

## D.T4.2.1

---

Functional model for a “RIS observatory on national level”

---

Version 1.1  
2020-03-18

in the frame of the EU project “SMART-watch - Regional branch observatories of intelligent markets in Central Europe monitoring technology trends and market developments in the area of smart specialisations” funded by European Regional Development Fund within the INTERREG Central Europe Programme.





## Document Control Sheet

<b>Work Package Number</b>	WPT4
<b>Work Package Title</b>	BOOSTING SMART_WATCH - policy recommendation
<b>Activity Number</b>	A.T4.2
<b>Activity Title</b>	Guidelines for RIS monitoring system for new perspective
<b>Deliverable Number</b>	D.T4.1.2
<b>Deliverable Title</b>	Functional model for a “RIS observatory on national level”
<b>Dissemination level</b>	Open Source
<b>Main author</b>	Christopher Meyer (Wismar University of Applied Sciences)
<b>Contributors</b>	WPT4 Working Group, FWW / EPC
<b>Quality Control</b>	Upper Silesian Agency for Entrepreneurship and Development Ltd.

## Versioning and Contribution History

Version	Date	Author/Editor /Reviewer	Contributors	Description/Comments
_v0.1	2019-12-31	Christopher Meyer	WPT4 Working Group	Structure / Content Development
_v0.2	2020-01-24	FWW / EPC		Research File & Content development
_v0.5	2020-02-18	Christopher Meyer	FWW / EPC	Chapter 2 & 3
_v0.6	2020-02-27	Christopher Meyer	FWW / EPC	Chapter 4
	2020-02-28	Christopher Meyer	FWW / EPC	Figure development / Chapter 5
_v1.0	2020-03-04	Christopher Meyer		Finalisation
_v1.1	2020-03-18	Christopher Meyer		Chapter 2 Update
_v1.2	2020-05-15	Christopher Meyer	Partnership	Review / Comment

<b>Document last saved on</b>	18/03/2020
-------------------------------	------------



## Table of Content

<i>List of Tables</i> .....	4
<i>List of Figures</i> .....	4
<i>Acknowledgement</i> .....	4
<i>1. Introduction</i> .....	5
<i>2. Strategy overview in the Central Europe Region / European Union</i> .....	6
<i>3. Performance comparison of national and regional systems</i> .....	10
<i>4. Guidelines and best practices for RIS3 observatories</i> .....	14
<i>5. Deriving the RIS3 observatory model</i> .....	19
<i>6. Conclusion &amp; Further Issues</i> .....	24
<i>References</i> .....	26



## List of Tables

<b>Table 1: Benchmarking with Common Set of Indicators.....</b>	<b>10</b>
---	-----------

## List of Figures

<b>Figure 1: European Innovation Scoreboard 2019 - CE Countries.....</b>	<b>13</b>
<b>Figure 2: Trans-national RIS3 observatory model .....</b>	<b>21</b>
<b>Figure 3: Classification of Trans-national RIS3 observatories on European level .....</b>	<b>22</b>
<b>Figure 4: Indicator distribution and responsibilities.....</b>	<b>23</b>

## Acknowledgement

This paper in hand stands for a compilation of data, its analysis, gradual update and finalisation in the frame of the SMART\_watch Central Europe project, part-financed by the ERDF.

Representing the project partner Hochschule Wismar, University of Applied Sciences: Technology, Business and Design, herewith I would like to express my gratitude to the partners and their contribution in the frame of provided information that was incorporated in this report and served for further thematic digging.

This report is funded by the European Union and therefore the access is granted to everybody, who shows interest in the topic of Smart Specialisation. Intellectual ownership belongs to the authors of this study. Therefore, copying of the information as well as reusing of part or the whole of this without a permission of the author is not permitted in any form and format.

The sole responsibility of this publication lies with the authors. The European Union is not responsible for the content and any use that may be made of the information contained therein.



## 1. Introduction

This document aims to develop a sufficient and effective model for a RIS3 observatory within the frame of the SMART\_watch project part-financed by the INTERREG Central Europe Programme. The conducted report will try to offer a sufficient and well-trackable explanation for the derived model described in chapter five.

As RIS3 observatory, we apprehend a model that consists all actor involved in the Smart Specialisation implementation, their tasks and obligations as well as interactions between each other and the overall shape. Those aspects are directly linked to the individual developed strategy on national or regional level. To make a clear assertion whether a national or regional system should be favoured, this report attempts to evaluate the performances from Central Europe countries having different systems.

Before starting with the overall performance evaluation, the report introduces existing types of strategies in the Central Europe regions to create an outline. This step is essential for the ensuing evaluation and interpretation of the performance indices.

Following the analysis in the first two chapters, guidelines, best practices and cooperation aspects will be emphasised. The guidelines are meant to be a helpful tool to develop a sufficient strategy to implement RIS3. It is important to highlight, that the strategy is determining the structure of a RIS3 observatory and not vice versa. Consequently, the reports focuses at this point to make sure that crucial activities, capabilities and aspects are mentioned to develop a strategy. From this functions, it is possible to derive an efficient observatory model. This leads to a well-justified structure of the observatory and founds the existence of the included bodies.

One of the main activities for a RIS3 observatory is to implement an on-going monitoring system of the whole RIS3 implementation process. In a subchapter, best practices in relation with monitoring and setting up indicators will be presented. Gained insights may be transferred to the model.

Another aspect to be considered, is the networking approach. The SMART\_watch project already produced reports and analysed possible networking strategies in the frame of Smart Specialisation and its actors. Those results will be summarised in a short way and retrieved in the model if possible.

In the last chapter, the actual model for monitoring will be described, using the derived arguments. While the label of this report demands a national observatory, it is questionable whether this is the best solution and if the project and its outcomes can have an influence on national level. Consequently, the first intention would be to develop a regional model to stay close at the needs of the project's stakeholder. To fulfil both, an assumption could be made to define the national observatory as summary of regional observatories implementing the evolved model.



## 2. Strategy overview in the Central Europe Region / European Union

The development of monitoring systems is a crucial part of the strategy progress. Their specific content is highly related to each other. Since the implementation approaches of RIS3 are very different due to the individuality, the monitoring systems might be different depending on the strength and priorities of the European NUTS2-regions. Nevertheless, as we have seen in the Final Report D.T4.1.4, we were able to figure out certain similarities between the participating Central Europe SMART\_watch project regions on NUTS2 level. For the following analysis, the perspective will be changed to the national monitoring systems. The chapter tries to give a short overview to clarify whether European Countries from Central Europe region have only national, national & regional or only regional Monitoring Systems to evaluate their implementation status of Smart Specialisation processes.

### **AUSTRIA:**

In terms of RIS3 implementation Austria is a special case, since a strategy dedicated only to Smart Specialisation does not exist. However, the Austrian Strategy for Smart Specialisation is seen as a European frame of reference for the research, technology and innovation (RTI) policies to boost growth and competitiveness in the long-term. This strategy implementation is monitored by The Council for Research, Technology Development and Innovation. Additionally, the NUTS2 regions developed individual RTI strategies to focus on their priorities (Gruber et. al., 2016).

#### *National S3 Priorities:*

- Service Innovation and Tourism
- Quality of life
- Bio-Economy and Sustainability
- Material sciences and intelligent manufacturing
- Information and communication technologies
- Intellectual, social and cultural sciences
- Life Sciences

### **CROATIA:**

The Croatian National Smart Specialisation Strategy is developed for the time starting from 2016 to 2020. The monitoring system is containing:

- Context indicators - using the National Statistics Office as data source and
- Output and result indicators - using values from Annual Implementation Reports of Operational Programs,

providing for every indicator baseline values with reference to 2014 and target values for 2023. Croatia has only a national strategy and logically only a national monitoring system.

