

Architecting Sustainable Solutions

The logo for BiLET, featuring a stylized 'i' with a small cluster of colored squares (orange, red, blue, green) above it.

BiLET

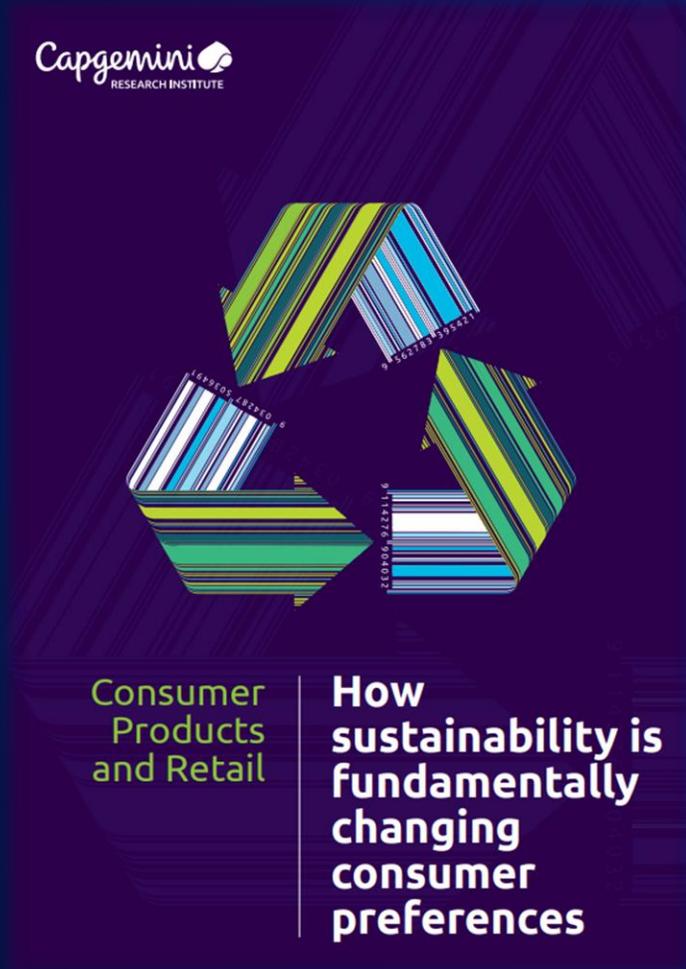
**Business Innovation
Leadership & Technology
Conferences**

Gunnar Menzel, 20th Nov 2020



Sustainability is a Key Subject for Consumers

Climate change and sustainability issues are top of our social and economic agenda



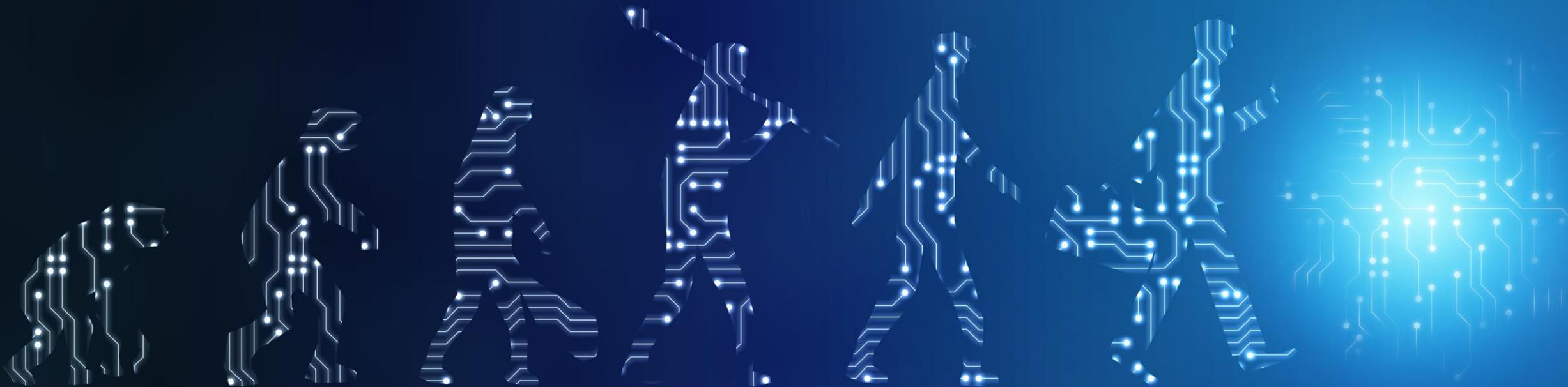
- Nearly **80% of consumers** want to be able to make a difference in saving the planet for future generations.
- **72% are personally concerned** about their environmental footprint.
- **66%** choose to purchase products or services based on their “environmental friendliness.”

The Age of Technology-Enabled Innovation

The new Technology Business



- The **digital revolution** is driving major change across our world as we know it
- Technology has become the most **important** driver across industries
- Digital is part of our **everyday life**, as a company and as an individual
- New technologies are bringing about change that is **swifter** and more radical than ever before



However, Technology has many Unintended Consequences



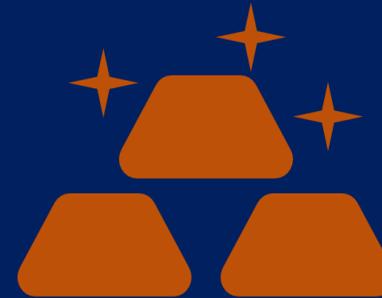
As global incomes rise, internet penetration and the use of connected, smart devices grows significantly



IT accounts for around **3%** of global CO2 emission, same level as global **aviation fuel** in 2018



