NI Connected Health Innovation Centre (CHIC)

Connected Health Research in Northern Ireland

CHIC
NI Connected Health Innovation Centre

NIBEC
Nanotechnology and Integrated Bioengineering Centre

University of ULSTER

SERG
Smart Environments Research Group

Connected Health Research in Northern Ireland

- European Connected Health Alliance – Northern Ireland Connected Health-ECO (NICH-ECO)
- University of Ulster
  - NIBEC - CHIC based at NIBEC
  - SERG
- Queens University Belfast
  - ECIT, Chemistry and Medicine
- CITRIC
- Trusts
  - All – mainly at Ulster, RVH, and Craigavon
- Industry
  - Companies like BT (NI), Intelesens, Randox etc.

Technology Transfer at NIBEC

- Patents
  - 35 patents : Wide range in the area of Medical Devices and Technologies
- IPR
  - Heartsine, Heartscape, Intelesens, Laboratories Fournier, Maersk Medical, Tyco
- Spin Outs
  - Heartsine, Heartscape, Intelesens
- Spin-in
  - Sisaf

HEARTSINE™ TECHNOLOGIES

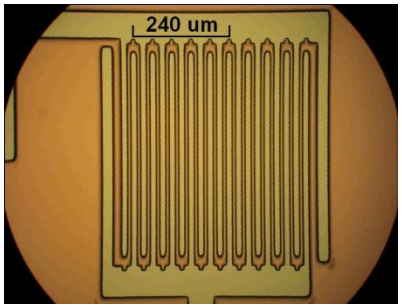
HEARTSCAPE technologies, inc.

intelesens RESPONSIVE HEALTHCARE

SISAF

Connected Health Themes at Ulster

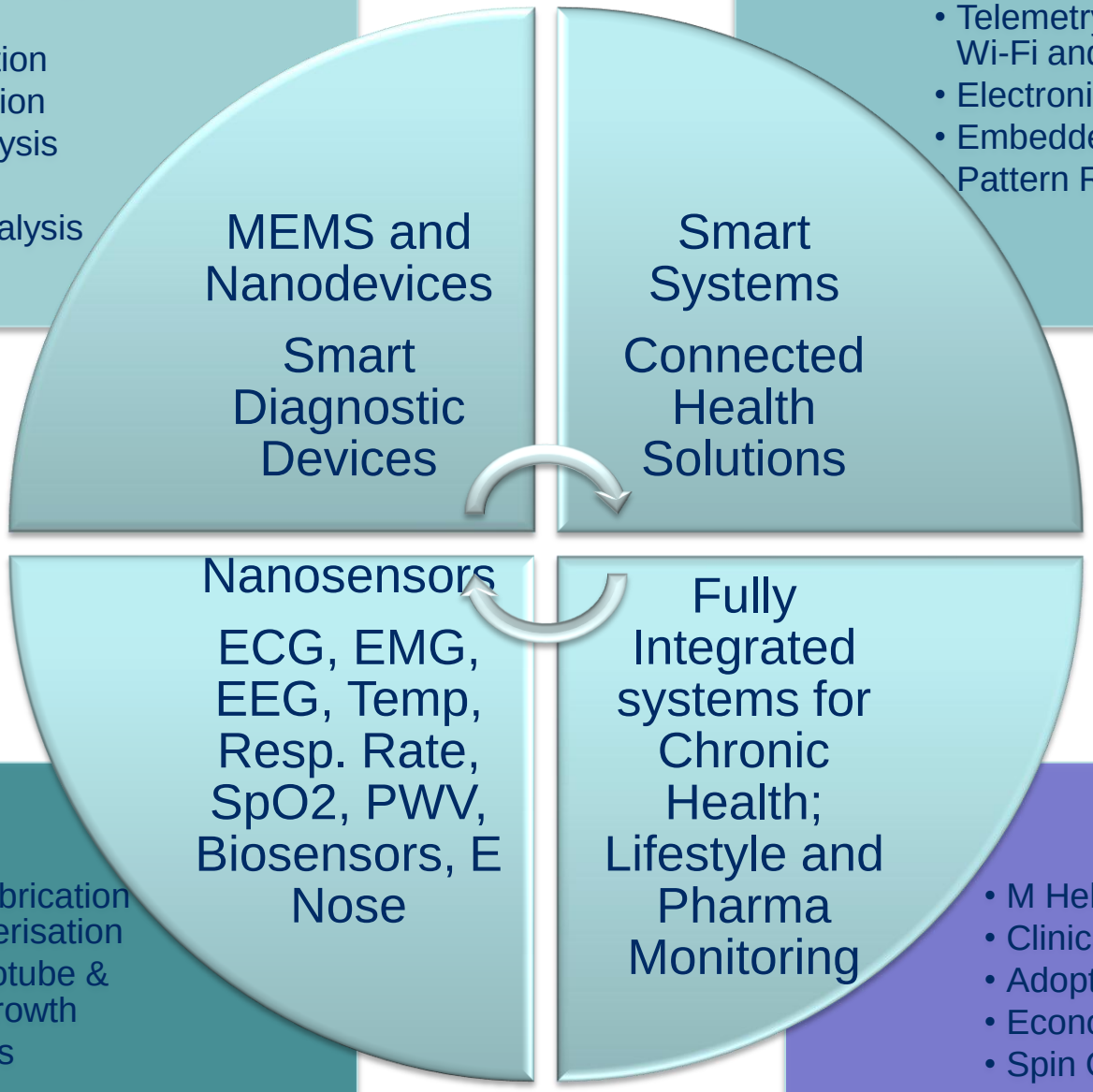
- Wireless Vital Signs Monitoring
- Point of Care Diagnostics Systems
- Sensor Technology
- M-Health
- Ambient Assisted Living
- Clinical Trialing
- Economic Assessment and Valuation
- Technology Transfer…spin outs and licensing
- Personalized Medicine (BSRI)
- CTRIC and UUM (ISRC)



