

TNO report

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Multi-Annual Programme for 2011-2014

**Enabling Technology Programme, Behaviour and
Innovation;
Adjustment 2013**

**Behavioural and Societal
Sciences**

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1 Introduction

TNO liaises with the relevant ministries and stakeholders to produce a Strategic Plan every four years, in accordance with the TNO Act. The TNO Strategic Plan for 2011 – 2014 sets out TNO's current demand-driven innovation objectives. The plan also covers the Enabling Technology Programmes (ETPs), which cover surveys and exploratory research aimed at refreshing the internal knowledge base. The current ETPs are devoted to six focused multidisciplinary programmes: Modelling, Sensor Networks, Materials Technology, Systems Biology, Behaviour & Innovation and Strategy & Change.

The choices in the Enabling Technology Programme are based on an analysis from the perspective of the TNO themes: which breakthroughs will be needed for various themes in order to achieve the theme objectives; and on an analysis from the perspective of the development of science and technology: which opportunities will arise in this area that could be tackled by TNO and developed into new concepts.

The Enabling Technology Programmes that emerge from this process must:

- be oriented to technological breakthroughs with the potential to accelerate multiple themes towards the innovation objectives;
- lead to a medium-term world-class knowledge position (mass and focus), while being distinct from and complementary to knowledge partners (uniqueness);
- derive their strength from the combining of disciplines in order to achieve genuine breakthroughs (TNO's multidisciplinary strength);
- have a relatively long time horizon (>3 years), normally building knowledge to a Technology Readiness Level (TRL) up to 5 ('concept validation').

The ETP Behaviour and Innovation started in 2011 with a term of four years. This document sets out the proposed research lines and the constituent projects, and the adjustments for 2013 relative to the ETP Plan for 2011-2014.

Where necessary, the generic knowledge demands of the top sectors and social sectors will be anticipated in the course of 2013.

2 Environmental perspective

Europe and the Netherlands are facing enormous challenges, both socially (population ageing, scarce raw materials and climate effects) and economically (the financial crisis, globalization, growth of the BRIC countries). These complex and interrelated problems are putting pressure on European – and Dutch – prosperity and wellbeing¹. In support of solutions for the above major social challenges, Europe has adapted many aspects of the new research framework programme for 2014-2020 relative to previous programmes.

2.1 Europe

In the current seventh framework programme (FP7), the content of the ETP Behaviour and Innovation aligns mainly with the issues in five programmes:

- Health
- Information and Communication Technologies
- Socio-Economic Sciences and Humanities
- Transport

and on components (Security, Environment) with other FP7 programmes (see Table 1).

Table 1. Match between the ETP Behaviour and Innovation projects and the FP7 programmes

	Smart Coaches	Gezondheidsgedrag en -bevordering	Sociale Media en gedrag	Mobiliteitsgedrag	Organisatiegedrag	Resilience wijken	Complexe systemen
EU FP 7 programmes							
Health							
Food, Agriculture & fisheries, and Biotechnology							
Information- and Communication Technologies							
Nanosciences, Materials, and New Production technologies							
Energy							
Environment							
Transport							
Socio-Economic Sciences and Humanities							
Space							
Security							
	<- Micro		Meso			Macro->	

¹ Social and Economic Council of the Netherlands advisory report, *Meer werken aan duurzame groei* (Making sustainable growth work), 2010.

The focus of each project on a limited number of programmes, but with potential spin-offs to other programmes, is conspicuous.

The long-term technical programming of the ETP means that the EU programming for 2014 and beyond is of great importance. In the new 2020 strategy, Europe aims to achieve success as a union with a smart, sustainable and inclusive economy and high employment, productivity and social cohesion. *Europe 2020. A strategy for smart, sustainable and inclusive growth*² sets out the vision for the European social market economy of the 21st century. The three priorities that are put forward to support the new strategy are:

- smart growth: for an economy based on knowledge and innovation;
- sustainable growth: for a greener, more competitive economy that uses resources more efficiently;
- inclusive growth: for a high-employment economy with social and territorial cohesion.

The substantive support for these three priorities from the new European research perspective is outlined in the recently adopted framework decision Horizon 2014-2020³. Of relevance to the ETP Behaviour and Innovation, and with compatible content, is the third part of the Horizon programme, named '*Societal challenges*', with the following issues:

- improving lifelong health and wellbeing;
- promoting an inclusive, innovative and secure European society;
- achieving efficient, environmentally responsible and safe transport;
- a resource-efficient and climate-resilient economy;
- safe, sustainable and high-quality food;
- transition to reliable, sustainable and clean energy.

