

Factors of success in wearable sensors and mobileHealth services



Giuseppe Andreoni
R&D Manager



Future Healthcare goals

- **Continuity of care**
 - *inside and outside the hospital;*
 - *shared care involving all care givers from prevention to rehabilitation, across all stages of care (prevention, diagnosis, treatment, follow-up)*
- **Citizen-centred care**
 - ***citizen empowerment** to manage own health status;*
 - *increase responsibility and knowledge*
 - *provision of **personalised care**/individual treatment*
 - *emphasis on **preventative lifestyle** (from care to prevention)*
 - ***early diagnosis** / prognosis*
 - *management of **chronic diseases***
 - *independent living / **ambient assisted living** (aging society)*



Healthcare 2020...



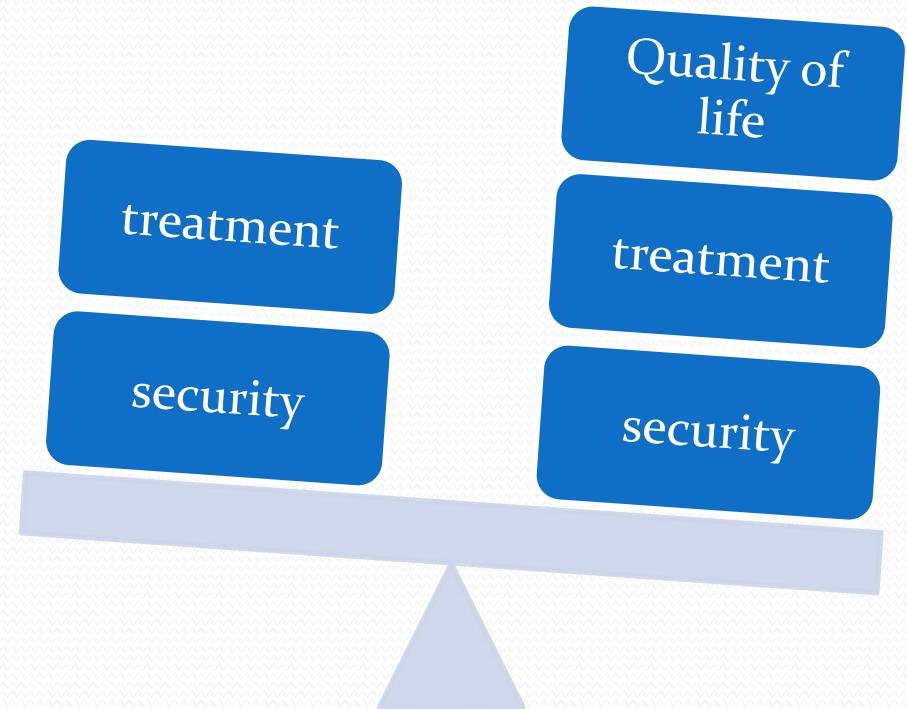
from

Cure



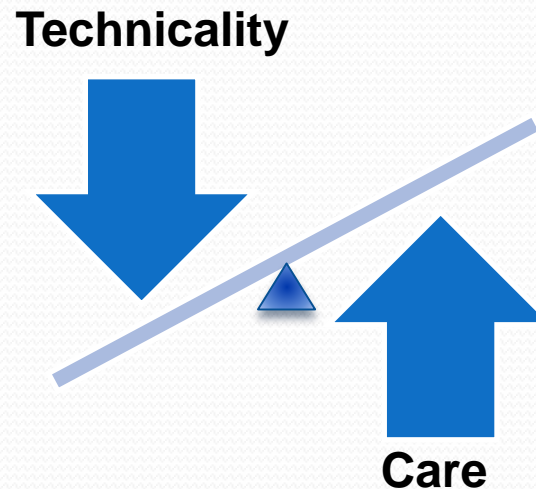
Care

.. a new complex and multifactorial process in which technological factors, organizational, and human dimensions must find a balanced mix for a full success.



