



Capabilities Overview & Experience

Minneapolis, MN
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Technology Management Corporation

Overview

Founded in 1987, TMC is a professional IT Consulting & Low Voltage Design firm serving clients with public and private sector projects, as well as architects and design professionals nationally and internationally. Our top caliber team of consultants each have over 30 years IT and Low Voltage experience.

Our client verticals include Enterprise, Healthcare, Government, Education, Sports, Entertainment and Aviation.

We are a certified women-owned, small business with multiple agencies throughout the United States.

Why Choose TMC?



Experience & Knowledge

With our years of experience, we understand each technology system, what the client needs and how it all fits together to maximize efficiency and reduced costs for the client.



Significantly better pricing

As expert technology contract negotiators, TMC creates a competitive bid process that gives the client the best possible pricing and terms.



Single Source of Accountability

With a maze of vendors, services and equipment, TMC oversees all aspects of the technology & low voltage scope, from design and full documentation to the RFP process to construction administration and system implementation.



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Our Services



Services:

- IT/AV/Low Voltage System Design, Spec, Bid & Project Management
- IT Upgrade, Design & RFP Process
- IT Strategic Planning & Roadmap
- Telecom Cost Audit & Negotiation

Technologies:

- Fiber/Copper/Cable
- Voice/Data/WAN/LAN
- IP/Phone Systems
- Data Center/Telecom Rooms
- Wi-Fi & Wireless Networks
- DAS & Radio Systems
- CCTV & Access Control
- Audio/Visual/Multimedia
- ERRC Testing
- Sound Masking
- Digital Signage

A few of our previous clients:

- US Bank Stadium
- Target Center Arena
- TCF Bank Stadium
- Mystic Lake Casino
- MN K-12 Public Schools
- Best Buy
- Deluxe Corp
- Carmichael Lynch
- Sioux Falls Federal Courthouse
- Miami Federal Courthouse
- City of Minneapolis
- Hennepin County
- Orlando International Airport
- Minneapolis-St. Paul Intl Airport
- Sioux Center Community Hospital
- Skagit Valley Hospital

I. Firm Profile

A. General Information

Technology Management Corporation is a professional technology consulting firm serving clients with public and private sector projects, as well as developers and design professionals throughout the United States and Internationally. TMC has specific depth expertise and experience in all IT systems including copper and fiber cable infrastructure, A/V, VoIP/IP and Unified Communications, security systems, Telco/Carrier services and Wide Area Network (WAN), Local Area Networks (LAN), server rooms, Wi-Fi, wireless coverage and specialty user technology systems.

About Firm/History:

Established in 1987

100% certified WBE, DBE and SBE

Offices in Minneapolis, MN and Tampa/Clearwater, FL

II. Project Types

A. Vertical Types:

Healthcare & Hospitals
Aviation & Transportation
Municipal & Government Facilities
Office Buildings
K-12 & Higher Ed Buildings
Sports Facilities
Residential & Mixed Use
Commercial, Retail, Hospitality

B. Scope Types:

New Facilities/Buildings
Relocations
Renovations & Tenant Improvements
Master Planning
Technology upgrades

III. Professional Services

A. Design/Technology Disciplines in the following areas:

Voice/Data/Cabling/Fiber Infrastructure
Data Centers/Telecom & Server Rooms
Voice Systems
Paging & Sound Masking
CCTV & Access Control
Audio/Video Systems
LAN, WAN, Wi-Fi
Cyber Security
Nurse Call & Public Address Systems

IV. Project Process

A. Design Approach:



Our team follows the standard architectural phases of Pre-Schematic Design, Schematic Design, Design Development, Construction Documents, Bidding, Construction Administrative and Commissioning. Examples of deliverables for these phases are listed below:

