**TECHNICAL SPECIFICATIONS
OF HARDWARE AND
SOFTWARE NEEDED FOR
UPGRADING THE COMPUTER
INFRASTRUCTURE**

**MUNICIPALITY OF
BLAGOEVGRAD, BULGARIA**

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East European Regional Housing Sector
Assistance Project
Project 180-0034
U.S. Agency for International Development,
ENI/EEUD/UDH
Contract No. EPE-C-00-95-001100-00, RFS No.
207

under subcontract to

The Urban Institute

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INTRODUCTION

The purpose of this document is to specify all hardware and software that the Municipality of Blagoevgrad should install and operate in order to improve its Management Information System (MIS) and thus be capable of providing more efficient and timely services to the citizens of Blagoevgrad.

A thorough analysis has been performed on the specific needs of the Municipality. After several visits by USAID consultants and discussions with Municipal officials, it has been decided that improving the Municipal MIS and servicing the Municipality's immediate needs for services to the citizens of Blagoevgrad should be achieved by:

— Upgrading the current municipal computer network capacity; and
— Implementing the Geographical Information System (GIS).

The computer equipment and software requested here have been determined under the general direction of a Municipal Information Systems Master Plan, currently under preparation.

OBJECTIVES

The main objective of this phase of the Information System Master Plan is to improve the services provided by the Municipality to the citizens of Blagoevgrad. This main objective can be broken down into several specific objectives:

! **Provide better computer support and communications to municipal employees.** The existing computer system infrastructure and its local area network backbone are old, obsolete and have very limited capacity. Most of the computers can barely support the existing software applications. Many workstations do not have hard-disk drives to allow for flexibility and computer power at the desktop level. The network server is already beyond its maximum capacity and does not have appropriate backup devices for securing the work performed across the network. Because many of the software applications that run on the municipal network have a direct impact on the services provided by the municipality, better computer

support for its users will without a doubt benefit the citizens of Blagoevgrad.

The current network operating system does not have the capacity to adequately support internal and external communications that will allow the Municipality to exchange vital information with local and national institutions, NGOs, local firms and citizens. Internet and e-mail services must be introduced to the daily workflow of the Municipality. Direct connections to Notary offices, since recent legislature requires a large amount of information exchange between Notary offices and Municipalities, will soon become essential for providing timely services to citizens and reducing the amount of paperwork by Municipal employees.

! Provide computerized support in the preparation of legal and technical documents for the transfer of real estate property. As a result of the changes in the political and economic environment in the last few years, the municipality has seen a dramatic increase in the number of requests for technical and legal documentation to support the transfer of real estate property. The Municipal staff has become unable to give satisfactory and timely responses to the requests.

With the implementation of this short-term plan, the municipality will be able to create the necessary environment to better absorb and implement computer technology. In the long run, by accomplishing these two short-term objectives the municipality should be able to implement the Information Systems Master Plan and deliver better services to its citizens.

HARDWARE

The hardware required to implement the first phase of the Information Systems Master Plan consists in brief of two computer servers, six computer workstations, three printers, and one scanner.

The municipality has already used its own resources in order to purchase additional equipment and software required to implement this plan and consequently to demonstrate its strong commitment to this and subsequent projects carried out by USAID. This includes the GIS software, one professional plotter, two printers, one 486 workstation, and the upgrade of several existing 286 and 386 diskless computers.

The first server, two workstations, two printers, and the scanner will be used exclusively for creating a small dedicated Local Area Network to support the implementation of the Geographical Information System (GIS). In addition, the municipality has already acquired the GIS application software (AKSTER) and a special plotter with its own resources.

The second server, four workstations and one printer will be used to strengthen the existing Local Area Network. In addition, the municipality has agreed to purchase one 486 workstation, two printers and upgrade at least four 286 and 386 computer with its own resources.

The following table is a summary review of the computer hardware and software required to be funded by the Small Grant Program, including cost estimates for each component.

