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Innovating Healthcare Delivery with Integrated Platforms

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Digital health trends

Population trends and shifting consumer trends are changing consumer preferences, leading to new ways of delivering care across the health sector. These key underlying trends can be summarised as follows:

Shifting consumer preferences towards choice and convenience	There is an increasing preference among the Australian population to choose healthcare delivery online as a more convenient option for services, with c.20% of professional attendance services delivered via telehealth in 2022, up from 0.1% in early 2020.
An ageing population	The proportion of elderly people in the Australian population is projected to grow to 20.7% by 2066, increasing the need for comprehensive healthcare systems that can service an ageing population. There is also an increasing preference among older consumers to 'age in place', with over 80% of older Australians preferring to do so, according to a 2020 survey.[1]
Increasing prevalence of chronic disease	Spurred by an ageing population, the prevalence of chronic conditions is increasing in Australia. About 50% of Australians have one or more chronic conditions, whilst multi-morbidity is prevalent in c.20% of Australians.
Focus on and funding for whole person, preventive and value-based care	Whole person care is growing in importance due to factors including chronic multi-morbidity. This has led to greater requirements for consideration of multiple patient dimensions and determinants of health in an integrated manner that emphasises the importance of doctor/patient relationships.
Global shortages in healthcare workforces	Systemically, the impacts have been far-reaching as we observe shortages in primary care access contributing to increases in emergency department overload and 'ramping' issues. Projections of Australian shortages of 109,500 nurses and 2,700 doctors by 2025,[2] and adjacent shortages in allied health in high-demand subspeciality areas such as mental health, underscore the burning platform for change in how we deliver care.

The COVID-19 pandemic has accelerated many of these trends as the healthcare system and consumers were forced to adopt new, digitally enabled ways of working during 2020-21.

Consequently, we see six key areas of healthcare that present clear opportunities for digitisation:

1. Hybrid care
   - Virtual care is here to stay with the increasing hybridisation of care, supported by the advancement of wearables and monitoring devices, which is improving convenience and reducing cost to serve. This trend is leading to a rapid explosion of care at home for the elderly as opposed to the more traditional residential solutions.

2. Patient experience and engagement
   - The increasing consumerisation of healthcare and the need to deliver hybrid care across virtual options, new sites of care and face-to-face engagement present a need to connect the patient's care journey and personalise their experience.

3. Clinician experience
   - Attracting and retaining healthcare providers during a shortage with workflow efficiencies, enabling them to deliver hybrid (i.e. in-person and digital) multidisciplinary care, and providing the data and insights to treat the whole person.

4. Data as a strategic asset
   - Business, patient and clinician insights, collected from multiple devices and integrated systems, are a foundation for value-based care and research excellence.
   - These insights are the basis to deploy more advanced data and analytics tools and artificial intelligence (AI), and to address new revenue streams.

5. Digital operations/operational excellence
   - Digitisation enables reducing the cost to deliver high-quality healthcare and adapting to the challenge of coordinating more complex hybrid care through standardisation and automation.
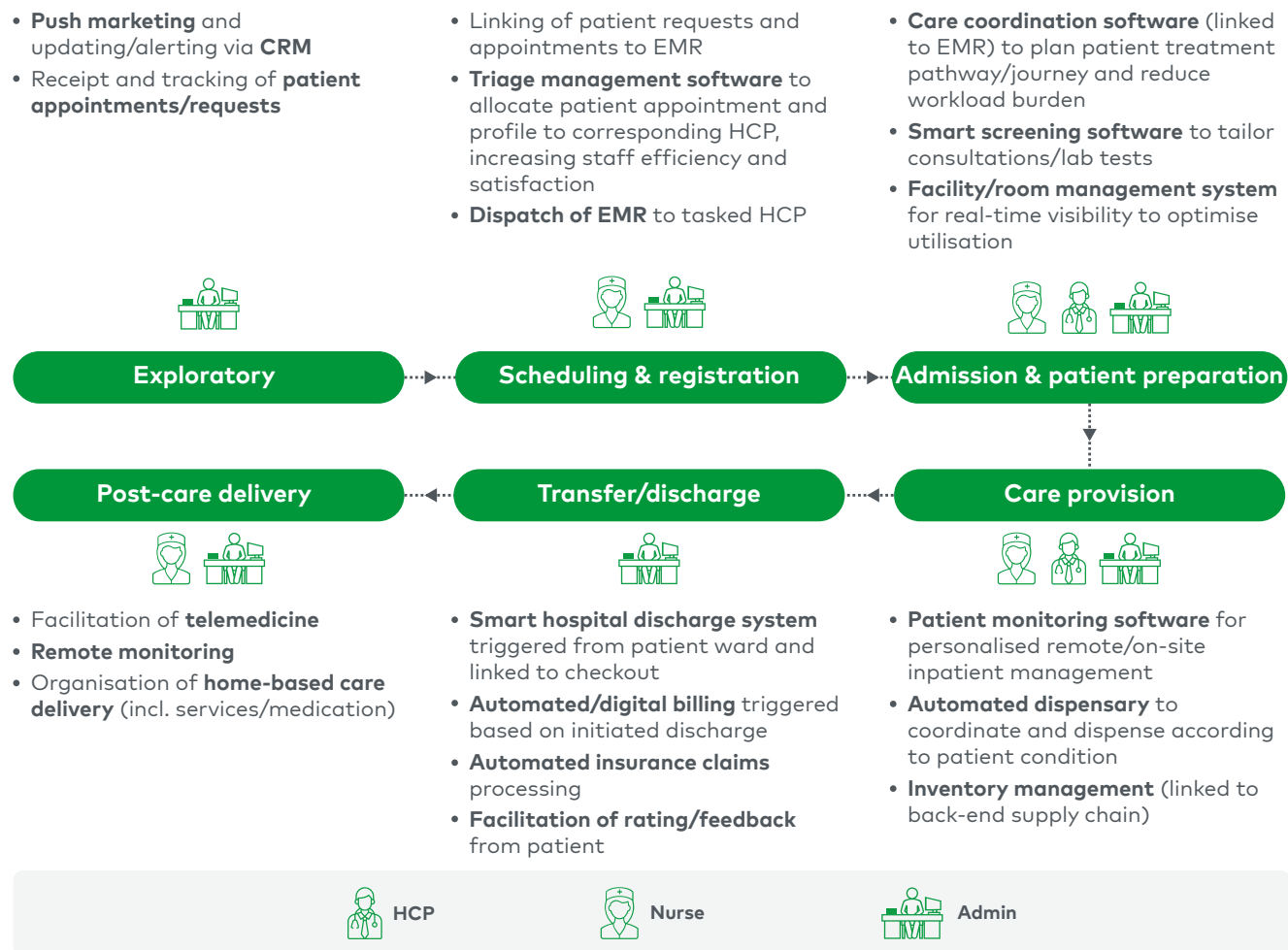
6. Interoperability
   - Digitisation affords greater integration and interoperability across various healthcare delivery settings (e.g. community and home care, primary and allied health, hospital and aged care) and service providers.

