



FRESHFEL THE EUROPEAN FRESH PRODUCE ASSOCIATION

INDUSTRY 4.0 - FRESH PRODUCE ECOSYSTEM

2nd June 2016



1870

1920





1950

FROM INTERNET TO OUTERNET

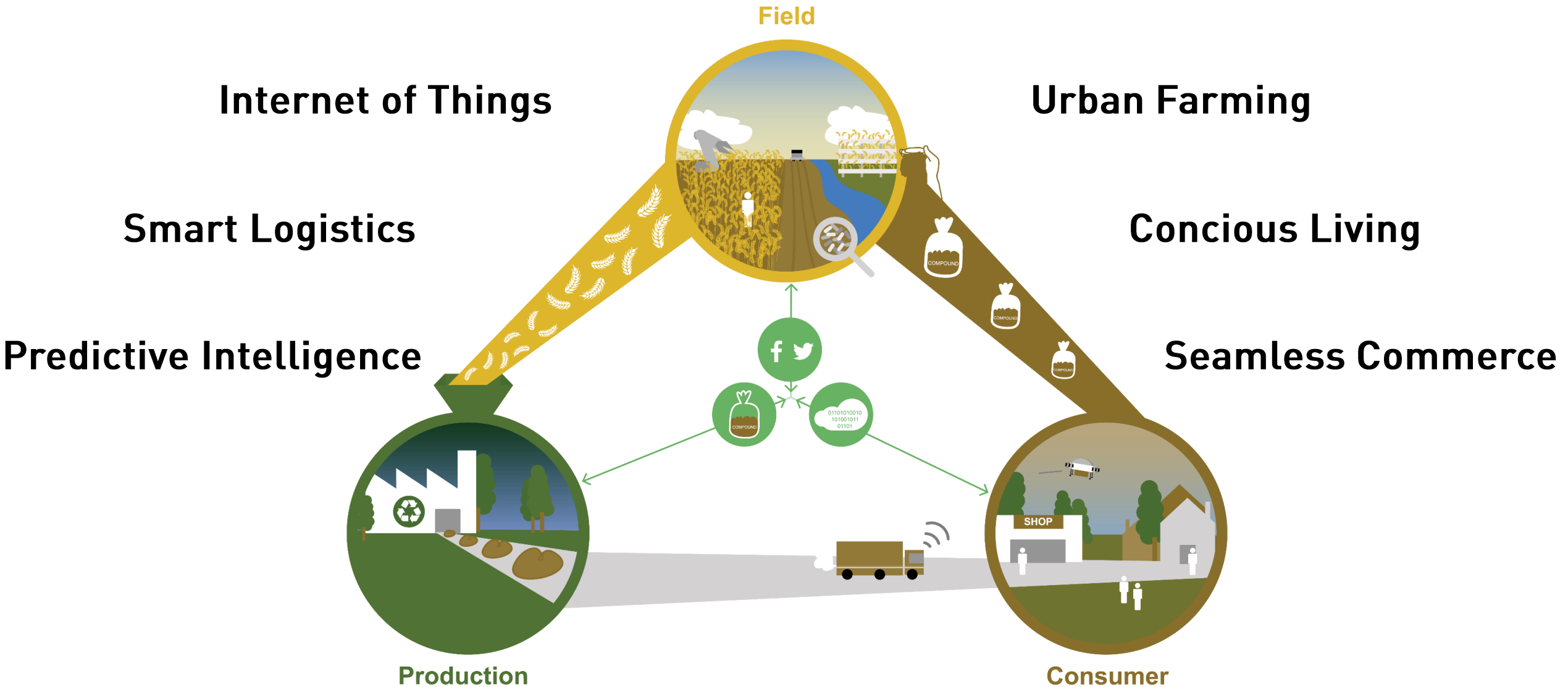


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FRESH PRODUCT ECOSYSTEM

A HIGHLY CONNECTED SYSTEM



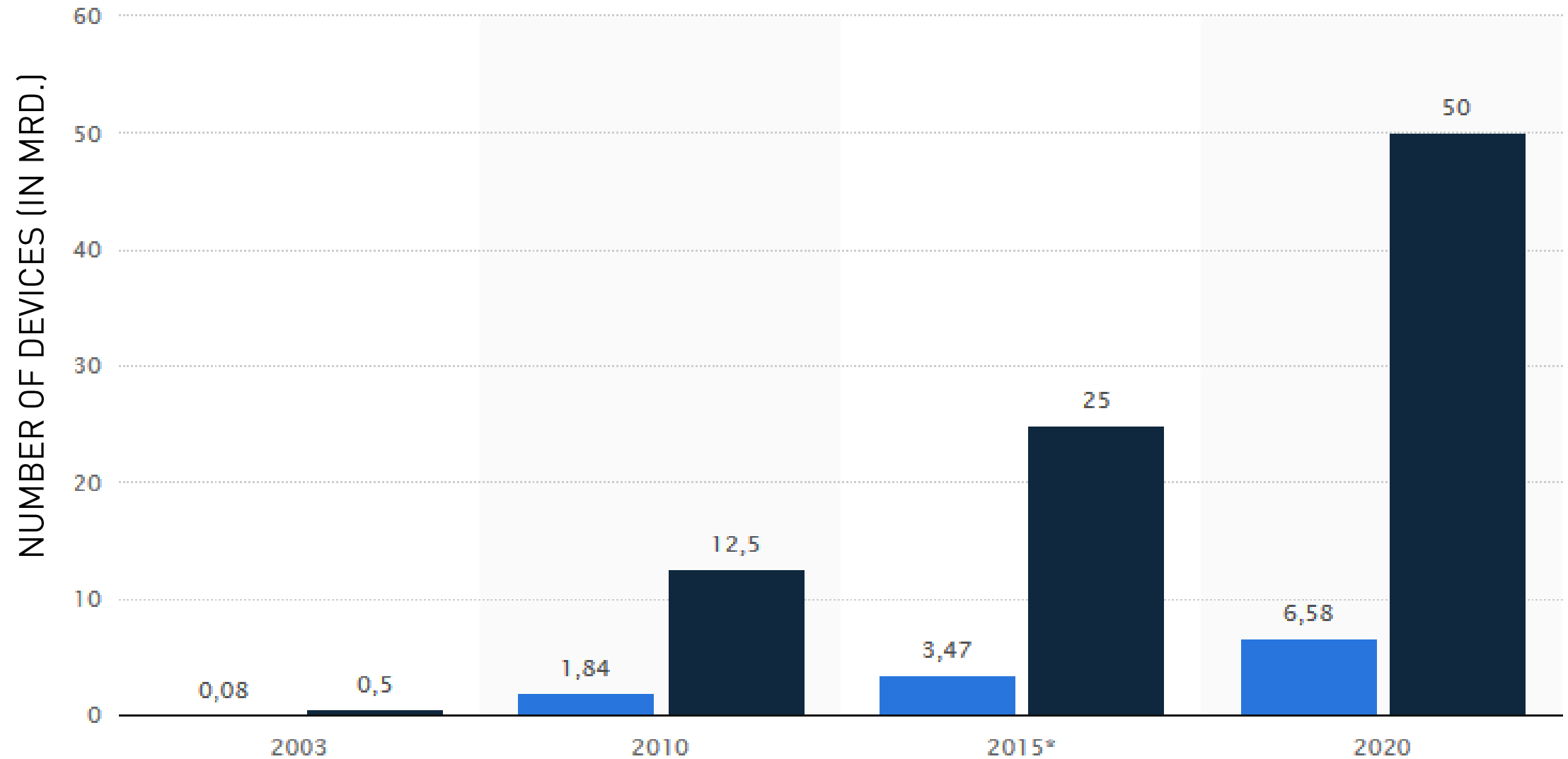
WEB OF THINGS

OBJECTS COMMUNICATE WITH THE ENVIRONMENT AND EXCHANGE INFORMATION



INTERNET OF THINGS

WORLDWIDE PROGNOSTIC FOR LINKED DEVICES PER PERSON/ON THE WHOLE



WEB OF THINGS

SENSORS FOR WINE GROWING



TracoVino is an Internet of Things solution that supports winemakers to improve the quality of their wines, optimize workflows and to monitor vineyards remotely. Data like temperature, humidity, light intensity, air and soil humidity are collected directly from the vineyards. The winemaker benefits by receiving alerts, reports and predictive analysis based on this data on a tablet or mobile - any time and anywhere. Any information to optimize the vineyard management is instantly and effortlessly available.



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<http://www.myomegasys.com>



Intel Corp., Germany

WEB OF THINGS

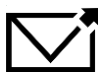
FLEXIBLE AND ATTACHABLE MICRO-SENSORS



Scientists from South Korea have developed a way to produce miniature carbon-based electrical devices which can be stuck to surfaces like stickers to operate as sensors for chemists. Carbon nanotubes and graphite serve as transistors and electrodes which can detect chemicals and wirelessly transmit the data. Energy requirements are supplied by environmental radio waves. The sensors can be applied to insects, plants and even organs to detect chemical weapons, environmental changes and diseases.



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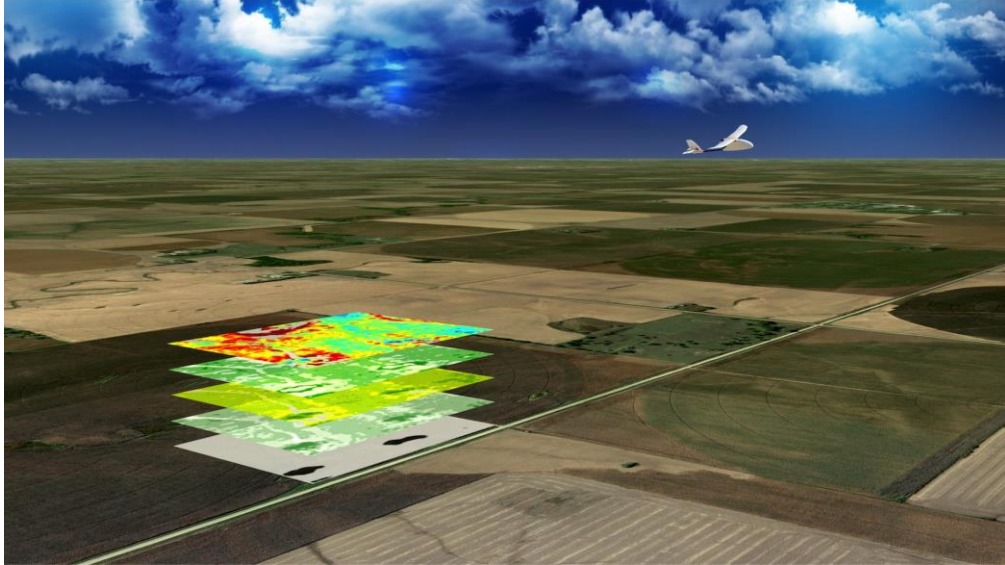
<http://pubs.acs.org>



Ulsan National Institute of Science and
Technology (UNIST), South Korea

WEB OF THINGS

INCREASING CROP YIELDS WITH DRONES