Hardware Request Summary

Product	Purpose	Quantity	Unit Cost US$	Extended Cost US$
Main Network Server with NetWare NOS	Upgrade current network server	1	12,000	12,000
GIS Network Server with Windows 95	Create the infrastructure for the future Geographic Information System (GIS)	1	8,000	8,000
Workstations with Windows 95	Update the current hardware network environment and create the infrastructure for the future GIS	6	1,800	10,800
Ink-Jet Printer/Plotter A3 Color	Create the infrastructure for the future GIS	1	2,000	2,000
Ink-Jet Printer A4 Color	Update the current hardware network environment	1	500	500
Laser Printer A4 Black and White	Create the infrastructure for the future GIS	1	1,500	1,500
Scanner A4	Create the infrastructure for the future GIS	1	1,500	1,500
Total (all local taxes included)				36,300

PRODUCT: MAIN NETWORK SERVER

Purpose: Upgrade current network server
Quantity: One (1) unit

Specifications by Component

Component	*Specification*
Processor	• Intel Pentium CPU equivalent, minimum of 166 MHz speed • Automatic memory error checking and correction • ISA/PCI SCSI Bus Architecture
Memory	• 32 MB of RAM installed with expansion up to 128 MB • 512 KB Cache Memory • 2 x 2GB SCSI Hard Disk Drive • 1.44 MB 3.5 inch Floppy Disk Drive • 1.2 MB 5.25 inch Floppy Disk Drive
Screen and Graphics	• SVGA 14 inch color monitor .28 dpi • 1 MB VRAM PCI SVGA
Keyboard and Mouse	• 101-104 keys Latin/Cyrillic Keyboard • 3 button Microsoft compatible Mouse
Backups and Restore	• 4 GB Digital Audio Tape Drive (4 millimeters) • Backup scheduling software (desirable) • 8X speed internal CD-ROM Drive
Networking & Communications	• 32 bit Ethernet Combo Card Controller • 3 Ethernet Network Hubs, 32 RJ45 twisted pair connections
Backup Power	• 600 VA Uninterruptible Power Supply (UPS) • UPS with 1 hour minimum period of power supply • UPS software driven and monitored (desirable) • UPS scheduled shutdowns and startups (desirable)
Operating System	• Novell NetWare Operating System upgrade to last available version, from existing 25 users to 50 users

PRODUCT: GIS NETWORK SERVER

Purpose: Create the infrastructure for the future Geographic
Information System (GIS)
Quantity: One (1) unit

Specifications by Component

Component	Specification
Processor	• Intel Pentium CPU equivalent, minimum of 166 MHz speed • Automatic memory error checking and correction • ISA/PCI SCSI Bus Architecture
Memory	• 32 MB of RAM installed with expansion up to 128 MB • 512 KB Cache Memory • 2 GB SCSI Hard Disk Drive • 1.44 MB 3.5 inch Floppy Disk Drive • 8X speed internal CD-ROM Drive
Screen and Graphics	• SVGA 17 inch color monitor .28 dpi as minimum • 2 MB VRAM PCI SVGA
Keyboard and Mouse	• 101-104 keys Latin/Cyrillic Keyboard • 3 buttons Microsoft compatible Mouse
Backups and Restore	• 400/800 MB Quarter Inch Cartridge (QIC) Tape Drive
Networking & Communications	• 16 bit 3COM Ethernet Combo Card Controller • V34 protocol at 28.8 Kbps speed modem
Backup Power	• 600 VA Uninterruptible Power Supply (UPS) • UPS with 1 hour minimum period of power supply • UPS software driven and monitored (desirable) • UPS scheduled shutdowns and startups (desirable)
Operating System	• DOS Operating System • Windows 3.11 (for Work groups) or Windows 95
Application Software	• MS Office: Word, Excel, PowerPoint • Other Applications: fax, communications, file transfer • PC Utilities: Anti virus, Backup scheduling software

PRODUCT: CLIENT WORKSTATIONS

Purpose:	Update the current hardware network environment and create the infrastructure for the future Geographic Information System (GIS)
Quantity:	Six (6) units

Specifications by Component

Component	Specification
Processor	• Intel Pentium CPU equivalent, minimum of 120 MHz speed • ISA/PCI SCSI Bus Architecture
Memory	• 16 MB of RAM installed with expansion up to 32 MB • 256 KB Cache Memory • 840 MB SCSI Hard Disk Drive • 1.44 MB 3.5 inch Floppy Disk Drive
Screen and Graphics	• SVGA 14 inch color monitor .28 dpi as minimum • 1 MB Video RAM • Super VGA video adapter
Keyboard and Mouse	• 101-104 keys Latin/Cyrillic Keyboard • 3 buttons Microsoft compatible Mouse
Networking	• 16 bit 3COM Ethernet Combo Card Controller
Operating System	• DOS Operating System • Windows 95
Application Software	• MS Office: Word, Excel, PowerPoint • Other Applications: fax, communications, file transfer • PC Utilities: Anti virus

