

1 **AUSTRIA'S APPROACH FOR STIMULATING INNOVATIVE MULTIDISCIPLINARY**
2 **TRANSPORTATION RESEARCH**

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30 **ABSTRACT**

31 Many of today's social, economic and environmental problems can be traced to inefficiencies
32 or inequities in our transportation infrastructure and systems. New and innovative solutions
33 for addressing these problems, improved research programs will be a fundamental part of
34 this process. Over the last decade Austria has implemented a series of innovations designed
35 to improve the quality and efficiency of transportation research funding. This paper describes
36 some of these techniques including using theme-based programs, improving research
37 administration, encouraging multi-disciplinary research and developing innovative research
38 processes. These techniques have been successful both in stimulating development of the
39 country's transport research sector and the quality of transport ideas; furthermore, they have
40 helped build political and financial support for transportation research among policy makers.

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1 AUSTRIA'S APPROACH FOR STIMULATING INNOVATIVE MULTIDISCIPLINARY 2 TRANSPORTATION RESEARCH

3 1. INTRODUCTION

4 Transport plays a fundamental role in our society and economy. Many of today's social,
5 economic and environmental problems can be traced to inefficiencies or inequities in our
6 transportation infrastructure and systems. Leaders worldwide have recognized the need for
7 developing new and innovative solutions for addressing these problems, improved research
8 programs will be a fundamental part of this process. [1]

9 This paper describes Austria's approach to stimulating innovative multidisciplinary
10 transportation research. Many of these techniques can be used elsewhere to improve
11 research quality and effectiveness. The paper begins with an introduction to Austrian
12 transportation research and then describes two innovative activities: the ways2go program
13 and the IV2Splus Trans-national Call for Projects. The final section presents conclusions and
14 recommendations.

15 2. AUSTRIAN TRANSPORT TECHNOLOGY RESEARCH FUNDING POLICY

16 This section presents a short history of transport research in Austria, the introduction of
17 techniques for improving research effectiveness during the last ten years, the "Intelligent
18 Transport Systems and Services (IV2S)" program – the first using these new techniques and
19 the new IV2Splus research funding program.

20 2.1 Background: One decade of transport research in Austria

21 Transportation has traditionally played a significant role in due to the country's geographical
22 position in the middle of Europe and its topographical constraints (limited settlement space
23 connected by narrow transport corridors). Transportation also contributes over 10% to
24 Austria's gross national product.

25 Austrian transport companies have successfully developed niches in several
26 important transport related sectors (e.g. automotive and rail technologies). During the last
27 several years many of these companies have shifted their emphasis to producing products
28 and services based on new technology developed partly with support from various different
29 government research grant programs. [2]

30 In the late 1990s, Austria decided to take a more comprehensive approach to funding
31 transport research. While former funding programs were limited to supporting industries only,
32 the new approach significantly expands the scope. The new programs emphasize topics
33 where new services and products can be developed that make a meaningful contribution to
34 solving transport related social, economic and environmental problems (mission oriented
35 transport research funding programs). The state's commitment to transport research funding
36 designed to meet these major challenges is especially important, since development in the
37 field of transport, due to market or system failures, does not always provide adequate
38 problem solutions without public interventions.

39 In summary, Austria's goals for state-funded research are to safeguard and expand
40 the competitiveness of the Austrian transport industry and to support development of an
41 efficient, safe, environmentally and socially sustainable transport system. The next section
42 outlines Austria's program for meeting these ambitious goals.

43 2.2 Improving the Effectiveness of Transport Research in Austria

44 Transportation is part of the same federal ministry that also includes innovation and
45 technology: the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT).
46 This meant that the BMVIT has the in-house resources to rethink research support and to
47 actually implement new ideas. The BMVIT applied three key techniques to improve transport
48 research effectiveness: **introducing "impulse programs"** to create a more open and
49 focused research system, **facilitating coordination and cooperation** between research and
50 transport policy and their stakeholders, and finally **building an efficient administrative and**

1 **institutional framework** for carrying out research activities more smoothly. Each of these
2 techniques is described below.

3 Creating the impulse program was the main step in transforming transportation
4 research funding from a series of singular initiatives to a comprehensive, focused and
5 transparent instrument. The impulse programs are designed to stimulate cooperative R&D
6 between industry, research and scientific organizations, and end-users. The programs are
7 especially focused on promoting research by small and medium scale enterprises (SMEs).

8 In a nutshell the impulse program method consists of developing a problem or
9 mission-oriented call for proposals in a specific topic. Proposals are expected to define
10 projects that contribute to innovation leading to new or improved products or services.

11 Then the impulse programs are funded for a fixed multiple-year program. The
12 programs are administered using standard procedures designed to provide an open and
13 transparent system for submitting and evaluating research proposals (open calls for projects
14 and external project evaluations) while ensuring high quality through the use of a competitive
15 application process for funding . Once an impulse program is completed, new programs are
16 developed (either expanding on earlier programs or completely new programs).