Solutions to our biggest challenges such as climate change, food and energy security and an ageing population will only come from groundbreaking research and innovation which brings together the best minds from across Europe.

Máire Geoghegan-Quinn European Commissioner for Research, Innovation and Science. Opening address Research, Innovation and Digitalisation Europe 2020 conference, June 2012, Bratislava.

The ETP Behaviour and Innovation, with its focus on behaviour and innovation issues, will be an excellent match for the first three societal challenges.

2.2 Top sectors

With a view to strengthening industrial policy, the Dutch national government designated nine top sectors in early 2011 in the memorandum '*Naar de top*' (To the top). These top sectors have proven to be internationally competitive. Science, industry and government will invest directly in these issues to enhance their innovative strength. The details of the various top sector agendas in terms of research and action plans were released in early 2012.

These top sector plans identify major challenges facing companies, government, and organizations in various sectors in achieving sufficient innovation and the appropriate behavioural change among organizations and consumers.

² <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:NL:PDF>

³ http://ec.europa.eu/research/horizon2020/pdf/proposals/communication_from_the_commission_-_horizon_2020_-_the_framework_programme_for_research_and_innovation.pdf

Table 2. Match of the projects in the ETP Behaviour and Innovation with the various top sectors and social sectors.

	Smart coaches	Health behaviours and promotion	Social media and behaviour	Mobility behaviour	Organizational behaviour	Resilient communities	Complex systems
High-tech systems & materials							
Chemicals							
Energy							
Creative industry							
Life science and health							
Logistics							
Horticulture							
Water							
Agri-food							
Head offices							
ICT							
Social safety							
Defence							
Sustainable living environment							
Employment and health							

The fundamental knowledge to be built up in the seven ETP Behaviour and Innovation projects will be usable by the various TNO innovation areas in projects within many top sectors and social sectors^{4,5,6} (Table 2).

It is generally assumed that the size of R&D investment is an important factor in new knowledge and innovation. However, it would appear that 25% of the success of innovation is determined by the technological innovations themselves, while 75% is attributable to factors on the human, organizational and societal levels⁷. Research has shown that organizational structure and culture, leadership, collaboration between companies and the networks in which employees operate determine a company's innovative strength. These aspects are within the 'social innovation' theme. Social innovation has

Economic growth will be possible only if there is a firm social foundation in the Netherlands. Research in the top sectors is impossible without the contribution from social sciences and the humanities.

From: NWO press release 2012
 Social Infrastructure Agenda

⁴ Ministry of Social Affairs and Employment Strategic Knowledge Agenda 2012.

⁵ Ministry of Health, Welfare and Sport Strategic Knowledge Agenda 2020.

⁶ Ministry Economic Affairs, Agriculture and Innovation Strategic Knowledge Agenda 2012.

⁷ Volberda, H., Final report Erasmus Competition and Innovation Monitor) 2010-2011.

been designated by the government as a top-sector-transcending theme, and is defined in the Human Capital and Social Innovation TNO/NWO roadmap⁸.

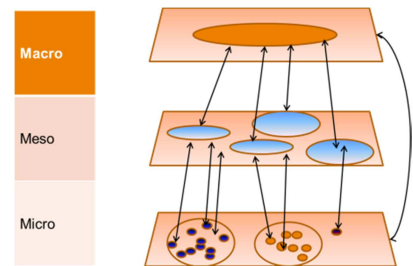
This roadmap sets out to develop knowledge and instruments to integrate innovations and investment in human capital and social innovation in specific innovation programmes (technological innovation): 'natural science-social science integration'. The 'human capital and social innovation' roadmap aspires to being a link between the Innovation Contracts and the Top Consortia for Knowledge and Innovation (TKIs) on the one hand, and the Human Capital Agendas of the various top sectors on the other. Some of the knowledge issues in this roadmap will be specifically addressed in the ETP Behaviour and Innovation.

⁸ Roadmap '*Versterken menselijk kapitaal en sociale innovatie*' (Reinforcing human capital and social innovation): a joint initiative of NWO, TNO and Syntens, 2012.

3 Objective of the ETP Behaviour and Innovation

The underlying assumption in the ETP Behaviour and Innovation is that the behaviour of individuals (micro), organizations (meso) and public authorities / business clusters (macro) determine the ultimate success of technological and social innovations⁹.

