Report of SIMTEGR8 Project Workshops:

Lightbulb Programme

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Loughborough University   healthwatch Leicestershire   Leicestershire County Council   SIMUL8 CORPORATION

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1.   Introduction

This is the second phase of the Simulation to Evaluate Great Care (SIMTEGR8) project. The first phase was undertaken in 2015 as a collaboration between Leicestershire County Council, Healthwatch Leicestershire, Loughborough University and SIMUL8. It evaluated four patient centric service integrations being piloted through the Leicestershire Better Care Fund (BCF).

Evaluation of up to four further schemes has been built into the BCF Plan for 2016/17. These schemes are:-

a) Ambulatory pathway at CDU (Glenfield) hospital admissions avoidance scheme for cardio/respiratory patients.

b) Lightbulb Programme (a Leicestershire housing support service hosted by Blaby District Council).

c) Help to Live at Home

d) The intensive community support (ICS beds) scheme.

The evaluation is undertaken using facilitated simulation modelling, to support the development of patient centric integrated services aimed at reducing emergency hospital admissions and improving the user experience.

A crucial part of the assessment process is a set of workshops held with project leads. The purpose of the first workshop was to develop an agreed process map (i.e. conceptual diagram) of the pathway with the project leads. The second workshop used the computer model built as a result of the first workshop to facilitate a discussion on how the intervention can be improved. This report sets out the outcomes of these two workshops in relation to the Lightbulb Programme.

These initial workshops were conducted as a partnership between staff of Loughborough University and Leicestershire County Council, with support from SIMUL8. The workshop participants included staff of Leicestershire County Council and Leicestershire District Councils. This report is structured using the methodology designed for the workshops, which will be outlined below. It was found that:

- The selection of the participants led to meaningful discussion about the patient pathways;
- The need for localities to consider and model what needed to be included in their local offer was identified;
- The workshop stimulated collaboration between participants for future work on the Lightbulb Programme.

2. The Lightbulb Programme

The Lightbulb (LB) Programme aims to integrate practical housing support into a single service that is available to all, easier to access, easier to use, and will provide support shaped around an individual's need not an organisation's processes.

Lightbulb provides access to the traditional housing support offer - i.e. a housing based assessment which could identify a minor adaptation such as a hand rail or a major change such as a downstairs bathroom and would include those adaptions available through the Disabled Facilities Grant. Lightbulb differs in that the assessment wouldn't limit itself to just those options and may also suggest a handyperson service, access to cheaper recycled furniture and offer affordable warmth advice –anything basically that could make a home safer, and improve an individual's health and wellbeing.

Lightbulb manages this offer of support differently through the provision of:

1) A single point of contact or referral;
2) A single, broader assessment process which will be accompanied by a case management service;
3) Wider variety of housing support and advice.

Through this, Lightbulb will maximise the independence and safety at home of service users.

The evaluation of the Lightbulb Programme took place whilst the final business case was being developed, in order to test whether the new process had been modelled accurately and would deliver the expected results.

3. Methodology

The *SimLean Facilitate* approach described in Robinson et al (2014) and the PartiSim approach described in Tako and Kotiadis (2015) have been adopted and modified to be used for the purpose of this study.

Simulation models are developed after discussing the pathways with relevant stakeholders in a facilitated workshop. These models are subsequently used in a facilitated workshop environment to generate understanding and discussion around the effectiveness of the pathway and how the user experience can be improved, and to identify potential improvements.

In order to analyse whether the patient pathway is the most efficient for the patient and the service the methodology follows a set of specific steps:

- Stage 1: Initial Pathway Briefing. This involves developing an initial understanding of the pathway and the data needed to inform the process map. The data, including referrals, staffing and use of the Disabled Facilities Grant, are then interpreted as an initial process.
- Stage 2: Workshop – Conceptual Modelling. This includes discussion of the planned pathway and reflections on its efficiency. The discussion serves as a basis for developing the simulated computer model in order to evaluate the intervention.
- Stage 3: Model Development. This is a quantitative representation of the qualitative conceptual diagram developed during the previous workshop. Data in the model may be adjusted to generate a representative behaviour of the system. The detailed complexity of the model is deliberately kept to a minimum to ensure stakeholder and patient participation in the next stages. The model developed aims to provide a good enough representation of the service to show the basic processes involved and to show the capacity and use of resources within the system.
- Stage 4: Workshop – Project Leads' Perspective. This workshop uses the model to facilitate a discussion on how the intervention can be improved. The discussion involves the following four phases:-
  - Model Understanding, the simulation model developed is presented and shown to the participants to allow them to understand how the simulation works;
  - Face Validation, the participants are asked to consider whether the simulation model reflects what actually happens;
  - Problem Scoping, by taking a helicopter view of the pathway, participants are asked to identify issues which have previously remained hidden because they are normally involved in the detail of only their part of the process;
  - Improvement, during this session the group is encouraged to identify changes that can be introduced to the service to reflect on the ideas produced throughout the session.
- Stage 5: Workshop – The Patient Perspective. The model with improved visual representation is used to help facilitate a discussion with patients and carers. The discussion involves the following three phases, the definition of which is similar to that in Stage 4:-
  - Model understanding;
  - Problem Scoping;
  - Improvement.

4. Workshops

In the next sections, the structure and the outcomes of each workshop are presented separately.

4.1. Workshop 1: Conceptual Modelling

4.1.1. Introduction

The workshop was held on 2nd September 2016 at Leicestershire County Council's County Hall. It was facilitated by the project investigator (Dr Antuela Tako) and the post-doctoral research associate (Dr Anastasia Gogi).

The workshop participants were 7 key people involved in the LightBulb Project. Considerable effort on the part of the Health and Care Integration Team went into ensuring that the workshops were attended by the right mix of professional staff who contributed to the work of the Lightbulb project across all elements of the pathway. This was a key factor to ensure success and on the day contributed to an environment where productive conversations could take place. A consultant from SIMUL8 (SIMUL8) and an observer from Loughborough University (Prof Stewart Robinson) also attended this workshop.

The sessions were managed within a tight timeframe of 2 ½ hours to impact minimally on service delivery. The active participation of all attendees and their willingness to commit to action plans was very encouraging.

4.1.2. Participants' anticipated expectations for the workshop

At the beginning of the session the facilitator briefly introduced the overall aims of the SIMTEGR8 project and the four phases of the study followed by a short presentation of the sessions included in this workshop. Participants were then asked to express what they hope to gain from this workshop. The following expectations were identified:

1. To design a complete pathway with all services input
2. To gain a better understanding of the further progression of LB project (i.e. the future role of HSC, a clearer understanding of the proposed OT/AT pathway through the LB process and any changes to the role of the Adaptations team)
3. To be reassured that the pathway the service has designed for the business case is correct and complete
4. To help the service identify how LB can become most efficient.
5. To help the service identify elements of work that may need to be improved/changed

It is noted that the first two expectations of the list above were aimed to be addressed in this workshop whereas the rest were relevant to the follow-up workshop (i.e. the project leads workshop, Section 4.2).

