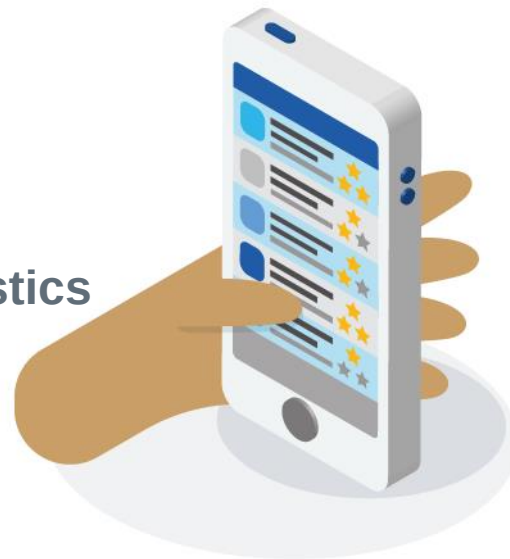


Using data and data standards to deliver better, safer care

Tom Denwood

Executive Director Data, Insights and Statistics

NHS Digital



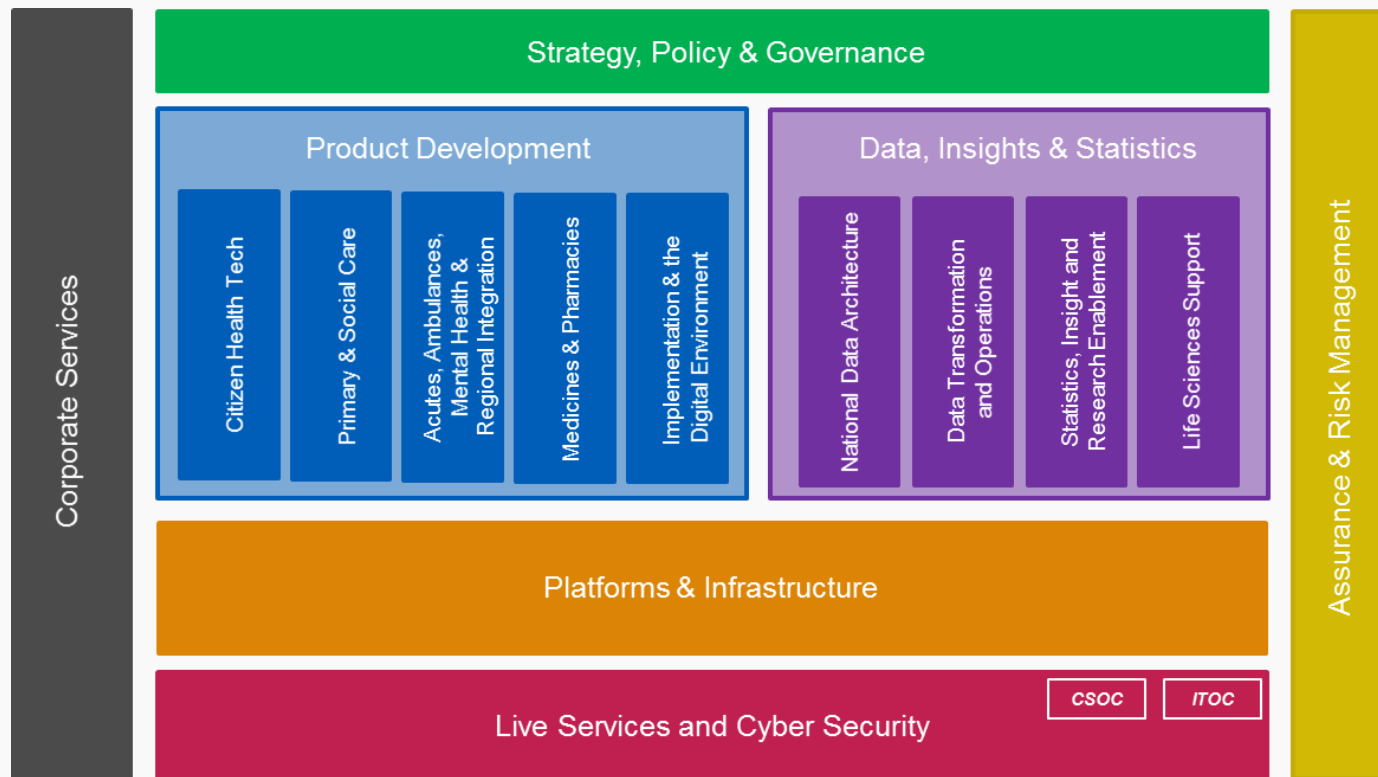
 @tomdenwood

Our mission

To harness the power of
information and
technology **to make
health and care better**



