



Horizon 2020 Societal challenge 5  
Climate action, environment, resource  
Efficiency and raw materials

# D6.3 EXPLOITATION STRATEGY

LEAD AUTHOR: Alexandre Barret (Strane Innovation)

OTHER AUTHORS: Stefania Munaretto (KWR), Nathalie Vallée (Strane Innovation)

DATE: 30 April 2020

<b>PROJECT</b>	Sustainable Integrated Management FOR the NEXUS of water-land-food-energy-climate for a resource-efficient Europe (SIM4NEXUS)
<b>PROJECT NUMBER</b>	689150
<b>TYPE OF FUNDING</b>	RIA
<b>DELIVERABLE</b>	Exploitation Strategy
<b>WP NAME/WP NUMBER</b>	WP Exploitation / WP 6
<b>TASK</b>	Task 6.3
<b>VERSION</b>	Final version
<b>DISSEMINATION LEVEL</b>	Public
<b>DATE</b>	30/04/2020 (Date of this version) – 30/04/2020 (Due date)
<b>LEAD BENEFICIARY</b>	Strane Innovation
<b>RESPONSIBLE AUTHOR</b>	Alexandre Barret
<b>ESTIMATED WORK EFFORT</b>	2 persons-month
<b>AUTHOR(S)</b>	Alexandre Barret (Strane Innovation), Stefania Munaretto (KWR), Nathalie Vallée (Strane Innovation)
<b>ESTIMATED WORK EFFORT FOR EACH CONTRIBUTOR</b>	1,75 persons-month (Strane Innovation) 0,25 persons-month (KWR)
<b>INTERNAL REVIEWER</b>	Emmanouela Leronymidi (EPSILON)

#### DOCUMENT HISTORY

VERSION	INITIALS/NAME	DATE	COMMENTS-DESCRIPTION OF ACTIONS
1	ALEXANDRE BARRET (STRANE)	15/04/2020	ASSEMBLING ALL THE CONTRIBUTIONS AND FINALISATION FOR THE REVIEW
2	EMMANOUELA LERONYMIDI (EPSILON)	29/04/2020	REVIEW OF THE DOCUMENT
3	ALEXANDRE BARRET (STRANE)	30/04/2020	FINALISATION OF THE DOCUMENT AND SUBMISSION TO THE COORDINATOR
4	NATHALIE VALLEE (STRANE)	24/11/2020	MODIFICATION OF THE DOCUMENT FOLLOWING THE REQUEST OF PROJECT OFFICER

ADDRESSING REVISION COMMENTS NOVEMBER 2020

COMMENT	RESPONSE
<p>PG 11 "TABLE 1 AND FIGURE 3 REPRESENTING THE INVOLVEMENT OF PARTNERS ARE PRESENTED WITH ALL THE INFORMATION AVAILABLE AS OF 15 APRIL 2020. MORE DETAILS ON PARTNER'S INVOLVEMENT, IPR ISSUES, AND ROLE IN THE JOINT EXPLOITATION WILL BE GIVEN BY PARTNERS BEFORE THE PROJECT' END AND THE TABLE AND THE FIGURE WILL BE UPDATED.</p>	<p>THE TABLE 1 AND THE FIGURE 3 HAVE BEEN UPDATED WITH THE LATEST INTENTION OF PARTNERS TO BE INVOLVED IN THE EXPLOITATION OF THE SERIOUS GAME. DETAILS OF THEIR INVOLVEMENT HAVE ALSO BEEN ADDED TO CERTAIN PARTNERS</p>
<p>LINKS TO THE SERIOUS GAME PLATFORM AND THE SIM4NEXUS-SPACE SHOULD BE INCLUDED</p>	<p>BOTH LINKS TO THE SERIOUS GAME AND THE SIM4NEXUS SPACE HAVE BEEN ADDED IN DIFFERENT PART OF THE DELIVERABLE</p>
<p>THE EXPLOITATION STRATEGY OF THE SIM4NEXUS-SPACE IS TOO VAGUE. THE SIM4NEXUS-SPACE HAS A LARGE AND POWERFUL EXPLOITATION POTENTIAL, POSSIBLY BIGGER THAN THE SERIOUS GAME. THE EXPLOITATION STRATEGY SHOULD BETTER IDENTIFY THE ACTIONS, HOW THE INTERFACE, KEE AND MODELS WILL BE MAINTAINED AND UPDATED, THEIR TIMELINE, AND THE EXPECTED TARGETS. - REINFORCING THE LINKAGES BETWEEN THE SERIOUS GAME AND THE SIM4NEXUS SPACE WOULD ALSO DESERVE SOME MORE FOCUS SINCE THE SIM4NEXUS SPACE COULD BE AN ATTRACTING SELLING POINT. MOREOVER, IT IS CRITICAL TO THE DEVELOPMENT OF NEW APPLICATIONS OF THE SERIOUS GAME, BEYOND THE CASE STUDIES DEVELOPED IN THE PROJECT.</p>	<p>EPSILON HAS UPDATED AND DETAILED THEIR CONTRIBUTION IN THE EXPLOITATION OF THE SIM4NEXUS SPACE</p>

# Table of Contents

Executive summary.....	5
Glossary / Acronyms .....	7
1 Introduction.....	8
2 Exploitation strategy.....	8
2.1 Exploitation strategy evolution .....	8
2.1.1 Draft exploitation strategy (D6.1) .....	9
2.1.2 Simplified 'Draft exploitation strategy' (D6.1).....	10
2.2 Exploitation strategy (D6.3) .....	11
2.3 Partners committed in the exploitation.....	11
3 Exploitation strategy activities.....	16
3.1 Nexus science activities implementation.....	16
3.2 Serious game activities .....	17
3.2.1 Commercial packages definition.....	18
3.2.2 Implementation of the exploitation strategy .....	22
3.2.3 Server(s) hosting the serious game.....	23
3.3 SIM4NEXUS SPACE.....	23
4 Conclusion .....	26

## List of tables

Table 1: Partner's involvement in the exploitation strategy .....	13
Table 2: Webinar's detailed audience and contributors .....	17
Table 3: Potential clients for the serious game according to different purposes .....	23

## List of figures

Figure 1: Exploitation strategy timeline .....	9
Figure 2: History of the exploitation strategy. Source: Strane Innovation .....	10
Figure 3: Partners involvement in the exploitation.....	12
Figure 4: The S4N-Space roadmap.....	25

# Executive summary

The primary objective of this report is to develop the exploitation strategy of the SIM4NEXUS project. The exploitation strategy purpose is to define means and ways for the consortium partners to continue to collaborate and work together after the end of the project. For that purpose, the exploitation strategy makes several propositions of collaborations, based on three outcomes of the project which are the Nexus science, the serious game and the SIM4NEXUS-SPACE. The exploitation strategy is built around a 2-year trial period after the project' end without any legal entity creation. After this test phase, the creation of a legal entity will be evaluated based on the results of the trial phase.