CH Capability

- PlasmaTechnology
- Microfluidics
- Microfabrication
- Nanofabrication
- Surface Analysis
- Microscopy
- Chemical Analysis

- Telemetry: Bluetooth, Wi-Fi and Propriety RF
- Electronics
- Embedded Systems Pattern Recognition

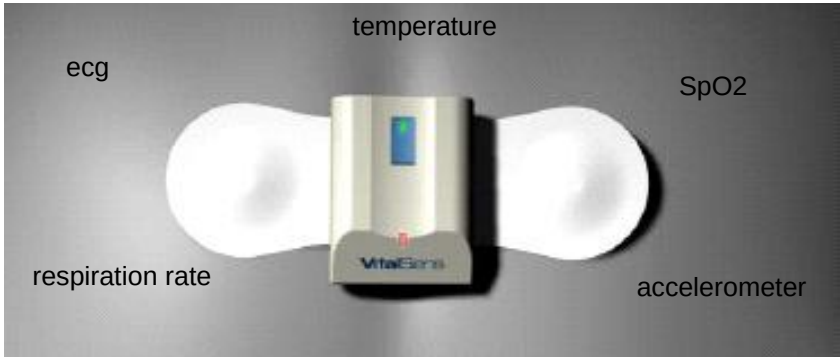


- Electrode Fabrication and Characterisation
- Carbon Nanotube & Graphene Growth
- Nanoparticles

