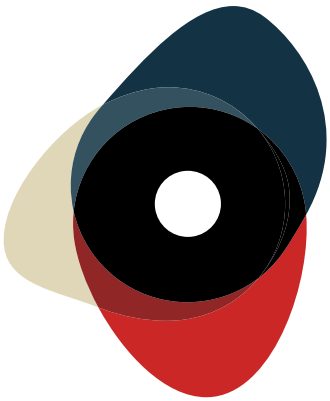

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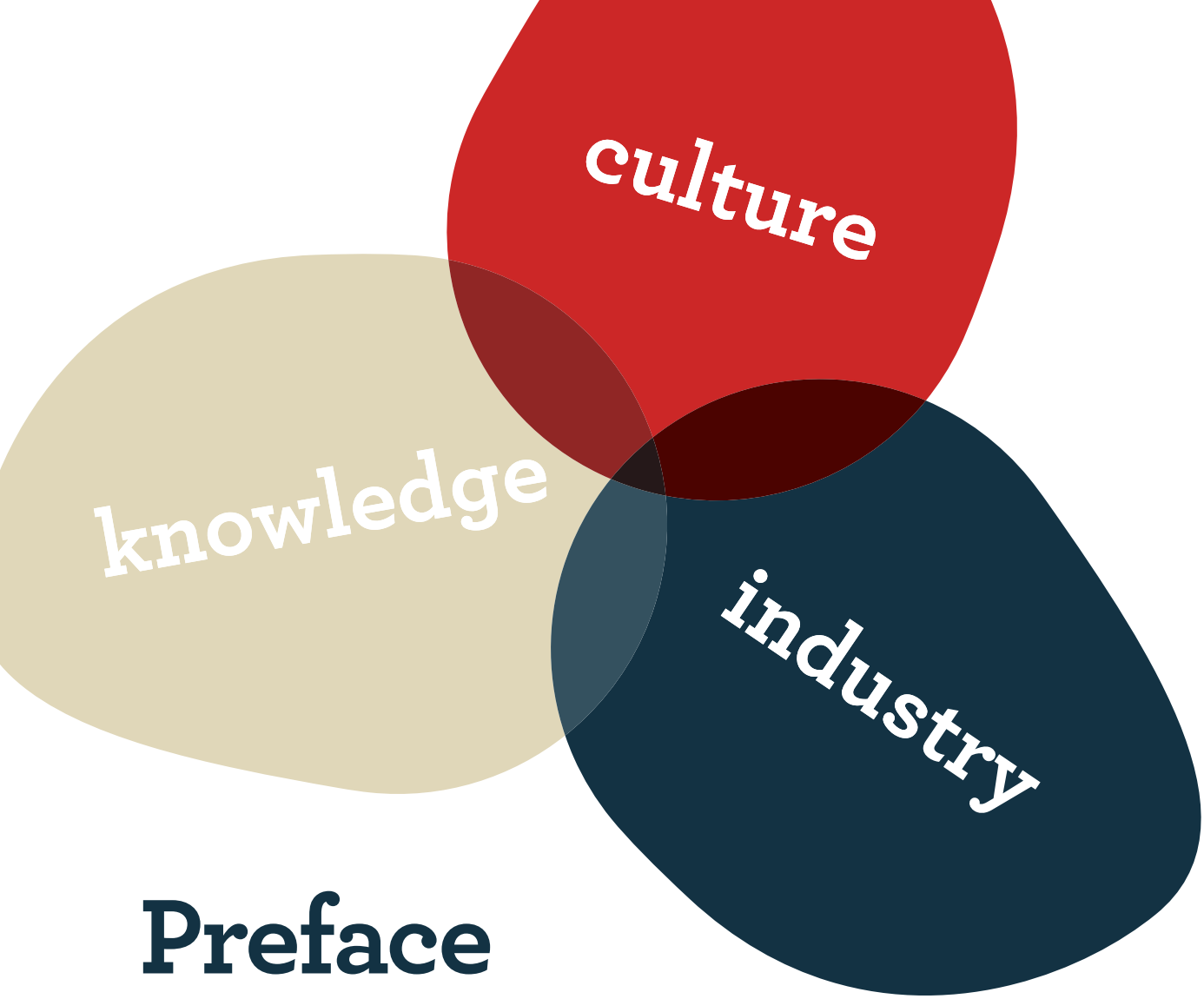

Preface

IIP/CREATE

This is the Strategic Research Agenda of the ICT Innovation Platform IIP/CREATE. Since its kick-off on June 20th 2007, IIP/CREATE has worked with many parties from the information, communication and media industry on this Strategic Research Agenda.

Participants

The platform IIP/CREATE is supported by

ICTRegie and NWO, the Ministry of Economic Affairs, and the Ministry of Education, Culture and Science.

The Strategic Research Agenda was built in discussion with

Industry partners such as Philips, Logica, Ericsson, GetronicsPinkRocade, IlseMedia; non-profit institutes like Waag, V2_, the Patchingzone, Beeld&Geluid; SMEs like FabChannel, Mediamatic, STBY; the Universities of Amsterdam, Utrecht, Tilburg, and Maastricht, the CWI; technical Universities of Delft, Eindhoven and Twente; the Universities of professional education in Amsterdam HvA Medialab, in Rotterdam the Royal Academy of Art, in Utrecht HKU; platforms for the arts like DEN and Virtual Platform, ICT~Office and Syntens, and intermediaries like TNO and the Telematica Institute.

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ICTInnovatieplatform
ondersteund door ICTRegie

Contents

Management Summary

The creative sector

Economy growth relies on ideas, skills and quality to excel, on entrepreneurship, on the work force to make it happen and ultimately on society where all these aspects are rooted. We live in an era where the value system of society changes rapidly as a result of the rise of the 'creating' class. The 'creating' class forms a new economic sector where relative autonomy, creativity, a networked context, and (large-scale) production of small-scale expressions define its work ethos. At the core of the 'creating' class is information, communication and media. This definition – similar to the one of CPB – is covers 30% of the workforce. Information, communication and media ICM are at its core.

The potential

Estimation of the economic perspective in standard ways is hard as data about this new sector lag behind. Nevertheless there is ample evidence of a considerable impact in times where technology becomes invisible, hardware is cheap, and content becomes invaluable. Dutch design rightfully acquires great fame, yet this results in limited impact in economic or social terms. Economically, small scale leads to a gap between idea and production, and to limited market exploitation, and to economic sensitivity. What is needed is complete ecosystems with science, inspiration, and production insight. Coordination problems occur when engineers and creatives do not find one another, and when knowledge and information are fragmented. Multidisciplinary projects may remedy this. Barriers to entry are mostly due to a lack of real communications, whereas foreign operators acquire data about all our (online and offline) habits. Socially, the rise of the 'creating' class has an enormous impact on the participation in (virtual) communities to restore coherence, narrowing the digital divide, and introducing new ways of living in the city. Such fields as healthcare will be impacted by information, communication and instruction, woven around the home. Culturally, developments in ICM will also change the way we create, distribute, preserve and participate. There is co-creation and re-creation, there is social participation and there is the impact on tourism, when all digital content is semantically accessible. The impact of the 'creating' industry on learning is inevitable, desperately needed to balance the excitement of Internet and games at home. The potential is illustrated by experts with scenarios for 2015 on games, shopping, cultural heritage, public health, hospitality, culture and education, and eGovernment.

In the Netherlands

Whereas the rise of the 'creating' class occurs world-wide, we focus on the changes in the Netherlands. The life-style of consumers will be creative and personalized, supplied with mass-produced individual 'expression'. In society, dependable collaboration at a distance will be essential. Where broadband introduces the whole world into the living room, proximity will paradoxically gain in importance. In science and technology there is an apparent lack of a coherent agenda, as opposed to foreign countries which invest heavily in this field. We can take advantage of innovation models and ways of working suiting the Dutch. Our excellent infrastructure provides an opportunity to invest in content, at the same time also creating more information for the content

providers abroad. Therefore, we must invest in Dutch search engines and experience labs. Current government instruments need improvement as they do not suit creative research well. Creative entrepreneurship has been successful as the new way of life for SMEs and ZZPs. However, innovation here is stalling. To complicate matters, classic intellectual property rights are fading away on a global scale, putting pressure on creative business models. The first to experiment with the new IPR wins. In conclusion, we have identified trends, strengths, weaknesses, opportunities and threats that are important to create the winning ecosystem in the Netherlands. The Netherlands have a good potential advantage. At the same time, physical proximity is important, as are ecosystems with creatives, production knowledge, research, diversity and chains in operation. It is our vision to create world-class ecosystems of the creative sector, by creating coherence between knowledge centers, industry and the non-profit leaders in regional contexts. Example ecosystems are presented in Amsterdam, Utrecht, Eindhoven,, Rotterdam, and the NIRICT.

The Strategic Agenda

In workshops and interaction with the field, we have identified the most vital themes to develop. Themes with the highest potential of success and a sense of urgency have been coupled with tools for broad support in the field. The five themes are search & find, contextivity about the importance of context exploration, virtual and real worlds, collaboration as a way of life, and interactive and tangible environments. Nine tools are discussed: instruments for interaction, location-based infrastructure, tools for data worlds and building real & virtual worlds, labs such as world experience labs and living labs. Abstracts are included for equally important measures such as policies for property rights, entrepreneurship of the creatives, and research of the creatives. For each theme and each tool we argue why the Netherlands is an excellent place to endorse its development. Per theme and tool also, we indicate immediate stakeholders in the Netherlands. The chapter is illustrated with working examples.

Creating a winning ecosystem

This agenda proposes a mix of long-term research with short term demonstrations and high-profile applications, consequently to form new chains of knowledge for an enduring advantage. We focus on the 'hottest' spots supporting local initiatives, wherever they originate. We aim to introduce vouchers for the production of creative ideas, creative pioneer vouchers, and creativity vouchers for the production industry and coaching. For the restoration of chains, we aim to build large-scale programs and new reward systems. For community building, we suggest public awareness programs, registration of best practices, and the maintenance of open-source technological sources. We suggest a few programs on education. We suggest a PhD on the basis of a work of art and on the basis of a start-up company. And, we aim to develop a program for stipends to artists, and for public broadcasting to be a lead customer. The chapter is illustrated with information on the EU, which proposes 2009 as the Year of Creativity and Innovation, and other programs.

IIP/CREATE

The Strategic Agenda was produced by the program board of IIP/CREATE and created in discussion with industry, non-profit institutes, SMEs, universities, HBOs and academies, platforms and intermediaries, and supported by ICTRegie.

01/ The Creative Sector

Economy and economic growth rely on ideas, skills and quality to excel, on entrepreneurship to seize the moment, on the work force to make it happen, and ultimately on society where all these aspects originate. If the composition of society changes or the way by which people live and work changes, the economy will change too. *If both society and ways to work and live change, economy will change for sure.*

The changing values of society

The same holds for the change in the values of society. Where some things loose their value rapidly, other quickly gain in value. A DVD-drive nowadays has the same value as the content of the game or movie which will play on it. Experiences thought to represent no value, nowadays are a new and highly valued commodity. People are prepared to work for free in an Internet community to entertain others or to maintain archives, work which was exclusively done in the context of labour. *The value system of society changes rapidly.*

The rise of the creative sector

These changes to society are happening in high speed. It is a world-wide phenomenon similar to the rise of the industrial economy or the service economy. A logical consequence of these drastic changes in the way we live is the rise of a new economic sector: the creative sector. The new economy will certainly touch the Netherlands, with among the largest penetration of bandwidth in the world, with a population prone for autonomy in an informal order, and with a mind for internationalism and business. *The Netherlands are a perfect, potential playground for the creative sector.*

1850	1900	1950	2000
	Auto, plane, telephone, radio, TV	Sexual, health, mobile, relational, informal revolution	
Industrial revolution	Horizon extension	Invention of the individual	

1.1/ What is the creating class?

In the last 150 years we have not only seen the industrial revolution which altered the structures of society, but also a huge extension of people's horizons through the introduction and use of cars, planes, telephones, radio and tv. Since then, neighbourhoods, cities and society are losing their strong sense of community and have become fragmentated[2]. Subsequently, there has been an 'individual revolution': the invention and rise of the individual. The effects are visible not only in family relations and sexual relations; we also have become more health conscious and as a result our average age has grown substantially. The fact that everybody has a mobile phone makes us accessible as an individual person (instead of belonging to a household or a company). All kinds of relationships are changing in a fast rate.

Living the creative way

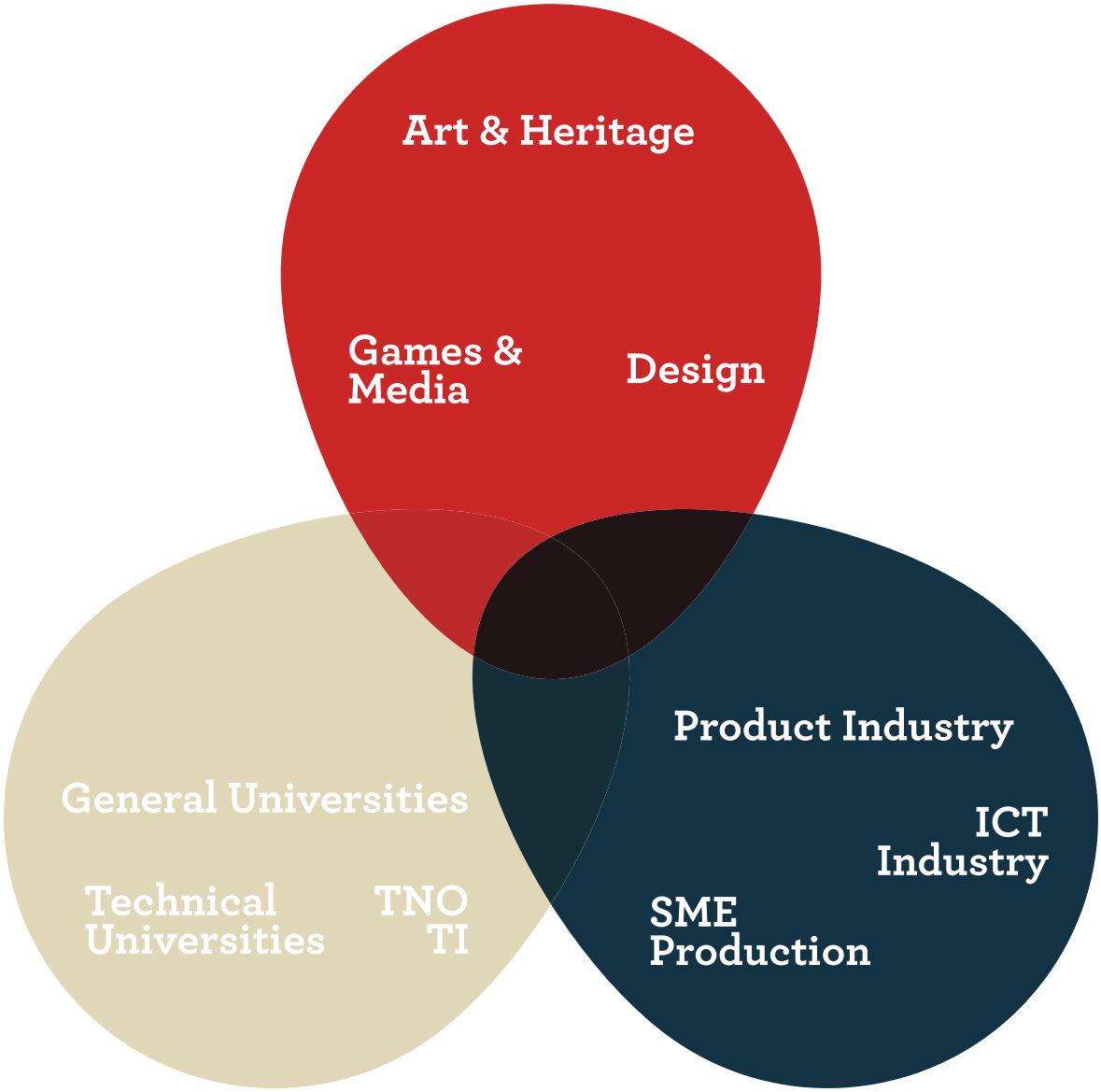
Millions of people are beginning to work and to live the creative way - as artists, consultants and scientists always have done. This is life style where personal responsibility and accountability are important assets. They work in a high degree of autonomy, they make something, and they operate in a network of relationships. Leading the shift are the people in many diverse fields who create for a living. This new economic class is generally known as the creative class[1] but that implies mostly artists and designers. It is a small subset of the class we have in mind. *We prefer to designate the class we have in mind as the 'creating' class.*

Characteristics

In macro-economic terms, members of the 'creating' class behave similarly. That is, they belong to the same new economic sector. Autonomy is a keyword in their work attitude. They optimize experience and expectation, and strive towards total acceptance of invisible technology in ambient intelligent environments. They work in a communal and networked context and their production is small-scale, based on co-creation. They share a common creative ethos that values creativity, individuality, difference and merit. For the 'creating' class, every aspect and manifestation of creativity (technological, cultural and economic) is interlinked and inseparable. Their creative life-styles will affect private and community life, work styles and citizenship. *What makes the creative sector unique is the integrated way of living and working and regulating, all with an emphasis on self-motivated and flexibly networked.*

The 'creating' class

Our definition of the 'creating' class covers the creation and recreation of products, it contains experiences and information, it contains media and their impact. In short, *it contains all who are creating in relative autonomy, operate*


Art & Heritage
Games &
Media
Design
Product Industry
ICT
Industry
SME
Production
General Universities
Technical
Universities
TNO
TI

in a social network, live a local ecosystem and deliver their goods where they can on the world. It is obvious they are leaning on information, communication and possibly media as their unique enabling technology to support their work and to support their expertise. Their products and services result from individual or collective works of creation and entrepreneurship. Private consumers and businesses buy them because of their meaning and the experience they accomplish. *At the core of the 'creating' class is information, communication and media.*

The 'creating' class versus other definitions

The common Dutch definition of creative industries is much narrower, restricted to art-related topics[3]. As lined out above we include a much broader scope: *it contains all who are creating in relative autonomy, operate in a social network, live a local ecosystem and deliver their goods where they can on the world.* We do so as this group behaves the same in an economic sense. In our definition, we find support in the definition of the Netherlands Bureau for Economic Policy Analysis (CPB). It defines the creative industry as follows: *"The creative industry is a specific form of industry which produces products and services which are the result of individual or collective labour and entrepreneurship. Content and symbolism are the most important elements of these products and services. They are purchased by consumers and business customers because they evoke a meaning. On this basis, an experience is created."*[4]. Interestingly, NESTA[5] the large UK funding initiative in this area, speaks of the creative workforce including people who work in creative positions in other sectors: advertising, architecture, visual arts, TV, music, publishing, and software, computer games.

