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Lean Universities

Steve Yorkstone, Senior Consultant,

Edinburgh Napier University, Edinburgh, UK

Introduction

This chapter examines lean implementation in higher education (HE) institutions. There is evidence of lean initiatives beginning in HE in the US in the early 2000s; there is also some evidence of business process improvement activity before this time (Moore et al., 2004; Waterbury et al., 2011). Today, many universities and other HE institutions are pursuing lean thinking.

The HE sector faces challenges around maintaining funding while continuing to deliver excellent services. Critics of HE assert that university operations are typically loaded with wasteful, unnecessary, and unproductive activity. On the one hand there is an apparent need for the sector to become ever-increasingly effective and efficient. On the other hand, the inherent complexity of the mission of universities would seem to present particular challenges to optimizing efficiency and effectiveness in the sector.

The characteristics of higher education

Universities deliver teaching and research (see *Figure 1*). They have been around for a long time; some institutions are hundreds of years old, and yet they are still big business. Much is written about the transformative power of HE both for individuals and for businesses and economies. This is not surprising when we consider individual universities, like Waterloo in Canada, that have a significant economic impact on their regions. Waterloo plays a crucial role in anchoring the Waterloo Region Innovation Ecosystem, which generated C$18 billion in technology sector revenue and a C$84 billion deal flow in 2009 alone.

The marketplace for HE is growing and is linked to an increasing demand for highly qualified individuals, the increasing global population, and a growing appetite for research outcomes from both public and private sectors. Finance models for HE vary from institutions funded directly by student fees (often in the form of student loans) to institutions where the state directly bears the full cost of education. However, student funding is only part of the picture as

institutions also draw significant income from research contracts and agreements (with private companies, charities, governments, and/or NGOs).

Universities are typically independent bodies, and as such the sector contains a range of operating models. These models reflect the history and purpose of each institution and are often displayed in varying levels of central control over federalized structures (Whitchurch, 2006). There are a number of factors that impact a university's operating model, including the institution's balance between research and teaching as well as the nature of the teaching and research undertaken. Given that universities are here to innovate, the border between teaching and research itself is often blurred, with some of the most attractive teaching provided by world-class researchers and some of the best students contributing to world-class research.
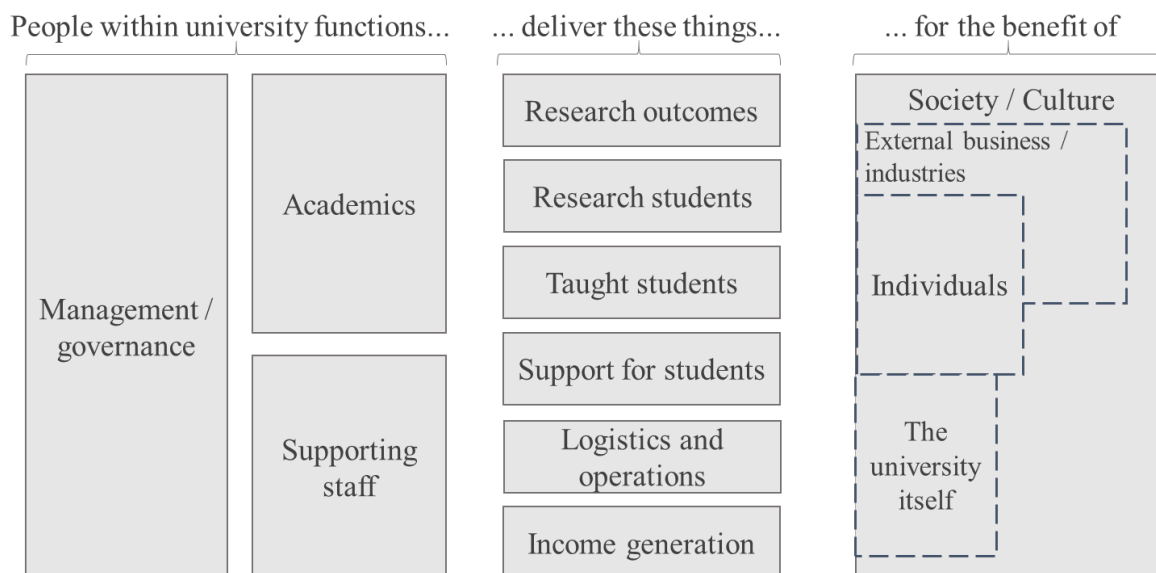

Figure 1. Mapping the relationship between university functions, outputs, and destinations.

