

Continuous Improvement (CIP)

Module 3 – Process

Constraint Management

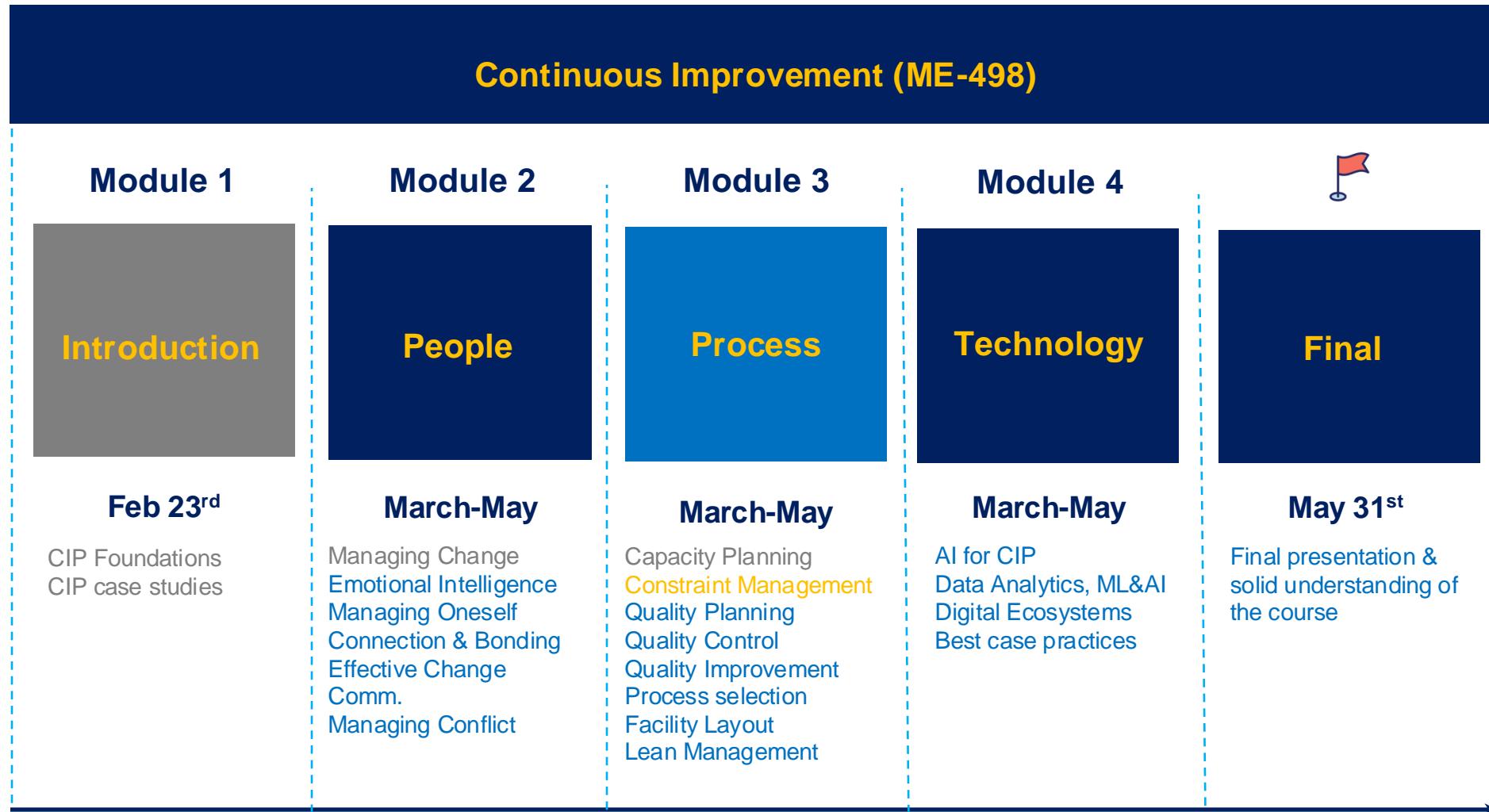
Amin Kaboli

Week 3, Session 2, Mar 07th, 2025

Course Framework



Change Plan
Strategic plan



Agenda of the day

- **13:15 – 14:00 Quiz & Q&A**
- **14:15 – 15:00 Module 3 – Process: Constraint Management**
- **15:15 – 16:00 Assignment 2 - Growth Mindset**
- **16:15 – 17:00 Guest Speaker; Head of AI Unit, EU Commission**

Question 1:

What is a Bottleneck?

What is a Bottleneck?



Bottleneck: The limiting factor or constraint in a system.

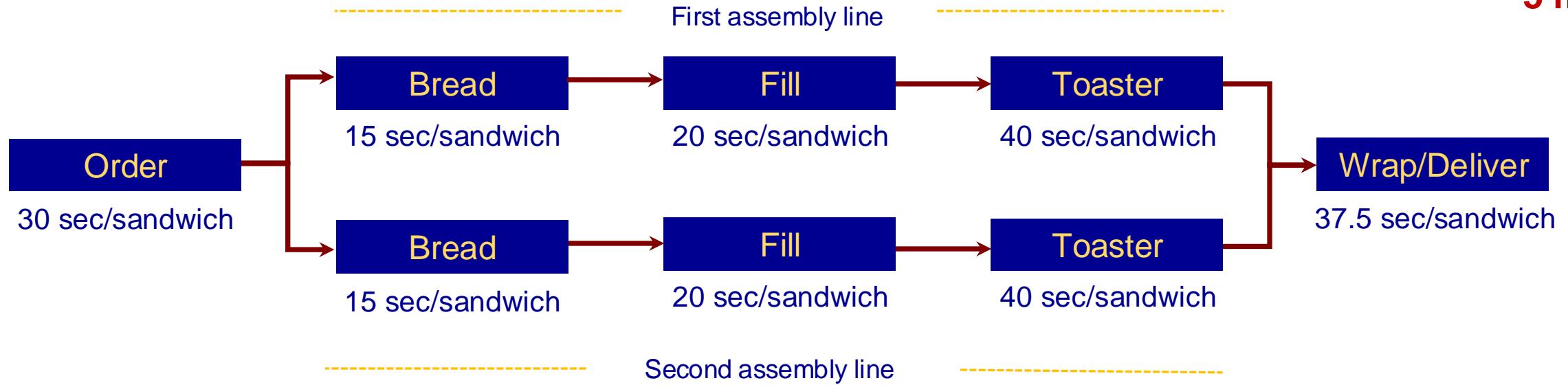
What is a Throughput Time?



Throughput time: The time it takes for a product to go through the production process with no waiting. It is the time of the longest path through the system.

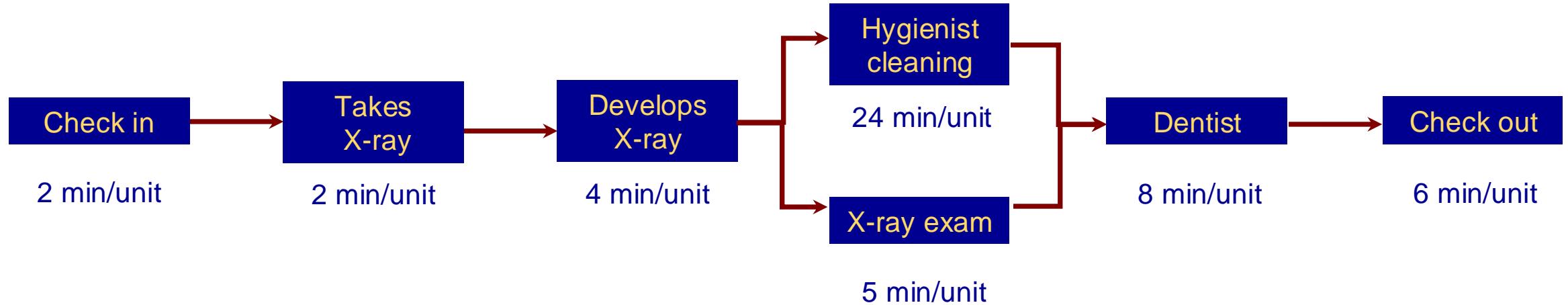
Throughput time: $2 \text{ min} + 4 \text{ min} + 3 \text{ min} = 9 \text{ Min}$

Exercise 5 – Capacity Analysis with Parallel Processes



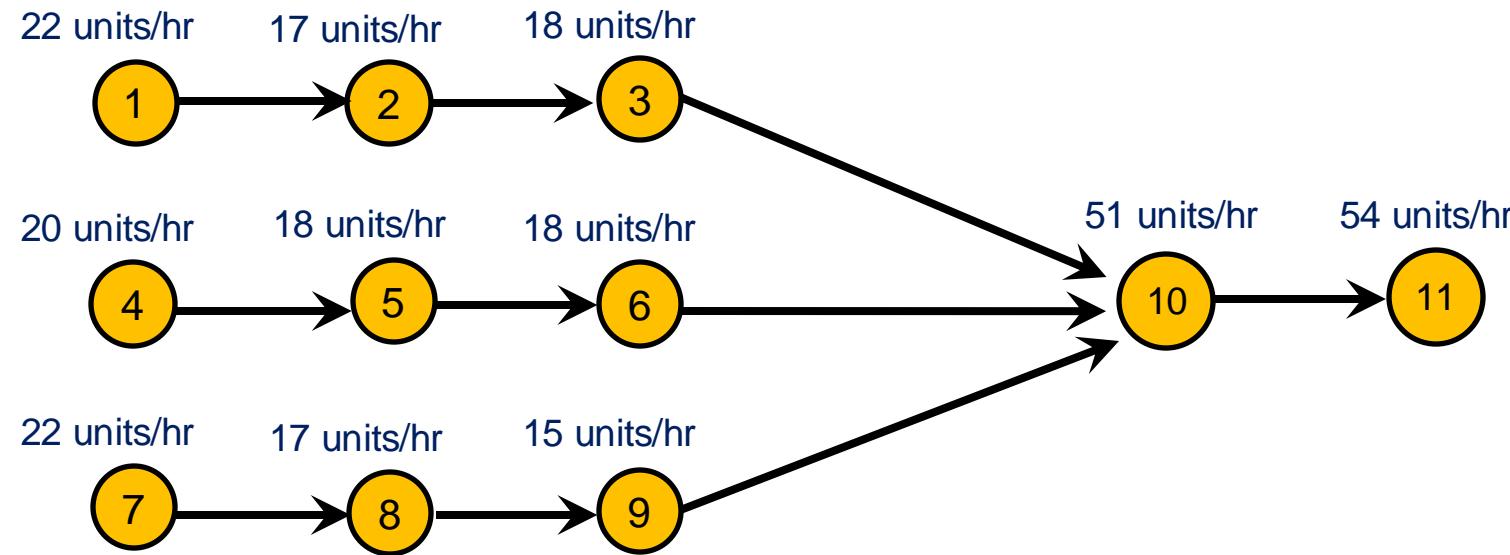
- 1) What is the bottleneck?
- 2) What is the capacity/hour?
- 3) What is the throughput time?

Exercise 6 – Capacity Analysis with Parallel Processes



- 1) What is the bottleneck?
- 2) What is the throughput time?
- 3) How to improve the processes?

Exercise 7 – Capacity Analysis with Parallel Processes



- 1) What is the bottleneck?
- 2) What is the capacity of the current system?
- 3) If you could increase the capacity of only one operation which operation would you select?

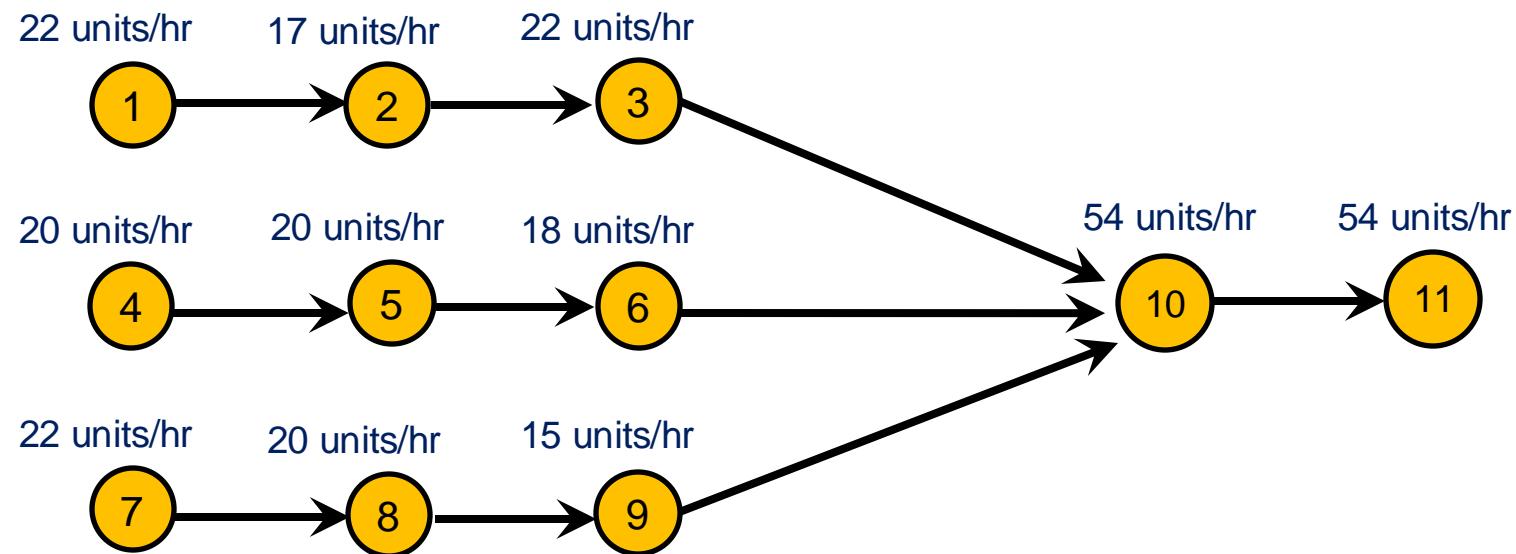
Question 2:

How to Manage Bottlenecks?

How to Manage Bottlenecks - Theory of Constraints (TOC)

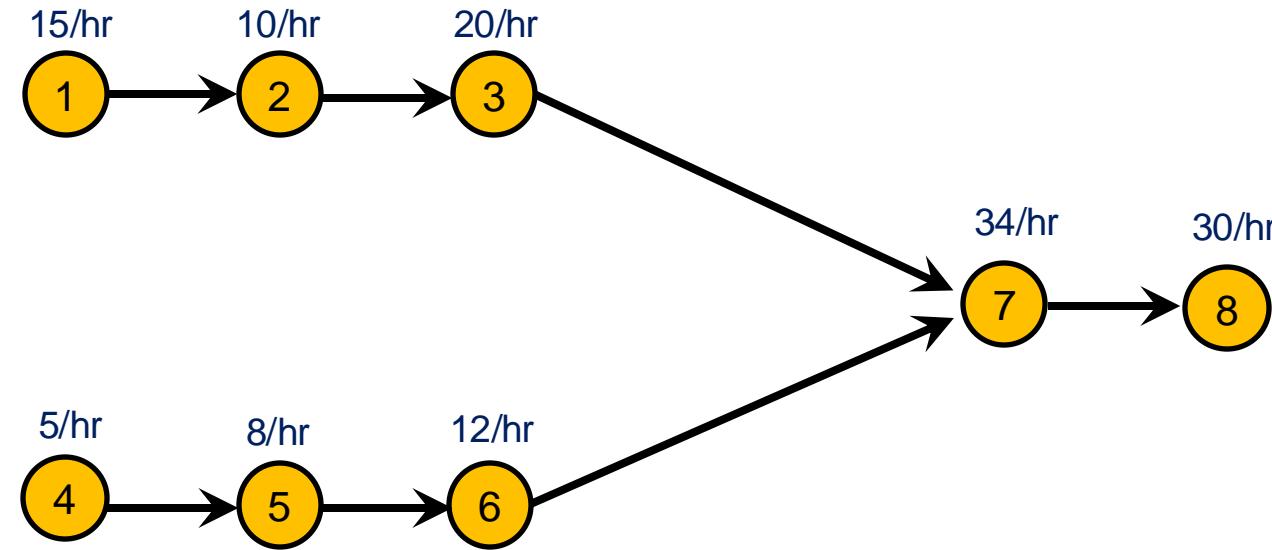
- **Step 1:** Identify the constraints.
- **Step 2:** Develop a plan for overcoming the identified constraints.
- **Step 3:** Focus resources on accomplishing step 2.
- **Step 4:** Reduce the effects of the constraints by offloading work or expanding capacity.
- **Step 5:** When one set of constraints is overcome, go back to step 1 for new constraints.

