Open Innovation Strategy for Austria

Open Innovation
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Open Innovation Strategy for Austria

Goals,
Measures &
Methods

Printing Information

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National Open Innovation Strategy

Foreword

One of the great strengths of our country is the innovative capability of its people, companies, research institutes and universities. At a time of growing global challenges, this innovative strength is more important than ever. It is a well-known fact that problems cannot be solved with the same mind-set that created them. This is why it is important to find the courage to forge new paths in the search for new solutions and innovation models that can do justice to the developments of our time and in which we collaborate across the boundaries of disciplines, industries and institutions. The Open Innovation Strategy is a key aspect of this approach.

Austria is one of the very first countries in the world to have developed a national Open Innovation Strategy. It was very important to us to promote collaboration between industry, science, public administration and society even while the strategy was being drawn up. In an open participatory process, interested parties from a wide range of areas were therefore given the opportunity to actively shape the national Open Innovation Strategy, both within the framework of a broad-based workshop and in the course of an online consultation.

This open approach served us well, and this strategy paper is the result of the work put in by countless actors from business, science, public administration and many interested members of the general public. They all critically considered ways of creating a culture of open innovation, forming innovation networks, strengthening public involvement in research programmes, and questions of open access, fair compensation models for crowdwork and much more.

The result is an extensive catalogue of measures that we see as the beginning of our work and not the end. It is now up to us to bring the strategy to life – a task we will carry out with conviction and dedication. As we do so, we hope we will be able to rely on your enthusiastic support!

Dr. Harald Mahrer
State Secretary in the Federal Ministry of Science, Research and Economy

Mag. Jörg Leichtfried
Minister for Transport, Innovation and Technology

List of Abbreviations

AAL	Ambient Assisted Living
AIT	Austrian Institute of Technology
aws	Austria Wirtschaftsservice GmbH
BKA	Federal Chancellery
BMB	Federal Ministry of Education
BMI	Federal Ministry of the Interior
BMLFUW	Federal Ministry of Agriculture, Forestry, Environment and Water Management
BMVIT	Federal Ministry for Transport, Innovation and Technology
BMWFW	Federal Ministry of Science, Research and Economy
BOKU	University of Natural Resources and Life Sciences, Vienna
EIP	European Innovation Partnerships
EIT	European Institute of Innovation and Technology
EU	European Union
FFG	Austrian Research Promotion Agency
FTB	Austrian Research and Technology Report
FWF	Austrian Science Fund
GDP	Gross domestic product
GII	Global Innovation Index
ICT	Information and Communication Technology
IP	Intellectual property
IPAG	Intellectual Property Agreement Guide
IPR	Intellectual property rights
ISN	Innovation Service Network
IST Austria	Institute of Science and Technology Austria
IUS	Innovation Union Scoreboard
LOIS	Lab for Open Innovation in Science
NCP-IP	National Contact Point for IPR
OANA	Open Access Network Austria
ÖBB	Austrian Railways
ÖAW	Austrian Academy of Sciences
OECD	Organisation for Economic Co-operation and Development
OeAD	Austrian agency for international mobility and cooperation in education, science and research
OISPG	EU Open Innovation Strategy und Policy Group
ORF	Austrian Broadcasting Corporation
PPPI	Public Procurement Promoting Innovation
RRI	Responsible Research and Innovation
RTI Strategy	Strategy for Research, Technology and Innovation of the Austrian Federal Government
SME	Small and medium-sized enterprises
UNIKO	Universities Austria
VWA	Pre-scientific paper – compulsory part of the Austrian school-leaving examination, qualification for university entrance
ZAMG	Central Institute for Meteorology and Geodynamics

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Executive Summary

Executive Summary

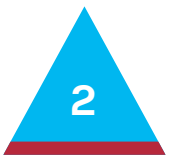
Digitalisation, globalisation and the dynamics and upheavals they generate in society, science and the economy present huge challenges to small, knowledge-intensive economies in particular. Austria has responded by becoming the first member state of the European Union to develop a comprehensive open innovation strategy. The aim of this strategy is to open up, expand and further develop the innovation system with the purpose of boosting its efficiency and output orientation, and improving the digital literacy of innovation actors: Not only do countries and regions vying for leadership in the global innovation race have to learn to operate in innovation environments characterised by diversity and constant change which are tightly linked in both real and virtual networks, they must also actively shape these environments.

The open innovation strategy consequently goes beyond addressing just the business sector, from established companies to start-ups: it pays special attention to the need for a focused expansion of knowledge and innovation processes in science and research, civil society and in politics and public administration as well. To master the increasingly complex challenges, the various stakeholders must engage in new forms of cooperation. In particular, this means integrating civil society players such as citizens, user crowds, user communities, [Footnote 1] associations, non-profit organisations as well as the creative industries, arts and cultural organisations into innovation processes. New actors from civil society help ensure that research and innovation processes address the right questions and contribute valuable ideas for solutions. Broadening the classic triple helix model (science and research, industry, public administration and politics) to a quadruple helix model (that includes civil society) is thus a logical step that can increase the innovative capability of the system and reduce the inherent risk of failure through the early involvement of society and the market.

In a one-year, open-ended process involving the public and stakeholders, a strategy was developed that presented a vision for 2025 and brought together existing challenges in three key areas of action. These were then used as the basis for developing 14 specific measures to establish open innovation as a guiding principle for action in the innovation system. Key differentiators at the international level were identified such as overcoming industry, disciplinary and organisational boundaries in a systematic and targeted manner, fostering new forms of interaction and partnerships between previously non-traditional knowledge senders and the possibility to generate new types of knowledge.

To increase Austria's innovative strength and hence competitiveness by means of open innovation, the following, mutually reinforcing areas of action must be addressed:

Development of a culture of open innovation and teaching open innovation skills among all age groups



Formation of heterogeneous open innovation networks and partnerships across disciplines, branches of industry and organisations

Mobilisation of resources and the creation of framework conditions for open innovation

Footnote 1

[1] Users are those who use new products, services or processes. They benefit directly from applications and therefore frequently have a strong interest in innovations and improvements. They may be members of the public or companies (who use innovations in-house) or state institutions. User communities are organised groups of users, who communicate and interact with one another regarding specific topics online. User crowds are less organised, more informal groups of users that come together for a topic or task (e.g. an online competition). ↖

Culture and Competencies

The aspect of cultural change is especially challenging, as sharing innovation knowledge and other resources but also collaboration across industries, disciplines and organisations is insufficiently rooted in the prevailing culture. The mind-set this requires should be formed and put to the test in regional open innovation and experimental spaces, which are easily and freely accessible to different segments of the population and their innovation activities. It is also essential to embed the principles of open innovation in kindergartens and schools, while at the same time offering training programmes and courses for adults in which specific open innovation skills and methodological knowledge are taught.

Networks and Cooperation

New intelligent approaches are also required to increase players' networking and cooperation abilities. In the future, a basic infrastructure which enables new innovation partnerships as well as access to non-traditional partners and supports the sharing of resources could be provided by a digital knowledge and technology map of Austria with a smart matchmaking function. A suitable, intensively supervised platform could also enable the use of open innovation methods to solve societal problems (social innovation). It is essential to systematically make open innovation methods and services accessible to small and medium-sized enterprises (SMEs), which according to the BMWFW's SME Report represent 99.6%, and thus the overwhelming majority, of companies. The combination of external and internal resources already makes it possible for large companies to adopt new approaches to innovation, but in the future could also enable SMEs to do so to a greater extent.

Resources and Framework Conditions

In terms of resources and framework conditions, the way in which intellectual property (IP) is handled plays an important role in open innovation. Focused IP management adapted to the specific research and innovation goals is a key prerequisite for the application of open innovation. In particular, it is necessary to raise actors' awareness and knowledge of the broad spectrum of disclosure, protection and exploitation strategies. In the case of publicly funded research projects where there is no sensitive data that has to be protected in the interests of commercialisation, greater use should be made of open access and open data strategies than in the past with a view to intensifying the transfer of knowledge and exploitation opportunities. The development of fair sharing and compensation models for crowdwork should be pushed forward. The increasing involvement of crowds in innovation processes and the resulting forms of decentralised, small-scale contributions raise the question as to how fair models of pecuniary and non-pecuniary compensation can be designed in future.

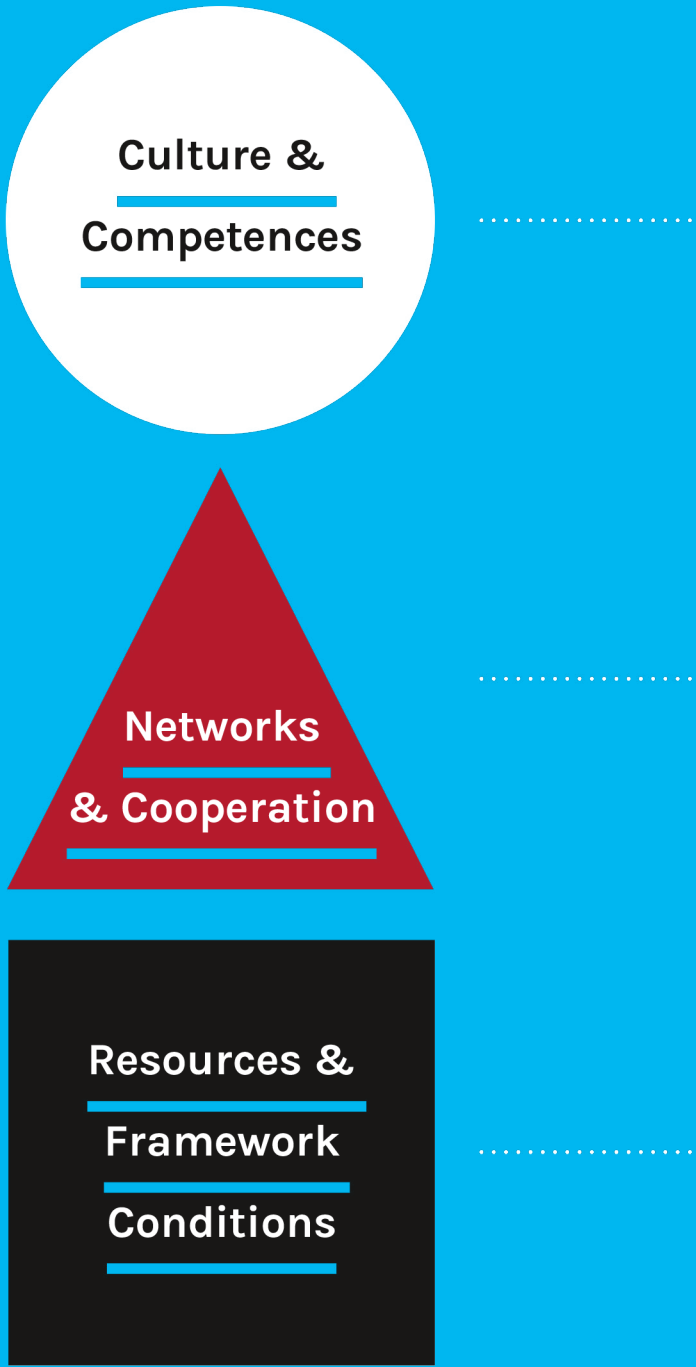
With an active open innovation policy and swift implementation of the open innovation strategy, Austria is well positioned to become an international role model for the design and steering of open innovation systems in the digital age and to gain an excellent reputation as a dynamic, open location for research and innovation, and as a "testbed" for new developments. As shown by an international analysis of innovation strategies carried out during the drafting of the Austrian open innovation strategy, the opening up of innovation systems is still in the

early stages compared to other countries. It will however be rapidly driven forward by new technologies, value patterns and not least of all by EU innovation policy. Austria's goal must therefore be to become a front-runner in this field. To this end, the implementation of the open innovation strategy will be tracked by a monitoring group.

Fig. 1
Action areas and measures of the
open innovation strategy derived therefrom

Based on the challenges, three action areas “Culture & Competences”, “Networks & Cooperation”, and “Resources and Framework Conditions” have been defined as described earlier. Fourteen measures were formulated for these, which can be assigned to one or several action areas.

Fig. 1
Action areas and measures of the open innovation strategy derived therefrom



1 ● ■ Create open innovation and experimental spaces

2 ● ▲ Embed open innovation elements at kindergartens and schools as well as in teacher training

3 ● ▲ Further develop public administration by means of open innovation and greater public involvement

4 ▲ Set up and operate an open innovation platform for social/societal innovation and as a contribution to overcoming global challenges

5 ▲ Set up and operate an innovation map including a matchmaking platform for innovation actors

6 ● Build up research competence for the application of open innovation in science

7 ■ Establish incentive mechanisms for research partnerships with non-traditional players in research funding to strengthen open innovation

8 ● ▲ ■ Increase involvement of users and members of the public in RTI funding programmes

9 ▲ ■ Develop fair sharing and compensation models for crowdwork

10 ● ▲ Further develop and provide open innovation methods and open innovation instruments specifically for small and medium-sized enterprises (SMEs)

11 ● Develop and implement co-creation and open innovation training programmes

12 ● ■ Embed principles of open data and open access in research

13 ■ Gear the IP and exploitation strategies of companies, universities, research institutions and intermediaries to open innovation in order to optimise innovation potential

14 ● Implement a comprehensive communication initiative about open innovation to raise awareness and create networks

Vision

2025

Vision 2025

In 2025 Austria is known internationally for its openness to innovation and the enthusiastic participation of the general public and institutions in open innovation activities. The country is valued and used by international companies, organisations and competence networks as an open location for research and as a “testbed” for new developments.

