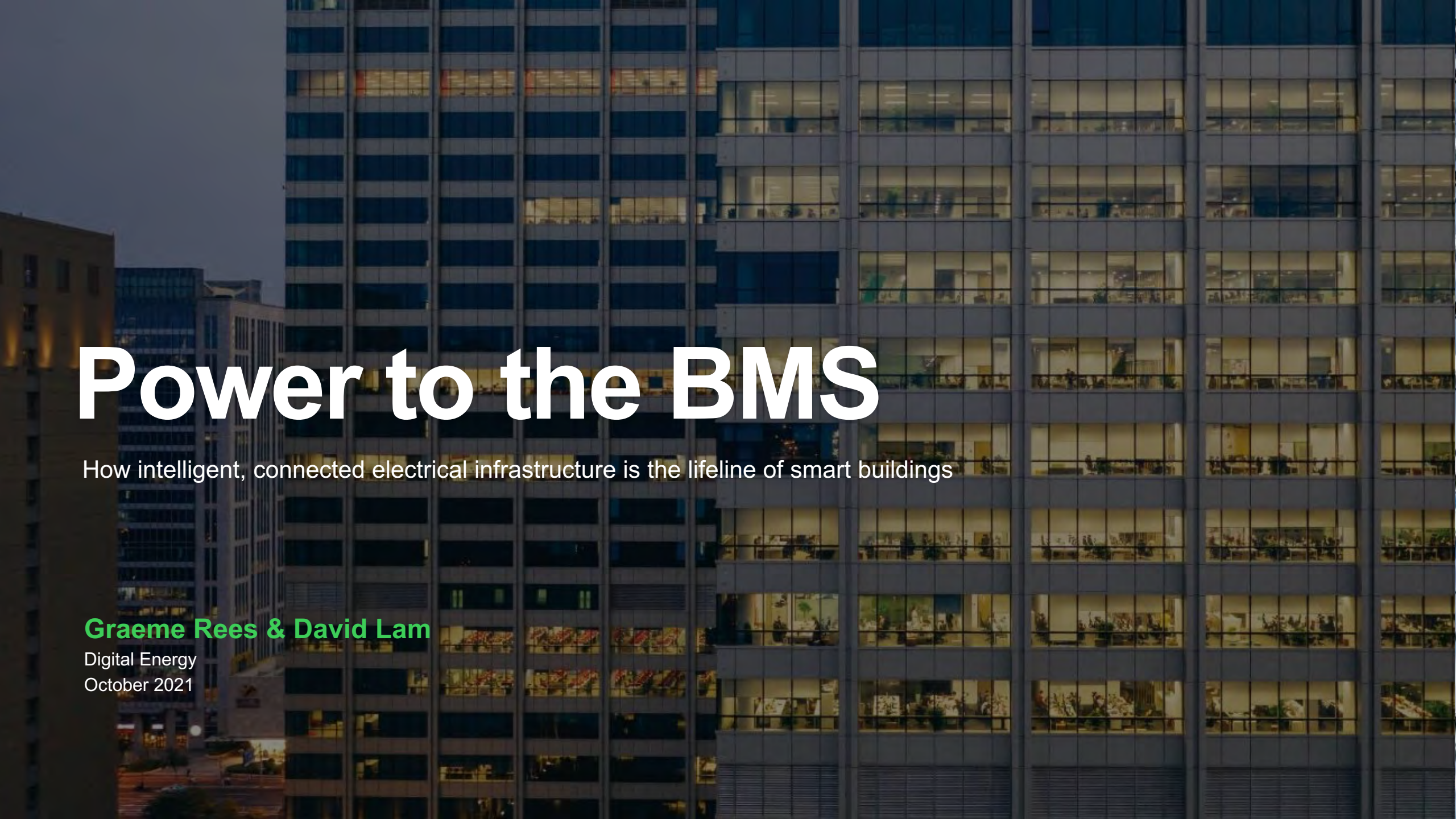
Smart Buildings SHOW

6-7 October 2021 • ExCeL London

THE UK'S LEADING DEDICATED SMART BUILDINGS EVENT

www.smartbuildingsshow.com

