



Sharing the experience of BT Health in the National Programme for Information Technology in the NHS in England

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February 2009

The eHealth World

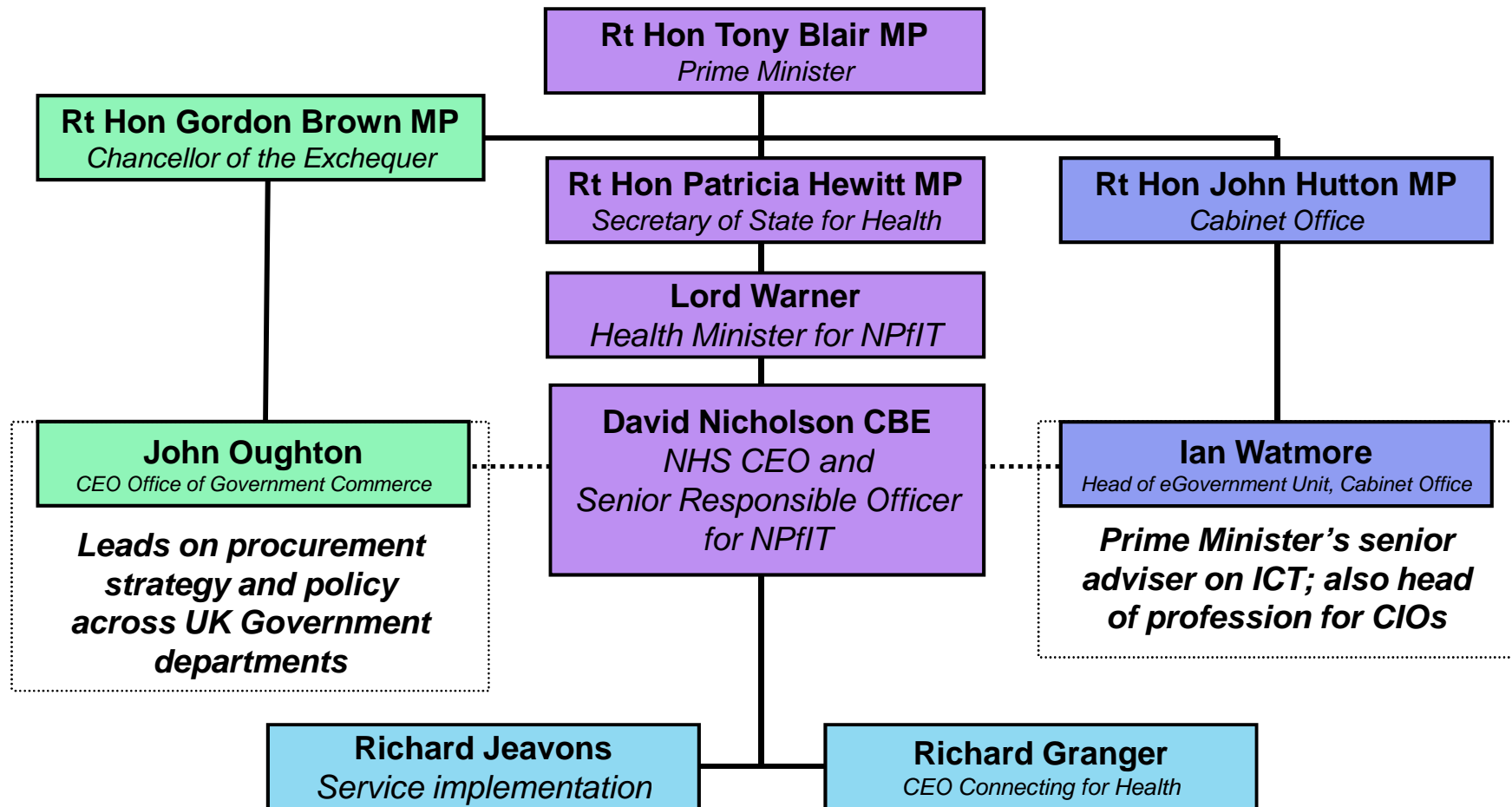
Interoperable, secure, wireless, mobile & broadband networks



