

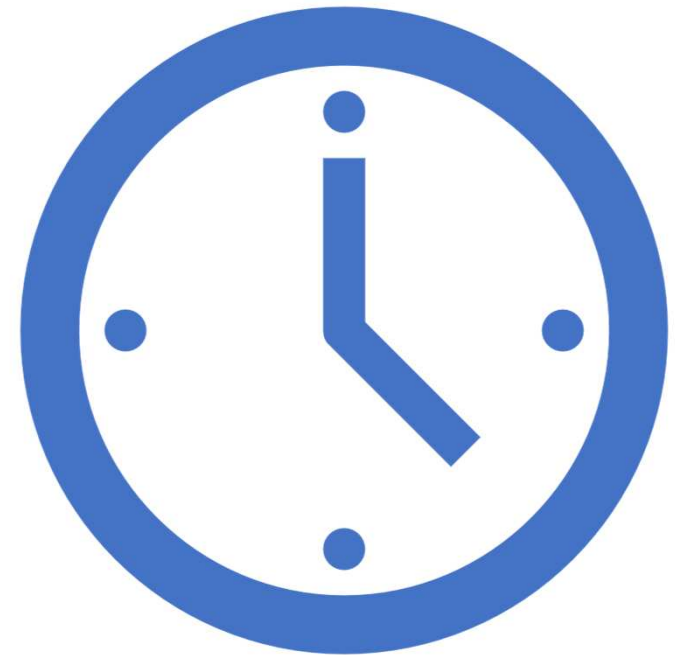


Interoperability – All done and dusted ?

DR. MICHAEL BAINBRIDGE
BM BS FBCS FRCGP FAIDH CHIA
CLINICAL ARCHITECT LEIDOS AUSTRALIA
MEMBER OF BCS INFLUENCE BOARD

disclaimer

- This is a personal view
- It's not aimed at anyone or any entity in particular
- It's the view of a person who computerised their GP surgery in 1982 and has spent their career in Clinical Informatics (even when it wasn't called that)
- I went to Australia 15 years ago almost to the day to do a skills transfer project
- Still waiting....



I've had a recent 'bowl of petunias' moment

NPfIT -> Connecting for Health
Hunt's various attempts

"....the only thing that went through the mind of the bowl of petunias as it fell was Oh no, not again. Many people have speculated that if we knew exactly why the bowl of petunias had thought that we would know a lot more about the nature of the universe than we do now."

Douglas Adams, [The Hitchhiker's Guide to the Galaxy](#)

tags: [petunias](#), [sperm-whale](#)

Government to invest up to £10bn to bring NHS 'into the digital age'

DIGITAL TRANSFORMATION, LEADERSHIP AND TEAMS,
NEWS

11 June 2025



Rachel Reeves (Credit: Lauren Hurley / No 10 Downing Street)

<https://www.digitalhealth.net/2025/06/government-to-invest-up-to-10bn-to-bring-nhs-into-the-digital-age/>

I literally got back from Sydney 3 weeks ago



- The container with our belongings is in Croydon
- It's also got an entire Dolby Atmos Recording Studio in it – That's another story...
- The third career...
- Some observations and perhaps a common route forward – 8 years i

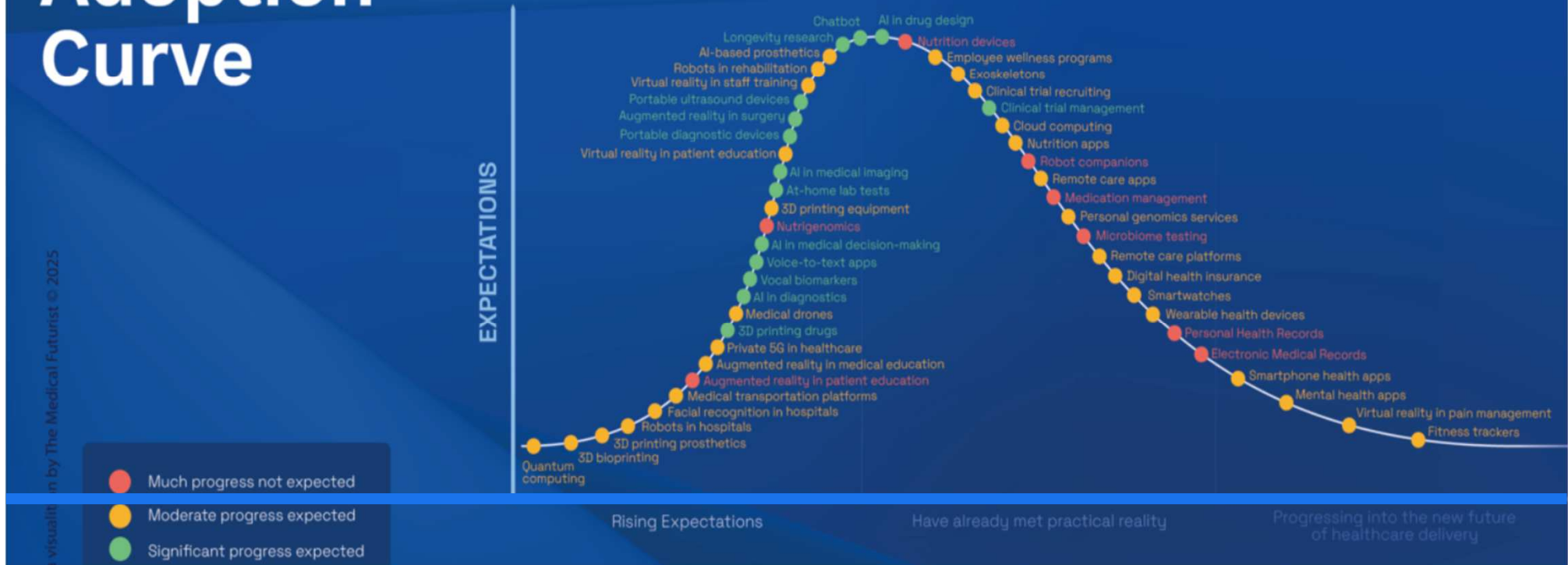
Effective approaches are needed

As Einstein never actually said:

"The definition of insanity is doing the same thing over and over again and expecting a different result."



Technology Adoption Curve



Gartner Hype Cycle 2025

Everyone is wanting to do the next shiny thing but where is the baseline functionality ?

Will We Ever See HealthIT Interoperability, Costs, Outcomes and Value Revealed?