The section 2 of the document presents the exploitation strategy evolution throughout the project (from the first ideas to the final exploitation strategy). This evolution expresses the general willingness of the project for the exploitation. Then, the last exploitation strategy is presented. Finally, the partner's commitment is presented. It shows the exploitation is led by the Steering Group of SIM4NEXUS composed of Wageningen University Research, KWR Water Research Institute and the University of Thessaly. There are known as the golden members of the exploitation. The other partners willing to be part of the exploitation are the Silver members and aim to support actions of the Steering Group. The Bronze members are interested to follow the exploitation of SIM4NEXUS but are not strongly committed to it.

The section 3 of the document presents the exploitation activities for the Nexus Science, the serious game and the SIM4NEXUS-SPACE. The activities were designed based on the feedbacks from the market and from the project partners. The Nexus Science activities include the organisation of webinars, Nexus academy, dissemination events, Nexus workshops and future academic collaborations. The serious game activities are training sessions divided into 3 different packages. The first package is for commercial activities. The second is for organising training sessions. The third is for training the trainers. Each package includes specific material at different prices. The SIM4NEXUS-SPACE is a tool to collect SDM data input from satellite images. This last exploitation activity will make possible to develop new case studies (after the project' end) from regions where data collection is uneasy or where data are not centralised.

All these activities intend to foster collaboration among the project' partners after the end of the project.

The conclusion of the document explains the connection of the exploitation strategy with the deliverable 6.4 on business models and business plans. Deliverable 6.4 focuses on the exploitation activities related to the serious game. Business plans are designed to support the 2-year trial phase and business plans are also suggested for the three years following the trial phase if a legal entity is created.

## Changes with respect to the DoA

No changes with respect to the DoA

## Dissemination and uptake

The targeted audience of this deliverable are the partners of SIM4NEXUS, and namely those willing to be part of the exploitation after the project' end. The level of dissemination of the deliverable is public.

## Short Summary of results (<250 words)

This document presents the exploitation strategy of SIM4NEXUS. This exploitation strategy is a roadmap for the partners for the next 2 years to exploit and disseminate the Nexus science, the serious game and the SIM4NEXUS-SPACE, seen as major exploitable outputs of the project. All the exploitation activities proposed in this document intends to support the collaboration among the partners after the project' end and suggests ways for more and new collaborations.

## Evidence of accomplishment

This report is the evidence of deliverable 6.3

# Glossary / Acronyms

	EXPLANATION / MEANING
SG	Serious Game
IPR	Intellectual Property Rights

# 1 Introduction

This report explains the exploitation strategy of the SIM4NEXUS project results. This exploitation strategy focuses on the joint exploitation activities of the project (not the individual exploitation activities of each partners). The exploitation strategy is meant to support the project partners who have decided to jointly exploit the SIM4NEXUS serious game beyond the end of the project. The exploitation strategy is then a way to define the working conditions among the partners of the project after the project' end.

Based on the intended exploitation activities of the partners, previous researches done by WP6 on market opportunities and competitors, WP6 results assessment, and discussions within the consortium, the exploitation strategy is outlined in this report which:

- i) reminds the history of the exploitation strategy of the project (section 1.2),
- ii) lists the project partners who have decided to embark into joint exploitation (section 1.3),
- iii) describes the exploitation strategy (section 2) for the Nexus science and the serious game, namely:
  - a. the serious game commercial packages and pricing
  - b. the exploitation activities to promote the serious game

## 2 Exploitation strategy

A draft strategy was illustrated and approved in D6.1, in May 2019. In late 2019-early 2020, in light of the project developments, partners were asked to review their initial intention and decide whether they wanted to join the project exploitation strategy and for which purposes. Also, partners re-discussed the draft exploitation strategy and agreed upon the simplified strategy. It is this exploitation strategy that will be presented in the following sections of the document.

The exploitation strategy of the project (D6.3), as it stands, focuses on 2 main items which are:

- **The Nexus science** and in particular the understanding the connections between the different components of the Nexus.
- **The serious game** (<http://seriousgame.sim4nexus.eu/>) and its use for training people about the Nexus science and policy decision making. This section also includes insights on how to maintain and update the user interface, the KEE, the models and the databases (with possible interactions with the SIM4NEXUS-Space (<https://sim4nexus-space.eu/>) for some case studies if desired).

Partners, however, remain open to opportunities that may manifest over the two years' trial period, to exploit also other project products. The steering group is composed of Wageningen University Research (WUR LEI), KWR Water Research Institute and the University of Thessaly.

### 2.1 Exploitation strategy evolution

The exploitation strategy of SIM4NEXUS relies on many assessments, interviews, discussions, market analysis and strong knowledge of the outputs of the SIM4NEXUS project. Figure 1 shows all the actions undertaken by WP6 partners to understand the outputs of the project, the related markets and afterward the roadmap to the exploitation.