Essential parties

Our target lies at the crossroads of three parties. We need inspiration and content from the arts, from digital heritage, from design. And we need industry to make it and to sell it. And we need science and innovative ways of thinking to make the product or the service to society stand out of the crowd of ideas: to endow it with unique features. *Content designed with a touch of excellence and empowered by science.*

Technology, talent and tolerance

Extensive research shows that successful ecosystems – with respect to innovation and economic growth – have three factors in common: technology, talent and tolerance. Each is a necessary but in itself insufficient condition. Technology is of course the base for innovation and worldwide competition. Talent is equally important: you need highly educated, creative and creating people. A tolerant environment attracts and retains top-creative and top-creating talent. In Europe, successful ecosystems are developing in cities like London, Paris and Berlin. In the Netherlands, we see large local ecosystems growing in Amsterdam, Utrecht and Eindhoven, each with their own emphasis. They are supported by ecosystems in Rotterdam, the technical universities, initiatives in HBO and other cities. *Successful creative cities all share technology, talent and tolerance.*

1 Richard Florida, The rise of the creative class... and how it's transforming work, leisure, community & everyday life, 2002. Also: Richard Sennett, The Corrosion of Character: Personal Consequences of Work in the New Capitalism; Charles Leadbeater & Kate Oakley, The Independents: Britain's New Cultural Entrepreneurs

2 Robert Putnam: Bowling alone, The collapse and revival of American community, 2000

3 For example in the studies by SEO Economisch Onderzoek and Atlas voor Gemeenten.

4 CPB, De creativiteit van de markt, no. 90, June 2005

5 Beyond the creative industries, mapping the creative economy in the UK, P. Higgs, S. Cunningham, H. Bakhshi, Nesta 2008

1.2/ Who are the creating class?

The economic value depends on the definition

It is difficult to come up with figures on the economic value of the 'creating' industry. Every new researcher defines the topic differently, and none comes up with the definition in full breadth as we do. For the narrow definition, SEO quotes a study[6] which shows that the economic value of the creative sector increased between 1993 and 2001 from 2.8% to 3.2%. An examination on the basis of sectors however gives little insight into the actual work carried out, so that the tea lady counts just as much as the designer. Assessed in this way, Kaatsheuvel is the most creative town in the Netherlands, because De Efteling is located there.

The economic value is based on 33% of our workforce

Following the more relevant, broader definition given above, research tells us that the 'creating' class consists of a core of computer and mathematics engineers, people in science and education, arts, design and architecture, sports, entertainment and media (12% of all employed people). Around the core is a broader group of 'creating' professionals in management, business, finance, legal, healthcare & technical high-end sales (18%). The remaining 66% of all employed people consists of working class (25%, construction, extraction, installation, repair, production and transport), service class (40%, health and personal care, food and non-food retail, cleaning, maintenance, office, administration, community, social, security) and farming (5%). *In total, 'creating' sector form nearly 33% of the workforce in the Netherlands[7] - and operating as a coherent socio-economic pattern.*

On ICT

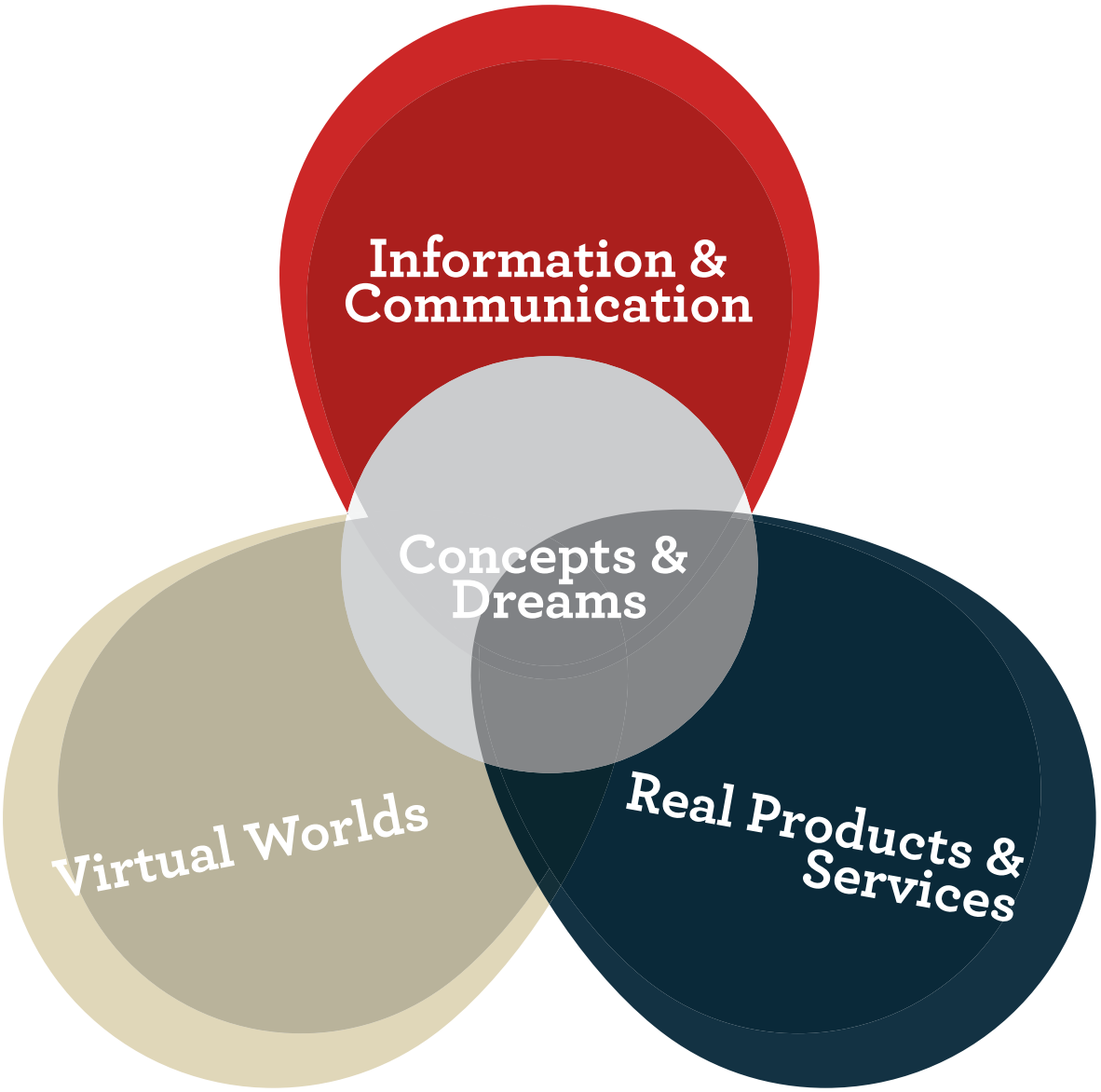
A special role is assigned to the ICT industry, since creating and ICT go hand in hand and ICT affects almost all creation. Not only in industrial design, interaction, architecture and space, but it also provides the means to communicate and live in social networks. At the same time, artists from various backgrounds have started working with ICT, as tools to create their work and do their research, and as a medium of expression. *ICT is the most obvious lifestyle enabler.*

Information, communication and media (ICM)

More specifically, the members of the 'creating' class are touched by information, communication and media industries[8]. We prefer to use ICM, to express the emphasis on content rather than ICT-technology. Included are digital entertainment, digital styling, digital art, digital lifestyle, digital content and digital heritage. The 'creating' people working in ICM form an interdisciplinary group, focussing on the creation of information & communication, virtual worlds and real world products. *The ICM-sector is the most important asset and motor of innovation.*

Information Communication Media is our core

In our definition of ICM are included creative and creating and everything affected by ICM- technology: the fashion industry when it deals with digital fabrics, museums for its digital archives, design in the context of interaction design and smart objects and architecture where the physical environment meets the virtual environments. Finally service design is an asset of ICM where services are platforms for meaning and social networks. *ICM is our core: everything related or depending on digital content and communication.*


Information &
Communication
Concepts &
Dreams
Virtual Worlds
Real Products &
Services

Creativity is the white spot in academic education

Robbert Dijkgraaf is one of the few who have been awarded the Dutch Spinoza price for research, in his case for his contributions to theoretical physics. He is president-elect of the Royal Academy of the Arts and Sciences. In a recent interview he emphasized what he learned and how he was trained to learn in university relative to his experience at the Rietveld Academy of Arts he had followed prior to his switch to physics. Here follows a quote in Dutch[9]:

"De omgang met de creativiteit van jonge talenten verdient in de universiteit meer nadruk. Robbert Dijkgraaf prees in dit opzicht het kunstonderwijs in het hbo als inspiratiebron. Op het seminar over de 3e cyclus in de kunsten in Amsterdam vertelde hij over zijn eigen onderzoekservaring in zo'n 3e cyclus in het wetenschappelijk onderwijs: 'Als je aan de universiteit de initiële opleidingsfase achter de rug hebt, moet je ineens een eigen onderzoek vorm en inhoud geven om je PhD te gaan halen. Ik vond dat een enorme overgang na de jaren waarin eigenlijk alleen maar colleges volgen moet. Ik had echt het gevoel in het diepe gegooid te zijn.' De Spinozist bekende dat hij aan de universiteit volstrekt niet geleerd had hoe in zo'n nieuwe fase van kennisverwerving hij zijn eigen creativiteit en intuïtie moest aanboren en benutten. 'de rol van je verbeeldingskracht daarin krijg je in de universitaire opleidingscontext niet mee. Daar praat men niet over, althans niet dan in gesprekken in zeer informele sfeer laat op de avond. Het vergt ook veel moed van een student of jonge onderzoeker om het feit van dat gebrek aan kennis en vaardigheid zelf in je onderzoeksopzet aan de orde te stellen.' Dijkgraaf was door een tijd aan de Rietveld Akademie zich bewust geworden wat het wetenschappelijk onderwijs hier veelal mist. 'Die ervaring maakte het voor mij beter hanteerbaar mijn eigen creatieve vermogens te benutten voor mijn onderzoek. Dit is een grote witte vlek binnen de opleidingstraditie van het wetenschappelijk onderwijs.'"

6 Robert Kloosterman, Recent employment trends in the cultural industries in Amsterdam, Rotterdam, The Hague and Utrecht. A first exploration, in: Tijdschrift voor economische en sociale geografie, 2005

7 Page 10, Cultuur en creativiteit naar waarde geschat, SEO and Atlas voor Gemeenten, 2005

8 Chris Bilton, Management and creativity, From creative industries to creative management, 2006

9 www.scienceguide.nl


CAFE

02/ The Potential

In the first chapter we described the rise of the creating class covering some 30% of the workforce[1]. Their creative life- and work-styles will affect private life, community life, citizenship, and work. Here we discuss the potential for our economy, for society, for our culture, and for education.

2.1/ The economic potential[2]

Economic impact

This section will examine the economic perspectives of the creative sector in the Netherlands. Can the creative sector be led to a greater contribution to the Dutch GNP? And can the sector, made up largely of small organisations, be made more resilient to economic swings, thanks to a more beneficial economic link to large-scale industry?

The value of content, of design and of technology

An Apple iPod costs more than a comparable MP3 player, just as the audio-video equipment of Bang & Olufsen costs more than comparable products. YouTube defeated Yahoo! Video and Google Video because the user interface and functionality were better. An individually designed house also changes hands for a higher sum than standard property of comparable materials. Where creativity and production come together, value is created. One achieves a (much) higher price for better quality for otherwise comparable products and larger volumes. Apple's iPod is the living example. Creative quality matters. Creativity is a necessary condition for an ICT product. *Technology becomes invisible. Hardware is cheap nowadays. But the innovative technology driving the experience becomes invaluable as it does so.*

Dutch creativity is world-famous

In terms of creativity, the Netherlands are a world leader. Expressions of Dutch creativity travel around the world. Dutch work forms part of collections of museums such as Droog Design. At the Salone Internationale del Mobile 2005 ICON drew up the top 10, which was largely made up of Dutch designers: 'We also make no apologies for the heavy representation of Dutch designers and brands: Milan once again shows how this small nation continues to

produce the most innovative and intelligent design.' This creativity extends to other sectors such as architecture, for example Rem Koolhaas. This results in personal fame for the designers. *The work of Dutch design performs an important function as ambassador of the Netherlands.*

The impact of the fame in creativity, however, ...

... is limited in economic terms. Converting ideas and concepts into saleable products differs radically from being bestowed with personal fame. It demands different motivations, a different mind-set for production-integrated thinking, and a different sense for risk and venture capital. A creative zone has sprung up in the Netherlands around Amsterdam and the 'Noordvleugel' (Northern Area) in general, but the creative sector is also manifest in places such as Eindhoven, around the Design Academy and Philips' Open Innovation Centre, and Utrecht's game design industry. *Where talent for creativity is not the issue, the challenge is to make valuable products or social services out of it.*

The challenge is to restore broken chains

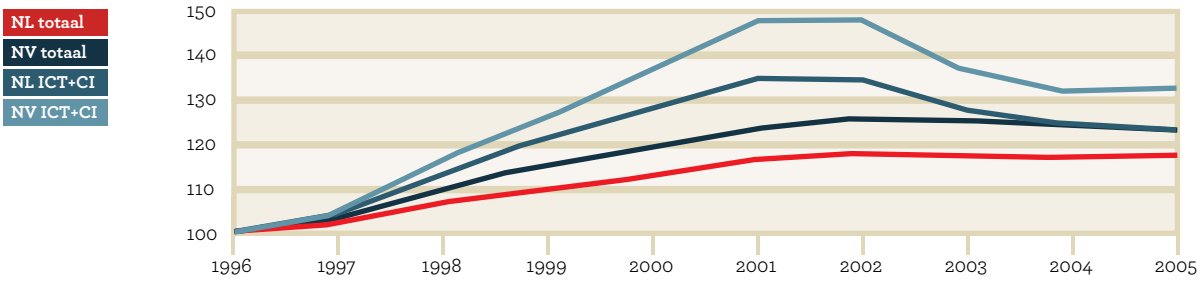
The challenge, if not the core of the problem, is in scaling up from an idea to production. Designers do not acquire the experience to think in terms of production, nor do they get easy access to production facilities to scale up their ideas, nor do they have the knowledge to gain access to these production facilities. The problems in scaling up are primarily due to broken links in the Dutch technology chains, but also beyond this[3]. *It is important to remove impediments and to repair the broken chains.*

Market failure

Despite the successful program of 'innovatievouchers'[4] and the fact that Dutch design and Dutch creativity are world-famous, there are cases of severe market failure in the Dutch creative sector. Most prominently this occurs on the interface between ICT and creativity. Although Dutch industry is ready to innovate, the creative ideas to not reach industry. The three most important forms of market failure will be analyzed in detail below: *market failure due to scale problems, market failure due to coordination problems and barriers to entry.*

Problems of small scale

The Dutch creative sector is characterised by small organisations, ad-hoc cooperative ventures, freelancers and one-man businesses. Ten to twelve people is already a big company. Amsterdam, for example, is characterised by an average business size of 3-5 jobs. The sector is broad-based, and is made up of many organisations. In the cities in the Noordvleugel, the creative sector represents 10% of jobs, and growth in the number of jobs was once again higher during 2005 than the average in other sectors. *The sector is primarily made up of organisations which are too small to become large.*



Jobs in ICT, the creative industry and the total economy of the Netherlands and the Noordvleugel 1996-2005[5].

