Presentation 5

Human-Centred Design

Creating inclusive environments

Ruth Hynes, Associate Design Researcher

building design.

ATKINS
Member of the SNC-Lavalin Group
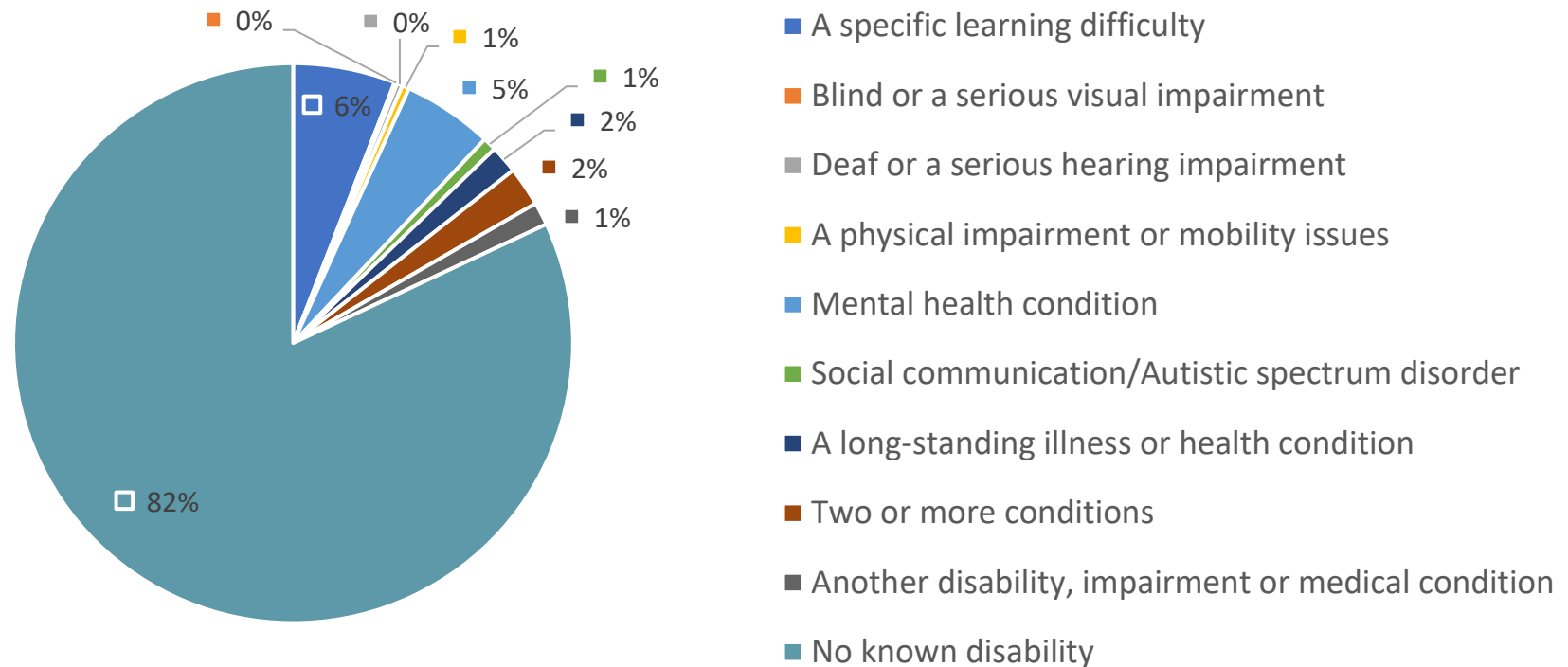
Diverse needs
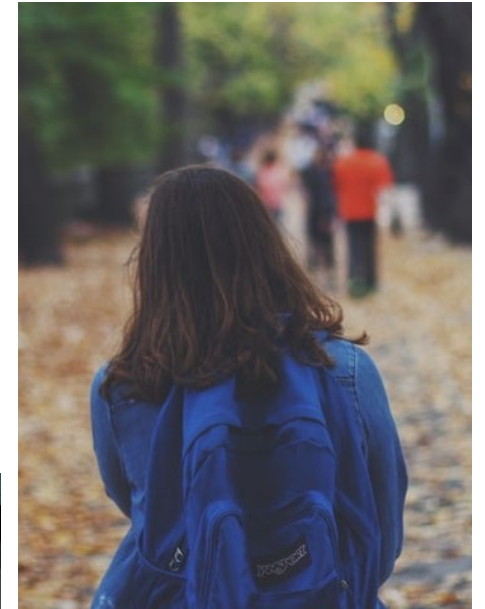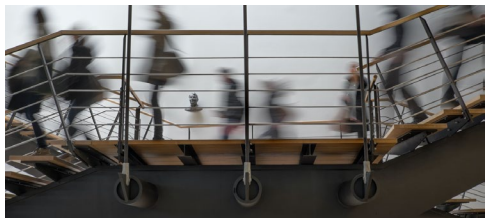
15% of students in 2020/21 were known to have a disability.

This has increased in recent years largely due to students reporting mental health conditions or a specific learning difficulty such as dyslexia, dyspraxia or AD(H)D.

- A specific learning difficulty
- Blind or a serious visual impairment
- Deaf or a serious hearing impairment
- A physical impairment or mobility issues
- Mental health condition
- Social communication/Autistic spectrum disorder
- A long-standing illness or health condition
- Two or more conditions
- Another disability, impairment or medical condition
- No known disability

Source: HESA Student Survey, 2021

Mental health

5% of students reported a mental health condition in their university applications.

In contrast to formally reported conditions, around **40% of students may fit criteria of mental health condition** (2020/21)
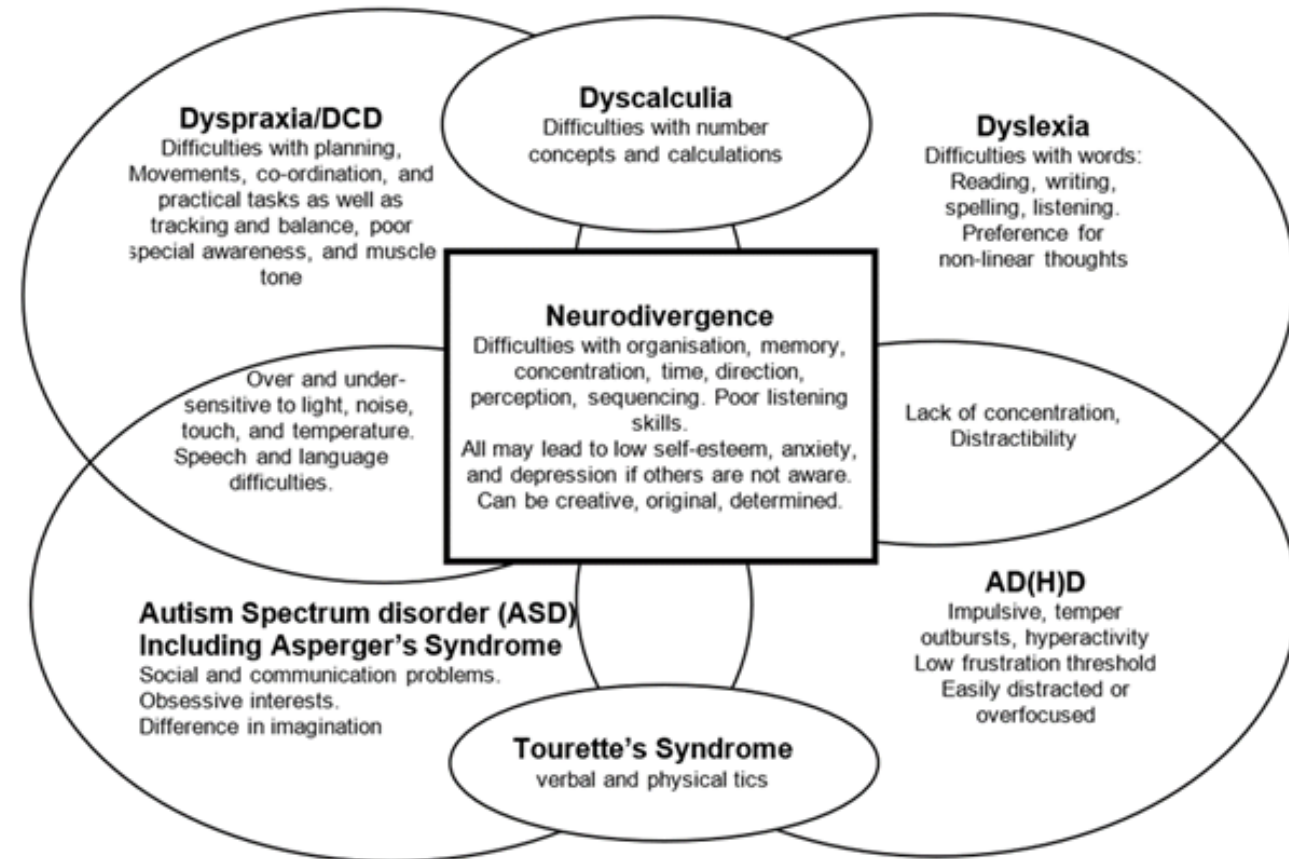