17 The first trial of this program architecture took place in 2002 when the BMVIT
18 combined multiple sources of funding for innovative transport technology research into a
19 single program called "Intelligent Transport Systems and Services (IV2S)". The IV2S
20 program contained three specific impulse programs. The program was completed in 2006
21 and was - as described in the following section - considered very successful.

22 The second technique used to improve transport research effectiveness was to better
23 coordinate transport research with transport policy agendas in order to better utilize research
24 results and to form cohesive policies (again the fact that BMVIT included innovation and
25 technology as well as transport was helpful in making this happen). One important example
26 was development of a telematics master plan for Austria that now serves as a guideline for
27 the development of intelligent transport systems. Coordination was improved by creating
28 several complementary initiatives within the BMVIT and by forming multi-disciplinary
29 industrial platforms (working groups).

30 The third technique was to concentrate administrative competences for BMVIT's
31 research funding programs in a newly created organization the Austrian Research Funding
32 Promotion Agency (FFG). This independent agency was created in 2004 by combining four
33 separate organizations and other scattered program management bodies reducing
34 duplication and providing one-stop assistance to researchers from development of proposals
35 to grant administration. In this case the BMVIT is the 'owner' of the research program and is
36 therefore responsible for developing the program goals and the call for proposals, while the
37 FFG is hired to coordinate the Call for Proposals process, the proposal evaluation process
38 and grant accounting. The FFG performs the same role for many research programs in
39 addition to transportation, so they are able to develop efficient and user-friendly
40 administration techniques. [3]

41 These techniques were partly implemented during IV2S program period, and were
42 further developed and amended for use in the IV2Splus program.

43 **2.3 IV2S Research Funding Program 2002-2006**

44 The Intelligent Transport Systems and Services (IV2S) research program was launched in
45 2002. The program has a budget of over EUR 50 million (\$71 million) and a four-year
46 duration. The IV2S program included three impulse programs:

- 47 • I2 Intelligent Infrastructure – Transport Telematics and Intelligent Transport systems;
- 48 • A3 Austrian Advanced Automotive Technology; and
- 49 • ISB Innovative System Railway.

50 The program provided funding for over 250 projects with a total volume (including matching
51 funds) of more than EUR 100 million (\$140 million). The IV2S program was targeted on
52 applied research activities, complying with the definitions of the European Community

1 framework for state aid for research and development and innovation. [4] The program was
2 judged to be successful using two main criteria.

3 First, the transport related funding as well as research funding in other industrial
4 sectors helped stimulate a wide range of primary and secondary impacts on Austria's
5 science, innovation and technology system. Studies have shown that the research funding
6 has helped to support the on-going structural transformation of Austria's economy. [5] The
7 European Innovation Scoreboard showed that Austria's level of innovation among European
8 Union members rose from 11th place in 2000 to 6th place in 2009. [6]

9 Second, the transportation research funding strongly contributed to building critical
10 mass in terms of research personnel and knowledge which, in turn, has created an
11 interlinked community of researchers and research organizations focused on completing
12 innovative projects and competing effectively for international research grants. The strong
13 showing of Austrian transportation research organizations in the European Framework
14 Program 6 (FP6) provides evidence of this success. Austrian transport researchers were able
15 to obtain 172% of their share compared to 114% average for all Austrian researchers. (This
16 measure compares the share of funds returned to Austria from the FP6 program to the
17 amount Austria contributes.) Early evidence from the 7th Framework Program shows that this
18 trend is continuing. [7]

19 While the IV2S program was considered generally successful, there were fewer
20 projects that led directly to actual products or services. Therefore, the BMVIT added the new
21 funding instrument "Lighthouse Projects" designed to demonstrate near to market
22 technologies in large scale demonstration projects. Furthermore, as described in the
23 following section, the IV2Splus program themes placed a stronger focus on developing tools
24 to generate projects which lead to products.

25 **2.4 IV2Splus Research Funding Program 2007 - 2012**

26 Given the success of the IV2S program, the BMVIT decided to extend the program by
27 creating the Intelligent Transport Systems and Services plus (IV2Splus) program. The
28 program developed new topics for the impulse themes and introduced several new ideas
29 based on experience with the IV2S program and consideration of important policy goals.

