ARE OUR BUILDINGS FIT FOR THE FUTURE?

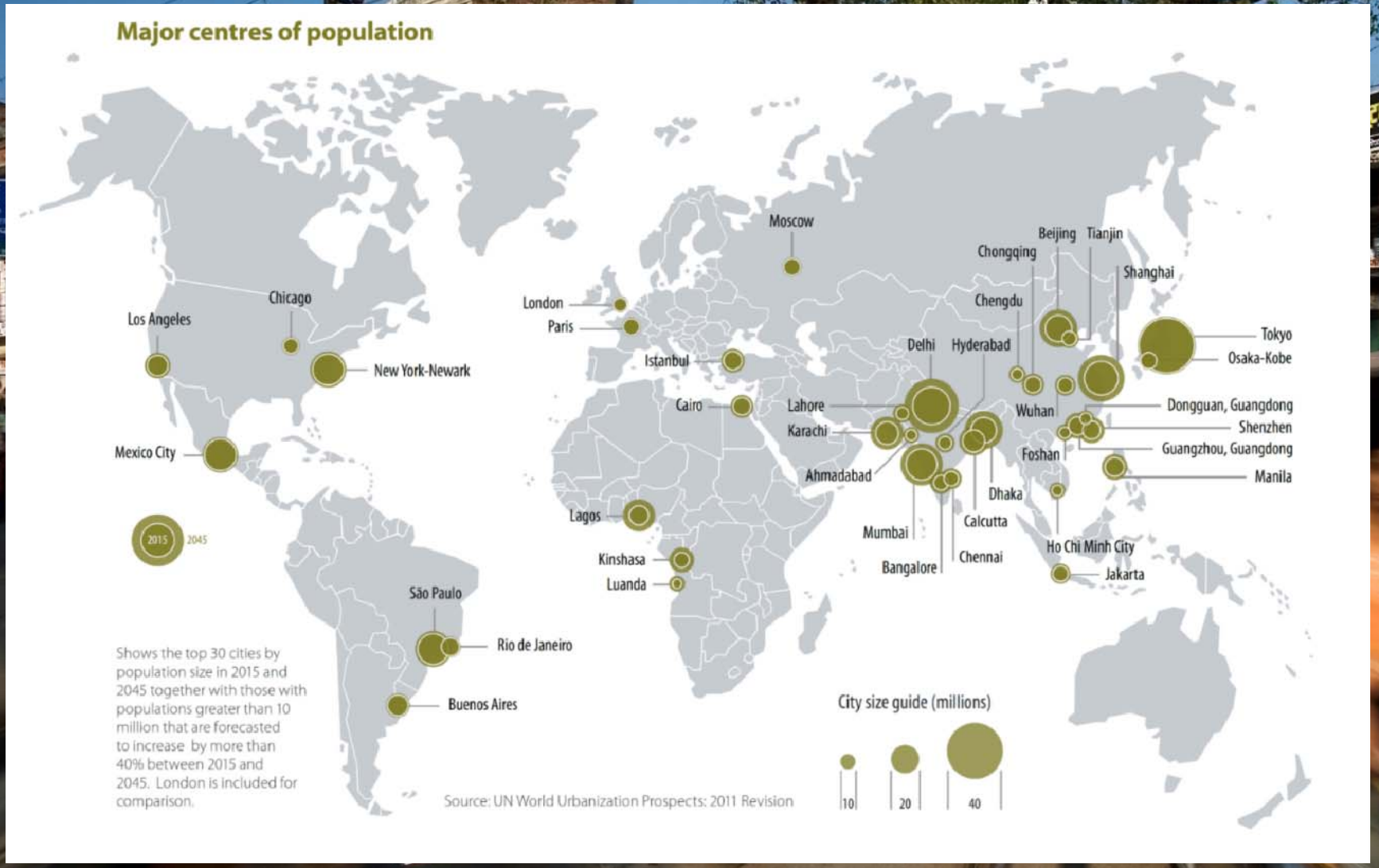
STRUCTURAL ENGINEERING FOR THE FUTURE

CAROLINE FIELD, HEAD OF RISK & RESILIENCE, BUROHAPPOLD ENGINEERING

GEOPOLITICS

BUROHAPPOLD ENGINEERING

URBANISATION



