IBM, our primary focus is not IBM product marketing. This allows our consultants to place the clients interest and needs as the primary factor in evaluating and recommending technology solutions.

Our six Global Competencies are:

- Consulting
- Systems Integration
- Managed Operations
- Technical Support
- Networking
- Learning

IBM professionals from several segments of these Global Competencies will be engaged in the early stages of the partnership with EPISD; others can be engaged as required.

General Scope of this Proposal

As noted in your RFP, it is the desire of EPISD to establish a long term partnership with a technology integration provider that will assist EPISD in effectively infusing technology throughout the school district. IBM believes there are several initiatives that must be undertaken in order to achieve that stated objective. Thus, the following paragraphs describe IBM's strategy for managing these initiatives. We believe that this strategy will form the foundation of our relationship.

In order to implement your instructional goals and objectives, EPISD understandably needs and requires services from multiple vendors. However, as you select a single Strategic Technology Integration Provider, IBM feels that the following benefits will be gained from your selection of IBM as your technology partner:

- The successful integration of multiple projects, rather than the implementation of a single project
- Focus on meeting quality standards, rather than only meeting project deadlines
- Alignment with the EPISD enterprise's strategic plans, rather than the simple execution of a single project plan
- Co-ordination of activities across multiple teams and organizations, rather than management of a single team
- The design and delivery of the "right solution" at "the right time", rather than random solution implementation

- Avoidance of "tomorrow's" problems, rather than simply a focus on "today's" problem
- Communication of value to your enterprise, rather than only communications amongst project team members
- Commitment to meet the EPISD strategic goals, objectives and expectations, rather than simply meeting a project schedule

General Information

LEGAL APPROACH

IBM's proposal in response to the above RFP is made with the understanding that the IBM Customer Agreement (ICA) will govern any ensuing transaction. The ICA has served as the basis for many successful transactions between us and provides the basis for the attractive pricing that we will offer. In addition, we are willing to consider modifications and additions to this proposal; however, material modifications or additions may affect pricing.

IBM Global Services will commit to consulting and services engagements with EPISD via the following documents:

IBM Customer Agreement (ICA)

The IBM Customer Agreement provides the framework for all business transactions between IBM and EPISD. EPISD has signed an ICA which is still in effect. It defines the general terms and conditions under which we will conduct various business transactions, including hardware sales, maintenance, software sales, and services. A copy of the ICA is included in Appendix C.

Statements of Work (SOW)

A unique SOW will be developed for each initiative or project. Each SOW will provide a description of our respective responsibilities in completing project tasks, assumptions upon which our estimates and performance are predicated, an estimated schedule for completing the project, the completion criteria that we are required to meet to fulfill our obligations, definition of the specific project deliverables, resource requirements, and applicable charges. EPISD must approve and sign each SOW before work begins on the project.

2.3 Legal Approach

Include a sample contract and all other documents that would become a part of the final contract.

IBM's proposal in response to this RFP is made with the understanding that the IBM Customer Agreement (ICA) will govern any ensuing transaction. The ICA has served as the basis for many successful transactions between us and provides the basis for the attractive pricing that we will offer. In addition, we are willing to consider modifications and additions to this proposal; however, material modifications or additions may affect the price.

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3.2 General Requirements of Each Offeror

- ***Adherence to the requirements as provided as attachments to this RFP by EPISD Purchasing***
- ***Provide audited financial statements for the last two fiscal years***

  Please see audited financial statements in Appendix D – Financial Statements.

5.0 Criteria for Selection of a Strategic Technology Integration Provider

El Paso ISD has identified multiple factors itemized within the RFP, critical to a company's ability to effectively assist El Paso ISD infuse technology and better prepare students to be successful citizens and productive workers in the 21st century. Outlined in the section below are IBM's capabilities to perform the desired activities and to meet the criteria specified in sections 5.1 through 5.8 of the RFP.

5.1 Availability and Quality of Resources

IBM can provide a wide range of professional resources to meet the needs of the EPISD technology projects. IBM is a multi-national corporation providing information technology solutions and services throughout the world. The EPISD school district will have access to the multitude of technical and educational resources that make up the IBM Corporation and its many business partners worldwide.

IBM Global Services will assemble a team of professionals to deliver the technology solutions and services necessary to meet EPISD's mission and project objectives. School districts have very unique solution and services requirements, but are also challenged with many of the same technology issues facing other large organizations. With this in mind, IBM structures each team with a core group of professionals with specific technical or industry knowledge. This team will work with EPISD to understand your specific technical, operational, and service requirements. The rest of the team is then assembled from IBM's large pool of technical and subject matter expert resources. All capabilities can be made available based upon the EPISD project timelines and requirements.

Resource Availability

Because IBM has such a large professional resource pool to draw from, each project team is staffed based on the project's requirements. Depending on the project schedule, the number of hours required to accomplish the scope of work, and the types of expertise needed, IBM Global Services may assign staff on a full-time, part-time, or as required basis, or in a combination of all of these. IBM Global Services will work with your staff to establish the project requirements and target completion dates, and assign the appropriate number and types of personnel to ensure successful performance and timely completion.