Clinical Reference Concept

The “**Care**” is the new clinical approach for the therapy of newborns in NICU (Neonatal Intensive Care Unit) and/or in the first two-hours lifetime, to assure the baby physical and comfortable experiences that could guarantee the best conditions for the most proper neuromotor development.



The Wearable Biomedical Systems

Wearable Health Systems (WHS) or Wearable Biomedical Systems (WBS) are integrated systems on body-worn platforms like wrist-worn devices or “biomedical clothes”, offering pervasive solutions for continuous health status monitoring through non-invasive biomedical, biochemical and physical measurements.



WBS would enable monitoring of patients over extensive periods of time, and they can be proposed to offer affordable and interactive healthcare, anyplace, anytime for anyone which is the future of healthcare.

ComfTech s.r.l. – Comfortable Technology is a Politecnico di Milano Start-up .

It was born in October 2010 at Monza, for the integration of synergic competences:

- **Biomedical Technologies**, in particular for the unobtrusive measurement of physiological parameters
- **Textiles**, with Designer specialized for baby garments, from newborns to teenagers
- **Ergonomics** and **Design** for usability, wearability, comfort and userfriendliness of the system.

Comfortable Technology realizes sensorized textiles for biosignal monitoring and optimized shape and fit.

The Concept



Comftech



From The Problem

**Ensure monitoring (Cure)
but ...**

**improve comfort, protection,
physical and psychological
wellbeing of the newborn (Care)**

- Replace the standard adhesive electrodes;
 - Maintain clinical quality signal;
 - Interface to monitor hospital.
-
- Increase thermal protection
 - Introduce the function of "containment"
 - Respect the clinical procedures
(e.g., access quickly to the chest for emergencies).

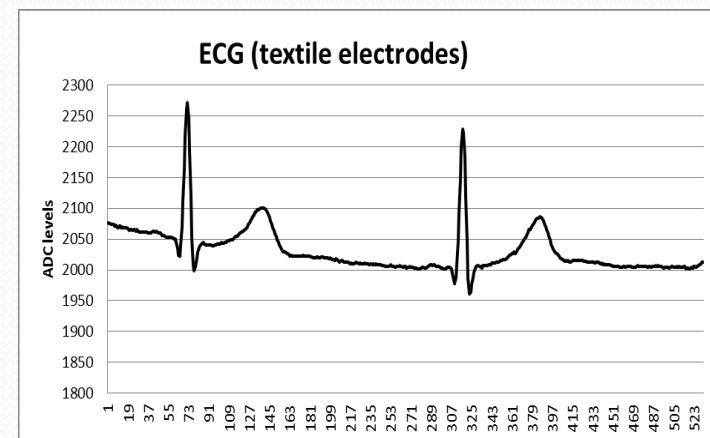
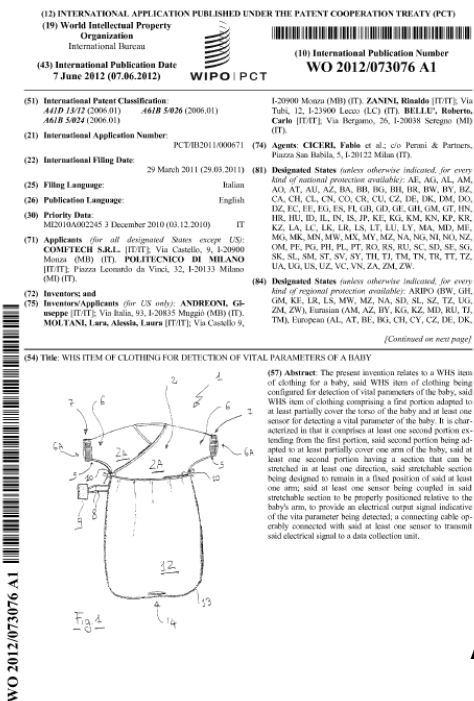
To The Solution

