Your Healthcare Prescription for Smarter Patient Outcomes

Enterprise Content Management

Agenda

- Main Objectives
- Smarter Healthcare Capabilities
- Basingstoke & North Hampshire NHS Foundation Trust
- The Path to Smarter Healthcare
  - ECM Business Solution Entry Points
  - Demonstration

Discussion Point

- # What are the main reasons for considering ECM for Patient Records?
  - Improving Patient Outcomes
    - Greater Accessibility to patient records
    - Single view of patient records
    - Ability to share records with other internal and external "stakeholders"
  - Reducing Costs
    - Storage Space
    - Eliminating logistical costs
    - Greater efficiency of costly assets by reducing delays

IBM's Smarter Healthcare Capabilities

A portfolio of business solutions focused on the local NHS that promote interoperability and provide Trusts with analytics capabilities,

- to improve patient outcomes
- to increase operational performance
- to reduce clinical risk.

Healthcare Solutions Overview
IBM Software Solutions | Enterprise Content Management

IBM

IBM Healthcare Portal

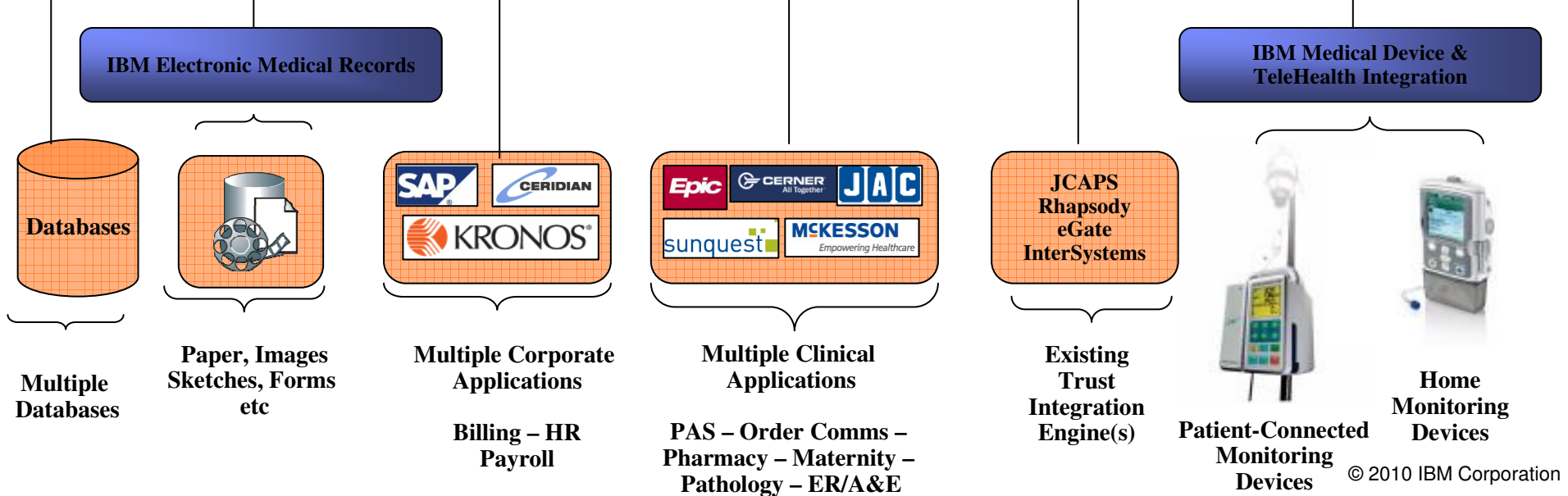**IBM Health Information Exchange**

IHE

IBM Initiate Master Patient Index
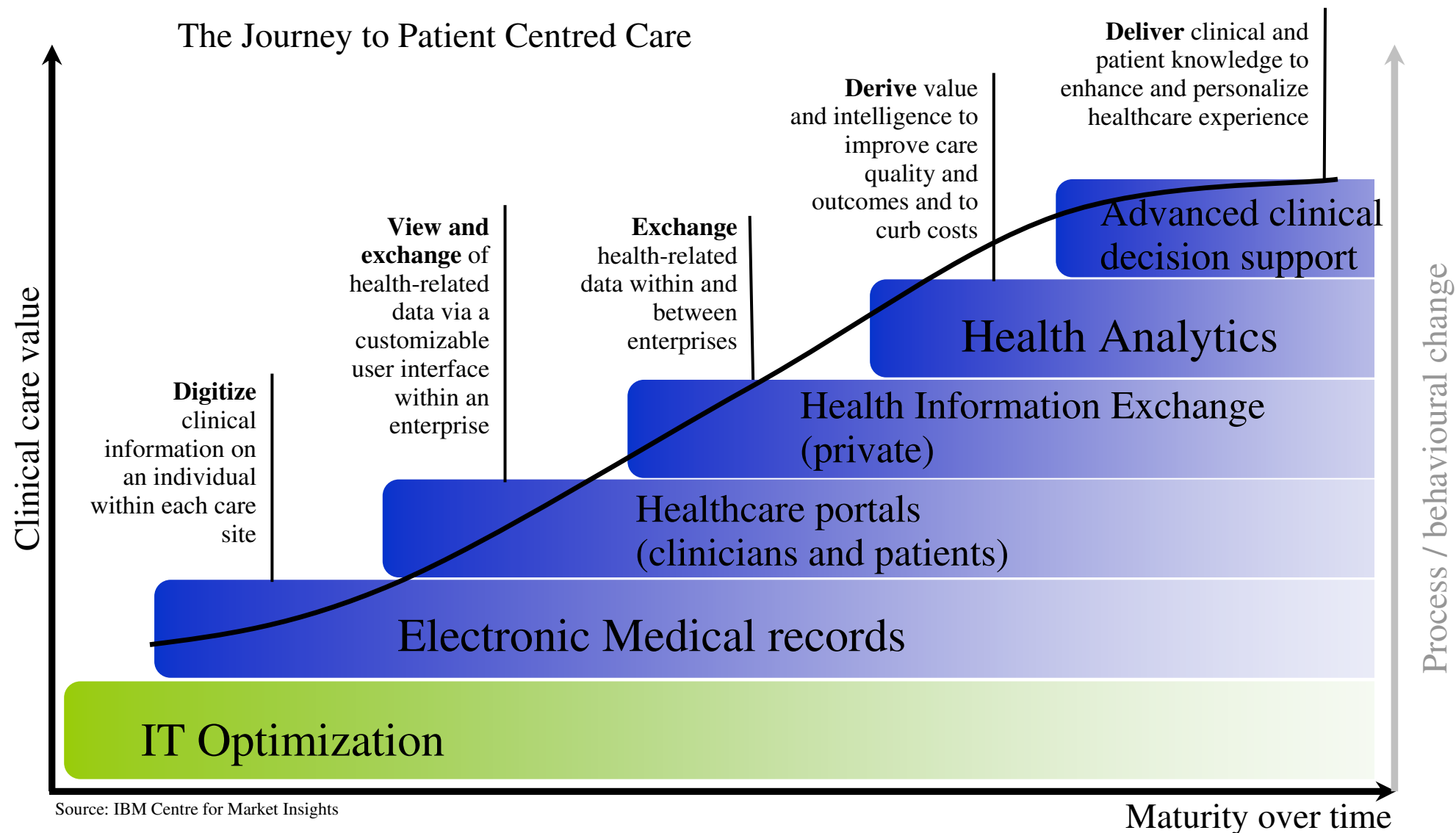
IBM Healthcare Analytics

IBM Care Pathway Optimisation

IBM Clinical eForms Engine
(Discharge Summaries/Clinical Correspondence)

