

CAST IN STONE

Exploring Fractals in Organizational Systems

presentation
by

Theodora Rondozi
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Uncovering the parallels
between fractal
geometry and
organizational
behaviour



Have you ever noticed?

**Your blood
vessels**

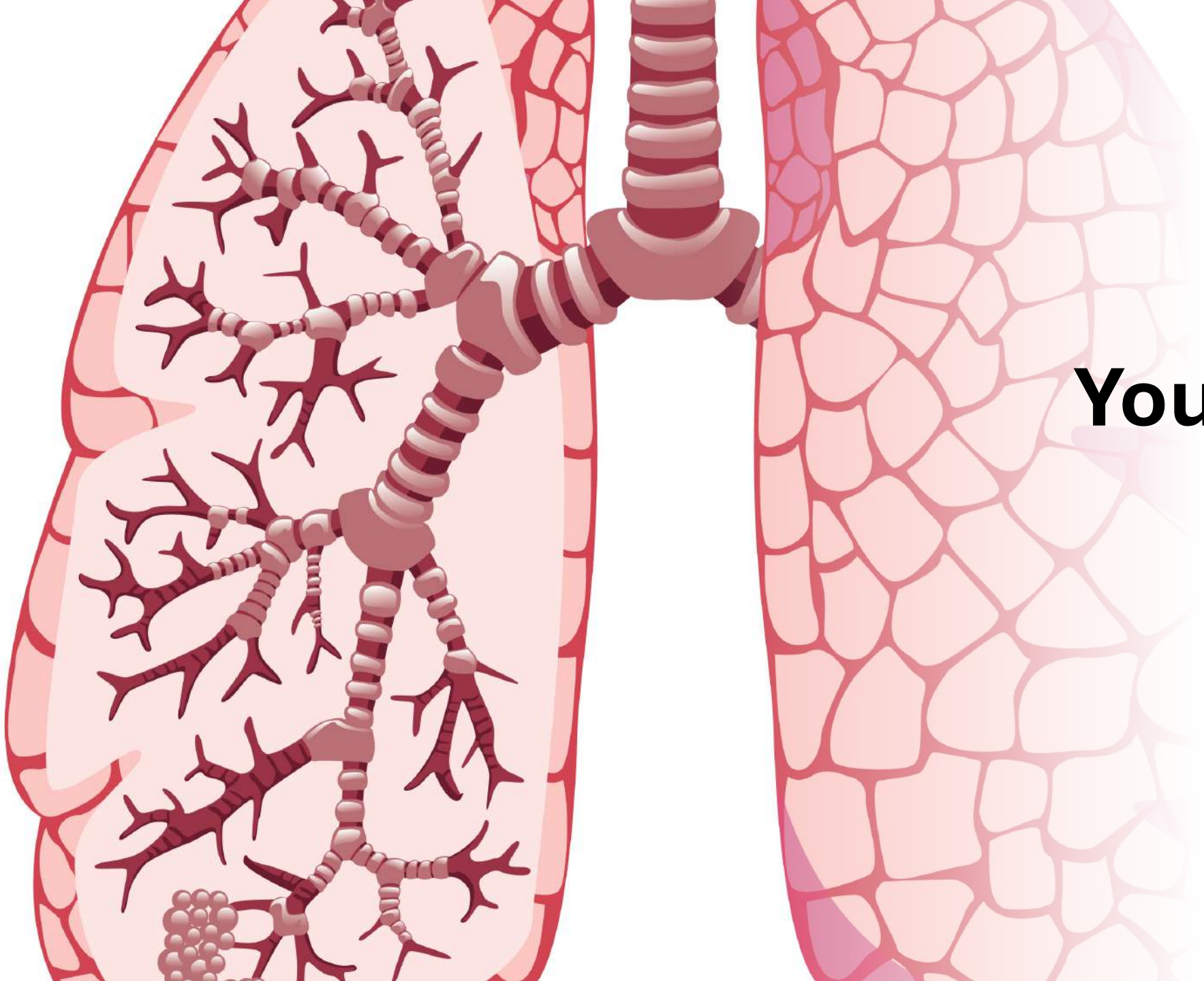


**Leaves
on a tree**



Romanesco broccoli



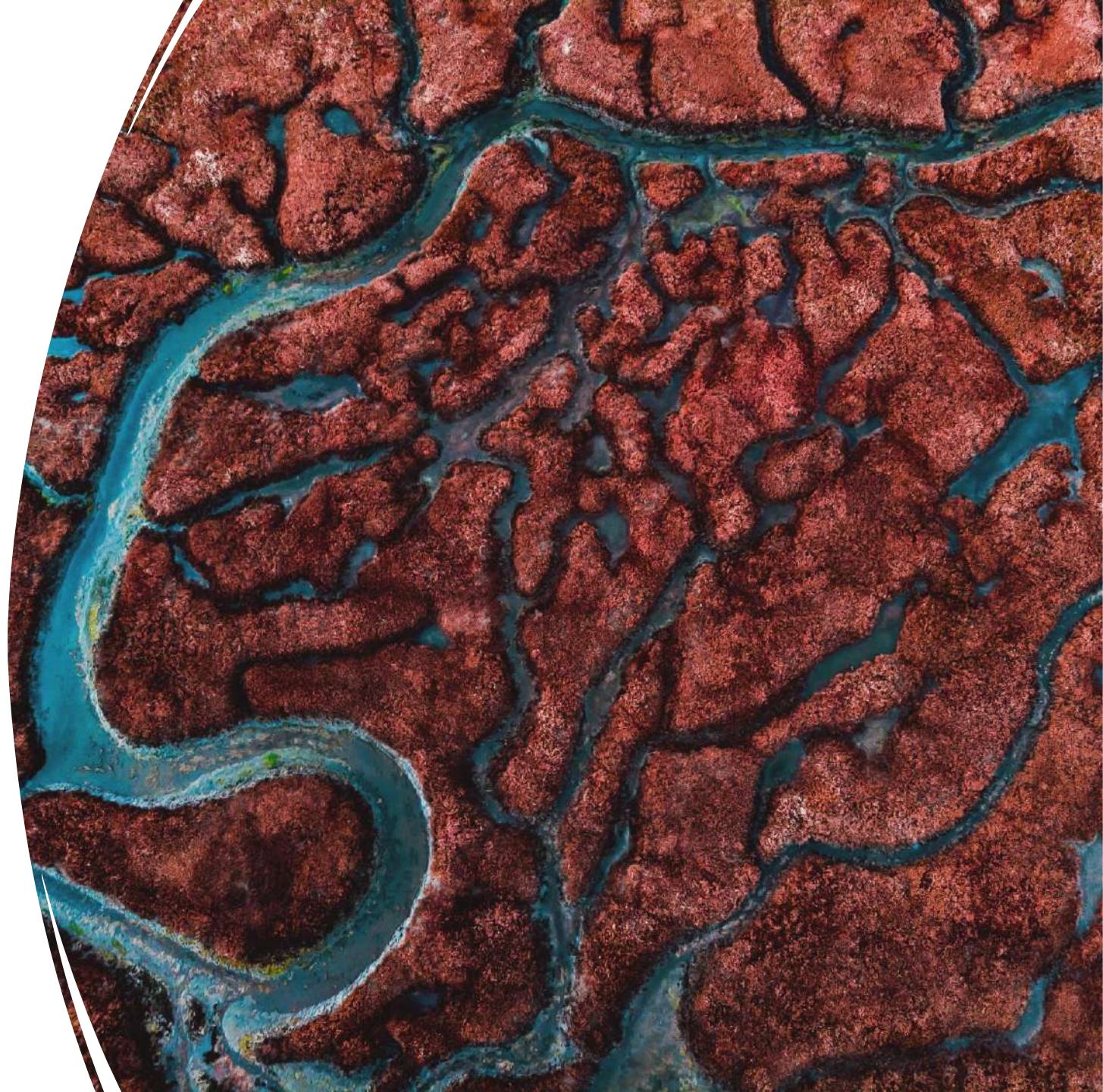


Your lungs

Patterns
that repeat themselves
over and
over and
over and
over and
over.....



The way a river flows





Introduction to Fractals

- **Definition of Fractal**
*(from latin “fractus”-
fragmented/broken):*
- **Self-similarity and
complexity at various
scales of
space or time**