Open innovation is taken for granted: Openness to new knowledge, new products, methods and partnerships, a spirit of cooperation across disciplines, sectors of industry and geographical and social boundaries, a strong willingness to experiment and take risks, and a culture that views errors as learning opportunities are values that are put into practice and trained from early childhood in kindergartens and schools. They are firmly embedded in the organisational cultures of scientific institutions, companies, non-profit organisations and in public administration. The focus is on the resource of human knowledge.

Actors from civil society, science, the arts, business, public administration and government work together in vibrant real and virtual innovation networks to tackle social, environmental and economic problems and to jointly develop new and better solutions.

Irrespective of age, education or profession, members of the public in 2025 use the opportunity to participate in research and innovation projects, to even initiate them or to contribute questions for future projects. Children, young people and senior citizens in particular are actively involved in issues and projects with future relevance in order to bring to bear a strong interest in the future combined with a wealth of experience. For one thing is clear: A high level of diversity produces friction, but also new knowledge. The national research and innovation promotion system therefore actively supports this development.

In 2025 it is common scientific practice to explore research questions in interdisciplinary teams. The strategic integration of non-traditional partners from outside the science system is actively embraced, also in order to generate maximum benefit for society and the environment with the results. Innovation knowledge is understood by all actors to be a strategically important commodity that is deliberately exploited and is therefore made freely available to other actors as appropriate or, alternatively, protected with intellectual property rights.

The ability of Austrian companies to make targeted use of open innovation methods, to tap globally distributed knowledge and to use it for their own purposes, has become an important factor in Austria's economic success on international markets. Even small and medium-sized enterprises are very successful in identifying the future needs of the market early on and translating them into successful innovations in cooperation with external, often non-traditional actors (such as crowds, start-ups, creative industry). Optimal framework conditions which include state-of-the-art virtual and real infrastructures support interaction, co-creation and joint experiments.

Public administration uses active open innovation methods to further develop its processes, activities and citizens' services. Cooperation with civic society, innovative companies and non-profit organisations plays an important role here. In politics and public administration, innovation has been established as a theme that cuts across all areas of policymaking, and knowledge and innovation direct strategic location-policy choices.

In 2025 Austria's active open innovation policy is an international role model for the organisation and governance of open innovation systems in the digital age.

Objective and Process

Objective and Process

Austria plays a pioneering international role in open innovation

Austria is the first member state of the European Union to develop a comprehensive open innovation strategy. The reason for this is the huge challenge facing Austria as a small country with a knowledge and export-oriented economy: How can it continue to compete successfully in a global world?

The ever-increasing pace of technological progress, climate change, migration and demographic trends requires new problem-solving approaches that go beyond the classic innovation models. Citizens are no longer merely passive consumers of media content, public debate and new products but actively shape them. Entire sectors and business models are in a state of transition. Communication is constantly accelerating and takes place through many channels simultaneously. Knowledge is more widely dispersed than ever before – one only has to think of crowd intelligence. None of these developments is taking place on a linear path but exponentially, making it clear that in the long term innovation cycles will become dramatically shorter.

Austria's future competitiveness depends to a significant degree on whether and how it will succeed in finding answers to these challenges more swiftly and innovatively than other regions and countries. Only those who play an active part in shaping the future and who drive forward change themselves will benefit from these developments.

Open Innovation Strategy with Three Core Objectives

The Austrian Government's Open Innovation Strategy drawn up under the auspices of the Federal Ministry of Science, Research and Economy (BMWFW) and the Federal Ministry for Transport, Innovation and Technology (BMVIT) therefore pursues the following goals:

To open up, broaden and further develop the Austrian research and innovation system and in particular to develop new sources of innovation and to strengthen the networking capability of the participating actors and organisations.

To increase the involvement of citizens (end users) in generating innovation. This may also contribute to significantly raising the value attached to innovation, research and development by the public.

To increase the efficiency and orientation to results of the Austrian innovation system by, among other things, implementing innovative forms of knowledge transfer and incorporating to a greater extent the needs of society, business and public administration into the research and innovation system. [Footnote 2]

The Austrian Open Innovation Strategy thus fulfils key current strategic guidelines laid down in the Strategy for Research, Technology and Innovation (RTI Strategy) of the Austrian Federal Government. Together with the Start-up Country Strategy, the sixteen open access recommendations made by the Open Access Network Austria (OANA), [Footnote 3] the IP Strategy, the Digital Roadmap, the Guiding Concept for Public Procurement Promoting Innovation and the Creative Industries Strategy, [Footnote 4] it makes a coordinated contribution to supporting the transformation of society, science, business and public administration and to consolidating Austria's innovative strength and competitiveness.

Footnote 2

[2]According to estimates by Statistik Austria for 2015, Austria's expenditure on research and development as percentage of GDP is relatively high compared with other EU and OECD countries; the target for 2020 is 3.76%. However, the extent to which this investment translates into concrete innovation output and outcomes is too weak. This is confirmed by the EU Innovation Union Scoreboard (IUS) and the Global Innovation Index (GII). ↖

Footnote 3

[3]The OANA was set up as a joint activity in organisational terms under the umbrella of the FWF and UNIKO. www.oana.at. ↖

Footnote 4

[4]The IP Strategy, the Digital Roadmap and the Creative Industries Strategy are currently being prepared. ↖

Open Innovation Approaches in the Development Process of the Strategy

The Open Innovation Strategy was drawn up under the direction of the BMWFW and the BMVIT and with the technical support of winnovation consulting gmbh and Community-based Innovation Systems GmbH.

In addition to accompanying studies concerning specific aspects of open innovation, particular attention was given to intensive and long-term participation by members of the public and relevant stakeholder groups. The most important tool in this participation process was the online portal openinnovation.gv.at. From the middle until the end of 2015 stakeholders, interested members of the public and experts all had the opportunity to discuss their ideas for the Open Innovation Strategy and to publish existing Best Practice examples. Parallel to the digital options a stakeholder workshop was organised in January 2016 and also provided an opportunity to participate in the process of drawing up the strategy and contributing specific content. The fact that 470 people from science, business and government took part in this process demonstrates the high level of stakeholder interest in open innovation. This was followed in spring 2016 by an online consultation in which the general public was invited to submit comments on the key elements of the Open Innovation Strategy, Vision 2025 and the proposed measures, and to suggest changes. This formed the basis for the drafting of the final text of the strategy, and in July 2016 the Open Innovation Strategy was adopted by the Austrian Government.

Starting Position and Definitions

Starting Position and Definitions

A variety of methods, principles and terms are associated and used in connection with open innovation. The following paragraphs provide a brief overview. To provide a frame of reference for the Open Innovation Strategy, the role that open innovation currently plays in the international innovation policy environment and the specific starting position in Austria is also described.

Innovation no longer takes place behind closed doors but takes its own non-linear route away from well-trodden paths. It occurs between the real and virtual world, in different disciplines, sectors and between different actors. This applies just as much to scientific research as to the application-oriented development of new products, services and processes. How innovation comes about must therefore be rethought: The definition of open innovation coined by Henry Chesbrough, originally in a business context, [Footnote 5] serves as the starting point for further developing the broad definition upon which this strategy is based and which was especially welcomed in the online consultation. [Footnote 6]

Those countries and regions will be the winners in the global innovation race in which different actors experiment across the boundaries of their organisations, sectors and disciplines and generate innovation in heterogeneous networks and eco-systems. As different innovators, such as science, start-ups, technology firms and companies from the creative industries work together, new perspectives, starting points and end points for innovation will be systematically generated.

Open innovation is the targeted and systematic cutting-across of the boundaries between organisations, sectors and disciplines to generate new knowledge and to develop new products, services or processes. Online tools and platforms are frequently used, allowing knowledge senders to link up and collaborate.

In this context, users are playing an increasingly important role: Users, user crowds and user communities can offer up their needs, problems and solutions to the innovation processes of companies, science and the public sector, thus increasing the success rate of innovations. In this way, knowledge can penetrate an organisation, while at the same time society can actively shape innovation processes.

For the innovation system, open innovation means that civil society, science, industry and public administration (Quadruple Helix model) work together in dynamic, diverse innovation eco-systems both online and offline. Above all, the diversity of the actors increases the likelihood of generating really new knowledge and more radical innovation. This is contingent upon a culture of open innovation that also supports the useful and selective sharing of research results and data. Open innovation thus eliminates barriers in research, development and innovation and generates an innovation dynamic that cannot be achieved with traditional methods.

Fig. 2
Eco-system for open innovation – actor groups according to the Quadruple Helix model

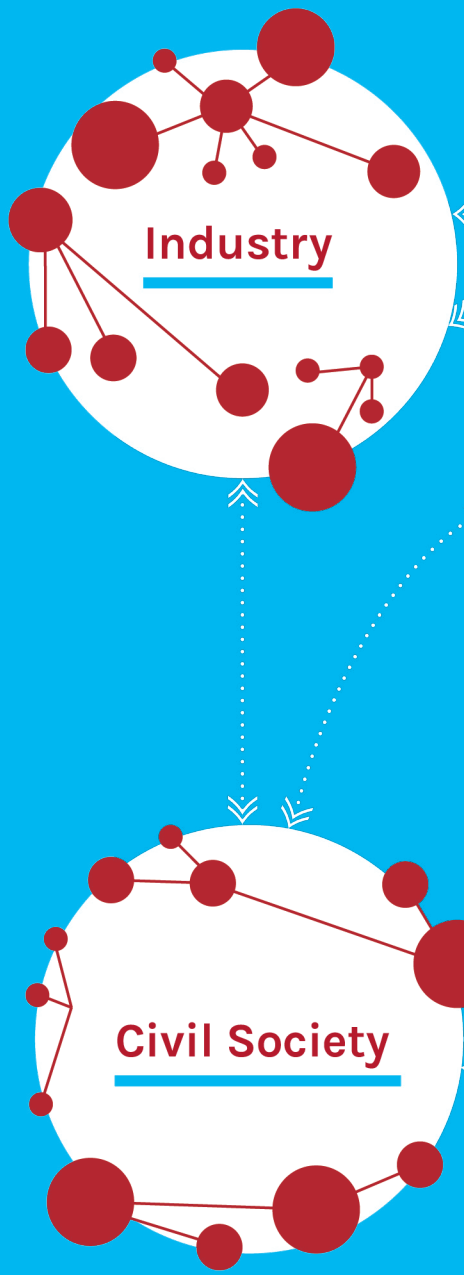
Footnote 5

[5] "Open innovation is the use of purposive inflows and outflows of knowl edge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. [This paradigm] assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology." Henry Chesbrough, Open Innovation: Researching a New Paradigm, 2006 ↖

Footnote 6

[6] www.openinnovation.gv.at ↖

Fig. 2
Eco-system for open innovation – actor groups according to the Quadruple Helix model



Targeted opening of corporate innovation processes for input and cooperation by/with external actors such as online crowds, communities, lead users and companies, e.g. start-ups across sectors and disciplines in order to reduce risks at an early stage and to increase innovation performance.

Open Inn

* targeted bridging of distance
* inclusion of non-traditional knowledge
* new forms of collaboration
* online and offline

Targeted opening of the innovation system for citizens, users, user crowds, user communities, non-profit organisations and other actors of civil society. These groups initiate their own innovation projects or are innovation partners of universities, industry, government and public administration.

Source: winnovation, 2016

Targeted opening of the scientific process of knowledge acquisition for collaboration with external actors (e.g. citizens) and across disciplines in order to increase the novelty of generated knowledge, to mobilise external resources and to generate public understanding for science.

ovation

senders

Targeted opening of innovation processes in government and public administration to citizens, businesses, science and civil society in order to develop new processes and services that are better adapted to user needs.

Overview of Open Innovation

Overview of Open Innovation

Open innovation is characterised by the targeted and strategic opening of innovation processes (in contrast to a general opening at no charge as the term might perhaps suggest). The essential feature is that non-traditional knowledge senders are also involved (e.g. by means of lead user methods) as distance and diversity increase the probability of generating genuinely innovative results. This not only requires far-reaching cultural change but also new online and offline organisational and governance models as well as the build-up of methodological open innovation competences among individual actors and also within networks and organisations. This challenge is illustrated in Table 1, compiled by Bror Salmelin (EU Commission, DG Connect).

