants. The bottom-line benefit, however, is for the refugees themselves, who should experience fewer delays in being resettled in the United States. According to the project manager, "The whole procedure is shortened, and they get here faster. That's really been the goal of ours."

Lessons Learned

- **User involvement is key to building a successful system.** A user group was created to provide constant feedback as the system was being developed. A system was established for capturing, tracking, and responding to user comments. A website was established to allow users to track progress.

- **Likewise, stakeholder consultation is a key requirement.** Partners from the NGOs and government offices had to be carefully consulted to ensure that the information and statistics that WRAPS produces would satisfy their requirements.

- **Defining system requirements and writing detailed business rules for the programmers was far more complex and time-consuming than anticipated.** It's like building an addition on your house: It takes longer and costs more than you think. In the last analysis, users were well served because of the specificity of the business requirements.

Figure 3: Overseas Processing Entities for refugee admissions

10/24/00
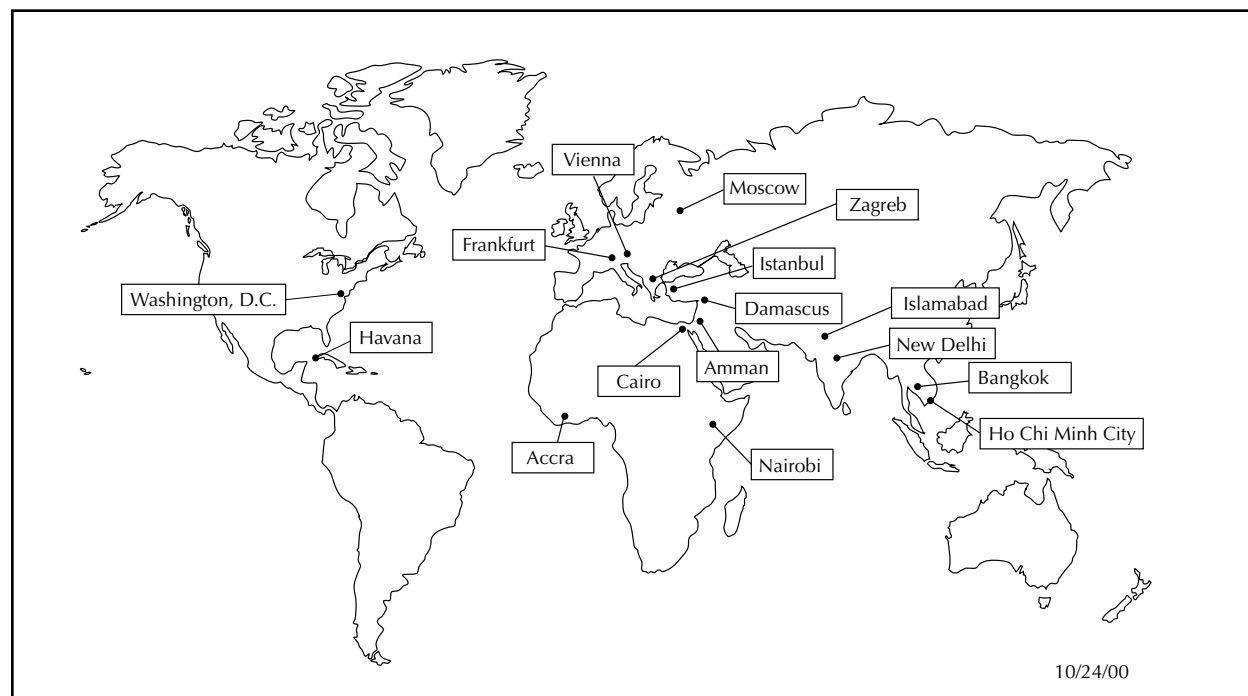
- **Training is essential.** A training manual was written, trainers visited field offices, and field officers were brought to Washington for hands-on training and immediate feedback. A 16-hour-a-day help desk was established, and online help screens were developed.

Dayton Peace Accords

The virtual maps of Bosnia used by State Department negotiators leading up to the 1995 Dayton Accords represent the most widely chronicled use of information technology in the service of diplomacy. Although the Department of Defense managed the technology, its skillful use by State Department negotiators helped conclude a peace agreement that is still being maintained after more than six years.

The Defense Mapping Agency (now a component of the National Imagery and Mapping Agency) created a virtual-reality version of the Bosnian landscape that allowed negotiators to sit in front of a computer terminal and examine geographic features to a detail of two meters. The computer program that simulated the Bosnian countryside, the PowerScene terrain visualization system, was developed by Cambridge Research Associates of McLean, Virginia.

The negotiations took place November 1–21, 1995, at Wright-Patterson Air Force Base in Dayton, Ohio, for the purpose of forging a peace agreement and gaining agreement for a multi-ethnic Bosnian state. Territorial issues within Bosnia were among the most intractable decisions facing the negotiators. After years of bloodshed and centuries of ethnic rivalry, the stakes were extremely high. The three warring nations were represented in Dayton by Yugoslav President Slobodan Milosevic, Croatian President

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Start Date: Used in peace negotiations in 1995

Originating Office: Department of State negotiators, with facilitation by DoD

Brief Description: Virtual mapping technology rendered three-dimensional views of disputed areas to assist in reaching agreement among warring parties

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Figure 4: Digital map used in Dayton Peace Talks
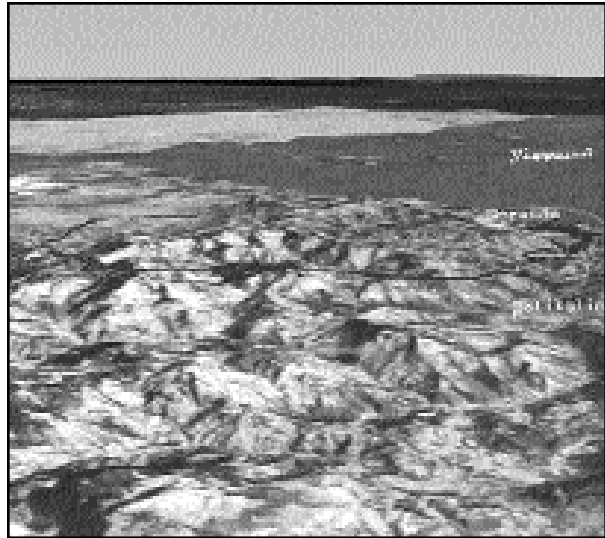
Franjo Tudjman, and Bosnian President Alija Izetbegovic. Assistant Secretary of State Richard Holbrooke headed the American negotiating team.

The virtual-mapping technology was supported by a team of 55 military experts and civilian contractors plus $4 million worth of map-making equipment. Bosnia had been completely filmed and stored to allow its virtual three-dimensional representation. The technology was originally developed for the Defense Department for use in Desert Storm.

One of the major challenges in Dayton was to convince all parties to agree to the same map and reach agreement on clear boundaries. Negotiators were able to pick a point on the map and simultaneously show on a split screen a color aerial image of the terrain. The principals were said to be astonished as they recognized familiar elements of the Bosnian landscape, including the ancestral home of one of the Balkan presidents.

Holbrooke was able to sit down with the principals and give them a virtual flight across disputed territories with the use of PowerScene. At one point, American officials brought Milosevic to a high-tech auditorium to show an aerial view of a disputed corridor of Serb-held territory between Sarajevo and Gorazde. After seeing that his proposed two-mile-wide corridor was rendered impractical by the steep mountains, Milosevic agreed to widen the path to five miles. Holbrooke

wrote that this high-tech video game played an important role in connecting Sarajevo with Gorazde, the last Muslim enclave in eastern Bosnia.

On a map scaled at 1 to 50,000, a slight shift may represent hundreds of yards on the ground, unintentionally separating communities and families. Bringing the landscape to Dayton by virtual means allowed all parties to understand without ambiguity the extent of their compromises and the precise nature of their agreement. The technology allowed the computation of the exact percentage of territory each side was given as various alternatives were considered. State Department negotiators were therefore in a position to build trust among the several parties. Technology removed subjectivity from the interpretation of the "facts on the ground." Any negotiator would benefit from having at his or her disposal an indisputable set of facts (i.e., an objective database) from which to forge agreement when emotions are running high.

Would the Dayton Accords have been reached without this technology? Holbrooke said: "It was very important, but I'm not going to sit here and tell you that we wouldn't have gotten a deal in Dayton without those computers. They made our job easier." As the technology itself was a reminder to the Balkan participants of America's technological edge, its impressionistic role may have been every bit as important as its facilitative role in establishing the Sarajevo-Gorazde corridor or computing the size of territorial divisions.

Holbrooke's masterful account of the negotiations in his book *To End A War* devotes two pages to the use of PowerScene at Dayton. In a 400-page volume, this brief summary may well represent a fair account of its value—useful but not critical. It is inconceivable that the peace accords could have been reached without the negotiating skills of a Holbrooke, but entirely plausible that PowerScene, as useful as it may have been, was not *the* element that made a difference between success and failure. Information technology, wisely deployed, can be a useful tool in negotiations, but is not a substitute for the skills of a negotiator.