Exercise 9 – Implement Theory of Constraints



- 1) What is the constraint (bottleneck)?
- 2) What is the capacity of the current system?
- 3) What is your plan for overcoming the constraint?
- 4) How do you allocate your resources?
- 5) How do you reduce the effects of constraints?

Exercise 10 – Implement Theory of Constraints



- 1) What is the constraint (bottleneck)?
- 2) What is the capacity of the current system?
- 3) What is your plan for overcoming the constraint?
- 4) How do you allocate your resources?
- 5) How do you reduce the effects of constraints?

Question 3:

How to Improve Capacity Utilization?

Improving Capacity Utilization

- **Main assumption:** There is a demand for the output of the system
- Effective training of employees
- Improving quality
- Bottleneck equipment utilization
- Maintaining equipment in a proper condition

Assignment 4 – Constraints Management & Managing Waiting Lines

- How do you develop capacity strategies for your case? what is/are your recommendations?
 - How do you measure the capacity (design, effective, actual) of this process/system?
 - What are utilization and efficiency of this process/system?

Hint: you may review the book chapter (page 11-17) and select some of the proposed strategies and expand them on your case
- Is there any constraint/bottleneck or anything that limits the performance of a process/system in your case?
 - How do you categorize this constraint/bottleneck?
 - How do you suggest to implement the theory of constraints (TOC) to manage bottlenecks?

Note: at least two iterations
- How do you measure the impact of your proposed improvement?
- Waiting lines management
- Deadline: March 21st

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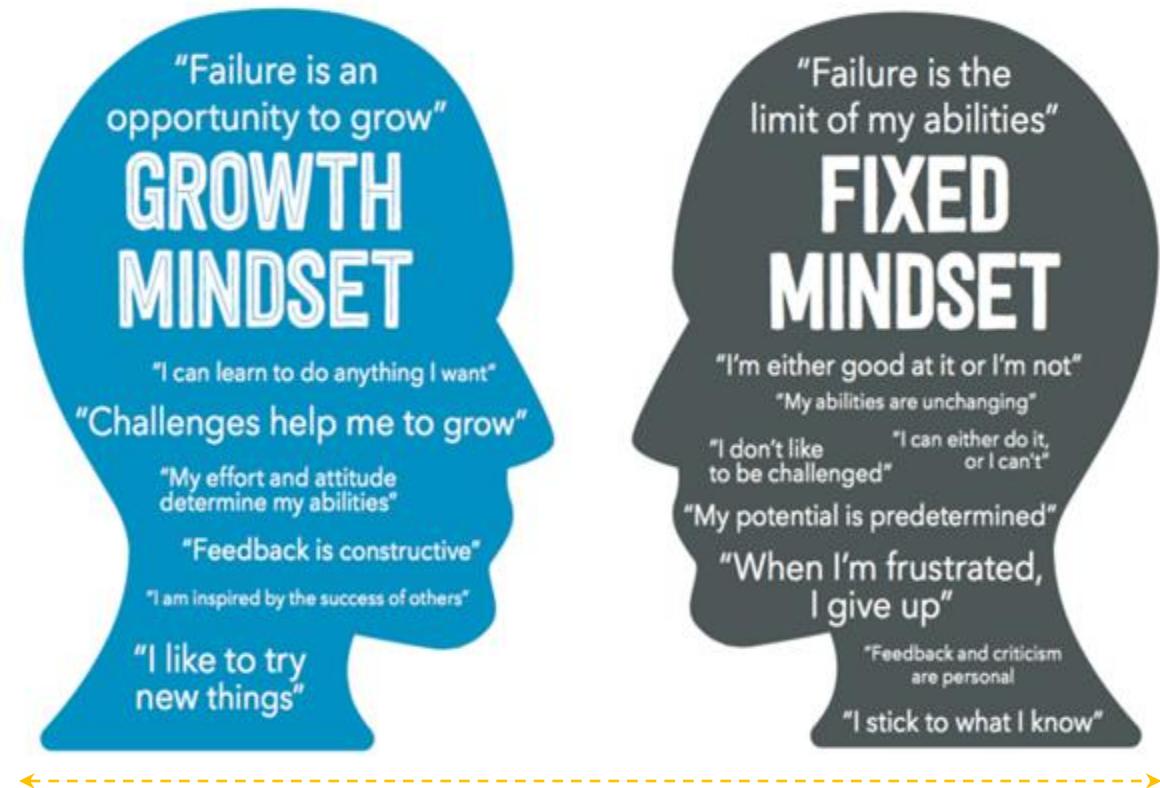
Module 2 – People

