Infosys
Navigate your next

Architecting the Enterprise through Practical Sustainability

SAP Enterprise Architect Virtual Global Summit
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Chief Learner and Sharer, Infosys Knowledge Institute

Infosys | Knowledge Institute


Enterprise architects play a vital role in sustainability.
They bridge physical-digital, Business-IT, and the enterprise-individual.


50% of the wicked sustainability challenge can be realized through existing technology and knowledge.
Future technology will address the remaining 50% through R&D that is data-driven, economically viable, and accessible.

Practical Sustainability research, influenced by Infosys carbon-neutral journey

Research methodology

Expert interviews
Case studies
Heavily sourced: 340+ references

WSJ 100 MOST SUSTAINABLY MANAGED COMPANIES 2020

MEMBER OF Dow Jones Sustainability Indices In Collaboration with RobecoSAM

GOLD 2020 ecovadis Sustainability Rating

United Nations Global Compact

2021 WORLD'S MOST ETHICAL COMPANIES® WWW.ETHISPHERE.COM

Resource Efficiency

26mn sq. ft.
of highest rated (LEED Platinum/ GRIHA 5-star) green buildings

55% per capita
reduction in electricity consumption compared to 2008 baseline

51mn sq. ft.
of smart connected office space

64%
Reduction in water usage

Infosys carbon-neutral

in 2020 across Scopes 1, 2 and 3.
Certified against PAS 2060:2014

Renewable Energy

60 MW
of installed solar PV capacity

~ 50%
of total electricity across India campuses from renewable sources

Carbon Offsets

11 of 17 SDGS
favorably impacted through our carbon offset projects

2,600+ jobs
created through our carbon offset projects

119,000+ rural families
continue to benefit from our carbon offset projects

Glickman and Kavanaugh, Infosys, 2021

ENVIRONMENT (11)

SOCIAL (8)

GOVERNANCE (2)

https://sdgs.un.org/goals

Practical sustainability focuses on significant contributors, with current solutions

These items are major contributors to sustainability challenges, yet also hold the key to solutions.

Supply chains and products

Supply chains account for 90% of firm GHG emissions
Product design locks in 70% of total product cost
Phygital physical+digital offers innovation opportunities

Buildings

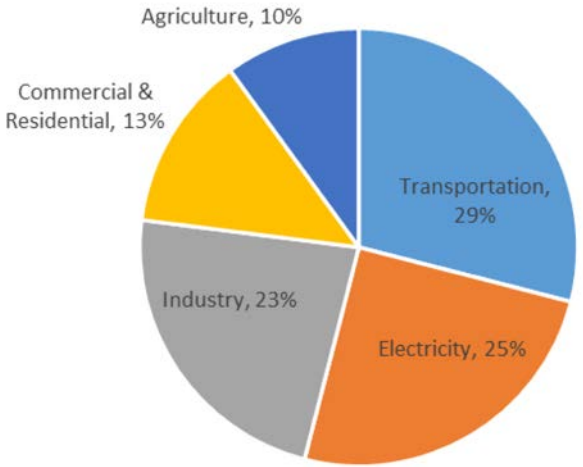
40% contributor to greenhouse gas emissions
90% of our time spent in buildings
Tech laggard – more improvement potential

Human experience

Overarching purpose behind most actions
Human capital as ultimate renewable resource
Adoption ultimate indicator of success

Glickman and Kavanaugh, 2021

US GHG emissions by industry, 2019

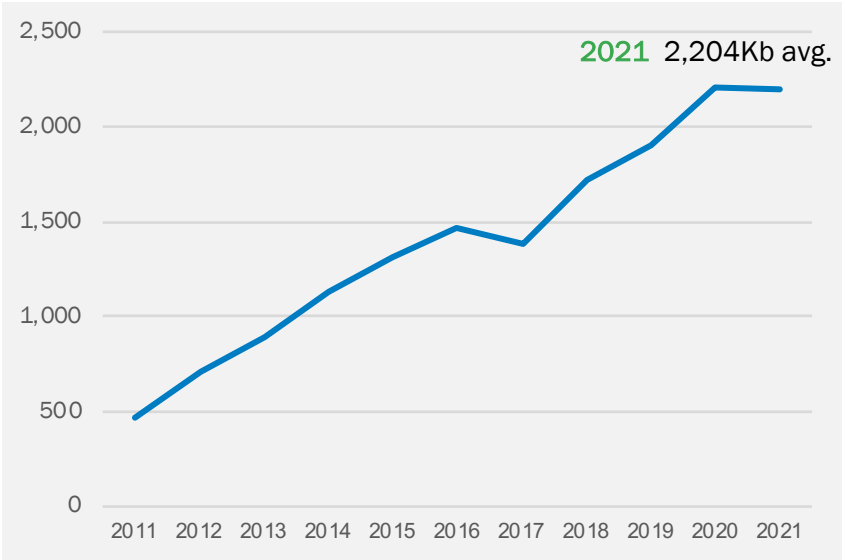


U.S. Environmental Protection Agency (2021)

Information technology emissions matter, and are growing

Today, the average website weighs in at over 4x more than in 2011.

Total kilobytes of resources requested by a page



HTTP archive

"Shaving off a single kilobyte in a file that is being loaded on 2 million websites reduces CO2 emissions by an estimated 2,950 kg per month."