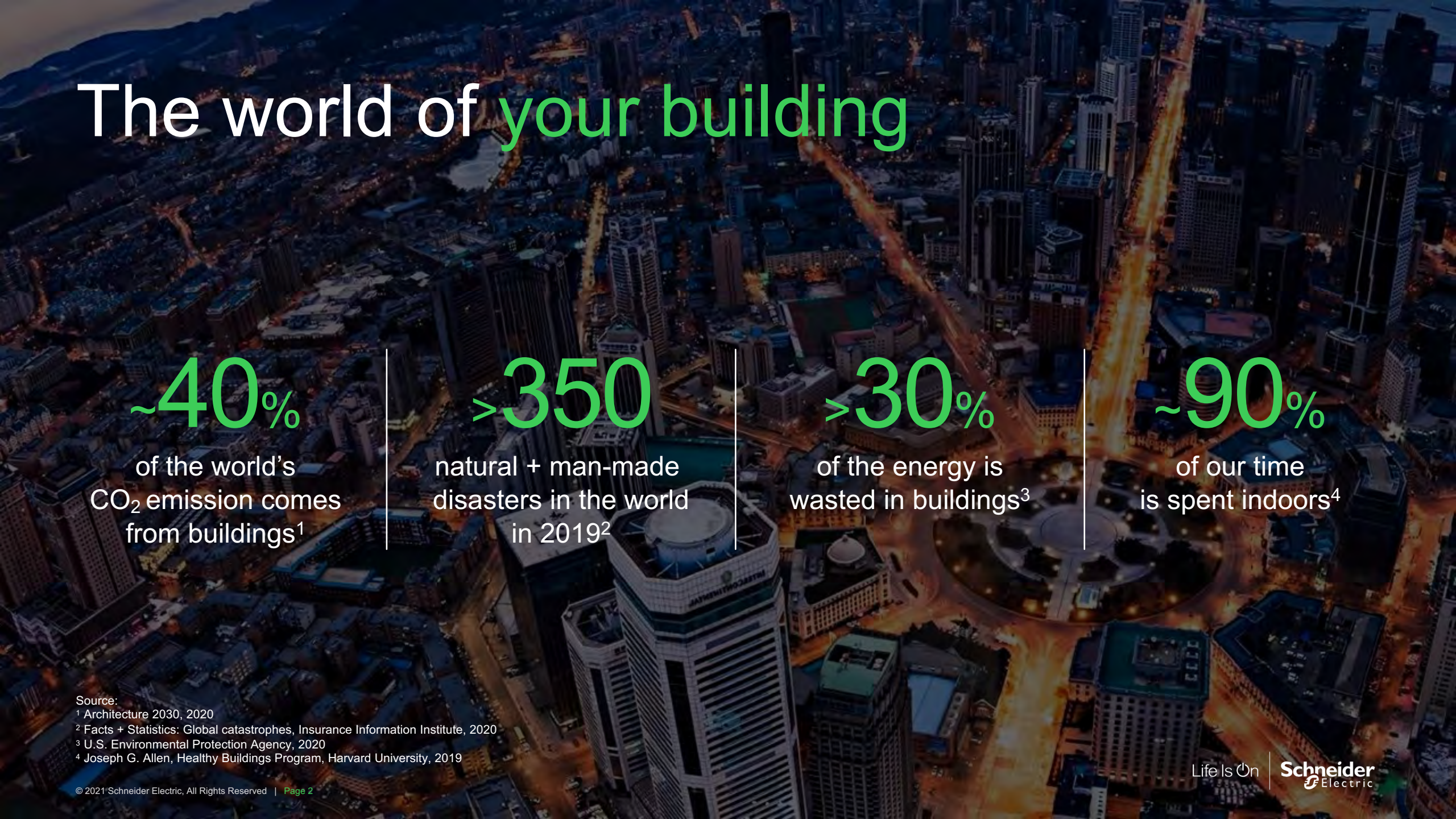


Power to the BMS

How intelligent, connected electrical infrastructure is the lifeline of smart buildings