Comparison of key measures
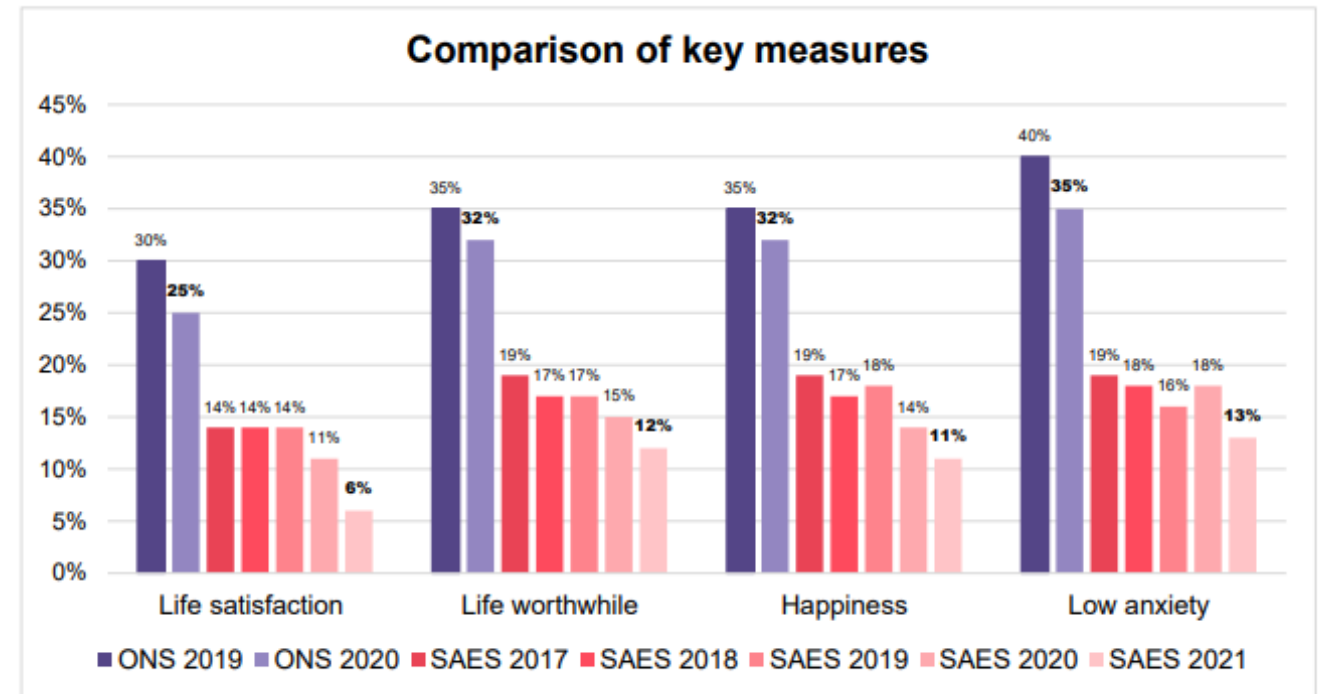
Percentages calculated from all respondents scoring 9–10 out of 10 for life satisfaction, life worthwhile, happiness; 0–1 out of 10 for anxiety.

Legend: ■ ONS 2019 ■ ONS 2020 ■ SAES 2017 ■ SAES 2018 ■ SAES 2019 ■ SAES 2020 ■ SAES 2021

Neurodiversity

1% of students reported autism spectrum disorder in their university applications.

6% of students reported a learning difficulty in their university applications.

It is estimated that around 1 in 7 people in the UK are **neurodivergent (14%)**

Dyspraxia/DCD
Difficulties with planning, Movements, co-ordination, and practical tasks as well as tracking and balance, poor special awareness, and muscle tone

Dyscalculia
Difficulties with number concepts and calculations

Dyslexia
Difficulties with words: Reading, writing, spelling, listening. Preference for non-linear thoughts

Over and under-sensitive to light, noise, touch, and temperature. Speech and language difficulties.

Neurodivergence
Difficulties with organisation, memory, concentration, time, direction, perception, sequencing. Poor listening skills.
All may lead to low self-esteem, anxiety, and depression if others are not aware.
Can be creative, original, determined.

Lack of concentration, Distractibility

Autism Spectrum disorder (ASD) Including Asperger's Syndrome
Social and communication problems.
Obsessive interests.
Difference in imagination

AD(H)D
Impulsive, temper outbursts, hyperactivity
Low frustration threshold
Easily distracted or overfocused

Tourette's Syndrome
verbal and physical tics

Source: Neurodivergence and online learning through the pandemic: What is neurodiversity? (Post 1 of 3) : #ALTC Blog

Our experience of the environment

The challenge of existing estates

In 2021 student network People and Planet annual [sustainability university league](#) found that:

46% of higher education institutions were on course to meet the target, up from a third in 2019.

But majority were still not on track to meet the target set for the 2020-21 by Hefce

Source: Majority of universities in UK 'not on track to meet emissions targets' | Universities | The Guardian

Student expectations – Sustainable Campus

Q. Which methods of reducing climate change should your university prioritise?

1. REDUCE BUILDING CARBON (48%)
2. REDUCE ENERGY USED IN HEATING/COOLING (38%)
3. INFORM STUDENTS ABOUT CARBON REDUCTION (33%)
4. REDUCE CARBON IMPACT OF TRANSPORT (31%)
5. COMMUNITY CARBON REDUCTION PROJECTS (30%)
6. IMPROVE BIODIVERSITY ON CAMPUS (27%)
7. REDUCE CARBON IMPACT OF FOOD CONSUMED (25%)
8. INCREASE IN ONLINE TEACHING & RESEARCH (22%)
9. PLAN FACILITIES FOR MORE EXTREME WEATHER EVENTS (16%)
10. IMPROVE LOCAL COMMUNITY ACCESS TO UNIVERSITY FACILITIES (11%)
11. SOMETHING ELSE (1%)
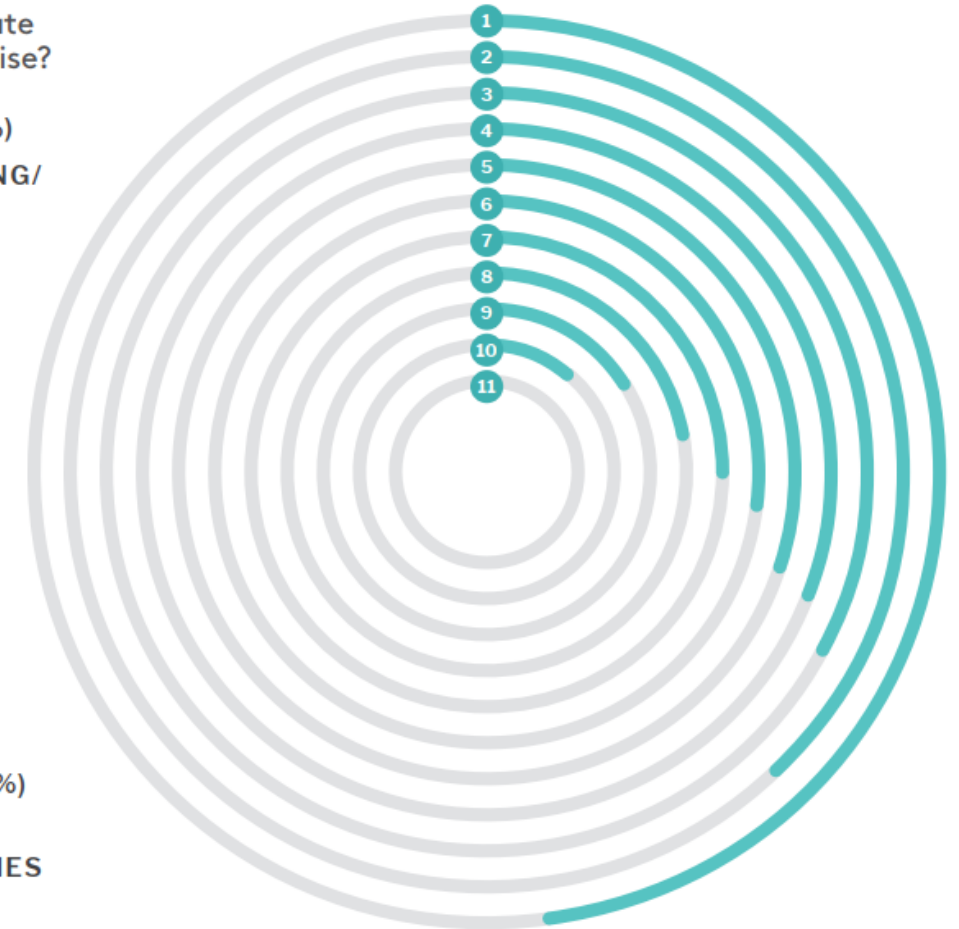
Source: HEDQF Survey Views, Sustainable Campus, 2020