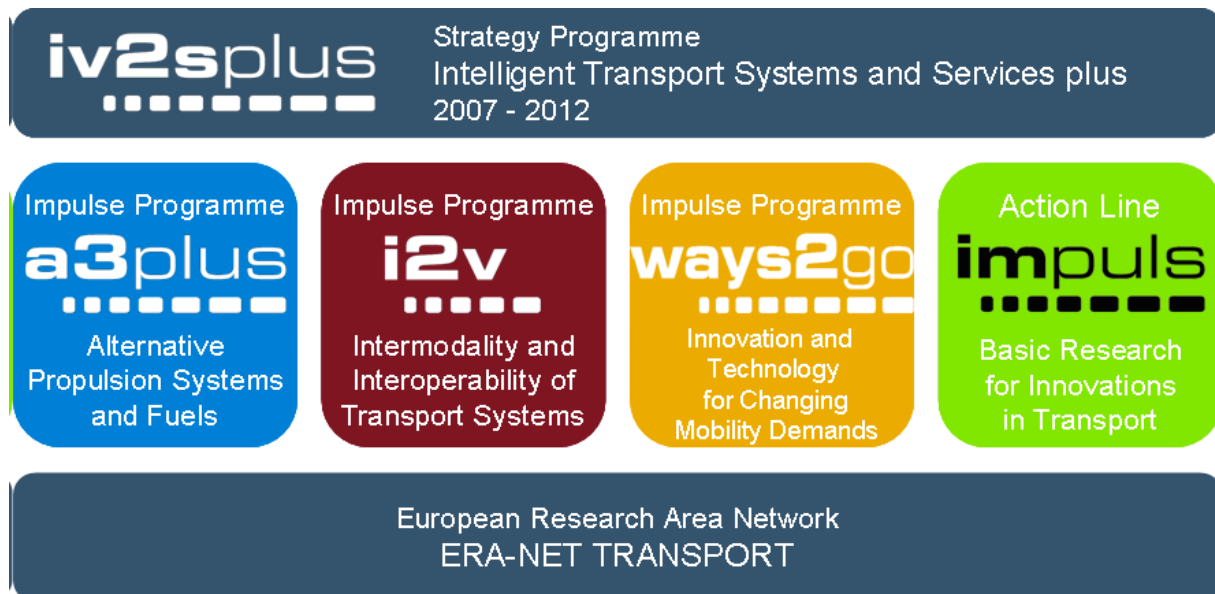
30 The architecture for the impulse programs was developed by using a two-step
31 process. First, general policy goals were considered in conjunction with results of the IV2S
32 program to help define the impulse theme topics. Then the impulse program themes were
33 developed in more detail in terms of topics and governance. The following general policy
34 goals were considered in defining the theme topics:

- 35 • Goals set forth in the European Commission in the Mid-Term Review of the European
36 Commission's 2001 Transport White Paper [8]. These include improved co-modality,
37 i.e. optimization of transport modes in both individual (mono-modal) and in multimodal
38 use, encouraging modal shift towards more environmentally friendly transport modes
39 such as rail, inland waterways into transport chains/integrated routes as well as
40 improving integration of transport modes.
- 41 • The need for increasing energy efficiency and environmental sustainability in the
42 transport sector due to binding climate protection targets or other pressing social and
43 environmental policy issues (e.g. threat to the security of energy supply).
- 44 • Changing demographic and social conditions (e.g. a massive change in the age
45 structure), combined with changes in land use and new transport and mobility
46 requirements.
- 47 • The transport manufacturing sector and transport research have both become
48 increasingly international. To compete successfully manufacturers and researchers
49 must be key players in effective international networks.

50 Three complimentary impulse programs were developed to address these policy issues. The
51 three programs consist of Alternative Propulsion Systems and Fuels (A3plus), Intermodality
52 and Interoperability (I2V) and ways2go. The fourth part of the IV2Splus program (Impuls)
53 consists of an initiative designed to encourage specific multidisciplinary projects including

1 transfer of knowledge from bionics and creative industries to transportation. The four
 2 programs are shown on Figure 1. A total yearly budget of about EUR 20 million (\$28 million)
 3 is foreseen for all IV2Splus research promotion activities.

4



5

6 **Figure 1: Overview of the IV2Splus framework. Source [9]**

7 The A3plus program spans a broad thematic arc ranging from development of highly
 8 efficient drive units to innovative storage concepts for alternative fuels to advanced
 9 automotive electronics for energy efficient control and vehicle system management. In
 10 parallel to these vehicle-based technologies, the program also considers alternative energy
 11 including research on alternative fuels as well as the infrastructure systems needed to
 12 efficiently create and distribute these new energy sources.

13 The I2V program line focuses on development of intermodal and interoperable
 14 transport solutions, intelligent freight logistics and reducing the environmental impacts of
 15 transport. Two especially important priorities are research on ways to shift freight flows from
 16 road to rail and/or waterway transport, and research on improving freight transport logistics
 17 by considering the entire transport logistics chain including both external and internal to the
 18 firm freight flows.

19 The ways2go program focuses on passenger transport. The program aims to
 20 increase knowledge on future mobility and transport issues in order to encourage
 21 development and testing of sustainable, demand-oriented transport systems and mobility
 22 solutions. The program particularly encourages interdisciplinary research projects that
 23 integrate ideas from outside subjects with transport research addressing future transport
 24 challenges. The ways2go program is described in more detail in Section 3.

25 The overall IV2Splus strategy program also includes support for international (trans-
 26 national) research by coordinating program activities with other countries under the
 27 framework of ERA-NET TRANSPORT (www.transport-era.net). [10] One new instrument
 28 resulting out of this approach is the Trans-National Call for project proposals designed to
 29 overcome the difficulties of coordinating national research programs. It is described in
 30 Section 4.

