Agency Operations Plan 2015-17

Agency:

North Dakota Industrial Commission Department of Mineral Resources

Line of Business: (optional)

Petroleum regulation, coal exploration, uranium exploration, subsurface mineral exploration and production, permitting of oil exploration sites, geothermal sites, storage of carbon dioxide, monitoring of producing oil wells, injection wells, central tank battery measuring devices, and core samples.

Contact:

Name:	James Martel
Title:	COMPUTER & NETWK SPEC III
Phone #:	701-328-8019
Email:	jmartel@nd.gov

Technology Strategy:

The Industrial Commission (IC) maintains an IT infrastructure supporting IC business processes. The infrastructure includes necessary technology to serve desktop, laptop, server, storage, and back-office needs for IC business functions. In addition to standard office automation peripherals such as printers and photo-copiers, the IC also maintains large format plotters and printers and large and small format scanners to address business requirements for the IC's extensive legislative mandates in areas such as petroleum regulation, coal exploration, uranium exploration, subsurface mineral exploration and production permitting of oil exploration sites, storage of carbon dioxide, geothermal sites, monitoring of producing oil wells, injection wells, central tank battery measuring devices, and core samples.

The support of IC business functions requires systems supporting a wide variety of

highly specialized technical professionals, including petroleum engineers, Petroleum technicians, graphic information specialists (GIS), paleontologists, and geologists. Support for this wide variety of specialties requires a substantial and varied technological infrastructure. Our professionals and infrastructure are located in Williston, Minot, Dickinson, Grand Forks and four locations in Bismarck. Due to the required business processes and the IC's business partners, the infrastructure and tool set provided must be current and in step with our business partners. The IC has four FTE's that support the department IT infrastructure. One of the FTE's is a programmer/analyst, one FTE supports GIS application development and one FTE supports IT network and equipment maintenance supporting servers, desktops, laptops, printers, storage and back-office systems. The final FTE is the Information Technology Administrator for the Department of Mineral Resources providing IT project management and supervision of IT staff.

Technology Infrastructure:

Desktops/Laptops

The IC provides windows desktops and laptops. The operating systems are primarily Windows 7 in the 64-bit versions. The replacement schedule for desktops and laptops varies from two to five years depending upon user application. The high-end systems supporting GIS, engineering and scientific systems are replaced on the shortest allowable schedule and are often reused as standard desktops for less intensive users. The IC also maintains a number of specialized workstations for specific applications or processes. These workstations utilize Windows 7 64-bit. The replacement schedule for these workstations is on average two to four years. The IC maintains laptops for users

frequently out of the office or those needing specialized field applications and systems, for example the laptops of engineers or scientists working in the field. These laptops are replaced every two years and brought back into the office and recycled to support office personnel requiring laptops for field duty. Monitors are replaced as failures occur or after six years. The estimated monitor replacement is approximately 25% per biennium.

Scanners

The IC maintains two types of scanners. The first provides standard sized document scanning to support common business processes such as petroleum case management or permitting. The other is a large format scanner capable of scanning maps and other information up to 42" wide. The scanners are on a three to four year replacement schedule with the exception of the wide format scanner, which has a projected replacement schedule of six years.

Printers/Plotters

Printing technology has evolved significantly over the past decade, and the Industrial Commission has consolidated the majority of the agency print services around networked high-speed digital photocopiers. The agency still maintains color laser printers. In addition, there are still workgroup printers available in several key areas for purposes of addressing specific print functions that are not addressed by the digital photocopiers.

In addition to the general-purpose business printing requirements, the IC will continue to require large format printing capabilities. These are currently being met with large format HP Design Jet plotters. The replacement cycle will be dictated by the life-cycle of

the plotter which is governed by usage. Based upon current usage, it would be reasonable to assume that the replacement cycle will continue to range from 6 to 8 years.

The IC maintains most of the server infrastructure to support the agency data management and application requirements. Currently, the IC maintains file and application servers for both standard business functions and high demand GIS, engineering and scientific processes. The IC also maintains database, WEB, and application servers. Mail services are provided by ITD.

Unlike the desktops, monitors, and other peripherals, server replacement cycles are more often dictated by application requirements and software resource requirements than by equipment life-cycles. It is not uncommon to upgrade or implement software changes that will vastly change the load and demand placed upon the server. Because server performance and reliability influence the productivity of all IC employees, replacement cycles are matched to the functions that the server provides. The application servers currently require greater performance with greater RAM requirements. These servers are generally replaced with an average replacement cycle of approximately every 4 to 5 years. Typically, the displaced servers are then re-conditioned to replace the role of the file server. As a result the replacement cycle on average for all of the servers is between 3 and 5 years.

Storage

In addition to the storage that is attached to each desktop, laptop, and server that is replaced as the respective system is replaced, the IC also maintains a large storage infrastructure. With the overwhelming growth in storage requirements to address both

the digital capture of historic and current scientific data resources and on-going GIS initiatives, the IC was required to address server storage. Internal server storage and direct attached storage did not provide the long-term expansion capabilities or effective management options to address the growing storage requirements for the agency.

Large storage is managed co-dependently with the server infrastructure, and as such, a replacement strategy has been developed that requires replacement of the existing disk and related subsystems every 3 to 4 years. Given the constant increases in density of storage, the replacement strategy is expected to be accelerated due to the necessary expansion of storage capacity needed to support the IC business processes.

Software

The IC maintains a policy to keep all software current. This policy is complicated by the need to maintain synchronous software deployment with the IC's business partners and compliance with, Ground Water Protection Council (GWPC) programs. Much of the software utilized by the IC's programs is provided by GWPC. IC experience indicates routine incremental upgrades are far less traumatic to business functions than larger periodic wholesale updates, providing improved productivity. Development platforms, databases, and other supporting systems are maintained at current stable release levels. Application development staff migrates and maintains applications in current development platforms and release levels. When a change in development platforms is prudent applications will be migrated proactively to new technologies.

The mixture of software tools used within the agency includes an array of different schedules and software maintenance issues. For many of the larger applications and software suites the agency is enrolled in annual maintenance agreements to maintain

the current state of the software. The following is a list of core software, defined maintenance method and business processes supported:

- PETRA
    - IC has maintained PETRA since 1999.
    - Supports petroleum geological and engineering research.
    - Maintained through maintenance contracts at current stable versions.
- RBDMS (Risk Based Data Management System)
    - IC has maintained RBDMS in conjunction with GWPC since 2000
    - Primary critical data regulating North Dakota's oil and gas production
    - Maintained through database development in conjunction with GWPC
- AutoCAD
    - Supports GIS and engineering business processes.
    - Maintained through maintenance contracts at current stable versions.
- ESRI GIS software
    - Supports business processes throughout the agency.
    - Primary critical application in analysis of oil field boundaries, siting applications and abandoned oil well reclamation projects.
    - Maintained in sync with business partners.
    - Maintained through maintenance contract.
- SQL server environment
    - Utilized since 2000.
    - Supports GWPC Risk Based Data Management System (RBDMS) application.

    - Primary application in case management, permitting, testing and production monitoring.
    - Maintained through GWPC contracts.
- Microsoft Suite
    - Supports all business applications.
    - Maintained through Software Assurance.
- AccuMap
    - Supports Oil Field and Petroleum exploration data.
    - Maintained through maintenance contract.
- Various specialized technical or scientific process applications
    - Maintained as needed dependent upon application and business requirements.

Planned Activities:

The Industrial Commission is in the planning phase to upgrade RBDMS to a newer more robust platform. We will be working closely with GWPC during this process.

Technologies being considered or investigated: