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Knowledge Ecosystems in the new ERA

WP1-3: Knowledge Ecosystems and their Actors across the ERA

Opinion for Stakeholder Consultation

Friends of Smart Specialisation¹ Comments

1. Introduction

This Friends of Smart Specialisation (FoSS) report outlines the main points of the Briefing Note “Knowledge Ecosystems in the new ERA” for Stakeholder Consultation (July 2021) and in parallel our own comments on the relevant sections.

FoSS welcome the ERA Hub initiative and this report for Stakeholder Consultation. However, some aspects of the Briefing Note lack clarity and the Note is not always clear in defining the difference between strong knowledge ecosystems and place-based research and innovation ecosystems. Knowledge ecosystems are defined as:

A community of interdependent heterogeneous actors operating in a specific geographical area with specific enablers, governed through collaborative structures, engaged in or facilitating knowledge production, transfer and exploitation, and collectively delivering outputs and impacts *which contribute to the development of the ecosystem*. (Our italics)

Although, outputs and impacts are mentioned, the definition seems to be more interested in the circularity of the knowledge system. The aim should not be “knowledge for knowledge” but knowledge to deal with societal challenges, exploiting opportunities and implementing objectives through aligned strategies developed at a variety of governance levels – European, national, regional, and local. Societal challenges are not just a local problem but must be addressed at the most effective levels of governance. This means that ERA Hubs should not just be considered as fragmented self-standing nodes of the different knowledge ecosystems but linked together to develop aligned policies where similar challenges exist and also joining up to exploit opportunities.

ERA Hubs should play a strong role in mapping in a geographical area research and innovation activities and actors, connecting these actors and seeking smart complementarities where possible. Their role should be to join up research and innovation activity and knowledge within an effective knowledge

¹ ‘Friends of Smart Specialisation’ are non-profit group of independent innovation experts with specific interest in the future role of Smart Specialisation and to policy thinking on the future of our European innovation system. Previous policy papers and presentations can be found on <https://friendsofsmartspecialisation.eu>. See specifically our paper ‘The ERA and Smart Specialisation’ (August 2020)

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ecosystem and not set up yet another silo. Therefore, they should build on existing structures and networks within territories, while in full networked mode in global terms with other hubs in the EU.

It is, therefore, quite clear that ERA Hub activity must link in with the development of smart specialisation strategies at the regional level. These strategies identify regional priorities based on innovation and transformation challenges in perspective of the twin transition and joint European missions and on regional assets and competitiveness for new sustainable growth. These strategies are therefore fully in line with the ambitions of the new ERA.

Smart specialisation strategies are mostly developed through a quadruple helix process² – the Entrepreneurial Discovery Process (EDP) which allows a wide range of stakeholders to contribute both to the design of the strategy but also importantly in its implementation. Universities are playing a leading role in many regions and have a responsibility in aligning governance of innovation and transformations at regional, national and European level, including the promotion of smart specialisation. Smart specialisation strategies are supported by Cohesion funding (the European Regional Development Fund in particular) specifically under policy objective 1 “a more competitive and smarter Europe” which along with then second policy objective “a greener, low-carbon transitioning towards a net zero carbon economy” are the two main priorities for Cohesion Policy 2021-2027.

Specific objectives of “a more competitive and smarter Europe” include the enhancing of research and innovation capacities and the uptake of advanced technologies; reaping the benefits of digitisation for citizens, companies, and governments; enhancing growth and competitiveness of SMEs; and developing skills for smart specialisation, industrial transition and entrepreneurship. An enabling condition is the good governance of a national or regional smart specialisation strategy. Smart specialisation strategies, which started under the 2014-2020 Cohesion Policy, and are continuing in the new period with more maturity, can provide a ready-made set of regional priorities built on governance structures, not only supported by Cohesion funding, but fully integrated in the governance of local innovation ecosystems of many countries and regions. These strategies are bridging research, innovation, and industrial policies, and in principle are being developed in all regions. **Such strategies are bridging research, innovation, and industrial policies in the EU.**

Smart specialisation strategies also allow and encourage regions with similar and complementary priorities to link together establishing competitive value chains. These initiatives, either in the form of smart specialisation partnership platforms or regional networks such as the Vanguard Initiative,³ already provide international networking and investment opportunities for organisations in the regions involved.

² Elias G. Carayannis and David F.J. Campbell, 'Mode 3' and 'Quadruple Helix': toward a 21st century fractal innovation ecosystem, *International Journal of Technology Management* 2009 46:3-4, 201-234

³ The Vanguard Initiative <https://www.s3vanguardinitiative.eu/>

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While ERA Hubs should play a wider role in linking all the research and innovation activities and actors in a specific territory, they should also be linked to existing and developing smart specialisation strategies. We envision the role of an ERA Hub to develop a wide knowledge of the societal challenges and opportunities in the territory it covers. While keeping their focus on the wider science and innovation scene, they can also build on regional (sub-national) priorities; they can benefit from existing governance structures and they can exploit related existing international networks.

ERA Hubs can become the missing-link for integrating the multi-level governance in the European innovation system, beyond the research domain only, provided they also become an instrument that encompasses the restructuring of industrial ecosystems and a better integration of regional innovation-ecosystems in the opportunity space offered by the European single market in the context of smart specialisation strategies.

FoSS believe it is essential to draw lessons from the relative failure of the Lisbon Strategy to achieve the transition in the EU towards a world-leading knowledge economy. The European Green Deal is the new Lisbon Strategy for the EU. Its success requires joined up policy making, collaboration and commitment. The network of ERA Hubs can become the backbone of a European R&I community composed of strong transformative and linked research and innovation ecosystems, providing access to tailored policy and instrument mixes for transformative co-investments. Therefore, the implementation of the concept with the appropriate mandate is now the key-question. The criteria to define this ERA Hub mandate now becomes the core issue.

The next part of the document outlines the main parts of the Briefing Note and links each section with Friends of Smart Specialisation comments. Then in the conclusion to the document we outline our thoughts on the key role and governance aspects of the potential ERA Hubs.

