



Research Consortium in Speckled Computing

Networks of Sensors for Environmental Monitoring

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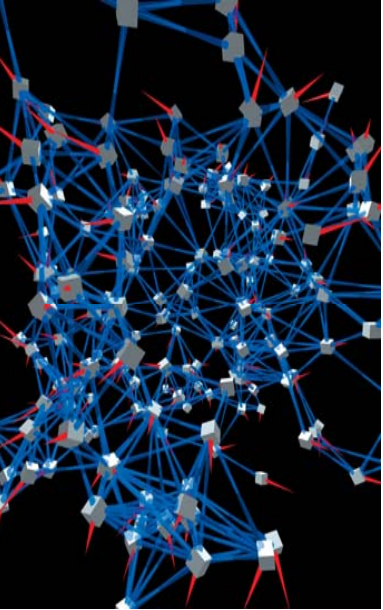
3 December 2009



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Vision



- Endow persons/objects with sensing, processing and wireless networking capabilities – Speckled Interactions
- Link the physical world of sensory data and virtual world of digital information - Speckled Environments

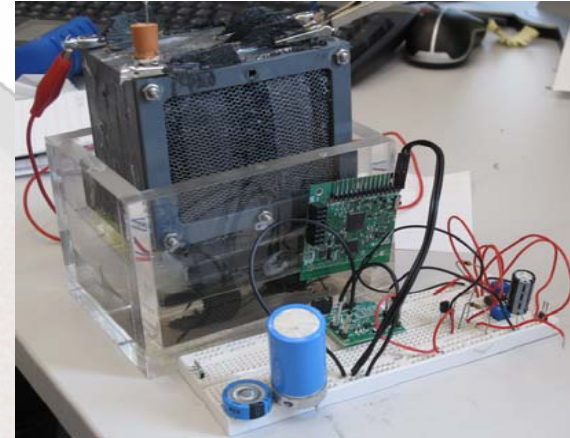
On-body Orient Specks for Motion Capture

- Capture, analyse and understand motion using network of on-body specks
- Orient: Fully wireless, full body, 3D motion capture in real-time