The US company Slantrange manufactures sensors for the airborne remote monitoring of agricultural crops, which can be attached to airplanes or unmanned drones. What distinguishes them from similar systems is that they not only record videos but also various biometric parameters with the help of multi-spectral sensors. Thanks to the analysis software included in the package, farmers can benefit from exact data on every plant to increase crop yields or to warn of impending crop losses.



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<http://www.slantrange.com>



Slantrange Inc., USA

WEB OF THINGS

PHYSICAL OBJECTS BECOME INTERACTIVE



The Norwegian technology company ThinFilm has announced a partnership with the EVERYTHING software provider to connect its printable electronics via the EVERYTHING cloud service to internet-of-things applications. This will allow ThinFilm printed electrical products, such as NFC barcodes or "smart labels" to be connected to the software-as-a-service platform from EVERYTHING . This will also make it possible to bring physical objects into the digital world and make them interactive and capable of communicating.



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<http://www.thinfilm.no>



ThinFilm Electronics ASA, Norway

SMART LOGISTICS

EFFICIENT AND COST-EFFECTIVE PLANNING AND CONTROL OF THE SUPPLY CHAIN PROCESSES



SMART LOGISTICS

SUPPORTING YOUR EMPLOYEES WITH AR APPS



SAP has presented two augmented reality applications for smart glasses for warehouse staff and technicians. They are intended to help simplify and improve user experience and work processes by offering a hands-free working experience. The “SAP AR Warehouse Picker” is designed to provide visualization and voice recognition to receive instructions via smart glasses, as well as allow data entry to be handled through scanning or voice recognition. The app “SAP AR Service Technician” will deliver a remote expert calling function and 3D model animation.



