



Data science in practice: innovation in company settings Responsible leadership; purpose driven business

Leiden Institute of Advanced Computer Science

Prof. Ronald de Jong, Oct. 2021

Understanding Society

TILBURG UNIVERSITY

Introducing Ronald de Jong

Started career at Philips in 1990 and held various leadership positions in marketing, sales, service, operations, supply chain and general management. Served as Member of the Executive Committee 2011-2019

Since 2014, Chairman of the board of the Philips Foundation

Since July 2017, Distinguished Professor of Practice in Business at the School of Economics and Management of Tilburg U.

Since Oct. 2019 member of the commission of development collaboration, Advisory Council of International Affairs (Dutch Government)

In 2007 Ronald was honored by the World Economic Forum as a 'Young Global Leader' and in 2015 he was proclaimed a Distinguished Fellow of the Globalization, Aging, Innovation and Care (GAIC) research program at Tilburg University.

Member of the strategic advisory council TNO, the advisory board of the Erasmus Centre for Leadership (Erasmus University)



Chairman Philips Foundation

Distinguished Professor of Practice in Business

Content

- 1. Intro**
- 2. Global challenges and the changing role of corporate enterprise**
- 3. The importance of data science as enabler for sustainable development**
- 4. Purpose driven leadership**
- 5. Wrap up, discussion and conclusions**

To set the stage ...

Since the start of the (second) industrial revolution, unprecedented value has been created in economic terms, often “at the expense of”. Natural resources like oil, steel and labour “fuelled” economic prosperity... We have come at the end of the industrial age as we know it and the world is facing enormous challenges...

During the fourth industrial revolution, shared value (ecological-, social-, and economic value) must be created (“in harmony with”). Data will be the “resource” to fuel sustainable development and address the big and wicked issues of our times...

Global challenges...

There's more carbon dioxide in our atmosphere than any time in human history

Average wildlife populations have dropped by 60 per cent in just over 40 years

Two-thirds of extreme weather events in the last 20 years were influenced by humans

The pressure on healthcare is set to grow in the coming decade; An estimated 2.3 billion people will be in need of care by 2030 —an increase of 200 million since 2015.

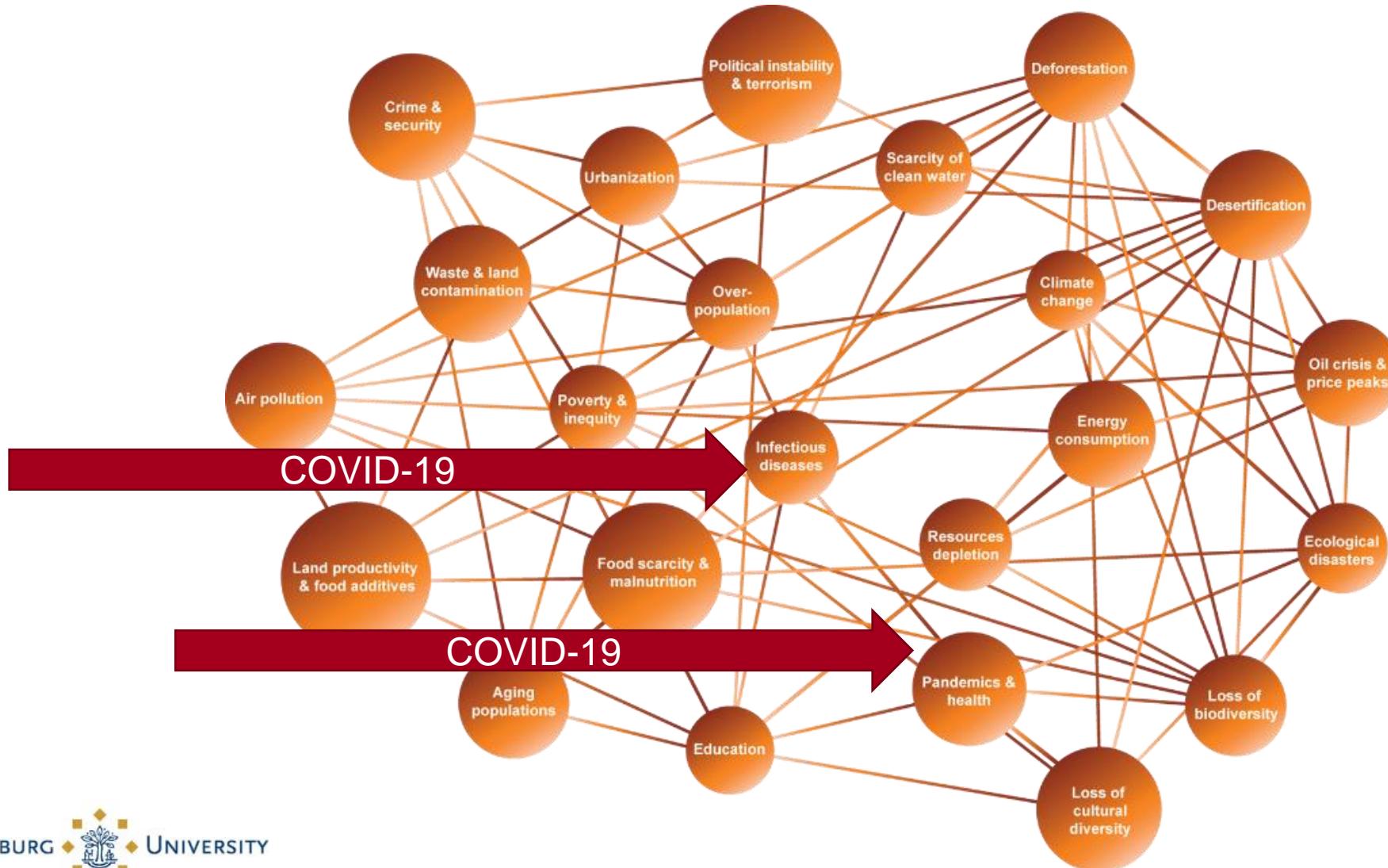
The world's 2,153 billionaires have more wealth than the 4.6 billion people who make up 60 percent of the planet's population

120,000 square kilometres of tropical forest were lost in 2018

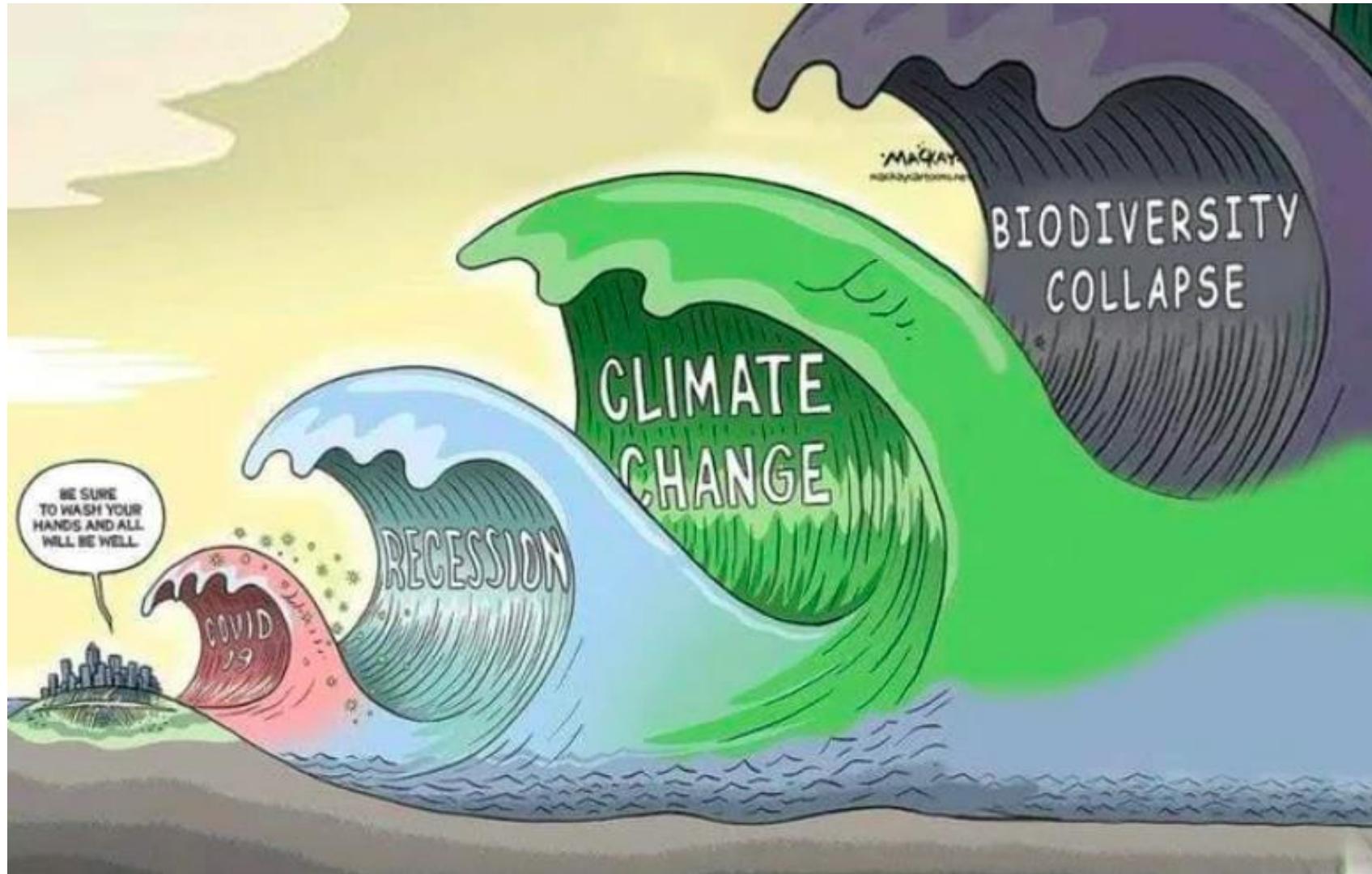
Carbon emissions from energy use are rising at the fastest rate since 2011

We will need the resources of 3 planets by 2050...