- Pre-Schematic Design and Schematic Design
 - Technical Requirement Standards moving forward
 - Standard check list for use in inventories and gap identification
 - Standard design recommendations for technologies
 - Rack and cabinet elevation schematics
 - Inventories of IT gear
 - Identification of which TRs house major systems
 - Completed checklists of all technology spaces
- Design Development
 - Rack and cabinet elevations
 - Completed check lists of all technology spaces
 - Budget Estimates for chosen technologies
 - T Layer Drawings and Technical Requirements
 - Coordination on plans and mark ups of Drawing Set
 - Coordination between IT and Engineering/Construction Specifications
- Construction Documents
 - Completed Prioritization of technology levels based on budgets
 - Budget Estimates for chosen technologies
 - T Layer Drawings and Technical Requirements
 - Coordination on plans and mark ups of Drawing Set
 - Coordination on Engineering/Construction Specifications
 - Transition Phasing Plans
- Bidding
 - Facilitate bidding process
 - Required Addenda input
 - Technology vendor evaluation input

- Construction Administration and Commissioning
 - Budget tracking for technology upgrades
 - RFI Response input
 - Submittal Reviews
 - Observation & survey Reports
 - Punch Lists and completion of including reports on test results

V. Value Adds

A. Teamwork/Interdisciplinary Coordination

Our team's experience includes not only technology professionals but also technologists with degrees in architecture, electrical engineering and facility management on large scales. This cross training allows us to coordinate in a unique manner with all of the disciplines that exist at a new facility. Our IT consultants and Project Managers are able to foresee potential coordination issues and address them before they become issues or problems. This experience will help mitigate any project inefficiencies or ineffectiveness in performing the tasks and deliverables required.

B. Technology Lead Times, Supply Chain & Product Substitutions

We manage RFIs and CO requests to minimize financial impact, product substitutions and project timeline extensions due to consistently expanding supply chain challenges. We are in constant communication with all the major manufacturers and dealers, and have many other projects at all phases of the CD and CA portions of a project, this has allowed us to get accurate predictability on what systems and what products are moving from standard intervals to half-year and longer delivery challenges. As a result, we know way in advance when and if product orders, product substitutions need to be places and how to break out pre-ordering equipment. This has become a game changer for ensuring that IT isn't the hold up on multi-phase, multi-stage projects. This has even required changing the way legal contracts with vendors are worded to ensure the customer isn't stuck with a lack of product and an extensive cost overrun. Our knowledge, connections and daily updates are so extensive from these vendors and integrators that we are like an insurance policy in our scope.

C. Accelerated/Phased Project Delivery

Our team can accommodate an accelerated schedule as required to keep the project moving forward. We will want to coordinate on the technology lead times and also the technology systems which are required to install along with the construction phases and those that are installed at project completion. Examples of this are technology systems which are replaced with newer models at lower prices; we will always ensure that the best technology solutions are accounted for and not "end of life" models because they were purchased too soon (VoIP gear, the LAN equipment, Wi-Fi Access Points, certain AV and camera equipment are other examples).

D. Single Source of Accountability & Fully Managed RFP Process

Our RFP pricing methodology ensures that vendors fees can be held to the fire for initial bid clarification and award, product substitution, restocking and credits, level playing field on discount application and labor rates and estimate of hours to perform all required scope. We receive significantly better pricing for client, than they would for themselves due to the fact that we have worked with all major vendors over the past 34 years and they know we go above and beyond for our clients to get them to best terms and pricing. We fully manage the RFP process and is the point of contact for all inquiries and questions so this doesn't create more work for the client directly, and they can keep doing their regular job functions. Our RFP and specification writing expertise on any given projects results in far fewer questions from the vendors and a great possibility of the bid pricing coming in on or under budget despite the current purchasing environment.

E. Agency Consultation/Approvals

Our team will be working alongside the entire design team; we will have approval steps along all major milestones 25%, 45%, 75%, 90% and 100% reviews, wall reviews and coordination meetings. Our extensive use of CAD/Revit allows us to spot issues between the architectural layers and resolve them immediately.