IBM will always attempt to staff an El Paso ISD project with local resources from within the area. However, in our efforts to secure the best skilled resources available when required, our need for a particular expertise may deem it necessary to use out of town-resources.

Personnel Competencies and Experiences

IBM is the world's largest information technology services company providing consulting, systems integration, and solution development services. In addition to providing a broad range of technical skills, IBM's professional staff includes personnel with many years of experience working with K-12 school districts. Based on EPISD project requirements, and IBM resource availability, IBM Global Services will assemble project teams with the capabilities and skills needed for successful project delivery. Appendix B includes resumes which provide a representative sample of IBM's industry and technical staff qualifications. These are representative of some the IBM personnel that could be assigned to the El Paso project.

IBM has successfully delivered quality technology solutions and services to large K-12 districts, governmental agencies and commercial organizations. Each project is delivered with a specific understanding of the client's environment, requirements, and associated challenges. Solutions and services are designed and delivered to meet the specific client requirements and utilize IBM's collaborative approach to project execution. Appendix A provides several examples of IBM's experience as it relates to the challenges facing EPISD. Additional references and contacts can be provided upon request.

Technical Consulting Background

- **K-12 Industry Knowledge** – The references presented later in this proposal demonstrate that IBM has exceptional depth of experience working with K-12 school districts and state education agencies. IBM's Global Services includes an Education Industry Group comprised of several hundred highly skilled professionals focused exclusively on providing products and services to K-12 and Higher Education customers. Many of the people in this organization have been educators, and everyone in the group has strong expertise in the business of education. In addition, IBM's Project Managers and some of the other staff assigned to the EPISD project will be drawn from organizations experienced in working with K-12 school districts.

- **Project Management Expertise** – IBM recognizes project management as one of the core competencies of its services business, and has established an internal Project Management Center of Excellence to keep IBM's project management methodology current, establish and maintain project management training courses, and define the standards for certification in the project management discipline. IBM project managers use an IBM proprietary methodology based on best practices distilled from thousands of successful projects. IBM's Project Management Methodology is a repeatable set of processes covering the life cycle of a project. The elements of our Project Management Methodology include project tracking, reporting, and daily management; project control, quality control, change management, issue resolution, deliverable review, and risk management.

5.2 Staff Development and Training

The challenges facing school districts today in providing a comprehensive staff development plan are two-fold. First, the challenge to provide students with opportunities to meet higher academic goals, requires teachers working together to design rich, student centered learning activities. Also prevalent is the challenge to provide administrative support personnel with adequate training to effectively use, manage, and support the technology deployed within their schools. To accomplish this, districts are striving to develop new and innovative professional development programs.

IBM acknowledges the vital importance of a comprehensive professional development plan for the growth and development of both students, teachers and administrators. In addition, IBM recognizes that an effective staff development plan must correspond not only to El Paso ISD's curriculum needs, but also to the needs and requirements of the support staff at each site who are critical to the day to day activities and success of the district. As a result of these needs, a multi-faceted approach to staff development is needed.

Instructional Approach

From an instructional viewpoint, the following is required: 1) identification of curriculum need 2) correlation between curriculum needs and the district technology plan 3) meaningful training for teachers to address their needs and correlation requirements and 4) professional development that contributes to measurable improvement in student achievement. One major goal of the staff development plan will be to use technology to enhance student performance and teacher productivity.

The IBM Project Team, in conjunction with personnel from EPISD, will work to build an extensive staff development plan and facilitate the implementation of new technologies into the EPISD curriculum. The following components would be recommended as part of instructional staff development plans:

- A needs assessment should be conducted at each building (by grade level) to evaluate current needs, levels of expertise, the correlation of existing material / technology with district expectations.
- District educational objectives need to be correlated to instructional software.
- Initial teacher training sessions should focus on orientation to instructional software and the alignment of software to district / state goals and objectives. Subsequent training to involve teachers in the assessment of student performance through the writing of rubrics and task analysis.
- Additional training sessions should address specific teacher needs and / or on instructional techniques such as the following: the use of the Internet as an instructional tool, the creation of student-centered learning environments, sessions on curriculum specific issues, techniques such as a center-based teaching

approach where technology is a vital and purposeful component, and the writing of lesson plans that accurately reflect teaching objectives.

- The training of key building personnel who can in turn mentor and train peers.
- The creation of a teacher mentoring program within the EPISD district which can focus on identified specific needs. The purpose of this program would be to promote collaboration and communication between EPISD educators.
- Follow up visits to schools to determine effectiveness of implementations and to observe technology and the student centered learning models in use. Follow up sessions would provide coaching and modeling of leading instructional practices.
- The creation of Standard Participant Guides used for all training that could include the following attributes:
    - Performance objectives for educators to achieve student results,
    - Hands-on activities to develop instructional software proficiency,
    - Self-assessment exercises for participating educators,
    - Integration exercises using district curriculum objectives,
    - Collaborative and communication activities.