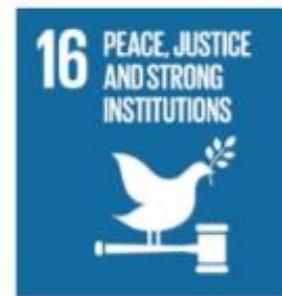
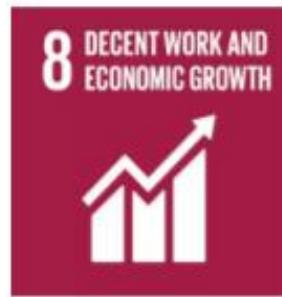
These global challenges are complex and interdependent as evidenced by the COVID-19 outbreak...



Putting the COVID-19 crisis in perspective...



New concepts and paradigms are needed to address these challenges (also in business) ; the sustainable developments goals (SDG's) as compass to develop these...



<http://www.un.org/apps/news/story.asp?NewsID=51968#.V-vC3pDCSM8>

Also in economics, management and business...



Purpose of the corporation has been debated throughout history - last big shift driven by Friedman in 70's

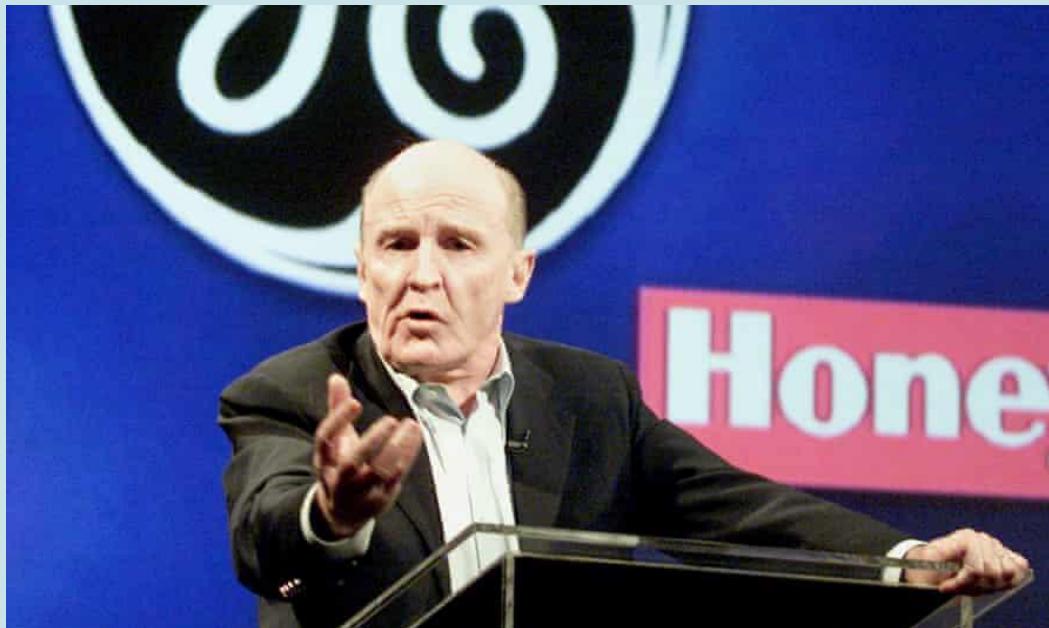
Types of Capitalism	State Capitalism	Shareholder Capitalism	Stakeholder Capitalism
Key Stakeholder	Government	Company Shareholders	All stakeholders matter equally
Key Characteristic	Government steers the economy, can intervene where necessary	The social responsibility of business is to increase its profits	Society's goal is increase the well-being of people and the planet
Implication for Companies	Business interests are subsidiary to state interests	Short-term profit maximization as highest good	Focus on long-term value creation and ESG measures
Advocated by	Milton Friedman ('70) «Shareholder Theory»	Klaus Schwab ('71) «Davos Manifesto» ('73)	

Visualisation by Peter Vanham, World Economic Forum, based on «Stakeholder Capitalism: A Global Economy that Works for Progress, People and Planet»

- Legal foundation for shareholder capitalism established in Dodge v Ford (1919)
- Lost some sparkle during the Great Depression
- Reinforced by Milton Friedman Chicago School of Economics in the 70's (in a loosely argued paper)
- It has been challenged (a.o. by the WEF) ever since



The supremacy of shareholder value is being challenged ... by some its strongest original champions

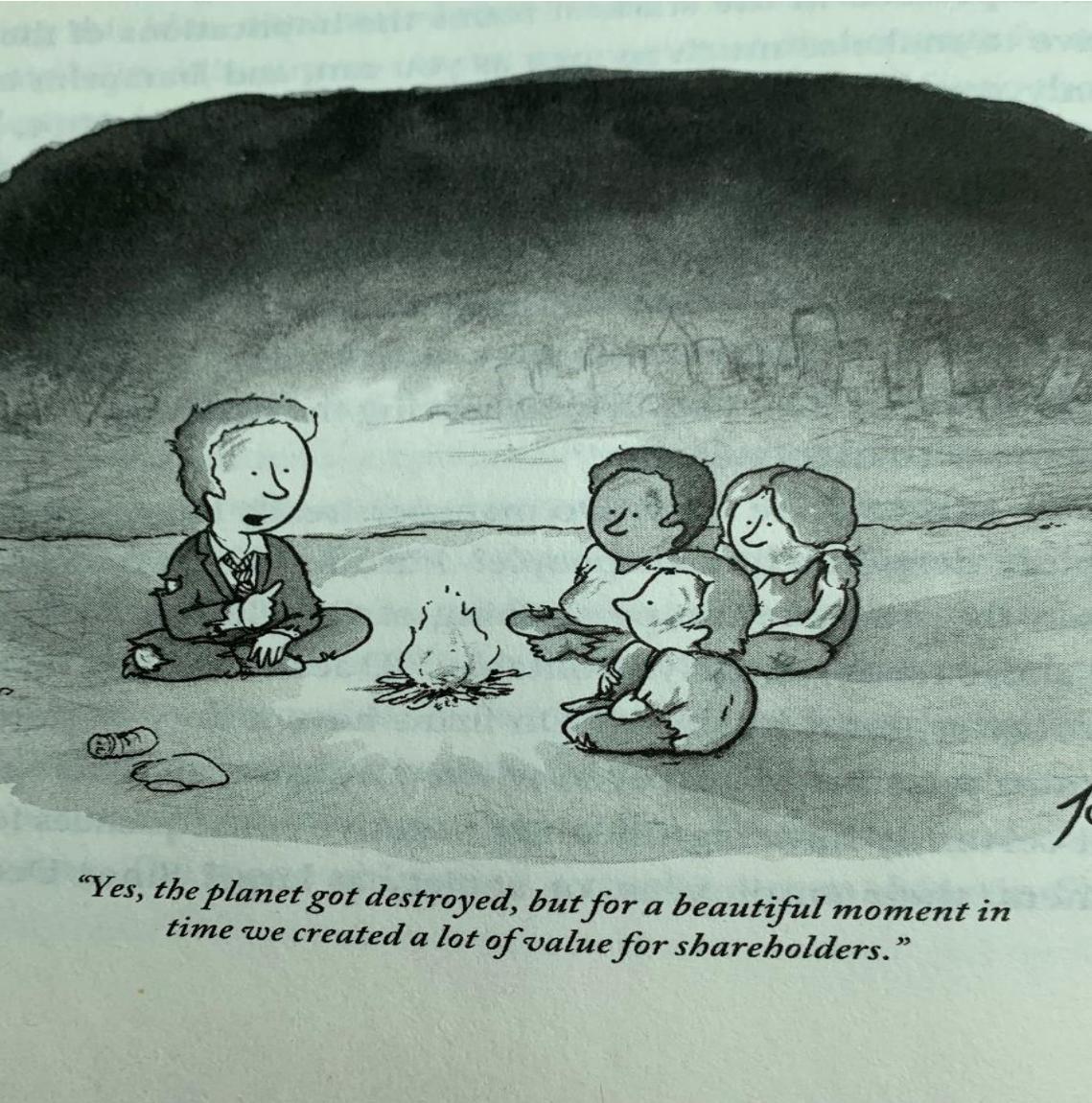


*"On the face of it, **shareholder value is the dumbest idea in the world**. Shareholder value is a result, not a strategy... **your main constituencies are your employees, your customers and your products**. Managers and investors should not set share price increases as their overarching goal... Short-term profits should be allied with an increase in the long-term value of a company."*

Jack Welsch, Former CEO General Electric

The role of the corporation has been a topic of debate for centuries. The pendulum in business is swinging back focus on share holders to a more inclusive stakeholder approach: forcing businesses to rethink and redefine their purpose in support of the Global Goals (SDG's)

Purpose of the corporation?