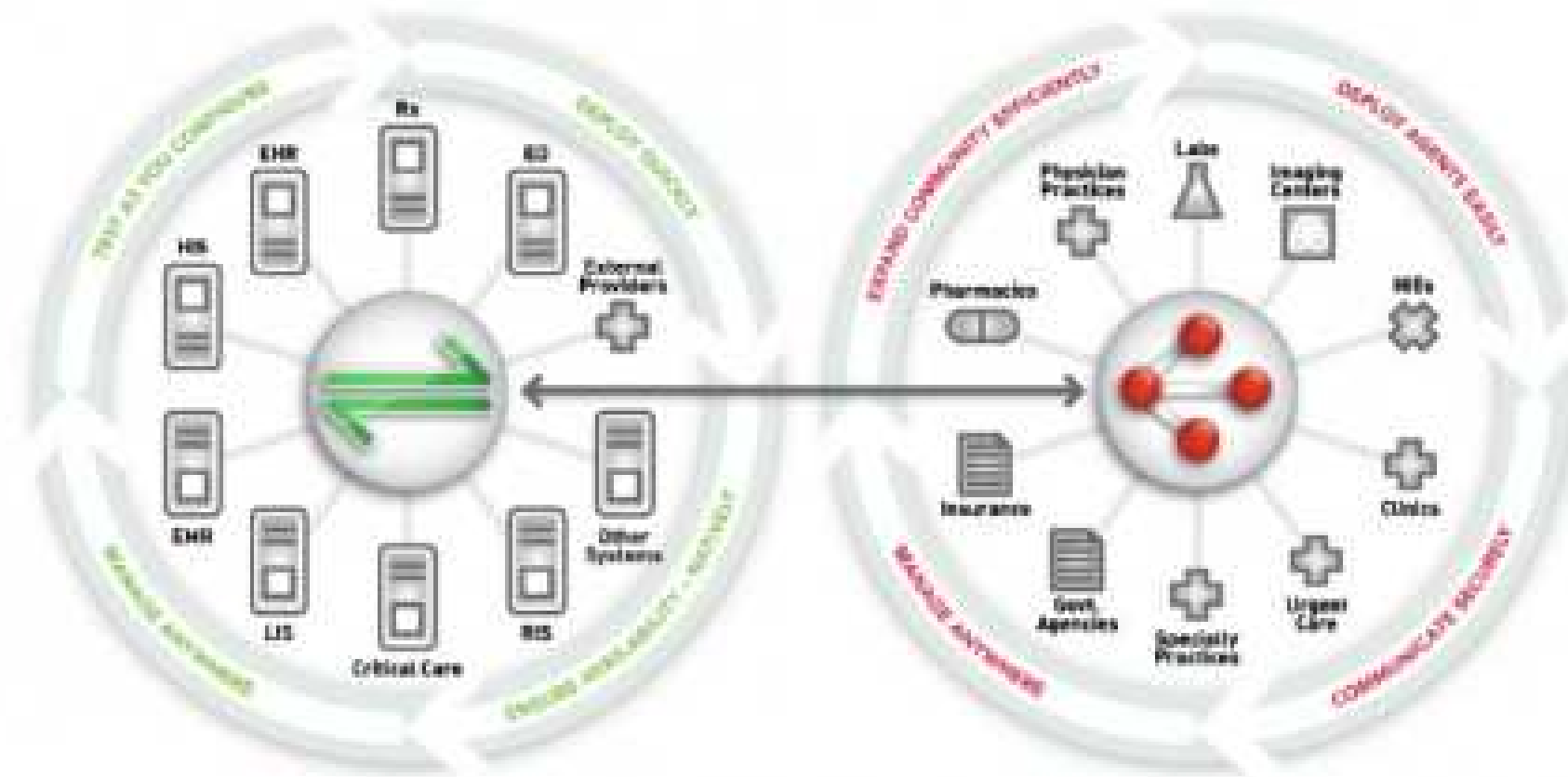
Published on May 18, 2015

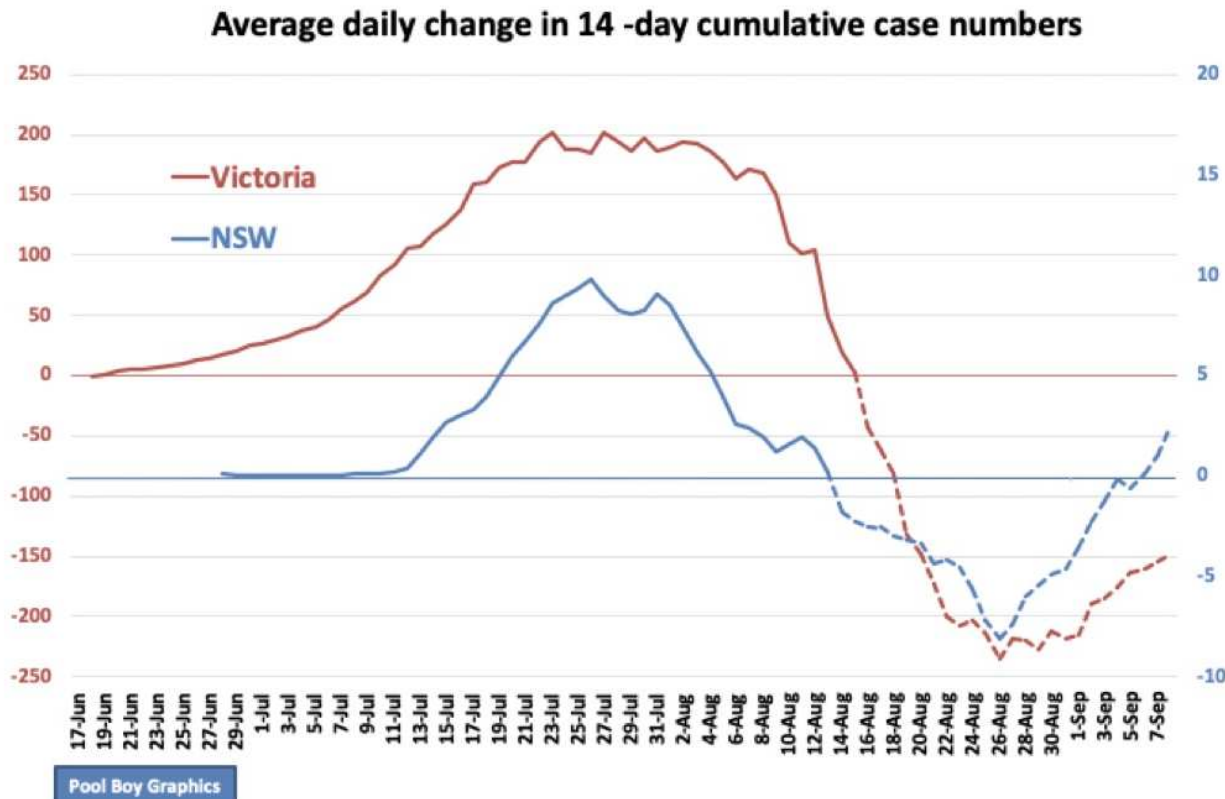


Howard Green, MD
Dermatology & Dermatology Mobile Apps

26 articles [+ Follow](#)

Cost releasing benefits are still being talked about





Grow up with
analytics
already !

PEOPLE STILL COMMIT
STATISTICAL ATROCITIES
ON A DAILY BASIS

E-record rules are burning out docs and killing patients

By [Betsy McCaughey](#)

March 28, 2019 | 8:54pm | Updated

JKM Care Solutions Retweeted



Dr Gordon Caldwell @doctorcaldwell · 3d

Preparing for an outpatient clinic of 4 new and 11 review patients took 1h 40mins undisturbed time today. That's only 'chasing' known facts of Diagnoses, Meds, Results ie a usable IT process would have saved me & #NHS 1h 40mins @PeteGordon68 @amirhannan

Medications

Atorvastatin 20mg once a day

Losartan 100mg once a day

Naproxen 500mg twice a day

Bisoprolol 2.5mg once a day

Indapamide 2.5mg once a day

Sertraline 50mg twice a day

Amlodipine 10mg once a day

Prochlorperazine 5mg as required

29

14

60



Show this thread

Twitter is [sometimes] a useful source of information
(with notable exceptions)

❤️ comparesoftware and 2 others liked



Shannon Sartin @sartin_shannon · 7h

I can't electronically move my records between doctors but that U2 album keeps following me to every new iPhone I get. Something isn't right here.

💬 28

↻ 95

❤️ 617



<https://www.linkedin.com/in/shannonsartin/>

The train has left the station on your data



YOU DON'T OWN YOUR HEALTH DATA

It doesn't matter who you are, or how wealthy or powerful you may be.



