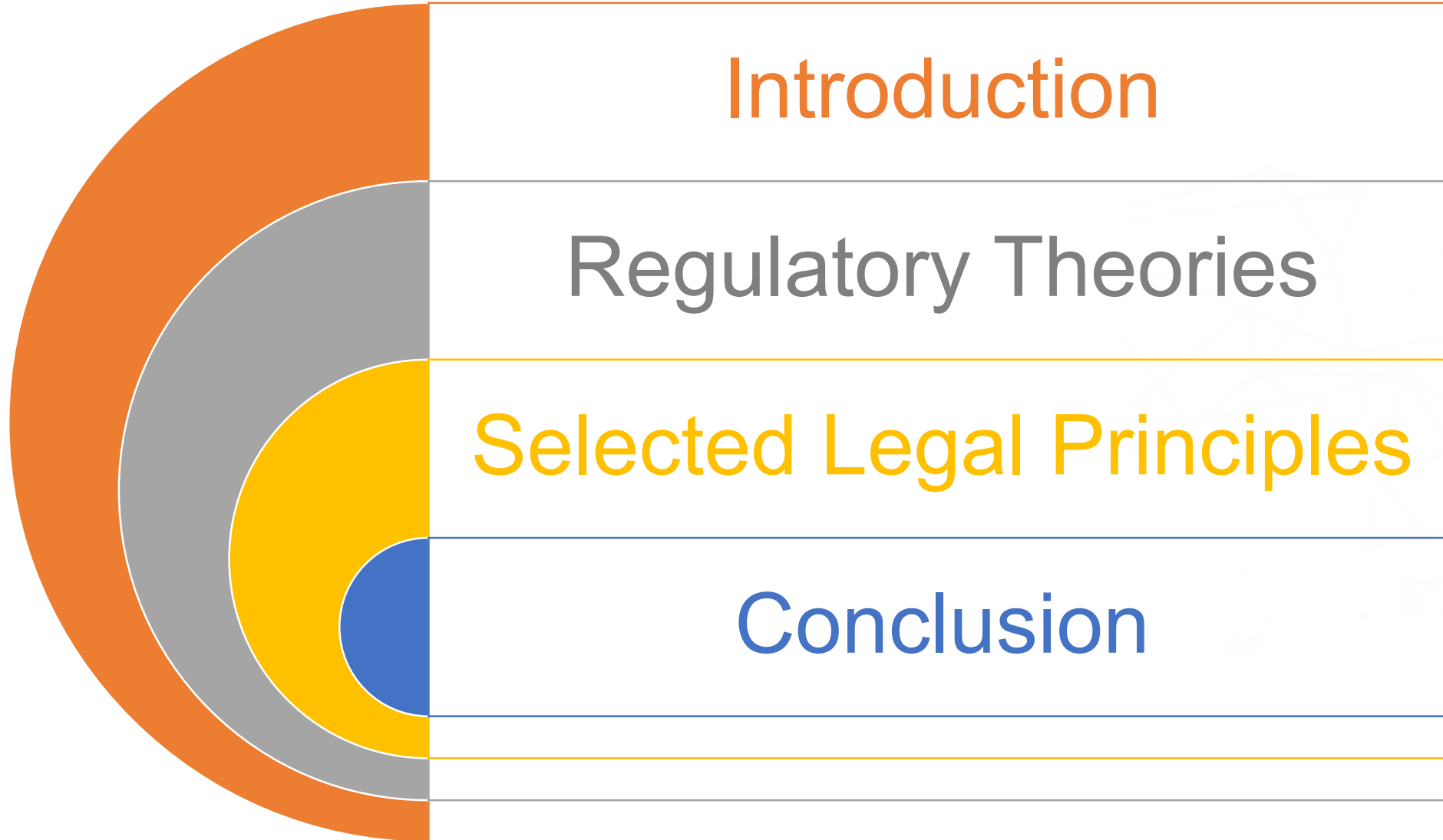**Disruptive Technologies and the Future of ICT Regulations – SA's E-Readiness Determined**

