WEARABLE TECHNOLOGY TRENDGUIDE

SCENARIOS AND OPPORTUNITIES FOR PRINTED ELECTRONICS AND SMART FABRICS

OUTLOOK REPORT 2014

TECNIO
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CETEMMSA
2014 OBSERVATORY

Member of:

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design: Marc Riera

CETEMMSA is a technological centre conducting research in the field of Printed Electronics and High Performance Textiles, and transfers its knowledge to companies wanting to innovate with differentiated products with a high added value. Its specialisation is within printed, flexible and flat electronics, as an alternative to traditional silicon electronics, which allows for the addition of new functionalities to different surfaces (textiles, plastics, paper, polymeric films,...). It is possible now to emit light, gather energy and physical or biological data or interacting with objects and people in a different and innovative way.

CETEMMSA does this thanks to its integrated chain which ranges from applied research to engineering and product industrialisation. These devices are bound to be applied to various strategic sectors such as health and wellbeing, automotive and transportation, professional sports, packaging, architecture and construction, and technical textiles.

FOREWORD

In the recent 2014 Mobile World Congress held in Barcelona, Genevieve Bell, the anthropologist and researcher, Interaction & Experience Research director at Intel, stated that answering the question 'why using wearables?' is the most important issue in defining the future of wearable technology, besides other questions such as 'which?' wearables to wear or 'where?' to wear them.

She suggested that to answer the question 'why?', it is necessary then to address which are the associated qualities that we attribute to wearables, those that go beyond their functionality.

She used examples of past wearable inventions, such as armour, glasses, and the watch. Glasses are associated with utility, intelligence or even a 'nerd' touch, the watch is associated with style or a connection with time, and armour speaks about protection, identity or power. It is not only what technology wants, but what we as humans need, our behaviours and preferences.

On the other hand, soft wearables represent a huge opportunity for the apparel industry. In the same way that the spacesuit worn by Neil Armstrong and Buzz Aldrin, finally manufactured by Playtex (International Latex Corporation), represented the victory of elegant layered softness over engineered hardness*, Printed electronics and Smart Fabrics will be the technological answers for these opportunities.

The next generation of wearables or 'mobile clothing' will then have to address the new concepts and messages of our changing society, and adapt to the needs and expectations of the user and to the new digital reality. Printed electronics technologies and the world of smart fabrics, will partly account for these disruptive wearable solutions.

This trendguide, split into five trend scenarios, presents current wearable concepts and suggested opportunities for growth, with a focus on using printed electronics and smart fabrics technologies, assessing also those insights influencing the future of wearables. This report has been possible after months of research and thanks to those actions, projects, creative minds and people around the world who are shaping the future. We want to share them in an effort to inspire and help foster a collaborative community.

We hope you'll enjoy the future.

* Spacesuit: fashioning Apollo, Nicholas De Monchaux, MIT Press, 2011.

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HOW TO READ THIS TRENDGUIDE

The purpose of this trendguide is to inform and inspire about how current sociocultural trend scenarios can impact the wearable technology market, and provide visions of future opportunities, with a focus on using Printed Electronics technologies & Smart Fabrics.

The report starts with a brief introduction on 'What is Wearable Technology?' and on 'What can Printed Electronics & Smart Fabrics deliver?'

The trendguide is then structured into five trend scenarios, each built upon sociocultural and design trend patterns. For each scenario, a series of wearables are presented as early indicators of this trend. Each scenario is further described through a series of insights that will also influence future developments, together with suggestions of what would be next for wearable technologies. The general overview of the five New directions in wearable technologies and a review of innovation factors close the document.

Legend

NEW IN WEARABLE TECHNOLOGY:
Key messages and innovation drivers in the field of flexible wearable technologies and smart fabrics which are in tune with the trend scenarios.

INSIGHTS & REFERENCES:
General references and insights that define each future consumer scenario and which will influence future wearables developments.

WHAT'S NEXT:
Indications of further opportunities in the wearable technology market, either generic or sector specific.

The term Wearable Technologies, 'fashionable electronics', or 'smart garments', is associated to those clothing and soft or hard accessories which integrate electronic components, or which are made of smart textiles. Wearables were initially developed for space travel, and are now coping with new needs in this hyper connected world. The social acceptance and widespread use of the 'smartphone', and our awareness of this intelligent device, is also fostering interest in creating intelligent devices that you can wear.

Forms and Technologies of wearables fall mainly into two categories: soft/hard supports and soft/hard electronics. Market-ready examples of hard supports range from glasses to bracelets or watches, and for soft supports from jackets to bras. Hard, traditional silicon-based electronics are the base for some of these wearables, but soft, flexible electronics are entering the market allowing for new types of supports and functions.

Current functions of wearables are based on the principle of collecting data from the user, and then presenting this data via the support itself, in real-time or later via a web interface, to show analysed feedback. They range from monitoring body vitals for health (stress levels, sleeping patterns, heart rate) or sport purposes (fitness level, performance optimisation), to being a source of light (for entertainment purposes). Other functions relate to augmented reality, such as Google Glass, which project digital information into our field of vision.

Similarly, Smart Fabrics, understood as those textiles that not only have a technological base, but also a materials-oriented base, are nowadays mainly associated with extra performance and physical comfort, but its potential functionalities can still be exploited further, and will probably be part of the textiles of our future.

Whereas wearable technology has not, to this date, been established as an institution, the 'wearables technology' community is nevertheless growing. On one hand, more fairs are being directly related to this field (Smart fabrics & Wearable technologies conference, in Europe and USA), more professionals in this area are emerging, and many more large and small companies are diving into this growing consumer market. On the other hand, crafting technologists are accelerating the introduction of wearable technology through learning platforms.

From an investors' perspective, there are three large, but not sole areas for near-future investment, as Seton-Rogers from Profounders Capital suggested, during the latest 'Wearable Futures' event in London: one, introducing computers into other places (google glass /smart watches); second, the health space, where there is most investment, and with examples such as FitBit; and third, 'life captures', capturing videos and images.

What can Printed Electronics deliver?

Printed electronics stands for all those electronic components that can be transferred, through various graphic applications such as serigraphy or digital printing, onto hard surfaces, but mostly, onto soft supports, such as textiles, paper, plastics and other supple materials. Nowadays 'wearable technology' solutions are offered by using hybrids of analogue and printed electronics onto various hard and soft supports. Other solutions integrate solely printed electronics. Both solutions are acceptable, what it is important is the end device performance, form factor, sustainability and cost.
The characteristics of printed electronics will help to gradually integrate electronic devices into soft surfaces. Clothing and accessories companies can be the new electronic giants of tomorrow.

Characteristics of Printed Electronics

- Flexible substrates
- Thin film
- Lightweight
- Stretchable
- Disposable
- Less visual impact
- Light environmental impact

- Low fabrication costs & Large areas
- Simple fabrication & Scalability
- Long switching times
- Low integration density

What can Smart Fabrics deliver?

The incorporation of functional qualities in highly common materials has become a special interest area in recent years. New fibers, yarns, fabrics, materials and structures have been developed to provide value-added functionalities for a wide range of applications. Textile materials and techniques have been established as an important platform for high-tech innovations on the medical, protection, insulation and sports and leisure sectors. From active surfaces such as those with hydrophobic qualitites, to fabrics with high strength-to-weight ratio, to 3D knits, High Performance Textiles are gradually entering our daily lifes.

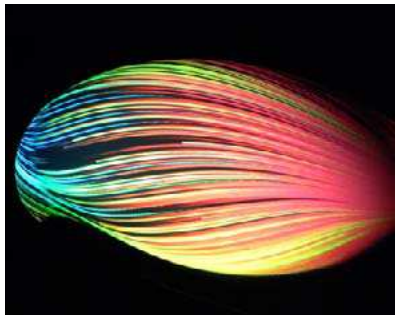
OVERVIEW OF SCENARIOS

SENSES

A certain sensibility to personal nostalgia and a pride in the past, where familiarity breeds comfort and legacy is valued. Senses are awakened through sensorial ambient, food or scentsory experiences.

CLEVERNESS

A certain utility scenario, in which everyday technological solutions should be clever and meaningful.



FLOW

A game frame that induces a state of flow and activates our seeking circuitry, as a way of adapting to changing circumstances.

RE-SET

Re-setting and entering the anthropocene era and rethinking the human condition and limitations in space.

KINDNESS

Disobedient and nomadic attitudes and adhocracy systems as an alternative towards better social awareness and less human imprint on the planet.

SCENARIO 1: SENSES

A certain sensibility to personal nostalgia and a pride in the past, where familiarity breeds comfort and legacy is valued. Senses are awakened through sensorial ambient, food or scentsory experiences. The world of light, shadows and shades opens up for new interpretations. Technological craftsmanship provides a sense of design-lifestyle luxury where hyper textures can also inform the identity of the owner. An epidermic scenario, where intimacy and privacy are also key.

Núria Grau
R&D Designer. CETEMMSA

"Design and innovation go hand in hand. The product design is progressively a central element in technological innovation and the engine for any business success. As a technological center we have had to adapt, think and question the functional interaction with the end user, not only in the prototyping phase, but in the very conceptualization of the idea."

SENSES. NEW IN WEARABLE TECHNOLOGY

The body as a support for pleasure, and to enjoy in all its senses. Distant relationships acquire a tactile expression through seductive techno-intimate wear. The body as a precious resource to be protected both as a physical entity and as personal identity. The importance of gesture and freedom of movement. Wearables that poetically indicate the passing of time. Conductive skins and body switches. Garments generating atmospheric effects for protection or for mood modulation. New fashionable volumes, traditional+digital fabric hybrids and hyper textures.

SCENTSORY DESIGN

S RING
by Alexander Reeder.

A ring that releases scents accented with pheromones and facilitates communication.

POSTURAROMA NECKLACE
by Akarsh Sanghi, Shinichiro Ito and Laura Mul.

Necklace that monitors women's posture and attitude via scent.

RELATIONSHIPS & PLEASURE

JADE
by Leonie Tenthofuan Noorden.

Flirting garment that based on the actions of the woman it changes appearance to attract attention from the man.

TACTILU
by Pangenerator and Cheil.

Bracelet capable of transmitting touch between two individuals even when they are apart.

Watch video.

FUNDAWEAR
by Wearable Experiments.

Garments with mini sensors to sensorially connect living apart couples.

INTIMACY

INTIMACY 2.0
by Studio Roosegaarde.

Garment made out of smart e-foils which become transparent or opaque in response to the heartbeat of the wearer.

Watch video.

PRIVACY

CAMOFLASH
by Adam Harvey.

Anti-paparazzi clutch with LEDs producing a stream of light of over 12,000 lumens

BODY LANGUAGE CONDUCTIVE SKINS

BLINKLIFIER
by Tricia Flanagran and Katia Vega.

Led based headdress synchronised with eye blinking through metalized eyelashes and conductive make up.

ELECTRIC PAINT
by *Bare conductive.*

Conductive electrical ink safe for the human skin.

SECOND SKIN ELECTRONICS

NOKIA'S ELECTRONIC SKIN

Stretchable circuit board that responds to touch and pressure.

TALK TO THE HAND

'TALK TO THE HAND' GLOVES
by Sean Miles and O2.

Gloves that double as a phone, made with upcycled mobile components.

GESTURE ACTIVATION

GLOVES VIDEO CONTROLLER PROJECT
by Tim Bartlett.