YOU DON'T CONTROL YOUR HEALTH DATA

Even though you can already control most other parts of your life on the web.



YOU CAN'T SHARE YOUR HEALTH DATA

This puts you and your family at risk, not being able to access your health data, when and where you want it.



AND YOU CERTAINLY DON'T PROFIT FROM YOUR HEALTH DATA

Instead, others sell your data for their own profit.



South Park: Season 28: Episode 3

Today's Challenges



Proprietary Systems and terminologies despite strategic pronouncements



Modified Billing systems predominate in Secondary Care



Useability poor



Interoperability limited



Secure messaging "coming soon"



Workforce digital maturity low



Professional standards not meeting technology requirements



Wait....



It's time to stop procrastinating

The technology has been here for over 10 years

Magical thinking about how we use the technology in projects will not solve the problem

Conflicted commercial organisations will not solve the problem

Leadership will solve the problem

Ancient History Lesson

01

When I started using computers in my surgery in 1982, computers were not compatible – Apricots and BBC 'B's were dominant

02

There were several competing terminologies

- OXMIS
- READ
- RCGP

03

Lots of Classifications

- ICD
- ICPC

04

And a lot of people who didn't know the difference between a terminology and a classification

Computer Capabilities Were Low

- Green Screen Terminals with 80 x25 pixels
- 'Servers' running AT chips at 12Mhz with 1Mb RAM to serve 8 terminals
- Serial ports running at 9600 baud
- Serial interface printers sharing the terminal connection
- Inkjets and Dot Matrix printers with a bail bar in the right position to keep the paper from flipping up and jamming the print





Abies – the Koreana was silent

Main programs

R Patient register
N Patient notes
M Patient medication
SX Scan/search main index
SR Scan/search reports index

Utilities

D Drug database
S System configuration
B Backup and restore
U Utility programs
E Menu editors

Lists and reports

P Print prescriptions
LS Report specification
LP Reports pre-defined
W Word processing
C Practice accounts
A Appointments
Q NICKIE questionnaire
O MS-DOS command
? Help
ACT Apricot "Activity"

Enter option █

PATIENT REGISTER

10/9/85

Patient No	246	(c2) Address	285 Balmoral Close
Surname	ANNER		Byton, Hampshire
Forenames	late Connie	Postcode	RG8 0UA
Title	rs	Sex	IF
Known as		Telephone	651 5161
(c1) D.O.B.	7/ 5/1948	Age	37
AHA No./Sound	10001568	27	05148
Marital St			
(c3) Doctor	01	Surgery	
FPC		Distance	
NHS No	CU00011	Dispensing	
Family No		Date reg	
Hosp No		Updated	18/ 7/85

Which option do you require? ☐

ABIES Apricot-CP

Time :17.17 on : 8/ 9/85:

user 18 18

Name : TANNER
1205 Balmoral Close

1 Kate Connie

!Mrs ! DoB !27/ 5/48! Age !37!

|Byton, Mar| Dr |JO| NHS |EUDU0011| |disp| |

```

: disp:

```

8	:HYP	FH: hypertension	[12C1]
1	:HYP"	Hypospadias	[XGEE]
2	:HYPW	H/O: hypothyroidism	[1432]
3	:HYP\$	Hypothermia -accidental	[FROH]
4	:HYP%	Hypertroph. pulm.osteo.	[PAGH]
5	:HYP(:Hypomagnesaemia	[:ENM]
6	:HYP)	:Hypoglycaemia	[:ENG]
7	:HYP*	O/E - hypothermia	[2E33]
8	:HYP+	O/E - hyperpyrexia	[2E35]
9	:HYP-	Hyperhidrosis symptom	[1662]

LINE No. : Dr SK date : 8/ 9/85

```
type:P;code:MP 11
```

!f/up!

[illegible]

dose	:		: 1st auth :	
------	---	--	--------------	--

supply	:		:		:	iss	:		:	:	:		:		:	2nd	:	:		:
--------	---	--	---	--	---	-----	---	--	---	---	---	--	---	--	---	-----	---	---	--	---

auth	date	NHS/Priv/CD
------	------	-------------

Which option do you require? a

For more

ABIES Apricot-GP

System 5 No 1 Ridge, Ms Carol M
37 Appleton Square, Hanger Lane, WC2 6TH
tel 987 6543 nhs 412 323 4151

```

                                16/11/98  09:22
mar S sex F dob 13/ 5/47 age 51y
cat 3 dis N usu JR reg JR sur MS

```

Current		+	-----	Read Codes	-----	+
		0	..L2	Eczemas		
		1	.L22	Eczema - seborrhoeic		
		2	.L23	Eczema - atopic		
		3	.L24	Eczema - contact		
		4	.L25	Eczema - ingestion		
		5	.L2Z	Eczema NOS		
		6	F5C4	Eczema - eyelid		
0	1987 Total abdominal hysterectomy	7	G932	Eczema - varicose		
1	14/10/98 Pallor	8	12H1	FH: eczema		
2	14/10/98 Headache	9	14F1	H/O: eczema		

Code	[ECZE]	Date	16/11/98
			Time	09:19
			Place	
			Responsible	JR
			Updated By	JR

ADD	F1	F2	F3	F4	F5	F6	F7
HELP	MORE	CODES	RESP	GP	DATE	PLACE	ABANDON

- Coded..
- Structured...
- Advanced Analytics

0	1987	Total abdominal hysterectomy
1	14/10/98	Pallor
2	14/10/98	Headache

ADD	F1	F2	F3	F4	F5	F6	F7
-----	----	----	----	----	----	----	----

The Problem Oriented Record
System 6000 - 1992

“Most disappointing” year at AAH Meditel

AAH Meditel represents under 1% of AAH plc's £1.6 billion revenue for the year to 31st March. It was therefore somewhat strange that it represented over 10% of the comment in their press of release.

AAH Meditel sells clinical management systems to GPs and in Mar. 94 acquired Peak Systems (community care systems) for up to £2.5m. Even so revenues were up just 5% at £11.3m and operating profit plunged from £2.2m to just £400K. The hiatus in the Dept. of Health's IT programme was blamed. But *“exciting developments”* such as the launch of System 6000 *“setting new standards of excellence in GP computing”* and the acquisition of Peak is expected to produce *“a better performance this year”*.

Cut & paste #1 - AAH Meditel is a classic example to add to a growing list of “non core” IT subsidiaries where we would advise a disposal/MBO.

Appendicitis

nt iliac fossa pain

- guarding - abd.

exia [D]

BC

er to surgeon

endicectomy

O/E - Wound healing well

For Help, press F1


13...