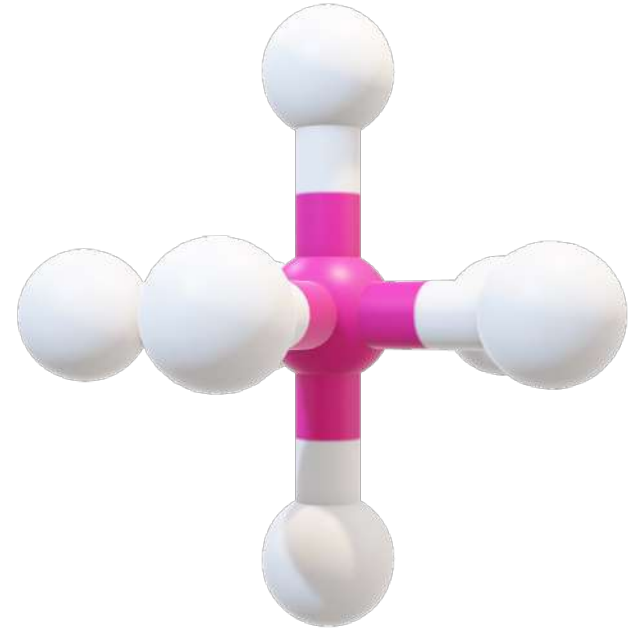
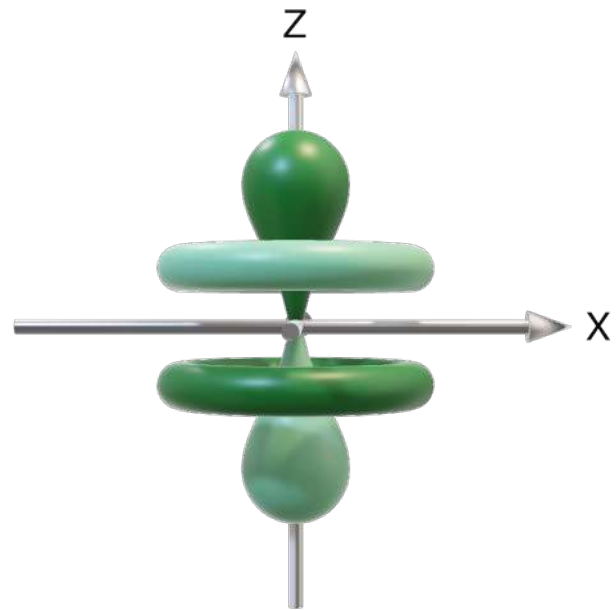
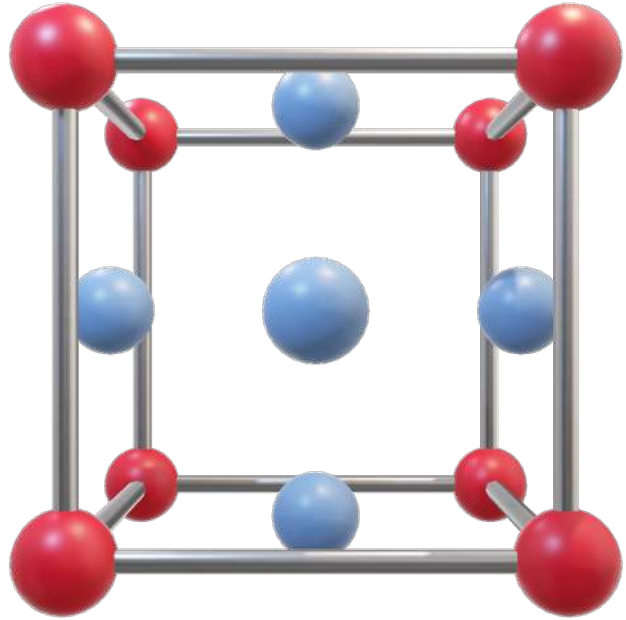


Key Attributes of Fractals

Characteristics:

- Infinite complexity
- Self-similarity
- Recursive structures

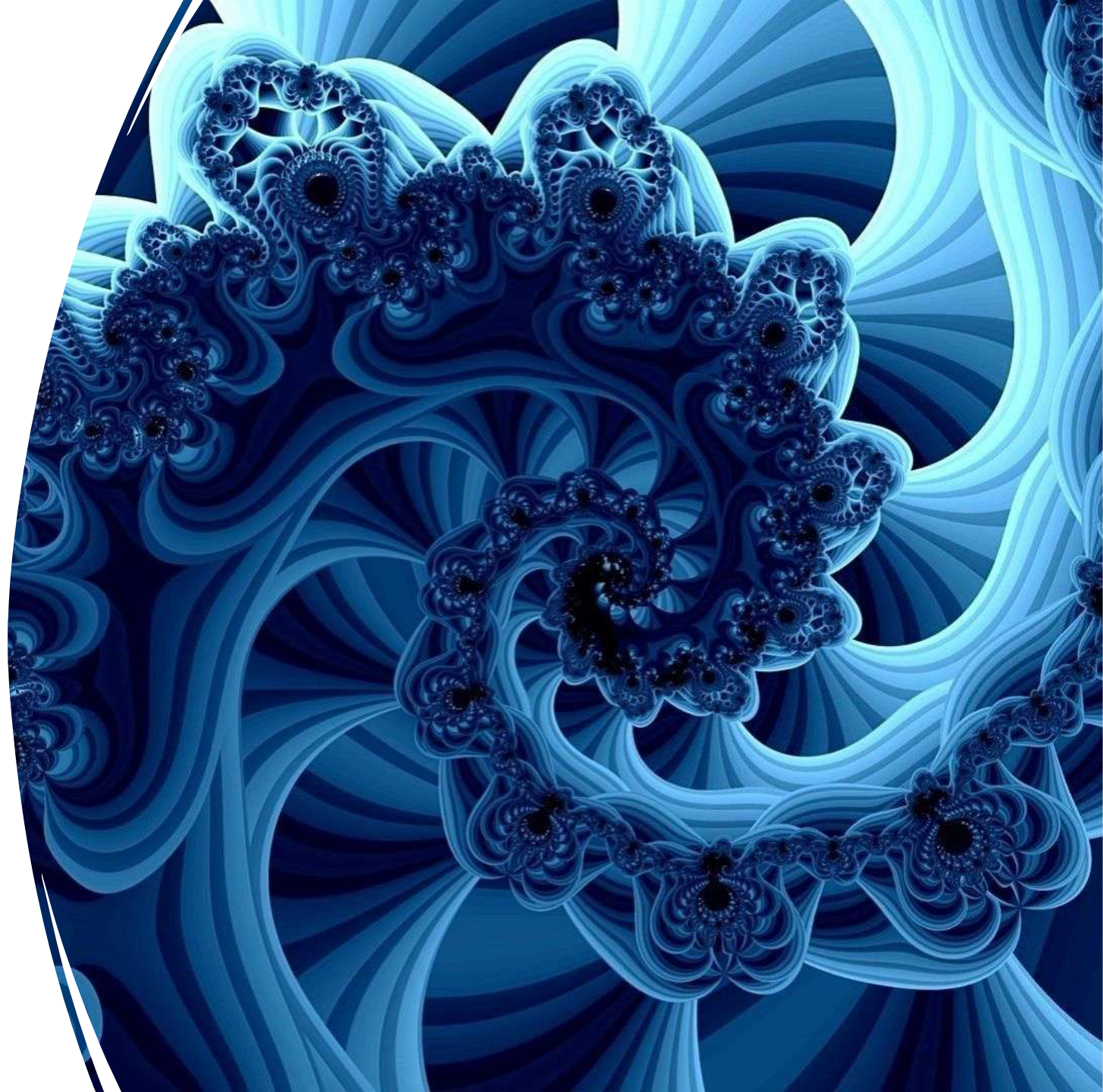




Complex modelling

•Relevance in Various Fields

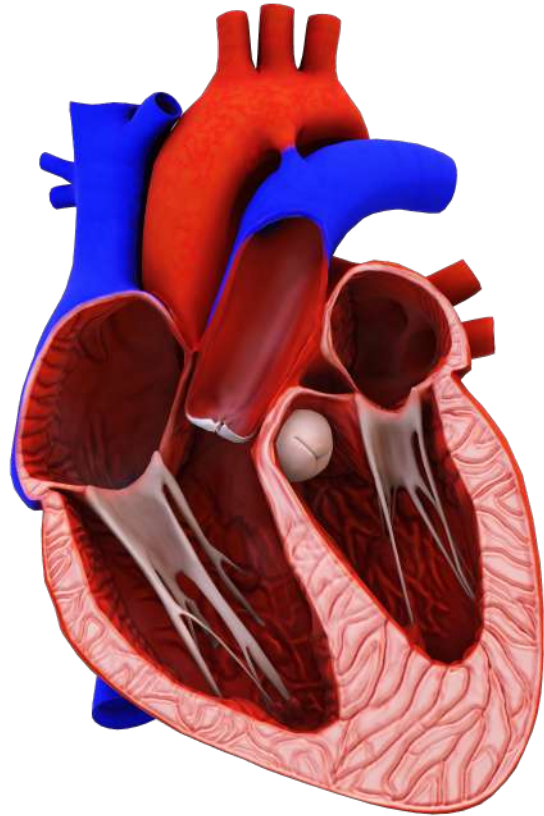
- Biology
- Medicine,
- Telecomms
- Engineering

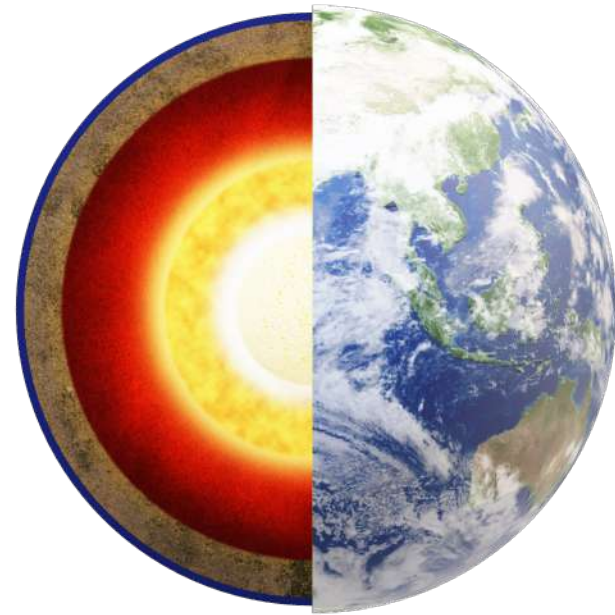
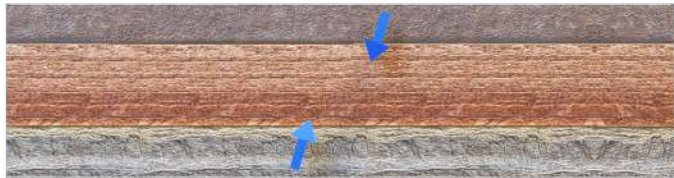