IBM Healthcare Integration Engine

IBM Electronic Medical Records

IBM Medical Device & TeleHealth Integration

Databases

SAP   CERIDIAN   KRONOS

Epic   CERNER All Together   JAC   sunquest   McKESSON Empowering Healthcare

JCAPS Rhapsody eGate InterSystems

Multiple Databases

Paper, Images Sketches, Forms etc

Multiple Corporate Applications

Billing – HR Payroll

Multiple Clinical Applications

PAS – Order Comms – Pharmacy – Maternity – Pathology – ER/A&E

Existing Trust Integration Engine(s)

Patient-Connected Monitoring Devices

Home Monitoring Devices

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The path to Smarter Healthcare

The Journey to Patient Centred Care

Clinical care value (vertical axis)

Maturity over time (horizontal axis)

Process / behavioural change (right vertical axis)

Digitize clinical information on an individual within each care site

View and exchange of health-related data via a customizable user interface within an enterprise

Exchange health-related data within and between enterprises

Derive value and intelligence to improve care quality and outcomes and to curb costs

Deliver clinical and patient knowledge to enhance and personalize healthcare experience

IT Optimization

Electronic Medical records

Healthcare portals (clinicians and patients)

Health Information Exchange (private)

Health Analytics

Advanced clinical decision support

Source: IBM Centre for Market Insights

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Improving Patient Outcomes

- **These are generic challenges across all NHS Trusts**
  - Single view of all patient information through the Portal
  - Available on all devices
  - Drive to reduce costs whilst improving patient outcomes/safety
  - Reduce dependency on legacy Clinical 5 applications
  - Move towards Straight Through Processing
  - Providing a platform and infrastructure that can react to change and take control of that change
  - Service Oriented Architecture
  - Taking control of our paper records through EDM
  - Ability to analyse unstructured text/data and convert it into structured content

What is Straight Through Processing?

- Data is captured and entered at the point of care not retrospectively

  - Don't let the Tail Wag the Dog i.e. don't develop clinical solutions based on corporate requirements, ensure that the clinical needs are met and that the bi-products are added value and data that can be used for research

  - Data capture tools need to add clinical value and be easy to use

  - All data is captured and managed electronically

  - All data is enriched along the patient's journey

- Coding data is mapped accordingly e.g. OCD10 and HRG etc (mapped to clinical systems automatically)

- External reporting is managed electronically with no manual intervention

  - Work towards common standards of external connectivity via protocols such as HL7

- All data routing is managed electronically with no manual intervention

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What is Natural Language Processing?

NLP is at its simplest level the ability to take unstructured data and translate it into structured, searchable content

- Pros

  - Clinicians are able to work as they work now by entering plain text as they do with their current hand-written medical notes

  - Information within medical notes, discharge summaries, progress notes, handover notes etc will be made available for clinical research which in turn will hopefully improve patient outcomes