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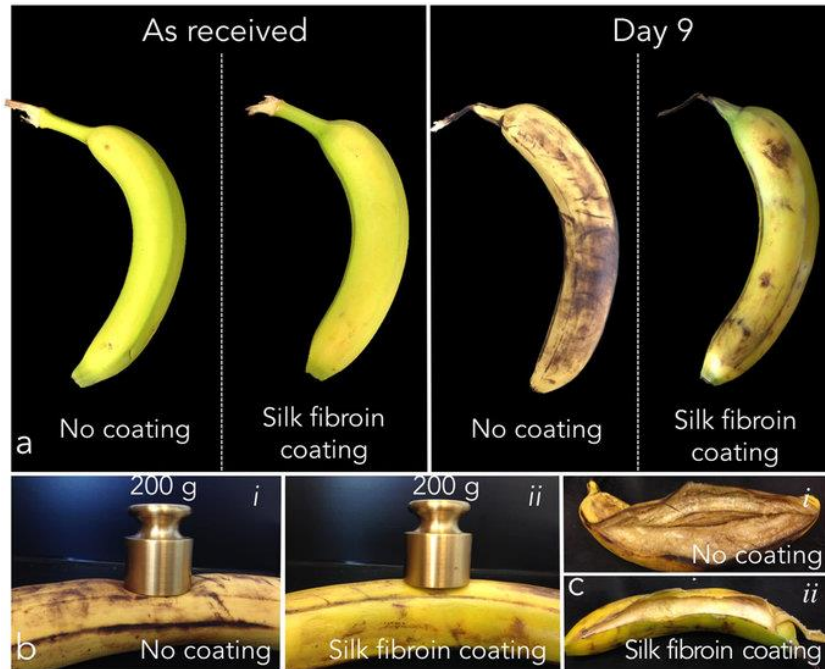
<http://www.news-sap.com>



SAP SE, Germany

SMART LOGISTICS

FRESH FRUIT AND VEGETABLES WITHOUT COOLING



Researchers at Tufts University in Massachusetts have developed a wafer-thin, transparent silk fibroin which can cover fruit and vegetables to extend their shelf life without being refrigerated. This thin silk coating consists of a tasteless protein that allows people to eat fruit and vegetables without needing to wash them beforehand. The protective silk coating is 27 to 35 micrometers thick and slows down cellular respiration to ensure that the food stays fresh for at least seven days without additional cooling.



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<http://now.tufts.edu>



Tufts University, USA

SMART LOGISTICS

ROUTE PLANNING WITH ARTIFICIAL INTELLIGENCE



As part of its "SmartTruck" project, DHL has integrated dynamic route planning and RFID technology into its delivery trucks. Packages with RFID tags and RFID readers in the trucks ensure that the right packages are loaded and carried. A red light informs drivers if something has been loaded incorrectly. What's more, satellite-based geodata and telematics data plus cooperation with a Berlin taxi company enable the trucks to receive traffic information and work out faster routes for deliveries so that drivers can work through their list of jobs more efficiently.



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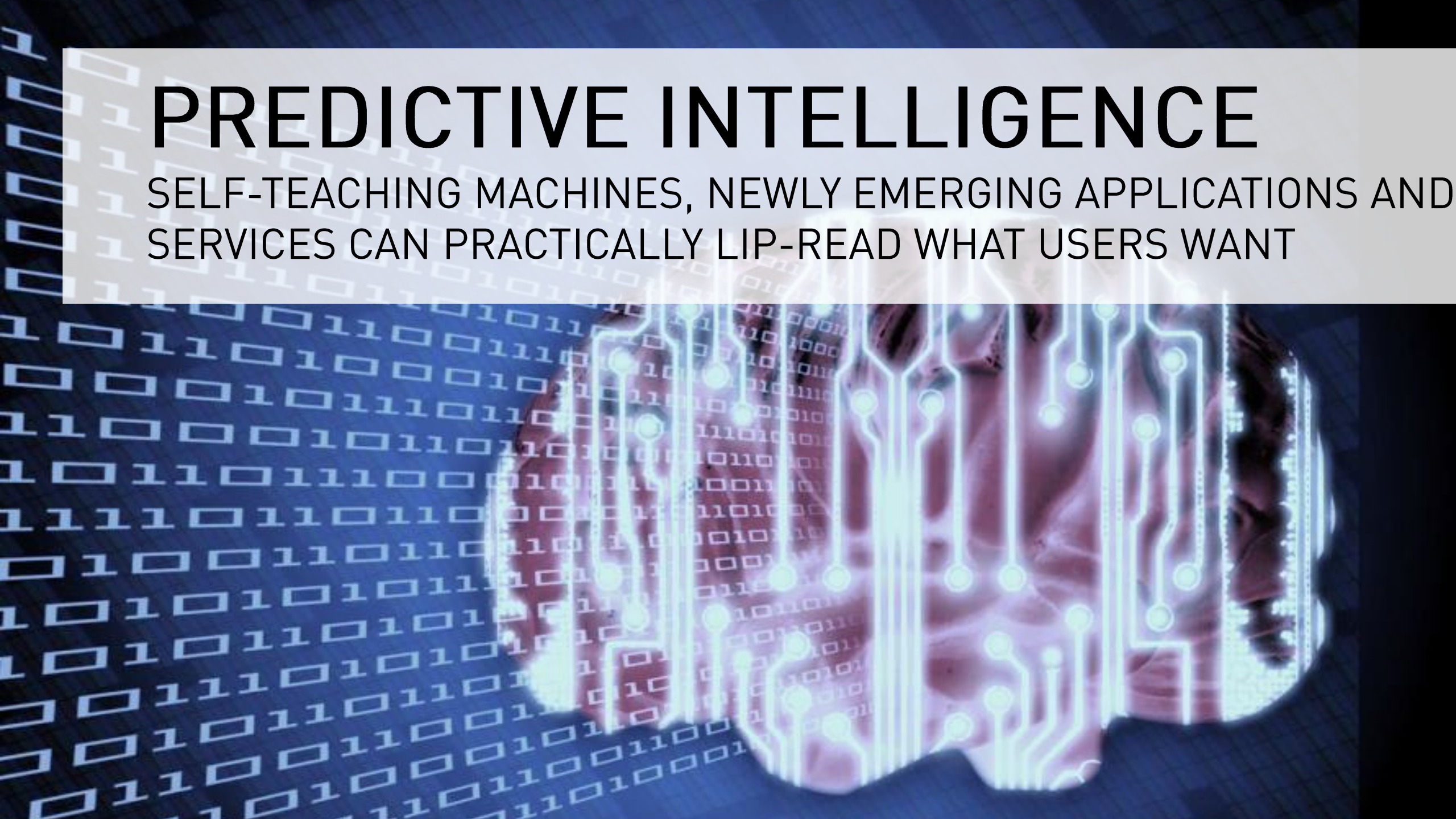
<http://www.dpdhl.com>