31

32

3 WAYS2GO – INNOVATION AND TECHNOLOGY FOR EVOLVING MOBILITY NEEDS

The ways2go program is an excellent case study of the Austrian approach for creating an interdisciplinary research focused on future transportation needs. The ways2go program was launched in 2007. The initial set of projects are underway and the second call for projects was issued in June 2009. This section describes the ways2go program (for further information refer to www.ways2go.at).

3.1 ways2go Program Design

Personal mobility has always been closely linked to demographic, economic and land use characteristics. However, rapid changes in these fields are having a significant impact on mobility needs and transport demand. These changes must be fully considered in the design of future transport systems both to achieve a high level of user acceptance and to provide sustainable transport networks. The ways2go program is intended to do just that.

As an impulse program, the ways2go program is designed to focus on a particular set of important policy issues. The program's overall theme is how social and demographic change will affect future transport demand; this broad theme was further refined to include several specific areas of focus examined in the context of future social and demographic change. These focus areas are described in the following paragraphs.

The ways2go program is particularly interested in exploring questions related to age discrimination, social inclusion, equal opportunities and accessibility in transport. These are subjects that will play an increasingly important role as society evolves. Often these issues are thought-of in the urban context, so the ways2go program explicitly considers mobility in rural areas where aging and socio-economic change (people moving to urban areas) is having a huge impact on transportation demand and where it is very difficult to provide cost effective public transport service.

Another ways2go program focus is developing ideas for creating socially inclusive, environmentally sound and safe transport systems. An important program goal is helping develop products and systems that contribute to realization of the barrier free transport systems called for in the Disability Equality Act. These could be innovative ideas for using the multi-sense principle in design, technologies for reducing transport system physical and/or informational barriers and ideas based on the principles of "universal design" (design for all) – a prerequisite for making transport system improvements that benefit all users.

Finally, the ways2go program also supports development of innovative technologies that can be used to improve the spatial planning and decision-making processes. New technological applications and methods can be used to better integrate spatial and transport planning. Spatial structure depends directly on transportation systems and vice versa, therefore they must be planned together to optimize outcomes. ways2go therefore supports an integrative approach towards transport technology, spatial planning and transportation planning, so that new and improved planning approaches for future transport systems can be realized.

The ways2go program is structured in terms of four topics all designed to address the overall program themes. The four topics are outlined below.

3.2.1 *Mobility research for future mobility solutions*

This topic focuses on broadening the mobility research knowledge base. Projects are designed to expand the knowledge base by solving specific problems. The topic considers two main themes:

- **User-specific mobility needs and transport demands** - This theme focuses on developing new knowledge about future mobility behavior and demand with particular attention on the needs of transport disadvantaged groups. The theme includes: analyzing physical and psychosocial mobility barriers for specific user groups,

1 examining the usability of future mobility solutions for specific user groups, and
2 developing indicators for better describing mobility characteristics and needs.

- 3 • **Social factors influencing mobility behavior, mobility trends, technology and**
4 **mobility scenarios** – This theme focuses on understanding the relationships and
5 interactions between mobility and other social fields. The theme includes: analyzing
6 the social impact of mobility behavior, interactions between virtual and physical
7 mobility, accessible transport technology options, technology options for changing
8 rural mobility needs and opportunities and risks for current and future transport and
9 mobility solutions.

10 3.2.2 *Mobility solutions and mobility infrastructure for the future*

11 This topic focuses on developing and testing ideas for improving future mobility systems and
12 transport infrastructure. A key goal is considering the ability of people to use specific
13 technological solutions in a social context and to transition smoothly at transport system
14 interfaces with the objective of developing new, integrated mobility solutions.

15 The topic includes developing and testing both innovative information technology (IT)
16 and ‘physical’ solutions. IT solutions include systems and components that: support personal
17 mobility in vehicles, infrastructure and public spaces, reduce barriers to independent use of
18 the transport system and encourage use of sustainable transport.

19 Physical solutions include developing and refining actual products and services
20 including developing new means of personal transport and support infrastructure, ideas for
21 increasing societal acceptance of new transport technologies, and developing ideas for
22 improving the attractiveness and efficiency of public transport.

23 3.2.3 *Motivation and learning for sustainable mobility and lifestyles*

24 This topic focuses on developing innovative concepts for increasing the sustainability and
25 safety of mobility options and mobility aspects of personal lifestyle. Concepts range from
26 hard measures (e.g. pricing and incentive schemes) to soft measures (e.g. awareness-
27 building and education programs).

28 The topic includes programs designed to publicize more sustainable and safe mobility
29 practices, programs to encourage implementation of new business models and
30 multidisciplinary cooperation in the transport sector, programs to encourage sustainable
31 transport through the creation of new marketing tools (e.g. using social networks to
32 encourage public transport), and programs to increase the usability of technology for specific
33 user groups.

34 3.2.4 *Innovative tools and methods for spatial planning, transport planning and transport* 35 *technology*

36 Good planning is the foundation for developing a more efficient and sustainable transport
37 system. Furthermore, solving future transport problems will require closer coordination
38 between transport and spatial planning. Therefore, this topic focuses on the development of
39 new tools for improving the transport and spatial planning processes.