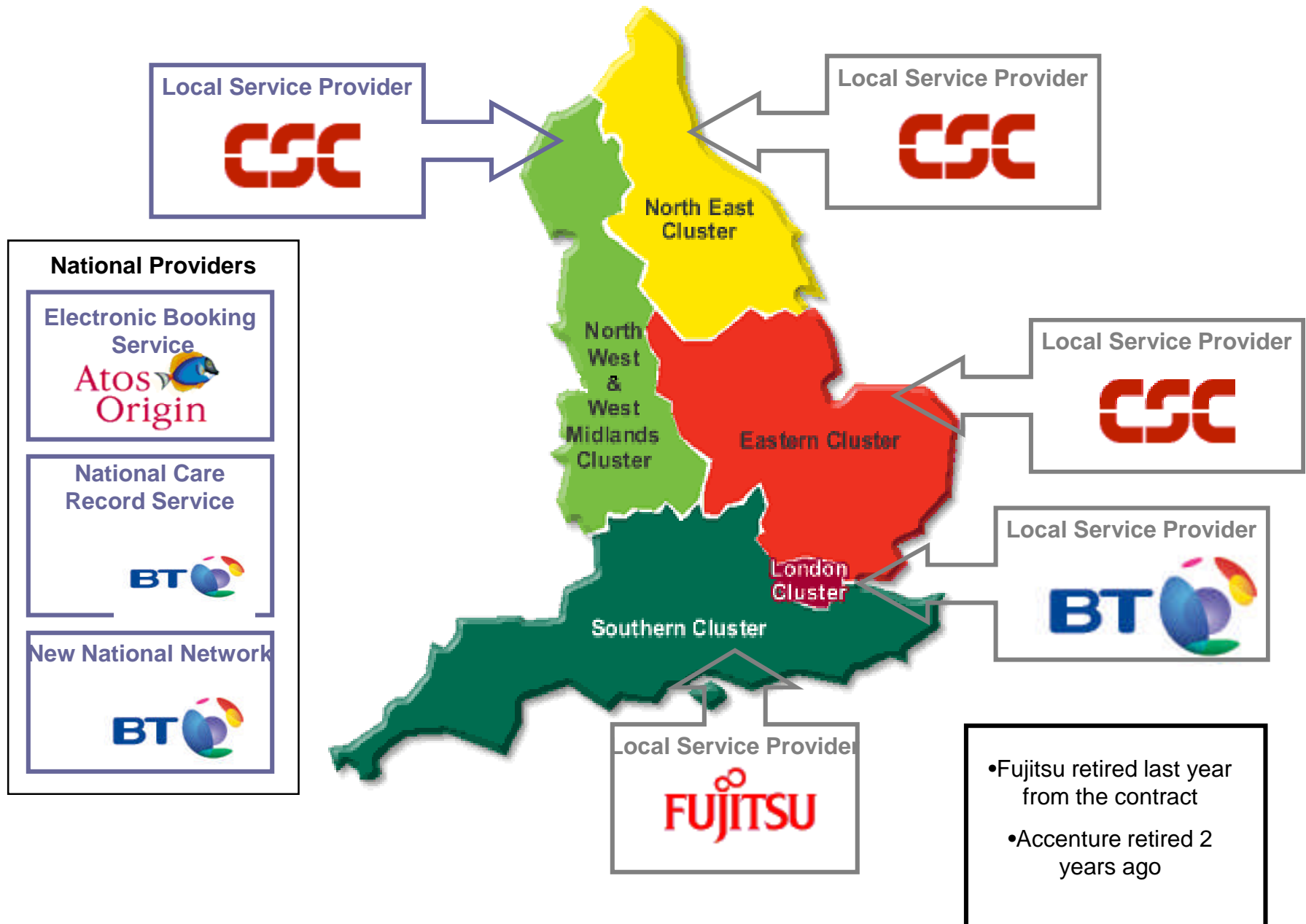
The National Programme for IT

- The National Programme for IT (NPfIT) is a 10 year programme that will deliver a modern, integrated IT infrastructure and systems for all NHS organisations in England.
- It will provide the following capabilities:
 - The NHS Care Records Service (NHS CRS)
 - Electronic Transmission of Prescriptions (ETP)
 - A New National Broadband Network (N3)
 - Picture Archiving and Communications Systems (PACS)
 - IT supporting GP payments, the Quality Management and Analysis System (QMAS)
 - Choose and Book
 - Communications – a central email and directory service

NHS CLIENT: KEY PLAYERS (at the time Programme started)



NATIONAL AND LOCAL SERVICE PROVIDERS



The Spine – the national database

– Scale

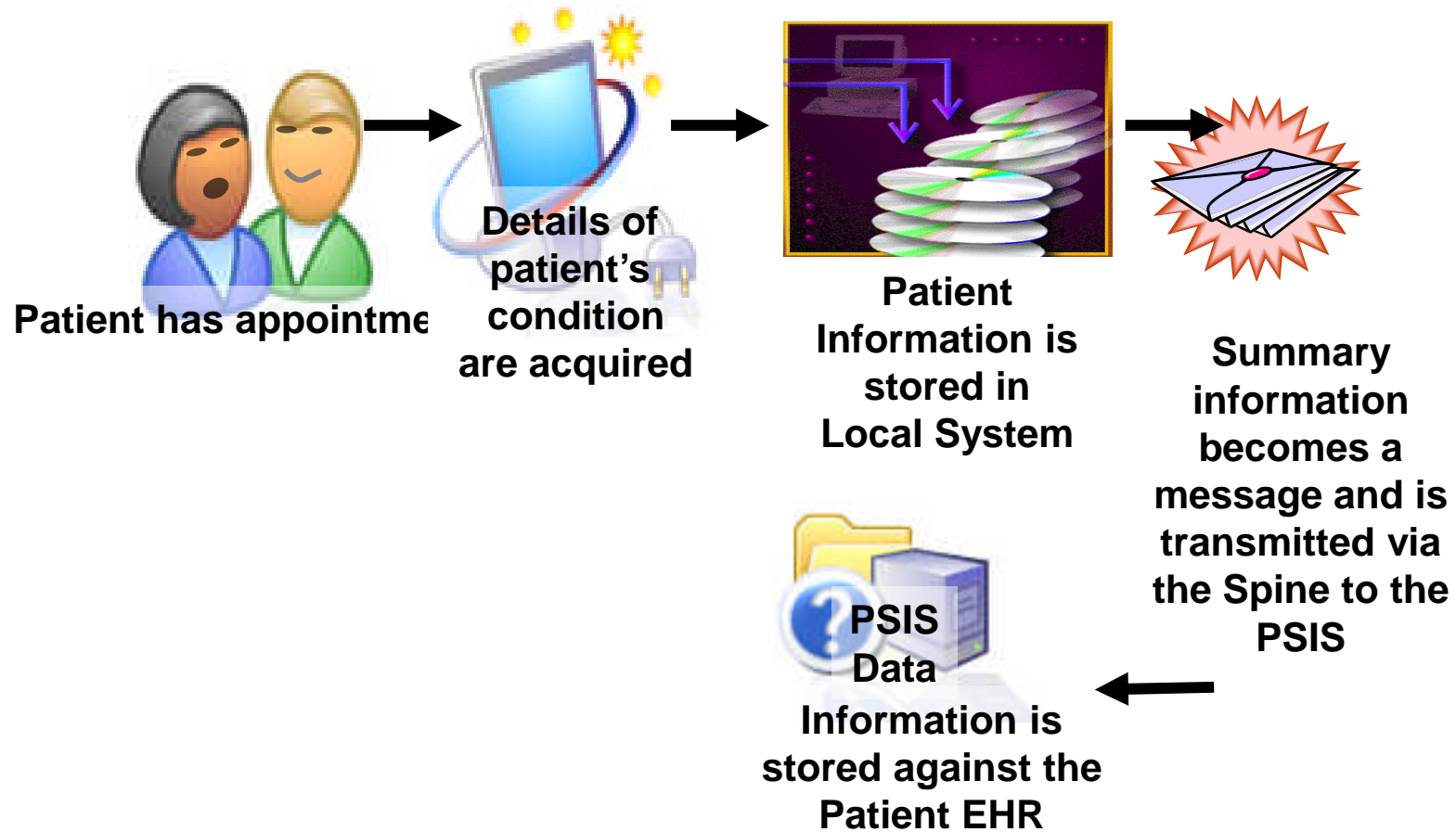
- One of the biggest databases in Europe
- More than 70 million records
- 313,000 + registered users

– Operational statistics

- All software deliveries on or ahead of schedule since February 2005 (11 out of 11)
- Messages transmitted Total: c250 million Monthly: >27 million
- Electronic prescriptions Total: >10 million Monthly: >1.6 million
- Choose and Book Total: >2 million
Monthly: c250k