Administrative Approach

From an administrative viewpoint, training must be provided to familiarize school administrative personnel with the technology and the software applications being utilized at their sites and throughout the district. The following are the key components we recommend as part of the staff development plans for administrative personnel:

- Provide a baseline set of introductory courses which include training on the Operating Systems and Office suite applications, Internet Navigation fundamentals, and other appropriate EPISD software.
- Conduct needs assessment to identify other training requirements for administrative personnel.

In addition to traditional classroom instruction, IBM's overall Staff Development strategy includes the use of other innovative modes of instruction. These include the following concepts which have been utilized and proven successful at other K-12 school districts:

IBM can investigate and develop curricula in multi-media format for continual use throughout the EPISD enterprise. This effort could include multi-media capture of live classes taught by IBM or EPISD personnel provided for teachers and other staff. This multimedia format can be made available for use on standalone workstations which have multimedia support. IBM will also investigate the benefits of producing these classes in VHS or CD-ROM format, if appropriate.

IBM can investigate and gather other potential sources of pre-produced and readily available multi-media training materials that could also be used in an on-line, multi-media training environment.

The overall goal of the Staff Development plan for EPISD is to utilize multifaceted and innovative approaches to learning to work toward using the most advanced teaching methods available to create an active student learning environment where technology is an integral teaching and learning resource in the classroom and to also create a productive work environment for other school personnel. IBM, as your partner will support El Paso ISD in this effort.

5.3 Project Management/Systems Integration

Managing and delivering complex technology projects can significantly strain a district's management and administrative resources. As a systems integrator, IBM Global Services provides its clients with a single point of contact for project responsibility and accountability. IBM takes fiscal, technical, and scheduling responsibility for all project tasks, and oversees the design and delivery of EPISD specific technology and services solutions.

IBM is responsible for delivering and managing all resources required for successful project delivery. Typically, systems integration projects are delivered by a combination of IBM and sub-contractor personnel, under IBM leadership. Solutions often include both IBM and non-IBM technologies and components. This approach allows IBM to deliver comprehensive and best-of-breed solutions.

IBM designs and delivers integrated systems by evaluating the client's functional and technology requirements from an enterprise perspective. The enterprise focus ensures that requirements are assessed across all functional areas and address user needs at both the functional and technological levels. IBM projects are delivered within a collaborative framework based on active participation by EPISD staff and joint ownership of project success.

IBM Global Services provides its clients with the resources and capabilities to successfully integrate complex technology solutions. IBM's strength and capabilities as a systems integrator are evidenced by our:

- Nationally available resources to design and deliver complex K-12 specific solutions and services,
- Highly skilled professional consultants and project managers who have a knowledge of education requirements,

- Enterprise focus in designing and delivering comprehensive solutions, and
- Ability to plan and deliver solutions and services through methodologies and processes designed to achieve desired results.

Project Management Methodologies

Regardless of project size or complexity, IBM Global Services utilizes proven project management and systems integration methodologies. These methodologies and processes have been developed and refined through years of experience successfully managing complex technology implementation projects across all market segments. IBM delivers project management as part of every engagement to successfully implement all of our projects.

IBM Global Services fosters a joint working relationship with the client and establishes a project team of both client and IBM team members from the inception of the project. The client possesses extensive knowledge on their legacy systems and "as is" processes. This information provides the fundamental base for assessment and design of the "to be" processes, system modifications and interfaces required to effectively implement new systems.

IBM Global Services has extensive experience executing projects of this nature. Our relevant experience includes systems development and implementation, information systems planning, process improvement and re-engineering and organizational change management services for many leading corporations and organizations across virtually all industries. Our experience managing projects for large school districts is demonstrated through the project descriptions in Appendix A. The major components of IBM's project management discipline are described below.

Project Management & Organization

Project Management is a key competency within IBM Global Services. IBM Project Managers must demonstrate their understanding and ability to apply IBM's project management methodologies and disciplines. IBM Project managers, who have chosen this career path, must achieve IBM Certification in the Project Management discipline. Qualifications for certification include managing multiple complex projects, attending methodology classes, demonstrated skills in use of tools, and contributions to the discipline of project management. Applicants must then complete a Certification proposal and present it to an internal IBM Certification Board for approval. This certification process ensures a professional, consistent, and quality delivery of project management support and services.

Each project is organized to provide the client and project team with clearly defined responsibilities, channels of communications, and procedures for effective project delivery and project control. Each project team is staffed and organized according to the client's solution and service requirements. An IBM project manger is accountable for the successful delivery of the solution, with the team members being responsible for specific tasks and deliverables.

Project Planning

Effective Project Planning is the most significant contributor to successfully managing complex projects. Successful project delivery requires a project plan, which details the required tasks, resources and schedule for achieving project objectives. Experience coupled with the use of methodologies, templates, and estimating models provides the intellectual capital to execute the planning process effectively. Utilizing these planning processes and disciplines in concert with several project-planning principles, provides the optimum opportunity to be successful. The planning principles that determine the content of an IBM project plan are:

- Plan the project in Phases
- Define the project Deliverables that will be created
- Define Roles and Responsibilities of project team members
- Estimate effort required to create deliverables
- Define Completion Criteria for each phase and task of the project and establish a Base Line from which to Manage Change

Project Execution

IBM project managers will work with EPISD management to develop a project plan with common understanding of expectations, scheduled milestones, and resource requirements. Project execution and implementation of complex systems requires dedicated and direct participation by EPISD staff, as well as IBM consultants, to ensure the solution is configured to address district specific processes and requirements. The IBM implementation team will work closely with EPISD to assure knowledge transfer. The implementation team will work together to develop EPISD ownership in the new system, integrate new processes, resolve implementation issues, and assist in deploying the new system.