PRODUCT: INK-JET PRINTER/PLOTTER A3 COLOR

Purpose: Create the infrastructure for the future Geographic
                                   Information System (GIS)
Quantity: One (1) unit

Specifications by Component

Component	*Specification*
Black Resolution	• Best: 600 x 600 dpi • Normal: 600 x 600 dpi • Fast: 300 x 300 dpi
Black Print Speed	• Best: 1 page per minute • Normal: 2.5 pages per minute • Fast: 4 pages per minute
Color Resolution	• Plain/Premium paper: 300 x 300 dpi • Glossy paper/Transparency film: 600 x 300 dpi • DOS graphics: Full-page 75, 150, 300 dpi
Color Print Speed	• Best: 1 page per minute • Normal: 2 pages per minute • Fast: 4 pages per minute
Media Size	• A3 (297 x 420 millimeters) • A4 (210 x 297 millimeters)
Memory Buffer	• 512 KB built-in RAM • 32 KB receiver buffer
Input/Output Interface	• Centronics parallel • IEEE-1284 compliant
Operating Environment	• Temperature: 5C (41F) to 40C (104F) • Relative Humidity: 10 to 80 percent non-condensing
Software Compatibility	• DOS for 80286 and 80386 CPU • Windows 3.1 for 80386, 80486 and Pentium CPUs

PRODUCT: INK-JET PRINTER A4 COLOR (EQUIVALENT TO HP DESKJET 690)

Purpose: Update the current hardware network environment
Quantity: One (1) unit

Specifications by Component

Component	Specification
Black Resolution	• Best: 600 x 600 dpi • Normal: 600 x 600 dpi • Fast: 300 x 300 dpi
Black Print Speed	• Best: 1 page per minute • Normal: 2.5 pages per minute • Fast: 4 pages per minute
Color Resolution	• Plain/Premium paper: 300 x 300 dpi • Glossy paper/Transparency film: 600 x 300 dpi • DOS graphics: Full-page 75, 150, 300 dpi
Color Print Speed	• Best: 1 page per minute • Normal: 2 pages per minute • Fast: 4 pages per minute
Media Size	• A4 (210 x 297 millimeters)
Memory Buffer	• 512 KB built-in RAM • 32 KB receiver buffer
Input/Output Interface	• Centronics parallel • IEEE-1284 compliant
Operating Environment	• Temperature: 5C (41F) to 40C (104F) • Relative Humidity: 10 to 80 percent non-condensing
Software Compatibility	• DOS for 80286 and 80386 CPU • Windows 3.1 for 80386, 80486 and Pentium CPUs

PRODUCT: LASER PRINTER (EQUIVALENT TO HP LASERJET 6MP)

Purpose: Update the current hardware network environment and create the infrastructure for the future Geographic Information

Quantity: One (1) unit

Specifications by Component

Component	Specification
Resolution	• 600 x 600 dpi • 120 levels of gray at 106 lines per inch
Typeface Capabilities	• 35 scalable fonts (Adobe type 1) built-in • Additional 75 fonts (True type) for Windows
Paper Handling	• 250-sheet universal cassette • 100-sheet (or 10-envelope) multipurpose tray • 100-sheet face-down top output tray • 100-sheet face-up rear output tray
Media Type	• Plain paper and Envelopes • Transparencies • Card stock • Postcards and labels
Media Size	• A4 (210 x 297 millimeters) • Letter (8.5 x 11 inches) • Legal (8.5 x 14 inches) • Executive (7.25 x 10.5 inches) • DL (220 x 110 millimeters) • C5 (229 x 162 millimeters) • B5 (250 x 176 millimeters)
Print Speed / Throughput	• 6 pages per minute • 26-second first page out
Memory	• 3 MB standard, 3 unused SIMM slots • 50 MB maximum
Input/Output Interface	• Bi-directional, IEEE-1284 compliant parallel ports • IrDA-compliant wireless infrared port
Operating Environment	• Temperature: 5C (41F) to 40C (104F) • Relative Humidity: 10 to 80 percent non-condensing
Software Compatibility	• DOS for 80286 and 80386 CPU • Windows 3.1 for 80386, 80486 and Pentium CPUs