Lessons Learned

- **As any negotiator knows, trust building is an essential element of success.** The maps, virtual and real, that were generated by the Defense Mapping Agency in Dayton served as an important confidence-building measure. While there were severe differences about where boundaries should be drawn, the technology helped settle disagreements about the facts on the ground. A 3-D virtual map manipulated by a joystick presents an image of verisimilitude that is impossible with a paper map.

- **The medium, as McLuhan asserted, is the message.** A reminder of America's high-tech capabilities at a peace conference may have had the unintended consequence of reminding the belligerents that America's power could be used in less benign ways. As participant Richard Johnson wrote, "Finding one's own house depicted on a tactical map at an air force base in a foreign country can be sobering, and knowing that anything on such a map can instantly become a target is even more unsettling."[8]

- **Although widely recognized by negotiators, it may be instructive for others to recognize that technology can strengthen the hand of an able diplomat, but cannot substitute for the skills he or she brings to the table.**

Case Studies: Using Technology to Improve Public Access

Kosovo Information Assistance Initiative (KIAI)

Following the liberation of Kosovo, USIA's Information Bureau (now the State Department's Office of International Information Programs, IIP) established Internet connectivity in the Kosovo Refugee Centers in Europe and the United States (e.g., Fort Dix, New Jersey). The Internet connectivity was established to facilitate communication among families who had been separated by the war and to provide Albanian-language news and information to refugees who had been forced out of their homeland.

After repatriation of the Kosovars, IIP set up Internet Cafés (or Community Internet Centers) in Pristina and seven other Kosovo cities to provide connectivity to the Internet and access to news and information about the outside world. The centers were equipped with donated hardware and software including computers from Silicon Graphics, Gateway, and Apple. Each of the centers, with

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Start Date: Initiated in 1999; concluded in 2001

Originating Office: Office of International Information Programs (IIP)

Brief Description: State Department initiated and supported program to bring Internet connectivity to Kosovars returning home after the withdrawal of Serbian forces from Kosovo

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Figure 5: Pristina Internet Café

about 10 terminals each, had two-way high-speed satellite connectivity.

USIA gave a grant to the International Organization for Migration (IOM), which had offices on the ground in Kosovo, to fund the satellite equipment, satellite time, installation, and salaries of local staff. A contract network engineer made arrangements with the satellite provider, Hughes Network Systems, and a German subsidiary. His role was to negotiate physical space for the centers through contacts with the local IOM offices, ensure that they were refurbished and had electricity, and get equipment into the country. Because of local limitations and the mountainous terrain, it was not feasible to use ISDN lines, microwave relays, or combined satellite-telephone connections. The only practical option was two-way satellite connectivity. Each of the centers had its own connectivity, so they could operate independently of the others.

The centers attracted some 10,000 users a week, the majority of whom were teenagers and college-age students. Many had first used the Internet in the refugee camps. The opening of the centers was widely anticipated by word of mouth. When there were no phone lines between cities, the Internet Cafés allowed connectivity by Instant Messaging. Students used them for conducting research after the universities opened. Doctors used the centers to communicate with doctors outside of Kosovo. And journalists used them to download news for local broadcast. Since users were not paying, half-hour time slots were allocated. Still, there were far more demands than the centers could satisfy. The center in Pristina was booked three days in advance.

According to the contractor who oversaw the installation, "the technical part was the easy part. We did not deviate from our initial technical plan. It proved to be completely viable. The difficult part was logistical—getting the equipment, getting the facilities, getting the power, getting back and forth, traveling to the cities, getting the subcontractor in to set up the antennas, getting technicians in the country, and getting them from place to place." The IIP representative arrived in September 1999 and opened the first center in Pristina just before Christmas, which he described as "one of the most worthwhile things we could have done." The last of the seven centers was opened in Mitrovica in May 2000.

By August 2000, CNN reported that there were at least nine Internet Cafés in Pristina and 20 in Kosovo region, charging $2 an hour and still attracting crowds. "I have 15 computers now, and if I could buy another 15, they would all be busy," said Luan Oruqi, one of Kosovo's homegrown entrepreneurs, who is connecting Kosovo's ethnic Albanians to the world.

The centers set up by the State Department were transferred to local NGOs or closed in 2001 when the original grant was exhausted and commercial alternatives had materialized. Even with limited access, the Internet had played a role in keeping Kosovars informed, from the day when they were first forced out of Kosovo until they returned. The Internet Cafés demonstrated, particularly to young people, the importance of information, the power of free speech, and the role of technology as liberating forces against tyranny.

Lessons Learned

- **Most importantly, understand the complexity of the environment in which you are operating.** IIP's representative on the ground said that everything took three to four times longer than estimated, in part because of a shoestring budget that caused delays and compromises.

- **Technology is the easy part; logistical and bureaucratic considerations are far more difficult.** The most difficult part was getting the equipment into the country. USIA had all the equipment, but had to wait several months for shipment by sea freight. Even the satellite equipment was slow to arrive because of limited shipments into Kosovo.

- **Do contingency planning to shorten the lead time in establishing similar centers in the future.** By following the Defense Department's (DoD) lead, computer and satellite equipment could be containerized for immediate shipment. The Kosovo experience showed that it took too long to assemble the package from scratch.

Digital Videoconferencing (DVC)

Digital videoconferencing between Washington and American embassies began in 1993 at a handful of overseas posts. The purpose was to conduct expert exchanges in support of public diplomacy objectives. When American experts were unavailable to travel abroad to meet with foreign publics, digital videoconferencing appeared to be an alternative—less expensive than travel and far less expensive than the broadcast-quality one-way Worldnet video programs that had been in use for nearly a decade by USIA.

Digital videoconferencing requires an ISDN line or broadband IP line (Internet connection) between

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Start Date: Initiated in 1993; continually upgraded and expanded since then

Originating Office: Office of International Information Programs (IIP)

Brief Description: Digital expansion of public diplomacy program designed to create an opportunity for dialogue between American experts and foreign publics

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two remote points to exchange video and audio signals. Although the signal is not broadcast quality, many prefer this medium to one-way broadcast quality video, because they can see their interlocutors. Conversation flows much more readily, and the interaction approximates a face-to-face conversation. First-time users are frequently surprised at how natural their conversation becomes—unlike one-way studio experiences, where the audience cannot be seen. Overseas participants can sit in a small conference room in front of a 27-inch monitor or view the exchange in an auditorium on a large screen projection.

Twelve units were purchased by USIA in late 1992 at a cost of $60,000 each and were installed at several major overseas locations including London, Paris, Tokyo, and Hong Kong. During this early experimental stage, there was only one DVC per month. After a few years, the number began to increase, so that by the end of 2001, the Office of International Information Programs was averaging three DVCs per day. And that doesn't include the videoconferencing that is taking place in State's other 20 locations, or in other government offices like the Office of the U.S. Trade Representative that have since obtained their own equipment. Based on experiences with IIP's system, NGOs are also installing similar systems. A recent example is the Middle Eastern Institute in Washington, which adopted the technology after one of its members participated in a State Department program.

Three factors account for the growth. The cost has decreased from $60,000 a unit in 1992 to $6,500 for a unit made by Polycom. ISDN lines are available in many more locations, although their costs have decreased only slightly. Finally, users are increasingly satisfied with the results as the picture quality and reliability of circuits have increased.

It is axiomatic that busy people whom the State Department may wish to engage as expert speakers abroad can more easily spare an hour or two in a studio than the several days required for travel to an overseas post. On the other hand, no one would suggest that the experience of meeting one on one can be completely duplicated by a video-conference. There is always a tradeoff between the ideal and the practical. After eight years' experience it is clear that the effort has paid off. From

several posts in 1993 to 168 overseas sites today, videoconferencing is now accepted as a standard tool in the conduct of public diplomacy.

As the manager of the IIP facility said, it's always a people issue. "The sooner you get people meeting each other and exchanging ideas, that furthers diplomacy. You may not be able to get them at the same table, but this is a good way of starting." Most of the exchanges are between an American expert speaking on American policy or society and an international audience, but the medium has served other causes as well. For example, former U. S. Trade Representative Charlene Barshevsky used the facility in a working meeting with the South African minister of finance. On another occasion, a forensic scientist visiting the United States testified by DVC at a trial in Durban, South Africa, concerning an apartheid-era murder.

The staff finds its continuing interaction with experts to be a side benefit of the job. Expert participants, as well, find that the digital conferences leave them better informed through their interactions with international audiences. Since this operation began in a single room in 1993, small studios have been installed throughout the State Department at nearly 20 different locations. With no centralized coordination, each office manages its own conferencing, although no others have a dedicated staff or the frequency of the IIP operation. In a new development, the Office of Verification and Compliance is currently testing a high-definition

Figure 6: Videoconference between Washington and Kiev

video connection between Washington and Geneva for use by American arms control negotiators. And G-8 principals have expressed an interest in using videoconferencing in lieu of travel to frequent preparatory meetings.

IIP was planning to use Internet connections early in 2001 to transmit the DVCs, but has been at least temporarily restricted because of firewalls that block video signals. When and if that option becomes available, sharply decreasing transmission costs will undoubtedly spur even greater usage.

