

Chapter 2 Process View of the Organization

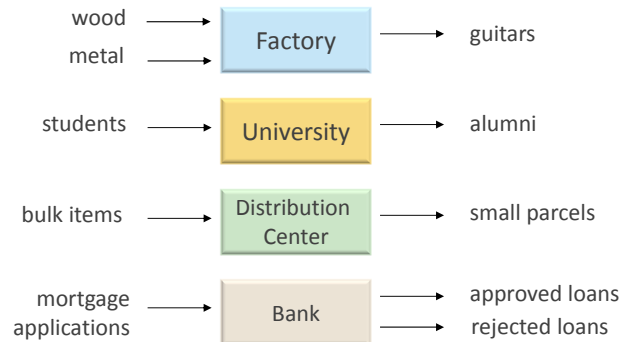
- Process View of a Hospital
- Process Performance
- Process Flow Structures

便當店服務與製作流程規劃



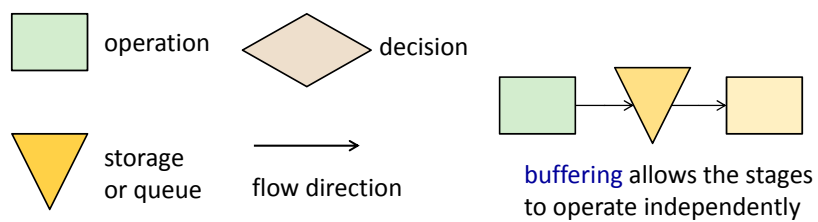
Definition of a Business Process

- A process is a set of activities that accepts inputs and produces outputs.
- Processes can involve both goods and services.



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Process Flowcharting



- What operations are needed to complete a product or service? What is the right sequence?
- Business Process Reengineering 企業流程再造

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2.1 Presbyterian Hospital

Process of Interventional Radiology Procedures

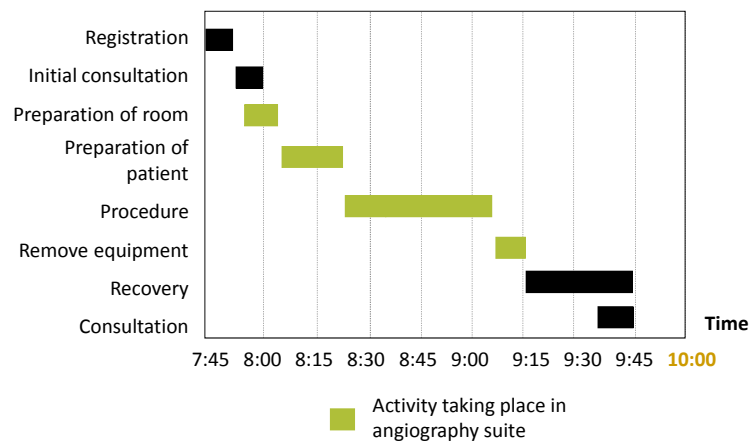
- Registration of the patient
- Initial consultation; signing the consent form
- Preparation for the procedure
- The actual procedure
- Removal of all equipment
- Recovery room
- Consultation with the doctor



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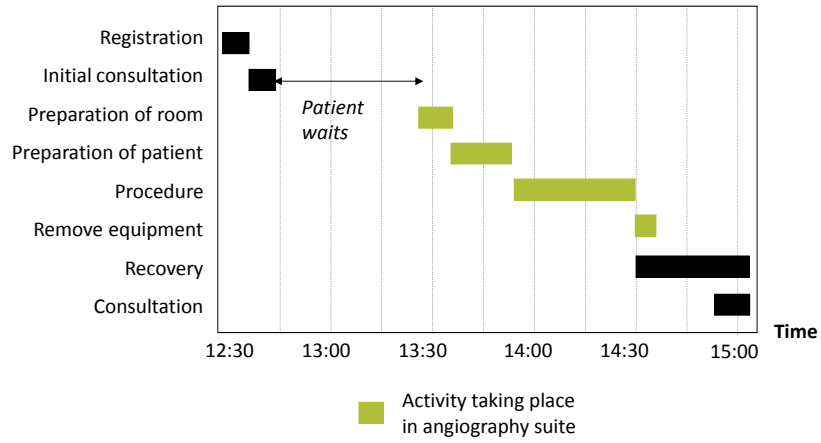
Process View of the Patient

Ideal Scenario for the first patient (no waiting times)



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Actual Activities for a Patient arriving at 12:30



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Time Patient Spent in the IR Unit