Modes of teaching

Teaching is delivered at different levels, beginning with undergraduate degrees and then moving to postgraduate (or graduate) and research (or doctoral) degrees. The nature of the delivery of degrees varies, according to established methods known as pedagogies. Degrees can be delivered entirely residentially or non-residentially, and are typically delivered as a combination of both. They can be part time, full time, delivered on site, or delivered remotely via technology. They can include practical assignments, applied work, work placements, or establishing a business as part of the course. Some courses now teach over the traditional vacation period to shorten the length of time it takes to gain a qualification.

An undergraduate degree is often required for an individual to access a certain level of employment following graduation and thus serves as evidence of a level of experience and understanding of the subject at hand.

Pure research degrees operate differently. Those undertaking a research (or doctoral) degree are already experts and they work underneath an eminent expert supervisor for a number of years with the aim of adding a novel element to their field. Postgraduate students are also often involved in the business of the university; for example, they contribute by teaching undergraduate students or participate in the commercial aspects of research.

Modes of research

The volume of research undertaken in each university varies, but for many institutions research is a necessity implied by undergraduate teaching; i.e., in order for academics to be qualified to teach at undergraduate level they may be required to be actively researching in their field. Institutions adopt different approaches to research, with some institutions developing highly applicable, close-to-market outputs, and others opting for more academic publications. Universities also undertake research that impacts culture and society at large, for example, in fine art.

The organization of research itself is largely dependent on the field in which the research is conducted. Research can be undertaken by individuals or teams and often requires significant non-academic and specialist resources.

Organizational structures

The evolution of universities includes the development of significant administrations to support teaching and research. Universities require logistics like all businesses. However, specialist teaching and research may also require specialized facilities, laboratories, etc., all of which lead to a need for attending supporting services and management.

Universities often provide a range of services in-house, for example, provision for student accommodation. The services they offer are frequently also provided for the communities where they are located. Many universities choose to leverage their estate or brand for

commercial benefit, for example, as providers of sporting facilities, conference facilities, and particularly in the US, college athletics.

Internationalization

International education is commonplace, with many students choosing to travel to study; for example, in 2013–14 around 4.5 million students studied overseas.

Not only is studying at a foreign university a worthwhile experience in itself, students also study overseas for financial reasons, with the international economy often making travelling an affordable route to a quality degree. For instance, all publicly funded German universities have abandoned tuition fees, even for non-German students. As a significant number of German programs are offered in international languages, such as English, these institutions are particularly attractive for students from countries with high tuition fees.

In other countries, such as the UK, primarily public universities have for some time been using income from international tuition fees to support their operations, while still offering a good value to students who choose to study abroad in these universities.

HE institutions are increasingly reaching out to overseas students by delivering degrees in their home countries, either through working in partnership with local educational institutions and importing lecturers and course materials (the flying faculty model) or through the establishment of satellite campuses.

The move to the Internet

There has been significant press recently discussing the impact of the rise of courses delivered online, known as "massive open online courses" (MOOCS). Delivered to large numbers of students, these have had a far-reaching impact in that most institutions now offer some level of their delivery online.

That said, MOOCS themselves have failed, at least in the short term, to be an industry changer for HE. While it was predicted that MOOCS would open affordable education to those who would not have otherwise studied, uptake has been largely from those who already have a degree and are seeking additional qualifications. Furthermore, completion rates for most online courses are extremely low.

For now, at least, wherever it is delivered, most HE continues to be about bringing people physically together in order to create shared learning or research outcomes.

The principle of academic freedom

In the context of a wide variety of institutions and operating models, one thread that unites the sector is "academic freedom," a principle that allows for freedom of enquiry without staff risking their employment or benefits. This means that, in practice, academic staff members are able to teach and research without fear, even when such activities run counter to existing orthodoxies (indeed some would argue it is the responsibility of the academic to challenge prevailing orthodoxies). Academic freedom is enshrined in law in a number of countries; however, in practice there are limits to this since academics are expected to act ethically, legally, and with limited resources.

Another thread that runs through the sector is the necessity for research to be non-standard; i.e., order for it to be successful (indeed, marketable), it has to have never been done before. In essence, HE is a creative industry.

What is lean higher education?

Universities often operate as collections of separate functions (federal in structure) rather than as highly corporate enterprises. This federal structure often leads to an emergent strategy for lean implementations, with individuals taking an opportunistic approach. That being said, it would be wrong to generalize as there are also highly successful top-down structured implementations (typically in more modern, more centralized universities). We are at a relatively early stage of understanding lean in the sector and a high level of tailoring for lean to meet the unique contexts of individual institutions currently exists.

As in common with lean applications in industry, in many lean applications in HE we are seeing the non-zero-sum (i.e., win-win) aspects of lean activity being applied: resources are released from back office or administrative activity and applied to increase value for students and research outcomes.

Locating lean within HE organizational structures

There is no shared acknowledgement regarding the "best" one functional area of a university that should be responsible for the implementation of lean practices, or indeed that any one area should take responsibility for implementing lean.

