GeSI
GLOBAL e-SUSTAINABILITY INITIATIVE

cscp
COLLABORATING CENTRE ON SUSTAINABLE CONSUMPTION AND PRODUCTION

WORKSTUDIO

FUTURE LIFESTYLES AND OPPORTUNITIES FOR THE ICT INDUSTRY

ENVISIONING PATHWAYS TOWARDS SUSTAINABLE LIVING IN 2050

8 May 2012, Berlin

TABLE OF CONTENT

INTRODUCTION

… Imagine you lived a sustainable life this weekend, what would it be like? What role would Information and Communication Technology (ICT) play in reducing your ecological footprint? And in what ways would ICT solutions support you in 'one planet living'- living and working within a fair share of the earth's resources?

"We, the ICT sector, need to understand that it is our mission to make the world a more sustainable place for future generations. We are the only industry with a unique and amazing potential to transform our future for the better. Our responsibility is huge and we cannot, must not, fail."
Luis Neves – Chairman GeSI

Finding answers to these questions and co-creating sustainable futures enabled by ICT was the aim of a workstudio organized by the Global e-Sustainability Initiative (GeSI) and the Collaborating Centre on Sustainable Consumption and Production (CSCP) on 8 May 2012 in Berlin.

Entitled 'Future lifestyles and opportunities for the ICT industry- Envisioning pathways towards sustainable living in the year 2050', the event brought together over fifty experts from the sustainability field, ICT sector and beyond to discuss how innovative technology can enable sustainable lifestyles in areas such as housing, health, mobility, communication and education.

To set the overall context of the workstudio the notion of 'one planet living' was introduced to the participants. This refers to living well within a fair share of the earth's resources. Today 80 per cent of the world's population lacks the infrastructure or means to access basic resources while the other 20 per cent consumes at a rate that would require the existence of three earths to sustain us. In fact, if everyone in the world lived like an average European, we would need three planets to live on. And if everyone in the world lived like an average North American, we would need five planets to live on. Such consumption patterns increase the urgency of finding innovative solutions that reconcile economic growth with sustainable development and allow us to maintain a high standard of living while preserving our environment. For the ICT industry one planet living represents an opportunity to deploy innovative solutions offering new lifestyle possibilities that seven billion people could genuinely achieve.

The workstudio brought together different stakeholders to discuss these and more issues, and provided a forum for dialogue, networking and action planning to truly deploy ICT for one planet living. It allowed participants to build a common understanding of the trends and opportunities for enhancing the capacity of the ICT sector and its positive impact on lifestyles; it also helped to explore potential collaboration areas and to cross-pollinate knowledge, expertise and expectations from different stakeholders aiming to encourage lifestyle pattern shifts. This document presents the outcomes of the workstudio discussions.

"Consumers are increasingly playing an active role in what is being supplied, ICT makes better -informed choices possible and opens up the spaces for innovations to emerge. New business models for more sustainable ways of living are possible thanks to ICT solutions and this is an opportunity for the industry as well."
Michael Kuhndt – Head CSCP

ANALYZING LIFESTYLES

CREATING THE SCENARIOS - OUR LIFESTYLES IN 2050

WHAT WOULD OUR LIVES BE LIKE IN 2050?

The workstudio participants were asked to put themselves in the shoes of a consumer in the year 2050 and identify opportunities for ICT to enable one planet living across different lifestyle areas- food and drink, leisure and culture, urban and rural development, employment, education, and communication. Exploring real lifestyle needs and values helped to create an understanding of the challenges and opportunities the emerging future presents. Participants were able to identify new policies, products, services and processes, and co-create scenarios of a sustainable future enabled by ICT.

In a sustainable future, people consume homegrown or locally produced food, share a community yard to grow this food and barter their produce in order to avoid food wasting and reduce the resources needed for food production. Acquiring locally produced **food and drink** goes hand in hand with developing solutions for smart storage of food such as smart refrigerators. ICT solutions can provide nutritional facts, monitor an inventory of goods, coordinate access and delivery of food, and enhance consumers' health by supporting consumers in monitoring suppliers and making informed choices about their nutrition.

"ICT solutions will have a key role to play in helping people to achieve what we call one planet living, that is living well within a fair share of the Earth's resources. We need to shift our existing culture of consumption towards a culture of sharing and being part of our local communities. As a society we need to make it easy for people to live a sustainable lifestyle. ICT can trigger people's imagination about ways of living and support the creation of networks and applications to support real behaviour change"

Sue Riddlestone - Chief Executive and Co-Founder Bioregional Development Group

Sharing tools and exchanging advice on practical issues online, for example on growing your own food or enhancing water management, are also part of community activities that occur around sustainable food provision.

Eating habits and access to food and drink are furthermore related to the activities of **leisure and culture** since access to common gardens and local markets is easy in a sustainable scenario. Consumers can travel longer distances by cycling, which can support energy generation as well as food distribution.

Access to resources has an impact on life quality and working hours. Activities such as preparing food or going to natural reserves are mainly for leisure, as people prefer virtual communication and gathering at social hubs close to their living areas.

A stable social security system, supported by e-health solutions, allows people to plan their leisure time according to their needs and physical conditions.

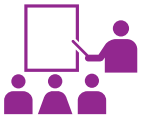
The connection with nature and with communities is also a milestone for **urban and rural development** as there is a tension for accessing food: urban density versus land use for food production in the cities and the proximity to the sources of food. More efficient ways of traveling are in place and low-tech traveling solutions such as cycling and electric cars are used mainly for leisure activities. Infrastructure such as railroads for promoting environmentally-friendly travel are the most common way of connecting communities and allowing access to rural areas.

Urban and rural development is also reflected in housing conditions. As co-housing resulted from higher density of population, it also increased urban farming. At least 20% of people have a house in the countryside and work from there.

For buildings in general, whether private or public, energy saving solutions are a rule as they all run on renewable energy. Smart meters, grids and networks allow people to analyze their use of energy and to share with communities. Therefore the infrastructure for energy generation and distribution also relies on community-based solutions.

ICT solutions such as teleworking play a major role for community development as people have more time to socialize and spend time close to their home. It is easier for individuals to interact with their peers and partners through virtual networks and people manage their time better.

Employment itself is determined by the capability of people to develop different tasks and have several jobs; the notion of a lifetime job is related to time spent between physical and virtual times and places as work happens in both environments. Work time is longer and it is also community based.



These work conditions result from a technology-based **education** scheme that allows people to get more access to information, increase their capacity for self-reflection and the curricula itself are more oriented to emphasize the relationship between environment and society. Social networks also play a fundamental role since personal interactions and experiential activities in 'real-life' are important part of study and skilling programs.

Communication is the essential tool that brings work's social nature to every day life and connects with other activities such as shopping, transport and leisure activities. It happens virtually and physically and individuals prefer to use simple devices rather than complex ones.

HOW DO WE GET THERE?

Discussing different ways to address the challenges that our current lifestyles pose helps to identify 'pathways', actions that will build on each other and support efforts to live sustainably by 2050 in the medium and long term.

Moreover, participants of the workstudio discussed possible instruments, concepts and frameworks towards achieving one planet living that could serve as input to the United Nations Conference on Sustainable Development Rio+20.

PATHWAYS

TECHNOLOGICAL INNOVATION

Barriers	Opportunities	Concepts / instruments / frameworks to be developed in Rio+20:
• *Privacy* • *Security* • *Inertia* • *Inconvenience* • *Short term reporting* • *Short term focus / lack of long term investment* • *Cost/ benefit* • *Rebound effect of technology / innovation* • *Regulations*	• *Dematerialization* • *Solve business problems (decreases costs; complexity management)* • *Virtualization* • *Usability / improvement* • *Consumer education (behavior)*	• *See ICT as a tool to reach sustainability goals* • *Key enabler and connector* • *Relevant to make an impact* • *Standardization –> measure contribution of ICT*

EFFICIENT VALUE CHAINS

Barriers	Opportunities	Concepts / instruments / frameworks to be developed in Rio+20:
• *Solutions that offer low cost may have a negative impact on the environment and society making them unsustainable and inefficient* • *Supplier pools rewarding sustainability* • *Consumer/business awareness* • *Informational challenges* • *Multiple value chains* • *Transparency*	• *From products to services –> from ownership to access* • *Messages to consumers, tailor-made information* • *Closing the loop, waste becomes raw material for the 'next'*	• *Joint responsibility* • *Convergence of supply/value chains* • *Customer guidance / orientation towards a harmonized framework for measuring and communicating sustainability*

SUSTAINABLE BUSINESS MODELS

Barriers	Opportunities	Concepts / instruments / frameworks to be developed in Rio+20:
• *Capital* • *Behavior* • *Economic* • *Data protection* • *Accessibility* • *Materials* • *Demographic challenges (i.e. aging)*	• *Collaboration with other industries, 'Converged services'* • *Emerging markets* • *Awareness products* • *Demographic markets (i.e. aging)* • *Re-use design*	• *Interoperability ('Design')* • *Collaboration* • *Infrastructure Investment* • *Consumer education / engagement*

POLICY TOOLS

Barriers	Opportunities	Concepts / instruments / frameworks to be developed in Rio+20:
• *Capital investment* • *Investment in infrastructure, not in centre* • *Lack of long term vision in politics (4 years election cycle)* • *No common understanding of impact of ICT* • *Regulations (REACH)*	• *Tax services not supporting services (labor highly taxed)* • *Public procurement* • *International standardization* • *Public awareness campaign* • *Need for opportunity for collaboration (knowledge)* • *Framework of recommended frameworks (regulations)*	• *Security/stability for investments* • *Global level playing field* • *Roadmap* • *Recognition what different actors can do*

SOCIAL INNOVATION

Human behavior, Lifestyles, Community, The next »facebook«, Social problems (demographic change, financial challenges), Redefining values, Society

Barriers	Opportunities	Concepts / instruments / frameworks to be developed in Rio+20:
• *Connected to environmental boundaries* *- Footprint calculator (individual / community / country / etc.)* *Scale –> global / regional material footprint /milestones*	• *ICT enable community* *- »little village« in a big city. Trading time and skills* *- Virtual community* • *E-voting: using ICT to »politically« engage people*	• *Information/transparency on products, policies etc.* • *Participation tool (for governments and business)* • *Organization (local and interest groups)* • *Links* • *Education* *- Connecting people* *- Virtual class rooms* • *For validation e.g. of the supply chain.*

CHOICE ARCHITECTURE

Influencing consumer behavior

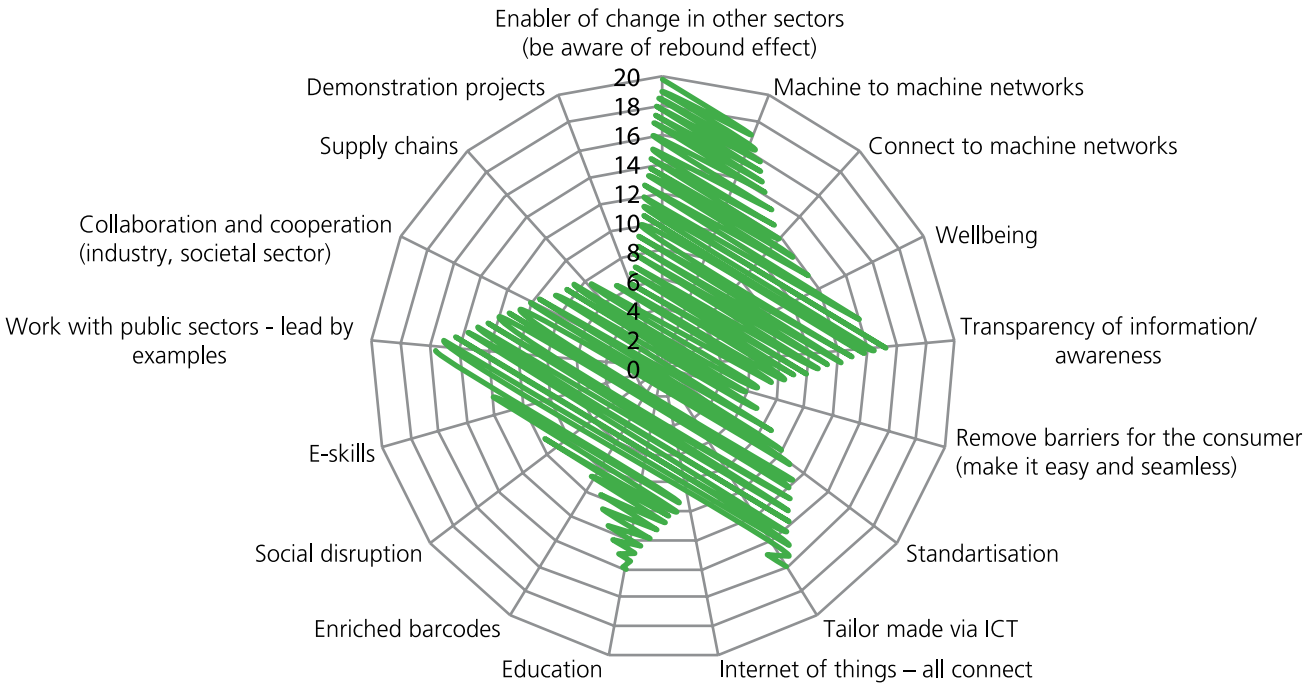
Barriers	Opportunities	Concepts / instruments / frameworks to be developed in Rio+20:
• *Major issues: is it compatible, upgradable and pretty?* • *Paradox of choice* • *Comparability –> upgradability* • *Look and feel –> brand* • *Design ahead of demand*	• *Interaction in open sources and social networks allows real-time perception of consumers' acceptance / rejection* • *Inter-modal* • *Customization* • *Design for demand* • *Dematerialization* • *Decrease costs / manage complexity* • *Improve usability (smart meter)* • *Consumer education*	• *Interoperability* • *Modular design / service is easy* • *Lean design* • *Demand driven* • *Design for repurposing, endorsing open source mentality and reducing options for hacking*

THE CONTRIBUTION OF THE ICT TO ONE PLANET LIVING TODAY

Bringing the visions of 2050 to today's reality, various ICT companies showcashed their products and services that are enhancing sustainable lifestyles today. These practices served as stepping stones for strategic planning towards bridging the envisioned future and current actions, ultimately supporting consumers in finding ICT solutions that enable them to live more sustainably as well as giving stakeholders a better understanding of the role of ICT in facilitating sustainable development. All of the cases presented at the workshop are available in the Annex of this report.

