Week 7
Organising Information Technology Services

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Week 7 Outline

- Reading: Chapter 7, Organising Information Technology Services p251– p282

  - Learning Objectives:
    - Describe roles and functions of major functions in IT departments
    - Discuss the role of the CIO. CIMO, CSO
    - Describe different ways in which IT service might be organised and governed
    - Identify key attributes of highly effective IT organisations
    - Describe the role and function of the data analytics department or unit
    - To be able to develop a plan for evaluating the effectiveness of the IT function within an organisation
  - Summary

Introduction

- Healthcare systems (and any other IT services business) require technical staff to support and maintain the applications and service
- The size and scope of the team is relative to the site and services it provides
- Large IT teams vs health care providers with technical skills
- IT resources need managing in the same way as healthcare workers, finance, human resources
- This chapter focuses on the organisation, resources, functions and responsibilities
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IT Functions

- IT is an ever evolving service, from unit dependent resources brought in to provide technical support when first implementing IT through to complex inter-related services organisation like Manitoba Shared Health
- Now a key partner to those providing healthcare services across a wide range of functions, federal/provincial government, acute (hospital), long term care, private clinics (EMR)

IT Department Responsibilities

- Management and support for the IT plan and strategy
- Work with organisation to acquire, develop, and implement needed applications
- Provide day-to-day support to users (desktop, application, customisation, upgrades)
- Manage backend services, network, database backup, system monitoring and security
- Examine/support new and emerging technologies

Core Functions

- IT organisations have 4 core functions
  - Operations and Technical Support
  - Application Management
  - Specialised Groups
  - IT Administration

Operations and Technical Support

- Backend infrastructure services – servers, networks, database, network distribution – generally related but seen as separate managed services
- Sub Functions (teams)
  - Data center management (servers)
  - Networking – cabling, switches, distribution, wifi
  - Server Engineers, setup/configuration design, service utilisation, Virtual Machine management
  - Security: virus, protection, firewall (edge device) intrusion services, password control
  - Help Desk – first line customer support
  - Desktop/Printers support
  - Training, organisation staff training for desktop applications and services like email

Application Management

- Supports acquisition, new systems development, implementation, enhancements, troubleshooting, vendor collaboration
- Functional Area Applications (e.g. Acute Care manages all applications used within primary sites)
- Application/Service specific – Digital Imaging team manages the RIS/PACS system
- Application Development Team for internal development
- Groups focus on different types of development, Web Services, Mobile development