- The National Digital Health Strategy sets out the importance of interoperability, and the Australian Digital Health Agency is leading the efforts to implement standardised digital health compliance and specifications across Australia, ensuring that clinicians and organisations in different jurisdictions are able to effectively exchange patient data.[3]

Care delivery will continue to expand beyond the walls of traditional health service settings as virtual and hybrid care delivery and prevention models continue to increase. Illustrations of this continuum of care are shown in Figures 1 and 2.
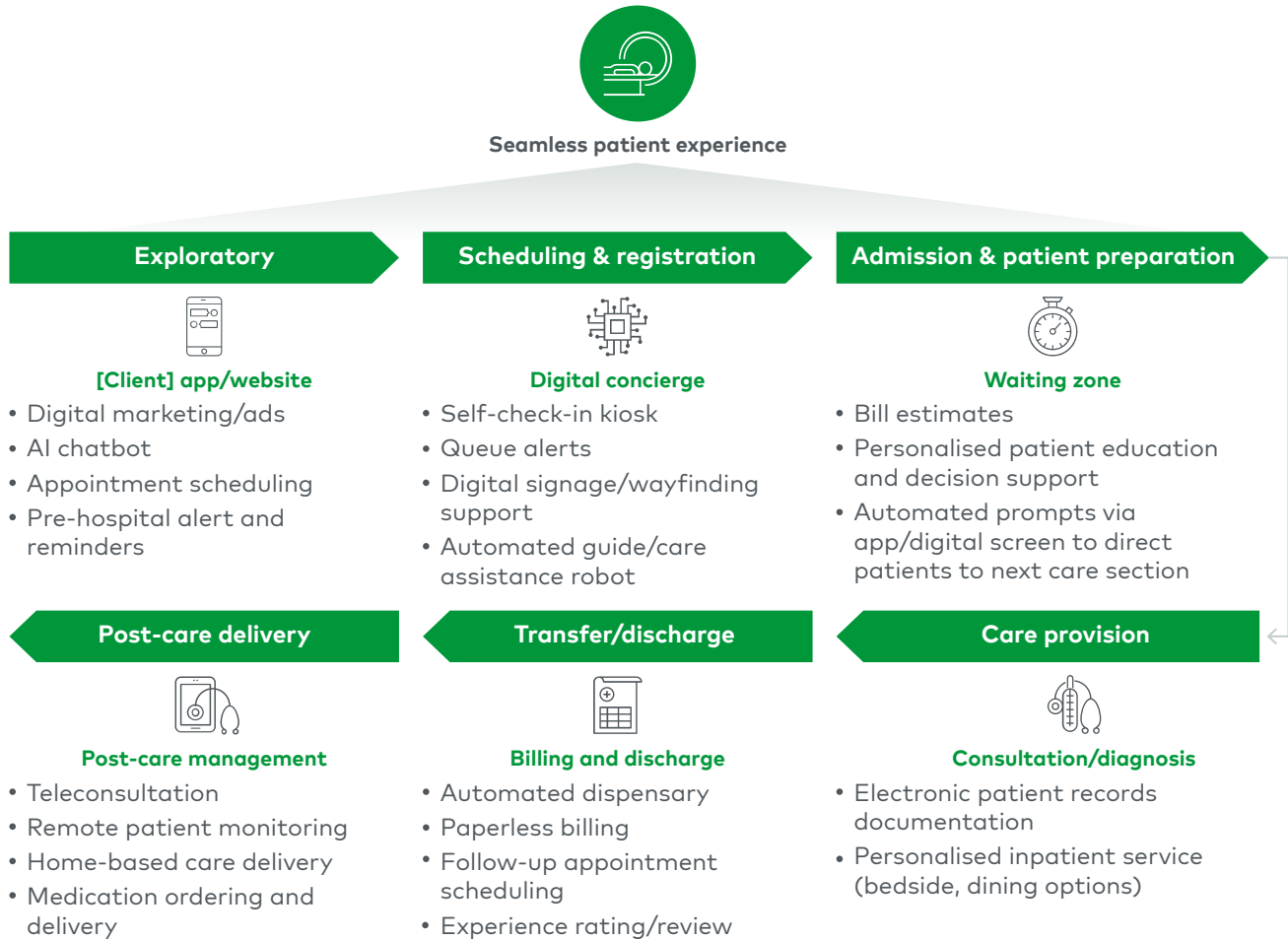
Figure 1
Leading workflow practices at digitally enabled hospitals