PRODUCT: SCANNER (EQUIVALENT TO HP SCANJET 4C)

Purpose: Update the current hardware network environment
                             and create the infrastructure for the future
                             Geographic Information System (GIS)

Quantity: One (1) unit

Specifications by Component

Component	*Specification*
Scanner Type	• Flatbed, color and gray scale
Scanning Mechanism	• 1 pass
Resolution	• Enhanced: 2400 dpi • Optical: 600 dpi
Gray scale	• 10-bit (1,024 gray scale levels)
Color Recognition	• 30-bit (more then 1 billion colors)
Scanning Speed (scan time only; data transfer not included)	• Preview: 4 seconds • 300 dpi B/W, letter: 7.5 seconds • 300 dpi color, letter: 7.5 seconds
Scaling	• 3 - 400 percent in 1 percent increments at 600 dpi (scaling range depending on resolution)
File Formats (Windows)	• PCX, TIFF, TIFF compressed, EPSF, Windows 3.0 BMP, OS/2 BMP, EPS with screen
Maximum Document Sizes	• A4 (210 x 297 millimeters)
Interfaces	• PC: dedicated SCSI adapter

SOFTWARE

The software required to implement the first phase of the Information Systems Master Plan consists of operating systems, office applications and application software.

Commercial Software

A number of PC general software applications are available for most users. These applications include word processing, spreadsheet, electronic mail, graphics, etc. The following table is a list of all the general applications used in the municipality.

System and Office Software That Needs to Be Upgraded

Type of Software	Manufacturer	Operating System	Manuals Required
Microsoft Office 95 (includes Word, Excel, PowerPoint, Access for 8 concurrent)	Microsoft	Windows 95	Yes
Mail System like EudoraPro	Qualcomm Incorporated	Windows 95	Yes
Utilities: Anti virus, Disk Tools	Norton	Windows 95	Yes
UPS Management Software	Novell	Novell/Windows 95	Yes
Upgrade of Novell operating system and number of users (50)	Novell	Novell 4.01	Yes
Backup Scheduling Software for Novell NetWare Server	Novell	Novell	Yes

Application Software

All available software applications are character-based and run on a DOS operating system. These applications have been developed using a variety of languages and tools, including dBase, Clipper, and Btrieve. The following table is a list of all the application software that needs to be upgraded.

Application Software Needing Upgrades

Name	Main Functionality	Operating System	Developer and possible supplier of the upgrade versions
	ACCOUNTING AND FINANCE		
BDJ	Budget preparation system	DOS /Windows 95	IT Center MOF
SOMB	Budget consolidation system	DOS/Windows 95	IT Center MOF
FSD	Accounting system	DOS/Windows 95	IT Center MOF
	ADMINISTRATION		
ESGRAON	Civil registration system	DOS/Windows 95	Central Institute for Programming Products and Systems
KADRI	Human resources system	DOS/Windows 95	IT Center MOF
TRZ	Payroll system	DOS/Windows 95	IT Center MOF
Delovodstvo	Documentation tracking system	DOS/Windows 95	Soft Informatika
Storage	Storage management system	DOS/Windows 95	Dplus
	CONSTRUCTION		
ACT	Construction cost & evaluation system	DOS/Windows 95	
ACSTER - M	Graphical Information System (GIS) and Cadaster	DOS/Windows 95	Technical University - Computer Laboratory - Acstrer
	ECONOMIC AFFAIRS		
BTO	Temporary trade contracts	DOS/Windows 95	ITM - Rouse
OI	Municipal properties rental contracts	DOS/Windows 95	ITM - Rouse
DIMOT	Creating acts for municipal estates	DOS/Windows 95	Central Institute for Programming Products and Systems
NAEMI	Municipal housing rental collection	DOS/Windows 95	Local developer

GIL	Control of lodging ownership for single families	DOS/Windows 95	
JVSS	Housing savings bank information system	DOS/Windows 95	SoftInformatika
APIS	Legal information repository	DOS/Windows 95	"Apis" Ltd.