Patterns

are
everywhere







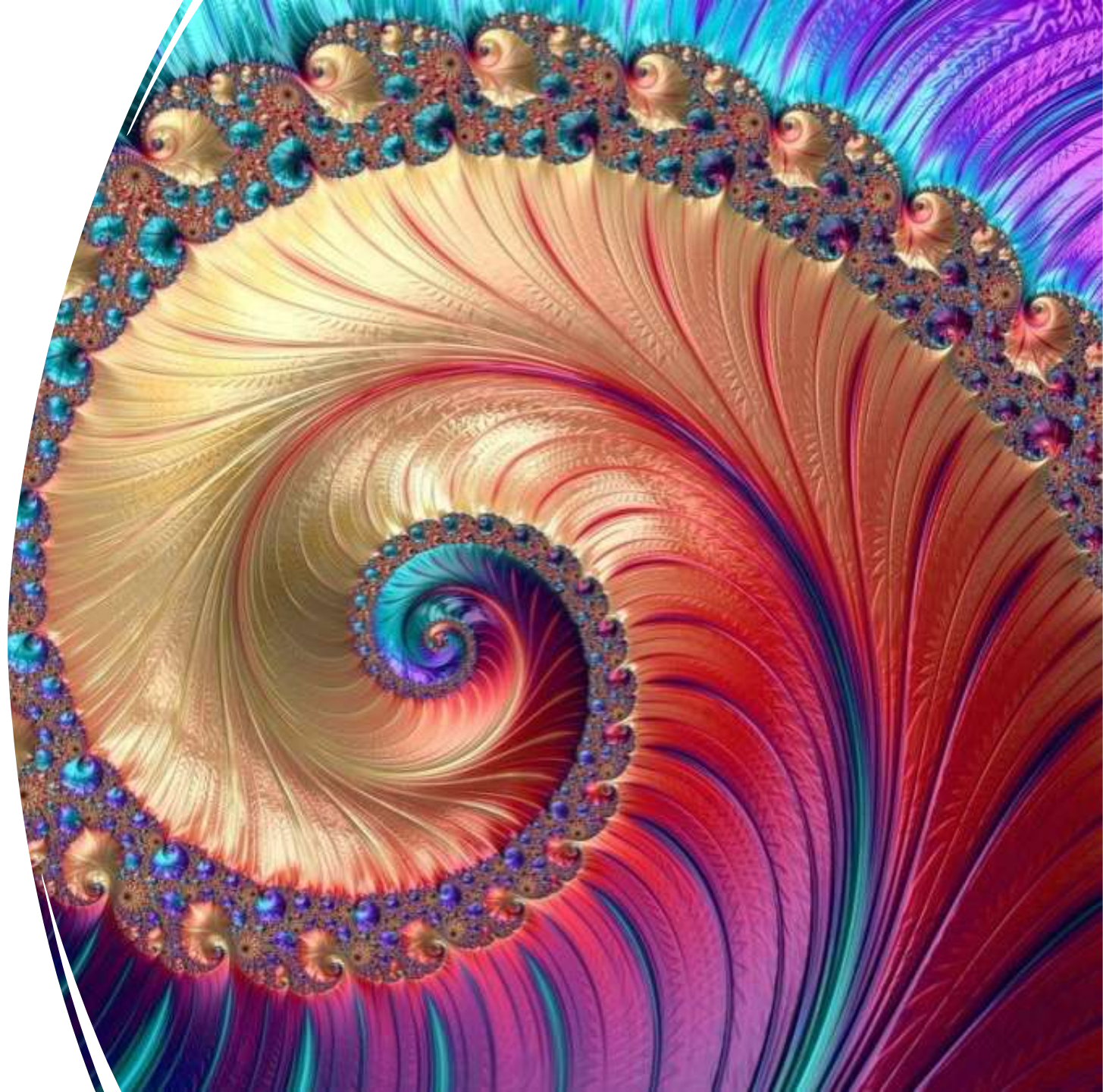




Patterns are everywhere

including

- **Art,**
- **Music**
- **Language**
- **Organizational systems**



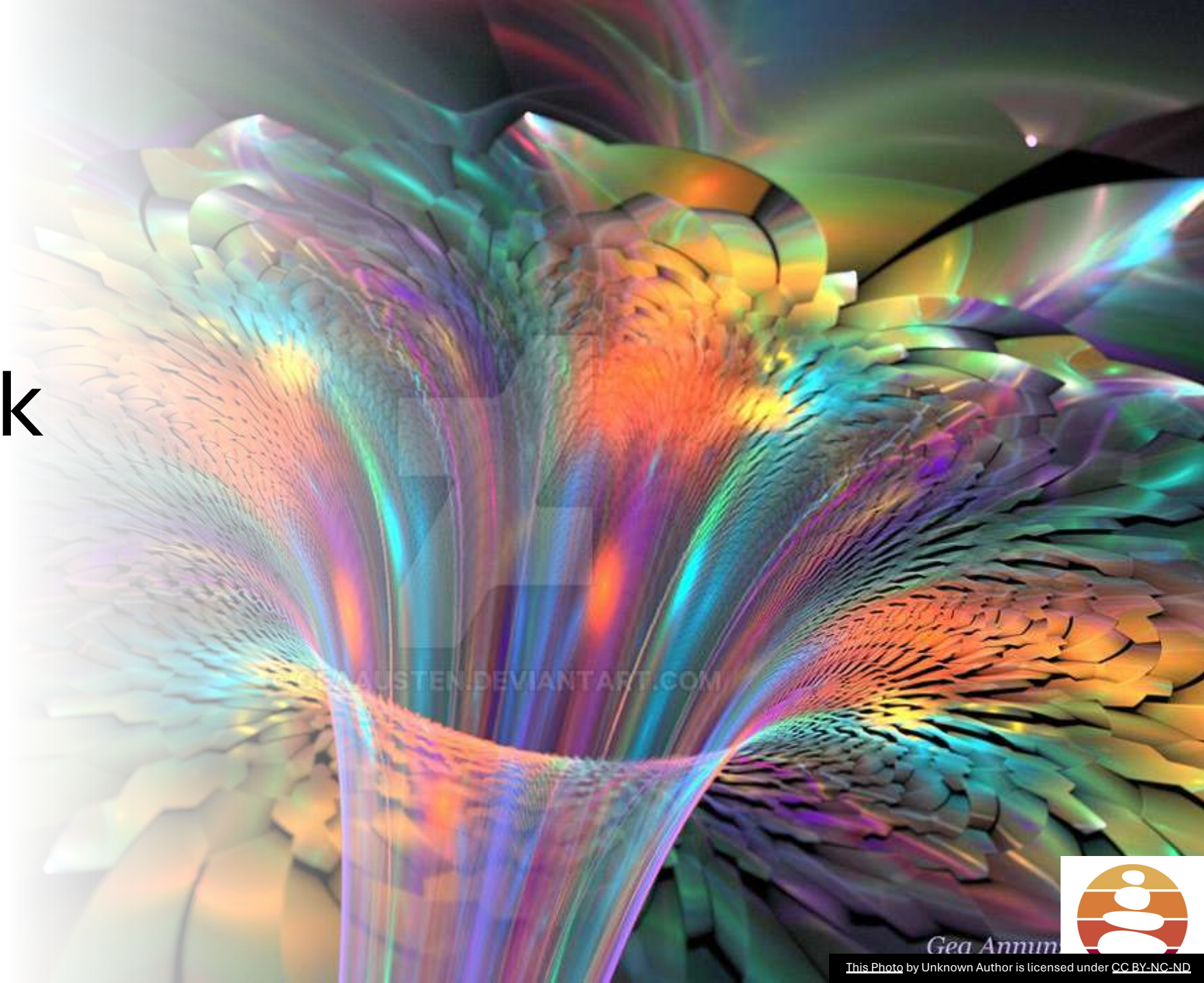




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An artwork



Gea Annun

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Music?





Organizational systems



Definition of a management system

- Set of interrelated or interacting elements of an organization to establish policies and objectives and processes to achieve those objectives
 - Elements = P-D-C-A



