

**LeanREB/ARVO
Case Study Report by the
University of Salford**

**Lean Facilities Management: The
UK Perspective**

**Case Study Report involving: Estate and Property Services at
The University of Salford and Balfour Beatty Workplace**

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1.0 ARVO Research Project

The following report presents the case study findings for the UK study which forms part of the LeanREB/ARVO '*Value Creation Models in Real Estate Business*' programme. The LeanREB/ARVO research project is funded by the Finnish Funding Agency of Technology and Innovation (TEKES). This is a joint collaborative research endeavour between the School of the Built Environment, Centre for Real Estate and Facilities Management at the University of Salford, Manchester, United Kingdom and the Real Estate Business (REB) team at Aalto University School of Engineering located in Espoo, Finland. The facility management organizations involved in the research were The University of Salford, Estate and Property Services, MediaCityUK and Balfour Beatty Workplace.

1.1 Introduction

The research produced in this report forms the case studies and lean workshop relating to adding value to the real estate end user. The case studies investigate the application of lean principles and takes a brief look at the visual workplace in complex facility management enterprises. Two cases are examined that explore different business related functions. In the first of these case studies, Case Study One, the researcher analysed The University of Salford's Estate and Property Services (E&PS) division as they underwent significant changes as part of a University wide Transformation Programme. In Case Study Two, The University of Salford (UoS) currently leases four stories of a high profile newly constructed facility as part of the MediaCityUK complex at Salford Quays, Salford, UK. Being the first time that the University of Salford has procured such a high profile facility, it also represents a departure in facilities management strategy whereby facilities management is outsourced rather than provided in-house. The outsourced service provider, Balfour Beatty Workplace (BBW) has embraced lean principles as a company and we sought to evaluate their lean approach. In particular, we investigated how the outsourced facilities management services were developed in support of the new facility over the first seven months of its operation. A Lean Workshop was undertaken and lean tools were introduced to stakeholders involved in both case studies. The outcomes of the workshop are synthesized in this report.

In section 2.0, this report focuses on facilities management and the notion of Lean FM in the UK. Section 3.0 defines lean principles that set forth the philosophy utilized to measure the case studies and LeanREB/ARVO programme herein. A short overview of lean concepts and the visual workplace are discussed. Section 4.0 and 5.0 present the background to the two case studies and the research findings. Section 6.0 synthesizes the data collected in the Lean

Workshop that was held in May 2012, in conjunction with the Finnish ARVO workshops. The findings of the report are presented in Section 7.0.

1.2 Case Study Objectives

The objective of the case studies were to understand the effectiveness of lean principles in the context of complex Facility Management systems. The theoretical model currently being developed suggests that a modified approach should be applied that takes account of the distinct characteristics that prevail in this complex environment. Most conspicuous in this context is the pre-eminence of the ‘service’ versus the ‘maintenance’ environment. Facility Management is unique in embracing both the service and the product (i.e. the asset or the building). Commonalities with the Finnish Case Studies will be sought to enable direct comparisons.

- Evidence of continuous improvement.
- Identifying the lean value stream.
- Specifying value from the customer, client and service providers’ perspective.

1.3 Research Methodology

Action research was conducted in order to gather background information and original data for the case studies. The researcher was able to study the participants working in their own environment to learn more about the organization, services provided, and the employee’s roles and responsibilities. Participatory action research, known as PAR, was additionally used to gather data, along with informal semi-structured interviews. In this report the researcher participated with both case study organizations. “In PAR, some of the members of the organization studied are actively engaged in the quest for information and ideas to guide their future actions and look upon the researcher for guidance” (Whyte 1991). Initial meetings were scheduled to establish key points of contact and to introduce the research goals, objectives and end-user participation was discussed. During the LeanREB/ARVO Workshop the perception of how the FM service providers interpret ‘value’ was discussed and attendees participated in a value added activity. There were additional activities to understand the barriers that FM service providers face on a daily basis that deters them from providing value to the end user. And lastly, a visual problem solving activity was introduced using visuality as a method to mitigate organizational issues. This report is a result of the data collected between the researcher, The University of Salford, Estate and Property Services, MediaCityUK and Balfour Beatty Workplace. The case studies seek to:

- Understand how ‘Value’ to the customer is interpreted by the service providers.
- Map the flow (Value Stream Mapping) of work provided and identify waste and impediments to flow.
- Introduce Lean Tools and Visual Workplace Principles to the FM service providers.
- Analyse the results of the organizations transformation and the effects on providing value to the end user.

The principles of Lean Theory that were considered throughout this report are as follows:

- Value Analysis.
- Continuous Improvement.
- Lean Transformation Concepts.
- Value Stream Mapping.

2.0 Facilities Management in the UK

According to BDO Stoy Hayward (2007) “Facilities Management (FM) is relatively a young industry and one that is constantly evolving in order to meet the demands associated with new developments in the international and UK economies”. A survey by BDO Stoy Hayward involved over 1,500 UK facilities management personnel in the following sectors: entertainment, financial services, hospitality, manufacturing, media, professional services, public sector government agencies, retail and wholesale and distribution. The survey outcome concluded that the biggest concerns FM industry faces in the UK are business continuity planning, compliance with industry regulations and sustainability issues. The FM organizations were asked how do they measure value to the end user. The results concluded that 59% of the respondents had no formal programmes established for evaluating the contribution of facilities management services; 41% had some type of formal programme in place to measure FM services provided. “Cynics would say that this is because many in-house facilities managers don’t want metrics which would act as a stick to beat them over their performance (fear factor). They perceive themselves as underfunded and expected to over-deliver” (BDO Stoy Hayward 2007). The challenges and enablers of change presented to the FM sector in the UK described in the BDO report that are closely aligned to the priorities of lean enterprises are as follows:

- Demonstrate the Value of FM:
 - Identify the organization’s needs and purpose Solutions.
 - Better Performance Metrics.

- Better Communication (Speak the Language of the Board/Organization).
- Better Environment Reporting:
 - Cost Benefit Analysis.
 - Common Standards.
 - Consistency, Comparability.
 - Audited Information.
- Investment in Skills Training.
- Career Development Programmes.
- Investment in latest Technologies which enhance Workplace Flexibility.
- Common Standards and Methodologies.

The survey did not mention the development or adherence to a lean FM enterprise. Clearly the study highlighted the need for the industry to set up value adding metrics, an investment in training and developing the workforce, and best practice initiatives in order to meet the demanding needs of executing and maintaining a healthy, sound and safe building environment.

2.1 Lean Facilities Management

Within the facilities management (FM) industry the conceptualization of lean implementation is at the early stages of investigation and is somewhat under researched. Evidence shows that lean implementation has been successful in manufacturing, aerospace industry, construction, healthcare sector, IT sector, service industry, banking and public sector organizations, although not extensively in facility management departments or FM organizations. Though its origins grew out of the automotive industry, lean is applicable to any service industry and administration functions where process, procedures and systems are in place. According to Coenen (*et al* 2011) organizations can be described as complex systems in which value-adding activities take place and necessary governance is predominately achieved by managing processes (Rüegg-Strum 2004, Coenen *et al* 2011). This applies to goods producing organizations, such as manufacturing, as well as to service organizations, such as banks or insurance corporations. For FM the main task is to engage in value-adding activities that support and improve the effectiveness of the core business (EN 15222-1:2006).

2.2 Lean FM in the UK

There is evidence of a lean movement in the areas of construction, manufacturing, healthcare and public sectors in the UK. One of the world's largest lean research centres is located at Cardiff University's Business School, Cardiff, UK. It was at Cardiff that Daniel T. Jones

instituted the Lean Enterprise Research Centre (LERC) in 1994 and has been researching, educating and communicating lean initiatives ever since. He is known for developing the term “lean thinking” in his book, *The Machine that Changed the World* (Womack, Jones & Roos 1990), which this report uses as a guide. LERC’s research and education is limited to the public sector, small and medium enterprises (SME’s), lean logistics, food sector, service and manufacturing organizations whilst their research in facilities management is limited. In addition, Cardiff University is going through a lean transformation programme.

A thorough literature review conducted in this research suggests that the areas of lean research activity in the UK are largely in aerospace, healthcare, public sector, manufacturing, and service/finance industries, whilst its application is limited in the FM sector. An example of its application in facilities management is that of a UK consulting firm who are involved in training the facilities management department of a large international pharmaceutical manufacturing company on implementing lean tools in their facilities management operations. Initial lean workshops were set up to introduce lean principles and visual management techniques. The company uses lean principles and Six Sigma tools in the manufacturing side of the business, but thus far has not addressed lean initiatives in facilities management.

Since 2005, the National Health Services Trust’s (NHST) started using lean tools at Bolton Hospitals NHS Trust, in order “to reduce waste and engage workforces to meet increased expectations of patients and improve quality (Jones and Mitchell, 2006). In 2006 they were asked to re-examine the issues of value measurement. The Royal Bolton Hospital NHS Foundation Trust (RBHNFT) was chosen to pilot lean initiatives. RBHNFT introduced a version of lean management entitled the Bolton Improving Care System (BICS). BICS is based on the fundamental criteria of lean management applied to healthcare that can be used at different levels – departmental, patient journey, or hospital wide (Fillingham 2008). Instrumental to BICS has been the focus on and development of rapid improvement events (RIE's). "The case study provided an opportunity to observe a lean journey in which laundry staff and clinical colleagues embarked with a joint aspiration of improving understanding and redesigning a service that was cost effective and supported patient needs” (Tyldsley and Wyton 2011).