Scenario:
Games in 2015

After a tiring day at work A.G. Sims is in the mode for some serious entertainment. After a quick meal he puts on his entertainment glasses and power gloves and steps into the mythological world of Rajiri. His home adapts the light, temperature, sounds and smell to this fascinating environment that is inhabited by millions of people from all over the world. He joined a couple of years ago. Now he has become a quest leader with a fame that he would never achieve in the real world. Today he and a couple of friends have planned to find the Gate of Knowledge of which it is rumoured another exciting game world is waiting. They have been gathering information and items that should help them to succeed.
First, A.G. decides on a brief visit to his grandmother. She often hangs out in Rajiri where she inhabits a house in the village. She collects scrolls of wisdom to help decoding secret messages of the game. She is not at home but once he knocks on the door his grandmother jumps into the game. They chat before he moves on.
Last time, A.G. and his friends built a raft from wood that was lying around. Today they plan to cross the river to see what is on the other shore. There are thick bushes here and A.G. and his friends use their swords, with strong movements of their arms to cut a path. A.G. almost steps on a poisonous snake which moves away, hissing. After the bushes it seems they finally reach their goal. They need all their combined force to open the gate in the rock wall. Finally it opens and reveals a beautiful landscape. A gate keeper steps forwards, inviting them into the new world. But, he must warn them. Once entered there is no return possible. The team-mates discuss for a while using speech and gestures. Their avatars express the emotions they feel. They decide to return for now. A.G. decides to go to bed early. The next day his alarm clock will call him early to his real world duties.

Mark Overmars, GATE, Utrecht

The 'creating' sector is more sensitive, ...

... than other sectors to economic swings as a consequence of the small scale and the broken chains. The graph shows that in the years following the 'dot-com bubble', the sector suffered more serious shrinkage (in terms of jobs) than other sectors. A reinforcement of the power of scaling up ideas could make the sector less sensitive to economic swings. This will provide the sector with a solid foundation, ensuring the sector is not blown away when the economic winds are adverse.

Where and how to produce?

One option is to make medium-sized and large businesses in the Netherlands aware of the potential of the 'creating' sector. Medium-sized and large businesses can scale up the golden ideas of the 'creating' sector into widely sold production runs. Such an approach has limitations, however. The number of medium-sized businesses in the Netherlands with a sufficiently large scale and capital to be able to take an idea into production is much smaller than the breadth of the Dutch 'creating' sector, and they are by their nature more risk-averse. Luckily, to have Dutch production is not necessary, however, the most important thing is that the knowledge and experience remains and grows, and that profits flow back to the Netherlands. TomTom is a good example of the preferred road of not focusing on the Netherlands for partnerships but of considering the possibilities of worldwide production. *The use of production vouchers (see recommendations) could enforce this scaling up process.*

Conclusions and recommendations on scale

Scaling problem risks	Solution direction
No transfer of small-scale ideas to large-scale market exploitation.	Ecosystem in which a link is made between demand and supply and in which there is primarily room for logistical mass production of a large number of unique products with the help of micro-subsidies (production and creativity vouchers)
Hard link between creative idea and production (inside-out, outside-in)	Enterprises with production capacity help find new ideas to fill capacity (inside-out) or to make ideas ripe for production (outside-in)
International trend towards individually targeted (high volume but unique) products and services; scale production demands sufficient quantities *and* a concession to the personal wishes of consumers	Intensive supervision of development from idea to production, and when getting ready for production, ensuring the 'best fit' partner within the production industry
Intellectual idea wealth (compartmentalisation, no hothouse), but there is no diversity	The ecosystem offers sufficient social security and safety in the long term in which all the interested parties can talk to one another on an equal basis, using a common language
A sector with primarily small organisations is sensitive to economic swings; a better link to other sectors (scale) could stabilise the sector	Ecosystem in which sufficient (financial) resources are available for further development/stimulation and with sufficient opportunities for monitoring.

Scenario:
Shopping in 2015

Leroy is a first year student of information science and about to give a presentation on the impact of modern media on the design of book covers in the late 20th century. He starts by accessing his private domain within the university library by voice control. He has selected a reproduction of a book cover which was inspired by a popular computer game from the same era. By touching the image, he accesses the national repository of digital books, and shows some earlier, more traditional book designs by the artist. From there, he links in images and descriptions on other objects by the same artist from various collections. Leroy explains how the designs evolved from naturalistic to hypermodern. From the artist's paper and digital archives, it is clear that this evolution is related to the switch from sketching on paper to electronic design.
Some television interviews have survived, and thanks to the national infrastructure for TV-archives, these fragments can be accessed directly from Leroy's presentation board. To prove that the inspiration for the opening book actually came from a computer game, Leroy emulates the character in the game that triggered the inspiration. Leroy had permission to retrieve a few items from the publisher's archive, and he shows some correspondence about the design. The artist had experimented with avatars from different games before. To round off, Leroy sends a selection of newspaper clippings to the students' mobiles.

Marco de Niet, DEN, Amsterdam

Scenario:
Heritage in 2015

Leroy is a first year student of information science and about to give a presentation on the impact of modern media on the design of book covers in the late 20th century. He starts by accessing his private domain within the university library by voice control. He has selected a reproduction of a book cover which was inspired by a popular computer game from the same era. By touching the image, he accesses the national repository of digital books, and shows some earlier, more traditional book designs by the artist. From there, he links in images and descriptions on other objects by the same artist from various collections. Leroy explains how the designs evolved from naturalistic to hypermodern. From the artist's paper and digital archives, it is clear that this evolution is related to the switch from sketching on paper to electronic design.
Some television interviews have survived, and thanks to the national infrastructure for TV-archives, these fragments can be accessed directly from Leroy's presentation board. To prove that the inspiration for the opening book actually came from a computer game, Leroy emulates the character in the game that triggered the inspiration. Leroy had permission to retrieve a few items from the publisher's archive, and he shows some correspondence about the design. The artist had experimented with avatars from different games before. To round off, Leroy sends a selection of newspaper clippings to the students' mobiles.

Marco de Niet, DEN, Amsterdam

Coordination problems

Another type of market failures are coordination problems. They occur when parties are unable to find one another in the marketplace. Coordination problems occur in the transfer from one link in the chain to another. They occur also when they are unable to estimate mutual interests and benefits of market parties. Coordination problems are important in the field of information and communication engineering as it depends on bringing people together. *Communication assumes the existence of chains, and changes assume the existence of relationships. If we want coordination to take place, the parties involved will have to recognize the value of communication.*

Overcoming coordination problems ...

... includes finding reliable suppliers in the Netherlands and abroad, developing a prototype, transforming it into a production model, organising the production process, campaigns, coordinating the production of various components, setting up a marketing strategy for the product. If the product is material, coordination of production is necessary to let production happen in the most competitive conditions. if the product is immaterial, collections are a source, user data are a source of real value to the owner. Typically coordination among owners of information sources will result in the ability to offer full-spectrum services to clients. *Coordination is directly successful in restoring production chains. In all cases, search and semantic access to data is a hot topic here.*

Conclusions and recommendations on network coordination

Risks of coordination problems	Solution direction
Engineers and creatives are not finding one another	Creation of multidisciplinary meeting places for creatives and engineers inside the ecosystem
Broken chains: knowledge / information is unlinked, not connected	All the involved parties within the chain have a clear role in the programme

The Netherlands do not have a centralised mentality	A Dutch branch of the EU lobby organisation, such as NESSI and NEM
Communication surrounding projects focuses on major successes; knowledge surrounding failed projects is not shared sufficiently	Collect, store and make available all knowledge, expertise and experience centrally to participants in programmes
The Netherlands are risk-averse	Directly reward projects and experiments for daring shown by 'waiving' the contribution
Geographical spread, inability to find one another, and fragmented knowledge (about sectors)	Highlighting mutual opportunities and joining forces, so that sectors are linked together

Barriers to entry

A large number of the old barriers to entering to the 'creating' sector have been removed by digitization. With a limited investment, it is possible to draft, programme and distribute creative expressions. The costs for producing and distributing digital products have declined drastically since the internet revolution got up steam. Entry costs are no longer determined by the costs of hardware and distribution networks. In the past five years, it has been shown that bringing together various sources leads to new renderings of information (see the many applications for Google Maps). The 'creating' class will bring about a society where the user will live in a cloud of information. *Rather, entry costs are determined by the cost of information.*

Conclusions and recommendation on barriers of entry

Risks of barrier entry problems	Solution direction
Entry costs in terms of being properly informed are high	Simpler and cheaper access to public information
Broken chains: knowledge / information is unlinked, not connected	Create semantic, interoperable access to archives, economic, social and cultural
After the introduction of broadband, the Netherlands are flooded with cultural influences from abroad	Digitization of Dutch cultural heritage is not sufficient. In addition, create semantic access.
Making use of the available information is slower and less informed than the competition (i.e. foreign countries)	Create Dutch search engines and Dutch Internet use and mood services, rather than leaving this to the international Internet service providers

The level of the barriers to obtaining access to information and the limited possibilities for scaling up an idea to production results in market failures which damage the competitive position of the Netherlands.

A final word on measuring the baseline

Strategic research agendas usually contain a quantitative study of the baseline to measure the impact of the agenda later. In this case, this is hard to attain. The chains are broken, so much so that all research differs greatly dependent on the definition of the sector. We focus on what is new and innovative in ICM, away from the traditional, already-classified areas. A museum, a designer, and a programmer are known sectors. But what is left unspecified is whether it is helpdesk work or creating digital representations of collections. Those dealing with the content and communication fall outside the official current statistics. It would require a massive study to establish these facts now . The lack of data for a baseline study is not a disqualification of the sector – on the contrary. Web design, web hosting and other internet-related work were, statistically speaking, still unknown entities 10 years ago, but now

Scenario:
Living in 2015

The road pricing scheme introduced by government in 2012 and the oil price crash of 2013 have had an averted affect. The Netherlands, despite their small scale, are moving quickly into a virtual workplace and teaching infrastructure. Consultants meet their clients in both real and avatar based words, where they can create the best possible customer satisfaction feeling. Call-centers in India are replaced by avatar based worlds, where clients can anonymously discuss matters of finance and health.
Office space is dumped at low prices, taken over again by real world artists, because it is cheaper to maintain a virtual office. Especially for the young generation, who grew up living in and outside a virtual world. Real world meetings are for social interactions.
Google earth has become the infrastructure, through which national agencies sell realistic visits to the country. HDTV webcams are a 'must' for any tourist attraction. They make money by letting people model their own world using Linden$. Artist has reached 300 incarnations, most of which expand into the digital archives of biodiversity.

Martin Kersten, CWI, Amsterdam

they can be measured. It will take another 10 years before the field of telecom and web use is redefined again. This is too slow to capture the essential changes in this field. *It is simply too early in the 'creating' field to establish a quantitative baseline measurement.*

1 Richard Florida, 2002

2 This section on economic potential is based on a study by Rudolf van den Berg and Reinoud van Kooten (Logica Management Consulting) for IIP/CREATE.

3 See Media in Beeld, vier scenarios voor 2015, ABN AMRO

4 http://www.minez.nl/Actueel/

5 Cross Media Monitor iMMovator 2006

6 NESTA in its latest report: Beyond the creative industries, 2008, asserts the same.

2.2/ Social Potential

The rise of the 'creating' class has an enormous impact on society. It will bring us new opportunities and require new responses to create societal wealth for all.

Social interaction

After the big changes ICT has brought to industrial and information processes in organisations, we now see the growing impact of information, communication and media on social interactions in society as a whole. Each person is connected into several communities at the time, both in the real world as well as in virtual worlds. These are the communities in which you work, do sport, absorb culture, live, recreate, share emotions and experiences etc. *Creation of (virtual) communities will allow new groups to form, defined by their (media) interests.*

Closing the digital divide

The right combination of creativity, content and technology (information, communication and media by mobile, internet and interactive television) will close the 'digital divide' between those who are at ease with new technology and those who have no access or even fear it. New devices will bring real inclusion to the elderly and the handicapped. Take for instance the 60 'Story Tables' now in use in homes for the elderly. Sitting together they share their memories, triggered by historical photographs or video images from Beeld&Geluid. These memories are also recorded and stored, using an intuitive interface. Research from VU shows the effects against feelings of depression and loneliness. *Closing the digital divide pays off in social values.*

Social coherence

Through the huge extension of people's horizons through the introduction and use of cars, planes, telephones, radio and television in the second half of the last century, our society has become fragmented and lost its sense of community. An example of introducing new forms of coherence is Afrikaander Tapes, a virtual radio in Rotterdam's multi-ethnic Afrikaanderwijk. This project informs and entertains the visitor with stories and pictures based on their current GPS-position, displayed on a PDA. The 80 minutes walk opens the visitor's eyes to the coexistence of people from all kinds of ethnic backgrounds. *Virtual communities and the internet as a whole - in combination with physical presence - counteract this development, since they stimulate the formation of groups and the exchange of ideas and experiences.*

Scenario: Public health in 2015

As a retired nurse aged 85, Andy knows from own experience how the pressure on the public health system has built up over the last decades. He is not in his best health, but he is working on improving his health in several ways. Actually, he is back at school, learning how to manage his health at home. His care coach, Ben, discusses his workouts, his diets and his medications. During their conversations at Andy's home, Ben pulls up information from the healthcare system through his PDA. Ben knows a lot, but he does not tell Andy what to do. In their conversations they decide what changes to Andy's everyday life are achievable for him. Ben adds these goals to the home care system so it can provide Andy with everything he needs to achieve those goals, from drugs to triggers for taking them, and schedules for his workouts. The drugs were always a bit confusing to Andy, but since he can hold them close to his RFID-reading digital tv to see what he and Ben discussed about them and when he has to take them, all in a large font type, he feels much more in control. These things give Andy confidence, and it keeps him out of hospital because he doesn't make mistakes that easily.
More recently, his lung emphysema has worsened. Ben suggested coming by to check Andy's home for air quality. Ben's RFID reader can look up the typical toxic vapours that are produced by furniture, equipment and home decoration materials. The RFID tags producers integrated in these products lead to information on the internet about chemical elements they contain, provided by themselves but also by people owning these products. Together they give a good impression of which things Andy better should get rid of.

Bas Raijmakers, STBY, Amsterdam

Scenario:
Hospitality in 2015

Patrick and Valery prefer unique hotels with some luxury. The hotel should offer a temporarily upgraded lifestyle where they are treated as a person, not a number. The hotels in this category are usually quite expensive where they do not really know you. This year they've booked at the Fermont. A hotel key with a keycard has been sent to them one month in advance. They have been able to set some preferences from the hotel's website. When entering, an employee welcomes them personally. 'Good afternoon, Mr. and Mrs. deWitt, your room has been personalized for you, let me walk you there.' The hall changes its style, and once they step into their room, lights in the carpet illuminate and the room adjusts to their preference. George and Helen regard a hotel room as their temporary personal space. It is their home for a couple of days. It is the place where they relax, wind down and sleep, and a base for all kinds of activities with their friends. They feel that, generally, hotels are too impersonal: in the room, when you enter the hall, and when searching for their friends' room. This hotel is much more to their liking. The door of the room resembles the front door of their house. Even when arriving they noticed the digital name tag with their names on, with the doorbell and a large window on the hall side too. This allows much more daylight to come into the hallway and is more inviting to visitors, even if it is their home for just a few days. When someone is in the room this window switches automatically from transparent to milky. They will enjoy their stay in full.

Emile Aarts, Philips Research

Styles of working for the 'creating' class

The new possibilities arising from 'enabling technology', sharing content, and creativity has the potential to facilitate business interactions. Products in this area reduce the time lost by physical travel by working from home or remote locations while keeping the interaction at high levels through high-definition video, other senses, and 'creating' ambiances[7]. It takes an extra effort to enhance collaboration between people and companies in times of unsolvable traffic congestion[8]. Another example is an urban communication infrastructure to increase the efficiency of traffic flow for the cities of Amsterdam, Seoul, and San Francisco. *Applying these technologies along with network intelligence leads to a new paradigm about how people move around a city.*

An example application field: Health

We foresee that the creative life style plus the ensuing technology enable remote diagnostics and remote care, where possible. The effect here is for the long term but yet estimated to be enormous. People will stay home much longer than now, yet their feeling of safety and security will be the same as in a hospital or nursery home. *The creative era will revolutionise healthcare when introduced properly – with integrated solutions for communication, emergency alerting services and permanent education.*

An example application field: sustainable energy

There are many opportunities once the worlds of information, communication and media have been brought together. The area of sustainable energy requires a complete turn-around of our ways of thinking: for companies, for individuals, for the government. There it is an ideal playground for advanced technology and content to take the lead. The prize-winning company Qurrent[9] has developed computer-controlled energy management for streets by optimizing the available energy between homes, using solar panels, micro wind turbines, heat pumps or hydrogen fuel cells. *This is an example of how creativity and the 'creating' class life style has a potential to cut CO_2 emissions at a mass scale.*

Conclusions and recommendation on the societal value

Risks of social problems	Solution direction
Fragmentation and isolation in society at a personal level due to television[10]	Counteract by active television, merge with active Internet television sites and communities
Fragmentation and isolation in society at a personal level due to the digital divide	Counteract by reintroducing story telling in computer settings almost without interfaces
Fragmentation in society at a group level due to immigration[11]	Create semantic, interoperable access to archives, economic, societal and cultural
Climate requires a deep change in mentality for all persons and all businesses	ICT and virtual worlds have the capacity to contribute here
Traffic jam congestion and environmental awareness require new, more true-to-life meetings by communication	Part of the creative life- and work-style is to work when needed where needed but not necessarily at work. Communication tools are key
Costs of health care go out of control, while quality of life is appreciated most	Help people to stay secure at their homes in spite of their illness or age by invisible communication on an urgent "as-needed" basis
Costs of safety go out of control	Help people to feel secure by creative ICT

7 See HP's experimental virtual presence facilities

8 Driven by Cisco's Connected Urban Development initiative

9 Winner of the 2007 PICNIC Green Challenge (for inventions to combat climate change), see www.qurrent.com

10 See Robert Putnam, Bowling alone, 2000

11 See Paul Scheffer in 'Het land van Aankomst'.

2.3/ Cultural Potential

The developments in information, communication and media technology change the way we create, distribute, preserve and participate in culture.[12] This applies not only to artists but also to our heritage which is 'turning digital'. And, it applies to the consumer who is going online.

