

“Making Healthcare Maximally Intelligent”

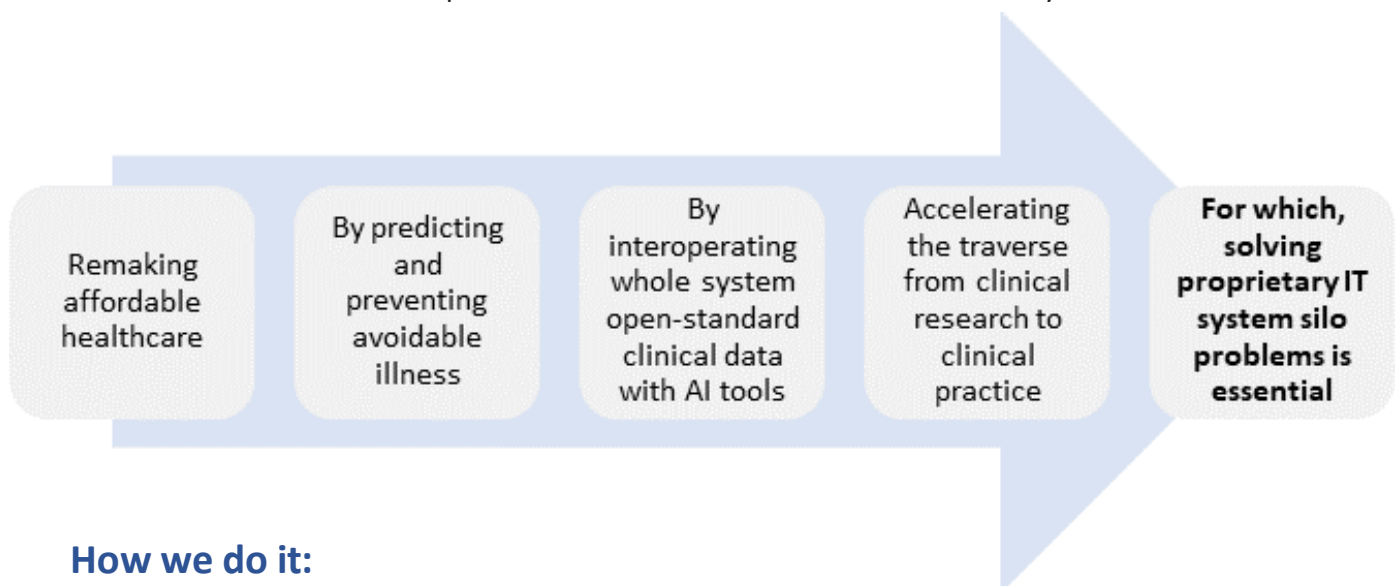
GCloud 15 (LOT-2) Service Definition

The PANACEA™ Digital Innovation Platform: **ARCHIVING and EPR MIGRATION**

In Future Perfect, we believe that by persistently innovating healthcare, people’s lives will be saved and improved, to the limit of what is possible.

Why we do what we do:

Our strategic aim for building our business is to aid remaking affordable healthcare, by predicting and preventing avoidable illness. **Our contribution is to enable this process by interoperating clinical data with AI tools that accelerate the translation from clinical research to clinical practice.** We solve proprietary IT system silo problems, our ethics for doing so being our commitment to open data standards and strict vendor neutrality.



How we do it:

By integrating patient data across institutions to enable and support live shared care –faster and at far lower cost than has hitherto been possible.

By using the increasingly adopted global standard for clinical repositories – openEHR, as endorsed by the World Health Organisation and the International Telecommunications Union, in recommendations to member nations relevant to lessons learned from responses to the Covid pandemic.

By accelerating access to innovating digital health technologies (e.g. AI, data from wearables, genomic data).

By committing to open data standards and vendor neutrality in all we do.

By working across healthcare and academic R&D, securely and safely holding data to enable clinical trials in Trusted Research Environments (TREs) and, also, the translation of proven research outcomes into clinical practice.

THE FUTURE PERFECT APPROACH DISPLACES

“SHARED CARE-RECORDS”

WITH

TRUE “SHARED-CARE RECORDS.”

What is PANACEA™?

PANACEA™ is a patient-centred health and care platform that utilises the global openEHR open standard for a clinical data repository. Uniquely **PANACEA™** provides full vendor-neutrality, offering choice even of the openEHR platform itself.¹

The functionality of the core product itself is standard across all scenarios because it can be installed and used across any combination of departments, sites, or even organisations – but only in one single configuration of e.g. workflow, e-Forms screens, clinical data repository configuration and integration. The core **PANACEA™** platform is ideally suited, for example, as a health system-wide diagnostics vendor-neutral archive, that would not necessarily require additional **PANACEA™** licence options.