The next phase, if the current firewall prohibitions are removed, is to allow the interconnection of posts with ISDN lines and IP lines through a gateway, thereby adding even more flexibility to an operation whose growth seems ensured. Plans are also under way to add video clips from the DVCs to IIP's overseas website. As long as new technologies are incorporated into the operation, its utility appears to be guaranteed.

Lessons Learned

- **Understand the environment.** The informality of the medium—which promotes conversation—must not sanction inadequate preparation or less than professional standards. In the early years there were numerous problems to overcome including unreliable ISDN lines, poor video and sound quality, and inadequate translation facilities. Overseas employees were occasionally untrained, speakers were poorly briefed on the use of the medium, and planning was inadequate.

- **Ensure that adequate resources are available.** Because the medium was perceived as relatively inexpensive and less than professional (compared to broadcast quality video), the operation has been shortchanged, from equipment to staff. As a consequence, in its early years quality suffered. Since then, the staff has upgraded its studios, routinely tests connectivity well before the scheduled conference, establishes contingencies to ensure audio connections if the video circuits fail, and otherwise promotes a professional production.

- **Innovators must hold on to their convictions until a new medium matures.** Because of the constraints of quality and cost, there was rela-

tively little usage in the early years. As equipment costs decreased and quality improved, the early champions of digital videoconferencing have proven to be prescient. Digital video-conferencing has become a powerful medium.

FOIA Electronic Reading Room

The Department of State website looks like many others in the federal government. But, one distinguishing characteristic is the Freedom of Information Act (FOIA) collection, particularly as it concerns key aspects of the U.S. government's conduct of foreign affairs.[9] Its Electronic Reading Room makes available to the public Department of State records that have been declassified and released under the Freedom of Information Act.

With a full- and part-time staff equivalent to 136 full-time employees, the department considers several thousand requests each year at an annual cost of more than $11 million. The staff includes scores of retired Foreign Service officers who meticulously review each document before release. The office is supported by an online archive of electronic diplomatic communications, a case tracking/imaging/electronic redaction system, and several Internet and intranet websites. The archive includes more than 25 million records.

The Electronic Reading Room receives 70,000 hits per day, a measure of public interest in the government's diplomatic relations. A well-indexed archive provides documents by subject and date in PDF format through a Verity search engine. The system is exceedingly responsive, even with a standard dial-up modem.

The current index of electronic documents includes CIA Creation Documents, El Salvador

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Start Date: 1997

Originating Office: Bureau of Administration, Office of IRM Programs and Services

Brief Description: Web-enabled online database established to provide public electronic access to State Department documents

Figure 7: Declassified document from FOIA Electronic Reading Room

> · MEMORANDUM
>
> THE WHITE HOUSE
> WASHINGTON
> (non-log)
>
> SECRET/SENSITIVE
>
> MEMORANDUM FOR THE PRESIDENT
>
> ACTION
> September 17, 1970
>
> FROM: Henry A. Kissinger
>
> SUBJECT: Chile
>
> Unless we establish tight control and professional guidance, the covert action program approved by the 40 Committee for Chile will not work. It is going to be a long-shot as it is; if we have to face the additional handicaps of well-meaning but unprofessional activism, of lack of coordination and of bureaucratic resistance, we will be dangerously exposed.
>
> The situation is as follows:
>
> -- State is timid and unsympathetic to a covert action program; it will not be able to provide either the imaginative leadership or the tight coordinated overview we need.
>
> -- Ambassador Korry is imaginative, but he is an "unguided missile." He is acting now as his own project chief and is trying to construct an operation all by himself. This is dangerous from a professional intelligence-operations point of view, and inefficient because there are so many inhibitions on his capacity to operate. He is too exposed and visible to do this kind of thing, and it may even affect his objectivity and analysis.
>
> -- But Korry does not trust his staff and will not use it; most of his key officers, including the CIA Station Chief, have been cut out of the operation.
>
> -- Only Korry is doing any real reporting, and while it is voluminous, it is inconsistent and contradictory. We cannot be sure of what the situation really is and how much Korry is justifying or camouflaging.
>
> -- CIA is unhappy at the modus operandi, but does not feel it can impose discipline on Korry; it certainly cannot do it through its present Station Chief.
>
> -- There is no consensus among agencies here concerning the full scope of operations and some lack of enthusiasm for overall planning. Hence, the bureaucracy is simply reacting to what happens in Santiago.
>
> -- The 40 Committee does not have the time for this kind of close, detailed supervision, and the time-lag would make it impossible anyway.
>
> SECRET/SENSITIVE
>
> DECLASSIFIED

Churchwomen Documents, Guatemala Collection, Raoul Wallenberg Collection, El Salvador Collection, and the Amelia Earhart Collection. The most extensive files are those on U.S.–Chile relations from 1968 to 1991, which include a total of 17,413 documents. This collection of cables, memoranda, letters, and testimony includes documentation on relations with the Pinochet government and the 1976 car bomb assassination of Orlando Letelier and Ronni Moffitt in Washington.

The Electronic Freedom of Information Act Amendments of 1996 (E-FOIA) established the requirement for all agencies to make available "copies of all records, regardless of form or format, which have been released to any person ... and which, because of the nature of their subject matter, the agency determines have become or are likely to become the subject of subsequent requests." Among other requirements, E-FOIA grants the public access to government documents via computer telecommunications. One of the amendments required that the first documents to be made available were those

released since November 1, 1966. It also required that an index of such documents be made available electronically by December 31, 1999. The Department of State's FOIA website, which was launched in 1997, was one of the first FOIA sites available electronically in the federal government. And it may well rank as the best.

There was a time when diplomats could assume that their confidential communications would remain closed to the public. With the passage of FOIA, individuals could request to examine any materials whose disclosure would not compromise national security or violate privacy restrictions. Nonetheless, there were impediments including costs and time delays. Delays are still common, but once a search has been done, the documents are now available to anyone with an Internet connection and a web browser.

That diplomats know their reporting will someday be public may restrain their candor or, more likely, will ensure the thoroughness of their documentation and the quality of their analysis. Furthermore, those members of the public who care about an issue will be able to examine its diplomatic nuances—and, in the last analysis, hold the government accountable for wisely representing the national interest.

When the Chile documents were released, for example, the National Security Archive at George Washington University credited State Department officials with a strong commitment to using declassified U.S. documents to advance the cause of human rights abroad and the American public's right to know at home.

Lessons Learned
- **The most important lesson to be learned by the FOIA Electronic Reading Room is that it never would have happened without legislation.** The average cost of processing a single request is close to $4,000. Only one-hundredth of one percent of the costs is collected in fees. The administrative disincentive to offer such a service to the public is enormous.

- **By posting these materials on the web, the business of government is now much more broadly shared with interested citizens.** The residual effect on trust building may be well

worth the investment in opening these files to public scrutiny. A better-informed citizenry will strengthen the conduct of diplomacy.

- **It requires subject specialists to review the documents to ensure that their release does not compromise national security.** Although aided by information technology, there is no substitute for reading each document and exercising professional judgment on the merits of its release.

Liquid State (Content Management System)

Liquid State is the latest step in the State Department's continuing modernization of the Washington File and associated digital products developed by the International Information Program Office. The Washington File is a daily multi-language product directed at foreign publics to explain American foreign policy and American society. It consists of speeches, texts, interviews, and summaries of U.S. issues produced in regional editions in print and web formats. Since it began in 1994, its web-based version[10] has garnered numerous accolades including *U.S. News & World Report*'s recent list of top sites and the *Library Journal*'s citation that "the State Department's International Information Program site is the best gateway to the various federal agency responses, both domestic and international, to terrorism and the September 11 attacks."

Liquid State is a three-part initiative consisting of: a content management system for web and print publications; a digital asset management system to provide access to photography, video, and sound;

Start Date: Initiated in 2002 to improve public access to numerous existing information services

Originating Office: Office of International Information Programs (IIP)

Brief Description: Content management system to enhance production of public diplomacy website, other electronic products, and print publications

and the global graphics initiative to provide standards and technology for image manipulation, page layout, web design, and electronic distribution.

The purpose of its key element, the content management system, is to "let writers write and designers design." Liquid State is a concept, a procedure, and a process wherein producers focus on the content rather than the product per se. Writers enter text into a web-based content management system from which a variety of products—from print to electronic—can be produced, depending on the public diplomacy requirements in different regions or countries. Hence, the raw copy might form the basis for a press release, a pamphlet, a CD-ROM, an electronic file, or a web-based product. The content management system can be accessed by writers from their desks at the State Department, from their homes, or through an Internet terminal abroad. It not only allows faster input, but also eliminates the need for the writer or an associate to rewrite in HTML.

The content management system selected by the State Department for this application is eGrail. Using object-based architecture, eGrail offers content flexibility, rapid development, and website uniformity. It allows users to manipulate distinct "objects" at a granular level (such as text, graphics, XML files, whole or partial client/server scripts, applications, etc.). With its point-and-click control, content management is nearly automatic. Its object-based, database-driven architecture allows writers to update pages quickly and easily, thereby ensuring that information is current. XML files, instead of PDF files, allow post-by-post customization.