40 The theme includes developing applications for improving management and analysis
41 of transport data (e.g. automated data collection and analysis), developing applications to
42 improve transport research knowledge management and developing planning tools (e.g. new
43 analytical models) and methods for the future.

44 3.3 **ways2go First Call for Proposals**

45 The first call for projects under the ways2go impulse program was issued in March 2008.
46 Given the program’s goal of encouraging a multi-disciplinary approach to understanding
47 transport and mobility needs, the formal Call for Projects was accompanied by a strong
48 outreach program designed to encourage wide participation. The outreach included contact
49 with:

- 50 • Research institutes at universities, colleges, and independent organizations;

- 1 • Industrial companies;
- 2 • Small and medium-sized enterprises (SMEs);
- 3 • Transport operators, mobility service providers, infrastructure operators;
- 4 • NGOs and associations (e.g. disability, health care, nursing and/or rehabilitation);
- 5 • Government bodies and local authorities (particularly municipalities); and
- 6 • Individuals.

7 A total of 82 project proposals were submitted for the Call; 36 of these projects were selected
8 with a total funding volume of EUR 5.3 million (\$7.5 million). Kick-off date for these projects
9 was autumn 2008.

10 Response to the call for projects was considered excellent. Not only were many more
11 projects submitted than had been anticipated, but the proposals included many innovative
12 ideas and included teams with totally new partner networks across several disciplines. This
13 showed that the ways2go program had stimulated formation of a new mobility research
14 community in Austria; 50% of program participants were newcomers in transport related
15 funding programs.

16 Furthermore, the program succeeded in encouraging SMEs, which is often where real
17 innovation occurs, to participate (about 70% of company participants are SMEs). Finally
18 some of the new partnerships formed for the ways2go projects are now working
19 cooperatively on other projects thus increasing the quality and innovation level in Austria's
20 transport sector.

21 One reason for the program's success in attracting new and smaller organizations
22 was the inclusion of a very small project category called "concepts" into the program. This
23 enabled organizations and individuals to submit project ideas for a maximum grant of EUR
24 35,000 (\$49,000). The applications for these grants were simpler and less detailed than the
25 full application. Projects in this category had to show how they would lead to knowledge that
26 would ultimately become a new product or service; in this way these concept projects could
27 also be a way to refine and develop ideas for future Calls for Projects.

28 The response showed that taking a holistic approach to mobility research and
29 technology was strongly welcomed by the research community. Many of the project
30 proposals took a socio-technical approach expanding the technology-limited scope found in
31 previous research programs. The ways2go program encouraged this approach by
32 introducing a new project type "basic research with technological or economic orientation"
33 which enabled researchers to take a broader perspective in their work.

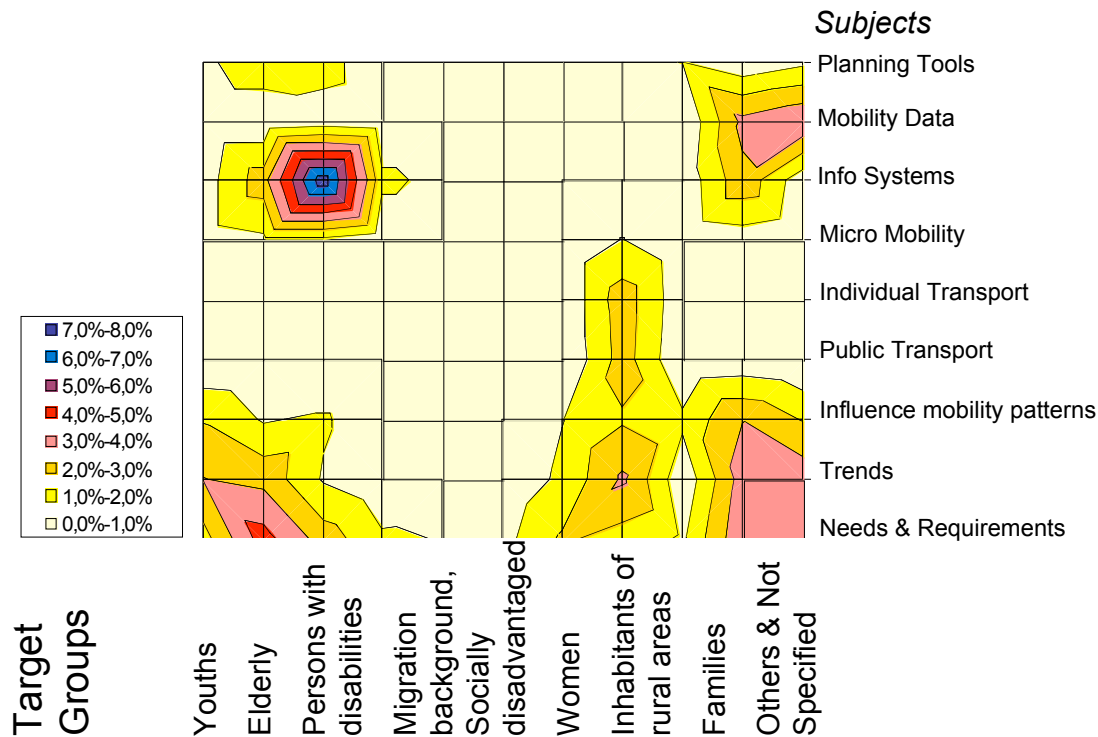
34 The ways2go projects cover a very broad set of topics. As part of the proposal
35 process applicants were asked to self-assess their proposals based on research subject and
36 target group in order to describe project effects more practically. Figure 2 presents results of
37 this assessment.