Design and production of sensorized systems/garments* for monitoring the preterm newborn or the infants in the first two hours of life with dedicated and fitting shape to the needs of babies (Cure+Care)

* Patented

*From Cure to Care with
Comfortable Technology!*

Research → IPR → I2P → BP → BP competition → Spin – Off



Applications development
Products portfolio
Testing
Production process optimization -> low costs
CE Med Certification

Product Portfolio



Certification ISO 13485 (January 2014)

1.st step

Market identification:

→ Consumer (B2C)

→ **Clinical**

- *Public (Reimb)*

- *Private (B2B)*

Business type

Product vs Service

Commercial strategy:

- Distribution
- Joint Venture on specific application/sector/country
- Direct exploitation -> marketing investement

Strengthpoint: CE Med Certification → Consumer products

«**Quality**»

TINY is the solution for NICU (*Patented*)

It consists of a garment made of certified hypoallergenic textile, designed in modeling and shape so as not to irritate the skin of the premature infant, and provides excellent function of "containment" according to the recent findings in neonatal care. This garment is equipped with textile electrodes embedded into the cloth and perfectly supporting the measure of the ECG signal. These textiles electrodes are extremely soft, hypoallergenic, and do not cause any damage to the skin. The electrodes are in the right positions simply when the garment is worn and their adhesion can be easily adjusted to each child. It is compatible with the most common hospital monitoring systems.

The product (single patient) can be washed at home, both in the hospital, and will not lose its function until after several washings also with chemical sterilizants.



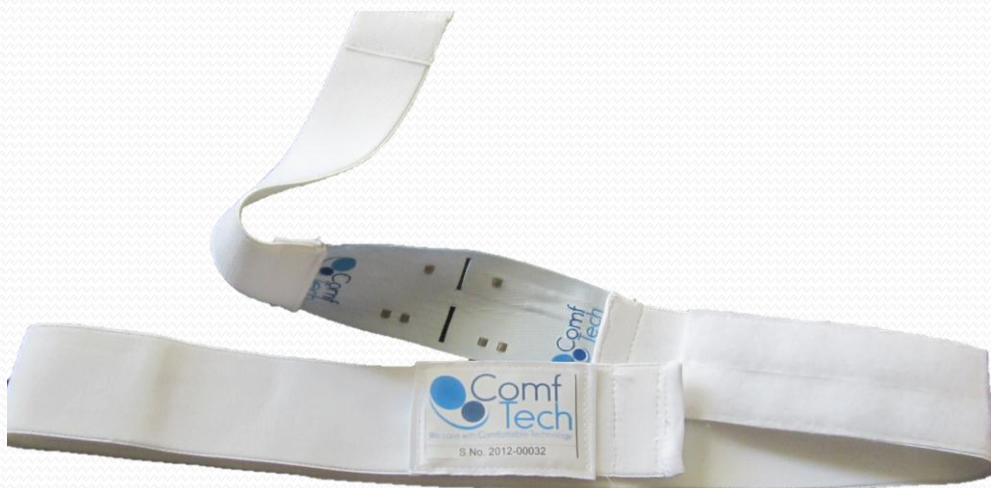
ELDY is the product designed for home monitoring of elderly patients. It consists of a vest made of hypoallergenic fiber, very easy to wear to the subject by opening with side zip.

It has two or three embedded textile sensors for ECG monitoring, two bands for the monitoring of plethysmographic or resistance of the thoracic and abdominal breathing. Wearability and comfort are integrated by the differential elasticity required for make the sensors adherent to the body. In this way the overall system does not affect the actions of everyday life and represents a real unobtrusive sensors system.

Washable and reusable for about 200 times with a guarantee for the proper electrode functions.



Sensorized vest



ALLY is a belt designed for the comfort of adult people, Easy and fast to wear and unwear, can be easily adapted to the waist . Washable.

Sensorized belt

ComfTech System Overview

The system monitors and transmits 1 ECG lead, 3D acceleration, breathing rate and optionally temperature. Bluetooth and/or NFC data transmission and battery recharging are other innovative features of the system .