The initiative was undertaken to provide more tools to the producers and more flexibility to the overseas missions. Attending a Seybold publishing conference to look at private sector initiatives provided the encouragement for this initiative. The focus was not just on introducing new technologies, but also in identifying technologies that would support new processes. While IIP's predecessor bureau in USIA had been one of the first in the foreign affairs community to use the World Wide Web, it was now time to adopt new technologies to support older products as well. Print has not been replaced by the Internet.

Figure 8: Washington File
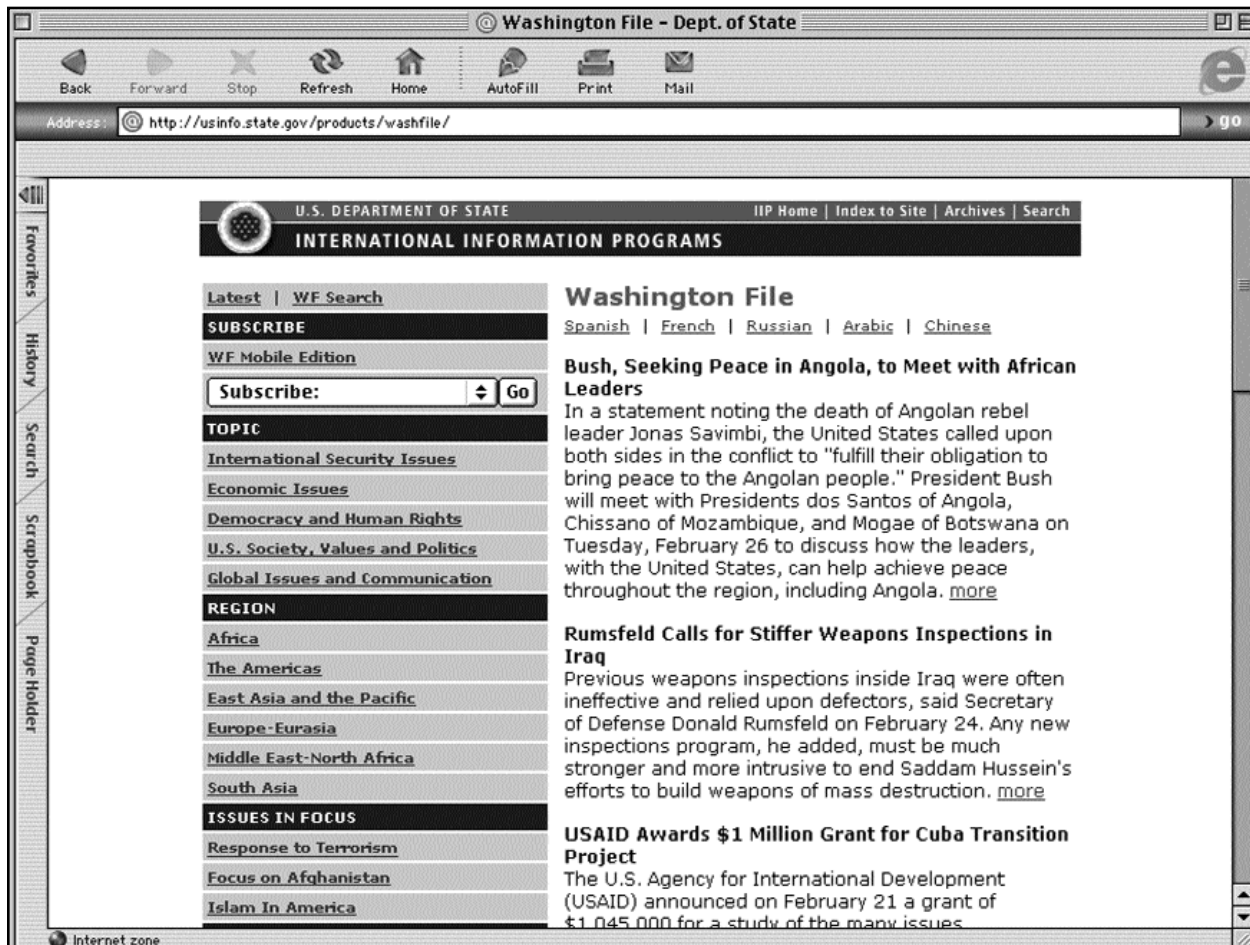
IIP's focus on electronic delivery of its products has left many American missions in the developing world without the print assets to communicate with publics who do not yet have Internet access. Liquid State, through the content management system and associated technologies, will give to overseas missions not only the content, but also the technical and design resources necessary to produce customized products. The information stored in eGrail can be poured into customized templates to produce print and electronic products that better satisfy different requirements in different countries.

Even as IIP looked at legacy products, it was looking ahead to new media including Personal Digital Assistants (PDAs). An early adaptation of the Washington File was to produce a mobile edition that can be accessed on a Palm device through a commercial provider, AvantGo. It has already enjoyed some early successes.

Lessons Learned

- **Stay on top of industry developments.** The developers have maintained close contact with commercial innovations by attending trade shows and professional meetings. They understand that in order to be competitive, they must stay in touch with emerging standards and anticipate where the industry will be by the time a project is finished.

- **Focus on the requirements of the users—the writers and designers who produce the daily products—not on the hardware or software.** The designers first went to the users and said, "Would you want to do this? What do you think about this? What is the feedback?" To be sure to get buy-in from the users, the new process must actually provide a benefit to the user.

Case Studies: Using Technology to Improve Internal Communication

Treaty Information Portal (TIP)

The Treaty Information Portal (TIP) is the latest upgrade to the Arms Control Treaty Negotiations Database, where negotiators and analysts can log on to a single network to access multiple databases containing all current arms control treaty records. It is managed by the Verification and Compliance Bureau of the Department of State, formerly part of the Arms Control and Disarmament Agency (ACDA) until consolidation in 1999. The Treaty Information Portal incorporates 12 libraries, including the official negotiating record archives; inspection reports related to the Conventional Forces in Europe (CFE) and the Strategic Arms Reduction Treaty; and treaty exchange data from CFE, the Organization of Security and Co-operation in Europe (OSCE), and Confidence and Security Building Measure (CSBM) data sets (including the global exchange of military information). Another library contains weapons photos that account for existing treaty-limited equipment. The photos are used to resolve disputes over weapons disposition.

Start Date: Initiated in 2000 to improve staff access to numerous existing databases

**Originating Office:** Verification and Compliance Bureau

Brief Description: Web-based classified portal consolidating numerous databases containing all current arms control treaty records

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The Treaty Portal also incorporates public affairs archives of signing ceremonies and numerous unclassified photos of weapons systems. (This is the place to go if you need a World War I picture of a horse in a gas mask; see Figure 9.)

By far the most important database is the Negotiation Record Database. The usefulness is evident. Negotiators in Geneva or Vienna can refer back to the intent of the original negotiators. Even if the treaty language itself is vague, the negotiation record usually speaks to the intent of the negotiators—10, 20, or 30 years after the fact.

The data repository is managed in-house by a team of data administrators who input data using high-speed scanners and electronic feeds from the cable network. Programmers and engineers work on links to existing databases outside of the State Department. Databases from DoD and other members of the arms control community are indexed within the State system to provide one-stop shopping for users.

The volume of new data exceeds 50,000 pages annually, not all of which is in English. In the past, there were numerous sources of translation, which occasionally led to confusion. Now, through interagency coordination, all documents are translated by one agency and shared by all. TIP, through indexing, provides capabilities to all user agencies to access their own data plus the data of others to the extent that the originator allows. An important element of TIP is the software to provide differentiated access. Data providers are less willing to collaborate if access to their data is unrestricted.

Figure 9: WWI picture of horse in gas mask
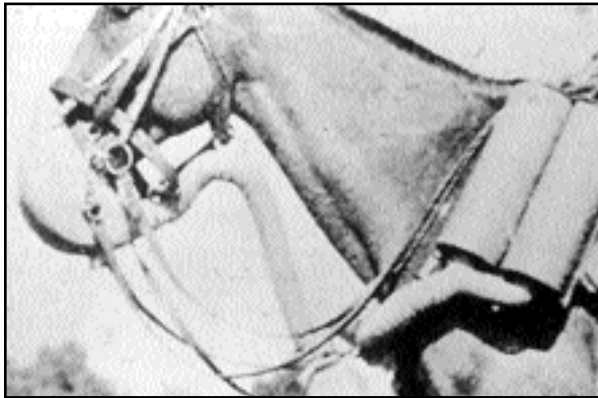
In 1982, Congress mandated that ACDA maintain a complete archive of the negotiating record to provide the basis for accurate and effective treaty negotiations. An interagency body, the Arms Control Coordinating Research Committee, decided to field two systems: ACCORD (Arms Control Online Research Database, an unclassified system accessed through a dial-up modem) and a classified system called ARENA (Automated Recourse to Electronic Negotiation Archives). The dial-up speed was slow, and the data structures didn't lend themselves to analysis. So, the system was underutilized, and most users simply requested paper copies.

The Conventional Forces in Europe negotiations, which required exhaustive data exchange among parties, created the next impetus for change. After some debate within the arms control community, it was decided that ACDA would become the official repository of the exchanged data, inspection reports, and notifications—on the condition that it would be made available online. Subsequent legislation required ACDA to maintain both paper and electronic records of treaty texts, negotiation records, research, and related arms control information.