Dr. William Arnold

11:13

A couple of things I've been
trying to instantiate to move
things forward in my 15 year
exile





Terminology and Classification – the 30-year war is it over yet or just a fragile cease fire ? UK examples but Au just the same

- Nomenclatures
 - READ – national
 - OXMIS –
 - RCGP – national
 - CTV3 – one system
 - SNOMED – International
 - dm+d / AMT / Singapore Meds Terminology
 - Open Clinical Terminology ?
- Classifications
 - ICPC – International
 - ICD (n) – International
 - ICD 11 is a tank on the lawn
 - Anatomical Therapeutic Classification (ATC) – International

Factional fighting continues

The coming of age of ICPC: celebrating the 21st birthday of the International Classification of Primary Care

Jean-Karl Soler¹, Inge Okkes, Maurice Wood, Henk Lamberts

Affiliations + expand

PMID: 18562335 DOI: [10.1093/fampra/cmn028](https://doi.org/10.1093/fampra/cmn028)

 Paperpile







Abstract

The International Classification of Primary Care (ICPC) has, since its introduction in 1987, been quite successful. Now in its second revised version, it has been translated in 22 languages, accepted by the World Health Organization (WHO) as a member of the Family of International Classifications, and is being widely used both in routine daily practice and in research. In this contribution, it is explained that ICPC was designed as a theoretical classification, and that it has especially great potential when used (1) supported by the ICPC2/ICD10 Thesaurus, (2) in sufficiently large studies to allow all classes to be observed often enough to provide reliable data, and (3) in studies based on data on episodes of care, rather than encounter data only. Under these conditions, the likelihood ratios of symptoms given a diagnosis, and of co-morbidity become available, which define the clinical content of family practice.

[PubMed Disclaimer](#)

DOI: [10.1093/fampra/cmn028](https://doi.org/10.1093/fampra/cmn028)

The fractured lens: a controversial revision of the International Classification of Primary Care

 Jean K. Soler^{1†}  Nicola Buono²  Elena Cardillo³  Thomas Frese⁴  Shlomo Vinker^{5,6}
 Mehmet Ungan⁷

¹ The Family Practice, Attard, Malta

² Department of General Practice, ICPC Club Italia, Caserta, Italy

³ Institute of Informatics and Telematics, National Research Council, Rende, Italy

⁴ Institute of General Practice and Family Medicine, Medical Faculty, Martin-Luther-University Halle-Wittenberg, Halle, Germany

⁵ Department of Family Medicine, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

⁶ Leumit Health Services, Tel Aviv, Israel

⁷ Department of Family Medicine, Ankara University School of Medicine, Ankara, Türkiye

Background: The International Classification of Primary Care (ICPC) has represented the international standard reduction for measuring the content of primary care for over 30 years. In the process of its third revision, its authors, the Wonca International Classification Committee (WICC), delegated a major part of the technical work to a purposely formed Consortium. However, in the process of such revision, standard classification principles and rules have been inconsistently applied with the result that ICPC-3 has been published with major errors and an inconsistent structure.

Objectives: To formally describe and critically appraise the revision process of ICPC-3.

DOI: [10.3389/fmed.2023.1230987](https://doi.org/10.3389/fmed.2023.1230987)

Commonality of User Experience



Standardisation of Medicines Terminology and UI /
UX – Common User Interface NPfIT program £20M



Taken forward by Australian Committee for Safety
and Quality

Usability

- Clinically dangerous should mean clinically unacceptable
- Burn out
- Putting PDF forms on screen is not the answer
- Australian Standard HB306 – 2007 was most definitely not the answer – At least it's been withdrawn !

CPMC MED Viewer

File Options Windows Patient Provider

Name: SANDIEGO, CARMEN MHN: 3131313 DOB: 23 Mar 1913 Age: 82

Adverse Reactions

Personal History of Allergy to Sulfonamide
Poisoning by Penicillin
Poisoning by Penicillin
WORK
TECENTOL
Unknown

Active Problems

Pain Involving Interphalangeal
Common Migraine
Common Migraine
Solar Urticaria
Nettle Rash
Macular Rash
DIABETES INSIPIDUS
CARDIO-AUDITORY-SYNCOPE SYN
INTERNE NEONATORUM (F-35000)

Current Medications

BESTREL 100 MG TAB, 1 PO QPM
EPOGEN 2000 U/ML 1 ML INJ, 1 SQ QAM
AZATHIOPRINE 50 MG TAB, PO QD
SLO-PHYLLIN 75 MG CAP, 1 PO QD X 1 wk
PREDNISONE 20 MG TAB, 1 topically QAM
PREDNISONE 5 MG TAB
PENICILLIN G POT 400,000U/5ML, PO PRN PRN
DECADRON TURBINAIRE, inhaled QAM PRN X 2
PREDNISONE 5 MG TAB, taper
HALDOL 0.5 MG TAB, 1 PO QD PRN

Results

29 Aug 95	Laboratory (11:53)
06 Mar 96	Radiology
12 May 95	Pathology
07 Jul 95	Admit/Discharge Notes
29 Jan 95	Operative Report
16 Oct 95	Neurophysiology
22 May 95	Ob/Gyn
24 Jan 92	Head and Neck
13 Jan 95	GI Endoscopy
03 Feb 96	Cardiology
27 Jan 95	Pulmonary

Search Words:
Travel

Selected Term:
Patient Problem

Return Term **Close**

Order **Referrals** **Follow-up Visit** **Make Note** **Close**

FIGURE 2 USER INTERFACE OF DOCTOR'S OUTPATIENT PRACTICE SYSTEM [20]

Example Examples

insulin soluble human –
ACTRAPID – 100 units per mL –
solution for injection –
DOSE 12 units – subcutaneous –
twice a day



In this correct example, the details are wrapped correctly. None of the attributes are broken up and the delimiters are at the end of each of the lines and not at the beginning of each of the wrapped lines.

CUI examples

insulin soluble human – ACTRAPID
– 100 units per mL – solution for
injection – DOSE 12 units –
subcutaneous –
twice a day



This example is incorrect because the attribute 'solution for injection' is split between two lines.

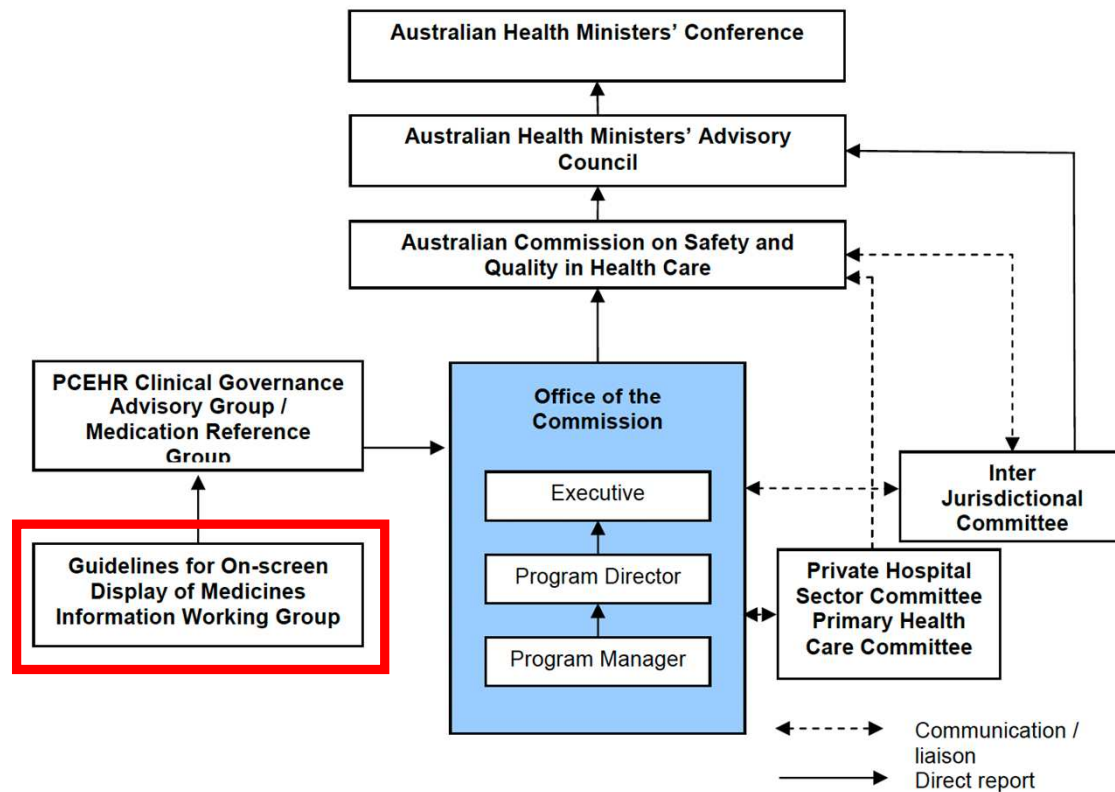
insulin soluble human – ACTRAPID
– 100 units per mL – solution for
injection – DOSE 12 units sub-
cutaneous – twice a day



This example is incorrect because the word 'subcutaneous' has been hyphenated and split across lines. This example is additionally incorrect because the attribute 'solution for injection' is split between two lines.