NHS Digital Organisation



Organisation Transformation Underway

- New skills and capabilities
- Restructuring

We do this together...

Academia partners:



Citizens and media:



Providers/places:



Other key partners:



Government:



Research partners:



We are committed to play our part for UK plc...





The NHS Long Term Plan



#NHSLongTermPlan

www.longtermplan.nhs.uk



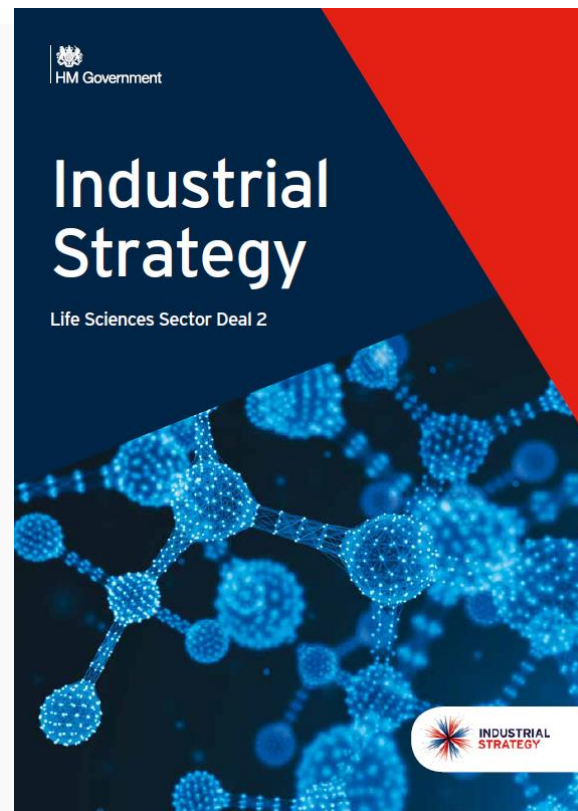
Industrial Strategy

Life Sciences Sector Deal 2



Life Sciences Sector Deal

- Mainly in infrastructure theme, working with partners:
 - With Medicines and Healthcare products Regulatory Agency **Test and validate algorithms** used in AI + medical devices
 - **Core standards** on technology and data for NHS IT systems and digital services to ensure joined-up and safer system
 - **Remote Data Access Environment** enabling customers to remotely and appropriately access data
 - **Streamline legal and ethical approvals** meaning easier, secure access for researchers
 - **Health Data Research UK – NHS Digital** Strategic Partnership
 - £43m investment to enhance **NHS Digital's core data services**
 - With Oxford University **data services to support a 21st century clinical trials**
 - **NHS App** from autumn 2019 to enable patients to become more directly engaged in clinical research



Harnessing data science and AI in healthcare

“Health systems will require five features to be successful:

1. Organization-wide data repositories
2. Data governance and security
3. Interoperability of data within and across health systems
4. Data science capabilities
5. Use and repeated reuse of data to improve decision-making and care.”