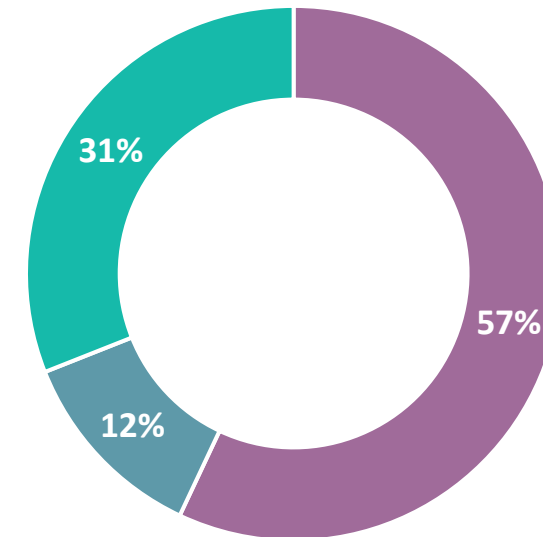# A new normal?

If there were no pandemic restrictions, how would you prefer to learn?

31%
57%
12%

■ Mostly in-person   ■ Mostly online   ■ A blended approach
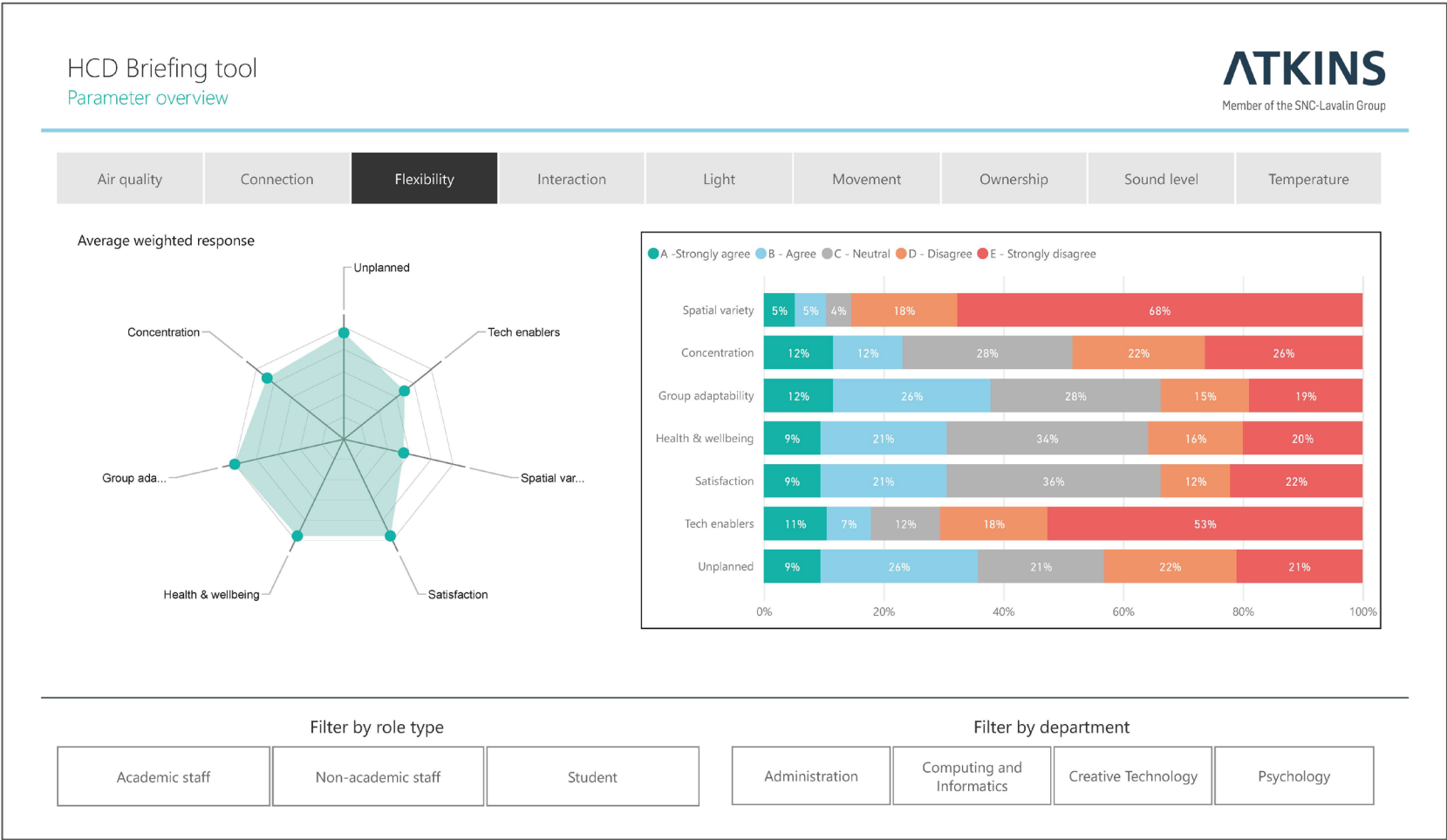
Source: HESA Student Survey, 2021

What are the biggest challenges you are seeing post-pandemic?

Is this changing how future plans for your estates, or how you think about estates planning?

Do you think priorities have changed?

Human-Centred Design Tool

Nine wellbeing factors

HCD Briefing tool

The alignment of plan and wellbeing factors

Connected Multi-tasker (31%)

Wellbeing factors

Interaction | Sound | Flexibility | Ownership

Undertakes a wide variety of working activities & meetings

Less concerned with privacy

Values phyiscal proximity to colleagues, but not a visual connection

Concerned with impact of workplace density on sound levels

Key activities & preferred spatial attributes

Desk based research
- Desk / work station (87%)
- Quiet environment (84%)
- Natural light (69%)
- Privacy (47%)

Meetings with University colleagues
- Privacy (72%)
- Near colleagues (47%)
- Quiet environment (44%)
- Adaptable furniture (37%)

Localised Collaborator (54%)

Wellbeing factors

Light | Interaction | Sound | Connection

Spend most of their time working alone or with collegaues in same department

Values collaboration, but interaction is less frequent and mostly planned

Prefers to work in a quiet environment

Concerned with background noise

Key activities & preferred spatial attributes

Desk based research
- Quiet environment (82%)
- Natural light (70%)
- Desk /work station (67%)
- View outside (50%)

Group / project work
- Adaptable furniture (53%)
- Near colleagues (42%)
- Natural light (39%)
- Quiet environment (37%)

Focussed Tasker (15%)