Australian CUI Version





It was well positioned

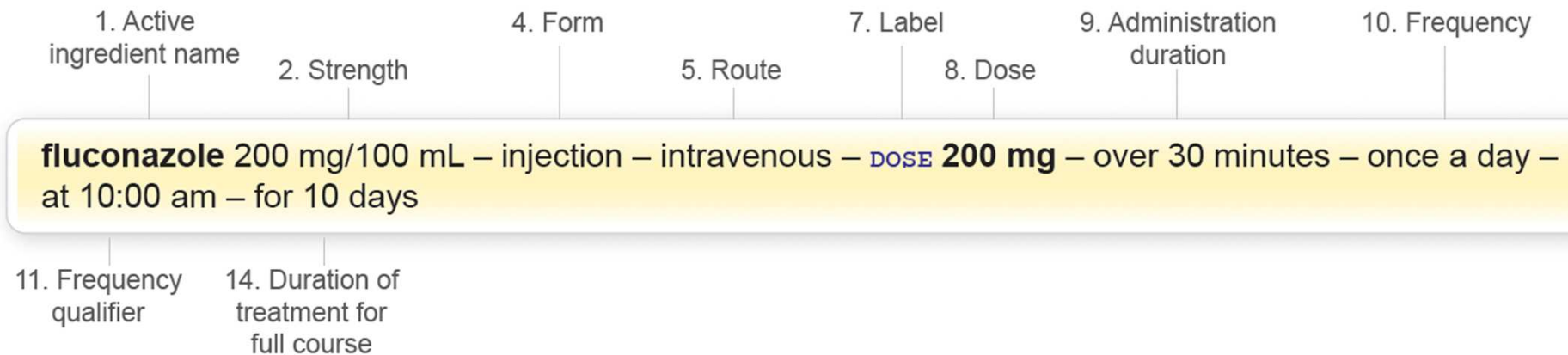
It was very clear

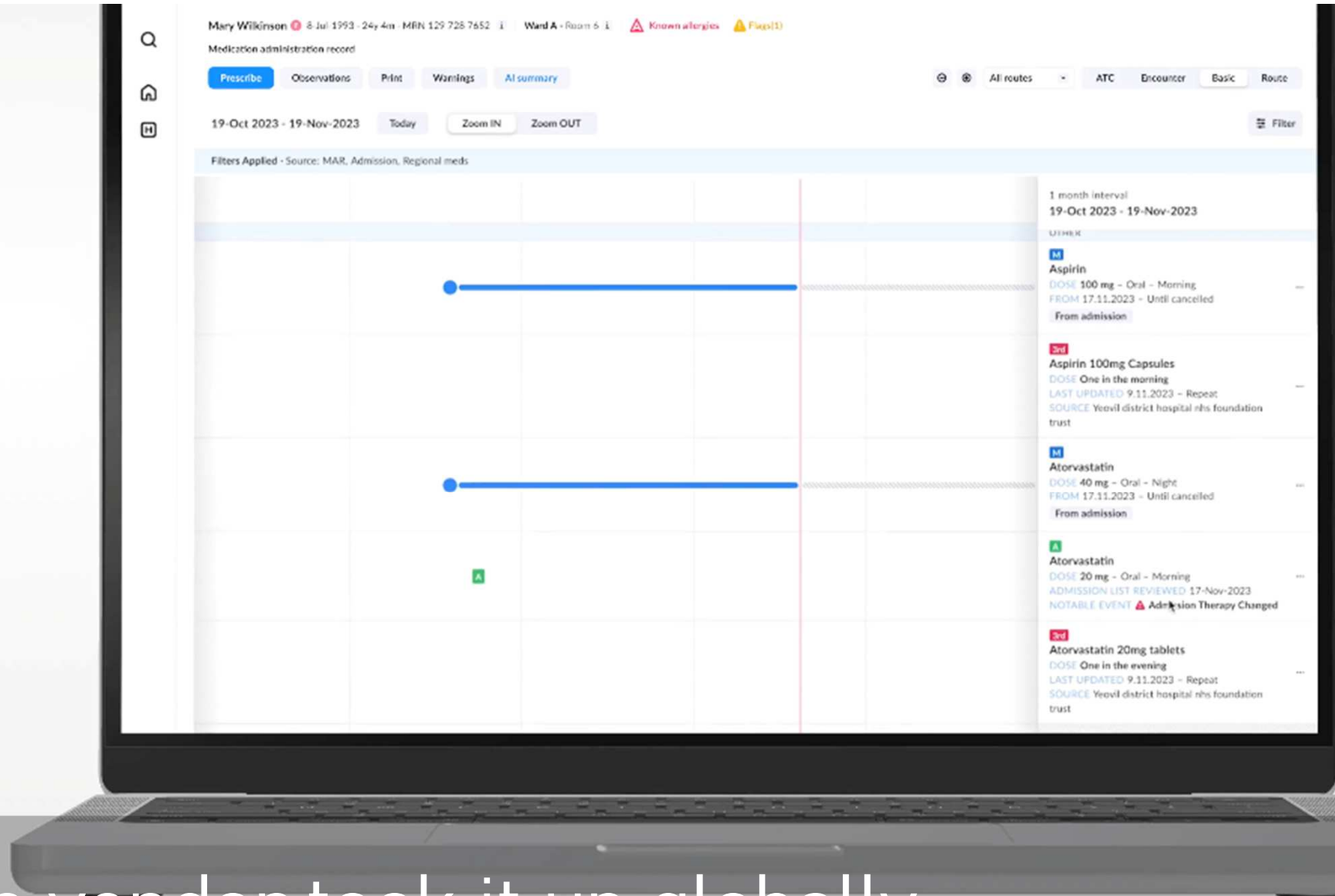
Single active ingredient product: pack-based example

1. Active ingredient name	2. Strength	3. Brand name	4. Form	6. Site	7. Label	8. Dose	10. Frequency	14. Duration of treatment for full course
chloramphenicol	0.5%	Chlorsig	eye drops	right eye		DOSE 1 drop	four times a day	for 4 days
SUPPLY 10 mL								
15. Label	16. Supply							