[Home](#) > [Code of conduct for data-driven health and care technology](#)



Department
of Health &
Social Care

Guidance

Initial code of conduct for data-driven health and care technology

Published 5 September 2018

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Introduction

Today we have some truly remarkable data-driven innovations, apps, clinical decision support tools supported by intelligent algorithms, and the widespread adoption of electronic health records. In parallel, we are seeing advancements in technology and, in particular, artificial intelligence (AI) techniques. AI is being used on this data to develop novel insights, tools to help improve operational efficiency and machine learning driven

BETA - NHS digital, data and technology standards framework

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[The NHS digital, data and technology standards](#)

[1. Patient records for all health and care settings must use the NHS Number wherever possible](#)

[2. Logging in to NHS systems should be through an approved authentication system](#)

[3. Patient information held in electronic health records should](#)

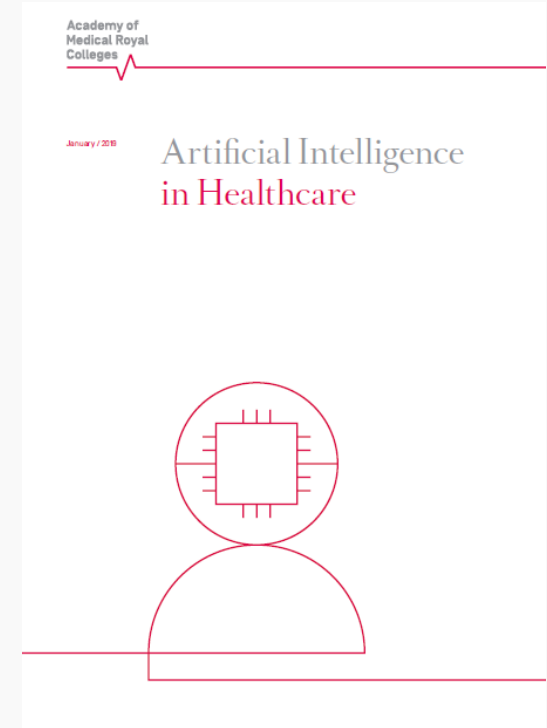
Summary

Ministerial foreword



Perils and pitfalls...

1. Politicians and policymakers should avoid thinking that AI is going **to solve all the problems** the health and care system is facing.
2. **Patient safety must remain paramount** and AI must be developed in a regulated way in partnership between clinicians and computer scientists.
3. **Clinicians can and must be part of the change** that will accompany the development and use of AI.
4. For those who meet information handling and governance standards, **data should be made more easily available** across the private and public sectors.
5. **Joined up regulation** is key to make sure that AI is introduced safely
6. **External critical appraisal** and transparency of tech companies is necessary for clinicians to be confident that the tools they are providing are safe to use.
7. Artificial intelligence should be **used to reduce, not increase**, health inequality – geographically, economically and socially.



AI vs. Doctors...

Robotics | Artificial Intelligence | Static

AI vs. Doctors

Artificial intelligence is challenging doctors on their home turf. We're keeping score

A.I. Wins It's a Tie Doctors Win

ICU

TUMOR MUTATIONS

HACKED IMAGES

BREAST CANCER

HEART SCANS

Robotics | Artificial Intelligence | Static

AI vs. Doctors

Artificial intelligence is challenging doctors on their home turf. We're keeping score

A.I. Wins It's a Tie Doctors Win

PNEUMONIA

MICROSCOPY

SURGERY: CUTTING

BRAIN CANCER

HEART ATTACKS & STROKES

Robotics | Artificial Intelligence | Static

AI vs. Doctors

Artificial intelligence is challenging doctors on their home turf. We're keeping score

A.I. Wins It's a Tie Doctors Win

OPHTHALMOLOGY

SKIN CANCER

GENERAL DIAGNOSIS

ALZHEIMER'S

SURGERY

Accessed 4th Feb 2019 - <https://spectrum.ieee.org/static/ai-vs-doctors>

AI in practice...