"Yes, the planet got destroyed, but for a beautiful moment in time we created a lot of value for shareholders."

We are at an inflection point towards ‘Purpose’ driven companies contributing more broadly to society as a whole



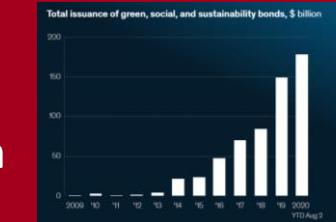
Resource constraints: need to reduce strain on our planet



Demand for Social Justice



Shift in employee compact



Investor recognition



“Purpose” not yet uniquely defined – lots of different views

Danone

Our mission is to bring health through food to as many people as possible.

Novartis

Our purpose is to **reimagine medicine to improve and extend people's lives**. We use innovative science and technology to address some of society's most challenging healthcare issues. We discover and develop breakthrough treatments and find new ways to deliver them to as many people as possible....

DSM

Our purpose is to **create brighter lives for all**. We achieve it by using all the scientific and innovation power at our disposal to tackle some of the world's greatest challenges - **creating value for customers, shareholders, our people, and society-at-large**.

BASF

We **create chemistry for a sustainable future**. Sourcing and producing responsibly, acting as a fair and reliable partner, connecting creative minds to find the best solutions for market needs. For us, this is what successful business is all about.

NOVAlex

Part law firm, part legal clinic, NOVAlex offers business law services to established businesses and accompanies eligible low-income individuals, non-profit organizations and start-ups on a *pro bono* basis.

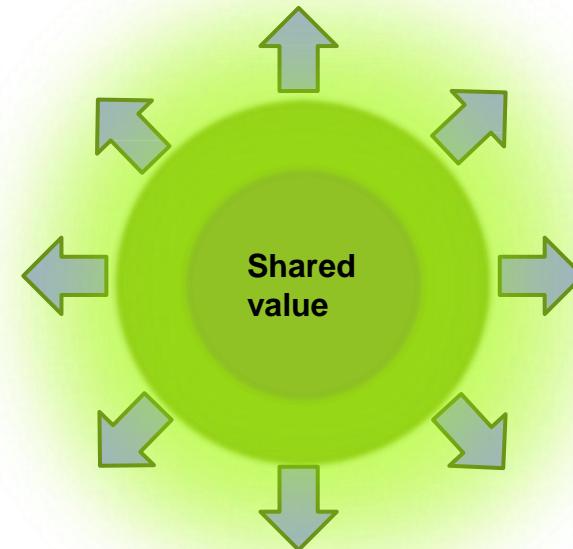
Many ‘Purpose-led’ multinationals focus on innovation and creating value for multiple stakeholder base
Few (if any?) go so far to quantify the extent they are willing to go

But all based upon a new strategy concept for Business: “Creating Shared Value” *

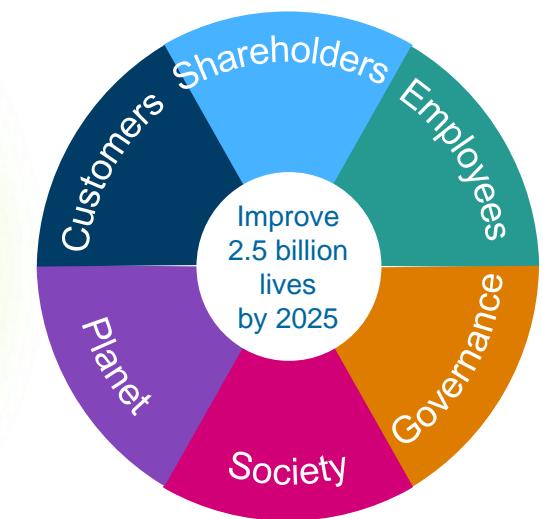
Shared Value strategies simultaneously create value for the business and for society

Meeting Societal needs that expand opportunities (addressable defined market) for the business

Scalable societal impact because shared value is self sustaining



Example Royal Philips



* Source:

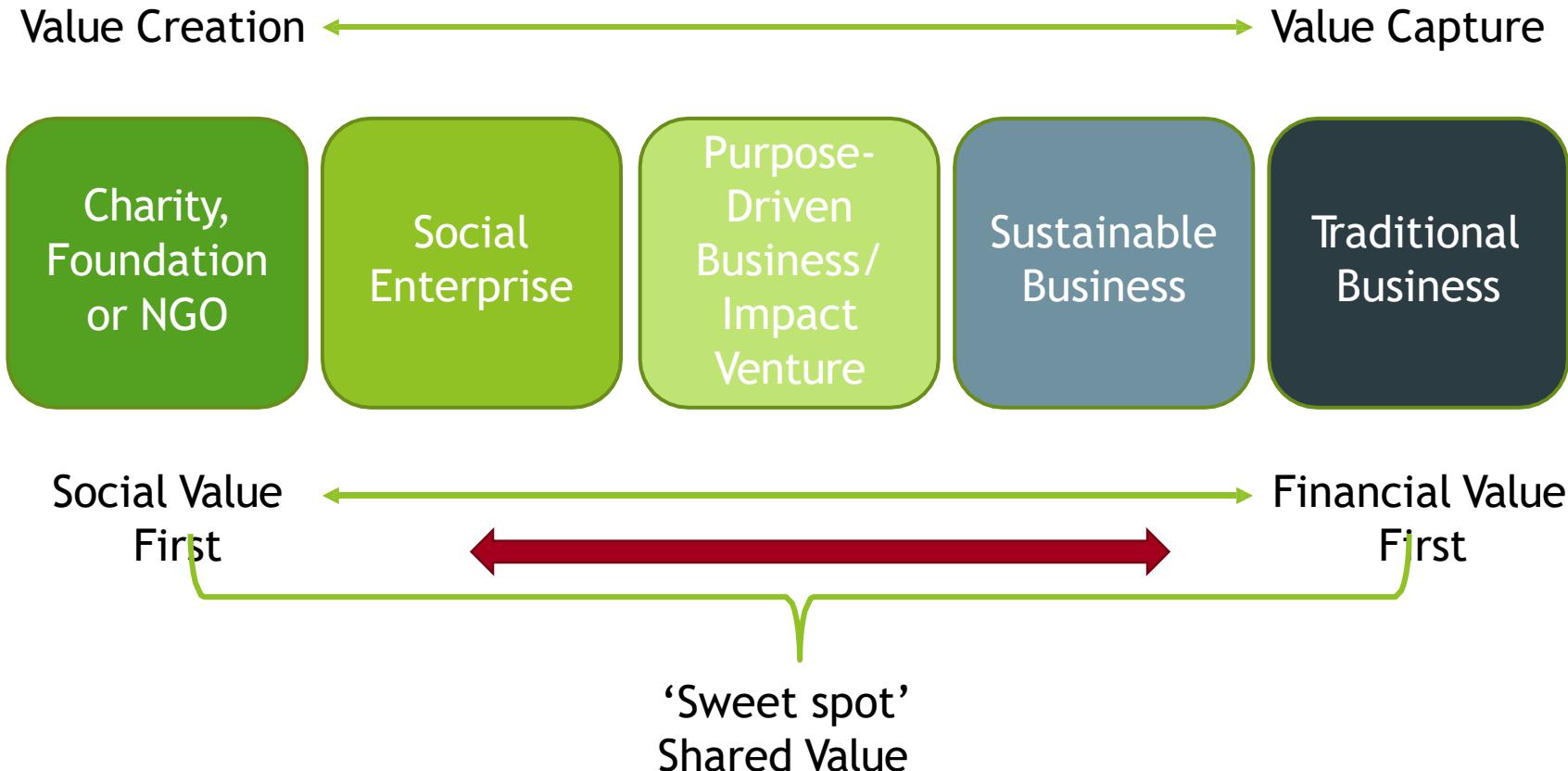
Porter, Michael and Mark Kramer (2011), "Creating Shared Value," Harvard Business Review, available at: <https://hbr.org/2011/01/the-big-idea-creating-shared-value>

Creating shared value; moving beyond philanthropy and corporate social responsibility...



The “Value Spectrum” and its key actors...

Next to traditional business, new types of entrepreneurs emerge aligned with the Value Spectrum



Stakeholders versus shareholders...embracing purpose and driving *shared value* actually drives shareholder value creation...