The format of the workshop was as follows:-

4.1.3. The Process Map

This part of the session involved the creation of a process map on paper, to which the workshop participants were invited to contribute their understanding of their process.

At the beginning of this session, the facilitator showed an initial process map that the research associate had developed based on information provided at Stage 1 (Figure 1, Appendix 1). The participants were then asked to comment on whether this was an accurate representation of their system. Participants realised relatively quickly that some parts of the pathway needed to be amended. The participants were then asked to discuss step by step how the initial process map needed to be updated while the facilitators were drawing the process map on a large white paper stuck on a wall. After a few iterations, an agreed process map was produced (Figure 2, Appendix 1). It represented a simplified version of the LB programme as detailed pathways for each service have not been audited yet. The key steps for DFGs cases were also included in the process map as this is considered to be an important part of the services provided by the LB programme.

4.1.4. Pathway Effectiveness

After having drawn the process map, the participants were asked to discuss their expectations about the LB project. In summary, the delegates expected that the proposed LB process would be:

- faster, easier (i.e. reducing waiting times, avoiding failures, effective triage)
- more streamlined (i.e. expensive processes moved at the end)
- more effective than the current offer, both in terms of ensuring that resources were used appropriately and offering an improved customer journey for service users.

4.1.5. Performance Measures

Next the group was asked to identify performance measures that could be used to identify the success of the study. The following measures of success were identified:-

- Reduction in time for the customer journey;
- Consistency of offer across the county;
- Reduction in time from when the need for a DFG was identified to when the case was closed;
- Number of cases and number of different types of outcome;
- Resources staffing levels (HSCs, OTs, Technical Officers)
- The views of service users in terms of mobility, safety and mental health and wellbeing;
- Cost effectiveness;
- The percentage of referrals that resulted in services being delivered (i.e. an increase in the number of completed pathways).

The facilitator explained that the last three performance measures in the list above were not possible to measure in the project's evaluation. In particular, it was explained that the views of service users will not be measured because they are qualitative data which cannot be easily incorporated into a simulation model. It was agreed by the participants that a cost effectiveness evaluation will not be part of the evaluation due to time restrictions and lack of relevant data. Finally,

the percentage of referrals that results in services will be included in the model as an input data. The simulation users will be able to examine how a change such as an increase in the percentage of referrals that resulted in services can impact customers' time in system and resources staffing levels.

4.1.6. Learning from the pilots

After discussing service performance measures, the participants were then asked to discuss learning acquired so far from the pilots of the LightBulb service from the patient and the projects leads perspective.

The Project Leads Perspective

When the delegates were asked to discuss learning obtained from the pilots of the service, they commented that any learning so far had been incorporated into the new process and used to inform the business case.

The Patients perspective

When asked about the feedback received from the patients who had accessed the Lightbulb Project during the pilot phase, it was observed that the majority of patients had given positive feedback. Negative feedback had included the delay in time for work to be done. It was intended that the new pathway would resolve this. Carers had also suggested that they did not feel sufficiently well informed. This issue would be picked up again during Stage 5 of the evaluation as carers would be invited to this workshop.

4.1.7. Alternative process map

When asked about what changes to the process map could potentially improve the service and therefore would be worth to be tested with the simulation model, it was agreed by all participants at the workshop that there would be no benefit in testing an alternative process through this evaluation.

4.1.8. Participants' Actual Outcomes from the workshop

At the end of the workshop participants were thanked for attending and were asked to express their actual outcomes from the workshop. These are summarised below:

- A definitive pathway to be designed
- A better understanding of the potential LB services
- DFG pathways and other aspects of service (i.e. AT, minor adaptations) were clarified
- An opportunity to get the input from all partners and discuss some of the elements through

One participant considered that s/he did not gain 'a lot' from workshop 1. This participant felt that they had already developed the process mapping within the team so s/he felt this wasn't needed.

4.1.9. Reflections on conceptual modelling workshop

The discussion during the workshop was lively with many contributors and engagement during the drawing of the process map was high.

Expectations that were stated at the beginning of the workshop showed that participants generally understood that the workshop could help them to achieve an agreed process map of the Lightbulb project. However, some of the participants' anticipated expectations were beyond the purpose of the first workshop.

At the close of the workshop the participants generally appreciated the chance to hear the views of others. They thought that it was useful, informative and a helpful way to gain a better understanding of the potential Lightbulb operational pathway. Comparing participants' anticipated outcomes for the workshop to their actual outcomes at the end of the workshop, it can be concluded that their aims had generally been met. Only one person believed that 'the real point of the project was not put across'. This is expected when anticipated expectations differ from the actual purpose of the workshop.

4.1.10. Conclusions from the conceptual modelling workshop

The concept of adopting a facilitated mode of practice to stimulate discussion on and create an agreed process map was effective. It was also useful to have participants across all elements of the pathway as this contributed to an environment where productive conversations could take place. The discussion in this workshop revolved around the patient pathway, the effectiveness of the service and the performance measures.

At the end of the session, participants demonstrated a shared understanding of the entire pathway, Therefore, using facilitated simulation modelling as a means of conceptual modelling has been successful.

4.2.   Workshop 2: Discussing the simulation model with the Project Leads

4.2.1. Introduction
The workshop was held on 16th September at Leicestershire County Council's County Hall. It was facilitated by the project investigator (Dr Antuela Tako) and the post-doctoral research associate (Dr Anastasia Gogi).

The workshop participants were 5 key people involved in the LightBulb Project out of which two did not attend the first workshop.