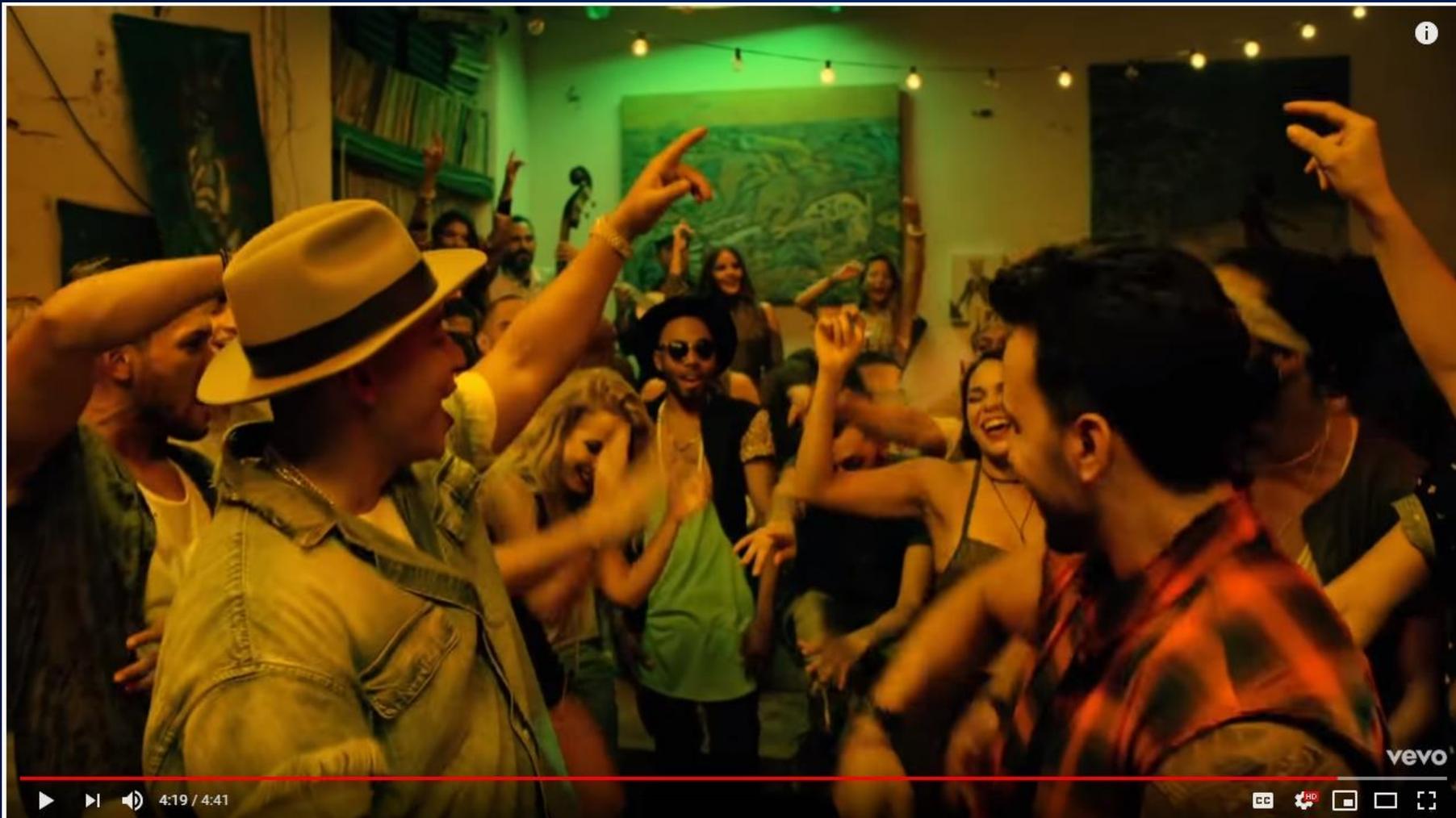
As a country, the IT industry would be the **3rd largest** electricity consumer in the world



\$52bn worth of precious metals are wasted each year through e-waste



The number of connected devices will grow by **12% annually** between 2017 and 2030