F. Construction Administration

Our team is local, we will be on site for the meetings and able to easily handle all walk thru, inspections and on-site meetings. We know all of the local and regional vendors for all technologies and have worked with all of them on construction projects. In addition, we have all standard architectural approvals in place such as RFIs, FOs, COs, etc. to ensure the checks and balances stay in place for all construction and also financial replaced issues.

G. Quality Assurance Plan

Our specifications have extensive testing and detailed specifications to ensure all systems are correctly installed and operational. We have checklists and inspections built in to all phases of the project to ensure we are well coordinated with the other disciplines and that all architectural concerns and technology concerns are all met. As long term, seasoned technologists we have been through thousands of construction projects and we are well aware of what works on paper and what works in the field for all areas of technology.

Project Case Study



Client

Metropolitan Airports Commission (MAC)
Minneapolis-St. Paul International Airport
Overview of All Projects
Location: Minneapolis, MN

Project Background

The MAC in its ever-expanding mode of the MSP campus has been working with TMC over the last 17 years on projects which include the following multi-year projects:

Capital Improvement Projects:

Multi-year; multi-phased funded projects; under which TMC provides Project Management; technology design/build, T-Layer drawings and specification through construction including working with all parties in the project, ensure construction remained on time and within budget. Managed the change process to accommodate field changes as required. TMC also managed IT spend to ensure staying within budgets. CIP projects include:

- Campus wide fiber network (expansion; design/build)
- TR standardization including developing TR Guidelines for TR project for both existing & new TRs as constructed
- Data Center design/build
- CCTV/Security includes design and expansion of security cameras across MSP campus
- Wireless network project includes design and expansion of wireless access to MAC network for MAC staff provide technology design, T-Layer drawings and specifications through construction administration for projects

Public Procurement Projects:

TMC developed design and specifications; RFP terms and conditions; bid process; analysis/recommendations of proposals and bids; implementation management. The following were projects under public bid:

- Centrex to PBX to IP Telephony
- Wi-Fi – public and private
- Multi-carrier DAS
- WAN infrastructure
- Way-finding and interactive digital display
- Data center build including fiber/copper infrastructure
- Data center equipment refresh and replacement for entire data center

Project Case Study



IT Department Operational Projects:

TMC worked directly with MAC IT on strategic projects including:

- Strategic Planning
- Wireless/BYOD Policies
- LAN infrastructure
- PCI compliance and elimination of fines
- Cyber security (CSIRT Program)
- WAN for voice/data/internet

Results

TMC has provided project planning, project management, design, support and IT solutions over our 17 years working with the MAC on all of these projects.

- Correctly sized data center with access control/CCTV in place by cabinet and function
- Standard IT designs, policy/procedure and approvals for all data centers, TRs/node rooms
- Campus-wide public Wi-Fi, private Wi-Fi
- Campus-wide voice communications
- Self-healing fiber rings for entire campus

Project Case Study



Client

Greater Orlando Aviation Authority
Orlando International Airport

Overview of all Major Projects over the last 6 years
Location: Orlando, FL

Project Background

TMC holds its second 5-year IT Professional Services Contract at the Orlando International Airport. While Orlando International Airport IT Department continues to handle all systems to service almost 50 million passengers in 2018, it also completed a state-of-the-art Transportation Facility serving visitors arriving for Disney World, Epcot Center, Universal Studios, NASA Space Center and all other local/regional attractions. Orlando International Airport is now in the process of a multi-year building of a 1.8 billion-dollar, 300-acre, new South Terminal.