In addition, by procuring licence options from our Catalogue, **PANACEA™** can operate independently with multiple instances and federate access to all the patient’s data held across those instances. In this way, **PANACEA™** can provide the required functionality of a care-system-wide electronic record system, in which the providers’ EPRs are nodes, points enroute along the patient’s pathway.

PANACEA™ also hosts components for multimodal AI generation and integration, clinical decision support algorithms and genomics data management. In this way, **PANACEA™** can add considerably to work with existing configurations of transactional EPRs and other such clinical systems.

For tertiary care acute Trusts offering hub-based services in tandem with many secondary care providers (e.g. Cancer, Pathology or Mental Health networks), **PANACEA™** offers an immediately invaluable way of managing care across such multi-provider pathways. Furthermore, the rapid take-up of openEHR internationally offers ambitious UK providers opportunity to interoperate care globally and, also, to underpin major research programmes and networks.

¹ This has been demonstrated by Future Perfect’s successful migration of one live implemented system between alternative openEHR commercial platforms – **thereby saving that customer a large proportion of their annual costs.**

Critical Challenges in NHS EPR Migration

- **Data Migration Safety and Quality Issues** The most pressing concern is data migration safety. Trusts have delayed a £450 million EPIC EPR implementation by six months specifically due to data migration safety concerns. Even after launching in October 2023, the Trust continues to experience "reporting issues" requiring manual data extraction for key reporting tasks, highlighting persistent post-migration challenges.
- **System Integration Complexity** Modern EPR implementations typically involve integrating data from dozens or even hundreds of clinical systems. Sheffield Teaching Hospitals delayed its £85 million Oracle Cerner Millennium EPR to address "outstanding issues" around system readiness. This complexity is compounded when legacy systems fail to comply with NHS Referral to Treatment (RTT) standards, requiring manual pathway reconstruction.
- **Limited Data Transfer and Legacy System Dependency** Healthcare providers can typically only migrate two years of clinical data into new systems like EPIC and Oracle Cerner Millennium, leaving older data archived in legacy systems. This creates ongoing dependencies that prevent the decommissioning of legacy systems, undermining the business case for EPR implementation.
- **Technical Stability and Performance Issues** Post-implementation technical stability remains problematic. Multiple NHS trusts have declared incidents after EPR systems experienced downtime, slow performance, and crashes, forcing trusts to revert to manual downtime processes.
- **Data Silos and Innovation Barriers** Current EPR implementations create data silos that hinder collaboration between organisations and limit the effectiveness of AI and clinical decision support systems. These structural barriers prevent healthcare providers from unlocking the full potential of emerging technologies.
- **Implementation Plan:** We offer a phased approach for the migration process, focusing on planning, data preparation, execution, and post-migration optimisation. Together, we can identify and address potential risks and ensures a smooth transition to the new system.

Ongoing value of Archiving

Interoperability Importance for Archiving: Robust interoperability infrastructure is essential to eliminate data silos and improve collaboration across healthcare systems. The PANACEA system utilises the openEHR standard to ensure data permanence and interoperability, enabling seamless data exchange and integration with data from both legacy and current systems. The Digital Innovation Platform, PANACEA provides the means to enjoin different systems using archived with current data to provide a real-time system-wide patient record, with considerable scope to model and implement transformed workflows.

Future Innovations: PANACEA is positioned not only as a migration tool but also as a platform for future healthcare innovations. It makes far easier, quicker and safer the integration of AI and other advanced technologies, facilitating the development of new pathways and workflows. The system supports virtual region-wide MDTs and clinical decision-support tools in fields such as cancer.

Conclusion: For implementing new EPR systems, PANACEA with openEHR offers a safer, quicker, and ultimately lower cost migration from legacy systems. By safeguarding ALL legacy data, the systems can be safely removed and associated costs saved. This advances the improvement of patient care and operational efficiency intended from the new EPR. Post-migration, by enhancing data safety and interoperability, PANACEA can expedite future innovations.

PANACEA™ Functionality:

PANACEA™ separates patient data from the applications that created that data, true vendor neutrality. It uses modern open standards-compliant software architecture, communication and workflow standards. **PANACEA™**'s integration hub supports a considerable channels library; includes HL7-based and FHIR-based 2-way interfaces which surface live data into the shared repository.