The discussion led to identifying the unique competencies of ICT and ways in which the solutions presented are supporting sustainable lifestyles.

ICT CONTRIBUTION BY LEVEL OF IMPACT LIFESTYLES



UNIQUE COMPETENCIES OF ICT

- Cost saving, reduction of transaction costs
- Technology to predict behavior and purpose
- Virtualization

IMPACT REDUCTION/ EFFICIENCY

- Mobility and access to high speed connections (virtual and physical)
- Ability to disconnect from material resources (dematerialize)

TRANSFORMATIVE

- Natural enabler (goes hand in hand with optimized mobility that increases speed)
- Convener
- Leaders
- Knowledge to break complexity down (system solutions, communication solutions)

"Two important factors are needed for a solution to succeed: low-cost simplicity and integration of services. That means things have to be easy, cheap and multifunctional. In the end, the solutions are providing more services than just the one they were designed for."

Thomas Zehetner - Ericsson

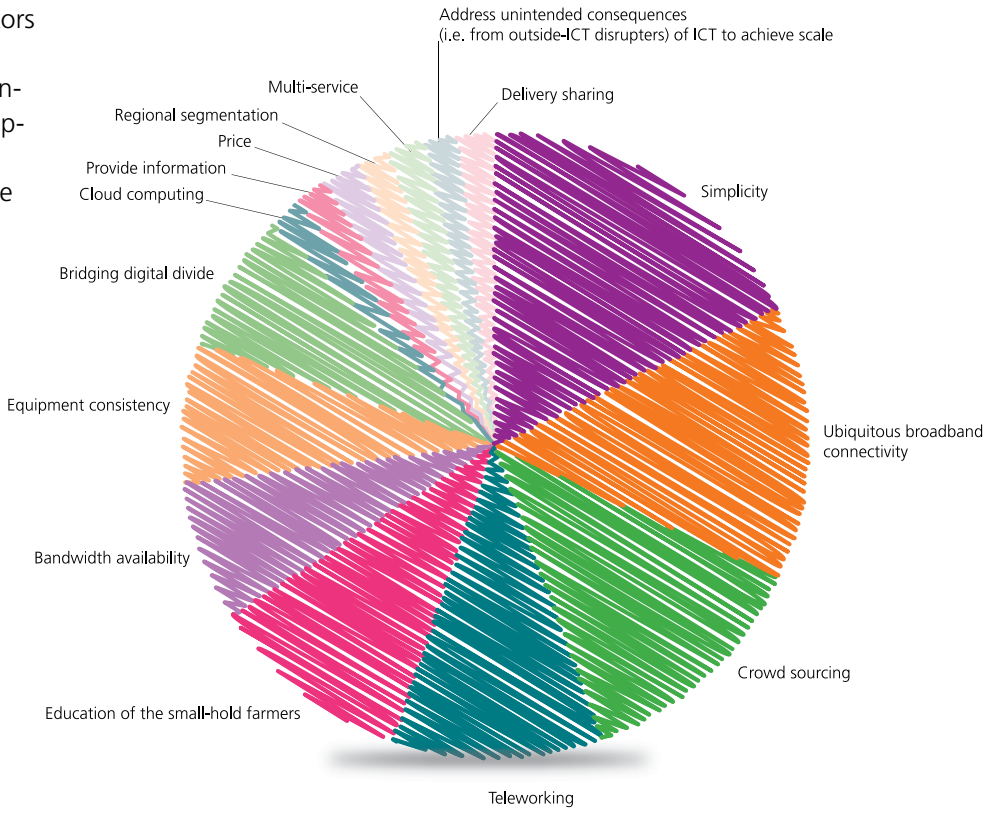
More information about Ericsson solutions: see Annex

SOLUTIONS TO SCALE UP

Identifying the key success factors of ICT solutions helps enable the development of instruments and mechanisms that can support their rollout as well as cooperation with other industries in this context.

During the workstudio the participants analyzed various success factors for scaling up ICT solutions in the short and medium term. This was intended to support shifts in consumption and production practices and ultimately enable behavioral change towards more sustainable living.

FACTORS TO SCALE UP IN THE SHORT AND MEDIUM TERM



The pathways discussed during the analysis of lifestyles served to contextualize the debate on the proper conditions for scaling up ICT innovations and highlight the instruments and mechanisms that will support bringing ICT solutions forward.

INSTRUMENTS AND MECHANISMS

- Standardisation has a role
- Intermodal collaboration
- Education and engagement

POLICY

- Global level playing field –> roadmap
- Links with other sectors/ supply chain
- Prioritize long term investments globally

SOCIAL INNOVATION

- Open source communities - transparency
- Making links - connecting people
- Education - glocal
- Validating claims on products

SUPPLY CHAINS

- Recognize networking approaches needed for engaging everyone in the transformation processes
- Supply will converge
- Customers/ Frameworks/ Measurement

"To facilitate truly sustainable lifestyles, technology will not be enough. First, we need to bridge the digital divide by lowering the cost of broadband access. To make a difference in the long-term, ICT solutions need convergence and scalability. Ultimately, it is both the accessibility and scalability of applications deemed relevant to the individual populations served that makes an impact."

Katrina Destrée Cochran – Alcatel-Lucent

More information about Alcatel-Lucent solutions: see Annex

"Innovations such as the provision of different e-health services via an integrated service platform help make a real difference in promoting more sustainable living. As innovations need social acceptance, solutions should not only focus on lowering costs and environmental impact but also on improving people's quality of life."

Andreas Kroehling - Deutsche Telekom.

More information about Deutsche Telekom solutions: see Annex

"Solutions such as the collection and provision of information to farmers, the provision of financial services, track and trace of agricultural products and improved logistics can have a transformational impact on the efficiency and sustainability of agricultural activities as well as improving the livelihoods of farmers."

Annette Fergusson - Vodafone

More information about Vodafone solutions: see Annex

"There is great potential for information technology in the built environment. So far, this space has been lagging in adopting advanced analytics and universal connectivity. Smart solutions will change that in the coming years, they can be introduced with low capital investment and little disruption to the business. If a number of key design principles are taken into account, solutions can be integrated successfully with existing infrastructure."

Joan Krajewski - Microsoft

More information about Microsoft solutions: see Annex

Participants agreed that the main transformation points lie in the flexibility of ICT to tailor solutions, creating real, individual services that allow quick data analysis and no waste generation. Access to information is made simple and opens opportunities for enabling change in other sectors, for example, in the areas of logistics and the integration of ICT to dematerialize and virtualize.

Investments in the short term are a challenge that can be overcome by connecting and educating small holders to create an impact, crowdsourcing, peer to peer financing and other cooperation-based schemes based on ICT solutions.

The cases and factors analyzed during the workstudio were grouped by the aspect of lifestyles they influence the most today, and with largest potential for supporting developments towards more sustainable living tomorrow.

	Housing	Mobility	Health	Food & Drink	Communi-cation	Education	Employ-ment	Leisure & Culture
Home office, remote (mobile) working		●	●		●		●	●
Tele-Presence					●	●	●	
Clouds		●	●		●	●	●	●
Smart-grids, smart buildings and cities	●	●			●			
E-commerce, m-finance				●			●	●
Use of amplifiers –> m-solutions	●	●	●	●	●	●	●	●
Making it easy – BoP access to basic services			●	●		●	●	
Use of sensors –> analytics – easy	●	●			●	●		
Efficiency enabler	●	●			●			●
Security enabler (data)			●		●	●	●	
Cost savings –> quality of life improvements	●	●	●	●	●	●	●	
Transparency – Safety	●		●	●	●			
System integration	●	●	●	●	●	●	●	
Technology to predict and promote (behavior)				●		●	●	●
Distribute channel to reach customers/training		●			●		●	

THE WAY FORWARD

After discussing the pros and cons of the different ICT innovations and ways to ensure their scale-up, the participants concluded that there is a need to continue the dialogue on ICT and one planet living with all relevant stakeholders. Some of the suggestions made by the participants included:

- Bringing other sectors into the debate particularly sectors where ICT can play an enabling role in reducing carbon emissions and enhancing sustainability such as energy, transport and buildings;
- Integrating a sustainable lifestyles dimension to a planned update of the report 'Smart 2020 Enabling a Low-Carbon Economy in the Information Age' by GeSI;
- Supporting the delivery of public services through ICT;
- Greater education and awareness-raising about ICT solutions and their positive impact in enabling sustainability;
- Exploring how the output of the workstudio could feed into other relevant initiatives such as the Global Network for Sustainable Lifestyles.

„One planet living presents an enormous opportunity for the ICT industry to deploy innovative products and services that allow consumers to maintain a high quality of life while preserving the environment. Today's workshop provided the basis for GeSI and its members to accelerate the way towards sustainable living."
Luis Neves – Chairman GeSI

THE ORGANIZERS

ABOUT GESI

The Global e-Sustainability Initiative (GeSI) is a strategic partnership of the Information and Communication Technology (ICT) sector and organisations committed to creating and promoting technologies and practices that foster economic, environmental and social sustainability. Formed in 2001, GeSI's vision is a sustainable world through responsible, ICT-enabled transformation. GeSI fosters global and open cooperation, informs the public of its members' voluntary actions to improve their sustainability performance, and promotes technologies that foster sustainable development. GeSI has 31 members representing leading companies and associations from the ICT sector. GeSI also partners with two UN organizations - the United Nations Environment Program (UNEP) and the International Telecommunications Union (ITU) - as well as a range of international stakeholders committed to ICT sustainability objectives. These partnerships help shape GeSI's global vision regarding the evolution of the ICT sector, and how it can best meet the challenges of sustainable development. For more information, see www.gesi.org.

GeSI
GLOBAL e-SUSTAINABILITY INITIATIVE

ABOUT THE COLLABORATING CENTRE ON SUSTAINABLE CONSUMPTION AND PRODUCTION (CSCP)

The CSCP is an international non-profit organization, born from the collaboration between the United Nations Environment Program (UNEP) and the Wuppertal Institute for Climate, Environment and Energy. The Centre contributes to the Johannesburg Plan of Implementation, signed at the UN World Summit on Sustainable Development in 2002, to promote sustainable patterns of consumption and production (SCP). Since its establishment in 2005, the CSCP team and research network has grown rapidly. The concept of Sustainable Consumption and Production (SCP) is an integrated and coordinated approach that requires international and localized expertise and the best multidisciplinary knowledge. For these reasons the CSCP has created a special "SCP Professional Inner and Outer Planet" team to build capacity for SCP with professionals from around the world, contributing a broad range of specialized know how. For more information visit: www.scp-centre.org

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WORKSTUDIO

WE MADE IT HAPPEN!!