DHL International GmbH, Germany

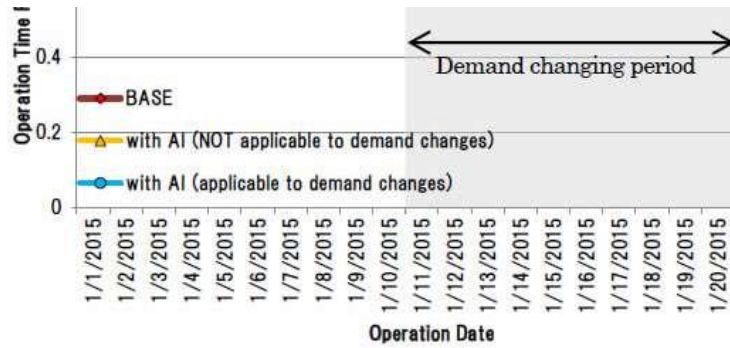
PREDICTIVE INTELLIGENCE

SELF-TEACHING MACHINES, NEWLY EMERGING APPLICATIONS AND SERVICES CAN PRACTICALLY LIP-READ WHAT USERS WANT

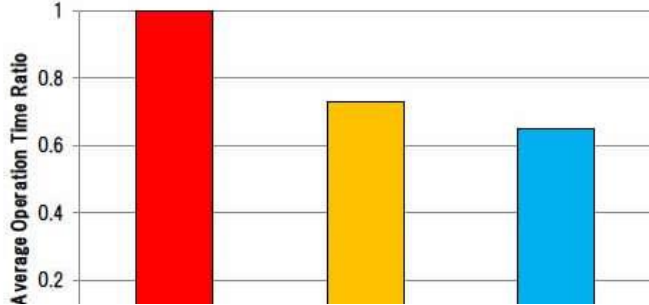


PREDICTIVE INTELLIGENCE

ARTIFICIAL INTELLIGENCE IN THE WAREHOUSE



Hitachi has developed a form of artificial intelligence that ensures improved work processes in warehouses and boosts efficiency by 8%. It is integrated into the IT systems and analyses masses of data in order to detect fluctuations in demand and then adapt the orders correspondingly. The technology also takes employee workflows into account and works out how effective they are. This enables companies to integrate alternative approaches into the workflow if similar conditions occur again.



trendexplorer



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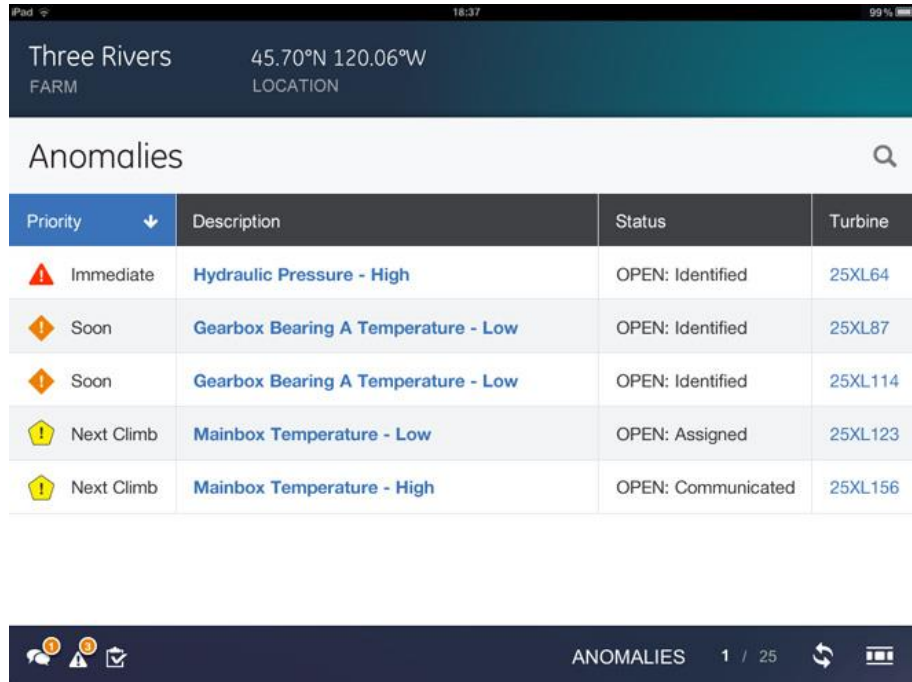
<http://www.hitachi.com>



Hitachi Ltd. Corp., Japan

PREDICTIVE INTELLIGENCE

SOFTWARE PLATFORM FOR INDUSTRIAL INTERNET



The screenshot shows a mobile application interface for monitoring industrial equipment. At the top, it displays the location 'Three Rivers FARM' with coordinates '45.70°N 120.06°W'. Below this is a search bar labeled 'Anomalies'. A table lists five anomalies with columns for Priority, Description, Status, and Turbine. The anomalies are: 1. Immediate priority, 'Hydraulic Pressure - High', OPEN: Identified, Turbine 25XL64. 2. Soon priority, 'Gearbox Bearing A Temperature - Low', OPEN: Identified, Turbine 25XL87. 3. Soon priority, 'Gearbox Bearing A Temperature - Low', OPEN: Identified, Turbine 25XL114. 4. Next Climb priority, 'Mainbox Temperature - Low', OPEN: Assigned, Turbine 25XL123. 5. Next Climb priority, 'Mainbox Temperature - High', OPEN: Communicated, Turbine 25XL156. At the bottom, there is a navigation bar with icons for search, share, PPT export, video, and more pictures, and a status bar showing 'ANOMALIES 1 / 25'.

Priority	Description	Status	Turbine
Immediate	Hydraulic Pressure - High	OPEN: Identified	25XL64
Soon	Gearbox Bearing A Temperature - Low	OPEN: Identified	25XL87
Soon	Gearbox Bearing A Temperature - Low	OPEN: Identified	25XL114
Next Climb	Mainbox Temperature - Low	OPEN: Assigned	25XL123
Next Climb	Mainbox Temperature - High	OPEN: Communicated	25XL156

General Electric has developed a flexible cloud-based platform called "Predix" that can be connected to all the industrial machines operated by the company in order to optimise the way they are monitored and maintained. The platform is a standard for the analyses carried out at industrial levels, and helps users make valid predictions. It will serve to prevent downtimes, minimise risks and maximise profits. With the help of "Predix", all machines can be analysed individually and the data thus collected can be grouped into prognoses and statistics, and made available on a smartphone app.