#### *National S3 Priorities:*

- Transport and Mobility
- Energy and Sustainable Environment
- Security



- Food and Bioeconomy
- Health and Quality of Life

#### **CZECH REPUBLIC:**

The National Smart Specialisation Strategy was approved in 2018 consisting 14 additional Regional Innovation Strategies. The Monitoring on national level is implemented annually, presenting a report in June by a National manager. For this monitoring and evaluation process the national institutions are cooperating with the ESIF operational programmes, organisations responsible for national R&D&I programmes and with regional RIS3 level. After gathering the necessary information from the monitoring system, the national strategy shall be updated every two years (Government of the Czech republic, 2016).

##### *National S3 priorities:*

- Mechanical engineering
- Natural resources, agriculture and food
- Transport means for the 21<sup>st</sup> century
- Health care, advanced medicine
- Digital Market Technologies and Electrical Engineering
- Creative Czech Republic

#### **GERMANY:**

Only a certain number of Federal States in Germany are situated in the Central Europe Region of the INTERREG programme. However, a national strategy in terms of Smart Specialisation does not exist - so does the Monitoring. The whole process is in the responsibility of the Federal States as NUTS2 regions.

##### *National S3 Priorities:*

- Digital economy and society
- Intelligent mobility
- Healthy life
- Innovative work environment
- Sustainable economy and energy
- Civilian security

#### **HUNGARY:**

The state of Hungary is implementing and monitoring the Smart Specialisation process on a national level only. The process is shall be evaluated in three different ways: interim, on-going and ex-post resulting in possible interventions of the program and design of the strategy. The used indicators are outcome-driven providing as well base values from the year 2012 and target values for 2020 (Nemzeti Innovációs Hivatal, 2014).

##### *National S3 priorities:*

- Advanced technologies in the vehicle and other machine industries



- ICT and information services
- Sustainable environment
- Agricultural innovation
- Clean and renewable energies
- Healthy society and wellbeing
- Inclusive and sustainable society
- Healthy local food

#### **ITALY:**

The national strategy of Italy does not consist an own monitoring system. It should be understood as supporting strategy for the regional implementation of Smart Specialisation. The national document aims to support regional government to design their own RIS3 strategies and to coordinate cross-border knowledge experiences within the regions.

Therefore, the conclusion should be made that no national monitoring system as understood in the Smart Specialisation implementation can be identified.

*National S3 priorities: no specific priorities on national level*

#### **POLAND:**

The National Strategy for Poland is co-ordinated by three ministries: Ministry of Science and Higher Education, Ministry of Infrastructure and Development as well as Ministry of Economics as process leader. On the regional level the Marshall's Offices of the 16 regions are acting as independent coordinators.

The key aspect of the national strategy is to focus on the priority areas in Research, Development and Innovation to support socio-economic transformation, improve innovation technologies and facilitate growth of private expenditures on R&D (Kamienski, 2014).

*National S3 priorities:*

- Healthy Society
- Bio-economy comprising agri-food, forestry and environment
- Innovative technologies and industrial processes
- Sustainable energy
- Natural resources and waste management

#### **SLOVAKIA:**

The Slovakian National Strategy indicates the Government Council for Science, Technology and Innovation as key authority to implement RIS3 with a Working Body established: "The Standing Committee of the Government Council for Science, Technology and Innovation for RIS3 Implementation".

The main objective of the strategy is formulated as a vision to drive structural change of the national economy towards growth based on innovation capability and R&D excellence. Reaching this goal shall be ensured by the objectives to deepening integration of major industries, increase contribution of research, create dynamic and innovative society and improve quality of human resources.





*National S3 priorities:*

- Cars for the 21<sup>st</sup> century
- Industry for the 21<sup>st</sup> century
- Digital Slovakia and creative industries
- Healthy food and the environment
- Public health and medical technology

**SLOVENIA:**

The Slovenian concept for RIS3 implementation is based on a national approach due to only two cohesion regions identified. Nevertheless, the strategy aims to support regional dimensions with relevant and minding activities for urban and rural areas. On the national level Government Office for Growth and European Cohesion Policy is acting as main coordinator supported by the Council for Science and Technology (Wostner, 2014).

*National S3 priorities:*

- Smart Cities and Communities
- Smart building and homes
- SI\_ndustry 4.0 - Smart Factories
- Health / Medicine
- Networks for the Transition to Circular Economy
- Sustainable Food Production
- Sustainable Tourism and Creative Cultural and Heritage based Services
- Development of Materials as Products
- Smart Mobility



### 3. Performance comparison of national and regional systems

After introducing the respective national and / or regional strategies and linked approaches on monitoring systems, a short analysis on the performances of the countries will be implemented to develop an approach of figuring out a clear statement which system (national vs. regional) should be preferred. Based on this, the guidelines to set up a model and monitoring system will be derived.

Within the Regional Report D.T4.1.4, a comparison of the project regions, representing the Central Europe region, was already conducted based on the developed Benchmarking Tool D.T4.1.2. This comparison was done on regional level measuring the Smart Specialisation implementation status. Table 1 indicates the received results showing that the regions from Austria (Styria), Italy (Piemonte), Germany (Mecklenburg Western-Pomerania) and Slovenia (Western) are in the leading positions and Italy (Veneto), Slovenia (Eastern) and Czech Republic (Jihozápad) form the mid-field, while Poland (Lubelskie and Silesia) and Hungary (D./E.Alföld) can be found at the end of the list.

**Table 1: Benchmarking with Common Set of Indicators**

Rank	NUTS-2 region	Benchmarking Index
1	Styria	0.8965
2	Piemonte	0.8307
3	Mecklenburg Western-Pomerania	0.6689
4	Slovenia (Western)	0.6505
5	Veneto	0.6333
6	Slovenia (Eastern)	0.6158
7	Jihozápad	0.5383
8	Lubelskie	0.5135
9	D./E.-Alföld	0.4841
10	Silesia	0.4425

Source: SMART\_watch (2020b).

Having this in mind, a conclusion regarding the question which monitoring systems are more successful in terms of implementation of the strategy could be derived. This would lead to the assumption that the monitoring systems of the leading countries in Table 1 should be considered as a best practice and adopted to the other countries and regions. All monitoring systems provide regular updates of the strategy after evaluation and any interventions to increase the effectiveness of the strategy. However, this conclusion shouldn't be made for several reasons.

First of all, if we take a closer look on the leading regions and the monitoring systems behind, we already have seen in the first chapter that they are very different. Germany has no national strategy, Syria's RIS strategy is adopted from a RDI strategy, Italy provides a national strategy to support their regional ones. Nevertheless, we can find at least one important similarity - all three leading countries have regional strategies as well to facilitate the Smart Specialisation on regional level by developing a strategy according to regional needs, strength, weaknesses and opportunities.



Czech Republic and Slovenia with the idea of national strategies can be found in the mid-field of the derived Table No. 1, which does neither serve as pro nor contra argument for using national strategies only.

Nevertheless, we can find some similar circumstances at the end of the table. Poland's system is pretty identical in its approach to the upper listed regions. A national as well as regional strategies were developed including detailed monitoring systems including a clear evaluation and intervention process to improve the strategy implementation. The same applies for Hungary, but only on national level. Therefore, the monitoring system itself can't be seen as only driver for (not) successful RIS3 implementation.

Furthermore, for an interpretation of the yielded data, the heterogeneity of the regions in terms of economic and innovation potential has to be considered. This is probably one of the key aspects to explain the different performances - not the existence of different strategies.

Another argument against deriving a conclusion is the limited number of regions that are covered within Table 1. Only Italy, Slovenia and Poland are represented by more than one region. To make a clear statement about the quality of national strategies and monitoring, this number of representative samples is too small. Therefore, another tool on national level has to be reviewed to derive a clear statement regarding the decision whether a national or regional monitoring system should be implemented.