PANACEA™ supports multiple clinical terminologies, such as SNOMED (LOINC, HPO or other) and can utilise external terminology servers.

PANACEA™'s functions drive the clinical informatics models (two levels - Archetypes and Templates), built by openEHR virtual community domain experts, published by the openEHR Foundation for use by all members. We employ clinical-informatics high-end skills to enhance existing or to create new Archetypes, also with skills transfer for customer independence and enhanced value of ownership.

- Liberates patient data from proprietary into open standards records.
- Supports shared care, not just shared records of care.
- Federates patient data access across institutions and networks.
- Offers Clinical Decision Support, AI platforms, Genomics and Collaboration tools.
- Patient identity match, validation, and merging
- Single Sign On (SSO) integrated User ID management, role-based security
- Patient list management
- Configurable whole-pathway views, timelines, and workflow
- Configurable e-forms-based data entry which support care planning.
- Configurable notifications and alerts
- Full auditing of all user actions
- Support for business continuity.
- Performance Analytics BI integration
- **PANACEA™** Integration Hub & channels
- openEHR clinical data repository.

Analytics and Business Intelligence:

Clinical BI is important because healthcare organisations generate a lot of data—from electronic health records (EHRs), patient feedback and operational data. Most NHS organisations use multiple, disparate technologies for data storage and analysis, but a centralized solution allows access to all data, giving clinicians and administrators the ability to track key performance indicators (KPIs) and patient outcomes. **PANACEA™** is built on the openEHR standard, data is normalized as it enters the clinical data repository, from any source such as laboratories, legacy EHR and local systems. Once the data is captured in **PANACEA™**, users can perform whatever analysis they want, the data is, liberated.

PANACEA™ Technology:

PANACEA™ is an applications platform that offers a view on patient data, allowing users to view patients' clinical data records. It is highly configurable and based on the openEHR standard, which liberates the data and makes it accessible by other platforms and toolsets for the standardisation and interoperability of patient data.

Technically, the **PANACEA™** platform combines open standards applications at every level of stack, working with any openEHR conformant clinical data repository. By using **PANACEA™**'s real-time views, data remains up to date, including version-control for clinical audit, unlike static legacy application's whose data is unsafely dated upon creation. The clinical information data model will align to ISO 13606-2.

PANACEA™ is built with microservices architecture, like Lego, enabling plug-and-play at a far more granular level than traditional large monolithic systems. It is also cloud-agnostic, able to run on any cloud provider or on-premise. The data is stored in a standardised fashion using the openEHR standard, which has been designed by clinicians².

PANACEA™:

- Utilises HTML5 modern webpage technology, to build highly usable and composable user experiences, again, with agility.
- Hosts third-party sub-platforms including AI and clinical decision support and aims to introduce many others in due course.
- Is “cloud agnostic”, meaning it can run on any cloud provider or even on-premise.