## Exploitation strategy timeline (D6.3)

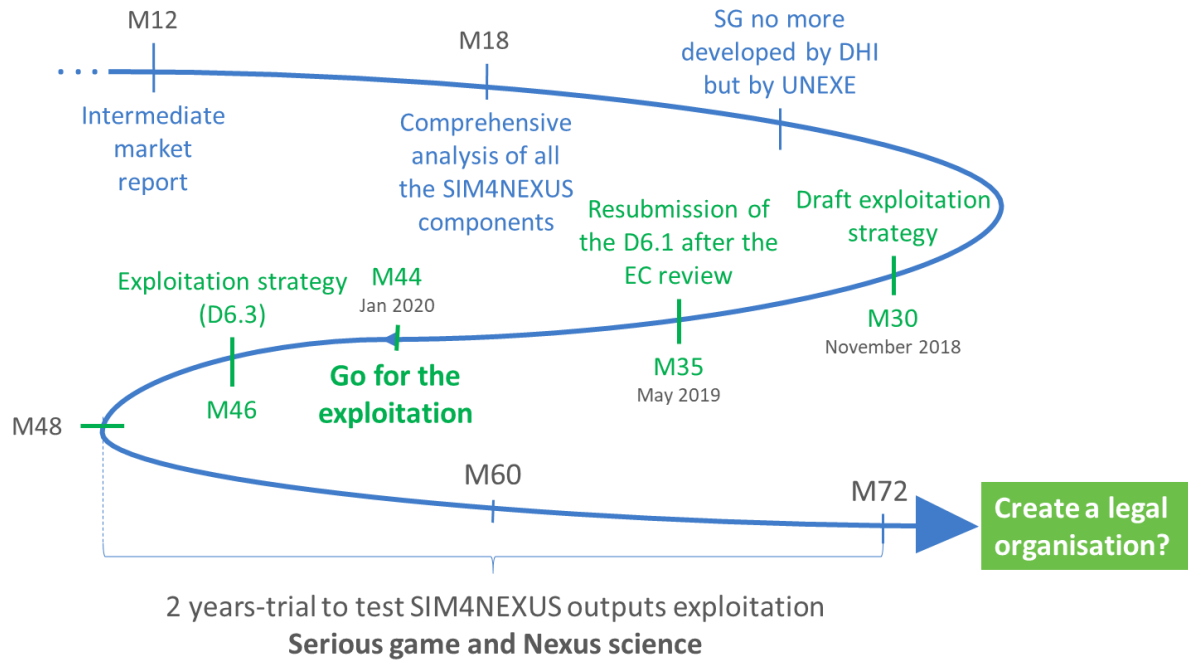


Figure 1: Exploitation strategy timeline

Strane Innovation displayed in the D6.1 a first proposition of exploitation strategy which integrated three spin-off creation. Based on the EC review and comments, a simplified version of the exploitation strategy was delivered, which suggested the creation of one foundation to host the exploitation activities (serious game, consultancy activities, Nexus science). Then, the steering group claimed for a period of 2 years to test the exploitation activities before creating a legal structure.

### 2.1.1 Draft exploitation strategy (D6.1)

This section summarises the history and evolution of the exploitation strategy of SIM4NEXUS. Figure 1 shows the overall evolution of the exploitation strategy.

# Exploitation strategy evolution (T6.3)

From *D6.1* To *D6.1 SIMPLIFIED* To *D6.3*

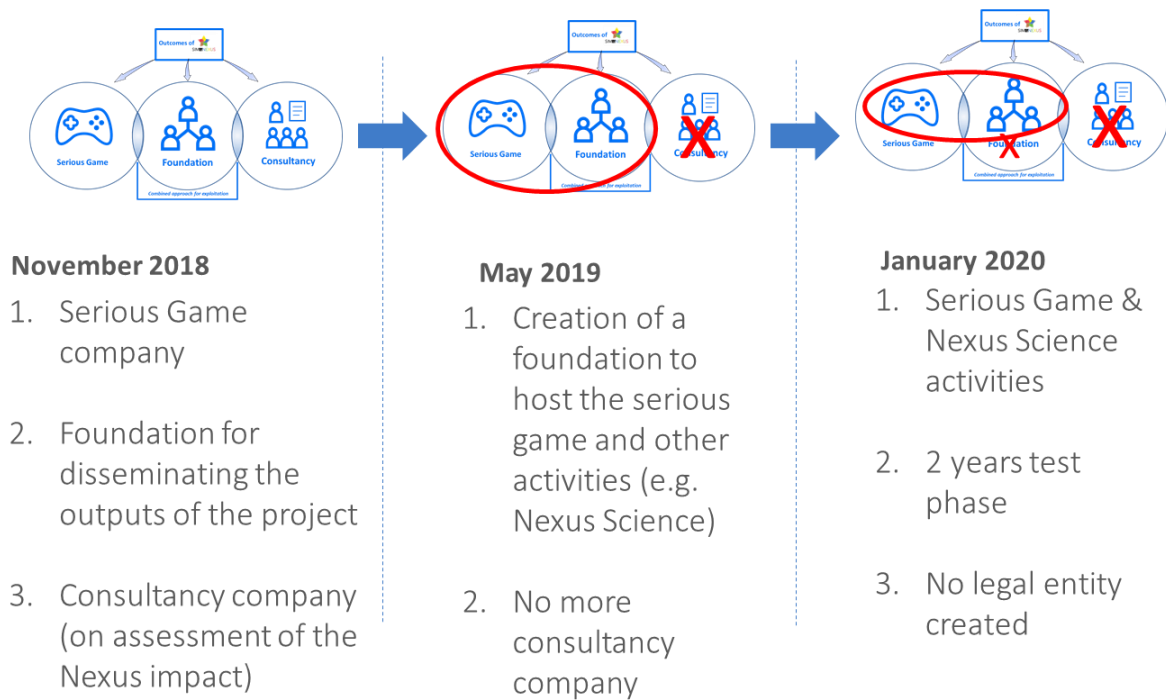


Figure 2: History of the exploitation strategy. Source: Strane Innovation

The draft exploitation strategy (D6.1) presented the comprehensive draft exploitation strategy with full details of objectives, purposes, economics, human resources, etc. taking into considerations feedbacks from all the partners collected during the two and a half first years of the project by Strane Innovation. The first draft exploitation strategy submitted at M30 (November 2018) included the creation of two spin-offs and one foundation. One spin-off to exploit the serious game and one spin-off to exploit the expertise in the Nexus modelling developed within SIM4NEXUS. The foundation purpose was to disseminate all the outputs of the project.

## 2.1.2 Simplified 'Draft exploitation strategy' (D6.1)

After the 2<sup>nd</sup> Review Period (mid-2019) of the project, the 'European Commission review' requested a simplification of the exploitation strategy. Strane removed spin-offs creation from the draft exploitation strategy (D6.1) and focused on the foundation creation. This last option suggested to include the serious game into the foundation together with the Nexus science activities.

After the review period and considering i) the products and services coming out of the SIM4NEXUS project and ii) the risk, the current market opportunities, the current Technology Readiness Level of the product and services, the steering group and the partners agreed on a Go to push further the exploitation strategy, and to implement the activities proposed but did not want to create a legal entity to support the exploitation activities right after the project.

## 2.2 Exploitation strategy (D6.3)

In January 2020, a 'Go' had been decided for the exploitation of SIM4NEXUS. A steering group composed of Wageningen Research - Wageningen University, The Netherlands (WUR-LEI), University of Thessaly, Greece (UTH) and KWR Water Research Institute, The Netherlands (KWR), was formed to lead the exploitation activities throughout the project and for the period after project closure.

After January 2020, discussions on the exploitation strategy involved the Steering Group and other partners willing to be involved in the exploitation of the project results. Discussion led to the decision of starting exploitation activities for a 2-years trial, without any creation of legal entity. Contributions of the partners will be in-kind contributions of time and resources.

On this basis, Strane developed the 'exploitation strategy' (D6.3) according to the partners' express of interest for this 2-years trial. Strane also developed the business plans of this trial period of 2 years in the D6.4.

This option remains of course open to every partner of SIM4NEXUS willing to join after the due date of this deliverable. Also, the legacy report (deliverable 6.6) extensively details all the highly valuable outputs of SIM4NEXUS which are not included in the exploitation strategy.