2. Overview of the Briefing Note

This section summarises the main points of the Briefing Note which aims to gather stakeholder feedback the objectives of the ERA Hub initiative and the role and functions of individual ERA Hubs as well as the key principles for the detailed design of the ERA Hub initiative. In places we have expanded the text to provide more clarity, for example, with reference to the four strategic objectives of the new ERA.

Briefing Note Main Points	FoSS Position
<p>The Briefing Note gives an overview of the main findings from the analyses conducted in Work Package (WP)1 “Mapping & analysis of knowledge ecosystems and their actors across the ERA” of the wide-scoping study “Knowledge Ecosystems in the new ERA”.</p> <p>In January 2020, the ERAC published its “Opinion on the future of the ERA”. The ERAC highlighted the significant contribution that R&I makes to achieving Europe’s wider</p>	<p><i>FoSS Comments: Defining knowledge ecosystems</i></p> <p><i>This definition is quite general and goes back to the early research and innovation policies trying to facilitate knowledge production. However, the challenge is now most often cited</i></p>

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<p>policy goals and particularly to <u>addressing transformative changes based on smart directionality</u>. It considered that a new ERA paradigm was needed with as overall objective ...to exploit the significant contribution that R&I plays in achieving Europe’s wider policy goals and make the ERA more responsive to society [as well as to] promote the adoption of ambitious knowledge policies, targeting researchers, innovators, R&I organisations and citizens, in order to broaden the outreach of ERA-related initiatives while also improving communication activities.</p> <p>The Commission Communication (September 2020) “A new ERA for research and innovation” recognises that a new approach to developing the European Research Area (ERA) is needed, <u>setting it firmly in the context of transformative R&I policy and the goal of fostering sustainable and inclusive growth</u>. To ensure that a new ERA is fit for the challenges ahead, the Commission proposed a new vision for the ERA based on four strategic objectives, aimed at <u>broadening</u> the ERA towards new priorities while also <u>deepening</u> the ERA in existing ones.</p> <p>The four objectives are</p> <ul style="list-style-type: none"> • Prioritising investments and reforms: to <u>accelerate</u> the green and digital transformation and to increase competitiveness as well as the speed and depth of the recovery. This requires better analysis and evidence and includes <u>simplifying and facilitating the inter-play between national and European R&I systems</u>. The principle of <u>excellence</u>, meaning that the best researchers with the best ideas obtain funding, remain the <u>cornerstone for all investments under the ERA</u>. • Improving access to excellence: towards more excellence and stronger R&I systems across the whole of the EU where best practice is disseminated faster across Europe. Member States willing to increase the performance of their R&I system towards excellence should be encouraged and supported, building on dedicated Horizon Europe measures and <u>complementarities with smart specialisation strategies</u> under Cohesion Policy. • Translating R&I results into the economy: R&I policies should aim at <u>boosting the resilience and competitiveness</u> of our economies and societies. This means ensuring Europe’s competitive leadership in the global race for technology while improving the environment for business R&I 	<p><i>is how to exploit knowledge production to deliver sustainable economic growth and social benefits, by targeted investments in the research and innovation systems. As they are all different, regions should concentrate on contributing via their knowledge and innovation assets to the most important socio-economic challenges and focus on developing their competitive advantages, while avoiding the tendency to reinvent the wheel in their constituency. This means inter-alia understanding their local assets, developing competitiveness in key sectors in order to create a critical mass and framework conditions able to attract inward investment of human and financial capital. ERA Hubs should embrace an advanced understanding of research and innovation ecosystem for the age of transformations.</i></p>
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<p>investment, deployment of new technologies and <u>enhancing the take up and visibility of research results</u> in the economy and society as a whole.</p> <ul style="list-style-type: none"> • Deepening the ERA: to further progress on the free <u>circulation of knowledge</u> in an upgraded, efficient and effective <u>R&I system</u>, in particular by moving from an approach of coordination <u>towards deeper integration between national policies</u>. The ERA will continue to promote adequate <u>framework conditions</u> and inclusiveness, help develop the skills that researchers need for excellent science, and connect all actors across Europe, including in education, training, and the labour market. <p>Under the priority 'Translating R&I results into the economy', the ERA Communication⁴ proposes to strengthen innovation ecosystems for knowledge circulation and valorisation. According to the Communication knowledge circulation and creation of value from knowledge are important parts of the ERA. R&I Hubs and Centres of excellence facilitate the involvement of a diversity of stakeholders in multi-disciplinary and cross-sectorial collaborations. They provide a valuable and still largely missing service to innovative start-ups and SMEs, which face market failures or obstacles.</p> <p>Over the years, different types of supportive structures have been created and there could be great benefit from fostering a <u>stronger interconnection between them across the EU</u>. Therefore,</p> <p style="padding-left: 40px;">based on a mapping of existing entities, and the analysis of potential gaps, an ERA Hubs initiative could be developed, building on existing capacities, such as Digital Innovation Hubs and clusters, and linking to the Enterprise Europe Network and StartUpEurope, to provide an <u>interconnected knowledge space</u>. This will facilitate collaboration and exchange of best practices, with the incentive to maximise the value of knowledge production, circulation, and use.⁵</p> <p>The Council Conclusions in December 2020⁶ make no mention of ERA Hubs but do underline the potential of closer R&I cooperation and coordination in the ERA between regional, national and European levels in order to maximize the impact of investments to achieve common policy objectives in an effective and impact-oriented manner, including reducing the R&I divide across the Union. It also</p>	
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⁴ A new ERA for Research and Innovation Brussels, 30.9.2020 COM(2020) 628 final

⁵ A new ERA for Research and Innovation Brussels, 30.9.2020 COM(2020) 628 final page 11