The impact on the 'creating' process

The 'creating' process is affected by information, communication and media, see '3VOOR12 Plundert Musea' in a later chapter[13]. And, the ability of very high precision video – known as CineGrid – enables filmmakers to tell their story in different ways. It enables musical performances of orchestras seated in different places or even on different continents. A similar innovation occurred when the step was made from theatre to film. At first, filmmakers used the new technology to show what happened on stage. Later, the same technology was applied to new forms of art. This two stage progress occurs always. *New technology is first applied in the old idiom; later it is employed in line with its own capabilities. As a consequence, the many ways in which ICT technology will innovate the arts are still to be discovered.*

Scenario:
Culture and education in 2015

Maneesh from India shows his concept of sustainable housing to his colleague Niels in Delft using Skype-3D. Niels walks aound, with Maneesh's avatar, in the creation of Maneesh, an Indian office of the future, using his Augmented Reality headset. Maneesh does the same in Hyderabad. Both discuss the pros and cons. Niels adds and changes some details, interacting with Maneesh and introduces some Delft concepts which he grasps from his local database. They decide to ask their boss Jeroen van Erp of Fabrique Delft for consen. He steps in later from his office in Milan. In the middle of the riots in Mecca, Jeroen zaps them away. Tired of all the mess in the world, he switches his ARMedia set to his favourite: a concert with Arthur Rubinstein. Soon he dozes off in his concert hall.
Meanwhile Yolande grabs her stuff together at the end of a busy day at her office and checks if all her belongings are in her bag, especially her mobile phone. She runs her ring over her bag which switches it to transparent mode. Smart fabrique is fun, she smiles, and switches her look and feel from 'office' to 'dating'. Her date waits in Voorburg, where they will experience Roman life at the forum of Hadrianum. This dinner party with dance and education is based on the concept of finding your optimal partner out of the public that happens to be there. Moving through the crowd, your smart clothes subtly push you to the right goal. It always surprises her, and it keeps amazing her. Man or woman, she meets very interesting people. Pieter steps in his car, 3D-skypes home and his virtual butler appears next to him in his car. His butler shows him the way to Voorburg and Pieter discusses his wishes for his dinner tomorrow. He praises his butler to train him better for the good things and he tells him what could be better. Conditioning of robots works remarkably fine, he thinks.

Pieter Jonker, TU Delft and Yolande Kolstee, KABK

The impact on creating open forms of art

The rise of open source software has had its own impact on art. It is compatible to the remix culture that created the DJ-tradition in music. Again, the Netherlands are very good at it (see the success of Tiesto and others0 but again, it is leading to personal fame, more than having a lasting and wide impact on the culture or the economy. The same is happening in the visual arts, where a community of film makers publish their cartoon-like films, including their components: the characters, images, and animation schemes. Other artists may freely use them to make their own creations .

The impact on fashion and interactive art

Wearables and fashion products with embedded electronics represent another new form of art. Since the sensors etc are becoming smaller and smaller, they are more interesting to use. Smart textiles can make you 'light up' when you meet someone from your online community somewhere. Clothes can generate noise or music, based on the behaviour of the person who wears them. These types of art will be the beginning of new lifestyle products. In general, interactive or process art is one of the most recent developments. *By shouting, moving, or communicating with the work of art, the viewer influences the art piece itself* .

Digital cultural heritage

Cultural heritage institutions are in the process of digitizing their collections. They do this from the awareness that, if they do not, they will lose contact with a communication and media-rich digital society. The public can only be reached by delivering the content to the home. Mass digitization results in vast collections of digital data. Access by content, just-in-time and just-

Scenario:
eGovernment
in 2015

Rishi is planning to open a new restaurant in a nice area of Amsterdam. However, he will have to get quite some work done first. He has to clear out the old restaurant, renovate the place and get his new kitchen set up. He realizes that he will need several licenses. Rishi has discovered that he must get a license from the parking department for a skip to collect the rubbish, permission from the planning department for the builders to redo the restaurant and a certificate from the sanitary department on the health and safety of the new kitchen. He just does not know where to start.
Somewhat confused, Rishi asks the neighbouring restaurant owner for advice. He tells Rishi horror stories on how long it took him, years ago. This does not cheer Rishi up very much. As he walks back to his restaurant he sees a man from the City Service Team checking license plates of cars. He asks him for information on the skips in the street. The man is very helpful and offers to fill in the form for Rishi right away via his PDA. They complete the form and Rishi is relieved that this is out of the way. Then the guy asks Rishi if he has applied for other licenses yet, such as planning permission. Surprised, Rishi says no. I can help you to get this started, offers the man. They sit down to complete some forms on the PDA, but others need to be completed by Rishi later. Rishi is pleasantly surprised he can work with the flow, that is, he can fill in the forms where and when it is most appropriate.
In the weeks after his encounter with the man from the City Service Team, Rishi is visited by several inspectors from various departments. Each of them focuses on the inspection for a specific license, but they are aware of the other applications that Rishi has pending. They all have access to the relevant files via their PDAs. They are able to support Rishi with the overview that he needs so badly is this busy period.

Bas Raijmakers, STBY, Amsterdam

in-context presentation, and story telling are inevitable assets for bringing cultural heritage home. In other words, content and technology when working together will strengthen the social value of heritage in the digital domain by increased participation of the public: *ubiquitous heritage through ubiquitous content, creatives and technology.*

Digital cultural presence

A new consequence of the world-wide web is open-source archiving of concerts. In 2003, Fabchannel of Amsterdam analyzed Amsterdam. Its concert halls would disappear from the world map if they would not be present on the Internet. They have generated a format where bands playing in Paradiso are recorded live on the Internet and kept in their archive. They became a world-leader, winning the Webby awards, aiming also to broaden their scope to classical concerts and other expressions, *serving well to advertise the Netherlands on a world-wide scale.*

Co-creation as a way to extend cultural experience and participation of the public

Through the availability and use of digital content from cultural institutions, there are more opportunities for active cultural participation by the public. The internet and virtual worlds offer all kinds of opportunities for doing so. Existing examples are the set-up of virtual reading, film, music and heritage groups, and the exchange of experiences and digital storytelling. Take the video clip site YouTube, or look at MySpace, which is used by, for instance, musicians for promotional purposes. The effect of the creatives in the cultural sector will be an enormously increased potential for participation of the public.

Conclusions and recommendation on cultural potential

Risks of cultural problems	Solution direction
Cultural heritage fades away in the avalanche of news	Create semantic, interoperable access to archives, economic, societal and cultural
Art, like many other things is first used in the old idiom	Stimulate new forms of art based on artist-accessible computer technology
Lose interest of tourist when not properly informed (in novel ways)	Develop mobile services to the tourist on location based heritage services
Reinventing content and technology picks up very fast in the popular culture, like YouTube	Stimulate active, lean-forward use of the Internet with tailored re-use formats for content for a cultural enrichment of society
Internet content is dominated by international companies and penetrates all broadband households	Develop adequate Dutch semantic content infrastructures on top of the excellent physical infrastructure

12 Innovate, participate! Cultural policy agenda Raad van Cultuur, 2007

13 A cooperation between VPRO and the Haags Gemeentemuseum.

14 www.blender.org

15 See the Dutch Electronic Art Festival, a world-renowned festival organised by V2_.

16 Fabchannel won the Webby awards with it, see www.fabchannel.com

2.4/ Potential in learning

The impact of the 'creating' industry on learning is biggest when it has effect on life-long learning. The impact of the creative sector is most desperately needed in learning at school. And, finally, it is needed when teaching the skills for the creative industry itself.

Learning at school

We already see that teachers in school use more creative processes to help their students learn (as compared to learning from books and whiteboards). Access to large amounts of text, images or video, or by creating movies, digital stories or playing an educational game are nowadays a normal part of the curriculum. The next phase will be that learning processes are enabled by, or based on, the use of virtual worlds or - more specifically - serious games. Serious games are based on the successful principles of virtual entertainment gaming in general: to challenge and reward the player constantly. *That is why they are highly stimulating and improve the student's motivation.*

Life-long learning

Highly motivated games and direct feedback are also needed for life-long learning, where the player needs to know in an instance whether the answer is right or wrong. Different levels in a game are currently very much suited for stimulation to keep on learning as a match to the player's level of skills. And another relevant tool is virtual games, the ones that can be played wherever and whenever is it is most appropriate. *The distinction between learning at school and learning in life will fade because of game-based education.*

Education for the creative industry

It is essential that education at schools, universities and in programs aimed at people in the creative industry adjusts to the developments we have sketched in the first chapter. The new possibilities, technologies and applications must find their way towards the (future) creative workforce. Current arts programs at art academies should include more training of technical skills, and technical schools should give more attention to the development of people's creative skills.

Education for health

Virtual worlds in general and serious games in particular have the potential to change human behaviour. Serious games are in a perfect condition to modify behaviour in diseases like childhood obesity. There, ironically, the world-wide obsession with computer games is not very helpful. Nintendo's Wii sports games play a role by making daily exercises fun. Exergaming – as it is called – has grown to a new topic in the world of games. One step further is location-based gaming. These games make children play outdoors, using their GPS-mobile phones. *These examples illustrate how games can influence behavior and hence health once you have recognized the problem.*

Education in the military

In the safety sector, we envision an obvious potential of serious games to train personnel for dangerous or critical situations, or to train them in anticipation of (foreign) missions. *Application of creative tools in serious games is already common practice.*

Conclusions and recommendation on the potential in education

Risks of educational problems	Solution direction
Learning at school becomes boring relative to what can be learned at home from games and the Internet	Creative use of games to learn at school is inevitable, and provides the new tools for learning
In health, change of life style is a first step in many modern-day diseases	Serious games have the proven capability to change life styles
Serious games have already proven their value in professions and businesses. Non-profit applications lag behind	Serious games have the proven capability to be very effective in learning skills (especially when they are needed under stress)

03/ In the Netherlands

Whereas the rise of the 'creating' class is a world-wide phenomenon, in this chapter we focus on the Netherlands. In chapters 1 and 2 we have positioned creatives in the economy, society at large, in culture and in education. We have seen that their way of working, living and spending their lives is part of an international trend. This chapter discusses trends, strengths, weaknesses, opportunities and threats in the Netherlands. We introduce the vision of IIP/CREATE, a platform for the creatives touched by informatics. This analy-

	Impact	Innovation	Business
Small Scale	Consumers	Science & Technology	Creative Entrepreneurship
Large Scale	Society	Research & Development	Ecosystems

Amsterdam

In Amsterdam the creative industries in the narrow definition as an economic sector grow faster than any other and also grow faster than the national average for this sector to cover 12% of the workforce including ICT . In the broad definition, the 'creating' class, 50% of all households are single. This makes Amsterdam a widely recognized creative city. Highlights are the Internet hub of Europe, cross-media formats, super broadband, mobile en locative technologies, semantic access, search engine technologies, interaction and situation design, collaborative technologies, digital content including Hilversum, technology in the Watergraafsmeer, the extended ICT-industry, glass-fiber role out in Almere, tourists. The Centre for Creative Content and Technology brings together UvA, CWI and VU with Beeld&Geluid en Logica for city-based and regional research to achieve impact in technology and applications. Waag Society performs interdisciplinary creative research for old and new media to reach impact in communities. The Media Guild is incubating innovative interdisciplinary media projects and talent, providing innovation services for all areas of the ICM Creative Industries. Amsterdam parties have a strong international orientation at forming strong bonds with regional and international Creative Industry peers and associations, supported by the Amsterdam Innovation Motor and the Kenniskring.

Source: DMO, gemeente Amsterdam.

sis is also the basis for the Strategic Agenda as the road to a winning ecosystem in the Netherlands.

We review the current state of affairs from small-scale to large-scale in the three relevant domains: the domain of the creatives, the high-tech domain and the business domain.

3.1/ Consumers

From passive to creative

Last year alone, 400 million pieces of content - games, movies, music - were sold or downloaded[1] in the Netherlands. That is an average of 25 items per person! It illustrates the change from a passive attitude to an interactive attitude in our population. Consumers are no longer passive absorbers of whatever is available on the 80 or so television channels. In the last 5 years, the number of hours spent watching television has gone down, from 12.3 to 10.8 hours of couch-television per week[2]. At the same time, the free time behind the computer doubled from 2 to 4 hours per week[3]. Other free time activities take on average 30 hours per week, yet a trend is visible: only the rise of Internet has been able to stop the trend of ever more television watching. Internet is active much more than television. The net effect is: *consumers start creating.*

Individual expression

Until recently, creating was limited to a small set of people. The Internet has changed this dramatically. The popularity of websites like YouTube or Hyves shows that consumers are no longer couch potatoes, but are creating or re-creating content themselves. In this time and age individual expression is a reaction to the uniformity of masses and mass production. The general trend is to mass-produce individual products. The first successful example is cars: an average manufacturer offers 100,000 different versions of their models differing in color, seats, and wheels and so on. It is a matter of logistics, but the result is the statement. This individual expression was limited to the world of capital goods, until recently, but we see a sharp shift to personalized consumer goods. The most recent examples are personalized stamps or personalized bank cards. Soon, we will have our own personalized package of sprinkles on the breakfast table. *Personalized lifestyle as mass-produced individual expression now generates money.*

Worlds

Since consumers have adapted so well to the digital economy, virtual worlds become an important means for all aspects of creativity, for example through games, meetings, virtual tourism, emotion satisfying games and shopping experiences. People will express more of their (collaborative) creativity in virtual worlds. Creating is as important as co-creation and re-creation. Creative is the crucial point for modern citizenship. This is enabled by the physical network and the broad acceptance of bandwidth in the Netherlands. We are first in Europe in the number of household connections: 5.6 million households are broadband connected[4]. Internationally, the Netherlands population stands out for its willingness to experiment with new technology. *Bandwidth is one of the causes of the 'creating' advantage also for the general public*[5].

For young people, technology is everywhere

Young generations are used to technology from the start. It will bring about a totally different life style of being on(line) all the time. For the young generations technology such as mobile phones, peer-to-peer networks, massive multiplayer online games, or social ware is part of their life and part of their social roots. Education needs to respond to the excitement Internet offers, even in its tools to learn. Memory games, spelling words, learning words from a different language, eye-hand coordination, planning, geology, history, social skills, and math, all these aspects can be learned from the Internet in a very absorbing way. Internet is not the end of teaching, but surely, to many it is the beginning. It will develop the potential of young people into new generations and new technology and a new society. By creating new educational concepts where gaming, co-operation and acquiring media skills–to present yourself– and media wisdom–to determine trustworthiness from sparse information –will play a major role, *the creatives hold the key to the mandatory change of education.*

1 Johan Idema & Hendrik-Jan Grievink, Datascape Cultuur, 2007

2 See also: Media predictions, TMT trends 2008, Deloitte.

3 SCP, De tijd als spiegel. Hoe Nederlanders hun tijd besteden, 2006

4 Compared to 20% in the US, research done by EC (NRC 20 – 3 – 2008).

5 R. Florida shows: creative is the magnet.

3.2/ Society

Utrecht

The city of Utrecht and the province have put gaming prominently in their economic development plans. Utrecht has focused on entertainment and serious games, in education, research, business development and public activities. There are numerous examples of (research) collaborations between parties like University Utrecht, TNO, HKU, for example UPGEAR, AGS, GATE, Dutch Game Garden, NLGD Festival of Games and Expertise Center. In 2005, 7000 creative companies were established in the province of Utrecht, 13% of the Dutch total number of creative companies. A total of 33,000 people are working in the sector or 15% of the Dutch total. The city of Utrecht accounts for 8484 employees in Utrecht. The average company size is 4-5 employees. In the city of Utrecht the creative industry has shown an economic growth from 6% in 1990 to 13% in 2005 doubling the number of people working in the sector over the same period of time.

Source: Creatief profile van de gemeente Utrecht, 2006

Eindhoven

The Eindhoven biosphere is known for its large high-tech industries (Philips, AMSL, Océ, DAF, ...). A large concentration of this activity is in Eindhoven, Helmond, and Venlo. Brainport Zuid-Oost Nederland organizes bridges between industry, universities and knowledge institutes in the region. Brainport has been instrumental in bringing parties (Philips, NH, TU/e) together in the recently started Creative Conversion Factory. The region is also known as a design region, where the Design Academy Eindhoven, Faculty of Industrial Design TU/e and ROC Design & Engineering are a source of new talent. Research shows that the creative industry in the region accounts for 8.500 companies, 30.000 people, 8% of total employment, and at least 1.2 Billion Euro turn-over. Almost 90% of the activity is concentrated in (very) small companies (<10 employees). 60% of the people working in this area wishes for coordination in this area of creative industry.

