PRINCIPAL INFORMATION SYSTEMS ANALYST

FLSA Status: Exempt
Union Representation: Professional and Technical Employees (PTE)

DEFINITION

To serve as a project manager on complex information technology or telecommunication systems projects, including systems development, network design, development and administration, geographic information systems, computer aided dispatch systems, database management, data integrity and recovery, managed data services, wireless services, and video services; to develop, implement and maintain large or complex computer software applications and systems; and to perform a variety of complex analytical duties relative to assigned area of responsibility.

SUPERVISION RECEIVED AND EXERCISED

Receives general direction from higher-level management staff.

May exercise direct, functional or technical supervision over professional and technical staff.

EXAMPLES OF WORK-- *(Any one position may not include all of the duties listed nor do the listed examples include all tasks which may be found in positions of this class.)*

1. Serve as a project manager on complex information technology projects including systems development, network design, development and administration, database management or data integrity and recovery.

2. Manage assigned projects; evaluate client business requirements; research and develop information technology or telecommunication system solutions; conduct cost benefit analyses; develop project timelines and budgets; monitor project performance and compliance with applicable specifications, rules, regulations and laws related to application and systems programming; ensure quality and timeliness of work performed.

3. Analyze computer management information or telecommunication systems to determine needed modifications or new development needs; design, develop and implement program systems.

4. Perform the more technical and complex tasks of the work unit including providing solutions to user needs through the development and implementation of information system or telecommunication system projects.

5. Prepare project cost estimates and justification for new or enhanced system modifications; prepare requests for proposals for vendor services; evaluate bids and make recommendations on vendor selection.

6. Conduct studies, analysis and research on a range of information system or telecommunication system assignments; analyze information needs to develop appropriate system structure; design output and input documents including screens, forms and reports; prepare system and report specifications; oversee or design, code and test systems and programs.

7. Serve as project manager on various voice and data initiatives; research and develop solutions; conduct cost benefit analyses; develop project timelines and budgets; monitor project performance and compliance with applicable specifications, rules, regulations and laws; ensure quality and timeliness of work performed; implement actions to resolve procedural or operational problems with voice and data systems.

8 May plan, prioritize, delegate and review the work of assigned project staff; establish schedules and methods for achieving project goals and objectives; review work products, make corrections and coordinate staff training and development efforts as appropriate.

9 Prepare and present project progress reports for department management or committee; identify problems and issues; recommend solutions.

10 Develop, maintain and enforce data resource management standards and procedures; develop standards for maintaining data integrity and security; develop strategies for data recovery.

11 Provide and coordinate user training and support; troubleshoot problems related to various applications and programs; develop documentation for user manuals; test document applications.

12 Provide network administration duties; configure, test, install and maintain LAN/WAN systems; connect peripherals to system; monitor disk space and system integrity; clear temporary and unused files; provide technical hardware and software support to users; identify, diagnose and resolve technical problems.

13 Perform database administration duties; provide support to programming staff in planning, designing and implementing application databases; maintain database security and user access; design, create and maintain physical objects including tables, files, libraries and indexes to support computer applications using database management systems; monitor database performance and troubleshoot problems; monitor and maintain space allocation for databases and files.

14 Develop and implement large or complex computer software applications; design, configure and test system software; debug or troubleshoot user software problems.

15 Perform related duties and responsibilities as required.

Knowledge of:

- Operations, services and activities of a comprehensive information technology or voice and data communications program.
- Principles, practices, methods and techniques of providing information systems or voice and data network systems project management services.
- Methods and techniques of evaluating client information technology requirements.
- Principles and practices of computer programming and systems analysis.
- Operational characteristics of various computer systems, applications and peripheral equipment.
- Information system infrastructure planning and development.
- Principles and practices of system testing, analysis and security administration.
- Principles of database and network administration.
- Telecommunication technology processes for voice and data communications including network computing, client/server, Internet, Intranet, video conferencing and related function.
- Configuration practices, protocols and transmission standards utilized in voice and data systems.
- Concepts, principles, practices and operational characteristics of emerging telecommunication system technologies.
- Principles of data management and integrity.
- Operational characteristics of multiple operating systems and platforms.
- Methods and techniques used to design, develop, test and implement user systems.
- Operational characteristics and capabilities of database management systems.
- Advanced concepts of data modeling, database design and administration.
- Advanced concepts of systems in assigned area including geographic information systems, computer aided dispatch and related program area.
- Advanced methods and techniques used in the installation, trouble shooting, upgrading and problem resolution of information systems.
- Advanced methods and techniques of system design, programming and software installation.
- Advanced principles and practices of information systems programming.
- Advanced principles of hardware and software configuration and troubleshooting.
- Advanced knowledge of database systems, relational and other structures, and system architecture.
- Pertinent Federal, State and local codes, laws and regulations.