BUROHAPPOLD ENGINEERING

CLIMATE CHANGE

Water Stress

Air Pollution

Environment

Heat Stress

Sea Level Rise

BUROHAPPOLD ENGINEERING

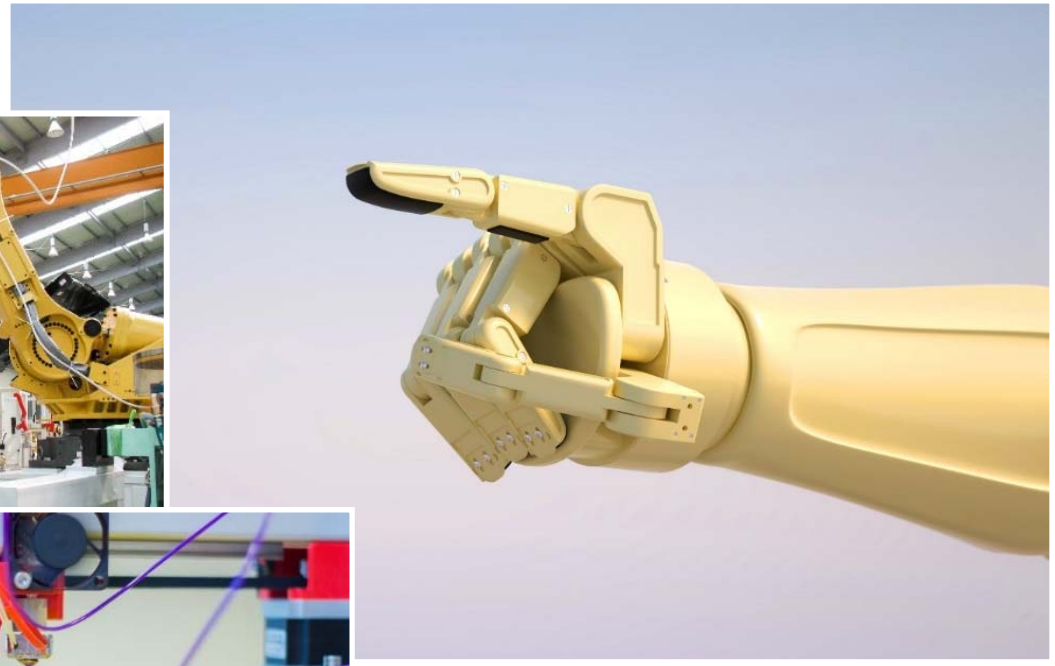
NATURAL HAZARDS

BUROHAPPOLD ENGINEERING

