Integrated cEHRs

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Why is it so hard to make Integrated Care work?

# Current digital systems are not built for integration!

- No matter how good your single-organisation clinical digital system gets, it's never going to create Integration. **Because it's a single organisation system**.

- In the days of paper clinical notes things were actually **easier** for integrated care - the patient could be given a 'patient-held record' and many organisations could contribute (eg UK Red Book, paper maternity notes)

- Digital has improved much but the commercial models for our clinical software have not favoured Intergation options.

- In the gap created, we have 'Human Middleware'.

'human middleware'

- humans compensate for deficiencies in the organisation's systems

- it is time consuming and wasteful of resource

- it's not enjoyable!

- it takes staff away from 'human' health and care duties, and forces them to spend time 'caring' for the computer.

- examples of humans doing 'middleware' jobs:

  - transferring patient information from one system on one screen to another system in order to be able to process the work you have done.

  - phoning the hospital to change a clinic appointment, then phoning the patient transport ambulance service to change the ambulance

'human middleware'

- the term 'middleware' comes from computing - it's important software that helps to join up all the pieces in a system.

- You only notice it when it's not there!
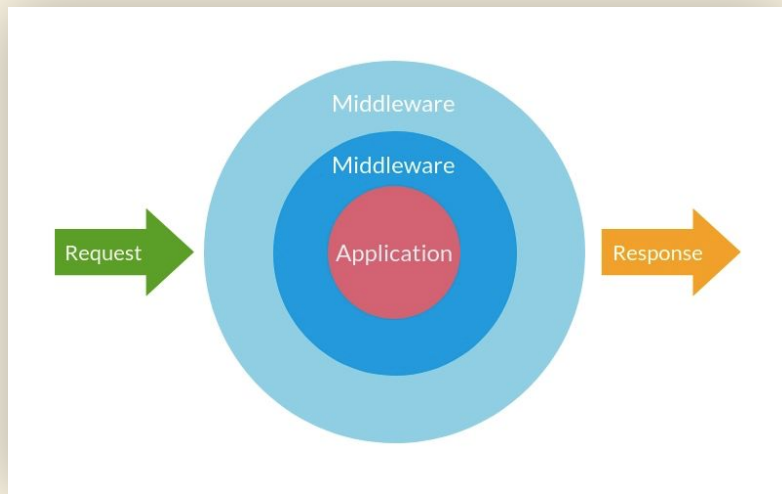
What Integration means in tech terms

- **connecting the information** - joining one system to another with a seamless machine-to-machine interface

- **elimination of human middleware** - in fact when you see that you have humans doing middleware jobs this what tells you that you are infrastructure-deficient.

- **exposing as a web service** your real clinical services, registers, information sources, knowledge bases

- **standardisation** - often by consensus rather than by legislation or mandation - but if there's to be a booking web service for hospitals they should all be the same, right?

What Integration doesn't mean

- Siloed applications which do **one** thing in **one** organisation but have no integration options.

- "**magical interoperability dust**" - siloed applications which can send limited information about the **patient** (not the services) to and from each other. This does not create integrated care, it *perpetuates the fragmentation*.

What is an API?

- API = Application Programming Interface, also known as a Web Service

- It is a way for a computer program to 'talk' to another computer program

- It uses a standard way of exchanging data called 'REST' hence sometimes called 'RESTful' APIs

The problem of building Uber

Uber is a popular taxi and ridesharing app.

To build Uber, you need:

- Mapping for the **whole world** (GPS integration)
- An SMS text sending system (global telephony integration)
- A payment system (credit card integration)

And you need **all of this** before you can launch and have your first customer!

The problem of building Uber

Luckily, Uber didn't need to build **any** of this infrastructure themselves

Because they are provided as Web Services, otherwise known as APIs

Uber could focus on building the 'special sauce' of the product, not the infrastructure

The problem of building Uber

Google Maps API for their global mapping and geolocation information

The problem of building Uber

Twilio API for SMS sending

The problem of building Uber

Braintree API for processing credit card payments

Now **THAT** is Integration.

← API Library

Welcome to the API Library

The API Library has documentation, links and a smart search experience.

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Maps

Maps SDK for Android
Google

Maps for your native Android app.

Maps SDK for iOS
Google

Maps for your native iOS app.

Maps JavaScript API
Google

Maps for your website

Places API
Google

Get detailed information about 100 million places

Machine learning

Dialogflow API
Google

Builds conversational interfaces

Cloud Vision API
Google

Image Content Analysis

Cloud Natural Language API
Google

Provides natural language understanding technologies, such as sentiment analysis, entity…

Cloud Speech-to-Text API
Google

Speech recognition

Calendar API — Clinic Booking API — Ambulance Booking API

checks my availability — "OK"

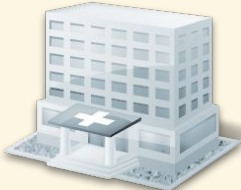rebook my clinic appointment — "OK"

change my ambulance booking — "OK"

So.....

Where are all the Health and Care APIs then?

Calendar API   **Clinic Booking API**   **Ambulance Booking API**

checks my
availability   "OK"

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We need Healthcare APIs for

- **Health Services** - Booking and Appointments, Laboratory Tests, Phlebotomy, Radiology, Emergency care flows.

- **Care services**- Placement, home care provision, food delivery, pharmacy delivery, transport

- **Information** - Drug reference information (both patient and clinician-level), social prescribing

- **Communications** - Privacy/IG-compliant comms: P2C C2P C2C P2P P2F and more

- **Registers** - entitlements for free care, ambulances, free prescriptions.

- **Knowledge Base** - decision support, pathways, clinical advice, learning systems.

- **Clinical Calculation** - growth, BMI, Early Warning scores, risk stratification

- .... not an exhaustive list but a starting point!

How do we get there?

How do we get there?

- **by teaching clinicians and carers to know what to ask for**

- by knowing the difference between silos and services

- by challening the ideology of magic 'interoperability dust' aimed at connecting silos not exposing usable services

Thankyou

Notes

https://integratedcarefoundation.org/events/icic20-20th-international-conference-on-integrated-care