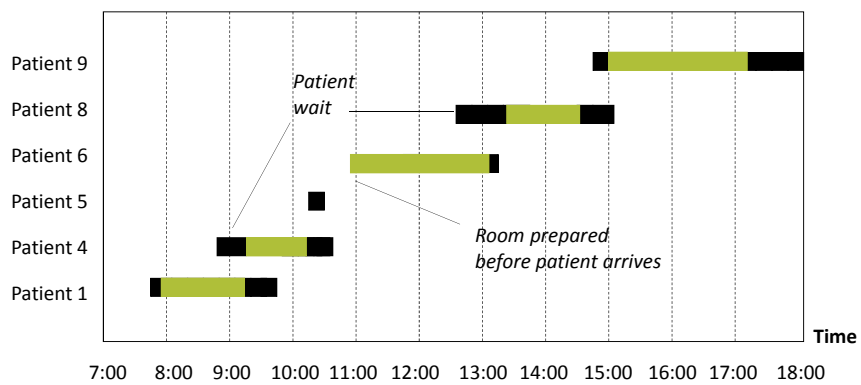


Figure 2.4: Time patient spent in the interventional radiology unit (for patients treated in main room only), including room preparation time

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Process View from the Hospital

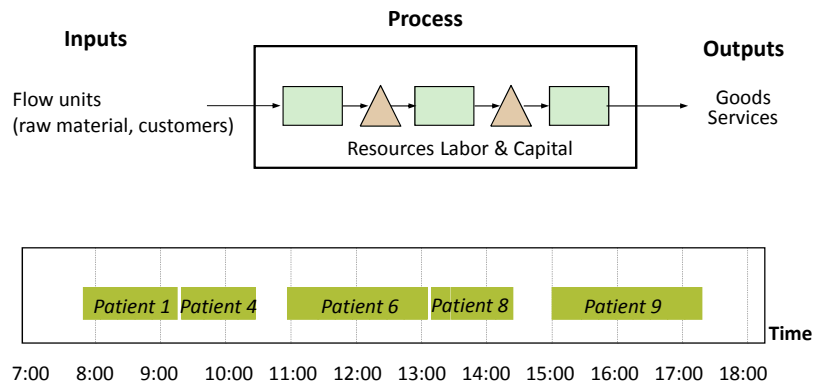


Figure 2.5.: Usage of the main room

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Two Sides of the Same Coin

From the perspective of the hospital

Why is there waiting time?

Why is the resource under-utilized?

∴ limited supply and variable demand

From the egocentric perspective of the patient

Long wait time despite arriving on time.

∴ poor planning ∴ perception of low quality

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2.2 Three Measures of Process Performance

- **Flow time**

The time it takes to go through the process. It consists of processing times and possible delays.

- **Work in Process (inventory)**

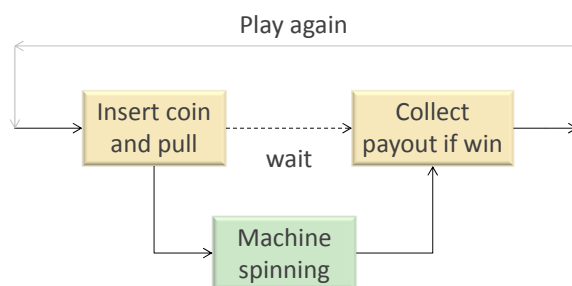
Number of flow units in the process; or its average across a time period.

- **Throughput Rate or Flow Rate**

Amount of output per time unit. The capacity of the process is the maximum throughput rate.

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Flow Time Analysis of Slot Machines



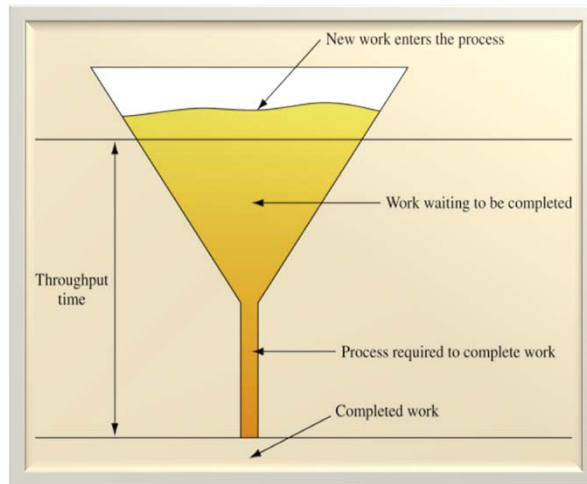
The faster the customer plays, the more money the casino will earn.



