Prepared by the North Dakota Legislative Council staff for the Legislator Computer Replacement Task Force
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LEGISLATORS' COMPUTERS - BACKGROUND INFORMATION

LEGISLATOR'S AUTOMATED WORK STATION (LAWS) SYSTEM DEVELOPMENT

1985-86 Interim and 1987 Legislative Session

During the 1985-86 interim, the Legislative Procedure and Arrangements Committee (now known as the Legislative Management Committee) approved a proposal with respect to the possibility of replacing legislators' bill racks with personal computer terminals. Representatives of IBM spent a day in each chamber during the 1987 legislative session, interviewed legislators, and sat with legislators on the floor to determine how legislators used bill racks to place notes on bills, note votes taken, add personal notes, and place telephone messages with the bills. Based on this review, plans were developed for presentation to the committee during the 1987-88 interim.

1987-88 Interim and 1989 Legislative Session

During the 1987-88 interim, the Legislative Procedure and Arrangements Committee approved plans for the development of a legislative information system (the Legislator's Automated Work Station (LAWS) system) on a pilot project basis for the 1989 legislative session. The proposal was for an IBM Personal System/2 terminal to be provided to four legislators in each chamber during the 1989 legislative session--the assistant leaders in each chamber and another legislator from each party in each chamber. The system contained four basic components--bill status, committee hearings, daily calendar, and personal services (which included telephone messages received by the telephone attendants).

1989-90 Interim and 1991 Legislative Session

During the 1989-90 interim, the Legislative Management Committee approved a proposal to enhance the LAWS system to allow the full text of a bill page to be displayed on one screen, to access individual roll call votes from almost every screen, to display the current text of measures being considered on the calendar through use of the voting system by pressing a "hot" key, to allow computer searches of the North Dakota Century Code (NDCC), to allow use of electronic mail to send messages to other legislators with workstations, and to store telephone messages in caller sequence. The committee determined the LAWS system should be continued on a controlled-growth basis, with usage voluntary, and authorized expansion of the system to 24 workstations--16 in the House and 8 in the Senate--for the 1991 legislative session.

1991-92 Interim and 1993 Legislative Session

During the 1991-92 interim, the Legislative Management Committee authorized expansion of the LAWS system to 50 workstations--33 in the House and 17 in the Senate--as well as a terminal and printer in each of the minority and majority leaders' offices.

1993-94 Interim and 1995 Legislative Session

During the 1993-94 interim, the Legislative Management Committee authorized conversion of the LAWS system to a personal computer-based system rather than a host computer-based system. The conversion was primarily to allow legislators to view complex tables contained within statements of purpose of amendment, to increase the number of versions of a bill available for viewing, to increase printer capabilities, to improve spreadsheet and word processing software, and to increase legislators' access to information outside the Senate and House chambers.

The committee maintained the LAWS system access at the same levels as the 1993 legislative session--50 workstations--so as to conserve resources to defray the costs for converting to a personal computer-based system. The committee also approved a LAWS PC Pilot Project for the 1995 legislative session, under which four members of the Legislative Management Committee--two from each house, one from each caucus--received notebook-style personal computers for use during the legislative session and the interim to assess the feasibility and desirability of making notebook computers available to legislators and converting the LAWS system to a personal computer-based system.

During the 1995 legislative session, the legislative leadership reviewed three proposals for converting to a personal computer-based environment. Two nationally recognized consultants proposed installation of a new system at a cost ranging from $2.3 million to $3.7 million. Rather than a new system, IBM proposed using the existing mainframe systems but installing graphical user interface (GUI) software, installing a wireless network for legislators to use notebook computers anywhere within the legislative wing, installing a cable network for use by personnel placing information in the system, and providing notebook-style personal computers to legislators. The estimated cost of the IBM proposal ranged from $1.2 million to $1.5 million. The Legislative Assembly made available $550,644.

1995-96 Interim and 1997 Legislative Session

During the 1995-96 interim, the Legislative Management Committee authorized installation of GUI software to allow use of the mainframe system through features available on personal computers.

This allowed the bill status system and the LAWS system to remain as mainframe systems, although the information would appear as if it were personal computer applications.

