

15.0 Business Applications

15.1 Scenario

It is May 20, 2025. Major Drew Englund makes his way to the office. He is about 20 minutes ahead of his normal schedule. “I better let George know I am going to be early,” he thinks. His personal communications device is on the seat next to him. He speaks. “Call George.”

Instantly George replies, “Good morning, Drew.”

“Good morning, George. I am going to be about 20 minutes early today, can you be ready for me?”

“The coffee will be hot and your mail ready for reading.”

“Thanks, good bye.”

While Drew completes his morning commute, George, his electronic assistant sets to work. George starts the automatic coffee machine and then begins to sort the morning’s e-mail and generates an updated agenda for the day based upon two of the mail messages. As Drew arrives into the parking lot the Headquarters building comes alive, literally. It instantly recognizes Drew as an authorized occupant and opens the doors for him and turns lights on in the hallways as he makes his way to his office. The temperature in his office is carefully monitored by the building. Drew grabs a mug of coffee and sits at his desk.

“Good morning George, did you have any trouble getting everything together for me?”

“No, I didn’t. I used your standard sort on the e-mail, are you ready for me to read them?”

“Yes, please go ahead.”

George reads the five messages pertaining to the day while Drew reviews his calendar. “I blocked time for the two meetings and I prepared a draft presentation for the status review. Shall I confirm your attendance?”

“Yes and bring up the presentation. It’s a good thing I am early today.”

Drew reviews the draft presentation and adds his own touch to it. He then goes down the hall to the general’s office. Most briefings are done by video but the boss requested his presence for this one. Drew wonders why. In the general’s office he pulls up the briefing and talks the general through it. He concludes with a note about the test flight in the afternoon and the engineering review afterwards. “Our contractor is ahead of schedule and wants you to approve his performance bonus after today’s test flight.”

“Good, if it goes well today I will give you the authorization codes to make the transaction.”

“Thank you, sir.”

Drew heads off to lunch early to give himself time to prepare for the afternoon flight. He reviews the flight characteristics and the design specifications of the new dual-role fighter. He then finalizes the simulation scenario and flight plan for the test. The new fighter project was still a year away from building the first prototype but all indications pointed to being ahead of cost and time schedule. Drew headed to the VR-flight room for the test flight.

The VR-flight room was a new creation proving to be extremely valuable. The room was a melding of technologies enabling the pilot to “feel and fly” the aircraft under all conditions, peace or battle. He took his seat in the center of the room and the simulation began. The aircraft formed around him and the test scenario began. As he took off, he again experienced the thrill of flying that first attracted him to the Air Force. The test flight lasted almost two hours. Drew was tired but exhilarated by the capabilities of the new fighter. He attended the video debrief and engineering review to pass on his comments. Some tweaking needed to be done on the instrumentation displays and some major work needed to be done on the seating ergonomics. The designers concurred and promised new drawings would be sent by week’s end. The contractor manager asked about the bonus and Drew agreed they met the criteria and promised the transaction would be complete right after he received the next set of drawings.

15.2 Business Applications

The above scenario clearly depicts the level of technology growth we expect to see in the next 25 years. It highlights some of the technologies the Air Force can expect to use.

While most of the focus of the Information Technology Panel is on military operations, some consideration must be given to the business side of the Air Force. The business side is loosely defined as those daily operations not directly tied to prosecuting war, i.e., information management, legal, acquisition, personnel, finance, facilities management, environment, legislative liaison, public affairs, etc. These are the same functions found in most Fortune 500 companies, the overhead for doing business. These functions comprise much of the work the Air Force accomplishes on a daily basis during peacetime, contingency operations, and wartime situations. A substantial amount of commercial work in information technology focuses on these tasks, for obvious reasons; there are lots of paying customers with problems to solve.

The business side of the Air Force cannot be neglected in the New World Vistas study for two reasons. First, it comprises such a large part of Air Force peacetime - and wartime - daily functions. Second, industry is producing new products, new solutions, and new technologies every day that can provide immediate benefit to the Air Force and they are doing this at increasingly reduced cost. So, there is enormous cost savings potentials for the Air Force with the right information technology investment strategy.