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2.3 Little's Law

avg. Inventory = avg. flow rate × avg. flow time



$$\text{flow time} = \frac{\text{Inventory}}{\text{flow rate}}$$

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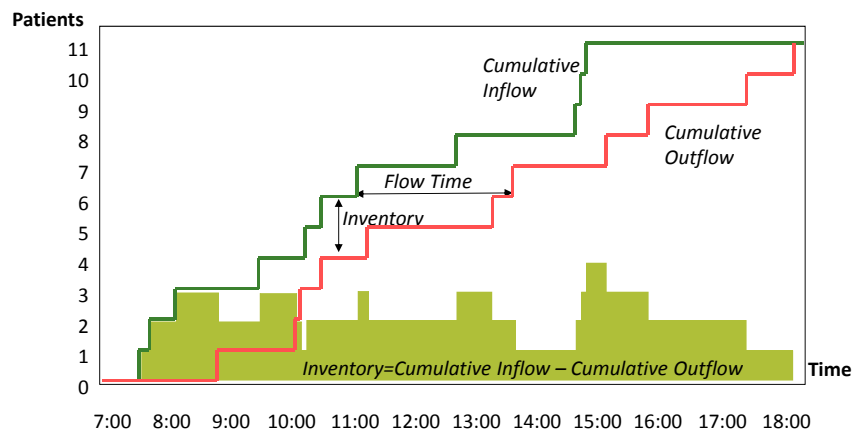


Figure 2.7: Cumulative In-flow and Out-flow

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2.4 Inventory Turns (low contact service)

avg. Inventory value = avg. sales × avg. flow time

- Inventory turn = $\frac{\text{Cost of Goods Sold}}{\text{average inventory value}}$
- Days of supply = $\frac{\text{average inventory}}{\text{average daily demand}}$
- Flow time = $\frac{1}{\text{Inventory Turns}}$

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Comparing Kohl's and Wal-Mart

	2011	2010	2009	2008	2007
Kohl's					
Revenue	18391	17178	16389	16474	15544
Cost of Goods Sold	11359	10679	10332	10459	9890
Inventory	3036	2923	2799	2856	2588
Net Income	1114	991	885	1084	1109
Inventory Turn	3.74	3.65	3.69	3.66	3.82
Walmart					
Revenue	418952	405046	401244	374526	344992
Cost of Goods Sold	307646	297500	299419	280198	258693
Inventory	36318	33160	34511	35180	33685
Net Income	16389	14335	13118	12884	12036
Inventory Turn	8.47	8.97	8.68	7.96	7.68

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Examples of Process Performance

	U.S. Immigration	Champagne Industry	MBA Program	Large PC Manufacturer
Flow unit	Application for immigration benefit	Bottle of champagne	MBA student	Computer
Flow rate/ throughput	Approved or rejected visa cases: 6.3 million per year	260 million bottles per year	600 students per year	5,000 units per day
Flow time	Average processing time: 7.6 months	Average time in cellar: 3.46 years	2 years	10 days
Inventory	Pending cases: 4.0 million cases	900 million bottles	1,200 students	50,000 computers

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Design a process to increase flow rate.

Design a process to offer more selections.

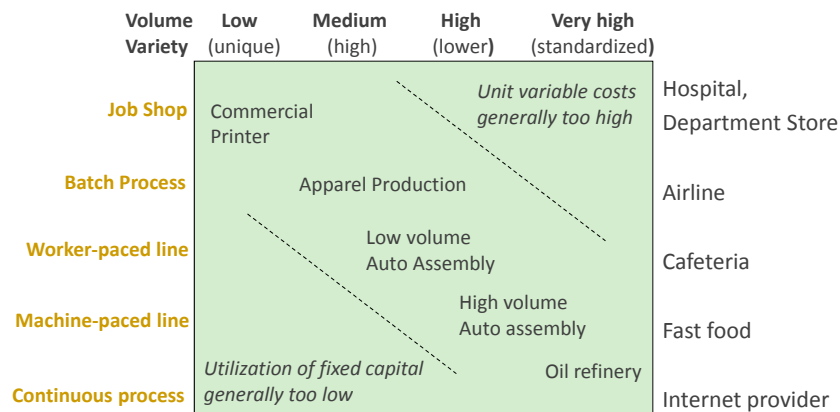
Design a process to reduce wait times.

Design a process to control inventory.

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2.6 Process Flow Structures

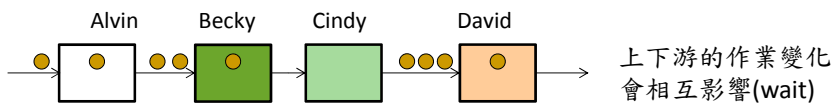
How to organize material or customer flow?