(That's the equivalent of 5 flights from Amsterdam to New York each month!)

van Kooten, 2020

Making the sustainability case: mobilizing the operating model

Operating model elements	Traditional (from)	Practical sustainability (to)	Themes	Key ideas
Organization	• Physical workplace • Shareholder • CSR • Full-time employees • Compliance	• Anytime, anywhere workplace • Stakeholder • ESG • Gig economy workforce • Change agent	Regenerative future	• True ESG with social and governance • Decarbonization as quantified priority • Formal carbon offset strategy • Digital strategy that enables Scope 1, 2, 3 goals • Prioritized triple bottom line: people, planet, profits
Value chains	• Extraction • Global sourcing • Offline, periodic analysis • Black box resources • Self-reported, targets	• Circularity • Proximity to source • Connected, instant simulation • Resource visibility • Supplier-reported, indexes	Circular commerce	• Circular supply chains • Predictive product lifecycle management • Traceable, ethical product provenance • Digital finance with velocity and trust • Low carbon energy
People	• Performance • Generic training • Physical security • Diversity	• Fulfillment • Personalized learning • Holistic wellness • Inclusion	The human experience	• Delight by delivering technology for good • Environment, health, and safety management • Socially progressive activism • Diversity and inclusion as talent engine • Measurable quantified outcomes
IT systems	• Corporate tech support • Point solutions • Dumb endpoints • Guarded data • Privacy considered	• Digital democratization • Systems design • Smart connected • Data transparency • Privacy prioritized	System of systems	• Systems design to tame complexity • Convergence of cloud + connectivity + IoT • Synchronized tech-driven operating model • Security and data privacy by design
Decisions	• Dumb endpoints • Policy execution • Profitable • Reactive • Analyze everything	• Smart connected • Influencer • Sustainable • Predictive • Identify anomalies	Digital twin	• Contextual and spatial data relationships • Single plane of glass • Historic modeling, real-time status, and future cast simulation • Enhanced asset valuation • Quantifiable science-based targets

Infosys Knowledge Institute, 2021

Define and measure sustainability with value, beyond intention

Moving from the Triple Bottom Line to Single Bottom Line Sustainability

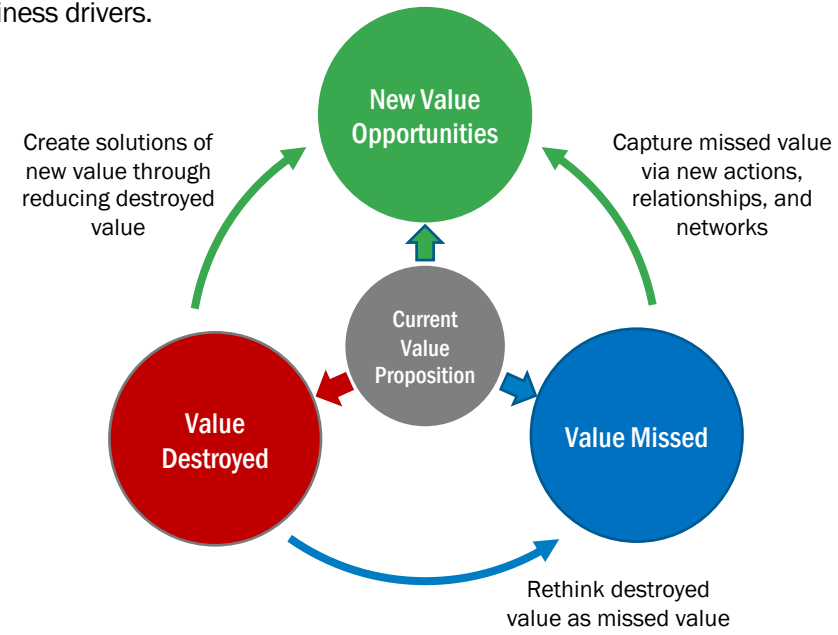
Triple Bottom Line

Balanced; all actions must consider full range of impacts, yet sustainability distinct from financials.