## 2.3 Partners committed in the exploitation

This section of the document intends to detail which partners of SIM4NEXUS are going to take actions in the exploitation activities for the upcoming 2-years trial period.

In the Grant Agreement, partners of the SIM4NEXUS project had declared their ideas for the exploitation of the project results (Deliverable 6.1, table 7, p.42). Among WP6 activities, there is the development of a joint exploitation strategy of the project outputs.

Three levels of involvement of SIM4NEXUS partners have been identified for the exploitation:

- **GOLD** (Steering Group) – leading role in the implementation of the exploitation actions; commitment offered through in-kind contributions and with important IPR assets to support the steering group.
- **SILVER** – commitment offered through in-kind contributions and with IPR assets
- **BRONZE** – No interest expressed to participate in exploitation activities with no specific commitment of time or assets

The Steering Group is composed by the following project partners:

- Wageningen Research - Wageningen University, The Netherlands in the person of:
  - Floor Brouwer
  - George Beers
- University of Thessaly, Greece in the person of:
  - Chrysi Laspidou
  - Maria Papadopoulou
- KWR Water Research Institute, The Netherlands in the person of:
  - Dragan Savic
  - Lydia Vamvakeridou-Lyroudia

Role	Bronze members		
	Silver members	UNEXE	UNU
Partners	Gold members <b>Steering Group</b> WUR LEI UTH KWR	ACT	KTH
		BEF	UB
		EPSILON	UNISS
		EURECAT	ENKI
		IHE	FT
		SI	BEF
		SWW	P&W
Type of involvement	Leading role in the implementation of the exploitation actions	Commitment offered through in-kind contributions and with important IPR assets	Not interested in continuing in the exploitation
	<ul style="list-style-type: none"> <li>- Promotion</li> <li>- Commercial</li> <li>- Administrative and logistics actions (rent venues, catering, materials, etc.)</li> <li>- Communication</li> <li>- Give courses/training sessions</li> </ul>	<ul style="list-style-type: none"> <li>- Support the gold members' activities</li> <li>- Give courses</li> </ul>	<ul style="list-style-type: none"> <li>- None</li> </ul>
Actions			

Figure 3: Partners involvement in the exploitation

The steering group led the exploitation strategy during the remaining part of the project contract (until June 2020) and will continue to do so for two years after that (until June 2022), as trial period to explore and seize market opportunities for the serious game and the Nexus science products.

Each member of the Steering Group has committed to invest two person months starting from July 2020 for two years to implement exploitation activities, as described in section 2.2. The steering group is not a legal entity. It is based on voluntary agreement between the parties and commitment of in-kind contribution to the exploitation activities. The project partners who joined, together with the Steering Group, have expressed their commitment for the two years' exploitation trial period as illustrated in table 1.

Other partners committed in exploitation will also contribute to the exploitation of the serious game after the end of the project, based on the resources each partner has decided to dedicate to this. Table 1 summarizes the final decision of partners on the joint exploitation and includes reflection on IPR issues related to the exploitation of the serious game and its components.

**Important notice:**

Table 1 and figure 3 representing the involvement of partners are presented with all the information available as of November 2020.

Table 1: Partner's involvement in the exploitation strategy

Acronym partner	Exploitation activities during the two years trial period	IPR issues/assets offered for joint exploitation	Role in joint exploitation (see section 2.1.2 for description)
WR	Yes. Leading member Steering Group	Foreground and background are defined in Consortium Agreement.	GOLD
UTH	Yes. Leading member Steering Group		GOLD
KWR	<p>Yes. Leading member Steering Group</p> <ul style="list-style-type: none"> <li>• Sharing nexus science in the Watershare network, a worldwide network led by KWR<sup>1</sup>. Activities will include the use of the serious game as tool to create a shared knowledge base on nexus science and raise interest in further developing the tool for applicability to the partner's context</li> <li>• Further developing SIM4NEXUS scientific results through acquisition of new (EU and other) funding - also within Watershare network</li> <li>• Sharing nexus science in academia and practice, for example by using the serious game in stakeholder meetings (with Dutch and Flemish water utilities), summer schools, MSc and PhD programmes, also through acquisition of new funding for e.g. developing ad-hoc trainings</li> </ul>		GOLD
IHE Delft	<ul style="list-style-type: none"> <li>• Educational activities</li> <li>• Use results in future research programmes</li> </ul>	SDM is in open access	SILVER

<sup>1</sup> <https://www.watershare.eu/>

UNU	Yes, but not in terms of monetisation	No	SILVER
EURECAT	Yes	EURECAT is not SDM input/output data owners, nor producers. IPR, foreground and background are defined in the consortium agreement.	SILVER
ACTéon	Willing to contribute, depending on contents agreed upon and budget available	No IPR issues	SILVER
EPSILON	SIM4NEXUS-SPACE		SILVER
Strane Innovation	Interested in contributing to develop an effective exploitation and giving possible training courses with the serious game		SILVER
Fresh Thoughts	Contribute to the policy uptake of the Nexus, e.g. linked to the Nexus Project Cluster, as we are already involved.		SILVER
BEF	Yes, interested to contribute to exploitation, although funding of these activities is an issue.	Further exploitation of SIM4NEXUS products has IP issues, which are closely linked to IHE-Delft (SDM for Latvia case) and the University of Exeter (serious game). See response IHE-Delft since the SDM is open source)	SILVER
UNEXE	Yes		SILVER
UB	Yes		SILVER
KTH	Yes		SILVER
UNISS	Yes		SILVER
ENKI	Yes, Michal Kravčík in Slovakia established 6 multi-sectorial partnerships called “Water Boards” in East Slovakia (Košice Region), they include 461 municipalities, each municipality has 15 – 30 members, representatives of towns, NGOs, entrepreneurs. They elaborate Action Plans for their regions according to results and conclusions we achieved in the GE-CZ-SK Transboundary Study (see Policy Brief). They had already several meetings aiming at final plans to be ready in February 2021 and material implementation starting in second half of 2021. The landscape restoration will go on till 2025. The basis were	Transboundary DE-CZ-SK study reached the level of final complexity model. The results confirm the trends of landscape drainage and soil water depletion. However the models cannot distinguish the process of its drainage caused by overheated surface and also evapotranspiration cannot be considered always as water loss. In general water and climate nexus is very tight, cannot be separated and may be considered as a challenge for climate / hydrology / meteorological models.	SILVER