Table 1
Characteristics of Closed Innovation and Open Innovation 1.0 and 2.0

Closed Innovation	Open Innovation 1.0	Open Innovation 2.0
Dependency on internal innovation	Independence from internal innovation	Interdependency between actors
Sub-contracting	Cross-licensing	Cross-fertilisation
Solo	Cluster	Eco-system
Linear	Linear with leaks	Mash-up
Linear with sub-contractors	Triple Helix	Quadruple Helix
Planning	Validation, pilots	Experimentation
Control	Management	Orchestration
Win-lose game	Win-win game	Win more-Win more
Box thinking	Out of the box	No boxes
Single entity	Single discipline	Interdisciplinary
Value chain	Value network	Value constellation

Source: modified from Salmelin, 2013

Open Innovation Works in Two Directions

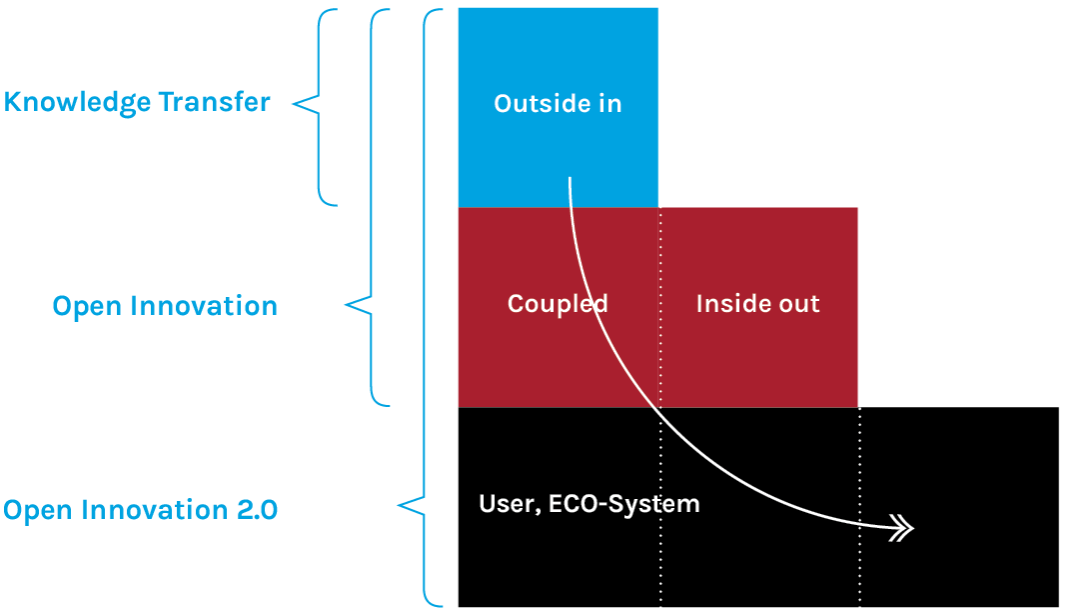
Open innovation can be used along the entire scientific knowledge acquisition and innovation process, from the definition of the research question to the implementation of innovation solutions. An organisation can absorb knowledge about needs and solutions by working together with external sources of knowledge and forming strategic partnerships (outside-in open innovation).

This is currently the dominant form of open innovation in the business and non-profit world, as is also evident from the list of methods in Table 2. However, one can also reverse the process and make innovation knowledge available to the outside world or to specific actors (e.g. through licences, open science, open data, open source). This is known as inside-out open innovation. A combination of both forms is called coupled open innovation. [Footnote 7] Fig. 3 shows the transformation from knowledge transfer to Open Innovation 2.0.

Footnote 7

[7] Enkel et al., 2009 ↖

Fig. 3
Transformation from Knowledge Transfer to Open Innovation 2.0



Source: European Commission, Open Innovation, Open Science, Open to the World – a vision for Europe, 2016, p. 13

Although the first studies on open innovation were carried out in the late 1980s, many of the terms associated with the phenomenon, generally of recent origin, are opaque and in some cases overlap. Table 2 lists the most important methods and terms.

Table 2
Key Open Innovation Methods and Terms

Methods and Principles	Explanation	Related or Similar Terms
Crowdsourcing	Collecting ideas, problems, feedback (e.g. within the framework of tests) and financing (crowdfunding) in a mass of knowledge senders – usually Internet-based – voluntary participation (self-selection)	– Crowd science (scientists working with mostly specific online crowds) – Citizen science (scientists collaborating in various forms with members of the public) – Idea sourcing (another term for the generation of ideas by external sources) – Citizen ideation/citizen sourcing (government and public administration and non-profit organisations working with members of the public)
Broadcast search and pyramiding search	Actively managed online and offline search processes to track down individuals with specific innovation knowledge	– Technology scouting – Innovation scouting
Lead user methods	Multi-stage approach developed at the MIT in which highly innovative, progressive users (comparable with searching for a needle in a haystack) are identified in order to develop (radical) innovations with them. Attention: Lead users are NOT key accounts of a company	– Lead experts (like lead users, endowed with precisely defined progressive features)
Analogous market effect	Use of analogies to transfer solutions between different industries or disciplines – usually through cooperation with specific knowledge senders	– Cross-industry (deliberate crossing of industry boundaries in the search for new solutions)

Source: winnovation, 2016

Methods and Principles	Explanation	Related or Similar Terms
Technical competence leveraging	Targeted search for new fields of application for existing technologies, especially in analogous markets (see the previous point)	
Open innovation networks and organisational structures	Networks of innovation actors intended for a longer-term existence – heterogeneous composition – concrete innovation activities depending on focus – initiated by members or institution(s)	– Open innovation communities – Open business models
Co-creation labs and workshops	Event formats or spaces which facilitate joint innovation or experiments across the boundaries of industries, disciplines and organisations – focused on the specific innovation goal – active moderation – idesign that stimulates interaction	– Open innovation workshops/labs – Hackathons
Open science [Footnote 8]	Open, collaborative working methods of scientists and researchers, cooperation with stakeholders and civil society, exchange, sharing resources and dissemination of results within the scientific community. Open science increases the accessibility of scientific knowledge and thus promotes the use of open innovation practices. The disclosure of knowledge is not however in every case a mandatory prerequisite for open science	Open science encompasses: – Open methodology (disclosure of methods and processes) – Open source (development and use of open-source technologies) – Open research data (providing FAIR access to research data) – Open access (open publication, making results accessible, translation) – Open peer review (quality assurance by means of open peer review) incl. development of new incentive systems – Open educational resources (freely accessible material in education and teaching)

Footnote 8

[8] See in particular "Council Conclusions on the Transition Towards an Open Science System" (27 May 2016) and "Amsterdam Call for Action on Open Science" ↖

Advantages of Systematically Opening the Innovation System

Small economies in which knowledge and innovation form the basis of their prosperity benefit from skilful, systematic opening of the innovation system and the development of heterogeneous sources of knowledge. Depending on the context and the objective, the use of open innovation methods and principles delivers the following benefits:

More innovative results are achieved in comparison with closed innovation
(› greater degree of innovation or more radical innovation).

Problems in industry, society and public administration can be solved more effectively and individually
(› new solutions have a better “fit”).

New, previously hidden problems and thus starting points for innovation are made visible
(› more needs-oriented “programming” of innovation activities and agenda setting).

The market and society are more accepting of new solutions
(› lower risk of failure, greater innovation friendliness).

In many cases innovations are developed faster and in most cases also at a lower cost
(› greater transfer of knowledge, increased efficiency of innovation processes).

The ability of companies to build new value creation networks and sectors is increased
(› strengthening of resilience in transition phases).

The accessibility and thus the diversity of innovation systems is increased
(› greater participation of women and minorities e.g. in crowdsourcing processes).

However, open innovation should not be misunderstood as the outsourcing of research and development activities. On the contrary, it means that the innovation process is more complex. Only organisations with sufficient internal knowledge to seek, select and exploit the relevant innovation knowledge (absorptive capacity) are successful with open innovation. This means that organisations must intensively engage with open innovation. In-house innovation and research units are therefore extremely important for maintaining innovative capability in the digital age. However, they are challenged to develop and to integrate search, collaboration, communication and network competences.

National and International Status Quo

National and International Status Quo

Not only organisations, but also nation states recognise and are increasingly utilising the potential of open innovation methods for the above reasons so as to strengthen their own innovative capabilities and competitiveness on global markets.

In an international comparison the European Union is a pioneer in the implementation of open innovation in innovation policy. Key EU programmes (including Horizon 2020, in particular the EIP - European Innovation Partnerships) as well as the general principle of anchoring Responsible Research and Innovation (RRI) more strongly in Europe, provide a supporting framework for the increased application of open innovation principles and methods. Since 2008 the EU's Open Innovation Strategy and Policy Group (OISPG) has published 16 reports [Footnote 9] in respect of the application of open innovation and the framework conditions that are necessary for this. In addition, discussions are currently taking place about the European Innovation Council and open science and, in particular, about the Open Science Cloud. [Footnote 10]

Other international efforts also underline the fact that, although the development is still in its infancy, the first countries are beginning to recognise the huge importance of opening up innovation systems. This can be seen in the area of politics and public administration, where 69 countries [Footnote 11] have already joined the global Open Government Partnership initiative. [Footnote 12]

Footnote 9

[9] Status: April 2016 ↖

Footnote 10

[10] See in particular "Council Conclusions on the Transition Towards an Open Science System" (27 May 2016) and the "Amsterdam Call for Action on Open Science" ↖

Footnote 11

[11] Status: April 2016 ↖

Footnote 12

[12] www.opengovpartnership.org/countries – Since 2011 the Open Government Partnership has aimed to support national governments who are committed to fostering a culture of open government and introducing participatory decision-making processes going above and beyond innovation. ↖

Carlos Moedas, EU Commissioner for Research, Science and Innovation spells out the importance of open innovation in the EU with the following words:

> **We need open innovation to capitalise on the results of European research and innovation. This means creating the right ecosystems, increasing investment, and bringing more companies and regions into the knowledge economy. I would like to go further and faster towards open innovation.**

European Commission, Open Innovation, Open Science, Open to the World – a vision for Europe, 2016, p. 86

Open Innovation in National Innovation Strategies – a Systematic Data Survey

The comprehensive and targeted opening-up of national innovation systems is however a relatively new development. Internationally, it is still at a very early stage and some countries are more advanced than others. This is the conclusion of a qualitative study and analysis of secondary data carried out during drafting of the strategy in order to obtain an overview of the international status quo regarding the anchoring of open innovation in national innovation strategies (the practical implementation of open innovation in the individual countries was not covered by this study). For the purposes of this study key innovation policy strategy documents and programmes [Footnote 13] from a total of 17 countries (including Austria) were examined with regard to two aspects:

The extent to which provision is made for open innovation:

high
= own national open innovation strategy

medium
= open innovation methods and principles are explicitly referenced in key national innovation or comparable strategies

low
= open innovation methods and principles are not explicitly referenced in key national innovation or comparable strategies

The intensity of efforts to establish a Quadruple Helix model (inclusion of civil society as a key innovation actor):

high
= efforts are clearly visible

medium
= efforts are visible

low
= efforts are barely visible or not evident

EU member states from the four categories of the Innovation Union Scoreboard 2015 [Footnote 14] were selected as examples to provide an overview of the status quo:

Innovation leaders:
Sweden, Denmark, Germany, Finland

Innovation followers:
Netherlands, United Kingdom, Austria, Slovenia

Moderate innovators:
Spain, Hungary, Slovakia, Croatia, Estonia

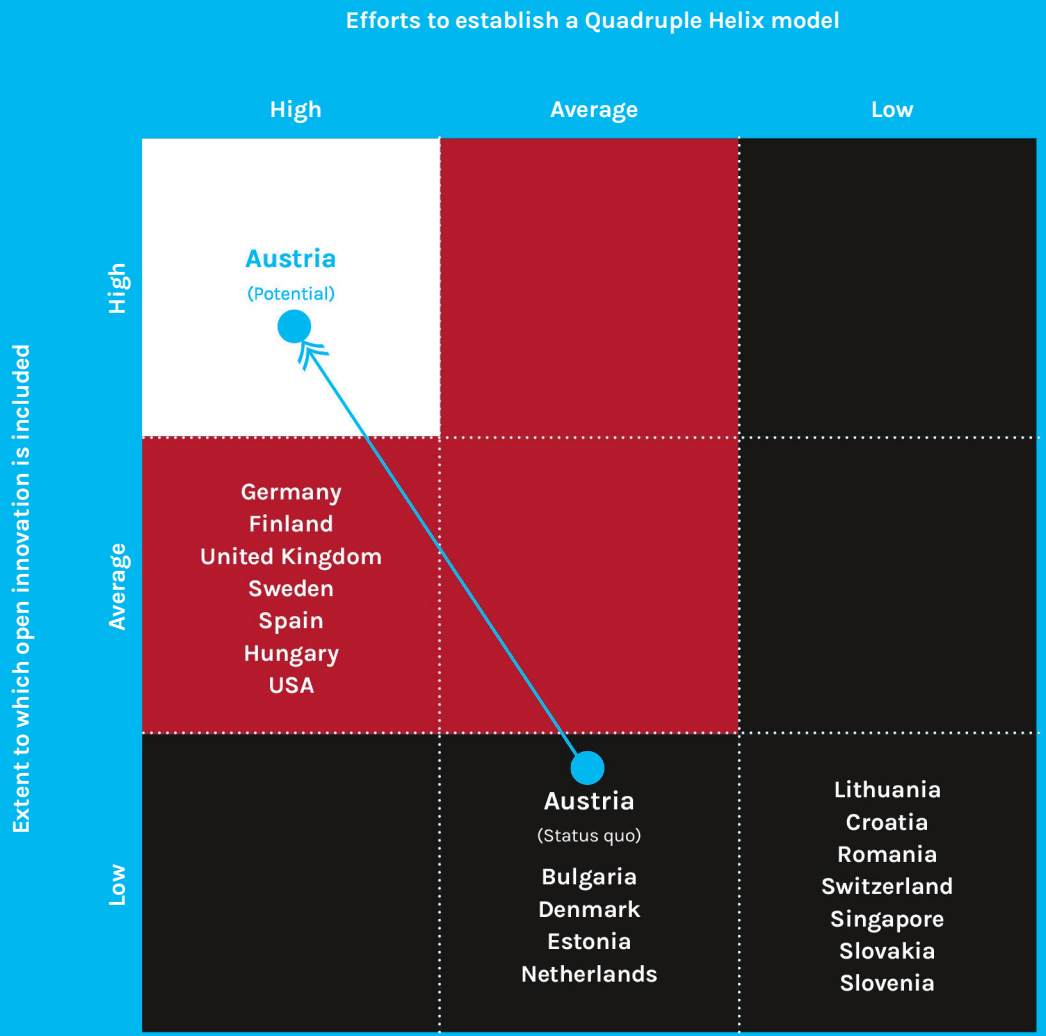
Modest innovators:
Latvia, Bulgaria, Romania

All European countries from among the innovation leaders were included in the study, as, due to the performance of the respective innovation systems, benchmarking with these countries was considered useful. For the same reason, the selection was broadened to include those countries outside the EU who rank among the top 10 most innovative nations according to the Global Innovation Index 2015: [Footnote 15] Switzerland, USA and Singapore.