The programme has two objectives. The first is for the programme to supply tools and methods based on an innovation management approach in order to bring innovations to practical application faster and more effectively. We know that this is necessary, because it is all too common for innovations to become stranded in the chain that has to be traversed to reach the end-user (90% of innovation investment does not achieve the desired result). Insufficient understanding of the chain and methods of influencing progress through this chain has an important role, as does underinvestment (financing is mainly directed towards achieving and demonstrating the innovation).



The second is for the programme to develop generic instruments for use in influencing and modelling behaviour, and to investigate the rules of behaviour that govern the interaction between systems and individuals. The need for this is that human behaviour underlies several major social problems that confront our society. Moreover, behaviour is a crucial factor in the introduction of innovative technology.

The Enabling Technology Programme (ETP) Behaviour and Innovation will build fundamental knowledge concerned with explaining and changing human behaviour in relation to system innovation. Models, methods and toolboxes will be developed using a multidisciplinary and multilevel approach for effective behavioural influence, (community) interventions, system innovation and social change. These generic results will be tested on issues within a specific TNO innovation domain.

⁹ OECD Industry, Innovation, and Entrepreneurship committee report, New Nature of Innovation, 2009.

4 Substantive relationship with government policy and TNO themes

4.1 Governance

The 2013 programme for ETP Behaviour and Innovation was produced in coordination with the steering group. The representatives of the relevant themes in the steering group are: F. van Aken (Information Society), Prof. P. Bongers (Healthy Living), Dr B. Don (Defence, Safety and Security), F. Hagemeyer (Transport and Mobility), Dr M. Kuipers (Built Environment) and S. Kooten (Energy) under the chairmanship of Dr A. Sanderman (MD TNO BSS).

The steering group held several formal meetings, which were minuted. In May 2012 the ETP Behaviour and Innovation was assessed in the TNO executive board. The relationship with demand-driven TNO programmes is defined through the input from the representatives of the various TNO themes.

The ETP is subject to a mild form of demand control by the government, on which basis there are two liaison sessions a year with representatives of various ministries led by the Ministry of Economic Affairs, Agriculture and Innovation.

4.2 Relationship with TNO themes and top sectors

Knowledge of behaviour and innovation has a direct link with the innovation objectives of many TNO themes. The table below shows the link from the ETP Behaviour and Innovation to issues within the various TNO themes (Table 3).

Table 3. Substantive relevance for the TNO themes from the three research levels of the ETP Behaviour and Innovation.

TNO THEME		Behaviour of people (micro)	Behaviour of organizations and networks (meso)	Behaviour of social systems (macro)
1	Defence, Safety and Security	Citizen self-reliance and civic participation	Civil-military collaboration	Cultural conflicts; crisis management
2	Healthy Living	Prevention and lifestyle programmes	Labour saving in healthcare; productivity strategies	Living longer at home; intersectoral health policy
3	Energy	Consumption behaviour	Optimization of chains	Energy transition: implementation of sustainable energy technology
4	Transport and Mobility	Traffic behaviour	The New World of Work	Mobility transition: traffic economy
5	Built Environment	Behaviour-reinforcing environmental interventions	Energy-neutral built environment; reduction of the construction industry's ecological footprint; The New World of Work	Livability of urban environments

6	Industrial Innovation	Intuitive man-machine interaction	Partnering, open innovation, cooperation in coalitions and networks	Interaction characteristics of innovation system and innovative capacity
7	Information Society	User acceptance behaviour; behavioural influence through social media	E-business strategies; Information-driven work	Socio-economic implications of Internet
Generic knowledge areas		Cognitive models; assessment and decision behaviour; learning models; human-system communication	Community interventions; self-organization; emergence; intersectoral cooperation	Social innovation; transition paths; monitoring instruments; new behaviour-influencing instruments; knowledge transfer between research, policy and practice

The substantive relationship with the top sectors and social sectors is shown in Table 4 below.