ESG & Market Performance



Stocks of sustainable companies tend to significantly outperform their less sustainable counterparts



Source: Eccles, Robert G., Ioannis Ioannou, and George Serafeim. "The Impact of Corporate Sustainability on Organizational Processes and Performance." *Management Science* 60, no. 11 (November 2014): 2835–2857. http://www.hbs.edu/faculty/Publication%20Files/55RN-hd1964011_5791edac-7daa-4603-a220-4a0c6d7a3f7a.pdf

Key take aways before the break

- We are at the end of the industrial age as we know it. We accumulated unprecedented economic wealth, fueled by *exploitation* of resources (social, ecological, natural)
- Consequently, humanity is facing big challenges, all actors in society, including corporate enterprise, are to step up, join forces and become “part of the solution” in addressing the wicked issues of our times. The sustainable development goals of the United Nations will have to act as compass in driving the needed transformations
- Corporations have to rethink their “purpose” and embrace a more inclusive (multistakeholder) approach to business and strive for the creation of shared value. Creating *shared value* is not contradicting the creation of *shareholder value*

After the break we will talk about the importance of data science as enabler for sustainable development

Break



The importance of data science as enabler for sustainable development

- The strategic transformation of Royal Philips: class discussion on basis of case study London Business School
- Use cases:
 - Data science to enable output based and purpose driven multi stakeholder management
 - Data science to enable personalized healthcare and digital transformation of healthcare
 - Data science to enable predictive analytics for future pandemics (VODAN)

Class discussion on the strategic transformation of Royal Philips

**Prof Ronald de Jong
Chairman Philips Foundation**

Leiden Institute of Advanced Data Science
Oct, 2021

Data science to enable output based and purpose driven multi stakeholder management @ Royal Philips

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Oct, 2021



The strategic transformation of Royal Philips

*“As a leading health technology company, it is our purpose to **improve people’s health and well-being through meaningful innovation**. We aim to improve 2.5 billion lives per year by 2030.*

*We will be the **best place to work** for people who share our passion, promoting personal development, inclusion and diversity.*

*Together we will deliver superior, long-term value to our customers and shareholders, while **acting responsibly towards our planet and society**, in partnership with our stakeholders. ”*

What does “purpose” mean for stakeholders?

- We innovate to empower **health and wellbeing** for current and future generations
- We deliver the Quadruple Aim holistically across sustainable care pathways

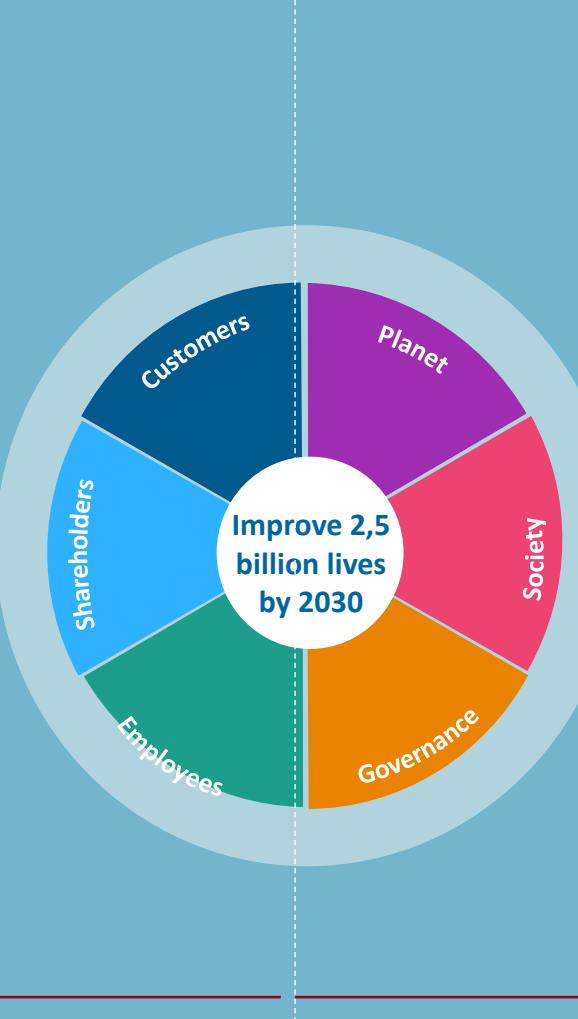
Customers

- We create **sustainable value** for our investors and shareholders by applying resilient business practices for **long-term business health**

Shareholders

- We will be the **best place to work for people who share our purpose**
- Our team reflects the societies we operate in wrt **inclusion and diversity**

Employees



- We aim for a net zero environmental impact across our value chain: **from cradle to grave reuse**

Planet

- We contribute positively to the communities in which we operate and foster sustainable development towards a healthy and inclusive society with broad access to healthcare

Society

- We set the standard for transparency and integrated reporting

Governance

Detailing out the commitments...

Improve 2.5 Billion lives per year by 2030

Customers	<ul style="list-style-type: none"> We innovate to empower health and wellbeing for all, including current and future generations of customers Our solutions enable customers to deliver the Quadruple Aim holistically across sustainable care pathways We ensure transparency on our products' environmental footprint and collaborate to drive healthcare ecosystems to a net zero economy 	Planet	<ul style="list-style-type: none"> We minimize externalities we create across our value chain: from cradle to grave-to reuse We have a net zero or positive impact on the environment We use materials in a such a way that they remain available for future generations and foster regeneration We protect and restore healthy natural ecosystems throughout our value chain
Shareholders	<ul style="list-style-type: none"> We create sustainable value for our investors and shareholders by safeguarding mid-and long-term business health We build a successful and resilient businesses - in the context of long-term macro and environmental constraints- and return a fair share of the value We make transparent the integral value return on investments so that investors can optimize the integral value they choose to create 	Society	<ul style="list-style-type: none"> We contribute positively to the societies in which we operate and foster sustainable development towards healthy and inclusive societies We actively engage with the public sector to provide service and advance policies that strengthen health and sustainability We increase access to healthcare services and wellbeing in general
Employees	<ul style="list-style-type: none"> We will be the best place to work for people who share our purpose Our team reflects the societies we operate in wrt inclusion and diversity We empower everyone to contribute to our purpose in their jobs and daily lives, We empower our employees and their families to live a healthy and happy life 	Governance	<ul style="list-style-type: none"> We set the standard for transparency and integrated reporting

From commitment to target setting...



Health and well-being for all

- We improve the health and well-being of **2 billion people** per year through meaningful innovation
- As part of this, **we enable access to care for 400 million people** in underserved communities



Circular economy

- We generate **25%** of our revenue from circular products, services and solutions
- We offer a trade-in on all professional medical equipment, and take care of responsible repurposing**
- We embed circular practices at our sites* and put **zero waste to landfill**



Climate action

- We reduce our CO₂ emissions in line with a **1.5 °C** global warming scenario, for example by further improving the energy efficiency of our products during the customer use phase
- We source **100% of our electricity** and over 75% of our total energy consumption **from renewable sources**



Partnerships

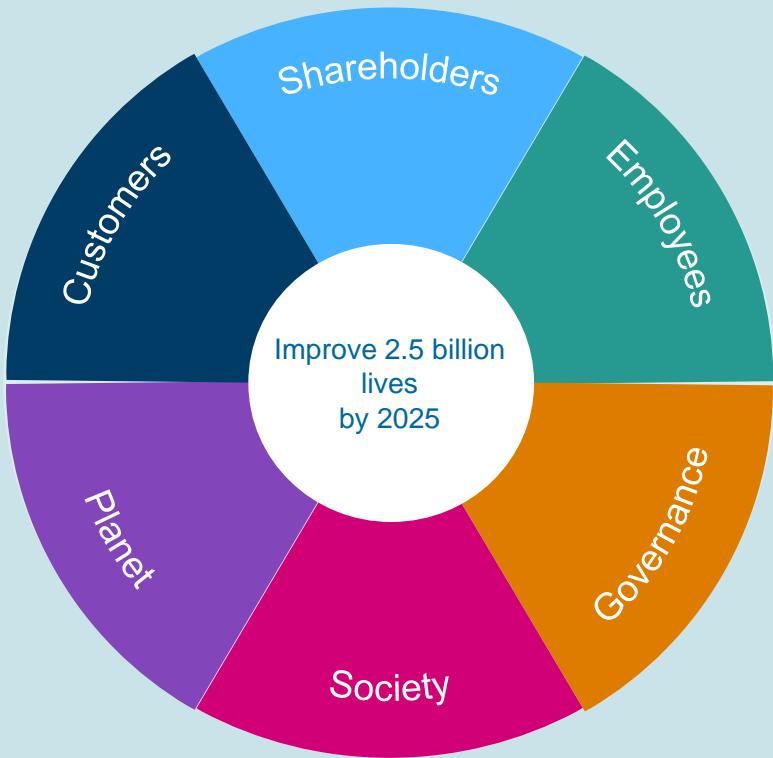
- We team up with our partners to deliver sustainable value and drive global change
- We improve the lives of **1 million workers** in our supply chain and reduce its environmental footprint



Enablers

- We design 100% of our products and services in line with EcoDesign requirements, with 'Eco-Heroes' accounting for 25% of revenues
- We embed sustainable practices in our ways of working, as defined by the Philips Business System

and implement an innovative framework to enable operationalization: *the purpose compass...*



