



Una Europa Future UniLab

Instruments Cluster Envisioning report

Future of the university

As we look to the future, being true to our values and philosophy has never been more important. Digital infrastructures and tooling now takes on an undeniably central role in defining the various hybrid worlds in which we exist. We must take on the mantle of creating those worlds in the way we wish them to be, rather than meekly waiting for others to provide the means for our vision. By taking a commanding role in our digital worlds, Universities can express their boldest visions for the greater good.

It's well known that the only constant in life is change. For a number of years it might have seemed that there was little change in aspects of higher education. While there has been a great deal of development in the nature of universities during that time, not all of it has been visible, and while there has been an immense amount of good done, not all developments in the higher education sector are as they would be in an ideal world. We have now reached a point where there is a great deal of visible change to be made, both to continue evolving the things that are good, and to improve where there are opportunities to do so. This will involve significant shifts that affect Universities from edge to edge, and right to the core. Some of those shifts are going to be imposed on universities as they respond to external developments, and others come with the natural evolution in the aspirations and goals of the institutions themselves, those that govern them, and those that work and study within them.

What are those goals and aspirations? Universities across the world target different balances between being research-intensive, or teaching-intensive, with a long acknowledged tension between these two supposed polar opposites. Institutions are usually striving to be the best they can in both these areas, because of the interlinked need to benefit their students, staff, local communities and the world at large. For the future it is important to change this framing which valorises neither research nor teaching more than the other, but instead a framing which understands the intrinsic interdependency between these activities within the institution, and how the institution relates to the world around it.

The world surrounding a university has taken on a greater importance, both because of the opportunities now on offer, but also the threats and challenges. In any long-lived activity, threats and challenges are to be expected, and should not be feared. They are a natural impetus to grow and evolve, resulting in better outcomes for all concerned. At times, particularly now, an optimistic outlook can seem a tenuous position to adopt. There are certainly enough students and staff who are struggling with the nature of higher education in the difficult times imposed by the Covid-19 pandemic (let alone all the other tragic consequences). However, when the future brings time to reflect, there is likely to be a silver lining. A number of the challenges of operating with staff and students in different locations, are opening up opportunities to develop and understand new ways of working.

One of the core aspirations of Universities is to better the world around them. This in turn requires the engagement and recruitment of people who can support this mission - whether that is being a high profile leader in a particular area, or part of a team that enables those leaders to reach their maximum potential. For those on the academic path, it is likely they will experience different stages of their journey in different institutions. For all those who are participating, it is essential for universities to be *platforms for personal growth* and *platforms to change the world* - it is difficult to have one without the other. How can this be done? To take an example from the perspective of a student, universities must *design learning* so that people can see and feel that they are progressing, day-in, day-out. The activities must always be *meaningful*, for everyone, every time. In practice, this means that the curricula are not just preparing the students to advance the arts, science, humanities, medicine, and so on but also allow them to be part of the ecosystem of "curiosity start-ups" which will go on to change the environmental, commercial, political, human landscapes - and perhaps not just here on earth. There must be room - and active encouragement - to dream big, to take risks, to accept failure as a growth opportunity - and thus to learn and grow in a safe way. This growth happens together with the stakeholders and resources outside the university. Every student can grow networks and personal "portfolios" that are built so that they exceed the university diplomas and transcripts, in order to be useful and relevant outside the universities.

These new ways of working rely on digital infrastructures and tooling, and bring into focus more clearly than ever before on the importance of having the agency to choose the values and philosophy upon which your digital infrastructure is built - because this then frames the capabilities, features, and experience you can get. You cannot have digital infrastructure and tools that meet your needs, if they were not first created by developers who share your worldview or, at least, don't actively oppose principles that are important. For a simple example, consider teaching tools you might currently be using which sow seeds of distrust right from the moment you introduce them, contradicting your efforts to build that safe space to explore, try and fail. Going further - rather than focusing on tools which shore up outdated approaches which no longer work in the modern environment let us turn instead to building the digital infrastructure and tools which take us into the future instead?

What is that future? What are the values, philosophies, and capabilities we want in our digital infrastructure and tools? First we must recognise that Universities are no long simple closed systems. We must appreciate and develop *porous boundaries* between a university and the rest of the society, prioritising *Openness, transparency, diversity, inclusiveness, fairness, privacy and dignity*. When everything in the digital world seems to be just two clicks away, Universities can no longer rely on a geographical monopoly to ensure their sustainability. Now it is important to consider all of these aspects in order to ensure sustainability going forward.

In other words, future universities will find sustainability through evolving once more in the direction of being ongoing learning communities that welcomes everyone who wants to study, teach, research, as well as all those who support those activities inside and outside of Universities. Equally, Universities must respect and supporting the broader educational ecosystems in which they operate, engaging younger students in primary and secondary the wealth of options available to them in the wider world - some of which may involve higher education - as well as working with other education and training institutes, whether vocational, professional, or otherwise, for the greater good. With the rising prevalence of digital infrastructure and tooling, and the proven sustainability benefits of forming communities around software artefacts, there is a great deal of value to be had in spearheading the kinds of digital infrastructure we want to see in the world, and making it stronger and better by building it jointly, freely sharing it, and uniting many people under a broad roof. But not by forcing everyone to be the same, but rather, by supporting them to be different

in ways that matter to them, without having to reinvent and reimplement entire systems simply to obtain something with capabilities that better match their values and philosophy.