Graeme Rees & David Lam
Digital Energy
October 2021

The world of your building



~40%

of the world's CO_2 emission comes from buildings[1]

>350

natural + man-made disasters in the world in 2019[2]

>30%

of the energy is wasted in buildings[3]

~90%

of our time is spent indoors[4]

Source:
[1] Architecture 2030, 2020
[2] Facts + Statistics: Global catastrophes, Insurance Information Institute, 2020
[3] U.S. Environmental Protection Agency, 2020
[4] Joseph G. Allen, Healthy Buildings Program, Harvard University, 2019

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Two major transitions already underway

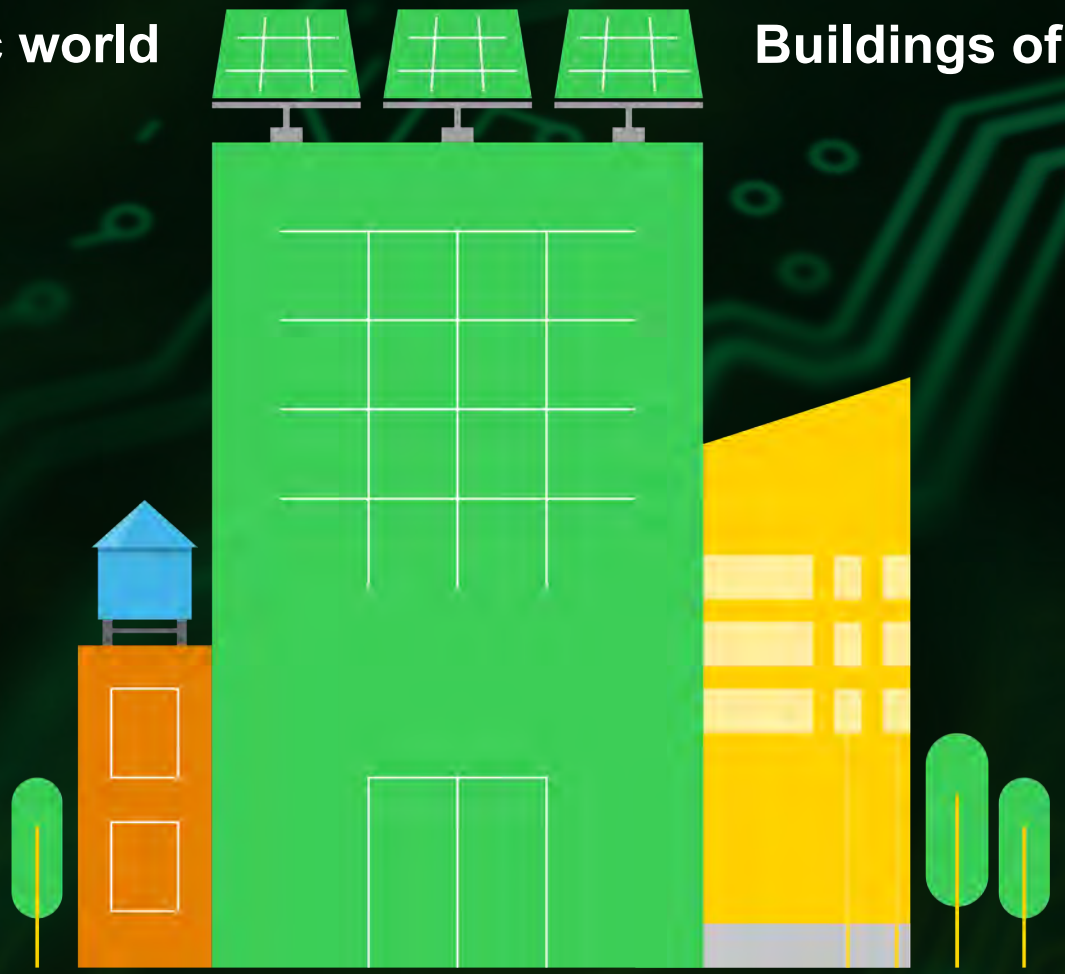
All-digital, all-electric world

Digitization

IoT **10x** more new connected devices than individuals
Source: GSMA 2019

Big Data **x5** 81 bn GB in 2017, 403 bn GB in 2021
Source: IDC, 2018

AI **x6** increase in AI expenditures between 2017 and 2022
Source: International Data Corporation, 2020



