Field Research on Digital Inclusion: narratives and advocacy for the disenfranchised.

A pitch for funding by

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… a Research Partner of DIAA

These slides introduce the <u>Center for Inclusive Digital Enterprise</u> (CeIDE, pronounced "seed", www.ceide.org) which was ideated in 2016, established in Jan 2018 and became a research partner of DIAA in Sep 2019. Its founding purpose was to advocate for policy changes with thought leadership and data-driven recommendations. The formal mission of CeIDE is focused on bringing about digital inclusion and equity for the well-being of the currently disenfranchised communities. Consistent with the ideals of "tech for good" and "Information for All", CeIDE believes that digital inclusion is a fundamental and universal right of active citizenship and should contribute to the well-being of humanity. With the use of appropriate field research methodologies we shall analyse factors contributing to digital innovation and enterprise as a driver of equitable growth and development. This deck suggests further research in the form of narratives and how they may be constructed for deeper sense-making, insights, policies and ultimately … positive digital transformation.

Field Research Themes

If knowledge is a key factor of production, could inclusive digital platforms play a distributive role?

Is the idea of an open and level "playing field" desirable-viable-feasible?

Can we empower the SED communities with digital innovation? How?

Are there good practices and lessons learnt that can transfer across communities, societies and countries?

How can policy research be translational?
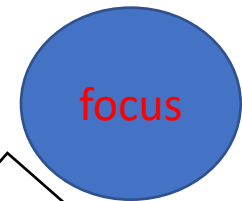
Aside

Wisdom from Jack: *1) we only have experts for the past not for the future 2) before 50, you do things that others want you to do, after 50 you do things that you want to do for others 3) there is always opportunity in crisis … when people worry entrepreneurs step in 4) customers first , people second and shareholders third. 5) small is beautiful, we focus on helping small businesses. 6) hard to imagine China today without the internet 7) we have to make technology warm (human) then we shall succeed 8) digital technology is designed for inclusiveness 9) four E's for SD: entrepreneurs, education, e-government, e-frastructure.*

STORYBOARD

- Part I: Theory of Sustainable Development
- Part II: Semi-Structured Literature Review
- Part III: Policy Indictors and Outcomes
- Part IV: Research Agenda – Sense-making & Narratives

Prologue - Sustainable Development

Prologue - Inclusive Societies

- The World Summit for Social Development (Copenhagen 1995) defines an inclusive society as a "society for all in which every individual, each with rights and responsibilities, has an active role to play".

- The theme of ICIS 2017 was "Transforming Society with Digital Innovation".

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Research Context

- *If I have seen further than others, it is by standing upon the shoulders of giants.*

  - Isaac Newton

- *Digital is the main reason just over half of the companies on the Fortune 500 have disappeared since the year 2000.*
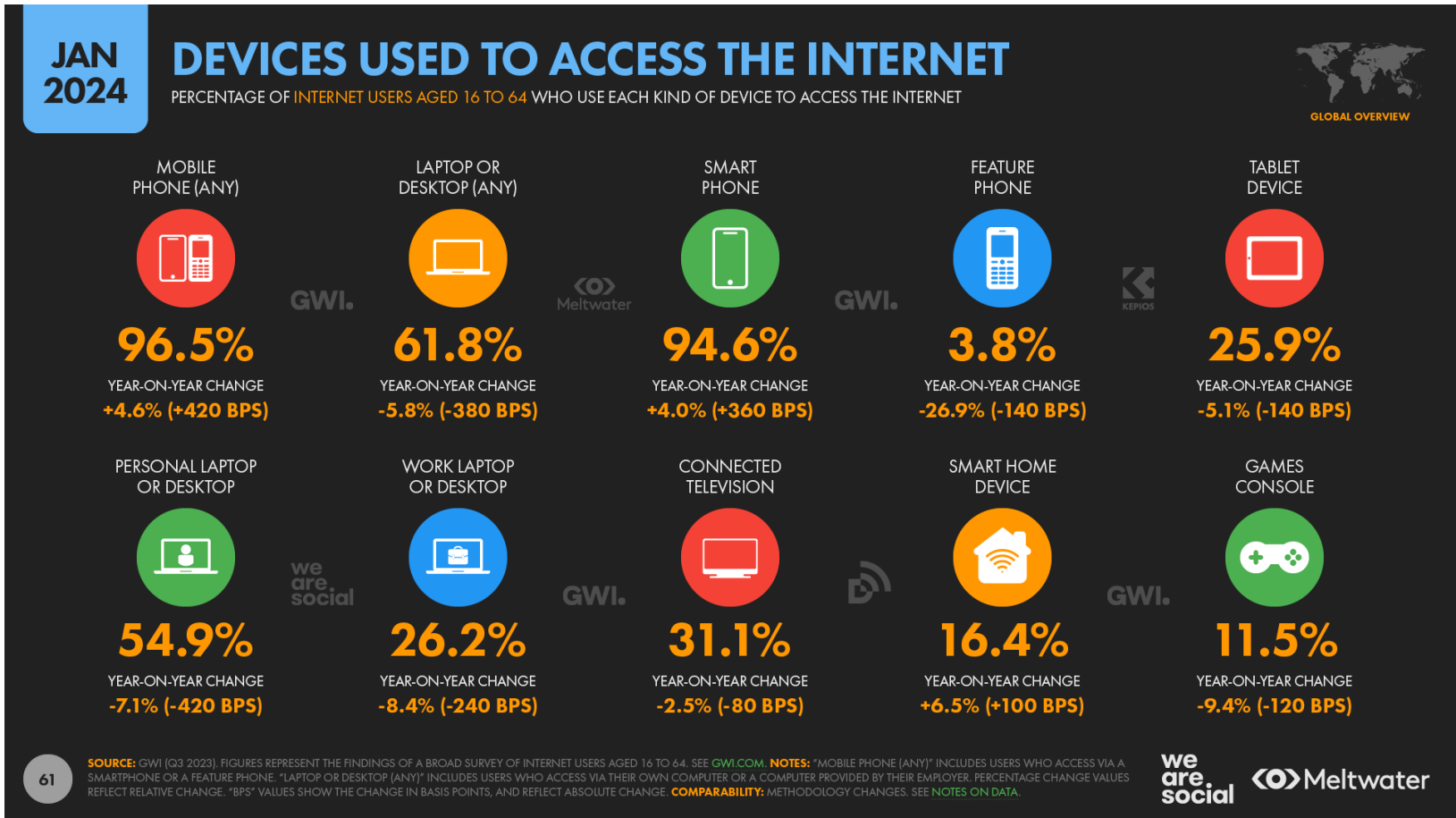
  - Accenture CEO Pierre Nanterme

- BCG 2018 report on top ten brands being digital natives

Preamble – *why?*

NUMBER OF YEARS IT TOOK FOR EACH PRODUCT TO REACH 50 MILLION USERS

Automobile	Telephone	Electricity	Credit Card
62 years	50 years	46 years	28 years
Television	ATM	Debit Card	Internet
22 years	18 years	12 years	7 years
PayPal	YouTube	Facebook	Twitter
5 years	4 years	3 years	2 years

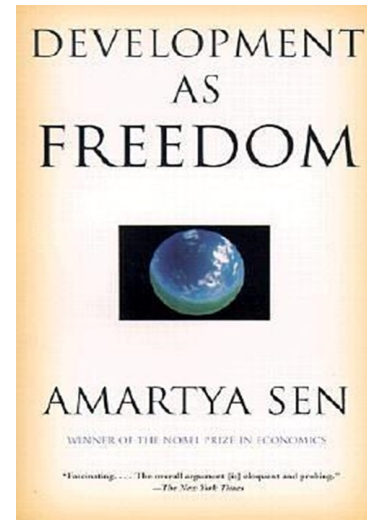# Era of universal access and affordance?

Functionings: beings and doings.

Capability: the substantial freedom or opportunity of a person to attain functionings.

Five types of instrumental freedoms: political freedoms, economic facilities, social opportunities, transparency guarantees and protective security.

The core ideas of CA are functioning and capability

DEVELOPMENT AS FREEDOM
AMARTYA SEN
WINNER OF THE NOBEL PRIZE IN ECONOMICS
"Fascinating. . . . The overall argument [is] eloquent and probing."
—The New York Times

What moves us, reasonably enough, is not the realization that the world falls short of being completely just – which few of us expect – but that there are clearly remediable injustices around us which we want to eliminate.

Online or off, people desire a just world

AMARTYA SEN
THE IDEA OF JUSTICE
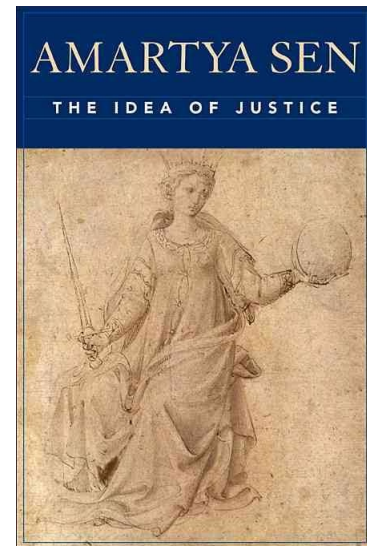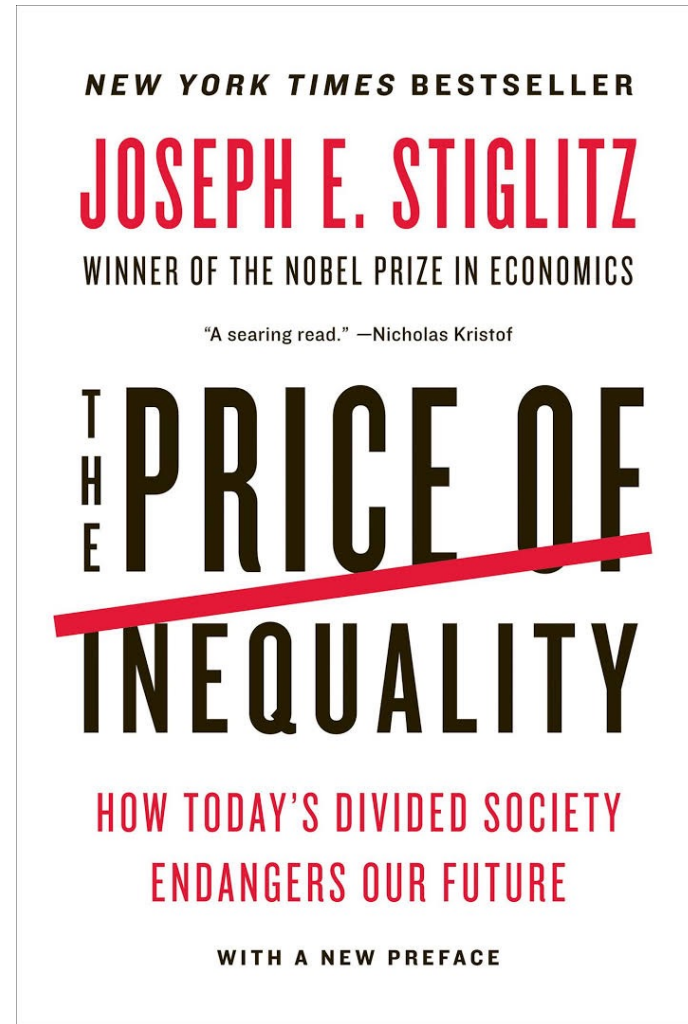
Worthy intellectual successor to Das Kapital

central thesis of the book is that inequality is not an accident, but rather a feature of capitalism, and can only be reversed through state interventionism

... modern economic growth and the diffusion of knowledge have allowed us to avoid inequalities on the apocalyptic scale predicted by Marx

CAPITAL

in the Twenty-First Century

THOMAS PIKETTY

TRANSLATED BY ARTHUR GOLDHAMMER
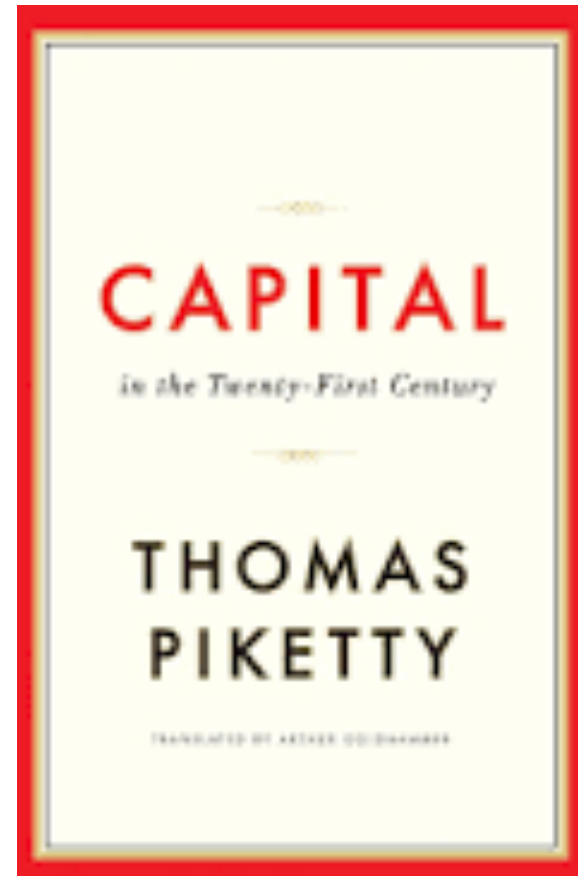
Zen and the art of …

aims to explain how inequality affects and is affected by every aspect of national policy, and with characteristic insight he offers a vision for a more just and prosperous future, supported by a concrete program to achieve that vision … education, technology & infrastructure

NEW YORK TIMES BESTSELLER

JOSEPH E. STIGLITZ

WINNER OF THE NOBEL PRIZE IN ECONOMICS

"A searing read." —Nicholas Kristof

THE PRICE OF INEQUALITY

HOW TODAY'S DIVIDED SOCIETY ENDANGERS OUR FUTURE

WITH A NEW PREFACE

Health (education) are tools of intervention

interplay between progress and inequality. The global inequality of today is largely the creation of modern economic growth. Health progress creates inequality in health just as economic progress creates economic inequality.