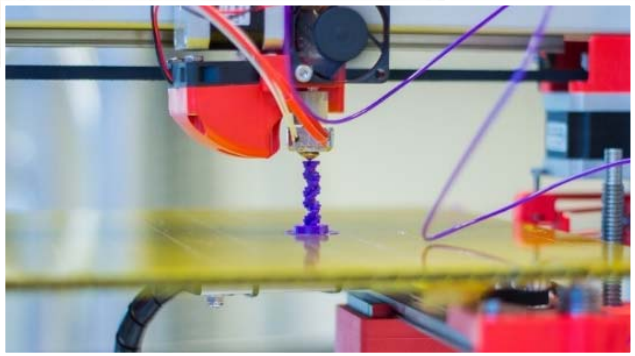
Thames valley, 2014

TECHNOLOGY

Artificial Intelligence



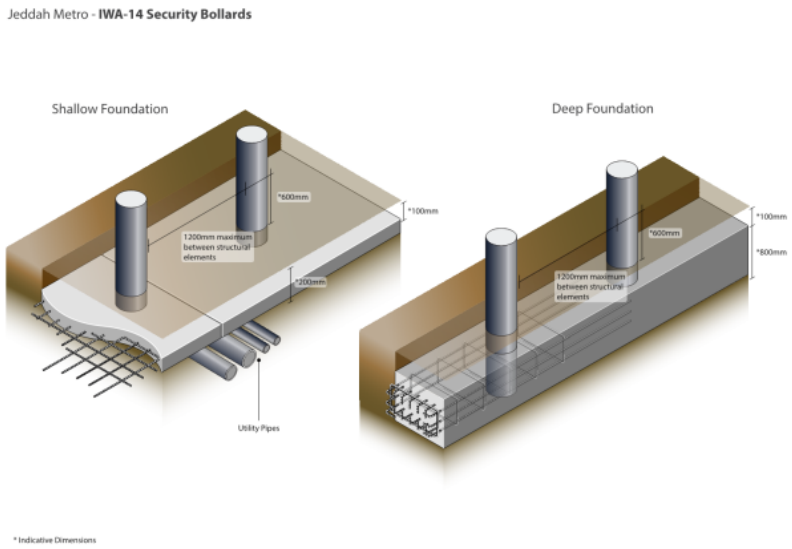
Automation

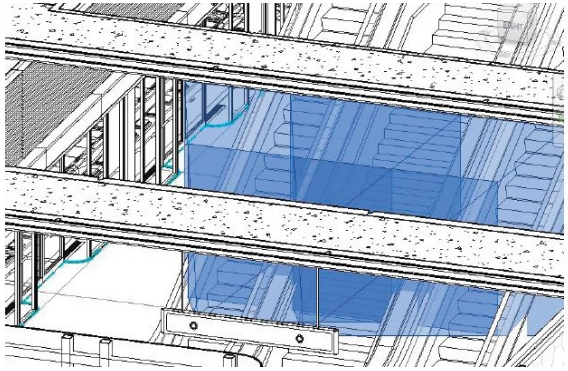


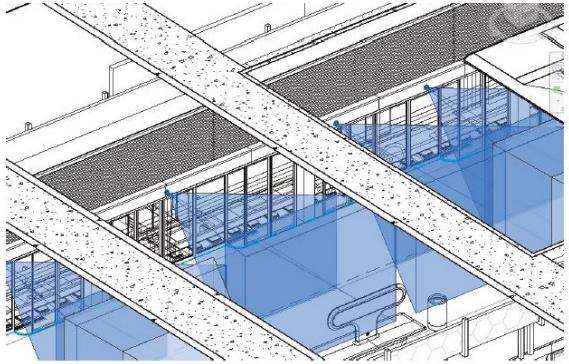
3D Printing