Table 4. Substantive relationship of ETP Behaviour and Innovation with the knowledge issues in the various top sectors and social sectors

Top sector / theme	Output of the ETP Behaviour and Innovation
High Tech	Model for accelerated innovation in complex cooperation Adaptive models for human-machine communication Development of strategies for interactive intelligent systems Behavioural influence for sustainable mobility Success and failure factors in upscaling
Chemicals	-
Energy	System models, smart grids Chain innovations and business models Intervention instruments for transitions
Creative industry	Tools and models for e-coaches Behaviour-influencing models
Life Sciences & Health	Lifestyle programmes Guidelines for intersectoral cooperation Intervention development
Logistics	-
Horticulture and propagating stock	-
Water	-
Head offices	Working effectively in the flexible labour market Models for cooperation Social innovation
Agri-food	Health promotion and behavioural influence
ICT	Models for social influence Use of ICT in new learning
Sustainable living environment	System analysis Innovation strategies

Social Safety	Model for self-reliance Interventions for citizen self-reliance
Defence	Methods and tool development for effective training and learning
Employment and health	Diagnostic instruments for assessing organization capacities Interventions based on co-creation and empowerment methods Sustainable organizational forms in relation to social innovation (MKSI roadmap)

4.3 Relationship with academic institutions and institutes in the TO2 federation

The ETP Behaviour and Innovation operates an active policy for establishing and maintaining relationships with academic institutions regarding the research issues. This policy is implemented through part-time professors and joint PhD students, and is the basis for obtaining a high-value fundamental knowledge influx (Table 5).

Table 5. Academic relationships of the ETP Behaviour and Innovation.

(Part-time) professors	PhD students
S. Dhondt (KU Leuven)	2 University of Twente
J.M. Schraagen (University of Twente)	1 trainee research assistant University of Groningen
J. Kerstholt (University of Twente)	1 Massachusetts Institute of Technology
[applied for] (University of Twente)	1 Erasmus University
	1 VU University Amsterdam
	1 Maastricht University

The ETP topics have a limited relationship with the research themes of the other institutes in the TO2 federation (Wageningen UR, the Energy Research Centre of the Netherlands (ECN), the National Aerospace Laboratory (NLR), Deltares and the Maritime Research Institute Netherlands (MARIN). Where possible, there will be collaboration on the forthcoming calls from the top sectors or Europe.

4.4 Collaboration with other ETPs

A joint research case on system change in diabetes care is being handled together with the ETP System Biology. The ETP Behaviour and Innovation will contribute the application of transition knowledge and methods for behavioural change to this issue. There is collaboration with the ETP Modelling to provide the agent-based modelling needs of the ETP Behaviour and Innovation for simulating human behaviour.

5 Objectives of the ETP Behaviour and Innovation

The ETP Behaviour and Innovation is structured along three different levels of research – micro, meso and macro – each with various specific knowledge objectives. There is an emphasis on disseminating, enhancing and implementing the knowledge that is developed through publications and membership of knowledge networks and through participation in competitive national and international knowledge programmes.



5.1 Micro-level knowledge objectives

The knowledge objectives in the behavioural research field are:

- *interventions of proven effectiveness for changing individual and group behaviour*: developed to be 'configurable' for various application domains. Some examples of domains are mobility, aggressive behaviour, overweight, infectious disease control, sustainability, informal care, and behaviour during incidents. In all these cases the (decentralized) government has great difficulty in inducing the desired public behaviour through existing methods (regulations, design of facilities, provision of information). The importance of behavioural models lies in enabling the evaluation of interventions – which may be difficult or impossible in practice – in a laboratory setting, and in providing explanations for achieving or failing to achieve the envisaged effect. New media in particular can be employed in the development of a communication method tailored to the profile of the individual citizen, as an alternative to the, hitherto dominant, universal communication. Tools and instruments with long-term commercial potential can be derived from the models;
- *optimizing natural human-system interaction*: a set of rules of behaviour is being drawn up with which natural (convincing) interaction between actors and people should conform. To demonstrate these rules of behaviour, a fourth generation personified human-system interface is being built for various sectors, including education (intelligent play room and classroom), and healthcare ('virtual companionship for elderly people', and 'virtual coach', which assists and gives feedback to professionals).

5.2 Meso-level knowledge objectives

The meso-level knowledge objectives are:

- *an optimized development model for innovative capacity*: the current models are insufficiently defined on an organizational level. The model to be developed will help improve the innovative capacity of organizations and networks of organizations. For instance, organizations will be aware of the conditions to be safeguarded when implementing innovative change, as well as the process they have to go through to ensure that innovations take root. A set of tools that is linked to the model will be provided for the effective structuring of innovation processes within an organization or network of organizations, including:
 - diagnostic tools for innovative capacity;

- tools for interventions for the effective organization of innovative processes, taking account of the complexity and the dynamics of innovative processes;
- tools to monitor and learn lessons from innovative processes;
- tools for upscaling an innovation, in order to create more impact than a successful pilot.