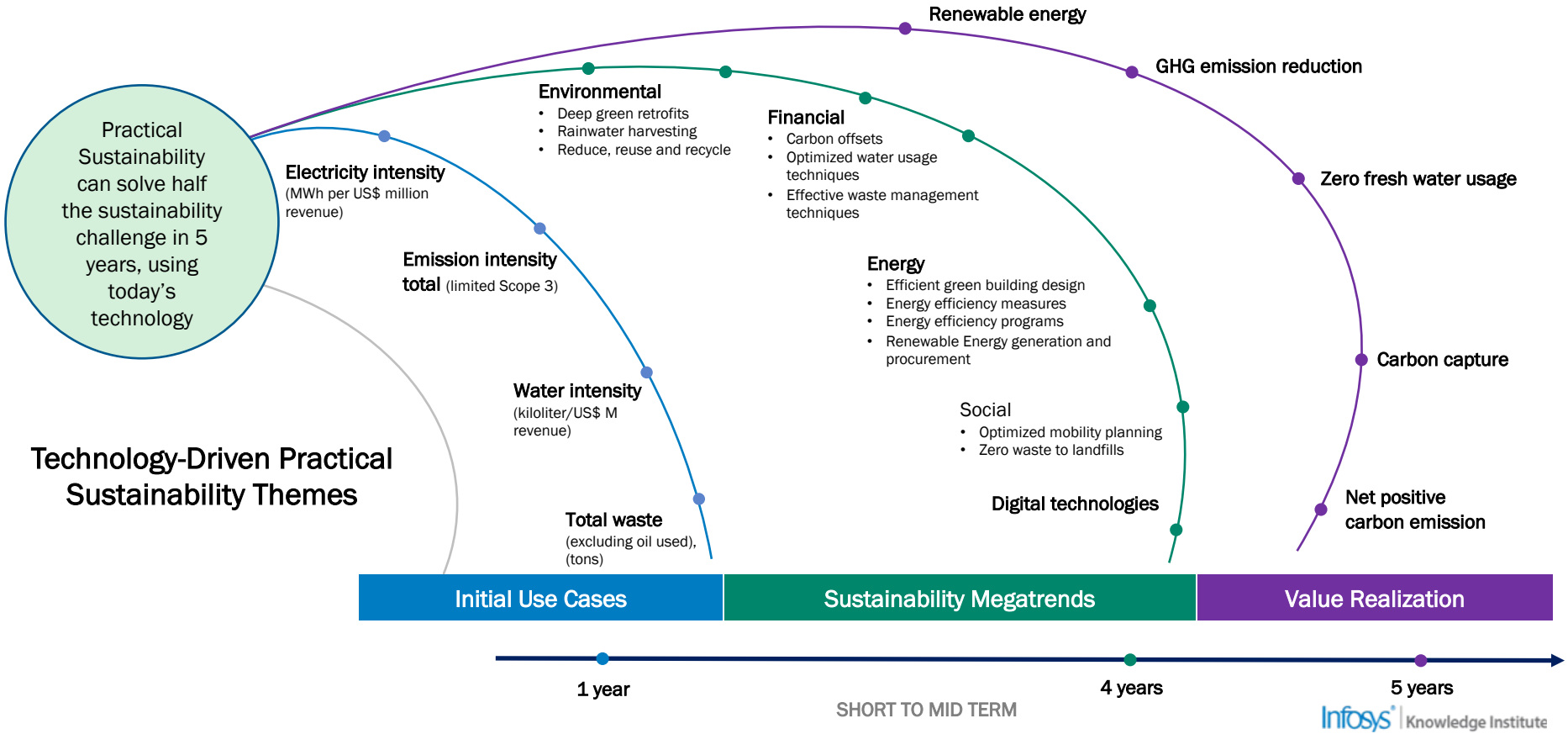
John Elkington

Single Bottom Line Sustainability

Positions sustainability concepts in pursuit of value growth, to align with natural business drivers.



Sustainability focus evolves from efficiency to amplification to innovation



Sustainability, through four lenses and six stages

CULTURE

Vision from leadership buy-in to user level empowerment of sustainability targets. Micro-change management drives adoption and cultural change.

FINANCIAL

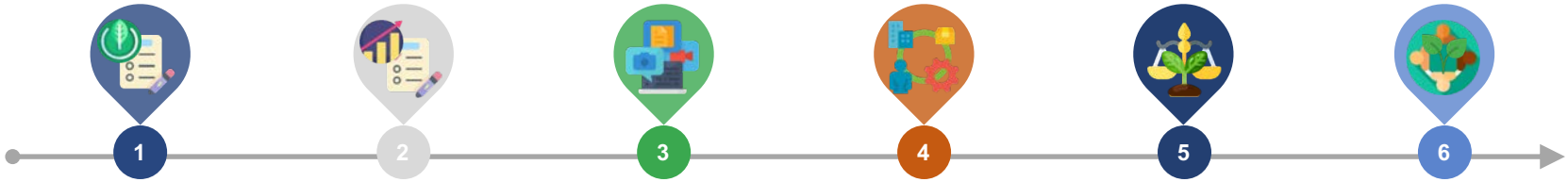
Holistic, viewing ESG and financial performance together. Combines auditing and portfolio management.

DATA

Drives understanding across operations to make financial sense of sustainability decisions. SDG metrics, IoT and source reporting bring this 360° view to life.

TECHNOLOGY

Amplifies results. Engineering and information technology are applied to physical and digital aspects of sustainability.



Sustainability plans combine strategic vision and detailed metrics

Environment Vision

Serve the preservation of our planet by shaping and sharing technology solutions

Environment Ambitions

Climate change

- Carbon neutrality across Scope 1, 2 and 3 emissions
- Reducing Scope 1 and 2 GHG emissions by 75%
- Reducing Scope 3 GHG emissions by 30%
- Engaging clients on climate actions

Water

- 100% wastewater recycling

Waste

- Zero waste to landfill

Social Vision

Serve the development of people by shaping a future with meaningful opportunities for all

Social Ambitions

Enabling digital talent at scale

- Extending digital skills to 10mn+ (2025)

Tech for good

- Empowering 80 mn+ lives via tech for good programs (2025)

Diversity and inclusion

- Creating a gender-diverse workforce with 45% women

Energizing local communities

- Delivering 33% of work by leveraging flexible/remote work options

Employee wellness and experience

- Facilitating best-in-class employee experience

Governance Vision

Serve the interests of all our stakeholders by leading through our core values

Governance Ambitions

Corporate Governance

- Empowered, diverse and inclusive Board
- Sustainable supply chains
- Robust compliance and integrity practices
- Transparent communications with stakeholders

Data privacy

- Leading data privacy standards

Information management

- Industry leadership in our information security practices

Infosys ESG Vision 2030

Decarbonize, democratize, digitalize, to achieve sustainability

Energy Efficiency

Deploy IT and IOT to reduce energy consumption, and drive resource efficiency.