Source: Stichting Alice, www.alice-eindhoven.nl, 2003

Cooperation in a networked world

Much of these changes depend on cooperation, new forms of cooperation to be precise: for health care to let more people live in their own homes, for business to reduce transportation, and for communication to let social cohesion grow. Cooperation improves creativity, breeds industrial and cultural innovation and transcends and transforms fixed patterns and structures. Cooperation stimulates the transfer of people, capital, goods and services, ideas and knowledge. Innovation, design and creativity increasingly become networked or distributed. Face-to-face meetings occur only at the beginning and the end of temporary work-relationships. *Dependable collaboration at a distance will be essential.*

Virtual communities, virtual experiences

Society is moving into a multidimensional world where people are connected through several virtual communities to work, to act, to share, to learn, to engage & to live. The time is not far off where all these communities have their own preferred channels: business emails, personal chatting, Internet television of the favorite soccer club, paid per view access to favorite music performances, social participation in a specialized Internet interest group, school, friends, neighborhood, patients with the same illness, the love-for-Italy groups, and so on. People will find identity by identifying with between 5 and 10 groups, on the Internet. Experiences recently thought to represent no

value, nowadays are a new and highly valued commodity. *The growing importance of personal experience demonstrates itself as the basis of the experience economy.*

The digital divide

Virtual worlds will play an increasingly important role in our daily lives. The connection between the real and the virtual world will become stronger over time. The right combination of creativity, content and technology (information, communication and media by mobile, internet and interactive television) where technology is important yet invisible will close the digital divide between the ones at ease with new technology and the ones with no access. Despite the trend that virtual worlds grow and a networked world is becoming a natural habitat for many people, proximity in the real world is the important factor of society. *Proximity generates social cohesion, individual confidence and trust. The ecosystem will gain importance, not lose it.*

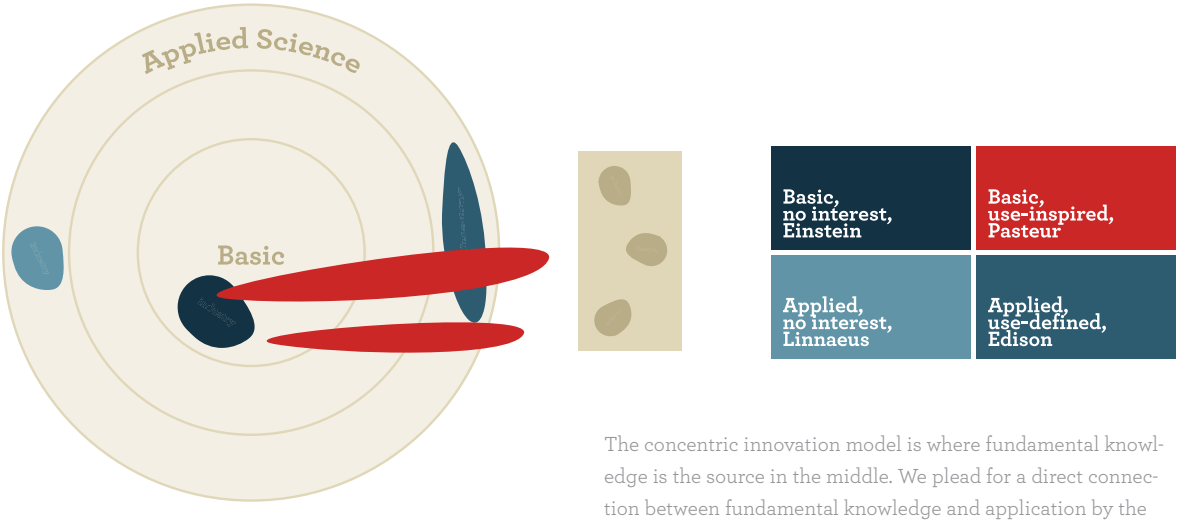
Education

The way we educate children and adults is rapidly changing from learning from text books and whiteboards to exciting and stimulating games in which they are challenged and rewarded constantly. As a result of growing up with virtual worlds and (serious) games, both at home and in school, children are comfortable with them. There is great interest in studies related to games or game design at all levels, because it consists of a mix of alpha, beta and gamma disciplines. However, the number of students in ICT is declining at a steady rate. In order to reach our Bologna target for education and Lisbon targets for research and innovation, *it is essential that education at schools, universities adjust to these developments.*

3.3/ Science & Technology

The lack of a coherent agenda

Media merges with ICT, making the T of technology invisible. Many people draw the conclusion that whatever is invisible is also important. Not the case. Water is under control in the Netherlands, almost invisibly, but never the less water management is as important as it has always been. The same holds for information technology. The computer is becoming invisible, invisibly small, invisibly by going wireless, invisible by much smarter interfacing than before. All this is rightfully so. But this does not mean technology is 'solved' or unimportant. We have strong research groups and innovative companies in this



The concentric innovation model is where fundamental knowledge is the source in the middle. We plead for a direct connection between fundamental knowledge and application by the same people who generated the knowledge. This guarantees knowledge lands locally rather than at an unknown location and in the shortest possible time to the market. Connecting the chain of high science to high tech to application is the core of a winning eco system.

domain and good expertise in handling large-scale data, but we lack a coherent research agenda. Such a research agenda will enable society and economy to respond to the rise of the 'creating' class, *including the mechanisms to make it profitable for SMsE and industry, for cultural heritage and for society.*

From high science to high tech: the new knowledge chain

Traditionally, high-tech innovation follows a concentric model, where knowledge from fundamental research ('the source of all knowledge') is translated through several steps into marketable products and services. However, in this concentric model there are no guarantees that the research will be end in application, at least not in the Netherlands, nor is it certain when it will happen. To gain in a short time to market, there has to be selection of world-class scientists followed by division of labour and topic between them, such that on

Rotterdam

Of Rotterdam's domains in the creative sector, creative business services is the most important, notably architects and technical design studios. At the same time we see that the media- and entertainment industry show most growth. The Creating industry in Rotterdam holds 10,000 fte's, which is 3.3 percent of the total employment in Rotterdam. Job growth from 1996 - 2003 is more than 8% annually, considerably higher than national. Some 2.5% of Rotterdam's economy is creating 400 MEuro in additional value. At the time in 2003 this was 2.2% of the total local economy is mostly small scale with 6 employers per business. There are alliances in the region around V2_ and its new The Patchingzone, where master and doctoral students and professionals from various backgrounds create experiences together. Other partners in the Rotterdam ecosystem are HRO, HHS, Albeda college, the TU Delft, Royal Academy of Art in Den Haag, Faculty of Arts Leiden University, Erasmus studio, the Creative Factory and several SME's.

Source: OntwikkelingsBedrijf Rotterdam

NIRICT

The Netherlands Institute for Research on ICT (NIRICT) bundles the ICT research of the technical universities of Delft, Eindhoven and Twente. 79 groups and 1200 persons are working on a number of SRA's, including Broadband Communications Systems, Computer Networks, Ambient Intelligence and Multimedia and Interaction. In all fields, creating dependable ICT systems has become a major challenge. Bringing together research and applications is regarded important. Mobility, healthcare and the home are important application domains and crucial parts of daily life. The CeDICT Smart Environment Labs constitute the 3TU laboratory infrastructure. Important stakeholders include TNO, D-CIS, CWI, Almende, Telematica Institute and Logica. The interest for entertainment, art, (new) media, design and games is another way in which technology has to care about the user experience. NIRICT aims at developing intuitive multimedia interfaces for personal and social computing related to daily tasks such as learning, shopping, entertainment, teleconferencing, and communities.

a small topic a researcher has both theory and practice on his or her agenda. This may create effective cooperation and knowledge dissemination between researchers and product developers as high-science connects directly to high-tech. And, again, further down the chain, high-tech industry requires intense interaction with future users to achieve useful products solving real-world problems. *We must take advantage of new innovation models and ways of working.*

The knowledge chain is broken but that is not all...

In addition, around the theme of information and knowledge, the division between alpha, beta and gamma – which is a deep one – is obstructive. Content & technology is an essentially iota science where alpha, beta and gamma meet. The re-division of the traditional disciplines, and cooperation in the fields of design & lifestyle, technology and entrepreneurship is important. This is to happen at all levels: mbo, hbo, wo. This is not just limited to the Netherlands, but rather a world-wide phenomenon. The first who close the chain have a competitive advantage. *Current national incentives are isolated, leaving reinforcement of chains badly needed.*

3.4/ Research & Development

After the bandwidth, (international) content creators profit most

In the Netherlands, we have a strong broadband infrastructure as well as high usage of Internet in compared with the rest of Europe. 5.6 Million households are connected by broadband. They can enjoy content from all over the world. On the one hand, everyone connected in the Netherlands can gather information, buy products, download content, shop for goods, and communicate from all over the world. The medal also has another side. Any content provider can deliver its content to the majority of Dutch households in an instant. YouTube has grown very quickly, but the crux is: also in the Netherlands. So, having built the rivers and the channels to open the Netherlands for content by providing broadband we should now invest in content innovation if we are not to be swept away. Now is the time to fill the available bandwidth. The world is connected by content. *We should invest in content and applications using this broadband capacity in order to reap the economic benefits. Our infrastructure is excellent and offers an opportunity.*

In the long run, the (international) content providers profit even more

There is yet another side to the medal. Users profit from the fact that practically all knowledge and information is accessible in an instant, and mostly international content creators profit from this. In the long run, the content providers profit even more than the creators. Internet and mobile companies like Google, Yahoo!, Nokia, and YouTube know an awful lot about customer behaviour, customer interests, and customer budgets sorted by location, other interests and family context. They know this simply by analysing the Internet search data per consumer. *If we want to keep our marketing data up to date, we need to invest in search engines, whether we like it or not.*

Users as co-developers

Designing new 'creating' technology is designing the experience. Human meaning and communication is the basic output that has become dominant. A major challenge is to develop creative products and experiences with a strong focus and understanding of unpredictable use. Technical improvement is not automatic improvement in use and perception; *social aspects and experience are decisive in the outcome of new introductions. Experience labs can provide the essential consumer insight.*

Innovation of research

Within the creative sector, there is a large diversity in research and development methods with very different characteristics from the methods used in science, both in scale and time. The study of creative research methods and international best practices fostering interdisciplinary cooperation at art academies and the like may deliver inspiration for further growth. Other techniques are design, practice-based research, participatory design, experience-based design, service design, artistic research, creative research, documentary research, research through improvisation, and design paradigms from gaming. Academic and creative research is destined to go hand-in-hand to a mutual benefit. *Current government instruments do not easily fit creative research methods and practices, especially for collaborative projects.*

3.5/ Creative Entrepreneurship

Dutch creative sector

Yes, we are famous throughout the world, not only for our Dutch design and product industry, but also for our first class cultural heritage, museums & art, and international cultural tourism. We are widely known for our advertisement, fashion, architecture, and the image culture in general. Some initiatives for international promotion already exist, but new possibilities are left open. Culture institutions digitize their content, but who profits from it? *Dutch design is world-famous for its name, not for the resulting turnover.*

The role of the media artist

The rise of the media has only just begun. Today's and tomorrow's interactive media applications represent a significant part of the creative industry, where co-creation and meaning become crucial. Interactive art and design have created a valuable expertise and a rich practice in relevant fields of human or user centred and participatory design. Most contemporary electronic art works with interactive elements. The contemporary media artist is a researcher, designer and mediator who is positioned in the centre of the disciplines and patches together knowledge fields and methods. *We can, and we should benefit from this expertise.*

Entrepreneurship

Creative entrepreneurship has been successful as the new way of life for SMEs and ZZPs[6]. Creative as in: flexible cooperation, in relative autonomy, and in a network of contacts to resolve task differentiation, and all of this for the duration of a contract. We see this happening also outside the creative industry: people working from home, co-operating with others when necessary. In the Dutch creative industry we have a good understanding of people's behaviors and motivations. In the technology industry and design we have a thorough understanding of bridging user needs to solutions. *However, innovation in classic SMEs is stalling and the innovation potential of small enterprises is hard to attain.*

Intellectual Property Rights

Especially in today's open innovation context, Intellectual Property Rights play an important role. It is obvious that the role of IPR will change, shrink and expand, as well as be free or more heavily policed. However, for SMEs, ZZPs, artists and cultural organizations, it appears difficult to organize their IPR in a proper way. At the same time, they prefer working in open source

environments. The study of best practices and new revenue models may allow for open source-based collaboration. *Classic intellectual property rights are fading away. The whole world struggles with IPR. It is crucial we experiment with it.*

6 One person companies.

3.6/ Ecosystems

The Internet can support but not provide proximity

With the rise of the 'creating' class, of active consumers, and of all-connected citizens, the regional factor will become essential in the creative environment. To overcome the natural boundaries between disciplines, a comfortable social structure is needed. Impact can be attained by creating a regional climate with a focus on a national and most of all international frame work. *Bringing the creative and technology industry together is essential to understand people and make it happen in solutions.*

Regional ecosystems

In the Netherlands we have established a young and successful gaming ecosystem in and around Utrecht. Its success is based on cooperation between education institutions, a multidisciplinary research program, stimulating economic activity, support from (local) government and creating interest with the public. In and around other big cities we also see local creative ecosystems. Amsterdam is widely recognized as a creative city because of its culture, content, technology tourists, and connections. The Eindhoven biosphere is known for its large high-tech industries and concentration of SMEs. In Rotterdam creative business services are most important, notably architects and technical design studios, whereas the media- and entertainment industry show more growth. *Open or collaborative-across-discipline innovation in a local ecosystem is a winner.*

Ways of working: from process-oriented to interactive product development

Traditionally most companies develop their products according to the waterfall-model: start with an idea, then analyse the requirements, make sketches and a design, test the principle on a prototype and consequently introduce the product on the market. Since this has been done in the same way for decades now, the processes are fixed. This makes the process relatively easy to plan and manage and quality assurance relatively easy to execute. However,

all creativity is concentrated in the first steps of the process. In the creative sector it is more common to develop products and services in close cooperation with the customer and the consumer interactively and in iterative steps. Creativity is part of the total process, not almost exclusively restricted to the beginning or restricted to the end. *We expect this interactive working process at the work table to become standard in traditional companies over time.*

Changes are world wide

The Netherlands are not the only country where the market is changing, where a product based economy is changing into an experience economy, where innovation and knowledge chains are broken, where the need is felt to work closely between engineers and creative. Everywhere in the world the barriers between such divergent forces as creatives, scientists, designers, and solid ICT companies are challenged. *There is no road map for the development of the sector and other nations and regions in the world act (much) faster.*

3.7/ The vision

We have identified trends, strengths, weaknesses, opportunities and threats that are important to create the winning ecosystem in the Netherlands. In summary:

The Netherlands have *a good potential advantage*: an excellent infrastructure with the largest penetration of bandwidth in the world, a population which tends towards autonomy in an informal order, and with a mind for internationalism and business. However, bandwidth generates opportunity first of all for international content creators, and most of all for acquiring strategic marketing information for international providers. Therefore, the Netherlands, after having created the broadband culture, have to act on content as well. The Netherlands are a perfect, potential playground for the 'creating' class. Now is the time to invest in content in order to secure economic benefit.

Creation will be the 'thing' - from data to design to software: consumers start 'creating', lifestyle generates money, popular culture gains momentum. Creative is the crucial point for modern citizenship. Experience labs and Living labs can help us tap the potential.

Physical proximity is important. Innovation predominantly occurs in creative regions: social coherence, individual expression and trust flourish by direct interaction. Physical proximity in an ecosystem with an open atmosphere is important, even more important in virtual times of the Internet era. New innovation models and ways of working will improve cooperation and knowledge dissemination between researchers and product/experience developers and future users.

We need the creatives for their contributions to realize the necessary transitions in society and education. Dutch design is famous for its name, not its turnover. Bringing the creative and the technology industry together is essential to make it happen. To enable the rise of the 'creating' class and

make it profitable for industry and non-profit, a coherent research agenda is necessary.

Where there is *a large diversity of research* and development methods, academic and creative research is destined to go hand-in-hand to learn and to mutually benefit. However, current government instruments do not always fit with creative research methods and practices, or collaborative projects.