Wellbeing factors

Light | Sound | Movement | Connection

Spend most of their time working alone in their own building

More sedentary than other groups due to nature of work

Requires moderate privacy, mostly visual

Not as concerned with workplace density

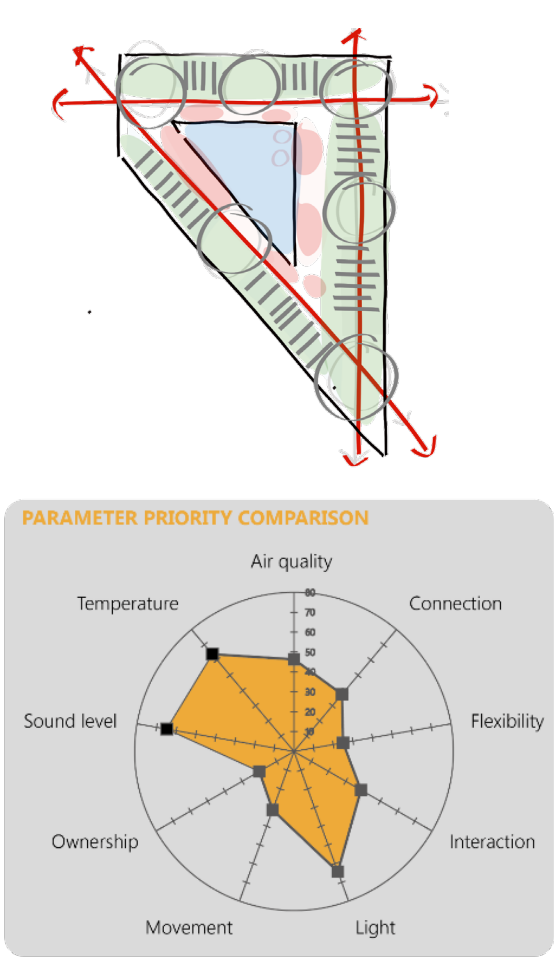**Key activities & preferred spatial attributes**

Desk based research
- Desk /work station (81%)
- Quiet environment (75%)
- Natural light (50%)
- Privacy (37%)

Writing papers / assignment
- Quiet environment (94%)
- Desk / work station (75%)
- Natural light (44%)
- Privacy (31%)

PARAMETER PRIORITY COMPARISON

Air quality — Connection — Flexibility — Interaction — Light — Movement — Ownership — Sound level — Temperature

Collaboration and Atrium

Delivering a 3-dimensional spatial order

Allows workspace to relate to collaboration space and the atrium

Spaces clearly related to each other

Creation of inbetween spaces between atrium and workspaces

HCD & refurbishment projects
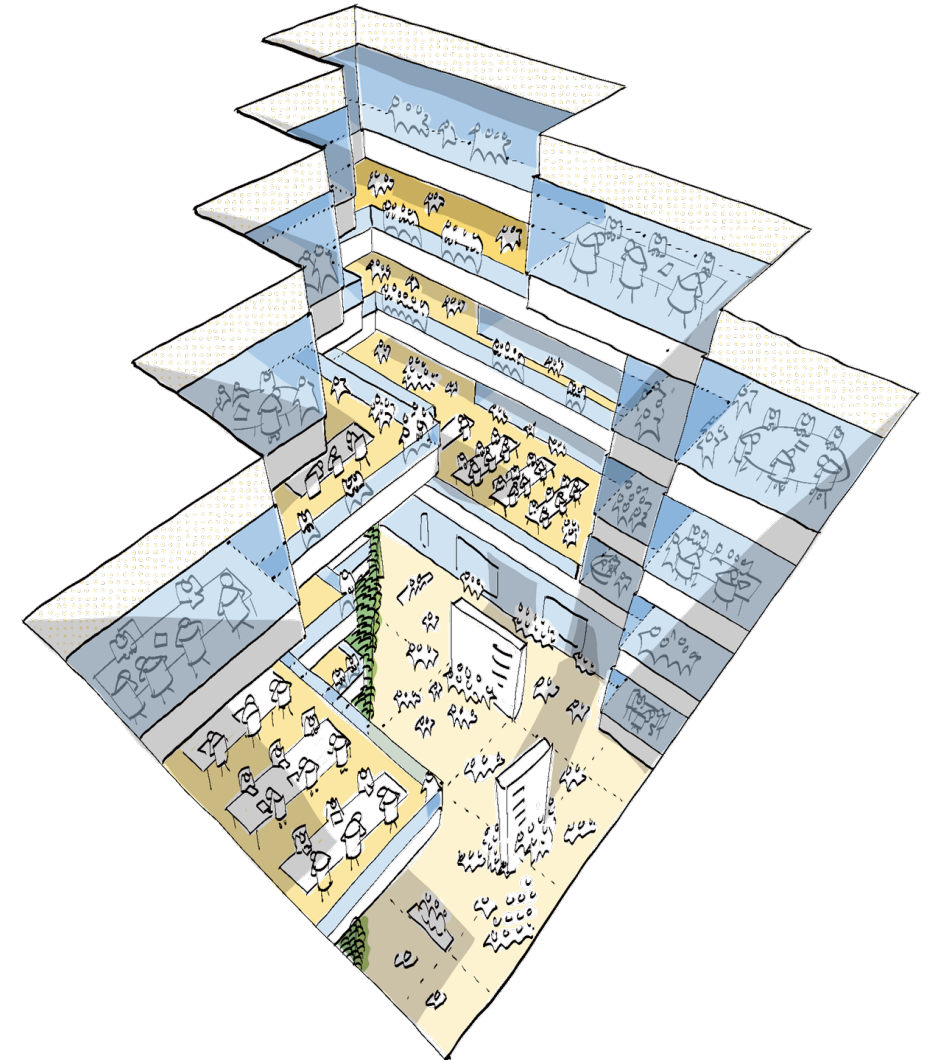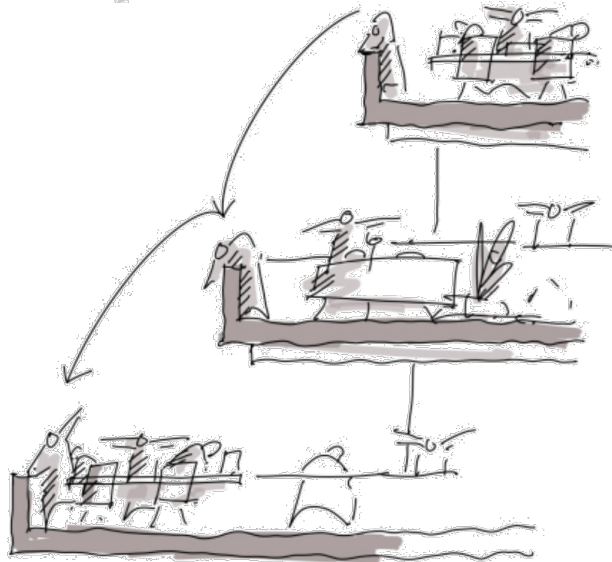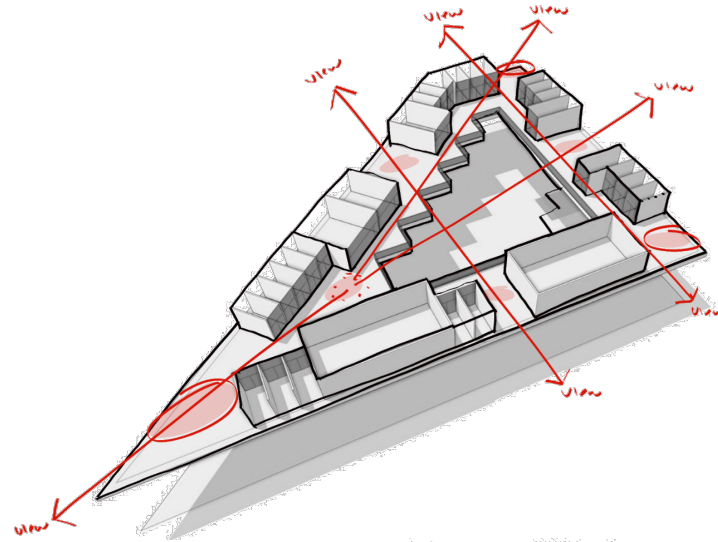
University of Bristol, Biomedical Building
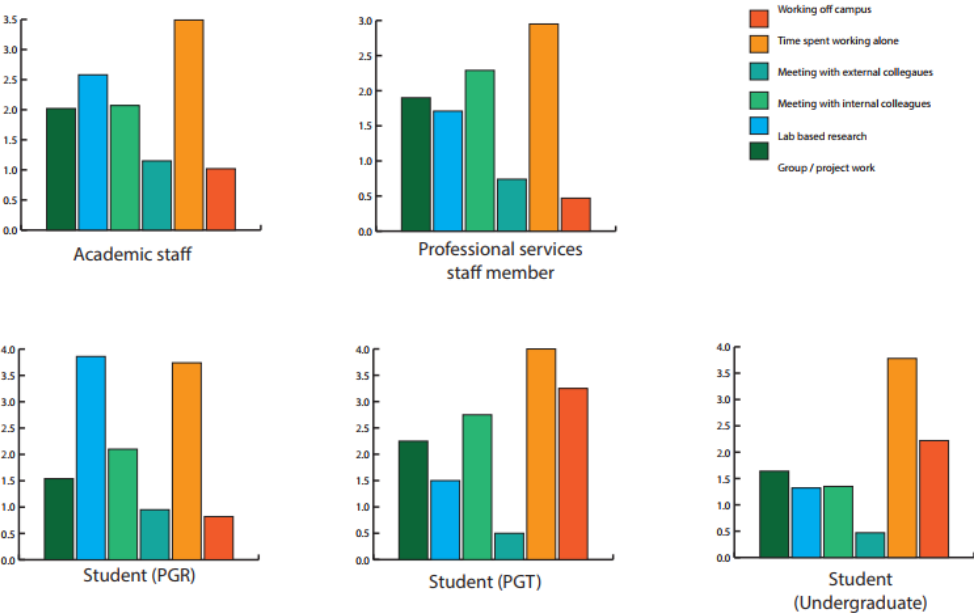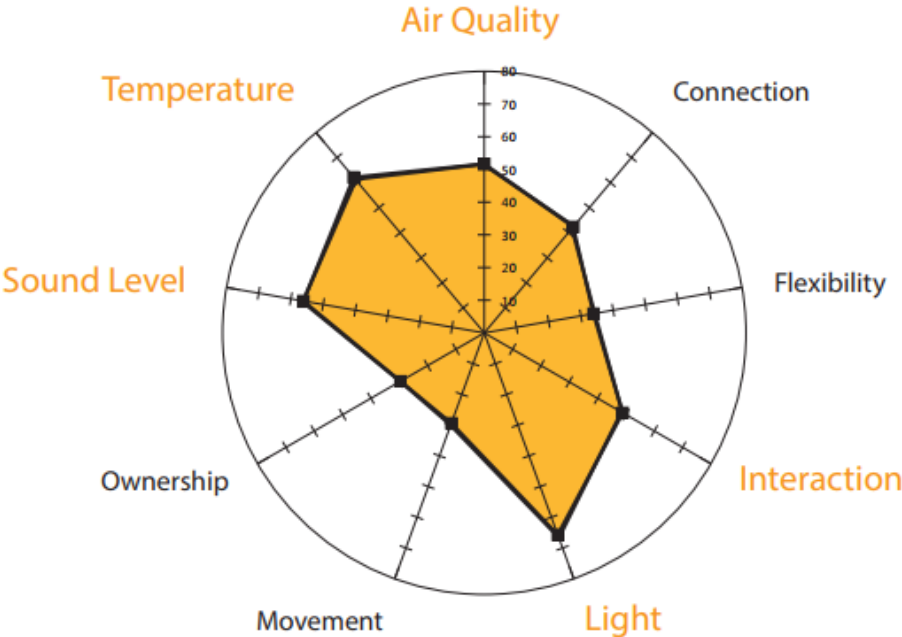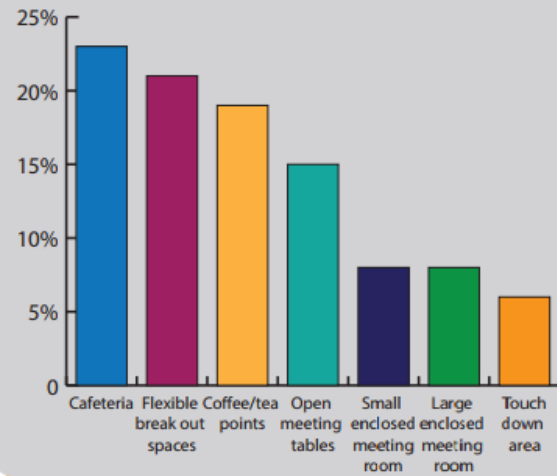
Interior refurbishment