Design principles

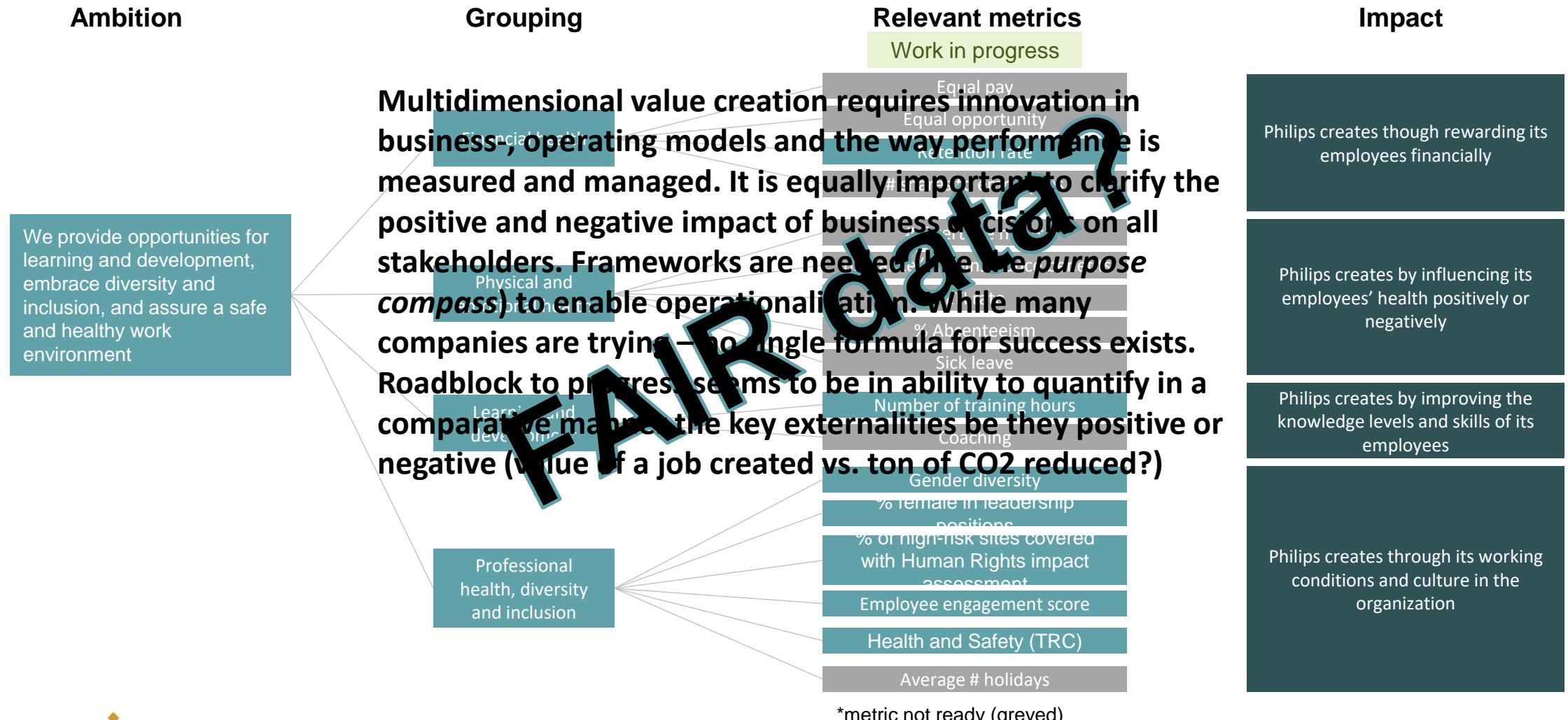
- Six Dimensions
- Each Dimension underpinned by metrics to drive performance on
- Clear and simple hierarchy in metrics per Dimension
- Metrics reflecting our purpose commitments

- 'Narrative' with employees
Help them understand what they where and how they can contribute with most impact
- 'Performance dashboard' for leaders
Give them a tool to show financial and non-financial performance in one integrated view
- 'Decision making guide' for leaders
Provide 'guideline criteria' for portfolio management and investment decisions

Intended use

- Broaden review dialogue beyond financials
- Measure and monitor performance across Dimensions
- Formalize selected metrics in Long Term agenda
- Define locally relevant initiatives based on results/focus areas

Metrics are tiered to enable “drill down” ...



Data science to enable personalized healthcare and digital transformation of healthcare

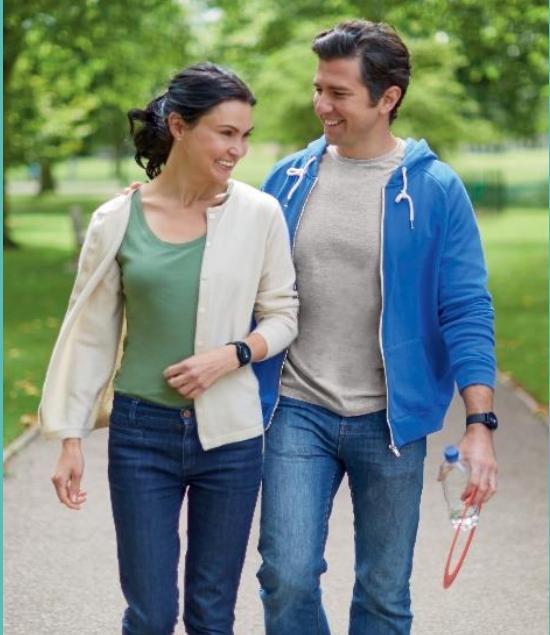
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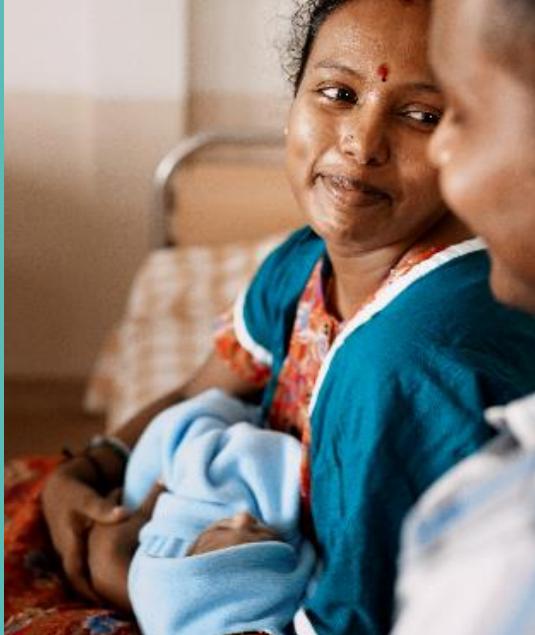
innovation ✤ you

PHILIPS

We are at an inflection point in Healthcare



Increasing consumer engagement in their own health



Shift to value-based healthcare will reduce waste, increase access and improve outcomes



Care shifting to lower-cost settings and the home



Digitization of healthcare, connecting patients and care providers

New care models



Stakeholders
in **multidisciplinary**
teams

Increasing
complexity
regarding
treatment options



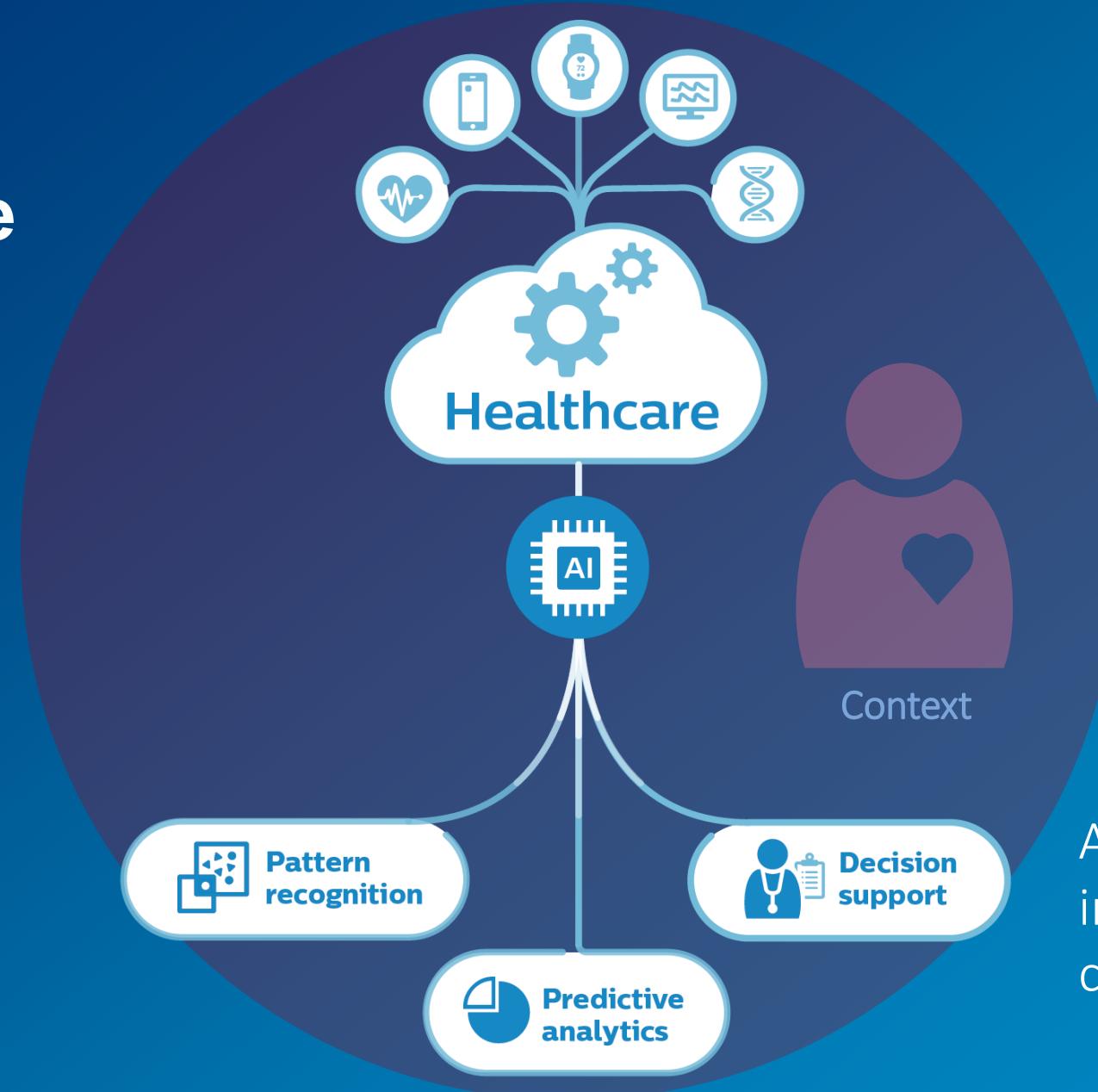
Engaging and
empowering patients



Rising costs
of care and focus
on **outcome**

From sick care to **health care**

Intelligence in
the Cloud for
personalized
care
anywhere



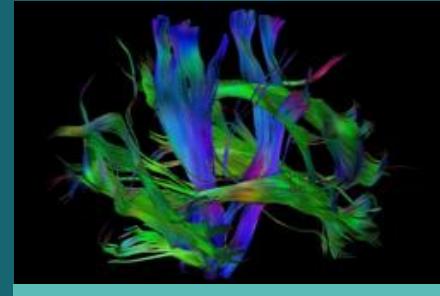
Adding context to patient
information for enhanced
clinical decision making