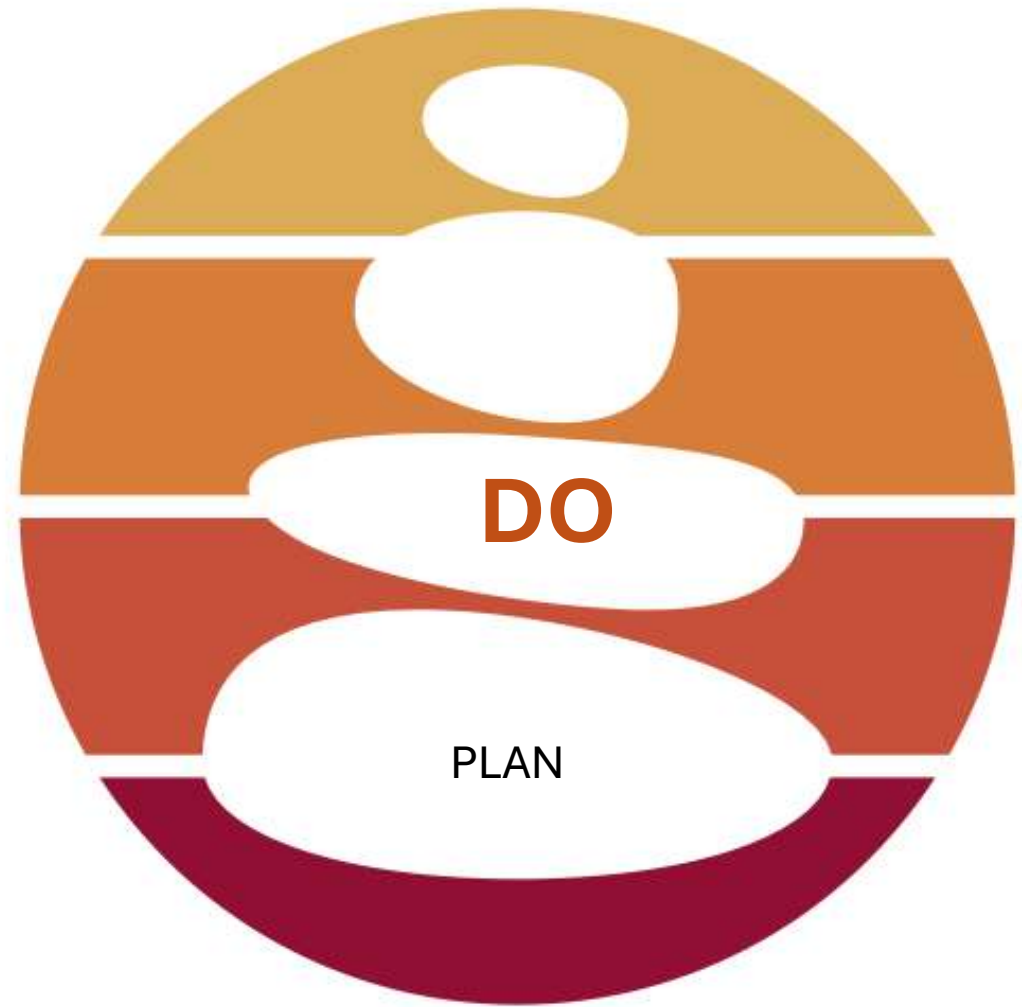
Elements of a management system

Elements = **P**-D-C-A



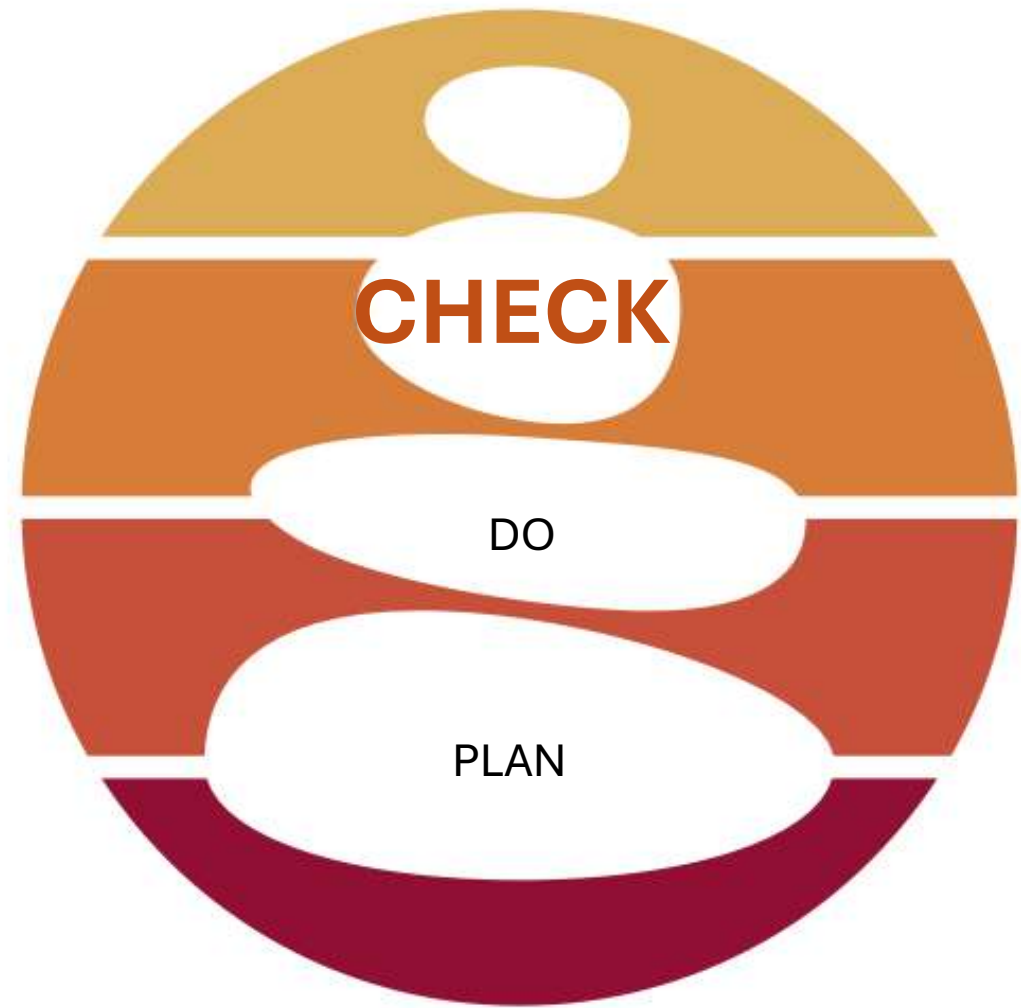
Elements of a management system

Elements = P-**D**-C-A



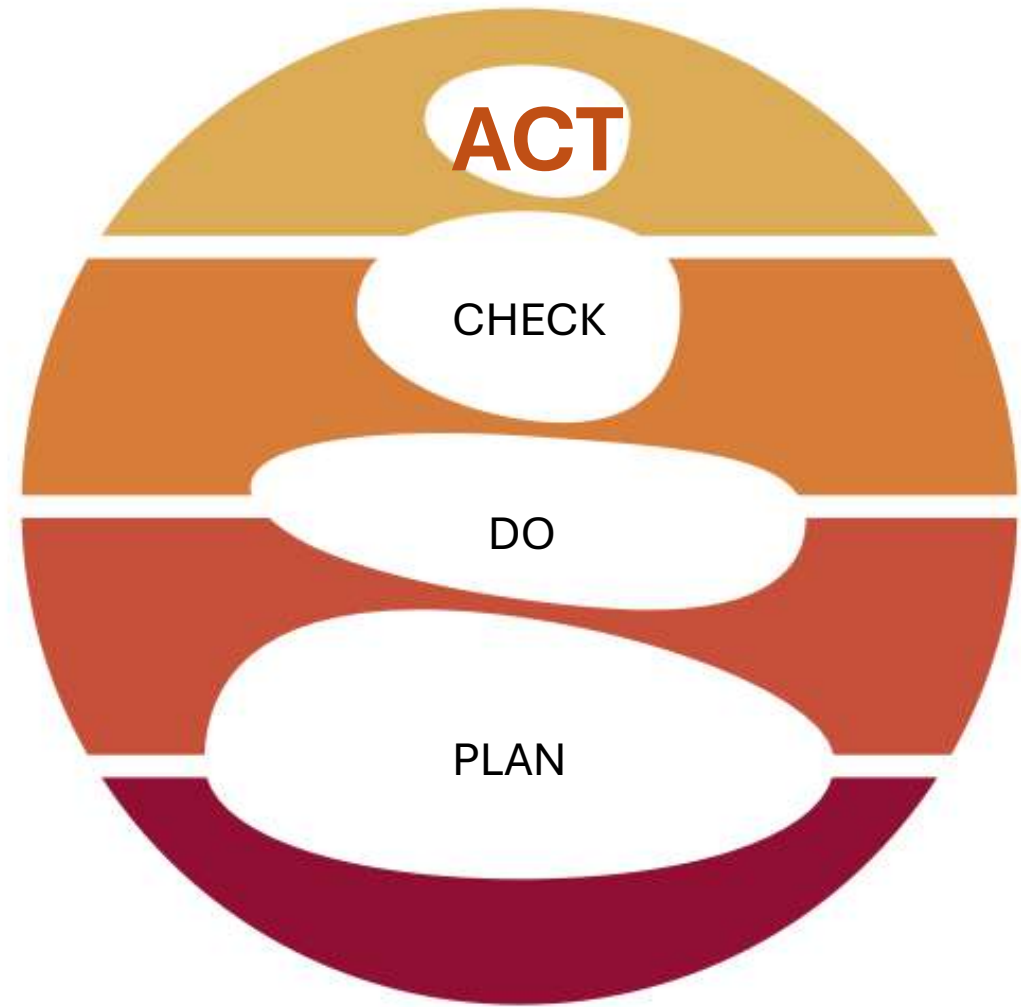
Elements of a management system

Elements = P-D-**C**-A



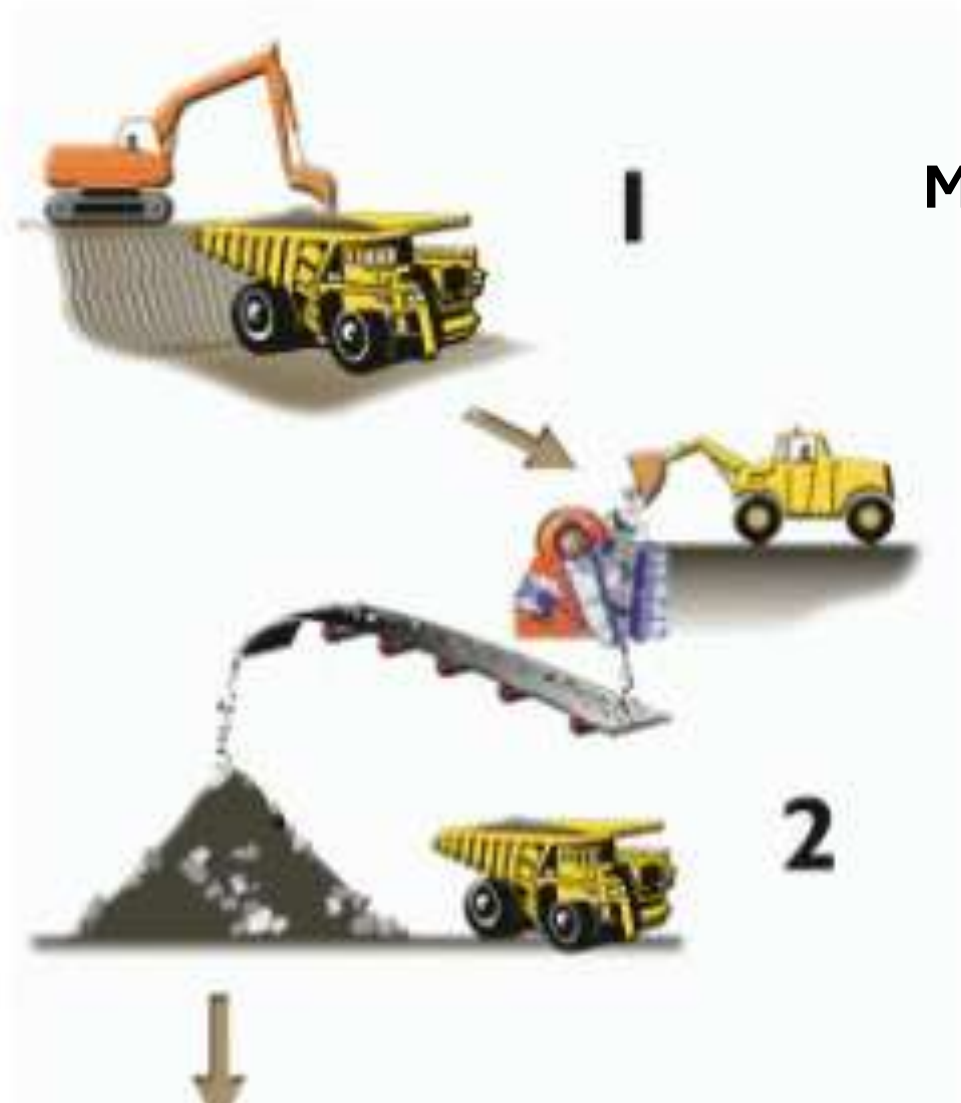