Growth Mindset

Amin Kaboli

Week 3, Session 3, Mar 07th, 2025

Two Mindsets: Growth vs Fixed



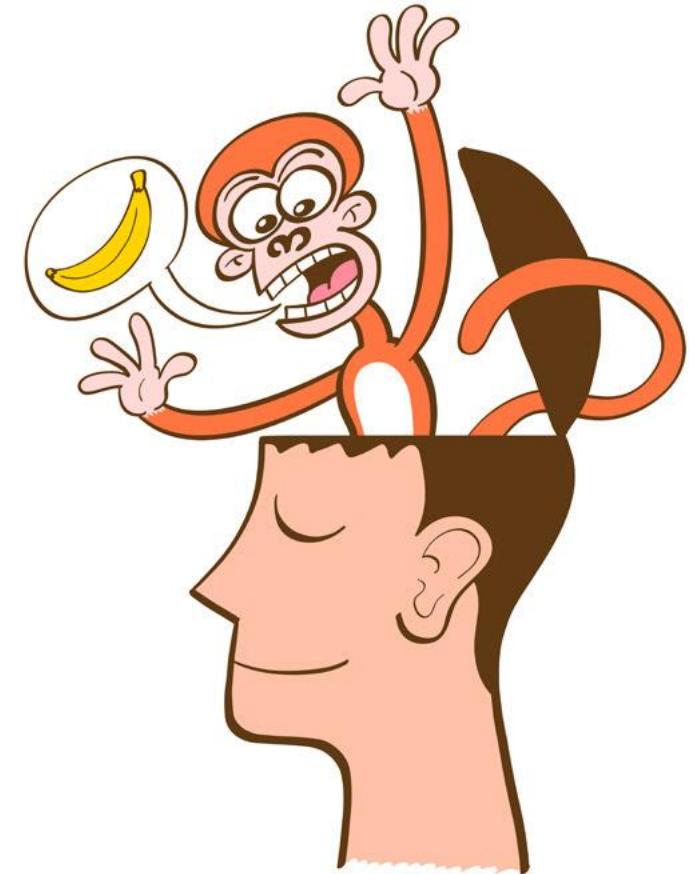
Source: Carol Dweck, *The Growth Mindset*, Random House, 2016.

The Mind



The mind is the set of **cognitive faculties including consciousness, imagination, perception, thinking, judgement, language and memory**, which is housed in the brain.