After reviewing information and comparing features of a wireless local area network to a wired local area network, the committee approved the installation of a wired local area network within the legislative chambers and other appropriate areas in the legislative wing. With respect to wiring committee rooms for computer use by legislators, committee members were concerned over the distracting effect of members keying on computers rather than paying attention to individuals who were testifying before the committee.

The majority leaders directed, and the Legislative Management Committee confirmed, the acquisition of 60 IBM ThinkPad 755CD notebook-style personal computers. During the latter part of the interim, an additional 15 IBM ThinkPad 755ED notebook-style personal computers were acquired through a lease arrangement. The resulting 75 computers allowed distributions to slightly over 50 percent of the legislators.

1997-98 Interim and 1999 Legislative Session

During the 1997-98 interim, the Legislative Management Committee reviewed the feasibility of distributing personal computers to all legislators. The committee reviewed information on IBM, Compaq, Dell, Gateway, Micron, and Toshiba notebook-style computers that were capable of operating current legislative systems and software as well as software with contemplated changes for the next four years. The committee selected the Gateway Solo 9100. Sixty Gateway computers were purchased for distribution to legislators.

The committee also reviewed a schedule for use and acquisition of notebook-style computers. The committee approved the replacement of 3 IBM ThinkPad 360C computers, replacement of 60 IBM ThinkPad 755CD computers, and reassignment of 15 IBM ThinkPad 760ED computers to legislators, desk forces, and legislative interns. During the latter part of the interim, the committee approved the acquisition of 87 notebook-style computers which allowed each legislator to receive a notebook-style computer. In this phase, the committee reviewed information on notebook-style computers with at least the features of the Gateway Solo 9100. The committee viewed demonstrations of computers manufactured by Compaq, Dell, Fujitsu, Gateway, and IBM. The committee selected the Gateway Solo 2500.

The committee reviewed a number of options for the disposition of the ThinkPad computers, first of which was whether to use the computers as a trade-in or credit for acquiring replacement computers. Because the value of the computers by prospective vendors ranged from $100 to $250, the committee decided not to use the computers for any trade-in or credit value. After surveying legislators as to the level of interest in acquiring the ThinkPad computers, the committee determined that the committee should transfer the computers to the Office of Management and Budget for transfer to state agencies, political subdivisions, and certain nonprofit organizations under NDCC Section 54-44-04.6 relating to state surplus property.

The decision to replace the IBM ThinkPad was made as part of a plan to provide every legislator with a computer that would be able to take advantage of the 1997-98 enhancements to the LAWS system, e.g., split screen display of amendments and text of bills and planned software upgrades for the next four years. Newer computers also allowed more efficiencies due to Pentium processor speed and greater disk capacity. The computers had either Pentium 166MMXS or Pentium II 233 processors. Each computer had 48 megabytes of RAM and the hard drive was either 2 or 4 gigabytes. The display was 13.3 inches and the operating system was Windows 95. All computers had internal CD-ROM drives.

During the 1999 legislative session, 132 members took advantage of accessing the LAWS system.

2001-02 Interim and 2003 Legislative Session

The Legislative Management Committee reviewed a four-year replacement schedule for notebook-style computers for legislators. Some of the computers used by legislators had been in service for four to five years. Warranties on 60 computers expired before the 2001 legislative session and the warranties on 87 computers expired in June 2001. The Gateway computers were experiencing various hardware problems, such as hard drive and battery failures, inventory of replacement parts was becoming difficult to maintain, and a timelag of six weeks to obtain parts was becoming common. A number of computers were operable only because the Legislative Council staff had scavenged other computers for parts. Newer software was not compatible with the Windows 95 operating system, which was no longer supported by Microsoft. For most legislative purposes, the limits on the Gateway computers had been reached as far as further software development and upgrade.

The committee reviewed requirements for the replacement of legislators' computers. Basically:

- 256 megabytes of RAM was necessary for the LAWS system, Lotus Notes, and Internet Explorer to be open simultaneously and operate at an adequate speed.
- A 15-inch screen would accommodate future development in the LAWS system, particularly with respect to the easier viewing of text of measures.
- A 20-gigabyte hard drive was necessary to accommodate the amount of legislative software that needed to be loaded on the computers.