4.2.2. The simulation model
A screenshot of the model used for the project leads workshop and outputs page can be seen in Figure 1 and Figure 2 respectively. The process was built to be the same in each locality. A general model was built for each locality area as well as for Leicestershire to show what each service would look like based on current levels of demand and their projected staffing levels in the new lightbulb model. The model was also built to allow users to test the customer's journey experience in the case of staff increases, increased demand or changes in the pathways. The model was shows on a district by district basis the staffing levels required in order to meet demand taking into account population increase in over 65s by 2020 according to Office for National Statistics 2008-based Subnational Population Projections by board age groups for local authorities and higher administrative areas within England, published on 27 May 2010.
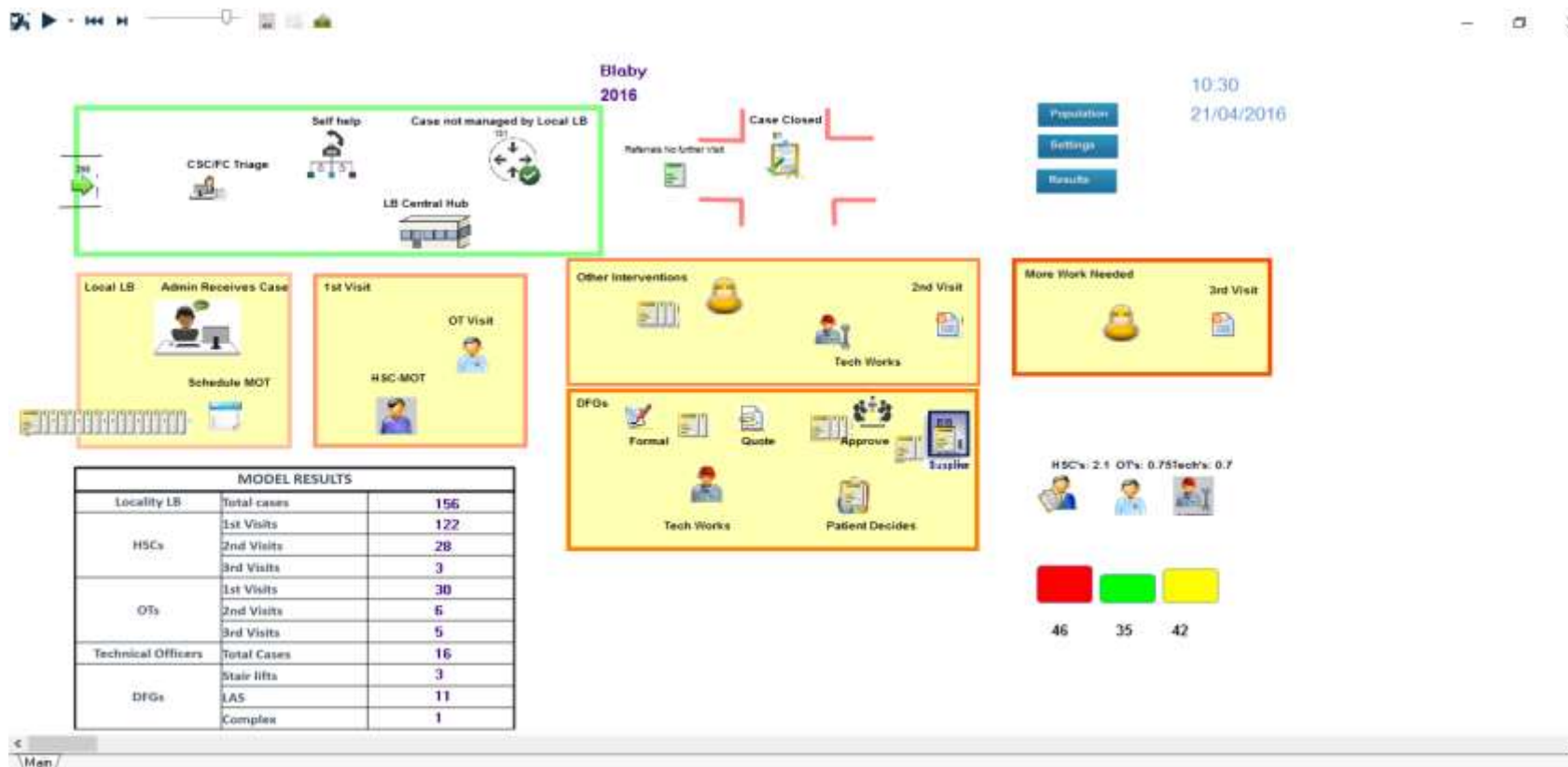
Figure 1. A Screenshot of the model used for the patient's workshop

Formula One Workbook Designer

File   Edit   View   Data   Sheet   Format   Object   Help

C8

	A	B
1	**Scenario 1:**	**Blaby, 2016**
2	**HSC's: 2.1, OT's: 0.75, Tech Officers: 0.7**	
3		
4	**RESULTS**	
5		
6		**Average Total Time in System (Weeks)**
7	1 Visit	4.26
8	2 Visits	6.83
9	3 Visits	10.86
10		
11		**Average Total Time in System for DFGs (Weeks)**
12	Stair lifts	12.28
13	LAS	18.15
14	Complex	25.42
15		
16		
17		**Average Time in System for DFGs (Weeks) from MOT**
18	Stair lifts	10.10
19	LAS	15.84
20	Complex	23.08
21		
22		**Resource Utilisation (%)**
23	HSC'S	64%
24	OT's	51%
25	Tech Officers	65%
26		
27		
28		**Average Waiting Times for (Weeks)**
29	1st Visit	2.01
30	2nd Visit	0.05
31	3rd Visit	0.10
32	Tech Officers	0.51

Figure 2. A screenshot of model outputs.

4.2.3. Participants' anticipated expectations for the workshop

At the beginning of the session the facilitator briefly reminded the participants the aims of the SIMTEGR8 project and the four phases of the study. She then explained that the purpose of the second workshop was to use the simulation model as a basis for the analysis of the intervention and the participants to work together to find ways for improving the LightBulb business case. After introducing the sessions included in this workshop, the participants were asked to express what they would like to gain from this workshop. The aspects of the LB service that the delegates hoped to resolve through the workshop were:

- To confirm expectations that they are improving customer journey and LB works efficiently
- To identify staffing level required to meet demand
- To reduce customer waiting times and time in the LB system
- To identify how the Fire and Rescue Service can fit into the Lightbulb service
- To capture future demand

It is noted that most participants' expectations of the list above were relevant to the purpose of this workshop and were captured in the model.

The workshop sessions included the following sections:

4.2.4. Model understanding

The approach taken to address model understanding was to check that both the basis for building the simulation models was considered accurate and that the participants understood how it had been transferred into the simulation software. This involved an initial "walk through" of the process map which had been developed at the previous workshop. It continued by demonstrating how this was built into a SIMUL8-based model and then the outputs were presented in the form of number of cases and number of different types of outcome (e.g. number of 1st Visits by HSCs, number of Stairlift cases, technical officers total number of cases etc.) so as to be familiar to the participants. The following assumptions are needed to be taken into account when considering the results of the model:

- Part-time resources are made to start at 9pm
- Resources (i.e. housing support coordinator, tech officer, etc.) will be 100% of their time available.
- Tech officer's activities (drawing, scheduling work etc.) are represented as a single activity (i.e. Tech Officer works) for simplification purposes.
- Possible delays in the patient pathway (e.g. LB receiving case, scheduling MOT etc.) have been incorporated into the model to produce more realistic results.
- The model was built to examine each case scenario and also that it did not show interaction with other services.

The general conversion of these process maps into a simulation model appeared to be understood by all participants and the process map was confirmed as accurate.