- M Helath
- Clinical Trials
- Adoption Models
- Economic Assessment
- Spin Outs

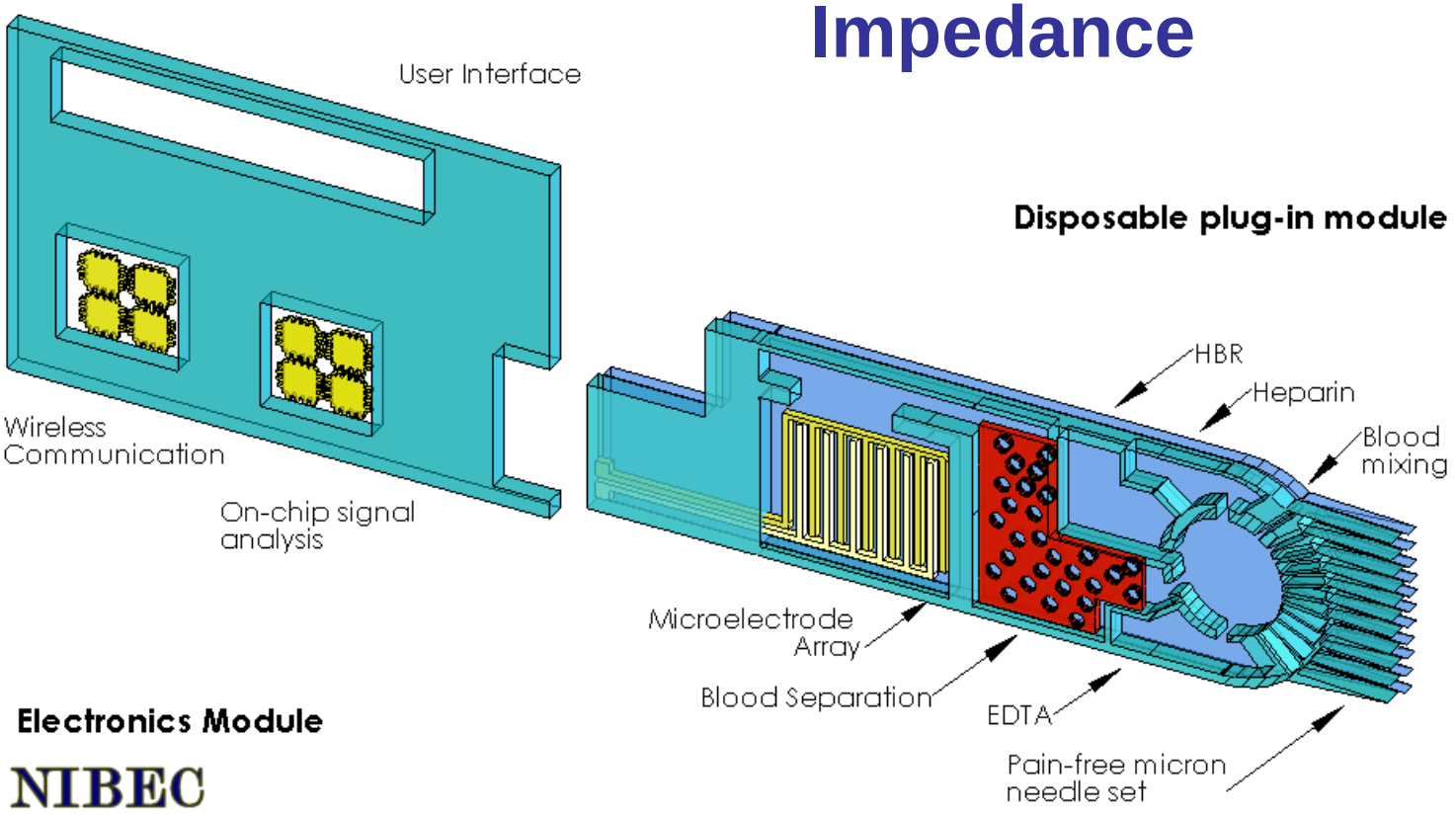
Wireless Vital Signs Platforms

- Intelesens has developed its platform as the basis of OEM products
- Short range or cellular telemetry
- Range of vital signs possible
  - Respiration
  - Blood oxygen (late 2007)
  - Temperature
  - Motion, activity and falls
  - Cardiac output
  - ECG
- Compact, light, easy to wear



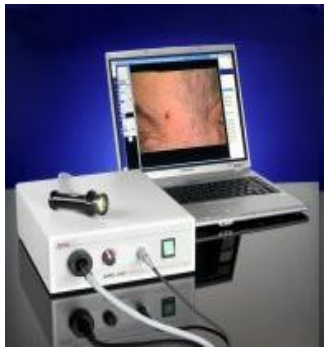
intelesens
RESPONSIVE HEALTHCARE

The NIBEC POC Cardiac Enzyme Impedance



Infrastructure

- SMART HOME & SMART WARD
- SMART Doctors Surgery
- SERG : Ambient Assisted Living
- Data Analysis/DSP/Labview Project Laboratories
- Patient Testing Laboratories
- NIBEC: Nanotechnology, Microfluidics; Cell- /Micro-Biology Laboratories; Microfabrication Cleanrooms
- Terrace House and Playing Field Testing
- Plans for new Innovation Centre (Manufacturing)…Rapid Proto typing



NI Connected Health Innovation Centre (CHIC)