Using standards to support care

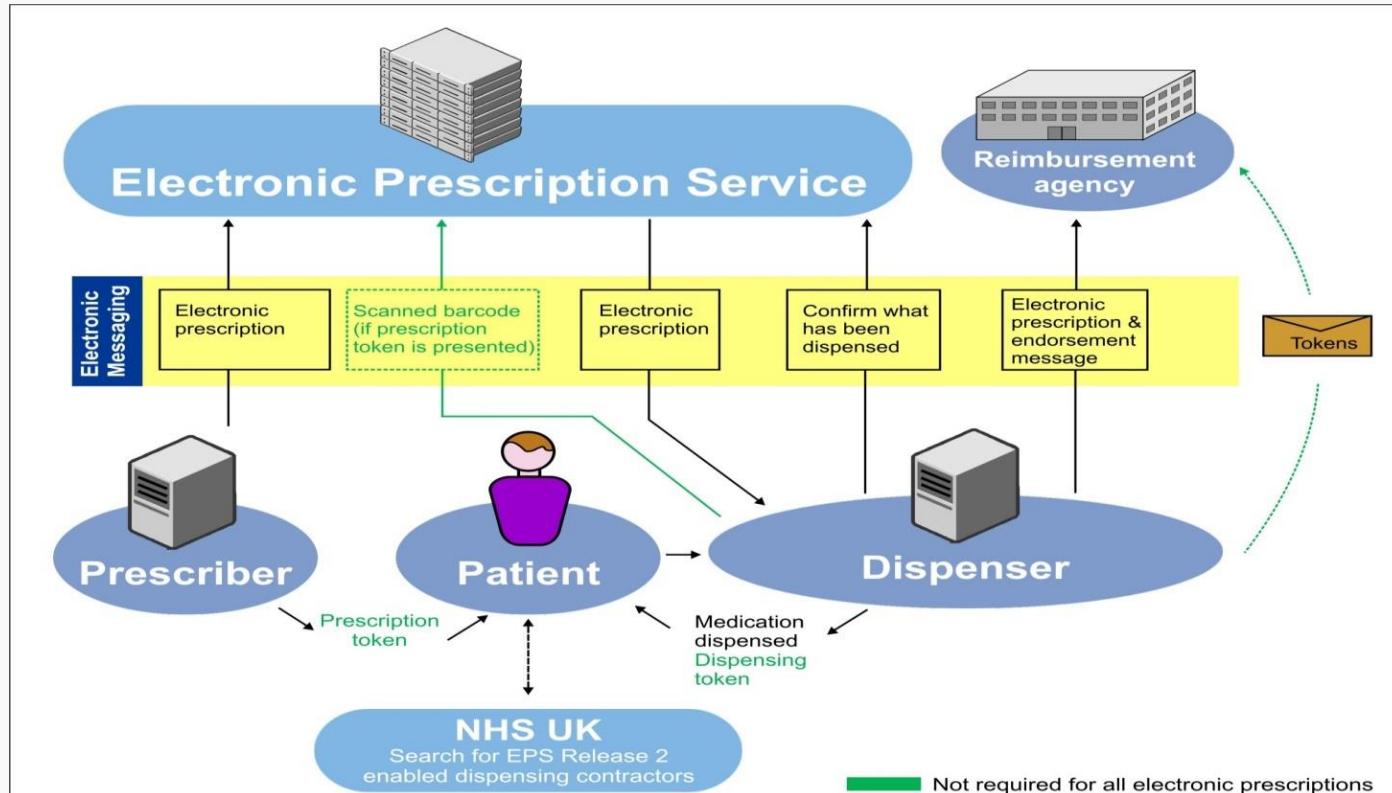
Direct Care: Building blocks of standardised recording and semantic interoperability:

- NHS #
- SNOMED CT
- dm+d
- HPO
- Unified Pathology Test List (based on the National Laboratory Medicine Catalogue)
- GS1
- FHIR profiles
- ...

Secondary Uses: The national and international (WHO) standards for retrieving information for longitudinal and cross-sectional analysis for improved commissioning, research (academic and clinical) and public health management:

- Above plus...
- OPCS4
- ICD-10
- Healthcare Resource Groups (HRGs)
- ...