5.3 Macro-level knowledge objectives

The macro-level knowledge objectives within innovation management are to make an *innovation model available on societal level, which is compatible with a complexity and emergence approach*. This model will be supported by well-founded and effective methods and methodologies (i.e. a toolbox). The toolbox will consist of the following.

- A tool for innovation diagnostics that identifies basic patterns in implementation processes: what opportunities and obstacles are to be expected?
- A design tool for an innovation strategy, based on the diagnosis and taking account of the complexity and dynamics of innovative processes.
- Tools for monitoring and evaluating an innovative process while learning. This will address one of the most important problems in the research: the actual ability to quantify the implementation or use of innovation. The 'learning' structure, with the participation of the most relevant involved parties, also creates an opportunity for continuous intervention in connection with complexity and emergence.
- Tools for intervention. These are mainly intended for influencing acceptance and use of product and service innovations on a micro level (end-users). Other interventions, such as 'living labs', or niche experiments, are appropriate as small-scale learning experiments in preparation for the upscaling and diffusion of innovations.

Cohesion

To link the three subsectors, an integrating theoretical and methodological framework will be developed in three projects *on micro, meso and macro levels*.

5.4 Portfolio 2012-2013 ETP Behaviour and Innovation

The long-term projects will be continued in 2013 within the ETP, with updated content of the research questions. The content will be adjusted on the basis of the 'transfer' of the knowledge output to one of the TNO demand-driven programmes. In line with this process, the successful substantive progress of the 'System and behavioural change in the energy sector (Suggest)' ETP project led to its inclusion as a project within the Energy top sector in 2012.

Indicators for monitoring the ETP portfolio include each project's current level of technological development, and the substantive achievement of the knowledge objectives.

The level of technological development is assessed in terms of Technology Readiness Levels (TRL), where TRL 1 means that basic principles have been observed and reported, while TRL 9 means that the knowledge product has been fully developed and is ready for application. Research subjects that have achieved

a level higher than TRL 6 are normally transferred to a TNO demand-driven programme for further development.

The classification of all projects according to the level of technological development and achievement of the knowledge objectives indicates sufficient progress on the issues of three project lines for a redefinition of content, and for a transfer of the issues to the demand-driven programmes (Figure 1).

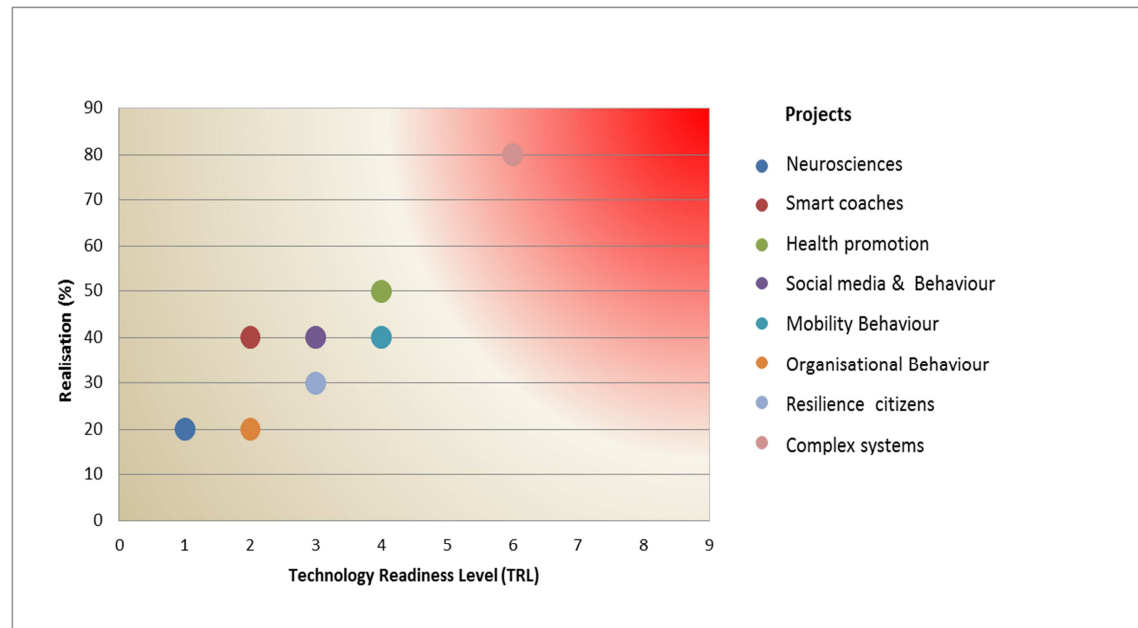


Figure 1. Classification of the 2013 ETP projects according to TRL and degree of implementation of the knowledge objectives.