The European Innovation Scoreboard (EIS) is not dedicated to Smart Specialisation (only) but a closer look on the used indicators of the EIS in contrast to the used set of indicators in the benchmarking tool above (ref. SMART\_watch ,2020a) shows a lot of similarities. Therefore, we can use the EIS as comparable benchmarking tool on national level.

The results for each Country in the INTERREG Central Europe are shown in Figure 1 below. The innovation index as summary from 10 thematic groups of indicators is shown for each year starting in 2011 until 2018.

Again, Austria and Germany have the highest values in 2018, followed with a big gap by Slovenia and Italy. Croatia provides the lowest value, Poland is only close above. Hungary and Slovakia offer a bit higher values in 2018, but have to be clustered at the end of the ranking as well.

As stated earlier, a simple comparison of the values in 2018 between the countries cannot be the background to derive a recommendation on national or regional strategies and monitoring systems. But, this statistics provide a timeline as well that may allow further assumptions of impacts resulting from RIS3 strategies.

The Smart Specialisation Policy is dedicated to be implemented between 2014 and 2020. Some countries faced a delay in the development of their strategies. However, whether this has an impact on the implementation success can't be evaluated by the authors and will not be considered in further argumentation.

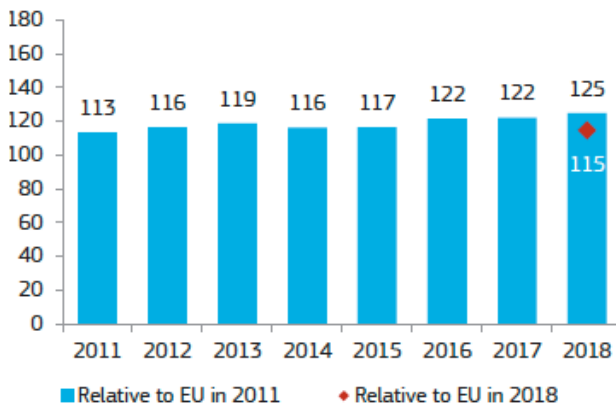
Reviewing the timelines in Figure 1, it is obvious that a direct comparison of the values in 2014 and 2018 show an increase of the scores. Slovenia is the only exception, but the low score is explained by one worse indicator (New doctorate graduates) and a new data source.

Furthermore, it is recognisable that 2014 has generally very low scores compared to previous years in the shown timelines.

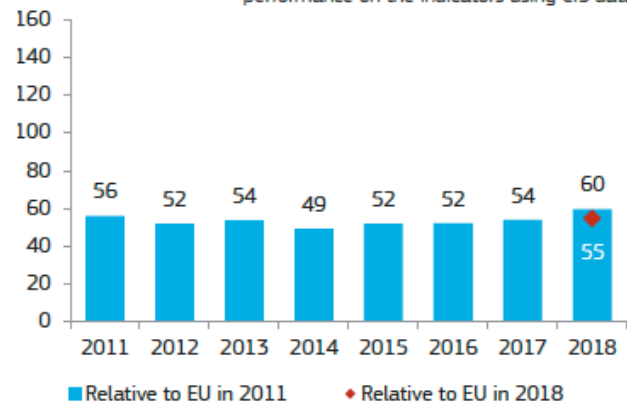
Additionally to the short analysis on regional level above, the data on national level does not allow a clear decision whether national or regional strategies and monitoring system should be preferred to track Smart Specialisation implementation. To many factors may have influences on the decision that have to be considered individually. A clear recommendation for either regional or national strategy cannot be derived with the gained knowledge. Therefore, it can only be advised by the authors to keep the idea of individual decision making for the system with the regions.



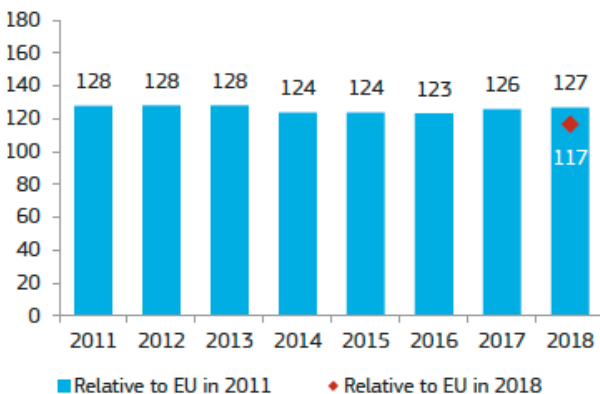
**Austria is a Strong Innovator.** Over time, performance has increased relative to that of the EU in 2011.



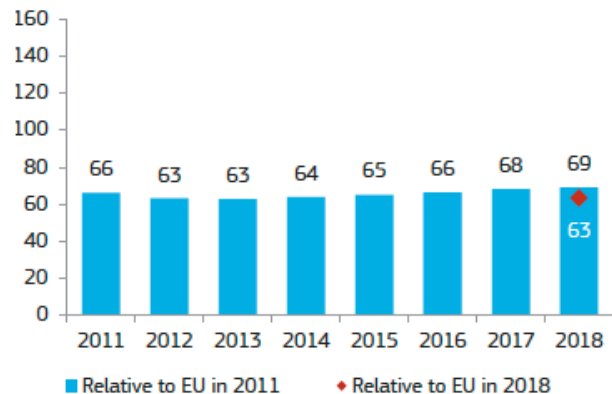
**Croatia is a Moderate Innovator.** Over time, performance has increased relative to that of the EU in 2011. The strong increase in 2018 is entirely explained by improved performance on the indicators using CIS data.



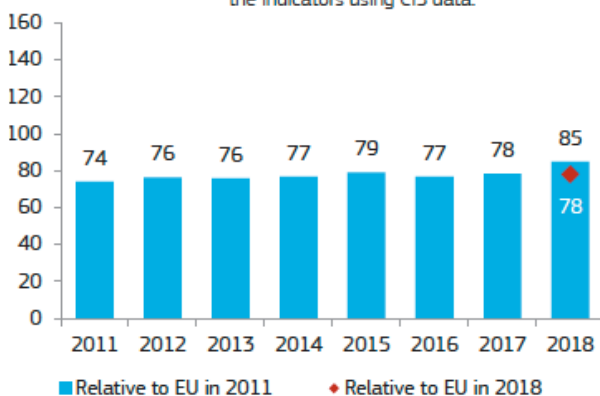
**Germany is a Strong Innovator.** Over time, performance has remained the same compared to that of the EU in 2011.



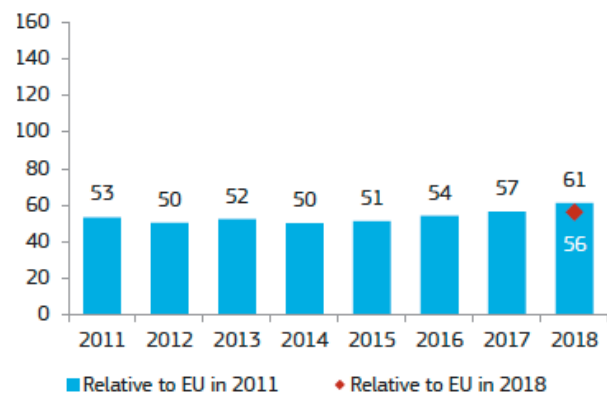
**Hungary is a Moderate Innovator.** Over time, performance has increased relative to that of the EU in 2011.



**Italy is a Moderate Innovator.** Over time, performance has increased relative to that of the EU in 2011. The strong increase in 2018 is largely explained by improved performance on the indicators using CIS data.