#LuisFonsi #Despacito #Imposible

Luis Fonsi - Despacito ft. Daddy Yankee

6,644,453,526 views • Jan 12, 2017

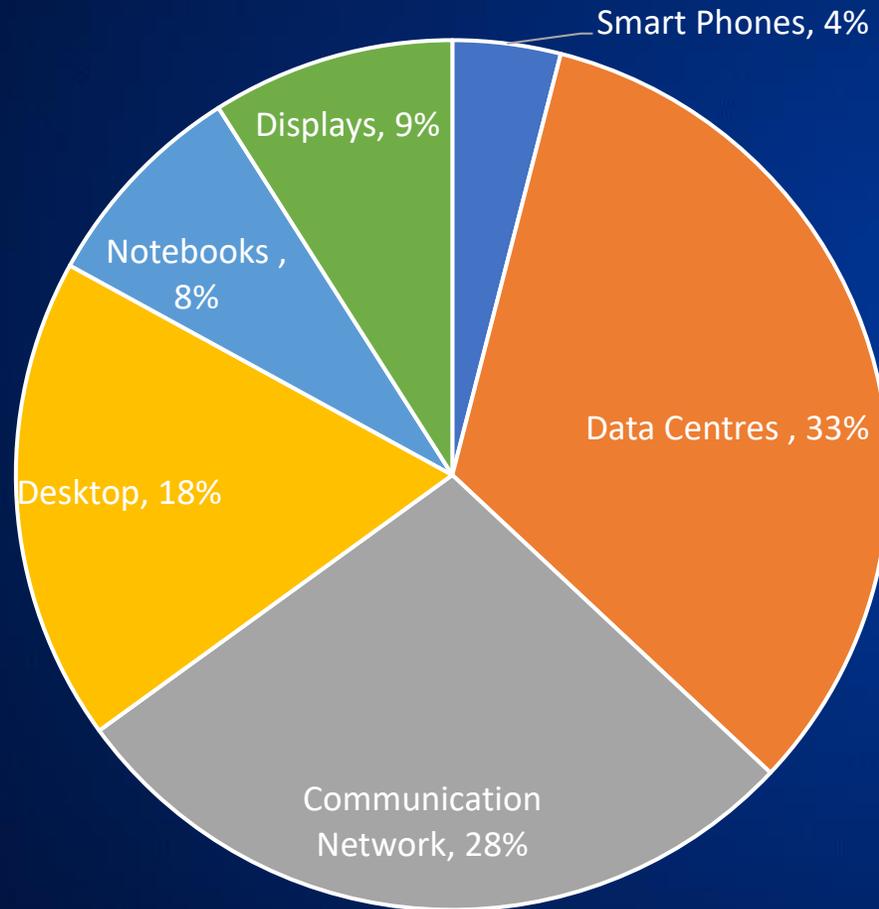
👍 36M 💬 4.3M ➦ SHARE 📌 SAVE ⋮

First video with
over **5bn views**
consuming more
electricity than
40,000 US
households over
a full year

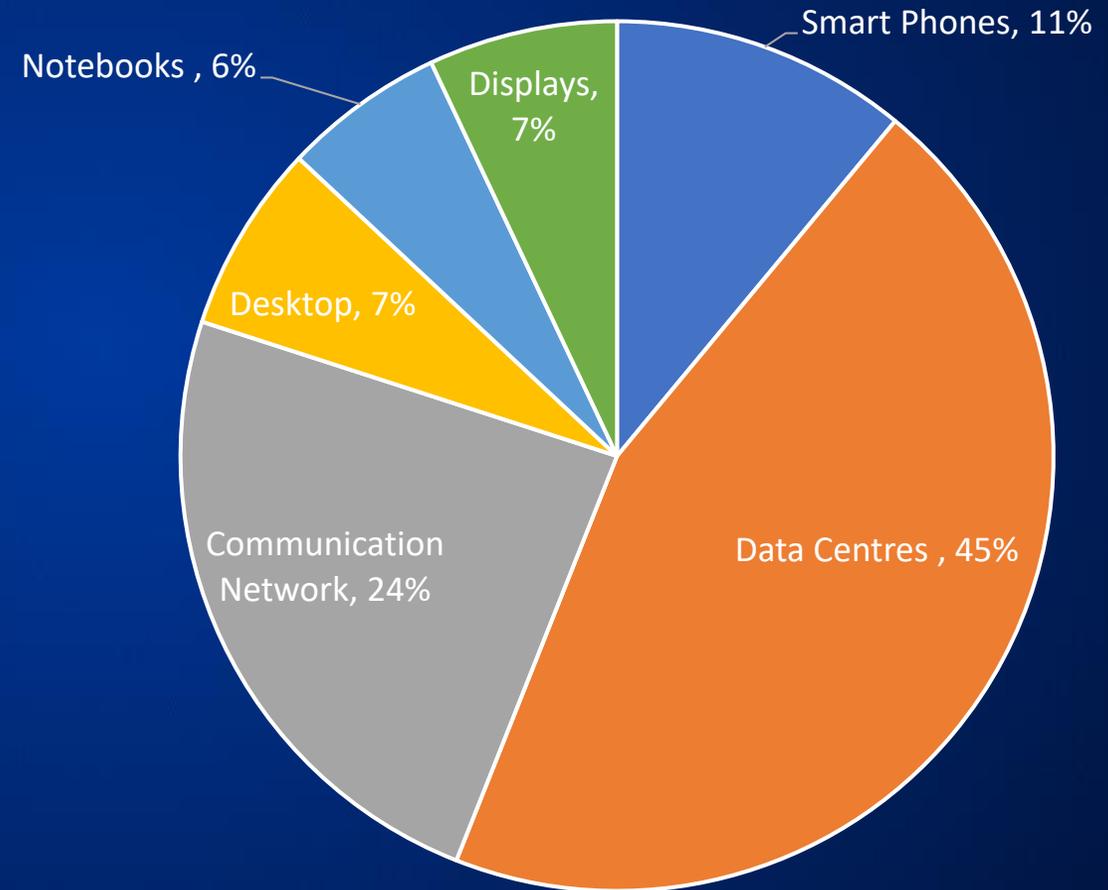
Driven by Data, Data Centres and Communications Network are the biggest contributors*



Relative Contributions of ICT Categories - 2010



Relative Contributions of ICT Categories - 2020



Yet, IT can contribute to solving a wide range of issues

Various ways where IT can make a real impact



IT can enable savings of **\$5 trillion** worth of resources and generate an **additional \$2 trillion** in revenues by 2030



By 2030, IT has the potential to cut **9.7 times** as many carbon emissions as they emit which would save **20%** of global CO₂ emissions by 2030



Digital solutions can contribute to achieve all **17 UN Sustainable Development Goals** and **>50%** of the 169 sub-targets

The Role of an Architect

Architect connects business and technology to design solutions

An Architect's role is to **drive change** that creates business opportunity through applied innovation.