- **Push marketing** and updating/alerting via **CRM**
- Receipt and tracking of **patient appointments/requests**

- Linking of patient requests and appointments to EMR
- **Triage management software** to allocate patient appointment and profile to corresponding HCP, increasing staff efficiency and satisfaction
- **Dispatch of EMR** to tasked HCP

- **Care coordination software** (linked to EMR) to plan patient treatment pathway/journey and reduce workload burden
- **Smart screening software** to tailor consultations/lab tests
- **Facility/room management system** for real-time visibility to optimise utilisation

| **Exploratory** | **Scheduling & registration** | **Admission & patient preparation** |

| **Post-care delivery** | **Transfer/discharge** | **Care provision** |

- Facilitation of **telemedicine**
- **Remote monitoring**
- Organisation of **home-based care delivery** (incl. services/medication)

- **Smart hospital discharge system** triggered from patient ward and linked to checkout
- **Automated/digital billing** triggered based on initiated discharge
- **Automated insurance claims** processing
- **Facilitation of rating/feedback** from patient

- **Patient monitoring software** for personalised remote/on-site inpatient management
- **Automated dispensary** to coordinate and dispense according to patient condition
- **Inventory management** (linked to back-end supply chain)

HCP   Nurse   Admin

Note: CRM=customer relationship management; EMR=electronic medical record; HCP=healthcare provider
Source: L.E.K. research and analysis

Figure 2
Continuum of care model at digitally enabled hospitals

Seamless patient experience

Exploratory

[Client] app/website

- Digital marketing/ads
- AI chatbot
- Appointment scheduling
- Pre-hospital alert and reminders

Scheduling & registration

Digital concierge

- Self-check-in kiosk
- Queue alerts
- Digital signage/wayfinding support
- Automated guide/care assistance robot

Admission & patient preparation

Waiting zone

- Bill estimates
- Personalised patient education and decision support
- Automated prompts via app/digital screen to direct patients to next care section

Post-care delivery

Post-care management

- Teleconsultation
- Remote patient monitoring
- Home-based care delivery
- Medication ordering and delivery

Transfer/discharge

Billing and discharge

- Automated dispensary
- Paperless billing
- Follow-up appointment scheduling
- Experience rating/review

Care provision

Consultation/diagnosis

- Electronic patient records documentation
- Personalised inpatient service (bedside, dining options)