  - Clinical coding is simplified and automated through data mapping
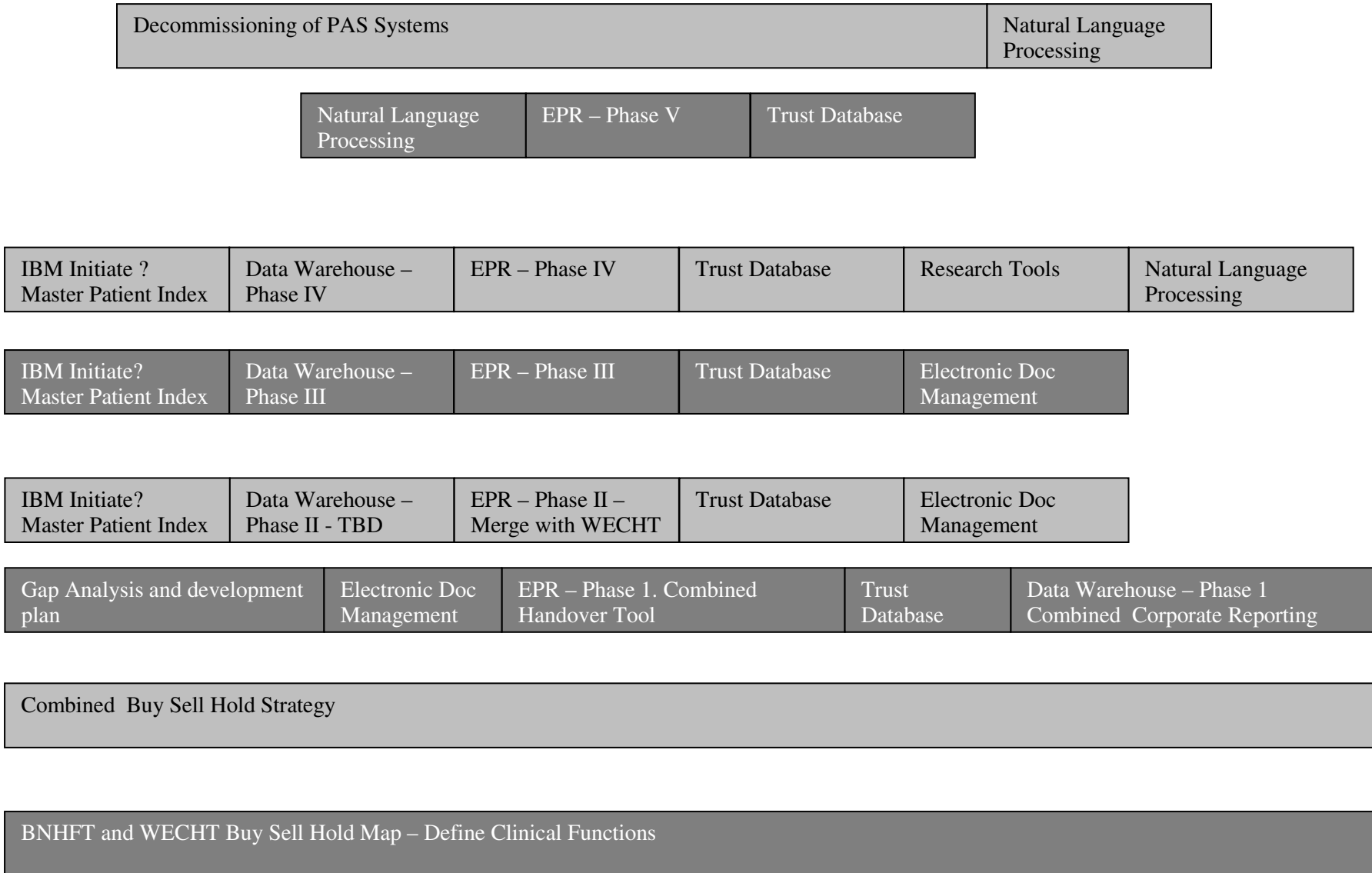
- Cons

  - Because medical note taking is by it's nature unstructured quality is difficult to guarantee. Checking mechanisms and auditing will need to be strengthened. (Maybe the NLP Systems can put a quality score against blocks of text based on the context of the note)

  - Up-front effort is required to teach the system about content patterns. Fine tuning will always be required

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Straight Through Processing - Improving Patient Outcomes through functional efficiency

2015

Decommissioning of PAS Systems	Natural Language Processing

2014

Natural Language Processing	EPR – Phase V	Trust Database

2013

IBM Initiate ? Master Patient Index	Data Warehouse – Phase IV	EPR – Phase IV	Trust Database	Research Tools	Natural Language Processing

IBM Initiate? Master Patient Index	Data Warehouse – Phase III	EPR – Phase III	Trust Database	Electronic Doc Management

IBM Initiate? Master Patient Index	Data Warehouse – Phase II - TBD	EPR – Phase II – Merge with WECHT	Trust Database	Electronic Doc Management