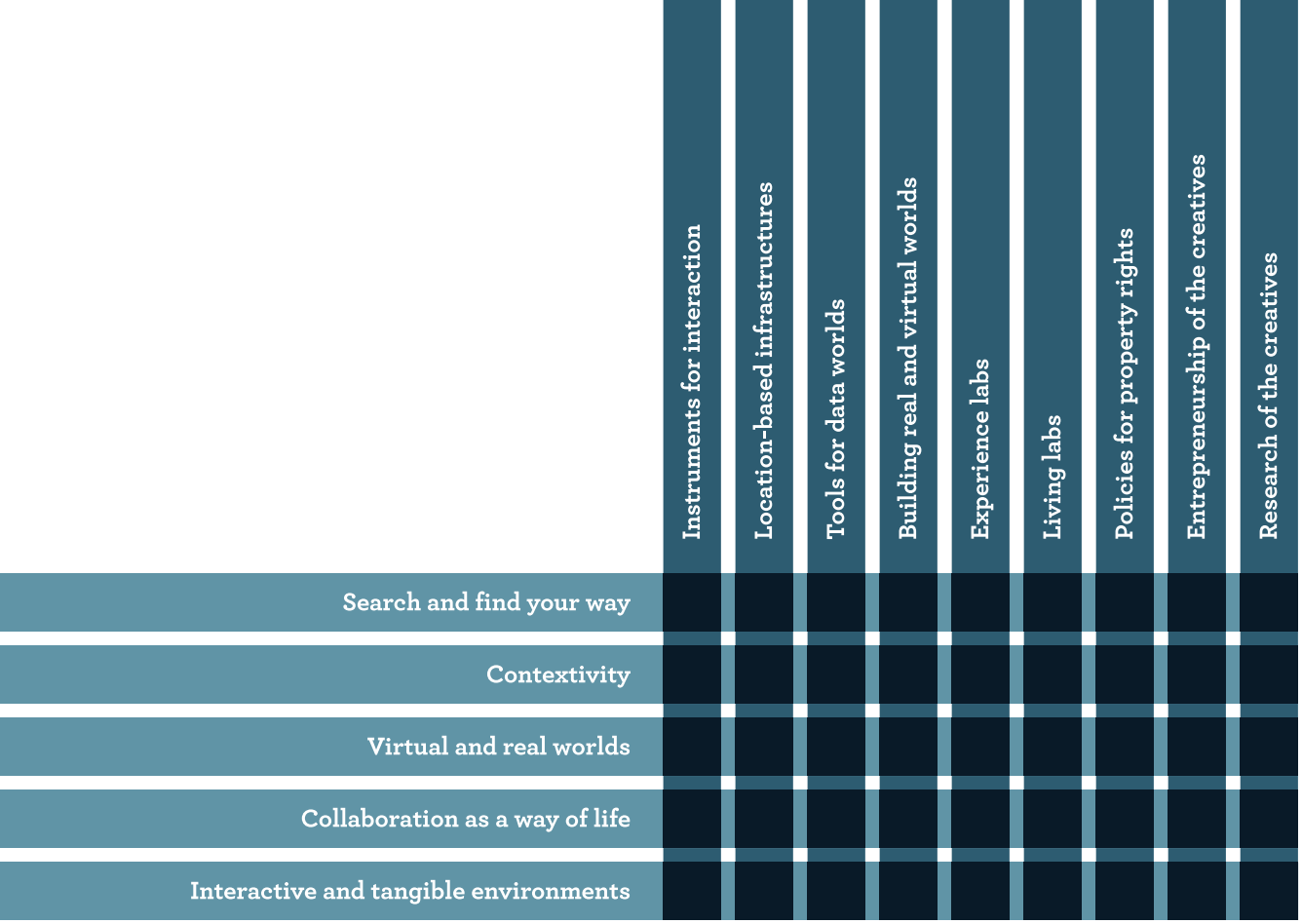
Both *the knowledge chain and the innovation chain are broken* and need to be restored to be an effective economic force. There is nothing new here, it is a world-wide problem. But the nations which fix these chains first will acquire a leading advantage. In the Netherlands incentives currently flourish in isolation where a nation-wide vision is needed to fix this. *A road map is required for the development of the sector.*

This SWOT-analysis shows a perfect fit with the Netherlands. It is our vision

to create a world-class ecosystem of the creative sector, by creating coherence between knowledge centers, industry and the non-profit leaders in regional contexts.

The Netherlands excel in design, media, autonomy and multi-disciplinarity. The Dutch foster cultural heritage and creativity with a truly international orientation. And the population has the broadest access to the web. The Netherlands are set to lead the creative era if they act now.


van de BV
en de NV
KLUWER



Here is an overview of the most urgent themes plotted in a matrix against the most urgent tools in a broad consensus in the field.

04/ The Strategic Agenda

Urgency

The strategic agenda is a direct answer to problems discussed above. It is based on the vision that the Netherlands are pre-eminently suited to take on the creative challenge, if we act now.

Success is made of...

The strategic agenda is based on a positive vision of the economy and the society of 2015 when things have changed for good in order to survive the international competition in the 'information intense' world. By that time, one lives and works in virtual as well as non-virtual worlds in close co-operation as a way of life. Millions of people live the creating way: they work in a networked communal context. They produce a large volume tailored to a small-scale expression. Their creations are based on individual expression in co-creation. They share a common creative ethos that values creativity, individuality, difference and merit. They are leaning on information, communication and possibly media by mobile, internet and interactive television as their unique

enabling technology to support their work and to support their expertise. *Information Communication and Media, ICM is the core: everything is related or depending on digital content and communication. Whichever nation succeeds in restoring integrated chains of knowledge and technology from creation to production will survive best in the competition.*

Themes and tools

In a workshop with 40 experts on invitation from industry, science, arts, education, SMEs and institutions, we have identified the most important themes. In addition, in extensive consultation rounds with all involved we have identified what are the important tools to solve the themes, from very down-to-earth technical tools to judicial and life style instruments. *Themes with the highest potential of success and a sense of urgency have been coupled with tools and broadly supported in the field.*

4.1/ Themes

4.1.1 Search & find your way

The information overload in personal lives, in business, and in society

Mobile solutions and pervasive internet applications generate a digital data explosion literally everyone is currently experiencing. New devices – the ipod, the hard-disk video recorder, the home-robot, to name just a few of many more – and new formats – (narrowcast) internet television, newspapers online, television coupled to chat-sites, Ajax.tv and many more – aggravate the sense of information overload in people's personal lives. In business, the information overload has just started not stopped – overloads of emails, overloads of media which bring messages, overloads of connected archives of pictures and texts lead to a new sense of lack of control. In addition there are many more previously unknown sources to mine to keep your business in good shape – user feedback, consumer satisfaction scores, video experience observations to learn from, micro-marketing information from Internet shopping and so on and on. In society, we are in the process of digitizing our entire cultural heritage. If there is no solution to searching and finding, there is no access. Digitization would be in vain. Cameras enter public and private lives. Leaving them inaccessible simply makes no sense.

Not just technology: the crucial advantage of Google

Where you go on holidays, when you are awake and when you are in leisure used to be strictly private information and privately owned. But when we rely on Internet search as we do already, what we have created is an extremely large pool of private data owned by a company. And not a single national company but rather international information brokers such as Google. Their success will continue as they know in detail how we behave by consulting their internal records for every district in the world.

Impact starts with search engines

So we cannot enter the digital age if we do not work on access to content after having provided broadband access to data. We need to exploit the data before the competition will do so. Large-scale, sometimes proprietary access is of vital importance to the economy and the Netherlands society. Digitization is made sustainable with automatic content access. At the root of future information, media and communication products is searching and finding. It

Story table

Elderly people tend to get lonely and as a result, depressed. Sharing stories and memories of the past has a strong therapeutic effect. To that end a Story table was developed with artist Hans Muller, with facilities for film footage, music and oral history. Currently there are 60 Storytables in homes for the elderly the Netherlands. Designers have realised a piece of furniture which encourages these users, who are aged 80 years and over, to overcome any fears of technology they might have. The Storytable is not a computer in disguise but a source of images, sounds and stories from the past that the inhabitants of the care home can operate intuitively and can add their personal experiences.

www.waag.org/verhalentafel

enables all kinds of kinds of public communities, professionals, and individuals to share, access, and find information. Access for the foreseen amounts of data also requires data-driven search engines, data-management, information visualization, case-based learning, knowledge formalization, social tagging, a solution to property rights, interaction.

... in which we happen to be world-class ...

The Netherlands are a top-player in the world in the field of search engines for video[1], for music[2], data-management[3], for Dutch speech, for knowledge driven search[4], and for question answer systems.

... and the neighbors invest on a very large scale.

We have the broadest bandwidth in the world. That makes the Netherlands suited as a play ground for the broadband economy. That is the positive effect. The negative effect is that the broadband infrastructure has enabled the leaking of all micro-marketing information to international companies. That is the sole reason why France invests 200 MEuro in Quaero the French Google, Germany 80 MEuro in Theseus, and Japan 90 MEuro in its version. We also have to act now. And digitization is progressing furthest. The population loves to experiment on the Internet. In order to exploit that competitive advantage, we must pay attention to proper content technology.

The Netherlands stakeholders

Stakeholders are information and media processing companies and institutes like IlseMedia, TextLite, DEN, Beeld & Geluid, PCM, Netherlands Forensic Institute, Police, Sanoma, Lost Boys, AIVD, Elsevier, Arbonet, FabChannel, DBNL, and ZiuZ.

4.1.2 Contextivity

The need for contextivity

From commuters in noisy trains to hospitalized elderly, from the professional at work to the citizens searching for information, many have different demands for information, for communication and for media at different places and at different times. To service these users groups and communities better, we need to provide adaptive content presentations.

Context awareness is the answer

Context awareness sensors will evaluate the current state of affairs. Sensors will provide part of the information to read the current context: in what type of environment is she? (Is she private, say it out loud! Is she in a train? Translate speech to text!) Using internationally recognized Dutch emotion recognition software[5] sensors can also read the state of affairs: what does the user

feel about the information presented thus far (Is she surprised? Give more! Is she bored? Change the information provision!) Using sensor awareness, the user's abilities and preferences, and the metadata of the content, contextivity implies displaying personalized content just in time, just in place, just in tune.

Impact in the Netherlands

Impact is foreseen in ambient assisted living, location-based media, lifestyle, tele-care, the mobile workforce, mobile serious gaming, mobile web and television. Interface adaptivity is at the core and essence of future information provision. We will need more self-evident and smarter interfaces that are more useful, less intrusive, and more versatile. We will need interoperability between platforms to achieve good accessibility. When this is accomplished, it will result in extended revenues in business, reduced cost and better well-being. The most crucial problems in the area of contextivity are augmented cognition, quality of experience, interface, reasoning, context-aware platforms, personal networks, security and privacy.

Not just technological

Context information used to be a private affair, where all information was publicly accessible. There was no ownership of the information concerning individual location. Nowadays the location information is in the hands of your telecom operator, or your Internet providers. Legal issues are plenty: who owns the information about you? Can you remove that information? Who owns the information when you are at home? In advanced contextivity, success depends on effective results from the other themes like searching and finding.

The Netherlands are an excellent test bed

The Netherlands have world-class problems in traffic jams and have world-class potentials to solve the problem, but the solution will not occur if we do not bring the two together. In the Netherlands we have multiple disciplines in creative interface design and a high density of mobility and broadband and high density mobile and wireless networks.

Stakeholders

Stakeholders are all current media, information, and communication companies and institutes servicing in areas like health-care, media-metadata, and serious games. Companies specializing in personalization, tourist information provision, information provision for the professional, for example LogicaCMG, Endemol, VPRO, MediaRepublic, Police, Telematica Institute, banks with telecom access, TomTom, Xylion for knowledge management and customer relations.

'De Tapes' audio tours in Rotterdam and Den Haag

Information and authentic stories from the inside of multi-ethnic neighbourhoods, not from the outside, that is what De Tapes offer us. Walking through the Rotterdam Afrikaanderwijk or the Transvaalwijk in Den Haag with a mobile phone and PDA, De Tapes tell us about daily life in the exact spot you are standing, and how it changed since immigrants came to live here. The stories were gathered in interviews on the streets, in shops or in people's homes. In neighbourhoods like these, there are enormous differences in culture, background, religion and beliefs. The idea behind De Tapes is that knowledge and insight creates understanding and tolerance.

www.detapes.nl

4.1.3 Virtual and real worlds

The inevitability of virtual and real worlds

Virtual worlds have entered our lives, our communication patterns, our culture, and our entertainment never to leave again. To be sure: the average age of a gamer is 35 years by now, and it increases every year. And that does not include role-play in a professional context, also known as serious gaming, inevitable when learning practical skills. Virtual worlds are in use for entertainment, education, training, getting information, social interaction, work, virtual tourism, reliving the past and forms of art. They augment and interact with our physical world and form an important part of people's lives. Many virtual worlds already exist as games, training systems, social networks and virtual cities and world models. Virtual worlds will change every aspect of our lives: the way we work, interact, play, travel and learn.

The answer is new activity

Games will be everywhere and their societal urge need is so big, it will lead to many new products and it requires many companies.

A multidisciplinary ecosphere is the answer

Technology improvement, both in hardware and software, forms the basis. We envision that the most important developments will occur in the areas of display technology, graphics, animation, (physical) simulation, behavior and artificial intelligence, loosely distributed systems and network technology. Furthermore, a strong connection between the virtual and the physical world is needed to reach simultaneous reactions in both worlds to changes in the environment and human behavior. Efficient, effective, intuitive and entertaining interfaces between users and virtual worlds are of crucial importance for their wide acceptance and use. To improve the process of creating virtual worlds a better design methodology and better tools are indispensible. For fast adoption of virtual worlds we need a better understanding of their internal economics, rules and regulations. And finally, what is the usefulness and applicability? When and why are they better than traditional approaches?

The Netherlands ecosystem

The Netherlands are a world-wide young but strong player in this field and have all the ingredients to make this a successful and profitable theme. The question is whether we will be able to convert the position into a stronghold.

Stakeholders

Stakeholders are all games and serious game producers of the Netherlands, and all companies which believe in virtual worlds. A most important impact is to be expected in the field of education if only to balance the excitement of the games and learning by Internet. That makes many of the current learning books boring. Typical examples of the second category are Thales for crisis management games, TNO – ASG, woningbouw-co-operations for urban planning, and defense industries.

4.1.4 Collaboration as a way of life

When something is too big for one...

Cooperation improves creativity, breeds industrial and cultural innovation and transcends and transforms fixed patterns and structures. Cooperation stimulates the transfer of people, capital, goods and services, ideas and knowledge. Collaboration improves decision-making processes.
Innovation, design and creativity increasingly become networked or distributed. Dependable collaboration at a distance will be essential for the future.

3voor12 Plundert Musea

... is an initiative to create new music from 'old' musical instruments in museums. On the website, visitors can download audio samples from unique instruments, which inspire them to develop their own mix, which in turn can be uploaded so others can hear it. An example of unique source material are the Koto samples, which is a Japanese piano-like instrument from the 19th century.

www.mediawijsheid.org, 3voor12.vpro.nl/plundertmusea/

Share and solve

Cooperation is about sharing content and joint problem solving. The target is to facilitate and to innovate rich task-aware cooperation. Rich cooperation means that we can cooperate at a distance, at a scale and frequency. It will tap a problem solving potential way beyond present possibilities. Collaboration will be a natural way of life for the individual as a consumer, as a professional, or as a client, for teams, or for communities through peer-to-peer or trade networks, and smart mobs.

Not just information also knowledge

Collaboration has already extended into knowledge. In just a few years time, Wikipedia has conquered a solid position as the number one source of formal knowledge. And, blogging has gained momentum as the informal source of knowledge. Every company, every institution will have to access its sources of knowledge in order to stay ahead of the ever expanding common knowledge and the swiftness of the competition to diffuse its knowledge.

Not just technical ...

Problems in this theme are identity, accessibility of collaboration networks, identifying peers and kindred spirits, exclusion mechanisms. In advanced collaboration there is attention for high levels of security and trust, of privacy and publicy. In advanced collaboration, success depends on effective results from the other themes like searching & finding your way and effective contextivity.

Stakeholders

The Netherlands are world-strong in (international) cooperation, infra-systems and distributing content (publishers, broadcasting), ICT services and software, consumer goods, design and architecture. IBM and the ICT industry in general is a strong proponent for collaboration, through open-source software, or through collaborative toolsets, or through remote access. Open source is a game, potentially a dangerous game breaking market chains, which companies should learn quickly as a new business model (of collaboration). In a networked world, all SMEs are immediate candidates to profit from the results of this theme.

4.1.5 Interactive and tangible environments

Environments

Environments are essential in creating the right atmosphere and mood for people to be productive and to enjoy themselves. These environments are composed of the physical space we stay in, of virtual environments we communicate with, and of physical objects around us fulfilling selected functions. We, as human beings, have a natural drive to feel safe and secure which demands intuitive and entertaining devices to achieve secure environments.

Stuart - show your art to the world

Stuart, short for 'student art', was created by the UK-based Saatchi Gallery for all art students to show their work and create their own network page. On the Stuart website, art students can post their work (photo, video, images), discuss it with each other, share their experiences and find out other people's experiences and build a network. The possibility to create profiles enables the artist to find people with comparable interests and preferences. This site is open for all students studying the visual arts, including fashion, design, applied arts and performing arts. They can showcase their work for thousands of visitors and connect with other artists and galleries.

www.saatchi-gallery.co.uk/stuart/

The next step ...

is to understand what functionalities people expect in their environments of physical, virtual and communicating spaces. Problems center on emotions and mood recognition, how to make environments respond in such a way that people are pleased, and how to bridge virtual and physical worlds with interfaces and languages that can transmit emotional data. In advanced environment, success depends on effective results from the other themes like contextivity and worlds.

