CHAPTER 1

ANALYZING BUSINESS GOAL & CONSTRAINTS

Expected Outcomes

Able to analyse a computer network requirements
Able to analyse business goals and constraint
Able to understand and apply the Top-Down Network Design Methodology

Top-Down Network Design

- Network design should be a complete process that matches business needs to available technology to deliver a system that will maximize an organization's success

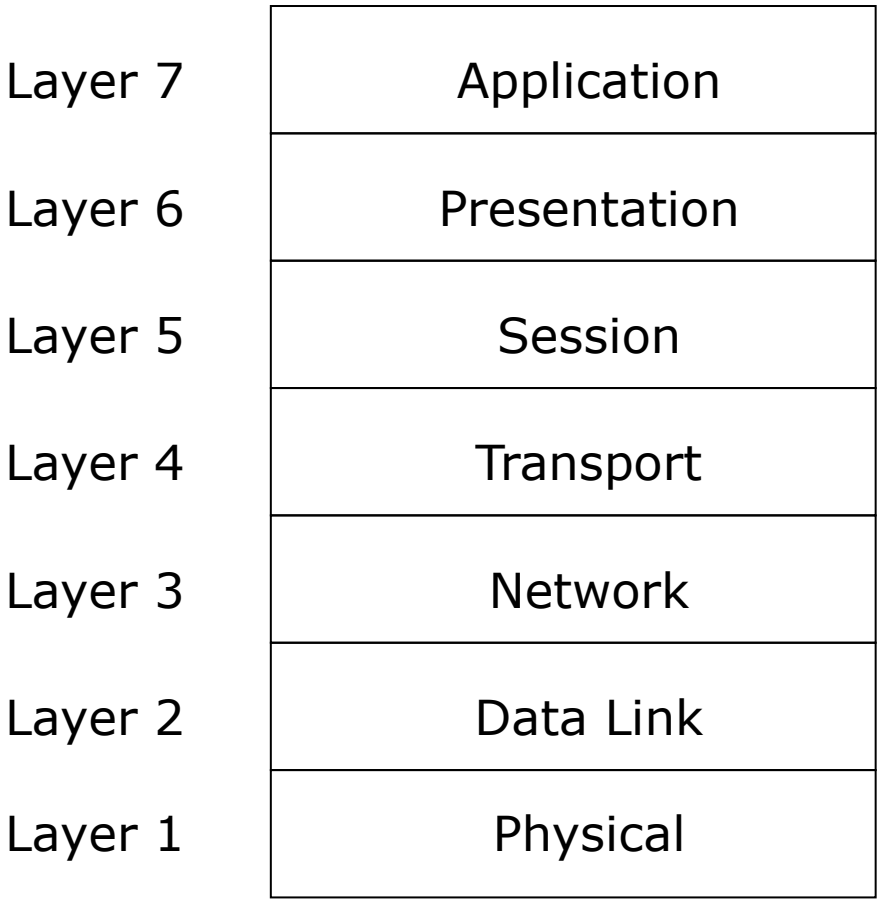
- Following a formal design process increases your chances of success. Also decrease the following:

1. Failure to meet requirements
2. Creeping requirements- Specification addition and changes can disastrously increase the amount of time, effort and money. All change requests must be clearly documented, communicated and evaluated.
3. Missed deadlines and budget overruns
4. Dissatisfied end users
5. Dissatisfied management

Start at the Top

- Don’t just start connecting the dots
- Analyse business and technical goals first
- Explore divisional and group structures to find out who the network serves and where they reside
- Determine what applications will run on the network and how those applications behave on a network
- Focus on Layer 7 and above first
- Layer 8 of the OSI model encompasses office politics, budgets, training, and other human factors.

Layers of the OSI Model



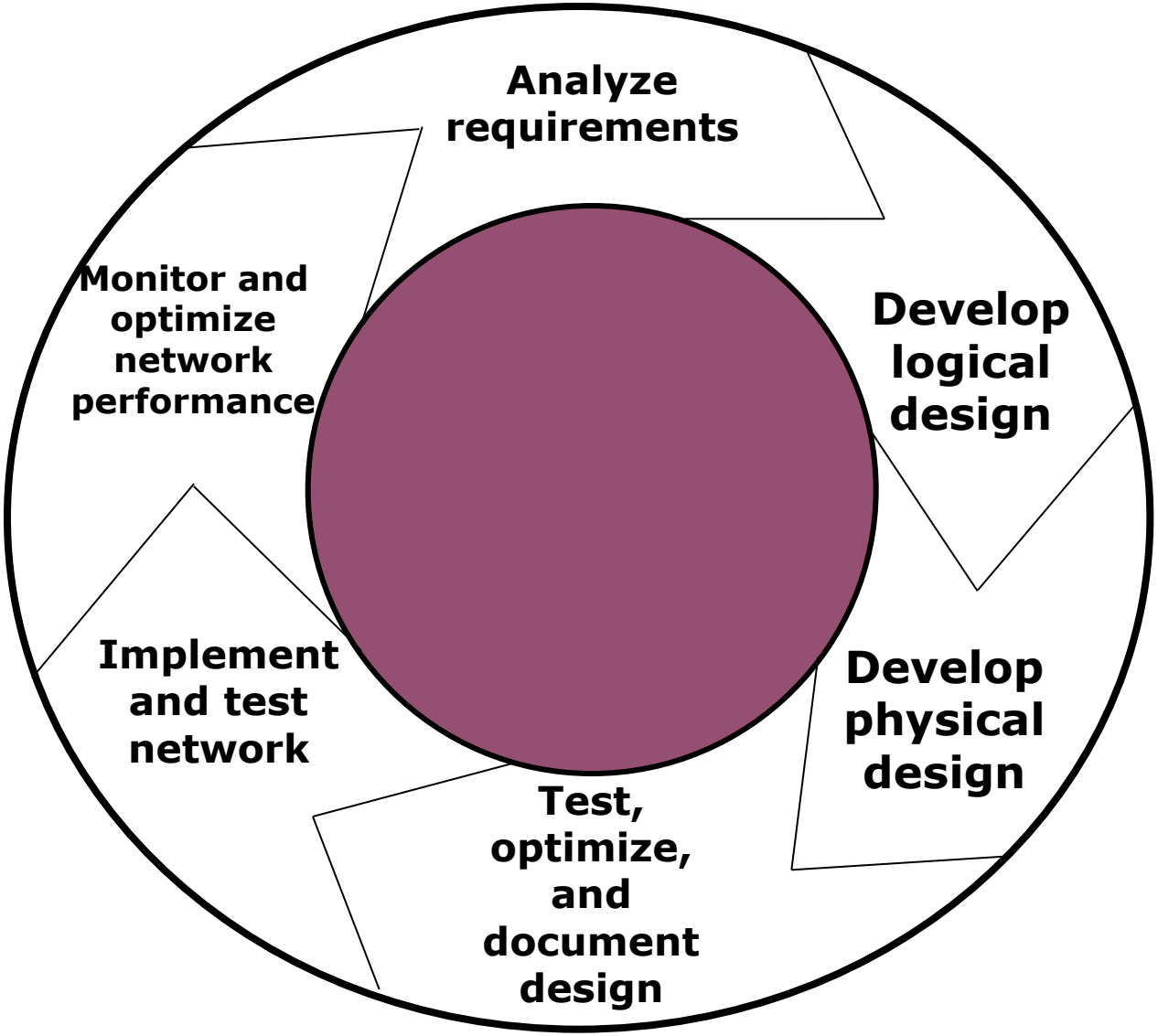
Structured Design

- A focus is placed on understanding :
  - data flow, data types, and processes that access or change the data.
  - the location and needs of user communities that access or change data and processes.
- Several techniques and models can be used to characterize the existing system, new user requirements, and a structure for the future system.
- A logical model is developed before the physical model.
  - The logical model represents
  - the basic building blocks, divided by function, and the structure of the system.
  - The physical model represents
  - devices and specific technologies and implementations.

Systems Development Life Cycles

- SDLC: Does it mean Synchronous Data Link Control or Systems Development Life Cycle?
- The latter for the purposes of this class!
- Typical systems are developed and continue to exist over a period of time, often called a systems development life cycle (SDLC)
- The process of creating a new system or changing an existing system is called a life cycle
- Life cycle: A new network is => Planned -> Designed -> Implemented -> Maintained

Top-Down Network Design Steps



Network Design Steps

- Phase 1&2 – Analyze Requirements
  - Analyze business goals and constraints
    - Revenue, profit, policy, politics, corporate structure
  - Analyze users need
  - Analyze application needs
  - Analyze technical goals and tradeoffs
    - No downtime, access data anywhere
  - Characterize the existing network
  - Characterize network traffic

../Network Design Steps

- Phase 2 – Logical Network Design
  - Design a network topology
  - Design models for addressing and naming
  - Select switching and routing protocols
  - Develop network security strategies
  - Develop network management strategies

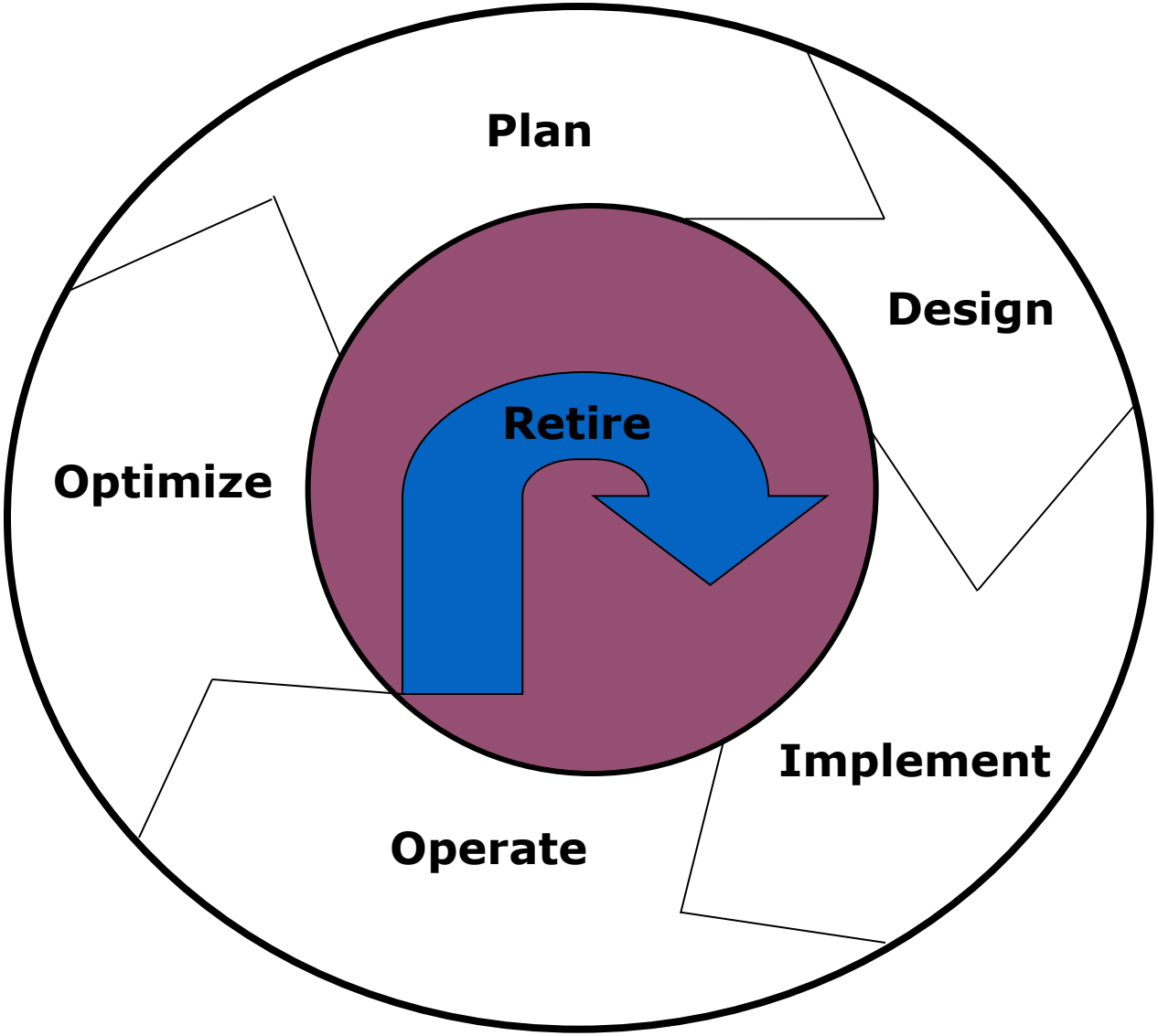
../Network Design Steps

- Phase 3 – Physical Network Design
  - Select technologies and devices
    - for campus networks
    - for enterprise networks

../Network Design Steps

- Phase 4 – Testing, Optimizing, and Documenting the Network Design
  - Test the network design
  - Optimize the network design
  - Document the network design

The Network Life Cycle



Business Goals

- Increase revenue
- Reduce operating costs
- Improve communications
- Shorten product development cycle
- Expand into worldwide markets
- Build partnerships with other companies
- Offer better customer support or new customer services

Recent Business Priorities

- Mobility
- Security
- Resiliency (fault tolerance)
- Business continuity after a disaster
- Network projects must be prioritized based on fiscal goals
- Networks must offer the low delay required for real-time applications such as VoIP

Business Constraints

- Budget
- Staffing
- Schedule
- Politics and policies

Collect Information Before the First Meeting

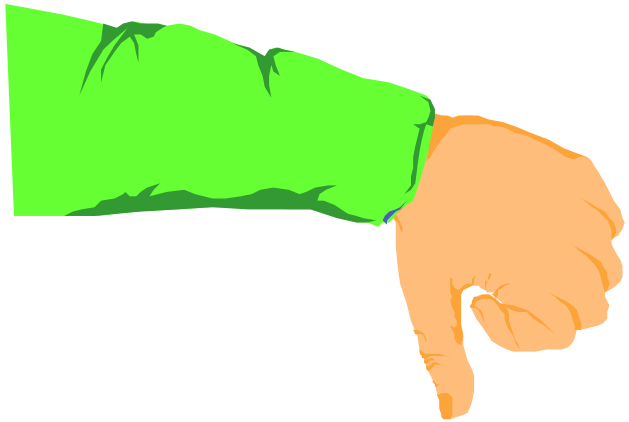
- Before meeting with the client, whether internal or external, collect some basic business-related information
- Such as
  - Products produced/Services supplied
  - Financial viability
  - Customers, suppliers, competitors
  - Competitive advantage

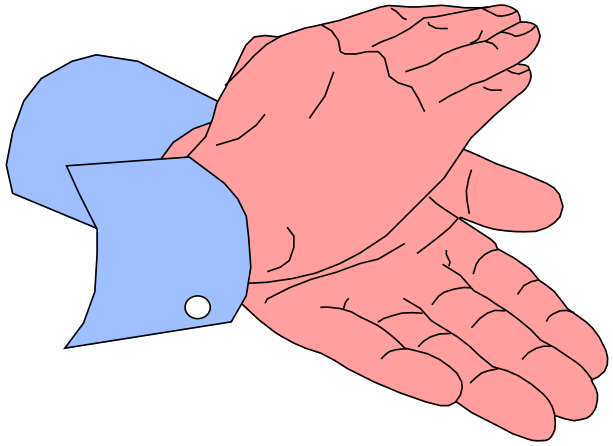
Meet With the Customer

- Try to get
  - A concise statement of the goals of the project
    - What problem are they trying to solve?
    - How will new technology help them be more successful in their business?
    - What must happen for the project to succeed?

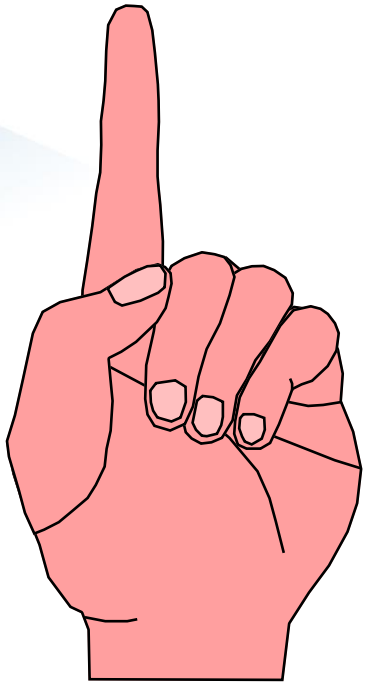
../Meet With the Customer

- What will happen if the project is a failure?
  - Is this a critical business function?
  - Is this project visible to upper management?
  - Who's on your side?





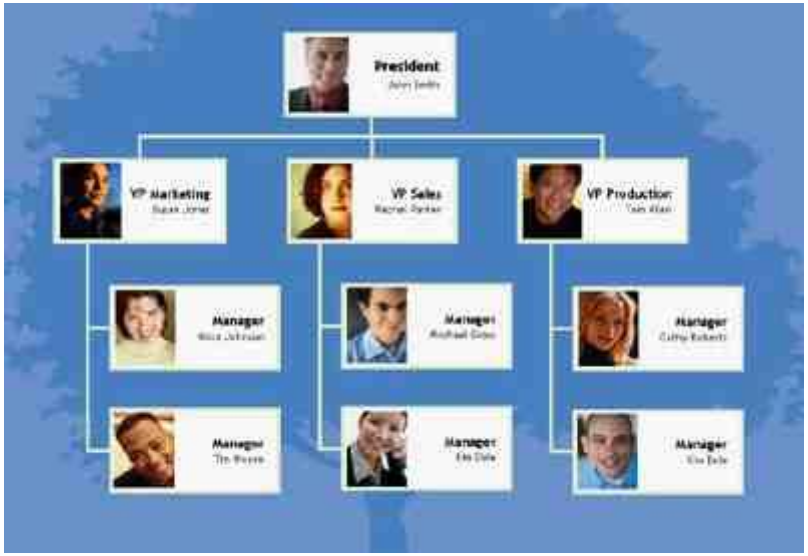
../Meet With the Customer



- Discover any biases
  - For example
    - Will they only use certain company's products?
    - Do they avoid certain technologies?
    - Do the data people look down on the voice people or vice versa?
  - Talk to the technical and management staff

../Meet With the Customer

- Get a copy of the organization chart
  - This will show the general structure of the organization
  - It will suggest users to account for
  - It will suggest geographical locations to account for



../Meet With the Customer

- Get a copy of the security policy
  - How does the policy affect the new design?
  - How does the new design affect the policy?
  - Is the policy so strict that you (the network designer) won't be able to do your job?
- Start cataloging network assets that security should protect
  - Hardware, software, applications, and data
  - Less obvious, but still important, intellectual property, trade secrets, and a company's reputation

The Scope of the Design Project

- Small in scope?
  - Allow sales people to access network via a VPN
- Large in scope?
  - An entire redesign of an enterprise network
- Use the OSI model to clarify the scope
  - New financial reporting application versus new routing protocol versus new data link (wireless, for example)
- Does the scope fit the budget, capabilities of staff and consultants, schedule?

Gather More Detailed Information

- Applications
  - Now and after the project is completed
  - Include both productivity applications and system management applications
- User communities
- Data stores
- Protocols
- Current logical and physical architecture
- Current performance

Network Applications

Name of Application	Type of Application	New Application?	Criticality	Comments

Summary

- Systematic approach
- Focus first on business requirements and constraints, and applications
- Gain an understanding of the customer's corporate structure
- Gain an understanding of the customer's business style
- Top-Down Network Design
  - i.e. analysing your customer's business goal
- Business Goal
  - The capability to run network applications to meet business objectives and within business constraints(budgets, limited personnel, tight timeframes)