A multiplatform App (iPhone, Android smartphones, Windows for PCs) allows for data visualization and recording.



Certification MD IIb Class
(March 2014)

DISRUPTIVE COMPANIES

CENTER VUE

Padova

www.centervue.it

Costituita nel 2008, ha mosso i primi passi all'interno di M31 a Padova. Opera nel campo della diagnostica precoce delle malattie degli occhi, producendo apparati per l'esame della retina, che scansionano e restituiscono un'immagine ad alta risoluzione per una diagnosi in tempi brevissimi. Nel 2010 ha venduto 200 installazioni, per un fatturato di 1,5 milioni di euro. Da Santa Clara ha aggredito il mercato americano, avvalendosi di canali commerciali che M31 USA mette a disposizione delle startup italiane.



dotta dal Politecnico di Milano. Propone la creazione e l'industrializzazione di sistemi biomedicali indossabili, caratterizzati da innovazione negli aspetti di ergonomia, usabilità e tecnologia. Ha iniziato la produzione a metà 2012. Fatturato inferiore ai 500 mila euro annui.



D-ORBIT

(Milano)

CHEMICAL CENTER

Bologna

www.chemicalcenter.it

Il Chemical Center nasce nel 2009 dall'iniziativa di docenti universitari e ricercatori impegnati in attività di ricerca di base presso il dipartimento di chimica G. Ciamician dell'Università di Bologna. Opera soprattutto in due settori di attività quali le analisi chimiche e chimico-fisiche, offrendo, oltre alla certificazione delle analisi, la possibilità di studiare la più opportuna soluzione a eventuali problemi evidenziati dalle analisi e l'attività di ricerca e progettazione che consente di offrire alle imprese soluzioni apposite.



COMFTECH

Monza

www.comftech.it

Start up del 2010 (incubatore di ricerca Politecnico di Milano), nasce dall'esperienza in Terapia Intensiva Neonatale (TIN). Il primo prodotto TINY è già stato sperimentato con successo su un significativo numero di bambini grazie all'attività di ricerca con-

SCENARI INNOVAZIONE

AL TOP 2012 Aziende italiane che fanno innovazione

Sulla scorta della edizione americana di Technology Review, che ogni anno seleziona le 50 aziende più innovative presenti sul mercato, anche la edizione italiana di Technology Review, parallelamente e in accordo di metodo con la edizione tedesca, ha deciso di inviare un'analoga iniziativa, nelle più coinvolte dimensioni richieste dal mercato italiano. La nostra selezione non vuole essere esauriente (né lo potrebbe, parlando d'innovazione, cioè di un principio di cambiamento incessante), ma "continua", cioè non limitata al momento della pubblicazione dei relativi elenchi.

Con l'attiva collaborazione del Comitato di segnalazione e di valutazione, appositamente costituito per questa iniziativa, la nostra rivista si ripromette, infatti, di porre in atto un impegno corrente di ricognizione

e d'individuazione di aziende già affermate o di start up, che rispondano ai criteri seguenti: significativa innovazione di prodotto, processo o business model; prospettive di crescita sul mercato di riferimento; internazionalizzazione. Per l'anno in corso sono state selezionate le 12 aziende (7 già sul mercato e 5 start up) menzionate nelle pagine seguenti, ma si tratta di un'apertura di discorso, che non escluderà in futuro né aziende di maggiore rilievo industriale e/o commerciale, né aziende che intendessero autocandidarsi. La banca dati della innovazione, che da sempre costituisce un patrimonio irrinunciabile di Technology Review, potrà così sistematicamente arricchirsi dell'apporto italiano, contribuendo alla valorizzazione dei primati scientifici e tecnologici del nostro Paese, (e.o.)

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March-november 2011

Comfortable Technology is selected by Comitato Italia 150 as one of the best innovation projects exhibited at Stazione Futuro at the Officine Grandi Riparazioni in Turin for the celebrations of the 150th anniversary of Italy Union.