Mzukisi Njotini

18 October 2020

Presentation Layout
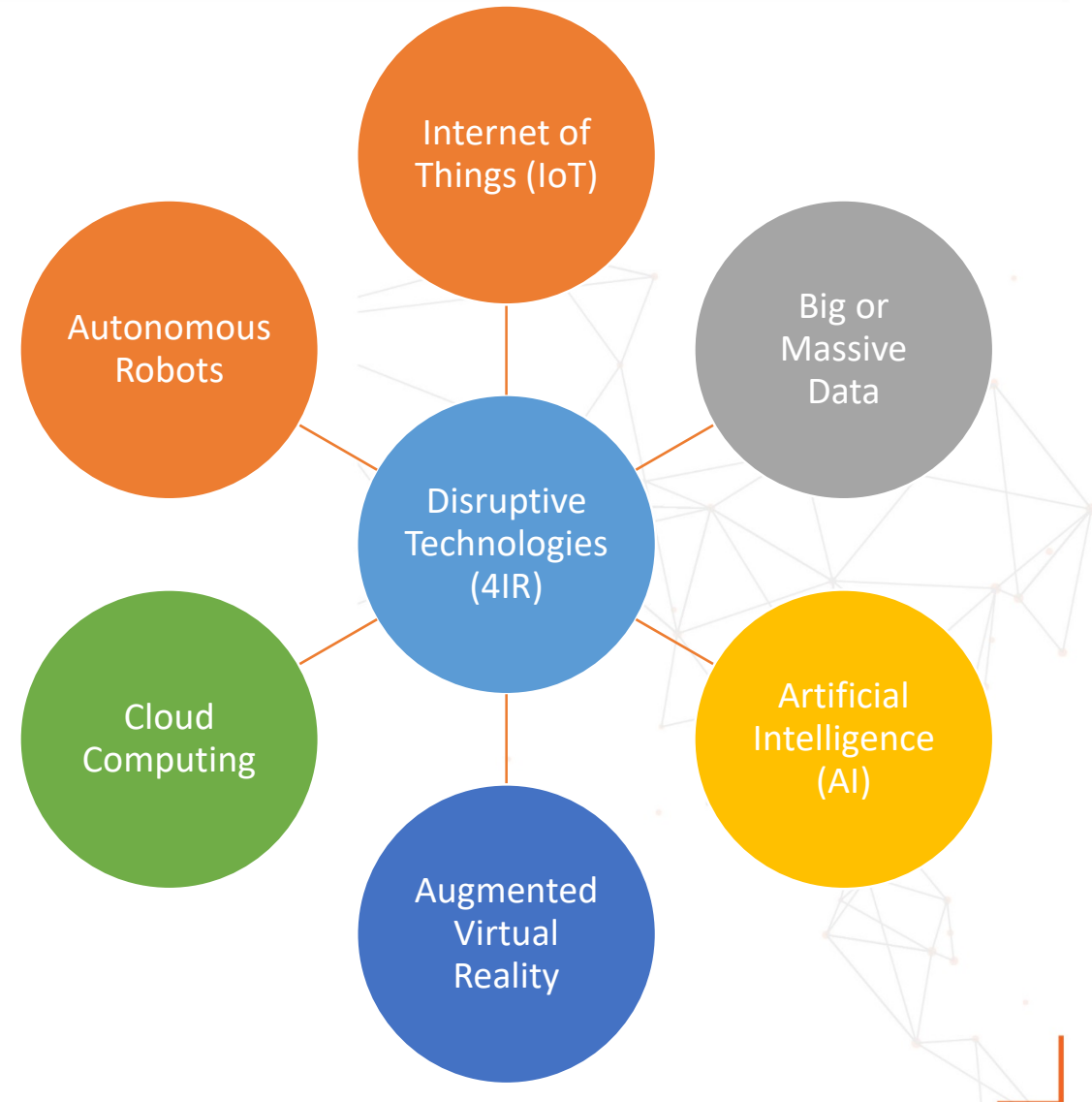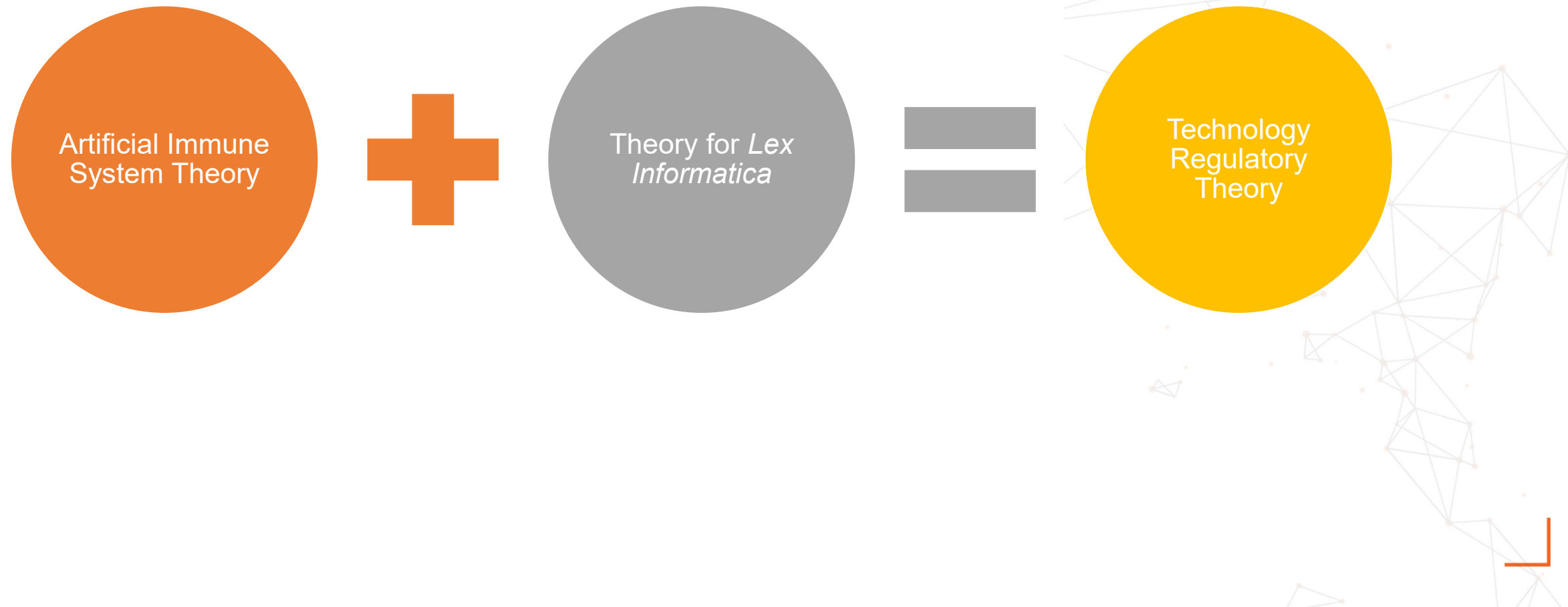
Introduction