4.2.5. Face validation

Having confirmed the understanding of the processes within the system the simulation was run through to allow the participants to view a top-down perspective and to study model outputs. The Hinckley locality was chosen as an example of the system. The aim was to validate that the simplified simulation model was acting along the same lines as the real system. This wasn't intended to be a detailed validation to assess statistical accuracy, but instead for the participants to gain trust in the model, that it was performing as expected.

The data output from the simulation models in terms of the number of cases and number of different types of outcomes in general matched metrics used to build the business case (see Tables 1 & 2 below). However, it was observed that the model was not performing as it would be expected in terms of customers' time in the system for some DFG cases and other interventions.

Tables 1 & 2. Metrics used to build the business case and as screen shot of model results.

Metrics used to build the case		Hinckley and Bosworth
LB Locality	Total Cases	810
HSCs	1st Visits	713
	2nd Visits	178
	3rd Visits	45
OTs	1st Visits	152
	2nd Visits	38
	3rd Visits	38
Technical Officers	Total Cases	80
DFGs	Stair lift	34
	LAS	35
	Complex	6

MODEL RESULTS		
Locality LB	Total cases	849
HSCs	1st Visits	761
	2nd Visits	199
	3rd Visits	42
OTs	1st Visits	161
	2nd Visits	49
	3rd Visits	49
Technical Officers	Total Cases	98
DFGs	Stair lifts	28
	LAS	54
	Complex	5

The participants were asked to supply their estimations regarding input data entered in the simulation model, such as the percentages of cases sent to other intervention than DFGs and time it took to complete some activities (e.g. level shower access providers provide their quotes, the preferred contractor provides its service etc), with the view to increasing the accuracy of the model. Any irregularities in the model results was explained through the participants' reflections, including:-

- The Housing Support Co-ordinators would have one day a week for case management and that time travel, breaks and leave would be built in to the model expecting that the resources utilisation will be reduced and hence be more realistic; Different localities may work differently in reality.

Overall, it was agreed that the model reflected the planned scheme and that the results produced by the model were as expected.

4.2.6. Problem scoping

A large part of the workshop was spent validating the model, so this session was shorter than originally intended. However, the facilitators were keen to understand whether any changes could be made to the model to reflect potential options for the new service being proposed in the business case.

The group agreed overall that the simulation reflected the service that would be outlined in the business case. However, it was suggested that the model could be amended to take into account the following:-

- The peripatetic Housing Support Co-ordinator resource which was in the central hub and had not been included in the district models;
- Although demand increase would be 3 – 6 percent by 2020, the distribution of demand was likely to be different as there may be no change over time in those eligible for financial assistance in the form of a Disabled Facilities Grant.
- MOT Visits can be also completed by an Occupational Therapist when all Housing Support Co-ordinators are busy (an additional suggestion made by the Project Lead in a follow-up meeting a few months after the completion of the workshop).

4.2.7. Improvement

In both workshops, the final session focused on action planning, a summary of next steps and a discussion around access to the simulation product for future use, including any modifications needed to the model.

It was agreed that the model would be amended following the workshop to reflect any new figures provided by the District Councils with regards to the time taken to complete interventions and the additional work undertaken by the Occupational Therapists as discussed in the previous section. These changes have been now made and the results of the model are shown in Figure 3.

HSC's: 1.5, OT's: 1, Tech Officers: 0.7	

RESULTS

	Average Total Time in System (Weeks)
1 Visit	3.68
2 Visits	5.57
3 Visits	8.63

	Average Total Time in System for DFGs (Weeks)
Stair lifts	9.73
LAS	13.62
Complex	21.66

	Average Time in System for DFGs (Weeks) from MOT
Stair lifts	8.22
LAS	12.03
Complex	19.80

	Resource Utilisation (%)
HSC'S	67%
OT's	68%
Tech Officers	62%

	Average Waiting Times for (Weeks)
1st Visit	1.44
2nd Visit	0.05
3rd Visit	0.05
Tech Officers	0.28

Figure 3. A screenshot of the outputs page of the updated model.

The model would also reflect the changing demand as well as the increase in population until 2020.

The model would be made available to participants to enable them to make changes to the model with respect to staffing levels, activities durations and demand of the service to see how it would affect the flow of patients through the pathway.

4.2.8. Participants' actual outcomes and their feedback on the workshop
At the end of the workshop, participants were thanked for attending and asked to express their actual outcomes from the workshop. Participants' actual outcomes from the workshop are presented below:

- Better understanding of locality demand
- Good idea of where the model is going
- A better representation of the LB progressing.
- An understanding that the model is a tool and can be amended to reflect demand.
- Better understanding of how localities processes differ

The participants were also asked to complete a questionnaire stating in a scale of 1 to 5 whether they agreed or disagreed with a number of statements about the workshops' communication, commitment, consensus and usefulness. Five participants completed the questionnaire. The results of the questionnaires are presented below:

Communication	Average Score 1 = Strongly Disagree 5 = Strongly Agree
1. The workshop provided me with an improved understanding of the LB service	3.6
2. There was open communication in the workshop sessions	4.2
3. I understood the model findings	3.8
4. I understood the opinions of others	4
5. The session leaders paid attention to my ideas and opinions	4.4
Commitment	
6. I was personally willing to involve myself in the interactive sessions	4
7. I had ample opportunity to participate in the workshop sessions	4.2
8. The topics discussed at the workshop are of importance to me	3.8
9. Providing a timely service is important to me	4.2
10. I identified activities that I could change as part of my day-to-day job	2.6
Consensus	
11. An integration of opinions was reached in the workshop sessions	3.6
12. The workshop sessions built a shared vision	3.6
13. Consensus about the next actions to be taken was reached as a result of the workshops	3.8
14. I agree with the conclusions reached	4
Workshop usefulness	
15. The workshops had a clear focus	3.8
16. All in all, I found the workshops useful	4

17. What did you learn from the discussions in the workshops?

- *There are a lot of variables. The model helps to enable trial runs.*

- *Where the LB is heading*

18. In your opinion, what do you think should be the next steps/changes to be taken within LB and explain why do you think this is important?

- *Business case to be agreed and resources confirmed.*
- *Clearer information of individual borough council processes needed.*

4.2.9. Reflections on the project leads workshop

The discussion during the workshop was lively with many contributors and engagement with the model was high. The participants focused their discussion around the model and its ability to show different outcomes from changing variables. The differences in processing specific activities between localities featured prominently in the discussions as well as the service as a whole.

At the close of the workshops the participants generally thought that the sessions had been useful and that they had gained an increased awareness of where LB is progressing. One participant mentioned that s/he understood that the model is a tool that can be amended to reflect demand.

The results from the survey given at the end of workshop were generally very positive with respect to Workshop usefulness and Communication. In more detail, they all agreed that overall the workshops were useful; there was open communication in the workshop sessions; the session leaders paid attention to participants' ideas; and they understood the opinions of the others. One participant stated that the workshops did not provided him/her with an improved understanding of the LB service. However, it should be mentioned that this participant did not attend workshop 1. Another participant was not sure if s/he understood the model findings whereas one was undecided on whether the workshop had a clear focus.