⁶ Brussels, 1 December 2020 (OR. en) 13567/20 RECH 483 COMPET 611

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<p>acknowledges that additional efforts are needed to translate the Union's intellectual and scientific assets into new products and services that <u>meet societal demands</u> and calls on Member States and the Commission to promote open science and open innovation practices and to stimulate knowledge and technology co-creation in Europe.</p> <p>Rationale for an ERA Hub initiative</p> <p>The Briefing Note proposes 'knowledge ecosystems' as a key analytical concept, defined as</p> <p>A community of interdependent heterogeneous actors operating in a specific geographical area with specific enablers, governed through collaborative structures, engaged in or facilitating knowledge production, transfer and exploitation, and collectively delivering outputs and impacts which contribute to the development of the ecosystem.</p>	
<p>The Briefing Note then outlines the characteristics of strong knowledge ecosystems⁷.</p> <ol style="list-style-type: none"> 1. The strongest ecosystems tend to be strong in all knowledge processes, creation, transfer, and exploitation, i.e., strong ecosystems feature both scientific and industrial excellence and performance visible in measurable outcomes and impacts. There are no strong knowledge ecosystems based exclusively on academic excellence or industrial exploitation. Capacities in research and innovation go <u>hand in hand</u>. 2. R&I related factors such as access to skills and competences are increasingly important for <u>companies</u> when they make decisions where to locate their activities globally. 3. Strong research and innovation ecosystems have been able to create virtuous circles which continuously reinforces the ecosystem. 4. The interest and perceived need to engage citizens, civil society actors and end-users in general to R&I activities is increasing, especially in stronger ecosystems. 5. External and internal crises may often be used to kick-start positive developments. Crises may cause shifts in stakeholder motivations allowing implementation of joint initiatives not possible in normal circumstances. 6. The stronger the ecosystem is, the less intrusive policy measures are needed. More hands-on policy 	<p><i>FoSS Comments: Characteristics of strong knowledge ecosystems</i></p> <p><i>The paragraph identifies the characteristics of strong knowledge ecosystems by their 'joined-up' nature of scientific and industrial excellence, inclusive governance and the requisite skills and competences. However, while metropolitan areas may have access to both strong academic and industrial leaders, more peripheral or 'inner-peripheral'⁸ regions may not have a critical mass of population or industrial or academic assets to cover all sectors. In this case we may refer to vulnerable or weak innovation ecosystems where weaknesses are most of the time structural (geographical isolation, relative lack of knowledge players, low investment levels, predominance of low-added value economic activities, etc.). While in a more comfortable position, stronger regions can also suffer from lock-ins in times of transformations. Therefore, each region needs to define its own transformational challenges and its smart</i></p>

⁷ Citation p 3 & 4

⁸ See ESPON Study PROFECY [PROFECY - Inner Peripheries: National territories facing challenges of access to basic services of general interest | ESPON](#)

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<p>action is often needed for weaker ecosystems to kick-start positive developments. The challenge in stronger ecosystems is to avoid complacency and lack of dynamics.</p> <p>7. Ecosystems with strong scientific orientation from economically stronger regions rely less on EU connections and funding as they can rely more on local and national resources. Actors in stronger ecosystems also see limited need for European level ecosystem support services, whereas actors from less developed ecosystems have less trust on local policy makers and initiatives, and therefore welcome and promote externally introduced and managed initiatives.</p> <p>8. Strong ecosystems from widening countries typically perceive barriers to R&I and collaboration as being more severe compared to other strong ecosystems. This is likely because of cultural reasons (gap between academic and industrial mind-sets) and the related misalignment between academic foci and local industrial interests and absorptive capacities.</p>	<p><i>specialisation strategy starting from local conditions to counter those challenges and develop a sustainable and more integrated economy. For example, Värmland in Sweden⁹ admits that is facing important challenges, such as slow population growth, a low level of education, low wages and a low degree of employment compared to the Swedish average. Companies in Värmland are dependent on good communications due to the long distances to the metropolitan regions. Värmland is home to large tracts of forestland – an asset for the region and its forest industry in the Värmland strategy. For Värmland, smart specialisation involves learning how to prioritize and invest in innovations in order to bolster Värmland’s competitiveness. This is achieved by profiling its business and research sectors, defining the areas of specialisation, as well as forming collaborative partnerships in Europe to successfully network and influence European policies. It is important to note that this is a comprehensive process where all local actors understand the importance of the strategy that they are creating and participate fully therein.</i></p> <p><i>The distinction between ‘stronger’ ecosystems that would ‘rely less on EU connections and funding as they can rely more on local and national resources’ compared to weaker, and that need less intrusive policy measures’, seems to admit a differentiation between more or less autonomous ecosystems, which would jeopardize the European interconnection of ERA Hubs required in times of continent-wide transformation.</i></p>
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⁹ [Territorial Approach to Smart Specialisation: Experience from Värmland | Assembly of European Regions \(aer.eu\)](https://www.aer.eu)