Ability to:

- Serve as a project manager on large systems programming or voice and data communication systems and projects.
- Evaluate client business requirements and implement information technology solutions.
- Perform highly complex systems analysis duties.

- Design, develop, implement and administer local and wide area network systems.
- Perform highly advanced programming and database management duties.
- Serve as database administrator and perform database modifications.
- Design, configure and test system software.
- Install, test and configure hardware and software applications and programs.
- Troubleshoot hardware and software application problems.
- Respond to requests and inquiries from system users.
- Communicate clearly and concisely, both orally and in writing.
- Establish and maintain effective working relationships with those contacted in the course of work.
- Maintain mental capacity which allows for effective interaction and communication with others.
- Maintain physical condition appropriate to the performance of assigned duties and responsibilities.
- Maintain effective audio-visual discrimination and perception needed for making observations, communicating with others, reading, writing and operating assigned equipment.

SPECIALTIES:

Positions in this class are assigned to one of the following specialties: GIS Business Architect (GISE), Vertical GIS (Bureau GIS Business/Data Architect) (GISV), Project Management (PROJ), Security (SECU), or Generalist (GEN). Positions assigned to the Generalist specialty are defined in the Definition and Examples of Work sections of the class specification.

Classification History:

Adopted: 12-16-98 Principal Information Systems Analyst (2545) class created as a result of IT Classification and Compensation Study 1997-1998. This class is composed of the following classes:
2546 Adopted: 07-01-92 Class created as a result of Nonrepresented Classification & Compensation Study, 1991-92. This class is composed of positions from the following classes:
0380 MIS Analyst; Revised 05-17-83
0383 Principal Programmer Analyst; Revised 10-16-84, 03-23-88
2522 Senior Systems Programmer Adopted: 07-19-83 Revised: 07-01-92
(Class revised and job class number changed as a result of Nonrepresented Classification & Compensation Study, 1991-92)
Revised: 08-21-00 GIS Business Architect specialty added.
Revised: 10-27-04 Security specialty added.
Revised: 12-01-04 Project Management specialty added.
Revised: 02-08-06 GIS specialty to re-titled to Enterprise GIS – GISE; no modifications to description.
Revised: 04-11-06 Bureau GIS Business/Data Architect – GISV specialty added.
June 2009 - Change Job Class number from 2545 to 30000218 (GEN), due to system change.
June 2009 - Change Job Class number from 2545 to 30000217 (GISE), due to system change.
June 2009 - Change Job Class number from 2545 to 30000880 (GISV), due to system change.

June 2009 - Change Job Class number from 2545 to 30000219 (PROJ), due to system change.
June 2009 - Change Job Class number from 2545 to 30000220 (SECU), due to system change.
July 2017 – Updated union name from COPPEA to PTE

30000217 - Principal Information Systems Analyst – Enterprise GIS (GISE)

Summary:

Positions in this specialty are responsible for citywide GIS coordination with strong focus on customer business relations, expert service delivery, and education. Enterprise GIS Principal Information Systems Analysts act as GIS Business Architects to develop and foster corporate business relations to support citywide goals and objectives; manage a variety of GIS projects and define tasks, project scope of works, time lines, deliverables and budgets; develop and support a corporate training program, and provide assistance to the Corporate GIS manager.

Examples of Work:

1. Analyzes user/business needs and provides business level solutions.
2. Develops and recommends business and communication strategies for distribution of information related to citywide GIS program.
3. Manages various GIS projects.
4. Develops and supports a corporate GIS training program.
5. Performs expert GIS analytical services.
6. Works with other GIS Business Architects to develop integrated GIS business solutions.
7. Assists in providing strategic corporate direction to leverage emerging technologies.

Knowledge, Skills and Abilities:

- Knowledge of business process modeling and reengineering relevant to GIS technologies including software and attendant data communications technologies.
- Thorough knowledge of GIS principles, methods and applied concepts.
- Thorough knowledge and experience using ESRI software including ArcInfo 7.x and 8.x, ArcView, MapObjects, etc.
- Demonstrated applications programming skills that comply with standard COM/DCOM object technologies.
- Ability to articulate issues, technical information, build consensus, and establish and maintain effective working relationships with all levels of the GIS community and personnel inside and outside the bureau.
- Ability to assess user business needs and develop requirements, specifications and designs necessary to deliver enterprise GIS solutions.
- Ability to plan and manage large projects involving in-house and contracted resources.
- Demonstrated ability to plan, design, develop and support a GIS training program.
- Ability to make expert presentations using state of the art technologies and information distribution channels.