Note: AI=artificial intelligence
Source: L.E.K. research and analysis

Data, connected digital channels, personalisation, technology integration and experience design are all key enablers of this transition.
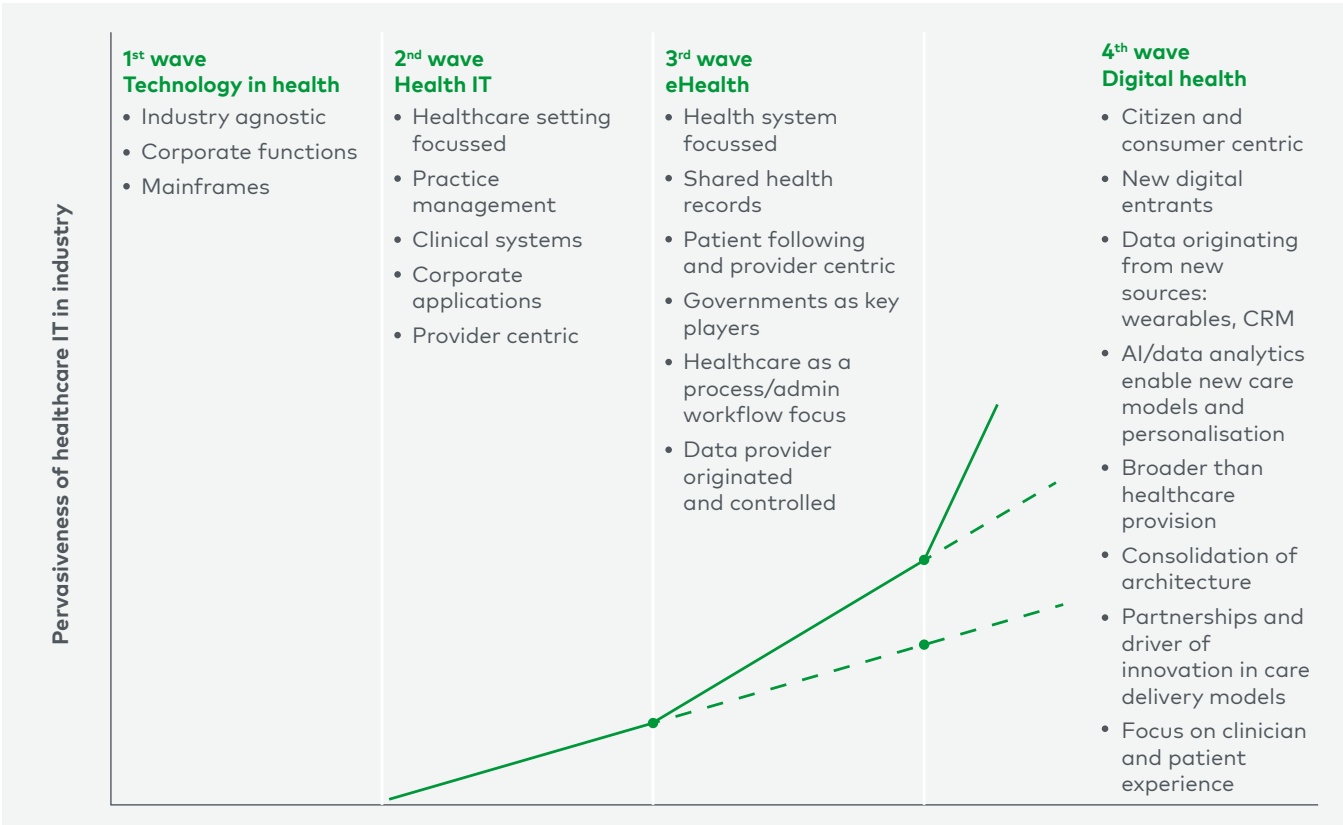
Healthcare IT

Digital

To deliver on the promise of healthcare digital transformation — connected data, personalised journeys, productivity workflows across diverse and cross-sector care delivery models — healthcare IT and digital teams will need to consolidate today's point solution technology landscape.

As healthcare IT teams come out of the third wave of health IT maturity — eHealth (see Figure 3) — many organisations have found themselves with a complex landscape

of point solutions and a lack of patient-focussed engagement channels and data. It is difficult for health IT teams to acquire the agility required to meet evolving needs and expectations for care when they are weighed down with managing a complicated legacy environment that is expensive to maintain and challenging to govern.

Figure 3
Overview of health IT maturity waves

1st wave Technology in health	2nd wave Health IT	3rd wave eHealth	4th wave Digital health
• Industry agnostic • Corporate functions • Mainframes	• Healthcare setting focussed • Practice management • Clinical systems • Corporate applications • Provider centric	• Health system focussed • Shared health records • Patient following and provider centric • Governments as key players • Healthcare as a process/admin workflow focus • Data provider originated and controlled	• Citizen and consumer centric • New digital entrants • Data originating from new sources: wearables, CRM • AI/data analytics enable new care models and personalisation • Broader than healthcare provision • Consolidation of architecture • Partnerships and driver of innovation in care delivery models • Focus on clinician and patient experience

Pervasiveness of healthcare IT in industry

Note: CRM=customer relationship management; AI=artificial intelligence
Source: L.E.K. research and analysis

In fact, upgrading, refreshing, or consolidating business apps, hardware and software infrastructure was one of the most common priorities for health IT organisations over the next 12 months, according to a 2023 Forrester survey.[4] L.E.K. Consulting's research positions 'Incompatibility of the different digital health solutions' as one of the top three concerns for healthcare providers.[5]

As has been the case across more digitally advanced industries, health IT is now turning its attention to platform consolidation and simplification to reduce maintenance overheads, increase the speed of innovation, improve security, improve data management, and deliver on a connected patient experience and care journey.

What is a platform?

A platform is the shift in mindset from point solutions to integrated, end-to-end journeys for patients and clinicians, and the critical, everyday practice of 'clicks not code'.

It has been said that healthcare has a lot to learn from other industries, and when we look at the largest and most complex organisations outside healthcare, we notice they are platform companies. In these industries that are ahead in their digital journey, application consolidation, simplified technology architecture and access to data were all critical to progress and success. Retail and fintech are key examples.

Rather than developing point solutions which allow users to perform single, discrete tasks, or applications which only serve a small portion of their business, platform organisations have instead chosen a 'platform approach' to enable individuals and the broader organisation alike to run their operations.

A platform is a system or set of foundational capabilities that are used to build, support, and connect multiple solutions, services and/or experiences. An open platform encourages third parties to develop new solutions, services and/or experiences on top of it and makes them as widely and readily available for use as possible. Such platforms enable the building of entire ecosystems and create unprecedented growth potential in agility and scalability.