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<p>Governance and structures of the knowledge ecosystems</p> <p>The Briefing Note argues that there is no single optimal model for the structure, orientation, or governance of successful strong research and innovation ecosystems. There are several different governance approaches that have been observed in the successful ecosystems, but no causal link can be attached between the ecosystem success and the governance format which ultimately seem to depend predominantly on characteristics of the local environment (i.e. the ‘enablers’ in their analytical framework includes local strategies and development plans, standards, regulations, labour and financial markets, physical and virtual infrastructure, general culture and demand for innovation.)</p> <p>Different types of governance are identified: a centralised approach often led by public authorities; a multiple thematic foci approach where governance is mainly at the thematic sub-ecosystem level such as universities, research organisations, clusters, science parks, etc.; a process oriented governance approach where governance is based on shared processes rather than formal ecosystem-level governance or even coordination structures and finally a larger fragmented ecosystem approach with multiple thematic foci (often found in the US) where successful governance is based on strong internal competition for resources and voluntary interactions without formal coordination.</p> <p>All ecosystems have the following structural elements: academic research, industry innovation activity, entrepreneurial activity, public sector innovation activity, and citizen and civil society activity. A strong research and innovation ecosystem relies on not only on the strength of the key stakeholder groups but particularly how they are connected to each other in order to identify and capture synergies, develop complementarities, and ensure the effective transfer of knowledge.</p>	<p>FoSS Comments: Governance and structures</p> <p><i>It is clear that there is no one-size-fits-all governance structure. Governance models are based on historical context and place. However, each governance model of regional research and innovation systems is based on a vision that normally includes an explicit or implicit strategy. Any centralised model requires consensus, and this is where the Entrepreneurial Discovery Process within the smart specialisation process can play a key role by allowing partners to develop an empirical perspective of challenges and opportunities.</i></p> <p><i>But the regional (smart specialisation) strategies cannot exist independently from the international and European context. Therefore, these strategies have to be integrated in the European multi-level governance and cooperation frameworks. Often at all levels and particularly at the European level there are system failures due to fragmentation that handicap the potential synergies within and across the regional systems. The European connectedness of EDP and investment pipelines for transformation are challenges for ERA Hubs.</i></p>
<p>Success factors and barriers</p> <p>There is no one-size fit all success model and attempting to categorise all ecosystems according to a limited set of criteria is challenging since each ecosystem has its own characteristics. Nevertheless, the Briefing Note identifies a set of key common success factors, outlined below.</p> <ol style="list-style-type: none"> 1. A sustained long-term policy support to R&I is required based on a broad political consensus of the importance and benefits of R&I. In successful ecosystems, R&I was not treated as a politically sensitive topic. Instead, support for research and innovation remained stable over time or was even enhanced at the time of major economic crises. 	<p>FoSS Comments: Success factors and barriers</p> <p><i>Smart specialisation strategies provide a long-term direction for research and innovation which can help develop trust and collaboration between partners particularly between universities and local companies. This is where applied science universities and professional higher education can play a strong role at the local level by developing strong links with local companies. The recognition of human capital as a key driver of smart specialisation has led to the European Commission</i></p>

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<p>2. High levels of alignment can be typically found in ecosystems with sufficient levels of trust, collaboration culture and extensive experience in science-industry collaboration, as well as inclusive and balanced ecosystem governance. Strong involvement of local companies in scientific research is also noticed in ecosystems with high alignment between research and industry needs.</p> <p>3. The strong collaboration culture present in the studied ecosystems has been another success factor. This is an element built over time, through mutually reinforcing good experiences, between local universities and research organisations, and local key industries and large companies. Collaboration culture is reinforced by further characteristics, such as the presence of open networks with low entry barriers towards newcomers, and the presence of incentives for collaboration (generally funding or structures that support R&I collaboration).</p> <p>4. R&I collaboration in the successful ecosystems is also facilitated by direct links to resource allocations and development of shared resources, enabling access to relevant high-quality research and innovation infrastructures.</p> <p>5. Successful R&I ecosystems have dedicated professional knowledge transfer organisations. This is underpinned by sufficient deal-flow volumes originating from local research, sufficient thematic specialisation, collaboration and networking with local private actors, sufficient resourcing but also performance monitoring, value for money.</p> <p>6. Successful ecosystems also show wide availability of and participation in quality innovation services that connect the ecosystems players to enhance R&I cooperation, such as information sessions relating to R&I funding or other public support for SMEs, entrepreneurial events, competitions, and awards.</p>	<p><i>proposing a new specific objective for the European Regional Development Fund 2021-2027 to invest in 'Skills for Smart Specialisation, Industrial Transition and Entrepreneurship'.¹⁰ This investment in human capital and development of partnerships between HEIs and regional authorities orchestrating S3 will help HEIs to contribute to their regions' green and digital transitions.¹¹ However, this means that universities need to develop staff who can play the role of 'boundary spanners'¹² and develop strong knowledge links with regional institutions. While there is a large consensus on criteria for successful R&I ecosystems, it is less clear how they can be achieved under different starting positions and policy environments. This would require a capacity for orchestration and tailored policy mix management that is differentiated according to types of governance. But the institutional capacity building for such system development – such as "boundary spanners" – is a common challenge. This capacity building, in particular, for transregional cooperation could become a focal point for the European added value of ERA Hubs.</i></p>
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¹⁰ European Commission (2018) Proposal for a Regulation of the European Parliament and of the Council on the European Regional Development Fund and on the Cohesion Fund, COM(2018) 372 final, Annex IV

¹¹ See Higher Education for Smart Specialisation: a Handbook (Version 2) JRC Report June 2021 Woolford, J and Boden, M (eds.)

¹² 'Boundary spanning skills tend to emerge from activities that straddle sectors, disciplines and professions and they are invariably fashioned in action learning environments where there is a high degree of novelty associated with the activity. Within the boundary spanning skill set it is possible to distinguish between horizontal and vertical boundary spanning perspectives, the former attuned to inter-organisational relationships within the region, the latter oriented to relationships between the region and its national and international interlocutors'. Universities and Smart Specialisation, JRC Report 2013 Louise Kempton, John Goddard, John Edwards, Fatime Barbara Hegyi and Susana Elena-Pérez (2013)