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<http://www.gesoftware.com>

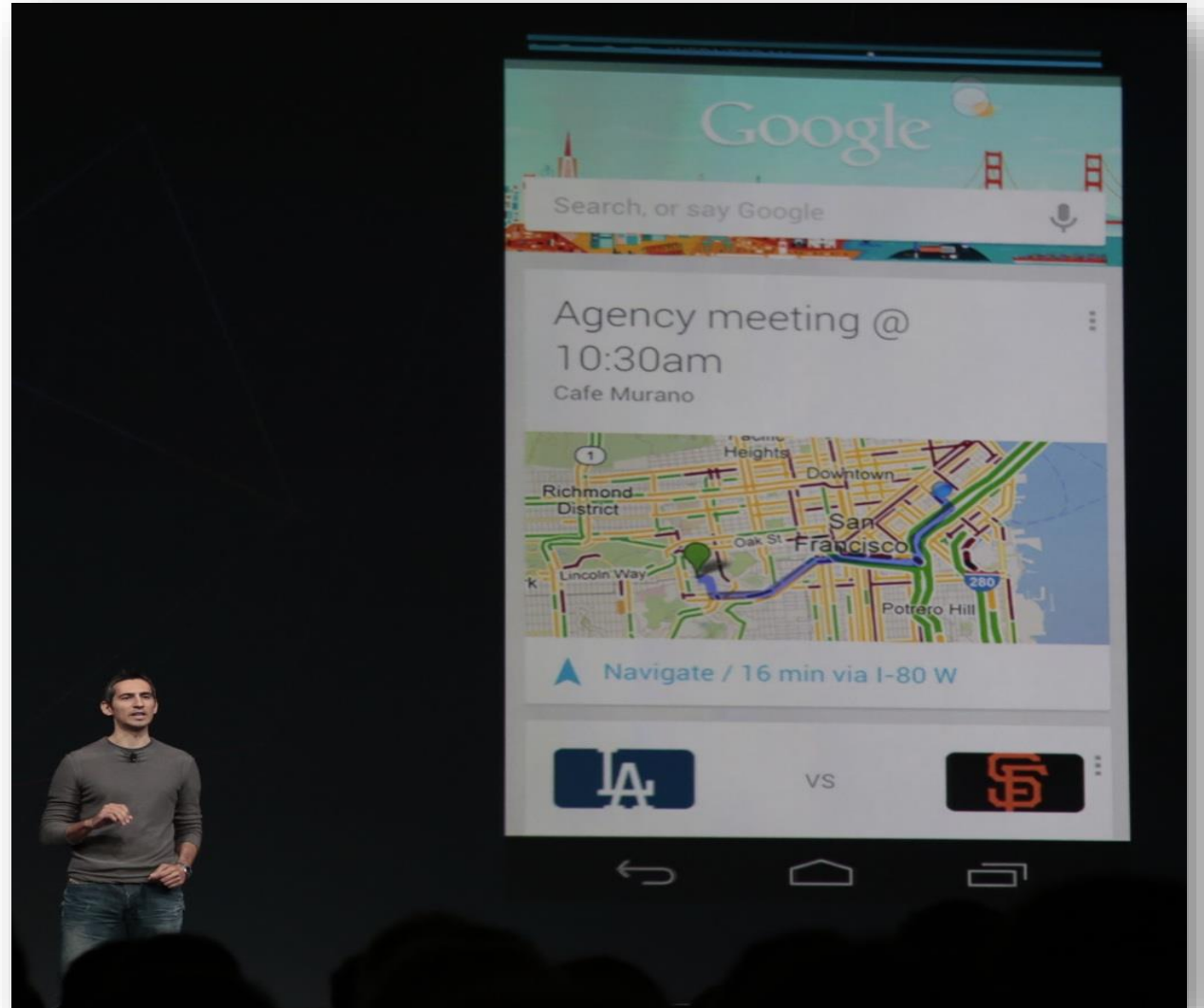


General Electric Corp., USA

PREDICTIVE INTELLIGENCE

GOOGLE
NOW

/ personalized
// contextual
/// proactive



PREDICTIVE INTELLIGENCE

AMAZON VOICE CONTROL FOR THIRD-PARTY PROVIDERS



Amazon now allows third-party developers to integrate the voice control software package "Alexa" into their own devices. This will make it possible to augment various devices and applications with features that already make Amazon's speaker "Echo" and "Fire TV" more powerful. Participating developers will be offered the "Alexa Skills Kit" so that they can teach the AI digital assistant skills for various functions. This could include the ability to control things like lights and thermostats.