Balfour Beatty delivers financial, planning, design, construction, facilities management, and maintenance and support services globally. Their FM group, Balfour Beatty Workplace (BBW), is the outsourced facility management provider in Case Study Two of this report.

The company implements a lean approach and Six Sigma strategies to all of their projects. This will be further discussed in section 5.0 of this report.

To conclude, this research makes a significant contribution to the embodiment of knowledge by exploring the concept of Lean Facilities Management (LFM) in UK practice, looking in particular at university facilities management systems in an in-house and outsourced operation. The intended outcome is a lean value added workforce that improves quality, performance targets resulting in a constant process flow of activities. The application of lean principles in facilities management is largely unexplored and it is hoped that the value and originality of this report influences future LFM research initiatives.

3.0 Lean Philosophy

The intent of a lean philosophy is to enhance customer value, improve organizational efficiencies and reduce wasted efforts within all aspects of an organization, to include interpersonal affiliations, human resources, supply chain relationships, materials, inventory and technology. The actual concept of what we call “Lean Thinking” today originated in 1990 with the legendary book, *The Machine that Changed the World*, authored by Womack, Jones and Roos. The philosophical foundation, tools, techniques and theory of a lean (total quality management, TQM) system started to be developed over 67 years ago by Shigeo Shingo who presented his concepts of production and identified batch production as the main source of delays (Bicheno 2000, Bicheno 2009). In 1950 Taachi Ohno began to develop the Toyota Production System, known as TPS. Nonetheless, according to Bicheno’s timeline of significant dates for the road to (and away from) lean (2009) we can trace initial ideas of efficiency and total quality management philosophy back to the date of 1893 when Frederick Winslow Taylor began work as a “consulting engineer”. Furthermore, the Lean Enterprise Institute traces efficiencies and flow back to the year 1500 when the Venetian Arsenal developed standards of design for manufacturing boats and the use of a floating assembly line for production. The idea of lean, efficiencies and work flow has puzzled man for centuries. Organizations are always striving for the best possible way to add value to our customers and that is what this case study is all about, creating value to the end user by introducing lean techniques and visual workplace management tools.

3.1 Principles of Lean

Womack and Jones (2006) identified five “lean principles” (Parry *et al* 2010) that this report will address. This research envisions a productive and successful lean workplace by

conceptualisation of linking complex facility management practices and Womack and Jones theory. Below are the five guiding principles of lean that are incorporated in this research:

1. *Specify value*: The definitive customer can only define Value. It is specified in terms of satisfying customers' needs by providing products and/or services with desired capabilities at a competitive price and lead-time.
2. *Identify the value stream*: The set of all of the actions required in order to bring a product through problem solving, information management, and physical transformation tasks. Here, value refers to the nature of activities being carried out. The value stream is the set of actions that transforms a product or service.
3. *Make the value flow*: By reducing cycle times and batch sizes to the absolute minimum, ensuring each operation is visible, defined, and has a visible status to eliminate possible stoppages in the production process. In the facility management system the value flow can be relayed to the cycle time of the work order process and flow of administrative, maintenance and operation activities.
4. *Let the customer pull*: Processes or products are to be produced and delivered on-demand from the customers.
5. *Pursue perfection*: Even if the other four lean principles are followed, if the mindset for pursuing perfection has not been developed across the enterprise, any improvement will only deliver a one-off benefit.

3.2 The Visual Workplace – The First Step

When embarking on a lean journey, the identification of activity process and procedures must take place in order to see where the elimination of barriers and constraints in the critical path of the systems are resulting in added value to the end users. This activity is labelled 'value stream mapping' and is the first step in visualising the systems flow of inputs, throughputs and outputs. Gadsworth (2005) elucidates the theory that visual and lean are twin strategies. She goes on to justify that visual and lean share a single objective: to help the enterprise achieve excellence and ensure its long life and prosperity. Lean addresses the technical side of the equation, focusing on the surgical excision of the macro-level and the relentless pursuit of the least cost means. The result of an effective lean conversion is for lead times to shrink by 60%-80%, and for productivity, quality levels, and market share to improve.

Visual workplace management is about information and people, targeting waste on a local micro level. The technologies of a visual workplace translate information deficits into visual devices and systems that populate the work environment, enabling people to execute the

standards formulated by lean into performance that is both precise and complete (Gadsworth 2005). Creating a visual workplace according to Gadsworth (2005) does something more than simply enabling a lean outcome. It makes the workplace sustainable, allowing the organization as a whole to move from strength to strength. This sustainability is deeply rooted in visual's ability to engage the creativity of the workforce and capture it in concrete, functional form, liberating information-and in the process, the human will.

The rationale behind the visual management link to lean and FM is that visual aspects of an organization are entwined with the core business and cultural effectiveness, where by lean is the tool that helps in removing the barriers and concentrates on the macro flow of activities and elimination of wasted efforts. This is done by visualization of the current FM business processes that accelerate lean process improvement initiatives through value stream mapping. The visual workplace philosophy and visual management tools were introduced to both case study clients during the LeanREB/ARVO Workshop and are examined in section 6.0 of this report.

4.0 Case Study One: The University of Salford, Estate and Property Services

Case Study One follows the Transformation Programme of The University of Salford, Estate and Property Services (E&PS). The Universities own transformation process is not specifically labelled a lean initiative, however Estate and Property Services took it upon themselves to implement lean strategies and use lean terminology and tools even though during the initial planning phase they did not outwardly discuss with staff that they were embarking on a lean programme. Few people in E&PS had heard about lean. In speaking with both the Team Leader of Mechanical and Building Services, neither individual had ever heard of lean before the LeanREB/ARVO Workshop which is presented and discussed in section 6.0 of this report. The Mechanical Team Leader said that, “we work for the university, whatever happens outside (the universities transformation) we are part of it, we are a part of the whole university”.

Additionally the word ‘transformation’ was one that E&PS tried to steer clear of. Although their documents mention the word transformation in parallel with the universities own reorganization programme. E&PS transformation programme is labelled as a ‘Business Case’ project along with ‘Project Initiation Documents’ that have been distributed throughout the workforce for clarification, scope and direction. The Head of Administrative Services describes their internal reorganizational as “bits and bobs, efficiencies, processes and reduction in duplication”. She goes on to declare that the term “lean only raised head

recently, previously it was not a term” that was used or talked about: until the lean workshop put it in perspective. Their own internal makeover is bespoke “to deliver the very best environment and service experience (to the end user) – and for making visible progress” (Benton & Large 2011 p. 5). The Associate Director of Operations refers to this restructuring as “added value” to the customer.

The objectives of this case from the researcher’s point of view are to establish:

1. How Lean has been implemented in the existing state?
2. What Lean or Visual Tools have been used and put in to place?
3. What aspects of the Lean restructuring business case have been successful?
4. What aspects of the Lean restructuring business case have been unsuccessful?

4.1 Introduction

Estate and Property Services (E&PS) division went through a restructuring of all of its departments, except Security Services, in the autumn of 2010. The second stage of E&PS restructuring efforts were to look at implementing a standardization for measuring performance levels and setting up service agreements with university colleges, schools and professional services. The next step was to develop Service Level Agreements (SLA’s) and Performance Indicators (PI’s) based on British Institute of Facilities Management (BIFM) UK industry performance standards for all hard and soft facility management services. Per the Associate Director of Operations and Facilities the new performance standards will be looked upon as ‘added value’ initiatives. Prior to this effort no known SLA’s, PI’s, let alone performance standards had ever been put in place to measure FM services. In Figure 1 below, the designation of what hard and soft FM services are in relation to E&PS is noted.

Table 1: Estate and Property Services Hard and Soft FM Services Defined

Hard FM Services	Soft FM Services	
Long Term Maintenance	Reception/Help Desk	Pest Control
Building Maintenance	Cleaning Services	Recycling & Waste Removal
Ground Maintenance	Mail Delivery/Sorting	Utilities Management
	Furniture Re-use	Parking Management
	Tenant Services (Technology House & Jack Goldberg Nursery)	Porterage and University Moves
		Security Services

4.2 Case Study One – Key Objectives of the Business Case

As mentioned in section 4.0, although ‘lean techniques’ were not considered training and teaching aids for E&PS staff, in Objective 4 of their Business Case documents, the concept of making a more ‘transparent’ working environment is mentioned. In developing a lean enterprise transparency becomes a major progression as you begin to look at the organization and its employees, customers and supply chain as a whole. “Each participant involved needs to understand all the steps taken along the value stream” (Womack and Jones 2003) and understand how it all links up to the vision and core values of the organization. In objective 7 of their Business Case documents, a “lean approach to delivery of services, identifying and removing waste activities” and “process mapping” are all components of developing a lean enterprise. There is a clear understanding of lean principles at the top executive level of the organization.

