



**Sensor City: Liverpool's new  
University Enterprise Zone**

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Transfer)**

**Liverpool John Moores University**



- Pilot scheme started Summer 2014
  - 4 initial zones: Bradford, Bristol, Liverpool, Nottingham
- Provide a focus for increasing interaction between business and universities



*Announced by George Osborne in  
Liverpool, July 2014*

- Academic
  - University of Liverpool
  - Liverpool John Moores University
- Regional
  - Liverpool Local Enterprise Partnership
  - Liverpool City Council and Liverpool Mayor
- Industry
  - Over 100 letters of support from potential partners



- **Vision:** To create a world-leading University Enterprise Zone in sensor technologies.
- **Technology Focus:** To develop and implement novel sensor systems that integrate sensors, firmware programming and advanced algorithms.

- Sensor City grew from the LEP's "Making It" initiative in Advanced Manufacturing
- Integrated into the LEP's Liverpool City Region Innovation Plan 2014-2020



[http://www.liverpoollep.org/PDF/MAKING\\_IT\\_2020FINAL.pdf](http://www.liverpoollep.org/PDF/MAKING_IT_2020FINAL.pdf)

- Sensor market is growing at over 10% per year
- Global market for sensor systems currently \$490bn globally
- In the last decade 1 in 3 global patents were sensor related
- The UK sensor industry contributes £13bn, 73,000 jobs and £6bn of exports
- 1.4 million people employed in sensor-aligned professions in the UK, 159,000 are in the North West and 27,000 in the Liverpool City Region

# Benefits for Companies

- There is currently no comparable centre focusing on sensors

- “... as an SME we find it difficult to maintain awareness of the emerging skills and capabilities that could support our business. Having a common access point through Sensor City would help remove this barrier.” **MAST (Medical Diagnostic SME)**
- “BT sees the opportunity to trial novel sensor technologies in a city context, and to have access to proven routes to take technologies from research into delivery as particularly attractive features of this bid.” **BT (Multinational Telecoms)**
- “We foresee this facility being able to offer expertise that will help us develop new products and processes ...” **Briggs Automotive Company (Automotive SME)**
- “Sensor City UEZ would be a significant benefit in helping us to improve production quality, productivity and to reduce cost.” **GETRAG Ford Transmissions (Multinational)**

# University Input

<b>General Engineering Research Institute (GERI, LJMU)</b>	Optical metrology, advanced manufacturing technology, radio-frequency & microwave electronics, image processing and mechanical engineering.
<b>Centre for Intelligent Monitoring Systems (CIMS, UoL)</b>	Sensor technology, software development, telemetry, system integration, sensing and monitoring systems.
<b>Virtual Engineering Centre (VEC, UoL)</b>	Virtual science & technology applications through integrated university-industry partnerships.
<b>Nanoinvestigation Centre at Liverpool (NiCaL, UoL)</b>	SME access to electron microscopy facilities.
<b>Built Environment and Sustainable Technologies Research Institute (BEST, LJMU)</b>	Virtual design and architecture, wastewater treatment, non-invasive and wireless sensors, energy systems, green design and sustainable building.
<b>Centre for Material Discovery (CMD, UoL)</b>	High-throughput chemistry and factory automation for new compound discovery.

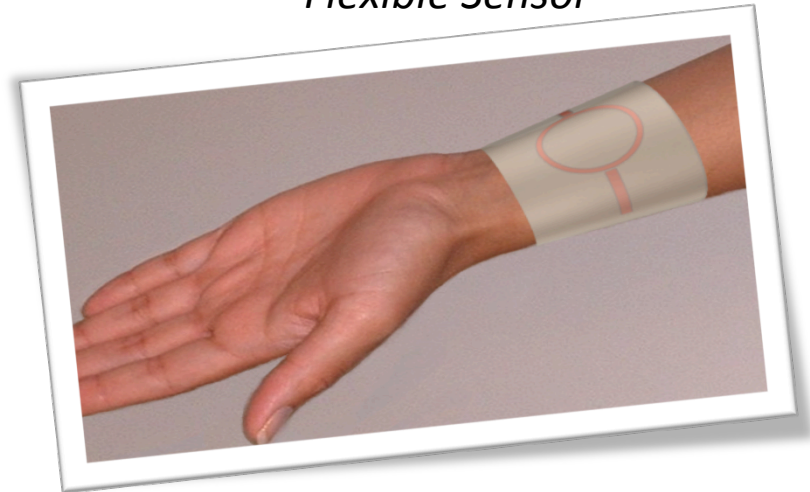


## Exemplars: 1 Wearable Sensors

- The 2,500,000<sup>th</sup> UK patent was awarded to Professor Al-Shamma'a for non-invasive, wireless, batteryless sensors
- Applications in health, security, automotive, military...