Plans to migrate from a dial-up modem to a network system based on Internal protocol (IP) were completed in 1999, using Excalibur RetrievalWare. The proof of concept developed for the Y2K project gave the Verification and Compliance Bureau a head start in building the data repository search engine for the Treaty Information Portal. New data sharing agreements were signed with NATO, the On-Site Inspection Agencies, and other members of the arms control community.

The availability of DoD's classified SIPRNET was a key element in the success of the project. It provided adequate bandwidth and the ability to share classified data. With a common web interface and graphical front end, SIPRNET was ideal for this application.

The key attribute of the Treaty Information Portal is providing *timely* and *accurate* information. It also eliminates duplication of effort among the thousands of people who work on arms control by providing data from all the data sets that are maintained and indexed. It makes everyone more efficient and eliminates unnecessary duplication of cost.

Prior to this system, arms control specialists were unable to share data with other agencies in real time. If an analyst at the Pentagon needed to know the U.S. position on a particular topic, he would call and ask for a data search. Then ACDA would send the data over by classified pouch, with a delay of a few days. Now the analyst searches the database in real time. The State Department is more efficient as well. By spidering all of the sites from a single interface, there is no need to duplicate data held by other agencies.

With the Treaty Information Portal functioning well, the staff is now building expertise on, and testing, high-definition video systems between Washington and Geneva. Given the care that is evident in the deployment of the new system, secure videoconferencing between policy makers in Washington and negotiators overseas will likely be commonplace before long.

Lessons Learned
- **There are several important lessons to be learned from the operation of this complex, classified interagency system, but none more important than the insistence of the leadership that all senior members of the IT staff be also expert in arms control.** Diplomacy and information technology must be tightly aligned if the latter is to serve the former. "I tell my guys, if you're not good enough to go work in the policy office, you're not good enough to work here. If you can't go work in the chemical weapons office or the nonproliferation office, that means you don't know enough to do your job here."[11]

- **The IT office must choose its core competencies.** As the demands are so great, it has to decide what is most important, specialize in that, and ignore the rest. "We succeed because we've chosen to ignore 90 percent of things we were doing, but do a few things and try to do them extraordinarily well."[12]

- **When working with the interagency community, draw up access agreements with great specificity, so that each agency will have the confidence that its data will not be misused or end up with unauthorized users.** Otherwise, agencies are reluctant to share their data.

- **Economies of scale can be found when related elements are supported by a common IT shop.** This is not an argument that the support of business functions should be centralized, but that common business functions can be supported by a single office large enough to have expertise in several related functions.

Worldwide Remote E-mail Network (WREN)

The Worldwide Remote E-mail Network is a mobile Local Area Network, or LAN, designed to support the Secretary of State during foreign travel. It provides classified communications to the Secretary and his immediate party from any point in the world through encrypted messaging on ISDN lines, a dedicated V-SAT satellite, or leased time on a M-4 InMarsat satellite. Connectivity to the V-SAT is through a 1.5-meter dish carried on the Secretary's plane; the InMarsat connection is through an even smaller mobile antenna. The systems, operated at a speed of 256 Kbps, provide secure communications to the State Department's Operation Center—and from there to any embassy in the world.

Start Date: 2000

Originating Office: Executive Secretariat

Brief Description: Mobile high-speed Internet connectivity enabled by satellite technology to allow broadband communications for the Secretary of State during international travel

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The system, from laptops to generators, is completely self-contained, so it can function in remote locations. While worldwide connectivity is hardly a novelty in the 21st century, it is only recently that secure, high-speed, e-mail connectivity between Washington and any remote location was routine. In fact, the system was inaugurated in 2001 during Secretary of State Albright's official visit to Pyongyang. Its use has since become standard operating practice.

WREN had its origins in Y2K preparations when older systems were subject to careful scrutiny. Legacy cable systems and classified fax were used to connect the Secretary with the Department of State, each requiring several steps of processing, along with the attendant staff support. The Department's Executive Secretariat proposed an upgrade using secure computers and networking sufficiently robust to satisfy the government's highest security requirements—without the intermediate delays inherent in the legacy systems.

As cables had been circulated by e-mail within the Secretary's inner office for several years, extending the same system to a mobile LAN did not represent a sharp departure from standard practice. To the contrary, information access on the road was the same as in the State Department itself. The change in technology resulted, as well, in minor organizational changes to better synchronize technical support with the operational requirements of the Secretary of State. Routines that were developed to support Secretary Kissinger during the Nixon and Ford administrations have been abandoned.

With WREN, the Secretary and his traveling party have much faster access to information than with its predecessor systems that required several intermediate processing steps before reaching the principals. For both strategic and humanitarian reasons, minutes lost may make a difference when the Secretary is on the road. WREN has been designed to ensure that information is available in real time.

In addition to classified e-mail, WREN also provides full access to the State Department's classified intranet—and through it to Defense Department and intelligence community networks. It offers periodic briefing materials and other information prepared in Washington to support the Secretary's

Figure 10: Worldwide Remote E-mail Network
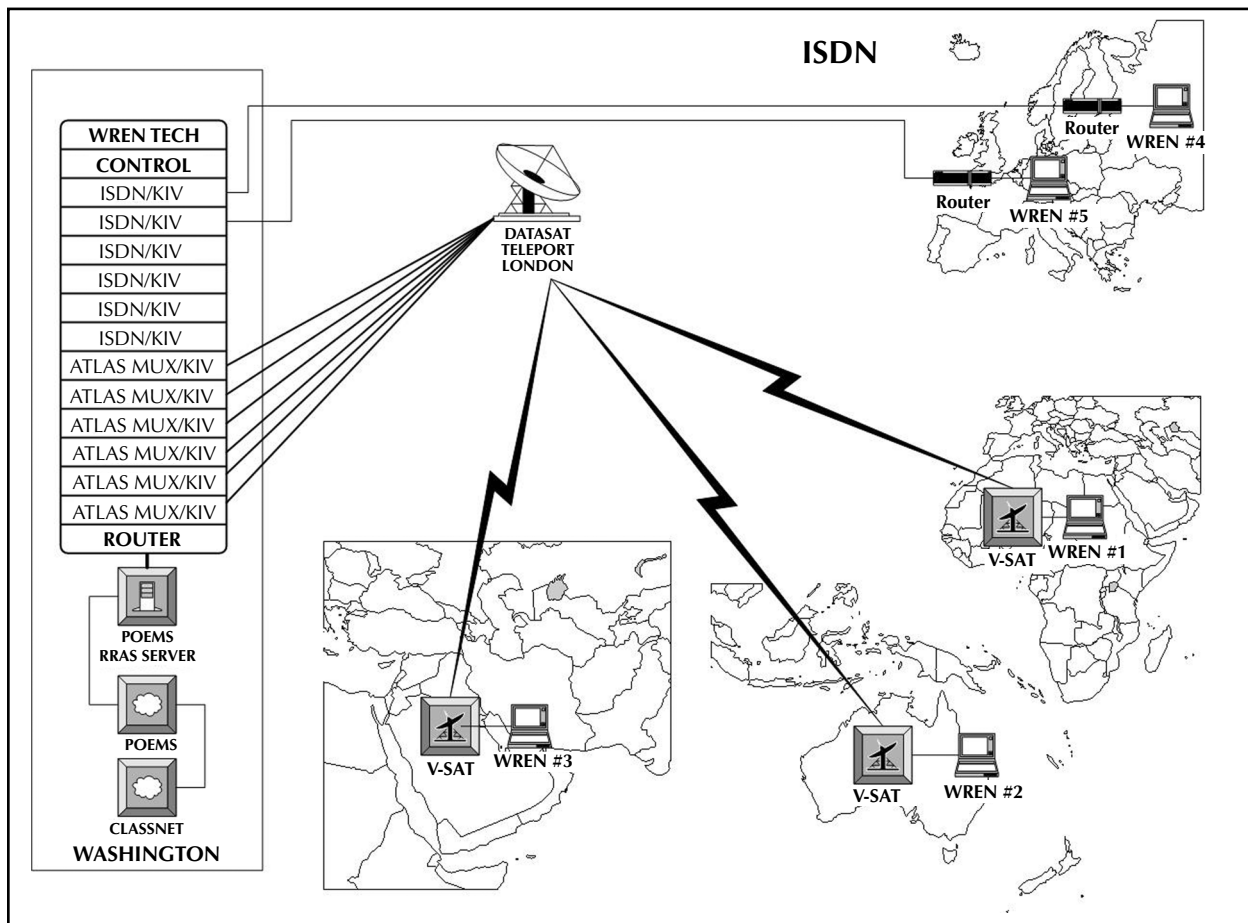
travel. The occasional fax that is still sent is being replaced by e-mail attachments. Secure videoconferencing is a planned future application over the network. For efficiency and thoroughness, plans are also under way to replace e-mail messaging with e-mail alerts that will be hyperlinked to HTML pages accessible through a browser.

WREN was designed to support the Secretary of State and his immediate staff during official travel abroad. That it does well. Additionally, it also supports the many others in the Department of State who are responsible for keeping the Secretary informed and for collaborating, advising on policy, and acting on instructions. While the system would not surprise anyone familiar with modern communications, it represents a significant advance over the legacy system that it replaced. As one officer in the Executive Secretariat said, "It is much, much faster." It is also easier to use.