When a number of employees heard the word ‘transformation’ and when hearing the word ‘lean’, they immediately thought of layoffs, or in UK employment terms ‘redundancies’. There was a very negative sentiment expressed throughout the workplace. There has been a considerable job task and role reallocation and some people have left, deciding to take early retirement and severance packages. However, according to the Lean Enterprise Institute (2012) “lean must never be seen as a tool for headcount reduction or mindless cost-cutting. This fundamentally misses the purpose of lean, which is to create value through eliminating waste. As companies improve their processes they should be able to reallocate their productive resources to new value-creating work”. The largest reallocations of responsibilities were made in combining the Reception/Help Desk activities and expanding the role of the Handyperson/Porterage services. The Reception/Help Desk activities will be examined later in this document.

In starting any lean initiative it is always advised to assign a point of contact or ‘change agent’ to educate and direct the lean program activities. This was done by E&PS as they defined a project team and board that are responsible for authorizing division reorganization initiatives and project scope, the project board is noted on the next page in Figure 1. All new business related initiatives to include process and procedures are to be run by the project board members. Individual names are withheld for privacy, but titles are indicated.

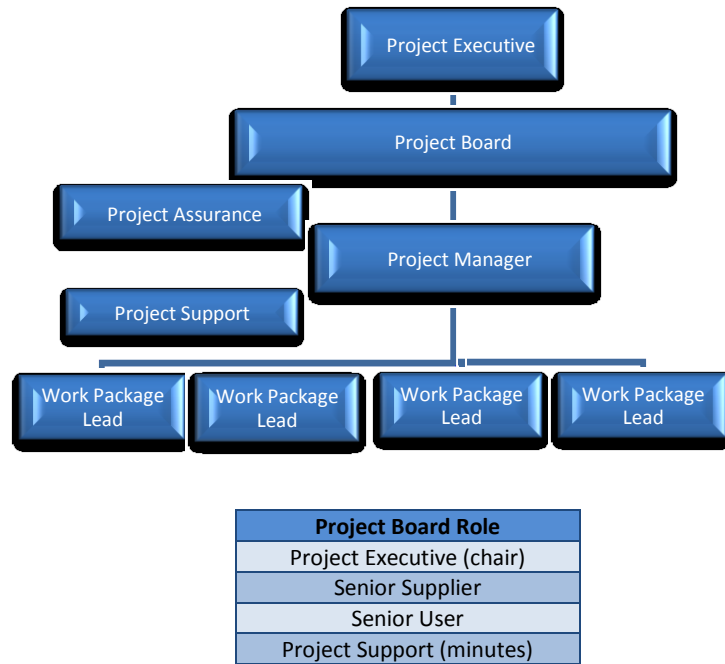


Figure 1: E&PS Project Team and Board Organization Structure

4.3 Added Value to the End User

A critical starting point for a lean vision is value (Womack and Jones 2003). The E&PS division interprets value from several different perspectives. Part of the new initiative is looking at performance indicators; according to the Executive Directors 2011-12 objectives “reviewing all FM services using ‘value for money’ criteria and benchmarking data” is key. This forms part of E&PS’s ‘customer service’ objective. They set up strategies that will facilitate feedback channels for measuring customer satisfaction, interpreted as ‘added value’ to the end user. A Customer Satisfaction and Perception Survey is sent out on a quarterly basis to a select number of customers. This had never been done previously.

To narrow down the focus the researcher concentrated efforts on the Reception Service/Help Desk task. According to Hodges (2004) “the work reception (help desk) area are the eyes and ears of the facility department. It is the single point where all, or nearly all, facility services are received, prioritized, tasked, coordinated, and evaluated. This is the department that carries out the day to day duties, and is the most important managerial function of the Facility Manager’s efforts”. In reviewing the Reception/Help Desk workload, E&PS wanted to ensure that they linked the activities with the newly created SLA’s and PI’s. Value stream mapping of all process and procedures were mapped out showing current state, labelled ‘As-Is’ and future state, labelled ‘To-Be’. According to Womack and Jones (2003), “the *value*

stream is a set of all the specific actions required to bring a specific product or service” to fruition.

As a result of value stream mapping it was noted that many of the soft FM services were not being monitored through the CAFM system, which was resulting in insufficient work order statistics being generated. In the ‘To Be’ or future state the Reception Service/Help Desk associate will have a larger role in acting as the point of contact for all customer requests, assigning work orders to the appropriate technicians; they refer to them as multi-skilled tradespersons, and ensuring that the flow of information to and from the customer is acceptable. The Reception/Help Desk associate will also be responsible for monitoring outstanding work orders and make sure that all work is carried out and meets the SLA’s put in place.

A further undertaking was to review the work orders that were created using the computer aided facility management (CAFM) system, the end result was that no one is monitoring and closing down work orders in a timely manner. In the new future state, once the work order is created the Reception Service/Help Desk associate issues the activity to a specific person directly. Whilst in the previous (existing state) the work orders were issued to either a team leader or supervisor. In the newly created (future state), the Reception Service/Help Desk associate would be responsible for monitoring the progress of work orders and following up to make sure that the work is being done in a timely manner, all linked to SLA performance levels. As a result, smart phones were purchased and distributed to the multi-skilled tradespersons. Once a work order ticket is issued in the CAFM system and assigned to a particular multi-skilled tradesperson, an e-mail is received through their smart phone. Currently, they can only view the work order tickets they cannot manipulate the document, it is read only. It is envisioned, in the future state, that the multi-skilled tradesperson will be able to interface directly with the work order and report their progress, as well as be able to close work order tickets and write comments.

A further value added activity incorporated was the Cisco telephone communications system. As a result of the value stream mapping exercise a Cisco telephone communications system was purchased and installed at each help desk and reception area. In Figure 2 on the next page, the existing state value stream map of the task of answering the telephone is shown. Based on the value stream map of the existing state, the future state was mapped out which is shown in Figure 3, page 19. The new value stream allowed for the development of all telephones to be networked and all calls in to the facilities help desk to be answered at any

location. Cisco refers to this new process as ‘intelligent call routing’ (Cisco 2012), calls are routed between Help Desk/Reception areas and availability. If an associate is on the telephone when an incoming call comes in to the Help Desk/Reception, the call will automatically be routed to another telephone at the next location.

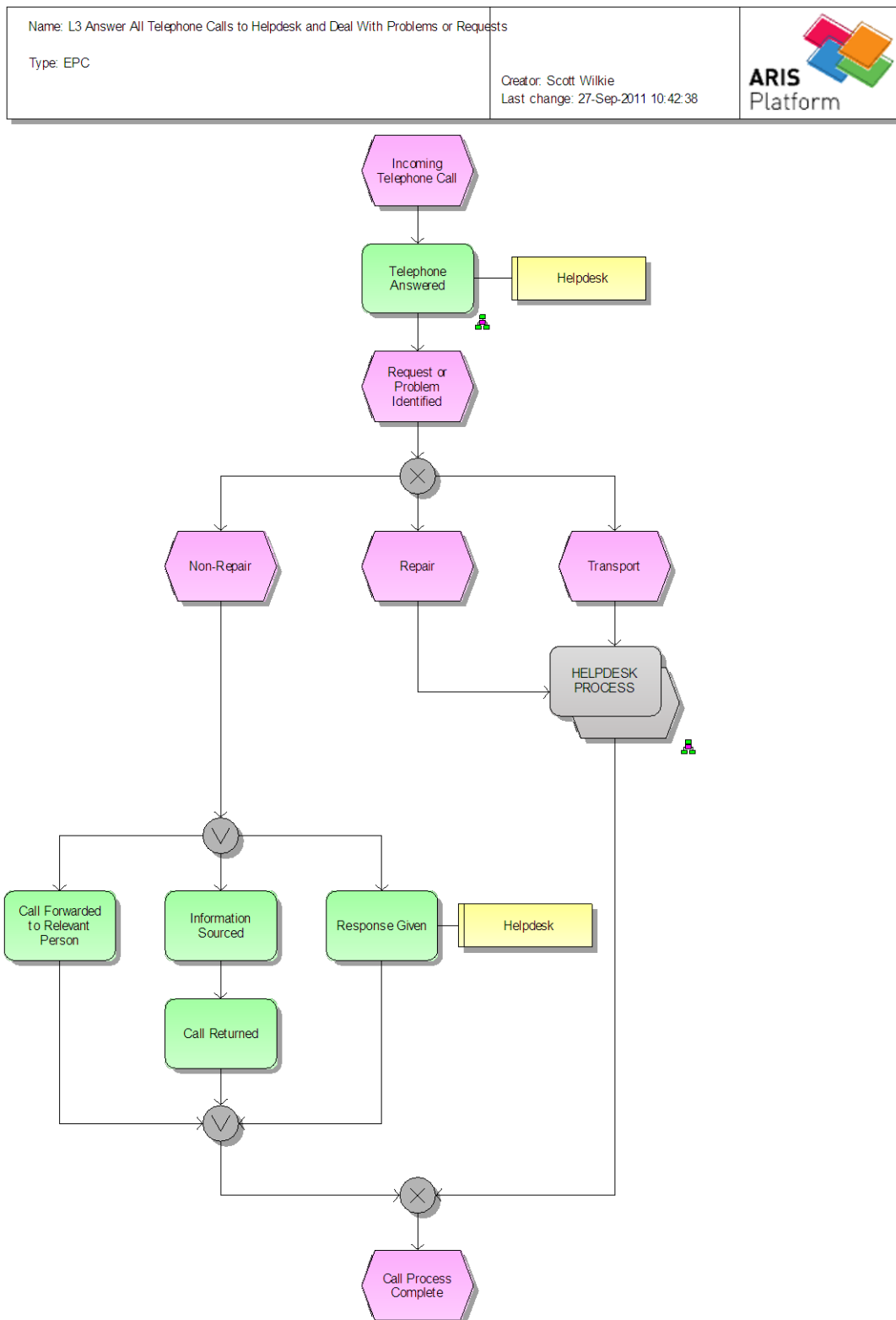


Figure 2: Answering Telephone Calls to the Help Desk “As-Is”

