

# Universal Systems Model

Foundations of Engineering and  
Technology

# Technology System

- The complete process of designing, creating, using a tool and the result of its use.
- Each technology has parts that have a relationship with all other parts and to the whole.

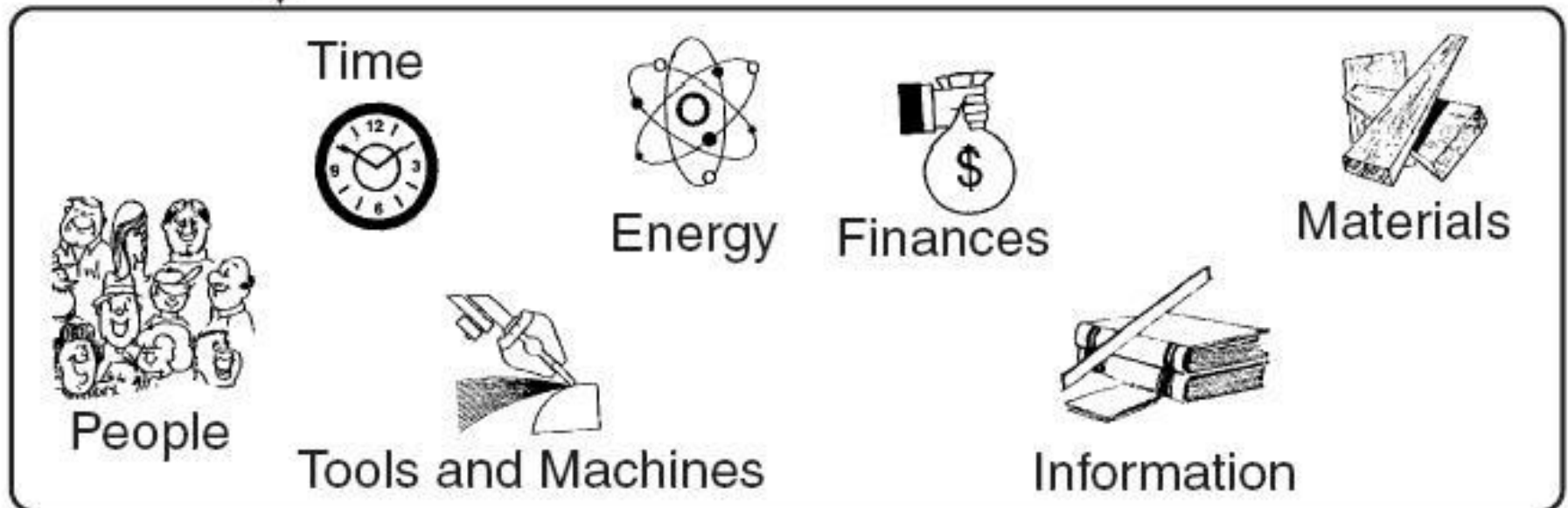
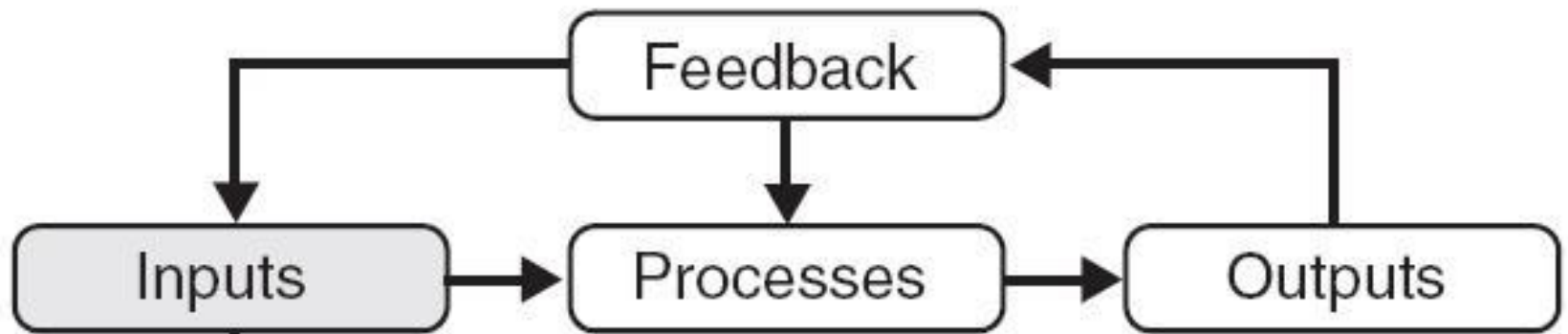
# Technology Systems Are:

- Created from human need or want
- Designed and developed by people
- Modified and/or abandoned over time