Lessons Learned
- **The primary lesson learned is the need for the IT developmental staff to be close to business practices.** Despite its centrality to policy making, the innovation did not come from the department's central IT office, but from immediate users. While centralizing infrastructure, network management, and standards may be advantageous, decentralizing IT applications is often the wiser course. To centralize all IT support is to put at risk the innovation that comes from those who are responsible for business practices.

- **Innovations built on systems familiar to users tend to reduce the resistance that often accompanies change.** The Secretary and staff were comfortable with information provided in familiar packages. The only change they saw was greater speed and greater depth in what they could access. Familiarity with the look and feel of the system output is particularly important when there is little or no latitude for error. WREN feels comfortable to users.

ChinaNet

The American Consulate General in Hong Kong has transformed the way it does business by moving many of its routine functions to Web-based applications. They include innovations in financial management, human resources, and procurement—the usual focus of technological change in the State Department. But changes have also been developed in the Public Affairs section, the Economic-Political section, and the Protocol section. The key to this profusion of innovation was a functioning real-time network and the availability of Web-based software. The transformation began in 1999 with the arrival of a computer-savvy administrative officer who joined with a forward-looking computer systems manager and talented local staff to demonstrate that the Consulate General could develop across-the-board efficiency gains. They exploited Internet-based software innovations to develop new applications based on Web browsers (e.g., Netscape Navigator, Internet Explorer) that were already familiar to officers and staff.

In addition to increasing the efficiency of administrative functions, the move to Web-based applications has directly supported several diplomatic requirements. The Public Affairs section is better managing its database of press guidances, thereby making them more useful to officers throughout the mission. The Economic-Political section put its biographic files online and substituted searchable, electronic record-keeping for traditional paper files. The Protocol section maintains a Consulate-wide contact list, searchable by staff, joined with an automated system to manage Consulate representational events. The Public Affairs and Administrative sections collaborated with the Foreign Broadcast Information Service (FBIS) to replace the cable distribution of FBIS news summaries and translations, press briefings and media reactions with a single

Start Date: 1999

Originating Office: American Consulate General in Hong Kong

Brief Description: Web-based diplomatic and administrative applications to improve efficiency at the Hong Kong Consulate General

searchable database. This Web-based application is now routinely accessed by Missions throughout Asia and by interested officials in Washington. In the words of the Consul General, "The entire institution is transforming the way it does business."

Over the past decade the Department of State has been coping with an increasing workload in the face of reduced staffing. Long hours are accepted as routine. Since the introduction of word processors more than two decades ago, there are few documented examples of new information technologies improving staff efficiency. The Hong Kong consulate is one of the exceptions. The result has been the elimination of needless steps, a reduction in paper use, and a much greater sharing of information.

Templates have been developed and networked to make forms easily available and ensure consistency in their completion. Directories, contact lists, and biographic files are shared across offices. Training has been made widely available.

One of the new applications, ChinaNet Procurement, has attracted interest outside of Hong Kong by demonstrating that a Web-based application could enhance productivity. Partly as a result, the State Department is now developing Web-based software for numerous other applications.

Many IT innovations result from the leadership of an individual whose passion for change is strong enough to overcome bureaucratic resistance. The

Figure 11: American Consulate General in Hong Kong

introduction of new IT practices at the American Consulate General in Honk Kong was no exception. The State Department acknowledged that the post's administrative officer, Jay Anania, made the difference, for which he was awarded the Innovation in the Use of Technology Award for the year 2000. It was his leadership and inspiration that transformed the Hong Kong Consulate General.

In recommending him for this recognition, the Consul General wrote: "Jay has been a catalyst for change. He brought to his job a deep knowledge of processes and an eye for how they could be improved by advanced technology. Equally important, he recognized that his staff had the capability to generate substantial improvements on their own. He therefore devoted his energies not only to hands-on exploration of opportunities for innovation, but to leading his staff, channeling their energies, and inspiring their creativity. Despite some initial resistance, he drove through the idea that we would transform the way we do business in Hong Kong, and share that with our colleagues in the region."

Lessons Learned
- **The first lesson learned from the Hong Kong experience is the key role of an IT champion who has the vision and force of personality to inspire, cajole, and lead the transformation of work practices.** With the predictable resistance to change, it takes a knowledgeable and persuasive champion to introduce change successfully.

- **The second lesson is that change agents must understand the business practices well enough to demonstrate that the recommended changes will improve efficiency or quality.** And the advocate must offer training to give the new users the confidence that they can perform the new routine at or beyond their personal standard of excellence. The technologies that were introduced were built to fit the user, not vice-versa. As the Consul General wrote: "If you build it, and show them how to use it well, they will come—in droves."

- **A third lesson is that success breeds success. Hong Kong's IT innovations, having received recognition, are being propagated to other American missions.** This summer the officer

responsible for these innovations is being transferred to a senior position in Washington, where his abilities and experience can be further exploited.

Foreign Affairs Systems Integration (FASI)

Knowledge management (KM) systems have come into vogue in the last decade to permit large enterprises to share intellectual knowledge among their employees. If the New Delhi office of an international consulting firm solves a local problem for a client, it may benefit other consultants in the firm to apply the solution elsewhere or, conversely, to learn what has not worked. While the line between information and knowledge is sometimes blurry, knowledge management systems are more than information management systems. It may be helpful to think of knowledge as what you have in your head, in contrast to information, which you keep in your file cabinet. Knowledge management systems allow you to efficiently store, retrieve, and exchange knowledge. And knowledge management systems tend to be collaborative.

At one level, the Department of State can be thought of as a mega-knowledge management system—ceaselessly gathering, processing, and acting on information; building a reservoir of knowledge about nations, alliances, agreements, and threats; sharing knowledge with other elements of government and other nations.

Indeed, sophisticated messaging systems as well as routine meetings and conferences have served the purpose of exchanging knowledge. But, such exchanges are often inefficient or even non-existent. What is known to a Second Secretary in Buenos

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Start Date: Prototype tested in 2001; pilot to be tested in 2002

Originating Office: Information Resource Management Bureau (IRM)

Brief Description: Web-based initiative to provide knowledge management tools to all government agencies operating in American embassies and consulates

Aires may never influence policy making in Washington. If he takes his knowledge with him when he departs post, it won't even influence his successor. Knowledge management systems are designed to give decision makers what they need to know to make wise decisions and to filter out that which is irrelevant.
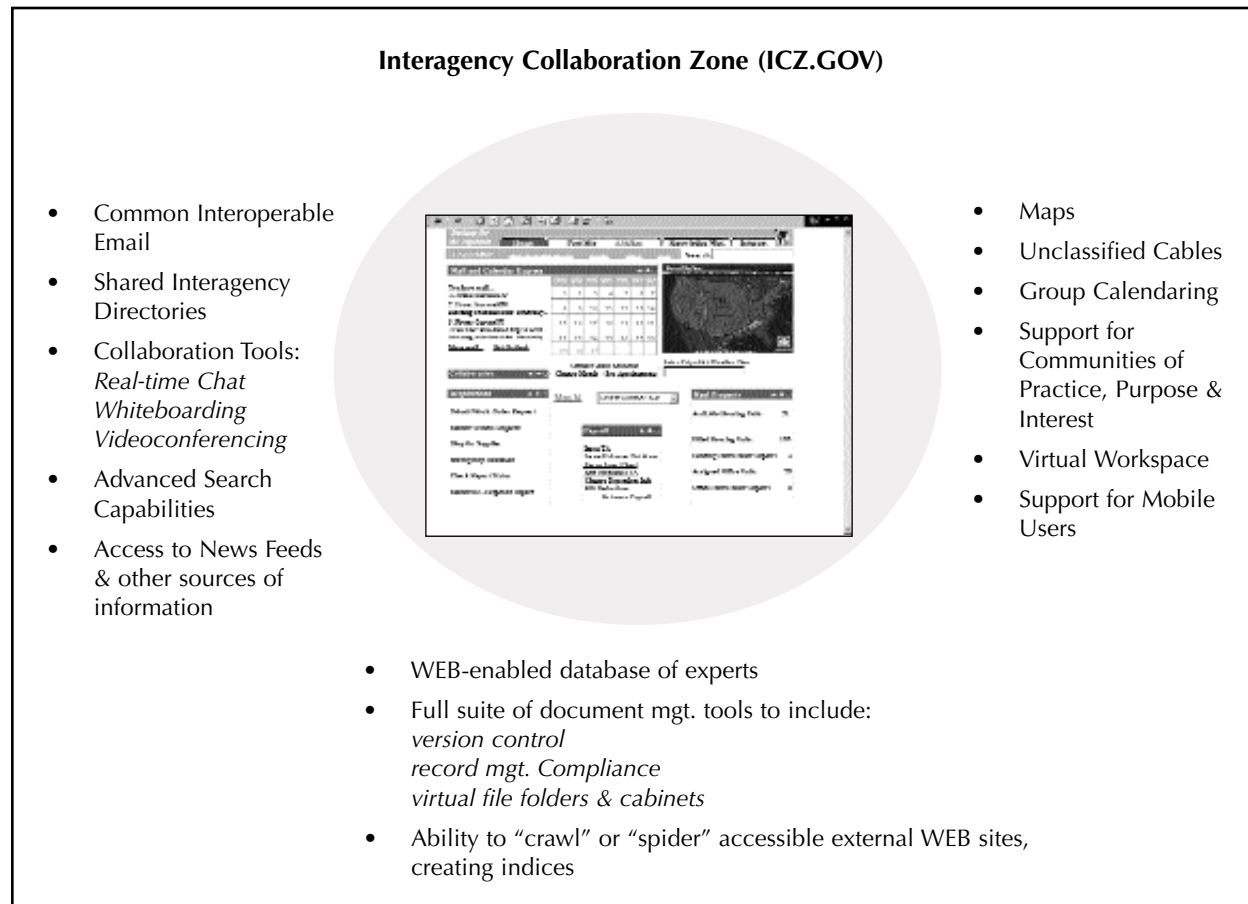
If the business of diplomacy is representation, negotiation, and advocacy, it follows that diplomatic skill is a function of knowledge: knowledge of the issues, knowledge of the environment, knowledge of one's adversaries. It would be foolish to proceed to a diplomatic assignment without a thorough knowledge of the issues and personalities that one will confront.