Sensor-laden gloves that can be used to control software through hand gestures.

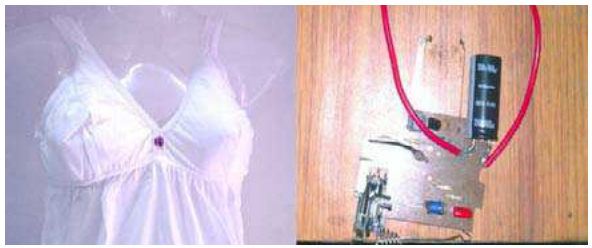
BODY PROTECTION, PERSONAL SPACE

SMOKE DRESS
by Anouk Wipprecht.

Interactive 3D printed dress capable of creating body atmosphere when someone steps into the personal space of the wearer.

NO-CONTACT JACKET
by Yolita Nugent and Adam Whiton.

Self defense jacket that when activated sends 80,000 volts preventing from unauthorised contact.



SOCIETY HARNESSING ('SHE')
by Manisha Mohan, Niladri Basu Bal and Rimpi Tripathi.

Anti-rape lingerie fitted with a pressure sensor connected to an electric circuit delivering a 3800Kv electric shock.

HÖVDING
by Anna Haupt and Terese Alstin.

Airbag for cyclists in inflatable nylon structure.

TOTAL SCREEN
by CETEMMSA

Electromagnetic wave protection fabric.

TIMERS

DURR
by Skrekstore.

A shivering unisex bracelet that investigates our perception of 5 minutes.

DIRECTIONS

GPShoes 2.0
by Innovalley & CETEMMSA

Shoes that will guide the wearer to any destination.

NAVIGATE JACKET
by Wearable Experiments.

Jacket that helps the wearer find a destination by using LED integrated lighting and haptic feedback.

NEW VOLUMES, HYBRIDS, HYPERTEXTURES

RCA FASHION COLLECTION
by Xiao Li.

Fashion collection with spacer fabric and moulded silicone in pastel colours.

GELATINOUS COLLECTION
by Drew Williams.

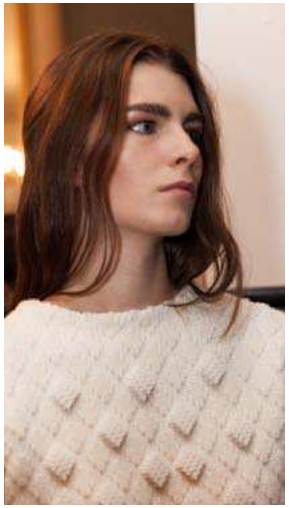
Silicon coated knitwear collection.

WARPED TAPESTRY
by Chloë McCormick.

Warp structures using laser-sintered nylon.

AW 2014 COLLECTION
by Pringle of Scotland.

Hypertextured garments by intregrating lasered-sintered nylon pieces.



TABLEWARE AS SENSORIAL STIMULI
by Jinhyun Jeon Studio.

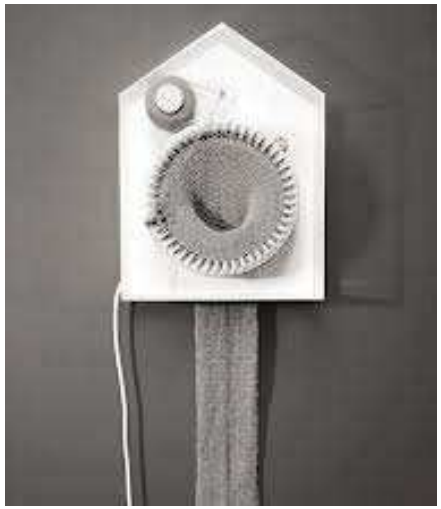
VALUE OF TIME

JUST ABOUT NOW
by Maarten Baas with Laikingland.

Sand timer that indicates the passing of time with the sound of a gong.

TIMESPHERE
by Erwin Hoogerwoord.

Mechanical device that resembles the earth and indicates daytime or nighttime.



KNITTING CLOCK
by Siren Elise Wilhelmsen.

Wall clock that knits a 2-metre scarf per year, showing the physical representation of time.

VALUE OF THE PAST

CHRISTMAS 2013, AUSTRALIA.

New technologies impacting religious traditions

WIELICZKA SALT MINE, KRAKOW.

Recovered mine salt for recreational use, valuing the historical weight of the space.

MUSEUM OF INNOCENCE, ISTAMBUL.

Cabinet of curiosities space related to a book novel set up in the past.

THE MEANING OF LEGACY

GENERATIONS MOBILE GAME
by One life remains

Questioning the inevitability of death, the meaning of legacy and the nature of progress.

TECHNO+PAST

MY NEW FLAME
by Moritz Waldemeyer for Ingo Maurer.

LED candle, merging electronics and the luminescent atmosphere from the ancient past.

KING EDISON
by Mineheart.

Pendant lamp that combines LED lighting with iconic lighting designs.

OLD & NEW, DIGITAL & ANALOGUE

SADLY BY YOUR SIDE APP
by Fabrica.

Editorial and app project where digital music is linked to physical colour relationships.

IDENTITY THROUGH USE

TELLING
by Jiang Shanshan.

Project about garments that narrate through the fabric surface deterioration, the daily habitual behaviour of the wearer.

DRESS YOUR ELECTRONICS

HOMEDIA TV
by Robert Bronwasser.

Upholstered television set.

TECHNOCRAFTSMANSHIP, CRAFTS LUXURY

ORÉE BOARD
by Orée design.

Portable wireless keyboard made from a single piece of laser-cut premium solid wood.

MONEY-DESIGN-LIFESTYLE

HYUNDAI "IT" CARD AND "MONEY" EXHIBITION
by Hyundai Card Design Lab.

Reinvention of the credit card as an object of desirability.

INTIMACY, PRIVACY

VEASYBLE
by Gaia.

Objects ready to use to create intimacy at any time, in any place.

SENSORIAL STIMULI – FOOD

HEINZ BEANZ FLAVOUR EXPERIENCE
by Bompas & Parr.

Handmade bowl and a musical spoon to experience a new Heinz beans flavour.

TABLEWARE AS SENSORIAL STIMULI
by Jinhyun Jeon Studio.

Cutlery design developed on the principle of synesthesia.

SENSORIAL AMBIENT STIMULI – AMBIENT, WHEATHER, COLOUR

MOMENTUM
by United Visual Artist.

Immersive installation that combines light, sound and movement.

RAIN ROOM
by Random International.

A falling water space through which it is possible to walk without being drenched.

ADAPTIVE RELAXATION SPACE
by Adam Henriksson and Frederico Trevia for Philips Design.

Exploring adaptive spaces, soundscapes and paced lighting to reduce work-related stress.

LIVING EXPERIENCES
by La Boira de Ponent.

Fog as a resource for enveloping experiences.

TACTILE SKIN EFFECTS

LATEX TRENCH AND ASYMMETRICAL DRESS,
by Tableaux Vivants for VPL.

Latex garments.

GELATINOUS COLLECTION
by Drew Williams.

Silicon-coated Knitwear collection.

SCIENCE IS FICTION COLLECTION
by Ying Gao.

Garments made of medical-grade latex materials.

FINELY GRAFTED JEWELRY
by Raluca Grada.

Skin textured silicone jewelry.

BAREFOOT EXPERIENCE

EL-X
by Vibram Fivefingers.

Flexible footwear that acts as a second skin.

ENHANCING THE SENSE OF TOUCH

REVEL
by Disney Research.

Wearable tactile technology that modifies the user's tactile perception of the physical world.

SCENTOGRAPHY

SCENT-OGRAPHY
by Amy Radcliffe.

A speculative scenario for domestic odour capture and synthesis.

Generic

Intimacy
Soft cocoons or garment volumes that can be deployed to ensure intimacy or privacy in public spaces.

Relationships
An accessory that could sense a possible matching partner or that could analyse our vital signs during a first date.

Anonymous
Wearables that protect personal identity.

Help in awkward situations
Physical integrity solutions in situations where you are not fully in shape, that can, for instance, help you guide your way home.

Specific

WELLNESS: Sensorial mood wearables
That help get the wearer into a relaxation mood, through coloured light, scent, or sound.

SPORTS: Sensorized 'barefoot'
Barefoot electronic skins that can monitor wearers performance.

PROTECTION: Skin armours
Body protection can be achieved with high performance fabrics that are skin-thin but that at the same time can perfectly resist high impacts. 3D knits made out of high performance fabrics can gain new markets thanks to their lightness, resistance, and adaptability to the body.

SELF-DEFENSE: Wearables reactive to personal attack
Electronic discharges, or blurring smoke effects to protect from a potential personal attack.

CONSUMER, HANDS-FREE NEEDS: Gesture activation. Soft accessories like gloves, that help control other intelligent devices through body movement. Electronic makeup acting as an on-board interface.

CONSUMER, GIFT: Recorded heritage
Heritage accessories, those that pass from one generation to another, or emotional valuable presents could benefit from electronic technology. In the same way as engraving jewelery with dates, imagine a ring or a scarf that holds voice records of past generations or of your loved one.

TOURISM, SPORTS: Touristic and hiking helpers. Wearables that can haptically guide you through foreign cities or natural landscapes without having to manipulate any device.

TRAVEL ACCESSORIES INDUSTRY:
Suitcases that can communicate where they are, or that can inform us of the passing of time.

APPAREL INDUSTRY: Hybrids of traditional and innovative textile materials
The world of fashion is incorporating hybrid solutions to enhance the texture or the volume of the garment pieces.

APPAREL INDUSTRY: Intimate pleasure
Intimate apparel manufacturers , including stockings, could profit from the potentiality of interactive devices for pleasure and indulgence, or for nurturing distant intimate relationships.

APPAREL INDUSTRY: Gloves are accessories that can potentially and easily be accepted to become intelligent. We could think of all variations, from leather or fingerless gloves, to driving or medical gloves. They can easily integrate hybrid or printed electronic solutions.

LATEX INDUSTRY: Make latex a fashionable and interactive substrate Latex surfaces as those used for medical purposes could expand to new markets, by turning into a second electronic skin.

SCENARIO 1: CLEVERNESS

A certain utility scenario, in which everyday technological solutions should be clever and meaningful. Processes are optimised and reliability is important. Products which assist us in our daily activities and those that allow for a mental detox are favoured. Design must be rationally intuitive and the message must be simple and transparent. Honest approaches and longing for simpler times. Obsolescence is questioned and the environment and sustainability issues are addressed. Scarcity sharpens wittiness.

Santi Pérez
Technology Consultant .
CETEMMSA

"We have to be respectful to each and every one of the ecosystems that may be affected by technology. All technological devices used must be justified, carefully integrated and fulfill their added value. Neither the user nor the manufacturing process, and neither of course the environment, should pay any price."

CLEVERNESS. NEW IN WEARABLE TECHNOLOGY

Solutions for daily life and for a healthy lifestyle in a scarcity scenario. Wearable solutions that address issues of self-control and optimisation of activity. Clothing that cleans the air, lasts in time, or with nearly zero maintenance, in a perfectly studied patternmaking process for perfect comfort, perfect fit and long lasting properties. Wearables that are light on the environment and light to carry. Sustainable fabrics and processes with an honest and chic approach. Technoknits as examples of optimal applications that exploit all the virtues of the manufacturing process and the high performance of the fiber.