In practice staff leading lean in institutions are often aligned to senior management (e.g., the principal's, vice chancellor's, or president's office), the Human Resources, or the Information Technology departments. Furthermore, leadership can be provided by either academic or non-academic staff. While there is some debate about where best to site leadership for lean, where central staff responsible for lean exist, they tend to be managed in administrative or support functions rather than academic functions.

It is true that lean is being applied directly to the primary institutional value streams in universities, for example, those relating to teaching (Emiliani, 2015b). However, there does appear to be more effort currently focused on the improvement of supporting or back office processes (Emiliani, 2015a; Balzer, 2010; Robinson et al., 2014).

The non-academic leadership of central lean teams, combined with this typical focus on non-academic processes, has led to the accusation that the sector is often applying "lean office" within HE (i.e., focusing on enhancing the administrative and back office processes of a university), rather than ensuring true lean HE (i.e., enhancing the teaching and/or research activity).

Different approaches to lean in HE

While lean in HE is as varied as universities themselves, there are several approaches emerging, which are explored further below. In most implementations we see different elements of these approaches to a greater or lesser extent. Three common approaches to lean in HE are as follows:

1. Event-driven lean in HE
2. Advocate-led lean in HE
3. Tool-led lean in HE

1. Event-driven lean in HE

There has been a strong movement in lean HE toward event-driven lean, as seen in the University of St. Andrews for example (see below), with improvements being driven as part of

a series of "kaizen events" or "rapid improvement events." Typical in the sector, these events are supported by a central team of trained facilitators who lead activities on a project basis. Such event-driven implementation also typically aims to embed lean culture and behaviors through knowledge transfer and coaching.

This approach has the benefit of deeply introducing the staff involved in these interventions to lean tools, techniques, and behaviors. It does, however, run the risk of missing those areas not included as part of a program of activities, and thus care must be taken to ensure the broader cultural aspects of true lean are maintained.

2. Advocate-led lean in HE

Alternative early models focused on a small team of lean facilitators training and supporting staff at key levels in lean techniques (developing a network of advocates) and supporting them through improvement projects. This is an approach seen notably at Cardiff University.

Focusing on a relatively large group of individuals enables a broad spread across the institution at relative speed and can work to maximize behavioral and cultural impact. However, there is a risk that the initial enthusiasm will be short-lived. There is also a risk that without support for these advocates to see their organization as a whole system, any improvements could be at the expense of other internal functional areas. There is also a risk of tokenism, with these staff seen as the "lean person" rather than the wider body of staff taking responsibility for improvement themselves.

3. Tool-led lean in HE

In other applications, we see institutions taking elements of the lean toolkit and applying them, examples of which include the use of daily communication cells and visual management to support improvement. This is not an approach that one would imagine would work in the creative space of a university, but there is strong evidence, e.g., in the University of Strathclyde in Scotland, that this approach is having a real impact. However, it is important to note that such an approach works best when applying these tools is part of a wider initiative aiming at cultural change.

Lean and related approaches in HE

Other approaches related to lean that have been utilized in the HE sector include Six Sigma, systems thinking, business process mapping, and total quality management (Waterbury, 2011; Antony et al., 2012). Indeed, many more universities apply continuous improvement (and may be more lean in nature) than those that explicitly apply lean by name. As part of their assessment for programs such as "Investors in People" or "Customer Service Excellence," a large number of universities, particularly in the UK, are required to demonstrate continuous improvement activity, albeit not specific lean activity.

Examples of tools seen in higher education

Returning to lean implementations, there are a number of tools often used. The use of sticky note process mapping in a commonplace as-is and to-be model is frequently seen in HE. While some authors have attempted to redefine the classic types of waste to more aptly fit a university environment (Balzer, 2010), typical lean implementations in universities address the classic "seven plus one" wastes: Transportation, inventory, motion, waiting, overproduction, over-processing, defects, and skills.

 "Affinity mapping" (Kawakita, 1982; George et al., 2004) is often seen as an approach to problem solving in university lean workshops and is often paired with a De Bono-inspired "six thinking hats" approach (De Bono, 2000) to ensure systematic analysis.

Visual management is often seen in HE through the use of whiteboards to manage information, even though this is often not acknowledged explicitly as a lean tool.

There are examples of many other lean tools being successfully deployed (albeit less commonly) in HE. For example, there is evidence of the successful application of 5S in Aberdeen University in Scotland, which includes clearing office clutter, reducing the amount of storage space needed, and making access to materials significantly easier (Paterson, 2013, 2014).

While in Universities there is often not the kind of high-volume transactional data that lends itself to statistical modelling, such modelling has been seen in HE, for example, in understanding the variations in the return times of library items and in invoice processing.