38 As shown in Figure 2, the projects selected from the first ways2go call generally cover the
39 main program themes and should contribute to meeting the program aims, although final
40 results are not yet available (first final project result are expected by the end of 2009). A list
41 of the projects funded from the first ways2go call is on line at:

42 http://verkehrstechnologien.at/ways2go/_prog18/umb7

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3 **Figure 2: Self-assessment of ways2go projects with respect to subject and target**
 4 **group (1st Call for Projects). Source [11]**

5

6 3.4 Transport Research Knowledge Management and Networking

7 A key goal of the BMVIT is to improve the quality and efficiency of transport research in
 8 Austria. One approach to achieve this goal is to develop a system of knowledge
 9 management. This fits nicely within the ways2go program and therefore the program
 10 managers decided to include a special project analyzing ideas for developing a knowledge
 11 management program using input from ways2go projects.

12 The ways2go knowledge management system project (ways2know) consists of
 13 surveying users to determine system requirements and then developing a prototype system
 14 (including recommendations for implementation). The requirements analysis has been
 15 completed and initial results show that the research community believes that a knowledge
 16 management system would be a useful tool for improving research quality and networking.
 17 The survey completed as part of this analysis provided a great deal of specific information
 18 that is currently being used to design the prototype system. Final project results are expected
 19 in autumn 2009. [12]

20 In addition to the formal study of knowledge management, the ways2go project is
 21 taking a proactive approach to networking among project sponsors by convening a series of
 22 workshops. As a result of networking at these workshops a large number of projects have
 23 started to share information and ideas, thus creating synergies and reducing the amount of
 24 duplicated work. For example, two projects can share a single survey. While some
 25 networking has taken place in other programs the ways2go program's proactive approach of
 26 organizing these networking events has significantly increased the quality and quantity of
 27 cooperation. This idea will be formalized as part of the knowledge management program.

28 Surprisingly many ways2go projects from the first call have now already started
 29 interlinking activities for cross-utilization of work. Such a high degree of "coopetition" has not
 30 yet been observed in other transport related programs.

1 **3.5 Lessons-learned and Outlook for Future ways2go Activities**

2 The first call for proposals under the ways2go impulse program was considered successful
3 by both the organizers and participants. Therefore the BMVIT decided to continue the
4 program by funding a second call for projects. While the first call was considered successful,
5 the BMVIT analyzed the program to identify lessons and ideas for improvement that were
6 subsequently included in the second call for proposals. This call was issued in June 2009
7 with a proposal submittal deadline in November 2009. This section outlines the process used
8 to revise the call for proposals.

9 The first step in assessing the ways2go first call was internal. While the first call was
10 judged successful, there was interest in increasing the number of ideas leading to actual
11 market ready products and services especially given the current economic crisis. Therefore,
12 the second call for proposals was designed with a stronger focus on applied research.

13 The second step consisted of working with key external stakeholders to evaluate the
14 first call both in terms of themes and program administration. Stakeholders included first call
15 project managers, key transport decision-makers and the public.

16 The first question: "Are the ways2go themes still relevant?" was answered with a
17 resounding yes. In fact these themes are growing in importance. This can be seen in the fact
18 that many ways2go themes are subjects of lively public policy discussions (transport's impact
19 on climate change) as well as international research. For example international conferences
20 on the impact of demographic trends on transportation systems (e.g. the TRB conference
21 held in October 2008), increasing accessibility, integrating IT into transportation systems and
22 developing new strategies for integrating transportation and land use planning. Stakeholders
23 did make suggestions for revisions and additions within the main themes.

24 The second question addressed by stakeholders was about other ideas that could
25 improve the ways2go program. Stakeholders developed several specific recommendations
26 including:

27 **Increase outreach to industry** – Large industrial companies were underrepresented
28 in the submissions for the first call. Therefore representatives of these companies were
29 contacted to learn more about why they had not proposed. The main finding was that, while
30 the firms knew about the ways2go program, they were confused about whether or not they
31 had projects that would qualify given the program's interdisciplinary emphasis. They were
32 unsure how their projects would fit within a "soft" or "social" oriented research program rather
33 than in former clearly "technical" oriented programs.

34 The important take away from this misunderstanding is to remember that,
35 multidisciplinary programs are more difficult for traditional engineering based researchers to
36 understand. Therefore special outreach is needed for large manufacturing companies and
37 especially at the level of the actual 'potential researchers' rather than only at the corporate
38 R&D level. This outreach should consist of describing the program in more detail and
39 brainstorming about potential projects.

