
## Widening Access to Virtual Educational Scenarios

**562463-EPP-1-2015-1-UK-EPPKA2-KA**

# Deliverable 6.3

# Model for sustaining knowledge toolkit

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| Deliverable number | D.6.3 |
| Delivery date | Dec, 2018 |
| Status | Final |
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# 1. INTRODUCTION

The WAVES project aims to facilitate the proliferation of Scenario-Based Learning (SBL) through ease of use streamlining and educational dissemination of it across the academic and wider educational community. The project aims to achieve these goals by creating outcomes in 3 main aspects; Community Engagement, Technical Facilitation and Knowledge Support. WP6, Sustainability describes all the activities and outcomes of the WAVES project regarding the viability of the project's outcomes past its own active funding period.

## 1.1. Aim and Scope of this document.

In this specific deliverable a sustainability model for a core tangible outcome of the WAVES project, the knowledge toolkit shall be described. It must be noted that in the context of the project's tangible outcomes the knowledge toolkit (MOOC, training videos & exemplar scenarios) has an important role. Knowledge toolkit, as a whole, is an educational tool that both disseminates the SBL educational modality, but also implicitly facilitates ease of use by creating SBL aware educators. In that context, in this deliverable, this interplay between the knowledge toolkit itself and the rest of the WAVES outcomes shall be explored in order to describe a coherent sustainability roadmap for the whole of the project.

## 1.2. Structure of this document.

This document is structured in three chapters with the first chapter being this introductory passage, which sets the context of this endeavor.

The second chapter focuses in the knowledge toolkit itself. It describes the components of the WAVES knowledge toolkit which are the MOOC, the training videos and the exemplar scenarios. Afterwards it explores the sustainability avenues for the toolkit through a strategic viewpoint utilizing a business model canvas and a qualitative value proposition analysis. Finally it presents the practical aspects of sustainability with inclusion of things like the number of MOOC upgrades sold, number of website visits etc.

The third chapter presents the holistic map to the sustainability of virtual scenarios. In this chapter the whole of the WAVES project is presented as an integrative scenario based learning (SBL) proliferator. Then the three core aspects of the project are outlined and the relevant strategic approaches for them are presented as they also exist in the other two deliverables of this work package (D6.1, D6.2). Finally, based on this presentation, the inherent advantages of the WAVES approach to sustainability is described by outlining the synergies that the project's three outcomes offer to the whole endeavor of maintaining a sustainable and active SBL ecosystem of community engagement, technical facilitation and knowledge proliferation.

# 2. KNOWLEDGE TOOLKIT SUSTAINABILITY

## 2.1. Content of the toolkit

### 2.1.1. MOOC

The 3 week “How to create Virtual Scenarios” MOOC is organized around easing educators but also learners to the SBL modality of teaching and learning. The MOOC starts with the principles of the topic (what is SBL) and how to define it in its context (SBL learning sessions, types of SBL, links with problem based learning etc.) Then the core idea behind SBL is explored. The learners are introduced to the principles of storytelling, its key components (structure, suspension of disbelief) and are also introduced to the concept of branching narratives and the importance of user agency and decision making within an interactive story.

In the second week the learners are guided into combining storytelling with education. They are taught how to create an educational virtual scenario by linking player agency and choice with the educational outcomes and learning objectives. In that fashion the learners are able to create detailed storytelling interactive scenarios that are going to be easily transformed into virtual scenarios.

In the third week the learners are taught exactly this transformation. Namely how to take story narratives that are appropriately described and convert them into interactive scenarios. The learners are taught about starting and ending points of the scenario the critical path of the scenario as well as managing decision points to appropriately effect the granularity of the virtual scenario.

Throughout the course the learners are introduced to the technical aspects of the VS authoring. Both open source and commercial platforms for VS authoring are shown (OpenLabyrinth & CASUS along with any other prevalent at the time) and the details of the WAVES outcomes enhancements are presented to facilitate a gentle learning curve of these platforms. The MOOC also exposes the learners to some advanced authoring techniques and concepts such as mind mapping their scenario and creating realistic and authentic narratives in VS. A far more detailed description of the MOOC and its contents is presented in D3.5.

From the above brief discourse it is clear that this MOOC is focused on educators. However, the continuous engagement of the MOOC participants with the concepts and use modes of the subject matter would benefit also the learners’ part of the SBL target groups. Additionally, the “how-to” specifics of a platform are good places to outline the WAVES toolkit’s improvements in SBL authoring platforms. Even the storytelling aspect of the MOOC can be demonstrated to benefit from ease of use enhancements that free the user’s narrative creativity.