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<p>Objectives of the ERA Hub initiative</p> <p>Modern transitional research and innovation policy calls for an ambitious ERA Hub concept, addressing highly relevant societal challenges and going beyond enhancing and speeding up the transfer and exploitation of research results within the economy and society. The focus of the ERA Hub concept is on strengthening European research and innovation ecosystems, enhancing collaboration within and between ecosystems as well as mutual learning, and facilitating the ambitious development of place-based research and innovation ecosystems with capabilities to address their relevant local societal challenges through shared holistic research and innovation policy and collaborative actions. Addressing societal challenges holistically requires multidisciplinary approaches. Hence, an effective ERA Hub initiative cannot be built only on a single scientific discipline or technology. However, a thematically non-specific focus is also not likely to be practical, as it may lead into too much fragmentation and too generic support measures, which are known to be less effective and efficient, e.g., in start-up ecosystems. Hence, the most appropriate approach is to build the concept around societal challenges that are highly relevant to the local environment and society. This allows straightforward alignment of the ERA Hubs with relevant regional and/or national priorities and policies as well as European R&I programmes and initiatives (e.g., Horizon Europe societal challenges, missions, partnerships). The ERA Hub concept therefore calls for widely inclusive quintuple helix formations and more coordinated larger scale efforts, with stronger problem owner and end-user engagement, also in governance and leadership. Increased interaction and collaboration between actors within the local research and innovation ecosystems and across ecosystems can significantly contribute to the development of networks, structures, and platforms which, by bringing actors closer to each other, shorten the distance between fundamental and applied research, experimental development, and innovation activities, and thereby allow actors to combine their competences to address local societal challenges more effectively. Increased interaction and collaboration are needed also to promote increased alignment in the directional focus across actors. This means that the ability of actors to provide increasingly valuable contributions to other actors will increase over time, strengthening mutual understanding of shared challenges as well as the needs and opportunities for joint strategies, objectives, and activities. This will allow ecosystems to tackle increasingly difficult local societal challenges, often in collaboration with other ecosystems beyond their geographical borders.</p>	<p>FoSS Comments: Objectives of the ERA Hubs</p> <p><i>FoSS underlines that ERA Hubs should aim for the ambitious development of place-based research and innovation ecosystems with capabilities to address their relevant local challenges through shared holistic research and innovation policy and collaborative actions, which requires a European perspective of joint missions and common goals. However, this is only half of the story. Firstly, as the Briefing Note states a thematically non-specific focus is also not likely to be practical, as it may lead to too much fragmentation and hence, the most appropriate approach is to build the concept around societal challenges that are highly relevant to the local environment and society. These priorities will be identified by the smart specialisation strategy. Secondly, one of the four objectives of the new ERA is to translate R&I results into the economy. R&I policies should aim at boosting the resilience and competitiveness of economies and societies. This is where the role of smart specialisation becomes key. Identifying regional growth sectors over the longer term and implementing policies and targeted investment to support these sectors is a key goal of smart specialisation.</i></p> <p><i>The role of the ERA Hub would be, as stated above, to increase interaction and collaboration to promote increased alignment in the directional focus on ERA missions among actors which will in turn strengthen the mutual understanding of shared challenges as well as the needs and opportunities for joint strategies, objectives, and activities in and across the ecosystems. This collaboration, of course, should be focused outside the region to work with ERA Hubs sharing similar societal challenges and smart specialisation priorities.</i></p>
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<p>It is practical to make use of the many already existing local, national, and European collaborative structures and integrate the possible ERA Hubs concept into existing actors and local collaborative structures. These include initiatives and structures focusing on enhancing knowledge transfer and exploitation, as well as SME services and service networks such as the Enterprise Europe Network, which can offer a wider range of services complementing those provided by the potential new ERA Hubs, local scientific research actors to ensure continuous access to latest knowledge and skills, and local public sector and civil society actors and their efforts to address relevant local societal challenges.</p> <p>The added value the ERA Hubs initiative and concept can bring into the ERA landscape relates to promoting and facilitating a holistic transformation approach to research and innovation policy and implementation. Support would be directed to enhancing ambitious developments at research and innovation ecosystem level towards increased ability for addressing local societal challenges - beyond what can be achieved through more targeted initiatives (e.g., DIH/EDIH, clusters, EIT KICs) or regional development efforts geared towards industrial needs and economic impacts (e.g., ERDF, RIS3), thus creating an ERA oriented bridge between them.</p>	
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<p>The incentive structure</p> <p>While the targeted impacts should act as sufficient incentives, practice has shown that funding is clearly the most important incentive. European funding is very important particularly for less developed ecosystems, but even in their case sufficient commitment of national and regional/local funding is equally important in ensuring sustainable longer-term developments. The need to develop an incentive structure, which makes reaching higher levels of excellence, performance, and impacts attractive is to some extent inconsistent with the fact that the stronger an ecosystem is in these respects, the more likely it is to be able to access funds from various competitive sources, and thereby has less need for earmarked ERA Hub funding. The total funds – including European, national, and regional/local – made available as incentives in the ERA Hubs initiative must be sufficient to make the initiative attractive for ERA Hubs at all levels of maturity.</p> <p>Support from the initiative should be provided for a limited time to pursue specific improvements, i.e., based on an ambitious development strategy and action plan presented by the ERA Hubs. To ensure sufficient commitment of all relevant ecosystem actors, the strategy and action plan should be developed jointly, and it should secure sufficient own investment by means of commitments from local, regional and national policy makers (both human and financial resources). The strategies should clearly indicate how the ecosystem development integrates to and supports regional development, higher education, and other relevant ERA-related, European, national and regional policies and strategies.</p> <p>The execution and impact of the support should be monitored annually and continued only if ecosystem shows sufficient progress towards its development objectives (milestones). Failure to reach objectives and show progress could be penalised to further enhance the incentive structure (a negative incentive).</p> <p>Special attention should be put on defining the added value and benefits expected from the ERA Hub concept/initiative and label for all ecosystems and their actors. Otherwise, there is a real possibility that assigning the ERA Hub label to an entity managing an existing collaborative structure, the ERA Hub concept competes with the existing collaborative structure and whoever received more resources and stronger incentives, will win at the cost of the other(s). The result being that either the management of the ERA Hub takes away resources needed for managing the existing collaborative structures, or it does not receive enough resources since the other collaborative structures are prioritised.</p> <p>It is therefore important to ensure the added value of the ERA Hub concept and label as well as its complementarities to</p>	<p>FoSS Comments: The incentive structure</p> <p><i>Targeted funding is clearly an important incentive for all ERA Hubs whether developed or not. The danger of targeting less-developed ecosystems is that it provides a ‘negative’ label of assistance which then became in many less-developed regions a reliance on European cohesion funding. If Europe sees the advantage of all regions having an ERA Hub then European funding possibly via Horizon Europe funding should have an allocation to support capacity building and the development and running of all ERA Hubs and especially their European linkages. Nations, regions, cities and indeed institutions can of course top up this funding but the total funds – including European, national, and regional/local – made available as incentives in the ERA Hubs initiative must be sufficient to make the initiative attractive for ERA Hubs at all levels of maturity.</i></p> <p><i>Labeling can give an incentive to comply to specific criteria for the quality of the governance for ERA challenges, but the funding would address the provision of specific services that are required to allow participation in European initiatives such as the ERA Pact and more specific actions such as contributing to the European technology roadmaps. An ERA Hub is a standard for European integration of the ecosystem and an antenna for the European alignment of regional priorities to European strategic goals and among themselves.</i></p>
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<p>existing collaborative structures are clearly defined, real and well communicated. Communicating the added value of the ERA Hub concept and label is also important in view of managing expectations among Member states and particularly different groups of stakeholders.</p> <p>Cohesion and excellence can both be addressed simultaneously using targeted funding allocations to specific activities, specific developments, and making some funds available based on the labelling model (e.g. specific calls targeted to those with no label or a lower level label). Cohesion objectives can be addressed by targeting funding and support actions to especially less developed ecosystems. Another cohesion specific support measure is to enhance mutual learning. The challenge is to provide sufficient incentives for the stronger ecosystems to motivate them to contribute to mutual learning activities.</p>	
<p>Support measures</p> <p>It is important that the ERA Hubs initiative is a dynamic element of ERA, and if it is planned to be a permanent feature of ERA, continuously encourages R&I ecosystems to pursue increasingly ambitious developments. Given the significant differences in strengths and maturity between ecosystems, and the many different governance, structural, and collaborative models employed, the initiative should show high degrees of tailoring to allow each ecosystem to pursue its own ambitious development path appropriate in their socioeconomic and political context.</p> <p>The ERA Hubs initiative should therefore consist of a toolbox of a limited number of well-defined yet flexible support measures. Each support measure should be designed to address a specific barrier or barriers with possible alternative approaches or measures for different socio-economic and political contexts if needed. This would allow some levels of standardisation of the specific support measures, but at the same time high levels of tailoring through different combinations. Especially less developed ecosystems need to prioritise targeting specific barriers and the prioritisation needs to change over time, so it is important that the support measures can be adjusted accordingly.</p> <p>The support offered by the ERA Hubs initiative should consist of financial incentives allowing implementation of joint activities to improve the ecosystem and its performance, as well as access to external expertise. The ERA Hubs initiative could also include incentives for establishing strategic alliances between two or more ecosystems across regional and/or national borders, thereby establishing networks which could provide even stronger basis for mutual learning and developing complementarities and capitalising on synergies.</p>	<p>FoSS Comments: Management of the ERA Hubs</p> <p><i>With the start of the new programming period the articulation of regional, national and European funding for the joint societal challenges and local priorities, is a major issue for the efficiency and effectivity of the regional ecosystems in the multi-level European R&I system. ERA Hubs can become the channels through which place-based R&I systems are internally and externally connected with each other and European partnerships or alliances for these societal challenges.</i></p> <p><i>A particular role of ERA Hubs therefore is to provide local navigation support with mapping tools, based on shared information bases. The complexity of the support structures for innovation and transformation is an impediment to successful co-investment. Therefore, tailored mapping of investment trajectories can have a big impact on the responsiveness to these challenges. Such navigation capacity is a precondition to the orchestration of transformation processes.</i></p> <p><i>As each region is different, there can be no one-size-fits-all system of geographical size and governance. However, an ERA Hub requires a critical mass of triple helix players combined with proximity to encourage contacts and regional networks. Thus, it is clear that metropolitan areas</i></p>