Targeted interventions in acute care • Precision medicine • Care pathway optimization
Population health management • Operational optimization

Digital is driving exponential growth of health data



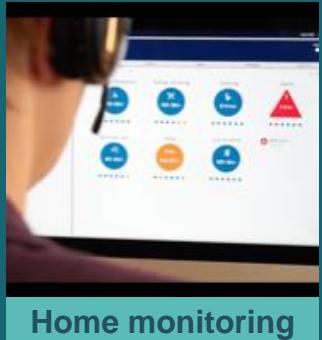
Personal health tracking



Medical imaging



Patient monitoring



Home monitoring



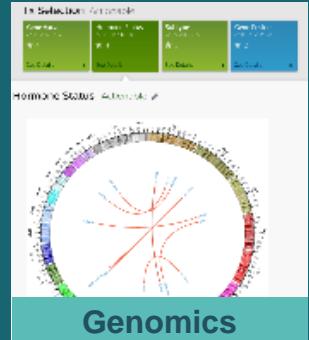
Medication adherence



Pathology



Quantification



Genomics

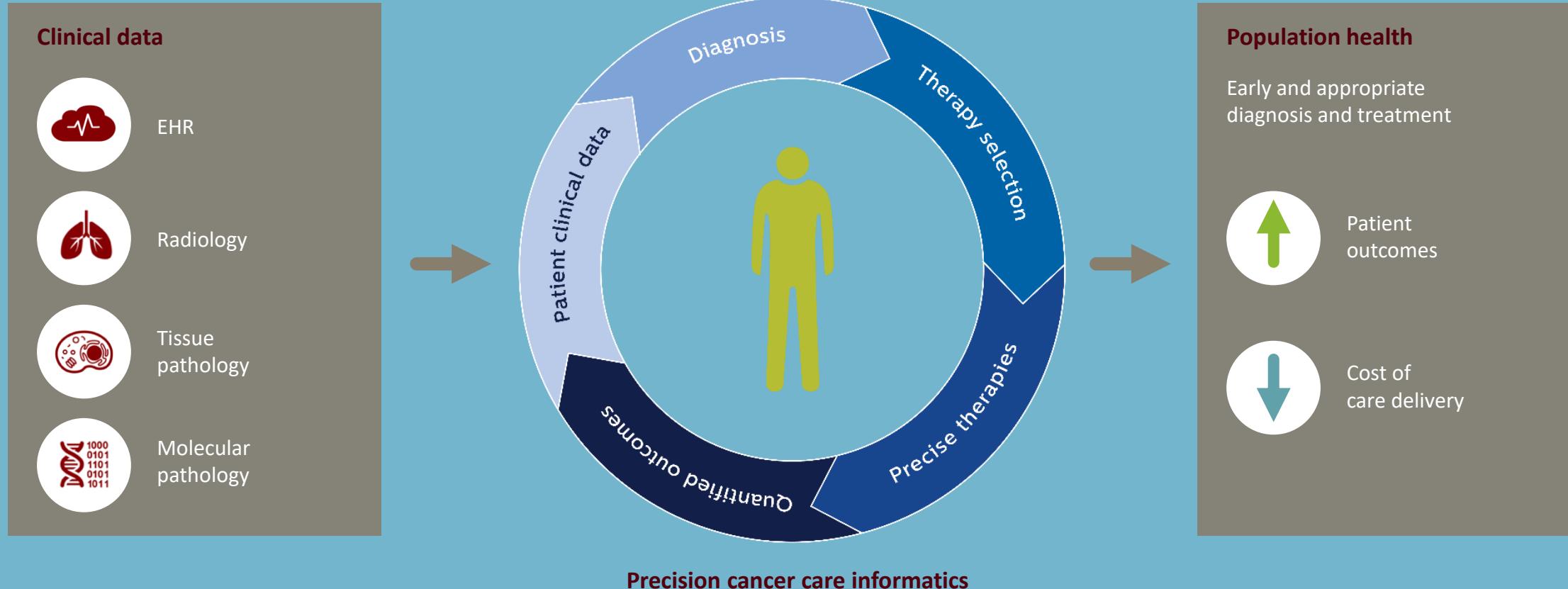


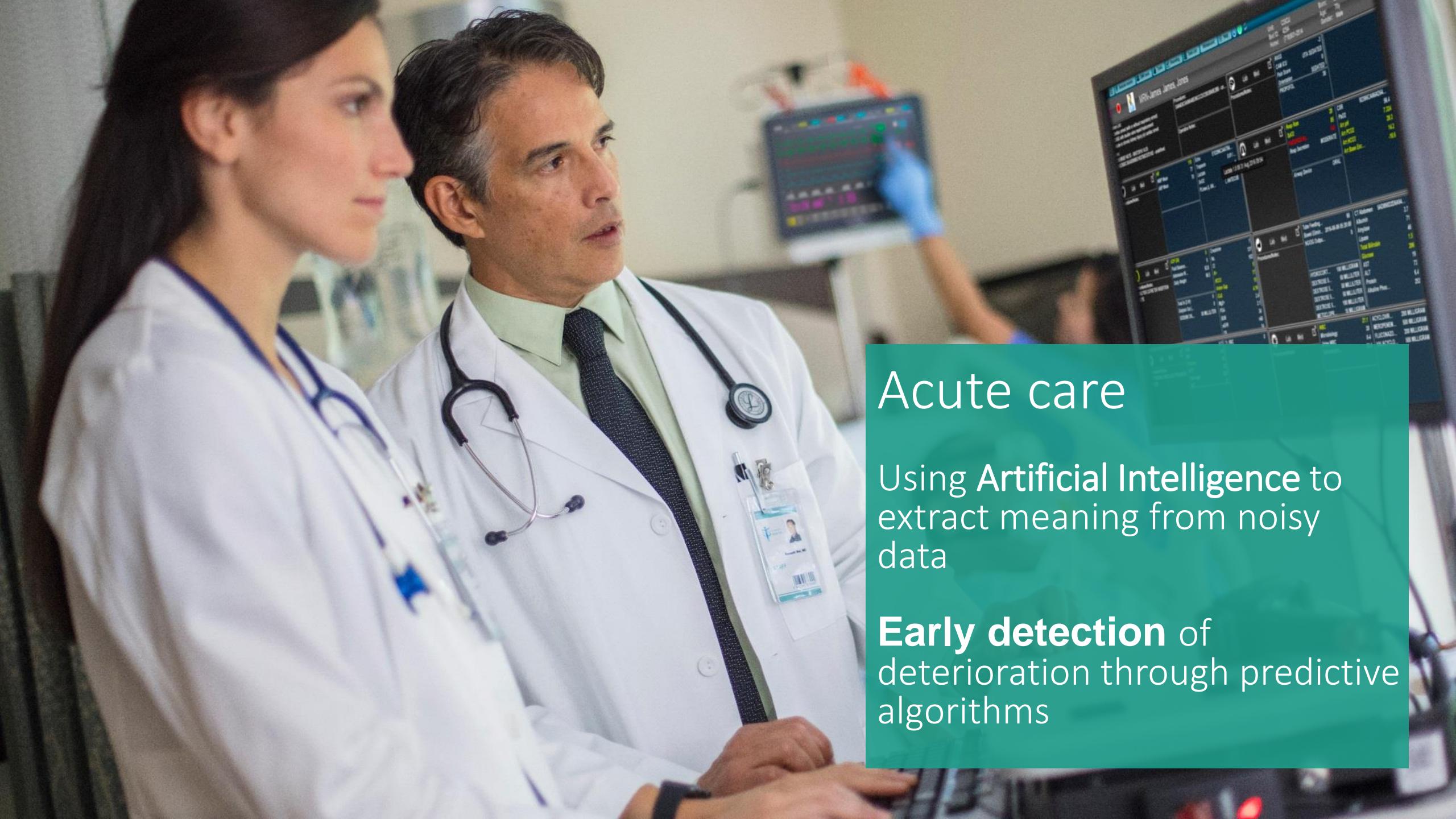
Analytics

We are gaining deeper, denser and more longitudinal insights than ever before

Informed choices, better decisions

Enabling efficient, first time right diagnosis and personalized treatment





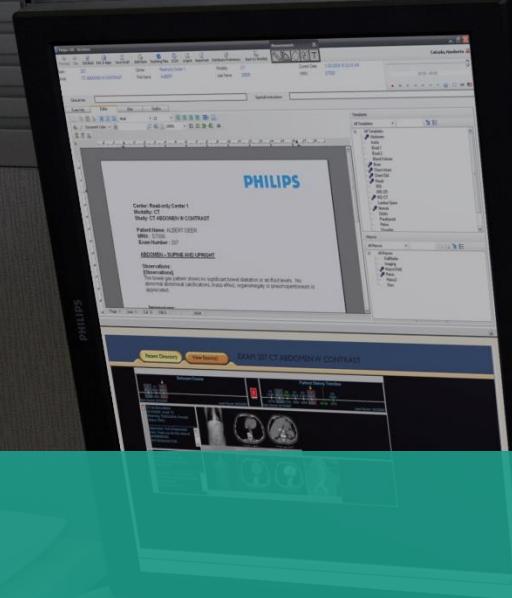
Acute care

Using Artificial Intelligence to extract meaning from noisy data

Early detection of deterioration through predictive algorithms

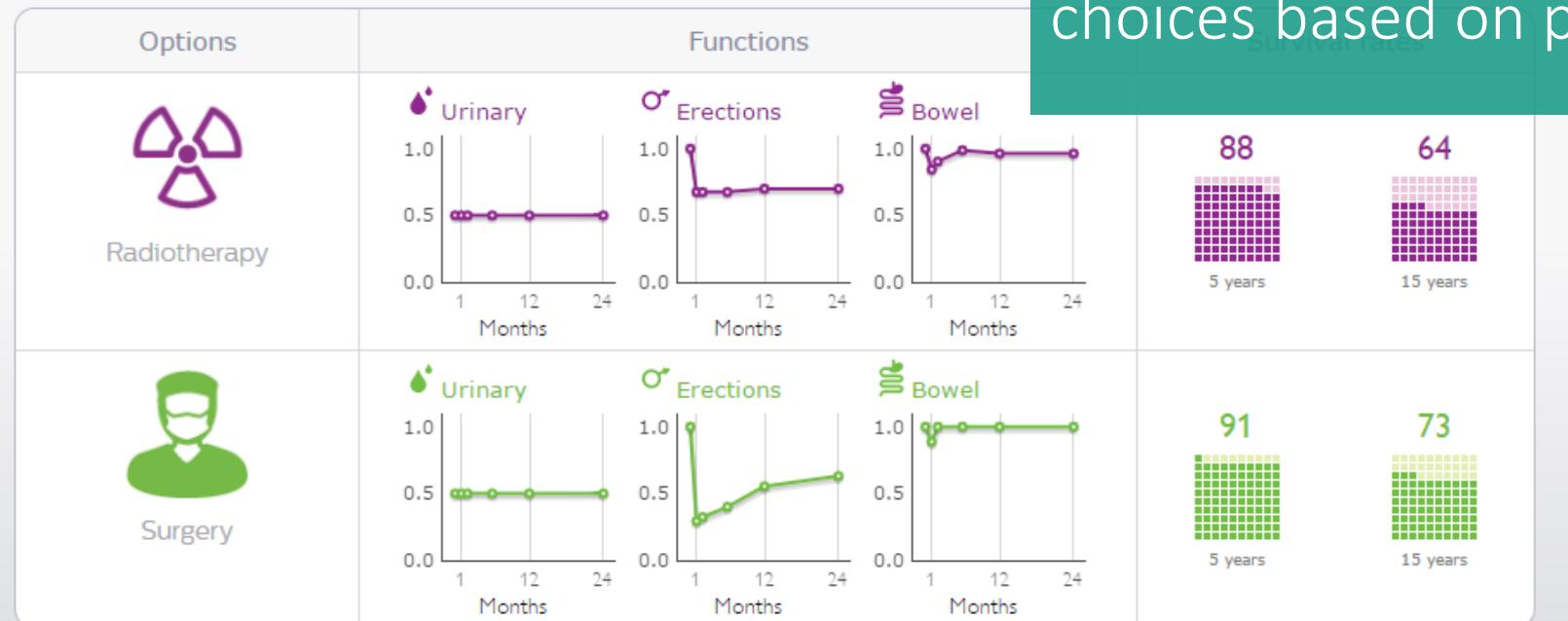
Precision medicine

Applying AI on images, pathology and genomics supports precision diagnosis and personalized treatment



[Suggested treatments](#)
[My personalized prospects](#)

Below you can compare the different treatment options with each other. The information is applicable to people with your age (60), tumor type (T3a Locally spread), and pre-existing symptoms.



Patient engagement

[Compare Pros & Cons](#)

Providing information tailored to the characteristics of a particular patient to support treatment choices based on preferences



Image guided therapy

Nano technology and augmented reality guide the surgeon

Key takeaways



Transition to **value based care** and **population health**



Applying design thinking and **digital models** to healthcare

A healthcare system fully connected, aware and **adaptive to patient needs**



Prevention, precision diagnosis, personalized treatment



Data science to enable predictive analytics for future pandemics (VODAN)

**Prof Ronald de Jong
Chairman Philips Foundation**

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Oct, 2021

Lack of coronavirus data has made the crisis invisible in Africa



Lack of coronavirus data raising fears of 'silent epidemic', [Reuters](#)