• Secure

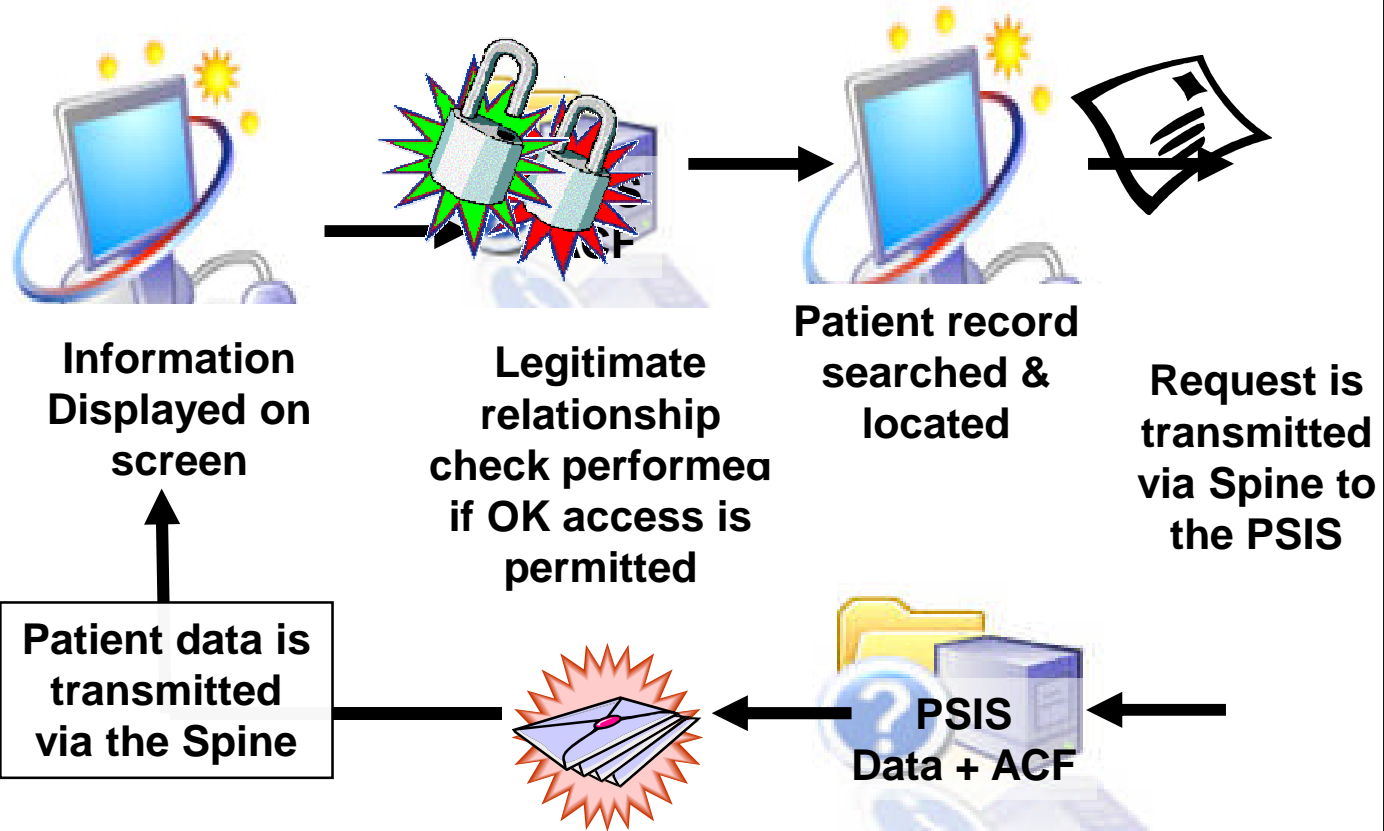
Capturing Data



Recalling/Reading Data

Transaction & Messaging Spine

Transaction & Messaging Spine



Transaction & Messaging Spine

How Spine will work across clusters in an emergency



Leeds resident Michael visits Blackpool

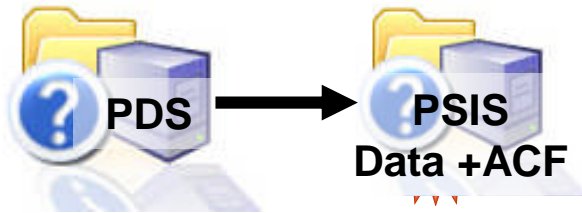


Following an accident Michael visits A&E for assistance



A&E Doctor needs to view Michael's Health Record . . .

Transaction & Messaging Spine



Search performed - Record is found.
Legitimate relationship is formed.
Information is transmitted to A&E Doctor

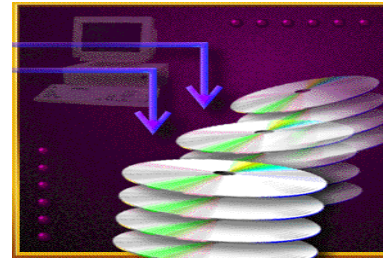
How Spine will work across clusters in an emergency



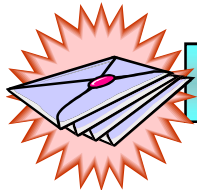
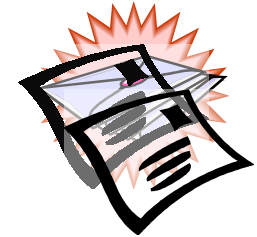
A&E Doctor views Michael's Health Record . . .



Carries out investigations & treats Michael. . .



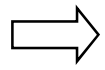
Michael's Information is Stored in the Local System



Transaction & Messaging Spine



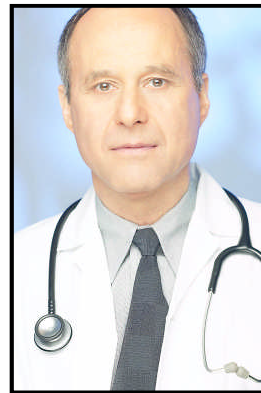
**Discharge Note generated sent to Spine
Alert generated sent to GP System via Spine**



How Spine will work across clusters in an emergency



Michael returns home to Leeds . .



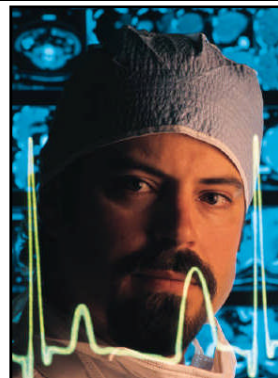
**GP receives alert & discharge note
Orders nursing care and medication**



eTP



Transaction & Messaging Spine



**Refers Michael to Physiotherapy (Choose and Book)
Refers Michael to Hospital Consultant (Choose and Book)**

NHS Service Operations Centre (NSOC) – leading edge end-to-end service capability

- End-to-end management
- Infrastructure to application
- ISO/IEC 20000
- ITIL standard
- 24x7
- Scalable
- Depth of view



N3 – What is it?