Specialised Groups

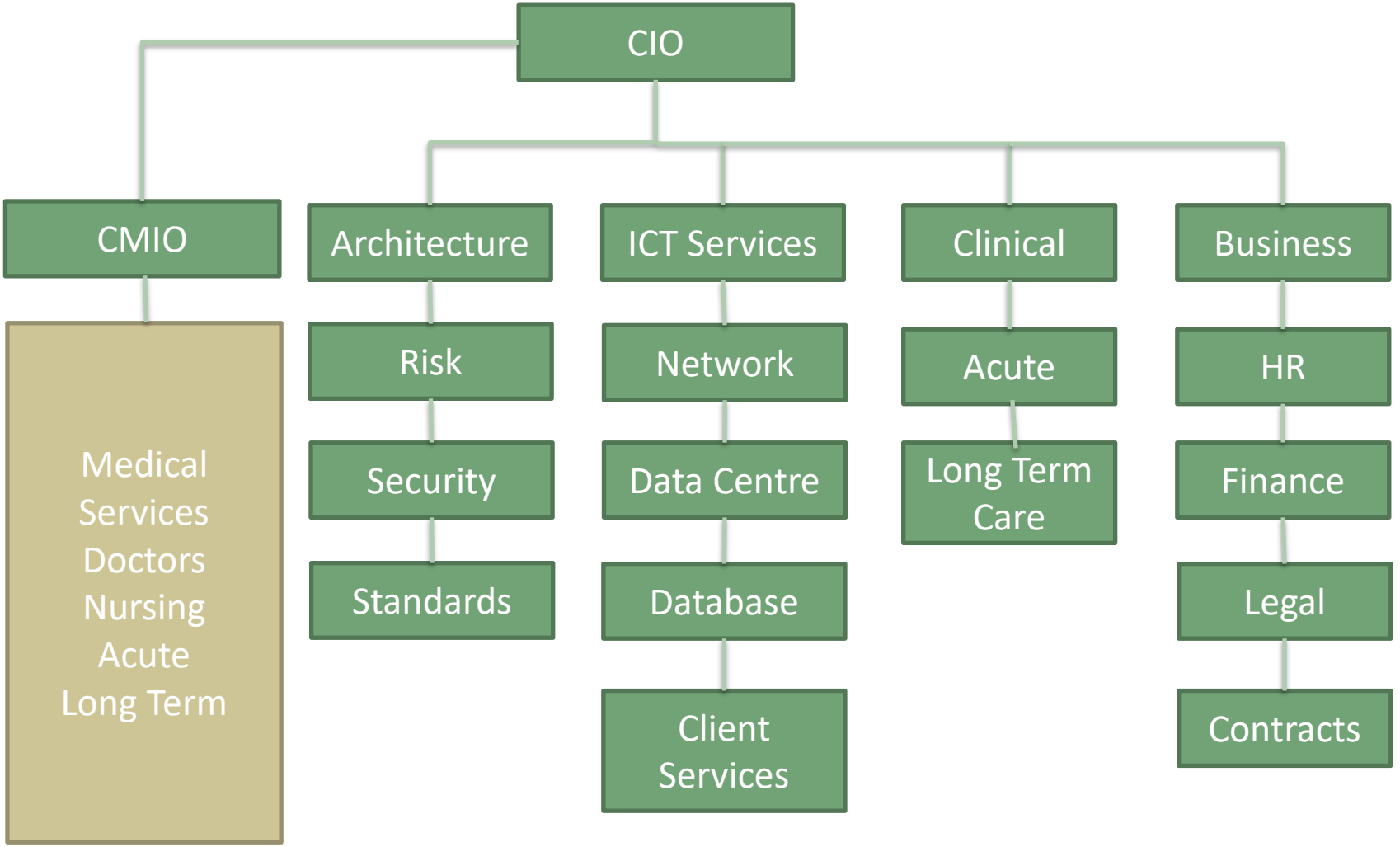
- Specialised team are often required to perform unique functions that fall outside of the main support of applications
- Research Communities and University Academic Support, e.g. U of Manitoba Medical School
- Process Redesign/centers for excellence
- Decision Support analytics and reporting

IT Administration

- Organisation philosophy dependent teams that:-

- Oversee development if IT strategic plan
- Mange contracts with vendors
- Develop and monitor IT budget (finance)
- Human Resource support to IT staff
- Project Management Office
- Space/facilities management for IT staff, staff deployment, locations, and telecoms

Example Organisational Structure



Note: Drawn at the Director level

Chief Information Officer

- Generally mid-to large IT organisations employ a CIO to lead the organisation
- CHIME has identified 7 key characteristics
  - Sets Vision and Strategy (Collaborate with snr. leaders)
  - Integrates IT for business success (applies IT knowledge)
  - Makes change happen (capitalise on IT investments)
  - Builds technological confidence (achieve value)
  - Partners with customers (internal and external)
  - Ensures IT talent (work environment and community)
  - Builds networks and community (professional networks with internal and external sources)

Chief Information Officer

- Needless to say the CIO should also encompasse other traits or ability to lead, make decisions, a communicator, critical thinker, open minded and focussed

- The CIO also reports to an executive member (CEO) of the business who also must characterise these traits

Chief Technology Officer (Architecture)

- Responsible for the guiding the definition and implementation of the organisations technical architecture
- Define Technical Standards
  - Operating systems
  - Network technology
  - Password Policy
  - Ensuring updated applied to required standards
  - Ensuring technologies work together
- New technologies: assessment and implementation

Chief Information Security Officer

- Responsible for protecting information systems assets from external (and internal) threats
- Also responsible for ensuring the organisation complies with federal/provincial security regulations
- Effective information security plan (generally built into the Enterprise Architecture)
- Implement technical and procedural procedures are in place to protect IT systems and appropriate disaster recovery procedures are in place
- E.g. Desktop screen saver, sleep mode after 5 minutes, mobile device go to sleep after 6 seconds of non-sue