The early fears that Covid-19 would claim a dramatic number of lives in Africa and overwhelm its weak health systems seem to be overblown, yet the paucity of data means that the figures showing a somewhat milder trajectory for Covid-19

The full scope of the pandemic remains uncertain, as cases are underreported and accuracy of data collection varies considerably.

Beyond health risks, the COVID-19 shock to African economies manifested in several waves, as result of lockdowns, lower trade and investment.

Coronavirus in Africa: How deadly could COVID-19 become? <https://www.dw.com/en/coronavirus-in-africa-how-deadly-could-covid-19-become/a-53230519>

Now more than ever, Africa needs reliable data

Urgent need to **improve data collection** at the community level.

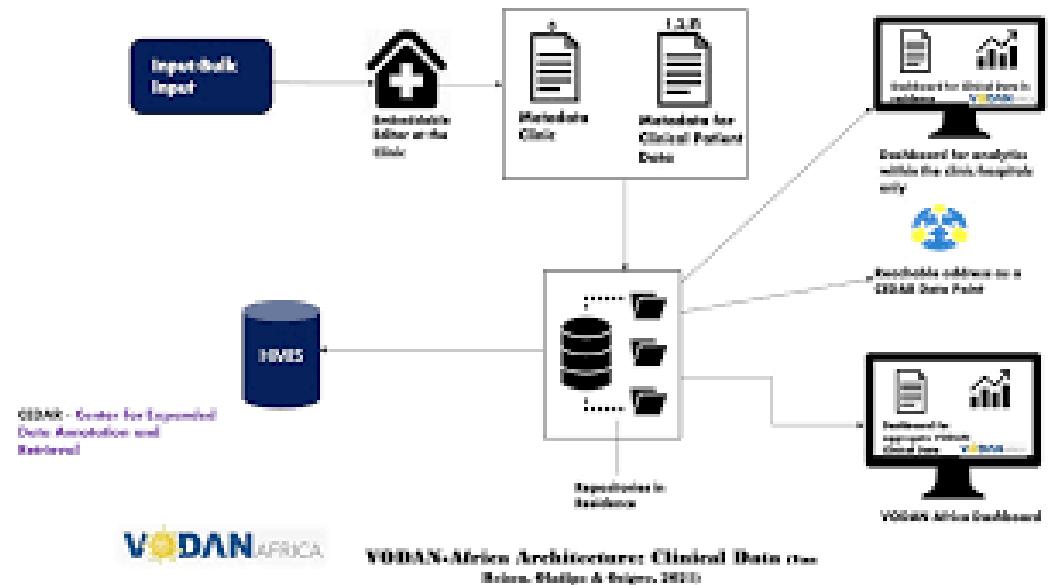
Although DHIS2 allows community reporting systems, it is not fit for purpose. It is necessary to keep data at the **source**, enable **data-visiting** for clinical research or analytics.

Building on and **complementing existing systems** is necessary to effectively respond to the pandemic.

Epidemiological data are not standardised, leading to challenges in combining, comparing or interpreting data from multiple reporting agencies.

Methodological challenges of analysing COVID-19 data during the pandemic, through getting **proper clinical data** of active and closed COVID19 cases, addressing statistical challenges of **analysing** COVID-19 data, **understanding** the complexity of clinical endpoints and statistical support for **randomized trial**.

Encouraging the **standardization of data** will facilitate the dissemination of an improved understanding of **Outbreaks**.



Challenges in reported COVID-19 data: best practices and recommendations for future epidemics <https://gh.bmjjournals.org/content/6/5/e005542>

Methodological challenges of analysing COVID-19 data during the pandemic <https://d-nb.info/1209877589/34>

Respond effectively to outbreaks

The pandemic accelerated the adoption of digital technology and supports the recognition and adoption of VODAN.

VODAN that is fully compliant with domestic regulatory frameworks and adheres to the international personal data protection supports governments in their efforts in data policy and utilization.