Instruments of the future university

Digital infrastructures and tooling are an inevitable requirement if we are to allow geographically-distributed communities to get together with convenience. IT helps us engage with non-traditional participants, and can encourage the traditional town-and-gown communication - but in its newer, more rounded, open form that does not simply consider a binary relationship between the the institution and the nearest city council offices - but all the people represented by both. In order to create the meaningful student activities, and to do so at the scale we need - we must turn to digital tools. For example, there are simply not enough industrial opportunities in the nearby area of many universities to offer engineering students the same access to a professional environment - yet we can look to the emergency services to find out how to create meaningful emulated experiences which are emotionally engaging, create genuine scenarios upon which meaningful reflection can be undertaken, and which reflect our latest understanding of pedagogies, and are informed by the world leading expertise of the researchers and educators involved. Such tools can be evolved into massive interdisciplinary interaction spaces, sometimes synchronously, sometimes asynchronously, sometimes for short periods, others for extend periods lasting a whole academic year, or even a whole degree. Interaction need not be confined to your institution - we have the digital opportunity for truly global participation, raising potential in all areas of the globe whilst celebrating the diversity this brings. It's not a simple world that graduates are going in to, so why should their education be limited to rational, bounded problems with answers in the back of the textbook? This has been an educational aspiration for many many years - digital capabilities emerging now and in the future provide the means to express and explore these visions in a practical way. And like the environment we create for students, for dreaming big and accepting failure as room for growth, we need to learn as we practice the art of forming communities, that these communities should expect elements of playfulness, novelty, and exploration in the tools they use, together with rock-solid underpinning for the fundamentals.

As universities create their new places and practices in an ever-changing messy world, they need the freedom to explore unique approaches. These are *phygital*, physical or digital or a mix of both. Many of the instruments needed in future universities are not possible with a reliance on externally-supplied software. An appetite for carefully undertaken risk within institutions is essential. Our existing approaches must be complemented by (1) fail-fast path-finding activities which are quick to start, and quick to end; and (2) transition activities which take the "winning" path-finding activities and scale them up. This means supporting developers within our universities and encouraging staff of all types and students to enhance their digital literacies. Most of these efforts need collaboration between institutions. For example, we face ever growing numbers of students needing access to experimental hardware across all fields of study. It is not sustainable for the resources of the world for all universities to attempt to replicate the full set of hardware required, and nor is it economic, because it is difficult to put any experiment to use beyond a certain number of weeks before it goes back in the cupboard. However, with the right infrastructure, we can take this hardware online, and share it easily through federated access arrangements which can all be frictionlessly handled digitally. Anyone anywhere in the world can mix hardware and interfaces, activities, and evaluation tools to provide exactly what they need, without having to reinvent the common infrastructure. All participants will benefit from the richness of the non-traditional practical work that will result. This is just one example of the future that is open to us when we embrace the chance to develop our own systems within academia, rather than fruitlessly and deleteriously awaiting sufficient market forces to evolve.

Keeping our value systems central to our digital developments makes it possible to deliver on our institutional aspirations. For example, reaching non-traditional participants in all corners of the globe, be they indigenous, displaced, or disadvantaged populations requires digital platforms that remove the barriers to participating in a traditional manner. Messy, contradictory information should occur as a deliberate exposure to the real world, and not simply as an accidental result of a reliance on old file-store technologies for virtual learning environments. Yet also, as we have learned from the nature of social media, the importance of fact checking in these environments cannot be overemphasised, and so we need to provide a gradual shift from a scaffolded, bounded environment into a more open

ended world, and use digital tooling to help each student with this journey, by surfacing the dimensions of time and personal growth more explicitly.

Hence universities need to commit to an exploring how to understand the time and progress elements of the learning journeys students take – digital tools which highlight the journey and support students when they are remote are even more essential because the common context established in regular proximal social relations on campus is no longer present to guide them . As we also learn to map our learning pathways at ever greater granularity, we free ourselves to make better decisions about curricula, to knowingly balance different requirements, and choose the degree of redundancy in what we teach so as to accommodate any future periods of restricted operation. With so many asynchronous digital content delivery mechanisms available, there is no need to valourise the oratory of a traditional monologue - except in those cases where it is exactly the right thing to do - and for that it must be kept. However in a great many areas, we now have the opportunity to convert teaching time into the highest-quality interactions, using our synchronous time to develop the finer point of graduate attributes which cannot be communicated in a text or a video. Of course, we need some way to measure and assess the wider range of capabilities we seek to create.

Authentic assessment becomes ever more important. While exams have their place, there is now much which goes beyond the capabilities of exams to measure. Yet for the scale we must operate, there will be no other alternative in many cases except for digital techniques. For example, open-ended scenario simulations as described earlier can also be used for assessment purposes, either by reflection, or by considering actions taken by a student. Let us see the dynamic capabilities of a student performing in context, and let the student learn from doing so. Furthermore, let the students co-create these with us - digital tooling is no longer the exclusive preserve of software experts, and we can expect great gains from involving students - academics well know how well they have learned something when they have had to wrestle with how to teach it, and explain or demonstrate it to the satisfaction of many different viewpoints. Thus let's reinforce our value system by seeing that the work students do for assessment betters the world around them, by creating digital and phygital assets that help other students, rather than simply repeating the production of paper artefacts which do not add to the community.

With such infrastructure, global networks of researchers can also draw on communities, citizen scientists, gamers, parents, children, prospective students and past alumni to achieve large and rich research samples that would be prohibitive to create from scratch.

Universities have the golden opportunity to re-focus on intellectual and academic leadership for the greater good, by creating digital infrastructure and tools which express the values and philosophy that they have always held dear, but cannot be found in creations made in the narrow framing of achieving shareholder value for commercial entities. It is time to invest our social, human and financial capital in creating the digital infrastructures, and tools, which we need in order to express our bold ambitions for a sustainable, fair, diverse and inclusive world with Universities leading from the front.