In terms of participants' commitment, almost all agreed that they were willing to involve themselves in the sessions, the topics discussed at the workshops were of importance to them but they did not identify any activities that they could change as part of their day-to-day job.

Finally, all participants agreed with the conclusions reached from the workshops. However, the majority of participants were undecided on whether an integration of opinions was reached in the workshop.

4.2.10. Conclusions

The concept of using a computer simulation of a patient pathway in order to stimulate discussion on and test the model set out in the business case was effective. It was also useful to have the same participants present at both workshops, as this gave a degree of

continuity. The discussion in this workshop revolved around the patient pathway, the service and the representation of the pathway in the simulated model.

Actions were identified which could further refine the model and make it even more useful as an ongoing tool for the LB service to use when planning changes in the future. Participants demonstrated a shared understanding of the entire pathway, despite many participants only being involved in a small part of the service. Therefore, it can be concluded that, in this case, using a computer model of a patient pathway as a vehicle for improvement, change and development has been successful.

4.3. Workshop 3: Discussing the simulation model with Service Users (Patients)

4.3.1 Introduction
The workshop was held on 28th October at the Blaby District Council offices. It was facilitated by the project investigator (Dr Antuela Tako) and the post-doctoral research associate (Dr Anastasia Gogi) with support from Healthwatch Leicestershire (Gemma Barrow).

The workshop participants were nine service users (out of which 2 were carers accompanying a service users) and two staff members from the Lightbulb team.

The participants completed a short questionnaire before the session started in order to identify the type of services they had experience of. (Appendix 2). The results showed that their experiences with the LightBulb service involved minor adaptions involving on average two visits from the housing support coordinator. As a result, the workshop focused primarily on this part of the LB service.

4.3.2 The user mode simulation model
A screenshot of the model used for the patient workshop can be seen in Figure 4. The user mode model was particularly developed in a user-friendly format, compared to the simulation model used for the project leads workshop. Simplified and improved graphics were added on the model to ensure that the visual impact of the model draws users' attention. Another important difference between the two models is that, in the model used for the patient workshop, some text appears on screen while the model runs to explain the progress of a patient's case through the service. Furthermore, in this model, there are no "simultaneous" customers. In other words, we see only one patient within the LightBulb service until his/her journey within the service is completed and the simulation stops. This change to the original model enables us to isolate different types of patients and monitor their journey within the service on a patient by patient basis. If simulation users would like to see another patient's journey, they simply need to press the "play" button.
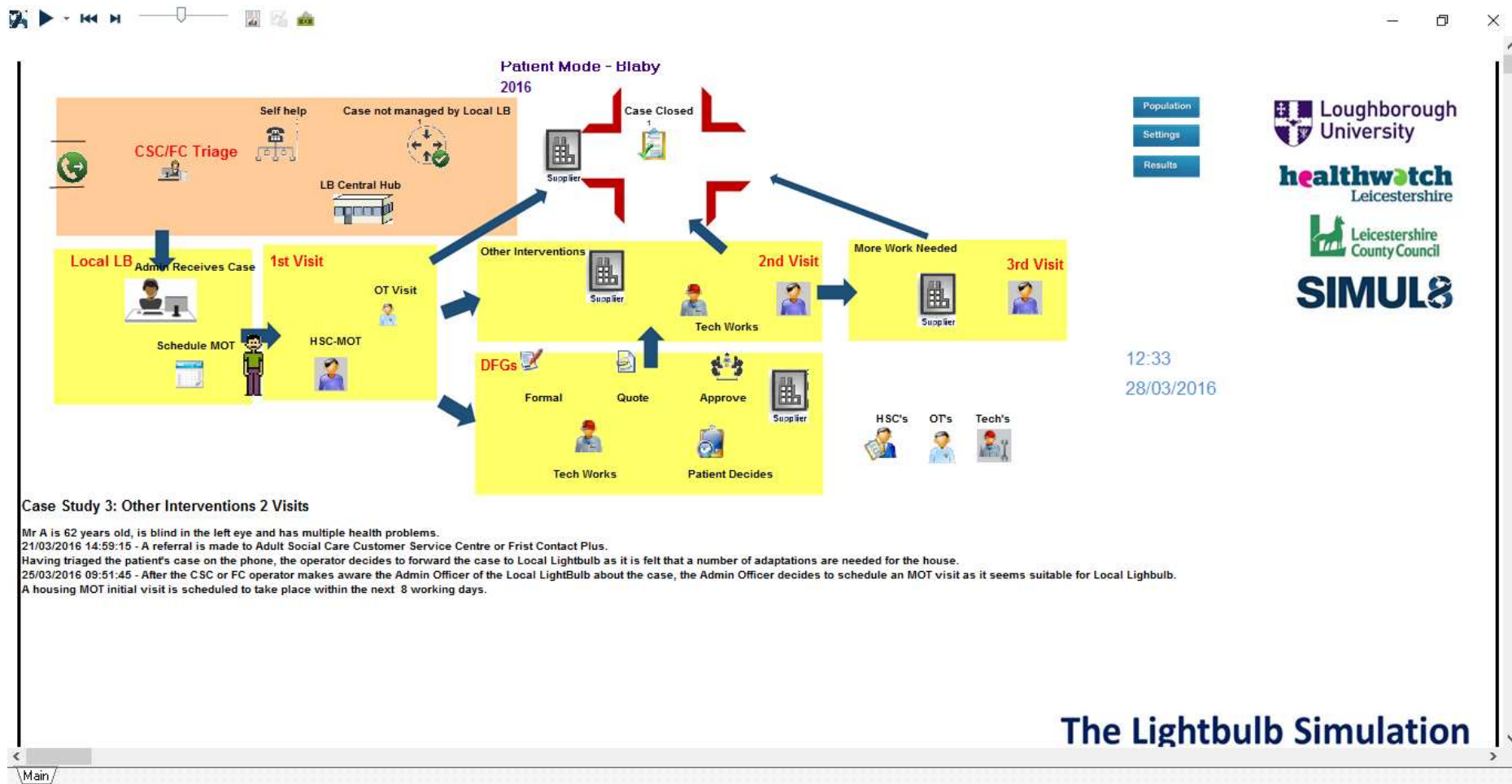
Figure 4: A screenshot of the model while it is running.

4.3.3 Participants' Initial Expectations

At the beginning of the session participants were asked: "what do you hope to gain from the workshop?". People seemed generally unsure about what the workshop was about. Most delegates stated that they came along to give their feedback on the service hoping this will result in the continuation of the service. After some encouragement from the facilitator, the following expectations were identified:

- Came along to give feedback on the service
- Meeting people
- Back up the Lightbulb project team
- To help and continue the service
- To obtain information about the service

The workshop included the following sessions:

4.3.4 Model Presentation

This part of the session involved the presentation of the simulation model in user mode created specifically for the patient workshop (Figure 4).