	formulated during S4N Transboundary Case Study GE-CZ-SK	Therefore modelling of the effect of revitalization of large drained fields on the local climate and water cycle proved to be an unsolvable problem for serious game. Therefore, it was not created for Transboundary DE-CZ-SK case study. As a replacement for the game, direct communication with stakeholders has been established which resulted in practical application of the project results.	
<b>SWW</b>	Yes	Company sensitive information might be altered prior to sharing	SILVER
<b>P&amp;W</b>	Yes		SILVER
<b>BEF</b>	Yes, approach universities in Latvia implementing programs for master course students related to environment and sustainable development (University of Latvia, Vidzeme University of Applied Sciences). Introduce the NEXUS concept, interlinkages and trade-offs between Nexus sectors, coherence of relevant EU policies and have a practical exercise to play the SG for Latvia case.		SILVER
<b>WssTP</b>	No	No	BRONZE - NONE
<b>PIK</b>	Remaining resources could be used for translation of Serious Game contents into German.	MAGPIE 4.0 has been published open-source under the GNU Affero General Public License. This version is used. See also: <a href="https://github.com/magpiemod/el/magpie">https://github.com/magpiemod/el/magpie</a> The model SWIM is not free software yet, copyright is held by PIK. This model might be released under an open source license, but probably not before 2021.	BRONZE - NONE

PBL	No, but available for presentations or lectures if invited.	All results and data generated from SIM4NEXUS are open source, which also counts for IMAGE data. They can be used freely after PBL will have had the chance to publish it, and with proper reference to IMAGE and PBL.	BRONZE - NONE
CE	No	No	BRONZE - NONE
UCAM	No	No	BRONZE - NONE
ACSDA	No	No	BRONZE - NONE
UU	No	No	BRONZE - NONE
UPM	No	No	BRONZE - NONE

### 3 Exploitation strategy activities

The exploitation strategy includes two types of activities: The Nexus science and the serious game (<http://seriousgame.sim4nexus.eu/>). Section 2.1 presents all the activities related to Nexus science. Section 2.2 presents all the activities related to the exploitation of the serious game.

#### 3.1 Nexus science activities implementation

The activities detailed afterwards reflect some i) ongoing activities taking place during the project and ii) some activities which could be initiated after the project' end:

##### Nexus Academy

The Nexus Academy is a cluster of partners who intend to invest most of their exploitation time in education activities (teaching students on the nexus science using the serious game). The Nexus Academy is conceived as a thematic cluster (it is not a legal entity) that focuses on joining forces to develop educational training on the Nexus science and to jointly seek funding opportunities to do so. The Nexus Academy will also be an opportunity to develop a place to share experiences, good practices and knowledge on how to organise education activities with students, general audience or non-expert people.

The visualisations produced by the global case study and University of Exeter might be used in the frame of the Nexus Academy for raising awareness and make audience understand the ins and outs of the Nexus science and the interconnectedness of the Nexus components.

This section presents activities (on-going or to be organised) to disseminate the Nexus science developed within SIM4NEXUS. The activities could be of different kind such as events, webinars, nexus workshops:

##### Organise webinars

The webinars' purpose is to disseminate the Nexus thinking, and the Nexus science added values acquired during the project. The webinars are to be developed in the coming months. Some partners



are already willing to develop material for that purpose. Indeed, each case study willing to develop a webinar for its specific audience. For instance, KWR could do the table of content and each case study develop its specificities.

These webinars will rely on existing material and would also benefit from existing material developed by other Nexus related projects, like the Nexus Cluster Project. Partners and Nexus related project networks are crucial and will be extensively used to promote the webinars among professionals and expert people of the Nexus world.

Webinar' complexity	Audience targeted
Expert Webinar	Experts of sustainable resource management (with or without the Nexus approach) Academics
Medium webinar	Experts of other fields or sector (indirectly related to the Nexus approach) Policy makers (EU DGs for instance)
Simple webinar	Industrials or public authorities not related to the Nexus Students, citizens and general audience

Table 2: Webinar's detailed audience and contributors

### Organise Nexus workshops

Organise Nexus workshops to make people work on the Nexus science. For instance, these workshops could be organised (with and for) stakeholders such as policy makers, water/energy/land utilities, municipalities, local authorities, etc. to work on specific interconnections on the Nexus science at a specific scale. The outputs of such workshops are "Nexus" maps which will help stakeholders to get out of the silo thinking and better understand sustainable resource management.

### Organise dissemination events

Organise events like conferences, talks, courses, etc. on the Nexus approach and the Nexus science towards other sectors as the EU DG's personnel (Energy, Agriculture, etc.) to disseminate the Nexus concept and science, or make policy recommendation for instance, or disseminate and share major findings on the Nexus. Collaboration with networks as the Nexus Project Cluster will be organised to disseminate the science of the Nexus, as it has already been done during the SIM4NEXUS project, with sister projects of SIM4NEXUS.

### Foster academic collaborations.

Foster academic collaborations by jointly applying for funding and/or write scientific articles on related topics like:

- Nexus science and the added-value brought by SIM4NEXUS to the Nexus state-of-the-art
- Serious gaming as a tool for awareness raising among students, professionals, etc. but also as a tool for decision making
- SDM and Nexus modelling

## 3.2 Serious game activities

This section describes the exploitation activities for the serious game.

The exploitation activities of the serious game are mainly about organising training sessions to train people on i) resource management and ii) how to use the serious game and interpret its results. The serious game activities are mostly for educational and awareness raising purposes. After the two trial years, if the revenues are conclusive, then the steering group will study the possibility to create a legal entity to support the exploitation of the serious game.

As described in the Grant Agreement, the Serious Game of SIM4NEXUS developed with EU public funding is open access. Anyone can play the Serious Game with no time or number of connection limits. However, training and coaching on how to use the Serious Game correctly, benefits and understanding of all the nexus related knowledge can be monetised. It is this training sessions that will be tested during the 2-year trial period to evaluate the demands and potential market size.

During the 2-year trial period, the business model of the serious game is very simple, considering the absence of any legal structure to hold its exploitation: each partner of the project committed in the exploitation strategy could organise training courses. For the courses, the partner will be paid by the client (university, summer school, organisation that hosts a stakeholder meeting, etc.), on a basis defined in section 3.2.1. The travel costs, food, and any additional courses are on top of the prices indicated below.

The serious game is a tool that can be used in the nexus science activities. Below are the commercial packages to enable these uses.

### 3.2.1 Commercial packages definition

After the end of the project, the serious game will be made freely accessible, on the internet, since it is funded by the European Commission.

In the following, the serious game product and service offers are detailed:

- The package 1 includes all the elements for the promotion of the serious game.
- The package 2 includes all the elements for one regular facilitation of session of the serious game.
- The package 3 includes all the elements for training future facilitators of the serious game.

The table 1 summarises all the information on the package.