The implementation of new systems requires a thorough review of existing processes and supporting policies and procedures. The functionality of legacy systems tends to dictate how an organization designs and implements their processes. Review and re-engineering of these processes and supporting policies and procedures is critical in transforming how people perform their jobs and to realizing the full benefits of implementing new technology solutions. Therefore, all projects must consider process re-engineering activities as part of the project plan and resource requirement.

Execution of a properly planned project involves applying the disciplines defined in the methodologies. Specifically, these include the management of tasks associated with the creation of defined Deliverables, assigning resources according to defined roles and responsibilities, achieve milestones defined in Completion Criteria, and managing project scope through the Change Control process.

Quality Assurance Procedures

Quality assurance processes are an important part of the IBM management controls. These processes include the following:

Proposal Quality Assurance - Every IBM Statement of Work is subject to a rigorous quality assurance review before it is presented to the client. This review is conducted by staff members, not associated with the marketing or consulting team developing the solution, who are accountable to IBM management for the success of the portfolio of projects. The review process evaluates such elements of the SOW as:

- The technical feasibility of the proposed solution
- Assessment of the project risk factors
- Definition of contingency plans
- Validation of the project estimates

Project Reviews - Projects of a size, duration, and complexity that warrants, are subject to Project Reviews. The first of these reviews occurs within eight to ten weeks after the start of a major project. The purpose of this review is to determine if the project planning process is being carried out effectively and to assess the effectiveness of the project plan. Additional reviews are conducted every three to six months thereafter, depending upon the status of the project. These reviews provide the project manager, IBM management, and the client management if appropriate, with an assessment of the project status. All reviews are conducted by IBM Systems Assurance staff that are not involved in, nor associated directly with the project. Therefore, there is an objective, unbiased assessment that determines "the health" of the project.

The results of all Project Reviews are documented and presented to the project manager by the review team. For any project problems identified by the review team, the project manager is required to immediately put a corrective action plan in place to resolve the defined issue.

An important measure of quality is client satisfaction, and IBM recognizes that we have an opportunity to delight or dismay our clients each time we deliver products, solutions, or services. IBM uses a number of methods to track and measure client satisfaction including:

- Transaction surveys conducted on significant projects.
- Semi-annual client satisfaction surveys conducted by client sales teams.
- Annual client satisfaction survey of a randomly selected subset of all clients.

Project Communications

Effective project communications is the responsibility of the project manager and requires the project manager to be attentive to all constituents of a project. It is the IBM project manager's responsibility to manage the expectations of all constituents through regular status reporting communications processes. This requires that project communications be:

- Often and regular, but not excessive,
- Relevant and informative, but concise,
- Consistent, and
- Factual and forthright, even if it may be "bad news".

Project constituents that must be included in any project communications plans are Client Users, Client Management, Project Team, Third Parties involved in project, and IBM Management. At the start of each project, a Communications Plan will be established in concert with EPISD project sponsor. Such plan will define when and how often Project Team meetings will be held; how often Project Status Reports will be issued by the project manager; and when and how often Client Management will be updated with the project status.

Many projects receive their strategic direction from a Client Executive Steering Committee. IBM welcomes and encourages the involvement of this type of committee, and will provide such committee with regular updates via formal presentations. Such a committee provides opportunity to discuss and resolve any project issues that requires management attention.

Project Change Control

IBM Global Services utilizes a formal project change control process to manage the project scope of work. This procedure provides a mechanism for evaluating proposed changes and their impact on the project scope, cost, resources and schedule. During the project planning process, both EPISD and IBM will agree upon the project "baseline". This baseline defines the agreed upon scope of the project and provides the reference point for identifying scope changes. Changes to this baseline may be initiated by either

EPISD or IBM. Such proposed changes are mutually reviewed to determine whether the identified change should be accepted, rejected, or deferred. This procedure will allow EPISD to make an informed decision based upon a detailed analysis of the impact the change may have on the project. Only changes approved by both EPISD and IBM will be incorporated into the Statement of Work, project plan and schedule.

It is IBM Global Service's business practice to identify and define all project elements and resource requirements as a part of the development of our Statement of Work. Therefore, change control will not be used as a means of minimizing initial cost, only to be increased during the project by change control procedures. In IBM's approach, change control is imposed only when there is a change in scope caused by identification of new or changing requirements that were not known when the SOW was developed.

Change Order Process

The following provides a detailed process followed if a change to the Statement of Work (SOW) is required.