HCD briefing tool

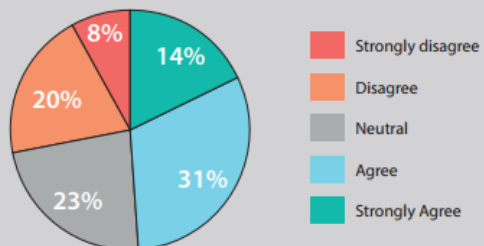Fig 2.5: Comparison of average time spent on activities across role types

Legend:
- Working off campus
- Time spent working alone
- Meeting with external collegaues
- Meeting with internal colleagues
- Lab based research
- Group / project work

Bar charts: Academic staff, Professional services staff member, Student (PGR), Student (PGT), Student (Undergraduate)

TIME SPENT ON LAB BASED RESEARCH

Academic staff	19%	21%	14%	9%	18%	19%
Professional services staff	22%	10%	7%			54%
Student (PGR)	29%		48%		17%	5%
Student (PGT)		50%			50%	
Student (Undergraduate)	6%	14%	22%	18%		39%

Legend:
- Never
- Rarely
- A little time
- Some of the time
- Alot of time
- All the time

Radar chart labels: Air Quality, Connection, Flexibility, Interaction, Light, Movement, Ownership, Sound Level, Temperature

SPACE FOR INTERACTION

'Which spaces would be most useful to support interaction?'

Bar chart (approximate values):
- Cafeteria: ~23%
- Flexible break out spaces: ~21%
- Coffee/tea points: ~19%
- Open meeting tables: ~15%
- Small enclosed meeting room: ~8%
- Large enclosed meeting room: ~8%
- Touch down area: ~6%

UNPLANNED

'I regularly need to find informal work/study areas for unplanned activities / conversations'

Pie chart:
- Strongly disagree: 8%
- Disagree: 20%
- Neutral: 23%
- Agree: 31%
- Strongly Agree: 14%

Evolving our approach

Operational approach

People	Activity
Diverse, multi-generational workforce	Processes, interactions & interfaces
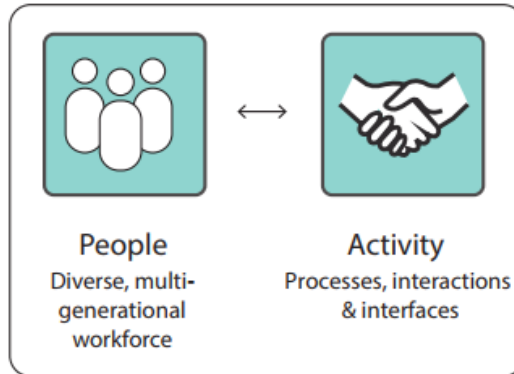
Physical & Digital Requirements

Place	Technology
Work settings, systems & spaces	Digital transformation
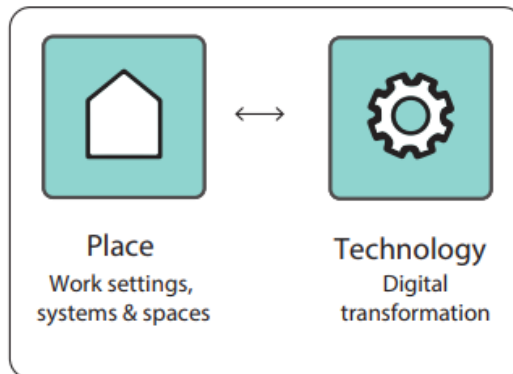
To help us understand how different activities and interactions may be assisted by technology we would like to know your views on the use of technology.