THE GREAT ESCAPE
health, wealth, and the origins of inequality
ANGUS DEATON
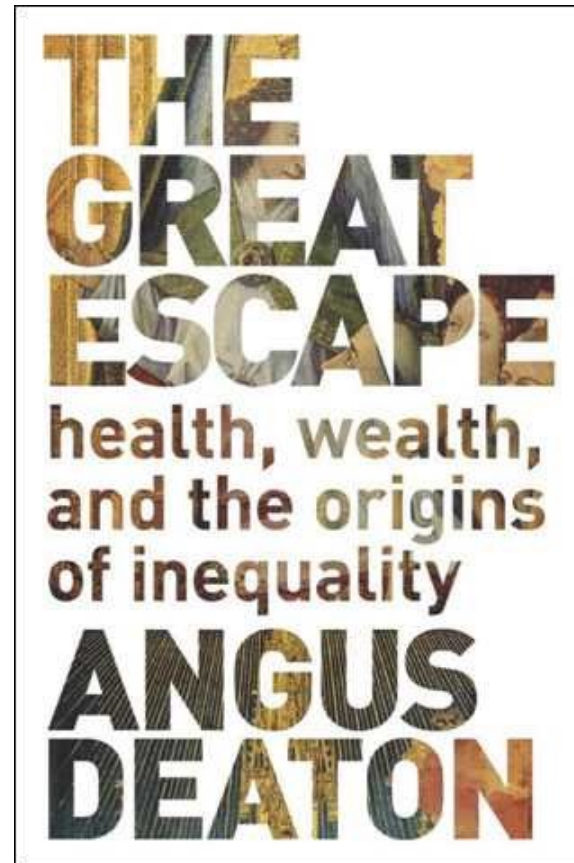
https://www.gatesnotes.com/2020-AnnualLetter?WT.mc_id=20200213120000_AL2020_BGLI_&WT.tsrc=BGLI&linkId=82291228#ALChapter2

If PHC can help the disadvantaged segments of society lead healthy, productive lives, then ...

methodical de-construction of fake facts on migration, trade liberalisation, jobs guarantee, wealth tax, …
a guide to RCTs informing effective policies
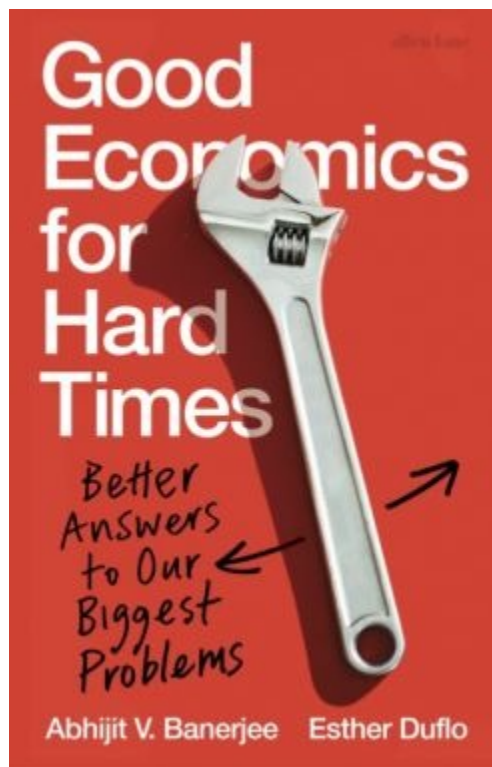
Perhaps the greatest contribution of Good Economics… is precisely this: it demonstrates both the brilliant insights that mainstream economics can make available to us and its limits, which a progressive internationalism has a duty to transcend

Yanis Varoufakis's review in The Guardian

Advocacy of RCTs to inform public policy

The World Bank's perspective

Inclusiveness means equity, equality of opportunity, and protection in market and employment transitions

… it is an essential ingredient of any successful growth strategy

Equity (refers to market outcomes)

Equality of opportunity (refers to access)

The Growth Report
Strategies for Sustained Growth
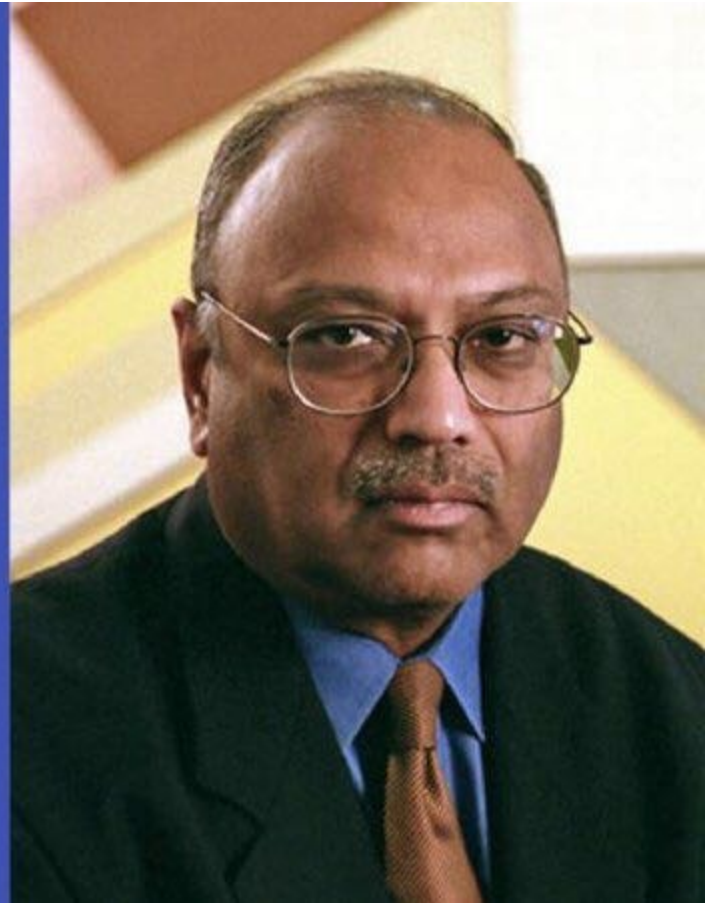and Inclusive Development

BotP

The Economist ON THIS DAY

"The typical pictures of poverty mask the fact that the very poor represent resilient entrepreneurs and value-conscious consumers."

C.K. Prahalad
Management theorist

Demise of the working class?
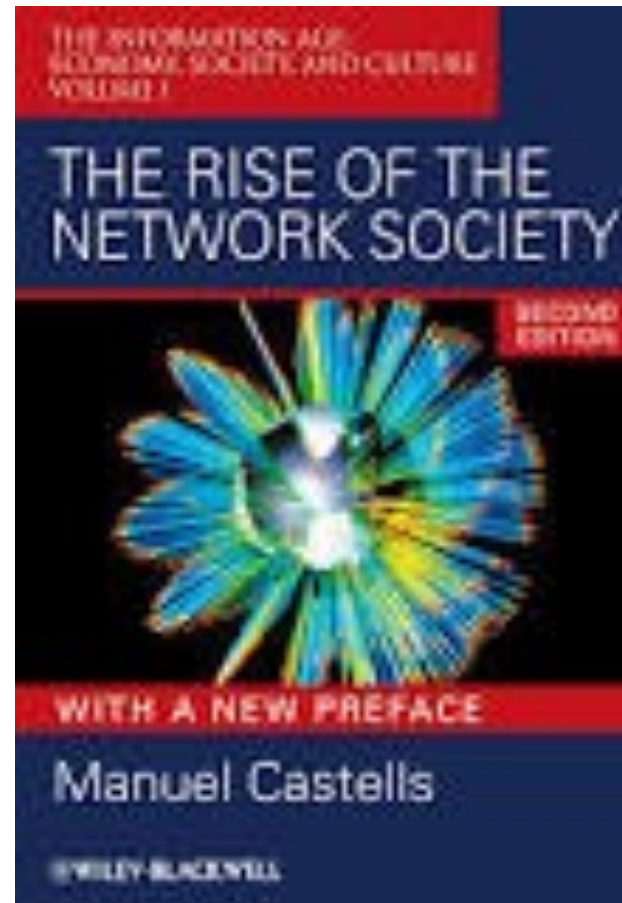
Epilogue to The Information Age trilogy

Stand out information scholar of our generation (Webster 2015)

TNS goes beyond information and is the action of knowledge upon knowledge itself
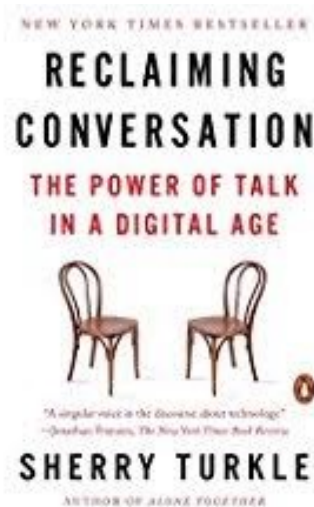
Consequences of information capitalism

Space of places to space of flows

Timeless time

Significant U-Turns

arguably the leading e-learning scholars in the English-speaking world

… investigates how a flight from conversation undermines our relationships, creativity, and productivity—and why reclaiming face-to-face conversation can help us regain lost ground.

Do today's youth have more opportunities than their parents? As they build their own social and digital networks, does that offer new routes to learning and friendship? How do they navigate the meaning of education in a digitally connected but fiercely competitive, highly individualised world?

Synthesis of Part I

- The theoretical underpinnings for the conjecture (postulate) that an inclusive society is equitable, just and sustainable.

- This level playing field of opportunities brings about a net gain to society.

- The digital era affords a new platform for innovation and enterprise.

- Effective policy needs to be data-driven with indicators, outcomes and treatment effects.