The major projects underneath this contract have included:

- Standardization for 200 network infrastructure communication rooms throughout the airport facilities in support of all mission critical systems such as CCTV, Access Control, fiber/copper, LAN, Wi-Fi, Common Use and Airport Systems and all other systems including:
 - On-site room inventories of network and documentation for GOAA's Top 50 Rooms
 - Surveys of each communications room to document all conditions
 - Develop budget estimates for top priority Communications Rooms
 - Plans and specifications for the work to be performed. Assist with the creation of the specifications and associated drawings for release of bid documents
- IT Systems Back Up Replacement requirements definition, sizing, design, spec, training and TCO plus award to Commvault
- Load Balancing Replacement design, spec and award to F5
- Core Firewall replacement and implementation of redundant Palo Altos
- IT Network Operations Center requirements and implementation including ServiceNow application development
- Campus outside plant duct bank fiber design and expansion to close the fiber ring
- Triple MPOE facilities, design, site selection, specifications and bid documents for each facility with capabilities for 6 diverse carrier cages plus GOAA server rooms to serve the entire airport
- Small Business Department cellular application requirements and recommendations
- Airfield, long haul Wi-Fi design, specification and RFP
- On-site Hyatt Hotel Wi-Fi heat mapping, design, specification and implementation drawings

Project Case Study



- PCI DSS v2 gap remediation tasks/deliverables and IT/IT security policies, standards, procedures, and guidelines documentation
- Design, specification and bidding for conversion of paper process for all concessionaires to full electronic Merchant Processing
- Redesign of Security Badge payment system and PCI compliance
- Creation of full CSIRT plan, policies and procedures, training, implementation and roll out of CSIRT
- QSA assessment and audit
- IT staff augmentation for: IT NOC, IPT, ServiceNow development, PMs, CCTV design, SharePoint, Structured Cable standardization, documentation and PM

Results

TMC accomplished the bullets using standard, best practice IT design, TCO, ROI tools.

- Prioritized list and standard designs for support of all network comm rooms for the entire facility, created costs for remediation of all IT systems involved, compiled documentation of Communications Rooms
- Achieved PCI/DSS compliance to process credit cards airport wide
- Complete design and specification of new communications duct bank to provide data service to the tenants who are located on the west side of the campus
- Triple MPOEs for capacity for 6 Telco carriers and authority fiber and IT infrastructure to feed the entire campus of the international airport
- Full long-haul Wi-Fi analysis, design, specifications and RFP to bid for coverage of the entire GOAA campus
- Hyatt Hotel Wi-Fi design and specifications to ensure 100% coverage
- State-of-the-art IT backup facilities
- State-of-the-art IT load balancing
- State-of-the-art IT firewalls
- BIA, BCP, CSIRT

Project Case Study



Client

City of Minneapolis - New Public Service Building
Location: Minneapolis, MN

Project Background

The City of Minneapolis contracted with TMC to provide the follow services to the new Public Service Building project. This new 13 story building is facilitating the consolidation of many leased spaces all across the City into one state-of-the-art facility to enhance the servicing of the citizens, consolidate and enhancement of the Police facilities and IT:

- Low Voltage Strategist/Advisor Consultant - develop City's objectives and strategies for all IT systems, oversee and coordinate all IT/AV, Security, confirm interface between systems, conduct peer review of MEP/Arch IT adjacent design.
- IT/AV Low Voltage Design Consultant – design, specification and bid documents, award recommendations and construction administration of all IT systems.

TMC handled all IT aspects and was interconnected amongst the disciplines of Architect, MEP, Client Facilities/Real-estate, Client IT, Owner Rep and Construction Manager to properly design and coordinate the project, clearly define responsibilities and ensure each discipline's scope of work properly aligned to the City's level of expectations.

The scope of the project encompasses the following technologies:

- Voice/Data/Telecommunications structured cable
- MPOE/MPOP/APOP/ outside plant fiber and copper route diversity, capacity planning and legal documents and MOUs for collaboration with County, US Bank Stadium and State-wide law enforcement agencies
- Broadcasting and News Channel connectivity and upgrades to fiber delivery capability for building and connectivity to other key government buildings in the downtown area
- Telecommunication Rooms (TRs) layouts, standards, rack layouts, capacity planning and utilization for all alarms systems
- Data Center/Server Room/ DAS Room planning, layouts and design, generator and UPS capacity planning
- Wireless Local Area Network (WLAN or Wi-Fi)
- Cellular Distributed Antenna System (DAS) for both Public Safety and Cellular
- CATV
- IP Telephony system – digital to SIP design, bid negotiations and implementation
- CCTV and Access Control peer reviews for physical security
- Audio/Visual (A/V) Presentation Systems including video projectors and screens, monitors, collaboration technology such as interactive whiteboards, digital signage, LCD and plasma flat screen displays, mounting hardware, video distribution amplifiers, switchers, scalers, audio Digital Signal Processing and amplifiers, speakers, wired and