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<p>External expertise support measures could focus especially on supporting analysis of barriers, needs, and opportunities for ecosystem developments, assisted peer learning, and implementation through longer-term mentoring-type engagements.</p> <p>Launch and management of the ERA Hubs initiative</p> <p>The differences between knowledge ecosystems and the tailored approach proposed for the ERA Hub’s initiative imply that decisions about who leads, manages, orchestrates, facilitates, or otherwise participates in the governance, coordination, and animation of ecosystems should be left to the ecosystem actors. As the concept is foreseen to be based on existing collaborative structures, ecosystem actors are likely to propose an arrangement based on assigning the appropriate roles to existing actors and intermediaries. What is important is not who the actors are, but what the minimum competence, resources, etc. required from them are. They also must have the necessary commitment and support of all ecosystem key actors, as well as regional and national policy makers.</p> <p>As for the geographical boundaries of the ERA Hubs, place-based research and innovation ecosystems typically build around geographical areas which house both strong academic research and strong industrial innovation activity. These are typically larger urban areas, which are also socio-economic centres of their respective regions. But it may be more viable to leave the choice of the geographical boundaries of the ERA Hub up to the actors involved.</p> <p>The main concern in launching a new initiative such as the ERA Hub concept and label is related to an appropriate scheduling and timing of the necessary activities. While the rationale clearly indicates the ambitious direction to which the ERA Hubs should develop, the starting point and thereby the more immediate development steps and related objectives will be ecosystem-specific. For example, the transformational challenge-oriented approach to the ERA Hub initiative is likely to present a particular challenge in ecosystems where local industry or local research or both are less oriented towards sciences and technologies relevant for addressing local societal challenges.</p> <p>Some of these scheduling challenges can be addressed by using transitional instruments. For example, short-term funding may be offered to ecosystems for the preparation of selected launch activities or more comprehensive action plans. Cross-ecosystem activities may also be implemented using temporary platforms while more permanent ones are being built. These activities may also be supported from temporary short-term funds.</p> <p>Since the proposed approach is to target ecosystems widely across ERA, the launching process should be carefully</p>	<p><i>and their hinterlands can develop an ERA Hub but more thought is required on how more rural and peripheral (both outer and inner) areas are integrated into ERA Hubs. Again, this is where some analysis of current smart specialisation strategies and their coverage can be useful. It might be also interesting to examine possible macro-region ERA Hubs (e.g. the Baltic, Adriatic and Alpine) to see if they would add value. FoSS therefore recommends that each regional smart specialisation strategy should examine how the ERA Hub could add value to their activities and check whether there is an exact or possible geographical overlap. This process would also encourage a more collaborative smart specialisation strategy possibly involving actors who may have been less committed to the initial strategy. This activity could start with the current review of smart specialisation strategies which has been stimulated by the increased focus on the Green Deal and digital transformation – thus shifting S3 to S4 by adding on a stronger element of sustainability. As sustainability is a horizontal concept underlying all smart specialisation strategies, the role of a wider access to regional knowledge and the development of regional innovation ecosystems becomes more important. As each region examines its possibly smart specialisation and ERA Hub configurations, it might be useful to aim for a linked set of conferences within Horizon Europe, Cohesion Policy, the European Week of Regions and Cities, etc. in a target year (e.g. 2023) in order to develop ideas and policies. It would also be useful to set up a pilot initiative involving a range of different territories to examine and share best practice regarding possible ERA Hub governance structures in order to be ready for a roll-out in the next European funding period 2028-2034.</i></p>
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<p>designed and implemented in well-defined steps. After the necessary stakeholder consultations and decisions to establish the ERA Hubs initiative, concept, and label, it should be launched as a pilot.</p> <p>The pilot stage could last e.g., two years after which there is an evaluation, followed by possible revisions to the initiative, concept, and label, and eventually a relaunch in full scale. The pilot stage could focus on encouraging ecosystems to prepare their development strategies and action plans, integration to regional development, establishing ecosystem level governance structures and processes, etc.</p> <p>It might also be viable to introduce the labelling model after the pilot stage and use the pilot stage to experiment with different labelling approaches or at least confirm what the most appropriate labelling approach and respective labelling level criteria could be.</p> <p>Member states and regions should be engaged in these activities throughout the launching period to ensure that the practical implementation of the initiative, concept, and label is relevant, effective, and efficient and thereby the ERA Hubs can secure the necessary support from national and regional/local policies, strategies, initiatives, and funds.</p> <p>The management of the ERA Hubs initiative, including the selection and labelling of the ERA Hubs, should be operated by an independent entity. Once the initiative is fully launched, the Member States and European representatives of stakeholders should be involved in the management of the initiative, but only at the strategic level.</p>	
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3. Conclusion