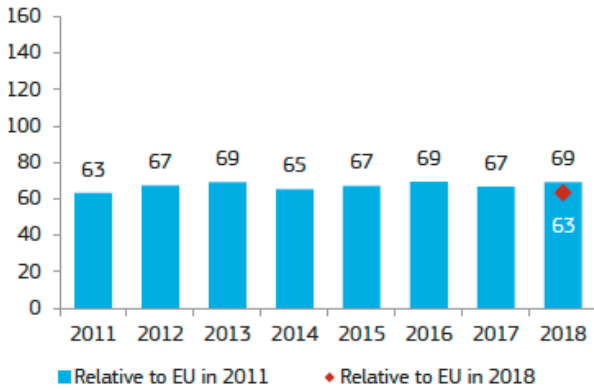


**Poland is a Moderate Innovator.** Over time, performance has increased relative to that of the EU in 2011.

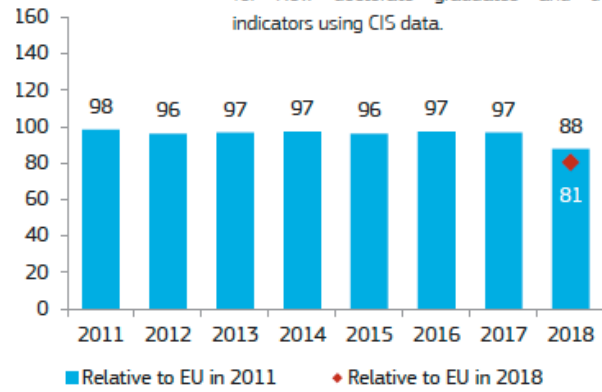




**Slovakia is a Moderate Innovator.** Over time, performance has increased relative to that of the EU in 2011.



**Slovenia is a Moderate Innovator.** Over time, performance has declined relative to that of the EU in 2011. The strong decrease in 2018 is explained by worsened performance for New doctorate graduates and the indicators using CIS data.



**Figure 1: European Innovation Scoreboard 2019 – CE Countries (Source: EC, 2020).**



## 4. Guidelines and best practices for RIS3 observatories

In the fourth chapter, a model for a RIS observatory will be derived by using guidelines for RIS3 implementation as well as best practices for monitoring systems. The guidelines will lead to a RIS3 strategy on regional level but can also be transferred to the development of national strategies. The activities, obstacles and tasks included in the strategy determine the structure and bodies of an efficient observatory responsible for implementation, monitoring and evaluation of the strategy. Furthermore, best practices may be used to be adopted to an efficient strategy and observatory.

### 4.1. Guidelines to develop a RIS3 strategy

The guidelines consists eight general topics and are derived from the Assessment Tool Annex III provided by DG Regional Policy and S3 Platform (Foray et. al., 2012). Following this guidelines with respect to the regional strength, weaknesses and opportunities shall lead to a sufficient RIS3 strategy that allows a development of reasonable observatory model. In the following, the eight guidelines are listed including a short explanation giving further details to be observed.

#### I. Identification of regional strength and future activities

The existing situation of the region should be analysed in terms of innovation capacities, technological and scientific specialisation as well as economic conditions. The future development of the region should be analysed as well. What are bottlenecks for economic and innovative development? Those points will lead to an extensive SWOT analysis of the current situation as well as a clear vision for the funding period.

#### II. Ensure stakeholder involvement and support entrepreneurial discovery processes

The strategy development needs to involve all direct (and potentially indirect) stakeholders at an early stage in the process including government, agencies, industry representatives and others. This ensures a detailed dialogue and broad view on possible contribution and cooperation between the actors. Also, clear responsibilities of all actors should be made, such as managing committees. The needs of Working Groups, Managing bodies, annual meetings, surveys, interviews and so on have to be clarified.

#### III. Identifying a set of priorities

According to the identified regional strength, a limited number of priorities have to be derived for future development. The priorities should represent economic potentials and local industries by analysing existing future concepts and actions. Are there any further economic niches to be facilitated in the region? It is recommended not to choose priorities that the regions is aiming to develop but on local existing strong economic fields that can be facilitated in the future.

#### IV. Establish clear actions and activities

Following the agreed priorities and strengths, future activities and actions have to be formulated. This includes a respective time schedule or action plan. The responsible bodies for each activities have to be identified for all participating actors and stakeholders. Planned activities should ensure triple-helix



approaches to facilitate cooperation and collaboration between entrepreneurs, researcher and politicians. The same applies for the financing of individual actions - public vs. private investments.

#### **V. Including cross-border potentials**

The strategy should not treat the region as island - a more global approach needs to be implemented. What is the position of the region on national and European level? Internationalisation of SMEs and cluster should be facilitated as well.

#### **VI. Identifying synergies between different levels and funding programmes**

National priorities and strategies (if existing) have to be considered and followed on regional level. Cooperation and coordination between different political levels have to be ensured for a sufficient implementation. This includes a schedule for applying different funding sources for innovative actions.

#### **VII. Setting up a sufficient monitoring and evaluation system**

Concrete and achievable indicators - context, result and output - have to be developed including starting and target values. An existing national monitoring system has to be considered to ensure comparison with other regions. The evaluation should lead to political interventions and adjustments of the strategy. Annual monitoring and data collection is recommended. Data sources for each indicator have to be identified from the beginning. The results should be published and communicated regularly to all stakeholder and public society.

#### **VIII. External evaluation and strategy improvement**

An external evaluation of the strategy is recommended to identify possible weaknesses and potentials. If the strategy is based on previous innovation strategies from the region, it needs to be improved and adjusted to the Smart Specialisation approach.

Those eight principles lead to certain bodies that need to be included in the RIS observatory. Responsibilities and connection between the bodies will be displayed.

## **4.2. Best practices on monitoring systems**

Monitoring the Smart Specialisation implementation is one of various tasks for a RIS3 observatory. Whereas the development of a sufficient strategy needs a high work input at the beginning of a funding period, the monitoring, evaluation and adjustment of the implementation is an on-going process in the period. Therefore, four indicated best practices are presented below, which will be considered in the RIS3 observatory model (rf. to EC, n.d.).

### ***Aquitaine (France) - Relevant, flexible, fine - grained indicators for S3***

The problem indicated was to make sure that the monitoring system is capable to use indicators that do not provide any bias in what they are supposed to capture. This occurs from different reasons, such as lack of data sources and ability of the responsible bodies.

The region of Aquitaine stated three specific objectives for the selected indicators:



- Indicators need to reflect the real impact of Smart Specialisation related project on businesses development (e.g. trainings, collaboration, patents and so on), since this is one of main purposes of the approach
- Indicators shall evaluate the scale of which EU-funded project are in line with the regional Smart Specialisation priorities
- Indicators need to cover cross-project activities from different sectors since innovation can occur as combination from different disciplines

Following this objectives shall make sure that the used set of indicators measures realistic impacts and gives the responsible bodies options for clear interventions.

### ***Emilia Romagna (Italy) - Measuring the transition and evolution of the regional economy***

RIS3 monitoring system's main objective is to derive intervention logics for the implementation which needs a well-articulated indicator set for each and all priority axis of the region.

The current approach of the region tries to focus on two actions. First, reinforcing and modernising existing clusters and second, to discover emerging cluster with high potentials for innovation. The approach to tackle this challenge in Emilia-Romagna region was to develop a structure containing four kinds of indicators as minimum required elements of a RIS3 monitoring system.

- Output indicators - Implementation measurement
- Change indicators (specialisation and transition indicators) - Measurement of any changes in the region in smart specialisation context
- Result indicators - Measurement of strategy effectiveness
- Context indicators - Economy evolution in the region

Implementing respective sets of indicators ensures the measurement of any movements in the region. Especially change indicators are used to promote activities related to smart specialisation among stakeholders.