Elements of a management system

Elements = P-D-C-**A**





Process



Mining

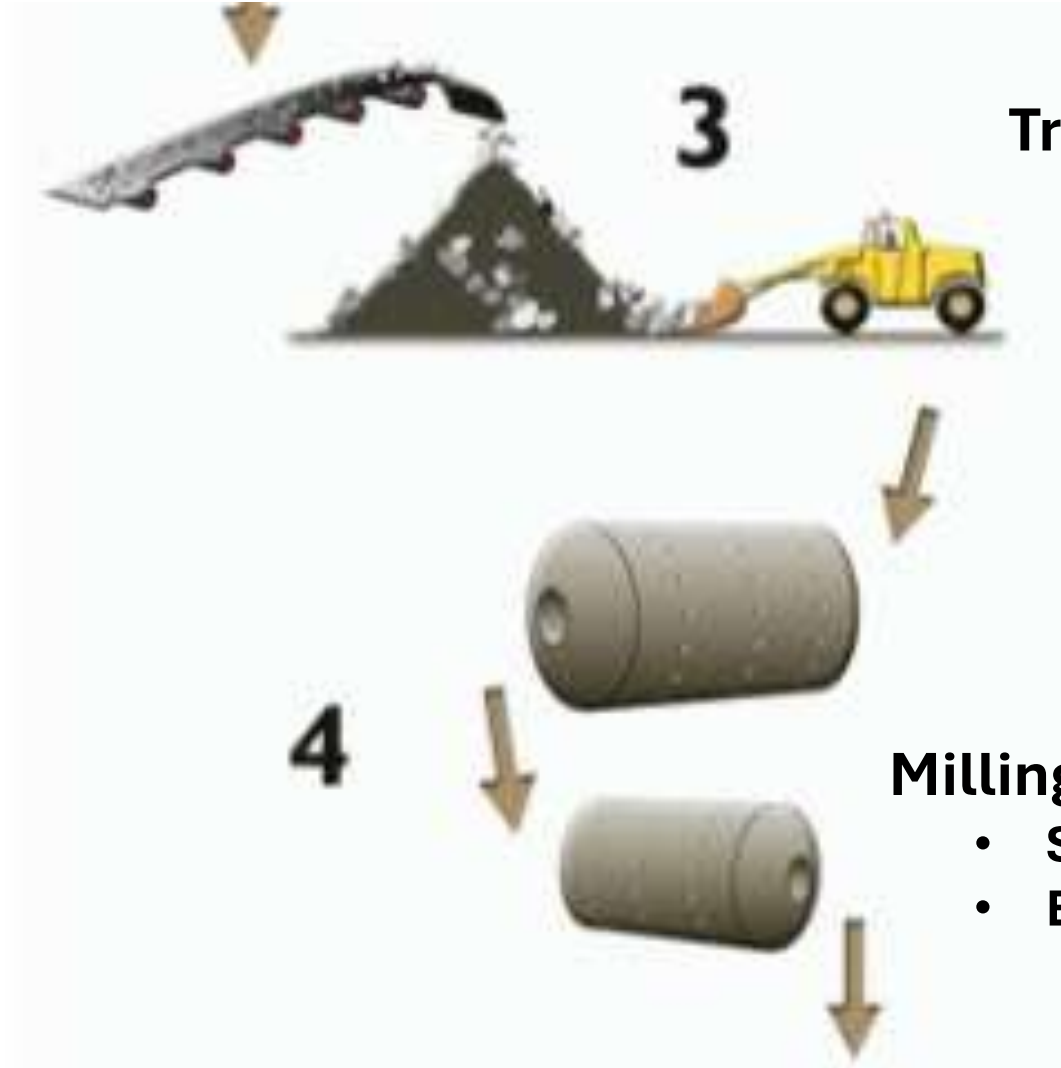
- Blasting
- Excavation
- Hauling

Crushing (1°)

- Ore
- Waste rock



Process



Transport

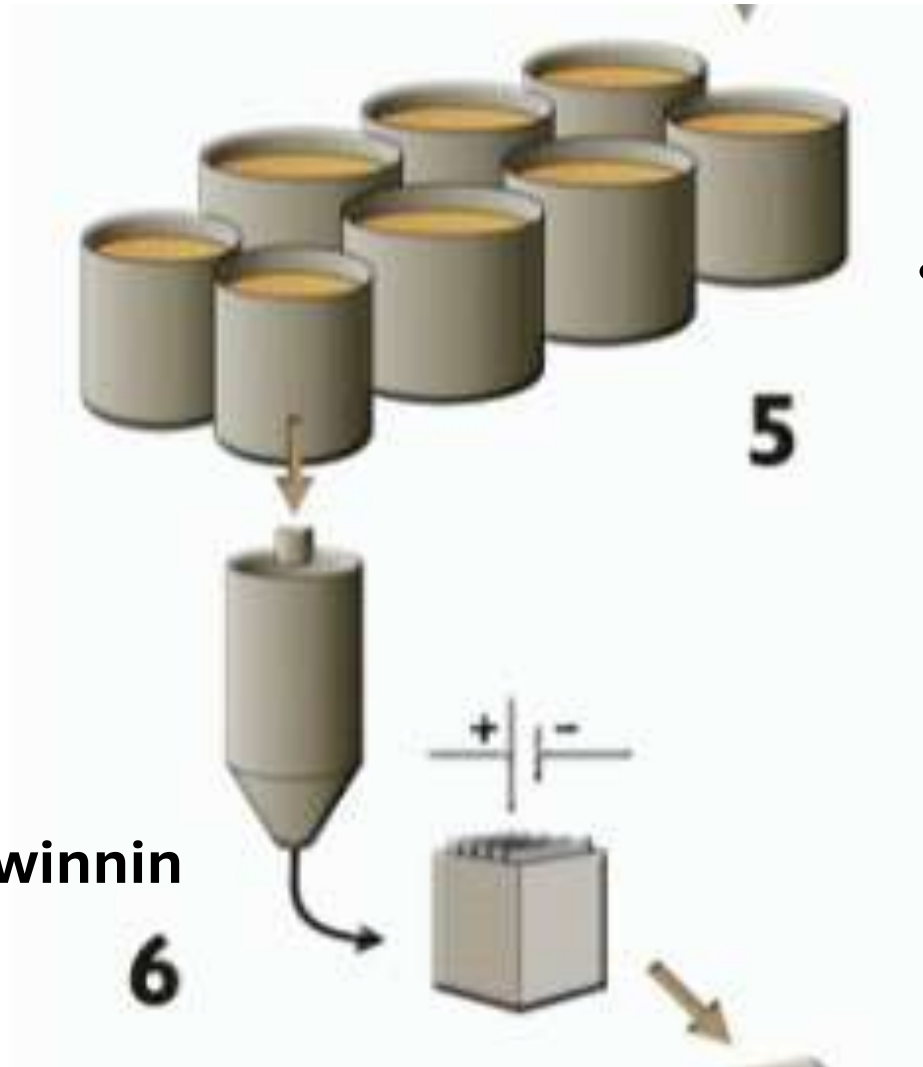
- Ore
- Waste rock

Milling (grinding & sizing)