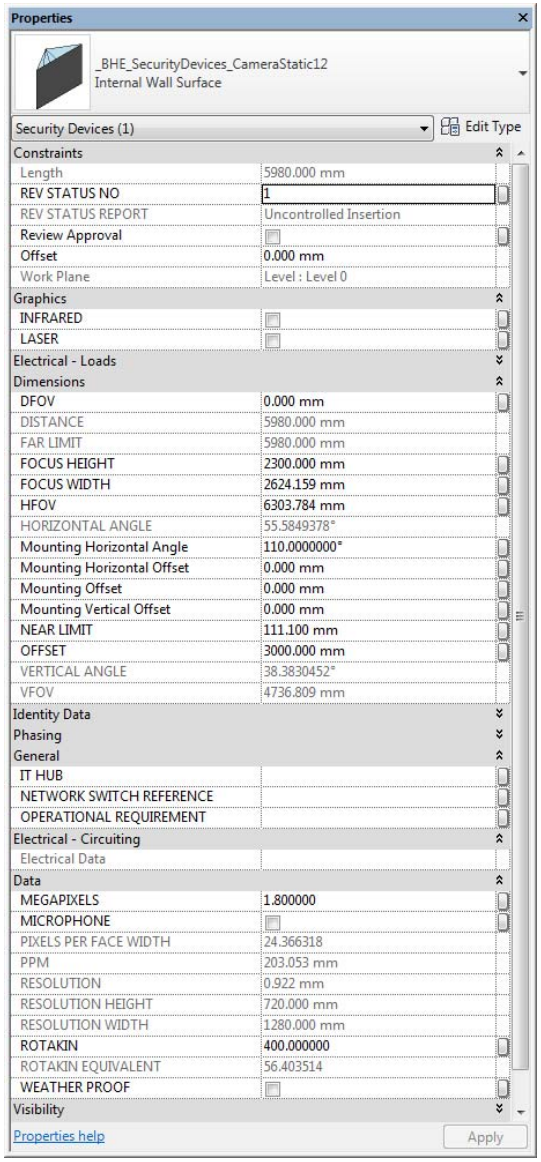
BUROHAPPOLD ENGINEERING

BUILDING INFORMATION MODELING









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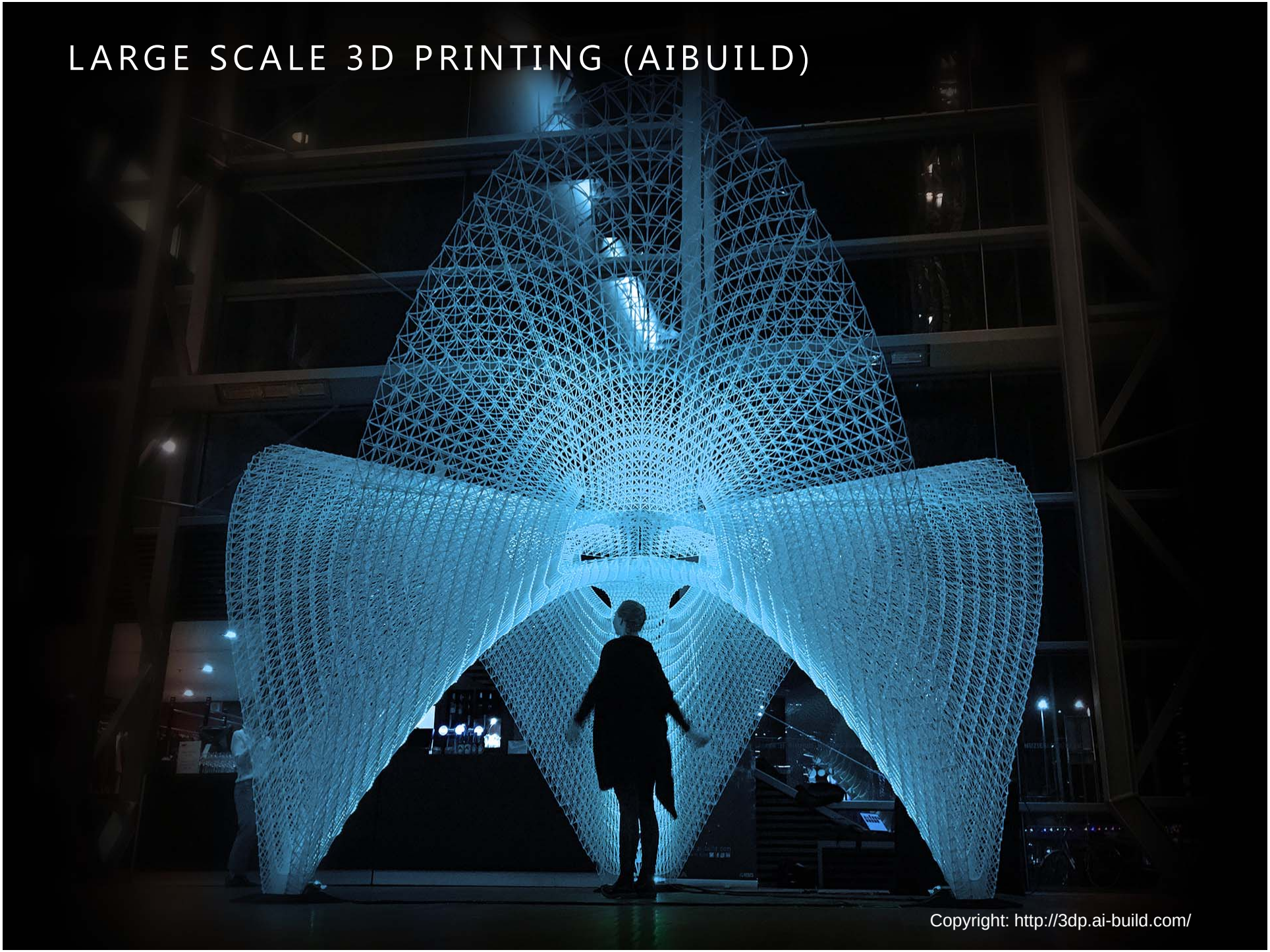
LARGE SCALE 3D PRINTING (AIBUILD)