A platform's value to its owner, to its user community and to all the third-party developers increases with each additional capability and/or ecosystem member. The value of the platform includes not just the core functionality (developed by the platform owner) itself but the entire ecosystem of additional capabilities and its network effect.

Platforms in healthcare

In healthcare, the need for rapid and large-scale response found new definitions during the COVID-19 pandemic, when aged care residential facilities were required to implement registries of their residents over the course of a weekend, or entire states implemented contact tracing and vaccination solutions on a Salesforce health platform over just three weeks for entire regions serving millions of people.[6]

Suddenly, the platform approach which had been adopted in many other industries found a new home in healthcare. The IT needs of a stadium filled with 26,000 individuals being vaccinated in just one day could be provided for through the agility and scale of a platform being used to craft and implement novel workflows from scratch with just a few days' preparation.[7]

The true potential for a platform strategy bears its greatest fruit, however, when its agility and scalability are utilised for more than single (albeit large-scale) use cases. The key to realising optimal value from a platform is to use it to support entire stakeholder journeys, not to plug gaps in functional processes.

When stakeholders include patients, family members, clinicians, administration officers, executives and board members, regulatory authorities, and any other individual important to a healthcare organisation, the capability to have a longitudinal view and a streamlined experience for each stakeholder brings far-reaching value.

Attaining the most out of a platform-first strategy requires gaining an understanding of the difference between a point solution and a platform as well as having a coherent and comprehensive data strategy.

Low code/no code
Configuring rather than customising, using out-of-the-box functionality and exploiting apps that have already been built from an application marketplace are all ways to increase speed to value and long-term success.

Part of a platform strategy's ability to enable higher-value technology implementations and automated workflow design is the low code/no code functionality that platforms provide to IT development teams. Instead of custom

coding, which may take long periods to create custom applications that are not easy to fix and maintain, low code/no code environments allow healthcare organisations' IT teams to quickly drag-and-drop the workflows and front-end user interface to create beautiful experiences for their users.

In contrast, most current off-the-shelf applications have hard-coded configuration tools that healthcare organisations' IT teams use to create their front-end workflows. These hard-coded tools in the back end therefore restrict constructive workflow design unless significant customisation through expensive custom coding is undertaken. Practically, this results in clunky user experiences, significant maintenance burden for the custom work and getting stuck in what clinicians call 'change request hell'.

Platforms, however, allow agile delivery design. In rapid one-week or two-week sprint cycles, user subject matter experts (SMEs) can sit with IT/digital teams to craft fast product development, with bespoke workflows utilising increasingly capable out-of-the-box functionality that includes visualisations, timelines, stakeholder maps and public-facing AI features.

Combined with a growing community of third-party on-platform and platform-connected application developers, healthcare organisations are now capable of implementing, in short time frames, workflow solutions for the entire stakeholder journey from enquiry, first contact and pre-encounter all the way to post-encounter follow-up, billing and ongoing engagement.

The value of cloud

Platform providers like Salesforce have been pioneers in cloud-based software solutions for over two decades. Since the earliest cloud-based delivery solutions that boasted a 'no disks' approach to installing and upgrading software, platform strategies have sought to remove the risk of significant downtimes for code package upgrades that afflict many off-the-shelf, on-premises point applications.

On-premises point applications result in significant clinical and cybersecurity risks and the need for extensive workarounds and governance processes when maintenance breaks and code upgrades result in lack of access to the systems supporting workflow. Fall-backs to temporary paper-based processes or other manually intensive workarounds create opportunities for medical error — errors of transcription, errors of omission, etc.

Instead, through software-as-a-solution/platform-as-a-solution delivery, new roadmap innovations on cloud-based platforms are delivered throughout the year in seasonal releases, requiring no downtime and no negative impact on organisational productivity.

The power of integration

Many other industries such as banking and the commercial retail industry have been utilising application programming interface (API)-driven integrations for a number of years. But in healthcare, it is not unusual to see up to a third of project resources dedicated to point-to-point integrations with third-party systems on new project implementations. The newer approach of API-based integrations utilising drag-and-drop developer environments and reusable connectors brings far greater time efficiency to project delivery.

Taking an end-to-end perspective inevitably requires integration among several different systems at both an enterprise and a business unit level. Traditional integration methods can lead, however, to high levels of customisation and interdependency when creating tightly coupled systems. Instead, more recent API-based integration offers both connectedness and independence, reducing technical debt and associated costs of maintenance.

Subspeciality clinic network providers in secondary care are now utilising this kind of API-driven platform approach as a productivity multiplier, to allow fast expansion of their clinic networks and to create a clinic-in-a-box concept as they expand their services in new geographical regions.

Achieving scale and impact through individualisation

One of the unsurprising aspects of platforms is how standardisation can enable journey orchestration for users and the patients they serve. The greatest challenge is to ensure that the almost-complete flexibility of creating bespoke workflows on a platform project and the creativity of SMEs on a project are harnessed and guided through implementing good governance culture and processes during design and delivery.

Achieving the balance between standardisation for scale and personalisation for impact also requires both user-centricity and platform skills. A human-centred design team combined with an agile technology development approach that makes use of the rapid development capability of a low code/no code platform allows implementation teams to create truly individualised experiences for patients.