ANNEX

CASES OF ICT SOLUTIONS FOR SUSTAINABLE LIFESTYLES

Alcatel·Lucent

Name of case
Example of technology – Long Term Evolution Technology (LTE)
Example of platform – High Leverage Network™ (HLN)

Name of organization
Alcatel-Lucent

Type of practice
B2B

Main area of impact for lifestyles
Communication

Abstract
To take advantage of the suites of mApplications, a high leverage network capable of handling such demands is required. Alcatel-Lucent's network solutions are based on a High Leverage Network™ (HLN) architecture to tackle these immediate challenges and set the stage to take advantage of new opportunities. Our networks leverage and manage the increasing flood of traffic on core networks, minimize cost-per-bit, and optimize efficiency. We help our customers provide broadband everywhere, open access and bridging fixed and mobile worlds which is the base to pioneer new media, new content and applications in a manageable way.

A key area to manage is the on-going operational expense of running a network. Alcatel-Lucent's end-to-end 4G Long Term Evolution (LTE) solution offers a revolutionary radio design that not only provides greater reach than other radio technologies, but is so spectrum and energy-efficient that it slashes the power requirements and operating expenses (OPEX) for operators significantly.

Keywords
Access, enablement, network evolution, operational transformation.

Organization's background
About Alcatel-Lucent
The long-trusted partner of service providers, enterprises and governments around the world, Alcatel-Lucent is a leading innovator in the field of networking and communications technology, products and services. The company is home to Bell Labs, one of the world's foremost R&D organizations, responsible for breakthroughs that have shaped the networking and communications industry. Alcatel-Lucent is committed to making communications more sustainable, more affordable and more accessible as we pursue our mission - Realizing the Potential of a Connected World.

With operations in more than 130 countries and 77,000+ employees and one of the most experienced global services organizations in the industry, Alcatel-Lucent is a local partner with global reach. The Company achieved revenues of Euro 15.3 billion in 2011 and is incorporated in France and headquartered in Paris. Bell Labs has an R&D budget of €2.5 billion, holds 27,900 active patents and has won 7 Nobel Prizes.

Alcatel-Lucent is the worldwide leader in fixed broadband access, supporting the largest mass deployments of video, voice and data services. Today, one out of three fixed broadband subscribers around the world is served through an access network provided by Alcatel-Lucent.

For more information, visit Alcatel-Lucent on: www.alcatel-lucent.com read the latest posts on the Alcatel-Lucent blog: www.alcatel-lucent.com/blog and follow the Company on Twitter @ Alcatel_Lucent.

Part 1. Context: problematic and customer
There are scalable capacity needs of dense areas, economic coverage needs of sparse areas, especially in developing countries.

Part 2: Description of the solution
Some rural settings do not have access to electricity but we no longer need to choose between delivering
electricity or communications infrastructure. Alcatel-Lucent's HLN and end-to-end LTE solution and innovative business models are specifically aimed to meet the needs of rural markets.

Part 3: Impact in lifestyles
There is a need for modern architecture such as the HLN that meet increasing capacity demands and can serve rural, previously neglected areas. Network performance modeling shows that the evolution from a traditional base station model to a self-organizing smaller cell model can reduce the cost of transmitting data through a network significantly.

And there is yet another benefit. Self-organizing small cell models also supports third-party application programming interfaces (APIs) which allow application developers to plug into the network and deliver their applications to customers on the same network, thus bringing innovation and low-cost capability to the rural population. This model also helps with application scalability, by providing broader reach for application developers.

A suite of applications was modeled for rural Bangladesh. These mobile applications included mAgriculture, mWomen, mHealth, mFinance and mEducation, and were designed to offer tangible benefits to the rural population at which they were targeted. In fact, they directly served 80 percent of the rural population—and radically accelerated mobile adoption. On the other hand, the introduction of a single application had much less impact.
Small cell

For more information about this case please contact
Katrina Destrée Cochran
Email: katrina.destree.cochran@alcatel-lucent.com

Alcatel·Lucent

Name of case
WP Building Benefits Broadband 2012
Social and Economic Impacts of high-speed broadband in New Zealand.

Alcatel-Lucent enabled two platforms to test mApplications and related programs:
1.High Speed Broadband Lab
2.ngConnect Program – a framework to enable local companies to explore and launch service concepts and applications (for ICT enhanced lifestyles).

Name of organization
Alcatel-Lucent

Type of practice
B2B

Main area of impact for lifestyles
Health, Communication, Education

Abstract
Selected one of the platforms: the ng Connect Program – connecting New Zealand innovators to global leaders (and markets).

Alcatel-Lucent is playing a leading role in bringing together collaborators to speed the creation of high-speed broadband applications. The ng Connect Program, conceived and founded by Alcatel-Lucent, brings together infrastructure, device, application and content companies to create an end-to-end ecosystem to rapidly develop new services and applications.

The ng Connect Program's 125 members include Alcatel-Lucent, Atlantic Records, Creative, Harman Audio, Hewlett-Packard, IMAX, Indosat, Intel, Kycera, Samsung, Sierra Wireless, and Telecom Italia, as well as developers in the education, health and games sectors. Already a number of New Zealand companies have joined the ng Connect Program, including Serato Audio Research, which creates audio software for DJs and musicians, and Solta, an Auckland-based technology innovation company.

The goal of ng Connect is to bring together innovative companies, to explore what new service concepts, business models and applications emerge when the power of networks, devices, content and software are combined.

Keywords
Infrastructure, end-to-end eco-system, mHealth, mEducation, mBusiness

Organization's background
About Alcatel-Lucent
The long-trusted partner of service providers, enterprises and governments around the world, Alcatel-Lucent is a leading innovator in the field of networking and communications technology, products and services. The company is home to Bell Labs, one of the world's foremost R&D organizations, responsible for breakthroughs that have shaped the networking and communications industry. Alcatel-Lucent is committed to making communications more sustainable, more affordable and more accessible as we pursue our mission - Realizing the Potential of a Connected World.

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Active in New Zealand since the 1920s, Alcatel-Lucent is a supplier to major telecommunications companies including Chorus, Kordia, Orcon, Telecom, TelstraClear and Vodafone, as well as a number of utility providers, including Transpower and Unison.

The company has 700 staff in New Zealand, based in Auckland, Hamilton, Wellington and Christchurch. Alcatel-Lucent has a deep knowledge of the New Zealand telecommunications landscape and has the largest on-the-ground team of network engineers in the industry.

Alcatel-Lucent is the worldwide leader in fixed broadband access, supporting the largest mass deployments of video, voice and data services. Today, one out of three fixed broadband subscribers around the world is served through an access network provided by Alcatel-Lucent. Alcatel-Lucent is a worldwide leader in the deployment of GPON technology, having been involved already in more than 100 Fibre-to-the-Home (FTTH) projects. Alcatel-Lucent's GPON customer base not only consists of leading operators such as China Telecom, China Unicom, Verizon, Portugal Telecom and Hong Kong Broadband Network Limited, but also includes a considerable number of utility companies, municipalities and regions around the world.

For more information, visit Alcatel-Lucent on: www.alcatel-lucent.com read the latest posts on the Alcatel-Lucent blog: www.alcatel-lucent.com/blog and follow the Company on Twitter @ Alcatel_Lucent.

Part 1. Context: problematic and customer
Alcatel-Lucent provides ultra fast broadband capabilities to serves service providers (operators), strategic industries (transportation, energy and public sector providers) and enterprises (governments). This case study featuring the framework program ngConnect for more than 80 members, including leading network customers, consumer electronics, application and content providers. The first service provider member, Indosat, the second largest telecommunications company for mobile services in Indonesia. ngConnect has opened up the program to entrepreneurs as well.
For a full list of members please visit: www.ngconnect.org/members/ and for more information on the ng Connect Program, visit: www.ngconnect.org. Follow us on Twitter at: twitter.com/ngConnect.

Part 2: Description of the solution
To take advantage of the suite of mApplications described in this case study as well as from other service providers, a high leverage network capable of handling such demands is required. Alcatel-Lucent's network solutions are based on a High Leverage Network™ (HLN) architecture to tackle these immediate challenges and set the stage to take advantage of new opportunities. Our networks leverage and manage the increasing flood of traffic on core networks, minimize cost-per-bit, and optimize efficiency. We help our customers provide broadband everywhere, open access and bridging fixed and mobile worlds which is the base to pioneer new media, new content and applications in a manageable way.

Part 3: Impact in lifestyles
The ngConnect Program launched in New Zealand, provides the foundation for our customers to offer these mApplications.

For more information about this case please contact
Katrina Destrée Cochran
Email: katrina.destree.cochran@alcatel-lucent.com

Name of case
Telemonitoring chronic heart failure (TMC Lausitz & TMC FONTANE)

Name of organization
Deutsche Telekom AG

Type of practice
B2B

Main area of impact for lifestyles
Health

Abstract
Best medical care at home or on the move with the tele-medical workplace: Remote monitoring of heart failure patients for an increased quality of life.

TMC Lausitz
In collaboration with GETEMED Medizin- und Informationstechnik AG, T-Systems has developed a complete interdisciplinary system for the comprehensive monitoring of high-risk patients with chronic heart failure.

Mobile medical devices and analysis software for patient monitoring have been integrated based on Deutsche Telekom's eHealthConnect platform, which enables the secure transmission, processing and storage of data for the professional service providers in the healthcare sector. For the health provision of high risk heart patients the first area with a telemedicine network started in the federal state of Brandenburg. The Carl-Thiem Clinic in Cottbus and the city hospital of the city Brandenburg take care for 500 patients with chronic cardiac insufficiency.

Deutsche Telekom and GETEMED have installed the state wide infrastructure and the tele-medical equipment. The project focuses on the avoidance of duplicate medical examinations and expensive stays in a hospital. The tele-medical check provision for chronic heart failure patients is being completed for the north region of Brandenburg by Charité Berlin within the project FONTANE.

TMC FONTANE
FONTANE (www.gesundheitsregion-nordbrandenburg.de/) aims at improving the health quality for cardiovascular diseases in structurally underdeveloped rural areas using modern remote patient monitoring systems. The remote patient monitoring systems to be developed by Deutsche Telekom is classified as a fourth generation system that is able to manage multiple diseases in a professional telemedicine network. A key component is a smart prioritization approach of vital data as a requirement for professional application with a high number of patients. To ensure scalability regarding the number of patients, the number of diseases as well as involved regions the prototype is based on an open and generic platform approach. This prototype will demonstrate the technical feasibility of a remote monitoring system under conditions of a clinical trial. Project partners are Charité Universitätsmedizin Berlin, Hasso Plattner Institut, GETEMED Medizin- und Informationstechnik and Thermo Fisher Scientific Clinical Diagnostics Brahms.

Keywords
- eHealth solution
- High risk hearts patients
- Tele-medical check devices
- Remote monitoring system
- Telemedicine network

Organization's background
Initiating Organization
List name of the initiating company, association or organization,
TMC Lausitz (excerpt)
- Deutsche Telekom AG / T-Systems International GmbH (www.telekom.com/innovation)
- Gesundheitsministerium Brandenburg (www.mugv.brandenburg.de)
- GETEMED (www.getemed.de)
- Carl Thiem Klinikum Cottbus (www.ctk.de/)
- Klinikum Brandenburg (www.klinikum-brandenburg.de/)
- AOK Nordost (www.aok-nordost.de)
- TMC FONTANE (excerpt)
- Charité Universitätsmedizin Berlin (http://www.charite.de/)
- Bundesministerium für Bildung Forschung (www.bmbf.de)
- Hasso Plattner Institut (www.hpi.uni-potsdam.de/)
- GETEMED (www.getemed.de)

Part 1. Context: problematic and customer
E-Health services have a huge potential to drive efficiency in the public health services. E-Health services help to master the challenge of increasing costs for the public health system driven by longer life expectancy, demographical change and medical progress. Beside that e-Health services also help to avoid traffic and by this improve the patients quality of life. They also contribute to a low carbon society.

For the solution of the problem interdisciplinary was key. Different partners had to bring in their competencies to develop an innovative and attractive service. Beside Deutsche Telekom as technology provider clinics, health insurances and provider of medical devices had to be involved.
The following factors are crucial for the success of the project:
- Patient and doctor confidence by high and well established data security
- Efficient provision for best medical care and secure monitoring
- Increasing responsibility for the own health by high cost pressure for public health insurance
- Further progress in hardware and application development

Part 2: Description of the solution
The project is a pilot project with the support of the German Federal Ministry for Education and Research (BMBF) to demonstrate the technical feasibility of a remote monitoring system under conditions of a clinical trial and to enable a smart prioritization approach of vital data as a requirement for the professional application with a high number of patients to ensure scalability regarding the number of patients.

E-Health services is one of 4 identified future growth areas which are expected to contribute 1 Billion € to Deutsche Telekom´s revenues by the year 2015.