2012

Gap Analysis and development plan	Electronic Doc Management	EPR – Phase 1. Combined Handover Tool	Trust Database	Data Warehouse – Phase 1 Combined Corporate Reporting

Combined Buy Sell Hold Strategy

BNHFT and WECHT Buy Sell Hold Map – Define Clinical Functions

2011

Strategic Delivery Path

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- Flexible
- Scalable
- Interchangeable
- Re-useable
- Future Proof

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GPs

Patients

HHR

PCTs

Referal

DMZ External Connectivity

HL7 Messaging Engine

Regulatory & External Reporting

Electronic Document Management IBM FileNet P8

Delivered to any platform or device through browser technology

Portal – EPR/Clinical Tools

ePrescribing Web Service

PAS Web Service

Data Services

eRequesting Web Service

EDM Web Service

IBM WEB SPHERE Service Oriented Architecture

Data Warehouse
- Single Version of all Data
- Clinical research
- Regulatory reporting
- Corporate reporting
- Auditable

Reporting

COGNOS Reporting

Data

Master Patient Index

Trust Data Repository

ETL

Data Warehouse

Data Glossary

PACS/RIS

JAC

ICE

PAS

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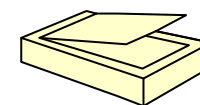
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System Schematic

Approx. 3,000 users around the facility

IBM P8 Server with application, Websphere and Database

Approx. 75 scanning devices, 16 copies of scanning software
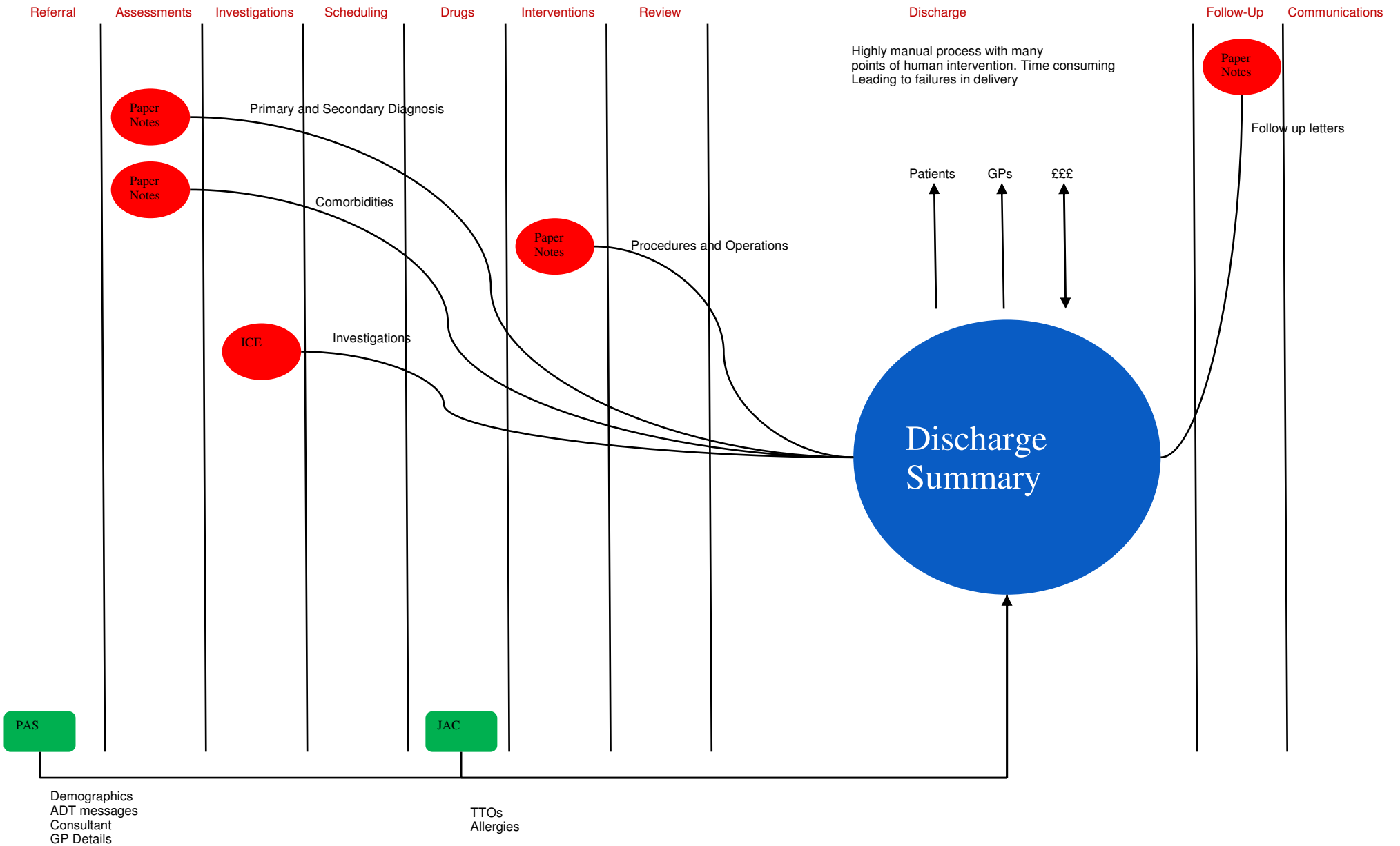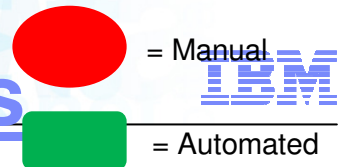
The Drivers for STP (example – Discharge Summary)