40 **Present concrete proposals for product customer profiles** – One way of focusing
41 research on developing new products designed to meet real needs is asking all researchers
42 to describe exactly how one or more 'typical' customers would use the product or service. For
43 example, the call for proposals could identify several different prototype customer profiles
44 and ask that proposals describe this person's transportation needs in 2020 and how exactly
45 they would use the proposed product or service. The customer profiles would provide a wide
46 range of social and demographic groups (e.g. age, sex, background, location, lifestyles, etc.),
47 for example one might be a 37-year old female working part-time and living in Vienna with
48 two children aged 4 and 7. A refinement would be to ask that the consortiums to develop
49 their own customer descriptions.

50 Finally, a side benefit of this approach is that the proposals would provide an
51 excellent Delphi analysis of future transport trends in Austria and internationally. This Delphi
52 analysis could be used to further refine the program objectives for future calls and for
53 developing ideas on future trends in transport.

1 This idea is currently under a feasibility check and could be implemented into the third
2 call for proposals in 2010.

3 **Accelerate transnational cooperation projects** – Very few project proposals from
4 the first call were had a trans-national project component, although a funding bonus of 5%
5 was offered. This fact, combined with experience in the ERA-NET TRANSPORT project,
6 clearly showed the need for taking a more flexible approach towards funding trans-national
7 projects and resulted in development of the “Transnational IV2Splus Call” described in more
8 detail below.

10 **4. FLEXIBILITY FOR TRANSNATIONAL COOPERATION: THE TRANSNATIONAL** 11 **IV2SPLUS CALL**

12
13 An important goal for Austria’s transport research is to increase cooperation with researchers
14 in other countries. This international research cooperation strengthens innovation networks
15 and opens new market opportunities for the Austrian transport sector. Austria has been an
16 active participant in the ERA-NET TRANSPORT cooperation platform but wanted to further
17 increase the amount of international research cooperation. Therefore, in 2009, BMVIT
18 launched a new Call for Projects under the IV2Splus program designed to stimulate and
19 enhance international research collaboration. This section describes the ERA-NET
20 TRANSPORT cooperation platform and the new Transnational IV2Splus Call for Proposals.

21 **4.1 ERA-NET Transport Cooperation Platform**

22 In 2004, 13 countries formed the ERA-NET TRANSPORT (ENT) cooperation network within
23 a Framework Program 6 project (see www.transport-era.net) to encourage research funding
24 information exchange and to develop cooperation procedures for funding transnational
25 research collaborations between national research programs in the transport sector. Since
26 then ERA-NET TRANSPORT partner countries have organized several trans-national calls
27 and obtained a good understanding of process related implications for trans-national
28 research funding cooperation.

29 Experience from the ERA-NET TRANSPORT process clearly highlights the barriers to
30 effective collaboration between national R & D funding programs of member states,
31 specifically:

- 32 • It is difficult to coordinate the timing of individual national research programs to
33 encourage effective transnational participation. The diversity of approval and process
34 requirements for different countries makes it extremely difficult to efficiently
35 coordinate call timing internationally.
- 36 • Producing comprehensive thematic harmonization of program priorities (research
37 agendas) for program-specific, trans-national calls or tenders is a difficult and long-
38 term task. When taken together with timeline related problems (see above) this
39 restriction significantly impacts the ability to support trans-national projects.

40 The ERA-NET TRANSPORT cooperation platform partners have worked well together
41 sharing ideas for research themes and research program administration, but due to the
42 barriers outlined above it has been very difficult to launch coordinated programs that
43 encourage researchers from separate countries to work together on specific projects funded
44 under national research programs.

45 Note that while the barriers make it difficult for international consortiums to work
46 together on nationally-funded research projects, they do work effectively on transport
47 research funded by the European Union where international cooperation is a requirement for
48 funding.

49 **4.2 IV2Splus Transnational Call for Proposals**

50 The goal of the BMVIT’s IV2Splus Transnational Call is to reduce the barriers preventing
51 effective transnational research cooperation. The specific objectives include:

- 1 • Establishing new transnational research cooperation that makes a demonstrable
2 contribution (e.g. knowledge synergies, opening new markets) to the development of
3 transport technologies in Austria within the framework of IV2Splus;
- 4 • Increasing the participation of Austrian organizations in trans-national research
5 projects by increasing program flexibility;
- 6 • Creating linkages to foreign research funding sources (both public and private);
- 7 • Reducing the coordination effort needed to support trans-national research; and,
- 8 • Creating a critical mass of funding for research in IV2Splus-related topics.

9 Given the limited national resources available to support scientific research this type of
10 international cooperation is critical to building an innovative transport research sector.

11 The IV2Splus Transnational Call for Proposals is designed to compliment the national
12 IV2Splus impulse programs. This Call for Projects works by significantly increasing the
13 flexibility for international research cooperation both with respect to time (deadlines) and
14 themes in a pragmatic approach.

