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**Wearable Computers
in Hindsight and Foresight:**

**Application Scenarios for
Applied Wearable Computing**

Dr. Christian Bürgy, Oberpfaffenhofen, March 30th 2006

Outline



- teXXmo GmbH & Co. KG
- Wearable Computers – so far, so good
- The Goal – where we want to go
- Challenges – what's the problem?
- Outlook – 2 years from now

teXXmo GmbH & Co. KG



- Management-Buy-Out of Xybernaut GmbH
- Founded 2005 in Böblingen
- Partner & Customers in EMEA-Markt
- Expertise on Kaleo-Plattform since 2002
- More than 10 years of Experience in Mobile & Wearable Computing

teXXmo Mobile Thin Client Product Suite

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M3



Kaleo

Porteo



Viseo



Mobile & Wearable Computing Environments

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Wearable Computers – so far, so good

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Steve Mann's "wearable computer" and "reality mediator" inventions of the 1970s have evolved into what looks like ordinary eyeglasses.



(a)
1980



(b)
Mid 1980s



(c)
Early 1990s



(d)
Mid 1990s



(e)
Late 1990s

Wearable Computers – so far, so good

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The Goal – where we want to go

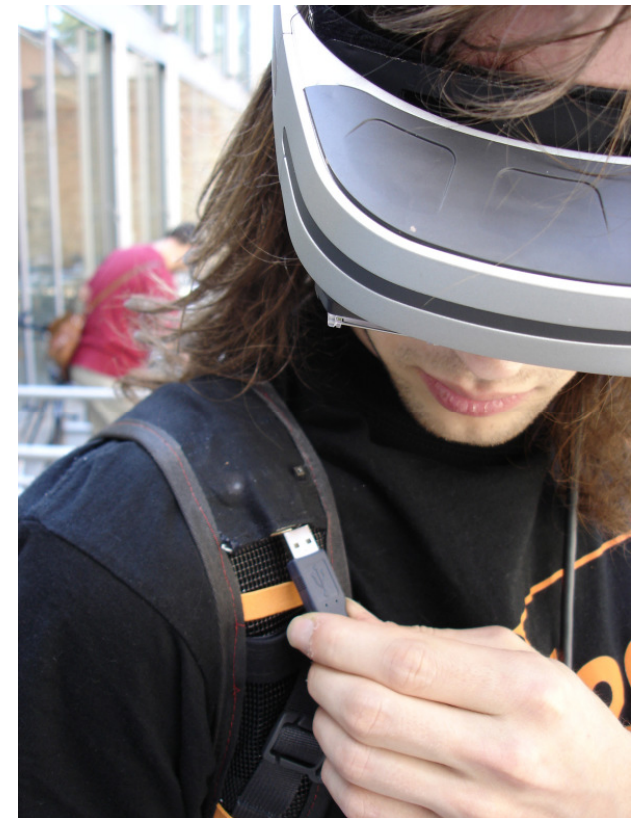
The logo for 'teXXmo' is displayed on a black rectangular background. The text 'teXXmo' is written in a lowercase, sans-serif font. The letters 'te' and 'mo' are white, while the two 'X's in the middle are a bright orange color.

Unobtrusive device that helps to perform „the job“

- Hands-free operation;
- Just one „box“;
- Only one cable (ideally none);
- Location-awareness;
- Context-awareness;
- Runtime for the intended usage time;

teXXmo Wearable Computing R&D

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Challenges – what's the problem?

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- Power supply vs. Processing power;
- Display technology;
- Human-machine Interaction / Usability;
- Location / context awareness;

Challenges – Power vs. Processor

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MA[®] V



MA[®] TC



MA[®] IV



MA[®] III

- | | | |
|-----------------------|----------|------|
| • MA [®] I | 486 | 1994 |
| • MA [®] II | 586 | 1996 |
| • MA [®] III | P133 | 1997 |
| • MA [®] IV | 233 MMX | 1998 |
| • MA [®] TC | PIII 400 | 2001 |
| • MA [®] V | Cel. 500 | 2001 |