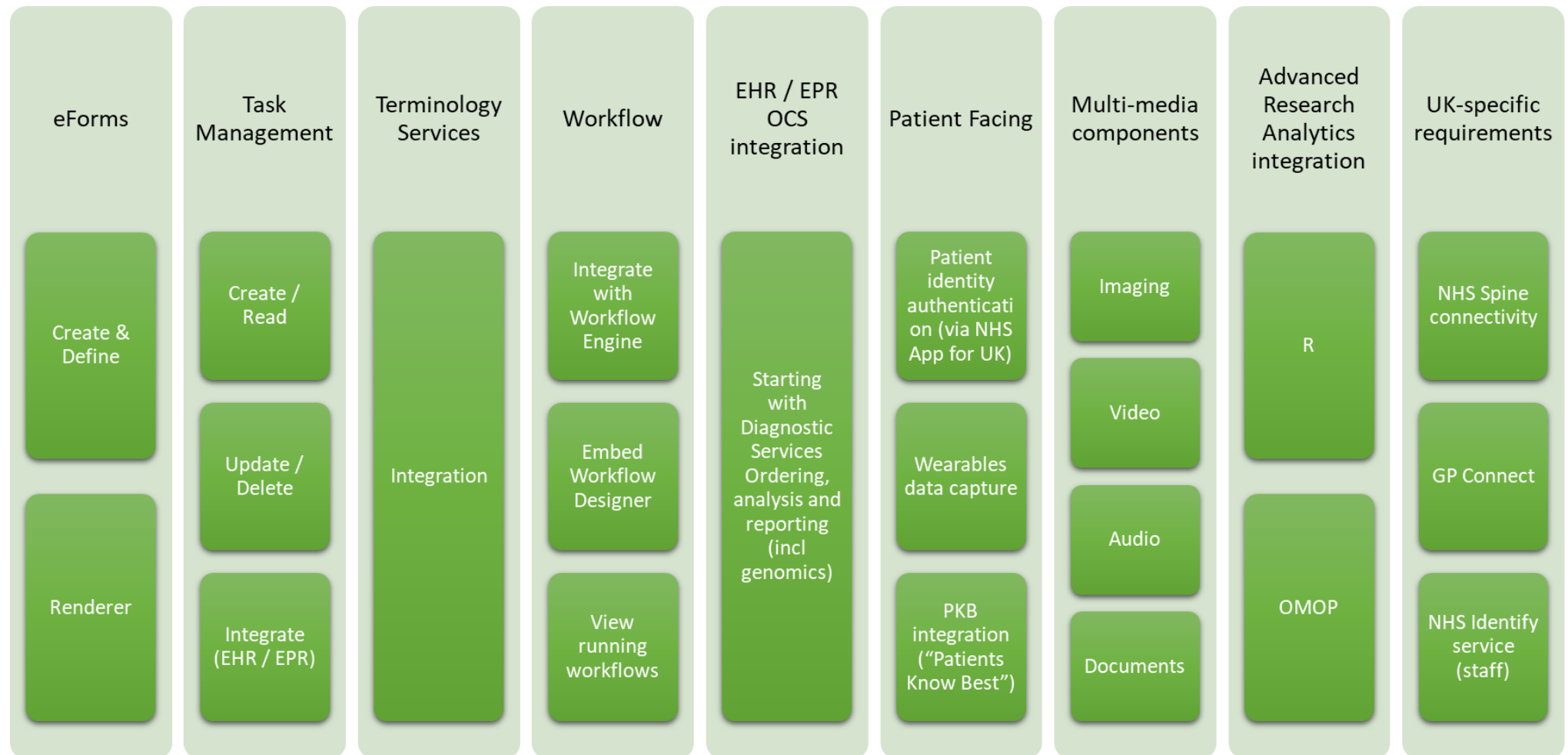
The present-state of **PANACEA™** is shown graphically by Function, overleaf:

² The (now-dated) obverse to a microservices architecture is a monolithic one, which has meant that in order to change any limited areas, one has to change the whole thing. With a microservices architecture, changes can be made to individual parts without having to change the entire system. With microservices architecture, big applications can be divided into smaller parts, allowing for Agile approaches for it to grow and change, whereas monolithic systems become stuck and changes become more major projects that carry far higher cost and take far longer to implement.

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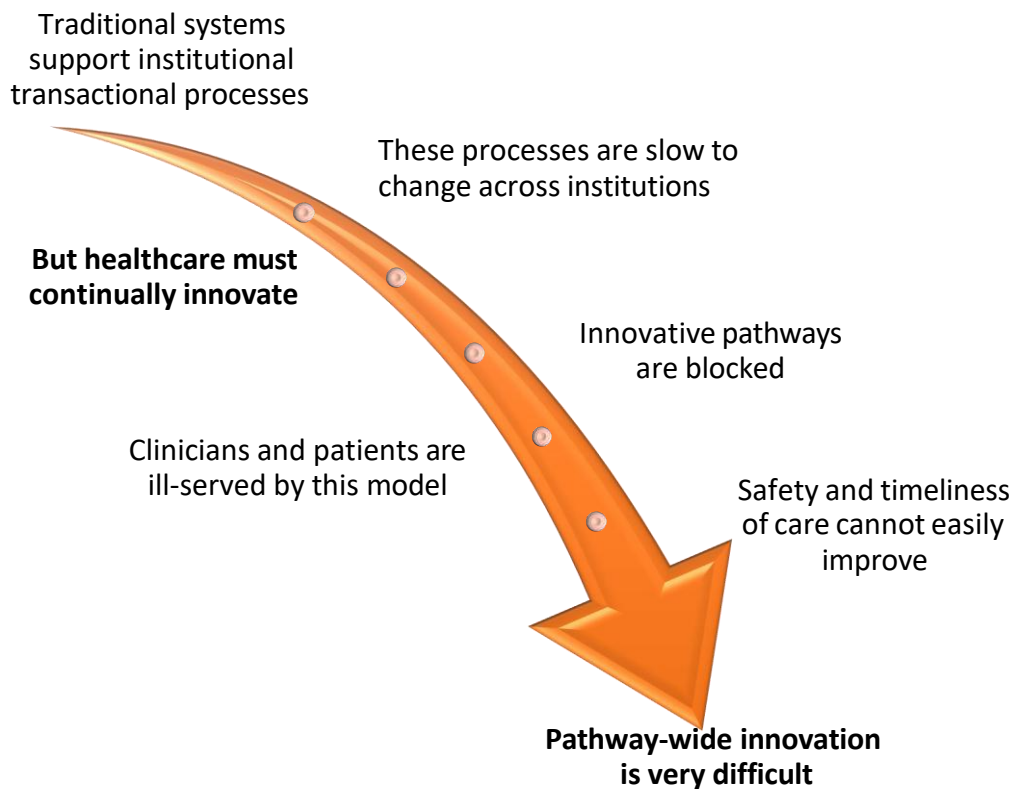
ABOUT THE PANACEA™ DIGITAL INNOVATION PLATFORM