### ***Galicia (Spain) - Monitoring as a way to manage strategy objectives***

Monitoring of RIS3 is result-oriented, therefore, clear definition for logic of intervention of the strategy and active implementation management is needed.

The region of Galicia developed a panel using 74 indicators with regular updates. The Galician Innovation Observatory is lonely responsible body supported by external experts to gather the necessary data.

The indicators are divided into three fields:

- Performance (Output) indicators as measurement of realised implementation instruments
- Result indicators to measure the impact on the strategic priorities
- Impact (context) indicators to measure the overall progress to tackle the challenges and fulfil the strategy vision

For each indicator used in the scoreboard, intermediate and target values are formulated for fixed point in time and agreed with the governmental bodies. The used data sources are mainly developed by different regional offices. The interlinked indicators serve as the key tool for managing the overall RIS3 implementation process in the region. An intermediate and final assessment is scheduled to compare actual values with the formulated target values. The assessment will also be added by qualitative information from regional surveys and discussions among the stakeholders





### *Wales (United Kingdom) - An innovative data visualisation platform*

Monitoring information needs to be transparent and accessible for involved stakeholders.

The Government of Wales developed a data platform gathering all the information and data about innovative activities and those which are related to the Smart Specialisation Strategy. The innovative tool can collect the information automatically from different sources and synergise web statistics and databases from companies, platforms and even social media. It is another task to use alternative sources for politicians to improve the entrepreneurial discovery process.

This tool and its alternative search for sources may be an option to tackle the lack of necessary data on regional or national level for the chosen indicators.

## 4.3. RIS3 observatory networking

The current structure for the transformation of the Smart Specialisation approach starting from European level to be implemented in regional level seems very hierarchic. The countries and regions focus on their own challenges and potentials. This may lead to a blind development of own strategies without considering the policy approach and other regions at all, eventually except neighbour regions. Following this principle, the illusion started to generate itself among all involved actors to be very different from each other in terms of priorities, actions, systems and strategies.

However, as we concluded in the Final Report D.T4.1.4, the regions are not that heterogenous as proposed and have several similarities in their chosen priorities and monitoring systems. Therefore, inter-regional cooperation should be accorded a higher focus on every level starting from the industrial companies up to the regional government. But the cooperation itself is not enough to have bigger impact on the Smart Specialisation implementation, such as knowledge and experience exchanges. Furthermore - and even more essential, cooperative implementation of actors from different regions has a big impact on the overall Smart Specialisation process (Santoalha, 2019).

To facilitate the cooperation between regions and observatories, a short view on the developed Networking Strategy and respective tools is made below. This insights refer to SMART\_watch (2020c) D.T3.1.2 report. For the development of a sufficient RIS3 observatory, the establishment of a network is essential. The most important steps to build up a network can be divided into four phases:

#### I. Initiation phase

This phase's aim is of course to build up the networking structure and connect possible members. Two different models can be observed. First, a network is initiated by a core group and expands by gathering new members. Second, the network already starts with the maximum number of potential members. This requires actors with a high degree of diversity.

#### II. Stabilisation phase

Following the starting of a network, the structure has to be developed within the members. This should be implemented via open dialogues and discussions within the members. A certain label and external representatives should be clarified at this stage.

#### III. Continuation phase

After establishment, the network has to be kept "alive". This includes facilitation of all relationships among the partners as well as attracting new members.



#### IV. Dissolution phase

A network may be funded for a certain reason or time frame. If those reasons disappear, the network might also be dissolved.

To derive a structure from the networking perspective of observatories, we also take a closer look on possible tools to be implemented in an organisation to facilitate sufficient networking and cooperation. For this short analysis, the project developed another report dealing with a summary of well-used tools for network implementation (SMART\_watch, 2020d). Below, a selection of possible tools is made.

- Network Website
- Cooperation Platform
- Competence map
- Electronic Newsletter
- Thematic events (workshops, study visits, exhibitions, round tables, etc.)
- Benchlearning
- Internal audits and meetings
- Action Plan

Which Tool is preferable and should be implemented differs due to the intention of the network. Some tools may be not sufficient to be used while others may be the only one used. The best selection might be a mixture of several tools. Considering a RIS observatory model, Thematic events / Meeting, Internal Audits, Action plans and a Cooperation Platform seem to be necessary.



## 5. Deriving the RIS3 observatory model

Following previous argumentation, it is not possible to make a clear decision whether national or regional models are more feasible to be implemented. The existing data does not serve as justification nor expresses the real reasons behind the performances of regions and countries. As already mentioned earlier, it could be a solution to summarise all regional observatory models and claim it as a national one.

Having in mind previous chapters and the conclusions from the Final Report D.T4.1.4 proposing the statement, that the European regions have several similarities in the RIS3 implementation (priority axis, monitoring systems, observatory structure, etc.), a joint monitoring approach needs to be derived for European NUTS-2 regions. Therefore, the following model will develop a Trans-national RIS3 observatory with focus on thematic fields.

At this point the regional and national level can't be excluded from the model. Regional policy making on innovation has a very limited impact to the RIS3 programme (Marques & Morgan, 2018) due to risk-averse behaviour that restricts experimentation, flexibility and public initiatives as well as leads to being threatened due to the transparent bottom-up approach in the programme (Landabaso, 2014). Nevertheless, regional bodies have an important role for informal factors in institutions such as trust, responsibility, partnerships and regional leadership (McCann & Ortega-Argilés, 2014). Therefore, both levels have to be implemented in the structure.

To justify a trans-national observatory approach, the concept of clusters shall be introduced. Cluster are interconnected companies and institutions in a particular thematic field with a certain geographic concentration (Porter, 1998). Transferring this definition to RIS3, we can indicate in every region with an own strategy and priorities several RIS3 cluster according to the amount of priorities. As an example, the region of Mecklenburg Western-Pomerania has six priority axis, so we would introduce six so called "RIS3 cluster" for the region according to our model, which of course interact between each other as well.

Next to the national body, which will be explained later, above the regional level the Trans-national RIS3 observatory shall be implemented. This body could be seen as managing position for a certain number of regional RIS3 clusters. This kind of cluster management was called "cluster of clusters" by Keller (1996). Portnoy (2004) describes this as managing a cluster of classic. However, the basic idea is to have a thematic managing body on a trans-national level to coordinate the regional RIS3 clusters.

The European Commission highly supports cluster strategies within the European growth strategy 2020 (rf. to Ketev & Protsiv, 2016 and EC, 2016a). Smart Specialisation is one of the key elements as well, therefore, it should be reviewed whether a combination of both elements may bring add-value to further innovative development. The RIS3 was already used in the Vanguard Initiative for New Growth through Smart Specialisation to facilitate cluster development and networks by formulating the objectives to:

- Match strategies for regional, national and European levels to support priority areas and create interregional networks
- Align strategic investments to create new industry pathways
- Transform regional cluster and partnerships with global potential (identified with smart specialisation strategies) into world-class cluster

Following those principles, the trans-national model would be the next step to create potentially further cluster through their thematic Smart Specialisation approaches. EC (2016b) also highlighted that the S3 programme requires a multi-scalar-co-ordination among supra-national, national and sub-national actors in Europe. The Trans-national RIS3 observatory model would fulfil this condition.

As mentioned before, the national sphere should not be excluded from the overall structure. National bodies are integrated in the model below as well but serve as a facilitator and coordinator for the regions as it is



implemented in Italy (see chapter 2). For those regions and countries, such as Hungary and Slovenia, having only national RIS3 observatory systems, the national coordination body wouldn't exist and they are directly placed as a region in the model.