It is a challenge for the sector to move beyond what we see in early lean in HE implementations, i.e., the elimination of waste from the value stream, and to move to a more advanced level of lean maturity, as demonstrated by: improving flow, truly embracing "customer" value, developing pull, and seeking perfection.

Lean as a phenomenon of organizational culture

There has been recent criticism of lean in HE in on-line fora, i.e., that in obsessing with models or approaches, practitioners of lean in HE have missed out on lean's true nature as an enterprise-wide approach and a way of working rather than a particular tool, model, or structure.

One aspect that successful applications of lean in HE share is the common understanding of lean as an applied philosophy of work that is essentially about how people within an organization relate to each other, their common behaviors, and the culture of work.

Challenges and opportunities

Like any industry distant from lean's manufacturing birthplace, there is some reluctance to embrace lean, typified by that familiar phrase "But we aren't like Toyota!"

Ensuring buy-in from university management is thus key. This drives a need for theoretical rigor to evidence lean as a viable improvement approach for HE and the importance of using the evidence base for lean that has been developed in industry. These challenges are shared by many organizations in the early stages of their lean experiences (Netland and Ferdows, 2014).

Organizational cultures: HE as a non-standard and creative industry

Deeply embedded within the culture of academia is the need to develop new ways of working; in the field of academic research there is a drive to produce the novel, the never-before-seen. This fundamental behavioral drive runs counter to the idea that work can be standardized and is a challenge to gaining a real understanding of lean (as standard work is a large part of many lean applications in industry).

A concept that can address this challenge is the manufacturing analogy of "runners," "repeaters," and "strangers." This model suggests that there are some things we do that are high volume and can be standardized (runners); other pieces of work that are regular and that can be standardized to some extent (repeaters); and those items of work that are infrequent and need

to be treated as unique instances (strangers). The error that this concept can help us avoid is confusing one category for another and the subsequent increase in waste this causes.

So, to apply this in HE: Yes, it is true that research must be unique and unprecedented (a stranger), but the purchase of the equipment required to stock the lab to produce that outcome can be done in a perfectly standardized way (a runner).

Organizational cultures: Academic freedom and debate

As we know, academic freedom is a key feature of universities, and again, this can be a challenge to introducing new and standard ways of working. On the one hand it is a misapplication of the notion of academic freedom to suggest that standard processes never apply to academic staff. On the other hand, it is hardly surprising when our academic freethinkers apply their skills of critical thinking to challenge what in other sectors would be highly standardized processes.

In fact, it is the willingness to experiment with new ways of working and the reluctance to standardize across the sector that many see as fundamental to the current comparative success of the sector. Without this diversity the HE sector would not be as vibrant as it currently is; pairing this diversity with an action-orientated approach enables universities to really lead innovation.

Indeed, HE is not alone in employing highly specialist, expert levels of staff with a penchant for questioning the norm. Involving these challenging stakeholders appropriately can be a gift, provided the debate is constructive.

The "customer problem"

When more than two lean practitioners in HE are brought together, there is almost always an inevitable discussion revolving around the following question: "Who or what is the customer of higher education?" In order to properly define value, we need to understand who the organization is for and what its purpose is.

The simplest definition of the customers of a university is that they are those people who study within it. While using university-provided catering or accommodation, students are clearly transacting with the university as customers. However, when consuming teaching content or

undergoing assessment, students do not always view themselves as a customer. Given some funding models where students do not pay for their own education, their relationship as a customer is unclear.

Many go further and suggest that the employers of graduates are the main customers of universities and that those organizations that fund research or the people that benefit from the research outcomes should be considered as customers also. At this level the "customer" of HE might then be seen as the cultures within which universities operate, which is arguably a definition almost too broad to be useful (see *Figure 1*).

Additionally, and quite rightly, many academics rail against the "commodification" of education with the assumption that universities do not provide a simple, repeatable transaction that anyone with enough income, if needed, can buy. It is often expressed that what universities do is a complex act of co-creation, requiring a personal investment from all parties in a way that not all individuals are capable of undertaking. Furthermore, it has been suggested that applying capitalist models to HE undermines its ability to add value.

That said, there are elements of the market in play, as universities are in competition to attract the best and brightest students, to win research funding, and to attract and retain the most prestigious academics.

For the lean practitioner, this "customer problem" runs the risk of becoming intractable. A pragmatic and functional approach has been observed to be the best solution. Rather than endless debates around who the customer of HE is, this energy is better spent practically getting on with the business of making the experience of HE better for students, for research funders, and/or for the beneficiaries of (and those engaged in carrying out) whatever the process in question may be. The "customer problem" runs the risk of being an example of where HE's predilection for discussion acts as a significant barrier to action.