# Universal Systems Model Steps

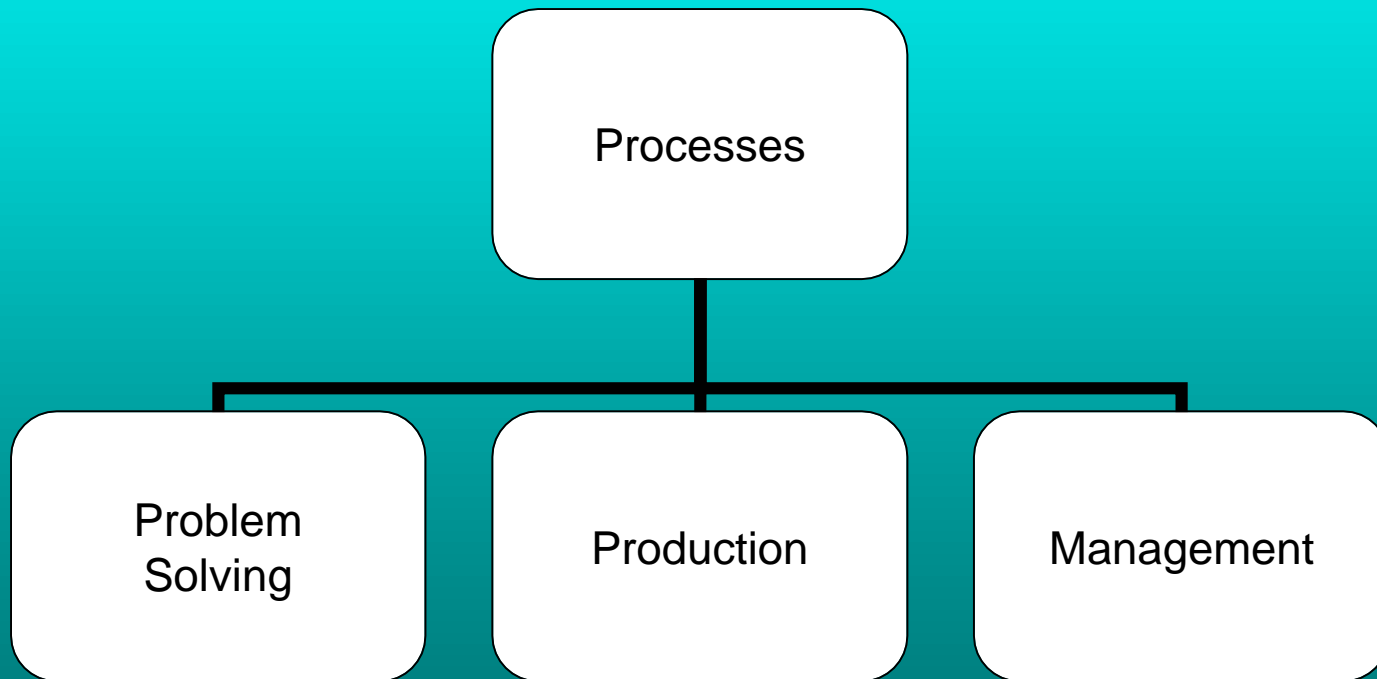
1. Inputs- elements that flow into the system and are consumed or processed in the system
  - 7 different inputs
    - » People – Everyone involved in any capacity
    - » Materials – Think Ingredients
    - » Tools or Machines – Output from another system used to modify or manipulate materials
    - » Energy – What is used to power equipment?
    - » Information – Recipe . . . Output from the problem solving process
    - » Finances – Cost for other inputs
    - » Time – Time to manufacture, develop, enhance, innovate

# UNIVERSAL SYSTEMS MODEL



# Universal Systems Model Steps

2. Processes- the steps needed to complete the task



# *Processes*

- *Problem Solving Process*
  - Identifying the problem
  - Developing solutions to the problem
  - Isolating and detailing the best solution
  - Modeling and evaluating the chosen solution
    - Pictorial or physical models
  - Selecting final solution and preparing for production
    - These were researched in project Tech before I was born

# Types of Processes

## Production Process

Actions completed to produce the product, structure or service

Action Verbs

## Management Process

Controlling and supervising the people, materials, and the production of the output.