The key points to unravel regarding ERA Hubs is their role and their implementation. The Briefing Notes states:

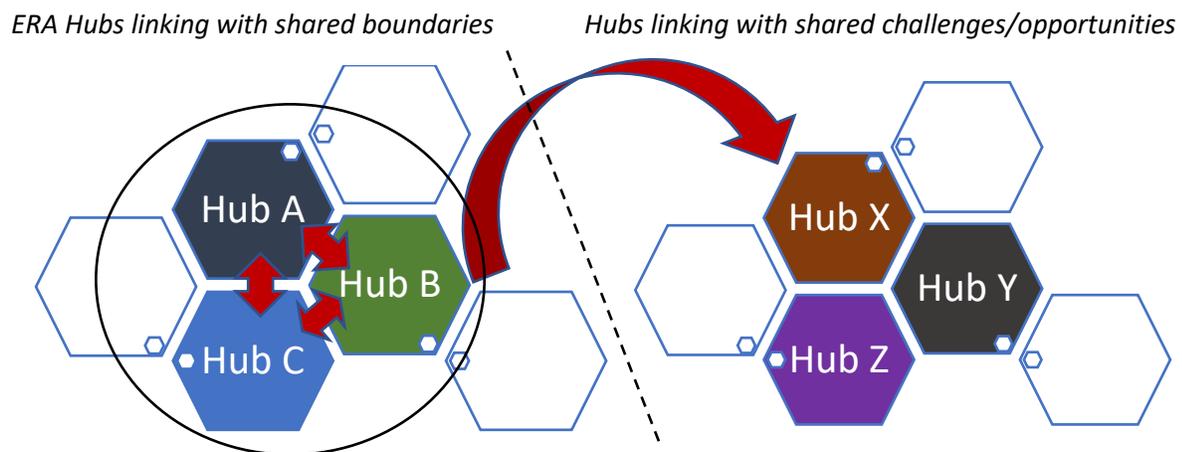
The individual ERA Hub would consist of a formalised governance arrangement that builds upon existing collaborative structures, networks and infrastructures in the local ecosystem while ensuring participation of all relevant actors across the research and innovation value chain, from fundamental research to innovation and including civil society actors and public agencies. These actors would have in common the directionality of their activities towards a specific local societal need.

This definition describes a possible ERA Hub but it does not outline in detail why ERA Hubs are needed other than the assumption that an ERA Hub can help create a strong knowledge ecosystem. The Briefing Note seems to be more interested in the circularity and strength of the knowledge system rather than its objectives. FoSS considers that a strong place-based knowledge system must deal with societal challenges and exploit opportunities and implement clear objectives through aligned strategies developed at a

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variety of governance levels – European , national, regional, and local. Each identified challenge can be then placed at the governance level best placed to add value from the local to the European or even global (e.g. in terms of climate change). This means that ERA Hubs should not just be seen as fragmented self-standing territorial ecosystems but linked together to develop aligned policies where similar challenges exist and also joining up to exploit opportunities. ERA Hubs would be expected to link where possible with neighbouring ERA Hubs exploiting proximity but also to link with ERA Hubs further afield linked to shared challenges or objectives.