Buildings of the future

Electrification

50% of energy production will be solar or wind-driven by 2050
Bloomberg New Energy Finance, New Energy Outlook 2019

30% of vehicle stocks will become electric by 2040
Source: Bloomberg New Energy Finance, New Energy Outlook 2019

x2 Electricity consumption doubles until 2050
Source: Global Energy Perspective 2019, McKinsey, 2019

The foundation of buildings of the future

Sustainable

Equipped with flexible energy assets and various electric sources

Resilient

Recover quickly and bounce back

Hyper-efficient

Seamlessly controlled by end-to-end digital platform

People-centric

Designed to be responsive to people

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Sustainable

Buildings today

- 30% of the **world's energy**
  (Source: IEA, 2020)
- 40% of global **greenhouse emissions**
  (Source: IEA, 2020)
- Rely on **non-renewable energy resources**

Buildings tomorrow

- **60% reduction** of carbon emissions by 2040
- At least **40% green, renewable electricity**
- **Influential to decarbonization** of other industries

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Resilient

Buildings today

- Only as good as their **weakest** link
- **Threatened** by weather, cybersecurity, health and outages
- Face peak **highs and lows** for utilization

Buildings tomorrow

- More than 70% of operations **performed remotely**
- **Automation** and **predictive analytics** to minimize outages and failures
- **Cybersecurity protocols** to minimize risk level

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Hyper-efficient

Buildings today

- ~30% of construction cost is **rework** (source: Procore, 2018)
- **Disconnected**, disparate systems
- **Under-utilized** assets and space
- **Reactive** maintenance

Buildings tomorrow

- **Digital twin** leveraged from design to build, into the operation and maintenance phases
- **Energy and building automation integrated** by converging IT and OT systems
- Systems that are **connected to each other and to the cloud**

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People-centric

Buildings today

- **Required to implement** new health and safety guidelines
- **Challenged to improve** occupant experience
- **React to demands** for safe and productive environment

Buildings tomorrow

- **Monitoring** of occupant levels and health indicators
- Significantly improved **occupant experiences**
- **Semi-autonomously identify** issues and take actions

