



**Mobile
Applications
Development
in the context of
Foundational
Digital
Capabilities
Research**

M Making < sure (it's possible)



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

Llanley Simpson



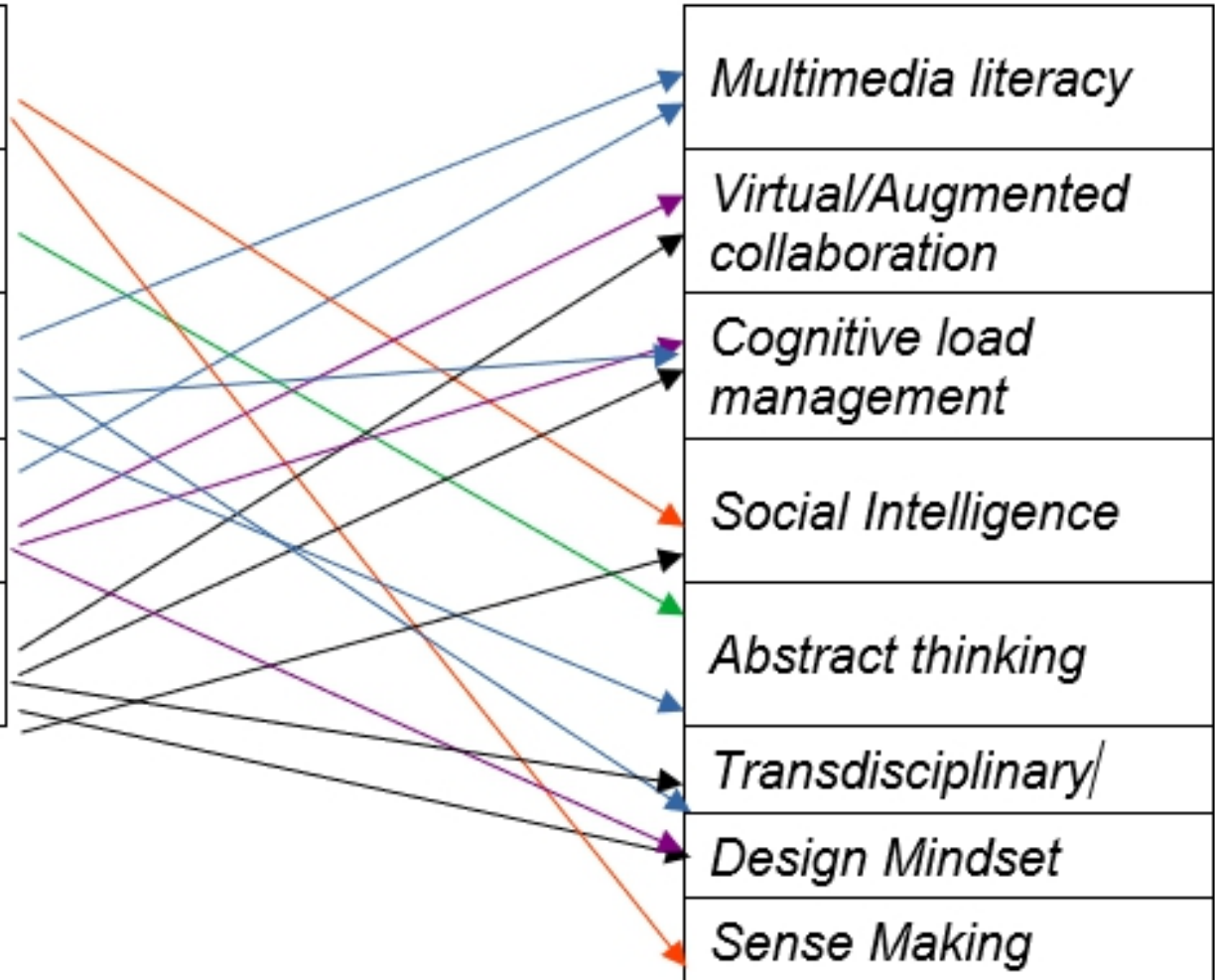
A New Industrial Paradigm

Change Drivers

<i>Smart machines & intelligent systems</i>
<i>computational ubiquity</i>
<i>Multimedia ecology</i>
<i>Self-organising socio-economic formations</i>
<i>Globally Interconnected World</i>