DAILY SAVVY

WEARABLE SOLAR
by Pauline van Dongen, Christiaan Holland and Gert Jan Jongerden.

Garments with flexible solar panel flaps that can charge a mobile phone on-the-go.

ADAPTIVE SURVIVAL CLOTHING
by Jacqueline Nanne.

Auto-ventilation wool knit garments with a series of holes that open and close thanks to temperature-sensitive memory Nitinol wire.

SHINE
by Misfit.

Physical activity monitor to track daily activity goals.

PRINTED LIGHT
by Mundo Original & CETEMMSA

Light-emitting apparel and helmet.

WARM-X NECKSHIRT
by WarmX.

Warm heated underwear for cold days or muscle pain relief.

LIFE ASSISTANTS

MODWELLS
by Artefact.

Sensors that collect and assess ergonomic posture data.

SMART VEST IN TEMIS
by CETEMMSA.

Temperature, breath and heart rate monitoring system.

TOTAL COMFORT

CYBERAGENT AND PARKA OASIS MENSWEAR COLLECTION
by Utope.

Smart clothing merging sartorial artisanry, design, smart fabrics and a need for increasing mobility and wearing comfort.

ZERO CARE

SMART JACKET
by Marella.

Practical & functional jacket made with smart fabrics, that you wash home, or pack without paying attention on how you fold it.

RUSHMORE SHIRTS
by Rushmore.

Non-iron shirts made of anti-wrinkle treated fabrics.

PERFECT FIT

ESSENTIALIST COLLECTION
by Natalia Allen.

Minimalist seamlessly knitted little black dress.

S DRESS
by Lana Biondic.

Breathable, UV protected, and machine washable garment for ultimate comfort and slimming effects.

ATMOSPHERIC CLOTHING

CATALYTIC CLOTHING
by Helen Storey and Tony Ryan.

Textiles surfaces that purify the air.

THE CLIMATE DRESS
by Diffus.

Dress that informs you about the CO2 concentration in the nearby surroundings.

Watch video.

CLEVER & CHIC ECOLOGY

FASHION COLLECTION
by Ecoalf.

Clothes and accessories made up from recycled materials turn into fibers.

FASHION COLLECTION
by Katty Hoetck with AirDye.

Sustainable design thanks to waterless dyeing AirDye technology.

THE 10 YEAR HOODIE
by Flint and Tinder.

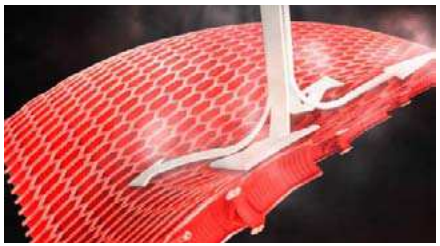
Sweatshirt designed to last.

SELF-CONTROL

IBAG
by Finder.

Shopping-urge controlling bag.

TECHNO LACE, TECHNO KNITTING



FLYKNIT TRAINERS
by Nike.

Ultralight polyester knit providing a lighter and more comfortable ride.

BLACK TECHNO LACE PULLOVER
by Edun.

Cutout knitted sweater made of 100% wool.

DEFLEXION
by Dow Corning.

Silicon spacer fabric for high-performance protective apparel and equipment.

DIDOMESTIC APPARTMENT
by Elii Architects.

EVERYDAY CLEVER SOLUTIONS

FOOD STORAGE
by Friday Project.

Food storage shelving system based on the 'food guide pyramid'. Visual help for a healthy living.

PLUG LAMP
by Form Us With Love.

Lamp with a bonus electrical socket facilitating the charging of devices.

POWERSNAP™ KIT
by Duracell.

Backup Power and Wireless Charging For iPhone 5.

DETOX

THE SILENCE ROOM
by Alex Cochrane for Seldfridges London.

Space conceived to encourage a mental detox.

THE SABBATICAL CABINET
by Mathew Little and Elliot Gorham.

Lockable cabinet in which to put techno gadgets for a set period of time to take a break.

OFFTIME APP
by Offtime

App to customise the connectivity for a better focus.

PURIFICATION

AIRBONE COLLECTION
by Stephanie Van Zwam.

Conceptual collection investigating how air interacts with garments.

SCANNING THE ENVIRONMENT

LAPKA PEM
by Lapka Inc.

Personal environmental monitor.

OPTIMISATION- RIGHT SOLUTION

CORTEX 3D-PRINTED CAST
by Jake Evill.

3D-printed casts for fractured bones healing.

MORPH WHEELS
by Duncan Fitzsimmons.

Foldable wheelchair wheel.

LIQUIGLIDE
by LiquiGlide Inc.

Modified surface which optimizes the pouring of liquids from their packaging.

SUPRANORMAL DESIGN

BRAUN BN10
by Braun.

Digital multifunction watch.

CAST IRON KITCHENWARE
by Jasper Morrison.

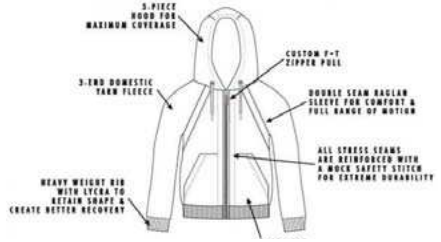
Cast iron table and cookware collection.

WORKWEAR INSPIRATION

THE CAPSULE COLLECTION
by Tom Dixon for Adidas.

Tom Dixon collection focused on extreme utility and multi-functionality

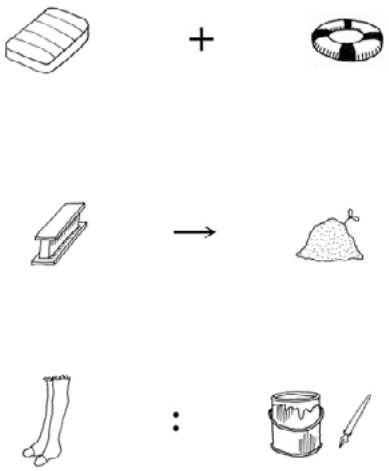
LONG LASTING PRODUCTS



THE 10-YEAR HOODIE
by Flint and Tinder.

Sweatshirt conceived to last.

INSPIRED BY SCARCITY



INSPIRED BY SCARCITY
by Hanae Shimuzu.

Research book about material shortages during the World War and how it forged people's creativity.

DESIGN MATHEMATICS

KAKI
by Kenyon Yeh.

Wall stand side table.

TRANSPORT
ECO LIGHTNESS

AEROSCRAFT AIRSHIP
by Aeros Corporation.

Eco lightness aviation.

RESOURCES, CONSUMPTION AND SOCIETY

SHOES BOOKS AND BIKE
by Thomas Walde for Postfossil.

Designer collective concentrated on long-life and responsible products.

LIFE ASSISTANTS

AUGUST SMART LOCK
by Yves Behar.

Smart lock and mobile app that authorizes access to the property without keys.

EASY INFORMATION - TRANSPARENCY

BETA GOV.UK WEBSITE.

Simple, clear and fast government services and information on the net.

THE FOREIGN JAPANESE KITCHEN
by Moé Takemura.

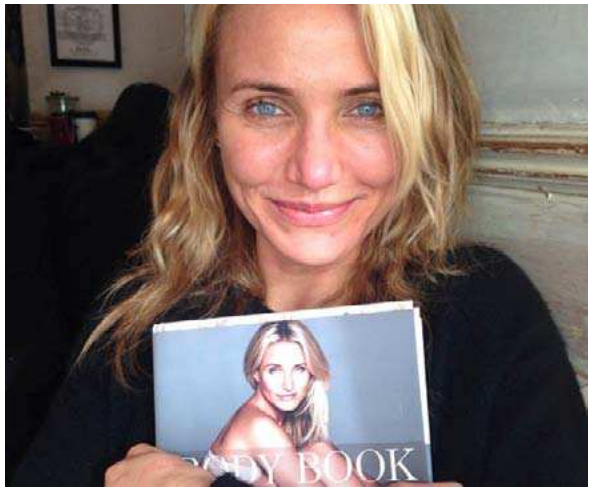
Visual recipe book on the optimization of the available resources to cook Japanese food in Sweden.

LONGING FOR SIMPLER TIMES

IMAGINE FINDING ME, 1982 AND 2005, PARIS.
by Chino Otsuka.

Digital compositions narrating simultaneously the past and the present of the photographer in different stages of life.

NO FILTER



CAMERON DIAZ'S INSTAGRAM ACCOUNT.

Instagram selfie showing her natural look, also portraying her new book on a healthier you on inside and out.

CLEVERNESS. WHAT'S NEXT

Generic

Simplicity and reliability
Wearable devices that deliver only one function, which are easy to use, reliable, accurate and have a seamless, discrete design.

Employee productivity, employee security
A growing market for employers looking to optimize employee productivity or minimize employee health risks.

Organization, control, and responsive coaching
Wearables that can help organize our daily activities or get control over and modulate noxious behaviours.

Detox
Wearables that encourage taking time off.

Specific

HEALTH, WELLNESS: Environmental health
Due to an awareness of pollution issues, wearables that protect from smog effects or even clean the air.

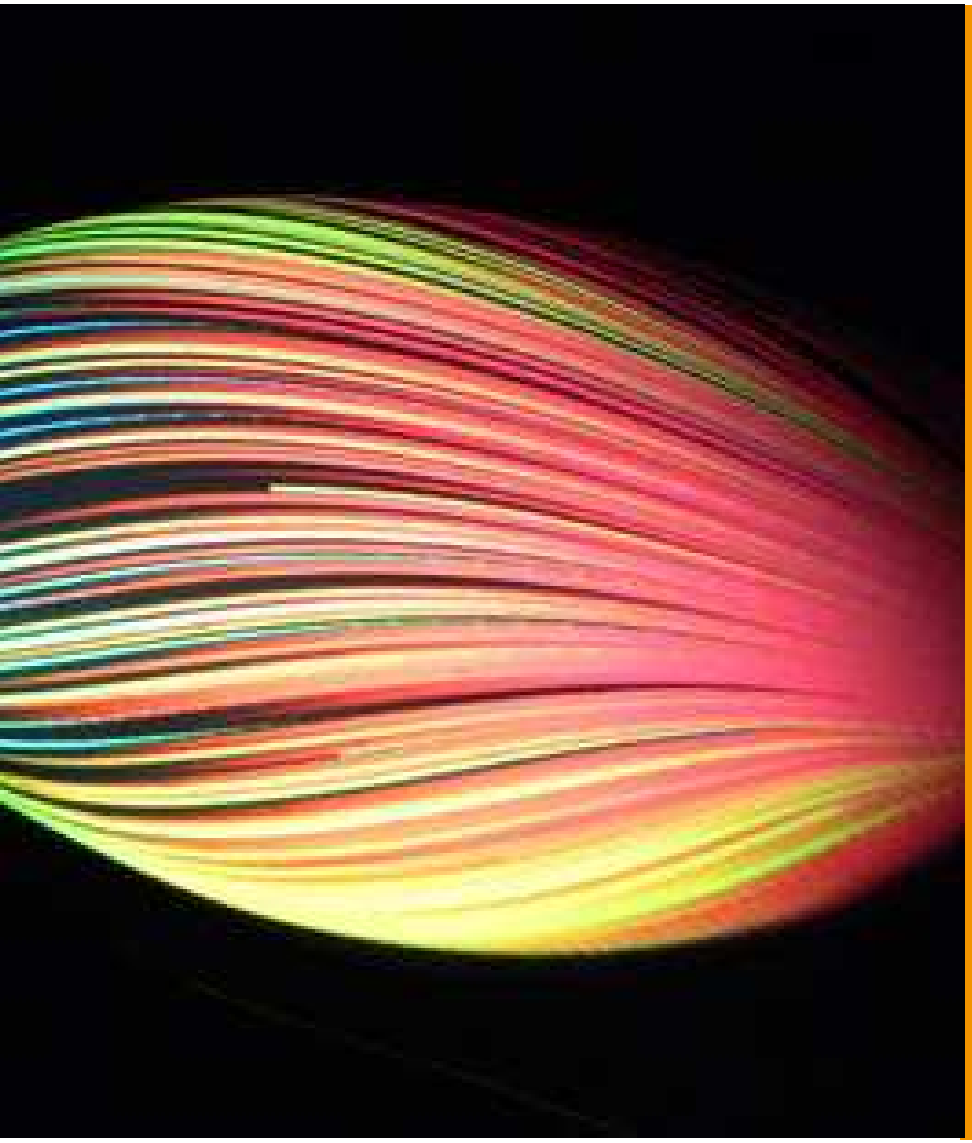
ADVENTURE, SPORTS: Transformable wearables
Multifunctional wearables that can, for instance transform from a coat to a shelter.