- A Project Change Request (PCR) will be the vehicle for communicating change. The PCR must describe the change, the rational for the change, and the effect the change will have on the project.
- The designated Project Manager of the requesting party will review the proposed change and determine whether to submit the request to the other party.
- Both Project Managers (EPISD and IBM) will review the proposed change and approve or reject it. IBM will specify any charges for such changes. If the change is authorized, the EPISD Project Manager will sign the PCR, which will constitute approval for the additional charges. IBM will invoice EPISD for any such charges. We will determine the effect that the implementation of the PCR charge will have on price, schedule and other terms and conditions of this Statement of Work.
- A written Change Authorization must be signed by both parties to authorize the implementation of the investigated changes.

Project Management Experience with Large School Districts

IBM Global Services proven project management methodologies and processes have been developed and refined through years of experience successfully managing complex technology implementation projects across all market segments. Our experience managing projects for large school districts, as well as other industries, is demonstrated through the project descriptions in Appendix A.

METHODOLOGY FOR MEASURING RESULTS

IBM Global Services welcomes EPISD's objective of defining a process and methodology for measuring results, which represent the success of our partnership. IBM is committed to the principle that "you cannot manage what you cannot measure." IBM's management systems and measurement processes include the following:

Client Satisfaction - Client Satisfaction Surveys are solicited for every project competed by IBM Global Services. The results of these surveys are submitted to our corporate Client Relations Department, recorded, and monitored for improvement. Client Satisfaction results contributes to our management's and consultants' compensation.

Project Success Criteria - Every engagement and project conducted by IBM Global Services is evaluated to measure its success in several key areas as follows:

- Quality of plans developed for the project,
- Completion of the project on time,
- Completion of the project within budget, and
- Client satisfaction with our performance.

PROJECT COMPLETION CRITERIA

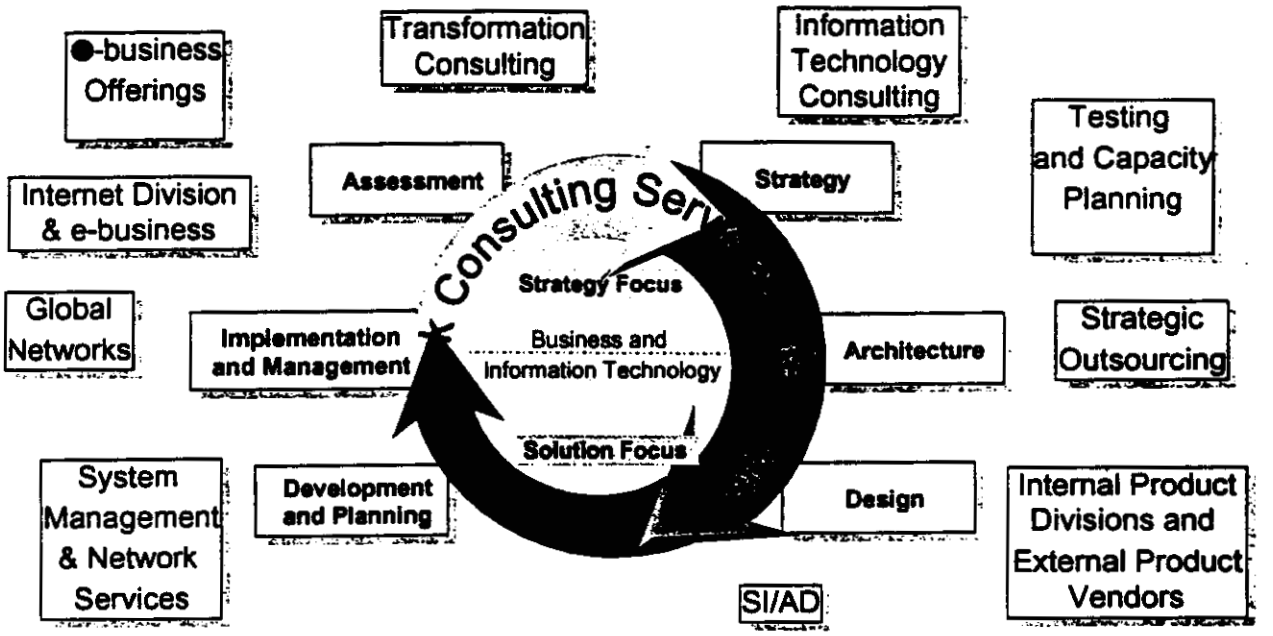
Every EPISD Statement of Work will contain Completion Criteria. Such Completion Criteria will define the specific achievements, deliverables and milestones that will allow us to mutually agree when the project is complete and when IBM has fulfilled its obligations.

In addition to the above standard measurements by which IBM Global Services can be evaluated, we propose that EPISD and IBM define additional criteria to measure the achievement of EPISD information technology objectives. These measurements can evaluate the service levels and value-add that the information systems organization is contributing to the EPISD organization, as viewed by the system users. Such measurement criteria can be defined by utilizing components of the IBM Information Technology Process Model methodology.

