

Unlocking Higher Education Spaces – Briefing Document

15 – 17 Jun 2020

This document contains background information and guidance for the “Unlocking Higher Education Spaces” virtual study group (VSG) being held on the 15 – 17 Jun 2020 run by the Newton Gateway to Mathematics. The challenge statement, VSG agenda and process are outlined below.

Challenge Statement: Universities and the knowledge they create have been vital in the fight against the COVID19 pandemic; we have seen innovation coming from the academic base inform policy in modelling pandemics, develop track and trace capability and fundamental work in clinical trials for a vaccine to name but a few. In addition, universities support economic growth in their regions through direct employment and the many services and outlets connected to them.

However, universities are suffering in the face of the pandemic with many still unopened, physical teaching courses suspended and ancillary staff furloughed. Universities are vibrant ecosystems which combine teaching, research and social activities; opening them back up to normal operation does pose significant challenges such as:

- access and flow of people through buildings,
- shared surfaces and bathrooms,
- potential for aerosol transmission in indoor spaces,
- operation of food outlets,
- operation of leisure facilities,
- interaction between the university, the wider local community, and home communities of students and staff,
- interaction with public transport.

The challenge of opening universities back to operation can be seen as a complex, multi-level problem where challenges exist on a building level, a campus level, and a community level.



Previous work through V-KEMS discussed general mathematical principles which could be considered when unlocking the workforce [1], and to a certain extent, this problem builds on that foundation of knowledge with an application to university operation.

Having been approached and having consulted with many in UK university leadership, we have developed a short, but by no means complete, list of topics we might be interested to discuss over the three days, for example,

- How much would grouping students into cohorts based on geography (halls of residence, residential streets) and using these to organise access to campus reduce transmission of disease compared to allowing everyone on at the same time?
 - Can students access social activities within their cohorts as well as academic ones?
 - What can we say about the benefits of cohorting and / or a less densely occupied campus?
 - How small would cohorts need to be to make a difference and consequently how much time on campus would they get?
 - How much could cohorting facilitate control of transmission through test, trace and isolate?
- How might some general principles apply to professional services and facilities staff such as cleaners and security staff to reduce transmission on campus?
- What about transport to and from campus? How might one manage the interaction with local transportation routes?
- What can we say about the transmission of infection between a university, its local community and the wider home communities of staff and students?

Time will be set aside on the first day to hear perspectives from stakeholders and everyone will be invited to submit suggestions as to what the priority topics and considerations should be.

1 <https://tinyurl.com/VKEMS-UNLOCK-PUBLIC>



Study Group Timetable

Day One – Monday 15 June

- **09:00 – 09:30** Room Open
- **09:30 – 09:40** Welcome and Introduction
- **09:40 – 09:50** The “Challenge”
- **09:50 – 10:15** Relevant Perspectives – *Various speakers*
- **10:15 – 10:30** Challenge Collation
- **10:30 – 11:00** Break
- **11:00 – 11:30** Prioritisation
- **11:30 – 11:45** Allocation & Division with Mural Demonstration
- **11:45 – 12:00** Quick Break
- **12:00 – 16:00** Group Work
- **16:00 – 16:30** All Participant Catch-up

Day Two – Tuesday 16 June

- **09:30 – 10:00** Informal Kick-off
- **10:00 – 16:00** Group Work
- **16:00 – 16:30** All Participant Catch-up

Day Three – Wednesday 17 June

- **09:30 – 10:00** Informal Kick-off
- **10:00 – 16:00** Group Work
- **15:30 – 16:30** All Participant Catch-up and Final Feedback



Study Group Process

The group will collectively decide which are the key topics for development after hearing from stakeholders with different roles and constraints.

The VSG will divide into three breakout groups - these groups will be loosely focussed on the following areas:

1. Building level topics
2. Campus level topics
3. Interaction with the extended community

In each group, participants will work collaboratively to map out the important considerations, assumptions and constraints against each prioritised topic. When this has been done, subgroups will form to develop what mathematical science could be used to provide support for universities and stakeholders.

Collaborative tools which will be used to capture progress will be overviewed in the first morning session.

Much of the time is given to “Group Work”, this will be broadly self-directed based on the topics and sub-groups decided in each team. We will aim to meet each afternoon at 16:00 to informally report back on what topics are being discussed and what progress is being made. On the final day, we will re-convene at 15:30 for feedback from each group.

As this is a multi-faceted problem, we are pleased to see representation from risk, applied mathematics, epidemiology, operational research, behavioural sciences and others.



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The Virtual Forum for Knowledge Exchange in the Mathematical Sciences (V-KEMS) is a collaboration between the Newton Gateway to Mathematics, Isaac Newton Institute (INI), International Centre for Mathematical Sciences (ICMS) and Knowledge Transfer Network (KTN) and various representatives from the mathematical sciences community (see <https://www.vkemsuk.org/>). Its main aim is to identify a range of virtual approaches that will help address challenges from business and industry, the third sector, and other groups outside academia. These challenges may be long-standing or may have arisen directly as a consequence of the present disruption to UK society.