Project Case Study



wireless microphone systems, assistive listening systems, control processors and touchscreens, wall plates and input/output outlets, equipment racks, and cabling and TV Distribution

- 800 MHz Radio System (Fire Radio Coverage, ordinance)
- Allied Radio Matrix for Emergency Response (ARMER, Public Safety Radio System), BDA and DAS systems as needed in conjunction with above fire ordinance
- Police interview rooms and evidence spaces which require specialized equipment
- IT multimedia training facilities and Help Desk IT Support Bar
- Specialized software systems such as 311, Public Service Area (Electronic Management Software and Qmatic), Police specialty software

Results

This project is not complete but, to date, TMC accomplished the below bullets using standard, best practice IT design, TCO and ROI tools while ensuring that all design decisions contribute to a building of the future due to the City requests for buildings of this magnitude having a 50 plus year lifespan.

- Utilization of the current US Bank Stadium Multi-carrier DAS verses building dual new DAS systems
- Collaboration of the inter-city outside plant fiber routes giving project savings
- Agreement to move off of digital voice communications which have been end of life for many years and implementation of SIP
- Agreement to move to a single structured cable infrastructure serving voice, data and video saving on extensive, obsolete and costly cable runs
- Elimination of analog systems which were originally intended to be moved to the new state-of-the-art building for digital signage, AV, IPT, CCTV
- Standardization and coordination of drawing layers between MEP and IT to ensure accurate bids and costly Change Orders do NOT occur
- Decrease of almost 50% on the Voice Communications System despite single source vendor

Project Case Study



Client

Minneapolis Public Library
Location: Minneapolis, MN

Project Background

TMC teamed with the Library to relocate the entire central library from its current site to the Marquette Plaza to allow for demolition and new construction of the permanent facility.

The New Central Library is on the same site as the previous library so TMC had to plan, design, implement and relocate the library to an interim location and repeat the process for the New Central Library - all without a moment of downtime.

This project consisted of three parts including the interim relocation, the new construction and the voice system upgrade.

Interim Relocation:

- Utilization of and evaluation of all current technologies to allow for re-use where possible to allow for the purchase of new technologies for the next phase of building the new Central Library. Creation of budgets and schedules for the interim location for the following:
 - Copper and Fiber Infrastructure
 - Telecommunications System relocation and implementation
 - WAN relocation and interim connectivity
 - Server Room Design and Layout
 - Security system design and implementation
 - Relocation of all current servers and PCs to the interim facility

New Construction:

- Envisioning the library of the future and evaluating how well current technologies meet existing needs in order to create a budget and schedule for the interim and permanent locations for the following:
 - Copper and Fiber Infrastructure
 - Telecommunications Systems
 - Wireless Voice & 802.11 Infrastructure
 - Server Room Design and Layout
 - Audio Visual Technology
 - Learning Technologies
 - WAN connectivity
- Designing the cabling infrastructure and general building design consultation

Project Case Study



- Creating RFPs for the above technologies, fielding questions, evaluating responses, negotiating contracts, and selecting vendors
- Managing the implementation of new technologies, the relocation of existing technologies, and interim solutions

Voice System Upgrade:

- Trusted advisor and lead diagnostician in the areas of IP addressing and routing, wireless VoIP and network traffic analysis
- Tested wireless VoIP throughout the entire facility, established minimum performance levels for all locations, tested to identify those locations that did not meet minimum performance levels, adjusted Access Point (AP) transmit levels and tested new AP mounting methodologies
- Conducted planning sessions to identify weak points in current IP addressing and routing schemes and lay out remediation to be implemented by Library staff. Oversaw implementation during off-hours and ensured that remediation efforts were successful and had not introduced unforeseen problems

Results

TMC achieved the following success:

- Successful design and implementation of cabling, voice, server room, security technologies, which are able to accommodate changes/migration to new technology in the next phase
- Minimal impact on the library facilities during the entire relocation process
- Successful design and implementation of cabling, voice, wireless, computer room, AV, which are able to accommodate changes in new technology
- Minimal impact on the library facilities during the entire relocation process as well as the new facility construction and opening
- Identified and implemented application and firewall changes that resolved the application connectivity problems at no additional cost to the Library
- Resolved over 65% of the Wireless VoIP locations that did not meet performance standards at no additional cost to the Library. The remaining 35% would require either fabrication of a new mounting system or additional AP's
- Developed and oversaw the implementation of revised IP addressing and routing configurations that reduced the complexity of the network

Project Case Study



Client

US Bank Stadium
Project: IT Systems for New Stadium
Location: Minneapolis, MN

Project Background

Technology consulting in support of new construction of the multi-use US Bank Stadium which held Super Bowl 52.

- Data Center and Telecommunications Rooms layouts and elevations; LAN Design
- Converged IP Data Network all hardware – routers, firewalls, switches, servers – to support approximately 10,000 IP enabled devices for the new stadium
- Wi-Fi System with High Density coverage, APs, antennas, controllers
- IP TV system feeding over 2,000 IP TVs
- IP Telephony System
- Design, capacity planning, full specification creation, bidder analysis and negotiations of bids and implementation project management.
- Conduct full assessment of risk levels for FEMA designations, crowd control, compliance of interaction between all security groups such as FBI, City Police, private security details, etc. along with Press and operations.
- Determination of levels of redundancy for full operational needs, placement of IT equipment for survivability and risk mitigation.
- Clarifying information and creating an “apples to apples” comparison for Review Committee; driving a truly viable comparison of vendors offering the same platform.
- Implementation of IPT system will follow construction readiness.

Results

This project involved coordination of the politicians, NFL executive team, architectural team, MEP team, Owner Reps, Broadcasters, all major network television stations, CIA, FBI, Homeland Security, MSP Airport IT and Police, City staff and other design team members. Given all of the coordination, emergency timelines, changes due to the award of the Super Bowl 52, we were also able to accomplish:

- Robust 140GB LAN infrastructure speeds
- IP Telephony with full UC/UM and presence
- High Density Wi-Fi for Super Bowl capacity of 85,000 users
- 1,300 HD Wi-Fi access points (expandable to Washington Ave, 5th Ave, 8th St & I-35) and 850 DAS antennas
- Facility-wide IP TV feeding all public and team/facility areas of over 2,000 4K HD IPTV large format monitors

Project Case Study



- Dual data centers and WAN carrier connectivity for full broadcasting and crowd Facebook, social media and interaction for all concessions
- Stadium platform is Cisco's Digital Network Architecture, and it uses Cisco Connected Stadium Wi-Fi for a high-density wireless network
- Over 9,000 ports (devices) report to the stadium LAN
- Cisco access lights carried over the LAN
- 700 Cisco handsets for the phone system
- 1,200 access points on the high-density Wi-Fi side
- Six - 10 Gbps circuits coming into the stadium
- 550 miles of fiber into the stadium
- 6,200 miles of Cat6 Ethernet copper wiring into the stadium
- 1,200 antennas for DAS
- 122 additional new or enhanced AT&T cell sites and 230 Verizon small cell sites in the Minneapolis-St. Paul-Bloomington area
- New DAS systems at 16 locations throughout the area, including at nearby hotels, mall of America, arenas and convention centers
- MatSing (short for multi-beam base station antenna) balls aloft, each carrying dozens of cellular antennas for ground cover
- New neutral host DAS at the Minneapolis-St. Paul International Airport with new 4G LTE coverage in tunnels, to boost Verizon's network capacity at the airport by more than 1,000%
- An estimated (depending on how the usage was counted) 15 to 24 TB for one day inside the US Bank Stadium itself successfully delivered