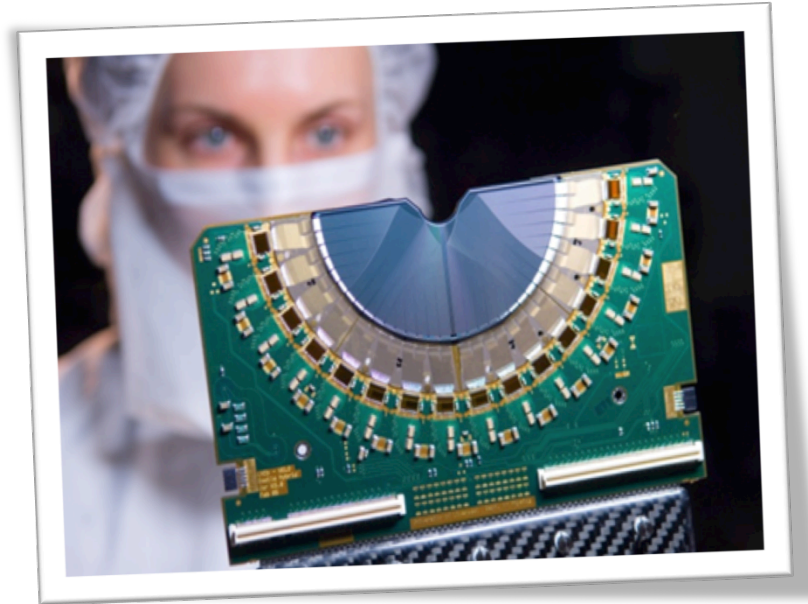
*Flexible Sensor*



*Sensor in bracelet for non-invasive patient monitoring for diabetes*

## Exemplars: 2. Particle Detectors

- Physicists at the University of Liverpool design and build particle detector systems used the Large Hadron Collider, CERN.
- The technology has applications for
  - Healthcare
  - Security
  - Energy



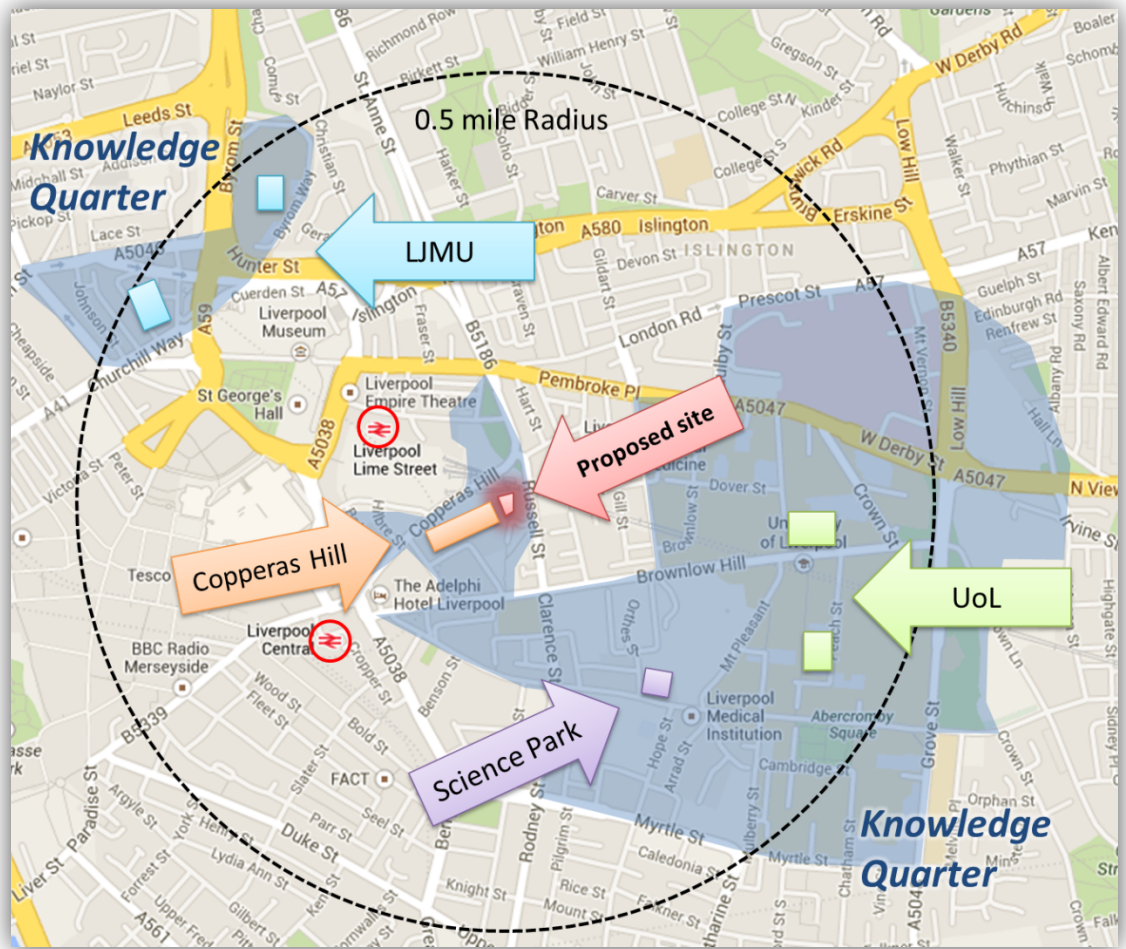
*The LHCb VERtex Locator (VELO); the most up-to-date, state-of-the-art particle detector ever built.*