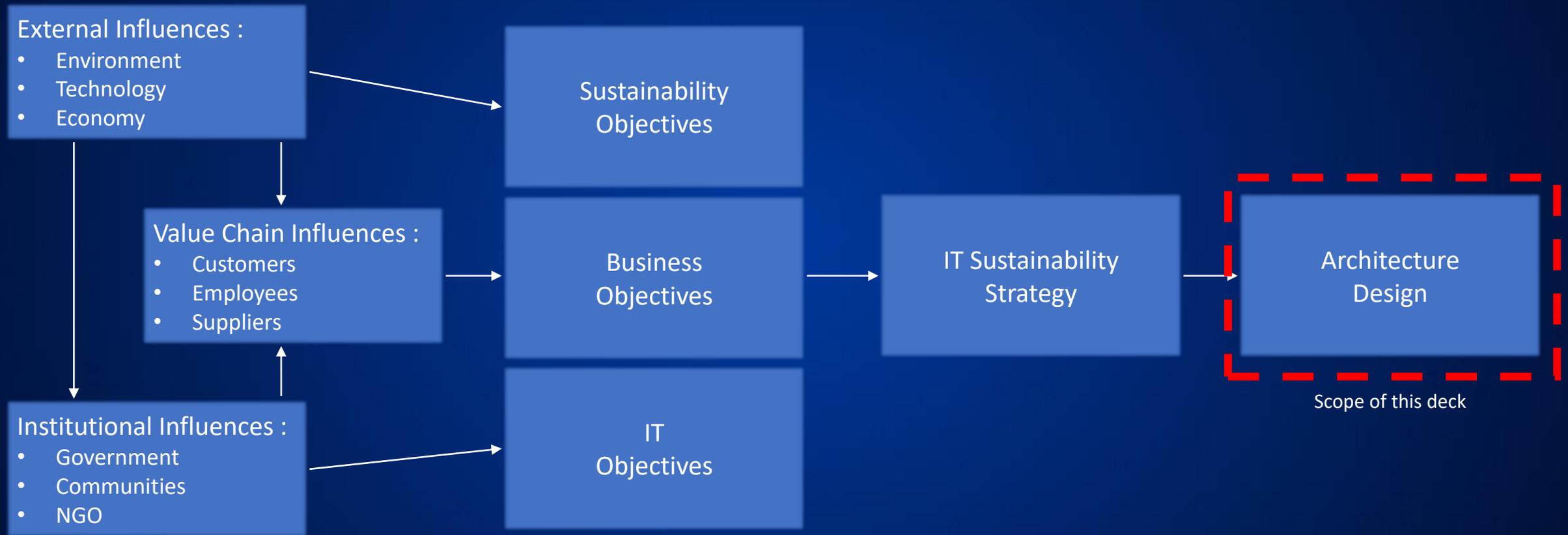
They will shape and translate business and IT strategy needs into realizable, **sustainable** technology solutions, while taking end-to-end solution delivery ownership from idea to benefits delivery.

In detail, an Architect

- provides insight, thought leadership and innovation to ensure that the solution meets the client's business goals,
- ensures that the solution¹ is **designed** for production and can be delivered efficiently maximising re-use, and
- ensures that the solution has integrity (is safe, secure and compliant).

Sustainability Strategy

Establish a clear IT Sustainability Strategy



How to Architect Sustainable Solutions



Making sure that sustainability related aspects are a core part of the solution design process

1 By defining what **sustainability means**

2 By ensuring that the entire architecture **design process considers sustainability** related artefacts



3 By ensuring that there is a **balance** between value for money, agility, compliance and sustainability

4 By applying a **design thinking** approach



What is Sustainability?

IT sustainability covers more than Green IT

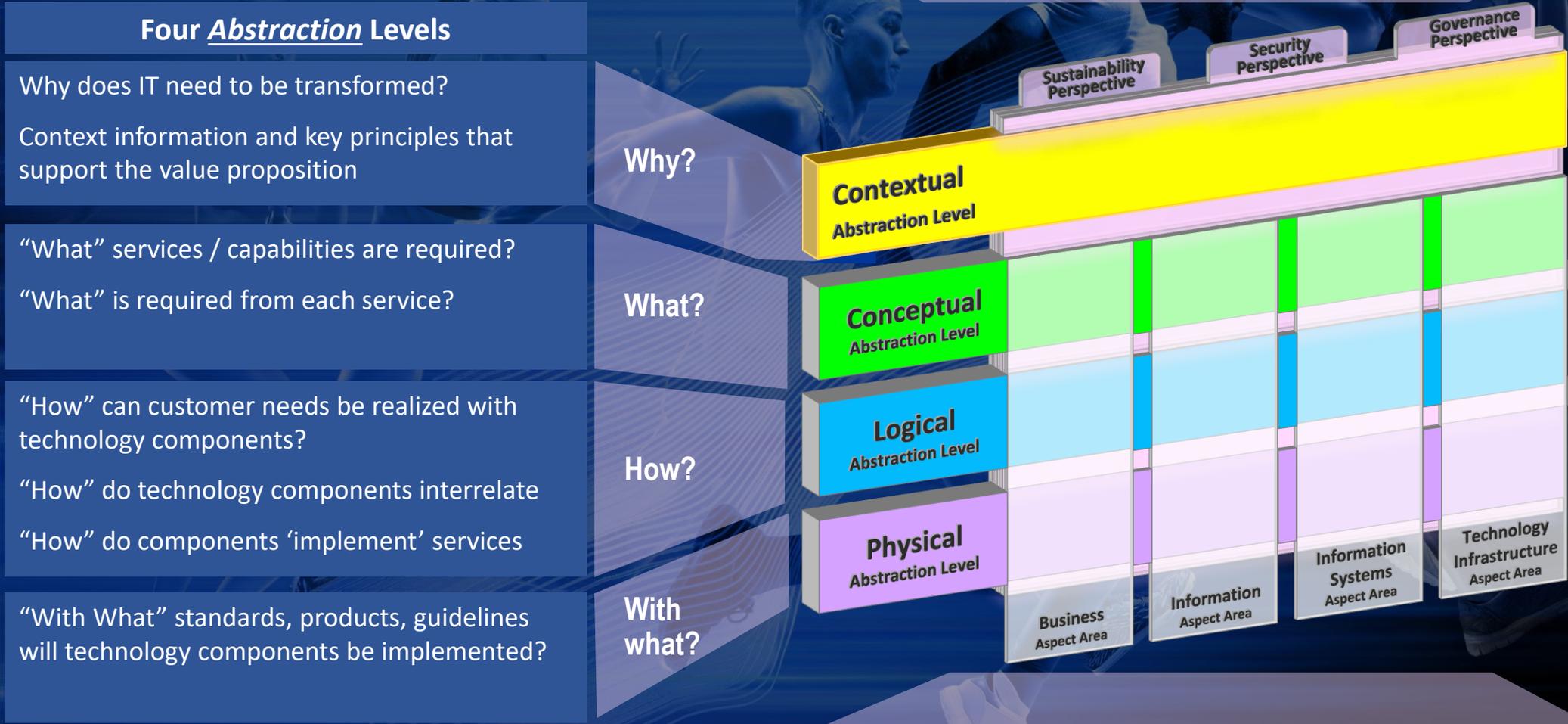
- Sustainability in an information technology context can be characterized by the **application of IT practices** and **technologies** for the benefit of customers and others stakeholders that ensure long-term well-being in economic, social, and environmental sustainability pillars¹
- Broadly **sustainability** means that the sourcing, operation and disposal of IT equipment does not directly or indirectly **negatively affect** economic, social, and environmental aspects.
- **Sustainability** in an IT context can be related to aspects such as electricity consumption, water usage as well as economical and social implications.