In the Netherlands ...

there is industry and an embedding of multidisciplinary experience to attain environments for a new level of experience for people. The multidisciplinary nature of the theme makes it necessary to involve creative as well as technical input to create solutions that people want. Stakeholders typically are design, construction, academia, and the product industry. We envision small-scale creative design & production industries where co-production and co-creativity flourish.

Stakeholders

The Netherlands are strong players in creating moods, environments and 'gezelligheid'[6]. World-class examples are Endemol and Tiesto. Typical examples for experimentation and production are Philips, Waag Society, but also hotel chains, environments in social care, and shopping malls.

1 It has won the NIST-organized international industry and academic TRECvideo competition for search engines.

2 It has won the international IMMIC MIREX 2006 competition.

3 It disseminates the broadly used data-management technology Xhive, MonetDB, and Sesame.

4 It has won the W3C award for the semantic web.

5 For a press overview see www.visual-recognition.nl

6 Hard to translate

4.2/ Tools

4.2.1 Instruments for interaction

Everything starts and ends with interactivity

Consumers and professionals interact with technology, devices, and services enabling a productive professional life and a more immersive private live. Technology and services already deliver a huge potential of functions to people. Interaction technology is the bridge between the people and the functions.

What to do about the flood of information?

New interaction ways are needed to keep pace with the abundance of data, of content, of functions, and, finally, of experiences. New methodologies are needed to disclose the abundance of functions made available by current and near-future technologies and services. Managing the amount amounts in a distributed setting at low cost becomes a discriminating factor of success.

In the Netherlands ...

in the Dutch creative industry we have a world-wide reputation for design. Hence we have a good understanding of people's behaviors and motivations. In the technology industry we know how to convert design to technology. Bridging the gap between the creative and technology industries together is essential to understand people and make it happen in solutions.

Games Atelier

Creative and playful use of technology motivates and stimulates pupils and enhances the learning effects. Most games only offer entertainment. There is a growing demand for games and simulation within education, but there are not many suppliers making games based on the development of skills that can be used within the classroom. Games Atelier is a new educational tool, to be used in secondary education in the Netherlands. Within Games Atelier, pupils can create, play, share and view their own locative mobile games with GPS equipped mobile phones and an internet application.

www.waag.org/gamesatelier

4.2.2 Location-based infrastructure

The new creative 'thing' is to 'apply at location'

There is a wide repertoire of opportunities for applications or services on mobile devices whereby the content shown or the interactions possible depend on the location of the user. Currently there are different technologies available to pinpoint the position of the user, depending on whether he is inside a building, near a field, or out in the open.

Not just technology

On a technical level, we need a location-based infrastructure that is seamless and transparent. Without knowledge on the specific technology used, the application should be able to know where the user is. Discussion is needed on topics like privacy and identity of the user, and security of the communica-

Frequency 1550

This city history game was set in medieval Amsterdam and played in 2005. As part of their history class, groups of pupils were sent out into the city with mobile phones to obtain answers to questions and to perform assignments. The children played with as well as against one another. As a sequel on Frequency 1550, a citizenship game called Frequency Now is being developed. It centres on contemporary city themes such as diversity, creativity and talent development.

www.waag.org/frequency

tion. For content and services providers, a layer is needed for common functions like paying, quality of service and copyright. Which content or services are useful?

In the Netherlands ...

there is good experience in multidisciplinary cooperation. And, we are at the worldwide forefront in the development of broadband and mobile infrastructures. The Netherlands will profit from being first in applications in education and in cultural heritage.

4.2.3 Tools for data worlds

Abundant data out of control

Data are abundant these days for the public, government, businesses, and non-profit institutions alike. They can be media, user-generated data, e-marketing figures, company websites and knowledge bases, libraries and cultural heritage domains. Enormous amounts of Internet-accessible data in the Exarange[7] of user-generated content are challenging and rewarding in terms of marketing insights or profits.

Data consumption is two way

More and more, one-way consumption is replaced by two-way consumption in virtual networks in which new social values play an important role, and by two-way consumption embedded in game worlds, social worlds, virtual worlds, and tied in the physical mobile world. The point is to get access to relevant data, to organize the data, to annotate and label the data for commercial reuse, to verify the web-input on them, and to be sure they are securely stored.

In the Netherlands ...

there is world-leading expertise in handling large scale data. A broadband network is available, and our population is willing to experiment on the web. This subject enhances creation, recreation, re-creation, and new Internet-based business creation.

4.2.4 Building real & virtual worlds

Virtual worlds require real hard work

Virtual worlds become an important means for all aspects of creativity for example through games, meeting placing, and virtual tourism. People will express more of their (collaborative) creativity in virtual worlds. Virtual worlds will play an increasingly important role in our daily lives to have their impact in games, online social worlds, virtual tourism, and training.

Behind the scenes

The construction of virtual worlds however is too time and labor intensive.

– even when they are virtual – it is all is about efficiency

Also the behavior of computer controlled characters in these worlds is unrealistic. Moreover, better interfaces are required, there are no standards for the connection between the real and virtual world and there are many legal issues. We need new systems to automatically create virtual worlds from real-world data. New software to simulate virtual human beings is needed. Experiments are being made on ew interfacing technology, standards, and rules and regulations.

In the Netherlands ...

we have a strong potential for the multidisciplinary community needed to solve the point. There are world class research groups and innovative companies in the domain. The connection between the real and virtual world will become stronger over time and companies will create virtual world applications once the gap between science and industry is closed.

4.2.5 Experience labs

Creativity strives to make technology invisible

There is often a mismatch between solutions provided by technology and solutions needed to fulfill end-user needs. Experience labs are places where end-users, universities, companies, and research institutes work on topics where consumer insight is essential. Experience labs implement complete prototype solutions in a setting that resembles real situations, for example in the living room, shop, and hospital rooms.

Finally, users are the start and end of development

By exposing end-users in such settings we observe their interaction with new concepts, and get response to improve solutions. Multidisciplinary teams are essential: disciplines needed are technology, design, user-interaction and psychology.

In the Netherlands ...

The first experience labs, home labs and shop labs are emerging. User-defined product research in Eindhoven is taking off in well-controlled and experimental environments filled with special user-monitoring equipment.

4.2.6 Living labs

Technology helps to make creativity visible

A major challenge for the coming years is to develop creative products and experiences. Technical improvement does not imply improvement in use and perception automatically. Social experiences are decisive in the success of new introductions. More and more content is being produced by users themselves. Hence, existing research and design processes must be tackled with better insight into the real user and at the same time be close to the designer. That is no different for the industrial designer in experience labs as it is for mostly non-profit social goals. For that purpose we present the living lab model, based on positive experience elsewhere in Europe, where creative new technology is developed in a real world close to users and producers. We expect this to bear fruit for contextivity, worlds, and environments.

Technology, is at the start of creating

In living labs we observe common users in their natural habitat. In contrast to experience labs, in living labs we stimulate creative outcome not by economic measures like shop turn-over but rather interactivity and communication. Multidisciplinary is here as essential as it is in experience labs. In fact, living labs are the non-profit version of experience labs for social goals.

In the Netherlands...

the first ecosystems are emerging introducing experience labs, home labs and shop labs. Amsterdam has started to work with Living Labs with a broad reputation in testing concepts in real-life settings.

4.2.7 Policies for property rights

Property of information is under debate, world-wide

Who has control over the ownership over a movie, a game, a piece of software? Is it fair people use it without paying for it? Is it fair to pay for the information to pinpoint where you are? Or who you are on Internet? When a user is willing to create and re-create, who owns the rights? Is it not fair to compensate the creator? What does it mean to own the rights for reproduction and remix? And what if policing the rights costs much more than the profit? Can property be protected? Is it profitable to protect ownership? Is all information public? Or in an ambient world, what information do I own?

The role will change however many securities will be built in

It is obvious that the role of Intellectual Property Rights will change, shrink and expand, as well as be free or more heavily policed. The consumer needs an easy to comprehend new set of intuitions of what to expect and live by in the Internet digital age. New and creative solutions have a big impact. Apart from the public discussion on watermarking content, there is also the important discussion on what to do with the ownership of remixing content (on public sites). And, there is the discussion what to do with the data generated by ambient environments, wearables and RFID. How to undo my profile in Internet worlds (when everybody keeps track of my previous behavior) is another important topic. It is clear security should not be given over to technology, nor to legal people, nor in the hands of open source idealists alone. The multi-disciplinary approach of IIP/CREATE is indispensable to come up with solutions which last for more than a few years.

In the Netherlands ...

matters of autonomy and privacy have always interested the Dutch. The country or community which comes with the first viable solution in intellectual property will have a major economic advantage. All the above questions and creative solutions are relevant to all.

4.2.8 Entrepreneurship of the creatives

The creating are solitary workers

Generally speaking, SMEs work on their own island, that is independent from others. A small number of employees try to cover everything. By doing so, they do not use the potential of others. Benefits like the economy of scale or the differentiation of tasks, can never take off.

Operating as consortia or in collaborative networks is key

Creative entrepreneurship is the new way of life for SMEs and ZZPs[8]. Creative as in: flexible cooperation, in relative autonomy, and in a network of contacts to resolve task differentiation, and all of this for the duration of a contract. Sets of small companies in mutual trust and benefit form clouds. This collection is known as an ecosystem. The best example is industry around the German automotive manufacturers. SMEs will lose their competitive advantage if we do not succeed in creating similar ecosystems here in all disciplines. This is an essential component of the creating life-style. Topics are how to find

each other, how to work together and how to include SMEs in large research consortiums.

In the Netherlands...

there is a growing number of one-person companies and a large number of SMEs. We have the proper mentality of balancing between the autonomy and the drive to work together suited for the creating lifestyle.

4.2.9 Research of the creatives

Different research styles and results

Creative research is totally different from academic research: the process, the techniques, the results and the way these are appreciated. The contemporary media artist is a researcher, designer and mediator who is positioned in the centre of the disciplines and patches together knowledge fields and methods. His research at an art academy results in a creation, comparable to a PhD in an academic environment, where success is measured in the number of publications and references to it. The artist's creation however is considered a success, when the design is convincing and attractive, when the artist gets awards, is selected for a festival and peers review it favorable; in short, when is has 'the X-factor'.

We can learn from each other

Academic and creative research is destined to go hand-in-hand to learn and to mutually benefit. Interactive art and design have created a valuable expertise and a rich practice in relevant fields of human or user centered and participatory design. The study of creative research methods and international best practices fostering interdisciplinary cooperation will deliver inspiration for further growth.

In the Netherlands...

we have many yet isolated examples of successful cooperation between creatives and scientific research. We have an open climate and several media labs where free creative research is conducted. We need to build on the world-class reputation to improve the scale and impact of these seeds. Our strong design tradition and reputation puts us in a perfect position to bring the best of both worlds together.

7 One Exa byte are one million Giga bytes.

8 One person companies.

4.3/ Conclusion

Not all themes require all tools. Priorities are identified at this point in time (see the figure). Obviously, the intersection of the theme Worlds and the tools for building these worlds has high priority; in order to implement this theme we need to understand these worlds better and we need to have tools and design methods for building them. In contrast, light dots do not need our attention at the moment. For example, if in a theme solutions are mostly in open source, there is no need for policies for property rights. We have selected the themes and tools on the basis of extensive interactions with the field.

05/ Creating a Winning Ecosystem

IIP/CREATE motivates, initiates and directs

IIP/CREATE aims to achieve an impact in the economy of the Netherlands and society. Bringing the creative and technology industry together is essential for people to understand one another and make innovative solutions happen. IIP/CREATE is the prime platform for the diverse field of creative arts and ICM, its driving forces and industry, ready to collect and return in value the results and products of the platform. It motivates, it initiates, and it directs research and innovation. Everywhere in the world the barriers between these fields are a challenge, but countries like France, Ireland, and the UK are already taking action and moving fast ahead. *IIP/CREATE supports a new way of working and a new way of living for everyone, it introduces and stimulates new ways of working along the knowledge and the value chains. The Netherlands with its strength in creativity, ICT-science, multi-disciplinarity and information provision is in the ideal position to take a lead.*

Creating coherence is key

Based on broad support, 80% of the sector, we focus on Dutch strengths ready to cross borders of technology, business, and creativity. The aim is to create coherence between knowledge centers, industry and the non-profit leaders in regional contexts. To that end, *this agenda proposes a mix of long-term research with short term demonstrations and high-profile applications, consequently to form new chains of knowledge for an enduring advantage.*


2007 | Handboek


ernemen

EU proposes 2009 Year of Creativity and Innovation

Europe needs to boost its capacity for creativity and innovation for both social and economic reasons. That is why the Commission has today adopted a proposal to declare 2009 the European Year of Creativity and Innovation. The decision will be taken later this year by the Council and the European Parliament. The modern world puts emphasis on better use of knowledge and rapid innovation. It therefore requires a broadening of the creative skills base involving the whole population. In particular, there is a need for skills and competences that enable people to embrace change as an opportunity and to be open to new ideas in a culturally diverse, knowledge-based society. Education and training are determining factors in this. In order to involve all those who might be interested, the Commission invites member states to appoint national coordinators who can cooperate through a small steering group at EU-level. The activities of the Year should focus on creating an environment favorable to creativity and innovation and become a strong impetus for a long-term policy priority. Emphasis should be put for instance on education across a wide range of subjects including mathematics, science and information and other technologies. Highlighting creativity through such skills should foster problem-solving and the practical application of knowledge and ideas. All forms of innovation including social and entrepreneurial innovation should be taken into account. Artistic creation and new approaches in culture should also receive due attention, as important means of communication between people in Europe and in the follow-up to the ongoing European Year of Intercultural Dialogue (2008). The European Year of Innovation and Creativity is proposed as a cross-cutting initiative covering not only education and culture, but also other policy domains such as enterprise, media, research, social and regional policy and rural development. It should include information and awareness-raising campaigns, promotion of good practices, debates, meetings, conferences and promote a wide variety of projects at regional, national and European level.

From the EU-press release.

NEM - UK

The UK has had its own platform since 1998 called NESTA, which is the National Endowment for Science, Technology and the Arts. Its mission is to transform the UK's capacity for innovation by investing in early stage companies, informing innovation policy and encouraging a culture that helps innovation to flourish. NESTA wants the UK to lead the world in the application of knowledge, enterprise and creativity.

NEM - EU

On a European level, IIP/CREATE is a natural mirror organization of NEM, the Networked and Electronic Media Initiative. This European Technology Platform is focused on an innovative mix of various media forms, delivered seamlessly over technologically transparent networks, to improve the quality, enjoyment and value of life. It covers the field of ICT and creative industries with hundreds of companies and universities participating. NEM works together with the national program for the creation and with important regional eco-systems for creative industries in Amsterdam, Utrecht and Eindhoven. Mirror organizations of NEM are active in many countries.

Two cornerstones for building a winning ecosystem

Creating champions
- by implementing a focus,
- by building new chains, and
- by investing in multi-disciplinarity

Instruments and incentives to reach that goal
- *Financial incentives* for the creation of new ecosystems
- *Organizational incentives* to build robust organizations and robust processes
- *Facilities* to create a head start for ecosystems
- *Research* on new technology, business and adoption to feed into the ecosystems
- *Education* for a world-class knowledge and creativity to feed into ecosystems
- *Nourish coordination* between actors and instruments to ensure efficient and effective growth and to disseminate and show the success of the sector.

IIP/CREATE is building on top of the existing and emerging ecosystems in the Netherlands and their European counterparts and networks as highlighted throughout the chapter.

1 See www.multimedian.nl

2 See www.gigaport.nl

3 See http://www.vl-e.nl/CreatingValue/

4 See www.point-one.nl

5 As in www.nwo.nl/catch
(Continuous access to cultural heritage)

5.1/ How to become a champion

Focus on the hottest spots

The research agenda is used to empower the rise of the creating class as a profitable force for SME and industry, for cultural heritage and society. In a workshop with 40 experts on invitation from industry, science, arts, SME's and institutions, we have identified and agreed on the most important themes. In subsequent consultation rounds with all involved we have identified what are the important tools to solve the problems posed in the themes, covering the full range from very down-to-earth technical tools to judicial and life-style instruments. Not all themes require all the tools with the same urgency. Therefore, the areas with the highest potential of success and a sense of urgency have been coupled to tools. *We have made a selection of the themes and tools on the basis of extensive interactions with the field. We will focus on the hottest spots first.*

REDICT

The council of Amsterdam has a leading role in REDICT, a project that brings together 6 regions and 18 partners sharing a strong R&D presence in the field of ICT and new media. They see that the factors that influence the transfer of knowledge to SMEs are complex and often badly understood and want to exchange experiences and best practices to boost compositeness and economic performance. Cities joining REDICT are Amsterdam, Berlin, Bucharest, Copenhagen, Dublin and Paris.