Both Primary and Secondary Care

Single active ingredient product: dose-based example





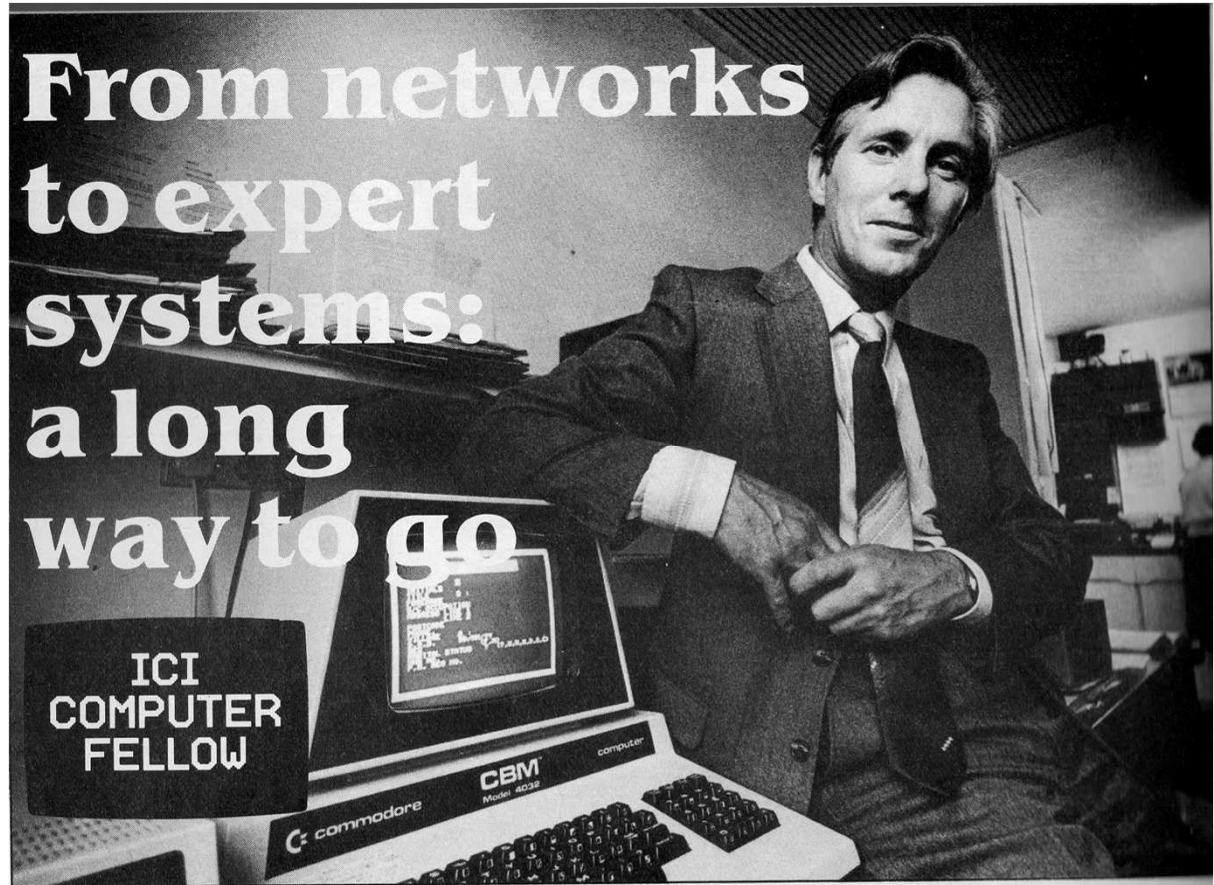
One vendor took it up globally

If we can't do security,
interoperable medicines,
diagnoses and allergies how are
we going to be ready for the
challenge of precision and
personalisation with the
integration of Genomics?