Use an Architecture Content Framework

Integrated Architecture Framework V6 / SE



Three Perspectives : Sustainability, Security and Governance across all Abstraction Layers and Aspect Areas



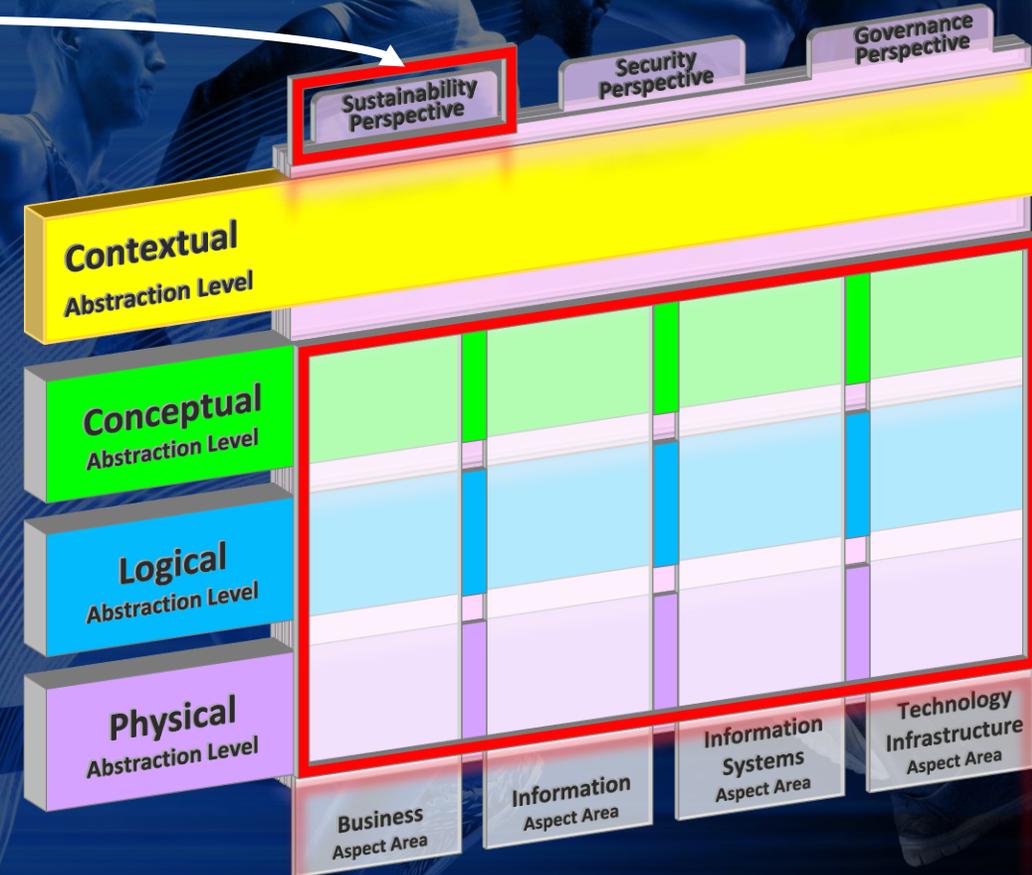
Four main Aspect Areas : Business, Information, Information Systems and Technology Infrastructure

Solution related Artifacts

A selection of key sustainable related artifacts¹

The **Sustainability Perspective** adds considerations and knowledge to any or all aspects areas in terms of context in Environmental, Social and Economic sustainability and considerations and measures of the sustainable context of the architecture and outcome.