Chief Clinical Informatics Officer

- AKA: CMIO, Chief Nursing Information Officer
- Roles/skills
  - Guide EHR selection
  - Define clinical information systems governance process
  - Engage senior executives in EHR culture and practice
  - Advise on implementation methods and sequencing
  - Identify value proposition and KPI metrics
  - Determine EHR enhancement request systems and process
  - Staff ongoing process improvements
  - Educate abpt HIT and interactions with people
  - Develop strong relationships with key stakeholders

Other Staff Roles

- Project Leader (project manager)
- Systems Analyst
- Programmer (software developer)
- Database Administrator
- Network Administrator
- Application Administrator
- Interface Analyst
- Systems Engineer

Project Leader (project manager)

- Managers small and large scale projects
- Owns the delivery of new services into production
- Coordinates activities during the phases of the SDLC
- Reports to steering committee and business owners

Systems Analyst

- Can be a technical or business orientated role (or a blend)
- May have direct clinical background
- Work closely with management and users to identify needs (requirements) , problems, opportunities, and strategies for effective use of IT systems and services
- Integral to the implementation of new/enhanced services, recording current state and transformation to future state
- Expected to work with many other resources across the IT and business organisation
- Often involved in system testing and evaluation, value analysis (ROI) and value realisation improvements

Programmer (Software Developer)

- Design build, develop test, release and support custom software applications
- General trend to build web applications and move away from think client (desktop installed) applications
- Script development
- Middleware configuration (web server, appliances)
- Glue logic applications

- *Personal comment – they don't get asked to build clinical applications, fill the gaps until something becomes available as a COTS solution*
- *Problem MS Access applications becomes more critical than professionally built web applications*

Database Administrator

- Works with the backend database systems and supporting the organisation
- Apply database patches and updates
- Deploy database packages and configure
- Access control, generally only DBA's should have access to backend - unless for vendor access
- Database performance
- Schedules backups and data restore
- Remove database locking
- Generally focus service into1-2 database types, MS SQL/Oracle
- Query performance monitoring and fine tuning
- Provides expert knowledge to support teams and projects

Network Administrator

- The network is the critical backbone of the organisation
- Requires a team to support configuration and protection
- Experts in WAL, LAN Internet, Intrant, Wifi, VPN configuration
- Understand capacity requirements, “zoning”, global connectivity
- Support new projects and infrastructure planning

Other Positions

- Application Administrator: support sub-set of applications in a support team, generally user issues, configuration and reporting, user accounts, vendor interactions
- Customer Services Manager: provides information and support to requests for information from the business
- System Integrators: develop interfaces between systems, data translation and mapping
- Business Intelligence/DSS Support: data extracts, transformations and load into analytics and reporting services

Staff Attributes

- Hard (technical) vs soft skills

- High performing staff:-
  - **They execute well** - understand the business, its needs and their work, professional approach
  - **Good consultants -** provide advice and understand best approach to problems, where does IT be less of an important part of a solution
  - **Provide world class support** - efficient and effective support to team, vendors, and business community
  - **Stay current** – keep up to date on technologies and technique important to the success of an organisation

Organising IT Staff Members

- Centralisation or Decentralisation
- Competing objective, putting decision and control either locally or centrally
- The larger the organisation (Provincial may inherently be decentralised but evolves into disparate systems and services
- Centralised control focuses on centralised shared services (even though staff are decentralised)

  Decentralised – self directed, what is important to me?

  Centralised – what is important to all?

Benefits of Centralisation

- Enforcement of hardware and software standards
- Efficient administration resources
- Better staffing
- Easier training
- Effective planning of shared systems
- Easier strategic planning
- Tighter control by senior management of budget/resources

Benefits of De-Centralisation

- Better fit of IT local business needs
- Quick response times
- Encouragement of end user development of applications (MS Access)
- Innovative use/development of information systems

Challenges

- Often a mix of the two models
- Control vs efficiency, managing cost and direction vs being agile and innovative
- Size of the organisation
- Cultural complexity and identity
- Role simplicity vs role complexity
- Difficult to find the right balance

Core IT Competencies

- Base Support Services
  - Front line support – users and business
  - Project Management – control and report on projects
- Care Improvement
  - IT services to improve the process of patient care
  - Application support and research
- Technical Infrastructure
  - Network and related technologies
  - End point of access to applications