Figure 1



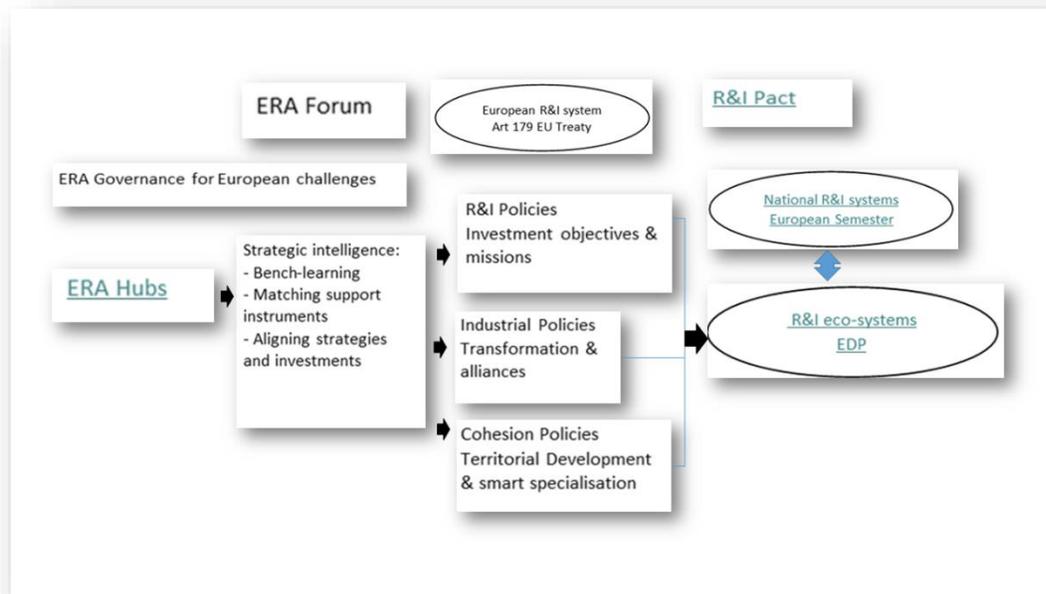
ERA Hubs should link (regional) R&I systems more closely to the ERA. The new ERA has a stronger remit towards supporting modern R&I ecosystems that will support the transition of the EU to a new sustainable growth model. The ERA Hubs framework therefore might evolve to be a support infrastructure to build those new strategic capacities in these ecosystems needed for the integration of breakthrough research, challenge-based innovation and industrial transition in transformation roadmaps in and across these ecosystems. This ambitious target can and should be supported through the identification of research and innovation priorities via the existing and developing smart specialisation strategies. It is, therefore, quite clear that any ERA Hub activity should gain from building upon smart specialisation strategies. These existing strategies identify national and regional priorities based on innovation and transformation challenges in perspective of the twin transition. They also take into account joint European missions as well as regional assets and competitiveness data aiming at new sustainable growth. These strategies are therefore fully in line with the ambitions of the new ERA.

It is important to stress here that ERA Hubs policies do not replace the smart specialisation strategies but frame them in a wider perspective of research and innovation activities and assets as well as linking to wider strategic innovation strategies of the EU. The smart specialisation lens on transformation not only

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emphasizes the balance of top-down directionality and bottom-up discovery, but also the importance of mapping and matching the search for complementarity. The ERA Hubs would have then a role of bringing together a wide range of actors going beyond the priorities of smart specialisation strategies for a broader view of regional assets. These assets may lack critical mass to be considered smart specialisation priorities but do contribute to the regional knowledge ecosystem. Thus, one of the roles of an ERA Hub should be to map research and innovation and industrial assets within the ERA Hub area which may be at the regional level but depending on the country geography cover the whole country, metropolitan regions or functional areas. The ERA Hub would also have a key role in linking key industrial sectors in a region and its potential links to higher education and research establishments both within and outside the region (via the connecting of ERA Hubs).¹³ This is where the role of applied science universities can play a key role being ‘close to market’ in terms of understanding the regional industrial context and an awareness of skill needs for the relevant sectors.

Figure 2 ERA Hubs – possible simplified schematic structure



¹³ The purpose of the European Research Area is to create an area where ‘researchers, scientific knowledge and technology circulate freely’ (Article 179 TFEU). See COM(2021) 407 final

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ERA Hubs should be viewed as an experimentalist approach for stronger multi-level governance of the European innovation system through joint intelligence for connectivity (targeted partnering) and synergies (tailored instrument mixes). In practical terms an ERA Hub would require a secretariat which could be hosted by any institution within the ERA Hub geography. As noted above, universities as key institutions would be likely candidates. As the ERA Hub would have a pivotal role in linking key industrial sectors in a region and its potential links to higher education and research establishments, both within and outside the region (via the connecting of ERA Hubs), applied science universities should play a key role. Applied science universities and professional higher education institutions are ‘close to market’ in terms of both understanding the regional industrial context and also being key actors in place-based innovation systems and smart specialisation strategies. They can play a specific role in devising incremental innovation and developing talent and skills for key sectors at the local level.

An ERA Hub would need strong convening powers and thus requires a small but high-level management team. We propose that ERA Hubs should follow European guidance to make sure that in each ERA Hub key positions such as a CEO and Communications Manager have minimum competences which are shared across all ERA Hubs which should lead to effective governance. Each ERA Hub should clearly identify positions and contact information to enable initial collaboration between ERA Hubs. This means that ERA Hubs would need to ensure a certain minimum quality of activity and services to obtain an **ERA Hub label**. Once the label is granted, European funding from the Horizon Europe budget could be allocated as an operating grant for salaries but it would be expected that institutions within the knowledge ecosystem would host the ERA Hub.

ERA Hubs would then play a clear role within the ERA framework by providing a top-down and bottom-up role. The ERA Hubs could be an effective way for the European Commission to circulate and discuss strategies with ERA Hubs bringing on the ground knowledge to the Commission. They would thus play a strong role in the proposed ERA Pact with specific involvement in the Pact objectives¹⁴ and specifically the free circulation of scientific knowledge and technology; the pursuit of excellence: through transparent research processes and methodologies and through research management which allows systematic re-use of previous results; value creation by increasing the impact of research and innovation by transforming Europe’s leadership in knowledge creation into relevant and sustainable products, services, processes and solutions that support the wellbeing of citizens, economic prosperity, open innovation; and coordination, coherence and commitment ensuring regional and national buy-in and commitment to the successful implementation of the ERA Priorities and ensuring complementarity with the EU framework programmes for research and innovation, thereby facilitating transnational cooperation.

It is assumed that ERA Hubs could be up and running in the next funding period 2028 onwards but the intervening period could be used to test different governance models and geographical configurations.

¹⁴ Proposal for a Council Recommendation on a Pact for Research and Innovation in Europe COM(2021) 407 final



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Such a pilot could be similar to the European Commission's DG for Regional and Urban Policy Pilot Action on Industrial Transition¹⁵ where a limited number of regions received advice and funding support to improve their broad-based innovation to address the challenges of industrial transition.

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¹⁵ https://ec.europa.eu/regional_policy/sources/tender/pdf/expression/industrial_transition_pilot_en.pdf and [PowerPoint Presentation \(europa.eu\)](#)