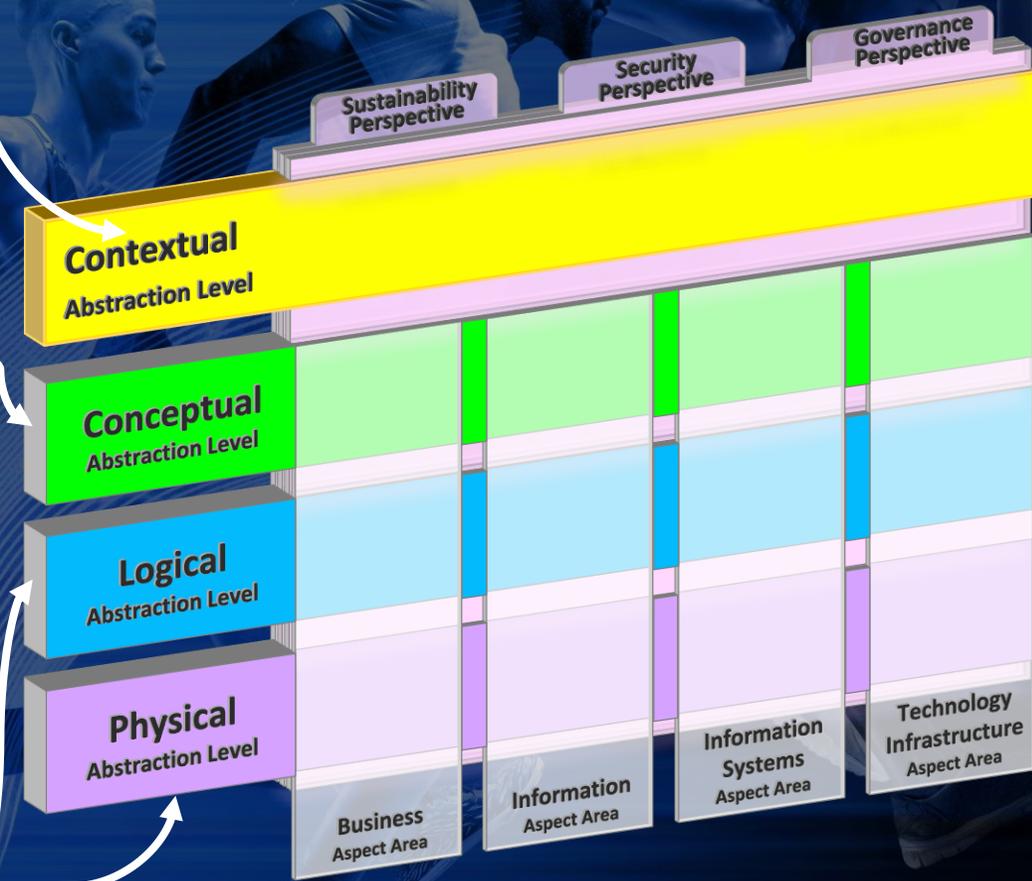
It considers **resource sourcing, utilisation** and **disposal, environmental** impact, **social** impact and outcomes, and **economic** outcomes



Solution related Artifacts

A selection of key sustainable related artifacts¹

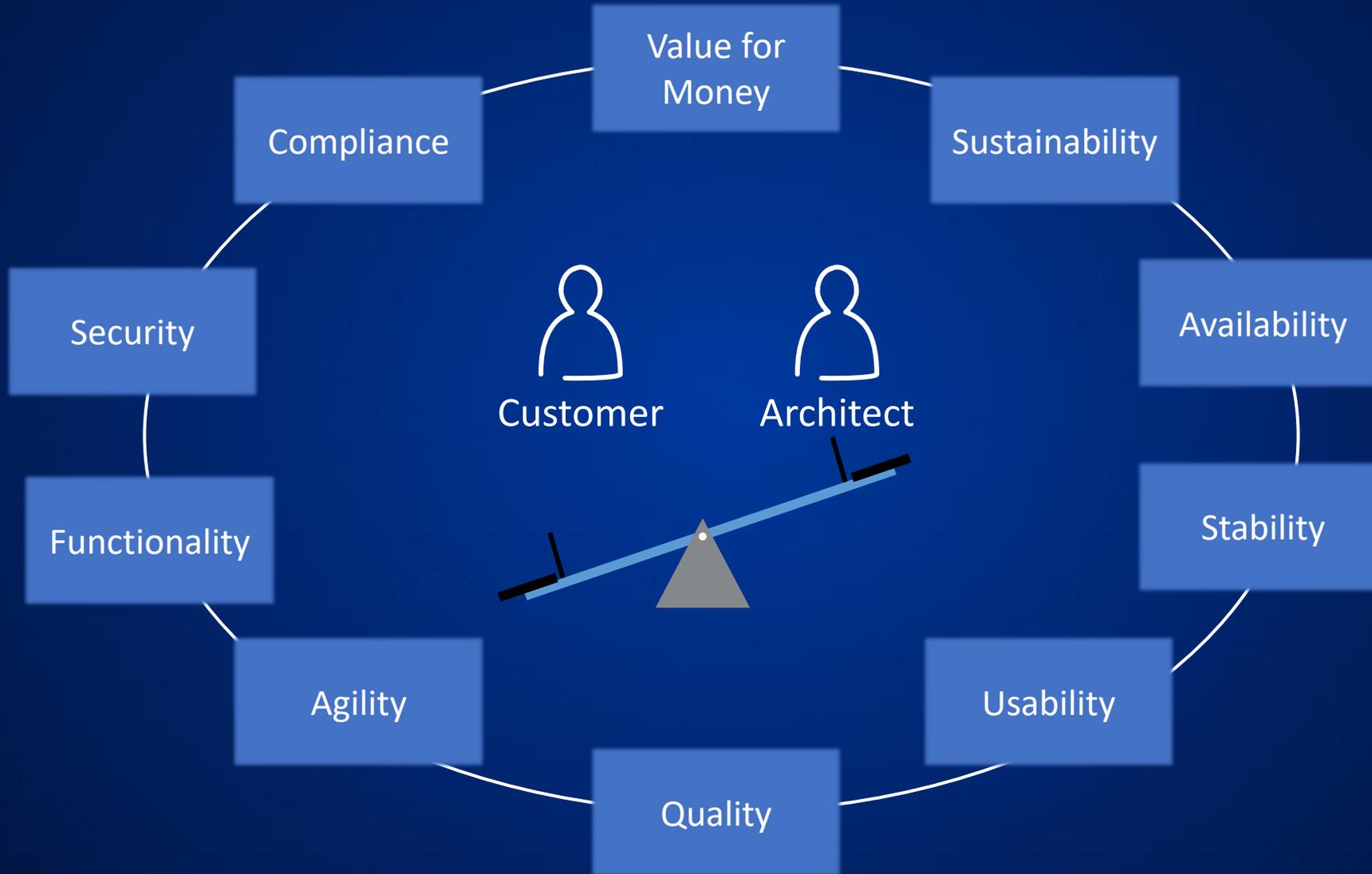
- The overriding **IT Principles**
 - Any sustainable **relevant inputs**
 - Any **compliance and standards** related material
 - Any Corporate / Companywide **sustainability strategy/ies**
-
- The **sustainable related requirements** “a physical server must not consume more than 270Watt per h in peak” or a “the total CO2 footprint for a typical high volume 2U Server over its entire lifetime including the production, delivery (embedded carbon), operational and disposal footprint must not exceed 6tons CO2.”
-
- The **logical solutions (options)** that meets the functional and non-functional requirements whilst meeting all contextual aspects incl sustainability targets



