

Speckled Computing (www.specknet.org)

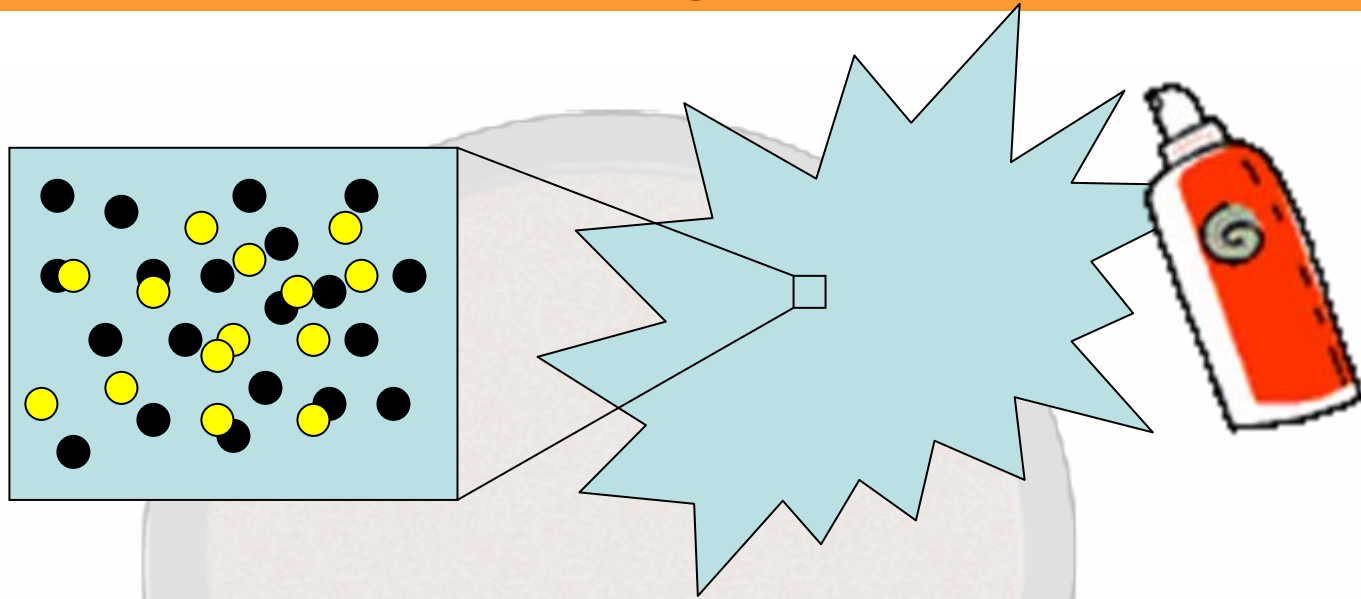
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Speckled Computing Arts Network, Edinburgh, 29.vi.'05

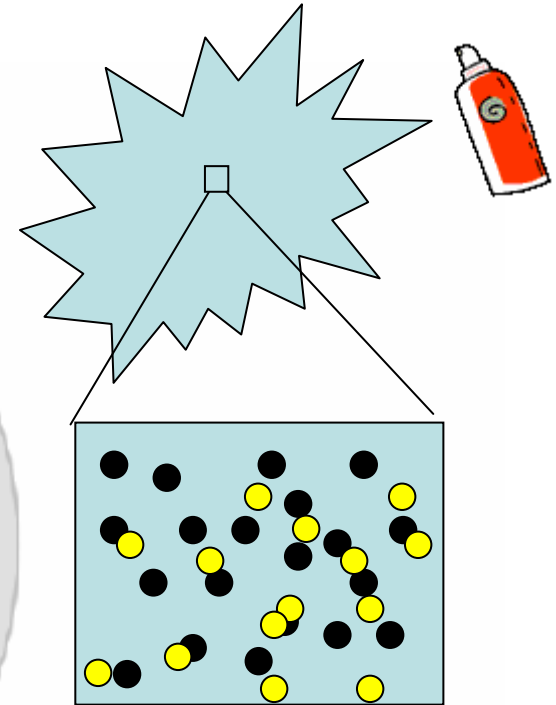
"To realise programmable semiconductor specks which can sense, compute, and network wirelessly."



- Specks communicate **wirelessly** over a few cms
- Size of a matchstick head (5cube) with **limited power**
- Interoperability: yellow specks - temperature sensor,
black specks - pressure sensor
- Specks are assumed to be **non-static** and **unreliable**

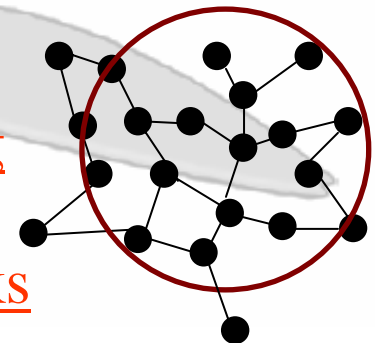
Specknets and Speckled Computing

- Thousands of specks collaborate as dense **programmable network** – Specknet
- Sensory data processed collaboratively, and information extracted *in situ* – fine-grained distributed computation
- Encapsulation of sensing, processing and wireless networking in a single chip