15 The instrument provides flexibility in time by being a continuous call (as opposed to
16 the normal national calls which are open for a limited period). This gives participants better
17 chances to coordinate with partners in other countries, to develop joint proposals and most
18 importantly, to coordinate the project proposal with research funding deadlines in other
19 countries (the Austrian program funds Austrian organizations, the foreign organizations need
20 to be funded under their own national programs).

21 The trans-national call provides flexibility with respect to themes by being open to
22 projects that are consistent with all three of the IV2Splus impulse programs. This provides
23 wide latitude for project proposals.

24 The IV2Splus Transnational Call for Proposals will only fund projects that include
25 international partners. The first call was launched in June 2009. A total of EUR 1 million (\$1.4
26 million) has been dedicated for the first call. The first proposal deadline is in November 2009,
27 but proposals will be accepted on a continuous basis to improve coordination with other
28 national programs.

29 The Transnational Call for Proposals is one of the first practical translations of
30 experiences gained from the ERA-NET TRANSPORT into a national funding system. This
31 instrument is currently on its first trial and aims for a permanent installation if successful.

33 5. CONCLUSIONS AND RECOMMENDATIONS

34 This paper describes Austria's approach to stimulating innovative multidisciplinary
35 transportation research. Many of the techniques used by Austria are transferable to other
36 research programs. These techniques include:

- 37 • **Theme-based Funding Programs** – Austria's use of time limited impulse programs
38 is a good way to continuously re-think research programs. This forces sponsors to
39 develop new themes for research and make a convincing case for their importance.
- 40 • **Improved Research Funding Administration** – Creation of a separate research
41 administration organization freed technical staff to focus on the thematic subjects and
42 made administration simpler, fairer and more efficient for project sponsors.
- 43 • **Multidisciplinary Research** – Austria's ways2go program is a good example of a
44 program designed to encourage multidisciplinary research that fully considers the
45 impacts of demographic and social change on transport demand. Developing this
46 program meant working closely with multiple stakeholders to fully understand the
47 themes and to encourage participation from organizations not necessarily focused on
48 transportation research.
- 49 • **Innovative Research Funding Processes** – The BMVIT's IV2Splus Transnational
50 Call for Proposals is a good example of thinking creatively to encourage new forms of
51 cooperation. In this case the cooperation involves different countries, but the

1 approach of evaluating the barriers to cooperative research and then developing
2 flexible techniques for working around these barriers is applicable in other situations.
3 In summary, the Austrian Federal Ministry for Transport, Innovation and Technology has
4 implemented several techniques designed to improve the quality and efficiency of its
5 transportation research programs. These techniques have been successful both in
6 stimulating development of the country's transport research sector and the quality of
7 transport ideas. The program has helped build support for transportation research among
8 policy makers and therefore continued financial support.

9 REFERENCES

- 10 [1] Critical Issues in Transportation, 2009 Update; Transportation Research Board,
11 Washington D.C.; 2009.
- 12 [2] Grassegger, E., C. Seibt: Innovationen im Verkehr. Erfahrungen mit leitbildorientierten
13 F&E-Förderstrategien im Verkehrssektor in Österreich, in: Technikfolgenabschätzung
14 Theorie und Praxis, Nr. 3, 15. Jahrgang, Forschungszentrum Karlsruhe, December
15 2006.
- 16 [3] <http://www.ffg.at/content.php?cid=34> accessed 25 July 2009.
- 17 [4] http://ec.europa.eu/invest-in-research/policy/state_aid_en.htm accessed 30 July
18 2009.
- 19 [5] Austrian Federal Ministry of Transportation Innovation and Technology (BMVIT),
20 Brochure "Intelligente Mobilität – Verkehr im Wandel", 2008.
- 21 [6] INNOMETRICS, The European Innovation Scoreboard Index 2008 - COMPARATIVE
22 ANALYSIS OF INNOVATION PERFORMANCE, January 2009.
- 23 [7] FFG-EIP, PROVISIO Status Report 6. RP, November 2008.
- 24 [8]
25 [http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/818&format=HTML&](http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/818&format=HTML&aged=1&language=en&guiLanguage=en)
26 [aged=1&language=en&guiLanguage=en](http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/818&format=HTML&aged=1&language=en&guiLanguage=en) accessed 27 July 2009.
- 27 [9] Austrian Federal Ministry of Transportation Innovation and Technology (BMVIT),
28 Brochure "Intelligente Mobilität – Verkehr im Wandel", 2008.
- 29 [10] www.transport-era.net accessed 27 July 2009.
- 30 [11] Wasner W., Zwick K., presentation for the 1st ways2go networking workshop,
31 http://www.bmvit.gv.at/innovation/verkehrstechnologie/ways2go/workshop_ergebnisse.html,
32 accessed 27 July 2009, diagram translated into English.
- 33 [12] Gruber Andreas, Andrea Mulrenin, Rolf Sint, Szaby Gruenwald, Salzburg Research
34 Forschungsgesellschaft mbH; ways2know – ein innovatives Werkzeug fuer das
35 Wissensmanagement von ways2go; Zwischenbericht Mai/Juni 2009.

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