MATCH
Multidisciplinary Assessment of Technology Centre for Healthcare

UNIVERSITY OF BIRMINGHAM · Brunel UNIVERSITY WEST LONDON · The University of Nottingham · KING'S College LONDON University of London · University of Ulster

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A major EPSRC funded national centre

RESEARCH THEMES

- Theme A: Decision Frameworks and Tools for Industry
- Theme B: Economics of Safety
- Theme C: Bayesian Framework research
- Theme D: User Requirements Studies
- Theme E: Value Procurement in NHS
- Theme F: Assessment Methods for New and Emerging Healthcare Technologies

EPSRC Pioneering research and skills

NI Connected Health Innovation Centre (CHIC)

Computer Science Research Institute

Smart Environments Research Group

SERG
Smart Environments
Research Group

NI Connected Health Innovation Centre (CHIC)

www.serg.ulster.ac.uk

@SERG_Ulster

NI Connected Health Innovation Centre (CHIC)

Clinical Research Areas

Clinical Domain	Areas of Research	Clinical Partner
Cardiology	12-lead ECG analysis, body surface potential mapping and smart garments	Royal Victoria Hospital Erasmus Medical Centre Cardiovascular Research Institute (Utah)
Dementia	Technologies to support remembering, social contact, activities of pleasure and safety.	Belfast City Hospital Alzheimer's Society (Northern Ireland) Northern Trust University of Sterling
Ageing	Technologies to support independent living	Belfast City Hospital Northern Trust
EEG Analysis	ABR processing	Cedar Foundation
Parkinson's Disease	Monitoring of tremors	Belfast City Hospital Parkinson's Walk in Clinic
Chronic Pain, Stroke and CHF	Home based self reporting and self-management	Bath Pain Management Unit Sheffield University

EUROPEAN CONNECTED HEALTH CAMPUS

EuMHA
European MHealth Alliance

ECHAlliance

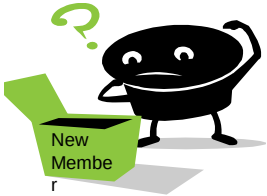
European Connected Health Alliance

Delivering leadership for the development of Connected and MHealth markets and practice across Europe

NIMAC

NI Connected Health Innovation Centre (CHIC)

Members include...



ECO (NICH-ECO) Launch

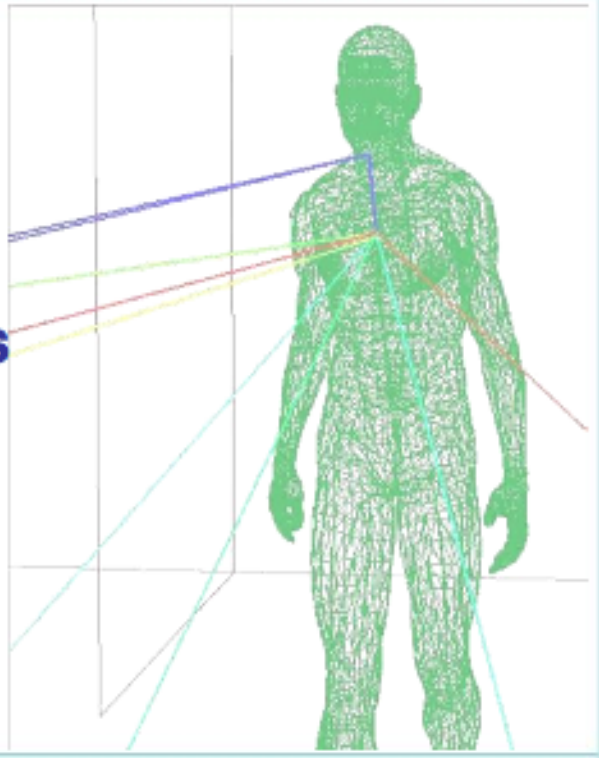
ECIT | The Institute of Electronics, Communications and Information Technology