### 2.1.2. Training videos

To complement the knowledge toolkit, WAVES created material based on the test cases as described in D5.2 for the purpose of informing the educators about common workflows. For that material was created in video tutorial format. Video tutorials are screen recording or recorded slide-set with voice-over or text captions as commonly published on YouTube or Vimeo. The video tutorials illustrate a step by step process on how to use the exemplar tools for performing different

functions in regard to virtual scenarios and were constructed by both technical developers and educators to ensure that they can disseminate knowledge in an understandable way to different audiences and in particular to meet requirements of non-technical target groups.

The material was reviewed according to the quality assurance plan and was improved according to the received feedback. The activities that were selected to be demonstrated within the videos were selected based on the test cases specified in the deliverable 5.2 and 3.3.

The videos were developed to include subtitles in English to enhance the understanding of every step. One of the videos demonstrating the integration of the OpenLabyrinth system with the Canvas LMS system was translated to other languages, including German, Greek and Czech as described in D3.3.

### 2.1.3. Exemplar Virtual Scenarios

A selection of demonstration scenarios has been put together by the WAVES consortium to showcase the different types of scenarios described in detail in D3.2. These should provide new authors with an understanding of the potential of Virtual Scenarios, and inspiration to add their own scenarios. The scenarios are listed in Appendix 1 of D3.2 with details on their key features. These have been made available to the public via the WAVES website as part of the non-technical toolkit.

The demonstration scenarios which have been put together as part of the toolkit have been mostly developed and delivered through the two exemplar systems we have been using throughout the project, CASUS and OpenLabyrinth. CASUS represents a commercial software and OpenLabyrinth represents the open source authoring software. There are many other tools or software which can be used to create and deliver Virtual Scenarios. Many tools will require some technical expertise to install and utilise and others will require a subscription or maintenance cost. For the purpose of the project CASUS has made some of their scenarios available freely and the authors of scenarios in OpenLabyrinth have made their scenarios openly available.

Virtual Scenarios can be developed in many languages, and Virtual Scenario authoring software will often support the use of other languages in the scenario itself, and in some cases even the interface will adapt for different languages. More about this can be found in the technical tool-kit where pilots have been carried out to adapt the interface. As the main languages of the consortium are English, German, Greek, Swedish and Czech the exemplar scenarios have been provided in these languages and in addition also in Slovak, French, and Persian.

## 2.2. Sustainability of the knowledge toolkit

### 2.2.1. Business model canvas and value vector for the knowledge toolkit

In the initial stages of the consortium's exploration about the sustainability model that would be appropriate for WAVES a standard business model canvas was built for every aspect of the project. The one regarding the knowledge toolkit is presented in Figure 1.

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| *Team or Company Name:* WAVES Consortium | *Date:* 10/01/2018 |
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## WAVES Business Model Canvas – WAVES MOOC

| *Key Partners* | *Key Activities* | *Value Proposition* | *Customer Relationships* | *Customer Segments* |
|---|---|---|---|---|
| • WAVES partners (Content Provider)<br>• FutureLearn (Publisher)<br>• Associate Partner Forum (Dissemination) | • Marketing<br>• Gather Feedback to ensure current content<br>• Update content<br>• Answering posts<br>• Resolve technical queries. | • MOOC that makes design and authoring SBL content. | • Mentors personally answering questions<br>• Certificate owners get perks (invitation to webinars)<br>• Co-creation of MOOC content | • Educators in Academic Institutions<br>• Learning and development experts-corporate sector.<br>• L&D professionals non-for-profit and govt. sectors<br>• Individuals interested in getting better at authoring and deploying SBL |
| | *Key Resources*<br>• FutureLearn<br>• Content<br>• Partners<br>• Advertisement | | *Channels*<br>• FutureLearn<br>• Customer channels<br>o Facebook<br>o LinkedIn<br>o Twitter<br>o Waves<br>o Cross site posts<br>o Email<br>o Newsletter<br>o Conferences<br>o Publications | |

| *Cost Structure* | *Revenue Streams* |
|---|---|
| • Personnel cost (content development, answering questions, technical issues) | • MOOC certification fees |