- Digital infrastructure *per se* do not create inclusion.
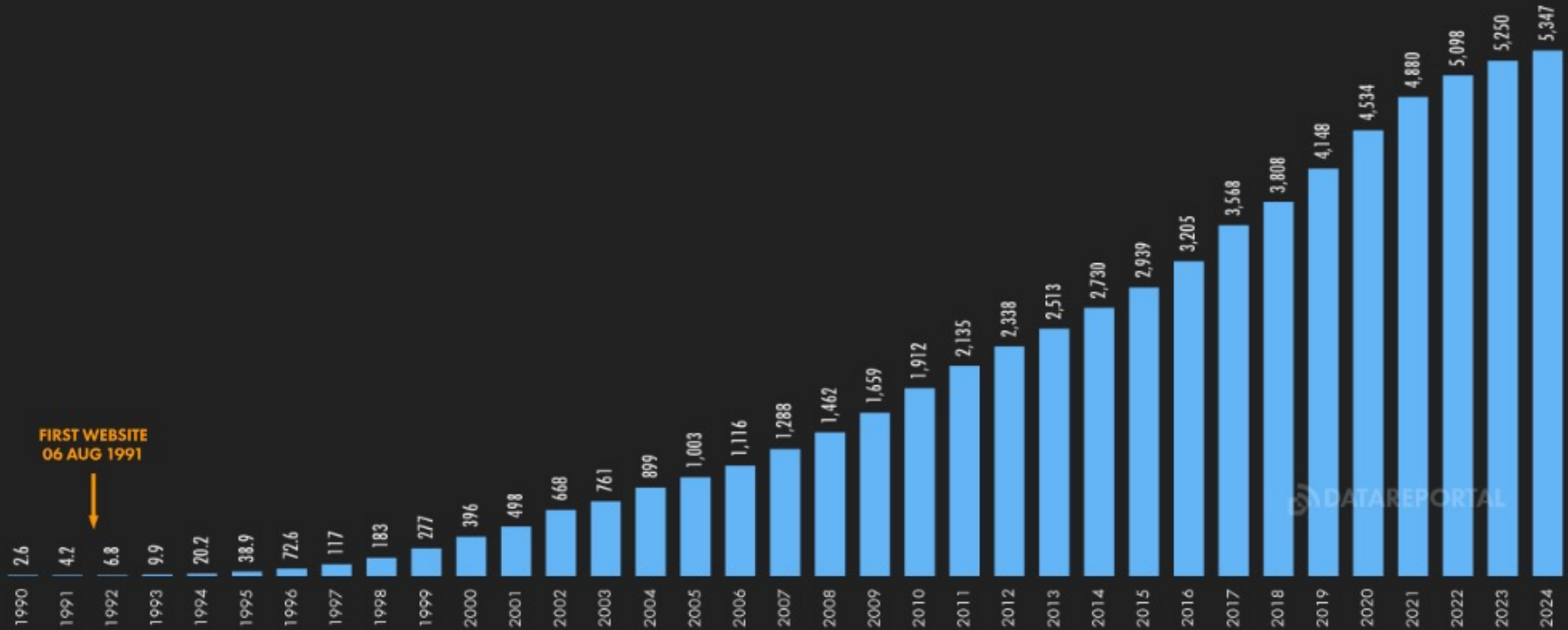
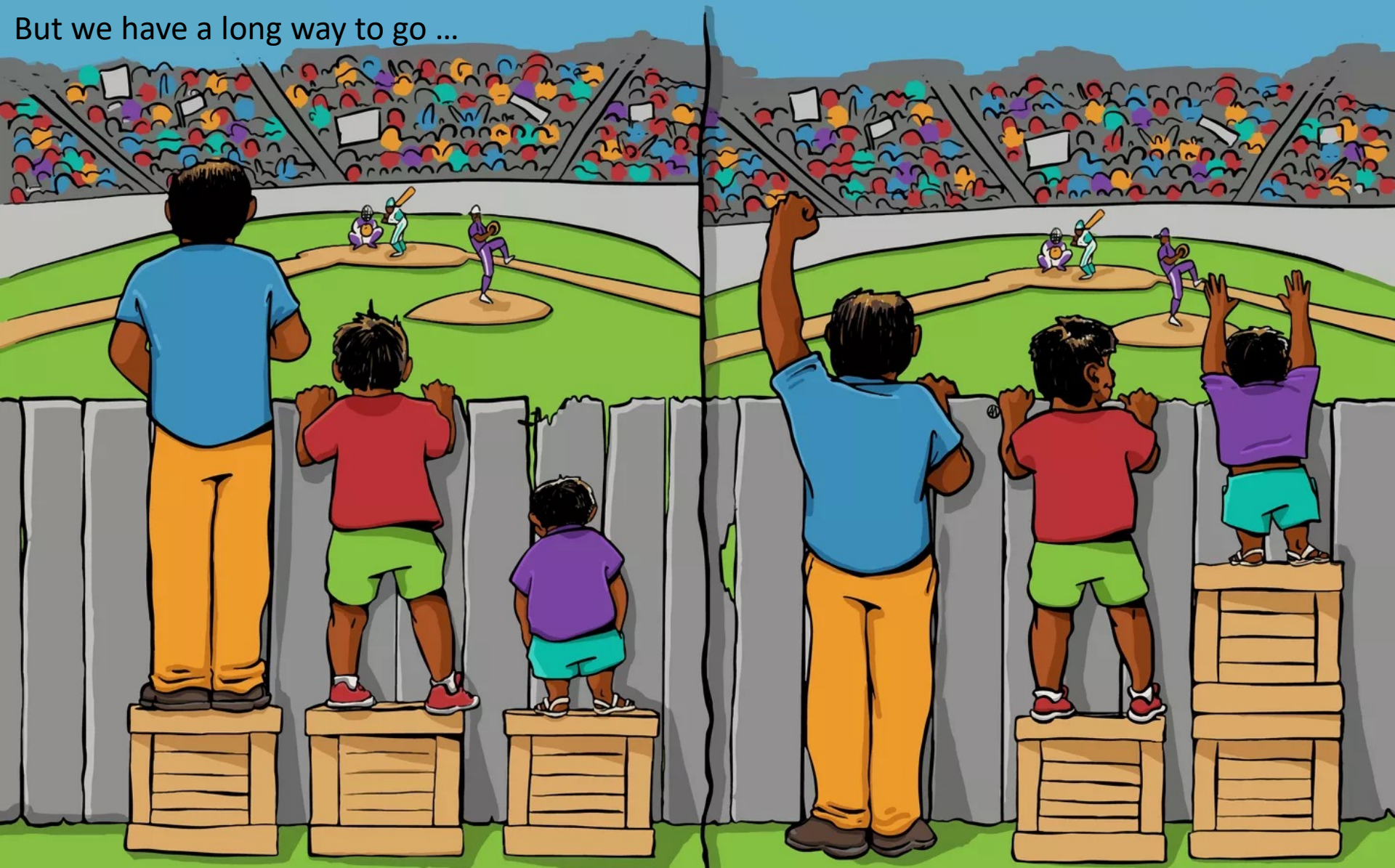# Is this digital Inclusion?
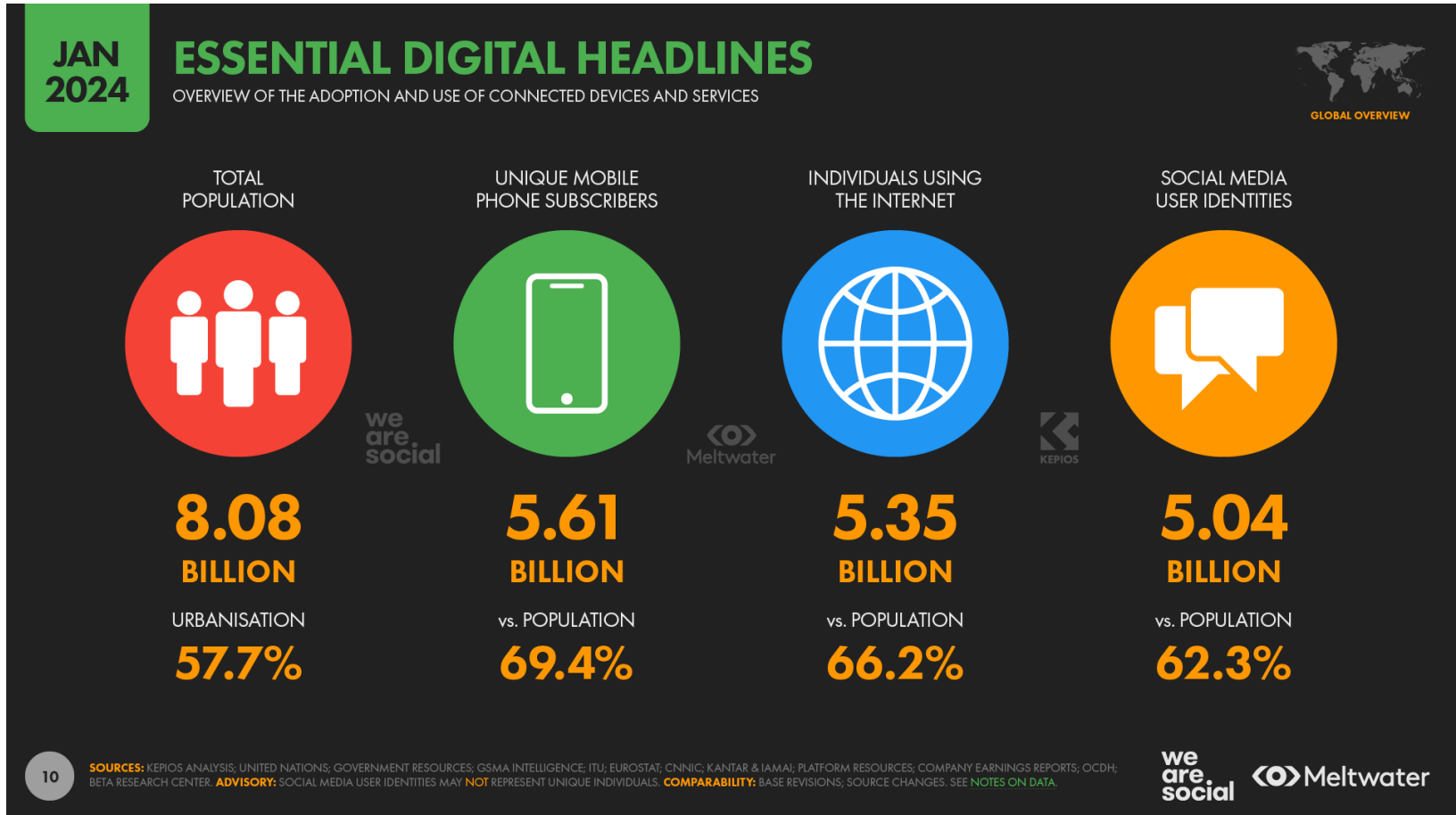
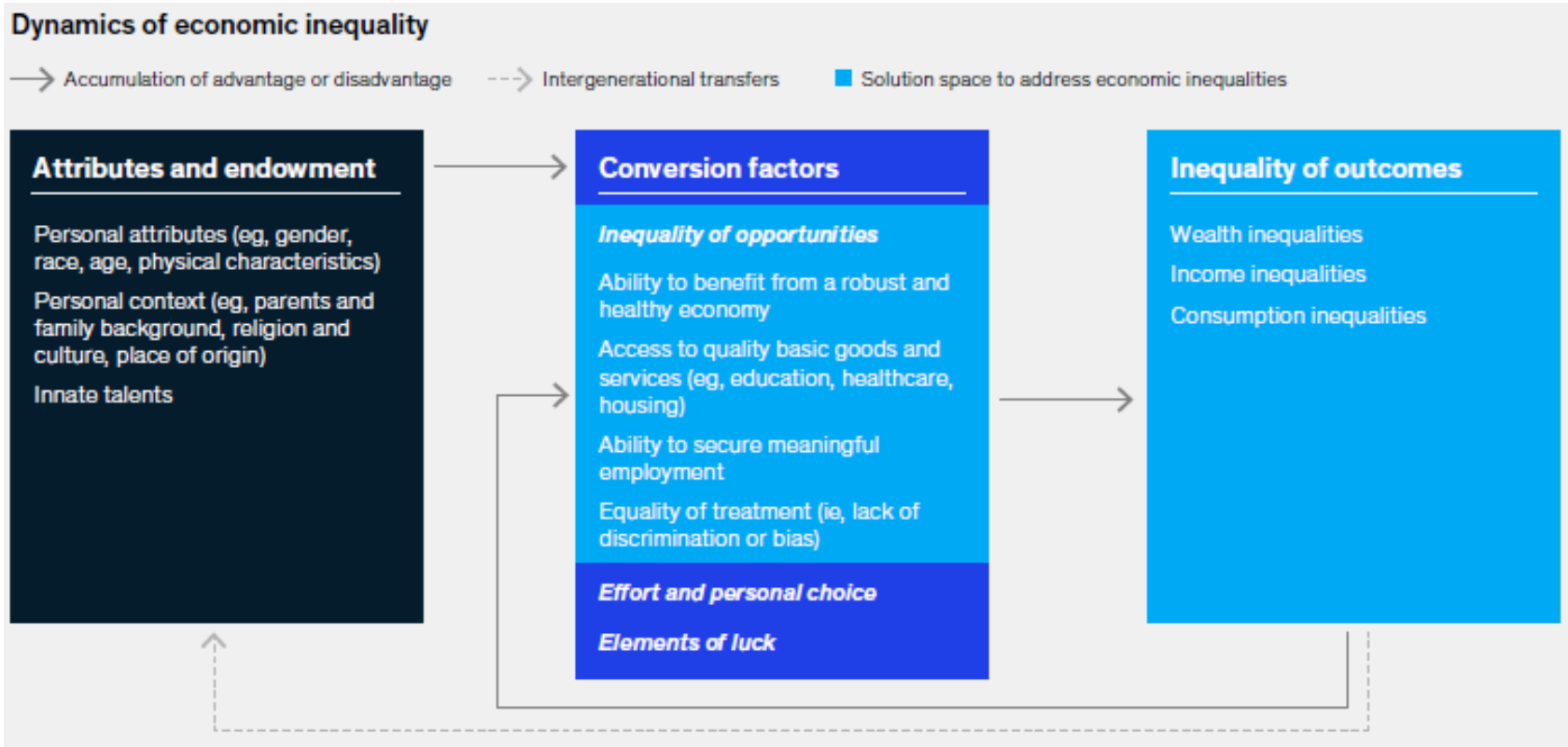... general trend is encouraging.

But we have a long way to go …

EQUALITY

EQUITY

MGI's (2019) take

While the wealth gap has narrowed globally, inequality within advanced economies has increased since the 1980s... this is a persisting challenge with sub-optimal implications for growth.

Dynamics of economic inequality

→ Accumulation of advantage or disadvantage   ⇢ Intergenerational transfers   ■ Solution space to address economic inequalities

Attributes and endowment

Personal attributes (eg, gender, race, age, physical characteristics)

Personal context (eg, parents and family background, religion and culture, place of origin)

Innate talents

Conversion factors

Inequality of opportunities

Ability to benefit from a robust and healthy economy

Access to quality basic goods and services (eg, education, healthcare, housing)

Ability to secure meaningful employment

Equality of treatment (ie, lack of discrimination or bias)

Effort and personal choice

Elements of luck

Inequality of outcomes

Wealth inequalities

Income inequalities

Consumption inequalities

Source: https://www.mckinsey.com/industries/public-sector/our-insights/inequality-a-persisting-challenge-and-its-implications

Meanwhile, in NZ

- **1 in 5 Kiwis are no or low users of the internet**

The World Internet Project report - affordability was a key issue (42 mins). "We don't need to, and cannot afford to, exclude anyone from the benefits of digital connectivity. …. New Zealanders must have access to technology as a right. … our aim is to close the Digital Divide by 2020. " Digital inclusion, innovation and economic development could all be done. … "We must never leave anyone behind."

- **But, …**

Radio New Zealand has published an article discussing the issue of "digital exclusion" as government departments are increasingly moving access to services via online platforms only. The article also discusses a Citizens Advice Bureau report that shows this is creating "digital exclusion", not only for the elderly but also those "across all age groups", with poverty being a "the biggest barrier" to access.

Read the full story [here](#)

Inclusive / Participative Knowledge Economies

- UNESCO's (2005) definition: "a society that is nurtured by its diversity and its capacities. Every society has its own knowledge assets. It is therefore necessary to work towards connecting the forms of knowledge that societies….".

- ICTs enables mass production and diffusion of knowledge, this being supported by smart cities.

- *Smart* people make up knowledge societies. They are culturally adept, open to new ideas and are creative.

- Such human development are requisite for smart community development.

- Could the key to digitization be to enable "smart" societies?

Enter the great equilizer – SMART Cities?

While some people continue to take a narrow view of smart cities by seeing them as places that make better use of information and communication technology (ICT), the cities I work with ... all view smart cities as a broad, integrated approach to improving the efficiency of city operations, the quality of life for its citizens, and growing the local economy.

Cohen (2012)

Digital (Smart) platforms for development?

- Smart cities attract highly skilled workers, help in building on creativity and innovation.
- Smart cities are highly complex in nature and specific knowledge is required to build the infrastructure.
- Literacy rates – including digital literacy – can impact the acquisition and creation of knowledge.
- Enclaves exist … knowledge is shared, and disseminated but, … a digital divide persists.
- Smart Cities may deepen the knowledge divide.

In Singapore …
LKYCIC @ SUTD

The Centre seeks to stimulate thinking and research on critical issues of cities and urbanisation and explores the integrated use of technology, design and policy to provide urban solutions.