Optimize efficiency through smart automation

Retrofit existing buildings with energy efficient equipment; Develop super-efficient buildings

Renewable Energy

Reduce electricity intensity; increase and optimize captive solar power generation

Phase out carbon dioxide emissions from fossil fuels and transition to 100% renewable energy

Procure renewable energy from third-party providers like HVAC and EV transportation

Carbon Offsets

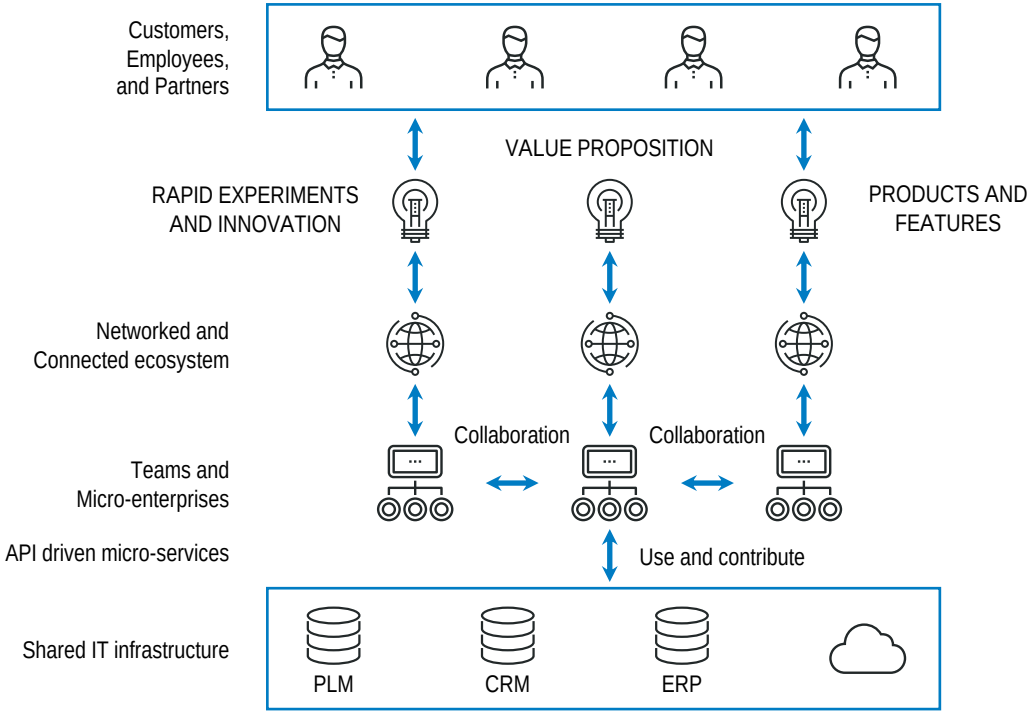
Offset all remaining emissions

Implement community projects rather than carbon trading – real emission reductions!

Example: Help rural communities embrace low-carbon futures through electrification, bio-gas plants and emission-free cookstoves

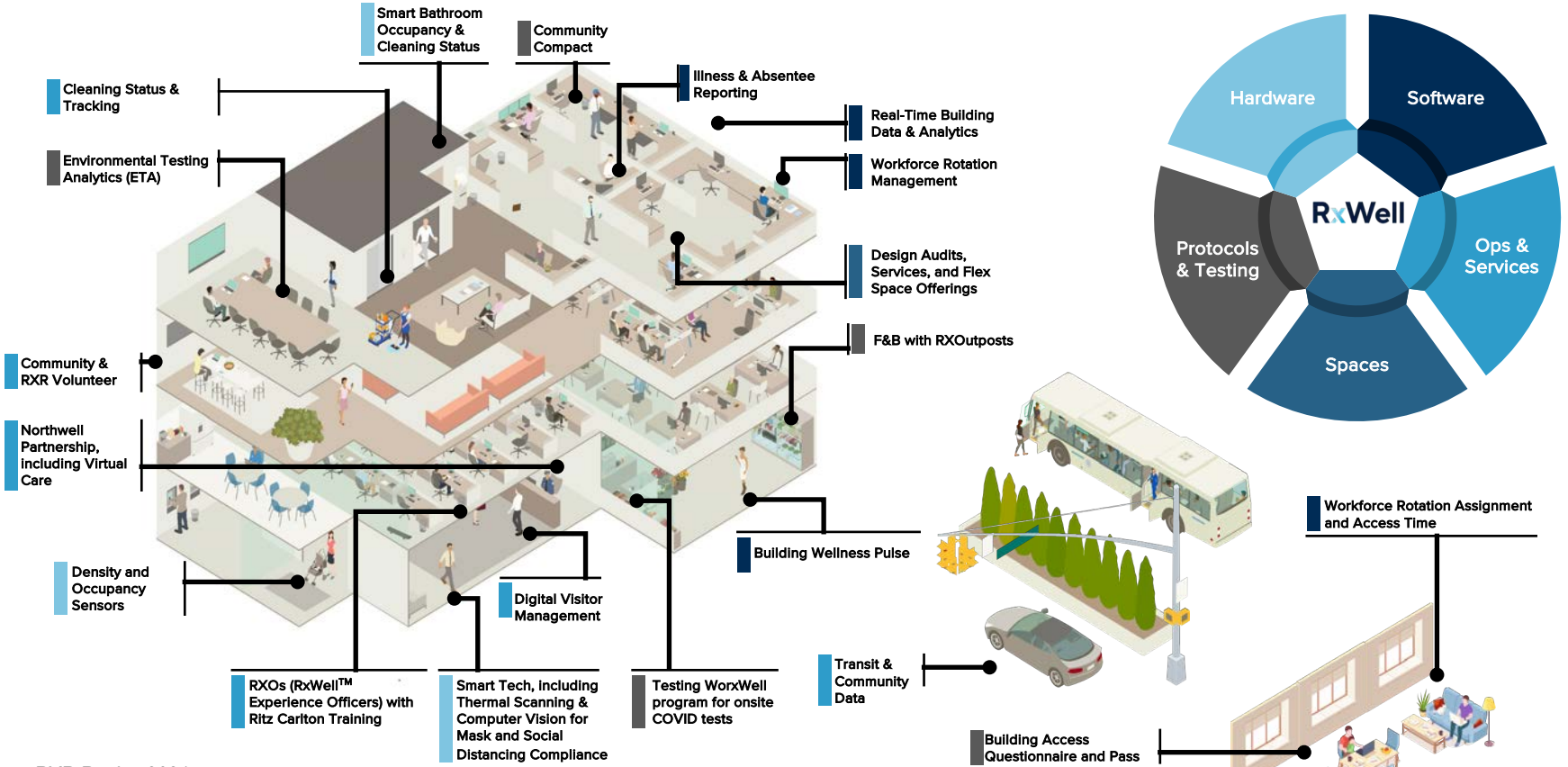
The modern operating model supports sustainability innovation