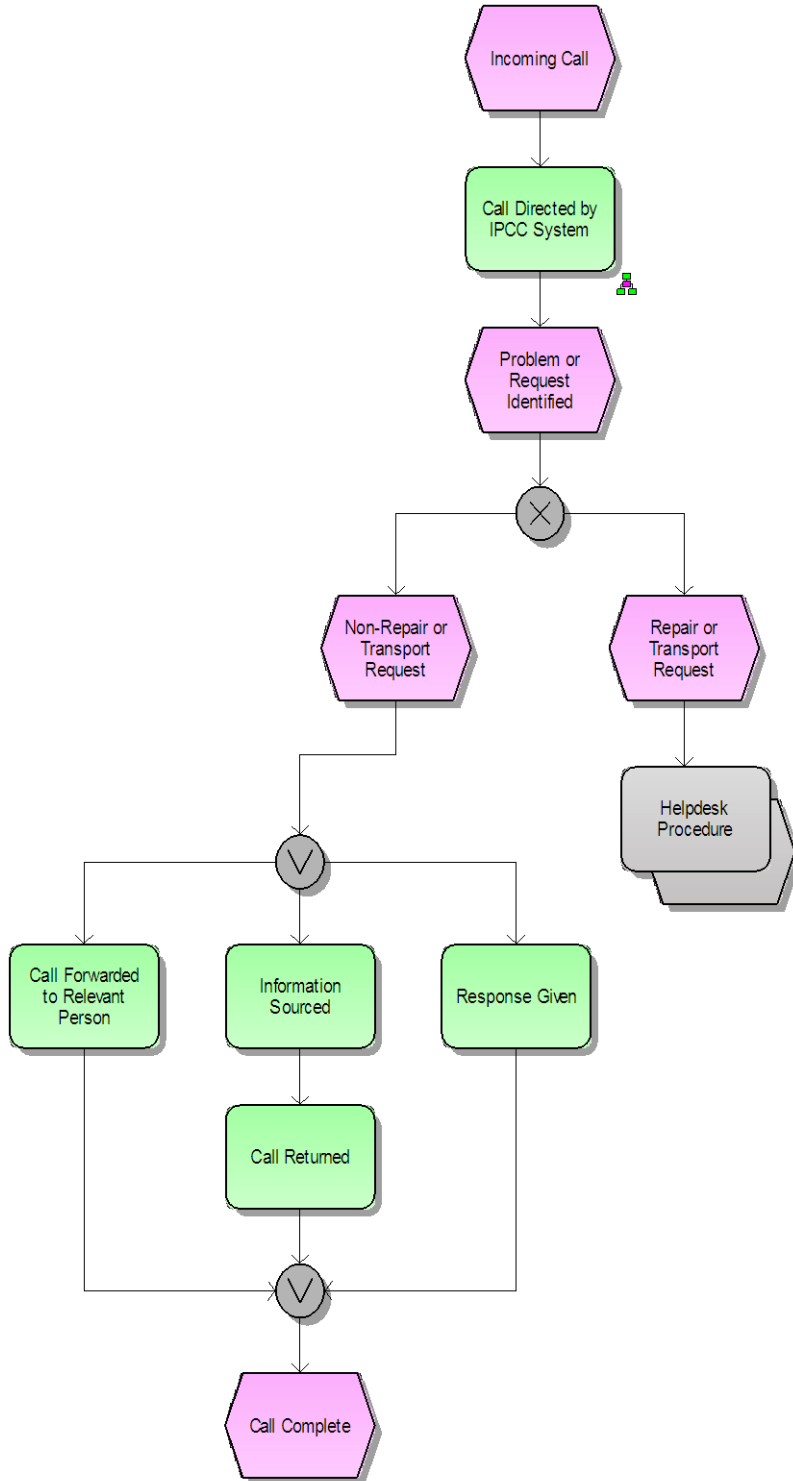


Figure 3: Answering Telephone Calls to the Help Desk “To-Be”

This has been a considerable improvement for the Reception/Help Desk operation. As a result of installing the Cisco telephone system at all the Reception and main Help Desk locations, since November 2012 the percentage of Help Desk phone calls answered in 15 seconds is up from 88.9% to 93.3%. Additionally the number of calls answered is now at 97%, well above the 90% Target Performance Indicator Compliance goal set forth in the new SLA.

4.4 Monthly Performance Indicators

Part of E&PS’s restructuring programme was the “production of a monthly performance report which aligns with the agreed SLA’s” (Benton and Large 2011). The department vision behind the report is as follows:

“E&PS will be recognized for strong determination to deliver the very best environment and service experience – and for making a visible progress” (Benton 2011).

As a result, monthly PI’s of hard and soft FM disciplines are compiled in to a report. And every six months customer feedback reports are assembled. “With the exception of the Health & Safety PI, targets are set between 90% and 100%” (Benton and Large 2011). This has been an extremely useful tool for the department to measure their transformation progress and the current and future state. The monthly report tracks all of the hard and soft FM services including administrative services, sickness and absenteeism. The services tracked are presented in Table 2 below.

Table 2: Monthly PI FM Services Reported

Monthly PI’s and Targets	
Building Maintenance (Excluding Student Accommodation)	Building Maintenance (For Student Accommodation)
Cleaning	Grounds Maintenance
Energy and Utilities	Health & Safety
Furniture Collection and Recycling	Porterage and University Moves
Mail Service	Security Services
Sickness and Absence	Reception and Help Desk Staffing

Porterage and University Moves are still under development. This report has been invaluable to E&PS as they track their performance and “learn from experience and continuously

improve the service given by” (Benton 2011) staff. The customer feedback results are a good indicator of how well E&PS have been adding value to the end user.

4.5 Conclusion - Case Study One

The aim of this case from the researchers objectives were to track the transformation programme that The University of Salford, Estate and Property Services is currently involved in from a lean valued added perspective. The findings are summarised based on the objectives of Case Study One.

4.5.1 Objective and Summation

As discussed in section 4.0, lean was not a term used in describing E&PS’s own restructuring initiative, nor did they train their staff in lean techniques. Retrospectively lean terminology and objectives were subliminally implicit within their transformation programme. One of the long term Help Desk/Receptionist operators mentioned that “lean was never explicitly mentioned, efficiencies were mentioned several times” in conjunction with the universities transformation initiative. Department objectives introduced a more transparent workplace; elimination of waste, increased efficiencies and more adaptation of visual tools. The lean visual tools put in place are process mapping, monthly performance indicator reports and Standard Level of Agreements. There is no evidence of visual controls, visual leadership and visual workplace management. Currently, E&PS is consistently benchmarking monthly performance based on ‘added value’ to the end user.

In Case Study One there are illustrations of Objective Three, the successfulness of a lean transformation business case. The fact that E&PS has been able to restructure their department and put in to place new process and procedures, such as the SLA’s and PI’s for all hard and soft services is a feat with in itself. The new Cisco phone activity and the continued development of the CAFM system have resulted in a better performing, more transparent organized facilities management department. They have a long way to go, but the attitudes of the employees, the change, and expectations have had a positive effect on staff and customers. Their ability to link core competences to the mission and vision of the university in a sense is adding value holistically.

In relation to Objective Four, the unsuccessful aspect of the lean restructuring case (with all of the new processes and procedures, more use of the CAFM system, new Cisco communications system and reporting procedures) has been the commitment of time. Training and development of current and new staff has been slow. According to the Associate

Director of Operations and Facilities Management, in the “length of time it takes to implement change, and wait for improvements, (it is easy) to lose momentum. The quality is good but employees are not managing their time well and there is a lack of follow-up, continuous improvement” taking place. It is the researchers’ observation that more effort on training and developing staff is very much needed. Though, with the universities transformation programme coinciding with their own, there have been many limitations. One limitation that effects the Help Desk/Reception support position is that E&PS can only hire part-time temporary associates in this role. As soon as a Help Desk/Reception operator is trained and up to par, they end up leaving having found more permanent work. Then the training starts all over again. This is an area that really needs to be improved upon, especially with such a critical role to play on performance and operations. In addition, the value stream maps of the current state have been in place since the fall of 2011 and it is time now to reassess the ‘To Be’ processes and make any adjustments necessary. Further emphasis on lean tools, visual workplace management techniques, training and educating their workforce, developing a continuous learning environment and the pursuit of perfection will be key to E&PS’s perpetual success.

