



**New communication devices in wearable applications:
3G video jacket and other future gadgets**

8. February 2010

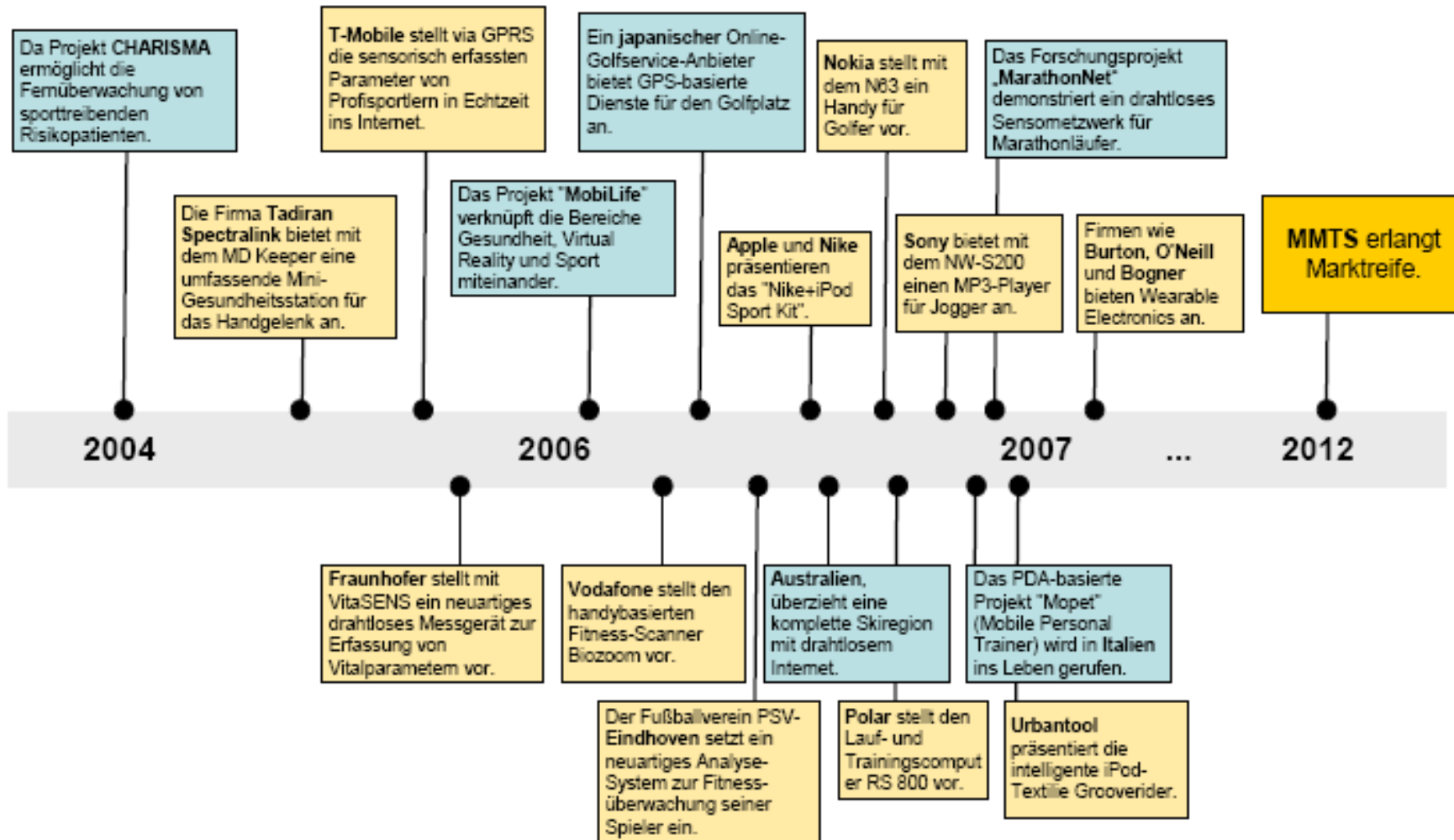
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- **Definition wearable**
- **Current solution (com, count, heat, detect)**
- **BT mobile communication solutions**
- **3G mobile eye – next century imaging**
- **Future vision**
- **Conclusion**