- **Co-Working space**
  - Shared meeting rooms, break out areas and refreshment facilities.
- **A Technology Development Zone**
  - Integrated underpinning open laboratory services
    - Software development
    - Electronics lab
    - Shared equipment
  - Close location to universities will facilitate knowledge exchange and access to further facilities.
- **An Open Innovation Lab**
  - Tailored 'sandpit' model, to support innovation and collaborative design between university and industry.
- **Entrepreneurship Coaching and Business Mentoring**
  - Bespoke coaching and company mentoring.
  - Develop industry-partnered student internships.
  - Integrated provision from the LJMU Centre for Entrepreneurship, the Liverpool Business School and the UoL Management School
- **Access to Funding**
  - Create funds to support pre-seed opportunities, proof of concept studies and Enterprise Scholarships.
  - Develop an active investor network of Business Angles and Venture Funds
  - £2m is available from the Mayoral Investment Fund (MIF)

# Sensor City: Location

- In the “Liverpool Knowledge Quarter”
- Next to the two universities and our joint Science Park
- Excellent communication links



# Sensor City: Development

Copperas Hill:  
£112m LJMU  
redevelopment  
starts 2014

Sensor City:  
~2,500 m<sup>2</sup>

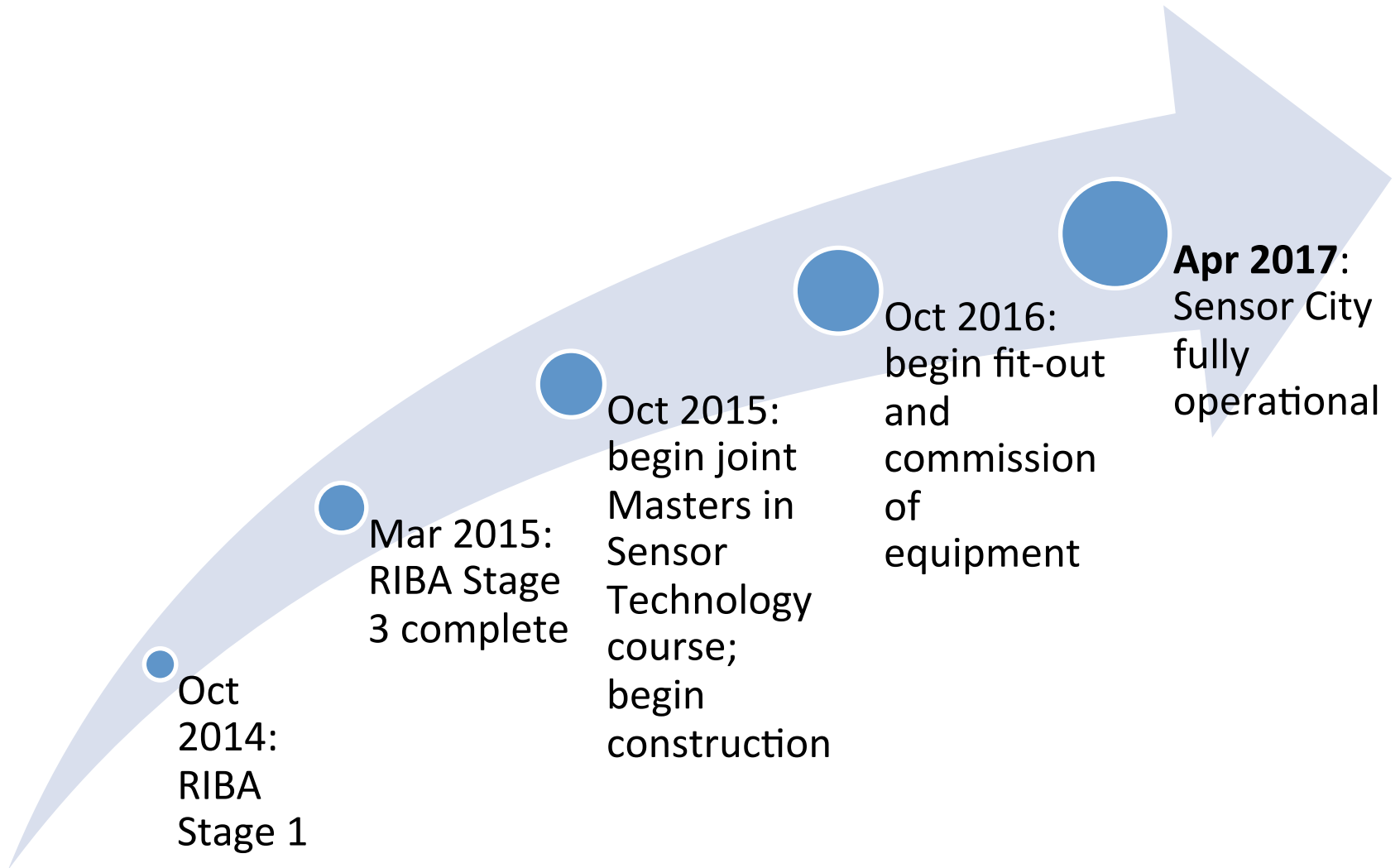
Available  
Phase 2:  
~2,000 m<sup>2</sup>

- a. Serving
- b. Car parking
- c. Research Piazza

- Total cost of UEZ: £15m
  - Funding from BIS: £5m
  - £10m of matched funding:
    - £7m via LEP funding (ERDF)
    - £3m from Universities (£1.5m LJMU, £1.5m UoL)