Packages	Package 1	Package 2.A	Package 2.B	Package 3
Prices	FREE	399€ (1/2 day) or 699€ (full day)		1999€ (2 days)
Demo version of the SG				
User guidance				
Commercial brochure				
Full version of the SG				
Facilitator & Interpreters <sup>2</sup>				

---

<sup>2</sup> If needed only

Training material <sup>3</sup>				
Printable policy cards files				
Material to become facilitator				

Table 1: Summary of the commercial packages to train with the serious game

**Important notice:**

The prices indicated for the packages of the table 1 are estimations and might possibly evolve during the 2-years of the trial phase depending of the market and the partners.

**3.2.1.1 Package 1: Game promotion**

**Purpose**

The purpose of this package is to deliver all the material needed to promote the serious game as output of SIM4NEXUS and to showcase it to some events for various audience.

It could be used:

- For educational purposes to all audience and especially academic environments such as BSc, MSc, PhD programmes and summer schools
- To raise awareness and understanding of the interconnectedness of the different nexus domains
- during meetings (e.g. project meetings) where for example stakeholders with different disciplinary/sector background are invited to discuss resource management problems
- At events such as climate change COP, international conferences, meeting of water utilities (KWR), etc. where stakeholders from different backgrounds and interests can be contacted. The purpose of this event type is to foster participant engagement in the meeting.

This game promotional package would also be a nice showroom towards other networks related to the Nexus in the perspective of organising serious game training sessions, gathering feedbacks on the game, development of new case studies, etc. to promote and develop the serious game.

Finally, the game promotion package is very useful for promotion and explanation of the Nexus thinking at professional events (meetings or major exhibitions, as done by SIM4NEXUS partners in Valencia in March 2020). This type of event is a good commercial showroom for further training sessions with the serious game.

**Content**

This package will include:

- A freely available demo version of the serious game (all rounds of the game will be available but with two policy cards per Nexus sector only)
- A user guide (explaining how to play the serious game)
- Brochure with information about the game, list and price of products and services offered, contact details, etc. (available in case study languages) and about the SIM4NEXUS project. The brochure will be available online, for ease of access, at a printable format (e.g. Portable Document Format - pdf).

---

<sup>3</sup> Questionnaires, guiding questions, etc.

For specific professional events, a facilitator with in-depth knowledge of the game and its features could be requested to present the serious game for an agreed number of hours. Depending on the event, the facilitator may be requested to stay a different number of hours at a meeting, event, etc. Price per hour of facilitation is established.

## Price

This package will be freely accessible online, to optimize the dissemination of it. Moreover, some funds may be needed to attend some exhibitions / shows / etc. to showcase the serious game.

### 3.2.1.2 Package 2: Game facilitation

The purpose of package 2 is to propose the material to play the serious game and the expertise of an expert facilitator. The purposes of these training sessions are to:

- Assist people understand and ‘touch’ the Nexus interconnectedness (and Nexus modelling) by playing the Serious Game (with the help of the facilitator).
- Assist people to get out of the silos thinking (for the policy design process for instance), and bring them to the Nexus thinking and its integrated view.
- Explain how policy assessment is usually made with models and how it could be improved (through the Nexus science achievements of SIM4NEXUS)

WP6 also developed an extensive ‘facilitator guide’ to help partners organise training sessions. This guide is available under request to [stefania.munaretto@kwr.nl](mailto:stefania.munaretto@kwr.nl)

During the SIM4NEXUS project, it appeared that some people were willing to play to the serious game but did not had individual laptop (or only one laptop for the group). For this, it was decided to develop a second package with printable policy cards. The purpose is to involve as many people as possible in playing the serious game

Package 2 is divided into two parts:

- Package 2.A, which requires each participant to have an individual laptop (or one laptop for 2 participants).
- Package 2.B, which enables to play the serious game with only one centralised computer for all participants

## PACKAGE 2.A

### Purpose

The purpose of this package is to make people play the serious game with an experienced facilitator and then make players discover and understand i) the Nexus thinking, ii) the complexity of implementing a public policy and iii) learn elementary rules to make and design public policies.

### Content

Package 2.A includes:

- A full version of the game (potentiality of playing all game rounds with a complete set of policy cards of all Nexus sectors)
- A facilitator (and possible 1 or 2 interpreters, if needed)
- A complete, detailed training material (text and videos) for the participants to learn and reflect on Nexus interactions from playing the game (Nexus science, before and after questionnaires) and a user guidance (for easy hands-on)

Based on the experience of SIM4NEXUS partners playing the game and feedbacks from the early players, the ideal time for one session is 4 hours minimum which may extent up to 7 hours (1 full day) of training.

## Price

Package 2.A could be purchased for 399 euros for a half day training and 699 euros for a full day training. This price does not include the travelling costs.

## PACKAGE 2.B

### Purpose

The purpose of package 2.B is to offer the group of players with only a centralised computer the opportunity to play the serious game. This package will enable countries with lower resources to play the serious game.

This form of playing the serious game might also lead to more discussions on which policy to play and possibly enable formation of groups of players with sectoral policy cards (1 group with water policy cards, 1 group with climate policy cards, etc.). Each group of players has different goals and views to defend in the game.

### Content

The policy cards are available on-line (to be printed by the facilitator or players) or already printed (players purchase online a set of policy cards already printed). Thus, the players can experiment with a variety of policy cards (sectoral policy cards, all policy cards, or other, depending on the desired game type). The facilitator will implement the policy cards on the centralised laptop/computer.

Package 2.B includes:

- A full version of the game (potentiality of playing all game rounds with a complete set of policy cards of all Nexus sectors)
- A facilitator (and possible 1 or 2 interpreters, if needed)
- A complete, detailed training material (text and videos) for the participants to learn and reflect on Nexus interactions from playing the game (Nexus science, before and after questionnaires) and a user guidance (for easy hands-on)
- A set of policy cards available online (to be downloaded and printed) or purchased and sent to the place of the training.

### Price

The price of package 2.B is 399€ for a half day training and 699€ for a full day training. This price does not include the travelling costs.

### 3.2.1.3 Package 3: Training facilitators

#### Purpose

The purpose of package 3 is to train new facilitators on the serious game. Teachers, companies, universities, etc. might be very interested in facilitating themselves the serious game for their own audience.

#### Content

- Full access to the serious game (potentiality of playing all game rounds with a complete set of policy cards of all Nexus sectors)
- All training material (text and videos) for the participants to learn about nexus interactions from playing the game
- Detailed facilitator guidance illustrating step-by-step how to facilitate a complete serious game session and a demo serious game session

- Hours training of facilitators where participants will become acquainted with the game environment and functionalities, and will be instructed on how to facilitate a complete and a demo serious game session

#### Price

Package 3 could be purchased by people who wants to become facilitators of the serious game for 1999 euros for two-day training.