30000880 - Principal Information Systems Analyst – Vertical GIS (Bureau GIS Business/Data Architect) (GISV)

Summary:
Under general direction, the Bureau GIS Business/Data Architect is responsible for: coordinating with other bureaus and Corporate GIS to provide bureau data required by City staff and the public; developing and fostering bureau business relations to support bureau-wide goals and objectives. Incumbents manage a variety of GIS projects by defining tasks and deliverables; and developing the project's scope of work, time line, and budget.

Examples of Work:

1. Identifies and analyzes user/business needs; and develops requirements, specifications and designs necessary to deliver bureau GIS and business level solutions.
2. Develops and recommends business and communication strategies for distribution of information related to bureau-wide GIS program; assists in providing strategic direction to leverage emerging spatial technologies.
3. Plans and manages large bureau data and GIS projects involving in-house and contracted resources.
4. Performs expert GIS analytical services; provides geographic data links to major Bureau applications; works with Corporate GIS Architects, and other BTS and bureau staff to develop integrated GIS business solutions.
5. Works with Corporate and bureau GIS staff, and data administrators to plan, design and develop data integration and retrieval for bureau personnel to access maps and data from the Hub and from the Bureau computer network using GIS Software.
6. Works with data and system administrators to improve quality of data and develop QA/QC procedures; programs applications that comply with standard COM/DCOM object technologies; develops, documents and maintains technical and procedural data standards; works with the BES database administrator to bring Bureau applications into compliance with Corporate addressing standards.
7. Develops standards for common data architecture, integrate tabular and spatial information; ensures new systems are developed to be consistent with these standards and with city-wide GIS systems.

Knowledge, Skills and Abilities:

- Thorough knowledge of GIS principles, methods and applied concepts.
- Thorough knowledge and ability to use ESRI software including ArcInfo 8.x and 9.x, ArcView, MapObjects, etc.
- Knowledge of business process modeling and reengineering relevant to GIS technologies including software and attendant data technologies.
- Knowledge and ability to use SDE and SQL or other comparable database products.
- Ability to assess user business data and GIS needs, articulate issues and technical information, build consensus, and develop and deliver solutions.
- Ability to establish and maintain effective working relationships and with all levels of the GIS community and personnel inside and outside the bureau.
- Ability to plan and manage large projects involving in-house and contracted resources.
- Ability to develop, document and maintain technical and procedural data standards.

30000220 - Principal Information Systems Analyst - Security (SECU)

Summary:

Positions in this specialty are responsible for participating in or leading complex information technology security projects including developing disaster recovery plans, analyzing security risks, installing prevention solutions and vulnerability analysis tools; and performing a variety of complex analytical duties relative to assigned area of responsibility.

Examples of Work:

1. Participate in or lead a project to develop information technology work processes and procedures that will comply with city security policy.
2. Develop and implement a disaster recovery plan or a subset of that plan for a specific business function using industry best practices. Periodically test disaster recovery plan and update as required.
3. Make written analysis for security risk of an application development or network infrastructure project. Recommend a solution to mitigate risk.
4. Participate in project planning exercises for operating system, directory system, email, or other network infrastructure technology implementations.
5. Install and configure various firewalls, VPN solutions, intrusion detection or prevention solutions, e-mail Spam filtering, and vulnerability analysis tools.
6. Regularly monitor intrusion detection systems, firewalls, virus scanning and vulnerability analysis alerts for possible security incidents. Develop and follow procedures for identifying false-positive alerts, and follow-up research on other alerts.
7. Plan, install and implement VPN secure remote access.
8. Audit and help mitigate security risks in a web-centric application-hosting environment including multiple network firewall perimeters, load-balanced applications, and fault-tolerant configurations.
9. Participate in application security planning, review and testing.

Knowledge, Skills and Abilities:

- Formal training or industry certification related to information technology security skills. Examples include: CISSP, SCP, SCNP, GSE, or various vendor-specific technology certifications.
- Formal training or industry certification related to network infrastructure skills. Examples include: protocols, network routing, Microsoft server operating systems, Unix and Linux operating systems, or SAN storage solutions.
- Knowledge of and experience in researching security risk analysis and mitigation best practices.
- Ability to plan and implement a variety of network security technologies including but not limited to firewalls, intrusion detection and prevention systems, e-mail Spam filtering, and vulnerability analysis tools.
- Advanced knowledge of the TCP/IP protocol and various common application protocols.
- Knowledge of TCP/IP routing and other networking concepts.
- Intermediate knowledge of various directory services technologies, including LDAP and Microsoft Active Directory.

- Advanced knowledge of open system VPN protocols and their implementation in common VPN access products.
- Intermediate knowledge of Cisco router configuration.
- Intermediate knowledge of application layer vulnerabilities and security approaches.