**Figure 1 The Business Model Canvas devised by the WAVES consortium regarding the knowledge toolkit.**

Due to the fact that the WAVES project, including the knowledge toolkit, is not a product or a for profit enterprise endeavour the consortium followed through this work with a set of targeted questions regarding the specifics that the value proposition of each needed answered in order to transform into actionable short and medium term guidelines and activities. These, coined, for lack of a better term, as Value Vector Identification Queries (VVIQs) were explored in several consortium meetings. The resulting outcomes for the knowledge toolkit are presented in Table 1

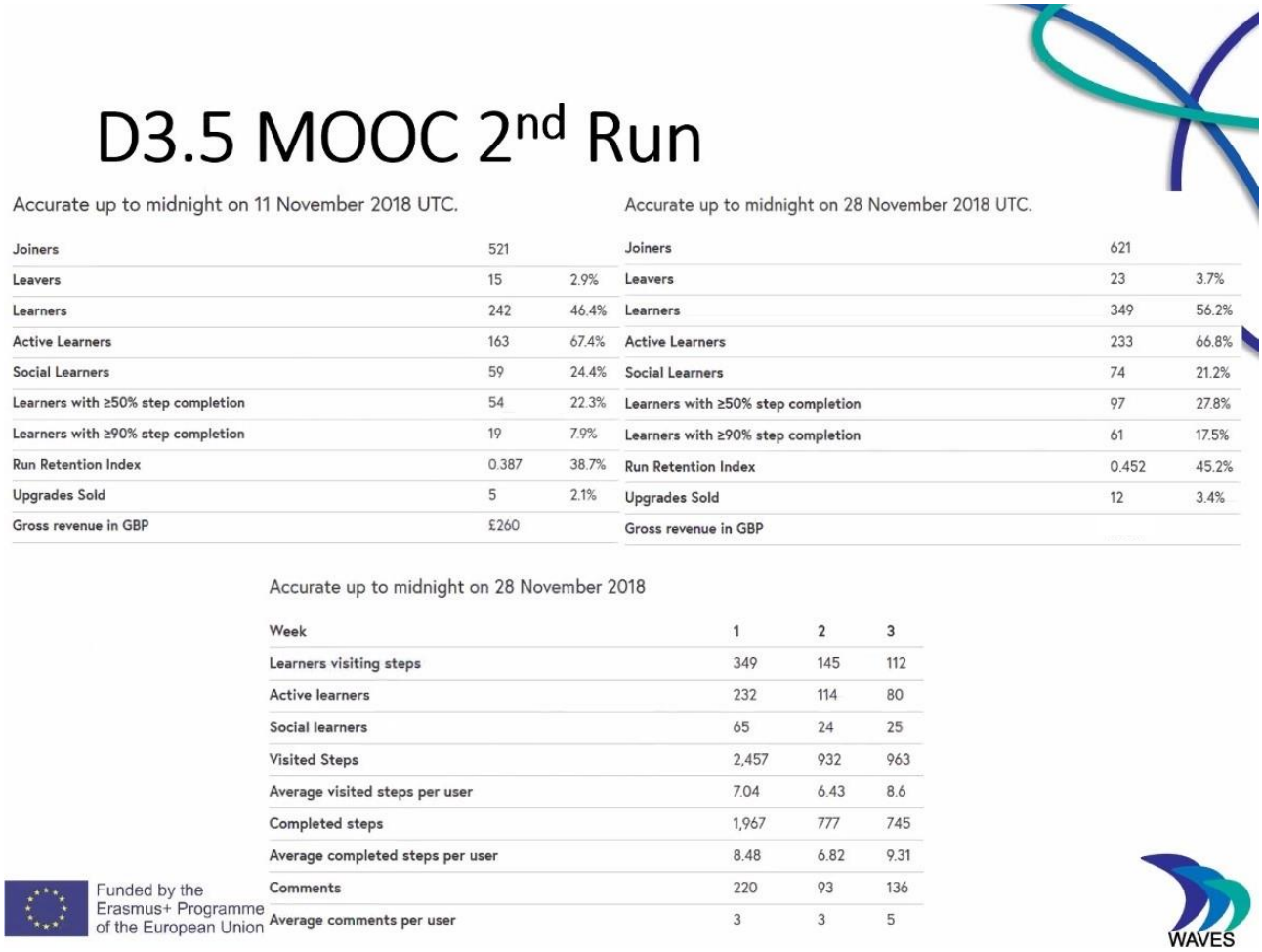
**Table 1 Value vector identification queries table for the knowledge toolkit.**