The described project delivers important information and experiences for the large scale build-up of medical tele-monitoring services. Main learnings out of the project are:
- Data privacy and security are key success factors
- Remote patient monitoring can improve patients' quality of life
- Trustful relationship with all stakeholders is important for sustainable success

Part 3: Impact in lifestyles
The solution has a highly positive impact on the life quality of the patients, suffering with chronic heart failure. They do not need to visit their doctors for routine checks and duplicate medical examinations can be avoided by this system. Beside that an important proportion of expensive stays in hospitals can be avoided by the use of the telemonitoring system. Mobile medical devices enable remote control of the patients body functions. The data were securely transmitted to a service platform where they can be analyzed by an analysis software for patients monitoring which is integrated in Deutsche Telekoms eHealthConnect service platform.

For more information about this case please contact
Andreas Kröhling, A.Kroehling@telekom.de

Name of case
Shopgun Information System

Name of organization
Consumentor EF

Type of practice
B2C

Main area of impact for lifestyles
Health, Education

Abstract
Consumentor develop and market the Shopgun Information System – an independent quality channel for product and consumer information in the retail business.
We offer services and tools to consumers, advisers, NGO and manufacturers, enabling them to act together to get more environmentally friendly and sustainable products on to the market.
In the spring of 2012 we launched new services in cooperation with among others the SwedishSociety for Nature Conservation, The Swedish Consumers' Association, WWF Sweden, Greenpeace Nordic, Swedwatch and Fairtrade Sweden.
We offer an independent and therefore credible channel for selected advisors who wish to make use of information related to products on the market in a new way, and manufacturers who want to position themselves through proactive CSR-work in collaboration with their customers.
We believe that an innovative actor as Consumentor today has a large and important role to play to create multi-sectoral sustainable interactions.
Consumentor´s goal is to became the number one Sustainability Mentor for all consumers in Europe.

Keywords
Sustainability, Environment, CSR, Health, Change of behaviour, Consumer

Organization's background
Consumentor is a cooperative with six (6) owners.

Year of creation and scope of the organization's activities
Consumentor was established the 15 mars 2009, on the International Consumer Day. Consumentor´s goal is to become a mentor to all consumers in Europe.
The company develop and market Shopgun Information System – an independent quality channel for consumer- and product information within the retail business.
We offer services to consumers, informers and companies and give them tools to enable them to get more sustainable, fair and healthy products on the market.

SWOT-analysis
S
- Shopgun is a "One stop shop". One channel for every kind of sustainable information
- All organization participants are social entrepreneurs/ idealists
- Shopgun is built on cooperation, transparency and sharing - not competition. We welcome anyone into the system, as long as they fulfill our quality standards.

W
- Dependent on support from only a few advisors to begin with.
- We just launched our services and are now looking for financial partners to help us bridge the gap between market introduction and revenues.

O
- Large need for multi-sectoral / cross-industry cooperation in the field of sustainable communications.
- Large need for a useful tool for sustainable consumption, to channelize the desire of many consumers.

T
- Competitors.
- Other solutions entering the market that perform a similar function.

Description of key stakeholders and their role in the case
Consumentor EF - administrator, content manager, team of four (4) developers
Advisors - WWF Sweden, Swedish Society for Nature Conservation, The Swedish Consumers' Association, Greenpeace Nordic, Swedwatch, Fairtrade Sweden, Fair Trade Center, EcoRunner, Professor G. Petersson (biochemistry)
Informers - Allabolag.se, Swedish authorities as National Consumer Agency, National Food Agency, Department of Agriculture aso.
Manufacturers - discussions underway.
Finance partners - Ekobanken, Västra Götalandsregionen, ALMI, Kreditgarantiföreningen

Part 1. Context: problematic and customer
The problem:
There is a lack of coordination between all the good forces which is working towards sustainable development in society.

• Consumers have difficulties to find quality sustainability information related to products.

"Each choice are a ballot. You can choose to support good or bad products, manufacturers, traders.
The sum of all our choices build the society we live in.
Your vote is important - use it."
Ola Thorsen
Inspirer to the Shopgun concept

• Advisors have difficulties to reach out with their quality sustainability information – ads and PR-campaigns often have access to more resources

„The Shopgun-idea comes out of the assessment that there are large demand for quality assured consumer guides as close to the consumer as possible. I agree completely."
Eva Eiderström
Head of Shop and Act Green-Good Environmental Choice Ecolabel Swedish Society for Nature Conservation, Gothenburg

• Manufacturers have difficulties to reach out with their CSR-information and want feedback on their products from consumers

"I see Shopgun as a revolution for the consumer's power over the supply, and it will benefit everyone in the industry, although some do not understand it in this early stage."
Marcus Radhe
Shopper Insight & Category Development, Lantmännen Ceralia
Lantmännen is one of the largest groups within food, energy and agriculture in Sweden. The Group owned by 37 000 Swedish farmers, has approximately 10 500 employees, operates in 18 countries and sales in 2010 were 35.1 billion SEK.

Part 2: Description of the solution

Our solution

We have created a new independent arena where consumers, informers and manufacturers all can meet on equal terms and together focus on how to develop more sustainable, fair and healthy products for the market. Simultaneously, we offer all consumers a tool which makes the process of making conscious and sustainable choices in everyday shopping fun and easy.

- Consumers get a trustworthy Sustainable Mentor in their mobile phones.
- Advisors get a new quality channel for their sustainable information and campaigns.
- Manufacturers get a new quality channel for active consumer dialogue and CSR-activities.

"Access to a tool like Shopgun can tip the scales, and lead to a considerable breakthrough for sustainable consumption."
Gunnar Granberg
Entrepreneur, speaker and consultant in the field of sustainable development
Shopgun Mentor Council 2012

Shopgun see RED when it is not GREEN!

Shopgun has been developed by a group of ordinary consumers in Gothenburg, Sweden. The app helps consumers to choose better products in retail stores. We have focused on environmental-, ethical- and health-issues because we ourselves think that's important. The goal is a sustainable world with only green products on store shelves. We encourage everyone to use Shopgun – our purchase decisions are important and together we have the power to change!

Content

Shopgun conveys both ad-free product information and current buying advice from selected advisors. The app also presents facts from authorities and additional information from our editorial staff. All information is reachable by scanning a products barcode or through free text search, and presented in a user-friendly way, using the well known traffic light system with three colours.

Advisors

The advisors we work with are selected after strict quality criteria of transparency, impartiality and democratic activity. We also place demands on the advisor's information, which must be current, relevant, and verifiable. Every effort is made so that Shopgun will provide maximum benefit to consumers.

Mentor Council

An independent Council decides which advisors are allowed to convey information in the Shopgun Information System. The Council consists of five reputable people with considerable combined expertise in Shopguns area of activity. In addition to ensuring the quality of the system they also act as advisory board for Consumentor.
"Surveys show that consumers are making an increasingly effort to shop sustainable. Labeling systems exist, but information on unmarked items is also requested. Shopgun is a tool that can provide this information."

Michele Micheletti
Lars Hierta Professor of Political Science, Stockholm University.
Shopgun Mentor Council 2012

Change of behaviour

A medium size supermarket in Sweden has 12-15.000 active products. Shopgun is today able to give extended product information and relevant shopping advice on approximately half of those products
- as the system grows, the number quickly will rise.
With estimated 50.000 users in Sweden in 1 year and growing, there will be a lot of exposure to sustainability information and hopefully a lot of interaction between actors in the system.

Steps forward

- Launch Sweden 2012
- Launch Scandinavia 2013
- Launch Europe 2015

Shopgun's flexibility and scalability will be used in future development of the system. Shopgun can be packaged in many different ways and be distributed through a variety of platforms such as Web, smart phones, information kiosks and handheld scanners in stores also. Content and features will continually be expanded and refined, with the help of user feedback. At market introduction, we focus on the food sector. At a later stage we will cover other industries such as cosmetics, electronics and clothing.

What differentiates Shopgun from other sustainability services and/or apps is:

- Shopgun Information System focuses on one important mission; to help green and sustainable products reach the market. For that purpose we have created a lot of unique tools and services.
- Shopgun is trustworthy because we are independent, ad free and only deal with quality information.
- Shopgun visualizes all kind of sustainable information in one system, in a new and highly user-friendly way, using the well known traffic light with three colours. This makes it fun and easy to shop green, fair and healthy.

"Shopgun is an ingenious, living simple and efficient tool to improve consumer knowledge and opportunity to eventually make the market „greener"."
Stefan Edman
Biologist, author and independent environmental expert
Mentor Council 2012

Part 3: Impact in lifestyles

Shopgun – tool for change

We are what we eat. That's why from the start we filled Shopgun with environmental, ethical and health information from the food sector - food and drink affects us all...

However, our ambitions are a lot bigger than this. In the near future we want Shopgun to take an active part in the necessary transformation of our world. From a resource-guzzling high-octane society built on speed, to a more sustainable, smart and calm way of living, in harmony with – not fighting against – nature.

With that goal in mind, we aim to further develop the system together with all our customers and users. We have a lot of ideas for features and powerful information to reload Shopgun with in the future – they have probably more. Please contact Consumentor at info@consumentor.org and we'll see what ideas we can come up with together!

"The concept can be described as revolutionary as consumers equipped with Shopgun helps to increase the functionality of the markets."

Cecilia Solér
Doctor of Economics and Senior Lecturer, University of Gothenburg
Shopgun Mentor Council 2012

Shopgun Information System was officially launched on the International Consumers Day the 15th of mars 2012. For more information - visit our website at www.shopgun.se.

For more information about this case please contact

Ola Thorsen
Chairman of the board of Consumentor EF
E-mail: ola.thorsen@consumentor.org
Mobile: +46-708-62 12 04

Name of case
Curitiba Connected Buses

Name of organization
Vivo, Telefonica and Telefonaktiebolaget LM Ericsson

Type of practice
B2B

Main area of impact for lifestyles
Mobility
Communication

Abstract
Curitiba's 3.2 million citizens in southern Brazil and its public transport operators are benefiting from an electronic ticketing and fleet management system due to a high-speed mobile broadband network.

At COP-17 Ericsson, Dataprom and mobile operators Vivo and Telefonica were acknowledged for the Curitiba, project, named as one of 10 inspiring examples in the UNFCCC Momentum for Change initiative.
Smarter public transport is an increasingly popular way for cities to minimize their carbon footprint.
Using mobile broadband, cities and regions can both improve the efficiency of their own bus, train and tram services and attract more people to switch from private vehicles to public transport, reducing traffic congestion, fuel consumption and carbon emissions.

Keywords
Fleet management, Electronic ticketing, mobile broadband, public transport

Part 1: Context: problematic and customer
Curitiba's 3.2 million citizens in southern Brazil and its Public Transport Operators are benefiting from an electronic ticketing and fleet management system. The city's bus fleet serves 2.4 million passengers daily and is connected through a high-speed mobile broadband network that provides up-to-the-second information on a range of services thanks to Vivo/Telefonica, Dataprom and Ericsson.

Part 2: Description of the solution
The system uses Ericsson's F3607GW module, a fast mobile broadband module with reduced power consumption and high-performance GPS. Ericsson mobile broadband modules unleash the true potential of advanced HSPA mobile broadband technology. Vivo, the leading mobile operator in Brazil, and Dataprom, an innovative Brazilian supplier of solutions for public transport, chose Ericsson as a partner thanks to its track record for customer support and quick service, as well as its mobile broadband modules.
A machine-to-machine communication solution developed by local partner Dataprom gives the Curitiba public transport authority URBS a wide range of information about its fleet. URBS can now monitor bus routes, time spent at bus stops, speed, distance traveled, and times for arrival and departure. Fleet management systems, controllers can access information about and monitor their fleet.

Part 3: Impact in lifestyles
The new solutions, through electronic ticketing, opens up possibilities for new traveler services that can help people plan their route and enable them to purchase tickets wherever and whenever it is most convenient increasing customer satisfaction and security for staff and passengers.

The electronic ticketing reduces the need for cash handling and contributes thereby to a safer travel. The fleet management system offers route optimization, reducing the fuel needed to run the fleet.

More efficient public transport, mitigates emissions and energy use, and a modern mobile broadband network for bus passengers: mobile broadband modules from Ericsson improves the public transport experience and so promotes more usage of the system compared with private transport e.g. cars.

For more information about this case please contact
Carla Belitardo
Email: carla.belitardo@ericsson.com

Name of case
Connect To Learn

Name of organization
Earth Institute (Columbia University), Millennium Promise, and Telefonaktiebolaget LM Ericsson

Type of practice
B2B

Main area of impact for lifestyles
Communication, Education

Abstract
Connect To Learn is a global education initiative founded by Ericsson, the Earth Institute at Columbia University, and Millennium Promise. Its aim is to channel the power of ICT to enable a 21st century education to students everywhere, with a focus on secondary education for girls. It is improving access to education for thousands of young people across Africa and Latin America.