Another important aspect that has to be introduced derives from the Final Report D.T4.1.4 as well. In chapter 2, a comparison of regional priority axis was conducted, leading to the conclusion that regions have very similar axis and themes that partly only differ in the labels (e.g. "Health & Life Sciences" vs. "Life Sciences"). As mentioned in the report, this should be an obstacle to be tackled in the further funding periods. For the provided model, we assume that a unification of the priorities was already done and a restricted set of priorities is existing assigning a number to each priority.

Figure 2 tries to illustrate the RIS3 trans-national observatory model. It connects several regions coming from different countries according to their chosen priorities. In this version, three regions are implemented coming from two different countries (highlighted in red and green). Following the presented guidelines, every region is developing an own strategy, exploiting a detailed regional SWOT-analysis (or similar tools) to derive priorities - only the monitoring system will not be developed by the regions individually. The chosen priorities are represented by numbers. As explained earlier, unification of priorities is one of the conclusions and recommendations made in the Final Report D.T4.1.4. In this model, we extinguish to have a unified set of priorities to choose from. As a showcase, we assume that Region A has chosen six priorities, Region B four and Region C five priorities. We already recognised that the amount of priorities are different for the regions in reality as well.

Another crucial aspect every region has to implement is one institution or representative responsible for one of the priorities. This includes representing the respective sectors of the region as well as supporting all participating actors in the field. Some regions have already implemented such bodies in their current RIS3 strategies (such as Mecklenburg Western-Pomerania).

The Trans-national RIS3 observatory as key element of this model could be understood as a cluster organisation or platform. Those institutions are implemented to improve innovation and competitiveness of a specific cluster (Christensen et. al., 2012). From the authors' point of view, a Trans-national RIS3 observatory needs at least three main bodies:

*a) Management Committee:*

Implementing a Management Board is a well recommended aspect for strategic leadership and competitiveness (Elenkov et. al., 2005) and also well included in current RIS3 strategies of the region (SMART\_watch. D.T4.1.4). For the Trans-national RIS3 observatory, the Management Committee consists one representative from each included region for the respective priority. Figure 2 gives an example for the priority No. 31, which means that the Management Board in the illustrated example would be built up by the three representatives responsible to facilitate priority 31 in their region.

The main activity for this committee is the general management of any actions related to their regions in the respective priority as well as coordinating the regional Smart Specialisation implementation in a cross-regional cooperative way. Furthermore, they are mainly responsible to ensure the implementation of the Monitoring System, which will be explained in more detail below.

*b) EU - cross communication body:*

The second body is mainly responsible for the external communication of results, action plans, events, success stories and so on. As discussed in section 4.3, regions should not act like islands in terms of RIS3 implementation, the same applies for the hypothetical Trans-national observatory. Therefore, a clear networking schedule with other trans-national observatories has to be developed and implemented.

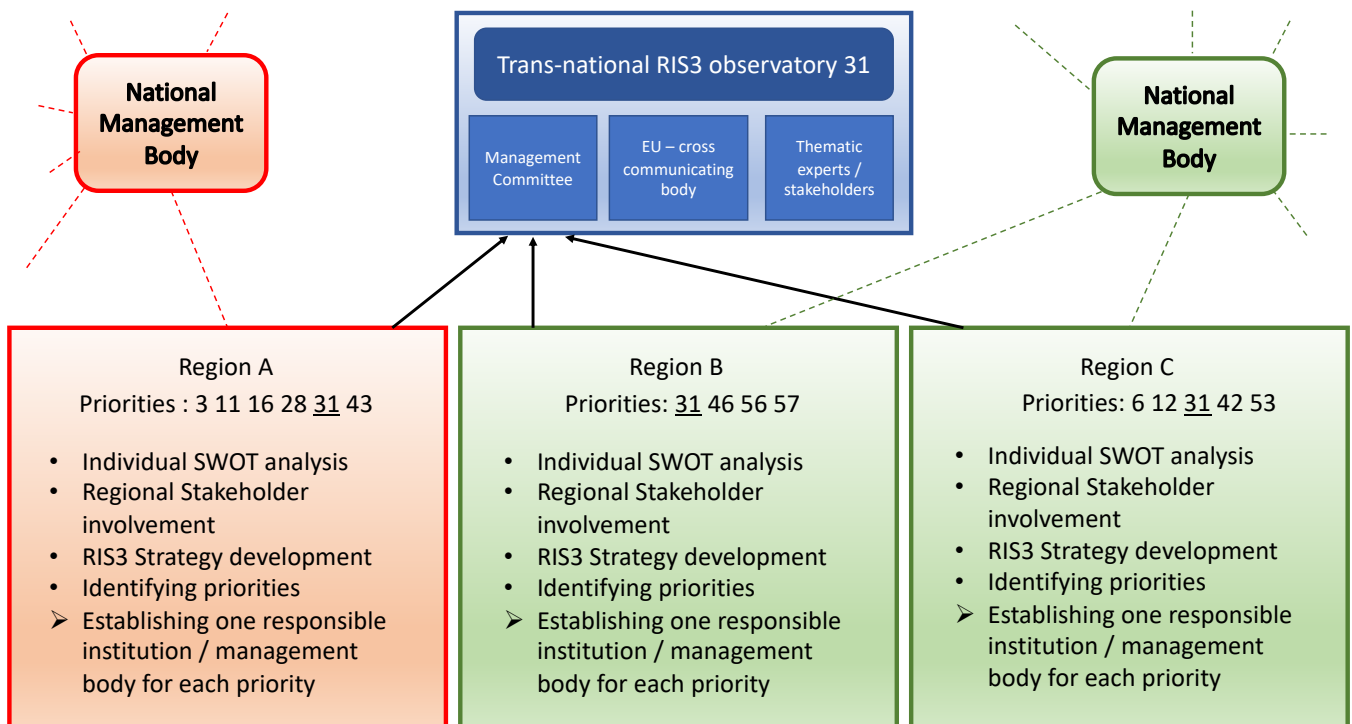
Furthermore, this body would have the responsibility to exchange all necessary information on European level as illustrated in Figure 3. Therefore, it is highly recommended to include at least



one European representative into this body to ensure smooth and fast communication channels to the top level. Additionally, every region could announce one responsible communication manager to ensure the other direction to the regional level.