AI / Expert
systems

Norman
Stoddart in
1985

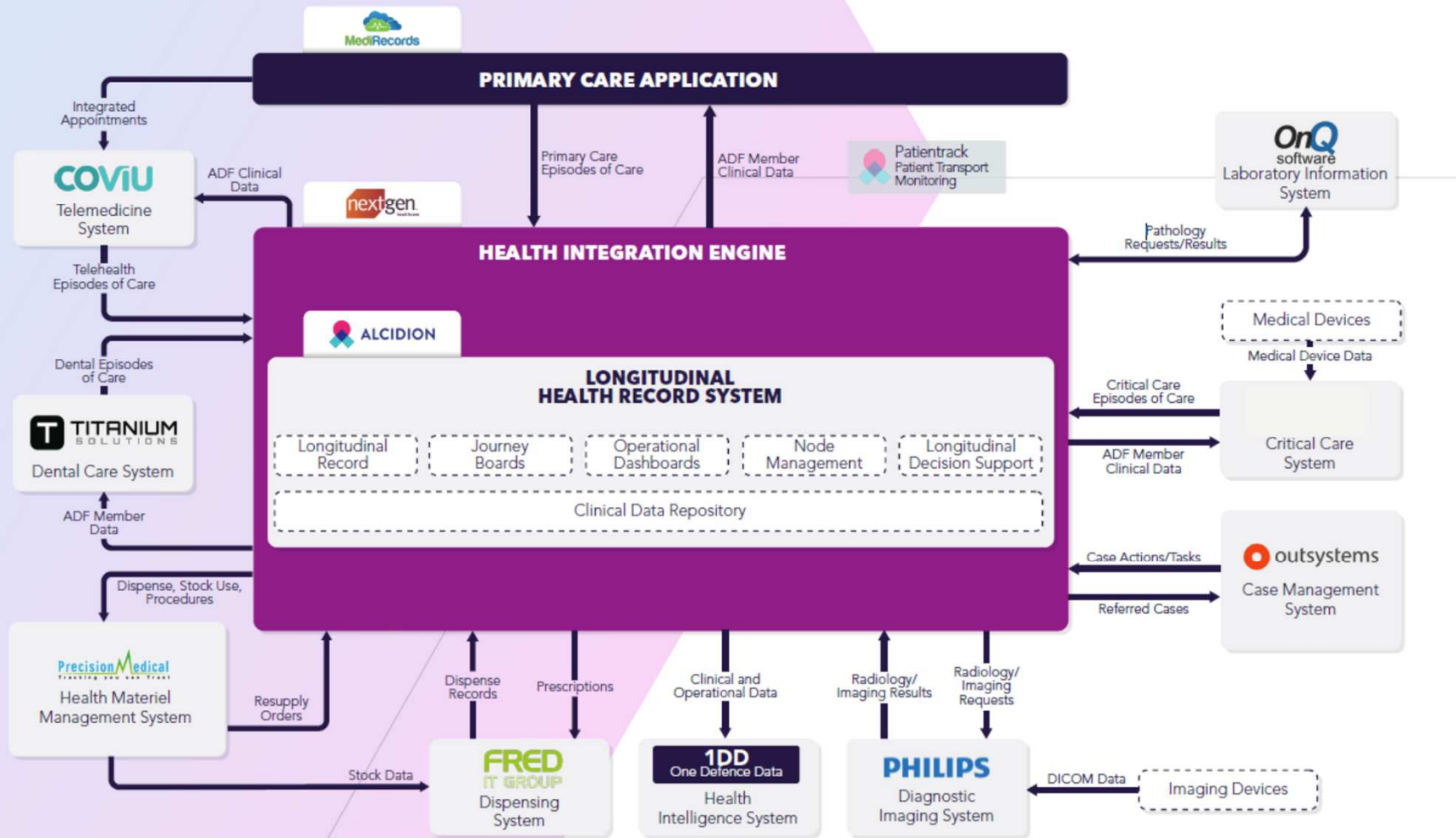




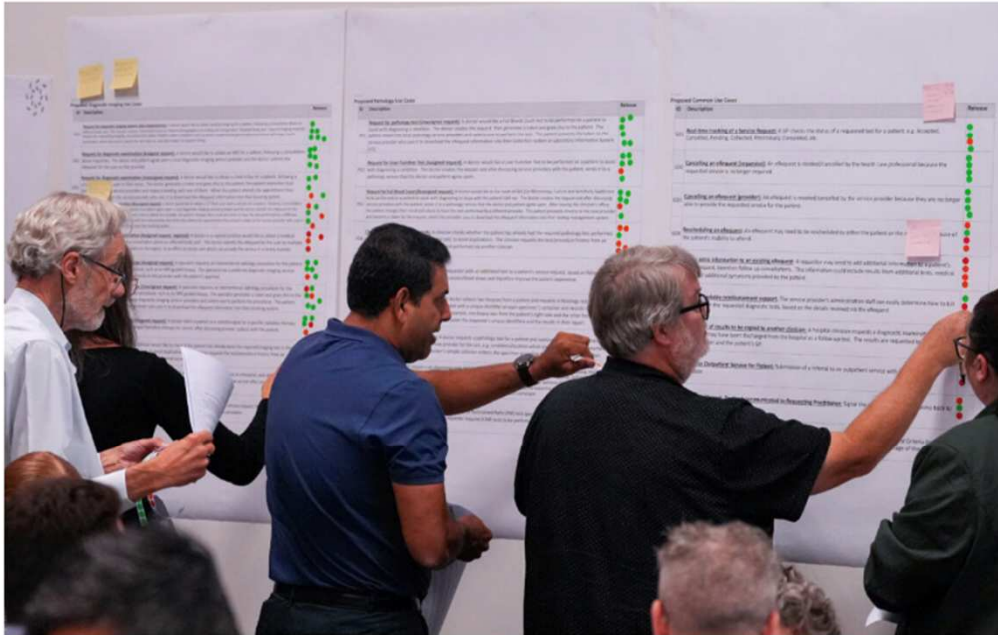
Ecosystems vs. Program(mes) and Projects

- My last 6 years
- JP2060 Phase 4
- Working with Leidos as a system integrator
- Building an entire interoperable healthcare **ecosystem** for Australian Defence
- Using Commercial Off The Shelf (COTS) systems
- Australian and International Standards to tie things together
 - SNOMED
 - AMT
 - FHIR V4
- So here is a positive example

FULL OPERATING CAPABILITY



Sparked Design Groups



Clinical Design Group

Develops the Australian Data Sets: AU Clinical Data for Interoperability and AU eRequesting Data for Interoperability.



Technical Design Groups

Develop and maintain the AU Core Implementation Guide and the AU eRequesting Implementation Guide.



Bob Brown
@ReasObBob

Interoperability in health care would be much easier -- and even ubiquitous -- if we had a viable [#HealthIT](#) infrastructure.

Until that happens expect more work arounds, add ons, and new bureaucratic organizations.

Why? We're confusing activity with results.

[#PrinciplesFirst](#)

Interoperability needs infrastructure

Brazilian Rocking Horses



Why is this
taking so long ?

"Disruptive innovation describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly move up market, eventually displacing established competitors."

Clayton Christensen

Capitalism

Question: Which health care market competitors will suffer the most displacement from interoperability of EMR/EHR and billing systems?



What needs to be done ?

Let's move
forward and
spend the
money for
demonstrable
progress this
time.



Healthcare delivery is a complex adaptive system



Policy funnels tend to forget this



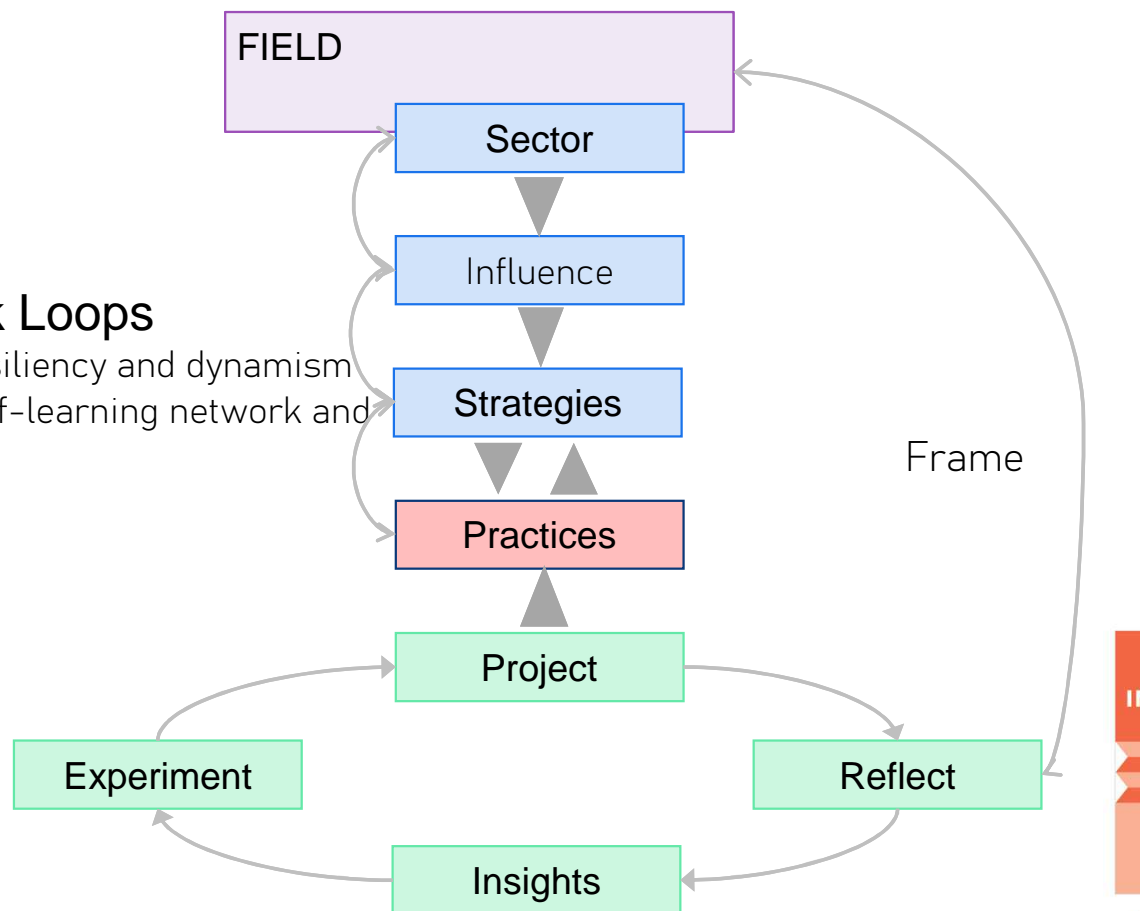
A new way forward ?

Read about
Frame
Innovation

Frame Innovation allows an Innovation Ecosystem to exist

Feedback Loops

- Build resiliency and dynamism
- Build self-learning network and culture



From Design Thinking, Design Theory

Frame Innovation
Create New Thinking by Design

By Kees Dorst

How organizations can use practices developed by expert designers to solve today's open, complex, dynamic, and networked problems.