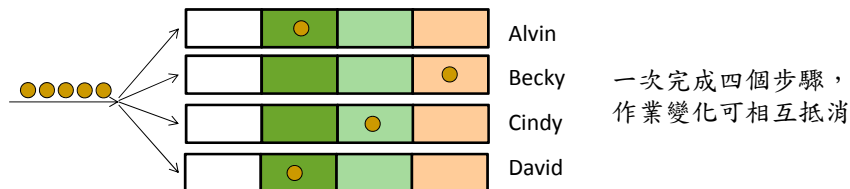
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Flow Line Structures

serial specialized processing 分工接力處理

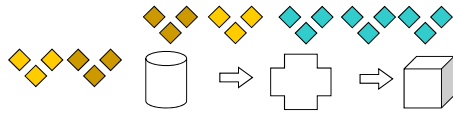


parallel generalized processing 平行全權處理



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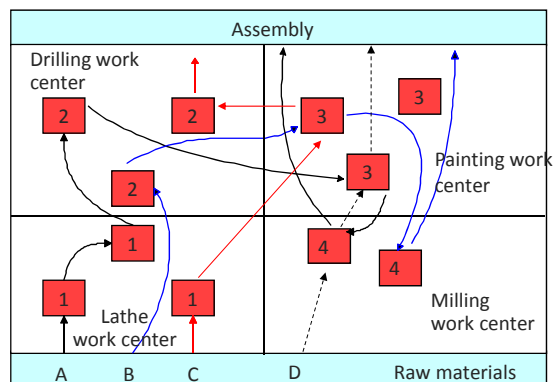
Batch Process vs. Continuous Process



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Job Shop

Small batches of different products with different processing sequences



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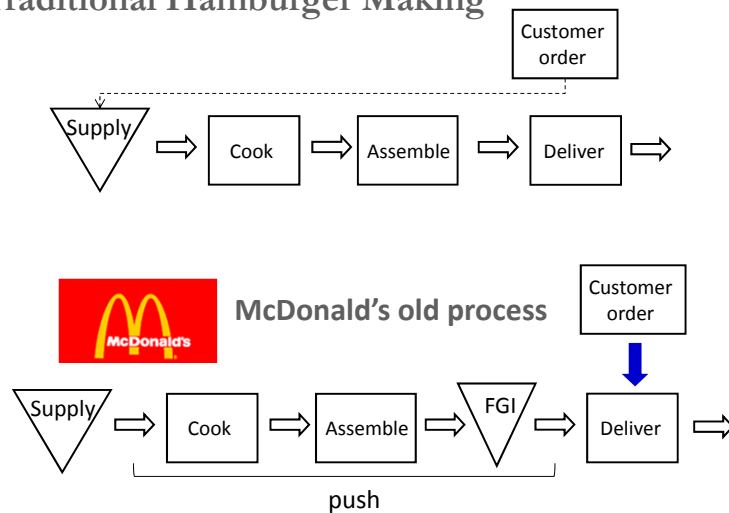
What Drives a Process Flow?

	Make-to-Stock	Make-to-Order
Production mode	Make standard products for future demand.	Process is activated in response to actual orders.
Process characteristic	Standardized product. Lower production cost.	Product variety. Flexible process.
Advantage	Fast delivery (no wait) Handling seasonal demand.	Inventory control Customer satisfaction.
Challenge	Forecasting and setting target stocking level.	Delivery (flow time) Quality control

Hybrid: Build to Order, Configure to Order

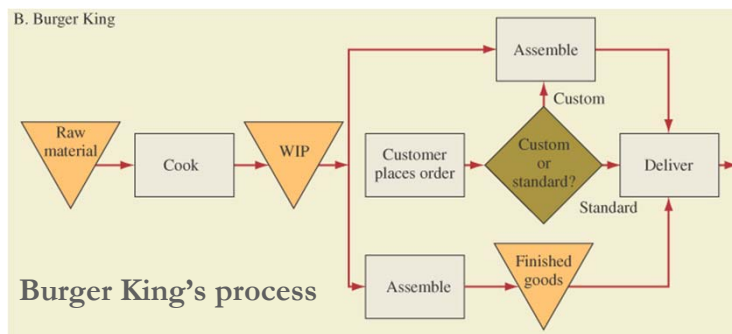
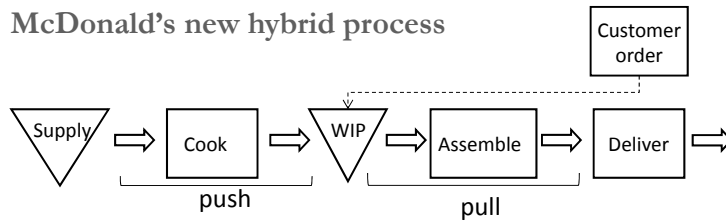
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Traditional Hamburger Making



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McDonald's new hybrid process



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A firm needs to have good products and good processes

The server's perspective is different from the customer's perspective.

Process performance measures

- High contact service: wait times
- Manufacturing and Retail service: inventory

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