November 2012

Comfortable Technology is selected by Technology Review as one of the TOP 12 companies for innovation in Italy

**Aziende
start up**
(in ordine alfabetico)

CHEMICAL CENTER
Bologna

CENTER VUE
Padova

COMFTECH
Monza

D-ORBIT
Milano

HENESIS
Pavia



March 2013

Comfortable Technology is selected and participates to the action line Health & Wellbeing - of EIT ICT Labs one of the first Knowledge and Innovation Communities set up by the European Institute of Innovation and Technology, as an initiative of the European Union to drive European leadership in ICT innovation for economic growth and quality of life.

Health & Wellbeing

Boosting the quality of everyday life by accelerating ICT innovation



Mental Wellbeing – Enabling people to create optimum balance in life to deal with the challenges of every-day life.

- > Watch the video on Balancing Work & Life: [Affective Health](#)
- > Watch the video on [Turn out, Burn out](#)



Physical Wellbeing - Healthy consumption and physical activity. Supporting people in promoting their health by improving what, when and how they eat and drink.



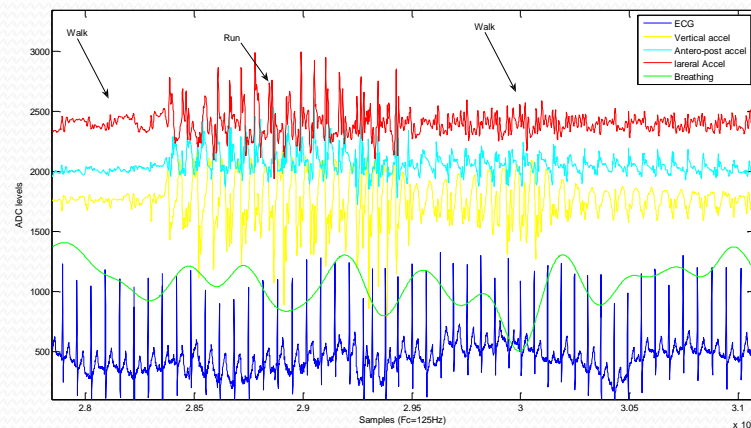
Social Wellbeing - Encouraging interaction with other individuals or health professionals to induce a healthier lifestyle.

- > Watch the video on the activity [Social Virtual Gym](#)
- > [More information](#) on Social Virtual Gym

LifeStyle and performance monitoring



Running



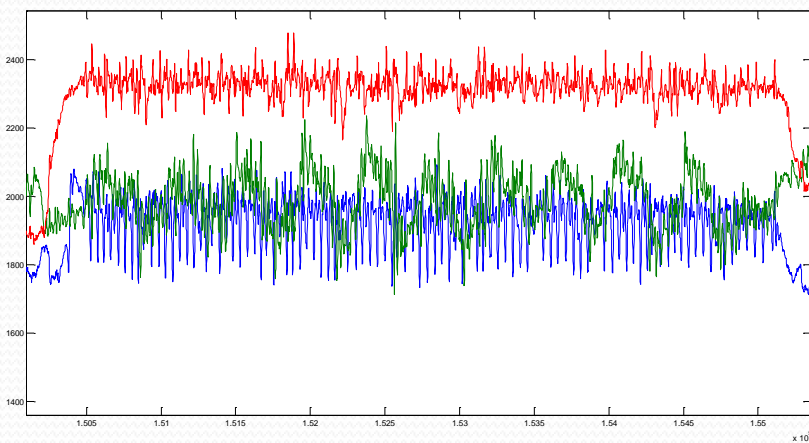
Sky Race

Soccer



Fitness

Swimming



Cycling



ComfTech s.r.l.

Via Castello 9, 20900 Monza (MB) - Italy

Tel. +39 039 830197

e-mail info@comftech.com

Giuseppe Andreoni

Mobile. +39 335 6057074

e-mail: giuseppe.andreoni@comftech.com