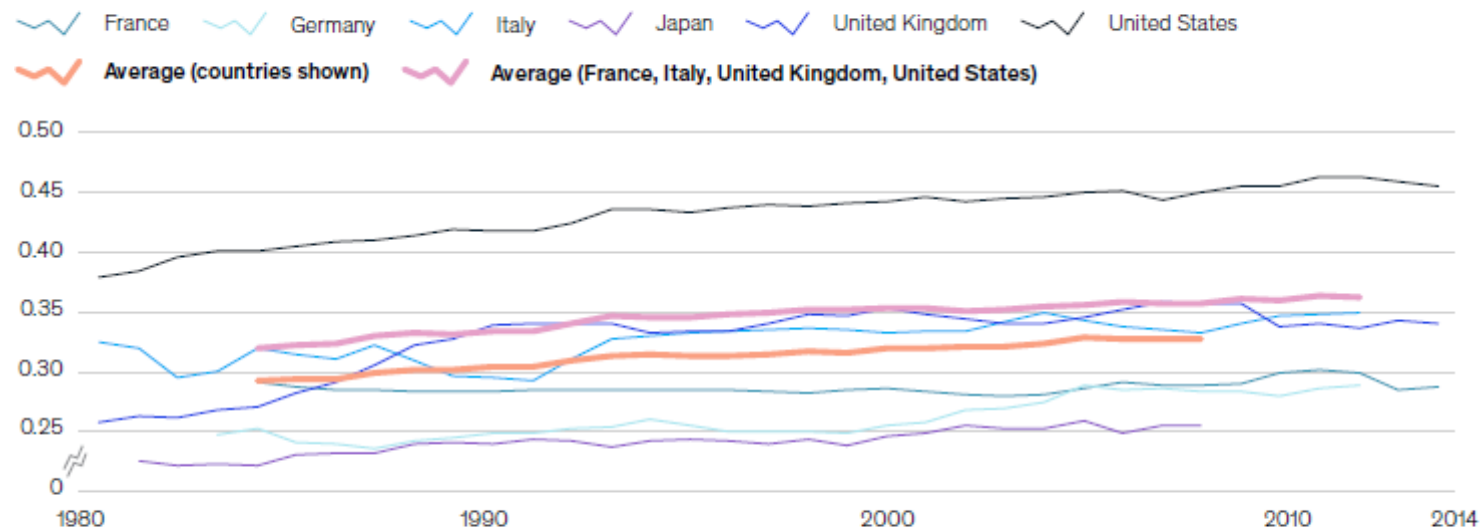60% of the world's population will be urban by 2050.

RQ : how much of inequality is attributable to financial vs intellectual capital?
=> How might we digitally bridge inequality?

Income inequality as measured by income Gini increased since the 1980s.

Equivalized disposable income Gini,[1] 1980–2014, selected G-7 countries

France   Germany   Italy   Japan   United Kingdom   United States
Average (countries shown)   **Average (France, Italy, United Kingdom, United States)**

Pretax income Gini is defined by World Inequality Database as pretax national income Gini for the adult population; average calculated as an unweighted average of France, Italy, United Kingdom, and United States.

Source: World Inequality Database, February 11, 2019, wid.world/data; McKinsey Global Institute analysis
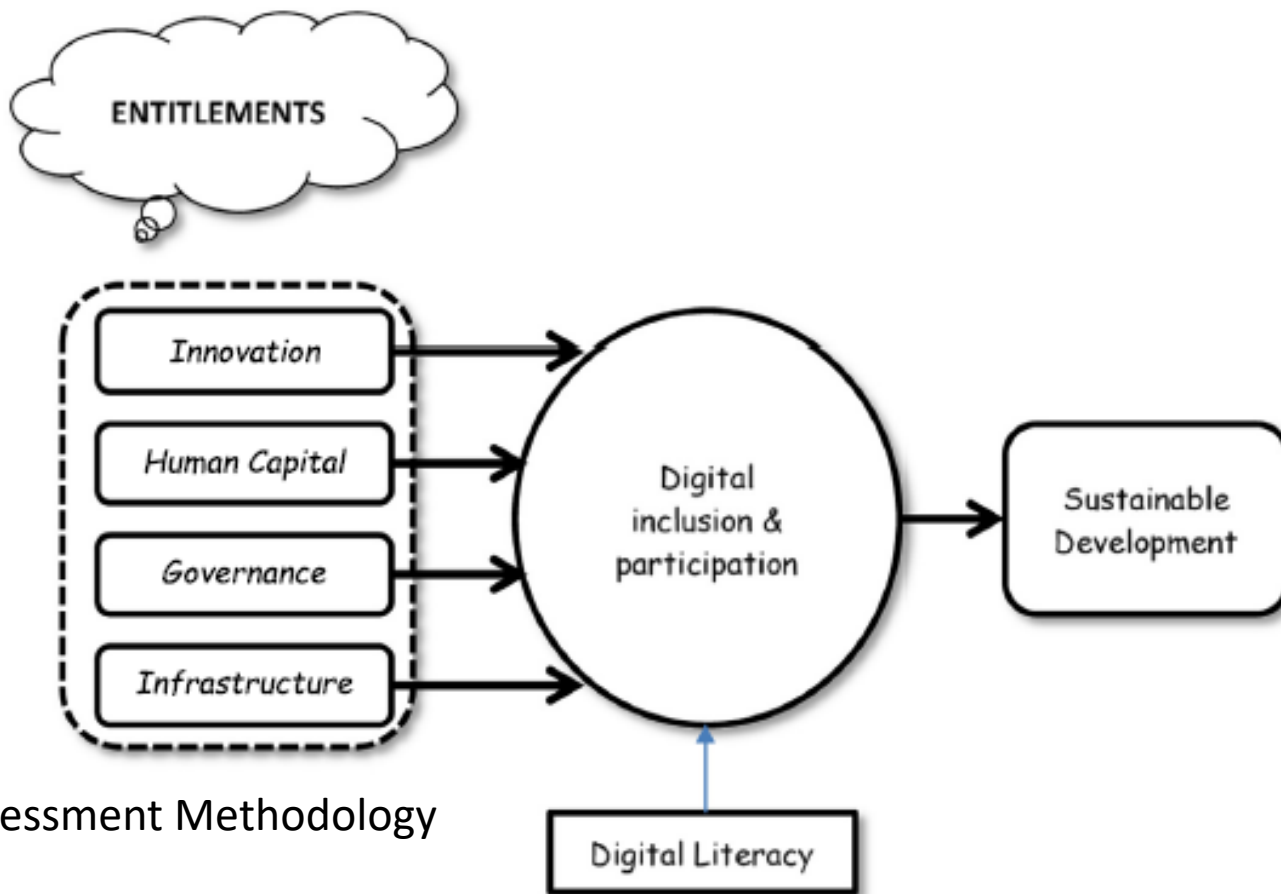
(Semi-)Structured Literature Review

- 4 pillars:
  - evolution of digital literacy,
  - measures and frameworks for digital literacy,
  - methods used to study digital literacy and
  - socio economic development and digital literacy.
- Literature, published over the past ten years (2005 to 2015), in English, were searched using various terms pertaining to each pillar.
- Used Google Scholar and also searched particular conferences and journals that are recognised in the field of Information, Systems & Management.

SLR - Observations

- Digital literacies have evolved from a mere set of skills, to encompass cognitive ability, to facilitate cultural engagement, and to enable critical analysis. This emphasizes participation, social justice and civic responsibility.

- Measures and frameworks ranges from countrywide/worldwide, group/community and individual. Most fall into the first two categories.

- Methods, mainly quantitative in nature, were used in empirical studies published in top tier journals. The scope of the studies can be classified in a similar way to measures and frameworks.

- Socio-economic development and digital literacy: allowing grassroots participation, social interaction, and access to new information.

CGT Field Study

ENTITLEMENTS

Innovation

Human Capital

Governance

Infrastructure

Digital inclusion & participation

Sustainable Development

Digital Literacy

World Bank
Knowledge Assessment Methodology

Sharma et al 2016

Insights from Indonesia's Sri Mulyani Indrawati

The digital revolution presents poorer nations with a huge opportunity to fast-track their economic development, deliver better public services, and create an inclusive economy and society.

The benefits of technology tend to flow disproportionately to early adopters and growth is often confined to small sectors of the economy. Without careful planning, far too many others will confront job losses from automation, growing inequality and entrenched poverty.

$\Rightarrow$ shared national vision for digital change and coordination between governments, companies and civil society; begins with ensuring access … main obstacle is cost

$\Rightarrow$ ensuring that citizens have the skills they need to navigate this new digital world

$\Rightarrow$ policymakers must set the right conditions for innovation by creating a positive enabling environment

$\Rightarrow$ secure, accountable systems, so that citizens can trust that their data is protected and that the data provided by the government is transparent … developing nations should be sure to tailor legislation to their specific national contexts and integrate developing-country priorities into global standards.
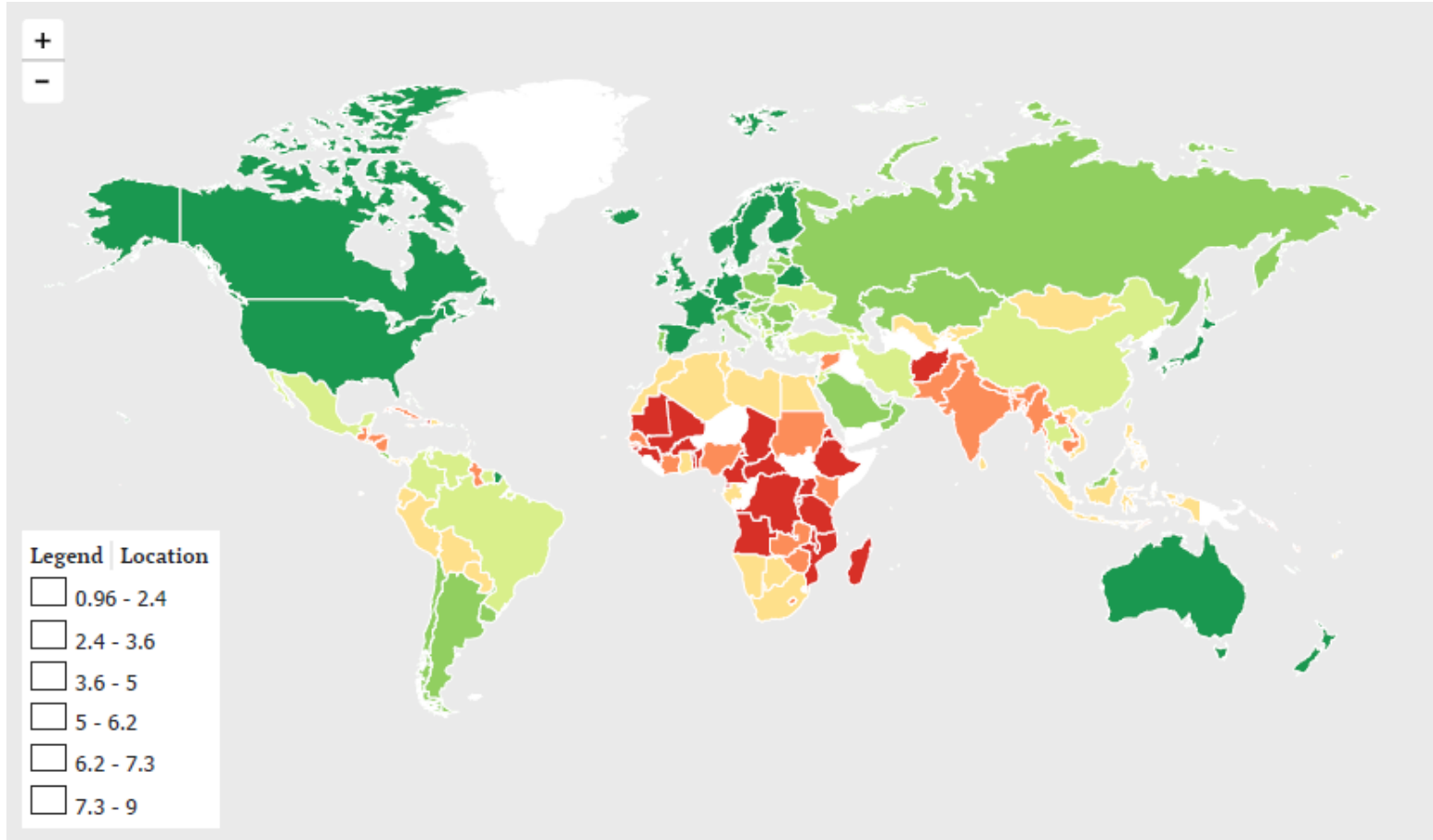
Synthesis of Part II

- Large body of knowledge, multi-disciplinary (much of it cross-disciplinary as well)

- Arise from practical and policy research on Digital Divides (UN – UNESCO, ITU; OECD; … IETF)

- Fairly mature state of framework, measures, data-sets but link between theory and outcome not established

- SDGs remain just that, aspirations … scorecards (and trends towards 2030) don't look encouraging.

IDI, NRI, HDI, GII, KEI, SSI etc.

Measuring the information society report presents a global overview of the latest developments in information and communication technologies (ICTs), based on internationally comparable data and agreed methodologies. It aims to stimulate the ICT policy debate in ITU Member States by providing an objective assessment of countries' performance in the field of ICT and by highlighting areas that need further improvement. The ICT Development Index (IDI) is a composite index that combines 11 indicators into one benchmark measure. It is used to monitor and compare developments in information and communication technology (ICT) between countries and over time. As these are proxy indicators, rather than indicators directly measuring ICT-related skills, the skills sub-index is given less weight in the computation of the IDI than the other two sub-indices. The data has been normalized to ensure that the data set uses the same unit of measurement. The values for the indicators selected to construct the IDI are converted into the same unit of measurement, since some indicators have maximum value as 100 whereas for other indicators the maximum value exceeds 100 After normalizing the data, the individual series were all rescaled to identical ranges, from 1 to 10.

https://knoema.com/MISR2018/measuring-the-information-society-report-2017?accesskey=ikdmpwd

ICT Development Index

Legend | Location
- 0.96 - 2.4
- 2.4 - 3.6
- 3.6 - 5
- 5 - 6.2
- 6.2 - 7.3
- 7.3 - 9

www.knoema.com

IDI – 3 sub-indices, 11 indicators

Access sub-index: ICT readiness - includes five infrastructure and access indicators (fixed-telephone subscriptions, mobile-cellular telephone subscriptions, international Internet bandwidth per Internet user, households with a computer, and households with Internet access).