Queen's University Belfast

Connected Health @ Queen's

Professor William G. Scanlon
Director of Research, Digital Communications

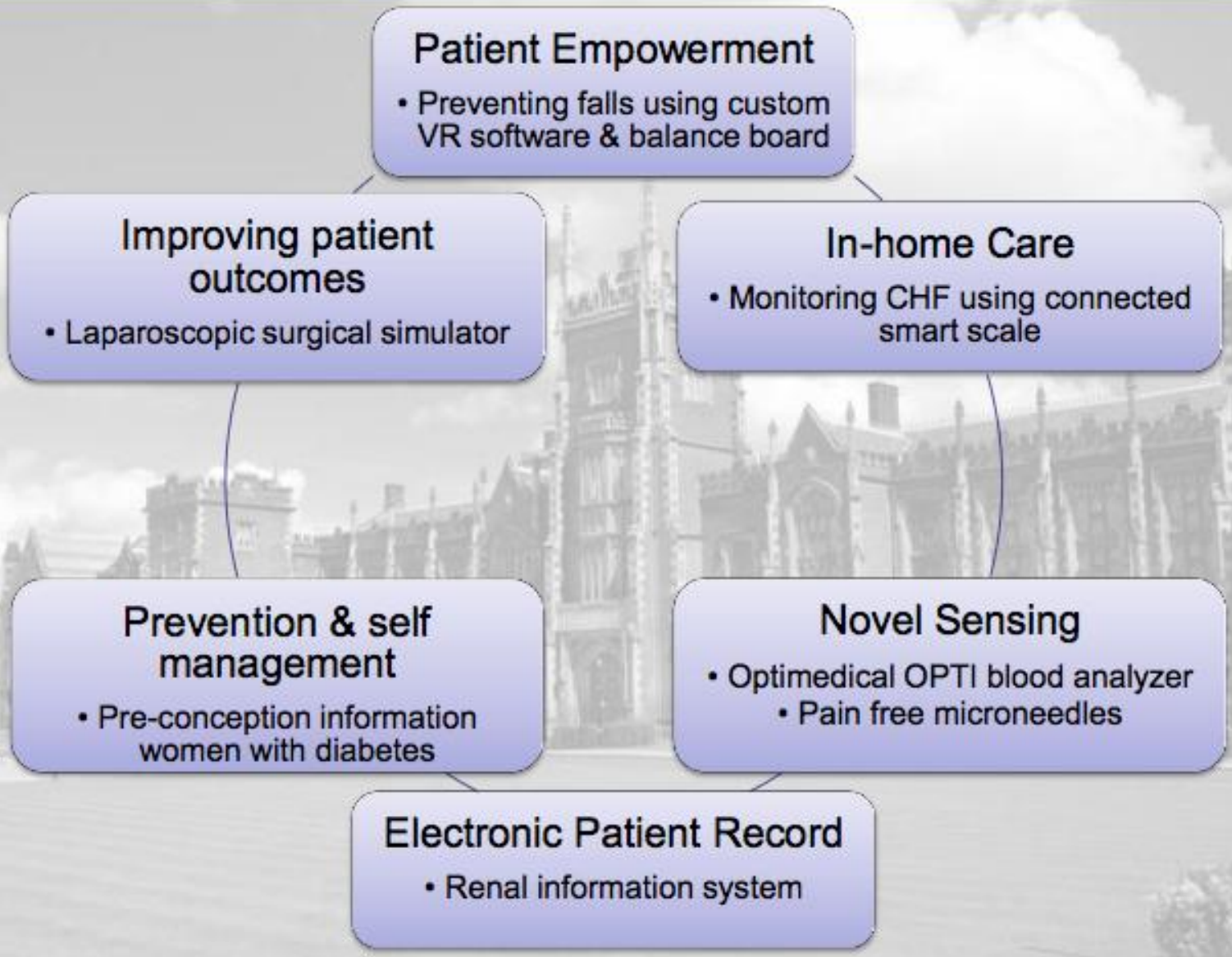
w.scanlon@qub.ac.uk
www.ee.qub.ac.uk/wireless/



Invest Northern Ireland

Department for Employment and Learning

ECIT | Queen's Exemplars



NI Connected Health Innovation Centre (CHIC)

Connected Health in Northern Ireland

Industry led research with global relevance

What is it?

CHIC is an ***Industry-led*** group which is focused on collaborative research to support the growth of the connected health market. Funding is largely from state aid.

Emerging Focus Areas

1. **Integrated community care** – joining together existing and new technology and process.
2. **Point of Care Diagnostics** – moving diagnostics closer to the patient.
3. **Vital Signs monitors** - technology development to support sign identification, analysis and communication.