Read the following statements and indicate to what extent you agree or disagree with them

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I see the workplace as an essential space for problem-solving	O	O	O	O	O
I would be willing to use new technologies to improve my work	O	O	O	O	O
I am more motivated when I work in a technologically well-equipped environment	O	O	O	O	O
Innovative ideas often come from chance meetings with people	O	O	O	O	O
Technology is an important factor for innovation	O	O	O	O	O
If I had a more flexible technology solution I would choose to work in different spaces for different tasks	O	O	O	O	O
Technology to enable collaboration within the office is important for my team	O	O	O	O	O

Where to work?

building design. | ΛTKINS
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Considering an ideal future working environment, where would you choose to do the following tasks?

Defining design drivers

Technology Drivers
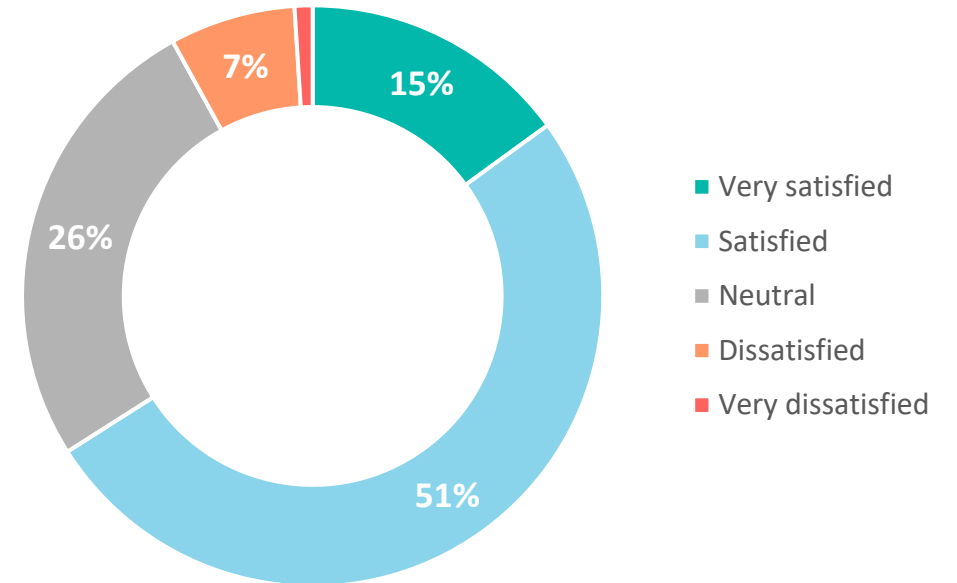
Scale		
XS		Tablet / small screen
S		Dashboard
M		Digital walls
L		VR station
XL		Immersion room

SCALE

Experience Drivers

	Augmented reality
	Non-immersive simulation
	Semi-immersive simulation
	Fully-immersive simulation
	Group experience & talks

SCALE

Space Drivers

	Individual p[ods
	1 to 1 cabins
	Workshop - showcase
	Discuss and present space
	Full digital building

SCALE

Technology

Satisfaction with the use of educational technology

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

15%

51%

26%

7%

Source: HESA Student Survey, 2021

Digital future

In this digital world, what are your priorities for facilities on campus?