One such example is Ochsner Health, which has moved from siloed messaging and disjointed experiences to a patient-centric approach where key interactions are leveraged for personalised conversations. Mehilainen constitutes another example of a successful healthcare services organisation with a strong patient-centric and digital-first approach.

By leveraging Salesforce Health Cloud and technology traditionally used by other industries for marketing purposes, Ochsner Health have built a unified consumer profile and offer a fully connected customer experience across all areas of their organisation. Mehilainen is commercialising its digital front door BeeHealthy to third parties abroad but also to public providers in Finland.

Real-time data from many different sources of information within Ochsner Health, centred in the Salesforce platform, drives personalised experiences with a 'know me, show me' strategy. For a commercial provider in healthcare, this has resulted in a 60% year-on-year increase in marketing leads, an increase of 10% in lead conversion and a 39% rate of email opens (the average in healthcare is around 21%).[8]

Similarly, consider the improvements for public health organisations and hospitals that this type of improvement in patient engagement might bring for ensuring medication adherence, reinforcing behavioural programmes, and individualising care in cancer care and mental health.

In a number of states in Australia, the Salesforce platform is being used to orchestrate referral journeys — for example, during general practitioner (GP) referrals to hospitals in South Australia, and in mental health in coordinating referral workflows with multiple receiving mental health providers throughout the entire state of Victoria.

Where does platform strategy fit with EMRs, PAS, etc.?

In the early 2000s, the United States government created a multibillion-dollar investment in the form of the Health Information Technology for Economic and Clinical Health (HITECH) Act that allowed hospitals to purchase electronic medical records (EMRs) and patient administration systems (PAS) to replace their paper records. These systems of record were off-the-shelf, solutions focussed on note-taking, documentation and registration for healthcare workers in provider organisations.

These systems utilised largely text-heavy user interfaces which were pre-configured by the vendor (with limited configuration capability in the tools provided to the clients) but which streamlined product research and development for the vendors and accelerated implementation on client projects by minimising customisation options. Any client requirements that did not fit the pre-configured capabilities of the system required heavy customised coding and extra implementation resources, usually after the initial implementation of the core solution.

These solutions also utilised proprietary data models and, at least initially, did not have direct integration with competing vendor solutions that lacked another supporting Health Information Exchange software solution.
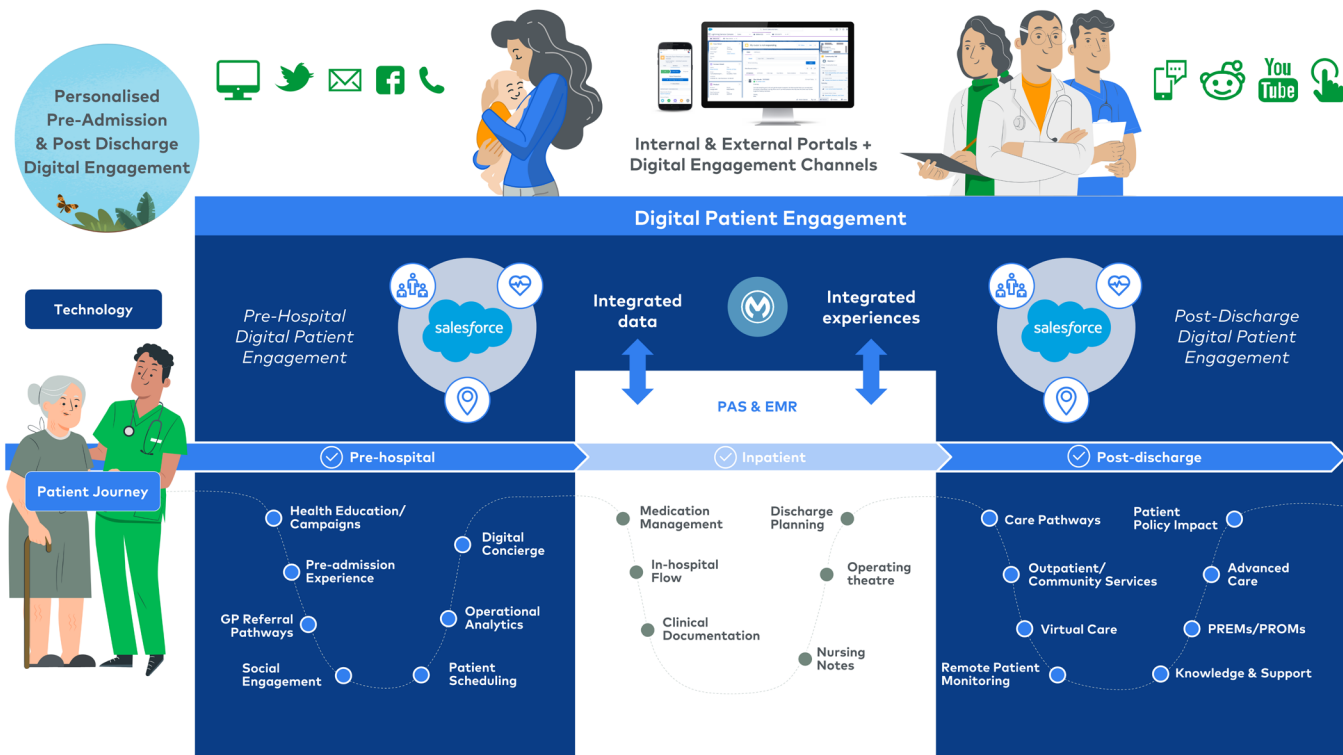
The combination of hard-coded user experiences and lack of integration meant that any workflow innovation or redesign in these systems of record has historically taken significant time and effort. Customer change requests for basic functionality, such as the ability to add pictures to note templates or features for early detection and warning of patient deterioration, could take years or even decades to develop for practical use at the clinical coalface.