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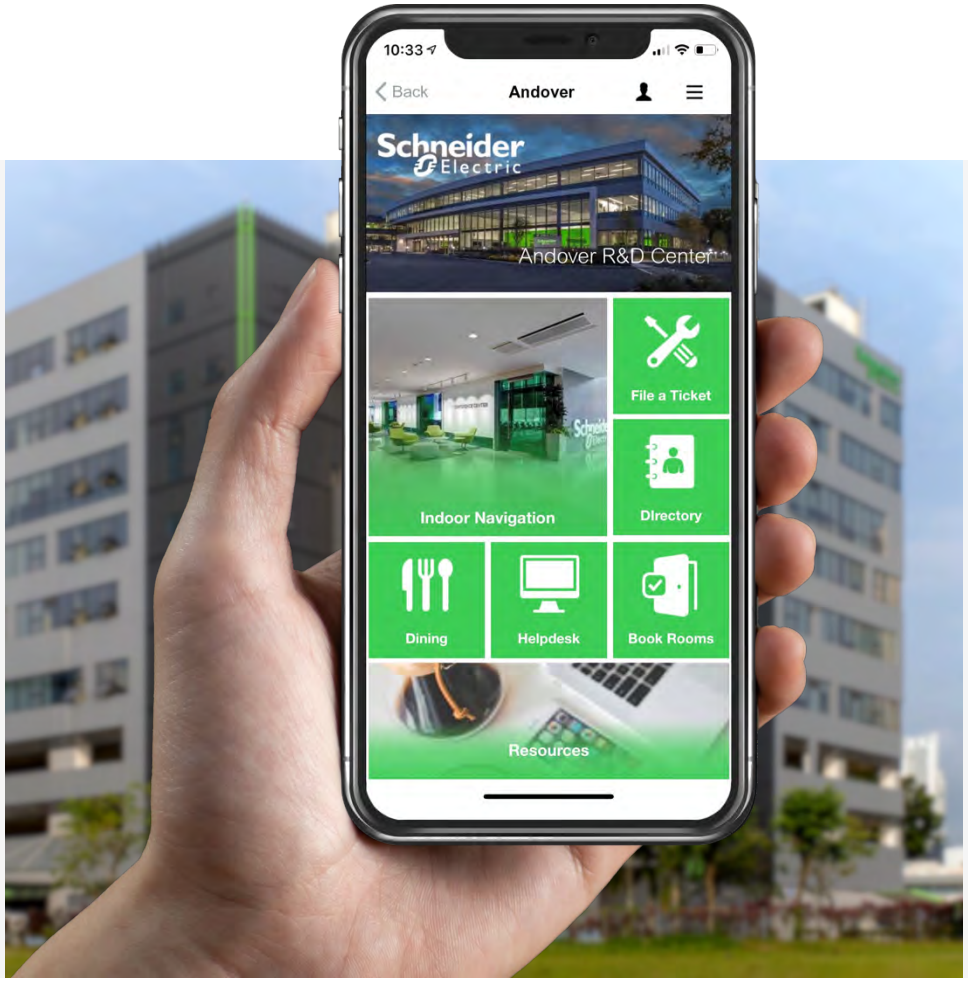
Putting control in the hands of users



Occupant engagement

EcoStruxure™ Engage Enterprise

- Room booking
- Helpdesk
- Company directory
- Dining
- Indoor navigation
- Access control
- File maintenance ticket
- Comfort control

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One minute of Instagram

Scrolling Instagram for 1 minute = eqiv. 1.55g CO2 (13 meters in a light vehicle)*
One hour of streaming Netflix consumes 0.8 kWh - enough to drive a Tesla Model S nearly 4 miles**
*Source: Greenspector **Source: The Shift Project