The Results in an International Comparison

This shows the following picture: [Footnote 16]

Fig. 4
International Comparison of the Anchoring of Open Innovation in National Innovation Strategies



There is not a single country at present that has a national open innovation strategy. This also includes the innovation leaders in the EU, which is why not a single one of them appears in the top row of Fig. 2. By adopting a comprehensive open innovation strategy that involves all four groups of actors of the Quadruple Helix model, Austria can indeed assume a unique position and play an international pioneering role.

However, in several countries a trend towards embedding open innovation in strategies and also to involve civil society can be observed. This is the case in Germany, Finland, the United Kingdom, Sweden, Spain, Hungary and the USA, where open innovation methods and principles are referenced in key innovation policy strategy documents and where there is at the same time a relatively strong tendency to move towards a Quadruple Helix model. Thus "transparency and participation" are two key pillars of the German High-Tech Strategy (2014), with the USA also stressing in its latest Innovation Strategy (Oct. 2015) the orientation towards the principles of open innovation in accordance with the open government focus already initiated in 2012. The Hungarian innovation strategy (2013) likewise describes involving users through open innovation as one instrument to intensify the exchange of knowledge in the country. The Spanish innovation strategy also expresses a will to strive towards open innovation; it was also possible to submit comments on the draft strategy in an open consultation process.

The current innovation strategies of Austria, [Footnote 17] Bulgaria, Denmark, Estonia and the Netherlands make no explicit mention of open innovation, but there are indications of efforts to involve civil society here. The Estonian strategy for example points to the need to improve public participation, although no strategic approaches are put forward as to how this could be achieved.

In the third group of countries, which includes Lithuania, Croatia, Romania, Switzerland, Singapore, Slovakia and Slovenia, current relevant strategy documents make no mention of open innovation, nor can any clear statements be found which permit the conclusion that development towards a Quadruple Helix model is planned. Especially surprising in this context is the outcome of analysis of the innovation strategies of Switzerland (Number 1 in Global Innovation Index 2015) and Singapore (Number 7): Although Switzerland stresses the importance of cooperating and networking with other countries, it makes no mention of civil society involvement. Singapore likewise focuses solely on the transfer of knowledge between industry and science.

Footnote 13

[13] Research was restricted to data that was available in German and English. The analysis is based upon an independent study of secondary data and the results of a report by selected authorities representing Austria both inside and outside the EU on current developments in an open innovation context made to the BMEIA in March/April. ↖

Footnote 14

[14] ec.europa.eu/growth/industry/innovation/facts-figures/score-boards/files/ius-2015_en.pdf. Although the Innovation Union Scoreboard does not currently cover open innovation aspects, it does provide information about the general performance of the national innovation systems of member states. ↖

Footnote 15

[15] www.globalinnovationindex.org/userfiles/file/reportpdf/GII-2015-v5.pdf ↖

Footnote 16

[16] The countries are listed in alphabetical order. ↖

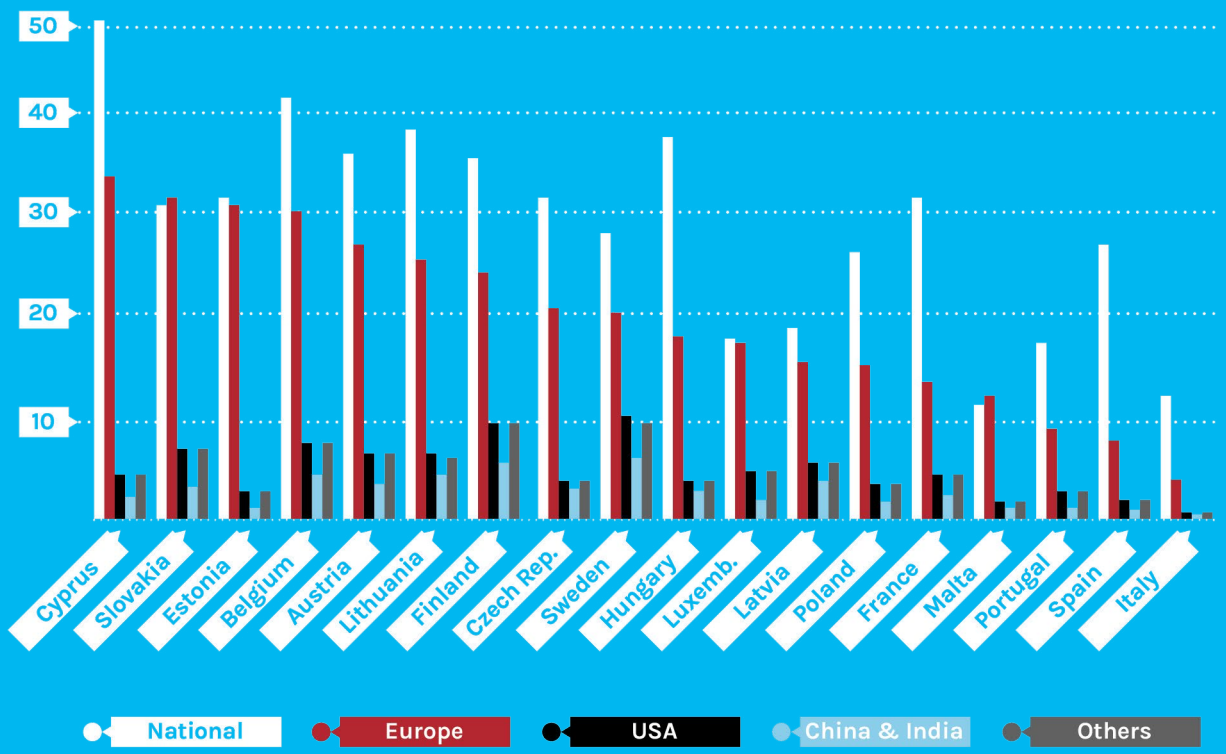
Footnote 17

[17] RTI Strategy, 2011 ↖

Innovation activities in Austria generally only with traditional innovation partners

Some innovative companies in Europe have already recognised the importance of collaborating with external innovation partners. Fig. 5 shows that the propensity to cooperate varies in individual European countries. There is however a clear trend towards national and European innovation partnerships.

Fig. 5
Percentage Shares of Innovative Firms that Collaborate for Innovation - Broken Down by Country of Partner



Source: European Commission, Science, Research and Innovation performance of the EU, 2016, p. 212

More recent data proves that innovation partnerships are increasingly gaining importance in Austria. In the last two decades the number of Austrian firms with innovation partnerships has more than doubled, rising to 22% of all companies or 51% of all companies engaged in innovation. Collaborating for innovation is especially pronounced between industry and science, in particular with the universities: Austrian firms work twice as frequently (22%) with universities than the EU average (11%). Footnote 18

Apart from funding programmes focusing on industry-university collaboration (e.g. Comet, CD-Laboratories or Research Studios) there also exist a number of programmes for network building among heterogeneous actors (e.g. COIN, Creative Industries Voucher) that are considered internationally as being progressive. Nevertheless, Austria has a great deal of catching up to do in terms of systematically involving civil society in innovation processes. Until now this has mostly been carried out by large companies and non-profit organisations, for instance, within the framework of crowdsourcing projects. To date funding programmes have offered almost no incentives for individual users (end consumers) or user organisations (such as associations) to engage in innovation activities or for companies or science to systematically involve citizens, users, user crowds and user communities in research and innovation consortia.

The concept of open innovation has not yet been systematically embedded in the RTI policy of the Austrian Government, although this concept is already implied within the strategies of individual provinces. Several programmes run by national funding agencies also provide for open innovation approaches.

All in all, initial tentative advances towards open innovation are being made in Austria and should be broadened and reinforced with the help of the strategy process set out here. They include firmly embedding open innovation at the strategic level, a political commitment to implementation and the creation of framework conditions that systematically support the opening of organisational boundaries and networking of heterogeneous innovation actors.

Footnote 18

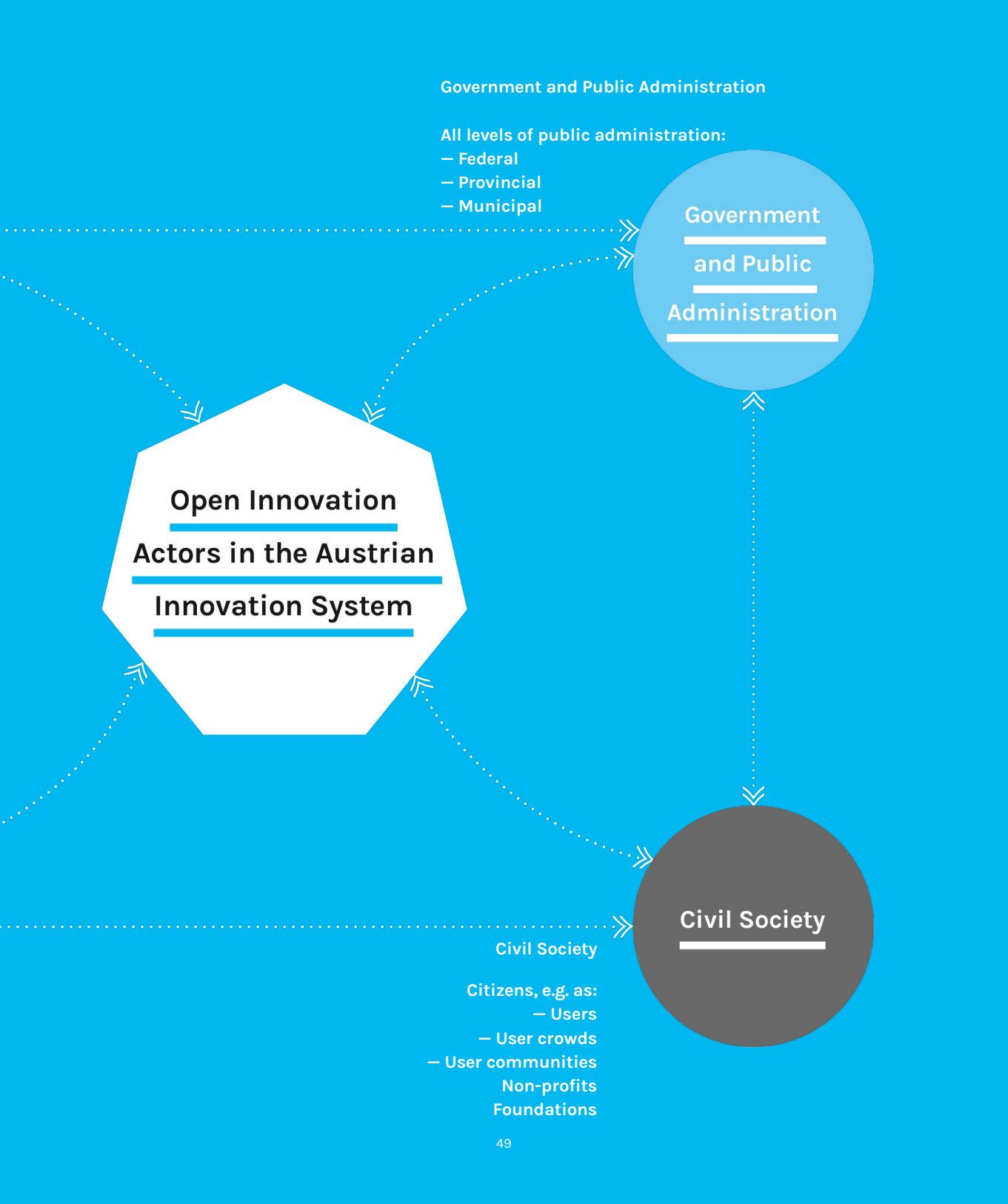
[18] Community Innovation Survey (Statistik Österreich on behalf of the BMWFW 2014, Leitner et al., 2015) ↖