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PPT export



<https://developer.amazon.com>



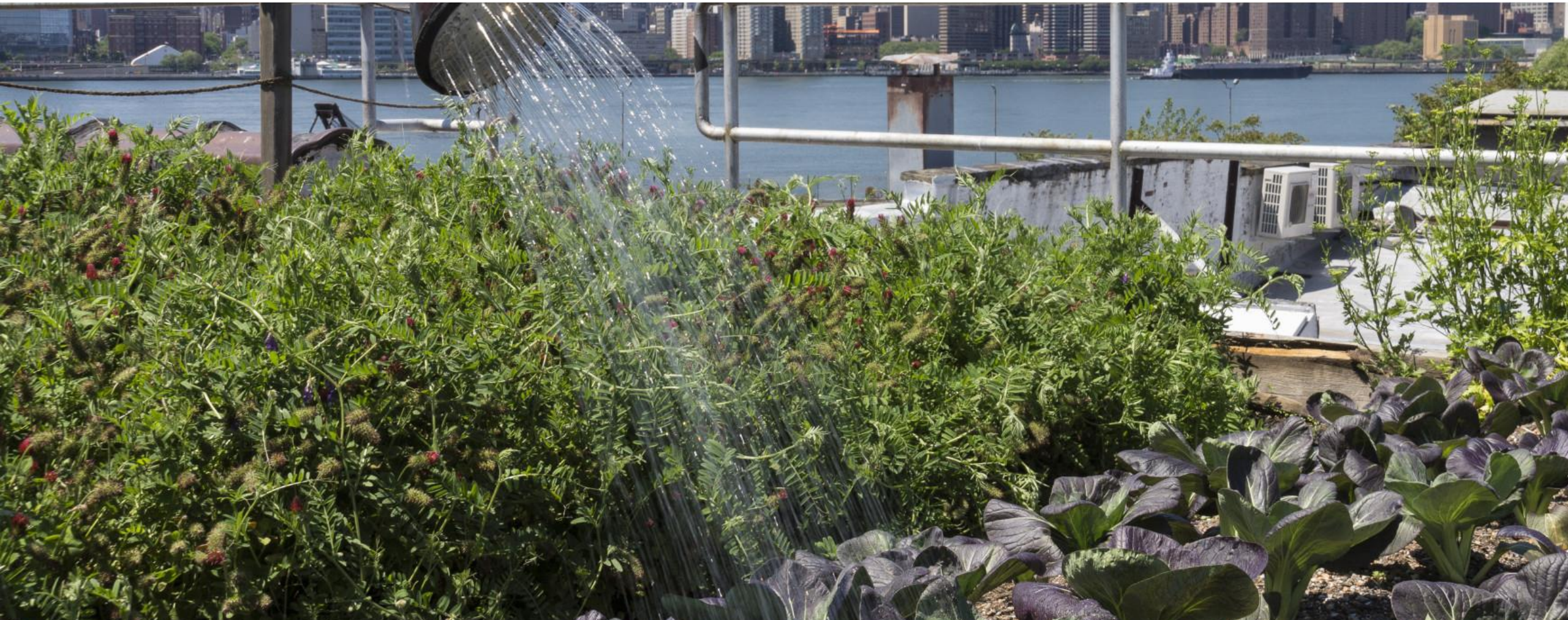
Amazon.com Inc., USA



The Consumer Product and Retail industry lose about 3.5% of their sales annually due to inefficiencies in the supply chain.

URBAN FARMING

AGRICULTURAL USE OF URBAN AREAS FOR SUPPLYING LOCAL PRODUCE



URBAN FARMING

MICRO-FARMS ON URBAN FALLOW LAND



The Californian company Cityblooms offers a modular system which allows even small unused areas in cities to be agriculturally cultivated. These micro-farms employ a fully automated and closed hydrosystem, which is far more water efficient than conventional farming. 16 cultivation units are able to produce around 5 tons of lettuce a year. A cloud-based sensor network also makes it possible to monitor and manage influencing factors for plant growth by remote control.



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video



more pictures



<http://cityblooms.com>



Cityblooms, USA

URBAN FARMING

ROBOT-RUN MICRO-FARMS



The Kyoto-based company Spread is aiming to create the first robot-run indoor farm by the middle of 2017. This fully automated planting factory on a 4,400 sqm site will produce over 30,000 heads of lettuce a day using robots. Only the seed planting will be done by people. After five years, as many as half a million lettuces will be picked every day. This will halve the staff costs and reduce the energy costs by almost one third. What's more, the robots will help to balance out the problem of not finding enough workers due to the ageing of the population.



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PPT export



video



<http://www.spread.co.jp>



Spread Co. Ltd., Japan

URBAN FARMING

THE SMALL FARM IN THE WHOLESALE STORE



Wholesaler Metro has introduced a high-tech herb garden to its branch in Berlin Friedrichshain. The pilot project has been realised together with start-up Infarm. The herb garden consists of a vertical, space-saving unit in which herbs and lettuce grow. The hydroponic cultivation makes it possible to offer fresh produce without pesticides. Because it also removes the need to transport the herbs, the instore farming concept also contributes to reducing CO2 emissions. Consequently, the concept is not only beneficial to customers, but also to the environment.



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video



<http://www.metrogroup.de>



Metro AG, Germany

CONSCIOUS LIVING

CONSUMER DECISIONS ARE MADE MORE CONSCIENTIOUSLY THAN IN THE PAST



CONSCIOUS LIVING

RECEIPT LEADS TO SUSTAINABILITY REPORT



The Italian supermarket chain Auchan offers customers the chance to view their annual sustainability report by using their smartphone to scan the barcode on the receipt. A detailed overview of all the data is then displayed on the screen and it provides information on the company's sustainability achievements. This campaign was developed by the German advertising agency Serviceplan, who also sent the receipts with the codes to journalists and the company's business partners so that they could access the sustainability report via the app.



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video



<http://www.auchan.it>



Serviceplan Gruppe für innovative
Kommunikation GmbH & Co. KG, Italy

CONSCIOUS LIVING

MCDONALD'S SHOWS ORIGINS OF MEALS



McDonald's is offering its Australian customers a mobile app called "TrackMyMacca's" that uses GPS and image recognition to provide information on the origin of the ingredients used. Based on the user's location, the app can work out which branch they are currently in and identifies the meal they order from a photo taken of it. Using this data together with the date and time, the app then lists the individual ingredients in the selected menu. With the help of augmented reality, McDonald's customers can then turn their table into a farm to find out more about the origins of the food.



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<https://www.facebook.com>



McDonald's Corp., Australia

CONSCIOUS LIVING

AUGMENTED REALITY SHOWS PRODUCT QUALITY



On behalf of the supermarket chain Système U, TBWA/Paris and DAN Paris have developed a campaign called "Operation Transparence" to boost consumer confidence in the quality of the products. For this purpose, a large screen was installed in a store and it was connected to a camera and an augmented reality system. When customers with a shopping trolley passed the installation, an animation appeared on the screen based on the contents of the trolley. If people had a packet of beef in their trolley, for example, a virtual cow would appear. The display also showed information on the product's origins and quality.



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<http://www.tbwa-paris.com>



Système U, France

CONSCIOUS LIVING

PAYING FOR FOOD BASED ON FRESHNESS



The American retail chain Target is working together with MIT Labs and Ideo on futuristic shop and sales concepts, and has already implemented some new ideas. These new methods focus heavily on transparency. In a store in Boston, for example, goods are sold that display ingredients on the front of packaging rather than in fine print on the back. Another idea allows customers to scan fruits and vegetables, learn the exact nutritional value and then pay based on freshness.