- SAG mill (CaO)
- Ball mill



Process



- Elution

- Electrowinning

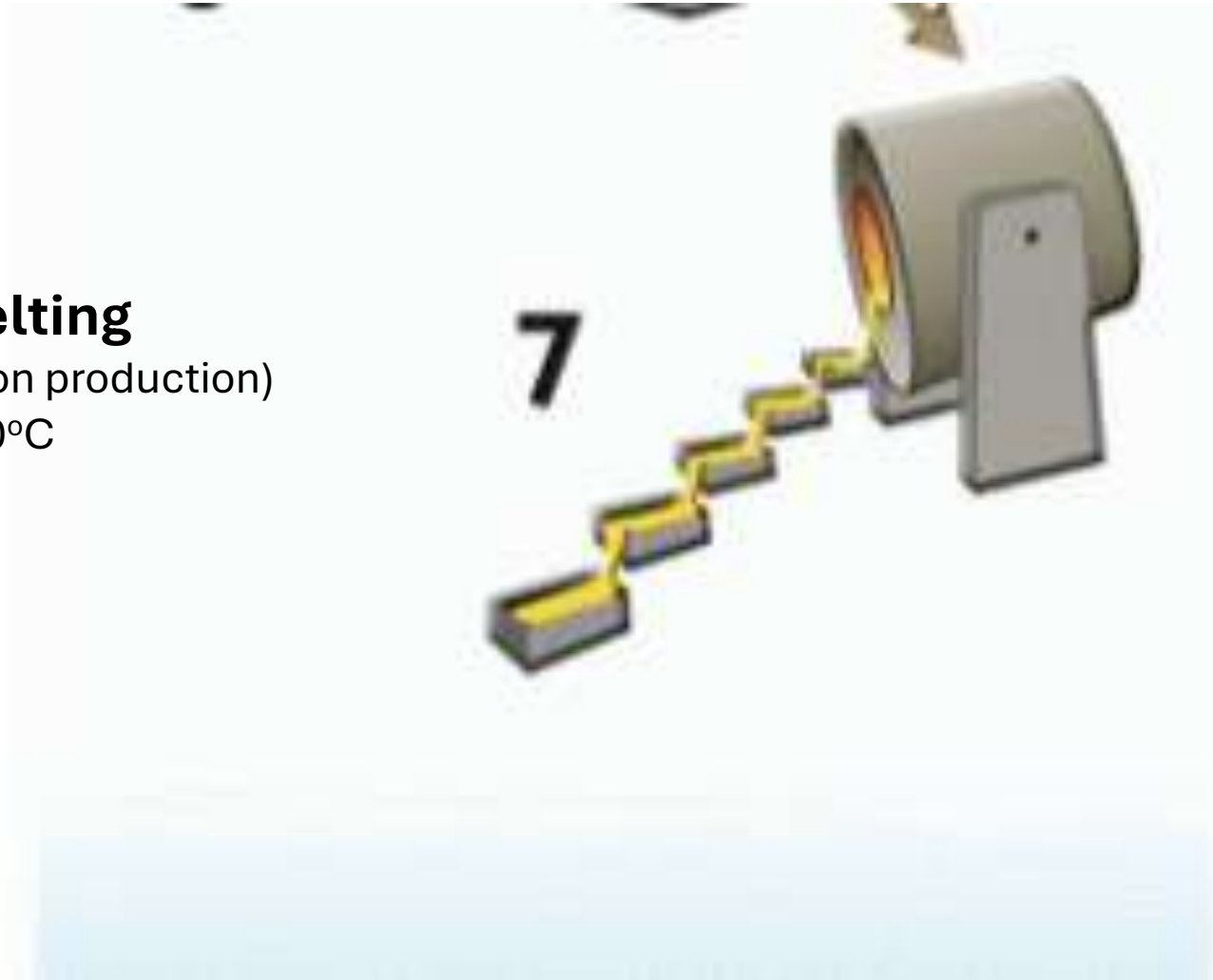
gg

- Leaching (CN^-)
- Adsorption



Process

Smelting
(Bullion production)
>1000°C



Process

Water treatment **8**



9

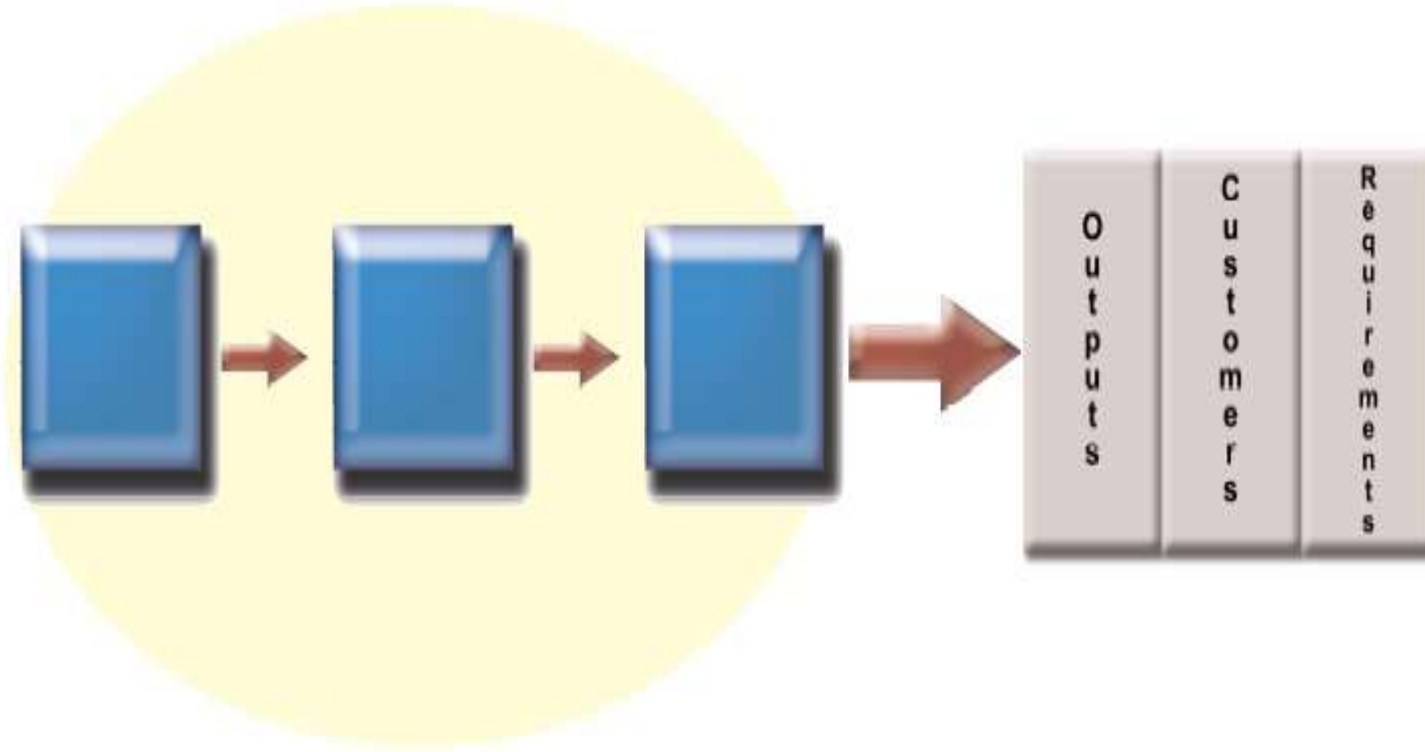
Tailings
disposal



The Process Approach



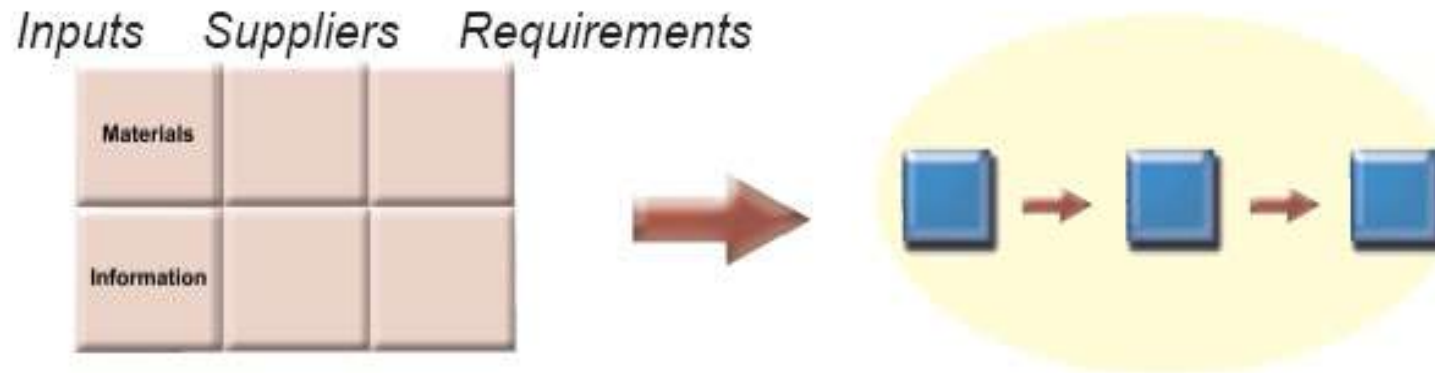
The Process Approach



Output Customer Requirements?



The Process Approach



Milling Process

Input examples

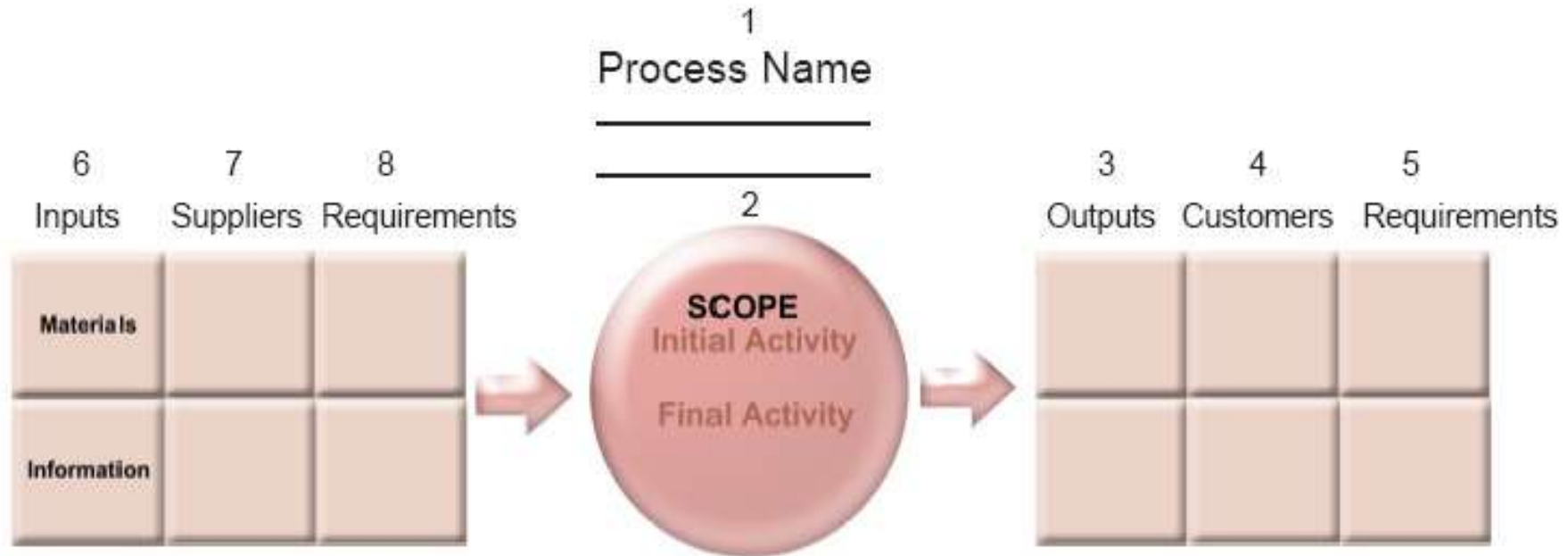
- **Crushed ore**
- **CaO**
- **Water**

Supplier?