22% Tech-free social space

20% Sports, gyms & clubs

33% Tech enabled group work spaces

72% 24/7 access to study areas

31% Leading tech equipment in my subject

25% Tech-free study area

49% Tech enabled study spaces

25% On campus IT helpdesk
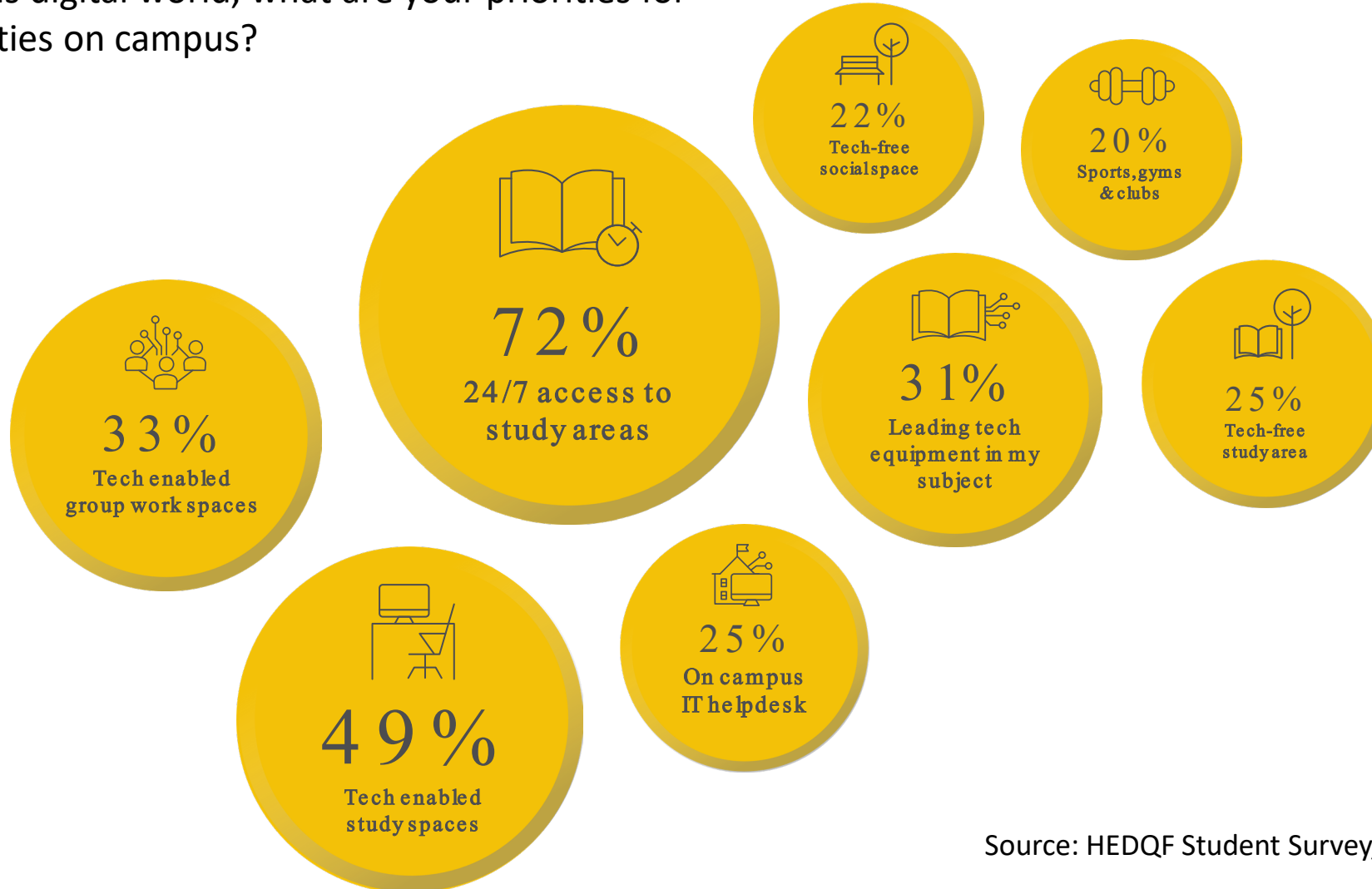
Source: HEDQF Student Survey, 2021
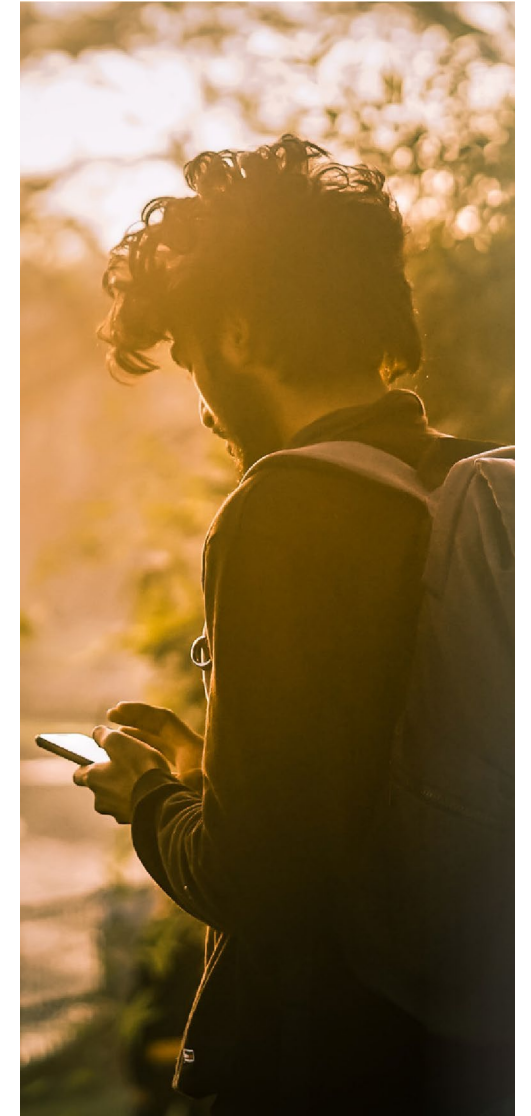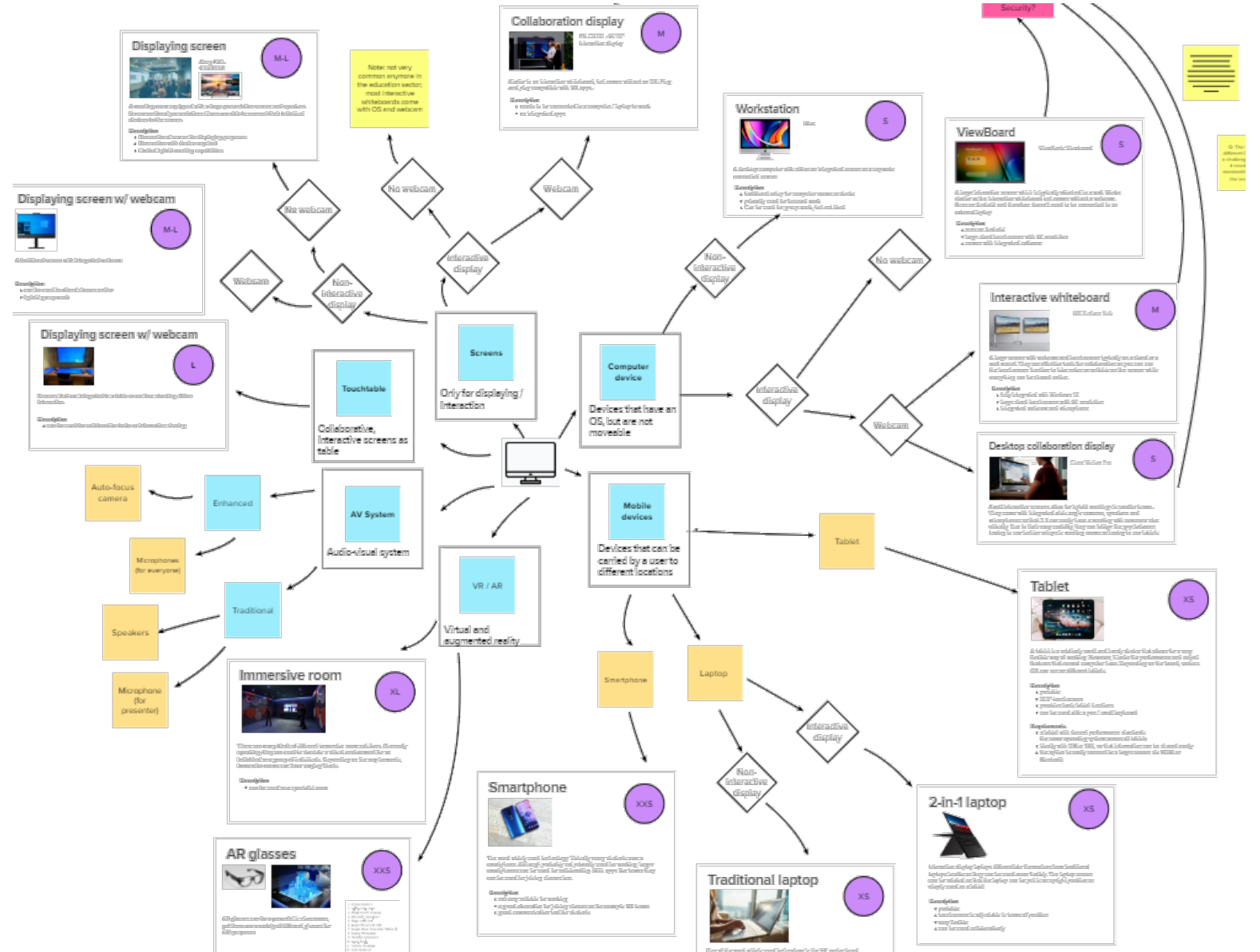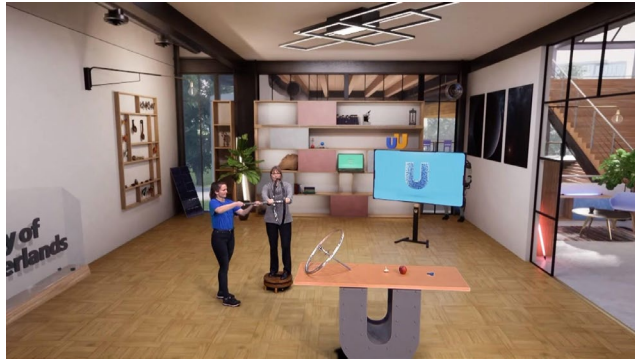
What are the changes you are seeing in requirements?

Is it technology, different space types, different teaching methods?

Do staff and students have different expectations now?

Evolving technology

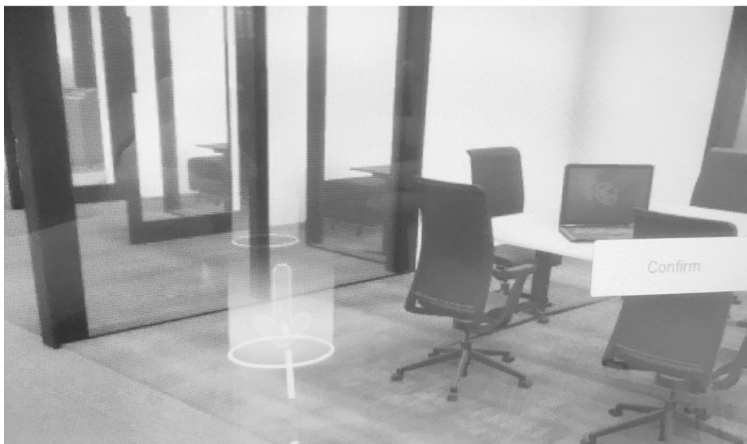building design. | ATKINS
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Desktop Questionnaire on laptop