N3 (the New NHS National broadband network)

Broadband network linking 18,000 sites in England,

and upto 3,000 in Scotland and 10,000 non-NHS

Enabling key NHS applications

One of the largest Broadband networks in the world

Expected savings c£900m over seven years

Serving one of the World's largest employers – 1.3m

N3 Service Provider (BT)

BT fulfilling a network aggregator role

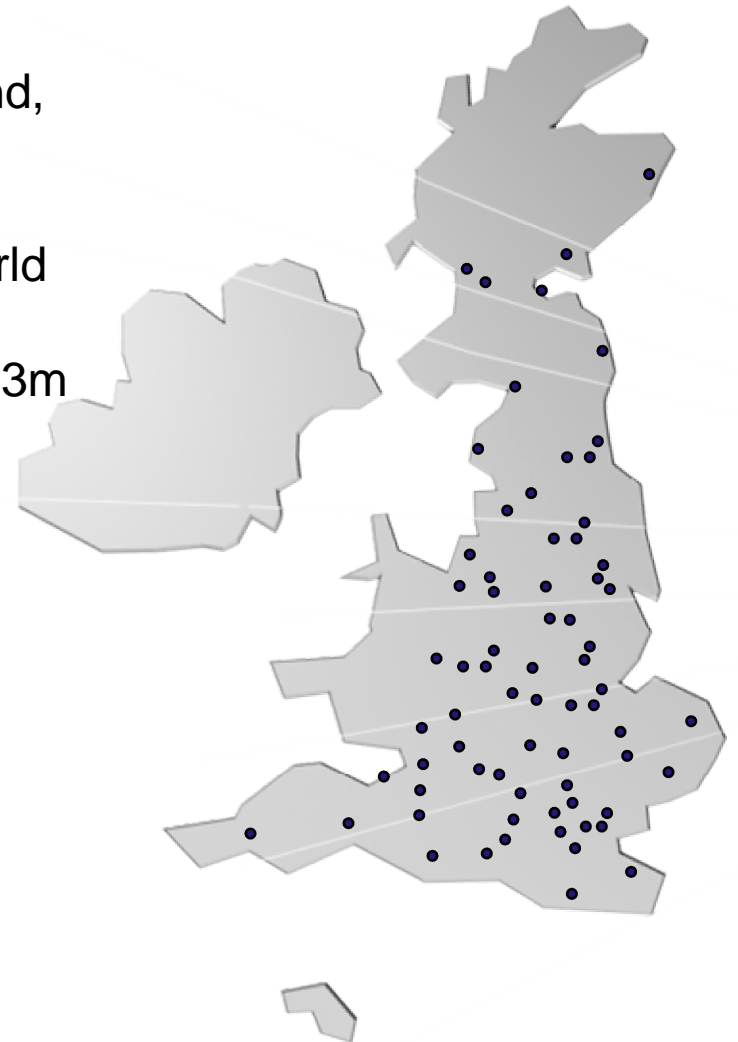
2.5years into 7year contract

58 PoPs and 12,780miles of Fibre

500 People within BT

24x7x365 Support

6,000 Calls to the N3 Helpdesk per month



N3- Enabling the NPfIT

456.123 Users SPINE(*)
1,5 Mill. viewings/día
1 Mill New Records/day



328.553 Users - NHS Mail
+1 Mill emails/day



14.977 Electronic Bookings /Day
Total 7.431.529



Electronic Prescriptions
200.000/ Day
Total 72.680.070

PACS
1.516.729/Day
Total
613.001.624

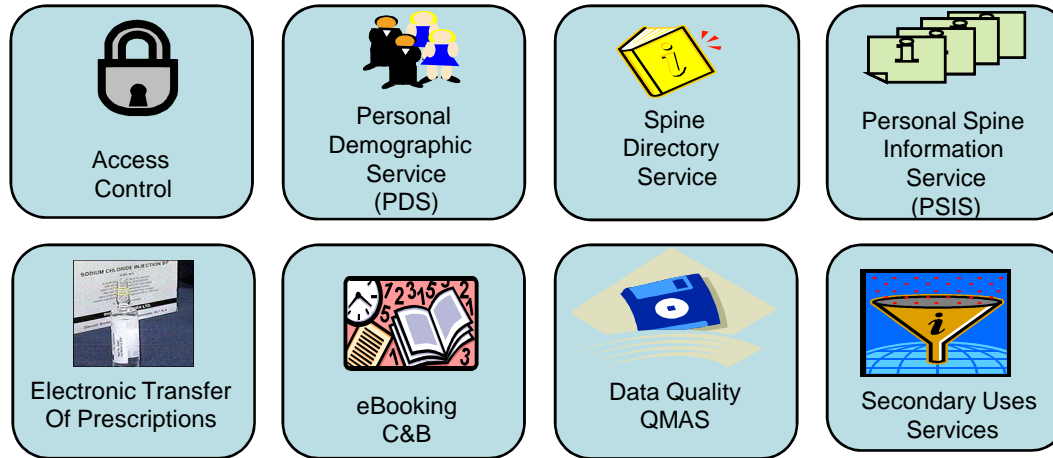


29.730 Secure Connection

N3

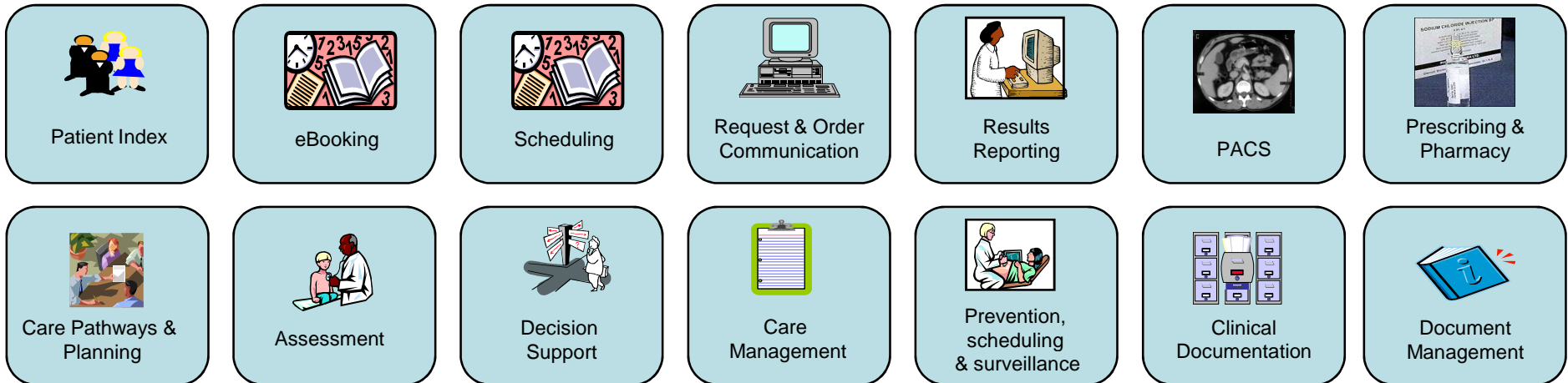
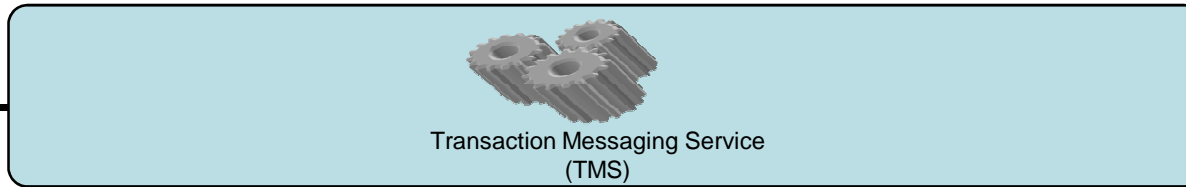