- Windows 2000 operating system was recommended for use with Corridor, which provided access to LAWS via the web.
- A Pentium III 900-megahertz processor was determined to provide adequate speed for projected future development.

The committee reviewed information on five notebook computers--Compaq Armada E500, Dell Inspirion 2500, Gateway Solo 9500, HP OmniBook XE3, and IBM ThinkPad A22m. After reviewing the specifications for each computer, committee members gave each computer a hands-on test and the committee authorized the purchase of 150 IBM ThinkPad A22m notebook-style computers with a standard warranty. The primary reasons stated by committee members in selecting the IBM ThinkPad A22m were the inclusion of a DVD drive, which was viewed as useful in the development of future legislative applications; a bright display screen; a quiet fan operation; the better "feel" of the keyboard and the appearance of the keyboard display; the location of the network connection on the back instead of the side; and the Legislative Council staff's repair experience with its notebook-style computers. With the acquisition of 150 computers, each legislator would be able to receive a computer and identical computers would be available for testing and providing help service for legislators having computer-related problems.

The Gateway computers that were not needed in other areas of the legislative branch were transferred to the Office of Management and Budget for transfer to state agencies, political subdivisions, and certain nonprofit organizations under NDCC Section 54-44-04.6.

Summary of Computers Provided to Legislators

Beginning with the 1995 legislative session PC Pilot Project and continuing through the 2007 legislative session, either the legislative leadership or the Legislative Management Committee had authorized these makes and models of notebook-style computers for legislators:

- IBM ThinkPad 360C computers;
- IBM ThinkPad 755CD computers;
- IBM ThinkPad 760ED computers;
- Gateway Solo 9100 computers;
- Gateway Solo 2500 computers; and
- IBM ThinkPad A22m computers.

LEGISLATOR TECHNOLOGY

Numerous factors may affect any decision as to the replacement of current notebook-style computers used by legislators. These factors include the replacement of legislative applications, the upgrade of technology available in legislative committee rooms, the use of smartphones, and the types of notebook-style computers.

Replacement of Legislative Applications

Most of the computer software applications used in the legislative branch are scheduled for replacement by the 2009 legislative session. New features that are under consideration for development include a type of subscription service for bill status, e.g., a subscriber either internal or external to the legislative branch could identify specific bills which the subscriber could easily track and could be notified of current action. Notification possibilities could include notice of any action recorded in the bill status system, e.g., referral to committee, date and time of hearing, and report out of committee. Types of notice could include e-mail, instant messages, or text messages. The value of receiving a "real-time" notice would depend on the type of notice sent and how the notice is received. In those instances when a group of bills have been scheduled for hearing starting at a specific time, the committee clerk who has a computer in the committee room could provide "up-to-the-minute" notice of specific times for bills coming up for hearing. The value of this type of notice to a legislator would depend on the legislator having immediate access to that information, e.g., the legislator is where the legislator's computer is located or the legislator receives the message on a smartphone or other personal device.

This notification feature may or may not be in place by the 2009 legislative session. Whenever available, implementation with respect to legislators will depend on the hardware used by legislators to receive notification.

Upgrade of Technology in Committee Rooms

Legislators have expressed the desire that committee rooms be "brought up to date" with respect to use of technology. The question is what is intended with respect to adding current technology capabilities to committee rooms. Fourteen rooms in the State Capitol are used for legislative committees during a legislative session. Two rooms--Pioneer and Fort Lincoln--are wired for the state's Interactive Video Network (IVN). Five rooms--Roughrider, Harvest, Sakakawea, Medora/Great Plains, and the House Conference Room--are wired for local area network connections for committee members. Two rooms--Roughrider and Harvest--are wired for ceiling projectors and wall screens.

With respect to projectors and screens, immediately before the 2007 legislative session, the Legislative Council chairman directed that wireless ceiling projectors be installed in the Roughrider and Harvest Rooms along with wall screens. The two projectors with installation cost $4,554.84 and associated electrical wiring cost $1,494.46. Because of interference with the wireless network maintained by the Information Technology Department and the special software needed to deliver a presentation over a wireless network, the wireless feature was eliminated after the 2007 legislative session and wired connections were installed at the lecterns and the

head tables in those rooms. Hardwiring the projectors and installing the wired connections cost $3,429. Based on this experience, it would cost an estimated $4,740 to install a projecter, wired connections at the lectern and the head table, and a wall screen in each of the 12 committee rooms without projectors.