c) *Thematic experts / stakeholder:*

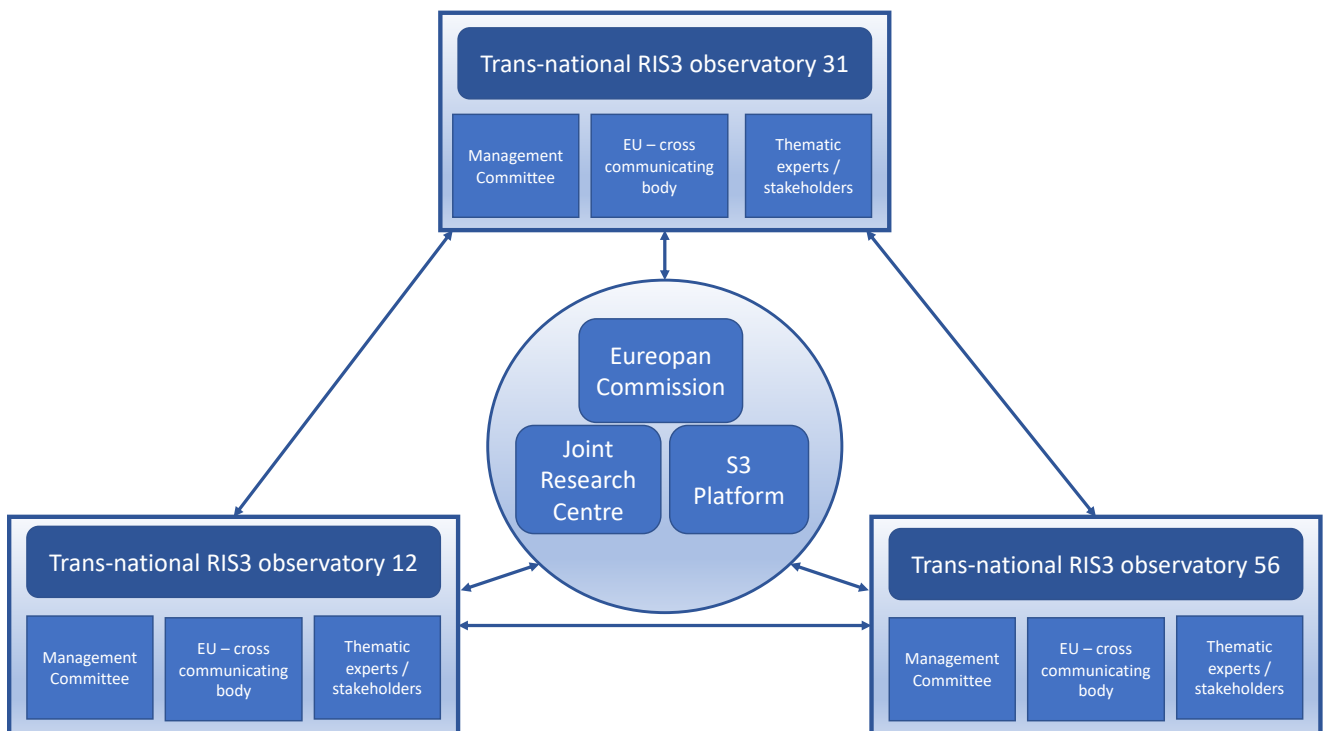
The Management Committee may have a great knowledge and experience in their respective priority, but nevertheless it is highly recommended to include external experts to ensure the triple or even quadruple helix approach.



**Figure 2: Trans-national RIS3 observatory model (Source: Compiled by author).**

As already mentioned, the respective Trans-national RIS3 observatories shall build up a network among each other with a directorate from the European Union which is illustrated in Figure 3, having three different observatories as an example. The responsible body on European level has to be chosen, wise institutions may be the European Commission itself, representatives from the S3 platform or Joint Research Centre. This structure is necessary for regular information exchange as well as on-going monitoring on European level, including an evaluation of funding programmes and their results in terms of the RIS3 approach.

Another important body of the developed model is the management on national level. This body should be implemented following the Italian approach, which was shortly introduced in the second chapter. A national body may not need to develop an own national strategy but should focus on the support and coordination of all regions in the country. However, the decision whether a national strategy should be developed additionally can't be recommended or advised against, since chapter two and three did not serve with a clear decision on that.



**Figure 3: Classification of Trans-national RIS3 observatories on European level (Source: Compiled by author).**

To make sure a well-balanced number of regions within the observatories and avoid large-scale observatories, a geographical limitation needs to be implemented. The limitation could follow the European funding areas, e.g. Central Europe or Baltic Sea Region. This ensures that the regions may have several similarities and their different circumstances are not too high obstacles for joint activities.

### Monitoring System for the Trans-national RIS3 observatory

The Monitoring system in the model has to be explained additionally since it cannot be displayed in the structure oriented Figures 2 and 3. Following the earlier introduced approach to rely on cluster theories, the monitoring of a Trans-national RIS3 observatory itself should follow the Cluster policy cycle containing three stages: Analysis, Strategy and Action (EC, 2016a). This procedure is already well implemented in several regional strategies and has been proven as sufficient process.

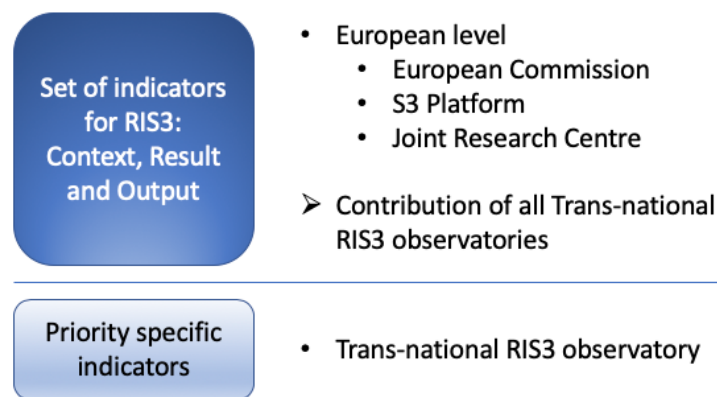
The main challenge to develop a sufficient monitoring system is probably to set up a useful and effective set of indicators. In the model, this task would be solely in responsibility of the Trans-national RIS3 observatory. This allows a comprehensive comparison of the individual performances of the RIS3 implementation of each region under the observatories. The option of implementing a national monitoring set of indicators as well is not excluded from the model, but would lead to the usual criticism of being not comparable to other countries.

Since a model relies on an multi-scale approach including different levels, the monitoring system needs to be developed in a common way as well. The basic idea follows another recommendation from the Final Report D.T4.1.4 to unify the used indicators to measure the Smart Specialisation implementation. Currently, the decision on the chosen indicators is still made by the regions individually, which leads to biased comparisons. However, the starting point for a sufficient set of indicators has to be on European level in dialogue with the Trans-national RIS3 observatories. As the best practices have shown, at least context,



output and result indicators have to be implemented in the final set. The report on the Common Set of Indicators D.T4.1.1 has already introduced one approach to unify the indicators from a restricted number of regions as an example.

Additionally to the agreed indicators to measure Smart Specialisation implementation - again, agreed on European level - the Trans-national RIS3 observatories should add specific indicator according to their thematic fields. The Final Report D.T4.1.4 has already introduced the idea to expand a set with more indicators coming from different strategies that may also be able to measure Smart Specialisation. Figure 4 tries to summarise the presented structure for the set of indicators and shows the responsibilities for the decision-making.



**Figure 4: Indicator distribution and responsibilities (Source: Compiled by author)**

The final step for the trans-national RIS3 observatory to conclude the setting up phase for a set of indicators is to derive clear base and target values for each indicator in each region. At this step, the heterogeneity of all regions under the observatory has to be considered. Each region has different base values and should have different target values according to their economic, innovative and competitive circumstances and potentials. The used data sources for each indicator need to be clarified at an early stage.

The presented best practices in chapter 4.2 shall be adopted. In the trans-national RIS3 observatory model, several points may be implemented:

- Change indicators to measure any impacts in the region regarding Smart Specialisation
- Intermediate and target values
- Regular updates on indicators
- Transparent Monitoring Platform
- Incorporating software for additional data sources

The decision on the tool implementation in detail needs to be derived on European level as well to guarantee the unification of the monitoring systems among all defined Trans-nation RIS3 observatories. Since the received data from all observatories cover also all European regions, the monitoring system provides a comprehensive analysis and overview as well as fundamentals for future development for RIS3 implementation.



## 6. Conclusion & Further Issues

The presented report aimed to create a traceable argumentation to derive a RIS3 observatory model.

Starting with an overview about the existence of national strategies in the INTERREG Central Europe countries including their national S3 priority axis, the report approached to derive an argumentation for a clear decision whether a national or regional strategy including monitoring system should be recommended. To do so, the following chapter compared the SMART\_watch project regions regarding their performance. The Benchmarking Tool D.T4.1.2 was used to link the monitoring structure with achievements in the RIS3 implementation. However, a regional comparison was not sufficient enough to tackle the problem. Therefore, a national level of comparison was chosen with the European Innovation Scoreboard. The Scoreboard is using very similar indicators compared to the Benchmarking Tool D.T4.1.2, but it is dedicated to the whole countries. Nevertheless, the presented values could also not lead to a clear decision on which system should be preferred since too many other factors than the strategy and monitoring system have a high(er) influence on the values.