AUTOMATION & AI

WHAT IS THE FUTURE ROLE OF ENGINEERS?

- SOCIETAL
- PEOPLE FOCUSED
- CONSULTATIVE
- EXPERIENCE
- INNOVATORS

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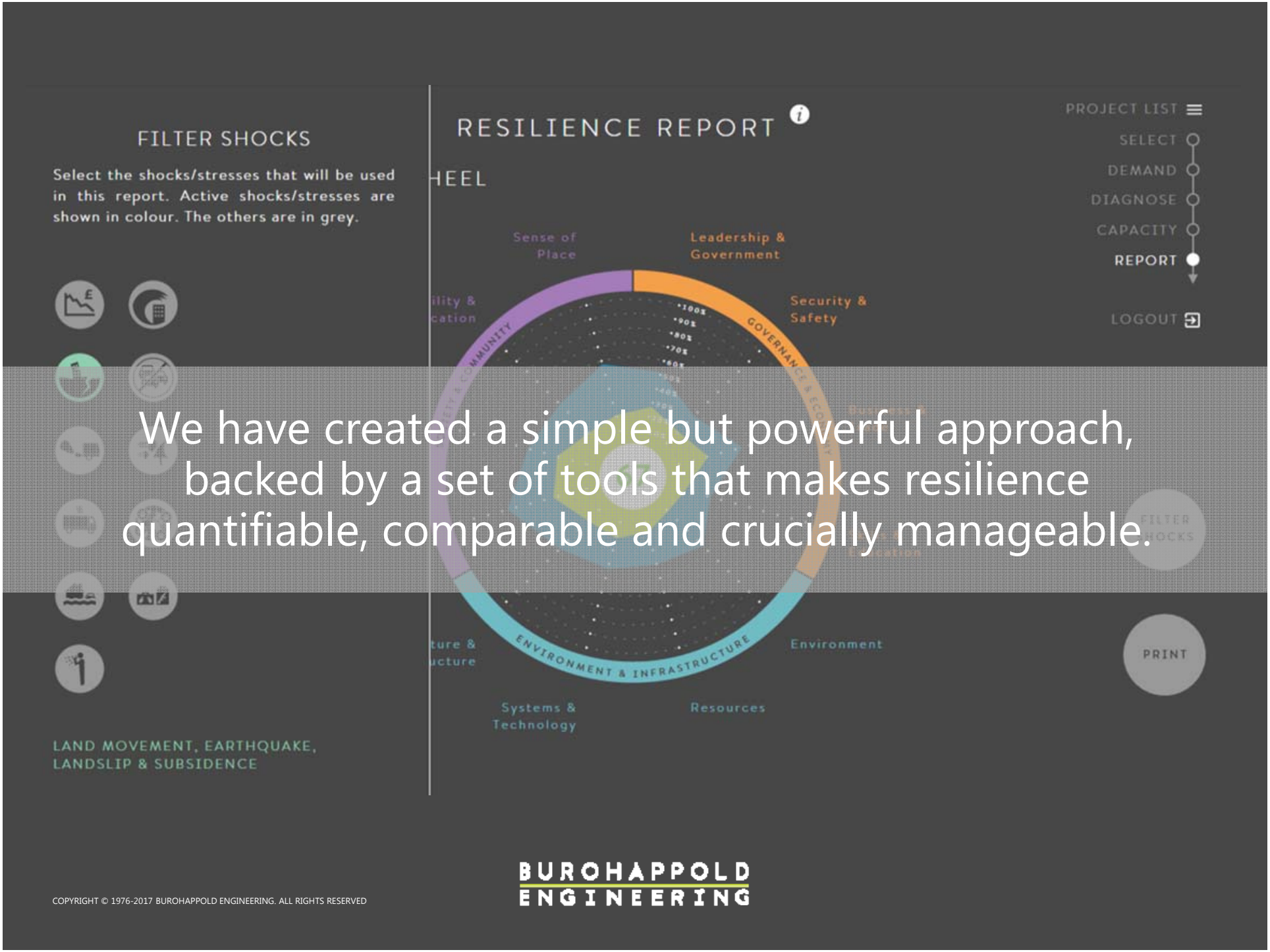