Before running the model, the facilitator briefly explained the different parts of the LightBulb simulation model. The participants were then asked to read Case Study 3 (Appendix 1) from their handouts which explained the pathway involved in the journey of a patient requiring minor adaptations, involving two visits from the housing support coordinator. As the participants had similar experience with the service to case study 3, this case was purposely chosen to ensure that the participants relate to the model. After reading the case study, the model was set to match the patient journey described in Case Study 3 and the model was run at a relatively slow speed on the screen. The delegates could watch the patient moving through the parts of the model while the facilitator with the help of one of the staff members of the LightBulb team talked them through the patient's journey in the service.

4.3.5 Participants' Experiences

After having presented Case study 3 using the simulation model, the participants were asked to discuss their experience with the service and compare it to the case study previously presented. This was an indirect way of assessing whether the participants understood the pathway and that it made sense to them, without restricting the discussion to the case presented. A summary of the participants' experience with the service is next presented.

Mrs B

Mrs B was referred to the service by her GP who passed her details to Social Care. No decisions have been made on Mrs B's behalf without Mrs B being present.

Mrs B had grab rails fitted inside and outside her home. She had her armchair raised and the wheels removed. Sensor lights were placed on the skirting boards in her home. She has a perching stool in the kitchen. The team will be making one more appointment to look at fitting a new telephone. Mrs B feels that the whole thing has been superb.

There were approximately 5 visits to Mrs B home over a 2-month period. Cases that require 3 or above visits are usually completed over a 9-week period. It was noted that Mrs B's case had a few complications and the work took a little longer than it would have in other similar cases.

Mrs L

Mrs L has rheumatoid arthritis and has had two stair rails fitted.

The bathroom light fitting was damaged and no longer worked. Mrs L was using a standing lamp and the wire was trailing across the landing. The handyman fixed the existing light fitting and put grab rails in the bath. A referral was made for fire alarms and a door chain.

There were approximately 2 visits by technicians and one check up to Linda's home over a 6-week period. Mrs L's case was particularly similar to the one presented with the simulation model.

Mrs C

Mrs C had seen the poster for the Lightbulb service at the doctors and asked about it. (She did think that the service was for depression).

She had three steps installed at her flat, a drop down seat in the shower, extended grab rails in the toilet and her existing grab rails were altered. Mrs C said that the workmen were wonderful.

Mrs P

Mrs P found out about the service through a carers group. Although the name may seem silly – she said that a light bulb makes a huge difference. Mrs P lives in a bungalow and had fire alarms, rails, light bulbs and a commode fitted. Pat described it as a 'wonderful' service and what is happening in Leicestershire is great. The service enables people to stay where they are and have less hospital appointments.

Mrs P said that is doesn't have to be a massive thing but little things make a big difference to our lives.

Mr R

Mr R spoke to the Lightbulb team at the GP Practice. They arranged for the fire service to check the fire risks and smoke alarm at their home. In his home, he has had two grab rails fitted and a rail in the bedroom to help get out of bed. When the handyperson visited the couple's house, he also offered to help Mr R to fit a cupboard in the garage. He stated that "this is more than I expected". The group agreed that it was better to have a handyman help to put up shelves etc. than have the clients potentially risk injury by doing the job themselves. They thought that they are "not highlighted enough how the little jobs are done – the service has made a difference to our lives i.e. having a grab rail can prevent an accident". Mr R hopes that the service does not fizzle out – he hopes it carries on.

In their case, everything was fitted very quickly. It took only one visit by a handyperson and the case was closed within 4 weeks.

4.3.6   Measuring Patient Satisfaction with the service
Next the participants were asked to comment on the positive aspects and the drawbacks of the service received so far.

Positives
When asked about the positive aspects of the service received so far, the participants commented on the following:

- **Quality of service.** Most participants commented on the good quality of work delivered, it was trustworthy and a quick process.
- **Support provided to them.** The participants agreed that the intervention enhanced their quality of life. It enabled them to be more independent. Most participants commented that it enables people to take charge and continue with their lives.
- **Multi-disciplinary nature of the service.** The participants commented on the fact that different services are provided under one roof, all goes through one person (one point of contact) which is considered important as it creates familiarity. They commented that it would be confusing if there were lots of people coming in and out of the house.

Drawbacks
When asked about the drawbacks of the service received so far, the participants initially found it difficult to identify any aspects, but after being encouraged by the facilitators they commented on the following:

- **Publicity.** The participants commented on the fact that the service was not well-known and that there is not enough clarity of the services on offer. One participant stated: "There needs to be clarity on what you can and can't expect – this needs to be clear". During the workshop, the range of services Lightbulb can offer was discussed.
- **Referrals to the service.** They also pointed out that it was not clear to them how they would access the service (there is not a telephone number to call), referrals are made by chance. During the workshop, information was given by the housing support coordinators about the future methods of referrals to the service, In this part of the session, it was felt that patients needed to see the model in order to conceptualise proposed changes in methods of referral.
- **Effectiveness.** One participant commented on the fact that this service could be seen as a duplication of existing services, and also about the fact that the housing association is supposed to provide a similar support, which they perceived to not be fit for purpose.
- **Service provided.** In one case only, it was reported that the handyperson was not always able to complete the job and several visits were required by the housing support coordinator to ensure that the work was completed.

4.3.7 Suggested changes to be considered by the service

When asked about what changes could the service consider for the future, the participants suggested the following possible improvements:

- **Service integration.** Better relationship with the housing association
- **Sign positing.** Provide sign-posting to other services to prevent social isolation
- **Publicity.** Advertise the service (i.e. Age UK Directory)
- **Direct Access**
- **Service Charge.** The participants commented that they would be happy to pay for services or a contribution towards it, provided that they get the service and the support from the LightBulb team in a timely manner

4.3.8 Participants feedback on the workshop

At the end of the workshop participants were thanked for attending and were asked to complete a questionnaire. Six participants completed the questionnaire. The results of the questionnaires are presented below:

Communication	Average Score 1 = Strongly Disagree 5 = Strongly Agree
1. The workshop helped understand the LightBulb service	4.5
2. There was open communication during the workshop	4.5
3. The computer model helped me understand the patient journey within the LightBulb service	4
4. I understood the opinions of other participants	5
5. The session leaders paid attention to my ideas and opinions	4.4
Commitment	
6. I was personally willing to involve myself in the interactive sessions	4.3
7. I had ample opportunity to participate in the workshop sessions	4.6
8. The topics discussed at the workshop are of importance to me	4.3
9. Improving the services provided by the LightBulb team is important to me	4.6
10. I identified possible changes that could be implemented in the Lightbulb service	4
Consensus	
11. An integration of opinions was reached in the workshop sessions	4
12. The workshop sessions built a shared vision	4.2
13. Consensus about the conclusions of the workshops was reached	4
14. I agree with the conclusions reached	4.2
Workshop usefulness	
15. The workshops had a clear focus	3.8
16. All in all, I found the workshops useful	4.5