Participant making selections in VR

Questionnaire in VR

Location selection in VR

Participant making navigating the space in VR

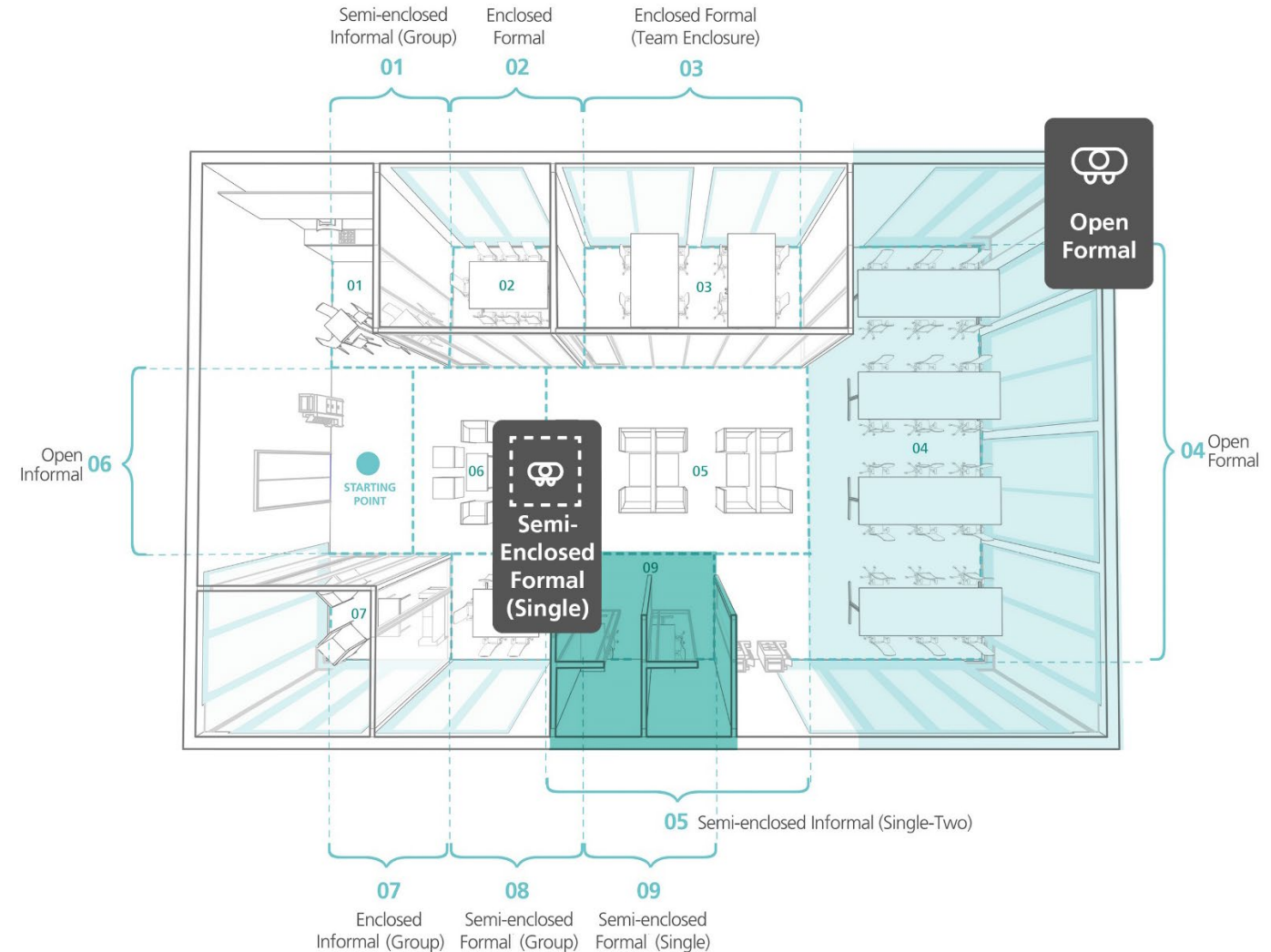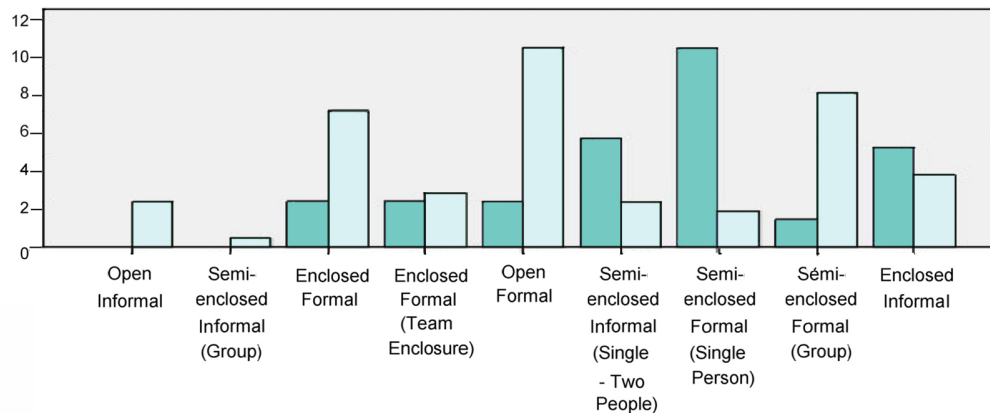VR headset and Virtual Office

Understanding different preferences

Personal trait difference:

- Territorial

- Non-Territorial

Preferred Spaces

How do you engage with your end users to understand this? Has this changed?

Are there changing expectations from students and staff post – pandemic?
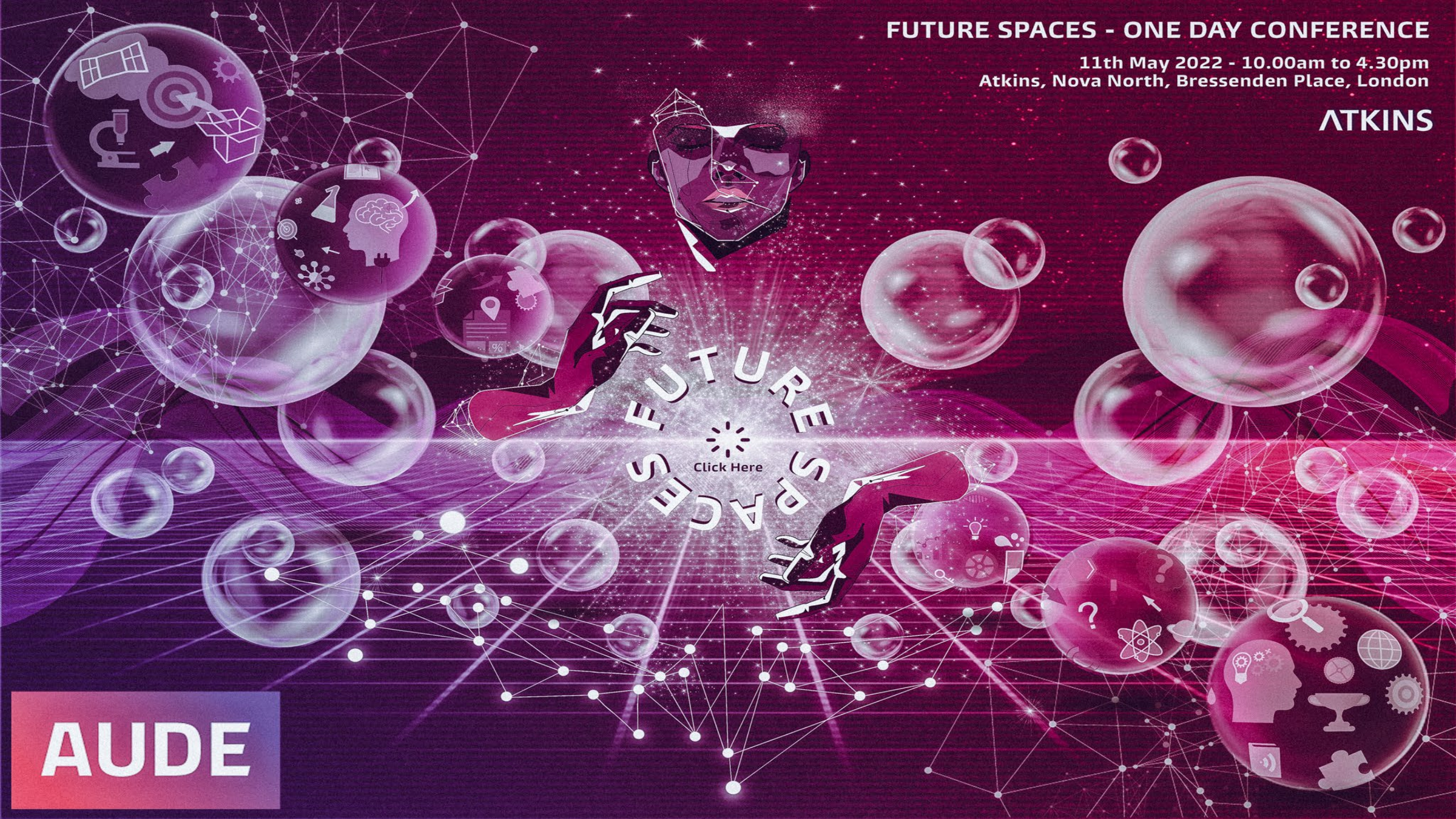
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Closing Remarks

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