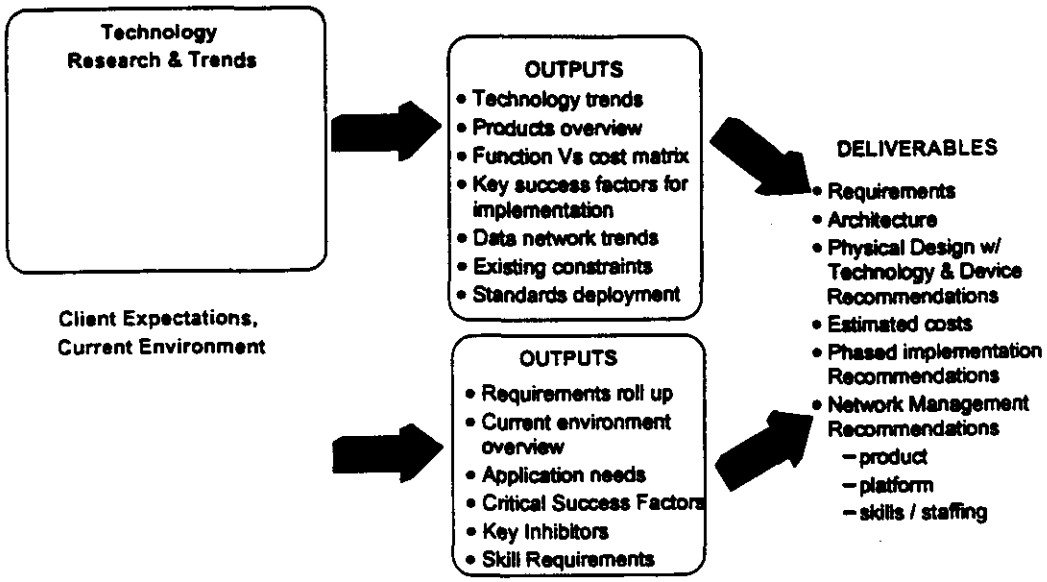
This model is a tool for assessing, measuring and managing the information technology asset. It is designed to address issues in complex technology environments, and provides an assessment of the management systems used within the information technology organization. It is a comprehensive process-based model for planning, investing, managing, and deploying the information technology resources.

5.4 Technology Solutions

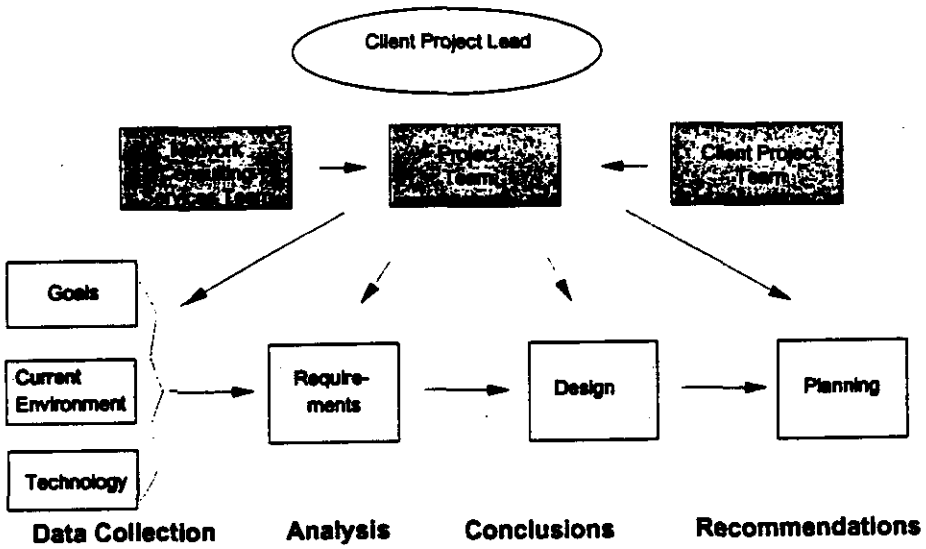
IBM's Networking Solutions services are anchored in a framework that ensures a holistic approach to analyzing network capabilities. This approach ensures delivery of Networking Solutions that fit into the context of a client's strategic interests and current needs.



IBM's engagement approach starts with fact gathering to make sure the IBM team has a realistic view of a client's network environment. This information is critical to the process of leveraging IBM's knowledge of technology trends to deliver real world networking solutions that fit tactical needs and leverage emerging technologies.



Even with a solution framework and a world-class understanding of technology trends, IBM realizes that the success of each project depends on collaboration with client teams. We provide a disciplined approach and critical expertise, and the IBM/client team delivers the right solution.



IBM can provide the expertise to implement and integrate leading edge systems in technologies such as video systems, voice systems, wireless systems, kiosks, and client/server computing systems. In addition, we can draw on expertise from our product laboratories, business partners, and the IBM Global Network to satisfy client requirements. Our approach is to utilize "best of breed" networking and computing system components, regardless of manufacturer, with adherence to open system standards wherever possible. This philosophy will allow a client to evolve from an existing infrastructure while minimizing implementation risks and maximizing the value of the client's I/T budget expenditures over the life cycle of a system.