Actors, Challenges & Action Areas

Actors, Challenges & Action Areas

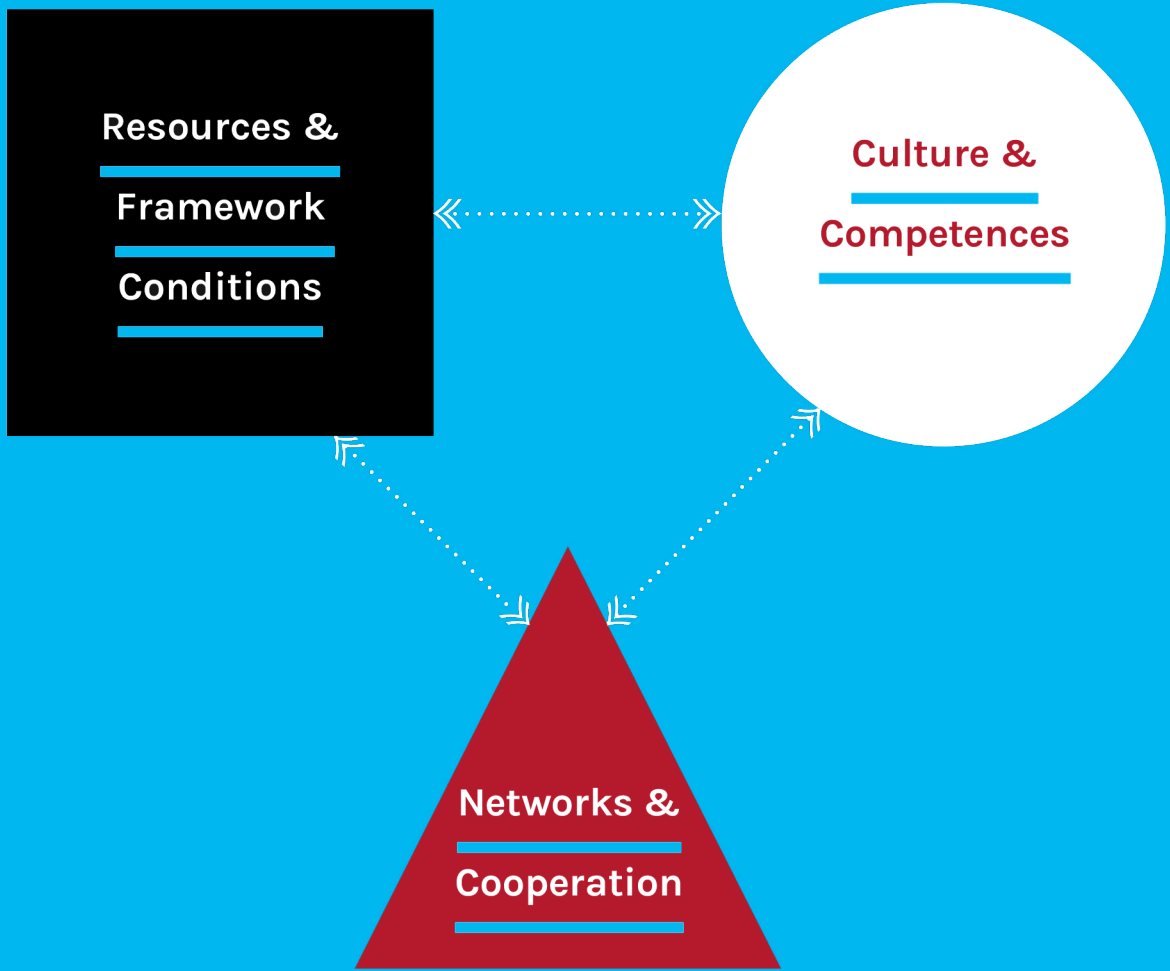
The cornerstones of the Austrian innovation system are its actors: industry, science, civil society and public administration. Within each of these groups there are in turn a multitude of different actors, with examples being shown in the following figure

Fig. 6
Open innovation actors and their networking potential in the Austrian innovation system


Government and Public Administration
All levels of public administration:
— Federal
— Provincial
— Municipal
Government and Public Administration
Open Innovation Actors in the Austrian Innovation System
Civil Society
Civil Society
Citizens, e.g. as:
— Users
— User crowds
— User communities
Non-profits
Foundations

The analysis of the Austrian innovation system results in key challenges in three action areas. They are not to be seen in isolation from one another, but rather the three areas are characterised by complementary interdependence.

Fig. 7
Action Areas for the National Open Innovation Strategy



Culture & Competences

Challenges

Civil Society, Industry, Science, Government and Public Administration …

… are still not sufficiently aware of the importance and diversity of open innovation

… are not yet open enough to innovation projects and experiments with an uncertain outcome (e.g. error culture, failure culture)

… have too little knowledge and expertise about open innovation methods, principles and areas of application

— Industry, science government and public administration still do not give sufficient consideration to civil society as a key innovation actor
— SMEs and public administration in particular still lack knowledge and expertise about the application of open innovation

… are for a variety of reasons in some cases sceptical about collaboration with non-traditional innovation actors:

1. Industry, science, government and public administration etc. fear a loss of control and a change in their own traditional role
2. Many actors do not yet have sufficient knowledge and expertise regarding the utilisation of intellectual property rights in open innovation projects
3. Many actors find themselves facing conflicts of interest, e.g. contradiction between disclosure and secrecy

Action Area

Creation of a culture of open innovation and teaching of open innovation skills to children and adults

In all the German-speaking countries innovation is still viewed too heavily in terms of technology, often being regarded as an isolated activity pursued by “a small number”. Innovation per se is held in high regard but frequently also carries a stigma of potential (“risk of”) failure. There is a cultural fear of experiments and projects with an uncertain outcome. The fear of losing control or of giving away possible competitive advantages leads to a situation in which organisations do not or too rarely enter into innovation partnerships; as a result, new scientific knowledge, ideas and concepts for implementation cannot be exploited successfully.

To tap the full potential of innovation, a cultural shift is needed in society, moving towards a greater openness to innovation activities as such the sharing of knowledge, a greater willingness to engage in experiments with uncertain outcomes and an acceptance of new, also non-traditional partnerships.

A key factor here is the development across all generations and groups of actors of the attitudes, knowledge and competences required for open innovation methods, principles and areas of application. Open innovation awareness and expertise, open up new and previously untapped opportunities for civil society, science, industry and government to generate innovation. At the same time improved open innovation competences reduce existing uncertainties and fears of potential users, and the fear of failure also decreases.

Networks and Cooperation

Challenges

Civil Society, Industry, Science and Government and Public Administration ...

... do not yet possess sufficient tools and mechanisms for identifying non-traditional innovation actors and forming partnerships for innovation

... do not yet have a clear overview and sufficient knowledge of innovation activities and the competences that are available externally

... are insufficiently networked with non-traditional actors within their own area

... do not yet exchange sufficient knowledge with other innovation actors; consequently there is insufficient learning from one another

... still have too few models and role models available to show them how collaboration can be organised:

— Industry, science and government and public administration in too many cases know too little about the possibilities of collaborating with civil society
— Many actors have a lack of knowledge and experience in overcoming geographical, cultural, social and economic boundaries

Action Area

Formation of heterogeneous open innovation networks and partnerships across disciplines, branches of industry and organisations

Identifying the right partners and external expertise is often a big challenge for innovation actors in Austria. There is still a lack of knowledge within organisations and institutions as to how partnerships for innovation can be initiated and established with non-traditional actors. As a result, collaboration for innovation in Austria frequently takes place in the usual manner between the usual actors. This means that not all relevant perspectives are given sufficient consideration. On the other hand, studies demonstrate that crossing boundaries in industry and disciplines significantly increases the novelty level of innovations. For these boundaries to be crossed requires expertise, tools and mechanisms which enable and encourage the formation of heterogeneous networks.

Collaboration in new types of innovation partnerships along the entire innovation process must be given targeted support. Instruments and knowledge about how and where non-traditional partners can be identified play an important role when it comes to establishing new forms of collaboration

Resources and Framework Conditions

Challenges

Civil Society, Industry, Science, Government and Public Administration ...

... have not yet provided sufficient incentives and support for implementing open innovation initiatives and projects

— In particular there is still a lack of incentives and opportunities for civil society (private users) to engage in innovation activities
— In industry, science and public administration likewise, there has still been insufficient impetus to involve users, user crowds and user communities or to systematically apply their knowledge in innovation projects
— There are still not enough freely accessible spaces (real and virtual) for experimental, interdisciplinary and cross-sectoral collaboration between different innovation actors

For civil society, industry and science ...

... there is a lack of framework conditions that provide for innovation projects and experiments with an uncertain outcome

... open, barrier-free, low-threshold access to digital and non-digital technologies (laboratories, test methods, IT hardware and software, etc.) is still inadequate for acquiring new knowledge and initiating and carrying out innovation projects

... incentives for private-sector investments in open innovation initiatives and projects, e.g. in the form of tax relief, are only partially available

... there is still a lack of incentives and support for disclosure and for sharing data and information (e.g. the usual practices in the use of IPR are not always compatible with open innovation)

Action Area

Mobilisation of resources and the creation of framework conditions for open innovation

Monetary resources for open innovation projects and activities as well as for innovation projects with an uncertain outcome (e.g. state funding) are rarely, if at all, available to some of the actors. The lack of availability of accessible premises and technical equipment in many cases presents challenges for potential innovation actors. Promoting innovation means providing spaces and resources for experimenting, for exchanging knowledge and for innovation. Additional resources should therefore be provided and framework conditions created that enable and permit targeted openness along the innovation process. Incentives should also be created to promote the publication of knowledge that is relevant for innovation and to make it available to external users. This also applies with regard to stimulating innovation by means of public-sector procurement.

Measures

Measures

Based on the challenges, three action areas “Culture & Competences”, “Networks & Cooperation” and “Resources & Framework Conditions” were defined as described above. Fourteen measures were formulated for these and they are set out below.

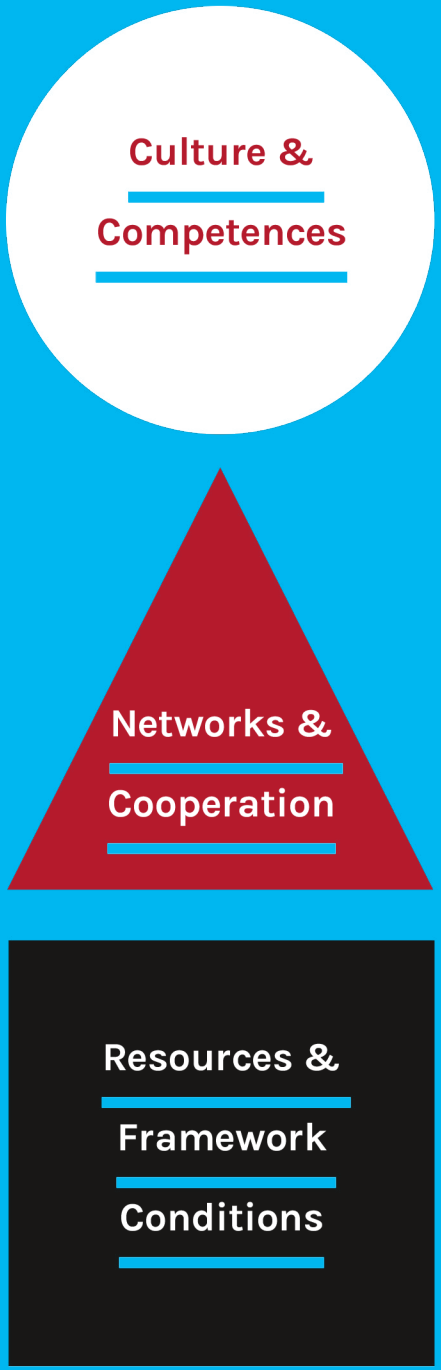


Fig. 8
Action areas and measures of the
Open Innovation Strategy derived therefrom

1 ● ■ Create open innovation and experimental spaces

2 ● ▲ Embed open innovation elements at kindergartens and schools as well as in teacher training

3 ● ▲ Further develop public administration by means of open innovation and greater public involvement

4 ▲ Set up and operate an open innovation platform for social/societal innovation and as a contribution to overcoming global challenges

5 ▲ Set up and operate an innovation map including a matchmaking platform for innovation actors

6 ● Build up research competence for the application of open innovation in science

7 ■ Establish incentive mechanisms for research partnerships with non-traditional players in research funding to strengthen open innovation

8 ● ▲ ■ Increase involvement of users and members of the public in RTI funding programmes

9 ▲ ■ Develop fair sharing and compensation models for crowdwork

10 ● ▲ Further develop and provide open innovation methods and open innovation instruments specifically for small and medium-sized enterprises (SMEs)

11 ● Develop and implement co-creation and open innovation training programmes

12 ● ■ Embed principles of open data and open access in research

13 ■ Gear the IP and exploitation strategies of companies, universities, research institutions and intermediaries to open innovation in order to optimise innovation potential

14 ● ▲ ■ Implement a comprehensive communication initiative about open innovation to raise awareness and create networks

Measure 1:

Building open innovation and experimental spaces

Even in a digital world innovation still requires direct interaction and communication between actors: In open innovation and experimental spaces that are accessible for different groups of citizens and stakeholders (e.g. children, adolescents, students, researchers, senior citizens and entrepreneurs) new questions are identified as the starting point for innovation projects and new solutions then developed. Openness, diversity and the targeted inclusion of non-traditional actors, i.e. non-traditional knowledge senders are key factors. A playful, experimental and very often artisan approach is a top priority so ideas and designs can be swiftly translated into prototypes using digital and non-digital technologies and tested, and new skills acquired. Innovation and experimental spaces connect "old" and "new" actors and institutions. Interested people learn to experiment, construct and research. This leads to the emergence of informal places of learning.