For healthcare organisations looking to innovate health practices and workflows or to test new models of care, a new need has arisen for an innovation solution layer that allows accelerated configuration, implementation and integration.

Organisations that also are seeking improved customer (patient) and staff experiences need not just a system layer focussed on internal processes and a system of record, but a solution with capabilities focussed on person engagement (see Figures 4 and 5).
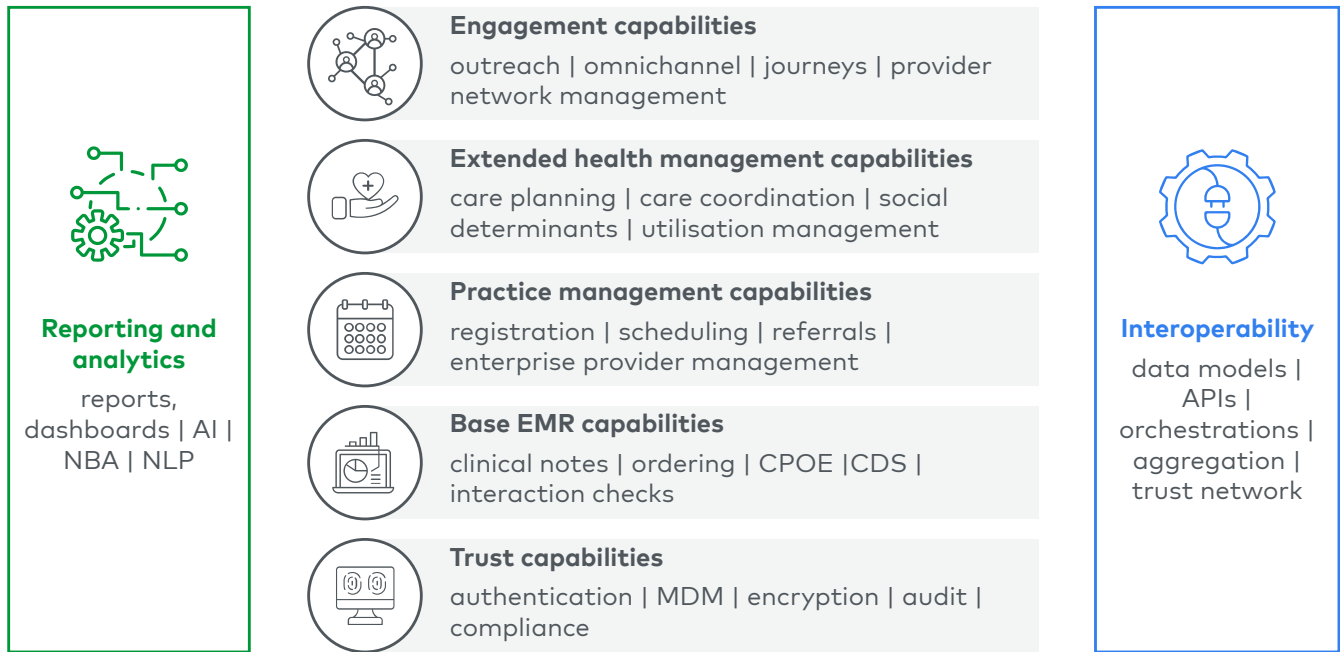
Platforms like Salesforce are therefore asked now to serve many EMR/PAS-augmentation use cases for both clinical and administrative workflows such as intake workflows for eReferrals from primary care GPs to acute hospitals, pre-admission journeys for surgical inpatients and outpatient clinics, post-encounter follow-up, patient feedback through patient-reported experience and outcome measures, care coordination, and hospital-in-the-home.

Figure 4
True patient engagement via an omnichannel approach

Note: PAS=patient administration system; EMR=electronic medical record; GP=general practitioner; PREMs=patient-reported experience measures; PROMs=patient-reported outcomes measures
Source: Salesforce

Figure 5
Complementary capabilities of EMR and CRM

Reporting and analytics

reports, dashboards | AI | NBA | NLP

Engagement capabilities
outreach | omnichannel | journeys | provider network management

Extended health management capabilities
care planning | care coordination | social determinants | utilisation management

Practice management capabilities
registration | scheduling | referrals | enterprise provider management