### 3.2.2 Implementation of the exploitation strategy

This section describes:

- Implementation actions to be carried out for the two first years of the trial phase by the Steering Group
- Prospects typology for further contacts

#### 3.2.2.1 Implementation actions

The Steering Group is in charge of the implementation of the exploitation actions, as:

- **The promotional activities** (showcase during exhibitions, disseminate the serious game, answer to questions received by emails, etc.)
- **The commercial tasks** (e.g. find teachers or students willing to be trained, answer questions of the prospects, find dates and venues for the training sessions, send information before and after the session, prepare specific questionnaire, etc.)
- **The administrative tasks** (e.g. set up all the details for organising the training session, book flights and hotels, possibly rent a room for the course)
- **Give the course / training session** (prepare presentations, make sure the serious game is working, send information prior to the meeting, travel, etc.)

#### 3.2.2.2 Prospects' typology

As mentioned above, the Steering Group and the other partners will promote the serious game, the uptake and further developments of the SIM4NEXUS scientific results for different purposes and towards different audiences within their networks and in the context of their organizations' activities (e.g. within existing projects, at conferences, in new project proposals, etc.). Table 4 is meant to help partners identify the most appropriate audience for different uses of the serious game.

User category	Users	Purpose of the serious game
<b>EU public officers</b>	Elected EU politicians EC officers/head of units EU institutions/agencies officers and experts	<b>Demonstration purpose</b> Citizens engagement/awareness raising on nexus problems and solutions (to e.g. build policy support)  <b>Education/training purpose</b> Stakeholder participatory consultation (e.g. to build shared understanding of a problem)
<b>National public officers</b>	Elected politicians National officers/head of divisions within ministries National institutions/agencies officers and experts	
<b>Regional and local public officers</b>	Elected politicians Regional/local officers/head of divisions within regional/local governments Regional/local institutions/agencies officers and experts	

<b>Business decision-makers</b>	CEOs Heads of departments/units	<b>Demonstration purpose</b> Company shareholders and customer's Engagement/awareness raising on nexus problems, budgets, etc. to e.g. build support on company strategy
<b>Business experts</b>	Issue experts (financial experts, energy experts, water experts, etc.)	<b>Training purpose</b> Company expert's training/education on nexus problems, environmental problems to e.g. develop company strategy, products, services
<b>Educators</b>	University professors, researchers, lecturers High school teachers (for students in their last years of study)	<b>Education/training purpose</b> Teaching on the nexus and environmental issues at university and high school level (e.g. modules within courses, an entire course in person or online, summer schools)
<b>Lobbyists</b>	NGOs Issue foundations/organizations (e.g. IWA, Water Europe, European Climate Foundation, etc.) Citizens associations Business associations (e.g. association of renewable energy industry, etc.)	<b>Demonstration purpose</b> Awareness raising/lobbying/communication about WEF nexus issues, environmental problems, case studies, etc.
<b>Research community</b>	Research Institutes Universities Consultancies Issue foundations/organizations (e.g. IWA, Water Europe, etc.)	<b>Further scientific development of serious game knowledge base and Serious Game for other contexts</b> Seeking the formation of partnerships/consortia for the acquisition of funds to further develop the serious game knowledge base and/or the development of new case study games

Table 3: Potential clients for the serious game according to different purposes

The updated version of D6.1 details the top ranked universities in Europe which might have an interest to train their students and/or personal to play the serious game (see Annexes). This list has been developed to nurture the commercial tasks of the 2-years trial period.

### 3.2.3 Server(s) hosting the serious game

The serious game will be hosted on the servers of EURECAT from the 1<sup>st</sup> July 2020 to the 1<sup>st</sup> July 2022. The serious game will be accessible on the weblink: <http://seriousgame.sim4nexus.eu/>  
Some partners also indicated the possibility to host on their own servers the serious game.

Access to the serious game will thereby be ensured. The SIM4NEXUS website will not be maintained after the project's end. Thus, it is proposed to partners to share the serious game link on their websites. Some related networks as Watershare and Nexus Project Cluster could be asked to share a link to the serious game website on their own websites. For that purpose, the existing serious game landing page<sup>4</sup> on the SIM4NEXUS website could be reused.

## 3.3 SIM4NEXUS SPACE

<sup>4</sup> <https://www.sim4nexus.eu/page.php?wert=SeriousGame>

This last section related to the serious game is about the SIM4NEXUS-SPACE tool developed by EPSILON (<https://sim4nexus-space.eu/>). The SIM4NEXUS-SPACE tool, which is currently under development, replaces certain SDM input data with space-based datasets.

The purpose of SIM4NEXUS-Space (S4N-Space) is to develop an extended approach within SIM4NEXUS, that addresses the following challenges:

- Possible unavailability of models' input data (i.e. Local and/or national datasets)
- IPR issues of the data owners, which affects the obligatory open access release of data.

To this end, the S4N-Space objectives are:

- To replace certain SDM input data using global satellite-based data inventories (Copernicus & NASA).
- To contribute to the SIM4NEXUS exploitation by introducing the Nexus concept to the Earth Observation operational and research community.

SIM4NEXUS-Space aims to develop new case studies in regions where collection of data is difficult (or not centralised).

The first step is to test the tool within real conditions with the Sardinia Fast Track case study. The results are going to be known before the project end and will be shared with the partners by EPSILON.

The SIM4NEXUS-Space is an important component of the exploitation strategy for maintenance and upgrading of the case studies (when this is applicable and relevant) and also for the development of new case studies in regions with only few centralised data.

#### How it works

1. Identification of replaceable SDM input data which is defined from the SDM's source code.
2. Collection and storage, in databases, of replacement data such as:
  - Crop areas from Copernicus Land Monitoring Service: CORINE LULC 2018
  - Population from NPP-VIIRS Satellite Night Lights image
  - Evapotranspiration from MODIS (satellite borne sensor) data
  - Precipitation from CHIRPS dataset
  - Temperature from Copernicus Climate Change service
  - Basin area from satellite based Digital Elevation Models).
3. Transformation of data to the SDM compatible format.
4. Run the SIM4NEXUS SDM.
5. Upload of results on SIM4NEXUS-space website.