Strengthening leadership and technical capacity for data management and utilization in African countries is the key success factor and will support a wider adoption.

Examples from the data collected so far show the potential of having rich data captured to support research and contextual analysis. The data demonstrates insights caused by the COVID-19 pandemic lockdowns in Slums around Nairobi, Kenya.



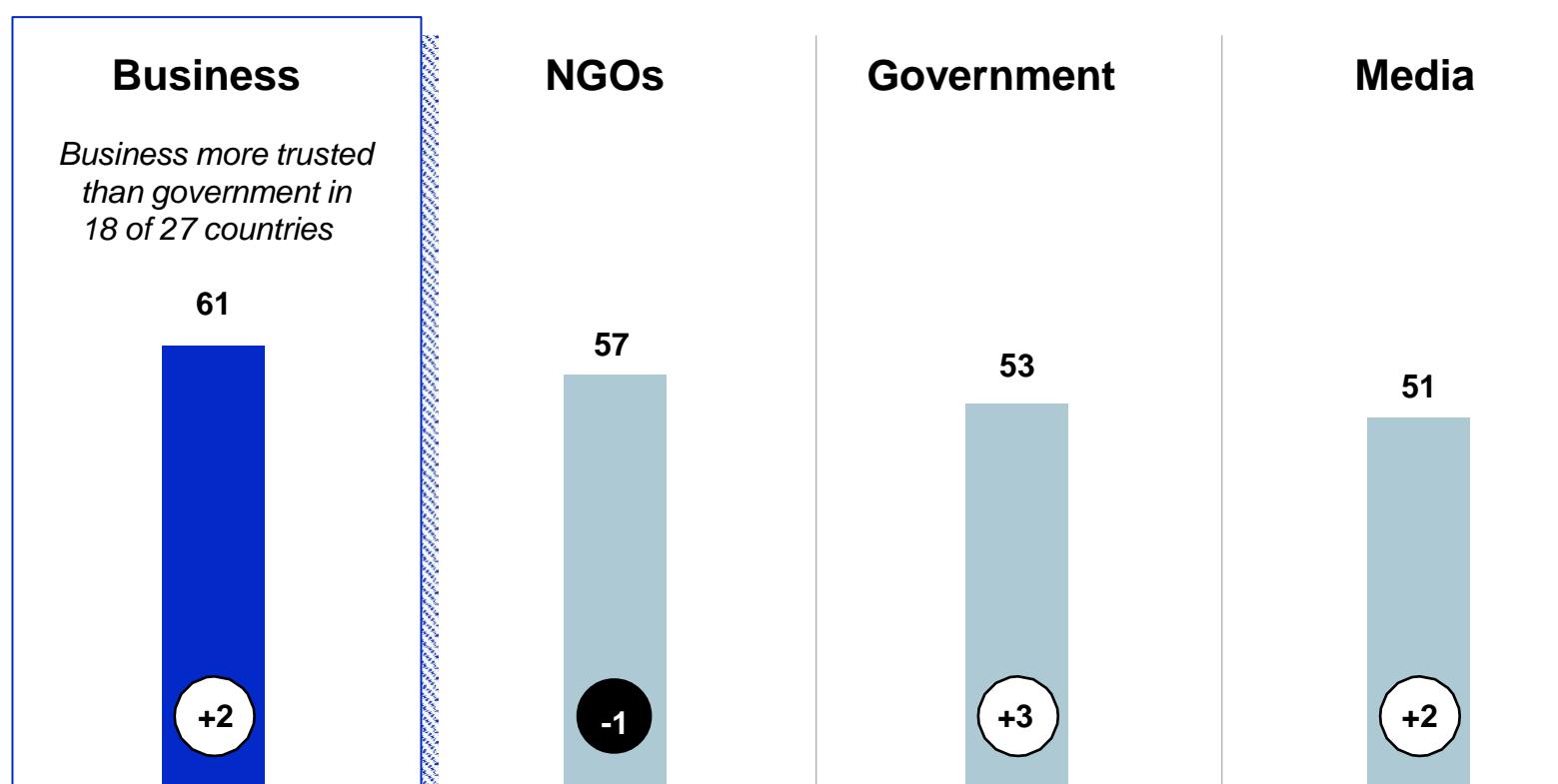
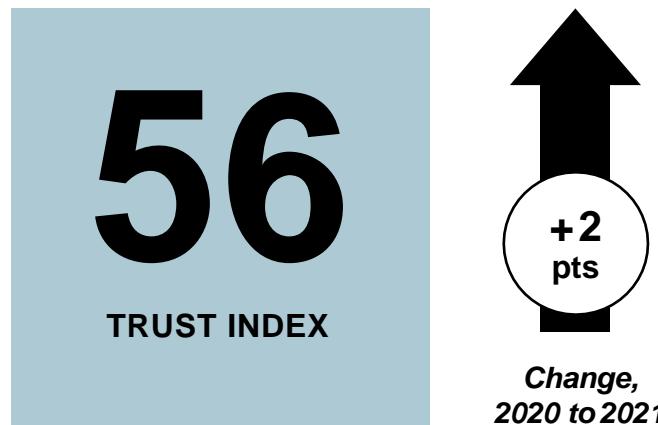
Improving Quality of Data

A word on *LEADERSHIP...*



EDELMAN trust barometer '21: BUSINESS BECOMES THE TRUSTED INSTITUTION...

Percent trust



2021 Edelman Trust Barometer. The Trust Index is the average percent trust in NGOs, business, government and media. TRU_INS. Below is a list of institutions. For each one, please indicate how much you trust that institution to do what is right. 9-point scale; top 4 box, trust. General population, 27-mkt avg.

“Responsible Leadership: Pathways to the Future,”

Journal of Business Ethics, 98, 3-13Pless, Nicola and Thomas Maak (2011)

Charismatics leadership

Transformational leadership

Authentic leadership

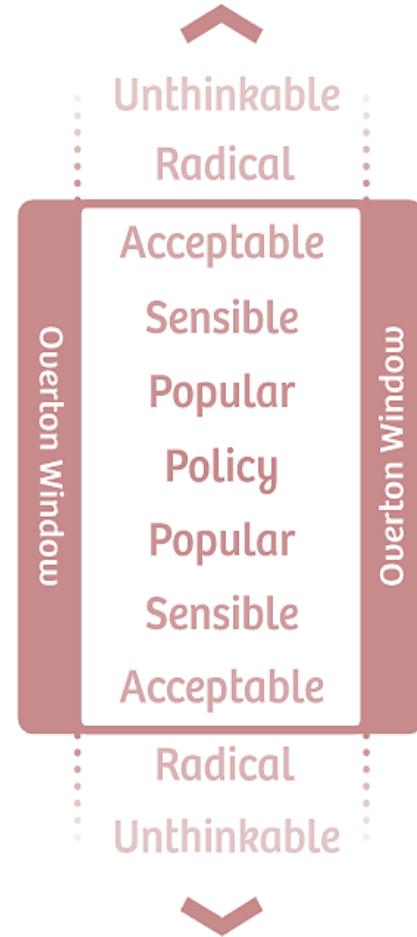
Participative leadership

Shared leadership

Servant leadership

Ethical leadership

Spiritual leadership



Pless, Nicola and Thomas Maak (2011), “Responsible Leadership: Pathways to the Future,” *Journal of Business Ethics*, 98, 3-13

Why “responsible” leadership?

- “To not be responsible is not to be a leader”(Waldman and Galvin, 2008)
- Corporate scandals
 - Exxon Valdez, Union Carbide, Enron
- Reforms needed (responsible global leadership; European Foundation of Management Development)
- Despite “call for reform”, global economic crisis (consequence of irresponsible leadership?)
- Need for a multilevel response to deficiencies in existing leadership frameworks and - theories

What are the key elements in “responsible leadership”?

- Respect, honesty, responsibility, accountability, morality, trust, driven by ethical principles
- Compassion towards rest of society; social responsibility (triple P&L, CSV)
- Multi stakeholder approach: ecosystems...

Pless, Nicola and Thomas Maak (2011), “Responsible Leadership: Pathways to the Future,” *Journal of Business Ethics*, 98, 3-13

Definition of “responsible” leadership?

- Responsible leaders build and cultivate sustainable relationships with stakeholders to achieve mutually shared objectives based upon a vision of business as a force of good for the many
- So “responsible” implies responsibilities towards the various stakeholders

Key take aways after the break

- We are at the end of the industrial age as we know it. We accumulated unprecedented economic wealth, fueled by *exploitation* of resources (social, ecological, natural)
- Consequently, humanity is facing big challenges, all actors in society, including corporate enterprise, are to step up, join forces and become “part of the solution” in addressing the wicked issues of our times. The sustainable development goals of the United Nations will have to act as compass in driving the needed transformations
- Corporations have to rethink their “purpose” and embrace a more inclusive (multistakeholder) approach to business and strive for the creation of shared value. Creating *shared value* is not contradicting the creation of *shareholder value*
- In the 21st century, DATA will be the critical resource fueling sustainable development and system change by creating shared value; we discussed the transformation of Royal Philips in a purpose driven company and the role data plays in enabling the transformation. Further more we talked about the revolution in healthcare enabled by data and how data science can help better predict future pandemics
- We closed by concluding that it will take *purpose driven and responsible leadership* to drive the much needed change

Literature

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