Finally, E&PS has had to parallel their restructuring efforts with the universities transformation. They had no choice but to review the entire way they performed hard and soft FM services across the board. Lean principles were subliminally implemented, though not actually associating their restructuring as a lean initiative outright. For instance, the transformation programme was based on ‘value added’ activities, one being the process mapping/value stream mapping activity. By value stream mapping all of E&PS tasks, they were able to eliminate wasted efforts and gain efficiencies throughout the organization. A board of change agents was created to assist in the communications of new organizational initiatives. As a result of developing monthly performance indicators and standard level of agreements, an organization becomes more transparent as they track efficiencies on a monthly basis seeking where efforts of continuous improvement are needed. On the following page in Table 3 is an example of lean terminology and lean tools that were adapted. These formulate the concepts that E&PS put into practice in their restructuring programme that align with a formal lean transformation programme.

Table 3: E&PS Lean Practice Concepts

Lean Terminology	Lean Tools
Added Value	Process Mapping/Value Stream Mapping
Transparency	Lean Leaders and One Point of Contact
Efficiency	Monthly Performance Indicators
Waste	Standard Level of Agreements (Standards)
Process Mapping	New Process and Procedures
Continuous Improvement	Continuous Improvement Plan

Whilst a transformation programme has been in place over the last several years, there have been many successful returns and just the fact that they are measuring added value to the end user is a significant undertaking. Their efforts are a continuous work in process and they will need to make sure that they are following up on the ‘As-Is’ and ‘To-Be’ process mapping procedures. If they do not continue to assess what is working and what is not they will lose momentum. In addition, from the research summation of observation of staff and operations, employees think that the ‘To Be’, or future state is set in stone, this is an attitude that requires more flexibility and reassessment. Currently, there is little evidence that E&PS is willing to tackle new improvements in a timely fashion. Furthermore, the ‘To Be’ state may not work as well as they thought and modifications may have to be implemented.

This report concludes that The University of Salford, Estate and Property Services is subsequently going through a Lean Transformation programme, adding value not only to their internal employees and customers but to the university, students, and staff. They are undertaking lean initiatives while transforming their operations in to a leaner FM enterprise. It is the researchers’ goal to introduce a clearer understanding of lean concepts, continuous improvement, and visual workplace management tools to E&PS for the next phase of change.

5.0 Case Study Two: The University of Salford/MediaCityUk and Balfour Beatty

Workplace

This is a unique case study in that The University of Salford has never entered in to a real estate legal agreement where The University is lessee of four stories of a high profile media and communications building, meaning the company or persons that receive a leasehold for a specific property from a lessor. The lessor is the entity that provides the leasehold interest in a specific property to the lessee. In this case the lessor is the Peel Media Group. The said

property is leased to The University of Salford. In addition, the university is outsourcing facility management services, which is also a very new legal endeavour for them.

5.1 MediaCityUK Background

In October 2011, the University of Salford (UoS), School of Media, Music and Performance (SMMP) went live with what Salford Universities website describes as “a unique digital learning, teaching and research space at MediaCityUK” (UoS 2011). The SMMP program consists of 39 undergraduate and postgraduate courses with an estimated 1,500 students that will have the opportunity to work with the journalism and media industry using the most current up to date digital equipment, along with state of the art studios and teaching laboratories. The University of Salford’s new facility does not just house university students and faculty but will be the only building in the MediaCityUK complex that will be open for the entire community to share. Each year it is estimated that 30,000 people will attend public events that have already been scheduled.

MediaCityUK has been designed around the media industry with residents including the BBC, The University of Salford, TV producers, Coronation Street Studios, computer game designers and companies involved in the journalism and media industry. Construction started in May 2012 on the upper floors of the building for ITV offices and rumour has it that Google has signed a lease. The vision is for MediaCityUK to become a community where collaborative relationships between industry and academia can take place. It is a concept reflecting the way the industry is moving, as the boundaries between 'old' and 'new' media become increasingly blurred. Peel Media has invested over £500 million dollars in building and developing the 236 acre site. Phase one was complete in 2011 and houses BBC and the University of Salford on a 36 acre suite. It is envisioned that another 200 acre site will be developed in the future.

5.2 Case Study Two Introduction

The University of Salford/MediaCityUK team along with the SMMP are now located in the new facility that opened in October 2011. The outsourced FM provider Balfour Beatty Workplace (BBW) manages the facility services to meet organizational and customer missions, vision and goals, as well as Standard Level of Agreements (SLA’s) and Performance Indicators (PI’s). The FM contract is measured against SLA’s and performance criteria. Their contract started in September 2011, one month prior to the facilities opening. BBW are responsible for providing cleaning, janitorial, reception, security and switchboard services in the following areas, refer to Table 4 on the next page:

Table 4: Balfour Beatty Workplace Responsibility Areas

Balfour Beatty Workplace Responsibility Areas		
Reception Area	Conference Facilities and Video Conferencing	Digital Media Laboratories
HD TV Studios	Radio Broadcast Studios	Performance Laboratories
Post-production Suites	Research Facilities	Academic Offices
Student Lounge	School Library Area	Teaching Areas

Peel Media, the landlord is responsible for the cleaning and maintenance of the toilet rooms, lifts, and additional core functions. In Figure 4 below, an organizational chart shows the main and secondary relationships between all of the stakeholders that make up the MediaCityUK facility. There is a legend for reference. The C represents the community, stakeholders not related to the university. The PM represents Peel Media the building landlord.

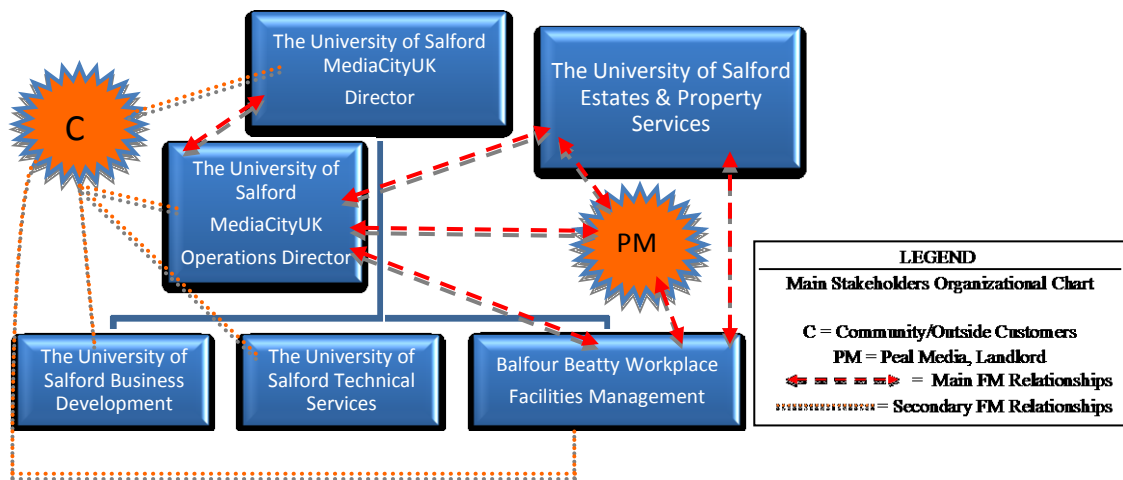


Figure 4: Main Stakeholders Organizational Chart at The University of Salford/MediaCityUK

There is an array of internal and external customers that BBW has to maintain relationships with including many university departments involved with MediaCityUK as well as external community partners. In fact even the local media and journalism tenants are customers of the facility. The BBC is consistently renting digital studios, production laboratories, equipment and even using university personnel to include students. This has been a very lucrative partnership for the university and the student’s education and future careers.

5.3 Case Study Two – Key Objectives and Business Case

The principal objectives of this case study is to identify how value is defined; the barriers that BBW contend with as outsourced FM service providers and where lean visual systems are implemented resulting in adding value to the internal and external customers. The researcher

observed the performance of the outsourced facility management (FM) services provider, Balfour Beatty Workplace (BBW) as they provided lean FM services.

BBW prides themselves as a sustainable lean organization and implements lean techniques and Six Sigma tools on all of their projects. Housed within walking distance to the Salford University/MediaCityUK facility is BBW's National Operations Centre (NOC). This is where all of the Help Desk calls are answered. "The NOC provides a central support network and single point of contact for customers which help to facilitate the integration of BBW's diverse service offerings" (BBW 2011). It is set up like a call centre, there are many Planning and Dispatch Coordinator's sitting behind rows of computers and desks, but only one is assigned to The University of Salford full-time. They are responsible for the SLA's and coordinating closely with the building engineer and subcontractors. Additionally responsible for "planning and organising the full life cycle of all facilities management work orders from the time they are logged to completion, this would involve understanding the work orders and allocating the correct skill set(s) of the engineers or subcontractors and updating the system" (BBW 2011). This is by far one of the most significant differences between Case Study One and Case Study Two. BBW's Planning and Dispatch Coordinator is not responsible for basic reception functions, car park tickets, student/staff ID cards, keys and ID's for contractors/subcontractors and vendors on site, transport tickets and giving out directions. Purely one function and based on observation, they do it well and systematically.