The question is whether KM systems can be designed to improve either efficiency or quality— or perhaps even substantially change one's conduct of diplomacy. There will necessarily be an

investment in hardware, software, and training. Will the return to the diplomat warrant the resources (particularly time) that are required to design, manage, and operate the KM system that purports to assist in the management of knowledge?

The Department of State has recently initiated the design of a worldwide, multi-agency knowledge management system designed to serve State Department employees as well as the overseas employees of some 40 U.S. government agencies. The system, managed by Information Resource Management's (IRM) Office of Foreign Affairs Systems Integration (FASI), grew out of a 1999 recommendation by the Overseas Presence Advisory Panel. The panel wrote that "management of knowledge must be a central focus of IT upgrades ... to create a system that not only distributes information but also captures and securely stores it for future retrieval…."

Figure 12: FASI Knowledge Management Project

Interagency Collaboration Zone (ICZ.GOV)

- Common Interoperable Email
- Shared Interagency Directories
- Collaboration Tools:
  Real-time Chat
  Whiteboarding
  Videoconferencing
- Advanced Search Capabilities
- Access to News Feeds & other sources of information

- Maps
- Unclassified Cables
- Group Calendaring
- Support for Communities of Practice, Purpose & Interest
- Virtual Workspace
- Support for Mobile Users

- WEB-enabled database of experts
- Full suite of document mgt. tools to include:
  version control
  record mgt. Compliance
  virtual file folders & cabinets
- Ability to "crawl" or "spider" accessible external WEB sites, creating indices

A preliminary system design was completed by IRM in the spring of 2001 with the advice of outside experts including KPMG, CSC, and Gartner group. Five vendors were invited to propose solutions. From their submissions, three industry teams were selected for the prototype phase, which is under way as this is being written. Members of the three consortia include SAIC, Pricewaterhouse-Coopers, SRA International, IBM, Accenture, General Dynamics, and Booz Allen Hamilton. After comparative testing, one of the three teams will be selected for a more exhaustive pilot test to be completed toward the end of 2001. It is scheduled to involve up to 2,400 employees working in Washington, India, and Mexico. If the pilot is successful and funding is available, worldwide deployment will begin in 2003 and will be completed in two to three years. Designed to reach the desktops of 30,000 State Department employees in 180 countries with a full suite of software including video, the FASI knowledge management project is an exceptionally ambitious undertaking.

Meanwhile, smaller KM initiatives have been initiated, driven by the business processes that they are designed to support. They include the Collation for Anti-Terrorism (CAT) Matrix, developed with the encouragement of the Under Secretary for Political Affairs, to support the international coalition put together by Secretary Powell after the September 11 terrorist attacks. Also, with the support of the Under Secretary for Management, a demonstration KM system to support the G-8 process is under development. Not quite a thousand flowers, but knowledge management systems are clearly at the blossoming stage in the Department of State.

Unlike the other systems that have been described, KM systems are still in their pilot phase at the State Department. With a 70 percent failure record in industry, the risk of failure is appreciated. Yet, the risk of postponing a decision in a knowledge-intensive organization is also significant. As everyone who has used a phone in the last several years knows, automated phone-answering systems save time for the corporation, but seldom for the caller. KM systems must either save time or improve the quality of diplomatic work. No matter how sophisticated the system, it must enhance the conduct of diplomacy to be judged a success.

Lessons (to be) Learned

- The Department of State faces the same question as every large enterprise: Are new systems best built from the top down or from the bottom up—or is there an intermediate step that combines the virtues of both? The FASI Knowledge Management system, with deployment costs estimated to approach $300 million, will be an expensive failure if it does not improve the efficiency or the quality of diplomacy. On the other hand, boutique applications like the CAT Matrix and G-8 KM system, even if precisely tailored to the business needs, may not be scalable or adaptable to other diplomatic requirements. The lessons from these approaches remain to be learned as the systems are deployed over the next several months and years.

Lessons Learned

Despite its reputation as a laggard in the deployment of information technology, the Department of State deploys a sophisticated array of computer and communications technology to collect, analyze, archive, and disseminate information. It maintains secure connectivity with embassies in practically every country in the world. From issuing visas to negotiating treaties, it is responsible for managing the foreign policy of the United States.

This study was undertaken to examine the introduction of information technology that has directly advanced the conduct of diplomacy (thereby excluding an examination of systems for personnel, financial, and administrative management). Current diplomatic practices were examined in search of applications ranging from database management to geographic information systems. It was no surprise to find that most diplomatic practices have changed little in the past decade, with the exception of the dramatic growth of e-mail within the Department of State.

With little central direction, e-mail messaging is competing with, and in many ways supplanting, State's legacy cable system. During this transitional period, where new practices are being consolidated, it is premature to say that the conduct of diplomacy has been enhanced by the introduction of e-mail. It has, nonetheless, introduced dramatic changes in business practices, producing positive consequences that will likely be manifest in the near future. Until then, the advantages of speed have been tempered by the excesses of distribution and the lack of connectivity among internal systems.

From the 12 discrete systems described here, there are several lessons to be learned in designing future applications. Table 1 shows the common features of the 12 innovations.

The key findings drawn from Table 1 are:

- Most of the innovations were driven by forces exterior to the Department of State, including the 1993 bombing of the World Trade Center, the fear of Y2K systems meltdown, and budget reductions requiring great efficiencies.

- Practically all of the innovations were initiated and developed by individuals who were part of the user community that they were designed to serve.

- Most of the applications were developed in areas of the Department of State traditionally thought to be out of the mainstream of political and economic analysis and policy making.

- Most of the innovations cannot be considered "mission critical"—that is, their development was not driven by an expressed need to improve the practice of diplomacy, even if that subsequently was the result.

Among the lessons identified for each of the 12 innovations, there are several that appear frequently enough to warrant particular mention:

- During the developmental stages, the user community and the IT developments *must* be very closely aligned. System development must be driven by the business needs, not by the hardware or software.

Table 1: Common Features of the 12 IT Innovations to Improve Diplomacy

	Outside Catalyst	Internal Champion	Non-traditional	Mission Critical
Consular Consolidated Database	√	√	√	√
Kosovo Repatriation Information Support	√	√	√	
Worldwide Refugee Admissions Processing System	√	√	√	√
Dayton Peace Accords	√			
Kosovo Information Assistance Initiative	√	√	√	
Digital Videoconferencing		√	√	
FOIA Electronic Reading Room	√	√	√	
Liquid State		√	√	
Treaty Information Portal	√	√	√	√
Worldwide Remote E-mail Network		√		√
ChinaNet		√		
Foreign Affairs Systems Integration	√	√		

- In addition to the technology, developers *must* understand other environmental constraints including logistical problems and bureaucratic resistance.

- Planners *should* be generous in estimating the time and cost of systems development and deployment. It's like building an addition on your house; it takes longer and costs more than you think.

- In the early stages of deployment, systems *should* be built to accommodate existing work practices in order to overcome resistance to change.

- Effective training *should* be offered to give users confidence in the new systems.

- Contingency planning *should* be undertaken to allow diplomats to respond swiftly to unforeseen events including natural disasters and hostilities.

- Interagency agreements *should* be carefully crafted to ensure that all parties are using compatible systems and common standards.

Drawing on these examples, the most important lesson is the need to ensure a close alignment between the user community and the IT developers. The closest possible relation results when the two communities substantially overlap. Most of the innovations came from users who *also* have expertise in information technology. The most compelling example is from the Verification and Compliance Bureau, where senior IT staffers are required to be expert in arms control negotiations as a complement to their IT skills. Among the 12 examples, there is not a single case to be made for the separation of policy and IT competence.

Given the responsibility of leveraging technology to support core diplomatic activities, what can the Department of State learn from its current practices? The lessons suggest that the most favorable circumstance is one in which:

- The diplomatic requirement (i.e., business need) is well defined and well understood.

- There is a champion (e.g., project manager) within the user community who is also competent in information technology.

- There is a catalytic force (e.g., crisis) outside of the Department of State that drives action.