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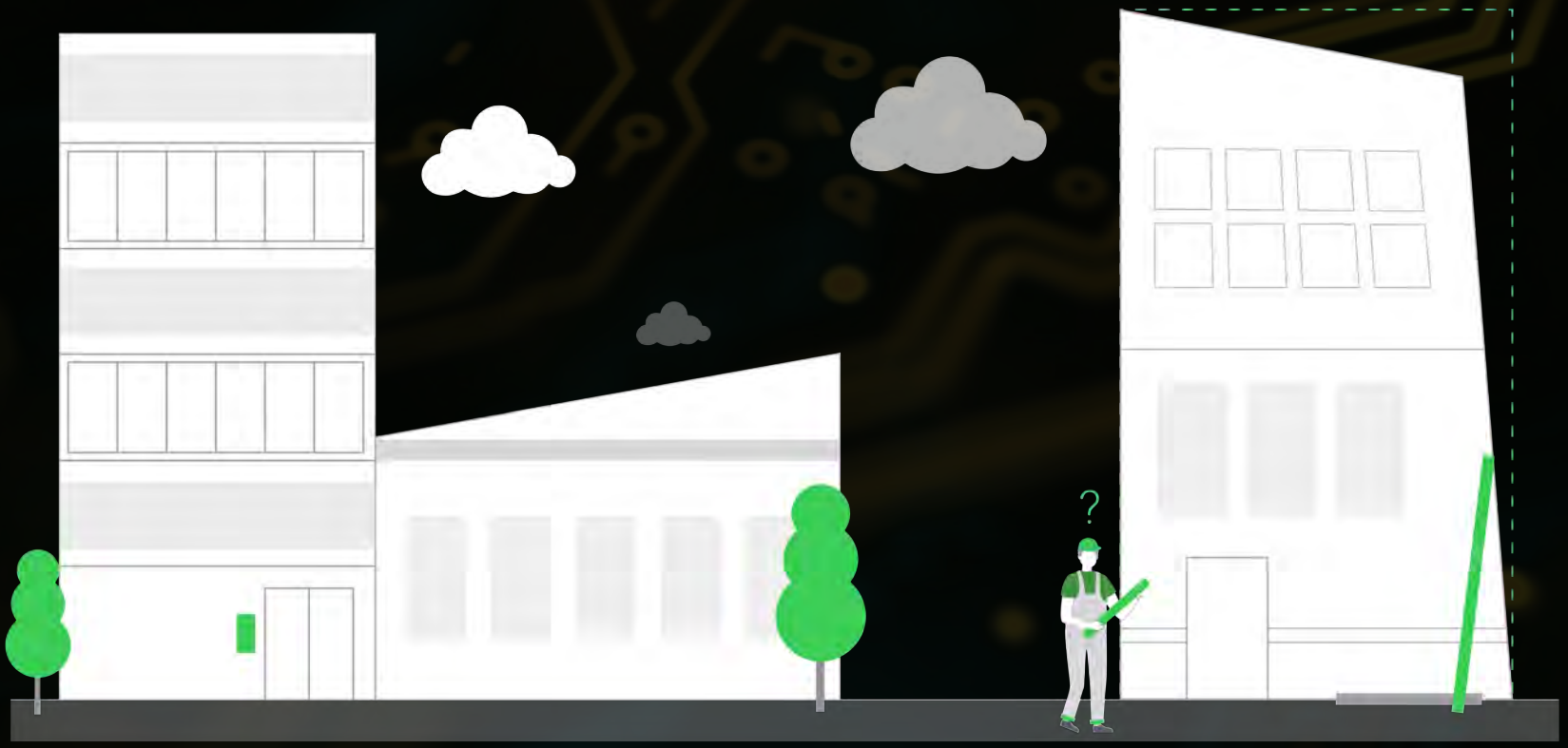
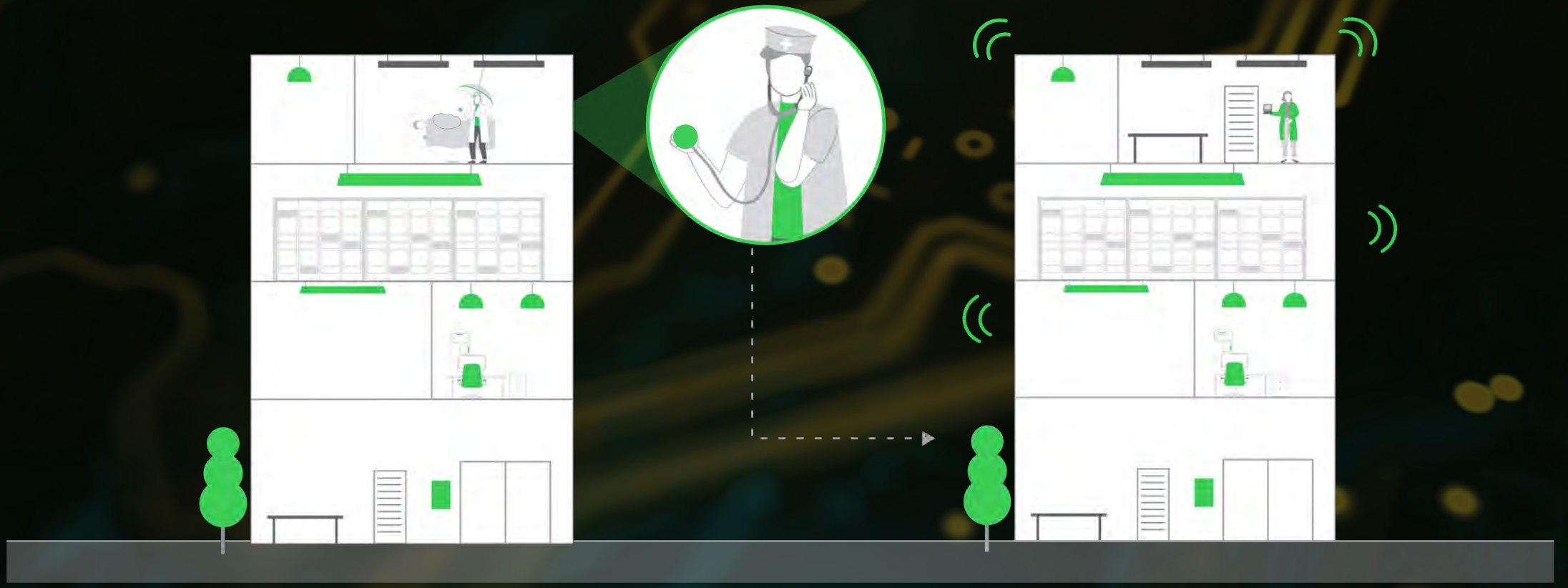