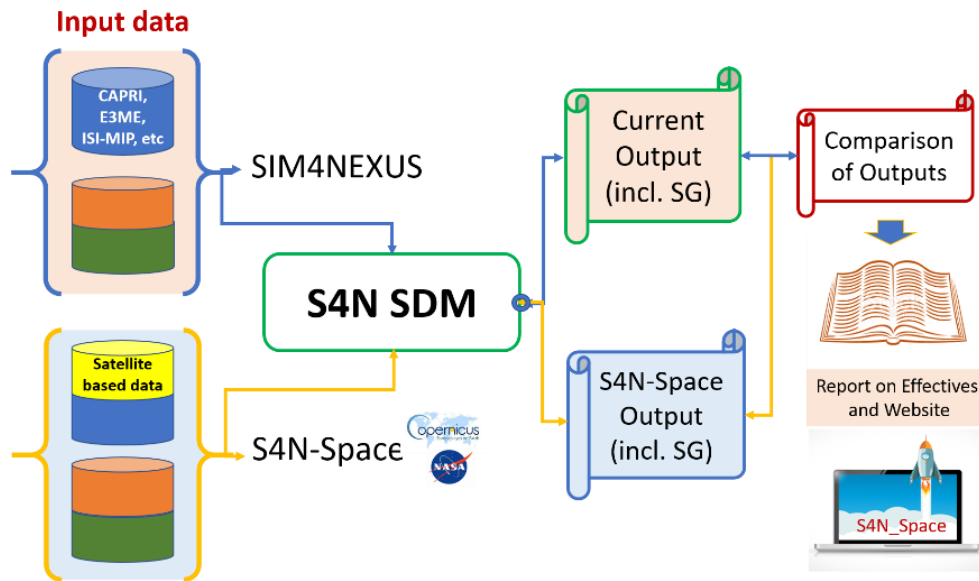


Figure 4: The S4N-Space roadmap

### Outputs of the SIM4NEXUS-SPACE

At present, the output will be of the same format with the current SDM's output.

In the future, it is envisaged to:

- Replace all crop categories used in the SDM using processed Sentinel satellite image
- Have a graded geospatial visualization of the results, namely graded colors according to region's (NUTS-III administrative level or river basin level) health score (if more than one Administrative region or river basins are present in the area of interest).

### Partners' actions

SIM4NEXUS-SPACE first results were very promising but further analysis is necessary to fully reap the benefits of the new technology. EPSILON will continue to make research and improve the existing development by:

- incorporating additional datasets (e.g Copernicus' C3S Energy Operational Service[1], ESA's Sen4CAP[2]) which were not available at the time of project's development;
- testing the product and calibrating the algorithms based on the results of the testing;
- achieve a fully operational prototype that will offer near real time results with minimum to no human interference (fully autonomous);
- Adjust the S4N-SPACE algorithms to the SDMs of the other Case Studies, to further cross-validate the S4N-Space results and provide larger coverage of the globe. At this time only the Sardinia SDM has been employed, but the next steps for the implementation of other SDMs, starting from Greece's SDM, will be following.

Additional funding will be necessary to pursue the next steps of the development, such as **ESA Business Incubation Centres (ESA BICs)**, through the launch of the programme in Greece, **ESA BIC GREECE (2021-2026)**. The programme supports entrepreneurs and start-ups to turn their ideas and inventions into successful businesses in Europe.

The final objectives will be:

- employing the scientific achievements of SIM4NEXUS by utilizing the "nexus" models (SDMs) and launch of an on-line S4N-Space service that will process the input and visualize the output.

- to be combined with the SIM4NEXUS-SG as an added value component of the serious game platform.

## 4 Conclusion

This document presents the exploitation strategy of SIM4NEXUS. This exploitation strategy is a roadmap for the partners for the next 2 years to exploit and disseminate the Nexus science, the serious game and the SIM4NEXUS-SPACE (<https://sim4nexus-space.eu/>), seen as major exploitable outputs of the project. All the exploitation activities proposed in this document intends to support the collaboration among the partners after the project' end and suggests ways for more and new collaborations.

During this 2-year trial period, no legal entity will be created to support the exploitation. After the 2-year trial period, the creation of a legal entity will be studied in the light of the results of trial period. This test phase will be led by the Steering Group composed of Wageningen University Research, KWR Water Research Institute and University of Thessaly. Some other partners decided to join the exploitation to support the Steering Group. The table 2.3 of this document details their involvement.

The exploitation strategy mainly relies on the market study (D6.2), the assessment of all the outputs and opportunities of SIM4NEXUS, the definition of SIM4NEXUS products and services (MS23), the Nexus Business Group (D6.5), the legacy report (D6.6) and expressed the willingness and ideas of the consortium partners on 'how to keep working together after the project' end'.

**The Nexus science exploitation activities** aim to promote the Nexus science developed within SIM4NEXUS. The activities suggested for the exploitation are to:

- Organise webinars (with different levels of complexity and different audience targeted)
- A Nexus academy (for all activities related to teaching)
- Organise Nexus workshops (to make professionals work on their 'own' Nexus, e.g. a municipality, industry, etc.)
- Organise dissemination events (e.g. presentation of the Nexus concept and achievements of the SIM4NEXUS project)
- Foster academic collaborations related to the Nexus

**The serious game exploitation activities** aim to make people play the serious game and raise awareness on sustainable resource management through playing the serious game, as well as promote the Nexus thinking. For that purpose, three commercial packages were defined to optimise the exploitation of the serious game. The first package is the promotional package. It includes the promotional material (serious game and leaflet) to showcase the serious game to potential clients (at booth events, conferences, etc.). The second package includes all the material to train people to play the serious game. This package includes material for audience with one computer per participant and audience without individual computers. The third package includes material for 'training the trainers' (teachers for example). This package includes all the material for experienced trainers to train future trainers and material to organise a training session afterwards.

The exploitation strategy then includes the **SIM4NEXUS-SPACE** developed by EPSILON. The SIM4NEXUS-SPACE is a tool to automatize the population of SDM through SDM data input collection using global satellite-based data inventories. The SIM4NEXUS-SPACE intends to be applied to some case studies of SIM4NEXUS under a voluntary basis. The first results are very promising and intends to foster collaboration between project partners after the project' end.

Business plans related to the exploitation strategy are detailed in the deliverable D6.4. The D6.4 focuses on the exploitation of the serious game (and not on the Nexus science activities nor the SIM4NEXUS-SPACE) and provide the partners background support and knowledge. The D6.4 shows economics based on market analysis and outcomes of Nexus Business Groups (see D6.5) organised by Strane during the project to showcase the serious game to potential clients. The D6.4 develops business plans for the 2-years trial and also business plans if a legal entity is created after the 2-years trial phase.

After 4 years of research and development, SIM4NEXUS is proud to develop this realistic exploitation strategy based on 3 pillars (serious game, Nexus science and SIM4NEXUS-SPACE). This will enable the SIM4NEXUS project to have an economic and impact. It will ensure the sustainability of the project after its end. It will also permit for some partners to get involved in the Nexus issues and to consider together to further develop the project through a new European or other funding project submissions.