The portfolio assessment and the input from the steering group lead to redefining the content of the following projects for 2013:

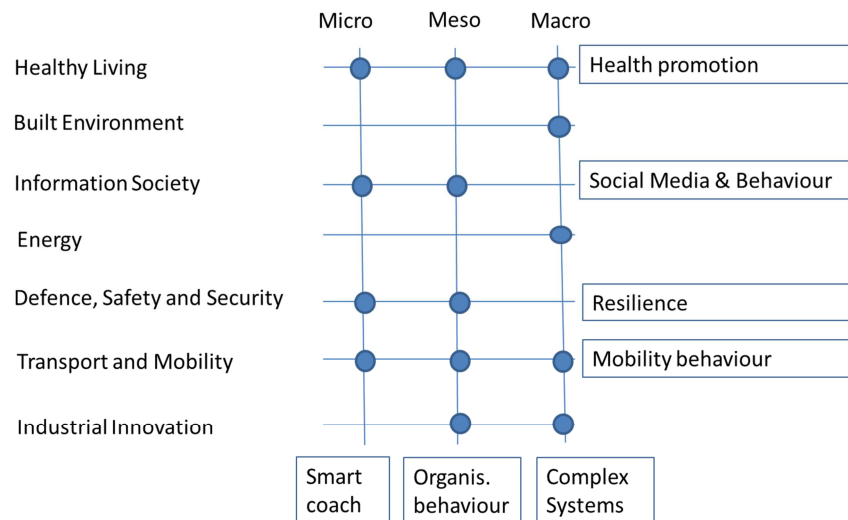
- innovations in health promotion;
- organizational behaviour;
- complex systems,

and the start of a new exploratory research project into applications of neurocognitive sciences in accelerating and improving learning and performance.

The overall budget reduction will also lead to an adjustment of the content or timescale of the ongoing projects.

6 Projects in 2013

In 2013 the following seven projects will be developed within the ETP, four of which have an application demand in a specific TNO theme, and three that are methodologically integrating for each research level.



The sections below outline the content and adjustments for 2013.

6.1 Innovations in health promotion

The prevention of overweight has gained in importance in recent decades because of the increasing public costs and the substantial burden of disease. The prevention activities to date have mainly involved a specialized approach, where the short term measures have no lasting effect in the longer term. This project is concerned with the development of generic knowledge and tools to provide tailored information for individual children and their parents, parenting support oriented to preventing 'inappropriate' behaviour of children, virtual coaching of mediating professionals who are responsible for preventive interventions, the validation of an implementation diagnostic instrument, and the modelling of intersectoral forms of cooperation.



The following work packages were carried out in 2012:

- development of a theoretical framework for parenting support;
- development and validation of a web-based virtual coach for professionals;
- development and validation of personalized information for young people;
- the creation of an explanatory model for intersectoral cooperation.

Adjustment in 2013 will coincide with the completion of the first two work packages and the continuation of the development of the personalized information tool, and the validation of an explanatory model for cooperation.

6.2 Social networks and media

Social networks have an important role in people's behaviour. ICT developments (social media) have further simplified the creation of networks of this kind. An example of the substantial impact of social media is how public opinion about an issue such as vaccination can be influenced. Government authority and public confidence in the government and science are being replaced, apparently effortlessly, by a collection of public utterances. We also refer to the increased impact of individual opinions as the empowerment of the individual. Because of the above, the idea that people's behaviour is simple to influence through one-way communication has become outdated. Social media and social networks are of increasing importance in encouraging change and innovation. The ambition is to be able to generate a model for explaining the impact of social media on people's behaviour and to provide handles for intervention.



The following work packages were carried out in 2012:

- development of methods and models based on complexity and chaos theories;
- conceptual development of a social psychology model for influencing;
- development of 'e-herding' dimensions for classifying patterns in messages.

In 2013 development of the conceptual model will continue, and will be validated with new cases from industry and government.