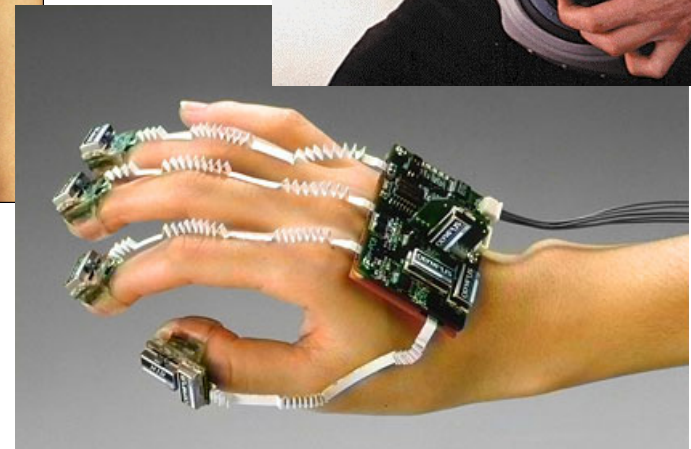
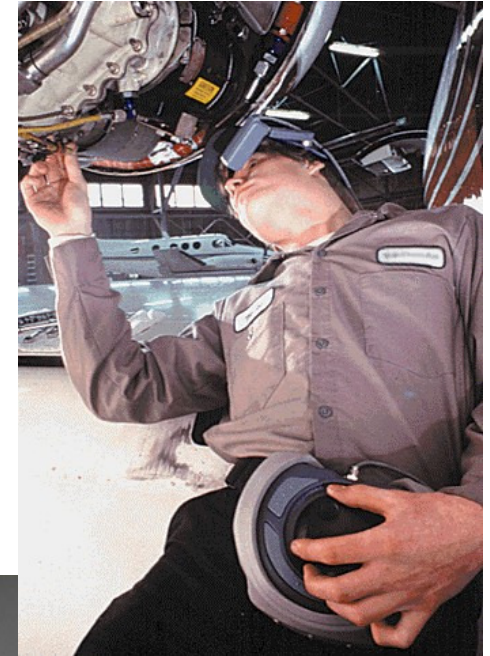
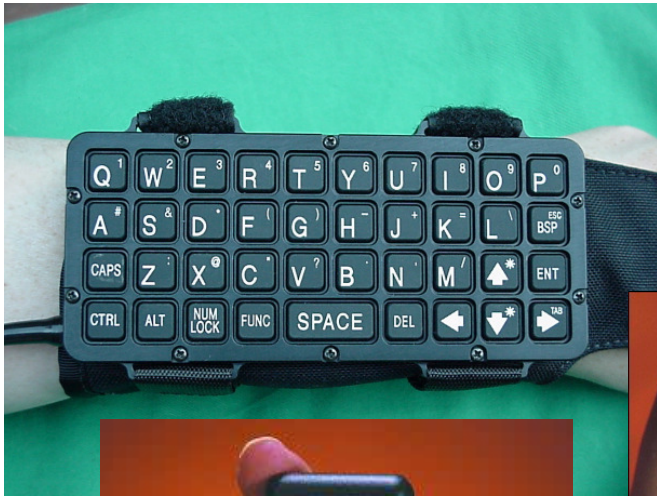
Challenges – Power vs. Processor

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- Technology: AMD Geode GX533/LX800, Via Eden1.0GHz
- Attachments (base): 4x USB, miniPCI, VGA, Mic in, Audio out
- Vol. size (mm³) 40x144x130
- Weight (gr) 400-700
- RAM (MB/GB) 256MB-1GB
- CF (MB) 128-512
- OS WinCE, WinXP embedded, Linux
- Prices range ~ € 500,- (€ 1.000,- incl. HMD)

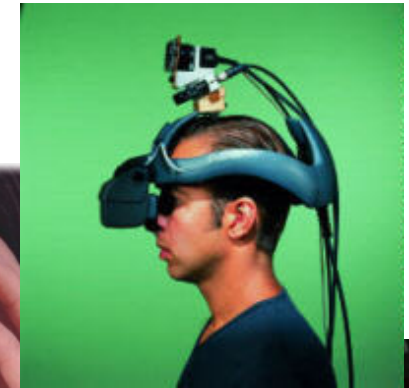
Challenges – Human-Machine Interaction

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Challenges – display technology

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Challenges – Location / context awareness

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Outlook – 2 years from now...

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Scenarios of future wearable devices:

- Electronics / communication peripherals distributed around the user;
- Convergence in one wearable communication device;
- Combination of the above with one “communication hub”;

Outlook – 2 years from now...

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- First affordable / usable wearables with HMDs;
- Pilot projects in industrial use;
- Next generation wearable with up to 8hrs of runtime (including WLAN, Bluetooth & display);
- Mobile phones that come closer to wearable devices (phones with HMDs);

Thank you!

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