The Mind and the Monkey

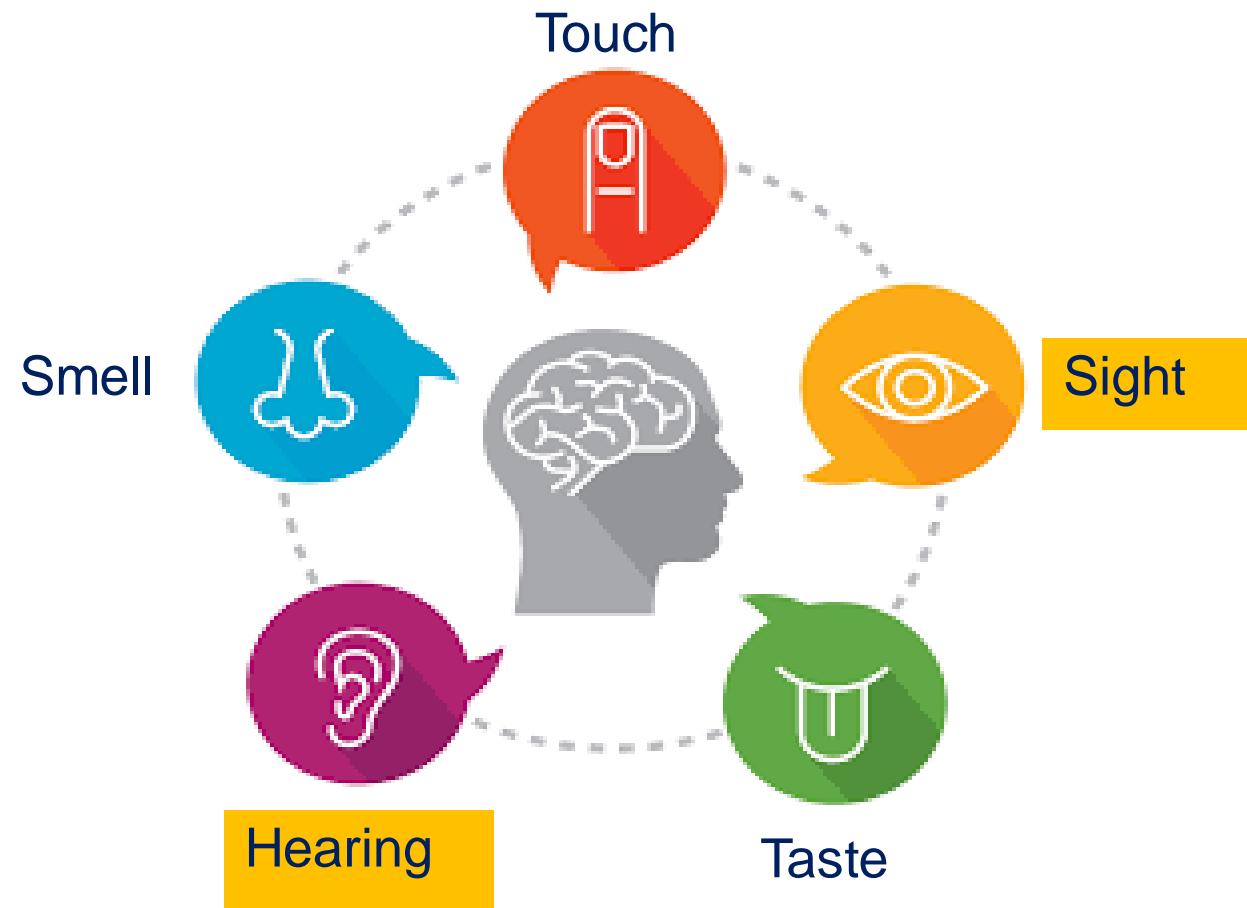


The monkey, the voice in the head, rumination, ...