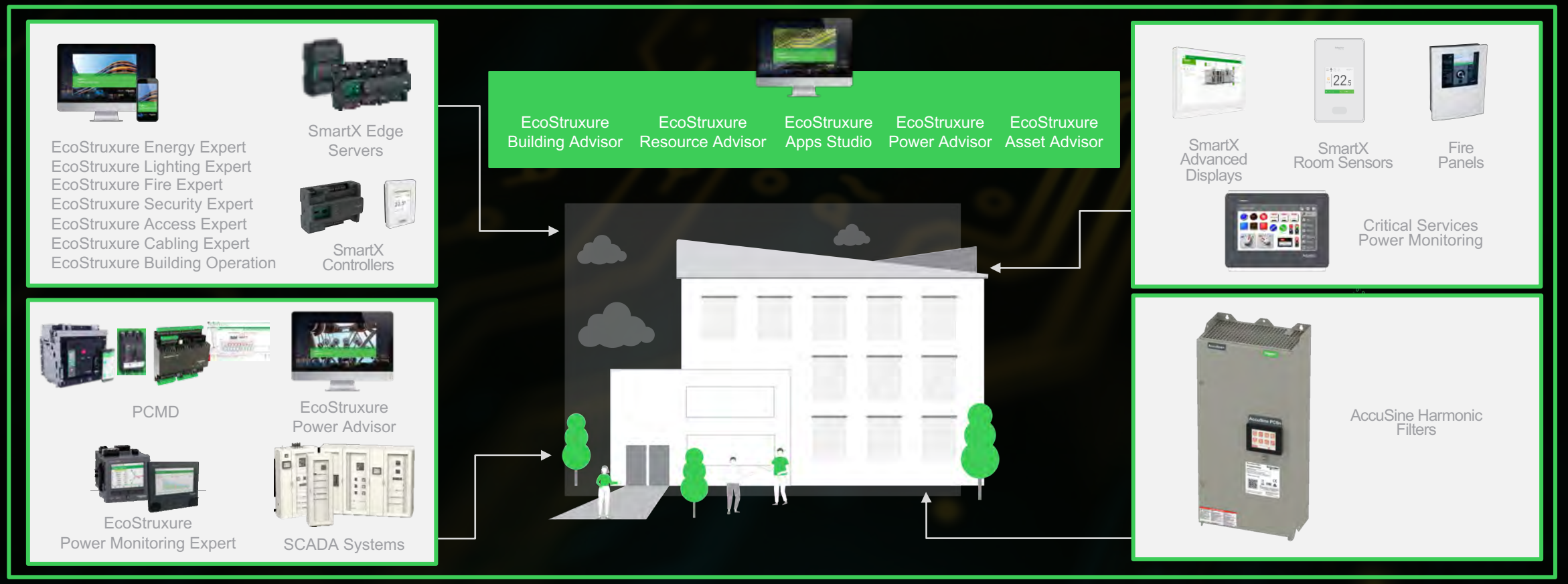
Ideal - design as much as you can, it still won't be accurate