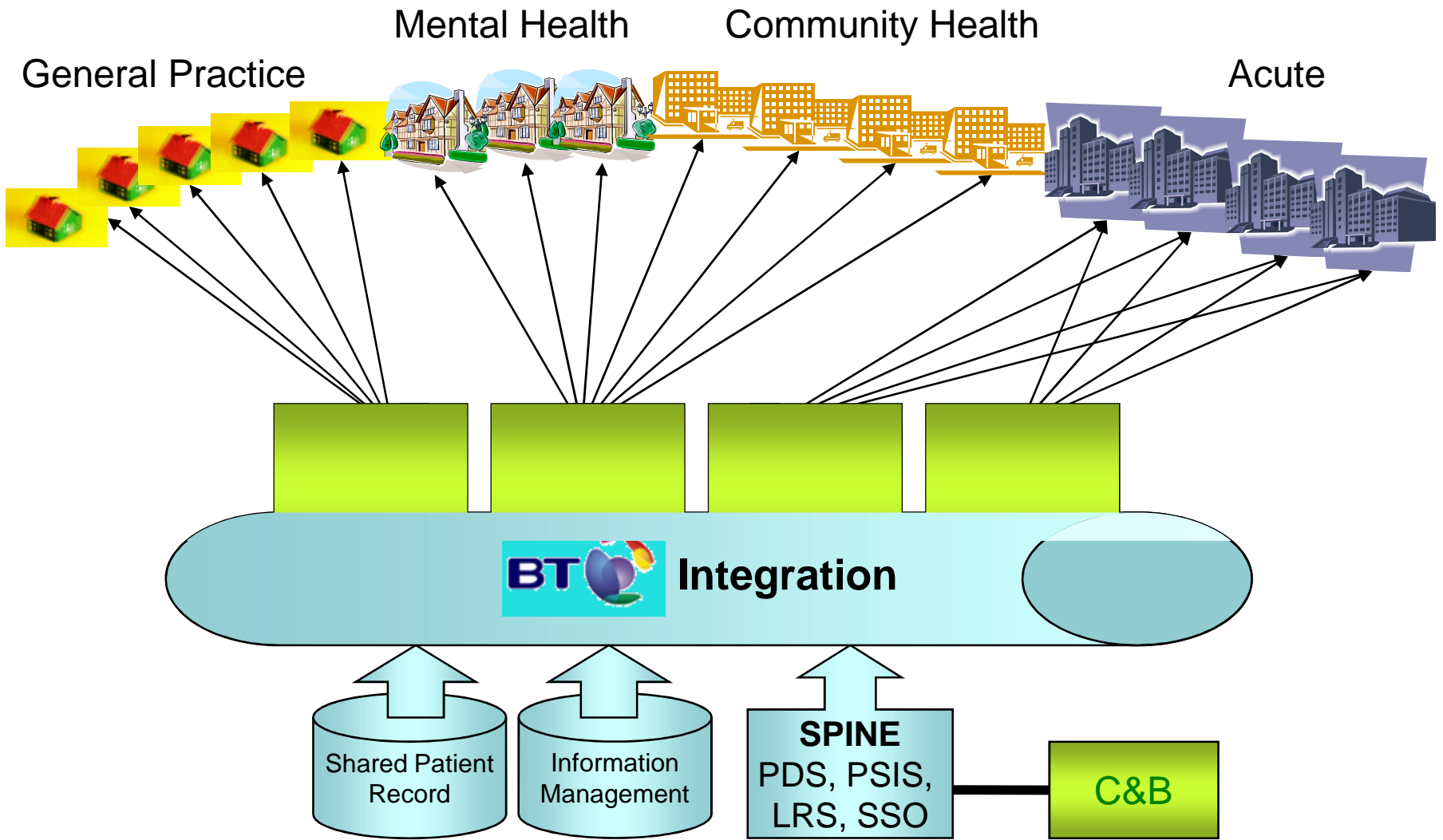
(*)SPINE "NHS Care Records"



NSP

LSP





**BT Adds Value as the Integrator,
making the whole more than the sum of the parts**

Electronic Patient Records

England NHS London LSP: Approach to EPRs

- BT Health is the prime contractor and works closely and collaboratively with a number of key suppliers
- BT Health brings:
 - Wide knowledge of healthcare applications
 - Domain process knowledge
 - Domain specific infrastructure knowledge
 - Large programme management skills
 - Health system integration skills
 - Global leadership in the development of healthcare application safety processes