The model is fluid yet scales, energizing many small teams with shared digital infrastructure.



Kavanaugh and Tarafdar, The Live Enterprise, 2021

Buildings are core physical assets for sustainability

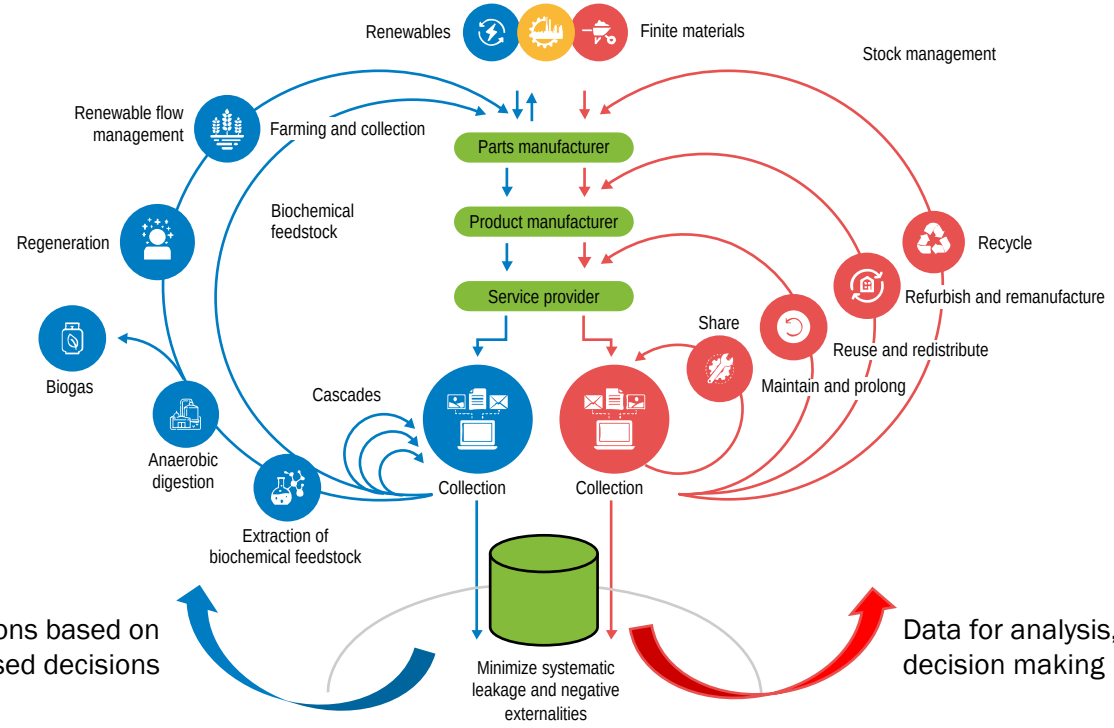


RXR Realty, 2021

Circular economy blends biology and tech toward regeneration

Biological cycle

Technical cycle

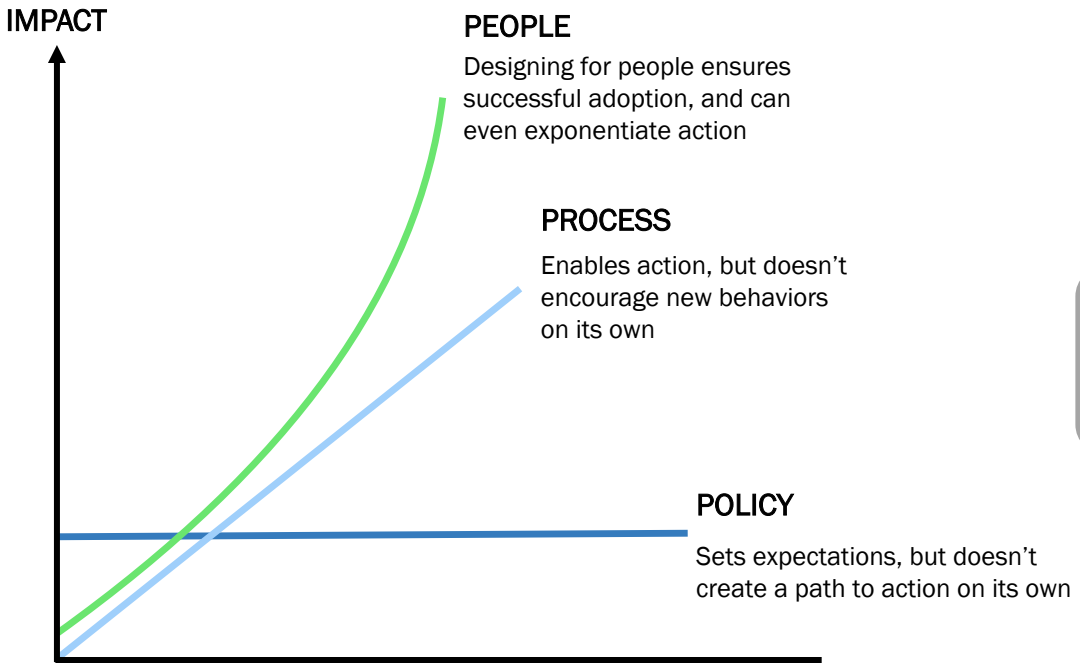


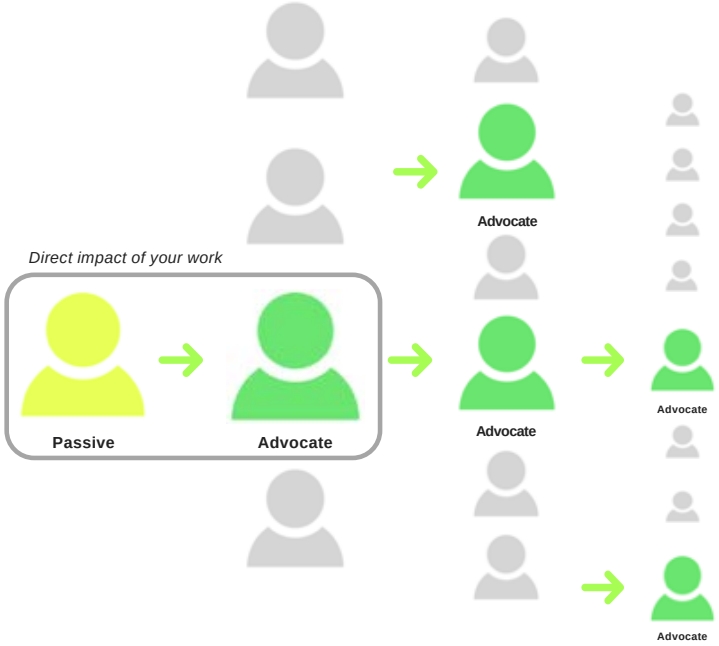
Enterprise architecture is a bridge between biological and technical cycles

ELLEN MACARTHUR FOUNDATION

Change behavior: create exponential impact on customers, employees, planet

Sustainability policy and process only work when **people** are engaged to deliver and drive them.