17. What did you learn from the discussions during the workshop?

- *How helpful the services is to users.*
- *A useful clarity of the service.*
- *A strong appraisal of the type of problems you need to face.*
- *There are supports from Council for the elderly.*

18. In your opinion, what changes should the LightBulb service undertake to do better in the future?

- *Once the need is established the service should develop itself.*
- *We were very pleased with the service we received from the LB team. I believe the idea of the service is wonderful and could help a lot of people to maintain staying in their own home a lot safer and better.*

4.3.9 Reflections on the patient workshop

When the workshop was drawn to a close, the participants commented that they appreciated the chance to meet and discuss each other's experiences with the service. But most importantly, when asked to state what they gained from attending the workshop (Question 17, Section 4.3.8), most participants highlighted that the workshop was a good opportunity to find out more about the LightBulb service. Revisiting participants' anticipated outcomes for the workshop to assess whether their aims had been met, it can be concluded that this was successful.

The level of engagement during the workshop was high. All participants were asked to comment on their experiences with the service. One delegate remained quiet and did not contribute to the conversation due to her medical conditions, however her views were articulated by her two carers that accompanied her.

There was some engagement with the simulation model, but less time than anticipated was spent on it. The delegates were quiet and attentive as case study 3 was being read by the facilitator and in the meantime the simulation model was running on screen; however, some of them looked puzzled. This is expected when presenting a model to lay people and those that are frail and elderly.

When the participants were asked to comment whether their experience was similar to the case study presented through the model, all participants seemed to have understood adequately the model presented to them. They were also able to identify similarities and/or differences in speed, method of referral and service provided between their experience and the model's case study. Furthermore, five out of the six people that completed the questionnaire believed that the computer model helped them understand the patient journey and only one remained undecided about the effectiveness of the model in communicating results.

To support the presentation of the case, a LB staff member was also asked to present the same case to the participants again as the model re-ran. This member explained the model and re-iterated the description previously provided by the facilitator. The staff members of the Lightbulb team were also needed to explain to the delegates particular aspects of the service, for example alternative patient routes or the method of referrals to the service when it is up and running.

Overall, the simulation model featured as an important tool during the workshop. It was mainly used to help patients in visualising the patient's journey within the system. Furthermore, the concept of using a simulation model in order to stimulate discussion on ways of improving the service was effective despite spending less time than it was initially anticipated on the computer model.

4.3.10 Conclusions

Based on the experience of this workshop the following conclusions can be reached:

- The presence of the staff members helped the smooth progression of the workshop. This was mainly because the participants were familiar with those staff members and a positive rapport had been already established.

- There were no participants representing a key category of patients who had used services of importance to LB such as complex DFGs, stairlift installation or level access shower installation.

- The use of acronyms caused some confusion amongst the participants

- The model produced results that described users' experience with sufficient accuracy for the purpose of the workshop.

- The visual representation of the model in user mode was effective in communicating the patient journey within the LB service.

Judging from the positive remarks that the participants made at the end of the workshop and the results of the questionnaire (Section 4.3.9), they generally found the experience useful and informative and an opportunity to meet others. All participants commented that the workshop helped them understand the LightBulb service as well as that improving the service would be important to them. The participants also agreed that an integration of opinions was reached and only one person believed that the workshop did not have a clear focus. Therefore, it can be concluded that in this case, that using facilitated simulation modelling as a means for communication, change and development has been successful.

Appendices

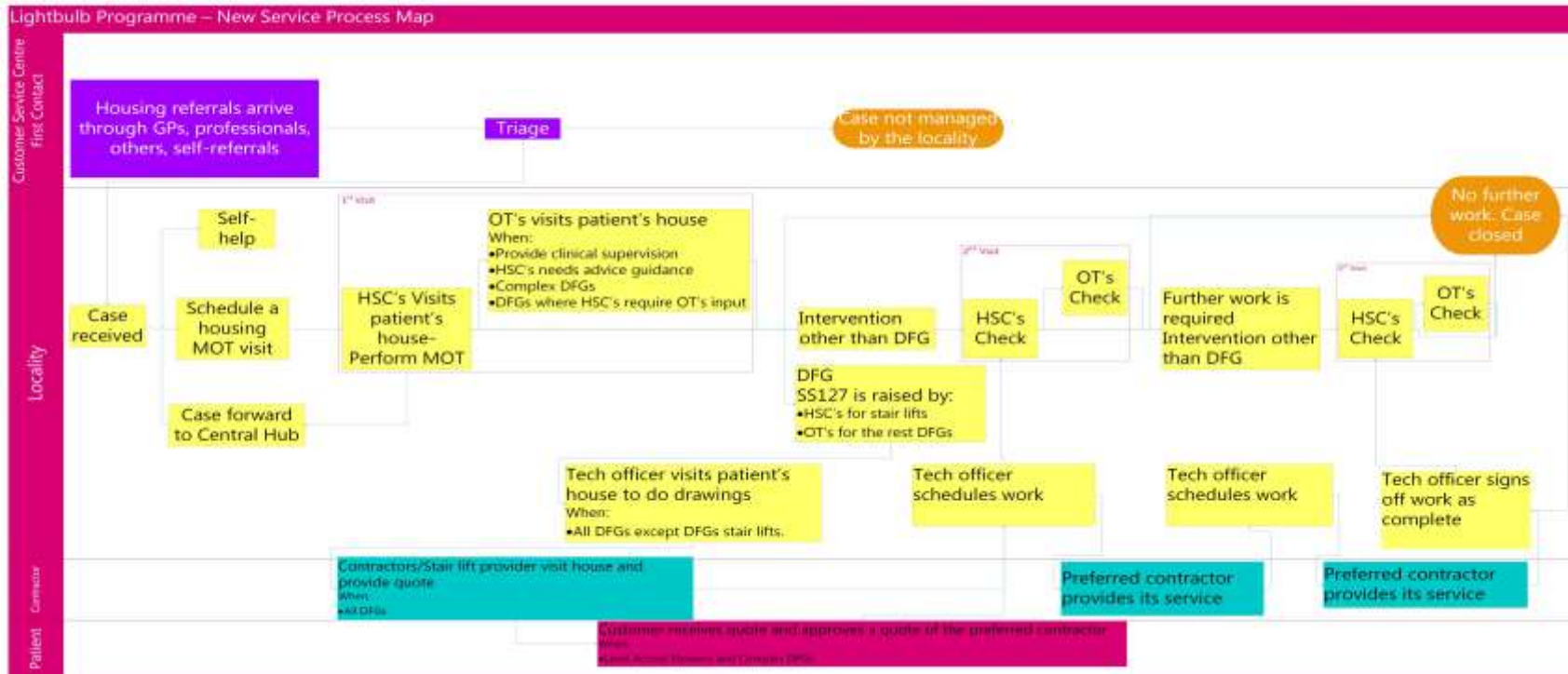## Appendix 1 – Initial and Final Process Map of the LightBulb Project