Evidencing lean in higher education: The "benefits problem"
The business of evidencing the benefits of lean in HE is a challenge. For organizations that have complicated and diverse aims, enhancing one aspect of performance may be detrimental to another. Again, we see a propensity for discussion over action inhibiting value-adding activity.

The tensions between teaching and research (and administration) are familiar to those who work in the sector (Whitchurch, 2006; Winter, 2009), and are an instance where different organizational goals lead to tensions within an organization. There are also concerns that the very different business models and aims of HE institutions, even if consistency is achieved within one university, make shared metrics across institutions misleading.

Perhaps this is one reason that an early report on lean in HE concluded that there was a large gap in the evidence of costs and savings made using lean (Radnor and Bucci, 2011). Indeed, since that report, there remains perhaps surprisingly little transparent reporting around the benefits of lean in HE (Lawrence and Cairns, 2015).

Lawrence and Cairns' recent research into the barriers universities face in sharing the benefits of their lean or process improvement initiatives is enlightening. Their survey of the sector suggests that in some cases people are not measuring the benefits of their interventions, and that even when measurement is being undertaken institutions are often reluctant to share this information externally. Such reluctance stems either from fear of criticism at the amount of waste that existed in the processes before improvement or concern that the project has not delivered the desired measurable results.

Nonetheless, Lawrence and Cairns' work led to the development of a framework for consistently measuring impact within universities, entitled: "A Guide to Evidencing the Benefits of Business Process Improvement [(BPI)] in Higher Education," which has been welcomed by the sector.

This framework provides a series of tools and activities based around seven project phases that complement existing project management approaches, as shown in Table 1 below.

Project phase	Summary of evidencing benefits activities
Institutional preparation	Preparatory work required to agree on priorities for undertaking BPI activities and ensure consistency of approach when measuring benefits.
Project initiation	Introduction of key activities to gather high-level baseline data to inform decision making ahead of project selection and scoping activity.
Project scoping and start-up	Detailed project scoping activities to gather and capture the necessary baseline data against which future improvements can be measured. This informs whether projects should proceed.
Diagnostic	Key activities once a project is underway to maximize data collation and the buy-in of key stakeholders.
Design, trial, and implementation	Essential activities that enhance the measurement of post-improvement data and ongoing buy-in for evidencing the success of the project.
End of project	Focused on the sign-off of benefits captured so far, those that have not been realized, and the ongoing responsibilities for the realization of further benefits.
Sustainment	Ongoing benefits realization and the identification of further opportunities for improvement.

Table 1. Stages in "A Guide to Evidencing the Benefits of Business Process Improvement in Higher Education" (Reproduced with permission from Lawrence and Cairns, 2015).

Evidencing lean in higher education: Existing information

There is some evidence for the success of lean in HE. High-profile lean adopters have published evidence of their successes. Examples include the University of St Andrews, who reported that over the first four years of their implementation they released the time equivalent of 24.63 full-time staff members to increase value-adding activity (Robinson et al., 2014).

Interestingly, however, St Andrews has more recently moved away from publishing data around savings made. They have commented that focusing purely on data detracts from their real goal of skills transfer and ensuring cultural change. Additionally, they cite the difficulties in arriving at robust and therefore fully defensible data. It has been argued that producing more data than is required to bring about improvement, while perhaps reputation enhancing, is in fact a form of over-processing.

Groups representing universities, particularly in the UK, are referencing business improvement and lean initiatives as part of their successes, which is starting to tell a story of how lean is having an impact on the sector. For example, Universities Scotland's 2015 report "Working Smarter 2015" lists six case studies of lean and process improvement across the 19 universities in Scotland. These case studies identify benefits totaling £168,000 in direct cost savings, £2.5 million of increased revenue for one named project, and a number of qualitative savings, including reduction in wait times and improved service levels (Diamond, 2015).

The growth of the number of lean implementations in HE and the interest that staff in HE have for lean (which, granted, is not a direct indicator of the benefits of lean) suggest that there is momentum behind lean and process improvement as a movement. For example, the Lean HE Hub moderates an online forum for staff interested in lean. This forum started in 2009 and has grown from around 500 members by the end of 2014 to well over 1,100 members by the close of 2015.

The future of lean higher education

In a sector where the central business is that of creatively deconstructing and reconstructing ideas, it is no surprise that crossing the knowing-doing gap (for example, relating to the customer and benefits problems) presents the sector's biggest challenge.

Despite the challenges, however, current indicators suggest that lean is in a period of growth in HE globally, with an increasing number of universities embarking on lean journeys. In early implementations we saw lean leveraging a largely bottom-up, emergent strategy to growth, yet we are now increasingly observing university leaders actively championing lean and continuous improvement initiatives.