15.3 Assumptions about the Air Force Structure and Business Practices

Before we consider the technologies that will impact the Air Force, we need to address some assumptions about how the Air Force will be structured in 2025 and the business practices that will be in place. The old adage “we will be joint, where joint makes sense” will be more true than ever. The business side is where joint really makes sense because all four services are structured like big business in many ways. We manage large payrolls, have vast amounts of real estate, perform property or facilities management on this real estate, manage health care plans, procure supplies and equipment and the list goes on. We will undergo a transition over the next several decades. First we will “go joint”. The services will combine their many similar business functions into joint systems using the same concept that is being used to create the Global Command, Control, and Communications System. These joint systems will rely more and more

on COTS products, both hardware and software. After this period, we will, for downsizing and cost savings, start contracting out these same services to commercial industry. Sometime around 2025 most of our business functions will be outsourced to the commercial sector. The first step towards this is already happening with American Express charge cards provided to government travelers instead of cash advances. There is no reason why most of our personnel accounting and finance functions could not be handled by a very competent vendor of outsourcing services.

Not all Air Force business functions will be privatized. There are several critical functions that are peculiarly military in nature or are mission critical functions, for example, logistics to the forward deployed forces. Lack of privatization does not mean these functions will be immune from commercialization. They will become extremely reliant on COTS technology. Sometimes the technology will need to be adapted to a military function but many times it won't.

It does not matter which functions are privatized because regardless of the function, some basic things take place in every office, Air Force or otherwise. Schedules and calendars need to be kept current. Phone calls happen. Documents - forms, letters, memos, and presentations - are created, proof-read, and transmitted, either by US Mail, electronic mail, fax, or VTC. Information is received from many sources like: TV, radio, magazines, newspaper, letters, electronic mail, or the Internet, to name just a few. There is not a noticeable difference in activity from office to office, whether Air Force or corporate. The data and purpose change from office to office but not the activities.

The Air Force is like any large enterprise and even though some functions have a military flavor, corporate America is doing something similar today. The Air Force functions need the same robustness, no more, no less, as private industry. We will not argue which functions will be contracted to private industry and which will remain blue-suit functions. We will assume a large number will be contracted.

Information technology will change the business world, therefore, it will change the Air Force. Corporate business will drive advances in information technology which in turn will change corporate business practices. The business side of the Air Force will follow these changes but will not drive the advances. Let's look at some of the key technologies and the impacts they will have on the Air Force in 2025. All of these technologies are discussed in greater depth in other portions of this Panel's report. These are just highlights impacting business practices.

15.4 Technologies Affecting Air Force Business Applications

Effectively infinite bandwidth, no more worrying about sending or receiving video or other bandwidth eating applications; this will happen through a combination of advances in multi-path fiber optics, ATM, and compression techniques. These three technologies are really only just starting to mature today. Effectively infinite bandwidth opens the door to many applications. Telecommuting, by 2025, will be telepresence, the ability to be where you really want to be and still operate in a very real way. Voice, video, data, or any combination will be available in real-time without distortion or sacrificing quality of one for the other. All this leads to the distributed workplace that will allow the Air Force to use smaller facilities saving money and improving morale. Video will be the communications means of choice for most applications. Conferences, meetings of all sizes will be via video as a matter of course without the distortion we tolerate today. Bandwidth on demand for any application at any location will do away with

the circuit-centric communications networks currently used. Commercial providers will meet almost all of the Air Force communication transmission needs because they can offer it more cheaply, more reliably, and just as secure as doing it with military resources.

There are two stepping stone technologies the Air Force will use over the next decade or more to get to a paperless environment. The first is the smart card. The current ID card is being replaced by a smart card carrying personnel, dental, and medical records. The card can also be programmed to contain security clearances and security codes for authentication and access. Instant access to vital information without the mess or bulk of paper.