Another sizeable advantage for BBW is that they have secured the outsourced facilities management contract for the BBC buildings and other organizations in the Salford Quay area. This is significant to their ability to deliver the FM contract successfully through the NOC and the flexibility of using building engineers (and suppliers) from BBC (and other facilities) when needed. They consider it multi-skilled staff. This is a lean way of managing a FM service contract with limited budget, SLA's, and PI metrics to adhere to in a complex and challenging environment. Their portorage staff are multi-taskers performing janitorial duties when needed. They do everything from carrying boxes, moving furniture, conference set up, to cleaning and whatever else is asked of them in any given day. Besides delivering FM services, BBW is mitigating new construction defects and warranty issues before the defect/warranty period is up.

5.4 Added Value to the End User

In early December 2011 through May 2012, BBW let the researcher monitor their operations. The researcher was able to visit the NOC and spend quality time with the facility manager,

planning and dispatch coordinator, and observe front reception desk day-to-day operations. One of the first exchanges of information centred around the perception of how BBW views value to the end user. The facility manager alleged that:

“For me added value gives the university the time to take care of what they need to do and not having to deal with the pain of FM and fixing a broken light or AC issue and fixing something – we fix it with a smile on our face. It’s the way we look at everything. We allow the customer, the university to do their job, which is teaching degree courses and we take care of everything else to make that happen”.

There is a sense of ownership that aligns with Belfour Beatty’s overall values of integrity, teamwork, excellence and respect. Their company wide values trickle down in to the way that they do business, how their employees perceive value as part of the whole and how customers are treated. It is top down and engrained in employee’s attitudes and their everyday interaction with customers and ability to perform quality services.

The Planning and Dispatch Coordinator considers value as how the different stakeholders and customers view their environment. It is about the relationship between all the stakeholders and the respect that lets BBW engage in their work, the smoothness and ease that allows all stakeholders and BBW to perform their job on a daily basis. Salford University/MediaCityUK’s Operations Director considers value more to be about the outsourced FM services contract that they manage. Value for them is in “terms of financial levels based on the budget, extra value in terms of what you pay for” and the services rendered. They are concerned about BBW providing a healthy clean environment and making sure that the UoS students, teachers, and visitors to the building are satisfied. For the building maintenance engineer value is the worth that you paid for and the services that you expect to get, and the feeling of accomplishment when the services are completed, that’s added value.

5.5 Visual Observation

The new Salford University/MediaCityUK building is a classic modern facility, the exterior skin is made up of glass panels and the interior spaces consist of large open floor plans and an abundance of natural light. It has a sterile feeling; though splashes of colour are painted on the walls and bright coloured furniture placed throughout there is a lack of signage and way finding instructions. The toilet facilities are not even labelled. Unless you are familiar with the building you would not know where the toilets and lifts were. This surely has an effect on customers, faculty, students, university staff, and BBW’s own staff. On the second floor,

there is a large open office space with clusters and rows of desks and chairs. This is where BBW's management and Salford Universities academic and management staff occupy. The building itself is approximately 20% occupied at all times. It looks like any new commercial office building, doesn't feel like a university. In May 2012's monthly performance report, BBW alluded to signage being ordered for way finding areas in the building that has been approved by The University and Peel Media. In addition, there is no exterior signage with the University of Salford's name on the building. This has caused issues with students, parents, visitors, and the community not knowing which building is the universities. Currently, BBW and Peel Media are in negotiations on ordering proper exterior signage for the building.

In the FM office behind the main reception desk, which forms the hub for daily FM service communications, there is a message board that conveys important information. In building any lean enterprise visual communications is an important function of daily activities. Section 2.2 references that a UK lean consultant is working with an international pharmaceutical FM department with their lean transformation. One of the first lean tools introduced to the FM department were visual communication boards. BBW has been utilizing this lean technique from the very beginning of their contract. Although, there are not visual indicators for tracking work orders, scheduling events and planned maintenance. There are visual signs indicating where specific paperwork and documents go. The receptionists printed out professional looking visual labels with the universities new logo and document standards (including colour standards) for all of their reception folders/clip boards that they need in order to do their job on a daily basis, i.e. reception clipboard; daily occupancy report & door patrol log; access card & key register; security handover report & weekly events. These labels are good representation of creating a visual workplace strategy; what do 'I' need to know and what do 'I' need to 'share' in order to do my job efficiently. The reception staff even designed an instruction sign for the student sign in log, "Students please print your details clearly, Thank You". You can see an array of BBW visuals below in Figure 5.



Figure 5: BBW Reception Visual Workplace Identifiers

5.6 Workplace Barriers

With such a high profile facility and complex organizational structure, BBW is maintaining the building well. Some of the barriers that face the building engineer were the post construction issues and warranty issues. BBW was not responsible for mitigating the defects the building owner Peel Media and the original building contractors are responsible for the construction snag list. The buildings end users are not privy to this they just want a clean, healthy functioning building.

The building engineer is in constant communications with the National Operations Centre (NOC) through their personal digital assistant, known as a PDA. The building engineer receives all of the work orders from the NOC on their PDA. They allude to the fact that the PDA is a good form of communications yet there are issues with network coverage, and they would like better correspondence and email record keeping attributes. It's a good device for one location, but once they leave the facility communications is limited. One of the biggest barriers that the planning and dispatch coordinator faces is the "need to tailor make the process based on the line of approval to get it right". According to the facilities manager, the biggest hurdle besides the post construction snag list is the FM industry and asset management. "It is the relationship between IT, engineering and the customer". For the UoS operations director the workplace barriers are the leasehold issues with the landlord. "Peel Media are responsible for the toilets, but when 50% of the toilets do not work and 50% of the faucets/taps are out of order, it is the basic things – the hot and cold water, that is what gives you the biggest headaches".

According to the University of Salford's own internal technical (IT) services and support staff created for MediaCity; IT services provided are very reactive, fire fighting issues and reacting to the universities own leadership. In view of the fact that the universities own transformation program is in progress, there is not a clear strategy and direction, no one communicates to each other. The schools located at MediaCity lack the confidence and leadership guidance to make decisions and they are not the enemy but the client. As stated by the UoS Technical Team Leader "there are two different methods, two different systems in place". There is the "complex old system" and the "new systems, (they both need) to interface with each other. Lots of things we try and do and the university says we don't do it this way". The barriers that exist for in-house services at MediaCity are clearly the mix between the old and the new.

5.7 Monthly Performance Indicators

BBW provides Monthly performance reports to UoS E&PS based on the FM services contract and Standard Level of Agreement criteria and response times. May 2012 monthly PI metrics indicate, “BBW continue to operate a 24/7 Helpdesk service for the university. There were 273 calls to the helpdesk in May 2012, a significant increase on the previous month. There was a total answer rate of 97% with only 8 calls answered outside the SLA” (Atkinson 2012). Reactive service performances for internal mechanical and electrical services were at 100%, refer to Table 5 below.

Table 5: Reactive Works by SLA

Standard Level of Agreement Criteria	Fail	Pass	Grand Total	% within SLA
Out of Hours Response		1	1	100%
P2 = Response Time: 4 Hours / Rectification: 8 Hours		4	4	100%
P3 = Response Time: 24 Hours / Rectification: 48 Hours		48	48	100%
P4 = Response Time: 2 Days / Rectification: 4 Days	4	216	220	98%
Grand Total	4	269	273	98%

On the next page, Table 6 “shows the total reactive work performance logged through BBW’s National Operations Centre (NOC) and the percentage completed within SLA criteria for each service line” (Atkinson 2012). There was not any direct customer responses communicated to BBW based on the customer reactive work order tickets completed in May 2012; however there was positive commentary received via email. BBW continues to provide lean FM outsourced services to the University of Salford with in planned SLA and PI targets.

Table 6: Reactive Work Performance Total for BBW FM Services Provided May 2012

Service	Fail	Pass	Grand Total	Completed % of SLA
Catering and Vending		43	43	100%
Cleaning		14	14	100%
Conference and Meeting Room Management		33	33	100%
Internal Fabric Maintenance	3	43	46	93%
Internal Mechanical and Electrical Services		35	35	100%
Porterage	1	93	94	99%
Security Services		5	5	100%
Security Systems/Access/CCTV		3	3	100%
<u>Grand Total</u>	<u>4</u>	<u>269</u>	<u>273</u>	<u>98%</u>

5.8 Conclusion - Case Study Two

In Case Study Two the principal objective was to identify how value is defined, the barriers that the outsourced FM service provider, BBW, contend with and where lean visual systems were implemented.

5.8.1 Objective and Summation

Objective One was to determine what “value” means to the FM service provider and their customers. It was established that the internal University of Salford customers seem comfortable with the facility and how BBW is providing FM services. Their concerns are more with the red tape and cultural issues of the old and new university processes and procedures. The university itself is going through a huge organizational transformation programme and they haven’t quite dealt with the idea of managing a new high profile media facility. Furthermore the facility is not fully utilized by students. They come to class then leave. The university needs to embrace the building utilization more.