Digital Skills Framework

<i>Multimedia literacy</i>
<i>Virtual/Augmented collaboration</i>
<i>Cognitive load management</i>
<i>Social Intelligence</i>
<i>Abstract thinking</i>
<i>Transdisciplinary/</i>
<i>Design Mindset</i>
<i>Sense Making</i>



FDCR Domains Skills Requirements

FOUNDATIONAL DIGITAL DOMAINS

- Artificial Intelligence/Robotics/Cybernetics
- Augmented/Virtual/Mixed Reality
- Modelling and Simulation
- Block Chain & Cybersecurity
- Internet of Things/Cloud Computing
- Quantum Computing

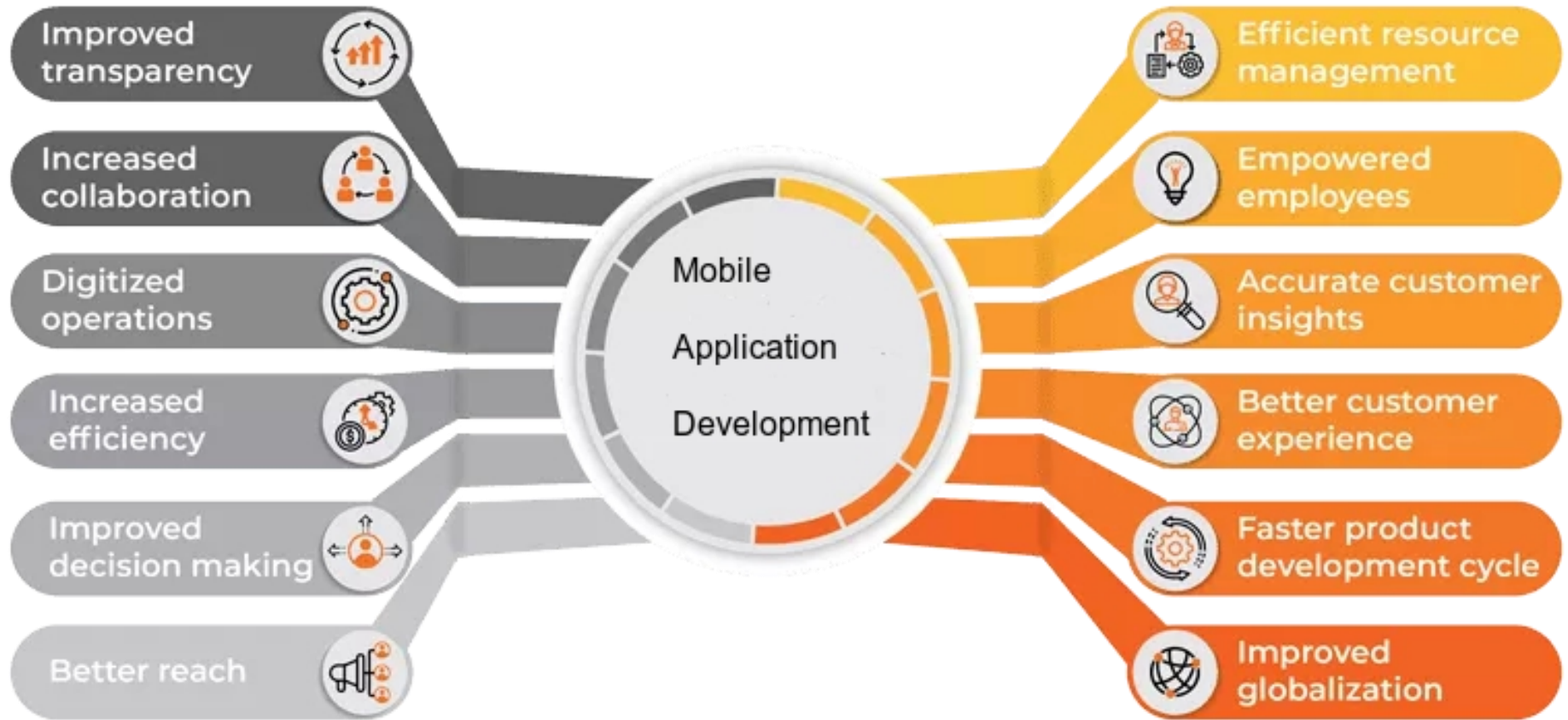
SPECIFIC SKILLS REQUIREMENTS

- Mathematical and Algorithms Knowledge
- Probability and Statistics
- Expertise In Programming Languages
(*Python/C++/R/Java/SQL/Rust/Hadoop/SAS/Spark/Matlab/Hive/Table
au*)
- Data Science
- Distributed Computing
- Command Over Unix Tools
- Advanced Signal Processing (Including AV systems)
- Curiosity and Creativity
- Stay Updated and Grasp New Concepts Quickly
- Perseverance and Patience

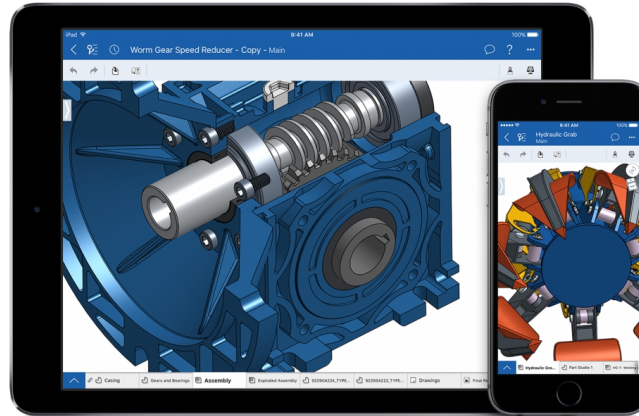
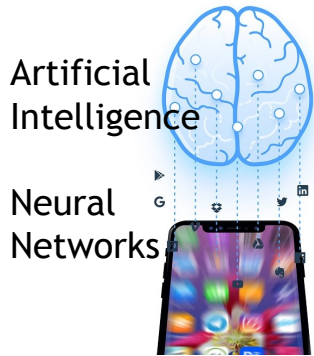
Foundational Digital Capabilities Domains

Artificial Intelligence/ Cybernetics/ Robotics	Virtual/ Augmented/ Mixed Reality	Internet of Things/ Cloud Computing/ Networking	Cybersecurity/ Block Chain	Modelling/ Simulation	Quantum Computing
Machine Learning	Immersion Systems	Big Data	Cryptography	Conceptual modelling	Quantum applications
Deep Learning	Sensory Feedback	DevOps	Cloud Security	Algorithms, model checking, inference	Quantum communication infrastructure
Reinforcement Learning	Interactivity	Cloud Load Balancing	Data Malleability/ Integrity	Fidelity, uncertainty	High Performance Computing (HPS) or super-computers
Natural Language Processing	Ethics	Green Cloud Computing	Privacy	Reuse, composition, adaptation	Quantum sensors and metrology.
Computer Vision		Edge Computing	Authentication/ certification	Real world validation	Quantum Annealing
Recommender Systems		Containerization	Energy Efficiency		Quantum simulations
Neuromorphic Computing		Fog Computing			Universal Quantum Computing
AI Bias					