However, innovation and experimental spaces also offer room for discussion and concept development. A crucial point is that, in addition to a central flagship innovation and experimental space in Vienna, a network of innovation and experimental spaces, both stationary and mobile (e.g. pop-up science centres), is also built up in the provinces and regions. This network should ensure a high level of accessibility to innovation and research activities for local communities, including those outside urban areas. Innovation and experimental spaces can be modelled on familiar international formats (e.g. FabLabs, MakerLabs, Hack your City, Citizen Science Labs), either acting independently or docking onto existing infrastructures. They are strongly driven by bottom-up processes both in terms of their topics and target groups. Depending on the particular needs of the regional stakeholders, there could be, for example, a focus on specific target groups such as civil society or SMEs including start-ups.

Challenges and Action Areas:

● Culture & Competences
■ Resources & Framework Conditions

Examples of ideas and initiatives to implement Measure 1:

○

In Austria there are already a number of open innovation and experimental spaces belonging to non-profit and public-sector organisations and firms that are accessible to other interested parties. Examples include OTELO, various FabLabs and the Practical Robotics Institute Austria (pria.

at). Existing and new innovation and experimental spaces should network more intensively in future. Accessibility and the terms and conditions of use for citizens should be rendered transparent here.

○

The BMVIT utilises urban mobility labs to support experimental environments in which research institutes, companies and citizens can jointly research and test new mobility solutions (urbanmobilitylabs.at). In exploratory projects eight concepts were examined for their feasibility (seesmart-mobility.at/initiativen/urban-mobilitylabs/sondierungsprojekte-20152016/), and a joint learning process initiated. One example is the exploratory project CHANGE-Lab of the Austrian Institute of Technology (AIT). In the next few years the implementation and operation of several urban mobility labs as "innovation eco-systems" and anchor points for RTI in the field of mobility in Austria is envisaged.

○

As part of the Steyr 2030 initiative, the public was invited to submit ideas for the future of the Steyr region in a crowdsourcing process. Twelve of the ideas submitted were selected and are currently being fleshed out and pursued further. A makerspace is being planned where interested stakeholders from the region can work on specific Industry 4.0 issues, jointly developing, inter alia, hardware and software programs.

○

The BMWFW uses performance agreements and the competitive award of structural funding to higher education so as to encourage the crossing of the traditional boundaries between different disciplines at Austrian universities.

○

The Angewandte Innovation Lab (AIL) of the University of Applied Arts Vienna facilitates the targeted exchange of ideas between various disciplines (e.g. art, design, business, science and engineering). AIL project partners include Wirtschaftskammer Wien (Vienna Economic Chamber), the Centre for Molecular Medicine (CeMM), the Institute of Molecular Biotechnology (IMBA), Ars Electronica and the Austrian Academy of Sciences (ÖAW).

○

In cooperation with the Danube University Krems the Federal Chancellery (BKA) founded the GovLabAustria in spring 2016, so creating a National Contact Point for innovation labs in the field of governance as well as an open innovation and experimental space for civil administration, science, industry and society.

○

The Open Innovation Lab & Service Design Centre of Austrian Railways (ÖBB) offers employees and managers the opportunity to drive forward customer-focused innovations together with customers. Members of the public can also participate in the development of innovations here.

○

The Pilot Factories for Industry 4.0 and Information and Communication Technologies (ICT), which are funded by the BMVIT, enable realistic models of a factory to be built in a laboratory. They are then used for conducting interdisciplinary research and for developing, testing and demonstrating new methods, technologies and processes in a realistic environment. The operators are required to open up the facility to others who are not members of the existing consortia (e.g. accessibility for companies, citizens).

- The Institute of Science and Technology Austria (IST Austria) plans to build an open visitor centre, in which interested stakeholders can test open innovation methods together with scientists.

- It is necessary to consider the extent to which it is feasible to open up infrastructure laboratories (e.g. SmarTEST Laboratory of the AIT's Energy Department) and the AIT's Technology Experience Labs to different stakeholders, including civil society.

Measure 2:

Embed open innovation elements at kindergartens and schools as well as in teacher training

Openness to innovation, eagerness to experiment and willingness to collaborate are essential prerequisites for open innovation. To sustainably embed these values in Austrian culture across all age brackets, ethnic groups, disciplines and institutions, they will in future be communicated at teacher training universities, kindergartens, schools and universities. Children, young people and adults should learn, train and apply the principles of open innovation to solve real problems at every stage of their educational and professional careers (e.g. at primary, secondary, technical and vocational schools, at university and at work). In this context empowerment is key. Children, teenagers and young adults discover that they can develop and implement new solutions themselves (e.g. classroom design/organisation, development of products and services such as sports equipment and apps) through explorative learning, openness, diversity, collaboration and sharing of resources.

The choice of topics should ensure that the results are relevant to children and young people and have a current social and economic context. Persons outside the scholastic environment such as craftspeople, retirees, senior experts, artists and scientists will also be involved, and special emphasis will be given to personal development to consolidate learning based on the individual talents of the children, adolescents and young adults. Learning by trial and error in an environment tolerant of mistakes (which in particular manifests itself in the absence of penalties for failure) will allow children to practise finding innovative solutions to problems with a view to their subsequent careers.

Implementation of this measure is contingent upon the inclusion of open innovation methods and principles in teacher training courses and further training programmes. This is the only way to ensure that openness to innovation and a willingness to collaborate are applied in regular classes at schools. There are several possibilities for implementing this measure. One option is for project-oriented open innovation weeks to be held in kindergartens and schools in conjunction with innovation and experimental spaces (see Measure 1).

Challenges and Action Areas:

● Culture & Competences
▲ Networks & Cooperation

Examples of ideas and initiatives to implement Measure 2:

○
Sparkling Science (www.sparklingscience.at) is a BMWFW research programme that actively involves schoolchildren in authentic research projects. It constitutes a new approach – and is also unique in Europe. One project that receives funding to embed open innovation competences in school life is OnlineLabs4All. A hackathon at the Vienna University of Technology, which receives funding from Sparkling Science as an open innovation pilot project, is aimed at developing innovative tools for science communication.

○
The "Jugend Innovativ" ideas competition organised jointly by the BMWFW and the Ministry of Education (BMB) pays tribute to innovative ideas put forward by students and apprentices. In the existing categories of Design, Engineering, Science, Young Entrepreneurs and the Special Prize for Sustainability, greater consideration will in future be given to open innovation and aspects of open science.

○
The TALENTE/ "Talente regional" programme funded by the BMVIT and managed by the FFG already supports cooperation between kindergartens and schools on the one hand and research and industry on the other but will in future incorporate open innovation elements to a greater extent.

○
Open innovation methods, e.g. teamwork, are integrated in so-called pre-scientific papers (VWA) at secondary schools of general education (AHS) and diploma papers at vocational schools and colleges.

○
The framework of citizen education at schools is used to teach children about innovative forms of public participation, e.g. using social media.

○
Teacher training universities and universities jointly develop educational guidelines for teachers in relation to open innovation projects spanning multiple, possibly interdisciplinary, subject areas. This step could also be carried out in combination with the open innovation platform for social/societal innovation (Measure 4).

○
The Welios Science Centre provides children and young people with space for experimenting and invites them to try their hand at research themselves. Learning-by-doing plays a key role in these facilities designed especially for children and teenagers, where all activities revolve around science and technology.

Measure 3:

Further develop public administration by means of open innovation and greater public involvement

Government and public administration are increasingly called upon to develop solutions to complex problems. At the same time, civil society is clamouring more and more for greater involvement and an active say in matters. Open innovation methods (PPPI Public Procurement Promoting Innovation) will in future contribute to developing new solutions such as high-quality services and processes hand in hand with the public. As a first step, pilot projects will be introduced to test how citizens can become involved in the development of new services and administrative processes in a professional and theme-specific manner. This could be accomplished, for example, by expanding existing and building new online platforms for crowdsourcing processes or through moderated co-creation workshops. In addition to this, the methods and options available for involving citizens must be pinpointed for government and public administration, as well as the necessary prerequisites here (transparency, preparation / provision of information).“Basic rules” for collaboration among the different levels of administration and also with members of the public should be drawn up. Education and further training in the public sector should also take account of open innovation methods and principles as well as the cultural prerequisites for open innovation.

Challenges and Action Areas

● Culture & Competences
▲ Networks & Cooperation

Examples of ideas and initiatives to implement Measure 3:

○
One goal of the GovLab Austria founded by the Federal Chancellery (BKA) in cooperation with the Danube University Krems is to address the challenges of the future and to come up with citizen-oriented solutions with the aim of further developing public administration by means of open innovation.

○
The Service Centre for Public Procurement Promoting Innovation (PPPI/IÖB, www.ioeb.at) supports the efforts of public administration to stimulate demand for open innovation with a matchmaking platform, crowdsourcing challenges (innovationspartnerschaft.at) and community management.

- In spring 2016 the Ministry of the Interior (BMI) launched the pilot initiative GEMEINSAM SICHER in a number of Austrian districts and towns with the aim of not only improving communication with civil society, but also of developing new solutions to the security problems affecting citizens.

- The AIT is analysing how members of the public (the “crowd”) could be included in the development of administrative and decision-making processes and the role they might be able to play in the event of crises and disasters (e.g. eGovernment, crowd tasking).

- As part of the urban renewal project Smarter Together funded by the EU, the cities of Vienna, Munich and Lyon are allowing their citizens to actively participate in the development of their cities through Urban Living Labs.

Measure 4:

Set up and operate an open innovation platform for social/societal innovation and as a contribution to overcoming global challenges

Social innovations are becoming increasingly important as a result of issues such as demographic change, migration, social inclusion, new worlds of work and climate change. If industry, research, civil society, government and public administration are to recognise the problems and needs arising from these complex issues of innovation and are to be capable of developing innovative solutions that enjoy a high level of acceptance in due course, new instruments will be needed. A crowdsourcing platform will therefore be set up specifically to deal with questions of social (= societal) innovation, where new problem definitions (problem crowdsourcing) and solutions (ideas crowdsourcing) can be generated. The platform is strongly bottom-up driven and allows members of the public to define problems and also suggest new topics. Public administration, government, science, associations and initiatives are given targeted and structured access to new knowledge (problems, needs and specific ideas for solutions), which in the past was unavailable in this form. It is essential here that the crowd is built up in a manner that ensures its members possess sufficient knowledge of the specific topics (for example, the environment, sustainability and social issues), and that the composition and activities of the crowd are moderated and monitored at a professional level. Crowd contributions will be intelligently evaluated, filtered and, if necessary, categorised according to the subject area during a pattern-recognition process. Community management and selective communication activities to publicise the platform and to anchor its use among the relevant target groups are tasks forming part of the professional support activities (role model: Office for Future-Related Issues (OFFRI), Vorarlberg). A further task is to collaborate with organisations that have an active interest in social innovation or its implementation. They can put forward their issues and also implement any solutions developed. To improve the likelihood that projects that are developed are then implemented, consideration can be given to the idea of combining them or cooperating with crowdfunding platforms in the social or civil society sector. The rules, obligations and expectations of all participants will be communicated on the platform in a transparent manner.

Challenges and Action Areas:

▲ Networks and Cooperation

Examples of ideas and initiatives to implement Measure 4:

○
Initial experiences with social innovation (e.g. via the platform www.respekt.net or the aws network set up as part of the Social Business Initiative) should be utilised when building and operating an innovation platform for social innovation. Possibilities for collaborating with existing platforms should also be examined.

○
The GovLabAustria founded by the Federal Chancellery (BKA) in cooperation with the Danube University Krems addresses the area of governance with its key dimensions of administration, the state, societal systems and the economy and offers a platform for public administration, science, industry and society to solve the major challenges in these fields.

○
As part of the benefit programme run by the BMVIT the platform Ambient Assisted Living (AAL) AUSTRIA was founded with the aim of networking the heterogeneous stakeholders in the field of AAL and so to promote the development and expansion of an Austrian AAL community and raise the profile of the issue at all levels. All stakeholders are invited to actively participate in developing new solutions.

○
The CrowdLynx ideas platform at the University of Natural Resources and Life Sciences Vienna (BOKU) provides students and staff with a forum to jointly develop, test and implement innovative ideas and concepts for greater sustainability. Ideas on mobility, energy, food, the environment, education and social affairs in particular are sought here.

○
The Ö1 Hörsaal is an online crowdsourcing platform for dialogue between science and society which is sponsored by Universities Austria (uniko), the ORF radio station Ö1 and the Innovation Service Network (ISN). Stakeholders who are usually excluded from the research process can draw the attention of researchers to their needs, problems and new ideas for solutions, including in the field of social/societal innovation.