BBW bestows value to the end user by providing a clean, healthy environment. Assigning a full-time Planning and Dispatch Coordinator at the NOC who is responsible for coordinating closely with the building engineer and subcontractors making sure that all of the work orders are completed based on SLA and PI metrics. All processes and procedures have been value streamed mapped prior to the opening of MediaCity, refer to a sample in Figure 6, below.

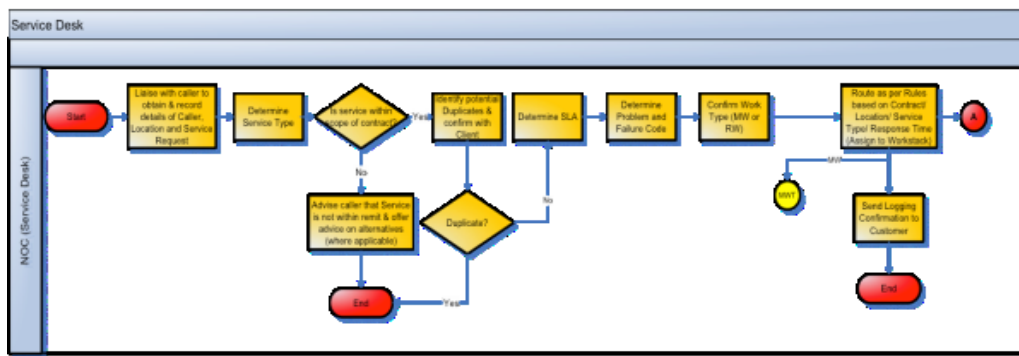


Figure 6: BBW NOC Service Desk Value Stream Map

One full-time coordinator logs the work orders through completion, and assigns them to the one multi-skilled building engineer. Having the NOC located in walking distance adds value to communications and the ability to work closely together. Having multi-skilled staff adds value to the contract. Furthermore, BBW can pull their resources from the BBC facilities if needed; maintenance and operation issues and supplies and contractors. There are fewer BBW employees on site due to the stringent contract budget.

Objective Two looked at the idea of a visual workplace that interfaces with current facility management applications and CAFM processes and procedures. The NOC has visual CAFM systems in place as well as the building engineer using a PDA system. It has its advantages, the building engineer is able to close out work order tickets and make notes. They are more responsible for their individual actions. This responsibility of having the multi-skilled technicians accountable for the communications and close out their own work order tickets has not yet been achieved in Case Study One. E&PS can learn from the way in which BBW manages their FM services. There are visual workplace communication and leadership boards in the FM office behind the reception desk, though limited in function; this is an area that can be improved upon. The building is kept clean and clear of most clutter. It will be a difficult task to develop a lean visual workplace in such a sterile environment. The visibility is limited, but with the resources they have so far, there are signs of an attempt toward a lean visual workplace.

6.0 The Lean Workshop

The Researcher presented a Lean Workshop to sixteen facility management professionals; fourteen were from The University of Salford Estate and Property Services, one from The University of Salford/MediaCityUK team and one from Balfour Beatty Workplace. Attendees ranged in job task from multi-skilled tradespersons, building managers, facility managers, administrative supervisors, campus managers, campus quantity surveyor to the

associate director of operations and facilities. Professor Lauri Koskela from The University of Salford attended, as well as researcher, Tuuli Jylhä, from Aalto University. After welcoming everyone and introductions the question was asked, “What are your expectations of Today?”.

Be known’s to us the majority of attendees had never heard of the term lean prior to the workshop invitation. It was there “first interaction with lean”. Everyone came with an “open mind” and wanted to “improve how they work, perform, and manage FM systems”. Listed below are a few expectations:

My expectations for today is to be “introduced to lean and how to incorporate it to improve”

To learn “how we deliver our systems and how lean will help us”

“We have done a lot of performance indicators, how can we apply what we have done?”

A formal presentation and short overview of the LeanREB/ARVO programme and history of lean was presented. In view of the fact that E&SP are going through a restructuring programme the presentation touched on lean transformation techniques and guidance from an organizational viewpoint. This is where the researcher found out that the E&PS staff did not view the word ‘transformation’ in a positive manner. In view of the fact that The University of Salford’s own transformation programme and redundancies have had a large effect on E&PS. Even though the word ‘transformation’ is plastered all over their department documents. Prior to this event the researcher had not been informed of the negative connotation of the word ‘transformation’. Then researcher, Tuuli Jylhä, introduced the ARVO project and presented her findings on the Finnish case studies.

6.1 How is Value Defined?

An afternoon activity was presented on individual’s perception of value. There were two parts to the activity. The purpose of this activity forms the basis for the LeanREB/ARVO research project relating to ‘*Value creation models in real estate business*’. By interpreting the theories and topics that were discussed in the workshop it is envisioned that each attendee will develop their own theory on ‘adding value’ to the end user.

In the first part of the exercise, the group defined three customers: students, staff and general public/community. Three sticky post-it notes where handed out to everyone and they were asked to write down what value means to them in regards to the three end users defined above. The post-it notes where then placed on three separate easel boards under the proper

customer heading shown in Figure 7 below. A fifteen minute discussion took place about perceived value towards the end user; refer to Table 7 for a synopsis of the activity.



Figure 7: Activity Two - Determine Value to the End Users Post it Notes Discussion

Table 7: Perceived Value to End User Post-it Notes Activity Synopsis

Staff	Students	General Public/ Community
Provide a safe working environment	Improve working environment	Increase financial in put in to the community
Good communications throughout the task	To be able to study in a quiet, safe environment with access to affordable, quality teaching	More local projects at MediaCity, general public engagement
Personal touch, keep facilities well maintained	Value for money and well maintained facilities	Provide jobs/potential employer for local community
They are important and they make a difference	Going above and beyond expectations	Well maintained facilities
Remove the internal red-tape, multiple systems, convolute way of day to day workload	To feel listened to and valued	Safe & welcoming environment
Going above and beyond expectations	Personal touch	Better communications about university plans
Health & wellbeing, social & support networks	Provide a seamless service	Being treated equally

The second part of the activity was a handout that provided instructions that explained the purpose and approach to the activity and then asked the attendees to answer the following questions:

- ⇒ *First Question: Who is your customer?*
- ⇒ *Second Question: In your opinion, how do you perceive 'Added Value' from your customers' point of view?*
- ⇒ *Third Question: In your opinion, how do you perceive 'Added Value' as an internal customer (an employee) of the organization?*

As mentioned above the customers were defined as the students, staff, community and public. It was unanimous in that value was perceived as providing quality work, in a safe, efficient and cost effective manner along with good communications. One of the multi-skilled tradesperson added this very relevant answer for the third question:

“To leave the job (site) as you found it regarding cleanliness. To be kept up to speed of the job, i.e. if material needs to be ordered, just kept in the loop. To be spoken too in polite and friendly manner.”

One of the team leaders added:

“As an employee ‘customer service’ is a top priority, good communications and a helpful and ‘can do’ attitude is essential. With also providing a safe environment in which staff, students and the public can feel relaxed and happy.”

To sum up the value activity the associate director of operations and facilities inscribed it clearly:

“I believe that the customers’ point of view will vary from customer to customer dependent on their view of ‘value added’. However typical examples could be:

- *Work carried out to a high standard*
- *Listen to the needs*
- *Continuous improvement*
- *Quick response (time)*
- *Engagement*

“As well as employers engagement with staff, good communications and the opportunity for internal learning and social activities.”

6.2 What are the Perceived Barriers?

The purpose of the third activity was to understand the barriers that prevent FM service providers from performing their job. Employees know best how their position ought to operate. Lean is all about empowering the employee and creating a learning environment. The attendees were asked to answer the following questions:

⇒ *First Question: In your opinion, what are the barriers that prevent you from doing your job to the fullest and adding value to your customer(s)?*

⇒ *Second Question: How can we mitigate the barriers? What is the answer?*

What surfaced was the daunting issue of temporary support team staff. These are the part-time staff hired to perform the Help Desk/Receptionist duties. Due to the universities own transformation programme the position can only be filled with temporary employees. The head of administrative services wrote:

“Too many temporary staff in the support team. Expectations of the Support Team/ Help Desk are increasing, but with ‘transient staff’. It is very hard to start adding value when you continually have to bring in and train new team members. This frustrates permanent team members, as it puts extra pressure on them.”

Besides the temporary staff issues the other main barriers FM staff are confronted with is the need for improved communications between internal staff. On matters such as O&M manuals, parts required to fix building issues, not having the ownership of keys to get access into buildings, lack of materials/supplies when needed. And yet again lack of communications, especially on the coordination of large installation jobs. Furthermore when commencing with university systems there is inconsistencies in the processes, too complex, slow and lack of resources. One of the facilities manager’s summed it up in this way:

The barriers that prevent me from doing my job to the fullest are central functions such as IT, HR, financial (and too much) paperwork. How we can mitigate:

- *Transfer function to local contractors*
- *Red tape reduction*
- *More efficient processes*
- *Resources*
- *Decision makers – bold decision!*
- *Flexibility*
- *Take RISKS*

Another facility manager surmised, “make decisions and communicate effectively to all staff and we need to “learn from these mistakes and move on”.