  - £14m will be spent on capital (£11m buildings and £3m facilities/equipment). Revenue expenditure over the first three years will total £1m
- Additional funding
  - £2m from Mayoral Investment Fund to be used by new business start-ups
  - We are currently targeting further company investment in the UEZ

- Over 100 companies / agencies provided letters of support for the bid
- Activities to be initiated in the coming months
  - Engage project manager
  - Construction planning
  - Marketing strategy (website, promotional materials etc)
- Future Plans
  - Company engagement events
  - Outreach events
  - Develop supply chains
  - SME support programmes

# Sensor City Timeline





## “Sensor Village”

- Sensor City will open April 2017
- In the run-up to this, we will develop activity within the Liverpool Science Park
  - “Sensor Village”



*Liverpool Science Park: a joint venture between Liverpool John Moores University, University of Liverpool and Liverpool City Council*

Lime St Railway Station

An aerial night-time rendering of a city. The scene is illuminated with warm, golden light from streetlights and building interiors, contrasting with the dark blue and purple tones of the twilight sky. The city is densely packed with buildings of various heights and styles. A prominent feature is a large, modern building with a curved, metallic facade and a glass roof, which is highlighted by a pink callout box. Other notable features include a railway station with a large, arched roof, a hillside with residential buildings, and a park area with trees and a walkway. The overall atmosphere is one of a vibrant, modern urban environment.

Copperas Hill

Sensor  
City

Science Park