Agility Departments

- Success in incremental steps or stages
- Execute what is important at a given point in time
- Allows to react to what is needed
- Short term project with limited scope
- Avoid 3-5 year projects
- React to change
- Fail early, fail fast and move on
- Process to eliminate “Red-Tape” and bureaucracy
- Responsive and flexible teams

Innovative Departments

- Allow the investigation into novel solutions and efficiencies
- How to use the tools we have today differently
- Data reuse
- Innovation requires multi-skilled teams to collaborate and conceive and proof new services and technologies
- Create space and capacity to innovation to grow
- Try ideas, again fail early fail fast

In-House vs Outsourced IT

- In-house, internally hired staff and resources formed not an IT department
- Outsourced – IT services performed by external vendors outside the health care system
- Why?
  - Lack of available skills and resources
  - No time for do projects and operations
  - Focus on key (goal) services, e.g. clinical applications
  - Control costs – fixed contracts and statement of work
    - does not mean efficiency or effectiveness vs internally managed

In-House vs Outsourced IT

- Often when a business is so ineffectual, outsourcing is the only option as the business realigns itself
- Evaluate the need to outsource –
  - Doe we have the skills and resources
  - How easy is it to recruit and train staff
  - What are our priorities and have the right mix of resources, skills, time to support
  - What benefits can be realised from outsourcing
  - Risks?
  - What parts of the IT org do we outsource
  - How is the IT world changing
  - Who can be our partners?

Evaluating IT Effectiveness

- Is the function efficient, effective, deliver good service, good value, weakness in the team?
- What is the view of our customers?
  - Do they get the service they need or want?
  - How much does it cost and compare to other organisations
  - Too slow to respond, exceed service level agreement response times?
- Assessment – generally done by external 3rd parties, less bias
  - Have the skills to evaluate common best practices and results

Evaluating IT Effectiveness

- Evaluations focus on
  - Governance
    - Structure, alignment, cohesion to business objectives
  - Budget development and Resources
    - Compared to other HC
    - How does our results align to spending?
    - IT budget % vs other HC spending
  - System Acquisition Process
    - How long to procure, process used?
  - System Implementation
    - Implementation and delivery (on-time on budget)
    - Teamwork and cohesion, working relationships

Evaluating IT Effectiveness

- IT Service Levels
  - The quality of IT Service Levels performance can be measured
  - Monitoring is required to assist identify improvement areas
- Can measure such things as
  - **Infrastructure** – availability, uptime, response times, time to service restoration
  - **Day-to-day support** – service desk response time, customer interaction, problem resolution time, process durations (e.g. order a new computer)
  - **Consultation** – Does the IT staff help me work through my needs and provide useful advice

Evaluating IT Effectiveness

- Service Levels defined in the Service Description
- Customers pay for the service they expect sometimes they want higher levels than the basic services and expect to pay more (business hors vs 24 hr support)
- Measurable response times
- Periodic reporting and evaluations
- Relative costs, service charge models
- Difficult to make qualitative measurements and evaluations
  - Reliability – unscheduled downtimes
  - Response (system) time – login time, search time and reports
  - Resiliency – recovery time (not the same as fixing a bug)

Evaluating IT Effectiveness

- Management Team must define the key performance indicators for each service
  - 99.999% uptime
  - Downtime 1 hour before moving to downtime procedures
  - Response to customer on P1 incident is <15 minutes
  - Number of calls outside of business hours
  - Maximum time allowed to close ticket?
  - 1 hour to restore service after downtime
  - Time exceeding planned outage periods

Effective Core Process Management

- Human Capital staff development (skills and people)
- Platform management (underlying infrastructure)
- Relationship management (customers and vendors)
- Strategic planning (cohesion with business objectives)
- Financial management (budget, business case)
- Value innovation (business improvement)
- Solutions delivery (SDLC)
- Service provisioning – day to day support

Agarwal and Sambamurthy (2002) Organising the IT function for business innovation and leadership

Summary

- Healthcare organisations need access to appropriate IT staff to support HIS
- IT departments have a management team that reflects the complexity of the organisation
- CIO is the senior level decision maker working with the business and the ICT leadership team
- The ICT structure is influenced by centralisation and decentralised services
- Constraints over resource availability can influence in-house vs outsourcing
- Important for management team to measure and assess efficiency of the ICT resources and allocation and make changes to services and support in order to make more effective