

Class 4

Models – The Second Prerequisite

The Processing Network Paradigm (BPR)

Why Queues – via DS-PERT/CPM (Project Management)

Flanders: The intelligent influential skeptic.

Larson: (part of the) production of Justic; DS-Networks

The Processing Network Paradigm (BPR)

- On ReEngineering;
- Building Blocks: customers (jobs), activities, resources, processes (routes);
- Project Management: dynamic stochastic (process) view.

Why (operational) queues?

A systematic answer via Dynamic Stochastic PERT/CPM (Handout)

- Defining Capacity of a service station, hence resource utilization.
 1. Can we do it? capacity analysis;
 2. How long will it take? response-time analysis;
 3. Can we do better? parametric and sensitivity (what-if)analysis;
 4. How much better can we do? optimization/approximations.
- What is prevalent in practice (Critical Chain Method), and what is better/best? some alternative controls.
- Brief survey on Fork-Join queues/networks (as time permits):
 - Bounding average project time by max of iid exponentials;
 - Resource-queues dominate (linear effect)
 - synchronization-queues (log);

Recitation 4: Processing Networks, PERT.

HW 4: “A Processing Network Model of a Service System”.

(The assignment and class-lectures include examples of homeworks.)