30000219 - Principal Information Systems Analyst - Project Management (PROJ)

Summary:

Under general direction, the IT Project Manager (ITPM) is responsible for planning, organizing, managing and participating in the development and implementation of IT development projects. Monitors progress and performance against project goals and objectives and ensures system provides required functionality; manages the project budget; serves on a variety of committees; and coordinates assigned activities with other divisions and City bureaus. Work requires project management expertise to integrate multiple interests and stakeholders in achieving successful project results. In-depth organization and process knowledge is also essential for ensuring project success. ITPM will lead project teams, which may include professional, technical and clerical staffs. Work may include both IT infrastructure and/or IT application development projects.

Examples of Work:

1. In conjunction with the Bureau Business Representatives (BBR), assesses bureau's needs; coordinates the design requirements, development, acquisition and implementation of computer system software, hardware, and data communications solutions; ensures migration of data from current system to new system, staff training, system performance, security, maintenance, connectivity and documentation needs have been effectively addressed.
2. Assists in formulating overall project scope, direction, objectives, goals, budget and timeline; researches, develops and implements project charters and project plans to meet goals and service objectives; develops, recommends and manages project budget; assist in developing or recommending associated operating and administrative procedures; identifies and recommends solutions to project resource needs and requirements; plans, organizes, implements and evaluates work activities to meet established overall project goals and objectives; analyzes alternative methods or processes to meet service delivery goals, including conducting cost benefit and resource requirement analyses; ensures program compliance with all applicable City and outside agency requirements.
3. As project manager, works with technical leads to assemble project teams; convenes technical, user and other appropriate task teams and committees; develops agendas and facilitates meetings; coordinates the work of the multiple teams and committees; leads and participates in the analysis and redesign of complex work processes associated with project; conducts management reviews of progress of project against time lines, goals and budgets; develops project reports and related materials; prepares staff reports and presentations; communicates project objectives, progress and issues to bureau managers. Serves as a member, or facilitates the work of an executive steering committee comprised of city budget and financial executives that provides citywide guidance for the project.
4. Evaluates the effectiveness of project activities and makes or recommends project modifications; ensures that performance, maintenance, connectivity and security issues are addressed; prepares narrative and statistical project performance reports and recommendations.
5. Manages the work of outside consultants including establishing system requirements, technology parameters and business requirements; develops and issues requests for proposals; leads the selection process, negotiates terms and conditions, monitors project status and progress; authorizes work and payments; ensures system is developed,

implemented and configured according to the specifications; ensures all activities and results are consistent with City strategic direction and standards.

6. Confers with other divisions and bureaus; coordinates and integrates project activities; participates on related boards, commissions and committees; develops project partnerships.
7. Serves as an expert resource; provides training and technical assistance to staff.
8. Performs other special assignment work as required.

Knowledge, Skills and Abilities:

- Knowledge of principles and practices of computerized systems analysis, design and development.
- Knowledge of contract management practices, standards, processes and requirements.
- Knowledge of principles and practices of information systems or telecommunication systems project management, development and administration.
- Knowledge of methods and techniques of evaluating business needs and developing information system solutions.
- Ability to plan, organize and manage a large and complex information technology project including developing and managing project budgets, work plans, process flow diagrams, use cases and timelines.
- Ability to assess customer and business needs and define requirements.
- Ability to coordinate and direct a variety of committees and work groups, maximizing staff effectiveness and aligning activities with overall project goals.
- Ability to establish and maintain effective working relationships with co-workers, customers, vendors and others contacted in course of work
- Ability to communicate with co-workers, managers and vendors including written communication, leading and facilitating task force committees, and making presentations in management meetings.
- Ability to collaboratively identify technical problems and solutions.
- Ability to negotiate and manage consulting contracts.
- Ability to analyze and assess project outcomes in relation to operational needs and make appropriate adjustments.
- Ability to identify and respond to organizational issues, concerns and needs.
- Ability to use project management tools and techniques to ensure projects are completed on time and budget.
- Ability to understand, interpret, explain and apply City, state, and federal policy, law, regulation and court decisions applicable to areas of responsibility.
- Ability to establish and enforce technological standards.
- Ability to present proposals and recommendations clearly and logically.
- Ability to represent the City effectively in meetings on a variety of technology issues.
- Ability to prepare clear, concise and comprehensive correspondence, reports, studies and other written materials appropriate to both technical and non-technical audiences.
- Ability to exercise sound, expert independent judgment within general policy guidelines.
- Ability to exercise tact and diplomacy in dealing with sensitive, complex and confidential issues and situations
- Ability to establish and maintain effective working relationships with all levels of City

management, other governmental officials, consultants, vendors, employees, the public and others encountered in the course of work.

- Skill in providing lead direction to staff including assigning and reviewing their work.