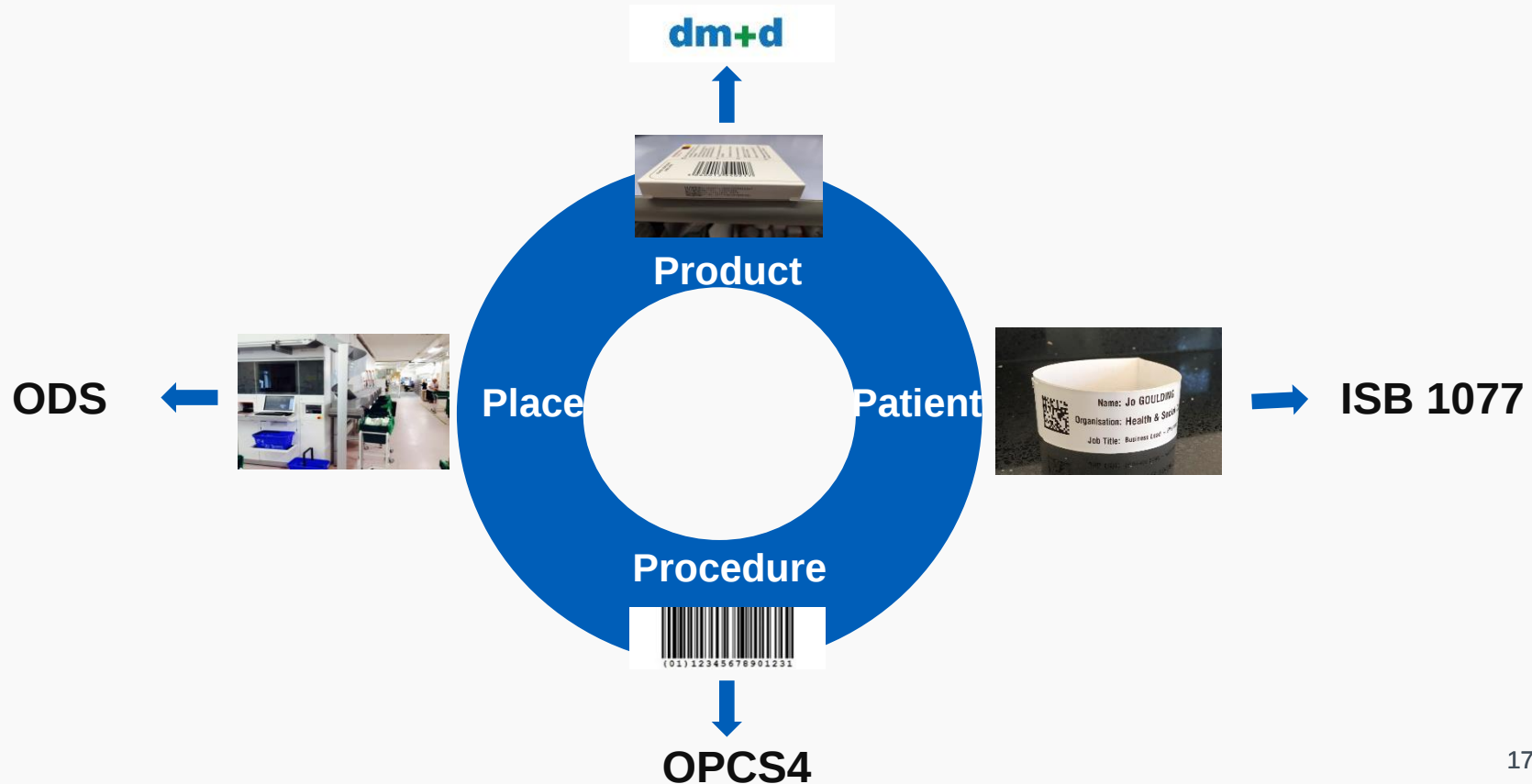
Practical example: Electronic Prescription Service



Implementing standards

- Set, agree and manage *international* -> *national* data standards
- Shelf-ware if not adopted to deliver benefit -> needs enablement
- Enabled 'top down' via national infrastructure
- Enabled 'bottom up' - Scan4Safety
 - Good example of a programme of implementation and incremental change
 - Achieved by creating a foundation for the reduction of some 'never events' and instances of clinical error
 - Potential to reduce incidents of harm has been recognised by the Healthcare Safety Investigation Branch
- Investment cases, and investment cycles key adoption points
- Role of NHS-X

Data standards - supporting implementation



In conclusion...

- We collaborate, to create the right delivery environment
- ‘Exciting time’ for UK plc – Life Sciences + LTP
- We all have a key role in co-setting, and supporting adoption of key standards
- NHS Digital is a key enabler in delivery of *better, safer care*

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company/nhs-digital



www.digital.nhs.uk