SPORTS: Tailored sportswear
Sportswear development that offers total comfort though tailoring, patternmaking and the use of technical fabrics.

APPAREL INDUSTRY: Total comfort, minimal work wear & multifunctional solutions
Technical fabrics and smart tailoring entering our essential daily casual wear and offering practical solutions, with a minimalist and/or work wear inspiration. Multifunctional garments for a variety of uses throughout the day.

APPAREL INDUSTRY: Sustainable clothing
Long lasting products and sustainable textile manufacturing processes.

SCENARIO 3: FLOW



A game frame that induces a state of flow and activates our seeking circuitry, as a way of adapting to changing circumstances. Intelligent playing that encourages creativity and flexible thinking. Activity is related to health, through motivation programs. Automatisation as a way to free from connectivity slavery. Brand messages are distorted, surrealism is an expressive communicative tool, and the limits between the digital and physical worlds are blurred. Playful interactivity of products and free-flow fabrication.

Núria Guilera
Printed Circuits & Components Manager. CETEMMSA.

"Wearable Electronics are essentially a combination of electronic technology and textiles. Through these developments individuals can be connected with their environment, other people or computers for 24h a day and seven days a week, being just around the corner or thousand miles away. The connectivity of the individual is an irreversible path and we should take advantage of this great opportunity."

FLOW. NEW IN WEARABLE TECHNOLOGY

Wearables with light and sound effects that arise emotions of wonder, amazement, or great joy. Activity is learned, the player measured, and the feedback is delivered in a timely manner and through rewarding programs. Automatisation allows for enjoyment of the present. Garments and accessories that act as social communicators. Sports clothing allows for freedom of movement and for adaptation to surrounding environment.

ENTERTAINMENT - WOW EFFECT

GUINESS MADE OF MORE INSTALLATION
by Elena Corchero and Jason Bruges Studio.

'Breathing' inflatable with vintage and reflective lace and embroideries.

BR2
by Brodas Bros.

Illuminated robots show.

INDIGENOUS BRAZILIAN HATS
by Moritz Waldemeyer.

Collection of LED-embedded carnival costumes for the London 2012 Olympic closing ceremony.

AUDI COSTUMES
by Moritz Waldemeyer.

Futuristic garments using technical sports fabrics and LED electronics.

AUTOMATISATION

PING
by Jennifer Darmour.

Garment that connects to your Facebook account wirelessly and from anywhere.

RAMBLER
by Ricardo O'Nascimento and Tiago Martins.

Microblogging sneakers that post your steps onto a Twitter account.

FASHION

CUTECIRCUIT AT NYFW2014

Wearable technology catwalk.

SMART HOODIE
by CETEMMSA.

Integrated earphones and light.

JOY

CADBURY JOY JACKETS
by Hirsch&Mann.

Interactive jackets that respond and change as the user eats chocolate.

TAILLY
by Shota Ishiwatari.

The tail that wags when you get excited.

ANIMAL EARS
by Emoki.

Ears that you move and control with your emotions.

ACTIVITY REWARDING, ENERGY HARVESTING FROM MOVEMENT

DANCEPANTS
by Inesa Malafej and Arunas Sukarevicius.

Pants that convert kinetic energy from running or dancing into electricity for your MP3.

SOCIAL SCREENS

T-SHIRT OS
by CuteCircuit.

T-shirt with flexible, washable LED screen that can be programmed via a smartphone app to display any image or animation you want.

Watch video.

AUTOMATED MOBILITY

ESAME RING
by Edward Tiong and Olivia Seow.

3D RFID ring that lets users pay their subway fare with a finger's flick.

BEYOND LIMITATIONS

SPORTY SUPAHEROE JACKET 01
by Utope.

Sporty jacket with LEDs and sensors for safe stylish runners/ cyclists.

H-BOMB
by Ripcurl.

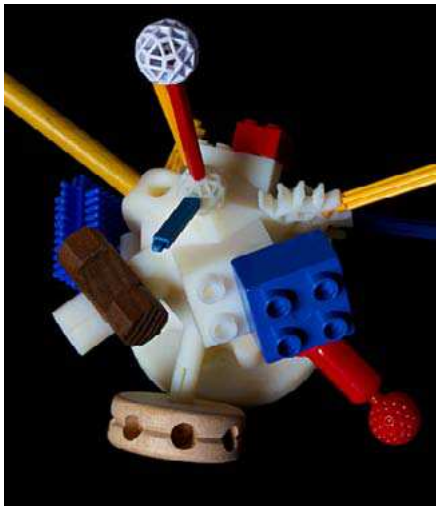
Power-heated wetsuit.

EXTREMIS MAGLIA
by Comfortec Sport & CETEMMSA.

Heatable cycling suit.

NOISY JELLY
by Raphaël Pluvinage & Marianne Cauvard at L'Ensci Les ateliers

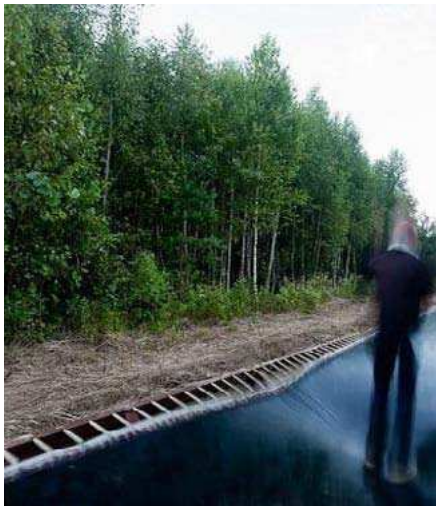
UNIVERSAL PLAY



FREE UNIVERSAL CONSTRUCTION KIT
by F.A.T. Lab and Sy-Lab.

Universal construction kit to function with any other playful construction system.

GAME FRAME- PLAYFUL SUPPORTS



FAST TRACK
by Salto Architects.

51m of trampoline walkway to go to work jumping.

ADOOBA CHAIR
by Jaewook Kim.

Chair that encourages playful interactions between parents and kids.

INTELLIGENT PLAYING

SIFTEO CUBES
by Sifteo Labs.

Interactive game system built by independents cubes.

GAMIFIED ELECTRONICS

POSTCARD PLAYER
by Uniform.

Player that reproduces music by introducing conductive ink printed postcards.

GAMIFIED HEALTH ACTIVITIES

GAMES FOR HEALTH CONFERENCE.

Conference for exploring the intersection of videogames+health.

ZOMBIES, RUN! APP
by Six To Start.

A motivation app that turns running into an adventure.

SUPERBETTER APP

App that lets you achieve your health goals through gamification.

ACTIVITY TRACKING

LARK PRO
by Lark LifeTechnologies Inc.

Personal sleep coach.

FitBit Flex
by FitBit

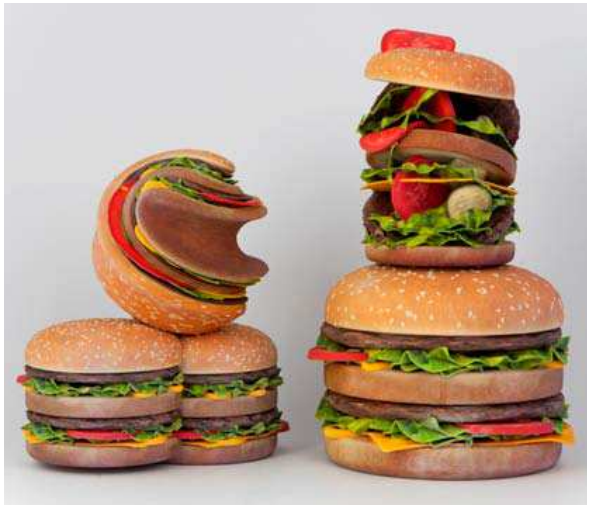
Fitness and health activity tracker monitor that can share activity and sleep data with mobile apps.

AUTOMATISATION

AUTOGRAPHER
by OMG.

A hands-free and fully automatic camera with built in sensors and GPS, to capture natural, unexpected and completely authentic photographs.

ABSURDITY THROUGH TECHNOLOGY



3D PRINTED FOOD
by Janne Kyttanen.

3D Printed pasta, breakfast cereals and burgers.

EXPRESSIVE

WHAAM!
by Reinier Bosch.

Coffee table made by street letters.

I FEEL ORANGE
by Arabeschi di Latte.

Dinner party to reinterpret popular sicilian snack food.

SURREALISM

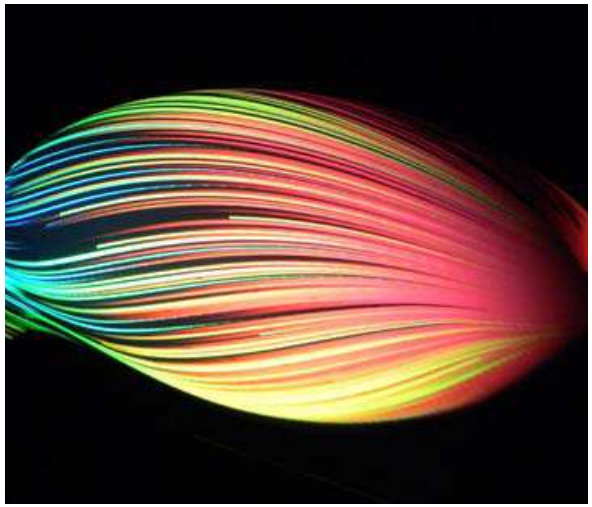
THE ROOM
by Joey Ho Design.

Impossible perspective room with the use of architectural components onto the ceiling and on the walls.

SUSPENDED
by Keith Sharp.

Surrealistic realities by photographing the overlap between natural and man-made worlds.

FLOW



FUTURISTIC PRIMITIVISM/ INSTINCTIVE OVERRIDE
by Ross Lovegrove.

Futuristic concept car born of intuition and with video projections that give the illusion of a 3-dimensional floating image.