Use of Smartphones

A smartphone has been defined as a cellular telephone that provides voice service as well as any combination of voice recognition, e-mail, text messaging, pager, personal organizer, web access, still camera, video camera, video player, and MP3 player. *pcmag.com/encyclopedia*.

In terms of features, most smartphones support e-mail capabilities with a functionality of a complete personal organizer. Some may include a miniature QWERTY keyboard, a touchscreen, a built-in camera, contact management, the ability to read business documents, such as PDF and Microsoft Office, Internet browsers, media software for playing music, and ability to browse photographs and view video clips. A distinction between a feature-loaded phone and a smartphone is that a smartphone allows applications to be downloaded onto it. A smartphone runs complete operating system software providing the interface and platform for application developers. Operating systems include Symbian (Motorola, Samsung, LG, and BenQ); Linux (Motorola, NEC, Panasonic, Samsung, Vodafone, and PalmSource); Windows Mobile; RIM BlackBerry; PalmSource; and Mac OS X (iPhone).

Smartphones offered by Verizon using the Windows Mobile operating system include the Motorola Q, Motorola MOTO Q, Verizon Wireless PN-820, Verizon Wireless SMT5800, Verizon Wireless XV6800, Samsung SCH-i760, and Palm Treo 700wx. Verizon smartphones using the Palm operating system include the Palm Treo 700p and the Palm Treo 755p. Verizon also offers the BlackBerry 7130e, BlackBerry Pearl 8130, BlackBerry 8730e, and BlackBerry 8830 World Edition.

Smartphones offered by Alltel using the Windows Mobile operating system include the Motorola MOTO Q, Palm Treo 700wx, HTC Touch, and HTC PPC6800. Alltel smartphones also include the Palm Treo 755p, BlackBerry Pearl 8130, BlackBerry 8703e, and the BlackBerry 8830 World Edition.

The cost of a smartphone varies depending on the smartphone and the service provider. The state contract price for a Verizon BlackBerry Pearl 8130 or the BlackBerry 8703e is $99.99 and for a Verizon BlackBerry 8830 World Edition is $149.99.

The Information Technology Department provides e-mail service for smartphones through a BlackBerry Server for a one-time charge of $150 and continuing charge of $17 per month and a Mobile Suite Server for Windows and Palm operating systems for a one-time charge of $250 and a continuing charge of $32 per month.

Notebook-Style Computers

During the 1995-96 interim, the Legislative Management Committee determined that notebook-style personal computers should be provided to legislators to provide a means to access legislative information while away from the Capitol--at first through a CD that included the North Dakota Century Code, the North Dakota Administrative Code, bill status information, and the North Dakota Session Laws and ultimately through web access. A variety of notebook-style computers are available which provide different features and have different limitations.

Full-Feature Notebooks

Based on recommendations of PTC, the contractor developing the replacement legislative applications, a full-feature notebook should include at least:

- 2.0 gigahertz processor.
- 2 gigabytes memory.
- 80 gigabytes disk space.

The legislative applications are being developed to work with either the Windows Vista or Windows XP operating system. An issue with Windows XP, however, is the length of time Microsoft will continue to support an operating system first released in 2001. According to Microsoft's Lifecycle Support Policy, mainstream support for Windows XP Professional will end on April 14, 2009. *support.microsoft.com/lifecycle/?LN=en-us&p1=3223&x=6&y=9*.

The legislative applications also will work with Internet Explorer 6 or Internet Explorer 7.

Additional features could include a 15.4-inch-wide screen, a CD-RW drive, and wireless capability.

Under the state procurement contract through the Information Technology Department for the acquisition of personal computer equipment, the base cost, including shipping, of an HP Compaq Business Notebook 8510p (mainstream) is $1,275 and for an HP Compaq Business Notebook 8510p (power user) is $1,419. The major differences between a power user and a mainstream notebook appear to be an Intel Core 2 Duo Processor T7500 rather than a T7300, 2048 MB memory expandable to 4096 MB rather than just 2048 MB memory, and a DVD+/-RW SuperMulti DL Optical Drive rather than a DVD/CD-RW Combo Optical Drive. According to the Information Technology Department, these prices are substantially below the prices available under the Western State Contracting Alliance (WSCA) contract.