Project Case Study



Client

Lakewood Health System
Project: IT for Entire Hospital
Location: Minnesota

Project Background

Lakewood Health System built a 25 bed, 136,000 square foot replacement hospital and clinic valued at approximately \$36 million. The old hospital continued to be used as the long-term care facility and also provide Computer Room support for the new facility. The goal was to be seen as a technologically advanced healthcare facility that uses technology in a practical manner to invite, educate, and service their community.

TMC's role included:

- Determine what technology will meet Lakewood Health Systems Goals
- Estimate the technology costs & effort needed for the construction period
- Prioritize technologies & create current & future implementation strategies and master budgets for multiple areas of technology, including:
 - IP Telephone System & IP Wireless Phones
 - Wireless Data – Data, voice, fiber, copper
 - Data backbone & Wide Area Network
 - Security & Public Address
 - Audio/Visual - Kiosk and way finding

Results

TMC designed and oversaw implementation of the information transport system including structured cabling and fiber, new core and edge switches and expanded wireless coverage. TMC also designed and oversaw implementation of the IP telephony system and integrated it into their existing site. There was successful implementation of audio-visual systems in two training rooms and the board room, successful implementation of the IP TV system and successful implementation of the security system including; access control, video surveillance and intercom.

“TMC brought a high level of expertise and experience to the project which not only saved time and money, but provided for a flawless move. I would highly recommend TMC to anyone.”

-JoEllen Enerwald, Director of IT

Project Case Study



Client

Sioux Center Hospital
Location: Sioux Center, IA

Project Background

Sioux Center Hospital awarded TMC the low voltage engineering services for design and construction of their new hospital and clinic facility as well as integration of services with their remote locations. Systems included network/IT, building automation, security/access control, nurse call, Vocera, patient tracking, overhead paging, AV, CATV, wireless clocks and DAS.

Other technologies added to the Scope included new radio tower, patient tracking system, migration from Centrex to on premise IP telephony system to support all 8 campus locations.

- Estimate the technology costs & effort needed for the following technologies:
 - Cable infrastructure
 - Wireless: DAS, Wireless Network and M2M monitoring
 - Nurse Call System and Infant Protection
 - Physical Security
 - Voice Communications System migration from Centrex to on premise IPT system
 - Enhanced Audio/Visual systems; adding Room Scheduling System
 - Two-way radio tower designed and built
 - New data center
 - Fiber design and build for greenfield site
- Manage the procurement process via RFP process for the above technologies
- Field all vendor questions and accurately evaluate vendor responses
- Recommend preferred vendors & systems and negotiate final contracts
- Provide implementation project management for all technologies

Results

The TMC team worked with the entire hospital and clinic project team, including hospital staff, the hospital architect, the general contractor and the hospital's owner's rep from the Walker and Associates in Minneapolis MN. Bring all technologies implemented on time to meet tight schedule deadlines. Successful implementation of all technologies including project additions and scope enhancements. New data center infrastructure with increased resiliency.

Project Case Study



Client

Minnesota K-12 Schools
Project: IT Consulting & IT Infrastructure

Sartell, MN Middle and High School
Lake Benton Schools
Le Sueur Schools
Lyle Public Schools
Howard Lake Schools
Rosemount Schools
Lake Crystal Schools
Mankato Schools
Cannon Falls Schools
Osakis Public Schools
Rocori Public Schools
Triton Public Schools
Ashby Public Schools

Project Background

TMC was brought in the help Dolejs Engineering on engineering and technology for projects for schools throughout the State of Minnesota. This included additions, remodeling and new school facilities. TMC provided low voltage technology consulting in the areas of voice communications, security and structured cable infrastructure.