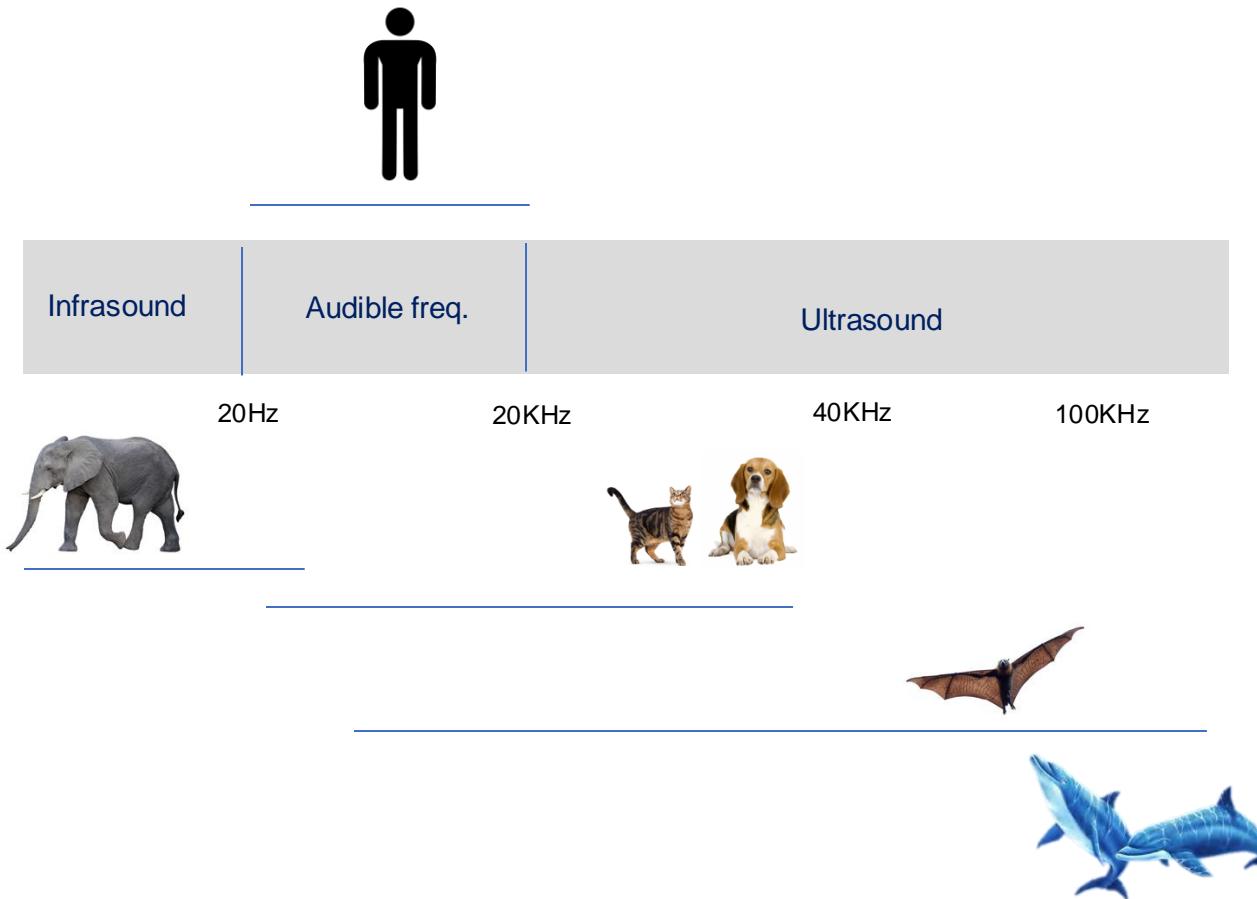
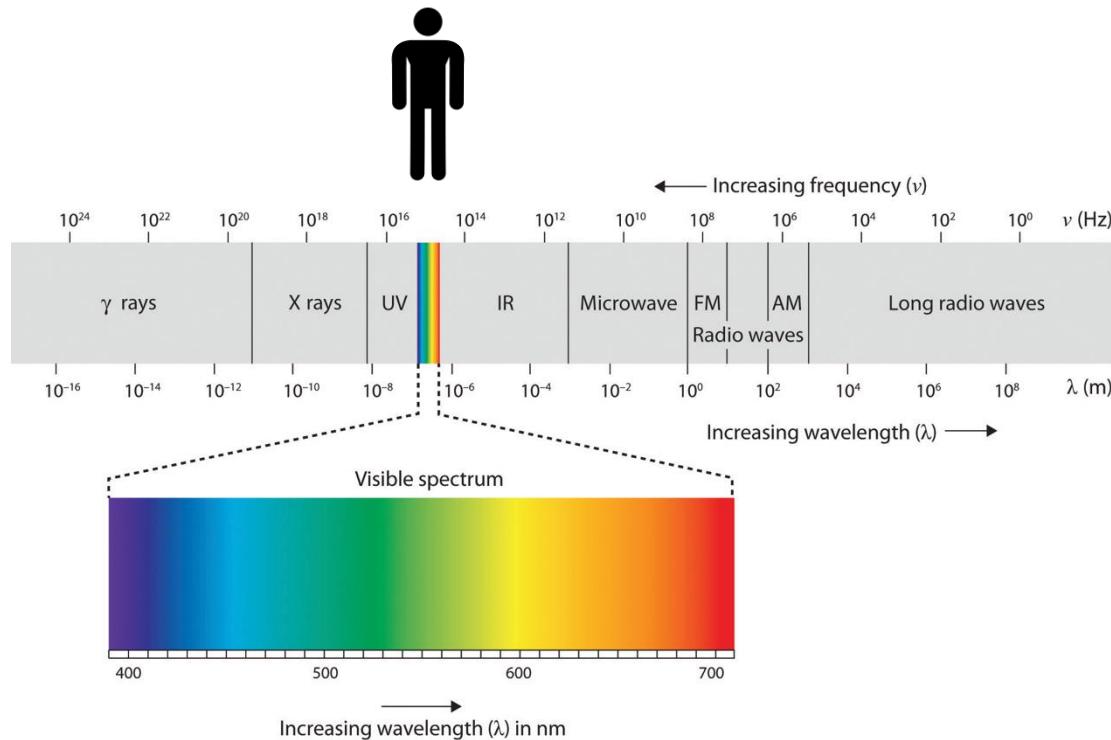
Perception – Our Five Senses