Reality



The Building of the Future – Power to the BMS



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Buildings of the future across the life cycle

Leveraging the **all-digital, all-electric world**
for new and existing buildings

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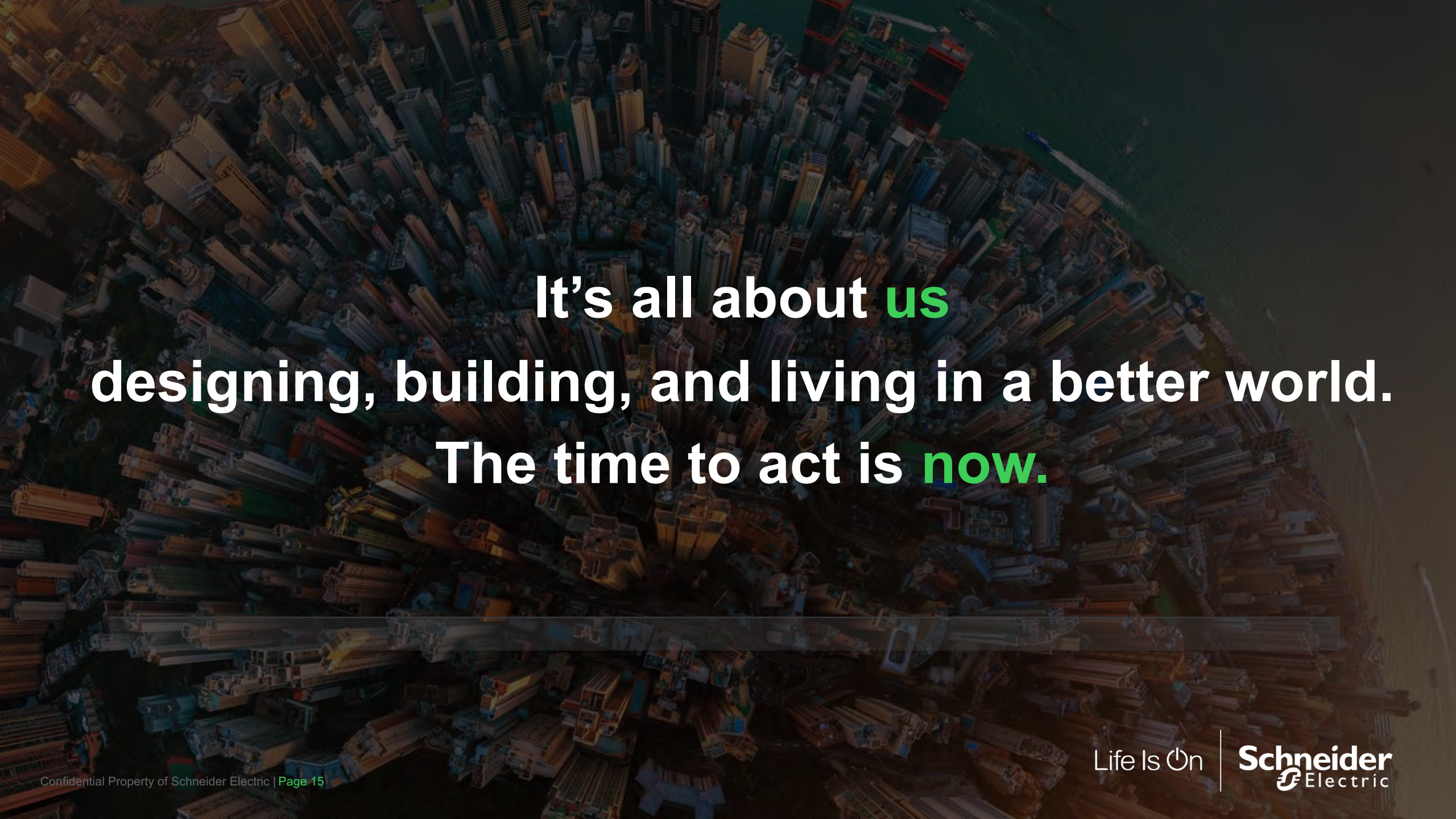

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We look forward to seeing you in 2022 at ExCeL, London

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12 - 13 October 2022 - ExCeL, London

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