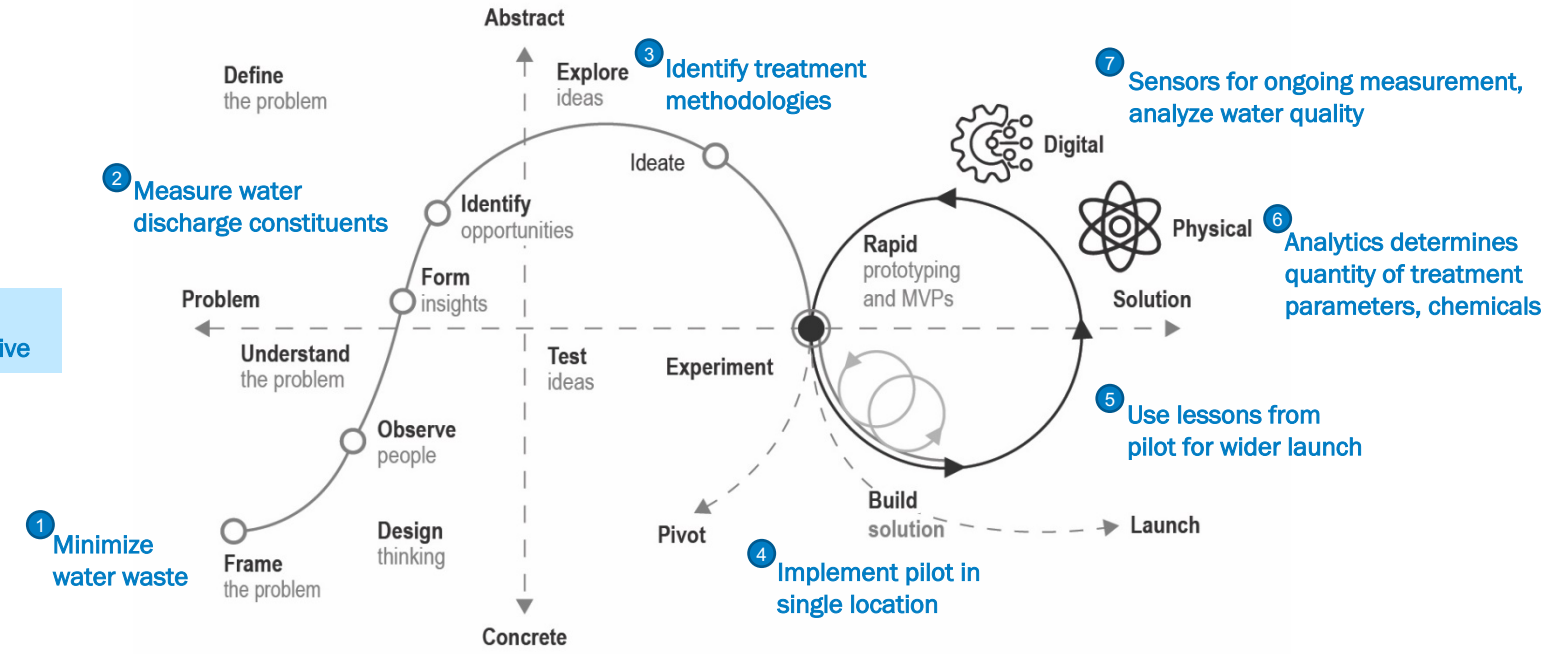




Kavanaugh and Tarafdar, Harvard Business Review, 2021

Sustainability is a system of systems

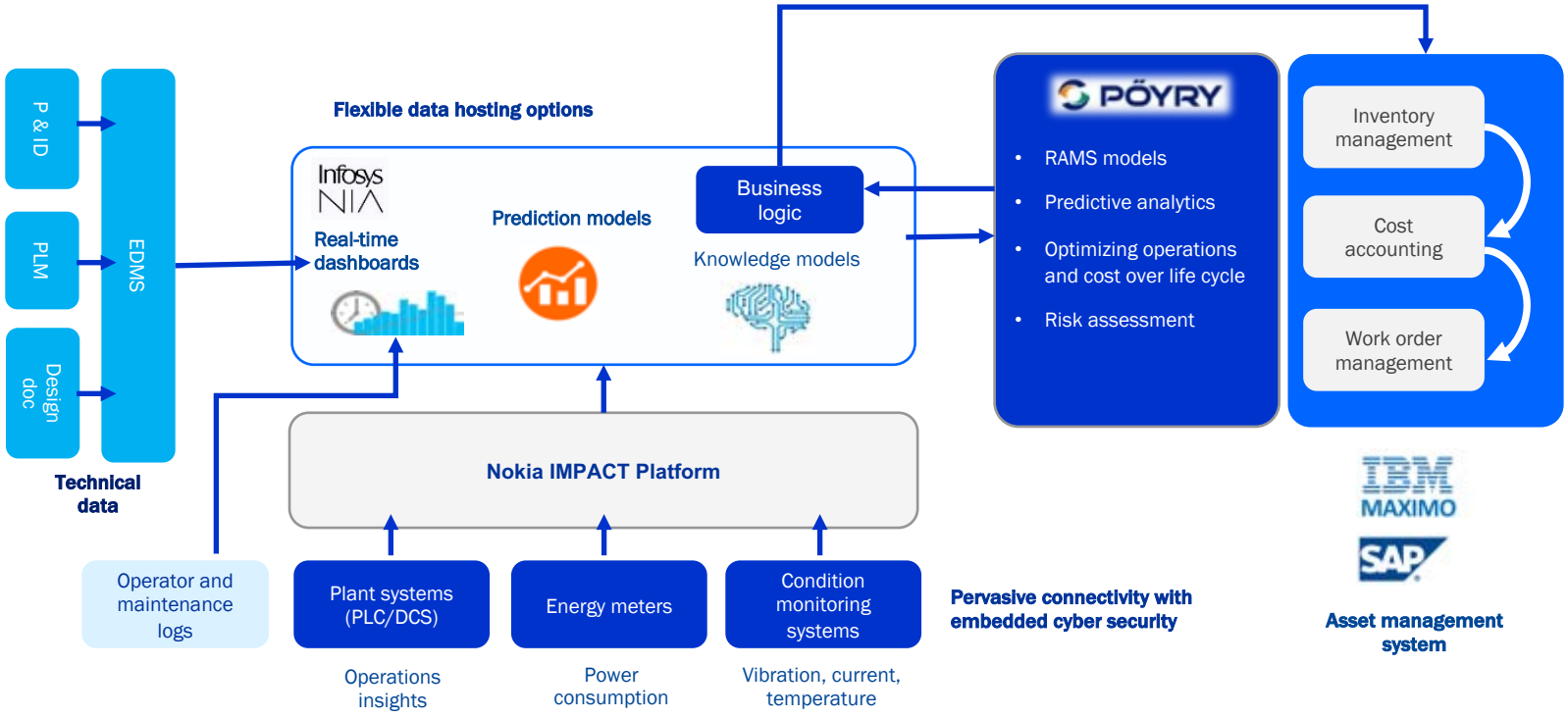
Applied systems design accounts for complexity, enables agile techniques and bridges the physical and digital worlds.



Infosys Knowledge Institute, 2021

Sustainability architecture: KRTI 4.0 AI platform