Tablets

A tablet personal computer is a notebook-style personal computer with a touchscreen technology that allows the users to operate the computer with a stylist or fingertip in addition to a keyboard or mouse. The advantages of a tablet versus a traditional notebook have been described as allowing a more natural form of input (sketching and handwriting versus keyboarding), gesture (moving the stylus in special patterns) recognition, notetaking at meetings, lightweight, and horizontal orientation (it lies flat on the

table). Disadvantages have been described as a higher cost than for comparable notebook computers, smaller screen size than most notebook computers, slower input speed (handwriting speed of 20 to 30 words per minute versus keying speed of 50 to 150 words per minute), and potential for more screen damage risk because the screen is used as the input mechanism.

Depending on the features, the cost of a tablet personal computer would be in the range of $1,600 to $2,000 or more.

Thin Clients

A thin client is a computer in a client-server network which depends primarily on the central server for processing activities and mainly focuses on conveying input and output between the user and the remote server. A thin client could be viewed as similar to a "dumb terminal" that is connected through the network to the mainframe processor, similar to what was the first generation of terminals used for the LAWS system in the chamber before 1997. A thin client would consist of a screen, keyboard, and mouse/pointing device. Advantages of a thin client include lower administrative costs because thin clients are managed almost entirely at the server, thus there are fewer points of failure; easier to secure because application data does not reside on the client and malware protection is centralized (on the server); lower hardware costs because thin clients are generally less expensive because they do not contain disks, application memory, or a powerful processor; easier hardware failure management because a replacement can be swapped while the client is repaired because data is not on the thin client. Disadvantages include less flexibility because a network connection is required to run most software and reduced multimedia performance because of the bandwidth limits on the network. A thin client could be a means by which computers could be provided in committee rooms and in the chambers for legislators to access their "desktop" which would be stored on the server. Thus, thin clients could be viewed as a way of expanding legislators' access to their information or the means of replacing the more costly full-featured notebook computers.

The cost of a thin client "box" would be approximately $300, which does not include the cost of the monitor, keyboard, and mouse, nor the cost of Windows Vista (or other operating system) for each user, nor any additional hardware or software cost to increase server capacity, nor any additional cost to maintain the server.

2007 LEGISLATIVE ACTION

Appropriation

House Bill No. 1001, as introduced, included $255,678 for acquiring 177 notebook-style computers for legislators and certain Legislative Assembly employees:

- 141 notebooks for legislators.
- 5 backup notebooks for legislators.
- 5 notebooks for use by leadership, e.g., to allow one notebook in a leader's office and one notebook on the floor.
- 10 notebooks for desk force personnel, i.e., 5 per desk force.
- 12 notebooks for legislative interns.
- 2 notebooks for assistants to the majority leaders.
- 2 notebooks for use in the page rooms, e.g., pages use the computers to print and cut amendments to place in the bill racks.

Before passage, the amount was increased to $300,294.

Smartphones

Before initial passage, the House amended House Bill No. 1001 to include Sections 7 and 8:

> **SECTION 7.** A new section to chapter 54-03 of the North Dakota Century Code is created and enacted as follows:
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> **Authorized purchases under state contracts.** Notwithstanding any other provision of law, a member of the legislative assembly may acquire a smartphone or personal communicator device from the information technology department and obtain telephone and data plan services from the department under any arrangement the department has for obtaining those devices and services from a third party, and may obtain access to the state e-mail system through the equipment and software of the department, upon payment for the device and the services provided by the department at the rates charged to public officials and employees.
>
> **SECTION 8. PILOT PROJECT.** The legislative council shall conduct a pilot project by providing smartphones or personal communicator devices to a limited number of legislators for the biennium beginning July 1, 2007, and ending June 30, 2009. Each legislator involved in the pilot project is responsible for paying a $15 per month fee authorized under section 54-03-26 for personal use of these devices and any additional charges resulting from the legislator exceeding the maximum number of plan minutes.

As passed by the Senate and ultimately enacted by the Legislative Assembly, House Bill No. 1001 did not include these two sections relating to smartphones.