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<https://corporate.target.com>



Massachusetts Institute of Technology (MIT),
USA



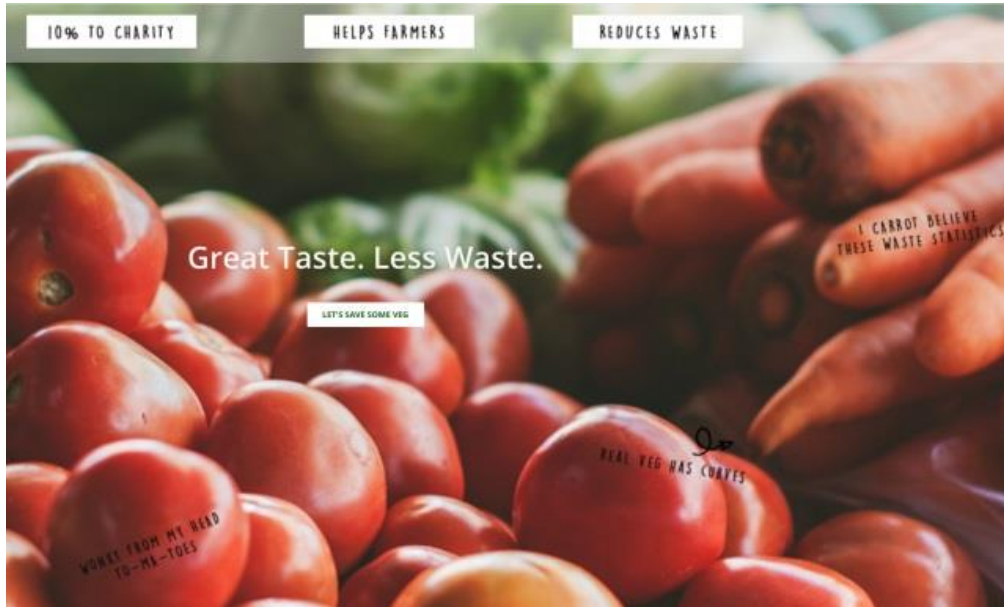
TRUST ?
YEARS TO EARN
- SECONDS TO BREAK!



**ONLY 5 % OF CONSUMERS
IN THE US & UK CURRENTLY
BELIEVE BIG BUSINESSES ARE
BEEING TRANSPARENT.**

CONSCIOUS LIVING

INTRODUCING A DELIVERY SERVICE FOR WONKY VEGETABLES



Major British grocery chain Tesco has launched the delivery service “Wonky Vegetables” for produce that does not live up to current beauty standards or conform to EU guidelines. Registered users can have a box of regional produce delivered regularly that would otherwise be thrown away because many customers do not want it, making it impossible to sell at stores. “Wonky Vegetables” also wants to buy 20 % more wonky produce than necessary and donate it to charity.



trendexplorer



share



PPT export



<http://www.wonkyvegboxes.co.uk>



Tesco Stores Ltd., UK

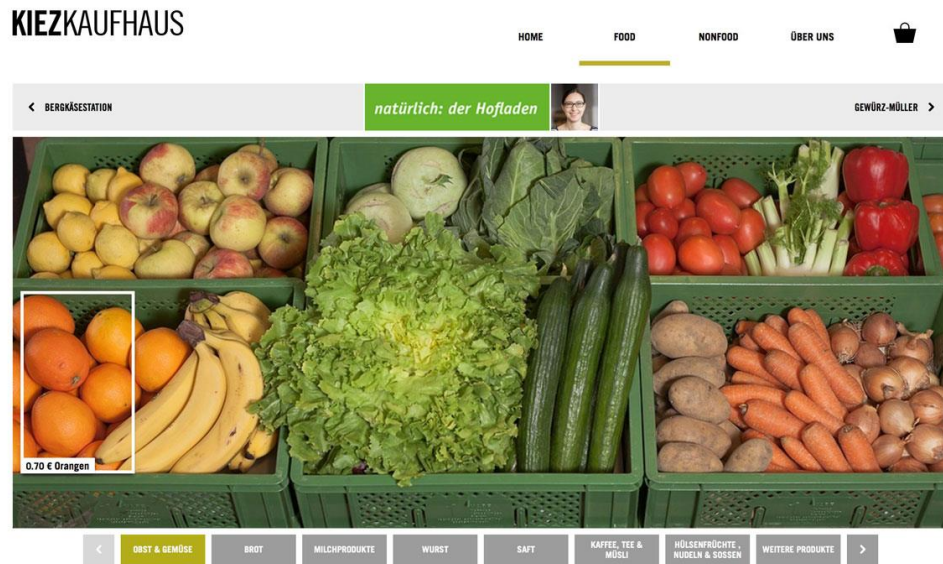
SEAMLESS COMMERCE

THE BORDERS BETWEEN BRICK AND MORTAR RETAIL, E-COMMERCE
M-COMMERCE ARE BECOMING INCREASINGLY BLURRED



SEAMLESS COMMERCE

ONLINE SHOPPING AT LOCAL SHOPS



"Kiezkaufhaus" is an initiative by local retailers in Wiesbaden, Germany, which has been started by the digital agency Scholz & Volkmer. A platform allows local shops to sell their fresh wares online. When customers order before 2 pm, the goods are delivered to their homes on the same day by a cycle courier. The platform also offers a unique online shopping experience. The image-based display of products creates the impression of actually standing in front of a shop shelf.



trendexplorer



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PPT export



more pictures



<https://www.kiezkaufhaus.de>



Kiezkaufhaus Volkmer & Gediaga GbR,
Germany

“LOCAVORE” MOVEMENT

MAJOR REASONS FOR PREFERRING LOCAL FOOD (USA):

1. FOR ITS FRESHNESS AND
2. BECAUSE IT SUPPORTS THE LOCAL ECONOMY.



**BUY FRESH
BUY LOCAL**

SEAMLESS COMMERCE

EXPERIENCING RETAIL IN VIRTUAL REALITY



The Italian start-up ShelfZone is developing a sales room simulation called "ShelfZone" using Unreal Engine 4 from the games developer Epic. The platform offers an interactive experience in photo-realistic quality. Users can freely move through the simulation and interact with it. There is an array of tools available to collect statistics on shopping behaviour. The simulation can be used with Oculus Rift and other VR headsets compatible with Unreal Engine 4. The software records users' movements, the products they look at and how they interact with them.



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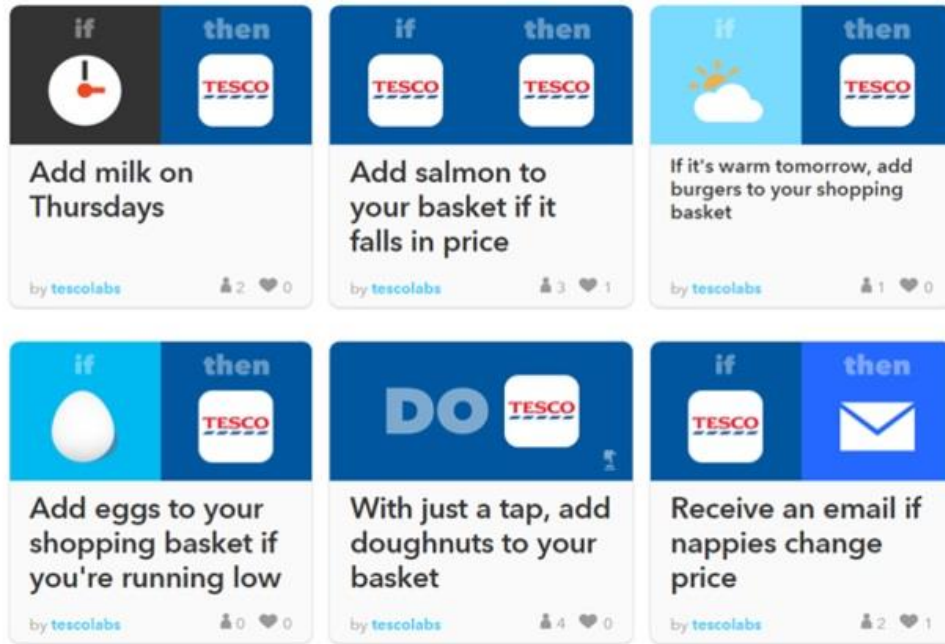
<http://www.invrision.com>