- Attention is given to inertial constraints (e.g., employee resistance) through incremental deployment, reorganization, and training.

- Planning anticipates the real costs and time required for effective deployment.

The Department of State remains a backwater in the deployment of information technology, but the underlying requirements for change are present: IT-savvy leadership and an organizational restlessness with the status quo. The innovations illustrated do not yet form the critical mass that ensure success, but are certainly of sufficient consequence to encourage widespread innovation in the service of diplomacy.

Recommendations

The Department of State has received more attention in its use of information technology than most areas of government. That it fell behind the curve is no secret in Washington. That it is moving forward is both a consequence of the attention it has received from outside *and* a determination from within to leverage technology in the service of diplomacy. The recommendations that follow are not specific to the Department of State, but to any comparable organization that needs to regain its information edge in support of its core functions.

Based on State's experience, the recommendations should apply as well to other foreign ministries, to other governmental organizations involved in the conduct of foreign affairs, and to NGOs with international responsibilities. Although they may apply more broadly, since the lessons were drawn from the support of foreign policy, it is to that discipline that the recommendations are directed. Furthermore, they are restricted to what were identified as second-level functions that directly support the conduct of diplomacy. Financial management, logistical support, and administration are not included within the scope of the study, although each is critical to the support of diplomacy.

First, it should be understood that information technology is no panacea, that it has no business in the workplace unless it supports core functions. Experience has shown that the payoff for new IT is slow, that new systems are subject to high failure rates. So, the first recommendation is to review and, if necessary, restate core business functions with clarity. Answer the question: What product

do we make? Or: What service do we provide? Without clarity at this stage, it is difficult to design supportive IT systems.

Second, before deploying information technology, ask how existing business processes might be improved to yield greater *efficiency* or higher *quality*.

Third, apply information technology.

It is the third step in which the State Department's experience may be of value. How one applies new information technology is not, however, as clear as the need to keep core business functions in focus. For example, even if a diplomat understands clearly that his or her role is to issue visas, and to ensure that they are issued expeditiously to applicants who satisfy specified legal requirements, it is not self-evident how information technology is to be applied.

Should a central IT office manage it all to ensure efficiencies of scale? Or, should each consular officer be given a laptop and asked to figure out how to improve his or her work? The second solution is obviously inefficient. Although less obvious, for a large enterprise the first solution may be only marginally better. A hybrid solution, respecting efficiencies of scale, the uniqueness of different diplomatic functions, and the hands-on innovation of diplomats is suggested by the 12 cases that have been reviewed.

The five key recommendations for introducing information technology in support of diplomacy are:

Recommendation One: Centralize common requirements such as network architecture, equipment procurement, security certification, and software standards.

IT specialists should design and maintain stable networks that serve a variety of different user needs. That is, a central IT office should keep one step ahead of users by rapidly adopting industry standards to ensure that the networks are sufficiently robust to support new requirements. Because of the lead time for evaluating new technologies, ensuring compliance with security requirements, and contracting, government IT managers must remain current with industry developments and move rapidly to adopt new technologies to satisfy users at the working level.

Recommendation Two: Decentralize the development and support of IT applications.

For example, the unique technology requirements of consular affairs should be supported by consular affairs IT specialists, the requirements for arms control verification by arms control IT specialists, and so on. While central networks and standards must support these and other unique diplomatic practices, it is the diplomats themselves who best understand the requirements of diplomacy. As this study has demonstrated, many of the State Department's diplomatic applications have originated with the users—when funds, equipment, and networks were available.

Recommendation Three: Encourage a cadre of IT-literate diplomats, officers whose specialty is foreign affairs with IT competence.

These are officers whose IT expertise—whether the result of serendipity or design—is recognized as an asset in the conduct of diplomacy. They are the boundary spanners who work across the lines of diplomacy and technology. IT literacy should not be a requirement for most, but the State Department should recruit and train a cadre of skilled diplomats who have the confidence to drive IT innovation. The more diplomatic practices can be enhanced by information technology, the more time officers will have to attend to the core elements of diplomacy.

Recommendation Four: Share learning by encouraging user groups that function across institutional lines.

For example, ensure that political officers understand how consular officers have deployed technology to satisfy their diplomatic requirements. Encourage one area's success to be adapted by others. The Department of State has long encouraged such sharing, although most of the applications have been in support of administrative practices. The next step is to encourage the sharing of IT innovations in the practice of diplomacy. In a profession where there are few textbook solutions to unique diplomatic challenges, the more sharing of IT solutions, the more agile will be the practice of diplomacy.

Recommendation Five: Promote innovation by funding pilot projects and recognizing excellence.

As the examples have shown, the State Department recognizes excellence through its awards and funds pilot projects to test their merit. Both have undoubtedly encouraged the IT breakthrough that is under way. Nonetheless, more should and can be done. As the lead foreign affairs agency, the Department of State must become the preeminent agency in the deployment of information technology—not because it is trendy, but because the raw material of analysis and advocacy is information. To ensure the quality and speed of its information, the department should expand its recognition of innovative technology.

The Department of State should not wait for crises, which have driven some technological developments, or rely on individuals to champion them. It needs to aggressively create the conditions that reward innovation. To this end, it may wish to consider a planning office which operates at the intersection of diplomacy and technology. Staffed by policy officers, IT specialists, and outside academicians, it could accelerate the deployment of information technology in support of diplomacy.

To repeat, information technology is not a panacea. On the other hand, it is not an option in today's competitive environment. If diplomats do

not have real-time connectivity to stay informed, if they do not have powerful tools to assist in analysis, if they do not have the means to improve their productivity, then those who do will best them. That will include not only diplomats from other nations, but also colleagues from other areas of government and competitors from the NGOs.

Neither the Office of Management and Budget nor the General Accounting Office currently gives the State Department high marks on its use of information technology. But, with its current leadership and the new funding it has received, buttressed by a new focus on diplomatic requirements, a turn-around within 24 months is a strong possibility for the Department of State. It is, indeed, a plausible candidate to assume a leadership role in the use of information technology in the foreign affairs community.

Appendix: Glossary

ACDA	Arms Control and Disarmament Agency		**KRIS**	Kosovo Repatriation Information Support
CCD	Consolidated Consular Database		**NGO**	Nongovermental Organization
CFE	Conventional Forces in Europe		**NIMA**	National Imagery and Mapping Agency
CSBMs	Confidence and Security Building Measures		**OFDA**	Office of Foreign Disaster Assistance (USAID)
DARPA	Defense Advanced Research Projects Agency		**OPE**	Overseas Processing Entity
DoD	Department of Defense		**OSCE**	Organization for Security and Cooperation in Europe
DVC	Digital Videoconference		**PDA**	Personal Digital Assistant
FASI	Foreign Affairs Systems Integration		**PDF**	Portable Document Format
FBIS	Foreign Broadcast Information Service		**SIPRNET**	Secret Internet Protocol Router Network (DoD)
FOIA	Freedom of Information Act		**START**	Strategic Arms Reduction Treaty
GIS	Geographic Information System		**TIP**	Treaty Information Portal
GPS	Global Positioning System		**UNHCR**	United Nations High Commissioner for Refugees
HCIC	Humanitarian Community Information Center (United Nations)		**USAID**	United States Agency for International Development
HTML	Hyper Text Markup Language		**USIA**	United States Information Agency
IIP	Office of International Information Programs (State Department)		**USIP**	United States Institute of Peace
IOM	International Organization for Migration		**USTR**	United States Trade Representative
IRM	Information Resource Management bureau (State Department)		**WRAPS**	Worldwide Refugee Admissions Processing System
Kbps	Kilobits per second		**WREN**	Worldwide Remote E-mail Network
KIAI	Kosovo Information Assistance Initiative		**XML**	Extensible Markup Language

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A B O U T   T H E   A U T H O R

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He is an associate of Global Business Access, a member of the Board of Directors of Info/Change—a nonprofit consortium founded to expand affordable access to information and communication technologies in developing countries—and a member of the Washington Institute of Foreign Affairs. He recently served on the Defense Science Board Task Force on Managed Information Dissemination.

Professor Fulton was associate director of the United States Information Agency (USIA) from 1994 to 1997, when he joined the Center for Strategic and International Studies to direct a project on "Reinventing Diplomacy in the Information Age." Prior to his presidential appointment, he was acting director of USIA's Bureau of Educational and Cultural Affairs. During a 30-year career with USIA, he served in diplomatic assignments in Brussels, Rome, Tokyo, Karachi, and Islamabad. He retired from the Foreign Service with the grade of Minister-Counselor.

He established and directed the American Forces Radio and Television Service in Turkey, where he served as a lieutenant in the U.S. Air Force. He has been an adjunct professor at American University; has taught part-time at the University of Maryland, University of Illinois, San Antonio College, and the Pennsylvania State University; and has lectured at numerous universities and organizations.

Professor Fulton holds a Ph.D. in communications from the University of Illinois, and an M.A. in broadcasting and B.S. in electrical engineering from Penn State. He is the recipient of the Presidential Meritorious Honor Award, the Vice President's Hammer Award for Reinvention in Government, and the Edward R. Murrow Award for Excellence in Public Diplomacy from the Fletcher School of Law and Diplomacy.

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