- Internal Operational cost constraints – Drive to reduce costs whilst improving patient outcomes

- Increased numbers of Sites to manage

  - Clinicians will need access to information anywhere

- The more the Trust can automate the less need there is for manual intervention

  - Fewer mistakes

  - More resource to direct at clinical opportunities

  - Better patient outcomes

  - Ability to deal with higher volumes

- Regulatory change e.g. Deeper scrutiny on the Trust's numbers and patient outcomes. The Trust will need solutions in place that can react to change

- GPs requiring more instant delivery of information

- Patients requiring more instant delivery of information

- Standardisation of output through de facto protocols (e.g. HL7). This will be driven from external pressures and competition for business

- The Trust can't ignore that although there are cultural and financial pressures that make change and automation complex and challenging, the fact is change is coming, and as other Trusts automate and provide external connectivity and access we'll have to do the same. Being part of that change is better than having it forced upon us

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The Challenge (example – Discharge Summary)

- Large amounts of manual intervention to generate a Discharge Summary

- Changing guidelines on the content of a Discharge Summary

- No clear demarcation lines on roles and responsibilities for the generation of Discharge Summaries

- Discharge Summary content is derived from paper based records (although some information is coming from the underlying clinical 5 Systems)

- The use of technology is culturally not embedded into the Trust

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Visual Representation of Current Process

● = Manual

▬ = Automated

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Referral　　Assessments　　Investigations　　Scheduling　　Drugs　　Interventions　　Review　　　　Discharge　　　　　　Follow-Up　Communications

Highly manual process with many
points of human intervention. Time consuming
Leading to failures in delivery