| | |
|---|---|
| What is the MOOC frequency and schedule after the project's funding? | Coordinator committed to running it on pre-determined schedule of two runs per year. |
| Who will commit as educators after the project's funding? | Volunteered existing MOOC educators per the coordinator's schedule |
| How long will the program be live during each run of the MOOC? | 3-5 weeks to join and interact |
| How many hours per week will each educator be | 1-2 hours per week, modified |

| | |
|---|---|
| engaged with the MOOC? | if needed by the coordinator |
| How will the MOOC content be updated? | Revision and consideration after each run. |
| When will the MOOC be updated? | Coordinator's purview, as needed. |

### 2.2.2. Applied aspects of knowledge toolkit sustainability

With the core knowledge toolkit outcome of WAVES being the MOOC the focus for sustainability metrics, regarding this aspect of the project, was shifted in it. After the first pilot run of the MOOC, in which many content and technical issues were corrected, the second run of the MOOC was conducted and a host of statistics were extracted. These, are presented in Figure 2



D3.5 MOOC 2nd Run

Accurate up to midnight on 11 November 2018 UTC.

| | | |
|---|---|---|
| Joiners | 521 | |
| Leavers | 15 | 2.9% |
| Learners | 242 | 46.4% |
| Active Learners | 163 | 67.4% |
| Social Learners | 59 | 24.4% |
| Learners with ≥50% step completion | 54 | 22.3% |
| Learners with ≥90% step completion | 19 | 7.9% |
| Run Retention Index | 0.387 | 38.7% |
| Upgrades Sold | 5 | 2.1% |
| Gross revenue in GBP | £260 | |

Accurate up to midnight on 28 November 2018 UTC.

| | | |
|---|---|---|
| Joiners | 621 | |
| Leavers | 23 | 3.7% |
| Learners | 349 | 56.2% |
| Active Learners | 233 | 66.8% |
| Social Learners | 74 | 21.2% |
| Learners with ≥50% step completion | 97 | 27.8% |
| Learners with ≥90% step completion | 61 | 17.5% |
| Run Retention Index | 0.452 | 45.2% |
| Upgrades Sold | 12 | 3.4% |
| Gross revenue in GBP | | |

Accurate up to midnight on 28 November 2018

| Week | 1 | 2 | 3 |
|---|---|---|---|
| Learners visiting steps | 349 | 145 | 112 |
| Active learners | 232 | 114 | 80 |
| Social learners | 65 | 24 | 25 |
| Visited Steps | 2,457 | 932 | 963 |
| Average visited steps per user | 7.04 | 6.43 | 8.6 |
| Completed steps | 1,967 | 777 | 745 |
| Average completed steps per user | 8.48 | 6.82 | 9.31 |
| Comments | 220 | 93 | 136 |
| Average comments per user | 3 | 3 | 5 |

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WAVES

Accurate up to midnight on 16 December 2018 UTC.

| | | |
|---|---|---|
| Joiners | 664 | |
| Leavers | 40 | 6.0% |
| Learners | 387 | 58.3% |
| Active Learners | 262 | 67.7% |
| Social Learners | 82 | 21.2% |
| Learners with ≥50% step completion | 129 | 33.3% |
| Learners with ≥90% step completion | 93 | 24.0% |
| Run Retention Index | 0.484 | 48.4% |
| Upgrades Sold | 13 | 3.4% |

**Figure 2 Details and statistic of the final MOOC Run for WAVES**

As can be ascertained by the figure, the core financial sustainability metric for the MOOC (gross revenue) showed a significant increase a couple of weeks after the MOOC's end a trend that denotes a significant interest of the learners to formally certify their training on the subject. Given

that this certification makes sense only in the context of verifiably being able to employ Scenario Based Learning (SBL) in a community of peers, the overall roadmap of sustainability for WAVES is outlined below.

# 3. INTEGRATIVE MODEL FOR SUSTAINING VIRTUAL SCENARIOS.

## 3.1. WAVES as an integrative SBL proliferator.

### 3.1.1. Two more core aspects of WAVES.

WAVES aimed to proliferate SBL by cultivating three specific but synergetic outcomes: Community Engagement, Technical Facilitation and Knowledge Proliferation. As is described also in the other deliverables of this WP (D6.1 and D6.2) detailed business model canvases and VVIQs were devised for each of them. The former are presented in the following two figures (Figure 3, Figure 4). Both these value propositions and the one presented in section 2.2.1 of this deliverable, by themselves are not strong enough in order to sustain the proliferation of SBL, especially after the activities of the project reduce in intensity after its funding period. However, both the activities performed during the project's funding period and the continuing facilitation of low intensity activities after that period, with minimal, in-house, or crowdsourced resources, taps into the mutual support of these individual outcomes.