Education is essential to ending poverty and ensuring a productive life for people all over the world. With today's technology, every young person in the world can have the opportunity to learn. Mobile broadband technology offers the opportunity to connect even the most remote village classrooms so that they can benefit from a 21st century education.

Keywords
Education, scholarships, mobile broadband, cloud services, collaborative learning

Part 1. Context: problematic and customer
Connect To Learn puts particular emphasis on improving access to quality secondary education for girls. About 70% of African girls in some sub-Saharan countries don't get a secondary education. Girls often are unable financially to stay in school after age 12, and drop out even after passing the high-school entrance exams. They are also much less likely to complete primary schooling when secondary school opportunities are not available. The consequences of these shortfalls are not limited to children's education. They also directly impact health outcomes, fertility patterns, employment opportunities, and women's empowerment.
The case for gender fairness and equal opportunity is based on rights, but there is also overwhelming evidence that investing in girls is economically beneficial. It was estimated that 65 low and middle-income countries lose approximately USD 92 billion a year by failing to educate girls to the same standard as boys. Further, an increase of 1% in female secondary school attendance adds 0.3% to the country's annual average per capita income growth. Alongside economic and social constraints, the high fertility rate in the poorest countries is often overlooked as a key barrier in achieving education for all.

Part 2: Description of the solution
Connect To Learn is a collaborative effort between Ericsson, the Earth Institute at Columbia University and Millennium Promise that leverages the power of ICT to bring a high quality education to students everywhere, with a focus on secondary education of girls. The initiative is based on the innovative use of connectivity to:
- Implement low-cost and user-friendly ICT for schools through mobile broadband and cloud computing
- Enable access for students and teachers to world-class information and educational resources
- Connect schools to other schools around the world to foster collaborative learning, cross-cultural understanding, and global awareness

Part 3: Impact in lifestyles
A multi-stakeholder approach
Connect To Learn invites a range of private, public and non-profit partners to advance secondary school education in three key ways:
- Raise funds to provide complete secondary school scholarships
- Implement mobile broadband and cloud solutions in the schools so students have access to Internet resources
- Support establishment of a Global Fund for Education to raise awareness about the important secondary education not only for students but to the benefit of their families and their nation's economies.

For more information about this case please contact
Katarina Schyberg
Email: katarina.schyberg@ericsson.com
or Paul Landers
Email: paul.landers@ericsson.com

Name of case
Mobile Weather Alert

Name of organization
Telefonaktiebolaget LM Ericsson

Type of practice
B2C

Main area of impact for lifestyles
Health
Food& Drink
Communication

Abstract
Lack of weather information is a serious challenge in Africa, where tens of millions of people working within fisheries, agriculture and other businesses depend on accurate forecasts for their livelihoods, and for their safety and security. Now this problem is being addressed through a partnership project where individuals can subscribe to customized forecasts sent to mobile phones.

Keywords
Weather Alert, Fishing industry, mobile application, forecasting

Part 1. Context: problematic and customer
Ericsson has developed the mobile application and designed the operational model for scale and replicapility, the World Meterological Organisation and the Uganda Department of Meteorology have developed the tailor made forecasts, the National Lake Rescue Institute supports the end-users and usability studies and where MTN Uganda and Grameen Foundation deliver the service.
The mobile solution is used by fishermen and traders in the Kalangala Islands at Lake Victoria in Uganda to provide individuals and communities with the best possible information to take action to prevent disasters related to weather conditions.

Part 2: Description of the solution
The initiative indicates positive benefits which can be of use for the 3.5 million people living alongside Lake Victoria, Africa's largest lake. Some 200,000 fishermen depend on the lake for their livelihood. But with over 5000 fishing-related deaths per year and catch rates on the decline due to a lack of resource management – sustainable solutions for the area are needed.
The service is designed to be replicable and scalable to any community or user needing specific and daily forecasts. The service can also be adopted to fit other user needs that rely on weather to make decisions affecting their livelihoods.

Part 3: Impact in lifestyles
Fishermen rely on service
A pilot and proof of concept was carried out for seven months during 2011 in Uganda in an island district in Lake Victoria called Kalangala and 1000 fishermen were subscribed to the service. The pilot found that fishermen use the information to ensure that they fuel their motors to be able to handle high waves and to avoid being stranded during a storm. The forecast allows them to optimize their fuel use based on weather conditions, and even postpone trips if necessary.

Conclusions from the pilot:
- All 1000 pilot users used the information as basis for taking decisions and that fishermen highly value the possibility to get accurate and specific information delivered to their mobile phones to complement the general forecasts broadcast on radio. The design of the message is tailor made to be easily understood even for people who are illiterate.
- Vital information can change behavior and users can take precautions where necessary.
- There is clear demand for these types of services.

For more information about this case please contact
Karin Svingby
Email: karin.svingby@ericsson.com

Name of case
The Patient-Centered Dashboard, developed by HP and Lucile Packard Children's Hospital at Stanford

Name of organization
Hewlett-Packard Company

Type of practice
B2B / B2C

Main area of impact for lifestyles
Health

Abstract
The Lucile Packard Children's Hospital in Stanford, California is piloting an electronic Patient-Centered Dashboard in its Pediatric Intensive Care Unit that effectively replaces and greatly extends the traditional whiteboard (with hand-written patient names, room numbers, responsible staff names, etc). The dashboard was developed as part of a collaborative effort between physicians at Packard Children's and technologists in the Services Research Lab of HP Lab.

The electronic dashboard presents all patient data and is predictive of patient needs. This means busy hospital personnel get all the information they require from one central location, including at-a-glance alerts (with red, yellow, and green urgency-level lights) to help prevent life-threatening complications.

To date, the pilot program indicates that the Patient-Centered Dashboard prompts a change in care in one out of three young patients every day. Examples include reminding staff of overdue care, e.g. to replace or remove equipment that might otherwise cause infection, to alter the type or quantity of medication, and to raise the head of the bed to prevent children on ventilators from developing pneumonia.

Keywords
Patient-Centered Dashboard, dematerialization and streamlining of Health Care monitoring and delivery, patient safety.

Organization's background
Nature and size of business
The world's largest technology company, HP (Hewlett-Packard Company (NYSE: HPQ), HP's revenue for the four fiscal quarters ended Oct. 31, 2011: $127.2 billion , 2011 Fortune 500 ranking: No. 11) brings together a portfolio that spans printing, personal computing, software, services and IT infrastructure at the convergence of the cloud and connectivity, creating seamless, secure, context-aware experiences for a connected world.

Headquartered in Palo Alto, California, with over 325,000 employees worldwide, HP serves more than 1 billion customers in more than 170 countries on six continents.

Background for working with Lucille Packard Children's Hospital

HP explores how technology and services can help people and companies address their problems and challenges, and realize their possibilities, aspirations and dreams. We apply new thinking and ideas to create more simple, valuable and trusted experiences with technology, continuously improving the way our customers live and work.

In May, 2011, HP and Packard Children's announced a Global Social Innovation partnership that highlighted joint research projects, such as the Patient-Safety Dashboard. The organizations have been collaborating on research around patient safety for over two years.

Part 1. Context: problematic and customer
Despite widespread awareness that approximately 98,000 US patients die from preventable medical errors each year , patient safety remains a daunting problem in clinical environments. Compliance with evidence-based guidelines (e.g., to prevent catheter-associated bloodstream infection (CABSI) and ventilator-associated-pneumonia (VAP)) is mandated by multiple regulatory agencies. However, implementation and monitoring of these guidelines can be challenging – especially in high-pressure patient-care environments such as a pediatric ICU.

One of the biggest challenges for hospital staff everywhere is the quantity of data generated during normal patient care -- the Lucile Packard Children's Hospital in Stanford, California is no exception. These incredibly busy people are working in stressful situations and must monitor, absorb, process, and act on vast amounts of highly complex information—vital signs, bodily functions, medications, reports from different specialists, and much more. Electronic medical records are „data rich but information poor," says Natalie Pageler, MD, clinical assistant professor of pediatrics at Stanford University School of Medicine, CA, USA, and project manager of a unique initiative between HP and Lucile Packard Children's Hospital at Stanford.

To make effective use of the endless patient data stream, this world-class non-profit children's hospital is innovating to save lives by tapping into research in analytics from HP Labs. The Lucile Packard Children's Hospital is piloting an electronic Patient-Centered Dashboard in its Pediatric Intensive Care Unit that effectively replaces and greatly extends the traditional whiteboard (with hand-written patient names, room numbers, responsible staff names, etc). The dashboard was developed as part of a collaborative effort between physicians at Packard Children's and technologists in the Services Research Lab of HP Lab with support of HP Sustainability and Social innovation team.

Part 2: Description of the solution
The electronic dashboard presents all patient data and is predictive of patient needs. This means busy hospital personnel get all the information they require from one central location, including at-a-glance alerts (with red, yellow, and green urgency-level lights) to help prevent life-threatening complications.

To date, the pilot program indicates that the Patient-Centered Dashboard prompts a change in care in one out of three young patients every day. Examples include reminding staff of overdue care, e.g. to replace or remove equipment that might otherwise cause infection, to alter the type or quantity of medication, and to raise the head of the bed to prevent children on ventilators from developing pneumonia.

As Jaap Suermondt, director of healthcare research at HP Labs says, „Through our collaboration with the Lucile Packard Children's Hospital, we have been able to develop a technology solution that finds and combines information at risk of being overlooked deep inside electronic medical records, and brings it

to the eyes of the entire care team, ultimately allowing them to make critical decisions and prevent complications."

One of the most interesting features of the HP-LPCH dashboard work is that it is designed on a market-leading EMR (Cerner), rather than as a custom "one-off" or stand-alone solution. Cerner is the largest provider of EMRs in the US and is an important ISV partner for HP. Under the US Recovery Act, most healthcare institutions in the US are rapidly moving towards "meaningful use" of EMRs, if they have not already done so. As a result, there are hundreds of hospitals that already have the underlying Cerner EMR infrastructure that includes all the care documentation necessary to replicate the LPCH dashboard.

ICU environments has been hypothesized for several years, and is applied in various audit-based quality improvement programs , such dashboards have not made it into routine clinical practice or current releases of major EMR systems. There are small vendors that offer electronic whiteboards, but the vast majority of hospitals use hand-written whiteboards on the units to track patients, care teams, and various care considerations - these all are challenges for future adoption of the dashboard.

Lessons Learned
It is extremely important to have strong project management in place and effective (open and frequent) communication amongst the team members to facilitate true collaboration. In addition, clear objectives must be set upfront as well as a thoughtful project plan containing well-defined roles, responsibilities, and owners. It is important to note that the implementation team faced resistance of medical staff – in this case, particularly the nursing staff – due to unfamiliarity of the new process. While quite obvious, but sometimes overlooked, clear and thorough training as well as explanation of benefits of this solution for the patients and them was extremely important. Because this was embraced up-front, all the nurses are very supportive and find this solution helpful in their daily patient care work.

Part 3: Impact in lifestyles
In summary, the dashboard prompted a change in the patient's plan of care in 34% of patient encounters. The project team concludes that use of a real-time patient safety dashboard embedded in the electronic medical record increased compliance with important elements of CABSI and VAP.

The hypothesis was that access to a real-time patient safety dashboard, visible continuously on the unit with patient details accessed and discussed during Pediatric Intensive Care Unit (PICU) daily rounds, would improve adherence to CABSI and VAP prevention guidelines and improve communication among the medical staff. Pre-implementation data for nursing engagement and line necessity discussion during rounds was collected via weekly nursing audits for 6 months and post-implementation data was collected via an unbiased auditor daily for 1 month and then monthly for a 1-week block for 3 months. The dashboard was deployed at LPCH, initially in the 2E PICU, in June 2011.

Audit data after a 3-month implementation period (with an average daily PICU census of 13.2) showed that multidisciplinary discussion of line necessity during rounds increased from 54% of the time before dashboard implementation to 75% after implementation. Audit data demonstrated that information presented on the dashboard prompted a change in the patient's plan of care in 34% of patient encounters, i.e., for 4 or 5 patients each individual day. Changes included central venous catheter discontinuation, changing medication delivery route from intravenous to oral, decreased laboratory utilization, providing overdue care such as cap changes, adjusting sedation, and elevating head of bed. Review of the dashboard added 74±96 seconds (median 56 seconds) to each patient's rounds.

In addition, the LPCH-HP project team received significant anecdotal feedback that the dashboard is continuously changing care: staff do not like seeing anything but green lights for their patients, and parents are alerting the staff as soon as they see a yellow or red light.