The evolution of lean in higher education

This recent growth of lean should be tempered with a word of caution, as in some institutions, including early adopters, we are seeing lean teams restructured and their roles minimized. In a small number of instances, universities that previously employed staff to introduce lean working have chosen to go in other directions. Despite the relatively recent growth of lean in universities, it is inevitable that we are going to see more implementations change or cease altogether.

There are two ways of viewing these changes. One interpretation could be that, as some lean teams are moved into other areas of the universities, we are seeing the true lean message being diluted. As a result, the strength of the lean improvements is weakened. An alternative view could be that we are seeing lean becoming more mainstreamed into the way that universities conduct their work; and thus continuous improvement becomes business as usual.

For lean to continue to have a positive impact in the sector, the key is to be take the second of these routes. In other words, it will be crucial to see a change in how the institution applies lean not as a failure but instead as a necessary evolution and an opportunity to apply learning from these experiences. Notwithstanding, at the early stages of these developments, further investigation will be required as these changes play out.

Whatever approaches are taken, there are enormous opportunities to improve the way that universities undertake their work, and lean is proving to be an important part of how this happens. Importantly, lean is becoming a significant part of building a culture of HE where continuous improvement and respect for people are part of how universities work.

Universities have been described as modern-day miracles, producing amazing outcomes for individual students and enabling research critical to the development of businesses, industries, and society. This is the challenge for lean in HE: to ensure that in a rapidly changing world, our universities can continue to produce transformative outcomes in a way that benefits everyone.

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Case study: Lean at the University of St Andrews

The University of St Andrews founded its lean team in 2006. This was one of the earliest and most successful lean interventions in HE. Ten years later, the university continues to practice lean and is also in the business of supporting other universities (and other bodies, primarily in the public sector) in their lean implementations, both at home in the UK and globally.

This case study is based on a series of interviews conducted with staff at frontline, management, and senior levels in the university, who have been involved in St Andrews' lean initiative in different ways. The aim is to reflect on what St Andrews has done that has led to lean being a successful part of the university's strategy and uncover lessons that other organizations can apply.

The University of St Andrews

The University of St Andrews is a relatively small and highly international community (just under 8,000 students, 47% of whom are from outside the UK), which has recently (over the last 10 years or so) improved its standing in the league tables to become a university that now places consistently within the top five universities in the UK.

It has a traditional academic portfolio, with subjects grouped into faculties of Arts, Science, Medicine, and Divinity. Its approach to internationalization is likewise traditional, with students travelling from around the world to attend the university, which is set in a small and picturesque mediaeval seaside town.

Lean in St Andrews: Historically

In 2006, the University had reached a time where the academic staff of the university met global standards of excellence, following a consistent policy of investment. However, there was feedback from these academic staff that the administrative processes of the university were suboptimal.

The senior management team of the university was also at that time recognizing that while the university was able to manage its finances adequately, in the medium to longer term the university needed to seek ways to ensure that it used resources more effectively.

This led university leadership to conclude that there was a need to become more effective and efficient, to look at the way the university organized its work. The leadership team wished to undertake process improvements; rather than merely implementing new technology.

Against this background, the then Quaestor and Factor (the chief operating officer who was at that time responsible for the finance and estates functions of the university) recognized that lean was an approach that would meet these needs. He was drawn to the approach by the non-zero-sum aspect of releasing waste to increase value, and the importance that lean placed on building relationships between people.

The university commissioned an external consultancy for a significant number of months to train a small number of seconded staff in "lean office" techniques, creating a central team that was line managed as part of the university's Information Services (IS) division. However, this team was still very much established as an internal consultancy service independent of existing organizational structures.

After the initial three-year secondments, the team members were made a permanent feature of the university, having developed their own *lean project cycle* (see below) and demonstrated significant successes in a number of areas.

Lean in St Andrews: Functionally
Practically speaking, the senior sponsor of the St Andrews lean team has remained consistent since its inception. However, as of January 2016, while retaining the title "Quaestor and Factor," this role has grown to include serving as the Acting Chief Executive Officer of the university, responsible for the university's operational structures, alongside the university's Acting Principal, responsible for its academic delivery.

Line management of the team has remained within IS, which was initially intended as a way to ensure that technological implementations first dealt with root cause problem solving and improved business processes before applying a digital solution. While managed within IS, the lean team positioned themselves very much as an internal consultancy service independent from any service or department within the university.