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WAVES Business Model Canvas – Technical Toolkit

| *Key Partners* | *Key Activities* | *Value Proposition* | *Customer Relationships* | *Customer Segments* |
|---|---|---|---|---|
| • Users community<br>• TRG | • Code maintenance<br>• Social media and website activities (answering questions)<br>• Hosting | Technical Toolkit<br><br>-SBL platform -improvement<br>-Making things easier<br>-UX improvements<br>-Cook book (code)<br>-Enables tech savy teachers to use VS easier | • Providing resources to target group<br>• Providing support: FAQ, guidelines | • Tech developers<br>• Learning technologists<br>• Tech savy teachers and students<br>• Med. Sim companies<br>• IT department supporter<br>• Comp. science researcher |
| | *Key Resources*<br>• TRG<br>• Feedback<br>• Code and developers of OL/CASUS<br>• Technical infrastructure | | *Channels*<br>• http://wavesnetwork.eu<br>• forums (e.g. facebook)<br>• social media<br>• MOOC<br>• source code repository | |

| *Cost Structure* | *Revenue Streams* |
|---|---|
| • IT services<br>• Person time<br>• Hosting – cloud, source code repository, server | • MOOC<br>• Following projects |

**Figure 3 The Business Model Canvas devised by the WAVES consortium regarding the technical toolkit.**

| *Team or Company Name:* WAVES Consortium | *Date:* 10/01/2018 |
|---|---|

WAVES Business Model Canvas – WAVES network

| *Key Partners* | *Key Activities* | *Value Proposition* | *Customer Relationships* | *Customer Segments* |
|---|---|---|---|---|
| • WAVES partners<br>• CROESUS<br>• eVip<br>• TAME<br>• ePBL.net<br>• E.C<br>• MEFANET<br>• OEB | • Pick out leads for each customer (which expert would the customer go to?)<br>• Define more clearly our network<br>• Video marketing promoting the network | • The WAVES network of leading experts | • Membership<br>• Joint collaborations (potentially more collaboration between business and academia)<br>• Faculty development integration<br>• Legal agreement<br>• Relationships with MOOC providers | • Educators from both industry and education<br>• EC<br>• Developers<br>• Students (University-masters/PhD<br>• Companies who are providing/developing material<br>• Chinese MOOC providers |
| | *Key Resources*<br>• Commitment of the experts<br>• Marketing to generate awareness<br>• Re-run MOOC – consider edX | | *Channels*<br>• htttp://wavesnetwork.eu<br>• forums (e.g. facebook)<br>• social media<br>• conferences | |

| *Cost Structure* | *Revenue Streams* |
|---|---|
| • WAVES fund<br>• Person time (2hrs per week = 18hrs per year) | • Webinars/ other charged services<br>• Expertise exchange as opposed to monetary exchange |

**Figure 4 The Business Model Canvas devised by the WAVES consortium regarding the community engagement of the WAVES consortium.**

### 3.1.2. WAVES synergies for sustainability.

Given the previous brief discourse, the overall integrative SBL proliferation potential for the WAVES project is presented in Figure 5. The WAVES “SBL Augmentation Cascade” is an in-consortium name, given to the synergetic nature of the three outcomes that emerged and are going to be sustained by the project.

Regarding infrastructure, the technical solutions and guidelines provided by the consortium’s Technical Reference Group (TRG) has already become a milestone, with suggestions and corrections being incorporated in widely available SBL platforms like CASUS and OpenLabyrinth. In turn this is made easier and more rapidly facilitated through the fact that the consortium’s community includes both developers of these systems as full partner for the former and key associate partner for the second. Additionally, these technical augmentations of the relevant platforms are further facilitated by the MOOC education and the host of relevant educational material that is made available through the project’s knowledge outcomes.

Regarding community, the key stakeholders that are engaged, both as consortium partners and as associates immediately facilitate the proliferation of SBL and its supporting problem based learning paradigm in the wider higher education and business community. This, in turn is made easier by presenting to this community both a) an easier, more attractive technical “front end” for SBL, through the technical toolkit’s innovations and b) a host of formal and informal training material through the knowledge toolkit’s content.