6.3 Mobility behaviour

There is still insufficient knowledge of the behavioural determinants on micro, meso and macro levels to ensure the success of innovations in the world of traffic, transport and mobility. Too often an innovation is introduced quickly (or tested on a small scale), and does not materialize on a national level as envisaged (upscaling problem). In this project we are combining the knowledge and output from earlier processes from the world of traffic and transport with a view to converting success and failure factors into a mobility behaviour model.



The following work packages were completed in 2012:

- inventory of behavioural models and data from practical experiments;
- the set-up and conceptual development of a differentiated behavioural model for each context.

In 2013 the focus will be on the further development of the behavioural model and the first test against available data.

6.4 Self-reliance and civic participation

Self-reliance is an important social theme that is relevant in various domains. Social safety is concerned with awareness of risks and preparatory behaviour, and, in the transport domain, ICT enables passengers to be informed real time about the current traffic



situation. The scaling down of government involvement is giving rise to a different relationship and a correspondingly different communication pattern between the government and the public: from 'top-down' control to networked cooperation. To ensure the success of this new form of interaction and cooperation, it is important to have an understanding of objectives, interests, information requirements and the convictions of citizens in order to shape the cooperation to the greatest effect.

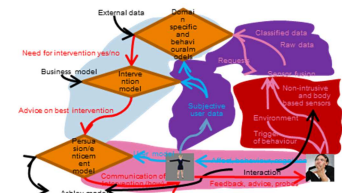
The following work packages were carried out in 2012:

- continued development of the community resilience model;
- conceptual development of intervention for the promotion of self-reliance;
- conceptual development of intervention for the promotion of cooperation between the public and emergency services.

In 2013 the community resilience model will be further developed from the physical safety domain to the social domain. The developed conceptual interventions will be tested.

6.5 Smart coaches

This integration project started in 2012 and is concerned with the development and implementation of smart coaches (e.g., virtual agents) for interventions, based on multiple behavioural change models. The prototypes of interventions will be delivered by the other ETP projects, that target behaviour on a micro level, but each within their own application (use case).



The following work packages were carried out in 2012:

- vision and roadmap development for an open innovation lab;
- toolbox development for designing interventions based on intervention mapping methodology;
- definition of system design and implementation of hardware and software.

The third work package will be continued in 2013 and knowledge and model development will be started for identifying the best form of the virtual agent depending on the user, task and environment involved.

There will also be attention to application opportunities for cognitive neurosciences, including in serious gaming environments.

6.6 Organizational behaviour

Improving the performance of organizations currently has to take place in a context of great uncertainty (e.g. flexible contracts, more market volatility).



This project integrates and adds depth to knowledge in the area of improving individuals' and organizations' performance and learning. Among the relevant issues are integration of learning and working, co-creation, and organization and productivity of organizations and individuals.

The following three work packages were completed in 2012:

- *Flex Barometer*: environment and micro-behaviour; how can we model feelings of uncertainty, regulatory context and performance? Use is being made of the Flex Barometer output.
- *Learning and Behaviour*: how can we link micro-learning methods (e.g. games, technology) to the meso and macro contexts: a multilevel approach to learning?
- *Participation and Behaviour*: what is the best way to design participation in various settings?

The activities surrounding the Flex Barometer and learning were completed in 2012. The participation and behaviour issues will be extended to research questions as set down in the cross theme TNO/NWO roadmap for Human Capital and Social Innovation.

6.7 Complex social systems: assessment and governance

The objective of the project is to develop and test application-oriented knowledge and methods for change within complex systems (industrial sectors, or governance networks that have to implement this kind of change).



Our primary aim is the development of system approaches, economic analysis models and new governance methods of general value for the Built Environment, Mobility, Energy and Climate, Information Society, Social Safety, and Industrial Innovation themes.

Three work packages were carried out in 2012:

- Integration and development of a method and of tools for complex innovation systems.
- Development and integration of knowledge instruments for complex decision-making in social innovation issues.
- Assessment tools for effects (costs and benefits) of innovations and interventions for social issues.

In 2013 the content will be oriented mainly to knowledge issues related to the energetic society, in order to better utilize the creativity and innovative capacity of citizens and companies that is present in society.

A central objective in 2013 is to assess the insights that can be obtained into the differences in the social activation patterns and the underlying mechanisms.

7 Signatures

Soesterberg, 22 April 2013

Placeholder



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