Enabler technology for truly ubiquitous computing

Speckled Computing looks beyond sensor networks



Multidisciplinary consortium

Programmable Networks

Radio

Demonstrators

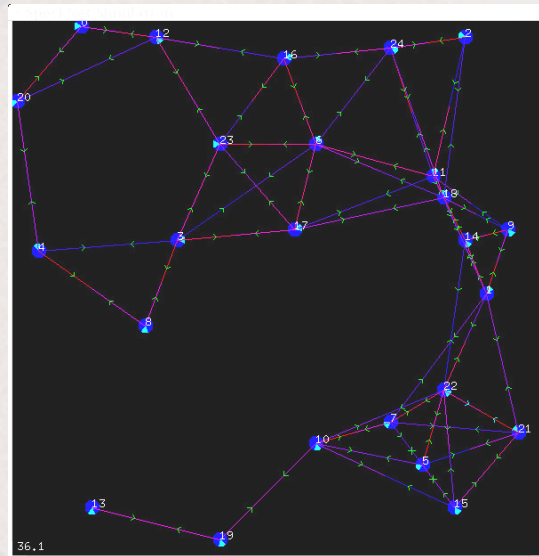
Photonics

**Distributed
Computing**

Solar Cells

Batteries

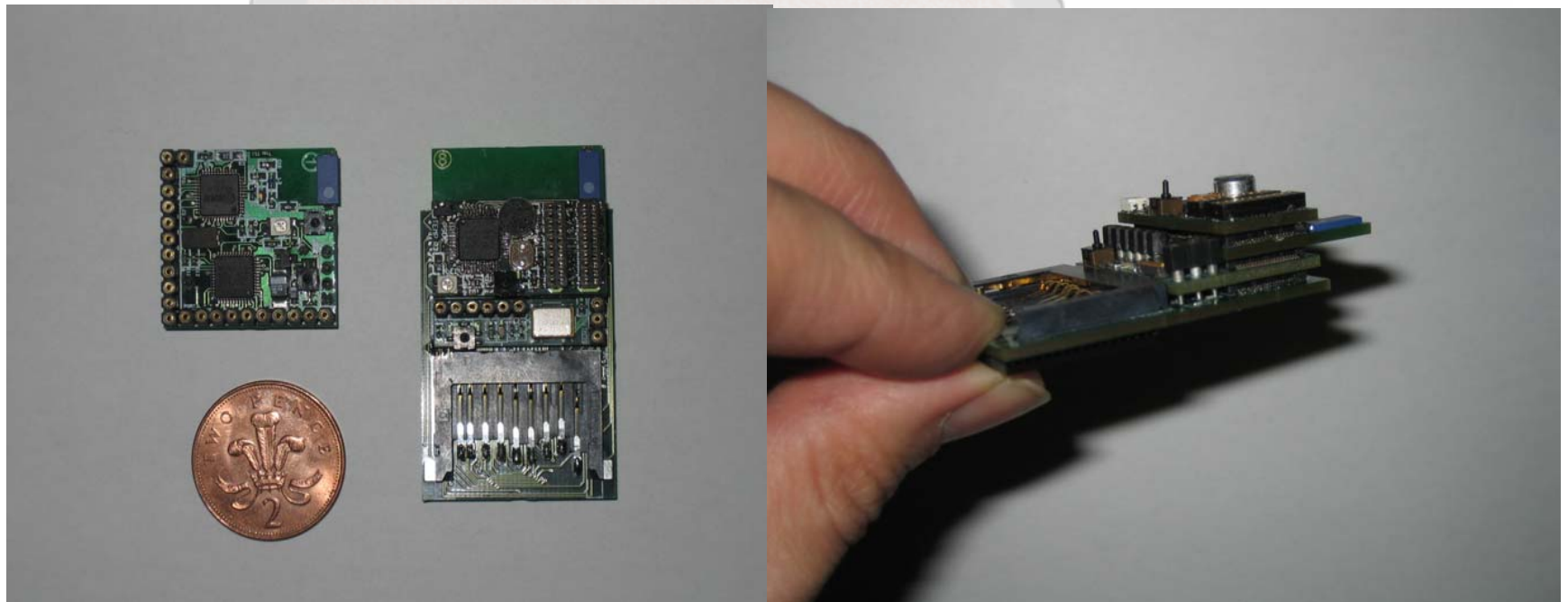
Processor



Digital Signal Processing

ProSpeckz II and III

Rapid development platforms for research in networking and programming environments, and development of applications in Speckled Computing



ProSpeckz II – Applications

Exploit proximity awareness and wireless networking:

- Distributed fire safety system
- Autonomous control of small vehicles
- Stress-responsive Office Systems
- Smart Furniture, Jewellery, Toys, Spaces, Games Interfaces, ...



5cube specks: Tangible Interfaces for Digital Media

- Everyday objects are applied with specks or *speckled*
- Objects sensitised *post hoc* both as computational resources and as props for interactions with the computational resources
- What is the influence of the speck size on the applications?
- Examples of applications using 5cube specks?

Status

- SHEFC Research Development Grant – 2003-07
(£1.32M, E2.0M)
- 25 researchers - 5 universities and several disciplines
- EPSRC Basic Technology Research Programme – 2005-10
(£3.8M, E5.7M)
- Industrial Affiliate Programme
- University Partnership Programme

Bridging the “Two Cultures”?

- Science- and technology-led consortium to research and prototype networks of small wireless devices
- Excellence in Art, Design and Architecture in local institutions
- Creative Ideas + specks → Artefacts/Prototypes
- Programme of interaction to the mutual benefit of both

Points for Discussion

- Should SCAN exist?
- What should be the format of an “Interaction Programme”?
- How do we nurture, sustain and scale it ?
- How will it be resourced ?
- How often do we meet ?
- List of actions/recommendations from this Workshop



Thank You