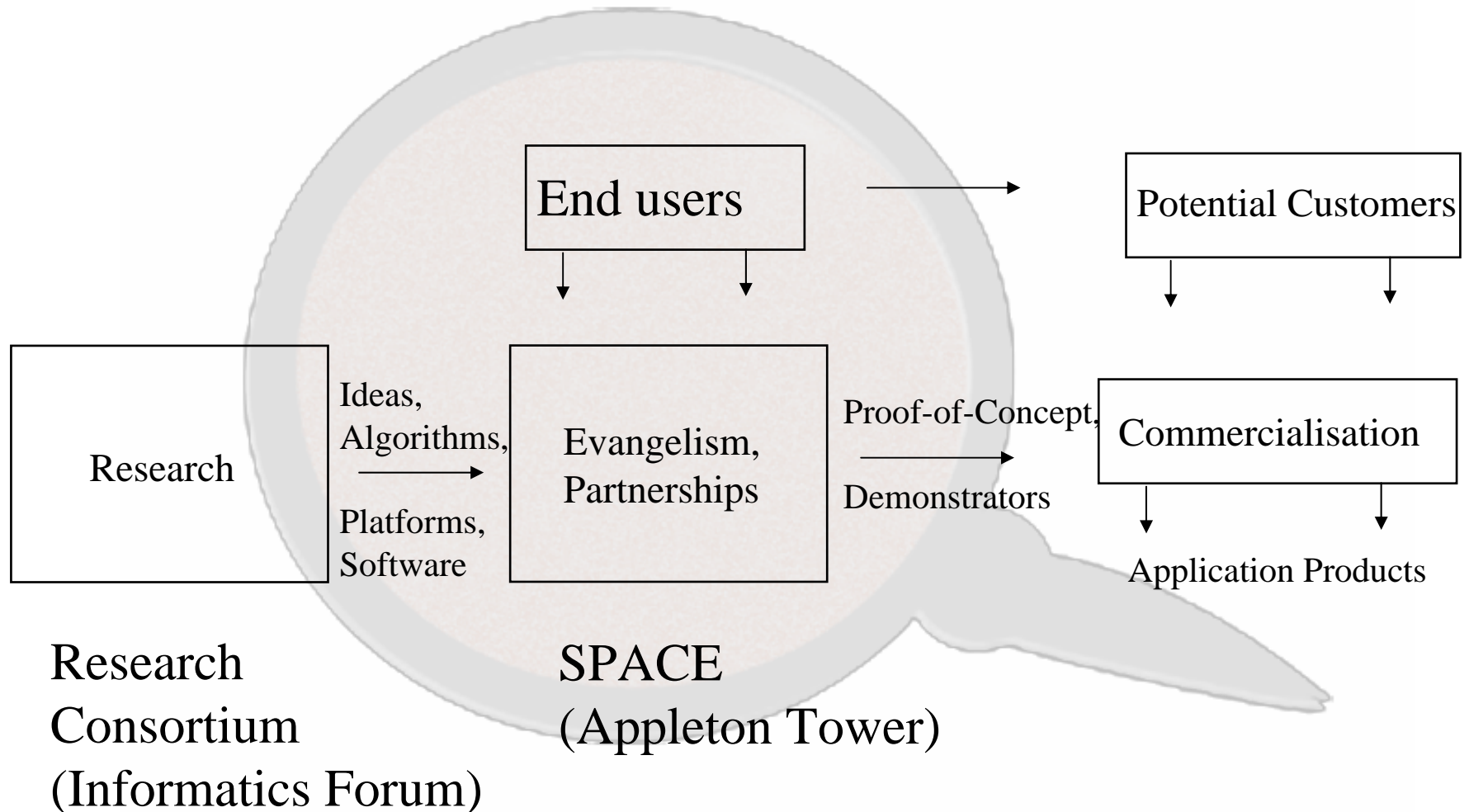


Energy Neutral Speck (ENS)

- Investigate the limits in deploying a pervasive network of specks with modest resources and powered by scavenging energy from the environment
- Strike a balance between designing for minimal power consumption whilst retaining sufficient processing, memory and wireless communications capabilities for mesh network applications



Structure for collaboration



3rd December Workshop

Dense network of sensors to observe the environment :

- Atmospheric
- Terrestrial
- Marine

Bring together researchers in

- Environmental Science
- Wireless Sensor Networks

Outcome

- Better understanding of the research issues in environmental science and the ones that can be supported by current and close-to-market WSNs
- The observational requirements for a selection of topics in environmental science in terms of
 - Communication
 - Computation
 - Energy
- Look ahead
 - environmental scientists' wish list for the next decade
 - Road map for research in WSN for environmental monitoring

Talks

- Paul Monks (Leicester)
“Environmental Science Requirements for Networks of Sensors”
- Peter Statham (Southampton)
“Technology Requirements for Sensor Systems in the Marine Environment”
- Timothy Hill (Edinburgh)
“Terrestrial Science Challenges for Dense Wireless Sensor Networks”

Talks

- Nathan Hill (NERC)
“Network of Sensors Programme: Call and Scope”
- Alex Efimov (SIKTN)
“The SIKTN’s Environmental Monitoring and Wireless SIGs, Industrial Drivers and Support for Environmental Sensor Networks Activities”

Breakout Sessions

10-minute Case Studies followed by discussions

- Iq Mead (Cambridge) – Room G.03
“Development of Mobile Low-cost Real-time Sensors for Monitoring Air Quality”

Rapporteur – Iq Mead

- Hywel Morgan (Southampton) – Room G.07
“Ruggedised Environmental Sensors for Ocean Deployment”

Rapporteur – Andrew Free

Breakout Sessions

10-minute Case Studies followed by discussions

- Robert Clement (Edinburgh) – Room G.07A
“Development of Mobile Low-cost Real-time Sensors for Monitoring Air Quality”
Rapporteur – Simon Oxley

Report back to the plenary session

For each application scenario in environmental science

- Type of sensors
- Sensing resolution – spatial and temporal
- Data volume: local computation and storage
- Frequency of local communication between sensors
- Energy scavenging options
- Time between updates to the remote server