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UNDERSTANDING THE RISKS, UNCERTAINTIES & TRENDS

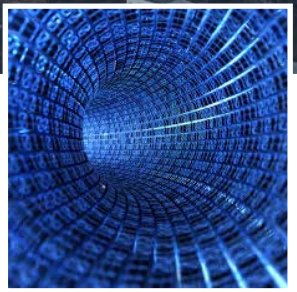
Infrastructure

Health

Societal Hazards

Natural

Security



Technological

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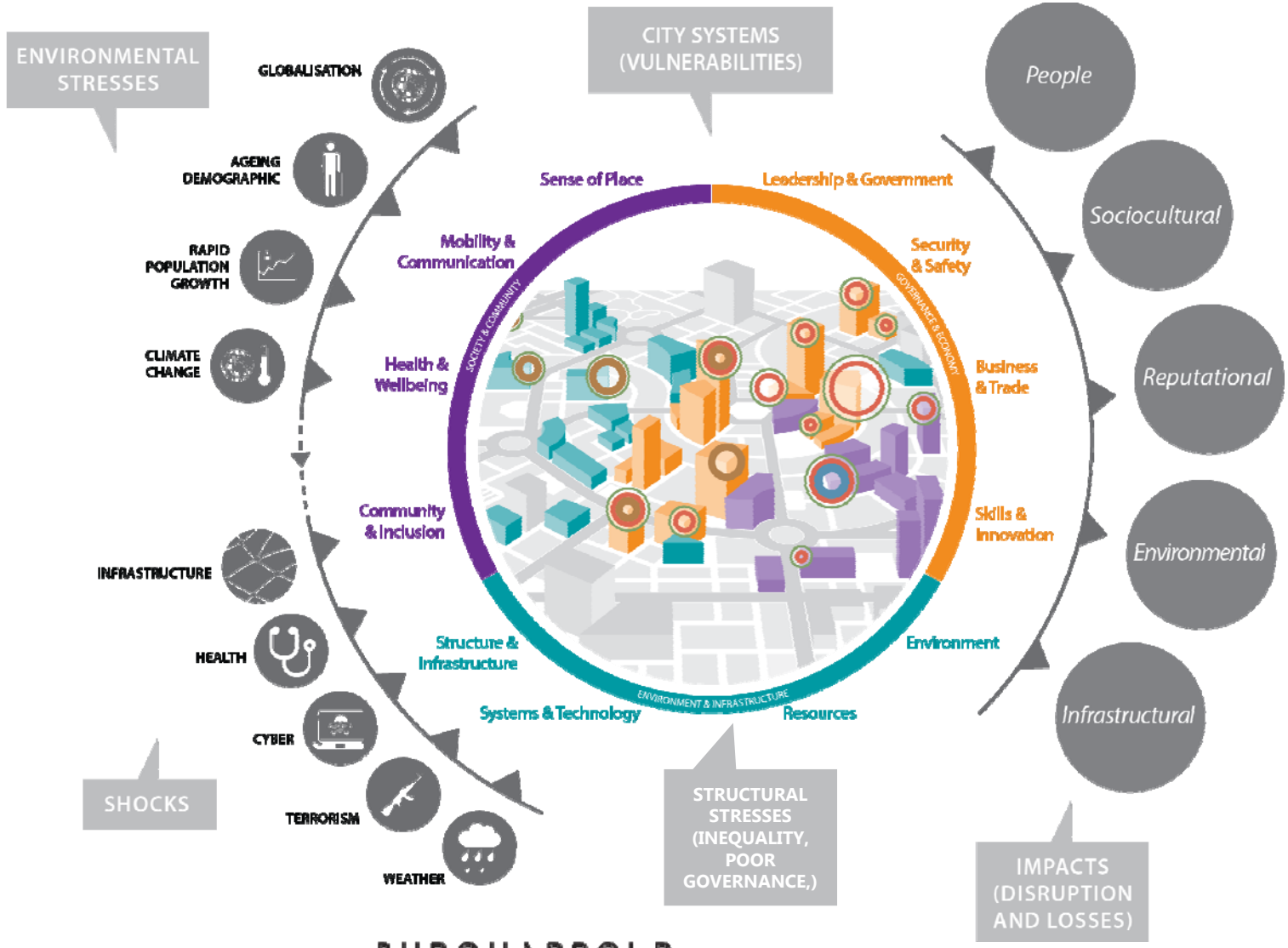
RESILIENCE DEMAND



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RESILIENCE CAPACITY

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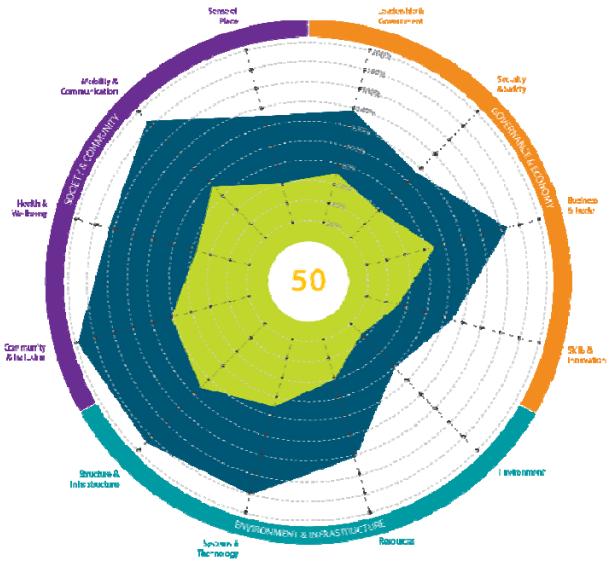
CITY RESILIENCE