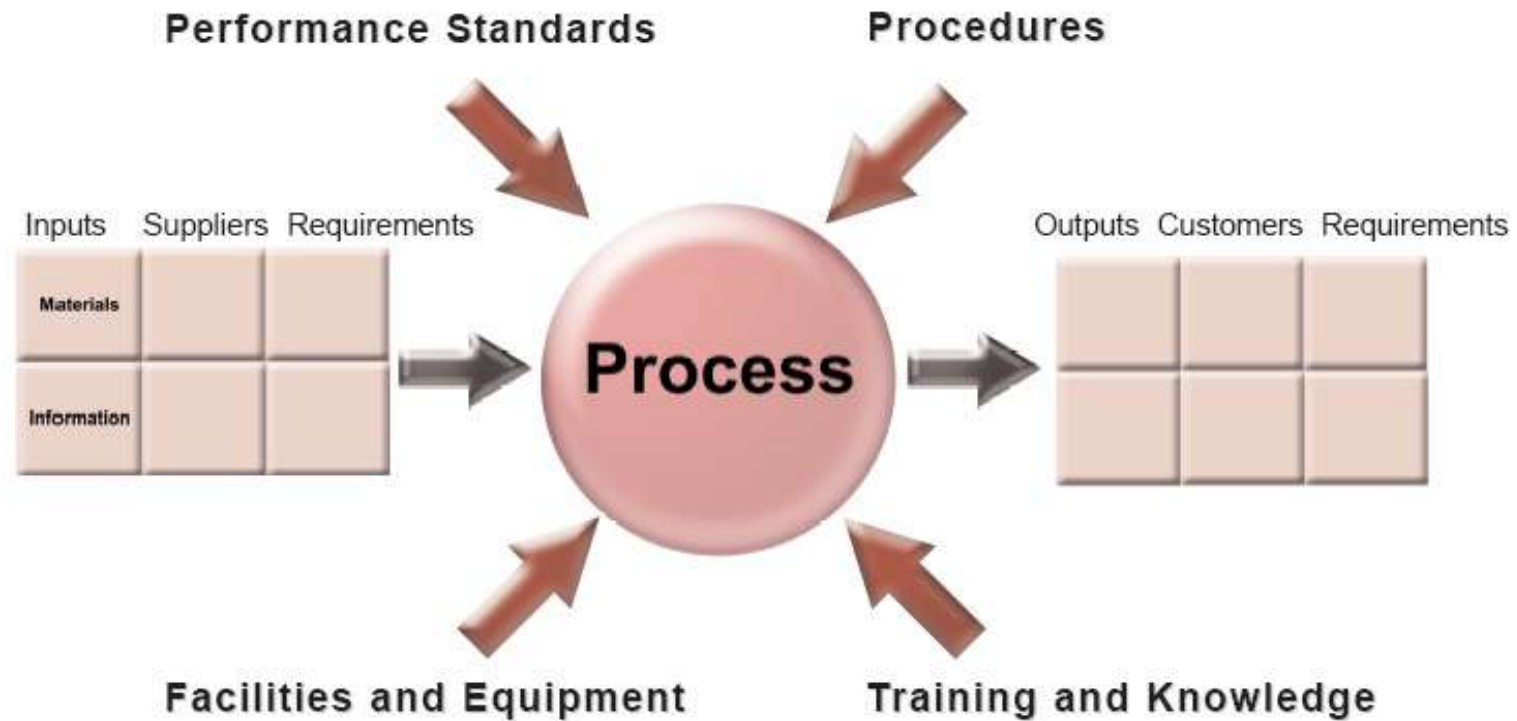
Requirements?