- Cable infrastructure for CATV, voice, data and wireless
- CCTV and security systems
- Replacement of older phone systems
- LAN equipment
- Creation of all specifications, bid reviews and recommended awards
- Shop drawing review and approval
- Telecommunications Room layouts, power requirements and rack elevations
- Server Room layouts, power requirement and rack layouts as required

Results

TMC fully tested and standards compliant infrastructure and established a reliable and flexible infrastructure to accommodate future growth and technology. TMC confirms maintainability by vendors that are certified and capable and qualified contractors despite the remote geographical locations.

Project Case Study



Client

Medtronic

Location: Coon Rapids, MN

Project Background

TMC was engaged by Medtronic to assist with analyzing invoices for billing accuracy and compliance. Medtronic has been consolidating voice and data invoices on locations worldwide and is at a stage where the invoices need reviewing. TMC was brought in to focus on the Global WAN Verizon invoice, contains roughly 250 locations and approximately 1,800 circuits. Medtronic also needed timely and accurate communications from management to all employees is very important to the company, shareholders and customers. As a result, Medtronic engaged TMC to prepare, issue and analyze the responses for a Request for Information (RFI) for a next generation Video Over IP (ViOIP) systems in advance of the next budget planning cycle.

TMC's role included:

- Gather all wireless invoices and create a summary of wireless spend in all categories
- Identify areas of cost overruns and areas of savings
- Make recommendations to Medtronic on where to make changes to save money
- Negotiate new contract terms and discounts
- Designed an interview form and format to be conducted with all major stakeholders
- Used the info from the interviews, industry trends and best practices to create the RFI
- Researched ViOIP companies who would qualify to respond to the RFI
- Issued the customer-approved RFI, managed the RFI process, collect all responses
- Analyzed all responses and presented the analysis and all RFI responses to the client

Results

TMC provided was a projected annual savings of \$1.7 Million with a minimal migration cost of \$440k. Additional potential savings from LEC and other voice services are \$1.3M. In addition, TMC was successfully able to negotiate multiple credits for new circuits and for remaining circuits significantly impacting the savings to Medtronic and its operating companies.

"Not only was the move invisible to our customers, it was the vehicle for adding addition quality to our phone structure. Thank you for your dedication!"

-Becky Carlson, Director of FSS Customer Service

Project Case Study



Client

Deluxe Corporation
Location: Shoreview, MN

Project Background

With Qwest contract expiration, TMC was engaged by Deluxe to conduct a network services re-negotiation project to establish refreshed and competitive pricing. TMC performed the following:

- Compiled information from Deluxe based on reports and vendor records to allow for a complete record of internet, voice services and data networks. All usage and bandwidth records/documentation for internet, wide area voice/data networks.
- Using current invoice reports and other service provider information, summarized all major unit WAN costs.
- Reviewed and examined the current vendor(s) service history, service costs, and overall responsiveness to Deluxe's performance requirements.
- Meetings were scheduled with Deluxe management to discuss current and future needs for the networks under review.
- Presented ideas for optimizing the networks and cover new features and options not available with the existing networks that would prove beneficial. Also, identified possible areas where costs could be eliminated or modified to better suit Deluxe's requirements.
- Final designs of the local and wide area voice/data networks were determined and reviewed by TMC and Deluxe personnel.
- Full process of developing the Request for Pricing documentation.
- As AT&T and Qwest were preparing their information, TMC responded to questions and provided necessary clarification.
- Proposals and responses were evaluated to determine the vendor(s) that best met the performance and pricing requirements of Deluxe.
- Conducted final contract negotiation with the selected vendor(s).
- Reviewed first invoices from vendors to ensure proper costs were billed.

Results

TMC recommendation of a split award between two major service providers resulted in meeting current contractual commitments; but with annual savings of over \$1,700,000.