Use sub-index: ICT intensity - includes three intensity and usage indicators (individuals using the Internet, fixed broadband subscriptions, and mobile-broadband subscriptions).

Skills sub-index: ICT capabilities or skills - includes three proxy indicators (mean years of schooling, gross secondary enrolment, and gross tertiary enrolment).

Data Mining & Knowledge Discovery

If you torture the data long enough, nature will confess.
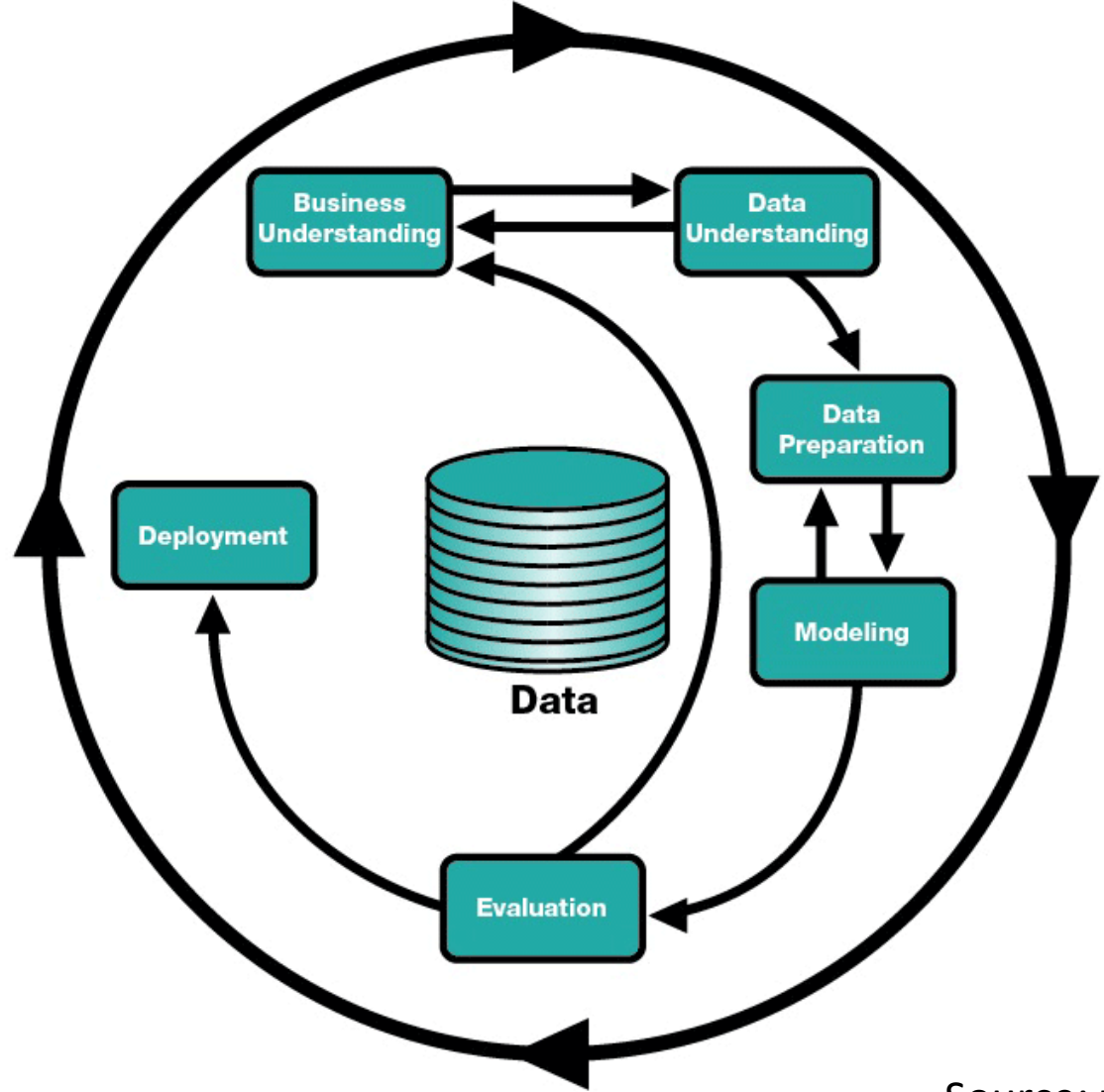
Ron Coase, 1991 Economics Nobel Laureat

Making sense of the data ... extracting knowledge from data sets

Model: indicators, moderators, outcomes

Sources: authoritative, panel data WB, WEF, UN, ...

Process: Cross Industry Standard Process for Data Mining (CRISP-DM)

CRISP-DM

Applying CRISP to 20+ economies

- Model :

Indicators - (infrastructure, governance, human capital, innovation)

Outcome - sustainable development

Moderator : DLM

NTU (pilot), ESSEC (eMBA groups), UC (BCom, MBIS, MADS groups)

20 countries across HDI / NRI spectrum

- Principle Components Analysis

- Interactive Effects Regression

- Benchmarked with OECD, within group HDI / NRI

Digital Literacy Maturity Model

	GOVERNANCE	INFRASTRUCTURE	EDUCATION & HUMAN CAPITAL	INNOVATION
HUMAN VALUES	Sustainable Growth & Development	Community Involvement & Socio-economic Returns	Civic Responsibility	Collective Intelligence
PARTICIPATION	Grassroots Participation	Human Development	Community Participation & Community Leadership	Knowledge Exchange
USAGE	Training	Applications	Skills & Experience	Information Economy
ACCESS	Universal Service Obligation	Devices & Networks	Utility	Efficiency & Effectiveness