Electronic Health Record – Associated Services

England NHS BT examples

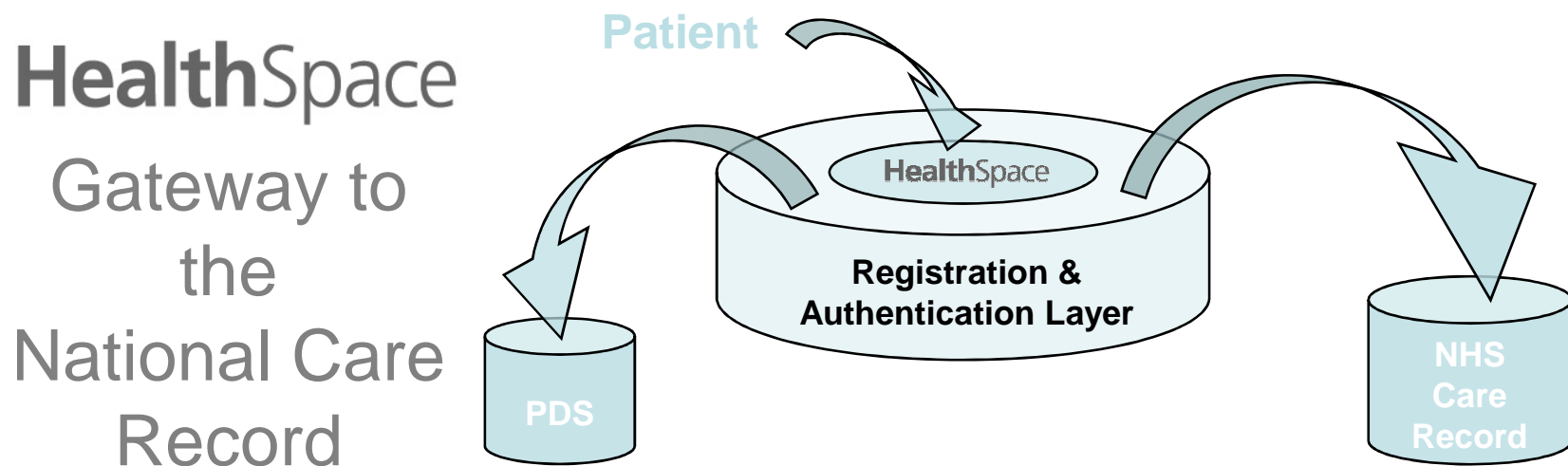
- England NHS Spine: Spine Directory Service
 - database of users, roles, workgroups and organisations
 - >100 directory requests a second
- England NHS London LSP: SPR Service Directory
 - database of services for routing service requests to fulfiller services
- England NHS London LSP: Scheduling & booking
 - cross-facility scheduling will be supported by requests from one facility to another through messaging:
 - booking request via the national Choose & Book solution
 - referral for services using referral message flows
 - request for services using requests and results reporting message flows

Electronic Health Records – Summary Care Records England NHS London LSP: LSP Summary Record

- LSP Summary for the benefit of all clinicians and Trusts within the London region
 - Managed by the patient's General Practitioner
 - Contents:
 - Problems and significant events
 - Coded diagnoses of consultations for the past 3 months
 - Free text linked to diagnoses
 - Allergies and adverse reactions to medication with date and severity where available
 - Repeat prescriptions – last 18 months
 - Acute care prescriptions – last 6 months with indication
 - Recent relevant results
 - Recent referrals - summary only
 - Critical alerts
 - Subset sent to PSIS as the GP Summary

Electronic Health Records – Patient access and control England NHS HealthSpace

- Integration with BT Health services
 - Patient demographics held in PDS
 - Amend some demographics and preference details
 - Flag disagreement with consent
 - Manage nominated pharmacies
 - Patient health record held in PSIS
 - Annotate (not correct) health records
 - Patient entered observational data will be stored
 - Information will be made available to clinicians



Electronic Health Record – Associated Services – Health Informatics

Coding and Classification / Taxonomy Service (CaTTS)

- Implements SNOMED CT for use by other clinical applications
- Protects the London LSP programme from SNOMED-CT change and complexity
- BT developed – may become open source

- CaTTS encapsulates SNOMED-CT standard implementation as a common service
 - term search services
 - subset enabled term search services
 - will provide an equivalence checking service to ensure alternative logical forms are detected
 - does / will provide message constraint checking service to detect inconsistencies
 - could check what information in an outgoing message would be understood and flag issues
 - could check that clinical information conforms to standard representations
- CaTTS can act as a reference implementation for suppliers to define behaviour required to ensure integration succeeds
- CaTTS as a syndication tool for managing SNOMED CT updates
- CaTTS as a configuration tool
 - could act as the single change analysis service to streamline change management of configuration items
- CaTTS could be a content editing tool

Consistent use of SNOMED-CT is vital

Support Systems – Service operation centres England NHS Service Operations Centre

Virtual NSOC

“Virtual NSOC Command Bridge” for those remote teams and suppliers

E2E Real time service Monitoring

Component monitoring into e2e real time Service monitoring across LoBs

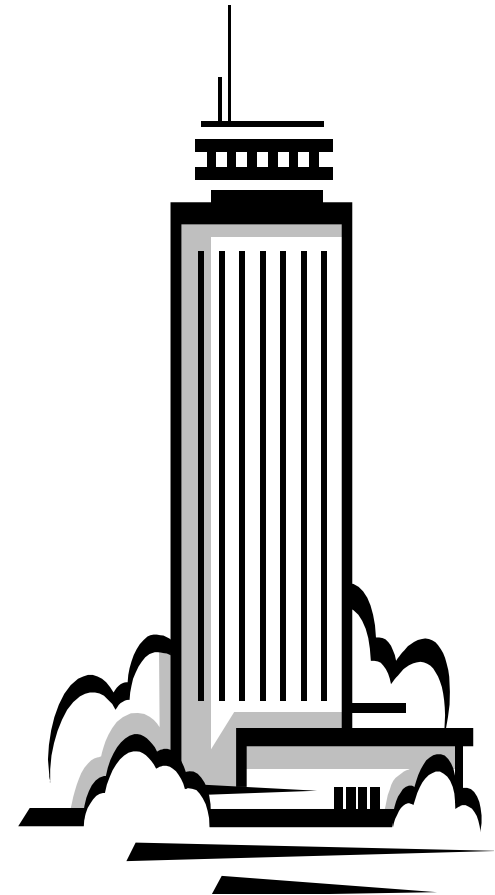
Customer Experience

Customer Experience monitoring highly representative of the service seen by customers.

Co-location

Co-location of the “critical” BT and supplier teams.

A Service not Product approach



Support Systems – Service operation centres

England NHS Service Operations Centre

Real time Business performance views

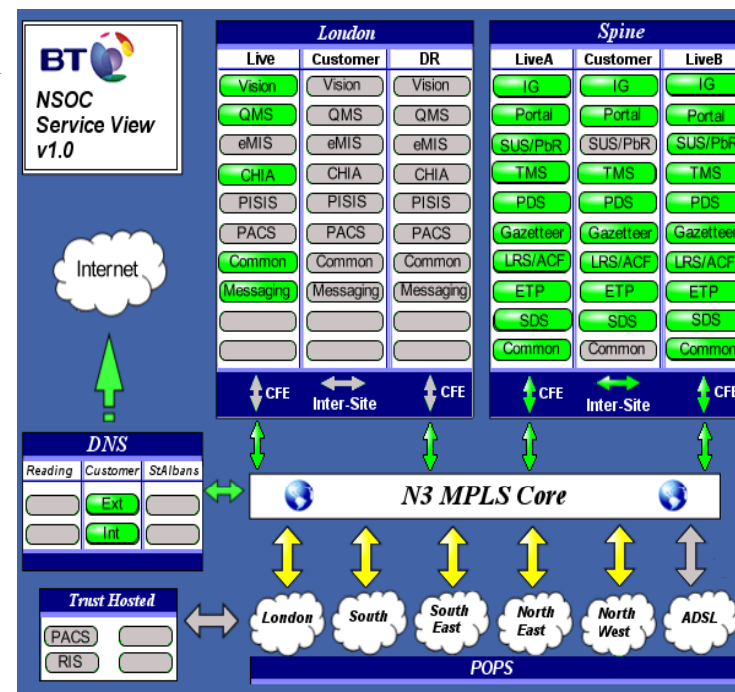
- Authentication volumes
- Message speed and through put
- Electronic prescription volumes
- No of new smart cards added