Invest in newly forming and promising chains

The market chains between creative ideas, industry and research are blocked. The few products that transcend just ICT, just content or just technology are an instant hit, such as the ipod, Youtube, and Flickr. It is content and technology that matters. Cooperation between parties in an atmosphere of open innovation, each focusing on their own part of the value chain, has launched successful products, such as the Senseo coffee machine and Apricot television. Critical success factors here are clearly defined responsibilities and shared revenues, and individuals which transcend their own safe corners. To promote awareness and bring about change, we aim to stimulate organisations and their employees to step out of their traditional role and form new chains of working. *Whichever nation succeeds first in restoring integrated chains of knowledge from creation to production will survive best in the competition.*

Build on track records

The Netherlands has established track records in such diverse fields as multidisciplinary cooperation, creativity, science, and productivity. We must capitalize on these track records and work from the best possible combinations. In the young but already successful gaming ecosystem in and around Utrecht, five success factors are present: cooperation between education institutions, a multidisciplinary research program, stimulation of economic activity, support from (local) government and creating awareness with the public. Other examples of world-wide excellence are the research results from MultimediaN[1], Gigaport[2], VLe[3] and Point-One[4]. We must take advantage of new innovation models such as the innovation tables and new and interdisciplinary ways of working[5]. *The potential has been created by the Bsik and other programs. Now is the time to transfer the chains into production.*

Support regional ecospheres of creative industries

Bringing the creatives, non-profit frontrunners, technology and industry together is essential to develop exchange and restore the chain. Only then, solutions and innovations are about happen. In Europe, successful ecosystems are developing in London, Paris and Berlin. Successful creative cities all share technology, talent and tolerance. In the Netherlands, we see large local ecosystems growing in Amsterdam, Utrecht and Eindhoven, each with their own emphasis. Amsterdam is for creative, cultural and content, Utrecht is for games, and Eindhoven is for design and production. They are supported by ecosystems in Rotterdam, by the technical universities, by initiatives in HBOs and others. A tolerant environment attracts and retains top-creative talent ready for multidisciplinary interaction. *IIP/CREATE will act as a container over local initiatives, supporting them wherever they originate.*

Invest in multi-disciplinarians

Talent is a necessary factor in building winning ecosystems. If we want to achieve impact on the economy and the society of 2015, multi-disciplinarians are essential. We need highly educated, creative people who build bridges between disciplines. Only then do we transform innovative ideas into successful products. One way to do this is create awareness in companies that

multidisciplinary teams are more effective. *Government can support this effort substantially by acting as a launching customer.*

Educate and disseminate to the young

We are to develop outstanding education programs, combining technology, research, business and design & art. People can become multi-disciplinarians later in life as well, by being exposed to and working closely together with colleagues with different backgrounds and expertise, but it is preferable to educate right from the start. Outreach is the essential factor in bringing about the changes to realize a future in which we challenge the international competition in the 'information intense' world. *Only if young people see career opportunities the knowledge chains can be closed again.*

IIPs

IIP/CREATE is an ICT Innovation Platform, supported by ICTRegie. Other relevant IIPs are Point One (for nano and embedded systems) and Veilig verbonden (for secure communication). These two are intended as high-tech only platforms, mentioning creative industries as an important target area and a reason for their existence. Without IIP/CREATE there will be no platform for these IIPs to connect to, demonstrating the need of this platform.

5.2/ Tools and incentives

From the above, we can distill the following lines of action to achieve a winning eco-system:

1.a Introducing production vouchers to creative entrepreneurs

Stimulation of supply and demand is possible by supporting a creative initiative by production vouchers. When the bridge between idea and preparing for the market has already been crossed, access to production capacity is the important next step. A production voucher supports the investigation the production options, to gear them specifically to the needs of the creative initiative or simply to purchase capacity (guided by coaches where appropriate).

1.b Introducing creative pioneer vouchers

We propose to set up a Creative Pioneer Fund with Vouchers tailored to stimulate the creative industry to develop working prototypes (15,000 Euro subsidy delivered to a specific member of the eco-system) and a voucher of 7,500 Euro subsidy to the partner (by getting feedback from the eco-system). The fund will work with two sheet proposals. This idea resembles similar grant proposals in Ireland. Return on investment to the fund occurs when profit exceeds 22,500.

IPCICO

IIP/CREATE will join forces with IPCICO where HKU, TNO and Syntens aim to reinforce innovation for creative SMEs. IPCICO opposes autonomous versus instrumental and market versus government to develop plans and guidelines for the stimulation of creative SMEs. IPCICO specifically employs the lectoraten, as they are positioned in the middle of research, education and SMEs. It investigates business models for creative entrepreneurship, the return of creativity (business cases), finding policy instruments to foster creative SMEs in creative industry and models for inter-disciplinairy collaboration between large and small creative parties.

Interregionaal Platform Creatieve Industrie en Cultureel Ondernemerschap

1.c Introducing creativity vouchers to the production industry

A variant of the production voucher is the creativity voucher. A large-scale producer is supported to turn a new product into one that is attractive to consumers. Support by creative talent helps embellish the product with an attractive design. A creativity voucher helps to bring in creative talent.

1.d Coaching creative initiatives, from idea to consumer

A creative entrepreneur with a good idea is supported by a coach from the ecosystem at an early stage to enhance market opportunities. The coaches are capable of supervising the interests and the forces surrounding the development of a new idea to a product. Elements include offering a legal framework, a proper policy on ownership, SLAs, securing revenues for The Netherlands PLC, etc.. The creative entrepreneur is assisted to turn the idea into a market-oriented prototype. The expert ensures that it is matched with production and distribution potential.

2.a Restoring chains: building on successful large-scale programs

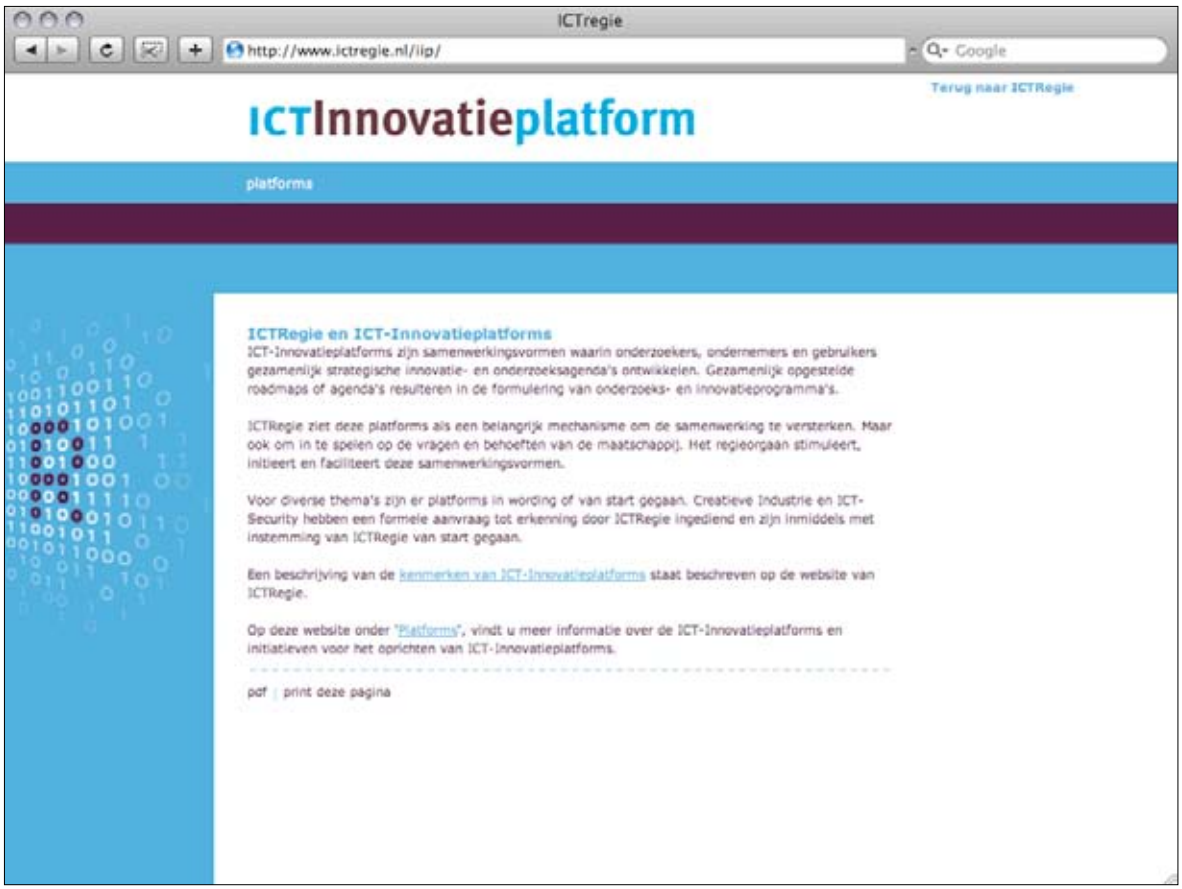
One instrument to restore the chain is to build on the successful large scale applied research programs of the past era from the bsik-program. They have led to agile new eco-systems and focus. We advocate the formation of large-scale single topic and local projects to stimulate focus and hence the chains in the eco-system by forming consortia from all parts of the chain. These projects should start from science and creativity and span the spectrum to application and spin-offs from the start. Typical target application areas are innovative creative approaches applied to health, mobility, safety and education. Projects are collaborations between knowledge institutes, creatives and organizations in the application domain.

2.b Restoring chains: new reward systems

The other one is to stimulate professionals to work outside their ‘square’, by creating extra incentives and rewards. From their reward system based on academic publications, academics are currently stimulated to work with other academics. We propose to stimulate academics to work in projects outside of academia and to enforce reward systems in the creative class for more than just academic publications. Dual positions between academia and entrepreneurial drive are rewarded.

3.a Community building: public awareness and dissemination

Meetings, websites, training and awards are activities to create a strong community in the creative sector. Public activities are foreseen to let the general public experience the innovative possibilities of the combination of ICT and art. Also, promotional activities are necessary to promote the Dutch creative industry in the world.



3.b Community building: registration of best practices and lessons learned

All the experiences with creative initiatives from the Strategic Research Agenda are stored centrally in the form of best practices. One of the most important requirements of an initiative is a good evaluation in the form of a lessons-learned report. The results are recorded for the purpose of sharing the knowledge, performance and experiences. Best practices also include initiatives which did not directly lead to a market introduction. In some areas, however, they also include important experiences which in certain phases of the initiative (for example, an experiment) have led to a result. In this way, knowledge and experience are shared and made available to all the participants in the network.

3.c Community building: maintenance of open-source technological sources

Much of the technology comes available through open-source communities, which require a business-like underpinning to maximize their effect. For this purpose we selectively identify and support Dutch projects with renewable vouchers to promote the technology, to maintain a basic help desk, and aid for documentation.

4.a Education and permanent learning

Present technical curricula are focused on single disciplines. We maintain that it is important to give people a strong technical basis but we propose to add a multi-disciplinary dimension on top.

- Masters programs will be developed allowing students to enhance their knowledge and experience in other directions, like a master for creative service design.
- In addition, we endorse collaboration between ICT and art colleges in the form of an exchange of staff and students.

• Mobility of staff and students will be endorsed by setting up academic – HBO shared labs.
• Vocational education (MBO) needs to train people with recent technology, development & production tools. Hence it requires strong ties between education and the creative industries by participation of professionals.

4.b PhD programs

Current PhD programs focus on scientific training only. We propose to set up two different PhD programs:

• Start-Up-thesis: To stimulate creative entrepreneurship we propose allowing students to write their thesis on setting up their own start-up. Incubator facilities in the eco-system are planned to stimulate the creation of SMEs in this sector. There will be a particular focus on the issues that are relevant to creation: IPR, investments, media.
• PhD on the basis of a work of art. Not meant here is a study of a work of art, but rather a PhD on the basis of a design and a document describing its rationale. In architecture this is practice, although not very frequent. In the UK, the scheme of PhD on the basis of a work of art has successfully been introduced by NESTA, see the text elsewhere in this chapter.

4.c Art programs

In the domain of culture, do not only emphasize the importance of public attention but also the impact artistic research has. To that end:

• Develop a program for stipends to artists to work together with scientists, supported by labs where they work together as Artist in Residence or a Researcher in Residence.
• Develop a pilot for the BBC model where the public broadcasting authority develops the potential of the creative industry to guarantee the breadth of the new media. In a such a modal, the public broadcasters function as a launching platform for new technology serving as a vehicle to overcome scaling problems in the area of the media.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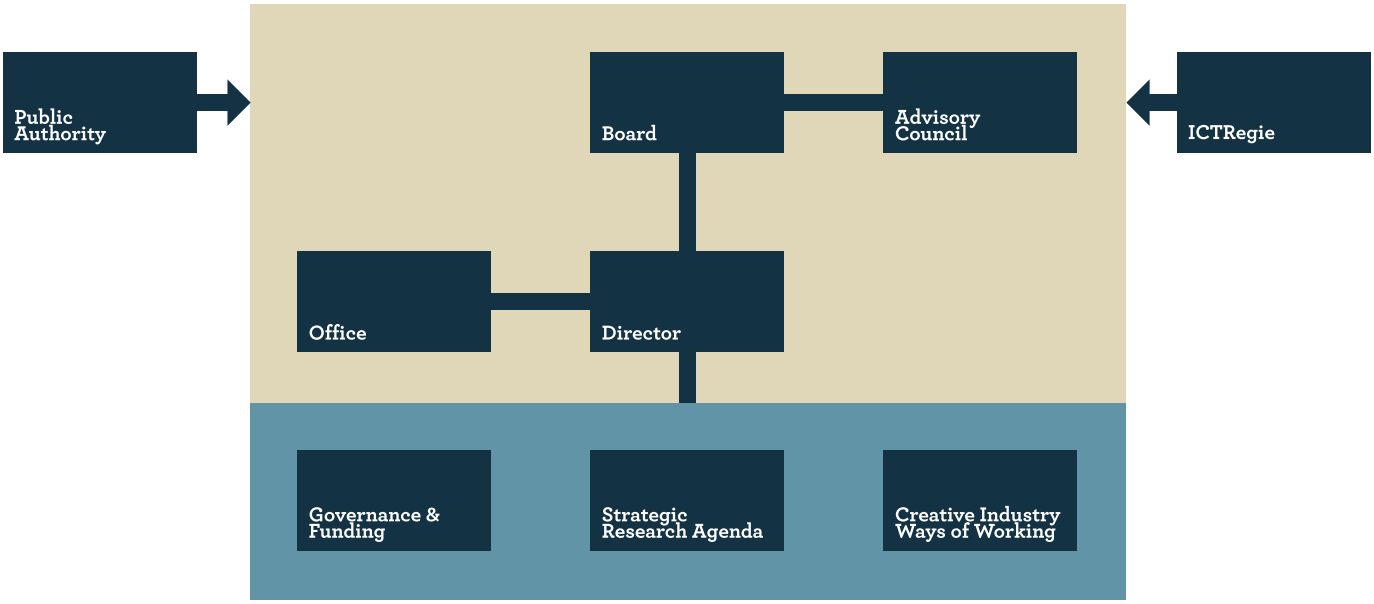
06/ Governance



Legally IIP/CREATE is a foundation. The structure is made of the following entities: The board is authorised to take decisions, striving towards the realisation of the vision of IIP/CREATE. The board is responsible also for the execution of the year by year program of activities. Its current members are Emile Aarts chair, Marleen Stikker vice-chair, Geleyn Meijer, Mark Overmars, and Arnold Smeulders.

The advisory council advises the board where it feels necessary. At least three times a year the advisory council is informed and consulted. The members are representatives of knowledge institutes, companies, non-profit institutes, creatives, platforms, sponsors, and users.

The office provides operational support to the board, the advisory council and the working groups. It coordinates activities by organizing meetings, working groups, communication and public relations. A director will be appointed, supported by staff.

Three working groups are responsible for activities respectively on the subject of Strategic Research Agenda, Governance and Ways of Working. Their activities are regularly synchronised.

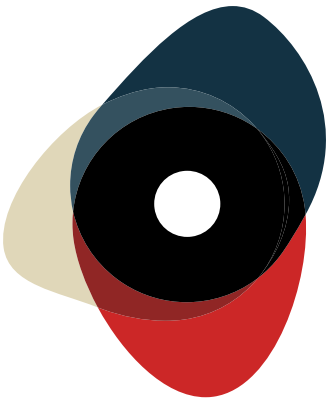
Yet to be formed is the public authority whose members represent the Dutch Ministry of Economic Affairs, the Ministry of Education, SenterNovem and NWO. It is their role to reflect on the progress of the working groups against national and international developments in public and private initiatives.

IIP/CREATE will actively monitor the progress by deliverables and indicators for the short and long run. Every half year the Board will evaluate the progress compared to the targets, and discuss the results with the Advisory Council and funding partners. The activities and programs of IIP/CREATE aim at realizing economic growth and societal impact in different areas, ranging from education and well-being, to security and cultural heritage.

The platform will further develop its activities with support of the Creative Challenge Calls funding. These activities aim at creating a national ecosystem at the crossing of Creative Industries and ICT. New national and international consortia will be formed, resulting into large research and development programs.

A winning ecosystem cannot be developed in isolation. The Netherlands are not the only country actively pursuing the promise of the creative sector. On the European level there are quite a few programs focussing on parts of the media, information and communication. Other countries have invested in national mirror initiatives: 200 MEuro for Quaero, the French counterpart of Google[1], 75 M Euro for Theseus, the German equivalent

1 Quaero is led by a Dutch man (!)



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