DIGITAL – PHYSICAL

GOOD VIBRATIONS
by Ferruccio Laviani.

Cabinet carved from oak by a CNC machine with a digital photo to final aesthetics.

MAP
by Aram Bartholl.

Public installation that questions the relationship of the digital to everyday public life.

CITY TRACKING
by Stamen.

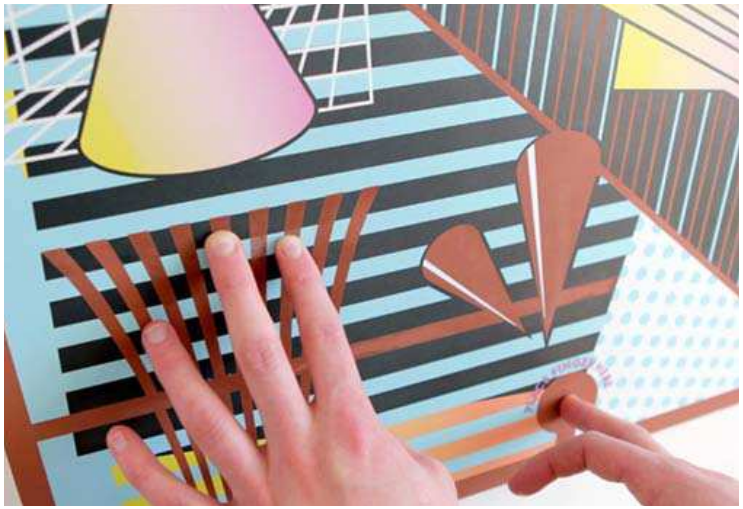
Watercolour cartographical data.


CityTracking

On March 22, maps.stamen.com - a series of tools to empower people to create their own beautiful maps - went live! Part of a grant from the Knight News Challenge, the site offers three core map styles: Watercolor, Toner, and Terrain. Later in the year, we modified both Toner and Terrain to include layers with streets only, labels only, and background only, and added the Burning Map style. And since there is no rest for the wicked, we recently added the Map2image feature, which allows anyone to create a 2000x2000 px image of these maps. People are using the maps all over the place!

Since launch, we've seen these map tiles used to create so many maps - even shoes with maps on them! The project has also sparked a collaboration with Jen Bekman for 20x200, made its way into the It's Nice That annual, and was featured in the July 2012 issue of Icon

INTERACTIVE GRAPHICS



SOUND POSTER 1.0
by Trapped in Suburbia with David van Gemeren.

Poster that uses the Arduino software connected with conductive copper ink to produce music.

L-INK
by studio Chevalvert and Jean Sébastien Lagrange.

Printed electronics poster that transforms into a lamp when folded over.

CLOTHING WITH OPTICAL EFFECTS

ENGINEERED ILLUSIONS
by Morgan Bajardi.

Optical effects in textiles to enhance the female form.

OBJECTS AS CHARACTERS

CAR EYELASHES

Street shot, Paris.

FREE 3D, FLOW

3DOODLER
by WobbleWorks LLC.

3D printing pen to build objects by drawing on the air.

3D INSTALLATION @ LONDON DESIGN FESTIVAL 2013

Generic

Automatisation
Life-capturing wearables that automatically record and send the captured image or sound information to the cloud memory. Freeing from technology and creating an automated life biopic.

Smiley Wearables
Those that allow us to express and share feelings of Joy.

Illusional Wearables
Combine graphics with electronic outputs to make a positive impression.

Absurdity
Wearables that respond to a desire of disconnection from established norms.

Specific

HEALTH, SPORTS: Gamified health, gamified activity
Wearable products that incorporate gaming to engage with the health or fitness consumer, that help achieve our goals by staying curious, optimistic and motivated even in the face of the toughest challenges.

SPORTS, FITNESS: Energy harvesting through activity
Wearables that transform our movement or activity while exercising into a source of energy.

ENTERTAINMENT: Social and entertaining communicators
Interactive electronic wearable electronics allowing for interaction with others through sound or light, to provoke emotions of amazement or for entertaining purposes.

SPORTS: freedom of movement & more possible practising grounds
Improve wearables so as to facilitate, through both the use of electronics and smart fabrics, better freedom of movement and adaptation to initially impracticable surrounding environments (urban or nature).

SCENARIO 4: RE-SET

Re-setting and entering the anthropocene era and rethinking the human condition and limitations in space. Human, animal and object physical and emotional expressions are interchangeable. A holistic approach to health where we observe the human, not the machine. Anatomy influences fashion and the human body enters the realm of dismorfism and genetic manipulation. Biology impacts in the form of new available materials and manufacturing processes. Data is translated into beautiful intuitive languages. A new realism-fantasy where we can experience parallel lives through others or enhance our emotional experience through digital supports, with special attention to extreme emotions such as danger and fear.

Mireya Saludes
Innovation Project Manager
CETEMMSA

"The social and economic impact of using wearable technologies will be much more important than the technology itself. What matters is to understand how people appropriate these concepts and how they influence their individual and social behavior and their self-image, and how seamlessly the device merges into their lifestyles."

Wearables are inspired by animal forms or terms. Garments breathe and become alive and are able to imitate when confronted.
Body as generator of beautiful sounds or energy. Coloured light or scent as mediators for balancing a holistic health state. Besides established vital signs, brain waves become the new vitals to be monitored. Garments or accessories help enhance the fictional experience.

ZOOMORPHISM

SPIDER DRESS
by Anouk Wipprecht and Daniel Schatz-mayr.

Animated robotic limbs with spider look inspiration that protects the wearer.

SENSORIZED INK
by Lauren Bowker.

Ink incorporated into a feathered garment, which changes colour depending on different climatic conditions.

HUI
by Youngsil Lee.

Interactive dress inspired in the hedgehog that detects the presence of other people and turns the sharp spikes to face the approacher.

ENVIRONMENT-REACTION

(NO)WHERE (NOW)HERE
by Ying Gao.

Dress in super organza, photoluminescent fibers and other electronical components that illuminates when stared by an spectator.

Watch video.

LUME COLLECTION
by Jorge&esther.

Electronic clothing that can respond to external features such as sound an can be controlled through an app.

AFTER EARTH LIFE SUIT
by Amy Westcott.

Chromatic alerts of dangerous surroundings.

AIR
by Theunseen.

Reactive ink that changes colour upon contact with the air around us.

BODY AND SOUND

Mi.Mu GLOVES
by Imogen Heap.

Gloves that translate gestures into data that controls sound.

BREATHING, ALIVE GARMENTS

SOCIAL SKIN, 'SKIN +BONE
by Seçil Ugur and Laura Duncker.

Soft moving necklace that chokes you when your stress levels go up.

ANIMA
by Yesenia Thibault Picazo.

Animated couture garment.

SEVERAL INTERACTIVE PROJECTS
by Ying Gao.

Robotized clothing that reacts to the surroundings by moving as if they were alive skins.

FICTION MEDIATORS

SENSORY FICTION
by M.I.T students.

Project about using networked sensors and actuators in clothing accessories for an immersive reading experience.

Watch video.

REALITY MEDIATORS

REALITY MEDIATORS
by Ling Tan.

Wearable devices that cause unpleasant sensations when the wearer becomes inactive.

SUPERSTIMULI

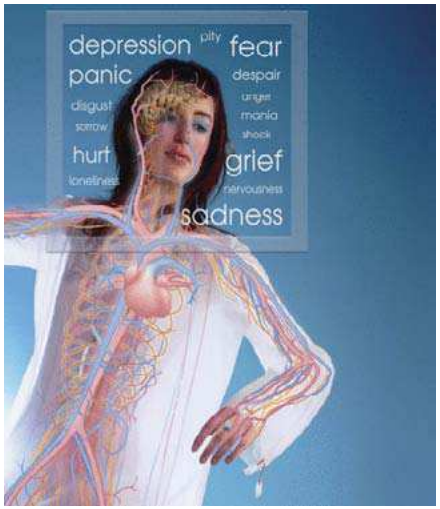
SUPER STIMULI
by Fauzi Al-Kaylani, Sander Bogers, Nicholas Nelson and Willem Willemsen.

Sensorial fabric that when touched, triggers senses one would not expect or dislike.

HOLISTIC HEALTH

GER MOOD SWEATER
by Sensoree.

Sweater that interprets self-emotions and displays mood levels with an illuminated colour changing collar.



SCENTSORY
by Jenny Tillotson.

Perfumery and complementary therapies united to create health and well-being garments.

BRAIN WAVE SCANNING

MUSE
by InteraXon.

Headband with electroencephalographic sensors that monitor the brain activity.

ANTI-NIS
by Fabrica Researchers.

Accessory that maintains private our neuroimaging data.

ENERGY HARVESTING FROM THE BODY

CAPTAIN ELECTRIC
by XS Labs.

Garments to convert kinetic energy from the human body into electric energy.

KINETIC STRUCTURES

KINETIC LED HA
by Moritz Waldemeyer for Philip Treacy.

Positioned propeller headpiece with blades finished with LED lights.

WEARABLES FOR PETS

PETCARE SYSTEM
by Otto.

Tracking device attached to the pet's collar to analize all their needs.

DR. WEISKIND'S DAY
by Jae Yeop Kim

GENETICS & EMOTIONS

ACCIDENTAL INCEST
by Jae Yeop Kim.

Project on people exchanging a Geneshare Genetic Pendant™ that encourages genetic testing and sharing of biometric data.

INTUITIVE DATA

MEASURING LESS TO FEEL MORE
by Mickael Boulay.

'Home care device' that expresses the blood sugar levels in a more intuitive and sensitive language such as colour.

HOLISTIC HEALTH

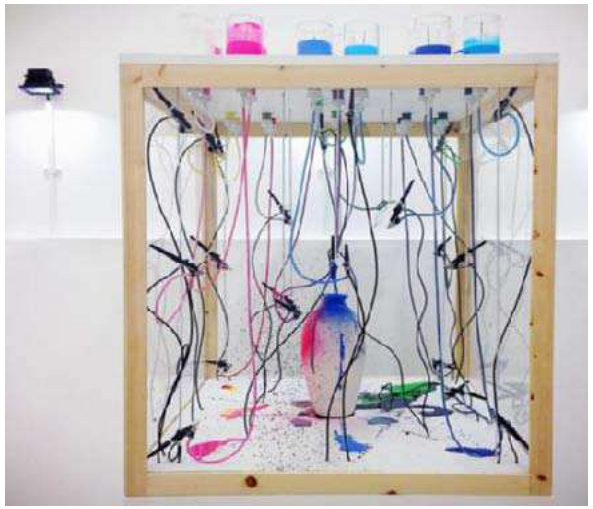
DAILY POETRY
by Ingrid Hulskamp.

Tactile objects to counterbalance digital lifestyles with time for contemplation in an intuitive way.

FIG WELLNES APP
by Fig.

Personal and holistic wellness guide.

THE BEAUTY OF DATA



CHROMATOGRAPHY-THE SPRAYER
by Ilina Patsiou.

An interactive system developed to translate each letter of the alphabet to a specific colour and a spatial co-ordinate.

FRAGMENTED MEMORY
by Philip Stearns.

Textile patterns taken from short-circuited cameras and manipulated digital techniques.

ANTHROPOMORPHISM & SUPERSTITIOUS MACHINES

SAFETY GEAR FOR SMALL ANIMALS
by Bill Burns.