Real time Service Management status

- Incident Performance
- Change Performance
- Problem Performance
- Release milestones
- Availability
- Call Answering

Automation through enhanced / fully exploited Toolsets

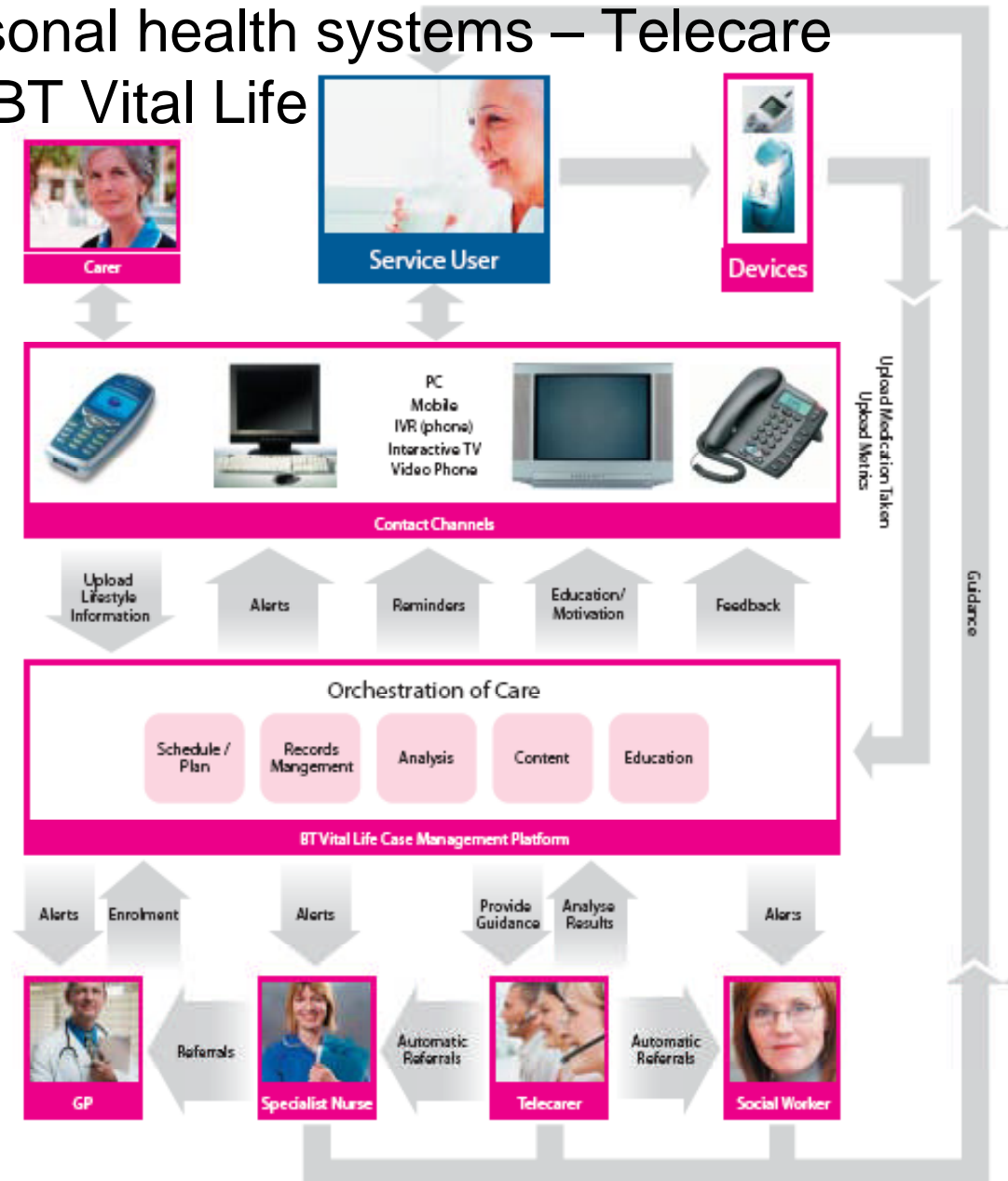
- Auto ticket generation, auto diagnostics, scripted fix
- Auto applied scripted fix
- Auto build / load of server, N/W and application
- Auto build and updates of and complete CMDB
- Auto SLM reporting
- Auto Operational Dashboard
- Auto linkage between incident – change – problem - config



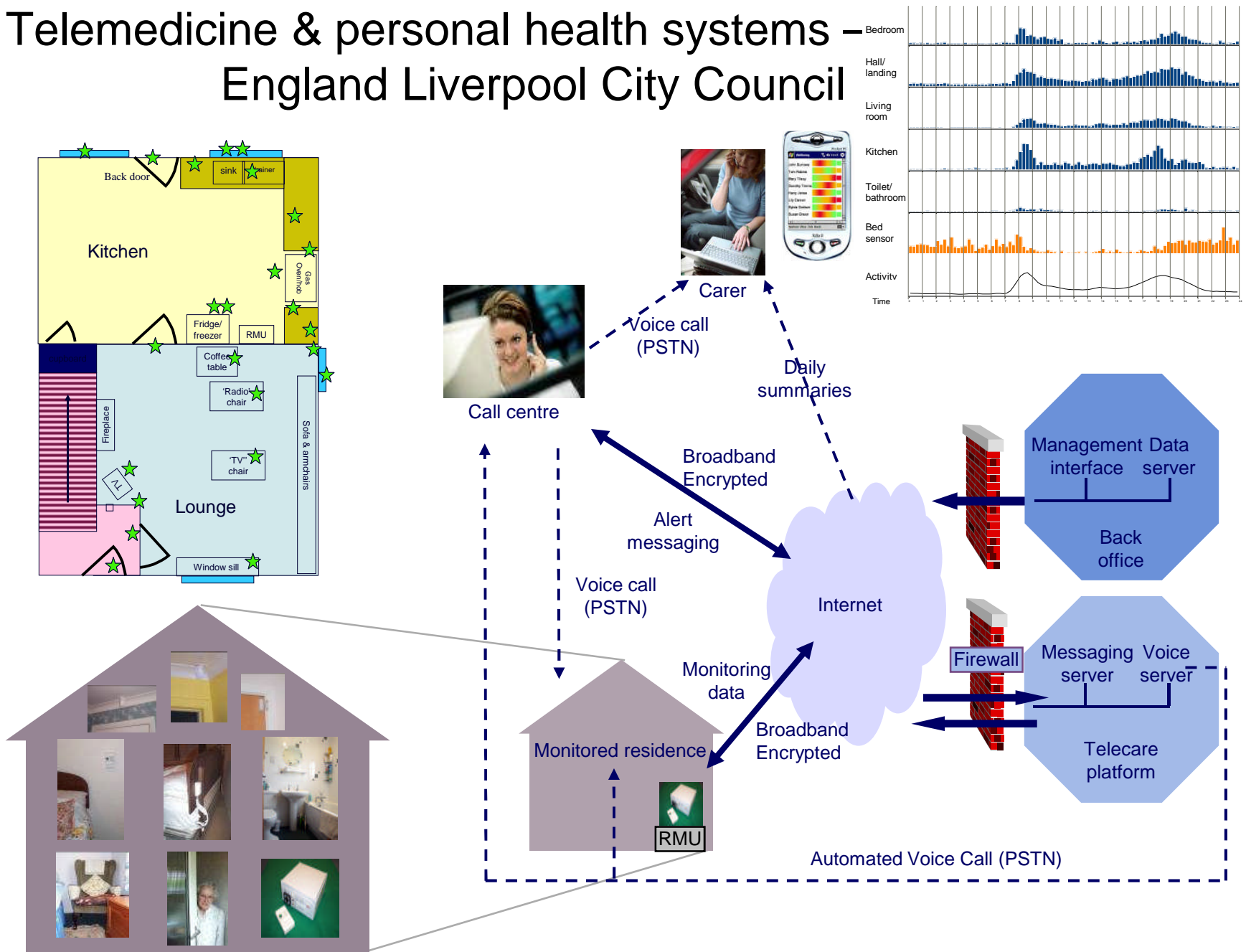
Telemedicine & personal health systems – Telecare