6.3 Visual Activity - A3 for Problem Solving

The A3 visual problem solving activity was very successful. The purpose of this exercise was to have the attendees participate in a lean visual problem solving activity in an open and creative learning environment. Based on a problem statement that the groups were to devise, or use one that was selected for them, an A3 report was created along with a short presentation and discussion. The problem solving A3 activity sets the stage for analyzing and

improving business operations. The attendees were divided into teams of four. Nonetheless, the MediaCity attendees had an issue in mind that they wanted to mitigate and there ended up being five teams, in lieu of four. Each team was provided with the necessary tools to create a problem solving A3 document; A3 instruction guide, coloured markers, pens and A3 sheets of paper. The first 15-20 minutes were set aside for discussion of the problem statement, the background and current state. They had two hours to complete the visual exercise, and were instructed to work through lunch.

This was the first time that E&PS staff were placed in teams to do a visual exercise, let alone participate in a group workshop. To see every level of staff mix together and mitigate a problem visually was amazing to watch, refer to Figure 8 below. The teams came up with five problem statements:

1. Issues with Jobs On Hold
2. On Hold Tickets
3. Optimizing Space for non Academic Events
4. E&PS Value for Money
5. Customer Engagement



Figure 8: Activity One A-3 Visual Problem Solving

At first the attendees were a bit apprehensive having never done a visual exercise before. Once they started discussing the issues and putting it down on paper, the answers started to flow.

“The A3 exercise was thought provoking, it gave me the opportunity to link the presentation to our workplace and what actions I will take forward”

“The A3 planning provided a new way of thinking”

“The (A3) breakout session went really well and is something that I hope we use internally in the future”

After presentations and discussion the two researchers and professor reviewed the five A3 papers. They selected the one they felt best visually displayed a clear understanding of the problem and how to mitigate it. The winning A3 is shown below in Figure 9.

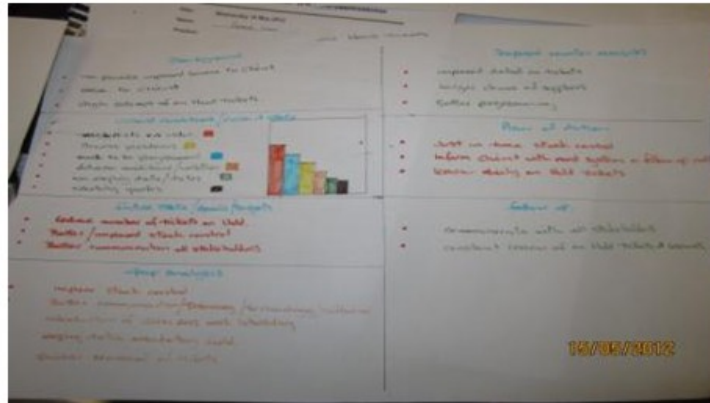


Figure 9: A3 Exercise Winner - On Hold Tickets

6.4 Workshop Conclusion

Instead of using the LeanREB/ARVO workshop to follow-up with the objectives and case study conclusions, the researcher used it for more of an educational fact finding mission. Lean tools were introduced and how to harness a lean transformation successfully was discussed. An open forum took place and a better understanding of “How do we add ‘Value’ to the end user/customer in Facility Management Practice” was revealed. The workshop gave the attendees an interactive team experience and helped them work through real life FM issues. Producing an A3 activity provided a new way of creative thinking. Thought provoking discussions about the barriers that FM service providers face day in and day out were brought to the forefront. The introduction of visual management tools provided a key factor for weighing barriers and efficiencies in the workplace. All in all it was a successful value adding lean workshop and a positive experience for all FM participants.

7.0 Conclusion

The overall case report objective was to understand the effectiveness of lean principles in the context of complex facility management systems. The research produced in this report parallels the main aim of the ARVO project case studies and lean workshops relating to adding value to the real estate end user. The case studies examined the functions of lean principles and visual workplace management in university in-house and outsourced facility management services. The perception of ‘value’ from the FM service provider, client and customer were provided throughout the report. This is in direct comparison with the Finnish

Case and project objectives: to identify the lean value stream and specify value from the customer, client and service providers' perspective. The lean 'value' theory engaged thorough out this report was modelled in comparison to the ARVO Cases based on James Womack and Daniel Jones book, 'Lean Thinking, Banish Waste and Create Wealth in Your Corporation' (2003). The first step in collecting project data is to understand 'how value' is perceived from the customer's perspective, because the needs of the customer determine how we produce goods and services in relations to our customer. The researcher took a glimpse in to the FM service provider's interpretation of value in all Two Case Studies and an activity on value theory and end users interpretation formed part of the Lean Workshop. If the people supplying the services are not aware of what value is in terms of their customers as well as their organization, then they cannot deliver proper quality services. Once value is determined the next step is to develop the value stream, mapping the flow of work provided and identify the wasted activities.

In Case Study One – The University of Salford Estate and Property Services department embarked on a five month time consuming project of identifying all of their activities in both hard and soft FM services. Developing the value stream and mapping the flow of work by producing process maps of every single task and service provided. Then an existing state value stream map labelled 'As-Is' was created. Once wasted activities were determined they developed future state value stream maps labelled 'To-Be'. An example of this is shown in Figure 2 and Figure 3 of this report. The outcome was a new E&PS FM department that is a continuous work in progress. New positions were created, a new telephone communications systems purchased and installed, Standard Level of Agreements and Performance Indicators where written for every job function and service provided; performance reports are now reviewed on a monthly basis.

They fell short of following thru on what they have done and not looking at what is working now and what aspects of their reorganization needs to be adjusted. This is a good example of the overall lean theory principle of determining continuous improvement that was considered throughout this report. A thorough literature review conducted in this area concludes that it is typical of organizations entering in to lean transformation programmes to stop reviewing what they have implemented. It is the continuous improvement attributes of lean, that strive for perfection that organizations stumble on. Just because we have restructured our department and redeveloped new process, procedures, standards and performance measures we should not stop there – that is just the beginning. It is now time for E&PS to take a further look at their lean achievements and improve where needed. The 'To Be' process maps

are now considered 'As-Is' current state and need updating to a new future state, again. It is not a one-time activity.

In Case Study Two – Balfour Beatty Workplace out sourced FM service provider to The University of Salford/MediaCityUK building, has implemented lean and Six Sigma tools from the very beginning; multi-skilled workers, value stream maps (refer to Figure 6), visual communications boards and the NOC with a full-time Planning and Dispatch Coordinator assigned to the university, to name a few. Every task that comes thru the NOC is measured against SLA criteria. Nonetheless, it is concluded that just like E&PS in Case Study One, BBW additionally needs to review their current state systems, process and procedures and envelop the lean continuous improvement theory in order to stay on track with their lean enterprise.

Though the new Salford University/MediaCityUK facility is sterile, lacks a sense of visual identity and not being utilized 100%, there is evidence that BBW is communicating with its own staff using lean FM visual communication boards, as well as deploying lean visual leadership, to some extent. On the other hand, this is not proven in Case Study one; were a lack of visual controls and visual leadership is apparent. The barriers that BBW face are more internal to the university and the universities own value stream. The research concluded that it is The University of Salford's systems that are intruding on a successful FM system for the outsourced service provider. It is the disconnect of processes and procedures, the old and the new coming together, it has not been well thought out.

For instance, while setting up the LeanREB/ARVO workshop, it took one week to get in touch with the UoS MediaCity event coordinator. Even after leaving many messages and contact information. Once communication was established, it took over a week for them to get back to the researcher concerning a room for the workshop. Another situation occurred when a Salford University research team was presenting a training workshop for Balfour Beatty employees. When the research team showed up for the workshop; not even BBW reception staff new about the workshop, its location, and the IT requirements. In the end, the workshop went on; however the executive from Balfour Beatty USA was unable to effectively communicate with the MediaCity site. During the Lean Workshop, the two team members from MediaCity did an A3 visual exercise on this exact barrier. They hope to rectify the problem in the near future. Conferences, event scheduling and coordination have excessively been an issue for E&PS and throughout Salford University.

The LeanREB/ARVO Workshop was a success. It gave E&PS team the ability to communicate effectively, openly and creatively with each other. They learned new lean visual management skills and determined value to the end user and mitigated barriers. As one participant alluded to

“We can mitigate these barriers by allowing more communications between projects/operations before/after and during work.”

The study found that FM staff envisaged that lean thinking could provide an opportunity to develop a better understanding of their own reorganization and stimulating interaction and adding value for both external and internal customers. This has contributed to E&PS FM staff engaging in a joint lean visual process redesign.

It was observed that for many FM staff the lean journey could be full of frustration, and in some cases present radically different job roles. Staff at all levels need support from leaders as they experience new approaches in decision making and process redesign. More education and training in lean process improvements and the visual workplace are suggested. Better collaboration and communications between BBW, E&PS, the colleges, schools and university administration to ensure that utilization of all assets are maximised needs to be considered. This is the beginning stages of lean facilities management (LFM) adoption in a complex university practice; evidence of a system of continuous improvement is a long way off. The framework for a learning organisation has been put in place. It is acknowledged that this forms part of an ongoing continuous improvement value creation concept that is consistent with lean thinking and the Finnish ARVO Case, '*Value Creation Models in Real Estate Business*'.

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