Figure 5. The draft process map showed to the participants at the beginning of the workshop.
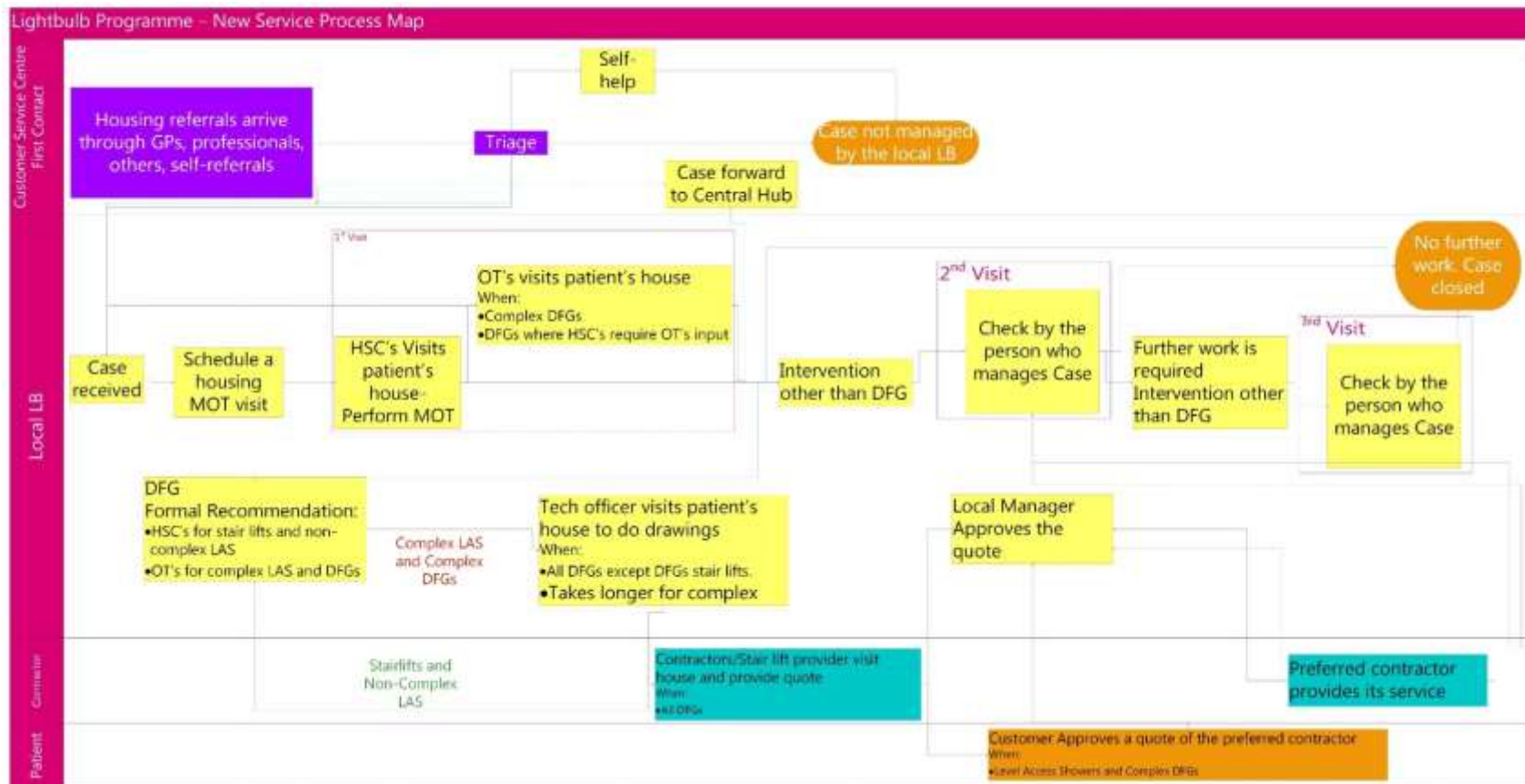
Figure 6. The agreed process map produced during the workshop.

Case Study 1: DFG Stairlift Installation

1. Mr J is 72 years old and lives alone in his house. He has mobility issues due to swollen legs.

2. A referral is made to Adult Social Care Customer Service Centre or First Contact Plus.

3. The case is forwarded to the local Lightbulb team as it is felt that a number of housing solutions are needed for his home.

4. A housing MOT initial visit is scheduled to take place in 7 days.

5. The Housing Support Coordinator visits Mr J as scheduled.

6. After the MOT has taken place the need for a Disabled Facilities Grant is identified.

7. A formal recommendation is made to install a stairlift at the house.

8. A stairlift provider visits Mr J's home and makes a quote. The Lightbulb manager approves the quote.

9. The next day work is scheduled to commence. The work starts 8 days later.

10. A month later, the Housing Support Coordinator visits for a second time to check whether works are completed.

11. At this visit it is established that, no further referrals are required.

CASE CLOSED

12 WEEKS

12. Mr J's case is closed (within **12 weeks** from initial referral).

Case Study 3: Minor Adaptations – Assistive Technology - Energy Efficiency (2 Visits)

1. Mr A is 62 years old, is blind in the left eye and has multiple health problems.

2. A referral is made to Adult Social Care Customer Service Centre or First Contact Plus.

3. The case is forwarded to the local Lightbulb team as it is felt that a number of ~~adaptations~~ housing solutions~~are~~ needed for his home.

4. A housing MOT initial visit is scheduled to take place in 7 working days.

5. The Housing Support Coordinator visits Mr A as scheduled.

6. After the MOT has taken place, referrals are sent to Adaptations for a stair rail and grab rail.

7. Referrals are also made to a Local Area Coordinator and to the assistive technology department and the warm homes service.

8. A couple of weeks later, the Housing Support Coordinator visits for a second time to check whether works are completed.

9. After the visit has taken place, no further referrals are required.

CASE CLOSED

6 WEEKS

10. Mr A's case is closed (within **6 weeks** from initial referral).

Case Study 7: CSC Inappropriate Triage

1. Mrs T's GP raised issues with toilet transfers and stairs.

2. The GP makes a referral to Adult Social Care Customer Service Centre or First Contact Plus.

3. The case is forwarded to the local Lightbulb team as it is felt that a number of housing solutions are needed for her home.

4. The Lightbulb team sends the case back to the CSC Team as signpost and patient guidance are only needed for this case.