Industrial platform address plant operations challenges: Nokia, SAP, Pöyry and Infosys.



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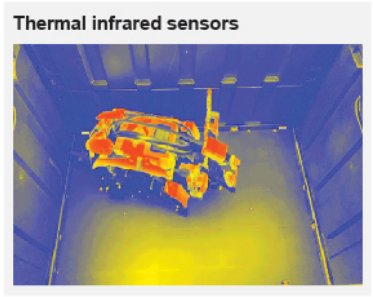
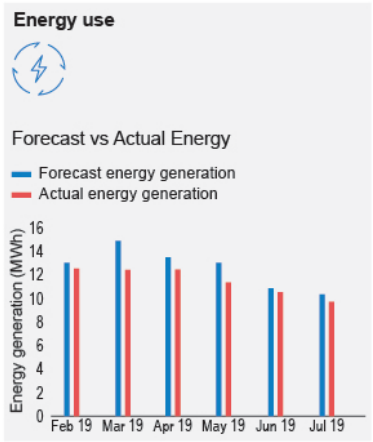
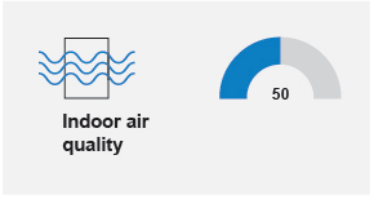
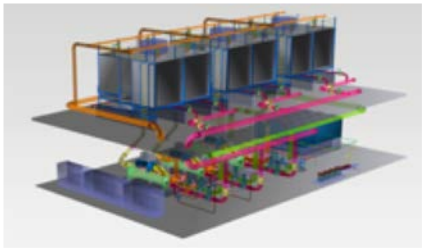
Digital twins simulate to analyze, monitor, and predict performance