Base EMR capabilities
clinical notes | ordering | CPOE |CDS | interaction checks

Trust capabilities
authentication | MDM | encryption | audit | compliance

Interoperability

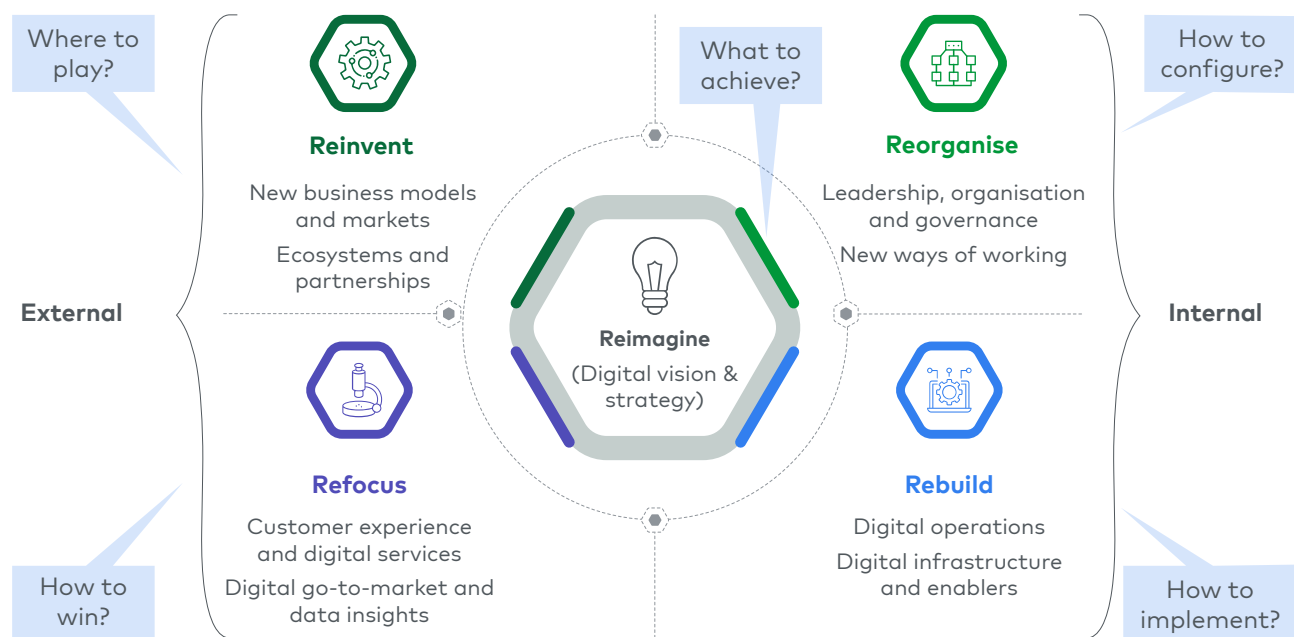data models | APIs | orchestrations | aggregation | trust network

Note: EMR=electronic medical record; CRM=customer relationship management; AI=artificial intelligence; NBA: next best action; NLP=natural language processing; CPOE=computerized provider order entry; CDS=clinical decision support; MDM=mobile device management; API=application programming interface
Source: Salesforce

Critical success factors in adopting a platform strategy

A platform strategy is a key step in enabling healthcare providers to reimagine care delivery for their patients and clinicians. In 2020 L.E.K. introduced its Digital Excellence Framework (DEX)[9] outlining five key areas underpinning digital excellence for healthcare companies. A digital platform strategy is a key component of rebuilding digital operations, infrastructure and enablers, and L.E.K. has now developed a Digital Excellence Model for healthcare services, recommending a holistic approach involving a core vision/strategy and four key components (see Figure 6):

Figure 6
L.E.K. Consulting Digital Excellence Model

Source: L.E.K. research and analysis

At the centre of the model is Reimagine — What to achieve? It is important to establish a clear and well-articulated digital vision and strategy for your organisation. Around that core vision and strategy are four key components:

1. **Refocus — Where to win?** This component is about understanding the patient journey and experience, with a view to personalising this for each individual.
2. **Reinvent — Where to play?** This component is about developing new models of care through creating ecosystems/partnerships to deliver care differently.
3. **Reorganise — How to configure?** This component is about embracing new ways of working, and aligning leadership, governance and organisation structures to suit.
4. **Rebuild — How to implement?** This component is about developing an enterprise architecture and digital platforms, digital infrastructure and enablers.

With the increasing capability of data and analytics tools and AI — whether to personalise patient journeys and experience, optimise staff engagement, or deliver precision medicine — healthcare organisations increasingly need to have a clear data integration and architecture strategy to deliver greater benefits to patients, payors and their own staff.

While the level of organisational transformation needed to reimagine a healthcare business is significant, the approach and experience can be markedly different from past business and technology changes, such as traditional EMR implementations. A digital platform strategy allows an organisation to approach the implementation of their digital vision in an incremental manner, with the agility and rapid iteration more common in digital native industries. Within the context of the overarching digital vision and strategy, a platform strategy can allow business units and clinical departments to progress at different speeds based on value, need and baseline digital maturity.

For more information, please contact us at **strategy@lekinsights.com**.

Endnotes

[1]Roy Morgan research.

[2]Health Workforce Australia, "Health Workforce 2025: Doctors, Nurses and Midwives Volume 1", 2012.

[3]Australian Digital Health Agency, "Australia's National Digital Health Strategy", 2018.

[4]Forrester, Priorities Survey, 2023.

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[8]Salesforce, internal client data.

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