The team concludes that use of a real-time patient safety dashboard embedded in the electronic medical record increased compliance with important elements of CABSI and VAP. In the next phase of the project we will analyze results after 6 month implementation phase where we expect to get clear evidence on how dashboard implementation influenced certain type if events , decreased mortality and increased quality of care.
To see how this solution has an impact on lives today and in the future it is important to understand that the motivation for pursuing such a project is that it is a fundamental part of HP's core culture.

„As part of our global social innovation program, we aim to enrich society by using the breadth and scale of technology to drive structural, systemic improvements in health access and delivery," says Gabi Zedlmayer, Vice President Global Social Innovation. „This project has been designed as a replicable solution that can be expanded to other hospitals in the United States and around the world to help save lives."

Take a few minutes to watch a short video about the project:
http://www.youtube.com/watch?v=VVZPbhhclAM

This case is published and can be viewed at:
http://www8.hp.com/us/en/hp-information/social-innovation/patient-centered-dashboard.html

For more information about this case please contact
Danica Balazova
Email: danica.balazova@hp.com

Name of case
The New Way of Working

Name of organization
KPN

Type of practice
B2B

Main area of impact for lifestyles
Mobility
Communication

Abstract
Increasingly people want to work in places and at times that suit them. We must change working patterns to reduce environmental impact of travel. The New Way of Working enables people to work location independent. This reduces CO2-emissions, saves time and money and makes people happier.

The potential of teleworking within dematerialization was already identified by GeSI in the SMART2020 study. KPN has actually pursued this potential through deployment of the New Way of Working and has achieved remarkable results. 11,500 KPN employees in the Netherlands (out of 20,000) practice the New Way of Working. They now drive 25 million less kilometers per year and the absolute CO2-emissions of the KPN fleet have been reduced by 3%. It has had a positive impact on productivity, pleasure and employer attractiveness. 49% of people that practice the New Way of Working stated that they get more pleasure from work;

Our clients are asking for green ICT services that enable remote working. KPN clients have increased their usage of New Way of Working services by 75% in 2011. During internal and client deployments, KPN has gained insights which KPN is happy to share as part of our responsibility to achieve sustainable working styles.

Keywords
New Way of Working, Green, CO2-emissions, Cost, Mobility, Pleasure

Organization's background
KPN profile
KPN is the leading telecommunications and IT service provider in The Netherlands, offering wireline and wireless telephony, internet and TV to consumers. KPN offers business customers complete telecommunications and IT solutions. KPN Corporate Market (previously known as Getronics) offers global IT services and is the Benelux market leader in the area of infrastructure and network related IT solutions. In Germany and Belgium, KPN pursues a multi-brand strategy in its mobile operations and holds number three market positions through E-Plus and BASE. KPN provides wholesale network services to third parties and operates an efficient IP-based infrastructure with global scale in international wholesale through iBasis.

Strength
KPN has a clear aim of being the best-in-class service provider. We aim to offer products and services that are simple to use and help customers achieve personal goals or business objectives. We have been bringing people together for over 125 years. Our technologies and our services enable people to share the special moments in their lives. That is where our strength lies.

Challenging environment
The ailing economy had an adverse effect on our sector. In the business market, companies postponed or reduced their ICT investments. In the consumer market, our market shares and revenues were under pressure. We saw a further rise in the use of mobile apps, so consumers sent considerably fewer SMS messages and made fewer calls. With our new mobile tariffs, we were the first Dutch provider to respond to that trend. Some of the initial results of the new propositions are positive, however more time must elapse before their impact is fully visible. The sharp growth in the number of Interactive TV and the Fiber-to-the- Home customers was positive, thanks in part to several product and service innovations. The explosive growth in data traffic brings us commercial opportunities on the one hand, and makes our climate neutrality target for 2020 a great challenge and an absolute necessity.

Guaranteed security of ICT facilities is becoming increasingly crucial, and we are helping organizations to empower their people to be able to work independently of time and place, which is the norm at KPN. Despite the economic downturn, companies' interest in green ICT and energy-saving ICT applications has remained high.

Thanks to the many KPN employees acting as volunteers, we have brought thousands of people in touch with one another via the KPN Mooiste Contact Fonds. We signed on to the United Nations Sustainability Platform, the Global Compact, herewith taking on the obligation to contribute towards achieving the Millennium Development Goals for 2015 set by the United Nations.

Those activities and our recalibrated social ambitions, which we aim to gear more closely to our everyday operations, confirm our role in society and the contribution we want to make. Our financial results and corporate social responsibility go hand-in-hand with this. Thanks to the wide range of our products and services, we make a vital contribution to the Dutch economy, of which we are very proud. The unique combination of our staff, our knowledge and our resources will enable us to make a difference for our customers and society; we have to improve relentlessly, doing things better today than yesterday and doing them even better tomorrow and thereafter.

Part 1. Context: problematic and customer
The world of work is changing. We need to think about cultural, economic, environmental and generational change in the world around us.

Increasingly people want to work at places and on times that suit their personal lives. The nature of the information worker is evolving. Today, we see the characteristics of information working becoming an intrinsic part of a wider range of jobs and work styles. This growth in information work is clearly reflected in attitudes to home-working and mobile working – both in terms of flexible contracts and of connectivity and access to information. It has been said before – but work becomes something you do and not a place you go to. KPN has adopted the New Way of Working to address these changes. 11.500 KPN employees practice the New Way of Working. Employee survey results show a positive impact on people:
- 49% of people stated that they get more pleasure from work;
- 47% stated that KPN is a more attractive employer.

Energy availability and climate change are topics that concern KPN, our clients and society in general. KPN aims to be climate neutral by 2020. This implies that we need to reduce our own

energy consumption as well as support our client's in reducing their CO2-emissions. KPN services contribute to this. We do this by deploying ICT services that are energy efficient and by using 100% green power in The Netherlands and Belgium.

We need to change working patterns to control work related travel. Through the New Way of Working our people can work time and location independently. This saves time, cost and reduces CO2-emissions:

- KPN employees drive 25 million less kilometers per year;
- Absolute CO2 emissions of the KPN fleet have been reduced by 3%;
- New Way of Working has contributed to the KPN total CO2 emissions have been reduced by 135kTon in 2011 (note KPN utilized 100% green electricity in The Netherlands and Belgium).

Besides CSR driven goals we need to ensure sound financial business cases. Adopting the New Way of Working has had a positive financial impact for KPN:

- We have realized a 25% decrease of recurring office space costs;
- Cost savings due to 25 million less kilometers driver by our fleet per year;
- 49% of our people told us that they can work more efficiently.

Part 2: Description of the solution

Range of projects

New Way of Working is a fundamental change. KPN has deployed 70 projects to get where we are today. Measures deployed span organization & culture, office facilities and technology. List below provides an overview of deployed measures:

- Organization and Culture:
- Business case based promotion;
- Amendment of labor contracts and performance management and staff development processes;
- Transformation of management style to more trust based and result oriented;
- Coaching of staff towards desired self-steering, networked and collaborative behavior;
- Facilities:
- Office space changes and consolidation of floor space;
- Function based design (duo workspace, open space, informal / flex space, meeting place, informal setting, lounge, informal meeting and lockers);
- Technology:
- Collaboration platform adoption;
- Messaging and conferencing facilities;
- Workspace that provides any time and place assess to corporate ICT environment;
- Any time and place and reliable connectivity / network;
- Freedom of choice of mobile devices (bring your own device).

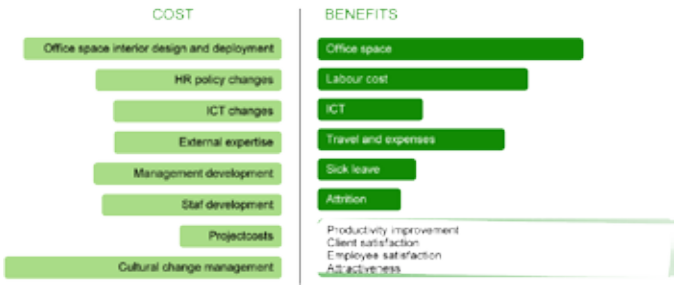
A lot of emphasis has been put on vision creation across the organization. HR, facilities management, ICT management and general management viewpoints where integrated in a vision of the desired future New Way of Working. Willingness to change, executive sponsorship and required resources where secured through a business case approach. Individual projects were prioritized based on business cases. We aim to have a continuous improvement cycle. Continuously surveys are conducted to measure impact and identify areas for improvement which are followed up business case based.

Throughout the value chain

Our goal to become climate neutral in 2020, implies that we need to drive change in our entire value chain. Contributing to the reduction of our client's energy consumption is essential. KPN has deployed ICT technology for the New Way of Working for clients such as PostNL, Achmea and the Dutch Ministry of the Interior and Kingdom Relations. KPN clients have increased their usage of New Way of Working services by 75% in 2011.

Cost and gains

Business cases have been at the center of deployment of the New Way of Working. Illustration below provides insight in the relative cost and gain as KPN has derived from the New Way of Working. Gains are presented in two sections, tangible and less tangible & hard to quantify. These have been grouped into one box. Although hard to quantify, KPN believes that these together represent the largest benefit.



Practical suggestions

In terms of practical suggestions, we are keen to share our experience to date. Key points are outlined below:

- We recommend to consciously bust silos – specifically bringing together HR, Facilities Management, ICT Management and general management functions to brainstorm new ways of working;
- We specifically ask ICT Managers to look for natural upcoming breaks in the ICT life-cycle and consider these as breakpoints – these may be due to current contracts coming to an end or current technology investments reaching end of life;
- We encourage HR and Facilities Management to review actual working practice and consider in hard terms how many square meters of office space need to be sustained for given business functions;
- We suggest that you set concrete targets for the reduction of travel budgets, road miles, square meters occupied and CO2 emissions and examine how new ways of working can help meet these targets;
- We recommend that you pay particular attention to compliance and security, identifying any areas of risk which could jeopardize your own organization's shift to the new way of working;
- We strongly promote experimentation, introducing new ways of working to specific business functions with enthusiasm and vision.

Further improvements

Staff feedback shows that there are still challenges with regards to transformation of management style. 17% of those who feel insufficiently enabled expect more space and trust from their managers. Leadership style transformation is proving to be an intensive and lengthy process. New Way of Working best practices are now embedded in overarching leadership, management development and training programs.

ICT is a critical factor in the adoption of New Way of Working. 64% of those who feel insufficiently enabled expect a workspace that even further facilitates working anywhere at any time. Significant steps have been taken to transform ICT environment.

KPN internally deploys leading edge ICT solutions. Uptake of New Way of Working is high, but feedback is telling us that if we would want to further increase uptake, ICT is a significant lever. ICT is a critical factor in adoption of the New Way of Working.

Green ICT
The New Way of Working has a positive impact on lifestyles. It reduces climate impact and surveys show a positive impact on peoples ''pleasure.''

The New Way of Working relies on ICT solutions and ICT does consume a significant amount of energy. It is therefore KPN's responsibility to reduce climate impact of her ICT solutions. KPN ICT solutions for New Way of Working utilize an energy efficient infrastructure that runs on 100% green power. Through this, in 2011 we achieved a 135kTon reduction of our CO2 emissions compared 2010.

Part 3: Impact in lifestyles
Mobility
The New Way of Working reduces people's dependency towards mobility for their work. It enables you to work location and time independently. This saves time and encourages a healthy work life balance. Surveys show that New Way of Working has had a positive impact on productivity, pleasure and employer attractiveness.

Changing work patterns may turn out not to be optional. If new work patterns are not adopted, increasingly transport infrastructure will become more congested which will have an adverse effect on mobility.

Communication
Availability and adoption of new communication services keeps increasing. Social media and mobile access is becoming an integral part of society. People are increasingly expecting similar communication facilities in their private and work lives and ever more blurred transition zone. New Way of Working provides the communication services that people require. ICT services for the New Way of Working include: collaboration platforms / groupware, messaging and conferencing services, workspace services that provide any time and place assess to corporate ICT environment and a reliable connectivity / network.

Climate
Energy availability and climate change are topics that concern KPN, our clients and society in general. We need to find new ways of working to reduce the impact of work related mobility on the environment. Reducing the impact per kilometer is one way of doing this. This is actively pursued by KPN, but a more significant lever is actually reducing travel. The New of Working has a significant impact on this. With current take up of the New Way of Working in KPN, employees drive 25 million less kilometers per year.

Measuring the impact
Measuring results and transparency is a key principle in KPN's Corporate Social Responsibility program. We therefore execute continuous measurement of the effects of New Way of Working. These measurements show that New Way of Working contributes to a cleaner environment and has a positive effect on people lives.