Safety items for endangered animals.

BAMBI
by Caroline Olsson.

Inspired by the anatomy of the knee , table with folding legs to be used at different levels.

SUPERSTITIOUS ROBOT
by Shing Tat Chung.

An autonomous uncanny trading algorithm operating with human superstitious character.

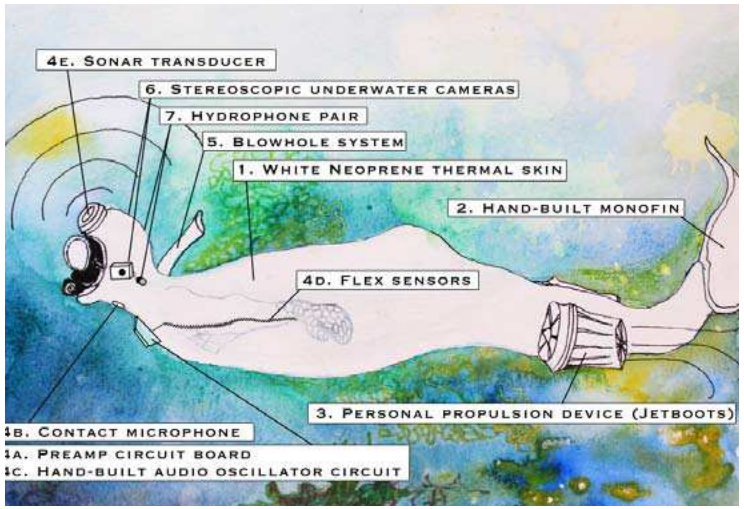
ARCHITECTURE FOR DOGS
by Kenya Hara.

13 design projects addressing the close partnership between humans and dogs, reexamining both human beings and the natural environment.

ZOOMORPHISM

HUNT FOR HIGH-TECH
by Bart Hess.

Armoured skin collection for a new human archetype incorporating animalistic and fetishistic instincts.



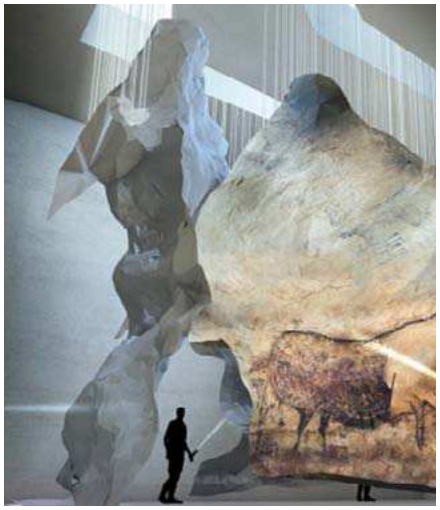
THE BIONIC WHALE SUIT
by Becoming Beluga.

Suit with aquatic sound inventions and sculptural elements for interspecies interaction with whales.

ANTHROPOCENE ERA

SKULL
by Steven Quinn.

Paper collage on panel.



LASCAUX IV CAVE MUSEUM
by Snohetta, Duncan Lewis and Casson Mann.

Architecture proposal for Lascaux Museum.

CRAFT IN THE ANTHROPOCENE
by Yesenia Thibault Picazo.

3 objects addressing the future use of new raw materials resulting from man-made influenced geological processes.

SPACE ALLURE

RICHARD BRANSON, VIRGIN GALACTIC.

Launch of Virgin Galactic space travel.

INTERNATIONAL SPACE APPS CHALLENGE
by NASA incubator.

A hackathon program where multidisciplinary global teams design innovative solutions for global challenges in the categories of Asteroids, Robotics, Human Space Flight, Technology in Space and Earth Watch.

DISMORFISM, NEW ORTHOPAEDIA

DISMORFOBINA
by Natalia Pereira.

Photo series that explores the deformation of our identity through the human body.

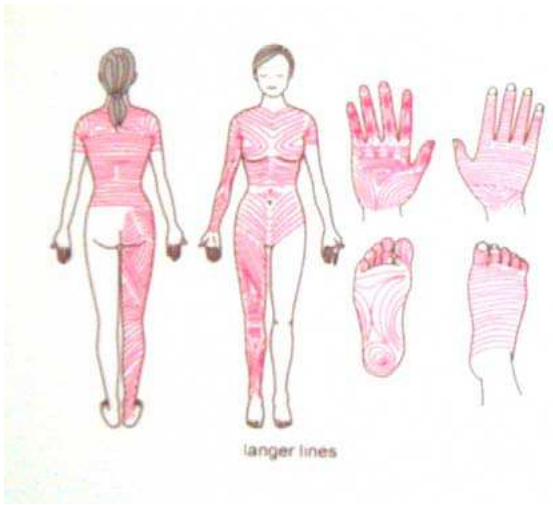
SPINE CORSET
by Beatrice Dodi.

3D printed tech-couture piece.

ILPOX
by Marina Hoermanseder.

Fashion collection based on discomforting inspirations such as orthopaedic devices and serious skin conditions.

ANATOMY & FASHION, BODY MAPPING



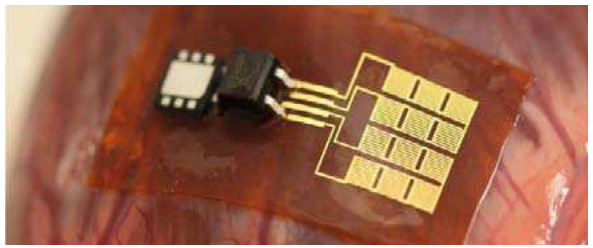
SKINSHIP UK.

Collaborative research project based on the intersection between Pattern Making Techniques and Reconstructive Plastic Surgery.

STREET SHOT FROM THE SARTORIALIST.

SS 2014 COLLECTION
by Christopher Kane.

ENERGY HARVESTING IMPLANTS



HEART CHIP
by Illinois University.

Chip that converts the beating of the heart into energy.

ROBOTIC SKINS

VOLANTIS
by Studio XO and TechHaus.

Flying dress of fibreglass and with six battery-powered rotors.

THERMO-BIMETALS
by Doris Kim Sung.

Thermo-bimetals building surfaces that act like a human to shade a room from sun and ventilate.

BIO FUTURES – ANIMAL MATERIAL

AMOEBA TRAINER
by Shamees Aden.

A surface-adapting trainer made in new materials derived from Protocells.

SKINSUCKA
by Studio XO.

Imaginary scenario in which microbial robots will clean our bodies.

BIO-LIGHT
by Philips Design Futures.

Light installation designed using bioluminescent bacteria.

BIOCOUTURE
by Suzanne Lee.

Fashion made by growing textiles using microbes and addressing a new bio-manufacturing future.

BIOPHILIA- ORGAN CRAFTING
by Veronica Ranner.

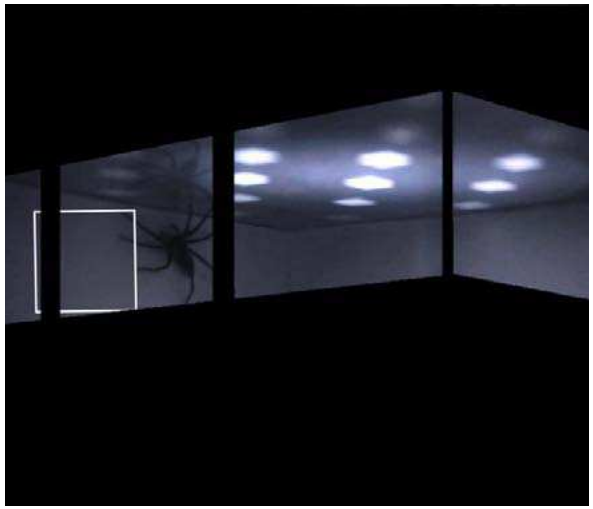
Silkworms genetically re-programmed to weave heart-shaped silk scaffolds.

CREATING EXPERIENCES IN CONTENT

THE SILENT HISTORY
by Eli Horowitz, Kevin Moffett and Matthew Derby.

Novel written and designed specially for iOS with hundreds of location-based stories, only to be read when device's GPS matches the coordinates.

THRILLED AND SCARED



IN ORBIT INSTALLATION
by Tomas Saracceno.

An gigantic installation that challenges the visitors to overcome their fear of heights.

ARANEOLA
by Friedich van Schoor.

Spider projection arising scaring and frightening emotions.

DO LIKE ME, LIVE THROUGH OTHERS

PELICANS LEARN TO FLY
by Go Pro.

GoPro camera attached to a Pelican to share how this animal learns to fly for the first time.

FOLLOW ME TO
by Murad Osmann.

Instagram project of travel pictures with girlfriend holding hands.

Generic

Body Electronic Mapping
A consequence of the emerging of anatomy & fashion disciplines, sensorized body mapping clothing will bring the body inside out. The garment as a multisensorial network of sensor nodules.

Creating Experiences in Content. Living through others
This relates to the idea of having wearable products that help us feel through others, for example feel what a novel or film character is experiencing, in a sort of augmented emotional reality.

Human-Like Wearables (mirroring)
Wearables that respond and imitate our emotions and display them through movement, light, colour,... Wearables that breathe, can express emotions of self-awareness, fear,...

Bio Cellular Materials and Printed Electronics
Begin research at the merging of bio cellular materials with printed electronics.

Intuitive and Beautiful Data
In monitoring wearables, going from numbers to emotionally expressed data.

Specific

HEALTH: Holistic Health Monitoring
Monitoring those variables that affect not only the physical body, but also mind, spirit, and emotions and actuating to balance them. It is a matter of measuring the human, not the machine, the qualified self over the quantified self. Brain activity monitoring becomes also important. Data can be displayed in an intuitive way through the same garment through colour, light or sound.

HEALTH: Implants
Wearable electronic implants that can monitor vitals or harvest energy from the body.

SPORTS: Zoomorphism
Next generation sportswear will further explore mimetisation, not only through the imitation of animal skins through technical fabrics, but also of other communication functions, thanks to printed electronics.

SPACE AND APPAREL INDUSTRY: Fashioning Spacesuits
With growing number of space travel companies, there will be an increasing demand for spacesuits that will require the same functionality in a more fashionable and casual style.

PET INDUSTRY: Wearables for Pets
Soft wearables for pets, focused on protection or activity monitoring.

SCENARIO 5: KINDNESS

Disobedient and nomadic attitudes and adhocracy systems as an alternative towards better social awareness and less human imprint on the planet. Friendship and sharing between people and alike communities. Technology must provide a sense of beauty, poetry or spirituality and provide a personal and adaptive engagement with the user. It is the time for inventors and garage design, makers defining the new scale industry. Democratisation of technology is achieved through learning platforms, social crowdfunding and slow tech visions. Influence and ideas from developing countries as genuine technological solutions.