Paper Notes — Primary and Secondary Diagnosis

Paper Notes — Comorbidities

ICE — Investigations

Paper Notes — Procedures and Operations

Patients　　GPs　　£££

Paper Notes — Follow up letters

Discharge Summary

PAS
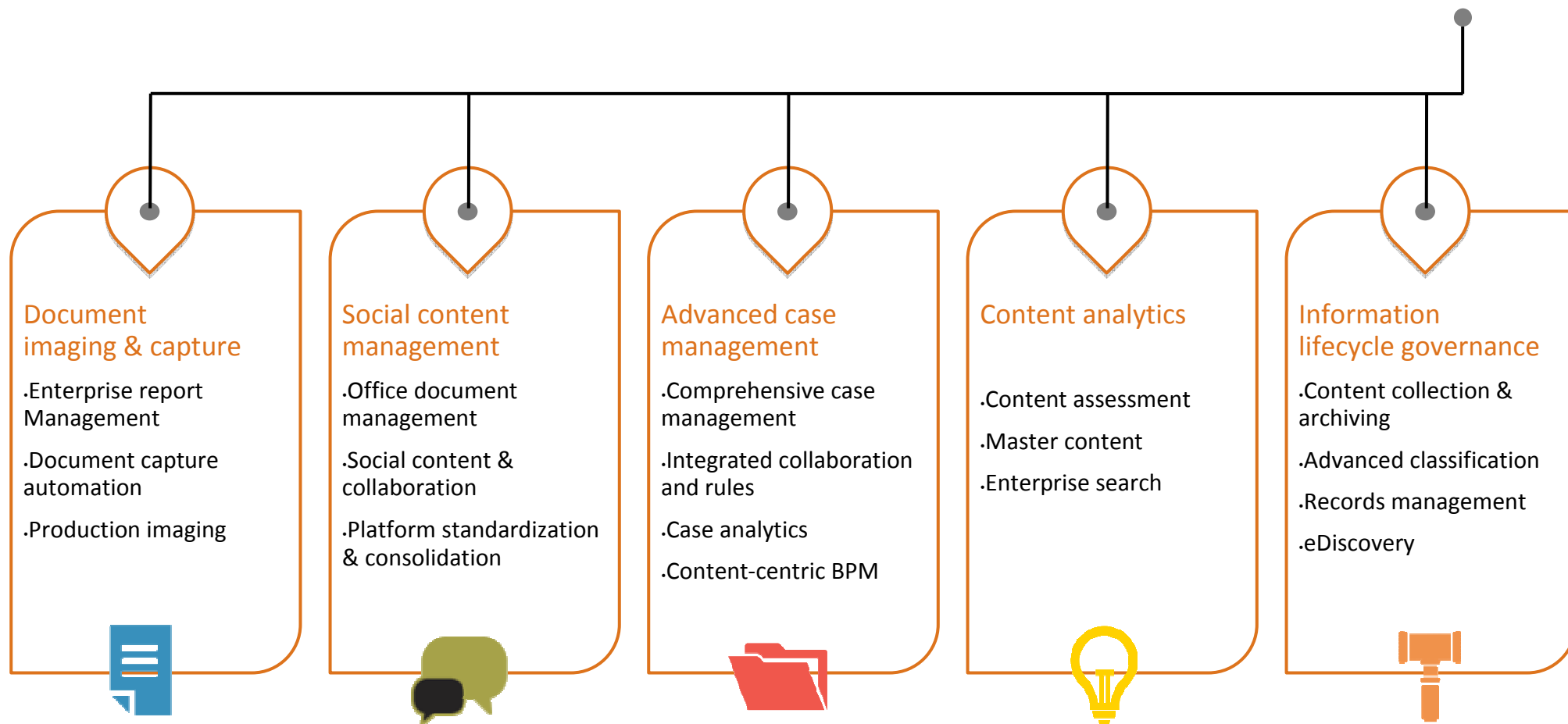
JAC

Demographics
ADT messages
Consultant
GP Details

TTOs
Allergies

Patient Journey

IBM Enterprise Content Management

The path to value lies along one or more specific *business solution entry points*

Document imaging & capture

- Enterprise report Management
- Document capture automation
- Production imaging

Social content management

- Office document management
- Social content & collaboration
- Platform standardization & consolidation

Advanced case management

- Comprehensive case management
- Integrated collaboration and rules
- Case analytics
- Content-centric BPM

Content analytics

- Content assessment
- Master content
- Enterprise search

Information lifecycle governance

- Content collection & archiving
- Advanced classification
- Records management
- eDiscovery

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