1911年11月

中華民國臨時政府

中華民國臨時政府

Doing more of the same will not work

- “Just” Building New Hospitals
- Continuing to deliver primary care which rewards bad practice
- Dividing acute, community, aged, psychiatric and general practice into separate cabals and expecting good and joined-up things to happen
- However – this is a ‘no fault’ situation
- Clinical Leadership needs to step up – self regulation is not working
- Integration and continuity are just not happening
- Duplication and missed opportunities are multiple and dangerous and increasingly unacceptable

Warren Sims keeping Joe and Me in mind

HTTPS://LNKD.IN/EPRNGUEW

Digital Risk vs. Reality: Why NHS Boards Must Learn from NPfIT to Save the £3.4 Billion Transformation

Comprehensive Source Documentation

Group A: Current Funding & Vision (2025/26)

Claim: £3.4 billion allocated for 2025/26 digital transformation

Primary Source: NHS England Board Paper: Digital, Data and Technology Transformation (March 2025)

- **URL:** <https://www.england.nhs.uk/wp-content/uploads/2025/03/agenda-item-8-data-digital-and-technology-transformation.pdf>
- **Key Extract:** "Through the Frontline Digitisation and Connecting Care Records programmes in FY25/26, we are providing c£600m investment along with practical support to trusts"
- **Context:** Part of a broader multi-year digital investment programme totalling up to £10bn by 2028/29

Supporting Source: NHS Confederation: Spending Review 2025: What You Need to Know

- **URL:** <https://www.nhsconfed.org/publications/spending-review-2025-what-you-need-know>
- **Relevance:** References the total tech investment trajectory and capital planning

Have we changed
since NPfIT?

Warren Sims 10
point plan

Area	Improvements Since NPfIT	Ongoing Risks
Clinical Engagement	More clinical leadership roles appointed; some procurement panels include clinical input.	Consultation often happens after key decisions are made; quality varies significantly across Trusts.
Governance	Named Senior Responsible Officers (SROs) in some Trusts; clearer national frameworks.	Multi-layered accountability remains confused; frameworks exist, but implementation is patchy.
Interoperability	Common standards are defined; successful pilots demonstrate the possibility.	Real-world data flows remain patchy; standards are defined but not enforced consistently.
Procurement	Phased approaches with milestones becoming more common; lessons documented.	Funding-driven deadlines still override readiness assessments; political pressure demands visible progress.
Staff Adoption	Increased training investment at select sites; recognition that culture matters.	Adoption rates lag; morale concerns persist; training is often one-off rather than continuous.

Turning paper medical records into FHIR and SNOMED CT encoded records in Africa

by Olivier Karasira (Kigali, Rwanda)

Voting with our feet

- Only using providers that accept, use and export my data
- Coded / Structured / Standardised
- Let's follow Burundi and Rwanda




MORE VIDEOS

HL7 FHIR DevDays 2020, Virtual Edition US, June 15–18, 2020 | @HL7 @FirelyTeam | #fhirdevdays | www.devdays.com/us






0:02 / 9:31

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  YouTube 

Babylon Health is no longer operating as a company after facing financial difficulties and shutting down its US operations in 2023. Its UK business, including the GP at Hand service, was sold to eMed and rebranded as eMed GP at Hand. The original company, known for its AI-powered symptom checker and digital health services, was founded in 2013 and aimed to make healthcare more accessible through technology. 



- **Company status:** Babylon Health is now defunct. It closed its US operations and placed its UK operations into administration in 2023. 
- **Sale of UK business:** The UK assets, including the GP at Hand service, were sold to a new company called eMed Healthcare UK. 
- **Current service:** The former Babylon GP at Hand service is now called [eMed GP at Hand](#). 
- **Original business model:** Babylon Health used a smartphone app to provide a range of digital health services, including AI-powered symptom checking, and consultations with doctors. 
- **Reason for collapse:** The company struggled financially after a stock market launch in 2021 and experienced significant losses. 

Pyrrhic Victory

- The founder of Babylon Health, Ali Parsa, has since launched a new healthcare AI venture called [Qu](#).

Maybe we need to
get as mad as
hell?

- In Defence it's possible to say "JFDI"
- Time to take a lead on this ?
- Final word from Peter Finch (Howard Beale) from the film Network (1975)

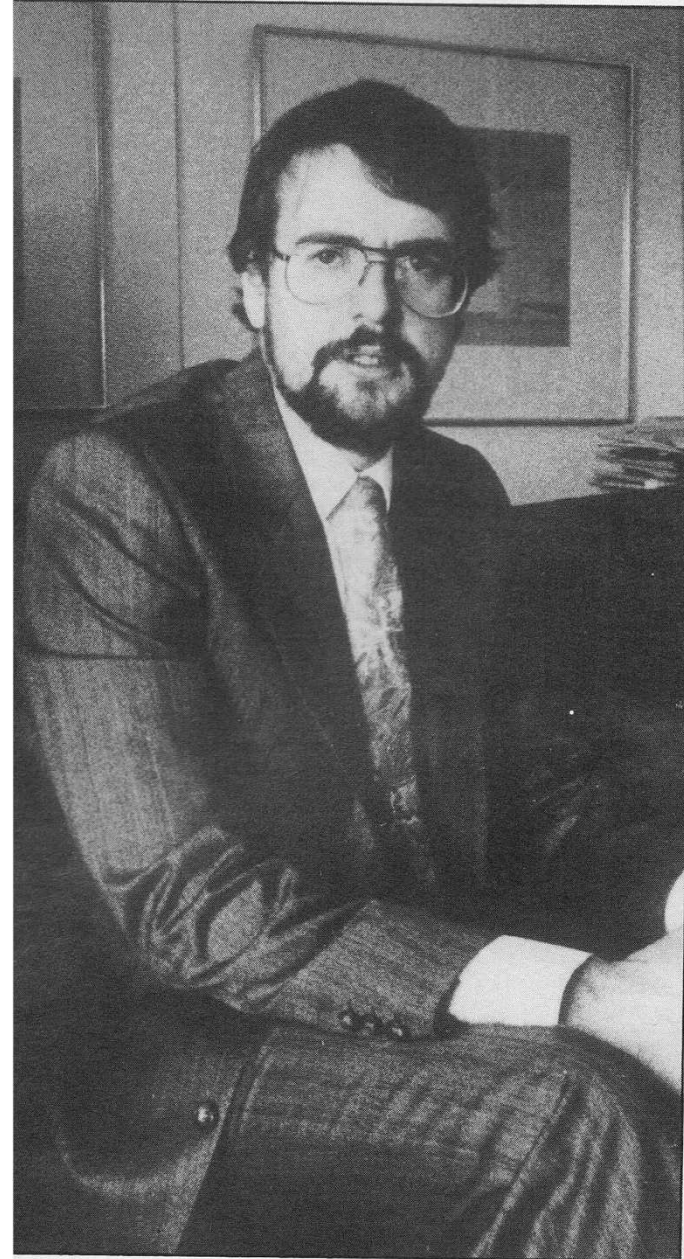




Interoperability – All done and dusted ?

DR. MICHAEL BAINBRIDGE
BM BS FBCS FRCGP FAIDH CHIA

Dedicated to Ewan Davis
(1955-2024) who gave
me my first job in
Clinical Informatics in
1984 - thank you for
trusting me



If anyone's
going to
monetise my
data, it's me
or is it too
late ?

I will decide about research

I will decide about who, how often and when

You will not treat my data as a commodity

Ultimately my data _is_ me

I will choose (and take the consequences) of a decision to share.

Thank you for asking....



What's Missing?

- Clinical Leadership
 - Child Health as an example <https://growth.rcpch.ac.uk/>
 - Australian Work in child health
 - Sign off from ...
 - PRSB work in parallel



As we keep hearing – 'Progress has been made'



Banking / Flights / Bookings / Check-ins



Coding and Terminology standards have existed for decades (I wrote some of them)



Why are we still squabbling about secure messaging and passing pdfs around



I don't expect perfection, but I do want to see progress



I expect us all to be working on precision and ultimately personalisation. Quality and safety should be a forgone conclusion