3 tier model: access, application, adaptation

x := *capability development, collective intelligence, active engagement, socio-economic participation.*
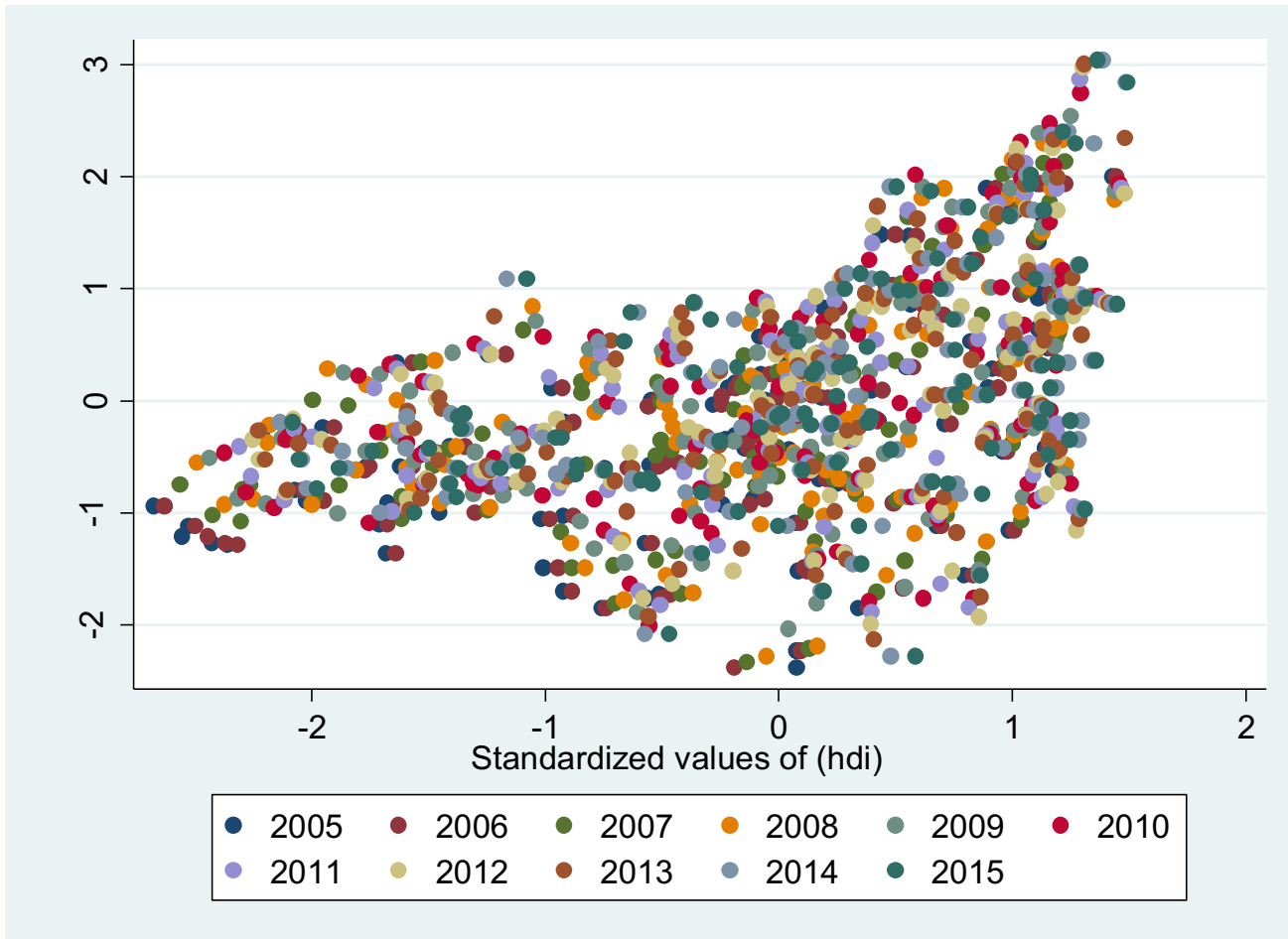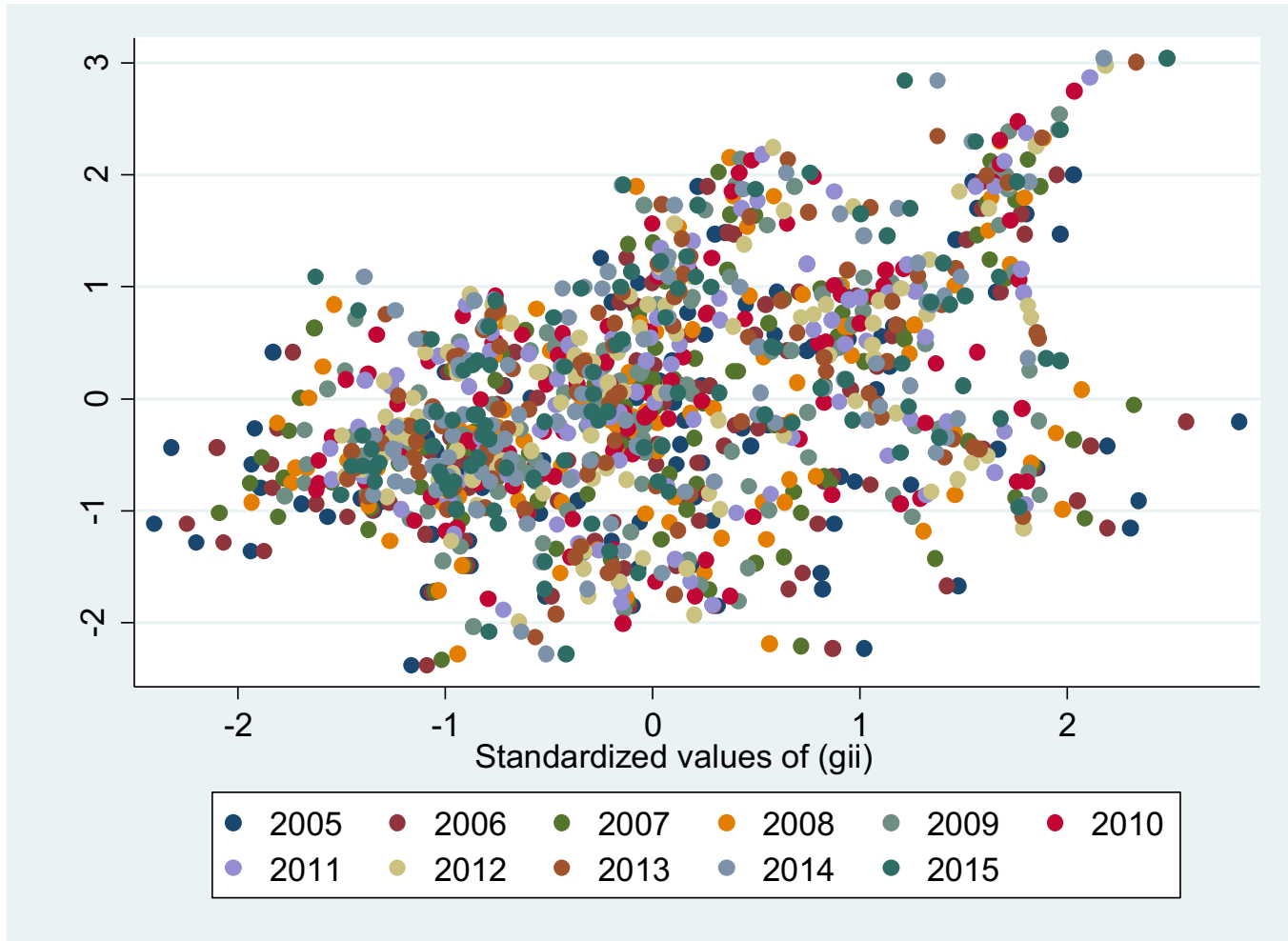
IT infrastructure -> SSI
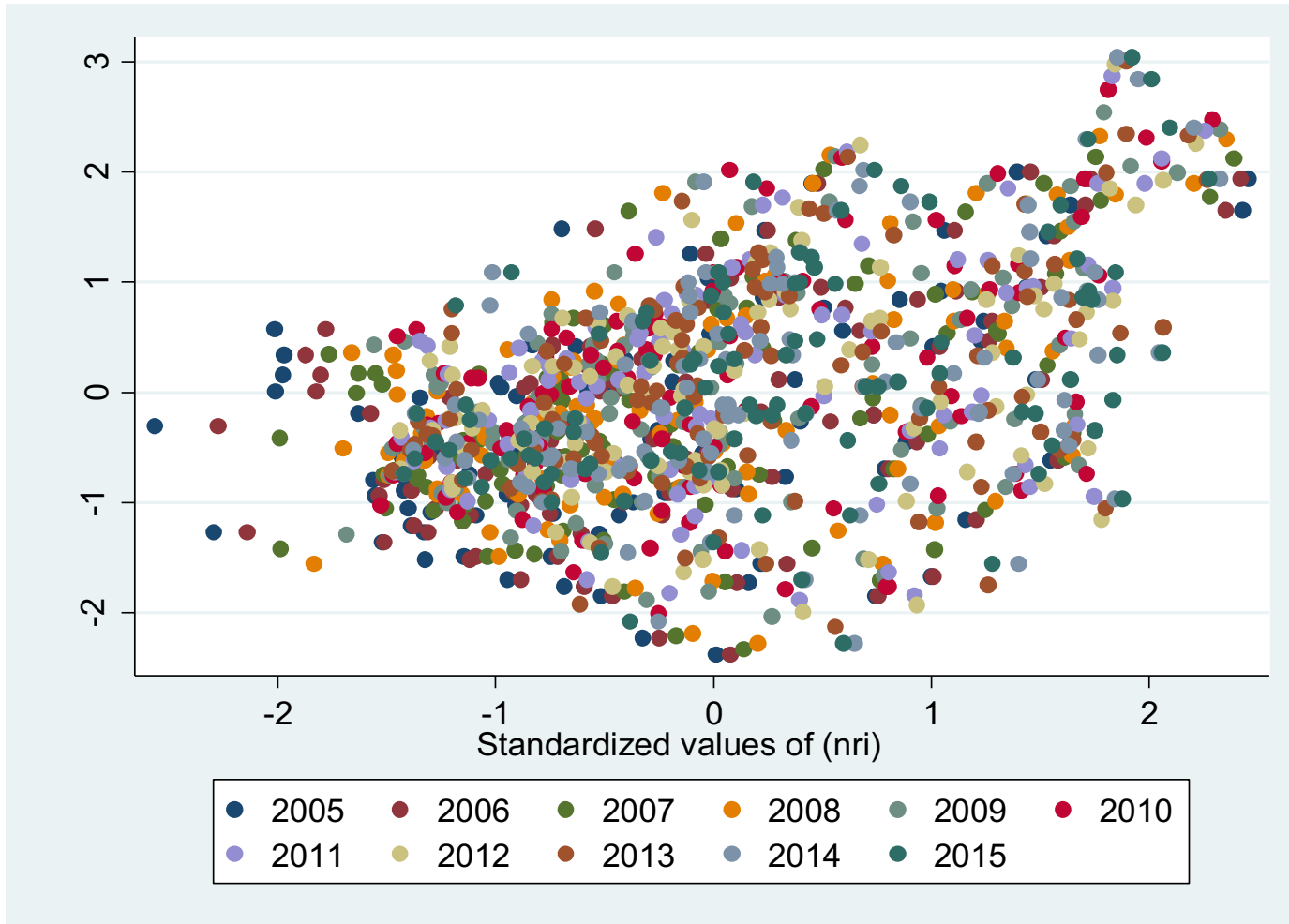
Governance -> SSI
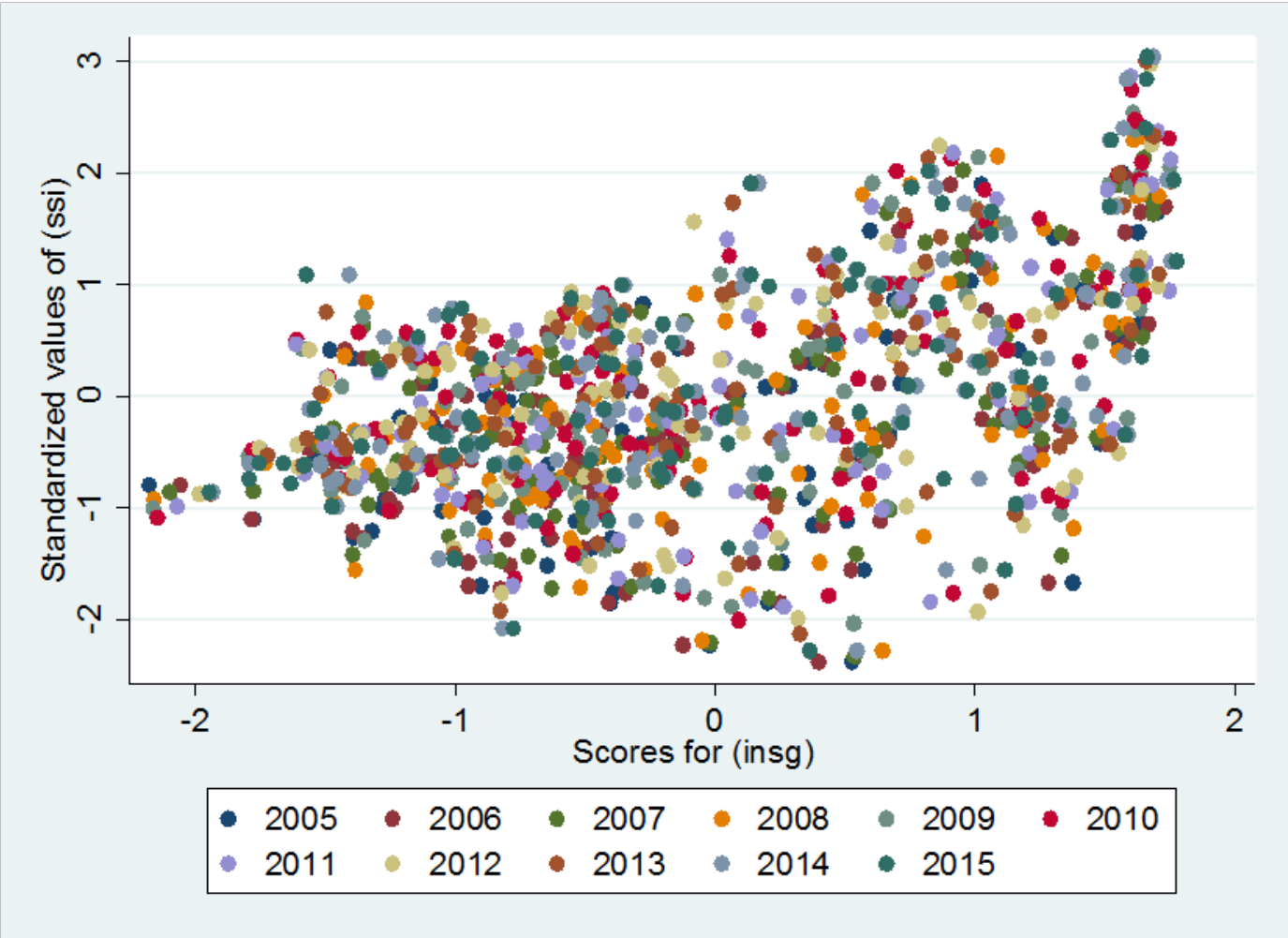
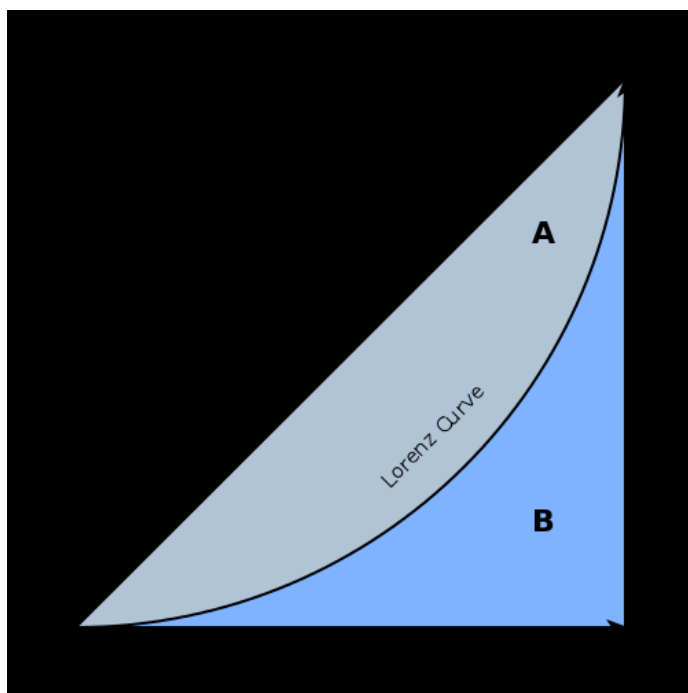# Human Capital -> SSI

Innovation -> SSI

Synthesis of Part III

- How do digital inclusion and participation create conditions for equitable, and therefore sustainable, development?

- Are digital eco-systems effective knowledge platforms?

- How are smart cities enablers of digital transformations?

- Revisiting conventional models of indicators, moderators and outcomes, how may we go forward with a research agenda?

- What are narratives (use cases?) for best-practices and lessons-learnt that may be constructed from deeper sense-making?

- So, what are "effective policy-strategy interventions"?

Aside: a measure of inequity

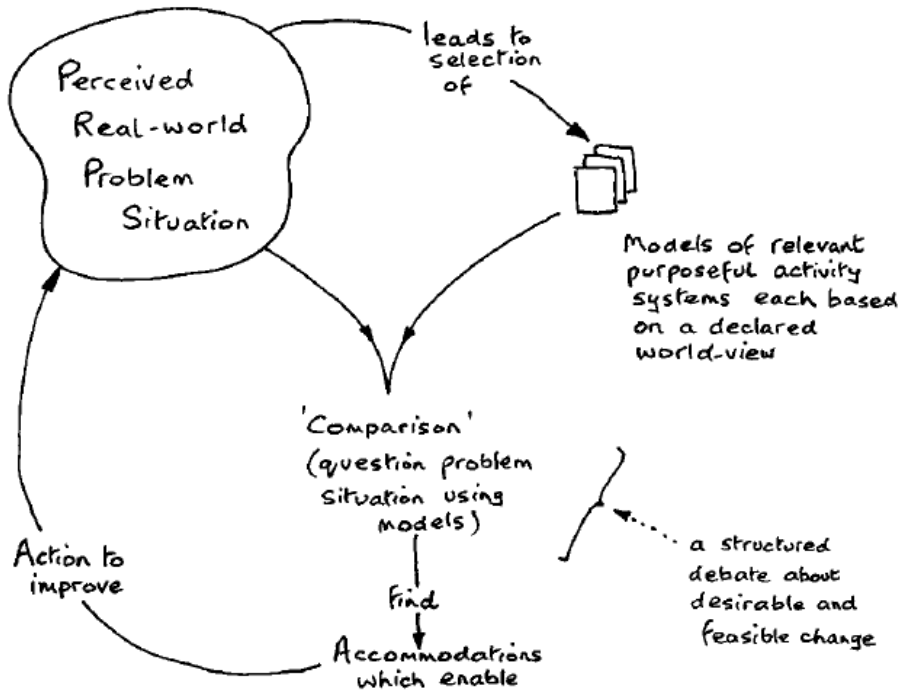- Could the K-Gini coefficient serve as a measure of inclusive societies?