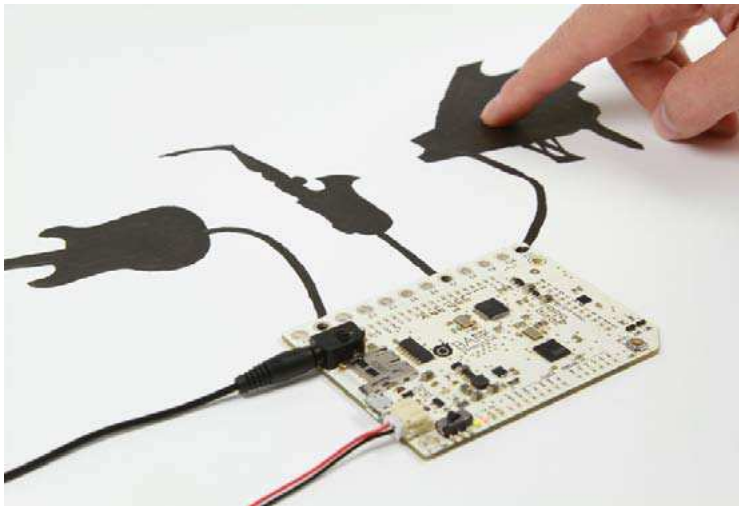
Sergi Gomis
Smart Objects Engineer
CETEMMSA

"Designing and adding the required functionality to the wearable garments, and making it happen through existing manufacturing supply chains, requires an intensive teamwork among technicians and designers to align differences and create common fields of knowledge and skills. To successfully complete any industrial escalation process of a wearable technology system, we must pay equal attention to the adaptation of the machinery itself as well as to the cultural change that the supplier must undertake."

KINDNESS. NEW IN WEARABLE TECHNOLOGY

Individuals learn and provide new crafted technological solutions. Wearables that allow the transmission of feelings of love and affection. Clothing and accessories that prepare for survival conditions and climate change. Helping those communities that work or live under social instability or unhealthy environments.

DIY, CRAFTED TECHNOLOGY



TOUCH BOARD
by Bare Conductive.

Conductive Ink and Touchboard for DIY projects.

LOVED ONES

COMMUNICATION QUILT
by Joshua Barnes.

Patchworked quilt with augmented reality technology to open up a line of communication between the child and their loved ones.

T JACKET
by T.Ware.

Controlled hugging jacket that utilizes deep pressure for calm and comfort in children.

INTERACTIVE HOODIE
by CETEMMSA

Pressure-inducted musical hoodie for autistic kids, favouring their recovery.

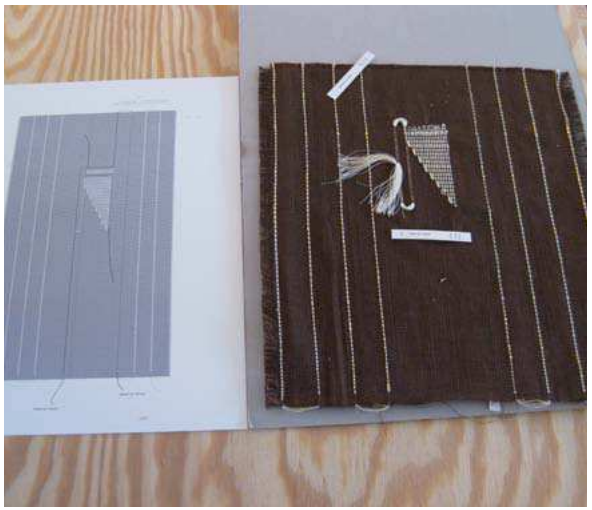
SLOW, LOW AND SOCIAL TECH

SMARTSHOES
by Anthony Mutua, Kenya.

Sneakers with integrated chip crystals that convert pressure into electricity to charge mobile phones.

ADELITA
by Wei Chieh Shih and Bandui Lab.

Project on teaching a community the manufacturing of crafted electronic textiles for a toy local company in Mexico.



TEXTILE FABRIC, ASPART OF MAKER FAIRE AFRICA.

Conductive thread weaved through traditional techniques.

WORKERS PROTECTION IN HEALTH RISK CONDITIONS

INTERCOMUNICADOR CLOTHING
by Solunova.

Miner workers dust protection and communicating mask.

SURVIVAL

AEGIS PARKA
by Niewe Heren.

Multifunctional protective jacket that warns about surrounding pollution, combining technical textiles and electronics.

COCA COLA SOCIAL MEDIA GUARD

DISOBEDIENTS, FARM FACTORY, COHOUSING, ADHOCRACY

IKEA DISOBEDIENTS
by Andres Jaque Architects.

Installation and performance on politically activated non-familiar domesticities.

COMMUNITY IN A CUBE
by Fat.

Highly sustainable, landmark housing project exceeding Eco Homes 'Excellence'.

ADHOCRACY EXHIBITION
curated by Thomas Ermacora.

A statement exhibition about the new industrial revolution which is about the working prototype and design as a network-based process.

NEW NATURALISM

MERGING
by Masha Reva.

Collection inspired on the interaction of human and nature and the layering of information.

CHERRYSTONE SHIRT
by Susanne Philippson.

Shirt with natural beans that relieve stomach pain.

FRIENDSHIP & SHARING

SWING TABLE
by Duffy London.

Fun and childlike experiences for social gatherings.

FRIENDSHIP CUP
by Arabeschi di Latte.

A customised traditional wooden bowl with little beaks to share a coffee encouraging social rituals and relationships between friends and strangers.

SOCIAL AWARENESS

SOCIAL MEDIA GUARD
by Memac Ogilvy for Coca-cola.

Marketing campaign about taking the "so-cial" out of media and putting it back into your life.

THE SOCIAL NETWORK, "...changed the relationship status. ...commented on that."
by Nicholas Ritter.

Humourous photogra-phs about facebook specific vocabulary and staging of banal things in social net-works.

COMMUNITY

MAKE & GET
by Fiona Harkins.

On-line platform to share crafting projects and resources.

LIKE KNOWS LIKE
by Marije Kuiper and Bas Berhout.

A project about mee-ting our online loves offline through a series of documentaries of admired people and artists.

ENGAGING TECHNOLOGY

IMPATIcENTS
by Lucie Barouillet.

DIY insulin pump.

ImPatients
by Lucie Barouillet.

Insulin injector with built-in tattooing.

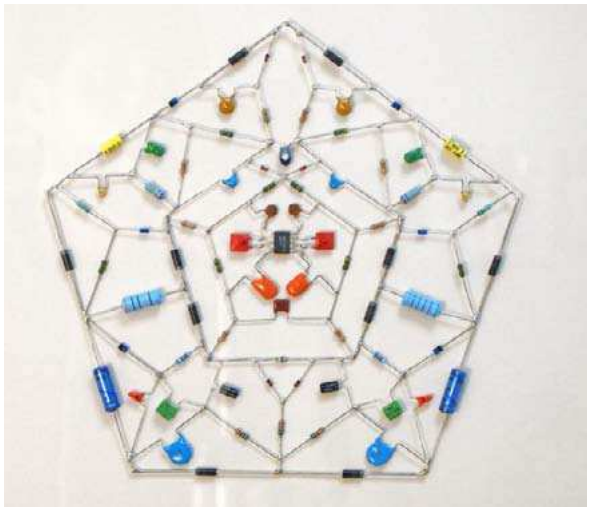
BEAUTIFUL, POETIC, SPIRITUAL AND NATURE TECHNOLOGY

SWING LAMP
by Bcxsy.

LED-illuminated swing to create ambience through lighting and movement.

WILLOW INSTALLATION
by Sharon Marston.

Fibre optics combined with natural willow canes.



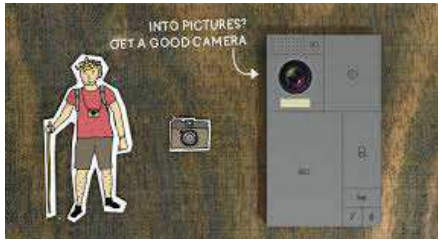
TECHNOLOGICAL MANDALA
by Leonardo Ulian.

Mandala made of electronic components.

ADAPTABILITY, MODULARITY

CRITTER
by Elia Mangia.

Mobile and configurable kitchen.



PHONEBLOCK
by Dave Hakkens.

Modular smartphone concept, made of detachable blocks .

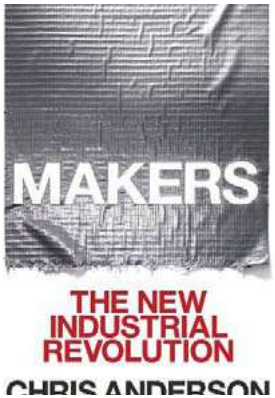
MAKERS, INVENTORS, NEW GEOLOGISTS

WELL PROVEN CHAIR
by James Shaw and Marjan van Aubel.

Chair made out of timber waste and bio-resin.

WHARFWARE COLLECTION
by Oscar Medley-Whitfield and Harry Trimble.

Tableware made of clay dug retreived form he muddy banks of the river Thames.



'MAKERS
The new industrial revolution'
book by Chris Anderson.

GRAVITY STOOL
by Jolan Van Der Wiel.

Unpredictable organic shapes made thanks to magnetic fields and the power of gravity.

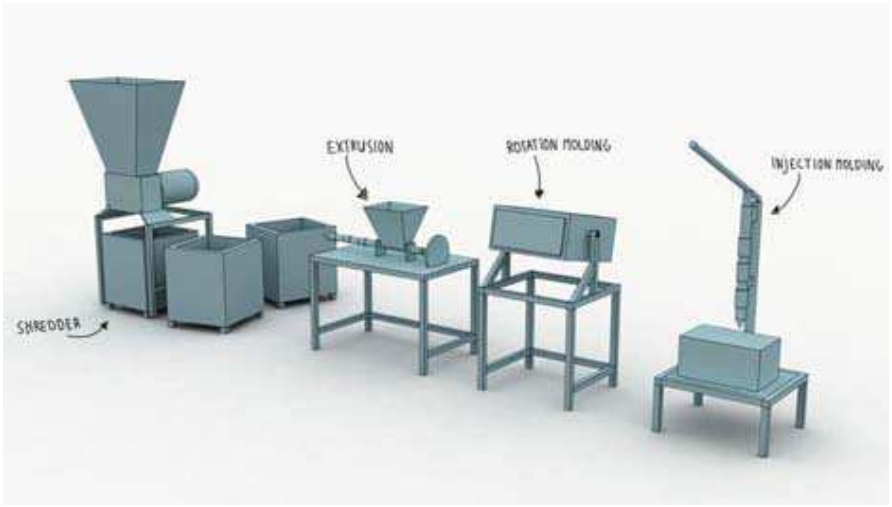
SMALL SCALE INDUSTRY

ROCKING KNIT
by University of art and design Lausanne Damien Ludi and Colin Peillex.

Knitting chair that works with the movement of the sitter.

PRECIOUS PLASTIC
by Dave Hakkens.

Machines for recycling plastic to make new products locally.



SLOW TECH

CLOCK SENSE
by Frugal digital.

A simple and visual clock build up from available resources to measure vital statistics.

TRANSPARENT TOOLS COLLECTION
by Jesse Howard.

A family of household appliances that users can produce away from mass manufacturing.

SOCIAL ECOLOGY

WO-BO
by John Habraken for Heineken.

Bottle with a second life to be used for building.

CROWDFUNDED INVENTORS

PEBBLE
by Eric Migicovsky.

Smartwatch funded through Kickstarter platform.

LEARNING, DO IT TOGETHER.

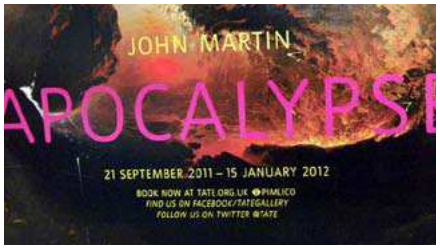
MAKEATHON WORKSHOPS
by Technology will save us.