Regulatory Theories

Selected Legal Principles

Conclusion

Introduction

- **"Shock of the Old" (Edgerton)**
  - Disruptive Technologies = Fallacy
  - Random Technological Interruptions
  - No Revolution (Vilakazi)
  - Reheated Nonsense
- **Schwab**
  - Unprecedented Paradigm Shifts
  - Modeling and Remodeling of Businesses
  - Disruption of Income and Value Generation
- **Taking advantage of 4IR?**
- **Plato (Science)**
  - Physical and Meta-physical Worlds
  - Inhabitants (People, Animals and Plants)
- **Technology Regulations?**
  - Whole or Wholeness of Technology
  - Systems and Networks

Autonomous Robots

Internet of Things (IoT)

Big or Massive Data

Disruptive Technologies (4IR)

Cloud Computing

Artificial Intelligence (AI)

Augmented Virtual Reality

Regulatory Theories

Artificial Immune System Theory **+** Theory for *Lex Informatica* **=** Technology Regulatory Theory

Artificial Immune System (AIS)

- **BIS**
  - Cells or Molecules
  - Macrophages
  - Dendritic cells
  - Natural killers
- **Pathogens (Infection detections)**
  - Self Attacks (Known and Recognised attacks)
  - Non-self Attacks (External Attacks)
- **AIS**
  - Damage Quantification
  - Intrusion detection
  - Anomaly detection
- **Risk-Based Approach**
  - Immunisation
  - Higher Risks = Higher Responses
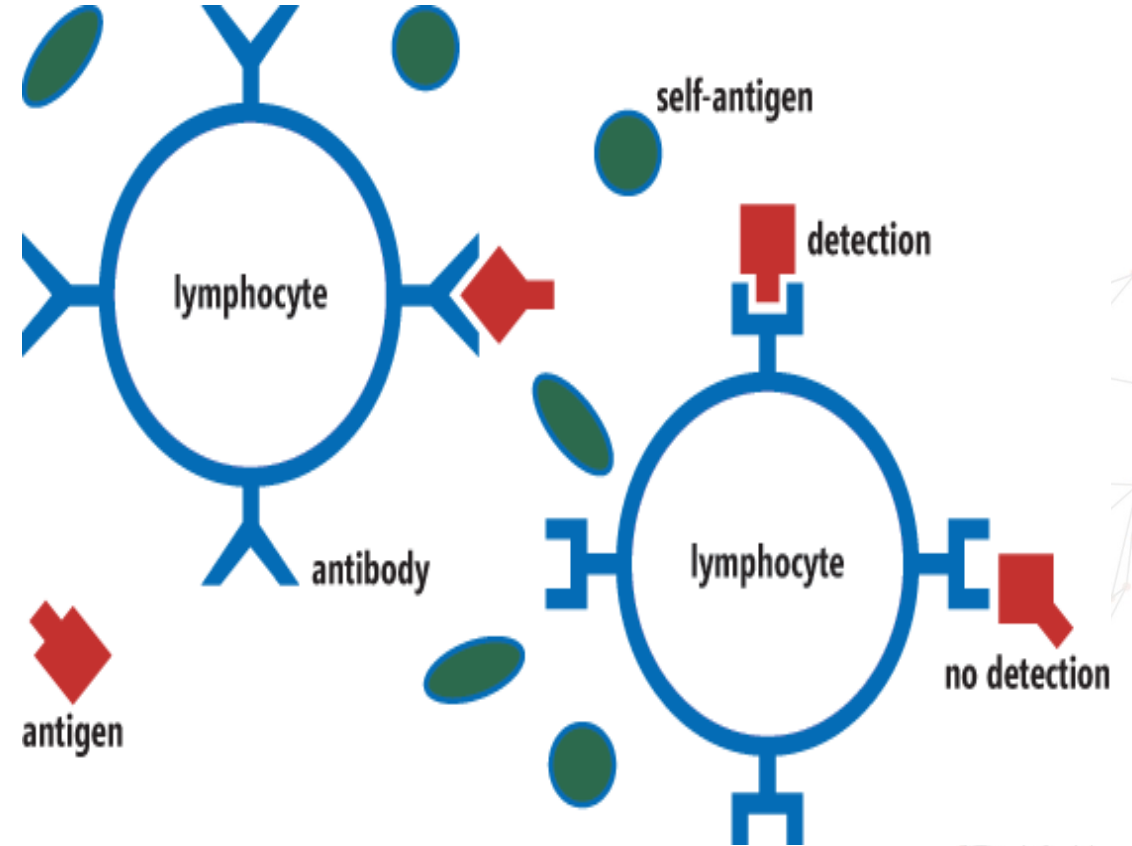
Theory for *Lex Informatica*

- **Law Merchant (Originates)**
  - Affairs of Nation States
  - Practices and Customs
- **Flexibility**
  - Transnational laws
  - Cross Boarder trading
  - Transnational merchant disputes
- *Lex Informatica* **(Reidenberg)**
  - Flexibility (Technology Developments)
  - Legal Regulations (Elementary Structure)
  - Command and Control Principle
- **Basic Structure**
  - Architecture (Internet or HTTP)
  - Default Rules
- **Technological Architecture = Regulations**
- **Lessig**
  - Technology Imposed Regulations
 - Computer Generated Codes (Pins, Usernames and Passwords)
  - Online Migration