Another stepping stone to a paperless Air Force is Electronic Commerce/Electronic Data Interchange (EC/EDI). EC/EDI will be ubiquitous in the 2025 marketplace, including the Air Force. Electronic transfer of contracting information and money will change and streamline the Air Force acquisition process.

Raw computing power will continue to grow and impact several technologies that will greatly affect daily operations. The interaction between man and machine will become more and more natural. Speech and gesture will replace keyboards and mice. Today's speech recognition engines will grow and mature allowing total control of the computer including the ability to dictate at a natural talking pace. Work production will increase because the built-in delays between thinking and typing will not exist. Typing a password will be replaced by the computer automatically recognizing authorized users using biometric methods. Offices where workers converse with their computers will be commonplace. No longer will operating a computer require a series of complex keyboard, mouse, and control character movements.

Computing power and advances in artificial intelligence will provide smart electronic assistants. These assistants will provide tremendous support to all levels, from the airman to the general (just like today's administrative assistants). The intelligent agent will screen electronic mail and phone calls. Other agents will do research, or find individuals and documents, even provide help in creating documents and briefings. Agents will help the action officer build briefings, including the difficult part of defining content and goals. Agents will be the "super-secretaries" of 2025. The agents will be personalized and take on personalities as they interact with their "masters".

Collaborative planning will fall out of very large bandwidth and increased computing power. The ability to share documents in real-time and communicate using voice and video simultaneously will be the norm. Action officers will be connected to others around the world just like they are sitting side by side. Operations centers can be distributed, with all the participants remoted from different geographic locations. IT-enhanced engineering, and data sharing allow weapons, buildings, planes, and other artifacts to be created better than ever by a distributed team of architects. Organizations can be smaller because expertise is only a "virtual access" away. Collaborative planning really integrates all the pieces making everything transparent to the user.

Smart buildings are an immature technology today that will grow significantly. This is an offshoot technology from the faster, smaller, better, more powerful computing technology. It merges high power computer chips, smart sensors, expert systems, and advanced processing to create a building that is an information appliance. The building can monitor and affect lighting, heating, cooling, and security appliances. Rooms and hallways are monitored for movement

and temperature and lighting is appropriately affected. Entryways are monitored and persons may be admitted or prevented from entering based upon a scan of physical characteristics like: iris, handprint, fingerprints, voice, and so on. This translates into significant savings in building maintenance costs and security personnel. It affects the business part of the Air Force because it affects costs and because good ergonomics makes employees comfortable and productive and saves health care time and money in the long run.

Modeling and simulation will have the biggest impact on the Air Force acquisition process. Integrating modeling, simulation, IT-enhanced engineering, and high powered computing will produce VR-rooms where virtual reality creations are life-sized “real” entities. These rooms will allow flight testing of aircraft, weapons, battle plans, room design, building design, and etc. Nearly perfect designs will go to producers because of the extensive testing, changing and additional testing that will occur in these rooms. It will be reconfigurable and reconstructable quickly. Intelligent agents will help the average Air Force action officer take advantage of these capabilities. Action officers will be able to test doctrine, battle plans as well as design plans using the advanced modeling capabilities that will exist.

Personal communication devices will provide an electronic tether wherever the action officer goes. They will provide voice, video, and data transmission capability, taking advantage of bandwidth on demand. These communication devices will allow the action officer to communicate with his electronic assistant wherever the assistant resides. Combined with speech recognition technology, this device will be simple and intuitive to use.

15.5 Summary

Corporate Air Force will be like the rest of corporate America. Information technology will affect daily business operations in many ways. Travel will be reduced. Geography will no longer limit planning capabilities. Acquisition will be based on modeling and simulation studies and IT-enhanced engineering. Business will be affected by EC/EDI enabling competition that can be accomplished in days not months or years. Natural interaction between man and machine will provide increased production and reduced frustration levels. Finally, Air Force personnel will be on electronic tethers with a multi-purpose personal communications device. Replace the uniforms with business suits and there will be no way to distinguish the Air Force “business” from other Fortune 500 corporations.