This section is a general description of IBM's networking capabilities. Tasks identified in this section are included only to provide El Paso ISD with an understanding of the breadth of IBM's capabilities in this area. While capable of performing all those listed, IBM as a part of this response will only be performing those tasks specifically identified in the Statements of Work developed at the direction of EPISD.

Physical Infrastructure Plans

REVIEW OF EXISTING CONDITIONS

The design team can meet with a client's networking management and technical staff to assess and survey existing conditions, physical constraints and site-specific details. From this survey we can determine if any existing infrastructure can be reused or adapted to meet the new requirements.

We can determine new or existing field conditions, communication closet locations and server/computer rooms.

We can review existing conditions that can affect the implementation. This includes:

- Phasing considerations,
- Co-habitation of systems,
- Cut-over strategies,
- UPS, generator, electrical, and A/C considerations,
- Space planning and co-operations of systems,
- Redundancy, alternate and back-up plans, and
- Critical path and timing issues.

Benefits

- Sharing of information, problems, and concerns,
- Identify possible sources to be reused, and
- Observations by our experts may lead to better or alternative solutions.

DESIGN DEVELOPMENT

Once we understand a client's existing conditions, we can follow with a design development phase. Activities during this step include:

- Assess the overall project goals.
- Determine project phasing and general implementation process.
- Develop a design criteria report for infrastructure recommendations.
- Prepare designs that comply with all applicable codes and follow guidelines set forth by BICSI and the EIA/TIA 568, 569 and 606 standards.
- Develop solutions that are flexible, reliable, expandable and if required, redundant.
- Determine outlet riser types, quantities and locations.
- Determine communication closet and computer room sizes, layouts, and environmental requirements.
- Determine infrastructure materials, equipment and components.
- Determine the basic requirements for all aspects of the communications closet including wall space, rack space, ladder racking, electrical power circuits, UPS systems, grounding, cable raceways, riser conduit sizing, environmental controls, access control and code compliance.

Using CAD drawings, we can develop a set of plans and drawings showing:

- Device layouts,
- Outlet layouts,
- Equipment layouts,
- Room/space requirements,
- System power requirements,
- A/C requirements,
- Back boxes and mounting height requirements,
- Conduit and cable tray requirements,
- Electrical outlet types and kVA requirements,
- UPS requirements,
- Cable routing,

- Cable support systems,
- Scheduling critical paths and early room completions,
- Grounding, bonding and lighting protection, and
- System hardware and components.

We can review the design criteria report and design development drawings with the client for comments and approval.

Benefits

- A client's management and staff will have a thorough understanding of the infrastructure system before it is enhanced.
- The client will be involved in the materials and components selection.
- Knowledge of new and current technologies.
- Knowledge of standards and cost/benefit approaches.

Comprehensive detailed planning will:

- Encourage strategic thinking and strategizing,
- Allow for growth, flexibility and the future,
- Help future proof the network infrastructure,
- Reduce changes, revisions and unexpected additions, and
- Control cost and reduce risk.

CONSTRUCTION DOCUMENTS FOR NETWORK ENHANCEMENT

After the project design criteria, materials and quantities have been determined, this information can be transformed into a detailed set of construction drawings and specifications.

This includes translating the design development documents into construction specifications and drawings. These will provide detailed construction and installation instructions and specifications. Construction documents include:

- Plan drawings showing additional outlet locations, device locations, raceway locations, patch panel location and riser locations.
- Detailed drawings showing additional outlet description and patch panel front elevation layouts.
- System wiring diagrams.
- Riser diagrams.

- Detailed front elevations of punch down blocks and distribution frames.
- Racks and equipment layouts and elevations.
- Outlet and cable labeling scheme.
- Project manual with three part specifications detailing general requirements, specific requirements and products and execution.
- Bill of materials.
- System specifications.
- Requirements and performance specifications.
- System diagrams.
- Patching, cross-connecting and commissioning specifications.
- Maintenance and warranty.
- Testing and certification.
- Schedule.
- Implementation procedures.
- Qualifications training.

Benefits

- Management of the process by IBM.
- The entire project team will understand and have a roadmap of what is to be built and the specifications that must be met.
- Documents can be used to track and monitor the installation and schedule.
- Documents can be used to identify user connectivity, user locations, labeling, layouts, equipment placement, etc.
- Documents can serve as a roadmap to what was built and where cable was placed. This is valuable for future adds, moves, building renovations and additions.
- Controls cost and reduces risk because everyone has a thorough understanding of what can be built and how it can be built.

ADMINISTRATION OF INFRASTRUCTURE ENHANCEMENTS

When it is appropriate to add infrastructure enhancements to support additional network technologies, IBM can assign a professional certified cabling system contractor to manage the installation. The contractor will follow all plans and specifications. Activities to be performed could include:

- Develop a detailed construction schedule, including all activities, milestones, phasing, and critical path criteria.
- Review a submittal and shop drawing process.
- Review and oversee the submittal process. Review shop drawings, issue comments and give direction as required.
- Develop an overall phasing plan to track construction renovations and additions.
- Hold construction project meetings with the contractor, network managers and other participants.
- Provide project construction administration and phasing coordination for the communication, electrical, A/C and security systems throughout the construction process.
- Track the contractor's progress. Verify the installation meets industry standards, the drawings and specifications.
- Provide meeting minutes for all meetings.
- Provide necessary documentation for conflicts and coordination issues that may arise during construction.
- Review and monitor testing and certification processes.
- Certify and verify the enhancements to the infrastructure.
- Provide warranty and final as-built drawing documentation.
- Provide a complete system patching drawing and documentation.