Selected Legal Principles

Background + Ownership and Control + Legal (Criminal or Civil) Responsibility = Selected Legal Principles
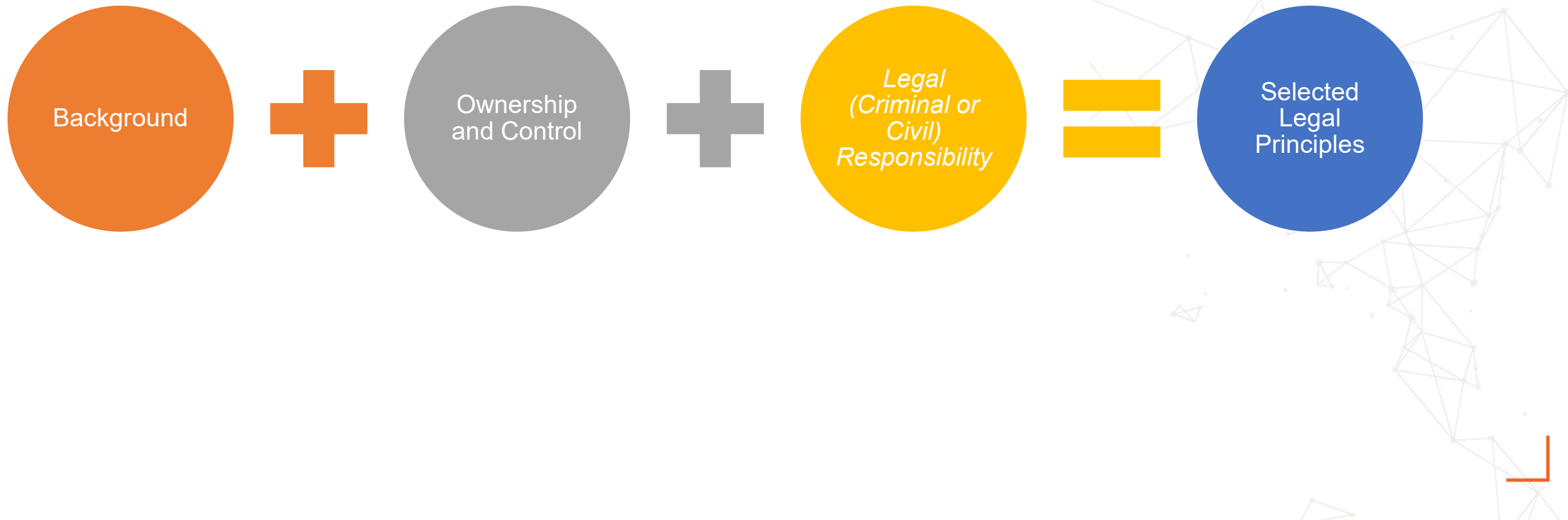
Ownership and Control