NI Connected Health Innovation Centre (CHIC)

Connected Health Competence Centre

Industry led and academia inspired.

Stephen McComb,
Technology Leader from Industry.
Background in telecoms, supply chain, health service reform, health IT Implementation and Lean management consultancy.

Prof. Chris Nugent:
Computing Science/Intelligent Algorithms and Connected Health

Prof Jim McLaughlin: (Physicist)
Medical Sensors; Micro and nanodevices;

Steering Group
Start, Stop, Continue
Currently shadow board

NI Connected Health Innovation Centre (CHIC)

Gathering Interest

Identifying the companies to work with

Yarra, Sectra, Oracle, EMC, Crafty Devil, CIGA Healthcare, Stredia , Independent Health Care Providers, HP, S3, I-Innovations, Amtec Medical, Randox, Finger print Learning, Fold, Scientific Medical Clinical (SMC) Ltd, Domestic Care NI, Andor, BT, Northgate, Microsoft, Almac, Fortress Diagnostics, Intelesens, Core Systems, Accenture, Prime care NI, 3fivetwo Healthcare, Astute Labs, Tyco Health care Uk, Rumble Labs, Vertical Structures, Sensor Mind, Galen, Kainos, Connected Health NI, Task, Isoft, Heartsine, 3M, NI Housing Executive, Meadows, Biancamed, Extra-Care, Balmoral Healthcare, Ann's Home Care, Care Link /Manor Health Care, Northern Ireland Institute for the Disabled, Medevol Clinical Services, Crucible Pictures , Redburn Information Services and Burke Consulting.

50+ Companies contacted

Estimated to be another 50+ companies

Strong Connected Health Interest

A sample of the types of potential organisations

craftydevil

CIGA healthcare

BOSCH

BT

RANDOX

Microsoft

3fivetwo HEALTHCARE

GE Healthcare

ORACLE

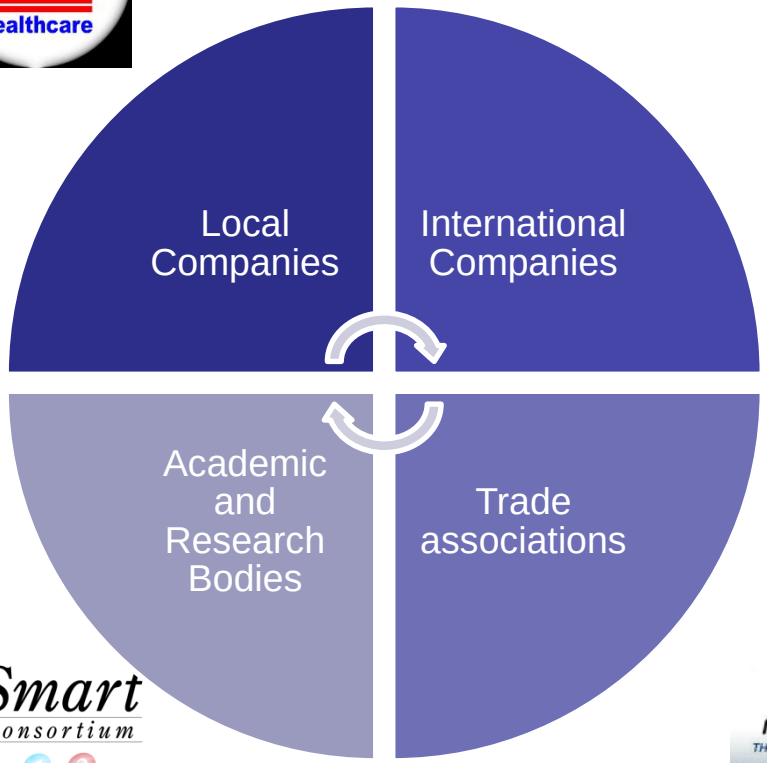
intelesens RESPONSIVE HEALTHCARE

Queen's University Belfast

BioBusiness

University of ULSTER

digital circle



Smart Consortium

momentum THE NORTHERN IRELAND ICT FEDERATION

ihcp independent health & care providers

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EUROPEAN CONNECTED HEALTH CAMPUS

EuMHA European MHealth Alliance