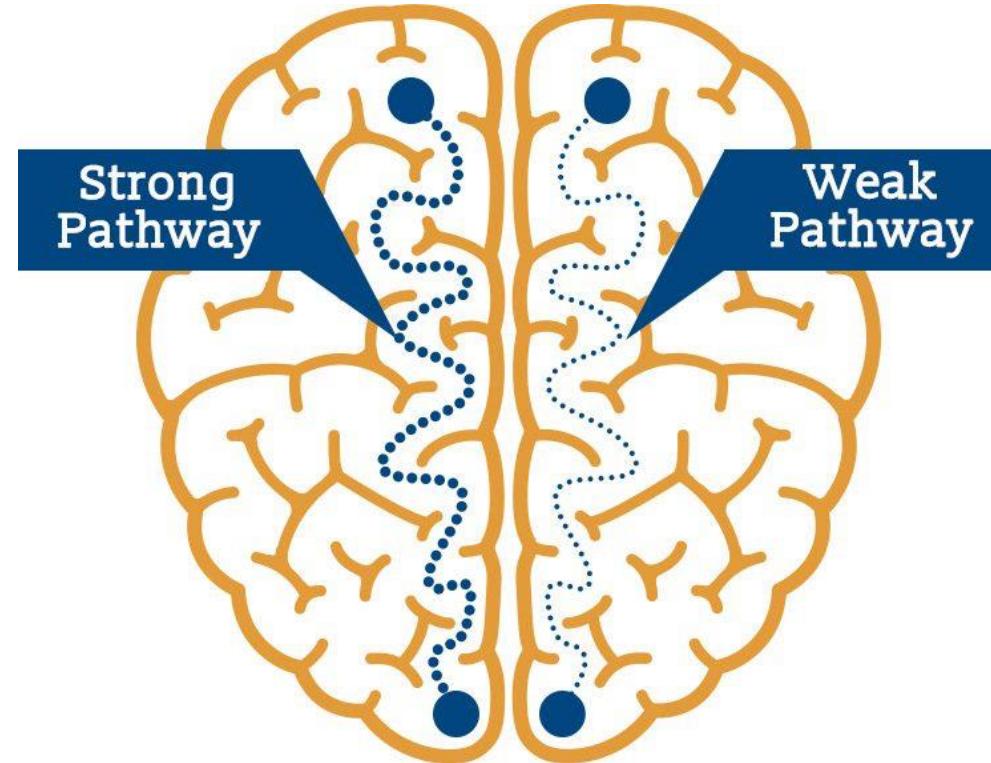
Perception – Two Main Senses



Perception Limitations – Sight and Hearing

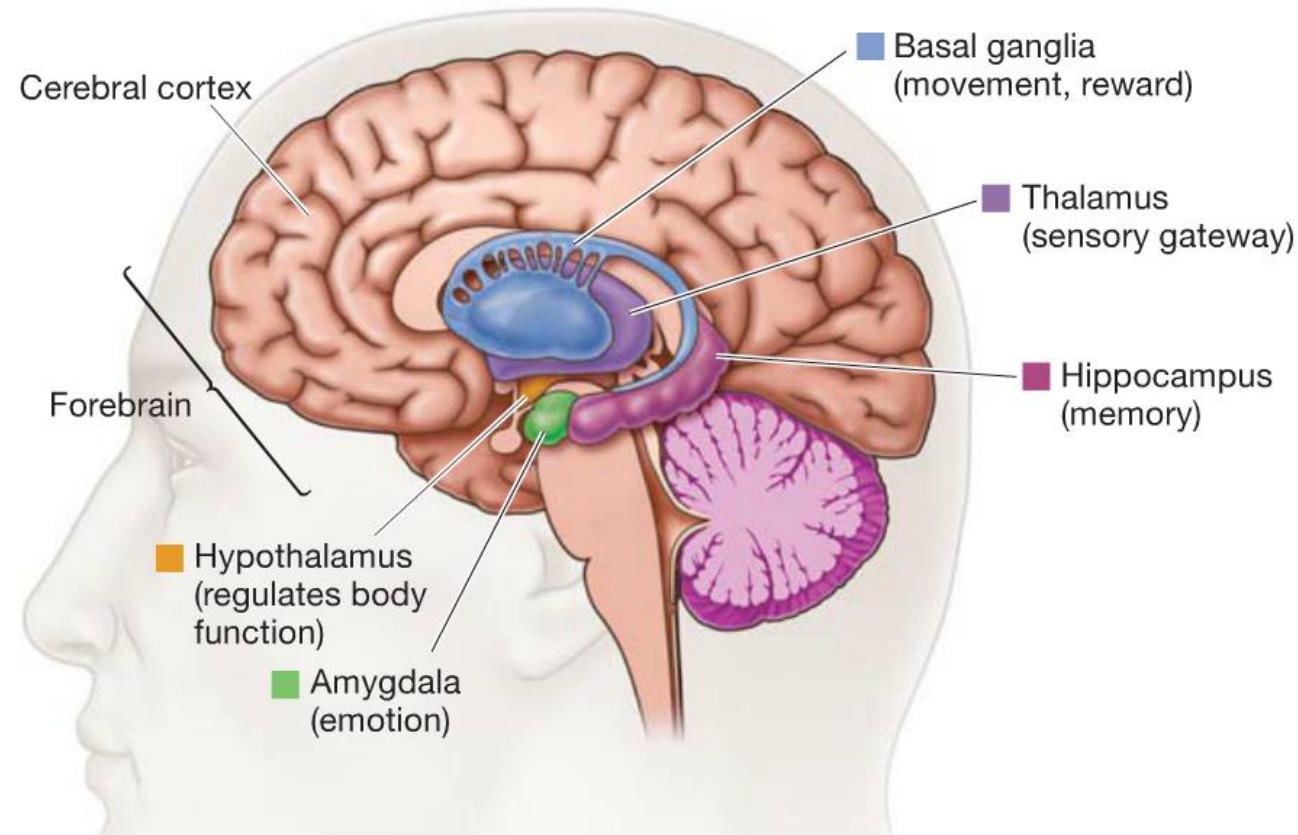


Change – Brain's Neuroplasticity



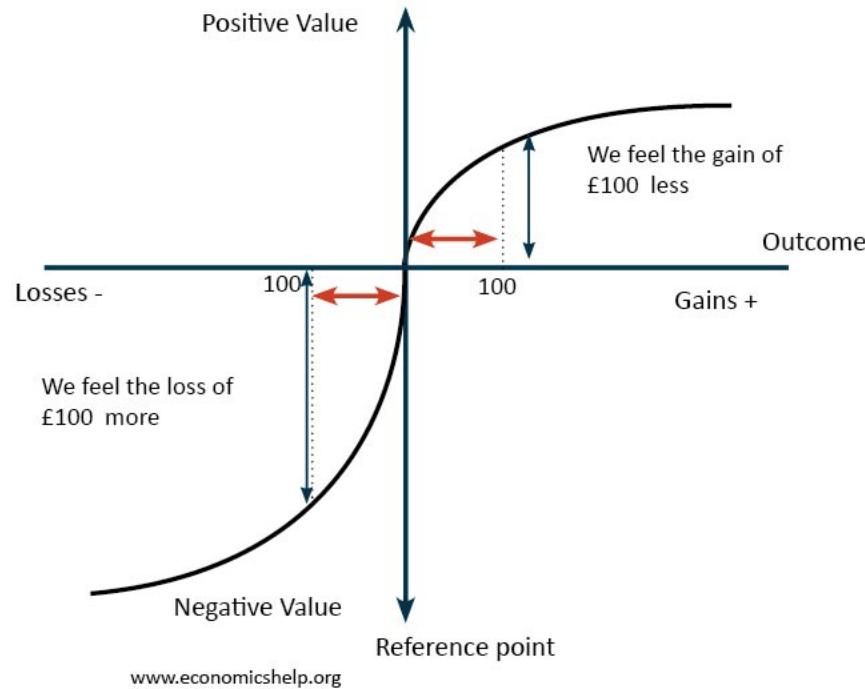
The ability of the brain to change throughout an individual's life

Change – Amygdala Hijack



Amygdala Hijack: Fight, Flight, or Freeze

Change – Do You Like Change?



Research shows we are fundamentally negative.
Survival – we are basically driven by fear, loss, ...

Leading Change – Self Awareness



The ability to see yourself clearly and objectively through reflection and introspection.

The CEO effect

Microsoft stock price by CEO tenure (\$US)

In October 2016 the company's stock price reached a level unseen since 1999. However, Microsoft's market cap, now about \$US460 billion, remains well off the \$US600 billion peak because huge buybacks have reduced the share count.





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Guest Speaker

AI in Research & Science

Liviu STIRBAT

Week 3, Session 3, Mar 07th, 2025