For more information about this case please contact
Tim Beswick – Principal Consultant CSR / Green ICT
Email: tim.beswick@kpn.com – Fon: +31655380512

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Name of case
Making Buildings Energy Smart

Name of organization
Microsoft (Microsoft is a trademark of the Microsoft group of companies)

Main area of impact for lifestyles
Housing
Employment

Abstract
Aggregated data and powerful analytics that add "intelligence" to existing building infrastructure have the potential to transform the way in which companies manage energy across their real estate portfolio. In particular, building engineers can be empowered to take a more targeted, data driven approach to their work while automation improves their productivity. This delivers substantial cost savings, while helping firms achieve carbon reduction targets with relatively low capital investments.

Keywords
Energy, usage, buildings, carbon, footprint, emissions, efficiency

Organization's background
Founded in 1975, Microsoft is the worldwide leader in software, services, and solutions that help people and businesses realize their full potential.

With 90,000 employees across its business divisions and global subsidiaries, the company generated revenues of US$ 69.9 billion for the fiscal year ended June 30, 2011. Its home page is www.microsoft.com.

Part 1. Context: problematic and customer
Buildings are the largest contributor to global carbon emissions, accounting for about 40 percent of the world's overall footprint. Commercial buildings alone account for close to 20 percent, about half of the total. For many organizations, commercial buildings are often one of their single greatest operational expenses. A more efficient building portfolio can improve the value of real estate assets, help the bottom line, cut emissions, and bolster the corporate image.

The pilot program by Microsoft's Real Estate & Facilities organization evaluated smart building applications from three vendors across 13 buildings within the company's main 118 building campus. In essence, these applications added an analytical layer on top of existing building management systems, without the need to replace existing infrastructure.

This new layer enables Microsoft to aggregate and analyze its building data to generate actionable insights that save energy and cut costs. In its initial stage, the program addresses energy consumption and cost in three specific ways:

- Fault detection and diagnosis to enable timely and targeted interventions in cases of faulty or under-performing building equipment.
- Alarm management to prioritize the many notifications generated by existing building systems and point engineers to the most impactful issues.
- Energy management through systematic tracking and optimization of building energy consumption and performance over time, while changing the behavior of building occupants with visual dashboards and benchmarks.

Part 2: Description of the solution
Microsoft's experience thus far demonstrates that a smart building solution can be established with an upfront investment of less than 10 percent of annual energy expenditure, with an expected payback period of less than two years. By collecting and analyzing millions of data points (samples) per day, the company has been able to embark on multiple improvements that are reshaping the way its buildings are managed.

Microsoft's building engineers have become far more productive: instead of "walking around" to find issues, they're now "walking to" the problems that have the greatest impact on cost or comfort. By itself, the ability to continuously identify issues and optimize the performance of building equipment is expected to deliver annual savings of more than one million dollars. Furthermore, as building engineers can analyze data collected over time and occupants become more aware of individual energy use, Microsoft hopes to save several million dollars by optimizing base load (from building systems directly controlled by the building engineers) and by reducing plug load (from devices used by occupants) across its building portfolio.

Part 3: Impact in lifestyles
Microsoft's smart buildings pilot program shows that while various adoption barriers remain, these can be overcome by following principles. Most importantly, the underlying technologies are now more widely available and easier to implement. By sharing its experience with the public, Microsoft hopes to contribute to the evolution of the technology and encourage other companies to implement programs of their own.

The potential for information technology to improve building energy efficiency is huge. The Global eSustainability Initiative (GeSI) estimates that smart building technology has the potential to reduce carbon emissions in the US by 130-190 million tons of CO2 – equivalent to the annual emissions of about 30 million passenger vehicles (SMART 2020: Enabling the low carbon economy in the information age, United
States Report Addendum, GeSI, 2008). The related electricity cost savings amount to US$20-25 billion (Greenhouse Gas Equivalencies Calculator, US Environmental Protection Agency).

Authorization for publication
This paper is an excerpt from the case study "Energy-Smart Buildings Demonstrating how information technology can cut energy use and costs of real estate portfolios" published by Accenture This case study was published by Accenture. The published report was authored in collaboration between Microsoft, Accenture and the Lawrence Berkeley National Laboratory, examines how building owners, operators and occupants can achieve significant energy and cost savings through the use of smart building solutions. It is based on insights from a detailed case study of a smart building pilot program being conducted by Microsoft at its corporate headquarters'. The link to the case study can be found at: http://www.microsoft.com/environment/our-commitment/greener-it.aspx campus.

For more information about this case please contact
Joan Krajewski
Email: joankr@microsoft.com

Microsoft®

Name of case
Controlling Home Heating Using Occupancy Prediction

Name of organization
Microsoft (Microsoft is a trademark of the Microsoft group of companies)

Main area of impact for lifestyles
Housing

Abstract
Home heating is a major factor in worldwide energy use. Our system, PreHeat, aims to more efficiently heat homes by using occupancy sensing and occupancy prediction to automatically control home heating. We deployed PreHeat in five homes, three in the US and two in the UK. In UK homes, we controlled heating on a per-room basis to enable further energy savings. We compared PreHeat's prediction algorithm with a static program over an average 61 days per house, alternating days between these conditions, and measuring actual gas consumption and occupancy. In UK homes PreHeat both saved gas and reduced MissTime (the time that the house was occupied but not warm). In US homes, PreHeat decreased MissTime by a factor of 6-12, while consuming a similar amount of gas. In summary, PreHeat enables more efficient heating while removing the need for users to program thermostat schedules.

Keywords
Energy, environment, home heating, sensing, prediction

Organization's background
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Part 1. Context: problematic and customer
Home heating uses more energy than any other residential energy expenditure including air conditioning, water heating, and appliances [1]. This makes increasing the efficiency of home heating an important goal for saving money and reducing our ecological footprint. Although programmable thermostats provide the technology to reduce this problem, they are underutilized.

Surveys have found that fewer than 50% of US households have programmable thermostats, and even worse, the US Environmental Protection Agency estimates that 30% or more of US households with programmable thermostats are not using their thermostat's programming feature, so they are not saving the 10%-30% claimed for such devices [2, 3].

Fundamentally, home heating is a trade-off between energy use and warmth. By leaving their thermostat set permanently to a warm temperature, households incur increased energy use costs; by using a programmed thermostat to only heat for some of the time, households can use less energy, but occupants may be cold if the program is wrong or while waiting for the house to heat.

References:
1.EIA, USE.I.A. Table 2.5 „Household Energy Consumption and Expenditures by End Use and Energy Source, Selected Years 1978 – 2005." Retrieved in April 2011 at http://www.eia.doe.gov/emeu/aer/consump.html.
2.EPA, USE.P.A., Summary of Research Findings From the Programmable Thermostat Market. Available from: http://www.energystar.gov/ia/partners/prod_development/revisions/downloads/thermostats/Summary.pdf
3. Meier, A., Aragon, C., Hurwitz, B., Mujumdar, D., Peffer, T., Perry, D., Pritoni, M. "How People Actually Use Thermostats", Proc. of ACEEE 2010.

Part 2: Description of the solution
By predicting future occupancy from historical data and current occupancy, the PreHeat system provides a better trade-off between energy use and MissTime (the amount of time an occupied space is cold) than a thermostat program, and does so without requiring a user to program an occupancy schedule (which past research has shown that many users fail to do).

We have been running PreHeat in 5 houses, 3 in the U.S. and 2 in the U.K, since January 2011. In the UK homes, we are learning the schedule for each individual room separately, allowing for further energy savings since different rooms can automatically learn and follow different schedules (e.g. nobody goes into the study in the mornings). Our system uses active RFID and passive IR-based occupancy sensors, temperature sensors, heating system controllers (including for forced air systems (U.S.), water-filled radiators (U.K.), and under floor heating (U.K.)), and PC-based control software using machine learning to predict schedules based on current and past occupancy.

During our deployment we are comparing occupant's comfort and cost in three heating conditions a) PreHeat, b) Always-on: leaving the thermostat always-on at a comfortable temperature, and c) Program: using a heating program specified by the household members.

Our research suggests several interesting directions for future work. We want to investigate improvements to the PreHeat algorithm, e.g. using other sources of data such as location from phones, or further exploring per-person predictions. Sleep detection would assist with automatically determining times for set point changes. A more sophisticated heating model could also enable more savings, e.g. by predicting departures and "pre cooling" since houses stay warm for some time. Finally, we plan to explore exposing the high-level tradeoffs PreHeat offers between the likelihood of being warm when arriving home unexpectedly and energy consumption to users so they can customize based on their personal preferences.

Part 3: Impact in lifestyles
In three US homes, we found that PreHeat reduced MissTime by a factor of 6-12 while using around the same amount of gas. Across two UK homes, PreHeat halved MissTime and also reduced gas usage by 8% and 18% - this is because UK homes used PreHeat on a per-room basis, so it was able to make additional savings by heating rooms adaptively at different times of day, again without requiring any programming of per-room schedules.

Authorization for publication
This paper is an excerpt from both the paper "PreHeat: Controlling Home Heating Using Occupancy Prediction" and the Microsoft research website http://research.microsoft.com/en-us/projects/preheat/

• James Scott, A.J. Bernheim Brush, John Krumm, Brian Meyers, Mike Hazas, Steve Hodges, and Nicolas Villar, PreHeat: Controlling Home Heating Using Occupancy Prediction, in Proceedings of UbiComp 2011, ACM, September 2011
UbiComp' 11, Sep 17 – Sep 21, 2011, Beijing, China.

For more information about this case please contact
Joan Krajewski
Email: joankr@microsoft.com

Microsoft®

Name of case
Cloud Computing and Sustainability

Name of organization
Microsoft (Microsoft is a trademark of the Microsoft group of companies)

Main area of impact for lifestyles
Employment

Abstract
Providers of public cloud infrastructure are best positioned to reduce the environmental impact of IT because of their scale. By moving applications to cloud services offered by Microsoft or other providers, IT decision makers can take advantage of highly efficient cloud infrastructure, effectively "outsourcing" their IT efficiency investments while helping their company achieve its sustainability goals. Beyond the commonly cited benefits of cloud computing— such as cost savings and increased agility—cloud computing has the potential to significantly reduce the carbon footprint of many business applications.

Keywords
Cloud computing, carbon footprint, business applications, information technology (IT), energy

Organization's background
Founded in 1975, Microsoft is the worldwide leader in software, services, and solutions that help people and businesses realize their full potential.

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Part 1: Context: problematic and customer
The GeSI Smart 2020 report "Enabling the Low Carbon Economy In the Information Age" estimates that the environmental footprint from data centers will more than triple between 2002 and 2020, making them the fastest-growing contributor to the Information and Communication Technology (ICT) sector's carbon footprint.
It stands to reason that consolidating corporate IT environments into large-scale shared infrastructure operated by specialized cloud providers would reduce the overall environmental impact and unlock new efficiencies.

Both cloud computing and sustainability are emerging as transformative trends in business and society. Most consumers (whether they are aware of it or not) are already heavy users of cloud-enabled services, including email, social media, online gaming, and many mobile applications. The business community has begun to embrace cloud computing as a viable option to reduce costs and to improve IT and business agility.

To assess the environmental impact of cloud computing, Microsoft engaged with Accenture—a leading technology, consulting and outsourcing company— and WSP Environment & Energy—a global consultancy dedicated to environmental and sustainability issues—to compare the energy use and carbon footprint of Microsoft cloud offerings for businesses with corresponding Microsoft on-premise deployments.

Part 2: Description of the solution
The analysis focused on three of Microsoft's mainstream business applications—Microsoft Exchange®, Microsoft SharePoint® and Microsoft Dynamics® CRM. Each application is available both as an on-premise version and as a cloud-based equivalent. The team compared the environmental impact of cloud based vs. on-premise IT delivery on a per-user basis and considered three different deployment sizes—small (100 users), medium (1,000 users) and large (10,000 users).

These products are representative of three types of business applications that are used broadly by companies across industries. Assessing multiple applications with different usage characteristics provides a diverse set of data points to validate the hypothesis.

To assess the carbon footprint of cloud-based applications, the research team collected data from
Microsoft's current data center operations. On-premise deployments were modeled based on Microsoft's product recommendations and input from subject-matter experts, and were validated with a case study using actual customer data.

Part 3: Impact in lifestyles
The study found that, for large deployments, Microsoft's cloud solutions can reduce energy use and carbon emissions by more than 30 percent when compared to their corresponding Microsoft business applications installed on-premise.

The benefits are even more impressive for small deployments: Energy use and emissions can be reduced by more than 90 percent with a shared cloud service.

Several key factors enable cloud computing to lower energy use and carbon emissions from IT:
- Dynamic Provisioning: Reducing wasted computing resources through better matching of server capacity with actual demand.
- Multi-Tenancy: Flattening relative peak loads by serving large numbers of organizations and users on shared infrastructure.
- Server Utilization: Operating servers at higher utilization rates.
- Data Center Efficiency: Utilizing advanced data center infrastructure designs that reduce power loss through improved cooling, power conditioning, etc.