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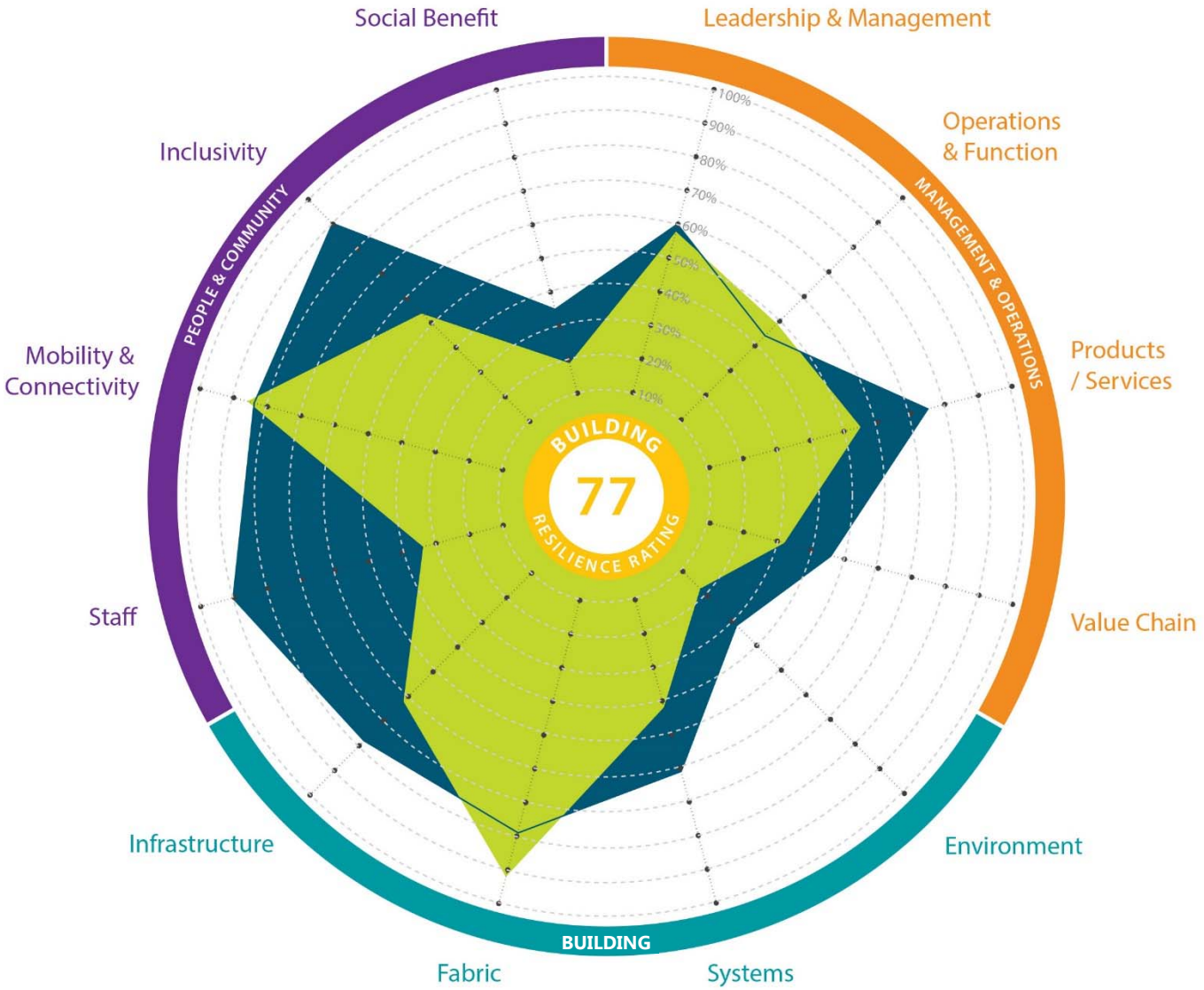
BUILDING RESILIENCE



BUROHAPPOLD ENGINEERING

HOW DO WE NEED TO ADAPT?

- EMBRACE TECHNOLOGY
- EDUCATION
- STRESS TESTING
  - WHAT IF SCENARIOS
  - RISK BASED
  - UNDERSTANDING UNCERTAINTY
  - CONSIDER SHOCKS, STRESSES AND FUTURE TRENDS
  - PERFORMANCE BASED
  - FAIL-SAFE DESIGN
  - CONSIDER WIDER SOCIETAL & ECONOMIC EFFECTS OF FAILURE

Thank You!

risk&resilience@burohappold.com