Benefits

- Single point of contact for construction implementation and coordination. This saves the client time and gives a single control point for management.
- Coordination of various team members, contractors, facilities management, etc. to address integration, coordination, phasing, cutovers and external service provider issues.
- Monitor, track and maintain the schedule to ensure the project is on time.
- Monitor, test and certify the system so that it meets industry standards. This ensures that any future system or hardware purchases can function to the standards and specifications, thus reducing long term risk.

INTEGRATION WITH ARCHITECT'S DESIGN PROCESS

Whether a client is building a new or renovating an existing facility, IBM can integrate our services with the architect's design process. Our approach can:

- Work along side the architect's schedule, incorporating the system's technology into the overall building design.
- Employ our broad skills in mechanical and electrical building systems engineering to assist in the systems coordination and requirements process.
- Work with the architect and attend coordination meetings. We can coordinate with team members for space requirements, electrical, power, lighting, lightning protection, UPS and emergency power requirements, power outlet requirements, conduits, cable tray needs.
- Import CAD floor plan documents into our system for space and layout coordination.
- Prepare BTU heat load list of our specified equipment per room and coordinate with team members.
- Coordinate with the design and programming project schedule. Provide input early on in the building design/programming phase.
- Provide electric outlet types and locations for coordination.
- Track these activities using our Scheduling tools.
- Provide equipment sizes/locations, closet locations, communication system device locations, and outlet locations on CAD files for coordination.

Benefits

IBM works closely with clients to integrate our work within the context of any architectural plans for new or renovated schools. This will help to alleviate possible re-work or inconsistencies.

INTEGRATION OF USER INPUT

The Client Project Team members and users input and involvement is vital to our understanding of a client's methods and system uses in order to design the most effective infrastructure systems. We can:

- Meet with users to understand client concerns, goals and requirements.
- Understand the current conditions and system operations.
- Survey existing equipment and how systems are used.
- Present current or new technology solutions for review.
- Provide suggestion, alternative solutions and recommendations.

- Look into future needs and expansion requirements.
- Discuss costs and budget issues.
- Share information so the client can provide feedback about proposed systems.
- Come to a collaborative decision on the best design or system approach that meets client needs.

Benefits

- EPISD is actively involved and end-user acceptance is consistently sought.
- Infrastructure findings, recommendations, and impacts are validated

MECHANICAL AND ELECTRICAL DESIGN

Our Mechanical and Electrical Design services include the following:

- Design modifications to base building HVAC systems. This includes supplements to the based building ductwork and SWUD units for high-density areas, addition of auxiliary HVAC units for Data Center and telephone room, and modifications to cooling towers and pumps.
- Design modifications to electrical systems, including electrical distribution system.
- Standby power distribution system, including an emergency generator.
- Telephone raceway distribution system.
- Emergency power off system in data center.
- Circuiting for lighting fixtures, receptacles, power outlets and building related equipment. (Layouts by Architect)
- Fire alarm system including ADA compliant horn/strobes connected to base building system.
- Smoke detection system for Data Centers, closet locations and communications rooms.
- UPS including batteries and distribution system.
- Equipment connections to all building related equipment including upgraded and auxiliary HVAC units, pumps and cooling tower fans.
- Upgrade base building electrical system to handle high-density electrical requirements. (Limited to equipment down stream of building busway.)
- Provide Design for a dry pipe pre-action sprinkler system for the Data enters.

Benefits

- Electrical and mechanical systems designed to support communication systems reduce down time.
- IBM has a proven record of designing coordinated systems that work together.

SECURITY SYSTEM DESIGN

Our Security System services include:

- Meeting with client staff to define requirements.
- Reviewing floor plans to present various systems options available.
- Developing diagrams and device-location floor plans to determine systems needs.
- Developing and presenting proposed systems design and equipment selection for review and approval
- Consulting with state and local authorities having jurisdiction over the project to determine code compliance.
- Prepare biddable construction documents, including originals of drawings and finished reproducible technical specifications suitable for construction.
- Coordinate the bid process.
- Provide construction administration.

Benefits

- Protecting property and people.
- Security systems are designed with client goals in mind.

Network Planning and Design Services

Our planning and design services follow a structured methodology that was developed around our unique approach to business problems. This methodology enables us to quickly analyze a client's current environment and identify areas for improvement. Once we fully understand, we can then begin designing the necessary functional and technical solutions required to put the client and their information systems on the road to increased productivity, reliability and usability.

Typical planning and design services include, but are not limited too:

- Needs Analysis,
- Network Design,
- Strategic Planning,
- Network Centric Services,