- The resulting **physical solution(s)**

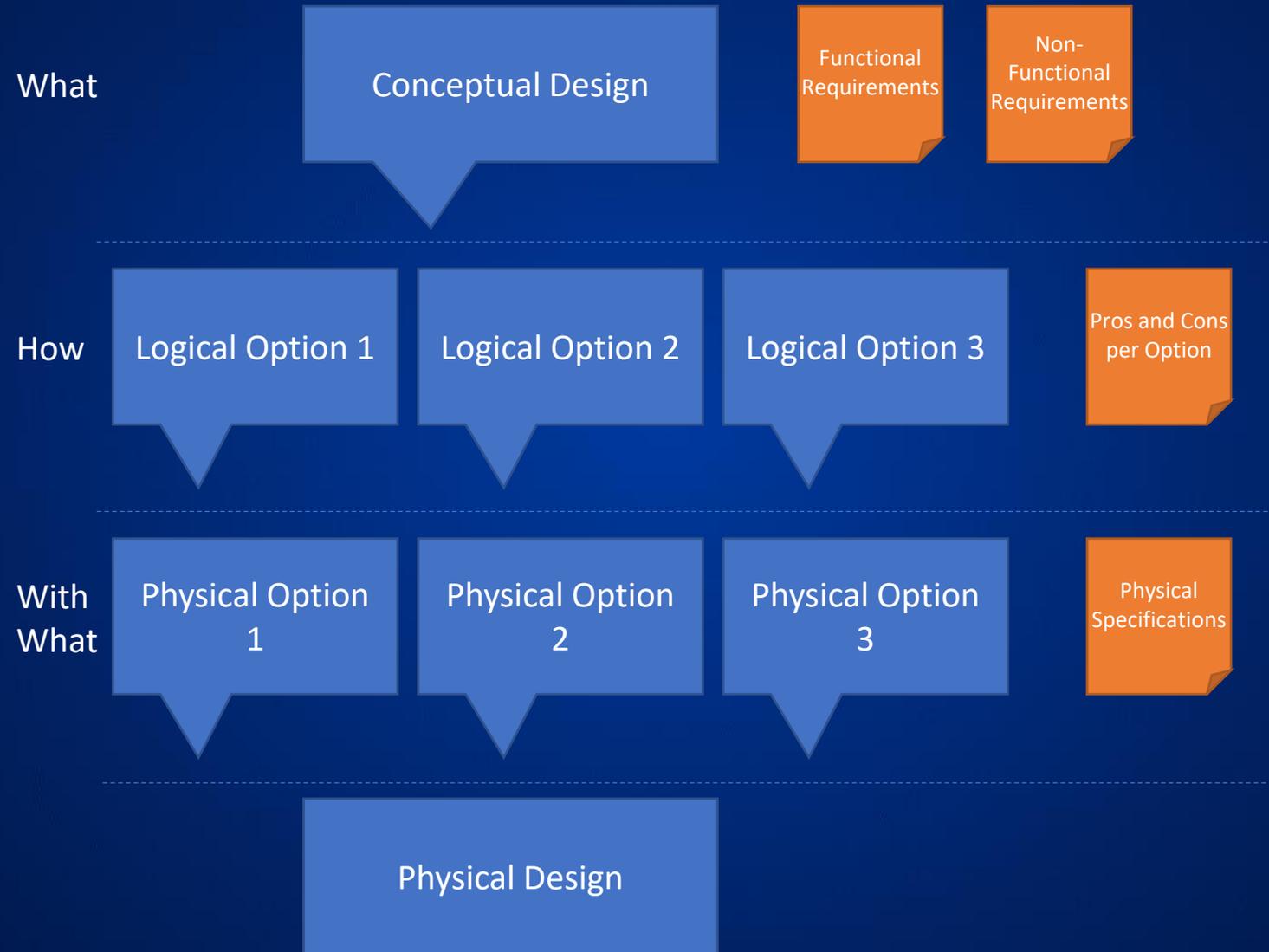
Sustainability Design Thinking

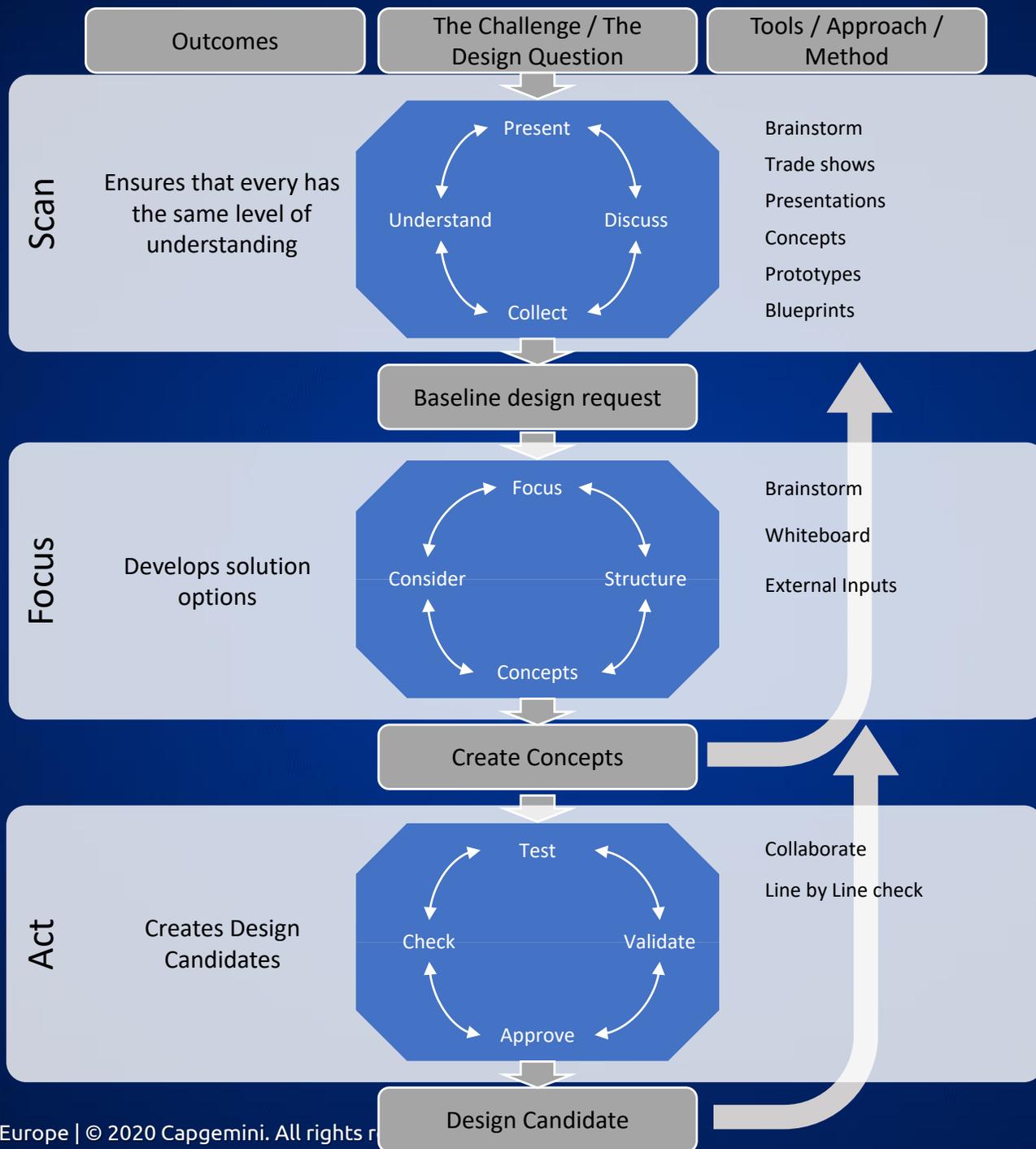
Balancing various drivers to designing a sustainable solution



Solution related design process

Moving from conceptual, logical into physical





Architecting IT Sustainability Solutions

Establish IT Sustainability Strategy & Ensure that Sustainability are core to the solution



- *ICT can have a **substantial sustainability** impact*
- ***Sustainability** goes **wider** than **Green IT***
- *To **successfully architect** an IT solution*
 - *Establish IT **sustainability strategy***
 - *Use a formal **framework***
 - *Ensure that sustainability is **core** to the solution*



More Reading Materials



We are committed to our business operations. This infographic details Capgemini's commitment to various areas including Client Sustainability, Environmental Performance, and Social Responsibility. It lists specific goals and initiatives across these domains.

Capgemini announces its ambition to become a net zero business by 2030

Net Zero

Could clicks become more dangerous for the planet than cars? (Part 1 of 3)

Published on March 20, 2020

Taking action against the carbon cost of ICT (Part 2 of 3)

Published on March 30, 2020

Sustainability must be at the heart of C-Suite thinking for the 'new normal' in the wake of COVID

Published on September 28, 2020

Earth Overshoot Day 2020: What it tells us about what we need to do

Published on August 25, 2020

Earth Day reflections: will we learn to listen?

Published on July 23, 2020

FIT FOR NET-ZERO: 55 Tech Quesits to accelerate Europe's recovery and pave the way to climate neutrality

Climate AI: How artificial intelligence can power your climate action strategy

Looping you in: the carbon cost of email (Part 3 of 3)

Published on April 9, 2020

Sustainability in ICT; It is Time to take it seriously

Published on July 15, 2020

The big crisis ahead is climate change – and we can't say we didn't see it coming

Published on June 5, 2020

Applying technology to sustainability challenges

Published on October 9, 2019

What is the boardroom response to sustainability challenges?

Published on June 6, 2019

The (more) sustainable Data Centre

Published on March 24, 2020

Training AIs doesn't have to hurt (the planet)

Published on November 3, 2020

Unlock the possibilities ... Join Us Today

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