- Personalised care plans & health promotion advice
- Management of key biometric data
- Monitor activities of daily living
- Medication and appointment reminders
- Proactive telecare network support
- Scripted protocols for health behaviour & lifestyle advice
- Multi-channel comms

BT Vital Life

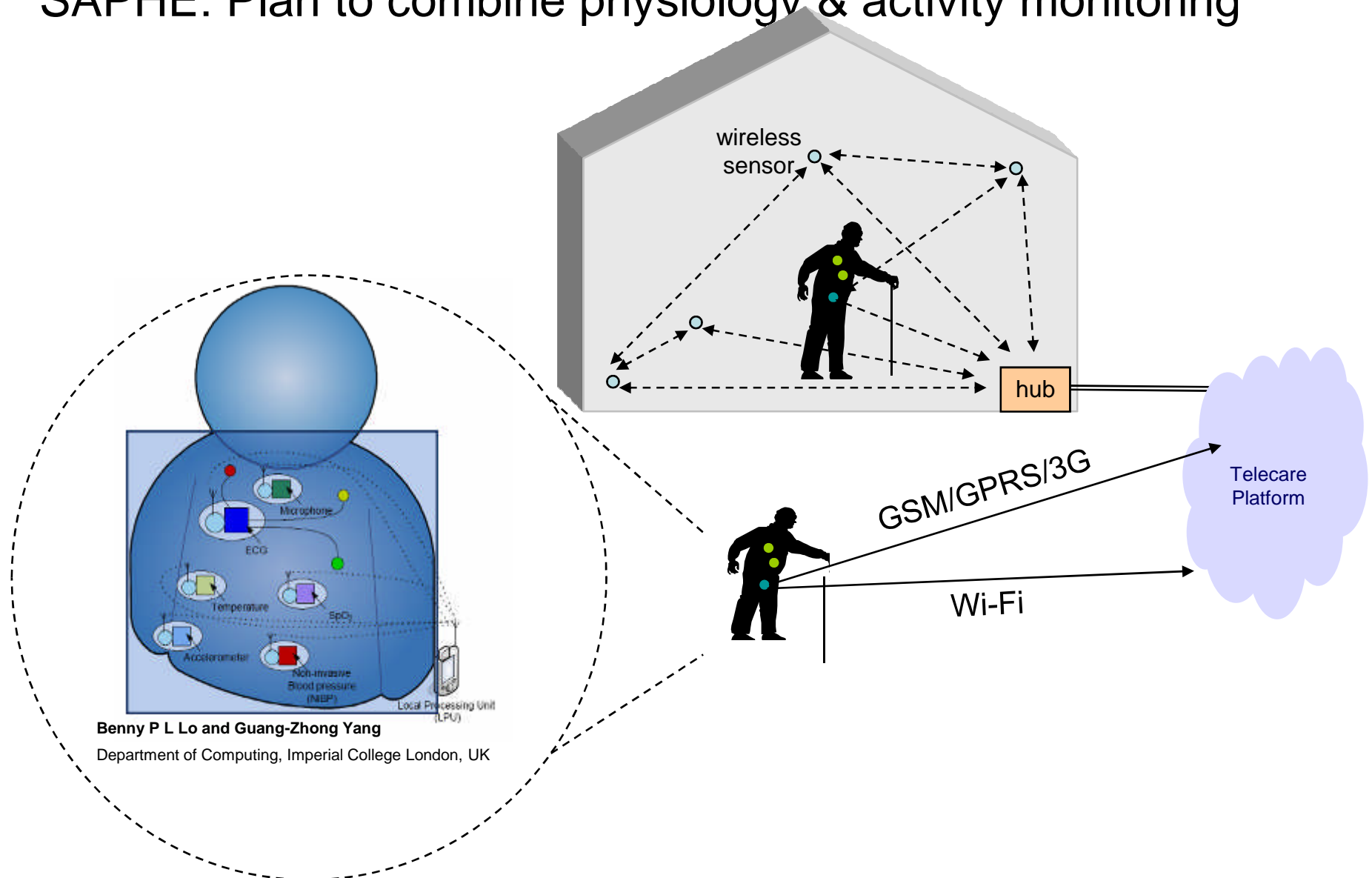


Telemedicine & personal health systems – England Liverpool City Council



Telemedicine & personal health systems – Telecare & Telemonitoring

SAPHE: Plan to combine physiology & activity monitoring



Benny P L Lo and Guang-Zhong Yang
Department of Computing, Imperial College London, UK

Support Systems – Tracking & Supply Chain

BT managed Blood Tracking

- On average, in any year, a hospital will have a 50% chance of experiencing a transfusion-related problem caused by human error
- Right patient, right blood
- Automated recording of all vital records
- osYris from Olympus managed service
 - Printed Wristbands using 2D Bar codes used for blood, RFID not yet approved by FDA



More information

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