- **Flexibility**
  - Adaptable to Societal Changes
  - Person and Thing
- **Old Roman Law**
  - Roman Citizens and Property (Law of the Twelve Tables)
  - Ownership not Recognised
  - Approach Followed in Pre-Classical and Classical Roman Law
- **Classical Roman Law**
  - Ownership Emerged
  - Control Over *res in commercio*
  - Corporeal (Land, House Horse, Garment, Gold and Silver)
  - Incorporeal (Rights, Inheritance, Servitude)
- **South Africa**
  - Classical Formulation Followed
  - Ownership = Control
  - Control = Power *(ius in rem suam)*
  - *Res in commercio* (Commercial and sentimental value)
  - Corporeal and Incorporeal
- **Dephysicalisation of Property**
  - Private and Public Property
  - Control over other Rights
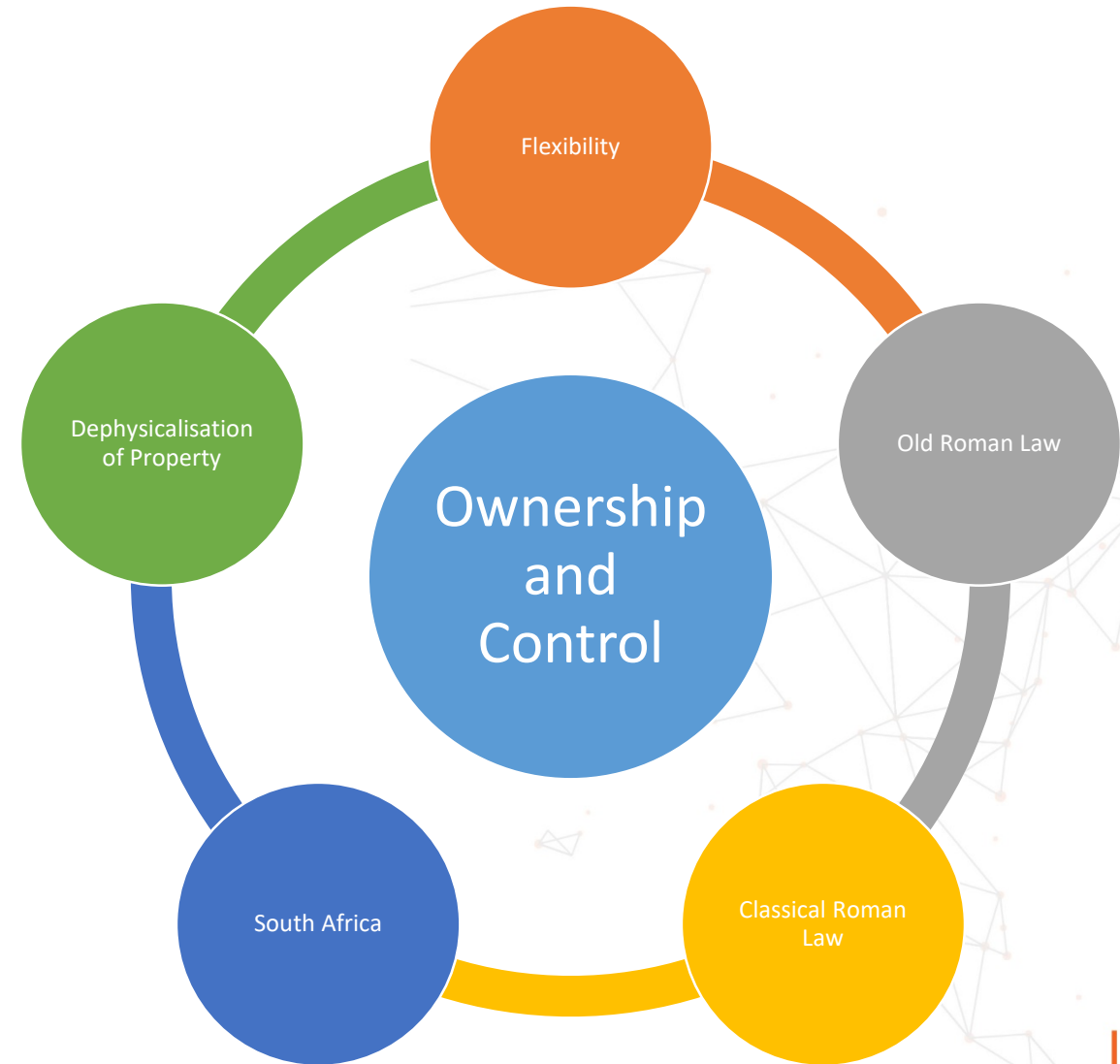
Legal (Criminal or Civil) Responsibility

- **1981 Robot Example**
  - Robotic Error of Judgement
  - Injury to an Employee
  - Attribution or Legal Responsibility
- **Technology with Cognitive Abilities**
  - Who controls the technology?
    1. Human Control (*sine qua non)?*
    2. Technology Independent Entities (Distinctive Rights and Obligations?)
  - Possible Responses = separation between
    1. Technology as an Instrument of Control
    2. Technology as an Independent Entity
- **Technology as an Instrument of Control**
  - Ordinary Principles Apply
  - Human Act Decisive
  - Mental State Important
- **Technology as an Independent Entity**
  - Retribution Gap (Danaher)
  - Mismatch (Human Desire and Retribution)
  - Reasonable Person Test
  - Criterion of Reasonableness (*Boni Mores*)
  - *Lee v Minister of Correctional Services*

Hallevy Models

- Penetration-via-Another Liability Model (Machine as Innocent Agent)
- Natural-Probable-Consequence Liability Models (Relevance of Programmers & Users)
- Direct Liability Model (Technology, internal & External, as an entity)

Conclusion

o Whole or Wholeness of systems
- System dynamics
- Determining Control?
- Dephysicalisation of control

o Reasonable Machines (Ethics)
- Legal responsibility
- Strict Liability (manufacturer)

o Punitive measures
- AI Death penalty
- Civil Liability

Thank you