Regarding knowledge, training the academic and business people that are going to need SBL for their learners or employees is intrinsically facilitated by a wider community engagement as is provided by the WAVES network of partners, associates and wider community. Additionally, this training is greatly enhanced by removing tedious technical requirements from the educators and technologists that are going to use or maintain SBL technological platforms.

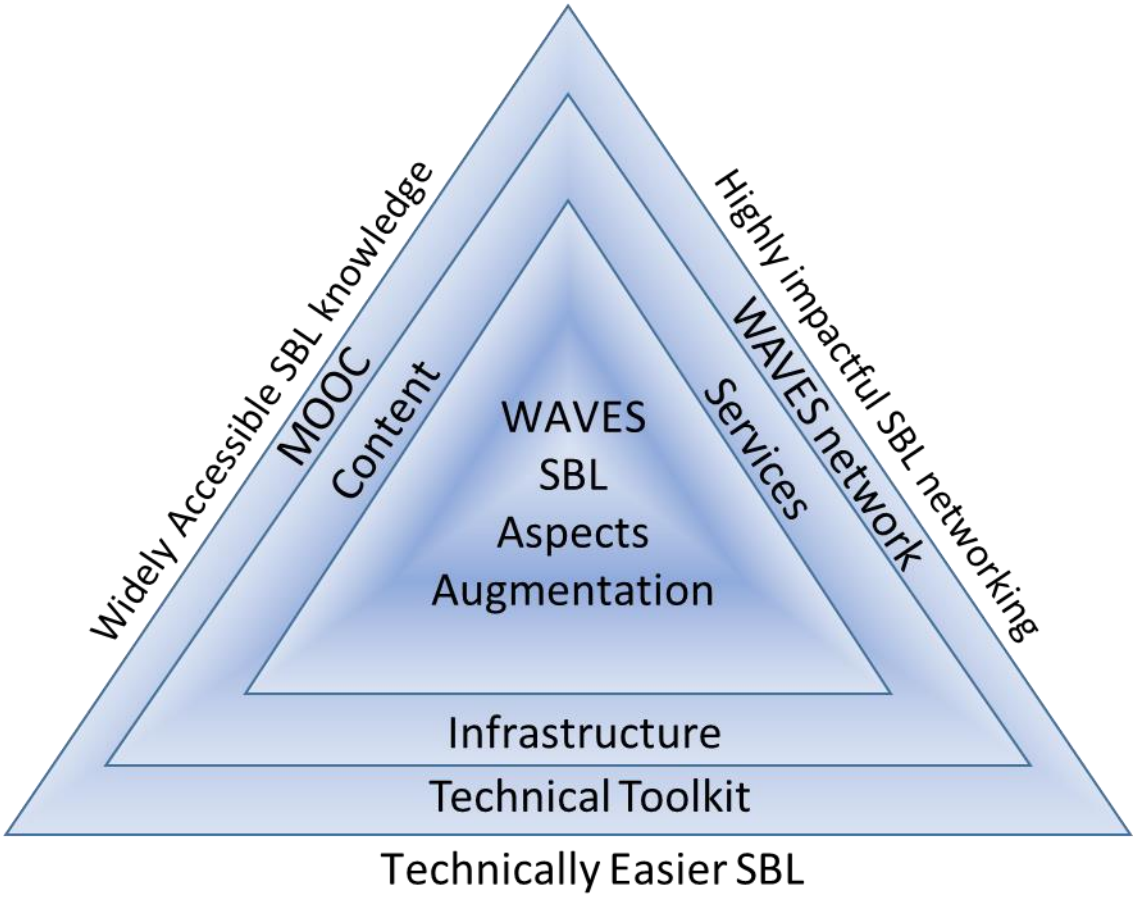


**Figure 5 The WAVES SBL Augmentation Cascade.**

These three generally described sustainability flows were generally described to exemplify the core sustainability proposition of the WAVES project. Each of the three WAVES outcomes acts as an impact multiplier for the two other outcomes, hence creating a positive feedback loop, and "augmentation cascade" for SBL proliferation. It is exactly this self-proliferating cascade of impact that will sustain the project's outcomes even with minimal in-house resources and the small financial contribution that the MOOC will be able to provide to the partners working in each aspect of it past its funding period.