K-levels max - min

Population 0 – 100%

K- Gini   = A / (A + B)

= 2A

= 1 − 2B

Soft Systems Methodology to Create Policy Narratives

Perceived Real-world Problem Situation — leads to selection of → Models of relevant purposeful activity systems each based on a declared world-view

'Comparison' (question problem situation using models)

Find → Accommodations which enable → Action to improve

a structured debate about desirable and feasible change

Principles

o real world : a complexity of relationships

o relationships explored via models of purposeful activity based on explicit world-views

o inquiry structured by questioning perceived situation using the models as a source of questions

o 'action to improve' based on finding accommodations (versions of the situation which conflicting interests can live with)

o inquiry in principle never-ending ; best conducted with wide range of interested parties ; give the process away to people in the situation

SSM at work
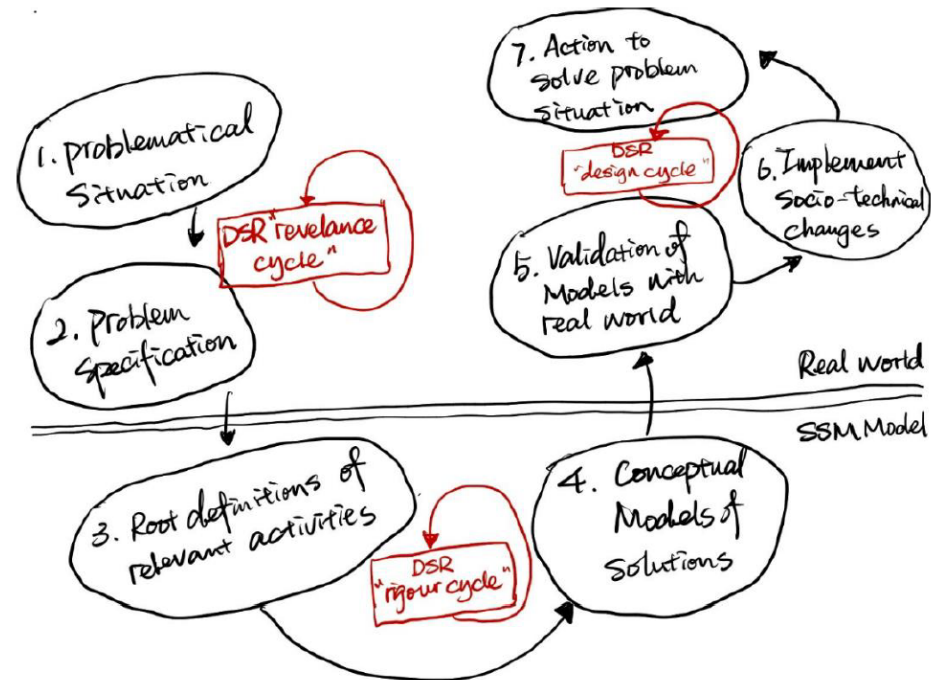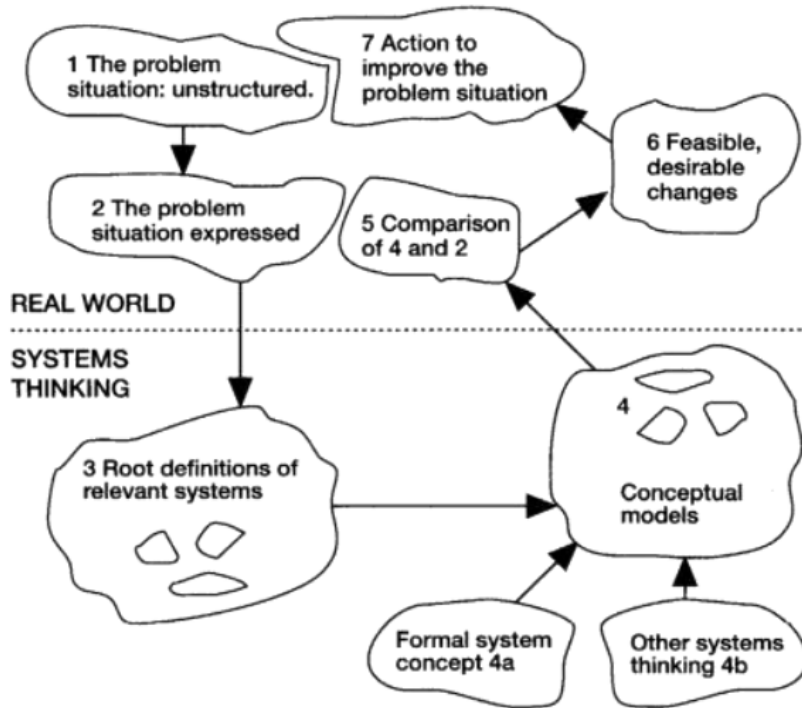
What are Narratives?

Ospina & Dodge (2005) state five essential characteristics of narratives:

1.   They are accounts of characters and selective events occurring over time, with a beginning, a middle, and an end.

2.   They are retrospective interpretations of sequential events from a certain point of view.

3.   They focus on human intention and action—those of the narrator and others.

4.   They are part of the process of constructing identity (the self in relation to others).

5.   They are co-created by narrator and audience.

Using Narratives

1. Narratives are interpretative rather than explanatory or predictive and have hence been used disciplines such as economics, sociology, and political science to address the limits of traditional explanatory social science (Boal & Schultz, 2007; Ospina & Dodge, 2005)

2. Narratives help researchers to move beyond descriptions of a universalized, orderly social world and to put themselves in touch with "local knowledges," or aspects of experience that are unique to specific contexts which is expected to add value to the proposed research (Ospina & Dodge, 2005).

3. Narratives help to build the required connectedness between theory and practice, policy indicators and desired outcomes.

4. Draws from Grounded Theory, Action Research, Case Study and Story-telling.

Narratives as Design Science Research Artifacts*

something observed in a scientific investigation or experiment that is not naturally present but occurs as a result of the preparative or investigative procedure (Oxford Dictionary)

DSR must produce an artifact created to address a heretofore unsolved problem and whose utility, quality and efficacy must be rigorously tested (Peffers, Tuunanen, Rothenberger, Chatterjee, 2008, JMIS)

Activities: [1] problem identification & motivation; [2] define objectives for solution; [3] design and development; [4] demonstration; [5] PIE.

Another Aside:

TURING AWARD WINNERS
YOSHUA BENGIO (DIRECTOR AT THE
MONTREAL INSTITUTE FOR
LEARNING ALGORITHMS) &
YANN LECUN (FACEBOOK VP AND
CHIEF AI SCIENTIST)

"Most of what we learn as humans and most of what animals learn is in a self-supervised mode, not a reinforcement mode. It's basically observing the world and interacting with it a little bit, mostly by observation in a test-independent way."

Design Science Research

Four-cycle model of DSR in IS (Drechsler & Hevner 2016)
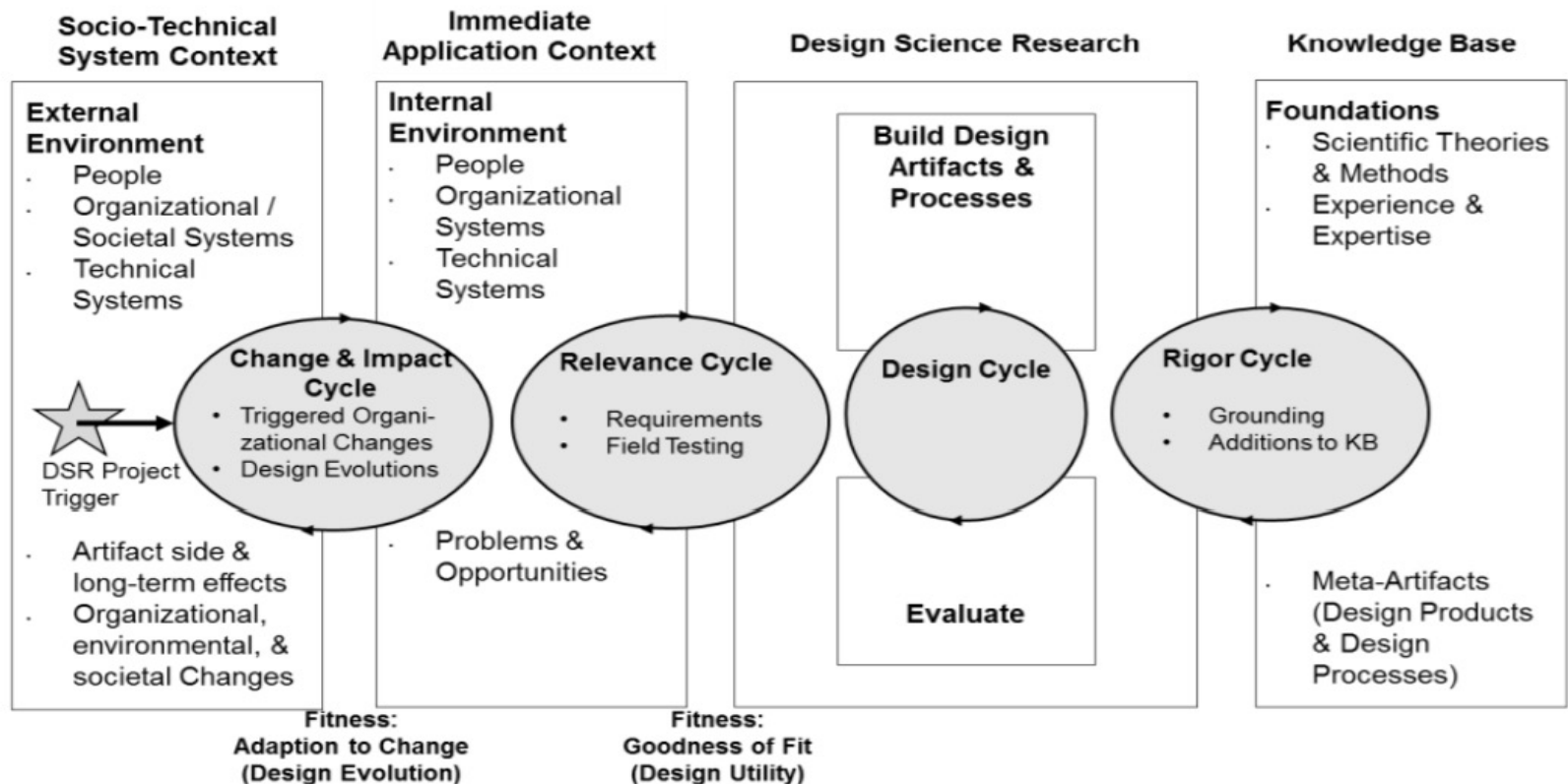
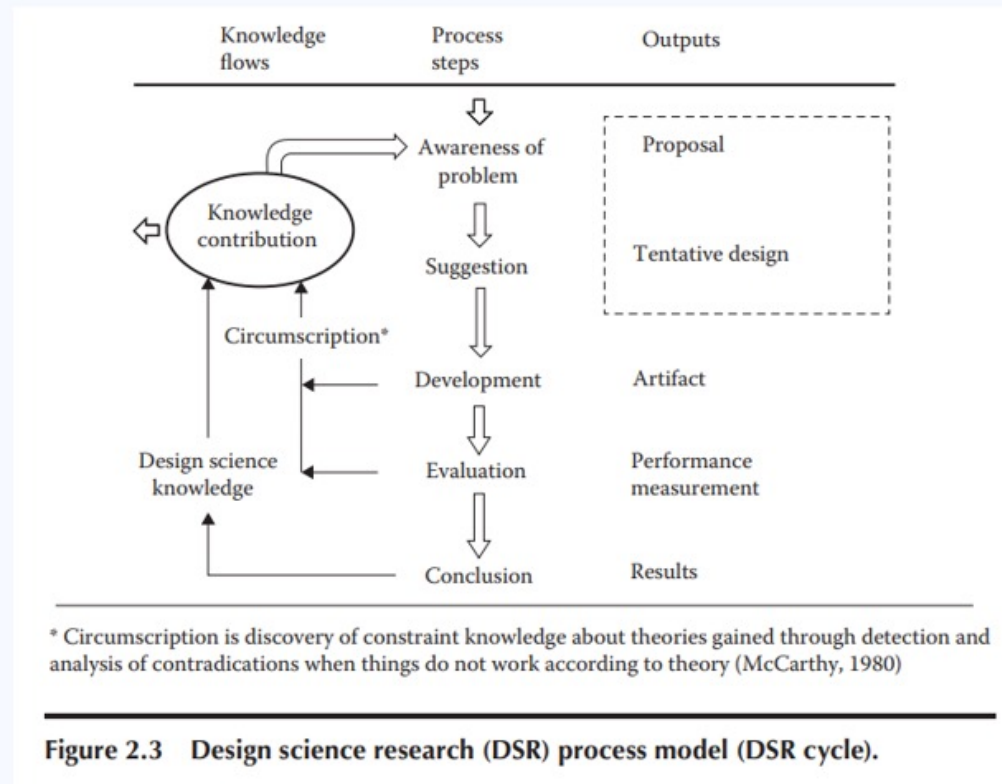# DSR PROCESS MODEL OF V&K 2015

Figure 2.3 Design science research (DSR) process model (DSR cycle).

Conceptual Research Programme

- Synthesis of the 4-pillar (infrastructure, governance, human capital, innovation) framework with the Digital Literacy Maturity Model

- Development of a sound methodology for data-driven narratives

- Pursuit of an ideal of ICT for social good => a universal right and an SDG

- Hardy's axioms for research contribution: 1) True? 2) New? 3) Interesting? (Gregor & Hevner, 2013)

- A corollary: 1) Why? 2) How? 3) feasible-desirable-viable?

Te Pūnaha Hihiko: Vision Mātauranga

New Zealand's DIA has published a digital inclusion research agenda -

https://www.digital.govt.nz/digital-government/digital-transformation/digital-inclusion/digital-inclusion-research-agenda/

MBIE's Capability Fund invests in the development of skilled people and organisations that plan to undertake, or are undertaking, research that supports the themes and outcomes of the Vision Mātauranga policy.

The Vision Mātauranga policy aims to unlock the science and innovation potential of Māori knowledge, resources and people to assist New Zealanders to create a better future.

Research Programme

- Revisiting the 4-pillar framework.
- Operationalising a K-Gini measure of digital inclusion.
- Precision digital health and universal access to wellness.
- Blockchain and Health-Tech, Gov-Tech, Ag-Tech, ER etc.
- MOOCs & accessible higher-ed for all?
- Evidence-based policy analysis for digital SEDs.
- Open Platforms for digital innovation & enterprise.
- Data-driven Narratives or Story-telling: the numbers do not know where they come from as the law of averages mask meaningful sense-making.