Workshop to build your own electronic gadgets.

COLLAPSE, HUMAN IMPRINT ON THE PLANET

THE MOST BEAUTIFUL ABANDONED SPACES IN THE WORLD

Abandoned 19847 winter Olympics Bobsleigh track in Sarajevo.



APOCALYPSE
by John Martin.

Paintings exhibition @ Tate Gallery.

'HOME FOR ALL'
Venice 2012 Architecture Biennale, Japanese pavilion.

Architectural projects addressing the need for housing after Fukushima's disaster.

CONFLICT FREE ELECTRONICS AWARENESS
by Matt Wilson.

Campaign to raise awareness of conflict minerals used in electronics.

SURVIVAL, CLIMATE CHANGE

NIGLIKTOK
by Femke Agema.

Fashion winter collection created for the snowpocalyse.

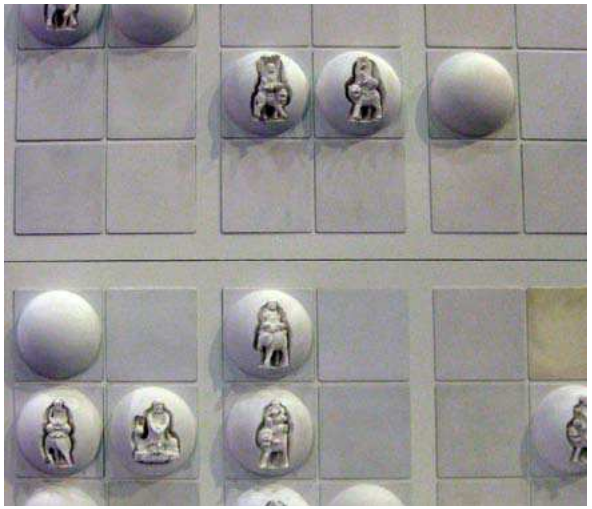
CLIMATE CHANGE COUTURE COLLECTION, THE APOCALYPSE EVACUATION SUIT
by Catherine Sarah Young.

Conceptual collection on adapting to harsh conditions.

CULTURAL, RELIGIOUS TECHNOLOGY

EMANCIPATI READER
by Orkan Telhan.

Dual tablet interface for progressive religious practcionaers wanting to diversify their resources of knowledge.



THE MUSEUM OF TOUCH
by Po-Ching Liao.

Spiritual & sensorial tactile totem or surface.

CROSS OVER

THE AFRONAUTS
by Cristina de Middel.

Photographic documentation an reinterpretation of a Zambia space program in 1964.

FORTUITOUS VARIATION
by Maezm for Bleeker.

Reinterpretation of traditional Korean furniture and reclaimed western-style.

KINDNESS. WHAT'S NEXT

Generic

Togetherness
Wearables that encourage sociability, empathy and community

Adaptability, Modularity
Providing wearables with a choice of functionalities.

User Engagement
Engaging the user with the wearable garment through personal achievement.

Kindness, Beauty, Spirituality
Garments or accessories that respond to soothing messages from loved ones, enhance the sense of beauty or are poetically inspiring.

Culture-Specific Wearables
Expect more religious or cultural-related wearables.

Democratisation of Technology
Learning and Do It Together platforms or genuine individuals drive for original ideas.

Specific

APPAREL INDUSTRY: Natural Technology
Wearable solutions using naturally healthy fabrics in combination to electronic monitoring functions.

APPAREL INDUSTRY: Survival Gear
Wearables to respond to climate change, inspired in real hazardous or toxicity protection garments.

SOCIAL: Social Wearables
For protection of socially endangered individuals or working communities at risk.

SENSES

The body as a support for pleasure, and to enjoy in all its senses. Distant relationships acquire a tactile expression through seductive techno-intimate wear. The body as a precious resource to be protected both as a physical entity and as personal identity. The importance of gesture and freedom of movement. Wearables that poetically indicate the passing of time. Conductive skins and body switches. Garments generating atmospheric effects for protection or for mood modulation. New fashionable volumes, traditional+digital fabric hybrids and hyper textures.

CLEVERNESS

Solutions for daily life and for a healthy lifestyle in a scarcity scenario. Wearable solutions that address issues of self-control and optimisation of activity. Clothing that cleans the air, lasts in time, or with nearly zero maintenance, in a perfectly studied patternmaking process for perfect comfort, perfect fit and long lasting properties. Sustainable fabrics and processes with an honest and chic approach. Technoknits as an example of optimal applications that exploit all the virtues of the manufacturing process and the high performance of the fibre.

FLOW

Wearables with light and sound effects that arise emotions of wonder, amazement, or great joy. Activity is learned, the player measured, and the feedback is delivered in a timely manner and through rewarding programs. Automatisation allows for enjoyment of the present. Garments and accessories that act as social communicators. Sports clothing allows for freedom of movement and for adaptation to surrounding environment.

RE-SET

Wearables are inspired by animal forms or terms. Garments breathe and become alive and are able to imitate when confronted.
Body as generator of beautiful sounds or energy. Coloured light or scent as mediators for balancing a holistic health state. Besides established vital signs, brain waves become the new vitals to be monitored. Garments or accessories help enhance the fictional experience.

KINDNESS

Individuals learn and provide new crafted technological solutions. Wearables that allow the transmission of feelings of love and affection. Clothing and accessories that prepare for survival conditions. Helping those communities that work or live under unstable or unhealthy environments.

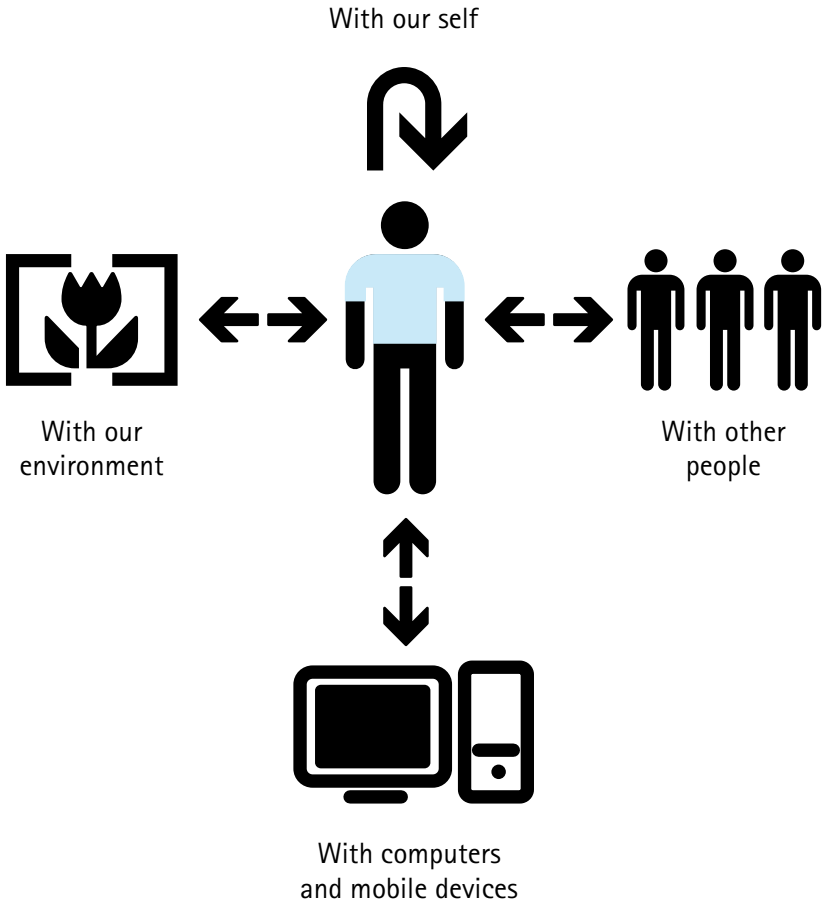
The exposed scenarios insights and the key wearable technology messages can provide the tools to answer the question 'why use wearables?' and constitute five approaches to innovation in wearable technology using mainly printed electronics and smart fabrics.

Other generic factors that are worth considering when innovating in wearable technology using Printed Electronics & Smart Fabrics are, as described:

Garments or the body as mediating interfaces

Garments and accessories play a mediating role between man and his environment. Garments adapt easily to our bodies, and when integrated with technology, they convey them into smart human interfaces that can interact:
with our self, with our environment, with other people and/or with computers and mobile devices.

Wearable devices interactivity levels:



Other interactivity models:

Relationship model

· Relationship with our self
· Relationship with our environment
· Relationship with other people

Source: http://www.slideshare.net/frogdesign/sxsw-designing-smart-objects-for-emotional-people

The Body-Space model

· Body
· Body/body/body
· Body-space
· Body/Body/Body – space

Source: Book 'functional aesthetics', Sabine Seymour, Ed. Springer-Wien-new York,2010

Person-Computer model:

· Person to person
· Person to computer
· Person as computer

Source PSFK+Intel Wearable trends report

Responsive technology

Wearable technologies not only can monitor our metrics, such as heart rate and perspiration, or other surrounding data, but can also put into action a reaction with ourselves or the environment based on these collected data. These collected data and the algorithms used to analyze it and recognize patterns, can be translated into visuals, sounds or colors, helping us modify our behavior, our health habits or our physical performance. In some sort, they are our technology assistants, our connected help, our responsive coaches.

The physical and the emotional self

Technology not only can dig into our merely physical metrics. The question 'has a website ever made you cry?', arouses the idea that technology is there not only to respond to our physical needs, but also to our emotional self. Emotions related to self-awareness, self-control, motivation, self-expression, sociability, empathy or fear could be modulated with the help of wearable technology. Technology can provide a new sort of E-life, where E accounts for emotional, enhanced, entertaining and exciting, creating experiences through technology*.

The importance of substrate and support

Printed Electronic Technology itself can not account for the success of a wearable device. Knowledge of the different fashionable supports, how to integrate the technology in them seamlessly, and the choice of material substrate will add up to the final acceptance of the device. From gloves to jackets, from leather to latex, the choices are there to decide for the wearables' marketability.

The importance of gesture and device usability

Another important factor is the usability of the wearable device and the body gestures necessary to interact with it. Exploring how do we normally interact with our garments or accessories is an important indication on which type of wearable choice to develop.

Market Overview

Current market widespread wearable applications are mainly for health, fitness, wellness and healthcare purposes with developments by Nike, Adidas, Reebok, Philips, Jawbone and Fitbit, and now Google, Apple and Samsung entering the market. Market players also include other independent star up initiatives that promise to take up a share of the market.

With an active ageing population and increasing body health concerns, these converging health, fitness, wellness, and healthcare sectors will continue to be dominant, although the approach to these issues will be largely influenced by some of the concepts that have been pointed out in this report, such as gamification or holistics and can provide new disruptive solutions.

The other important sectors of wearable electronics - industrial, commercial, military and lastly fashion will embrace wearable technology as a means of differentiating and creating a positive impact on society. From soft interactive toys, to interactive intimatewear to spacesuit manufacturing, the doors are open for this new future.

*
Sven Ehmann, on his talk at 'Rock Paper Pixel event'. Barcelona 2013.

WHAT'S NEXT?

www.cetemmsa.com

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