In the fourth chapter, several aspects to set up a sufficient strategy and monitoring system were introduced. At first, eight guidelines were formulated to develop a Smart Specialisation Strategy. Following this guidelines is the first step for every region or country for strategy development. Some points should be highlighted for the later on developed observatory model such as Identifying strength and weaknesses, setting up priorities and incorporating stakeholders.

Secondly, best practices with regard to the monitoring system were presented. Four European regions were chosen by the European Commission under the label Smart Stories. All four regions developed innovative approaches to improve the monitoring systems, which are adoptable to the derived model as well.

Lastly, the networking aspect was in the focus. The SMART\_watch project already developed a marketing strategy based on the demand of more cooperation between the regions in terms of RIS3 implementation. The strategy was introduced shortly including some usable tools. The networking aspect can be retrieved in the observatory model as well.

In the fifth chapter, the previous explanations and project outputs were used to derive a Trans-national RIS3 observatory model. The main idea of the model is to incorporate another body filling the gap between regional, national and European level with an additional RIS3 observatory. The European Cluster Theory as another main concept for the European Growth Strategy 2020 was used as base concept for the derived model.

In general, the model consists of three main actors from each level. Starting on regional level, every European region still develops an own strategy. This procedure is very similar to the existing process, but the identification of priority axis is a crucial aspect including the assignment of a responsible institution for each priority. The monitoring system will be excluded from the regional strategies.

On the national level, a management body is incorporated following the Italian idea to be in charge of facilitating the individual region and support cooperation between all of them. Developing a national strategy is not excluded from the model, but also not necessary.

The Trans-national RIS3 observatory can be seen as interlink to the European level. It connects several regions coming from different countries. The observatories are build according to the thematic fields of priorities. This requires an agreed set of priorities to choose from. It is recommended to implement at least three bodies for the observatory: Management Committee (consisting the one representative responsible in the regions for the respective priority), EU-cross communication body (being responsible for the communication to European level and having at least one representative as active member from the European level) and External Experts / Stakeholder (acting as supportive and consulting body).





On European level, all Trans-national RIS3 observatories are connected in a network including a body coming from European Union such as the Commission itself, representatives from S3 platform and / or the Joint Research Centre for RIS3.

The Monitoring system was explained in a more detailed way, since this is the on-going task for the observatory. Building up on previous project deliverables, it is recommended to unify the used indicators for RIS3 implementation. This ensure a sufficient comparison between different regions even with respect to their individual priorities. Additionally, every thematic observatory should develop indicators trying to cover the respective priority.

Of course, the model faces several limitations. The funding of the Trans-national RIS3 observatory was not analysed and it is unclear which funding programme could be used. Also, it is not analysed in what kind such an observatory would burden the existing funds. It could be argued that the national management bodies funds will decrease due to their less responsibilities.

Furthermore, the model premises cooperation between the regions. Since the idea of the European Growth strategy is to foster cooperation among countries, regions and communities, the derived model can serve as another step on this pathway.

Another problem may occurring applies for regions, that could be assigned to more than one European funding region. For example, the region of Mecklenburg Western-Pomerania is dedicated to the Central Europe and Baltic Sea Region. This leads to the question, which Trans-national RIS3 observatories are responsible for the region. The decision on it may be assigned to region depending on existing economic connections to certain regions.

Another issue to be discussed is the point of time for model implementation. Currently, the regions are evaluating the outcomes of Smart Specialisation strategies from the first funding period 2014 - 2020. This includes some adjustments of implementation and monitoring processes within the regions. However, an open question would be whether the model implementation would work within a funding period or have to be initiated at the beginning of it.

As concluding appreciation, the Trans-national RIS3 observatory model is a well-argued model for cross-border and multi-scale cooperation of RIS3 implementation. From the theoretical perspective, the implementation is recommended for the next funding period. Nevertheless, the next steps would be to develop a detailed feasibility study on the model including actors from all participating levels. This could be done with a limited number of regions trying to implement the model in the upcoming funding period.



## References

- Christensen, T.A., Lämmer-Gamp, T. & Meier zu Köcker, G. (2012). Let's make a perfect cluster policy and cluster programme. Smart recommendations for policy makers.
- Elenkov, D.S, Judge, W. & Wright, P. (2005). Strategic Leadership and Executive Innovation influence: An international multi-cluster comparative study. In Strategic Management Journal, Vol. 26, pp. 665 - 682.
- European Commission - EC (n.d.). RIS3 in practice: Implementation examples - Monitoring. S3 platform.
- European Commission - EC (2016a). Smart Guide to Cluster Policy. How to support SME Policy from Structural Funds. Guidebook Series.
- European Commission - EC (2016b). Implementing Smart Specialisation Strategies: A Handbook. Publications Office of the European Union, Luxembourg.
- European Commission - EC (2020). European Innovation Scoreboard. Derived from: [https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards\\_en](https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en)
- Foray, D., Goddard, J., Beldarrain, X.G., Landabaso, M., McCann, P., Morgan, K., Nauwelaers, C. & Ortega-Argilés, R. [alphabetic order] (2012). Guide to Research and Innovation Strategies for Smart Specialisation (RIS3). European Commission.
- Government of the Czech Republic (2016). National Research and Innovation Strategy for Smart Specialisation of the Czech Republic (National RIS3 Strategy). Department for Analysis and Coordination of Science, Research and Innovation.
- Gruber, M., Handler, R. & Kleinberger-Pierer, M. (2016). Policy framework for smart specialisation in Austria. Austrian Conference on Spatial Planning (Örok). Series Index No. 199.
- Kamiensky, Zbigniew (2014). POLAND: Towards a RIS3 strategy.
- Keller, T. (1996). Concept of Holding - Organisational Structure and Management. Higher Education and Science, p.24.
- Ketels, C. & Protsiv, S. (2016). European Cluster Panorama 2016. European Cluster Observatory Report. European Commission.



- Landabaso, M. (2014). Guest editorial on research and innovation strategies for smart specialization in Europe. *European Journal of innovation and Management*, Vol. 17 No. 4, pp. 378 - 389.
- Marques, P. & Morgan, K. (2018). The Heroic Assumptions of Smart Specialisation: A Sympathetic Critique of Regional Innovation Policy.
- McCann, P. & Ortega-Argilés, R. (2014). Smart specialization in European regions: issues of strategy, institutions and implementation. *European Journal of Innovation Management*, Vol. 17, No. 4, pp. 409 - 427.
- Nemzeti Innovációs Hivatal (2014). National Smart Specialisation Strategy.
- Porter, M.E. (1998). Clusters and the New Economics of Competition. *Harvard Business Review*.
- Portney, K. (2004). The legal status of Holdings in Russia: Scientific and Practical Guide.
- Santoalha, A. (2019). Technological diversification and Smart Specialisation: the role of cooperation. *Regional Studies*, 53:9, 1269 - 1283.
- SMART\_watch (2020a). D.T4.1.2: Benchmarking Tool. Derived from: <http://smartwatchepc.s3-website.eu-central-1.amazonaws.com>
- SMART\_watch (2020b). D.T4.1.4: Final Report.
- SMART\_watch (2020c). D.T3.1.2: Network management and communication.
- SMART\_watch (2020d). D.T3.1.3: Set of tools for strategy implementation.
- SMART\_watch (2020e). D.T4.1.1: Common Set of Indicators.
- Wostner, Peter (2014). Slovenia: Prioritisation, Entrepreneurial Discovery and Policy mix in the RIS3 process.