INVRSION s.r.l., Italy

SEAMLESS COMMERCE

TESCO AUTOMATES SHOPPING WITH IFTTT



The retailer Tesco now offers customers the chance to automate their shopping using simple rules. The If-This-Then-That method is a service that connects users' online tools to each other. People can use the retailer's online portal to set rules for their shopping. Various conditions are possible, such as: "If it's Thursday, I'll add some eggs to my basket" and "If the weather's good today, I'll add some burgers". This process makes shopping much easier and faster.



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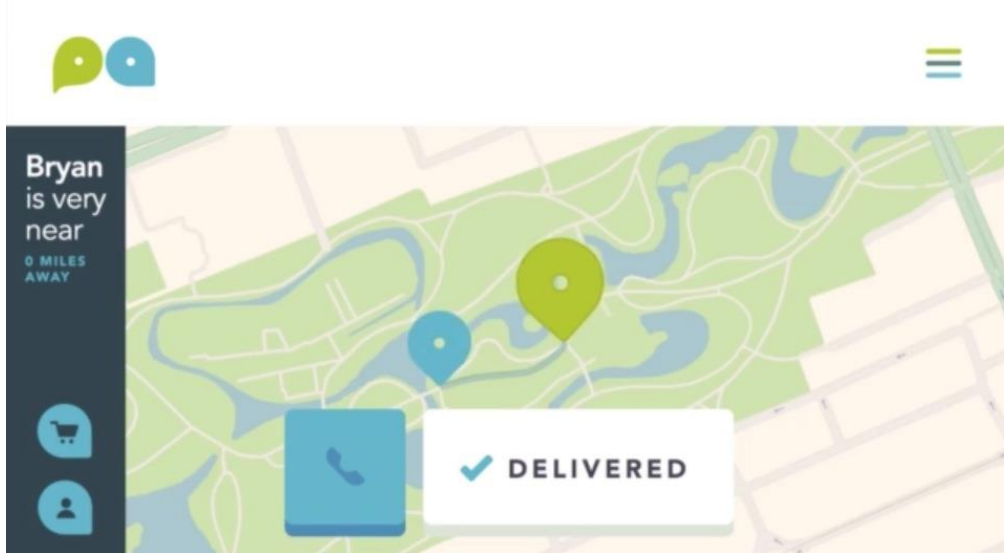
more pictures



<http://www.tescolabs.com>
Tesco Stores Ltd., UK

SEAMLESS COMMERCE

FLEXIBLE ADDRESS FOR SMARTPHONES



DDB Brussels has developed "PhoneAddress" for mobile operator BASE, which assigns a dynamic address to a smartphone's telephone number. The service allows users to, for example, order food to be delivered to their current location. The location of the "PhoneAddress" is continually updated, even allowing users to move to a different location after making an order. To enable a delivery service to recognise the customer, users add a selfie to their order.



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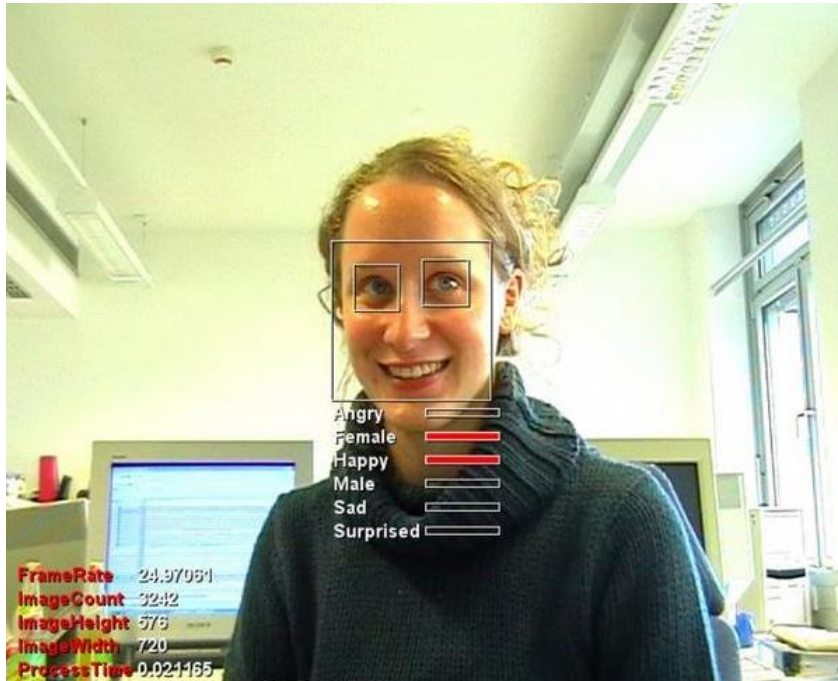
<http://ddbbrussels.prezly.com>



E-Plus Service GmbH & Co. KG, Belgium

SEAMLESS COMMERCE

AUTOMATICALLY RECOGNISING EMOTIONS



The Fraunhofer Institute for Integrated Circuits in Germany has developed software that can interpret facial expressions. This system doesn't just recognise people's gender, but also their emotional reactions and moods. This makes it possible to capture all kinds of consumer reactions, such as the way people respond to posters and other forms of advertising. The system can also be used to enhance user-friendliness, particularly in the software sector, as well as in cars. What makes this program special is the fact that it can use normal cameras and that the analysis works in real time, even with a variety of faces.



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<http://www.iis.fraunhofer.de>



Fraunhofer-Institut für Integrierte Schaltungen
(IIS), Germany



“Millennials are driving a disruption in the food industry. I think we’ll see the food industry turned on its head.”

Julie Smolyansky

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