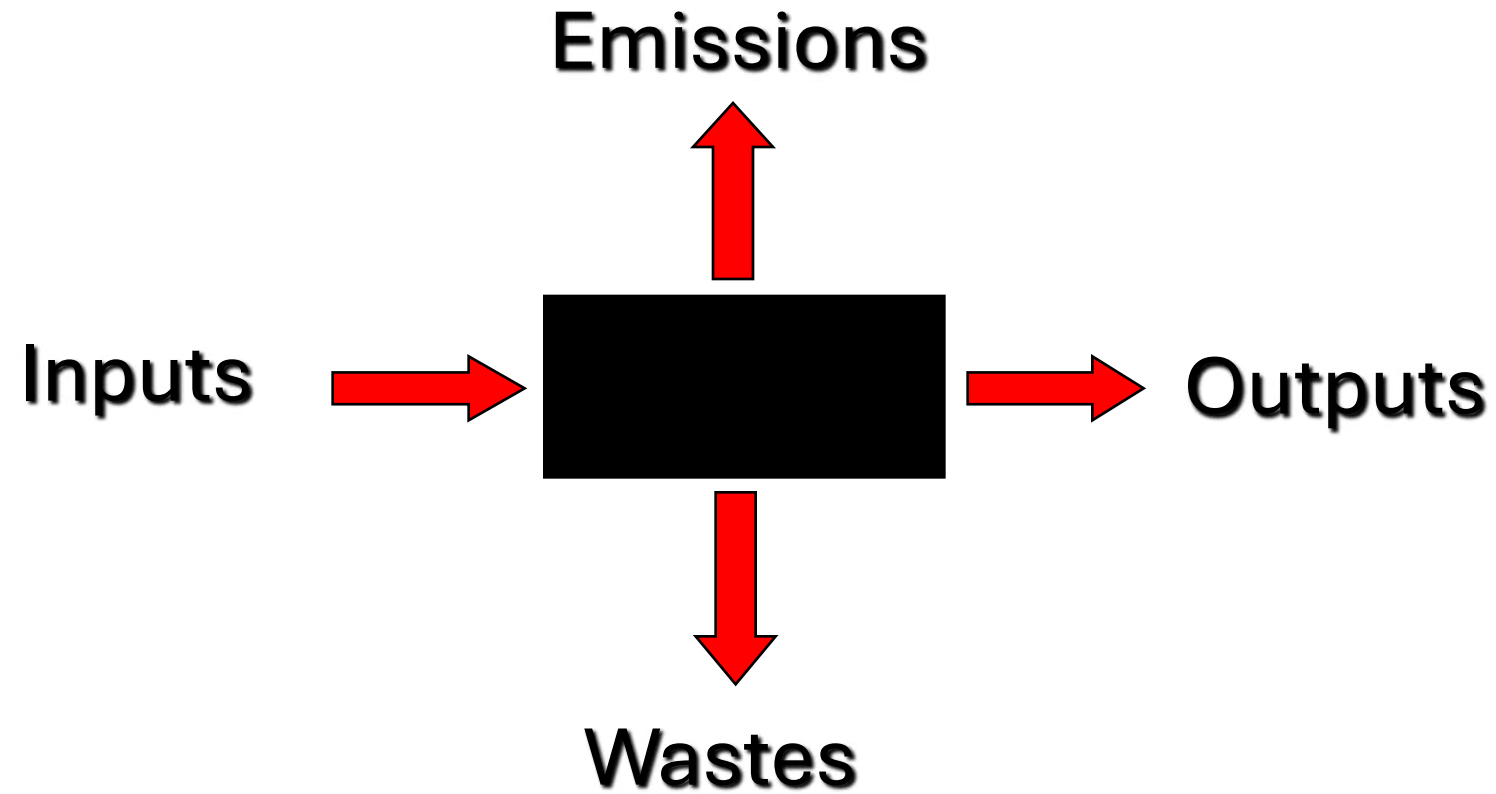
The Process Approach



The Process Approach



Environmental Process Matrix



Process



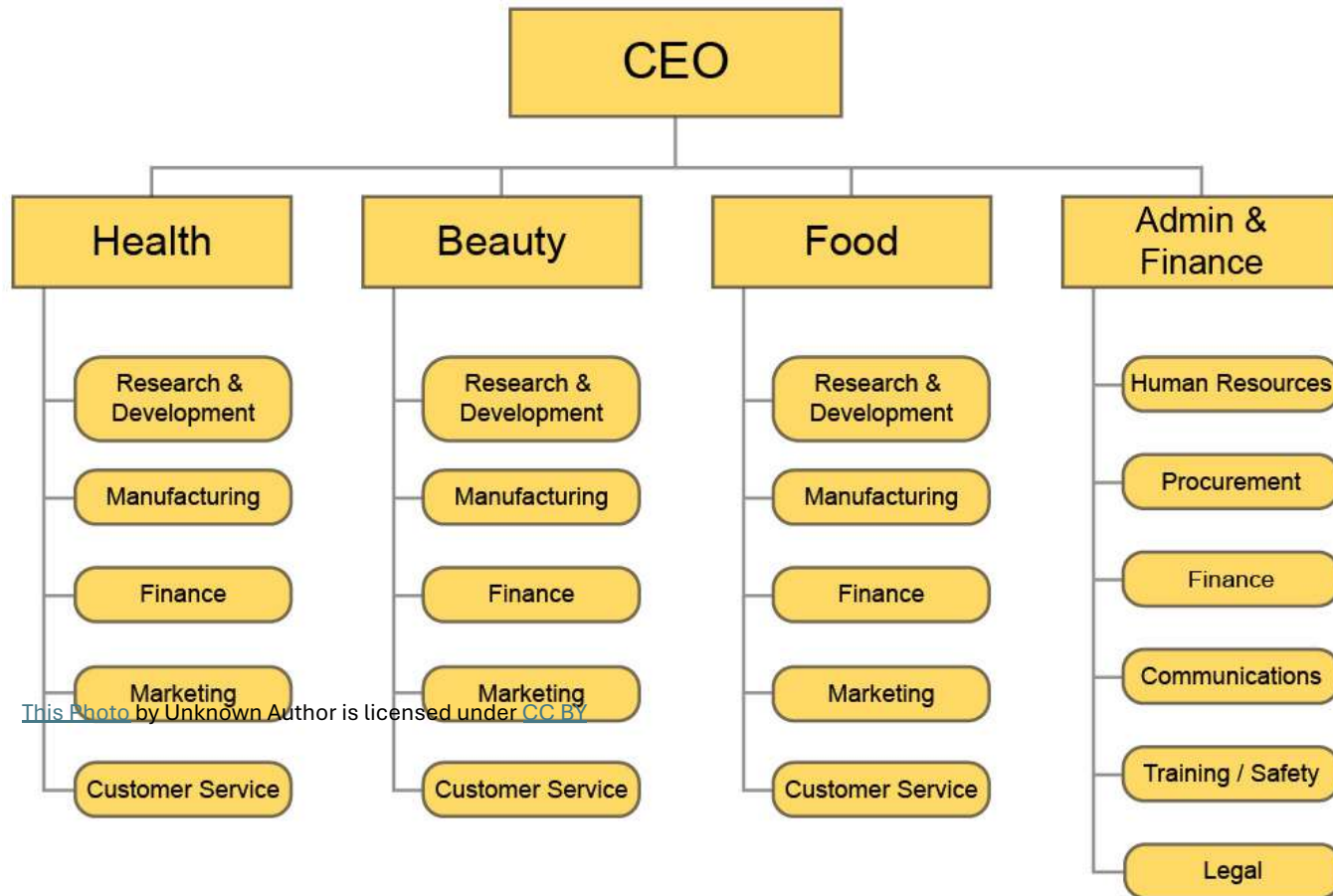
- $A + B = C$



- **What about an organization exhibits fractal behaviour?**



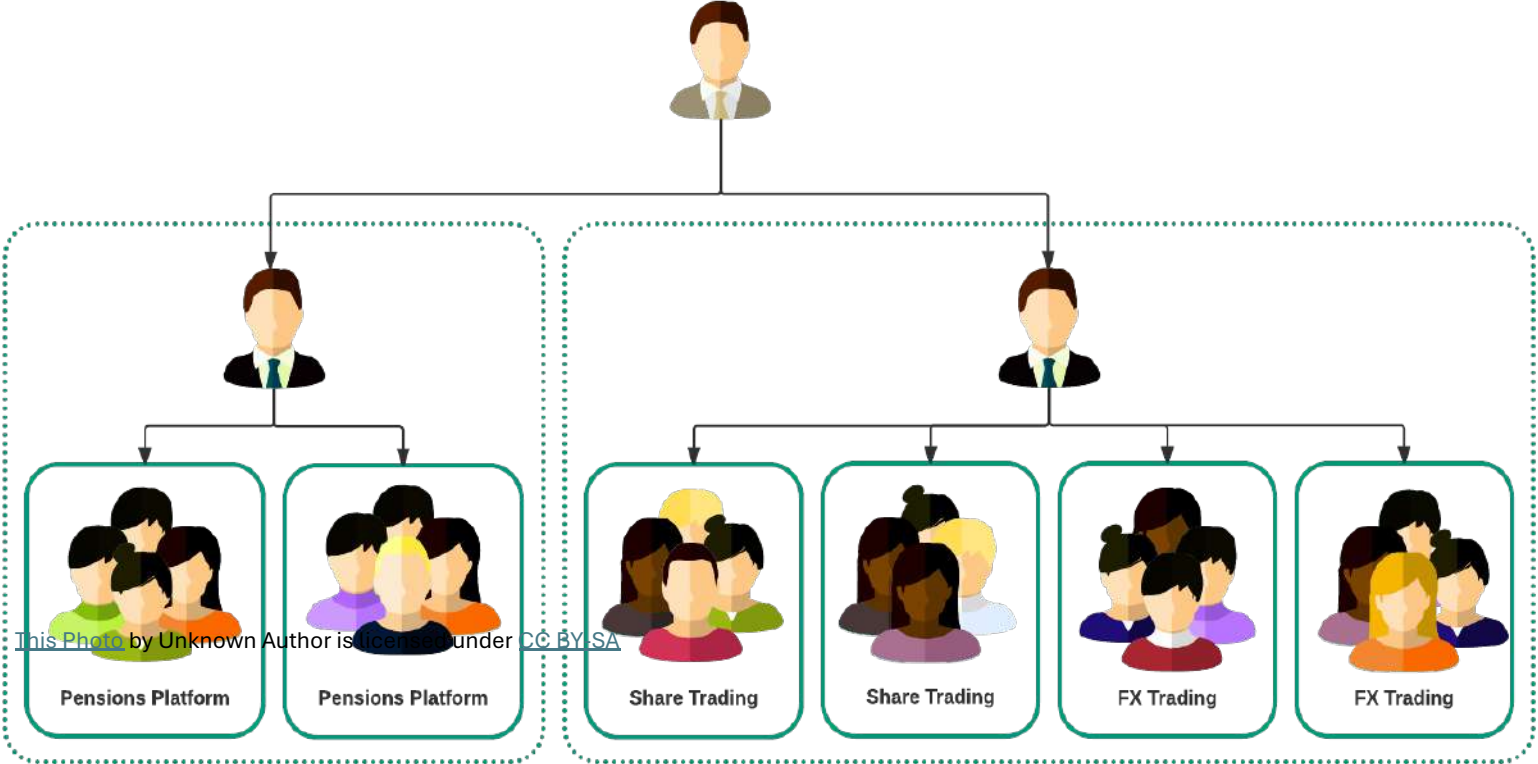
What about an organization demonstrates fractal behaviour?



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What about an organization demonstrates fractal behaviour?



Fractals in Organizational Theory

Fractal Patterns in Organizations

Hierarchical structures reflecting fractal properties

Examples:

Corporate level vs. team level structures



Collaboration?



**Opposing
teams?**



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Communication as Fractal Behavior

Fractal Communication Patterns

- How interactions replicate across departments

Key Points:

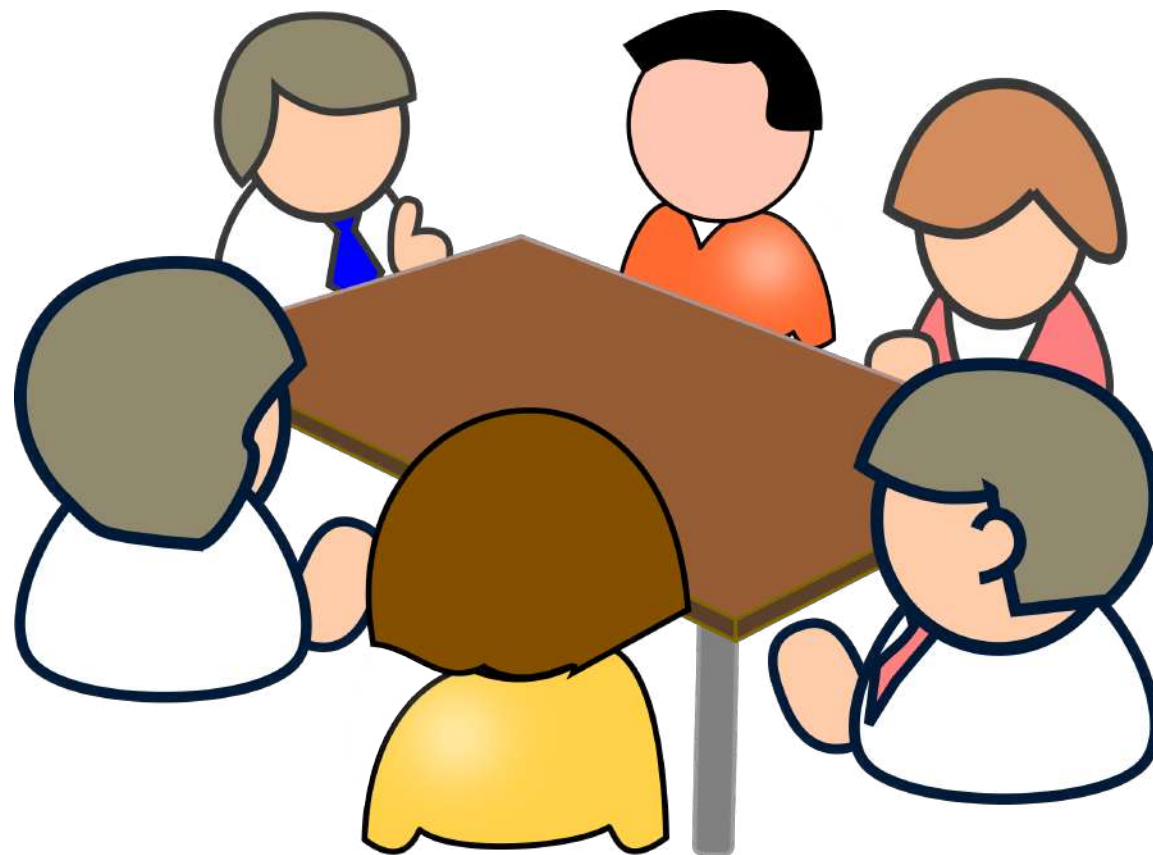
- Consistency in communication styles
- Influence on decision-making processes



The Morning Meeting

- **Company A**

- **Company B**



Problem-Solving as a Fractal Process

Fractal Problem- Solving

- Approaches to challenges mirrored across the organization

Implications:

- Enhances adaptability and coherence



To problem solve:

First,



Organizational Adaptability

Fractal Characteristics of Adaptability

How adaptability mimics fractal structures

Cultural Patterns:

Reflection of values and behaviours throughout the organization



Strategies for Enhancing Organizational Behavior

Recognizing

Recognizing Fractal Patterns

- **Learn to recognise patterns**
- **Gather information**
- **Pattern interrupt**
- **Improve**
- **Rinse and repeat**

Fostering

Fostering Innovation:

- **Use the knowledge available in the organization to encourage creativity and innovation**





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Contact information

theo@besaconnect.com

besaconnect.com