Hierarchy – Org Chart



# Universal Systems Model Steps

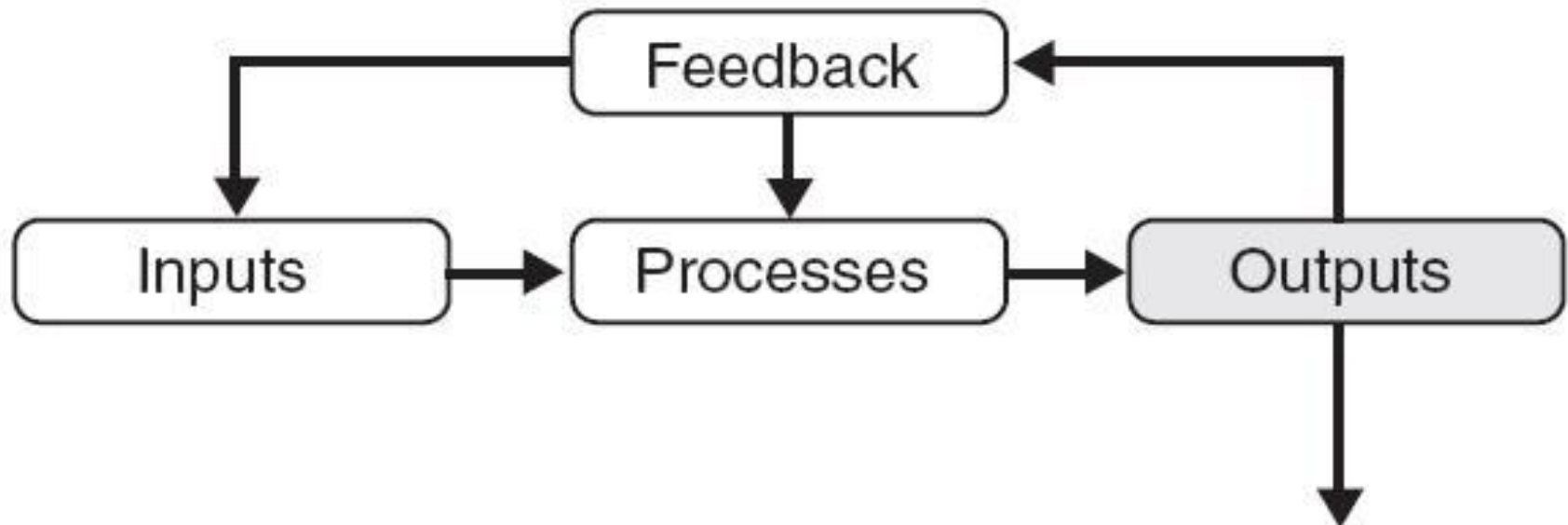
## 3. Outputs

- Finished product and wastes or pollution
  - Desired or Undesired
  - Intentional or Unintentional
  - Immediate or Delayed
    - Can you have outputs that fit into multiple areas?

## 4. Feedback- Information about the output of a system used to regulate the inputs and processes

Balance sheet – Revenue – Market Share

# UNIVERSAL SYSTEMS MODEL



Desired or Undesired  
Intended or Unintended  
Immediate or Delay  
Can you have more than  
one?



Scenario #1: A company in Castledale, Utah buys cocoa beans from Columbia and sugar from Hawaii to make chocolate candy bars. They make the bars in a manufacturing plant and ship them to stores all across the United States. People love them so much and have bought enough candy bars that soon the company will start selling in Canada and Mexico, too.

Identify the:

Input(s) \_\_\_\_\_

Process(es) \_\_\_\_\_

Output(s) \_\_\_\_\_

Feedback \_\_\_\_\_

Scenario #2: ABC Video Games has just created a new simulation where a player can turn into a prehistoric dinosaur of their choice. ABC produces the game with the cheapest electronic circuits and plastic case they could find. They program the electronic circuits and place the circuits inside the plastic case. Then the games are packaged in a small paper box. The packaged video games are shipped to only a few stores, and customers find that after they buy the video games, many of them do not work and the plastic case splits apart from not being glued together very well.

Identify the:

Input(s) \_\_\_\_\_

Process(es) \_\_\_\_\_

Output(s) \_\_\_\_\_

Feedback \_\_\_\_\_

Scenario #3: Mommy Tilfiger makes the world's classiest clothes. They buy their materials from the finest textile manufacturers and then cut and sew the fabrics to precise sizes. They have a quality control program to avoid having defective clothes from ever leaving their manufacturing plant. The clothes that do get to the stores sell remarkably well, even though they cost much more than clothes made much like the Tilfiger brand.

Identify the:

Input(s) \_\_\_\_\_

Process(es) \_\_\_\_\_

Output(s) \_\_\_\_\_

Feedback \_\_\_\_\_

Scenario #4: Chevroford Motor Company has developed an electric car that converts the sun's radiant energy into electricity through photovoltaic (foto-vol-TAY-ic) cells. The electricity then turns an electric motor that is connected to the car's gearbox. The gearbox is connected to the wheels that get the whole car moving. There is an on-board computer that tells the driver how much energy is being used and how fast the car is going.

Identify the:

Input(s) \_\_\_\_\_

Process(es) \_\_\_\_\_

Output(s) \_\_\_\_\_

Feedback \_\_\_\_\_

- Your Tasks:
  1. Complete the USM activity (either paper copy or on the online form)
  2. Complete the 16 personality types quiz
  3. Work on the USM presentation (rubric on my blog)
    - PowerPoint is fine
    - Groups of <3.1
    - Don't really need 2-3 examples of each input types
    - Plan on us presenting tomorrow

About Presenting:

Relax!

Please don't read the PowerPoint