Lean in St Andrews: The process

Figure 2 below illustrates how one staff member described (in a "rich pictures" exercise) the work of the lean team at St Andrews, which involves taking the complicated and making it simple in order to delight the customer.
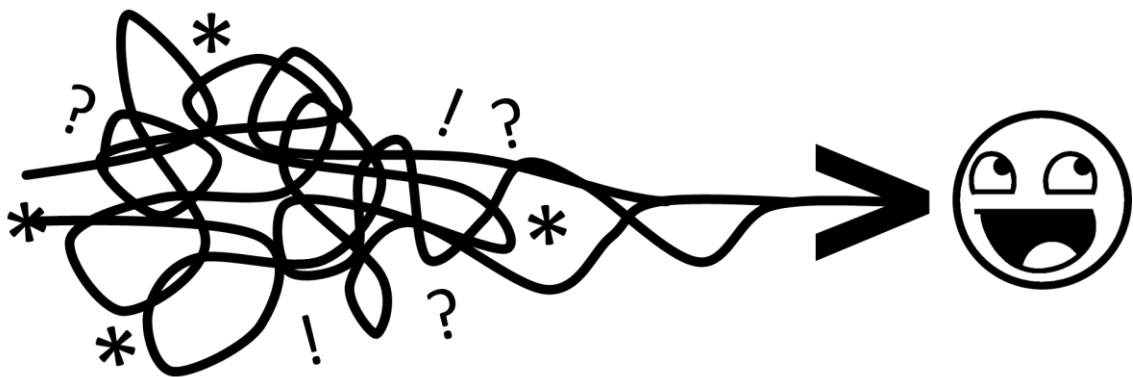

Figure 2. Image describing lean in the University of St Andrews (both over time and in terms of the act of process improvement itself).

The university has been a key influencer behind an events-driven approach to lean, having designed a process that revolves around a series of interventions that progress through the following steps (Robinson et al., 2014):

1. *Request:* An area of work is identified by a member of the principal's office, senior management, frontline staff members, or through an enquiry the lean team might make.
2. *Scoping:* It is ensured that there are clear goals, the right people are involved, and any required resources are arranged.
3. *Training:* Where required (e.g., when staff are new to lean or it is a specialist area), additional training is undertaken.
4. *Planning:* With the appropriate people, the project goal is reviewed and agreed upon. The approach, timetable, and any data requirements are also agreed upon.
5. *Redesign:* The group meets for a focused period of time with the authority to create a new process and identify and complete the actions required. This will lead to a new documented process and an action plan for any further work.
6. *Implementation:* Further actions are taken by the team members.

7. *Review:* The group meets regularly as required (often at 15, 30, and 90 days) to identify and remove any barriers to implementation

8. *Feedback:* The project is signed off as completed and feedback is gathered on the lean process as a whole.

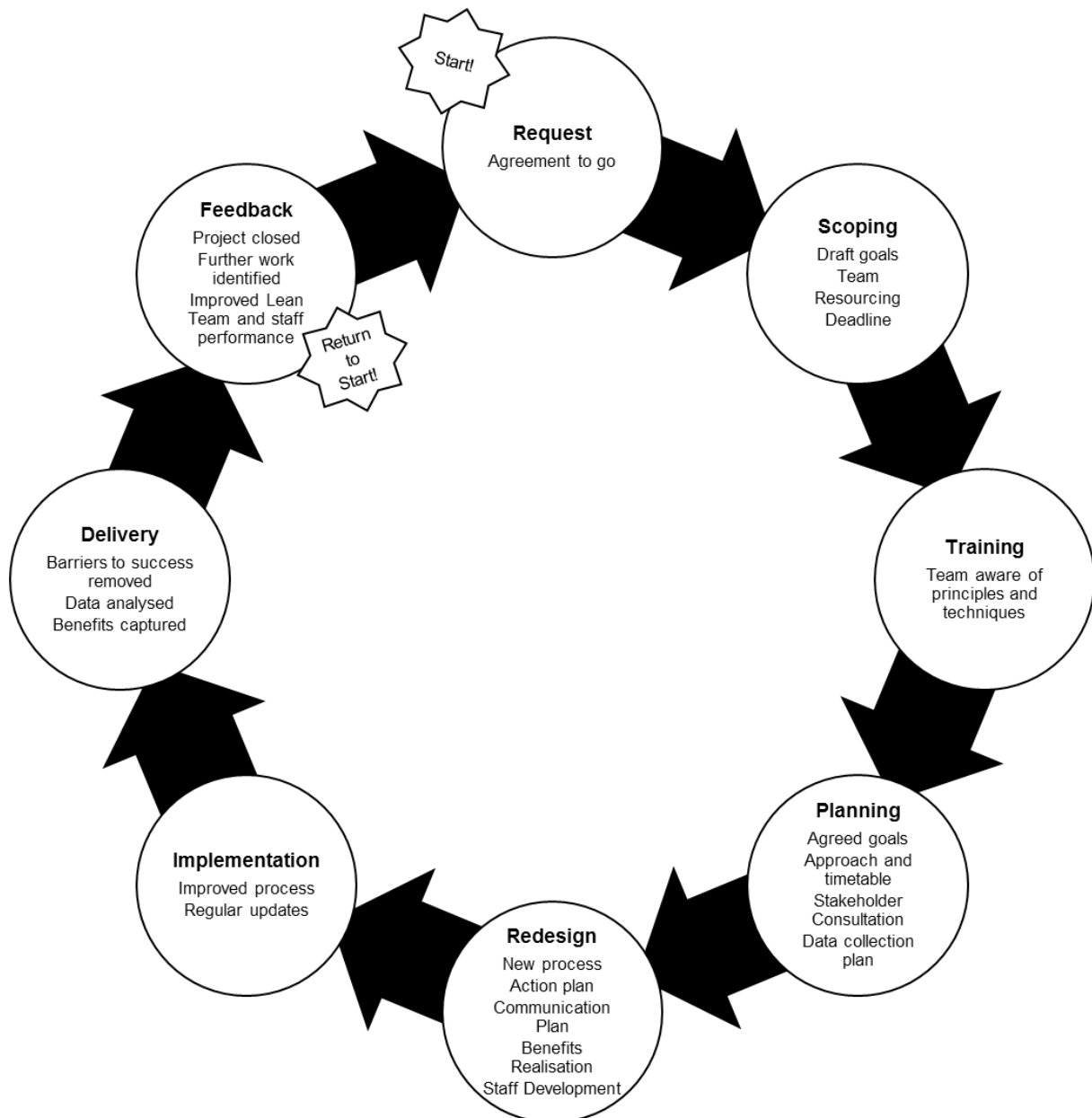These steps are described further in the following diagram:

Start!

Request
Agreement to go

Feedback
Project closed
Further work
identified
Improved Lean
Team and staff
performance

Return
to
Start!

Scoping
Draft goals
Team
Resourcing
Deadline

Delivery
Barriers to success
removed
Data analysed
Benefits captured

Training
Team aware of
principles and
techniques

Implementation
Improved process
Regular updates

Planning
Agreed goals
Approach and
timetable
Stakeholder
Consultation
Data collection
plan

Redesign
New process
Action plan
Communication
Plan
Benefits
Realisation
Staff Development

Figure 3. Image outlining the University of St Andrews' process improvement project cycle.

Notwithstanding the success of this "St Andrews Model," it is fair to say that St Andrews' approach has always aimed to leverage these events as a starting point to drive wider cultural and behavioral change.

Lessons from St Andrews

From the start of the lean team, it was acknowledged that lean was a "philosophy of work" rather than a series of tools or interventions, which is reflected in how staff describe the changes lean has made at St Andrews.

When asking staff at the boardroom level in St Andrews to reflect on the impact lean has had, they describe it as a cornerstone of the university's current success, success which has in part resulted from the breaking down of barriers between organizational functions enabled by lean. They are passionate about how lean has fundamentally changed how individuals and teams communicate and problem solve together.

Despite lean's successes at St Andrews, even after 10 years there is some evidence that not all areas of the university understand lean as an organizational cultural phenomenon—that is, as a "philosophy." Instead, they understand lean as a specific tool designed to deal with a certain type of problem. This is to be expected in an intervention-driven approach. Perhaps unsurprisingly, this perception is primarily carried by staff members who have not been involved in such interventions.

When asking a sample of St Andrew's staff about the impact of lean on individuals, they report that when people working as part of a lean project "get it" these people then make time to support their colleagues. The staff interviewed indicated that in the longer term also individuals who have taken part in a lean intervention subsequently appear to adopt the principles of lean in terms of how they run their teams and how they relate to their internal colleagues. This then leads to the emergent growth of lean behaviors across networks of staff and business processes, semi-opportunistically.

That said, members of the St Andrews lean team itself reflect that their lean journey has not been easy and that their role requires a high level of personal resilience, with a relatively high turnover of staffing during the early years of the lean team.

Summary

The lean team in the University of St Andrews clearly demonstrates that using a lean approach works in HE, albeit when that approach is tailored to fit the sector.

While many aspects of the lean approach in St Andrews appear to be very different from lean in other sectors, when we examine this case in more detail we can see similarities with other successful second-order lean implementations; e.g., the initial adoption of specific lean techniques in order to enable a principles-led approach and focusing on respect for people and continuous improvement.

At the time of writing, the lean team at St Andrews was broadening its responsibility to include purview of all change projects in the university as a whole. This is an approach emerging in the sector as a whole; one of hybrid lean and project management teams. It is an approach not without its risks as it arguably supports the misperception that improvement is different from business as usual.

If St Andrews can avoid this risk and keep working organizationally at a cultural and behavioral level, then we may yet see one of the world's oldest universities become one of the most lean.