Mobile Applications Utopia



Mobile Applications within FDCR



Modelling and Simulation



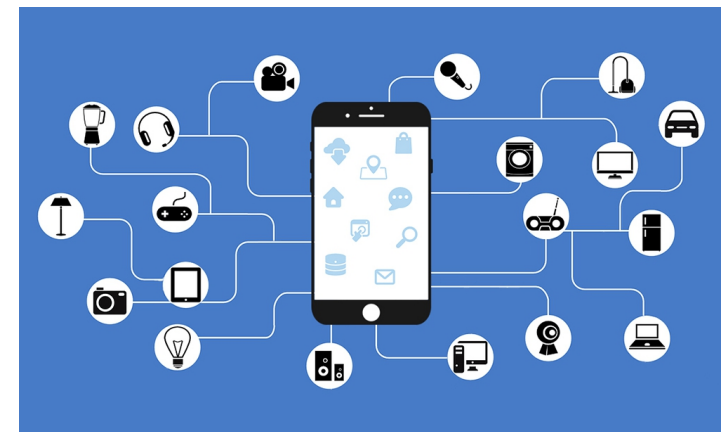
Cloud Computing



Disributed Ledger Tech



Mixed Reality



Internet of Things

Mobile Applications within FDCR

Cybersecurity threats



Trojan virus



Deep attacks



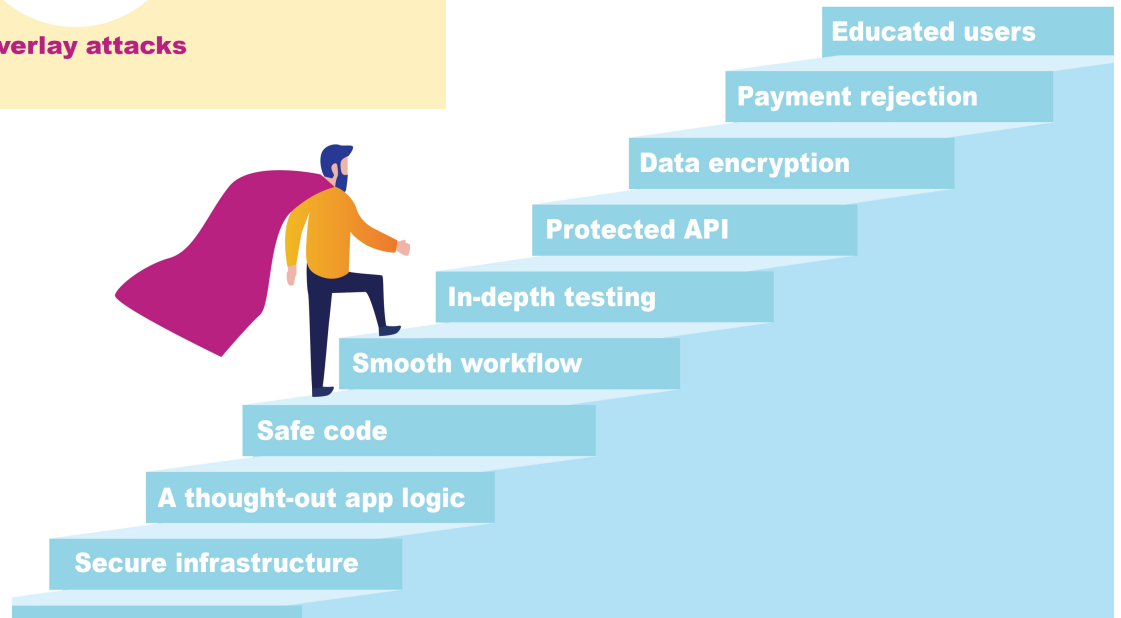
**Keyloggers and
Screenloggers**



**Accessibility Framework
attacks**



Overlay attacks



A New Industrial Paradigm

TRANSFORMATION:

- of Participants
- of Beneficiaries
- of Research Landscape
- in Engagement

INCLUSIVITY:

- Provincial Formations
- Local Formations
- Vulnerable Groups
- LGBTQIAP

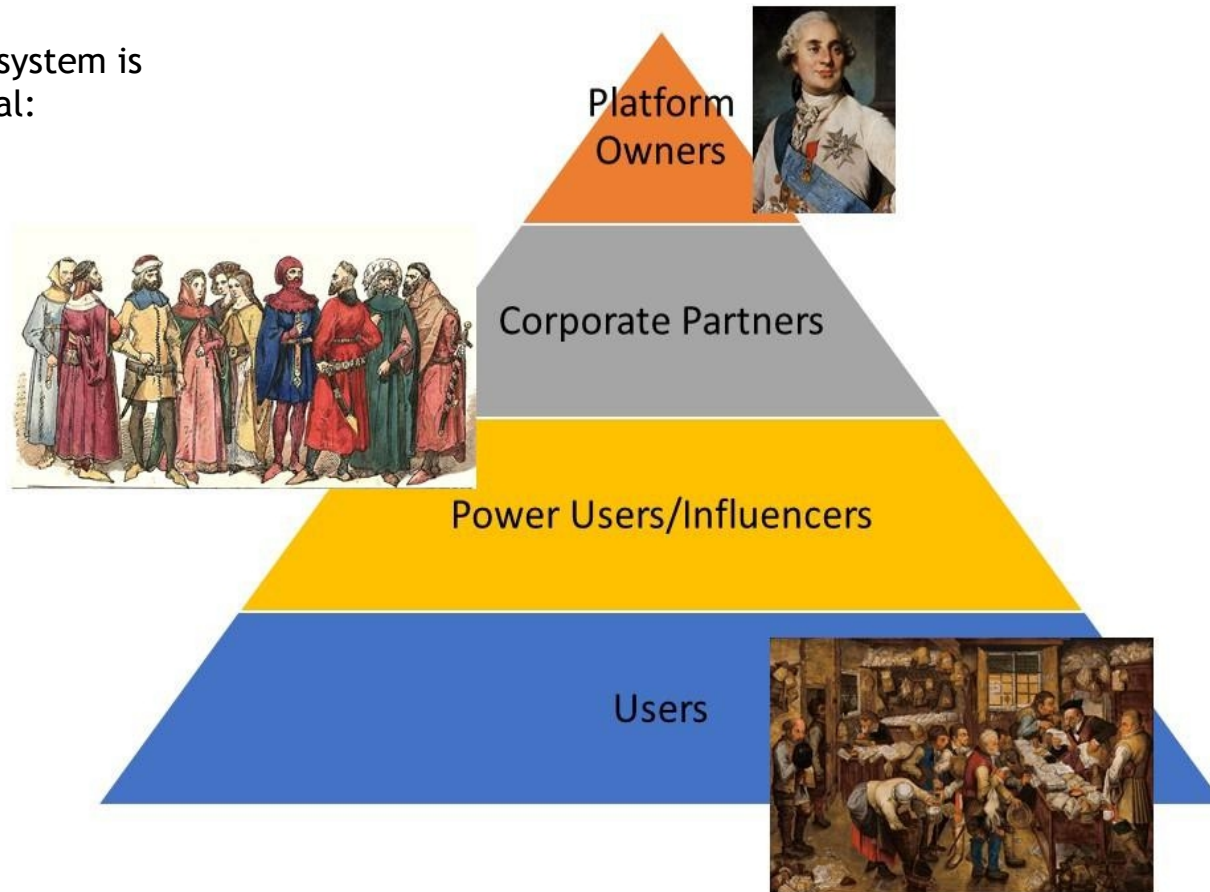
INEQUALITY:

- of Space
- of Time
- of Access
- of Income
- of Transactional Relations

**BEWARE OF
DIGITAL FEUDALISM!**

Classes of Digital Feudalism

How the data ecosystem is becoming medieval:



Lords of the manor: companies who own and manage platforms.

Major gentry: companies with business models based on the manor platforms.

Minor gentry: “influencers” who drive users to spend more time on the site.

Serfs: people who submit to data collection for the right to exist in digital space

Thank You - Questions?