Definition wearables



Source: BITCOM study Berlin 2007



An application, a solution, a support, a gadget, a tool

That will always with you

- you don't feel, but its there**
- you don't change your life but its always around**
- it will assist you to increase your life style**
- its ON when you need**

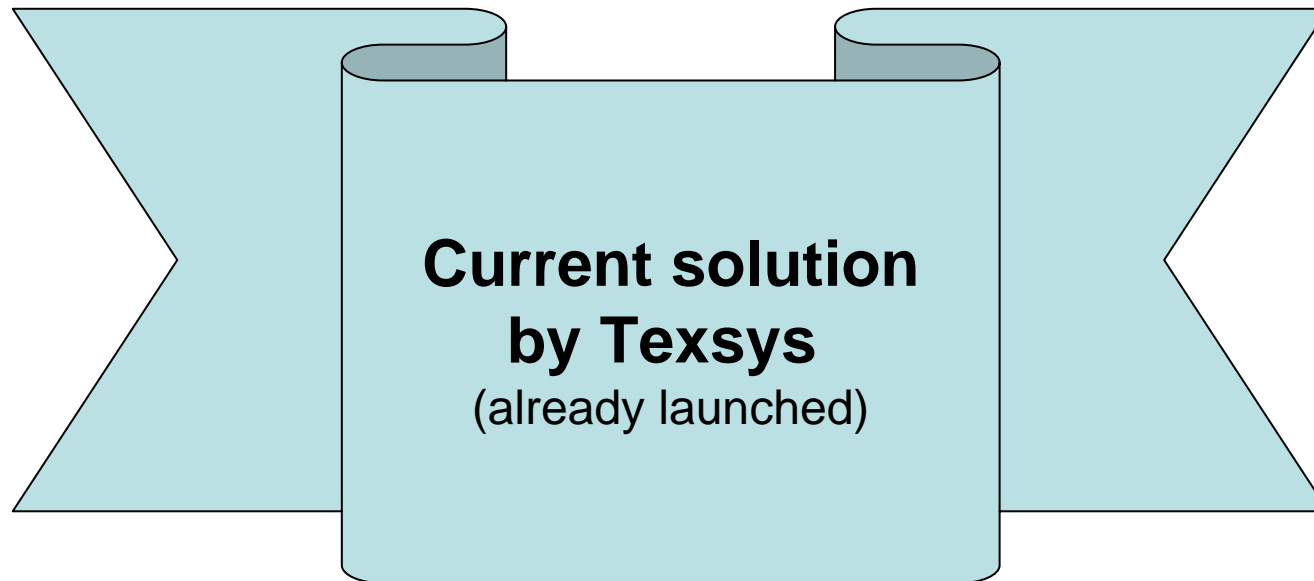
But it should NOT be

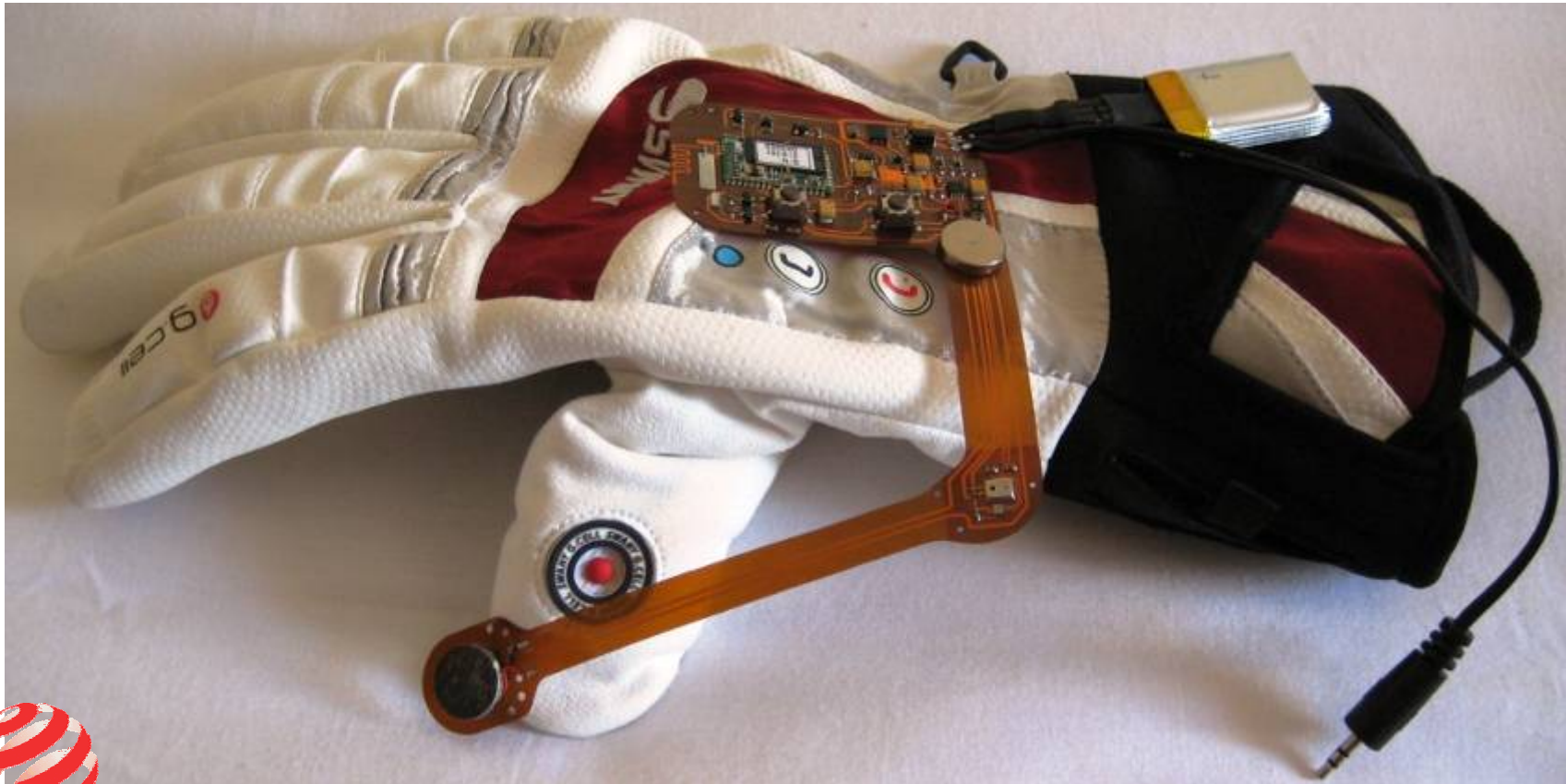
- a marketing and sales / promotion tool**
- a one stop shop solution**

it must be sustainable

- It should be ergonomic.
- it should be easy to wear
- it should be robust and impact-resistant.
- it should be resistant to humidity, (salt) water. soap (wash machine)
- it should work under wide operation of -30°C to $+85^{\circ}\text{C}$.
- it should be multifunctional (sport, health, industrial).
- it should operate at least one full day (16h).
- it should be safe every time and everywhere
- it should be produced very cost-efficiently

Vision becomes Mission that brings you to your solution





reddot

G-Cell - Communication glove final



9 iteration steps into commercialized product

- v0.1 – regular BT headset in glove at TITV
- V0.2 – BT headset assembly in glove at TITV
- V0.3 – MPD became partner of the consortium
- V0.4 – BT base module supplier qualified – Texsys firmware
- V0.5 – BT-system by wire and textile strips (proven samples)
- V0.6 – flex board design – reliable connection
- V0.6w –water proof circuit board 1st generation
- V0.7 – FPC redesign for reliability test
- V0.8w – reliable tested WP FPC product
- V0.9w – redesign for production adaption

3 years from idea into the retailer shop.