Measure 5:

Set up and operate an innovation map including a matchmaking platform for innovation actors

A substantial amount of innovation knowledge is currently not being used or only to an insufficient extent. Entrants to the Austrian innovation system, but also established actors for instance, have no comprehensive overview of who is working on which issues. It is unclear where which competences can be found and thus also opportunities for collaboration. The same applies to the resources that are needed for innovation (e.g. specific equipment or production facilities). They are often only accessible to a limited number of users and are thus not used to full capacity. A dynamic knowledge database and a knowledge platform are therefore being set up to furnish a complete overview of all research and innovation activities as well as the competences of scientific institutions, companies and non-profit organisations. This overview will then provide a basis for forming new innovation partnerships. New suggestions for potential matches will be automatically generated for users of the platform (sole traders, SMEs, start-ups, initiatives, NPOs, universities, etc.), and users can then seek out specific competences and resources and filter them according to their own criteria. This database could be fed with existing data from a range of institutions such as funding agencies or the Patent Office. Linking it with existing repositories is also conceivable. In addition to this, incentives should be created to encourage actors (who are not registered elsewhere) to voluntarily sign up on their own initiative. Scientific institutions, for example, which update their data on the innovation map, will raise their profile, making it easier for them to obtain third-party funding. It is important that the platform receives professional support and monitoring and that maintenance and updating of the data is guaranteed. It should also be examined whether existing platforms or public databases can be expanded to include these new functions.

Challenges and Action Areas:

▲ Networks and Cooperation

Examples of ideas and initiatives to implement Measure 5:

○

Different organisations and institutions hold a wealth of innovation data and, in some cases, also place it in the public domain. It should be investigated whether existing databases can be usefully linked (e.g. the research infrastructure database of the BMWFW, data from the Patent Office and the funding agencies FFG and aws, the NachhaltigWirtschaften platform and the KIRAS Security research map of the BMVIT, the University of Innsbruck's competences database and even in-house company databases, provided firms are willing). The aim here is to generate added value for innovation actors by intelligently linking databases.

○

Consideration should be given to cooperating with the Service Centre for Public Procurement Promoting Innovation (PPPI/IÖB), which can call on a community of businesses and civil servants with an interest in innovation.

○

The FFG offers several general as well as theme-specific platforms for ICT, health and life sciences designed to facilitate a concrete search for experts or research and innovation partners: www.ffg.at/services/partnersuche, www2.ffg.at/partnerdatenbank_innovationsscheck, www.ictprofiles.at, hwww.fitforhealth.eu/ and www.lifesciencesdirectory.at. The initiation of European innovation and technology partnerships is supported by the search-offer platform www.enterpriseeuropenetwork.at.

○

An innovation broker from the European Innovation Partnership for Agricultural Productivity and Sustainability assists the Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) in bringing together interested farmers, associations, research organisations and other funding applicants for joint innovation projects and also acts as a matchmaker (www.zukunftsraumland.at → Innovation → Innovationsbroker).

Measure 6:

Build up research competence for the application of open innovation in science

To date cooperation was centred on national and international partnerships between science and industry. Open innovation and open science, i.e. open methods of working, cooperation between heterogeneous participants, intensive exchange with different actors and new forms of disseminating results are however now playing an increasingly important role in science. And it is not just the scientific community that benefits from this. An increasing number of scientists want to be able to contribute to developing concrete solutions for society. Civil society likewise is also increasingly demanding that science opens itself to non-traditional actors such as citizens and user crowds.

The key tasks in this context are to explore constructive open innovation and open science methods that actually produce added value for science, and in particular, methods of collaborating with external partners and stakeholders. In addition, international examples of best practice should be gathered and analysed and new models developed to achieve a high degree of diversity and interdisciplinarity in research projects and groups. The insights gained will be incorporated in the education and further training of researchers (in combination with Measure 11). In a broader context, it is important that this new knowledge is also made available to others.

Challenges and Action Areas: :

- Culture & Competences

Examples of ideas and initiatives to implement Measure 6:

○
As part of the Open Innovation in Science initiative of the Ludwig Boltzmann Gesellschaft new targeted methods for opening up the knowledge acquisition process using open innovation principles are being studied, developed and tested: A Research Centre for Open Innovation in Science, funded by the National Foundation for Research, Technology and Development is scheduled to open in 2016.

○
In the specific field of the mental health of children and adolescents, the Ludwig Boltzmann Gesellschaft has developed and is testing new forms of cooperation between interdisciplinary research groups with

non-traditional external knowledge senders (e.g. web-based crowds, patient organisations, crisis intervention organisations, school, youth and parents organisations) with the participation of internationally renowned research partners. Prior to this, specific research questions were defined in a unique Europe-wide pilot project CRIS (Crowdsourcing Research Questions in Science). On this basis work began in 2016 on building up a new type of research initiative with a new type of open innovation call procedure that utilises active search and matchmaking processes. Even in the start-up phase specific workshops for applicants should ensure that interdisciplinary and translational cooperation forms the foundation for this programme.

○

In summer 2015 the BMWFW established The Centre for Citizen Science at the Austrian agency for international mobility and cooperation in education, science and research (OeAD). It acts as an information and service centre for scientists, citizens and experts from a range of disciplines and allows interested parties to network with the national and international citizen science community.

○

The Bachelor's and Master's degree programme “TransArts” (trans-disciplinary art) at the University of Applied Arts Vienna aims to generate synergies between the individual artistic disciplines and the associated new knowledge and research approaches for the development of models and theories for the arts and sciences.

Measure 7:

Establish incentive mechanisms for research partnerships with non-traditional players in research funding to strengthen open innovation

Research projects involving new forms of research partnerships with non-traditional actors from outside the research system and/or interdisciplinary and transdisciplinary research partnerships often have great potential for generating innovative knowledge and a strong societal impact. However, using open innovation methods and principles to intentionally create diversity in research projects and to contribute to new research questions and solutions is still not very common in the scientific community. Public research funding therefore offers incentives for scientific collaboration with non-traditional actors - above and beyond cooperating on research with industry.

These are designed to encourage greater interdisciplinary cooperation within science, within the research teams themselves and also between science and non-scientific actors (e.g. citizens, users, user crowds, user communities), with this already being envisaged in the early process phases for scientific projects. Funding agencies review their funding programmes and activities to find suitable opportunities to expand them with open innovation elements, making necessary adjustments to the evaluation of research projects and modifying their funding practices accordingly.

Challenges and Action Areas:

■ Resources & Framework Conditions

Examples of ideas and initiatives to implement Measure 7:

○

The Bridge programme, which is funded by the BMVIT and aid from the National Foundation for Research, Technology and Development and is managed by the FFG, supports collaboration between universities and industry. Consortia with new, non-traditional cooperation partners and in particular those with a high level of interdisciplinarity receive more favourable evaluations. As a result, projects involving new, non-traditional actors are more likely to be awarded funding in these competitive programmes, not only at the basic research stage, but also during later closer-to-market phases.

○

The special programme Partnership in Research provides an introduction to the funding schemes of the Christian Doppler Forschungsgesellschaft. It aims to encourage scientists to engage in basic research projects that involve collaboration with new, non-traditional partners with whom there has been no previous cooperation.

○

The BMWFW is developing a new funding programme for Responsible Research and Innovation (RRI) and open innovation in science, including programme objectives, funding criteria and a quality management concept. The project is scheduled to run from 2017 to 2027.

○

The BMWFW programme Knowledge Transfer Centres and IPR Utilisation is to be further reinforced by a successor scheme. The intention here is to realise and institutionalise open innovation to a greater extent by involving non-scientific actors in joint research projects or research questions.

○

In the years up to 2018 the FWF plans to develop a coordinated and adequately funded concept for participation by society in scientific projects based on its existing programmes for science communication and citizen science.

○

The Innovation System Department of the AIT is working on the EU project ERA Learn 2020. This project investigates how open science and open data approaches can be promoted in climate research within the framework of the JPI Climate Change. The aim of the project is to generate synergies between different regional and national funding instruments (also using open science and open data approaches).

Measure 8:

Increase involvement of users and members of the public in RTI funding programmes

Although the Austrian system supports collaboration between industry and universities in multiple ways, the knowledge of Austrian citizens and the (potential) users of future innovations is not yet systematically integrated in research and innovation processes via needs and problem-solving approaches. The funding system will therefore be opened up, especially in the field of applied research. In future, research and innovation programmes will include clear incentives to increase participation of civil society, knowledge holders such as citizens, (lead) users, user crowds, user communities as well as actors from the arts and culture. One important aspect here concerns the question of who can initiate projects and possibilities should be provided for actors from civil society to do this. Evaluation mechanisms should be modified to allow the involvement of crowd intelligence, at least as an addition to the classic panels of experts. Funding could also be combined with crowdfunding. In terms of programme implementation, simple application procedures and accounting modalities are vital to broaden the circle of funding recipients.

Challenges and Action Areas:

■ Resources & Framework Conditions

Examples of ideas and initiatives to implement Measure 8:

○
With the Smart Homes - Smart Services test regions set up as part of its “benefit” programme, the BMVIT is supporting new ICT solutions and services designed to improve the quality of life for the elderly. The direct involvement of end users in every phase of the innovation process is crucially important and is essential for the success of the resulting solutions.

○
The Top Citizen Science funding initiative sponsored by the BMWFW, FWF and OeAD promotes the active involvement of citizens together with their expertise, resources and engagement in scientific research and knowledge acquisition processes.

○
The COMET programme funded by the BMWFW and BMVIT, and managed by the FFG, supports competence centres, which revolve around a high-calibre research programme defined

jointly by industry and science. Open innovation elements are already eligible for funding and are now also present in a number of projects (e.g. user participation).

○

The participation of users is mandatory in every technology development project carried out under the umbrella of the security research programme KIRAS, which is owned by the BMVIT. This involvement of end users ensures that the solutions developed are actually needed and will be used in practice.

○

The “Networks” line of the COIN programme owned by the BMWFW and managed by the FFG enables the development of innovation networks (consisting of companies in the value creation chain, in particular SMEs, centres of research and knowledge transfer and other non-business institutions). It needs to be evaluated whether further open innovation elements, e.g. the involvement of civil society (user crowds) can be embedded here.

○

In general terms it should be examined whether existing funding agency research and innovation programmes can be broadened so that actors and other users in civil society can become members of subsidised consortia, or whether early innovation stages (idea generation) with these actors might be funded separately.

Measure 9:

Develop fair sharing and compensation models for crowdwork

Opening up innovation processes changes both the roles of actors and the classic divisions of labour. The increasing involvement of crowds in innovation processes via online platforms and the resulting forms of decentralised, piecemeal contributions raise the question as to how fair models of pecuniary and non-pecuniary compensation for innovation input by crowds could be designed in future. As many issues here are unresolved, possibilities for fair sharing and compensation models for crowdwork should be developed and made available to the public, for example in the form of guidance for fair sharing, collections of cooperation models and specimen contracts. This could be accomplished through research and innovation projects involving crowdwork, databases and events. When developing new models, the term "compensation" should be used in the broadest sense and in all its many facets (e.g. monetary and non-monetary reward systems such as visibility, reputation, appreciation and their impact on those who generate innovation). It should also take into consideration the motivation of the user. To this end, it is necessary to analyse existing sharing and compensation models to highlight for the first time the broad spectrum existing here and to draw suitable conclusions for Austria.

Challenges and Action Areas:

▲ Networks and Cooperation
■ Resources & Framework Conditions

Examples of ideas and initiatives to implement Measure 9:

○
With the operational support of the aws, the National Contact Point for Knowledge Transfer and Intellectual Property at the BMWFW is drawing up a manual which summarises and, where necessary, further develops possible fair sharing and compensation models (e.g. for crowdwork), as well as models to reward and incentivise outstanding achievement in science apart from the traditional citation indices and impact factors. To this end, the aws is in the process of setting up a competence group on "Remuneration Mechanisms in Open Innovation" to develop and define clear-cut, fair rules governing compensation for all actors in an open innovation project.

○
The FFG is currently conducting a pilot project with a crowdfunding platform within the framework of the general programmes. The aim here is to sound out possibilities for cooperation and combining funding and crowdfunding campaigns, and to ascertain the feasibility of fully funding projects that are already receiving financial aid.

Measure 10:

Further develop and provide open innovation methods and open innovation instruments specifically for small and medium-sized enterprises (SMEs)

Digitalisation and globalisation have increased the pressure on large corporations and SMEs alike to adapt and innovate. SMEs however have far more limited resources in terms of finance and personnel and also little organisational capacity, infrastructure or experience to respond with adequate innovation strategies. Until now it has been first and foremost large companies that have made use of open innovation so these instruments are tailored to the needs of big business. The existing open innovation methods must now be adapted for SMEs and new open innovation methods and instruments developed that are suitable for smaller companies. The limited internal resources of SMEs in particular make open innovation and the targeted opening-up of the innovation process essential. They can benefit from access to external information (such as ideas and data) and physical resources (like laboratories and equipment) as well as from the improved exploitation and strategic use of their own ideas and innovations. Open innovation methods will therefore be adapted and developed in cooperation with SMEs, and then disseminated following successful testing. Training will be specifically designed for smaller companies, and support measures for the implementation of open innovation projects will be designed in such a way that they are easily accessible, affordable and time-efficient. It is important that this support is flexible and tailored to SMEs and can cover the entire innovation process, from the idea to implementation on the market.