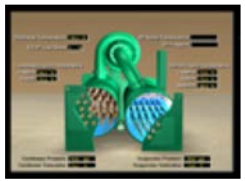


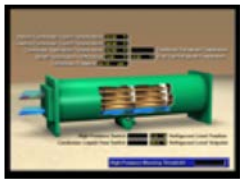


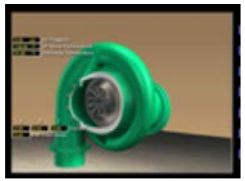
Mysore chiller plant



Digital model



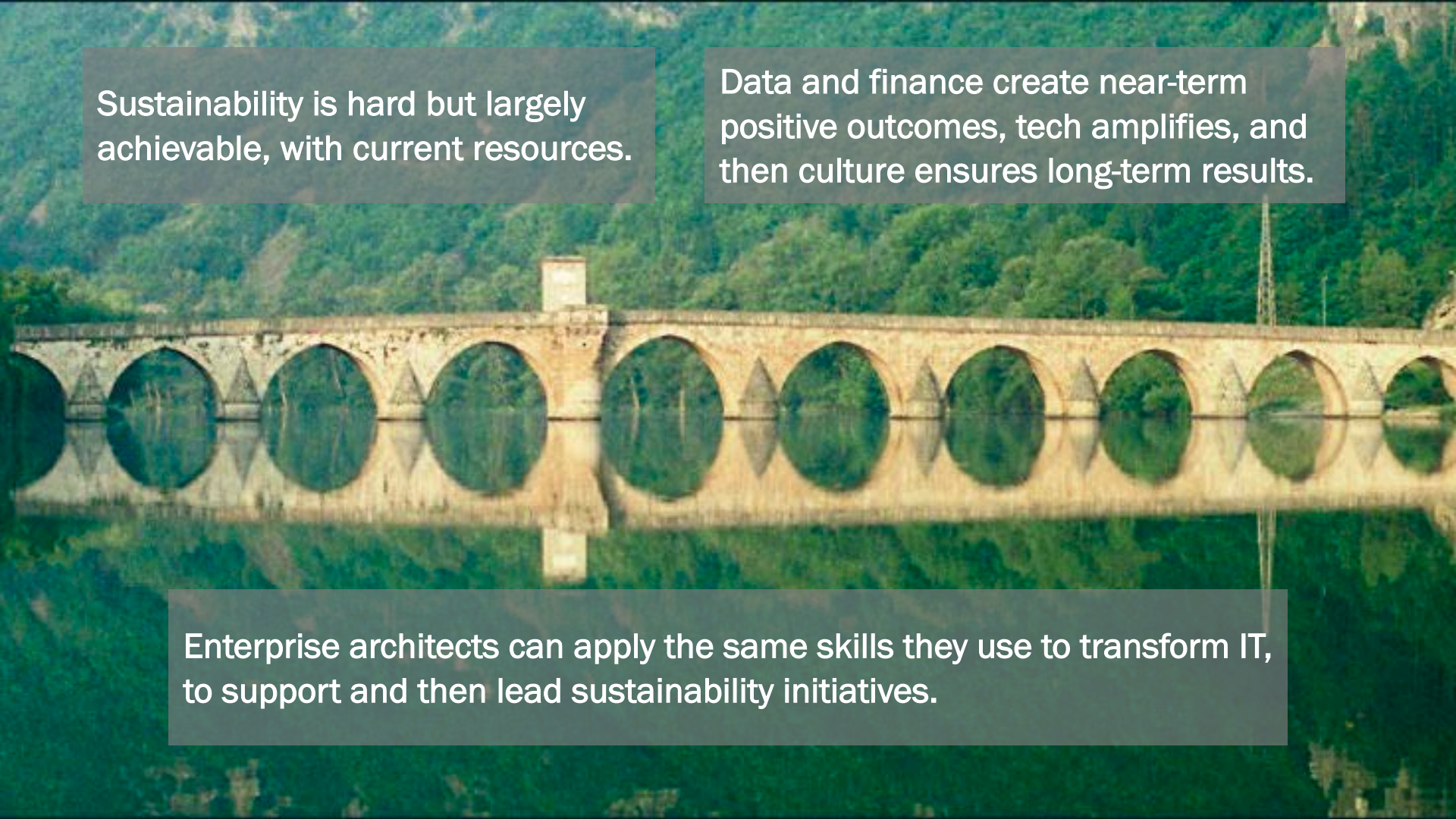




Chiller control integration

Prognosis

Predictive maintenance



Sustainability is hard but largely achievable, with current resources.

Data and finance create near-term positive outcomes, tech amplifies, and then culture ensures long-term results.

Enterprise architects can apply the same skills they use to transform IT, to support and then lead sustainability initiatives.

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