Biggest hurdle and challenging was the implementation in the manufacturing facility.

**China Glove manufacturing –
challenges for all circuit boards to survive**





Glove manufacturing generates stress and forces above 10G



Heated above 85C
for 2min.



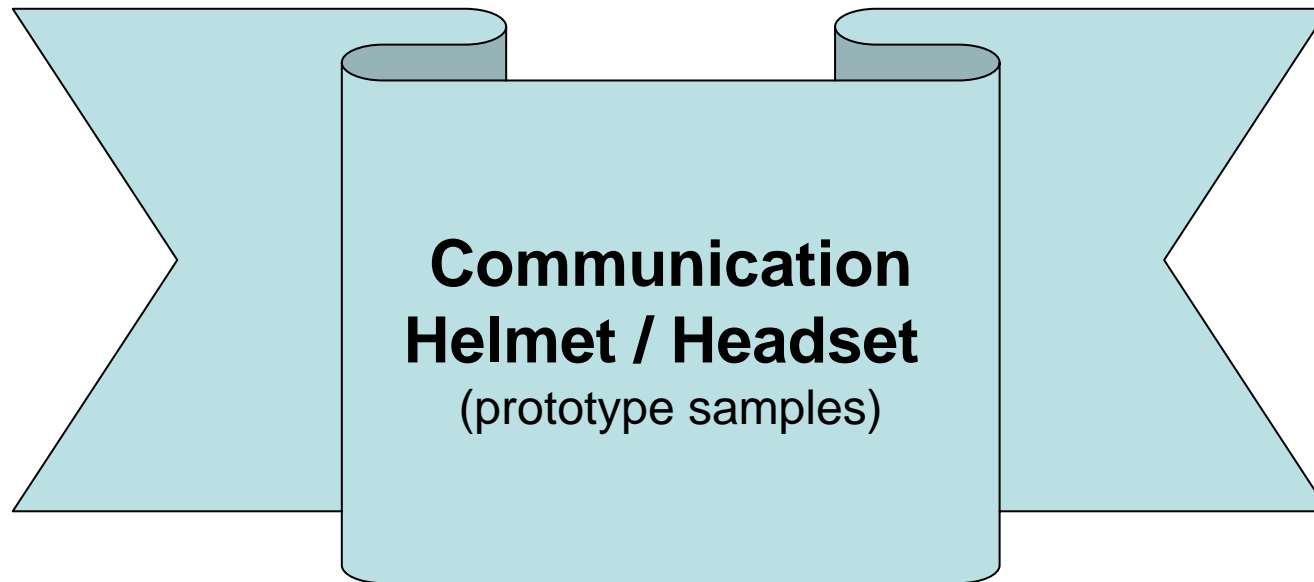
Outer shell –
reversed
manufcaturing

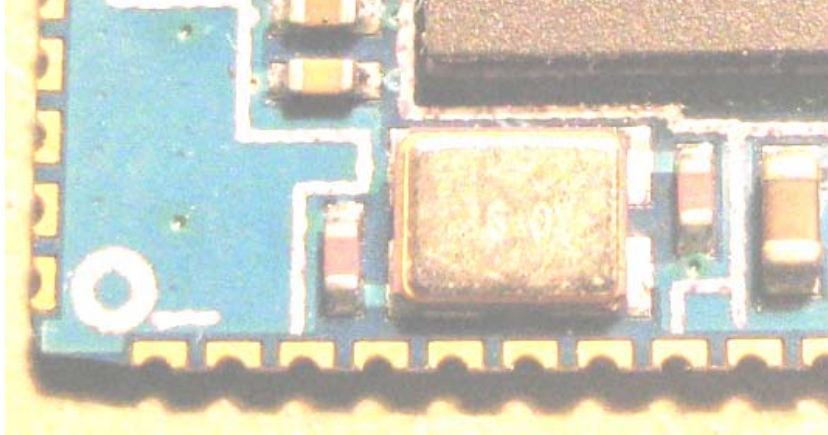




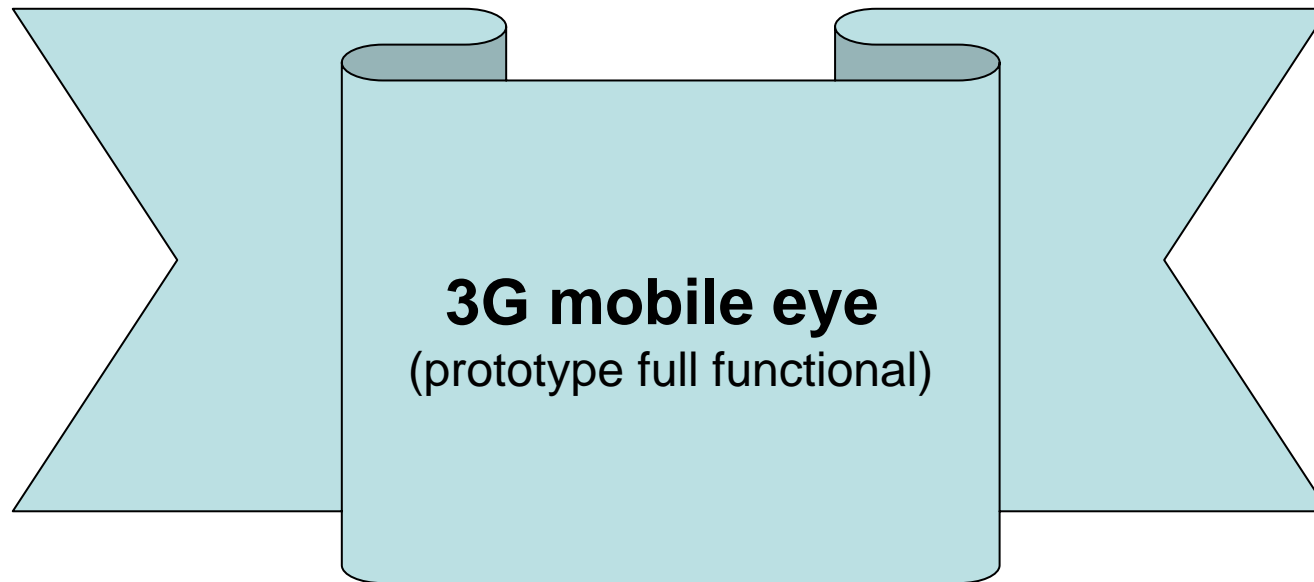


Glove manufacturing – stress tests...





- **BT 1.2, 2.0, 2.1 compatibility**
- **Own OS and firmware programming**
- **selected power management and charger / battery sourcing**
- **onsite production facility support and integration skills**
- **free control definition (1 ... 8 buttons)**
- **optional under BT 2.1. SMS and phone book with display**
- **full washable device with newest inductive charging standard**
- **6 ~ 8 months from idea to volume production**
- **Electronics made in Germany, assembly in Tech.**





CMOS – VGA 0.3M

Microphone

System electronics
(hidden)

Key panel

Display (optional)

- **Network: 3G / UMTS / WCDMA**
- **0.3 mega-pix – CMOS single eye camera**
- **Night Mode and Infrared spotlight (< 20 lux) & sensor**
- **Camera Control centre (via mobile phone remote access)**
- **Microphone & volume control**
- **Camera zoom in & out**
- **Camera movements (horizontal and vertical) –optional**
- **Indicators: Power, signal strength, communication device**
- **SIM/USIM and T-Flash (16GB) card slot**
- **Textile control panel with LED indicator**
- **Lithium Ionen Battery 2.6Ah**
- **Standby time 300h, at daylight 22h, at night 10h,**
- **video call daylight 6h and night 5h**
- **Working temperature: -20 ~ +70°C (5- 95% rel. humidity**
- **Standard USB charger, 3h charging time.**



Vision push activity
dream becomes reality
tomorrow is today.....



Tank you.