Authorization for publication
This paper is an excerpt from the case study "Cloud Computing and Sustainability: The Environmental Benefits of Moving to the Cloud" published by Accenture. The published report was authored in collaboration between Microsoft, Accenture and WSP Environment & Energy. The link to the case study can be found at: http://www.microsoft.com/environment/products-and-solutions/save-energy.aspx

For more information about this case please contact
Joan Krajewski
Email: joankr@microsoft.com

Name of case
Nokia Transport

Name of organization
Nokia Corporation

Type of practice
B2C

Main area of impact for lifestyles
Mobility

Keywords
Global availability
Local relevance
Mobility
Environmental-friendly

Organization's background
Nokia's origins as a company lie in the 1860s. Today, Nokia is a global leader in mobile communications whose products have become an integral part of the lives of people around the world. Every day, more than 1.3 billion people use their Nokia to capture and share experiences, access information, find their way or simply to speak to one another. Nokia's technological and design innovations have made its brand one of the most recognized in the world. For more information, visit http://www.nokia.com/about-nokia

Part 1. Context: problematic and customer
Today, more than half of humanity is living in cities, and the number keeps on growing; by 2050, roughly 75 % of the world's population is expected to live in cities, turning them into one of the most complex systems there is. Getting from A to B in these lively, vibrant environments can be challenging and stressful, depending on traffic conditions. At the same time, public transportation offers a convenient, safe and environmental-friendly alternative to the car for commuters, residents and tourists alike. Making the use of public transportation easier and more comfortable is a huge benefit for all of them – no matter if you're on your daily way to work, want to move around in your city or explore a city for the first time. What's better and more convenient than having all information you need regarding the best public transport routes on your mobile, even including walking directions to the nearest stop and from the last stop to your final destination?

This is exactly what Nokia Transport does – in currently more than 500 cities in 46 countries, with integrated time-table information in more than 80 cities. It has been developed to help people more easily choose and use public transportation options.

Part 2: Description of the solution
Nokia Transport is a unique service that provides the most convenient directions to underground, trams, suburban trains and buses services. With Nokia Public Transport, commuters, residents and travellers can plan their urban journey in a timely and environmentally-conscious way.

The service is available as mobile app on Nokia smartphones (Symbian and Windows Phone) as well as on the web and mobile web (for iPhone and Android users) on maps.nokia.com and m.maps.nokia.com for currently more than 500 cities in 46 countries, with timetable information in more than 80 cities.

Nokia Transport is the perfect commuter and traveller companion meeting the requirements of modern urban life: commuting and navigating in the city in a convenient and environmentally-friendly way. With Nokia Transport, users can plan fast inner-city routes from point A to B. The app shows when the nearest train, bus, tram or metro leaves, how to get to the station and to the final destination.

Thus the mobile app removes the need to carry around travel cards, timetables and city maps. It is all on the user's mobile device and always accessible in a convenient way. With its global reach it also removes the need to download city-specific public transportation apps for every single city you visit; the further expansion of the list of cities covered, including timetable information, is among the key tasks for the continuous development and improvement of the service.

The service has been made available in 2011 for the first time, and has grown since then tremendously in terms of city coverage as well as of supported operating systems/software platforms. Nokia Transport was shortlisted for an award in the category of Travelling, out of 262 projects that were overall submitted, in the European Commission's Sustainable Energy Europe (SEE) Awards 2012 (http://eusew.eu/awards-competition). More information on the the Nokia Transport submission can be found from: http://eusew.eu/component/see_projectview/?view=see_projectdetail&index=1&tagId=-1&countryID=-1&catId=3&pageNum=0&projectid=8113

Part 3: Impact in lifestyles
Finding your way from A to B in a large city can be a challenge – no matter if you're a resident or a traveler. At the same time, public transportation offers a convenient, safe and environmental-friendly alternative to the car for commuters, residents and tourists alike. Making the use of public transportation easier, more comfortable and trustful is a huge benefit for all of them – no matter if you're on your daily way to work, want to move around in your city or explore a city for the first time.

With the expected growth of cities in the next decades the need for developed and well-functioning public transport systems is growing as well, also in terms of sustainability. The same goes for services that make the use of these systems easier for people – like Nokia Transport. While already being beneficial for people and environment today, its importance will grow even further in the years and decades to come.

For more information about this case please contact
Sebastian Kurme, Communications Manager, Nokia
sebastian.kurme@nokia.com

Name of case
Smarter Cities: Cleaning up

Name of organization
Vodafone

Type of practice
B2B

Main area of impact for lifestyles
Housing

Abstract
In the Netherlands, Vodafone and technology partner, Mic-o-data, have helped Groningen City Council save an net estimated €92,000 on refuse collection costs and around 30 tonnes CO2-equivalent (CO2e) per year. Combining Mic-o-data's innovative technology with Vodafone's machine-to-machine mobile communications solutions, the Council has been able to reduce the annual carbon footprint of its refuse fleet by 18% and cut costs by significantly reducing fuel consumption.

Keywords
- Fuel, carbon and cost reduction
- Waste management
- M2M (Machine to Machine)
- Smart solutions

Organization's background
The Environmental Department of the City Council of Groningen (Gemeente Groningen) in The Netherlands
Groningen has a population of around 190,000. It is the largest city in the north of the Netherlands.

Progressive implementation from 1999 to 2010. Environmental services Department.

Outline of strengths, weaknesses, opportunities and threats facing the organization at the time of the study:
- Budget cuts
- Carbon footprint
- Inefficiencies in waste collection
- Overflowing bins

Description of key stakeholders and their role in the case
- City of Groningen: Customer
- Vodafone: Communication partner
- Mic o Data: Software Solution partner

Part 1. Context: problematic and customer
Groningen City Council aims to deliver an effective and efficient refuse collection service which ensures the prompt removal of waste while minimising related costs and environmental impacts. Its established approach was for refuse collection teams to empty bins on scheduled routes whereby each bin is emptied whether it is full or unused. This conventional approach meant that teams spent unnecessary time servicing unused bins while having no way of knowing which bins needed emptying most urgently.

Part 2: Description of the solution
An average lifetime of 10 years has been used for the purpose of this study but is expected to last longer.

Using Mic-o-data's Tardif system, the Council was able to make use of information and communications technology (ICT) to improve the effectiveness of its service while reducing fuel consumption, costs and carbon emissions from refuse trucks. The Mic-o-data Tardif system is a GPRS-enabled device which was attached to 961 refuse bins to monitor waste levels in individual bins. The device uses Vodafone's mobile communications network to relay information on how full each bin is twice a day to centralised servers. The servers then process this data to include only full bins in the next collection round.

Major sources of carbon emissions and cost savings were identified as:
- Reducing diesel consumption: 29.3 tonnes CO2e per year.
- Eliminating the need to purchase an additional refuse collection vehicle: 2.7 tonne CO2e saving per year
- Cost savings: €92,000 of net savings were achieved through a reduction in capital (purchase of a lorry) and operational (fuel, fleet maintenance and personnel costs).
- The research also took into account the additional emissions from the lifecycle of the Tardif system which were calculated as 2.4 CO2e per year.

Part 3: Impact in lifestyles
The solution enables the municipality to operate more efficiently, reduce costs and CO2 emissions.

For more information about this case please contact
Joe Griffin
Email: Joe.Griffin@vodafone.com

Name of case
Turkey Farmers Club

Name of organization
Vodafone

Type of practice
B2C

Main area of impact for lifestyles
Food& Drink
Employment

Abstract
Vodafone Farmers' Club is helping farmers in Turkey gain access to information and agriculture services and discounts aimed to boost their livelihoods. Launched in collaboration with the Turkish Ministry of Agriculture and Rural Affairs, it is a mobile price plan which includes numerous value-added services to help increase farmer efficiency and sustainability. These include SMS alerts with government information on new regulations and available financial support, as well as the weather forecast and local market prices tailored to provide information for their location and produce. Subscribers to the service also benefit from reduced handsets, personal accident insurance and discounts on farm machinery and opportunities to advertise produce. Through our partnership with Sekerbank, a leading agricultural bank, we enable farmers to pay their entire mobile bill once a year on chosen time of harvest. The Farmers' Club social business model also includes educational activities to support more effective agricultural techniques. There are now over 600,000 customers of the service, and through our distribution network we have informed over 3 million farmers across 26 provinces.

Keywords
Farmers, Agricultural productivity, Livelihoods, Information services

Organization's background
Vodafone Turkey is the number 2 mobile operator in Turkey with approximately 18 million customers (as at 31 December 2011).

Implementation of the Vodafone Farmers Club began in 2009 and is ongoing
Strengths: Strong rural distribution network interacting with farmers
Opportunities: Increase the range of channels for farmers to access the service – i.e. introduction of web application.
Weaknesses: It has been hard to keep track of how many customers are using the discounts we negotiated for farmers to understand the value of these benefit to them.

Vodafone Turkey provides the service.
Over 600,000 farmers are customers of the service.
Turkish Ministry of Agriculture and Rural Affairs – Vodafone launched the services in collaboration with the Ministry.
Sekerbank – through Vodafone's partnership with this leading agricultural, bank farmers are able to pay their entire mobile bill once a year on chosen time of harvest.

Part 1. Context: problematic and customer
Approximately 27% of the Turkish population is employed in agriculture. The service helps farmers in Turkey to gain access to information and agriculture services and discounts, aimed at boosting their livelihoods. There are now over 600,000 customers of the service, and through our distribution network we have informed over 3 million farmers across 26 provinces.

Vodafone Turkey reviewed their customer segmentation and saw an opportunity to increase market penetration amongst people employed in agriculture They formed a specific farmer group and team, which started with assessing farmer's needs in order to develop a compelling proposition.

Part 2: Description of the solution
Vodafone Turkey reviewed their customer segmentation and formed a specific farmer group and team. This team started with assessing farmer's needs in order to develop a compelling proposition to recruit new customers in this segment.

Vodafone implemented a rural distribution channel to recruit customers, often in remote locations, with trucks visiting these locations with Vodafone agents and NGOs to provide details on the package and some basic training. As part of this, we have trained more than 100,000 farmers on topics such as water usage, and using mobile technology in farming.

Customer feedback has been very positive, and the Turkish team has calculated it has significantly reduced churn compared to other consumer segments.

There are now over 600,000 customers of the service, and through our distribution network we have informed over 3 million farmers across 26 provinces. Vodafone Turkey has estimated that in the financial year 2011/12, the mobile service will have increased farmer productivity by €100 million.

It has also had an additional benefit of increasing employee engagement, especially amongst their sales channel, keen to sell such an important and beneficial service. It has also provided a foundation to innovate new services in this area such as a new telemetry solution for a national tea producer.

The key challenge is continuing to track and test which parts of the offering are most popular with farmers to keep refining the service. It is also the unique bundle of different options, which includes payment offers and advertising opportunities which sets this apart from other agriculture information services.

Part 3: Impact in lifestyles
Vodafone Farmers Club is helping farmers improve their farming practices and give them more security as often self-employed individuals. Vodafone Turkey have estimated that in the financial year 2011/12, the mobile service will have increased farmer productivity by €100 million. With an NGO supporting our sales team we have also educated over 100,000 farmers.

As agricultural productivity and food security is likely to become a greater issue by 2050 when population is expected to exceed 9 billion – we see there will be an increasing need for our service going forward.

We will continue to understand the needs and priorities of farmers and companies in the sector to continue developing services that create value to them.

For more information about this case please contact
Laura Crow
Email: laura.crow@vodafone.com

WORKSTUDIO

For more information about GeSI visit www.gesi.org.

Information about CSCP Workstudios for Sustainable Lifestyles can be found at www.scp-centre.org.

CONTACT:

GeSI
Alice Valvodova
alice.valvodova@gesi.org

CSCP
Ginnie Guillen
Ginnie.guillen@scp-centre.org

Images: GeSI and CSCP
Workstudio images and logos: CSCP
Design and Layout: Laura Schindler

Global e-Sustainability Initiative (GeSI) AISBL
c/o Scotland House | Rond Point Schuman 6 | 1040 Brussels | Belgium
Tel +32.2.28284.42
Fax +32.2.28284.14

GeSI
GLOBAL e-SUSTAINABILITY INITIATIVE

Collaborating Centre on Sustainable Consumption and Production (CSCP) gGmbH
Hagenauer Str. 30 | 42107 Wuppertal | Germany
Tel +49.202.45958.10
Fax +49.202.45958.31

cscp
COLLABORATING CENTRE ON SUSTAINABLE CONSUMPTION AND PRODUCTION