[https://www.pressreader.com/new-zealand/the-press/20190817/281487867992604]

1. Does PHC lead to "better" outcomes for all?
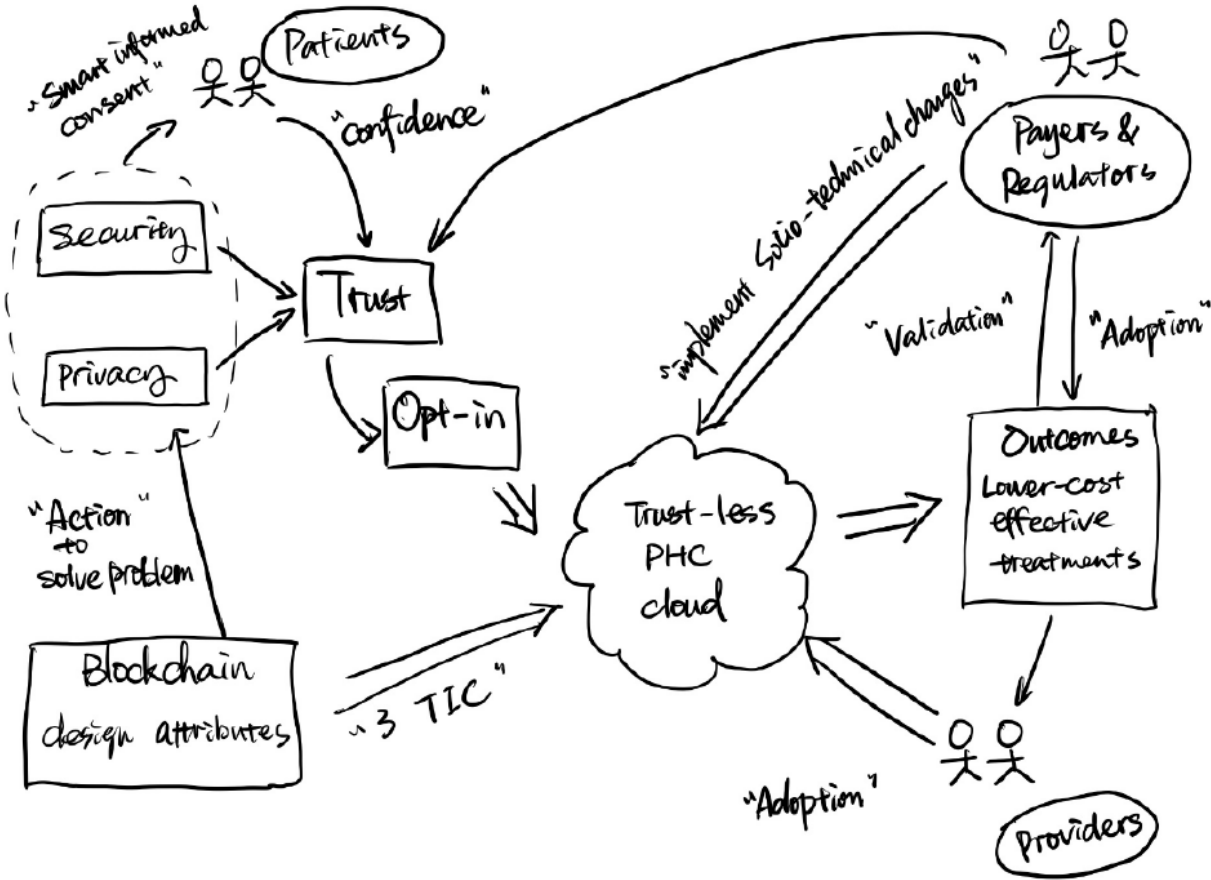
2. Can bargaining powers in digital Food Supply Chains be more symmetric?
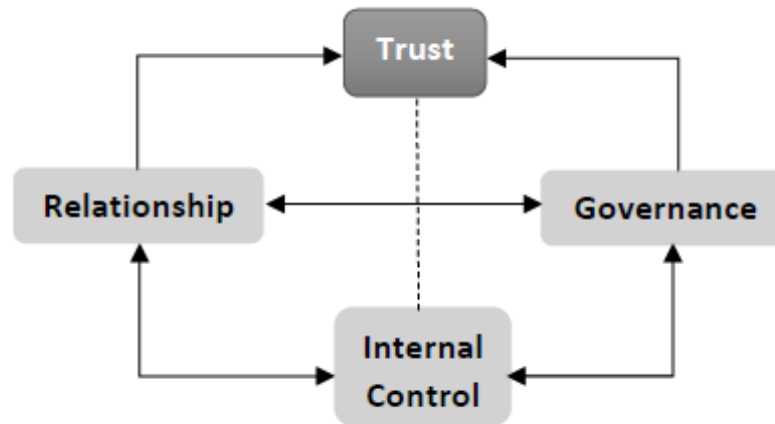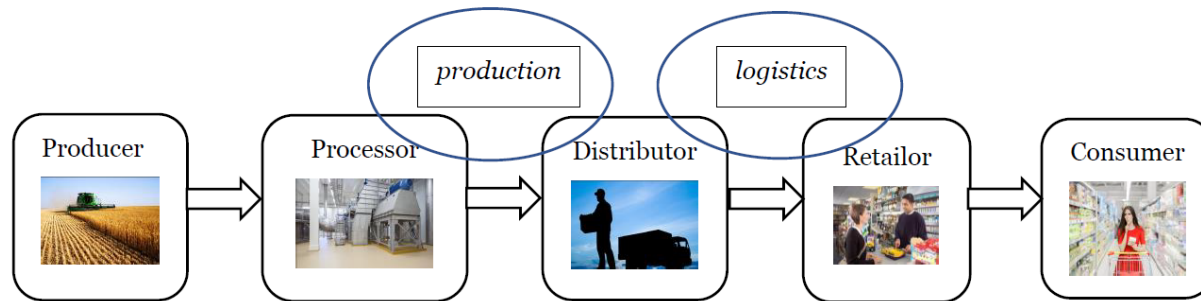
3. How might we deliver 3TIC public services (eg HSCs)?
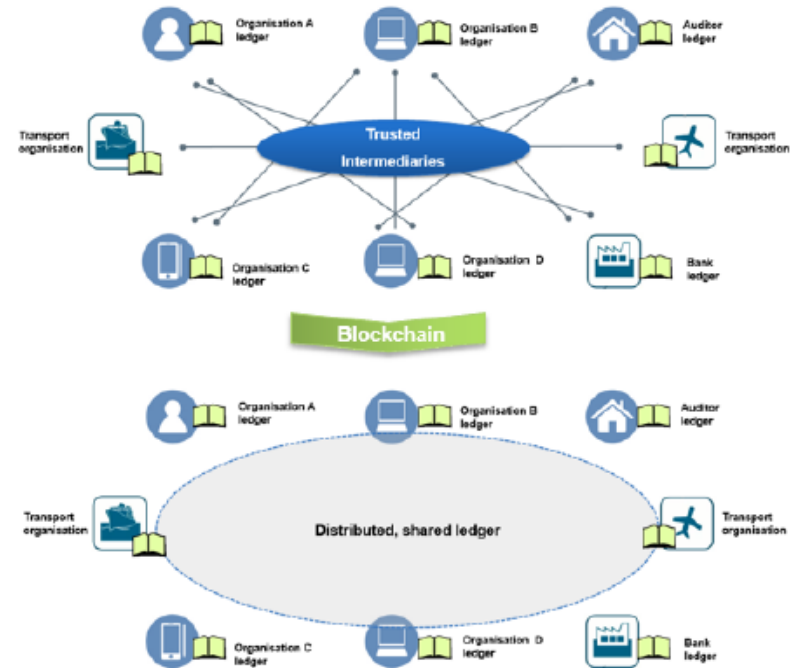
(Oloruntoba & Gray, 2006; Kronqvist, 2017)

4. If MOOCs are such a good idea, why not do RCTs, particularly with Gen AI?

The First Phase

b, c, x MOOC Platform	Group 1 — Learners 1, …,50	Group 2 — Learners 50, …,100	F 2 F

Knowledge Domains

HE Instructors

Control Parameters
STEM vs Arts
Learning Styles – Bloom's taxonomy
Instructional Design – inductive vs deductive

The Second Phase

b, c, x MOOC Platform	Group 2 — Learners 50, …,100	Group 1 — Learners 1, …,50	F 2 F

Knowledge Domains

HE instructors
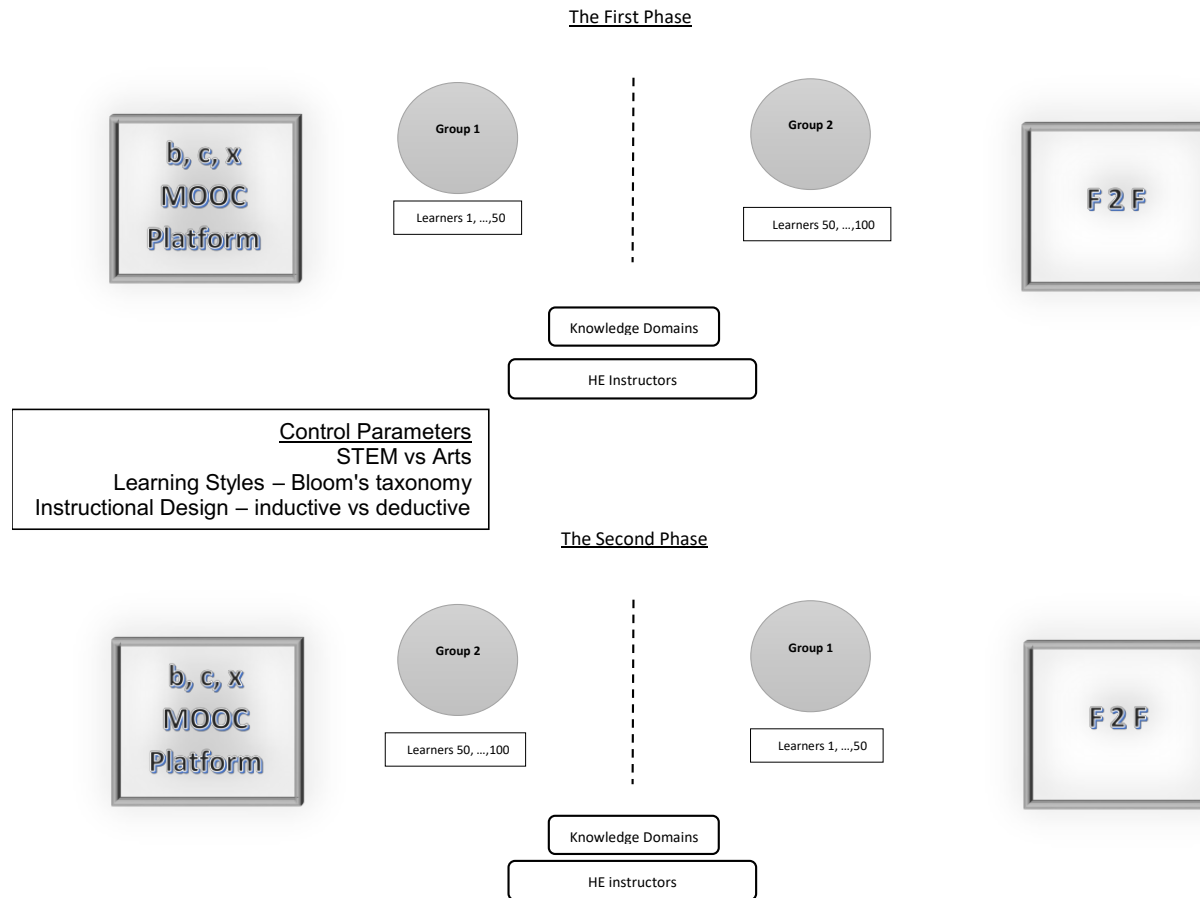
Synthesis of Part IV

- The theoretical underpinnings for the conjecture (postulate) that an inclusive society is equitable, just and sustainable.

- This level playing field of opportunities brings about a net gain to society.

- The digital era affords a new platform for innovation and enterprise.

- Narratives provide an approach to translational research in the context of the 4 use-cases outlined above.

- Effective policy needs to be data-driven with indicators, outcomes and treatment effects.

Winning friends and influencing people

Introducing CeIDE (www.ceide.org)

Vision : empowering the less-included with digital innovation.

CeIDE is a global research group focused on the inclusion of the currently less-included segments of the digital economy. The mission of CeIDE is the development of digital strategies that will bring about the transformation of the marginalised within our society in order to create equal opportunities for well-being. Organised as a DAO.

Target – $1m Program Funding for 3-5 years. Support for research assistants for data collection, interviews + travel support + Design Workshops. ADR in digital social innovation, digital frugal innovation.

Friends of CeIDE

- Anol Bhattacharjee, University of South Florida
- Samuel Ekundayo, Open Polytechnic of New Zealand
- Dhanjoo Ghista, CeIDE Emeritus Fellow
- Paul Hector, UNESCO
- Blooma John, University of Canberra
- Kevin Jones, CeIDE Research Fellow
- Nir Kshetri, University of North Carolina - Greensboro
- Eldon Li, National Chung Cheng University
- Intan Mokhtar, Singapore Institute of Technology
- Francis Pereira, University of Southern California
- Aijaz Shaikh, National University of Science and Technology
- Ravi Sharma, Founder-Director of CeIDE
- Steve Wingreen, University of Canterbury

Research Agenda

CeIDE's current focus on "tech for good" and "inclusive digital enterprise" goes beyond Piketty's notion of addressing financial inequality in that we examine whether a level digital playing field can counter the adverse impact of globalisation among the vulnerable and the unfair advantage of intellectual (ie structural, human and relational) capital per se.

In the era of the 4th industrial revolution, can "tech" be a positive policy intervention for the UN's SDG and a more equitable world?

Many economies have digital inclusion research agenda:
https://www.digital.govt.nz/digital-government/digital-transformation/digital-inclusion/digital-inclusion-research-agenda/

Epilog

Alignment with the Cyber Future Foundation:

We are a collective of committed scholars actively building trust and inclusion in cyberspace. Whereas the future is promising, confident, bright and positive - not because we are utopian or positivist in perspective, but because that's the most desirable outcome for humanity to lead into a digital and connected future - with hope, and humility we collaborate, cooperate and co-create this future together for ourselves, our future generations, and the global village in which we live.

Last Words

Alan Turing

We may not seen ahead quite so clearly

but with the knowledge and tools we have,

there's plenty that can be done.

Sri Mulyani Indrawati

The digital revolution presents poorer nations with a huge opportunity to fast-track their economic development, deliver better public services, and create an inclusive economy and society.

TO PROBE FURTHER

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8. Ravi Sharma, Kevin Jones, Warwick Anderson, Anushia Inthiran & Maryam Tabatabaee (2022) The digital transformation of higher education – "uni for nothin', MOOCs for free"?, Journal of Information Technology Case and Application Research, 24:1, 34-60, DOI: 10.1080/15228053.2021.1889741