Challenges and Action Areas:

● Culture & Competences
▲ Networks and Cooperation

Examples of ideas and initiatives to implement Measure 10:

○
SME competence centres for open innovation should be set up. The planned SME Competence Centre of the province of Salzburg, which is scheduled for opening in 2016, will be an Austrian pilot project.

○
The Austrian Patent Office and the FFG offer services for SMEs which offer them innovation-related knowledge from patent and utility model publications (patent literature) and so enable it to be harnessed.

○

With the BMWFW programme “R&D Competences for Industry” the FFG supports companies (primarily SMEs) to systematically develop and improve the qualifications of their existing research and innovation personnel. In cooperation with universities and/or universities of applied sciences participating companies design time-limited training programmes for employees of the company or university. Qualification measures in open innovation are already available but should be offered to a greater extent in future.

○

The FFG is currently developing and discussing a new module entitled “Introducing Open Innovation”, which aims to support SMEs in introducing open innovation processes to their company with the help of an external partner. The special focus here falls on the idea generation and ideation phase.

○

The support SMEs receive from the aws in respect of open innovation processes can be broadened by a customised open innovation tool kit. This could contain information and tools for setting up and managing an open innovation project as well as relevant contact data for organisations offering support and also national and international Best Practice.

○

The BMWFW programme ProTrans 4.0, which is managed by the aws, supports measures to strengthen innovation output by applying methods of in-house innovation and knowledge management and by optimising the corporate strategies of SMEs with regard to innovations for processes, products, methods and services as well as tapping into new markets. Open innovation projects are explicitly encouraged here.

○

The Innovation Voucher (FFG) and Creative Industry Voucher (aws) can also be used to support early-stage open innovation measures

Measure 11:

Develop and implement co-creation and open innovation training programmes

Successfully crossing boundaries in innovation processes rarely comes about spontaneously. More often it is the result of deliberate strategies. Using open innovation methods requires new knowledge and competences. This includes targeted search strategies (online and offline) to identify new sources of knowledge, but also for translating knowledge (decontextualisation and transfer to new contexts and applications) and collaborating with new, non-traditional actors (e.g. building crowds, collaboration with lead users). For this reason, co-creation training programmes for participants from science, government and public administration, industry and civil society have been developed. These participants use real-life case studies to acquire open innovation competences and test the practical application of open innovation methods. The training programme is aimed either at specific target groups or focuses on specific thematic areas as required. Key target groups are scientists, employees of companies, non-profit organisations and public administration (including management) as well as members of the public. The co-creation training programme can be staged in innovation, research and experimental spaces (see Measure 1) but also in other facilities.

Challenges and Action Areas:

● Culture & Competences

Examples of ideas and initiatives to implement Measure 11:

○

In the Lab for Open Innovation in Science (LOIS) of the Ludwig Boltzmann Gesellschaft, which is financed by the National Foundation for Research, Technology and Development, scientists from a variety of institutions learn to apply open innovation methods and principles along the entire scientific process. Starting in 2016, a concept for a permanent training programme will be developed within the framework of the Research Centres for Open Innovation in Science.

○

“Teaching Innovation” seminars and workshops for educators are offered as part of the “Jugend Innovativ” competition to encourage young people to develop innovative ideas. Starting with the next round of the competition in autumn 2016, open innovation will be specifically included in the series of seminars.

○

The BMWFW not only supports creative enterprises with funding measures, but also offers events and training programmes that are conducted by creative wirtschaft austria and the aws. In future, these programmes will be expanded to include a new focus on open innovation for the creative industries.

○

Those aspects of open innovation processes with relevance to intellectual property rights for research institutes and industry are one of the key themes in the 2017 working programme of the National Contact Point for Knowledge Transfer and Intellectual Property (NCP-IP).

○

The AIT already embeds learning opportunities for open innovation methods and principles in its further training modules for scientific staff. Managers are urged to intensify specific training and further education on open innovation for their personnel.

Measure 12:

Embed principles of open data and open access in research

In academic research open science and open access have already resulted in measures at both national and international levels to place data and information generated in the research process in the public domain. This has been done with the aim of increasing the value and reproducibility of research by sharing data from research. Free access to research data (Open Research Data) also has advantages for applied research and development, in particular for SMEs. Research funding agencies should therefore raise awareness of the resulting benefits when researchers from industry and other private-sector establishments offer access to their data. In publicly funded projects a data management plan could pave the way for creating awareness about data generation and the use of data (whether to disclose it). Any decision as to which data is published and to what extent ultimately rests with the company, research institutes and the scientists involved. If data is disclosed within the framework of subsidised projects, the additional costs of publication must be covered by the project budget. Consideration should be given here to appropriate sharing and compensation models that take due account of the full costs incurred by research institutes for research contracts; see also Measure 9.

Challenges and Action Areas:

● Culture & Competences
■ Resources & Framework Conditions

Examples of ideas and initiatives to implement Measure 12:

○
The sixteen open access recommendations made by Open Access Network Austria (OANA) should be implemented. This includes, among other things, switching all scientific publication activities to open access by 2025. It means structuring licensing agreements with publishing houses in such a way that authors' publications are automatically made open access and that alternative national and international publication infrastructures are built up.

○
The BMVIT is finalising the implementation of open RTI data policy measures with the responsible funding agencies.

○
Universities, research institutes and funding agencies should develop and implement institutional open access policies. The AIT has already planned and designed expansion of its (internal) innovation management

processes to include principles of open data and open access.

○
The FWF will establish open science elements in its funding programmes by 2020.

○
The FWF will develop a compulsory open research data policy for its funding schemes (including data management plans to be submitted with the funding application) by 2018.

○
The FWF is refining its open access policy so that by 2020 virtually all quality-tested publications resulting from FWF projects are open access (including free licences for subsequent re-utilisation) and their costs are transparent.

○
The FWF is in the process of further developing the existing "FWF Rules on Quality and Transparency Evaluations, Studies and Research Policy-related Services" by 2020 so that data and the output of its funding activities will be – as far as is legally possible – free of charge and available on the Internet for maximum open use by third parties (e.g. Creative Commons CC BY or CC 0).

○
Together with the BMWFW, the research centres and other funding agencies, the FWF will agree upon a joint initiative to comprehensively document all funding and research activity in Austria and to place it in the public domain on the Internet. This is scheduled for implementation by 2020.

○
The Sentinel National Mirror Austria project that is run jointly by the BMVIT, BMWFW and ZAMG, Austria's institute for meteorology and geodynamics, provides free and open access to the earth observation data from the Sentinel satellites online at www.sentinel.zamg.ac.at.

○
To enable students and doctoral candidates to make optimum use of freely accessible publications about patent and utility models as open access sources, the Austrian Patent Office performs searches of patent literature for degree papers and doctoral theses free of charge.

Measure 13:

Gear the IP and exploitation strategies of companies, universities, research institutions and intermediaries to open innovation in order to optimise innovation potential

Open innovation and the protection of intellectual property are not per se mutually exclusive concepts; on the contrary, inside-out open innovation in fact is conditional upon protection of an idea. Before publishing their work, innovators should take care to clarify and, if necessary, secure potential exploitation rights to their intellectual property. They should be offered support to assist them in this regard.

The system for managing the exploitation rights of research results must be structured in such a way that it does not present an obstacle to timely publication. If research results are disclosed in the form of scientific publications or research data, unhindered online access with maximum open rights of re-utilisation (open access) should be sought for all. Footnote 19

A national strategy for managing IP is currently being prepared and will be available in 2016.

The application of open innovation strategies requires actors to take a highly conscious approach to managing intellectual property as well as a knowledge of the many different options across the entire spectrum of IP protection and exploitation. These range from providing free and open access to intellectual property to strict protection by means of patents. The drafting of contracts between innovation partners therefore has an important role to play in the co-creation process. In practice, however, IP strategies vary widely in closed and open innovation processes, and different IP strategies and licensing / exploitation models are successful depending on the industry/sector, type of company and business model. It is therefore particularly important to develop the appropriate competences for managing IP, exploiting knowledge, open innovation and open access. This also requires stepping up training programmes about knowledge transfer for universities, research institutes, business and industry (e.g. developing a job profile for IP management).

Footnote 19

[19] See: Austrian ERA Roadmap, page 28, 2016 ↖

Challenges and Action Areas:

■ Resources & Framework Conditions

Examples of ideas and initiatives to implement Measure 13:

○
The Austrian Patent Office and the FFG are offering new services for different actors and groups of actors to communicate knowledge about IP protection and exploitation strategies in relation to open innovation (e.g. in the form of presentations and seminars).

○
Standard contracts and model agreements for open innovation processes are being drawn up in cooperation with stakeholders and are available to the general public on the IPAG website (Intellectual Property Agreement Guide, www.ipag.at). These specimen contracts cover areas ranging from initial disclosure of the idea to interested parties through joint further development to exploitation by the originator of the idea and those who adopt it. These contracts, which have been reviewed by legal experts, aim to simplify and speed up administrative processes and thus to provide valuable assistance to all parties to a contract.

○
As the market for exploiting intellectual property in Austria is underdeveloped, the aws is planning to establish an IP market place or an exploitation platform. A state patent fund should be set up in conjunction with this to exploit research results from key technologies in Austria.

○
By 2020 the FWF will apply comprehensive free re-utilisation rights (including creative commons licences) for the results (in particular publications, data, software, teaching material) published in its projects until 2020 to permit the unhindered circulation of scientific knowledge for all innovation actors.

○
Further training modules should be institutionally embedded in the career model for managing IP. The awareness and skills required for collaborative approaches to exploitation, especially among junior staff at the relevant research and educational organisations, must be strengthened here. An annual (internal) poster award that emphasises collaborative approaches to exploitation of the kind already in use at the AIT could be one way of accomplishing this.

○
The TWIST Fellowship programme set up by IST Austria provides a framework for systematically opening the institute to outsiders as the Fellowship is open to both members of the institute's staff and external applicants. The aim is to allow ideas to be systematically further developed, exploited and commercialised.

Measure 14

Measure 14:

Implement a comprehensive communication initiative about open innovation to raise awareness and create networks

Open innovation refers to the democratisation of innovation processes. Every citizen and every organisation can contribute to open innovation or initiate and benefit from these activities. However, there is little awareness regarding new possibilities and approaches of the kind that have been made possible for instance by modern communications technologies. Many actors are therefore still working in isolation from one another. A comprehensive and continuous communications offensive should thus be launched to illustrate how open innovation and open science can be implemented (good practices), what added value they deliver and how actors can network with each another. A vital aspect is that the communication measures are adapted to the needs of the specific target groups, e.g. for young people or companies from specific industries (including SMEs). The communication initiative should use a variety of offline and online channels (e.g. in combination with Measure 1) and support the collective build-up of knowledge and experience regarding open innovation. As part of this initiative a national open innovation network should also be established to offer its members opportunities to network, share their experiences and to learn from each other. The network will be active both in Austria and abroad and will support the implementation of open innovation activities, including the Open Innovation Strategy, on a number of levels. The open innovation network also has the task of successfully building bridges to other networks (e.g. the Alliance for Responsible Science) at national, European and international levels.

Challenges and Action Areas:

▲ Networks and Cooperation
● Culture & Competences
■ Resources & Framework Conditions

Examples of ideas and initiatives to implement Measure 14: :

○
The BMWFW and BMVIT will continue to operate the web platform www.openinnovation.gv.at, which was set up during the development of the Open Innovation Strategy,

so supporting the network with up-to-date information and offerings.

○

To enable others with an interest to become acquainted with the subject of open innovation, an exhibition on open innovation Best Practice examples will be held in Austria's parliament. To reach the widest possible audience, this initiative should be designed as a travelling exhibition that will be shown throughout Austria.

○

A Citizen Science Award is conferred by the Federal Ministry of Science, Research and Economy to publicise and support citizen science and open innovation projects in Austria.

○

Specific thematic priorities should be set by the relevant stakeholders (e.g. BMWFW, BMVIT, FFG, FWF, aws and research institutes) and greater use made of existing communication channels such as newsletters, websites and events (e.g. Alpbach, Falling Walls Lab Austria) in order to raise the profile and public awareness of open innovation methods and activities.

○

The INNOX Community is a group of innovation managers from Austria dedicated to the mutual learning and sharing of open innovation experiences, methods and projects.

○

The FWF is successively expanding its scilog blog (scilog.fwf.ac.at/) to become a forum of exchange between actors of science policy in the field of open innovation.

Implementation

Implementation

The measures set out in the Austrian Open Innovation Strategy will be implemented by the individual ministries in the areas falling within their remit in cooperation with the relevant stakeholders. The various actors at the provincial and municipal level are furthermore urged to do their utmost to bring the strategy to life. At the same time, the Federal Government explicitly invites interested parties from a wide range of areas to take inspiration from the content of the strategy and initiate their own open innovation activities.

A monitoring group will be put in place to track the realisation and further development of the Open Innovation Strategy. In addition, a report will be submitted to Austria's parliament as part of the Austrian Research and Technology Report (FTB) detailing the progress made in implementing the Open Innovation Strategy.