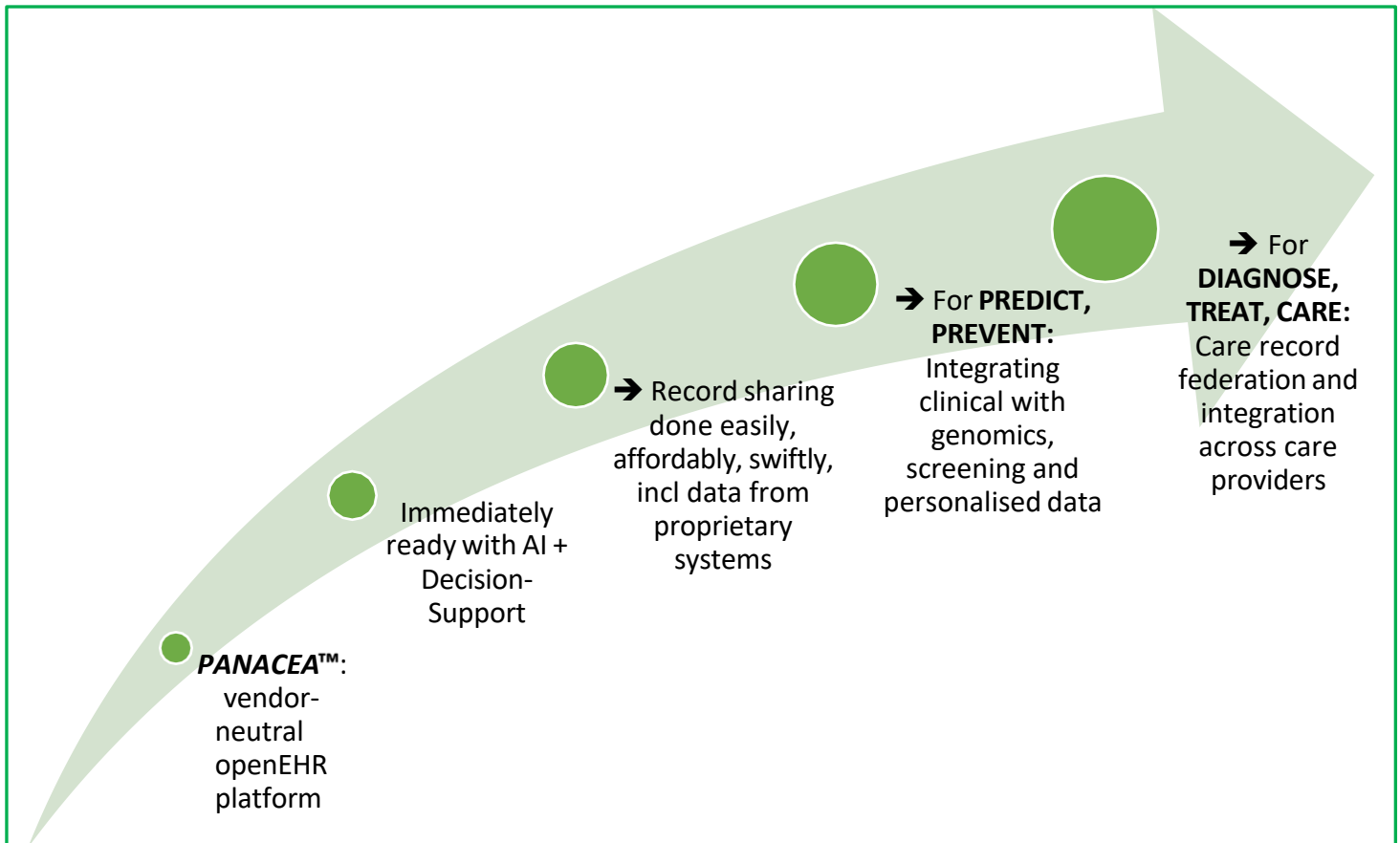
PANACEA™: by Function

SUMMARY – Solving the problem with PANACEA™

The problem:



The PANACEA™ solution:



Appendix – CUSTOMER SUPPORT

Raising Incidents

- We employ an ‘Omnichannel’ approach to Customer Support. Whenever the need arises our customers can contact the Future Perfect Support Team, either to raise an incident or ask questions, through several distinct channels:
 - Email - to the Future Perfect Support Team email inbox.
 - Text, and Voice - to the Future Perfect Support Team phone
 - Support Portal, to which all our customers are given access.
 - Web Chat - through the Support Portal
- The development of other channels, such as WhatsApp, can be considered, if requested by the customer.

Support Levels

- In handling and responding to the incidents that our customers raise with us we work with them at one of three levels:
 - **Level 1**

The customer support team will investigate and resolve and close an incident. As part of their investigations, customers do have access to the Future Perfect Support Portal (see appendix) to investigate and self-resolve any issues. If it is not possible then a Level 2 incident can be raised, either through an email, or text, to the Future Perfect Support Team
 - **Level 2**

All incoming emails and texts are automatically processed and responded to through our Customer Support system. The Support Team member on rota is alerted and will take responsibility for handling the incident, according to agreed SLA limits. Where an incident had arisen through changes to external systems, any resolution may require development by several parties, and the incident will need to pass through to Level 3.
 - **Level 3**

The incident will remain open until the external supplier's solution is complete and implemented.

Operating Hours

- We operate a standard 9 to 5 (UK time) Monday to Friday operation. We also offer extended hours and 24x7 support – details are available on request, and prices are included in our GCloud Pricing document.

Response Times

- With our default service level agreement, we respond to all service incidents within 30 minutes to 1 hour, depending on the urgency.
- The FPH Support Team are alerted, through text messages and Teams notifications, to new incidents, so can respond in a timely manner, and to inform the customer that the issue is being looked into. Further alerts are sent when approaching key SLA points, to ensure that progress towards a resolution is maintained.

Prioritising

- The customer allocates the severity of the incident, from **CRITICAL** (risk of cancelling patient activity or be otherwise unsafe for patients), **HIGH** (risk of disrupting patient activity), to **STANDARD** (risk to non-patient activity, or minimal risk). Each priority will be responded to according to the SLA agreement we have with that customer.

Logging and Monitoring

- All incidents are logged from their start to closure in our Customer Service system. The Support Team member on rota takes responsibility for handling the incident, from initial and ongoing investigations to implementing any agreed resolution.
- Through our Support Portal the customer has sight of the incident's status and progress and can respond through the same channel.

Escalation

- If any SLA targets are near to being breached, an automatic alert is sent to the Support Team, and further to the Support Team Lead. The customer can also request escalation through email or text.

Learning, Best Practice and Optimisation

- Within our Support Portal we maintain a Knowledge Base that is continuously updated with details of previous resolutions. Customers have access to this Knowledge Base, for any initial investigation of issues and self-resolution, as well as for their own learning.

Closing Incidents

- The customer alone has the authority to close an incident, and their approval is always sought at this stage.

Support Portal

We provide every customer with their own Support Portal, the benefits of which are:

- A user-friendly, accessible and convenient area in which to engage with the Support Team at Future Perfect.
- Users can raise and manage incidents.

- Knowledge articles and other incidents can be referred to as part of the initial investigation into an issue, with the aim of enabling more 'self-resolution'.
- Users can direct questions to Future Perfect Support.
- Registration is straightforward and secure, managed through the Microsoft Dynamics 365 Customer Service application.

Preventative Maintenance

- We continually monitor and analyse software, error messages and other logs, for preventive and/or remedial action:
 - IoT channels where deployable for automatic analysis and alerting, thereby endeavouring to investigate and resolve any issue before the customer is aware.
 - Supplemented by post-deployment-based monitoring for new or upgraded interfaces.
 - Regular reviews of logs

Software Upgrades

- We endeavour to maintain regular upgrades of the software that we use and deploy, according to the following time criteria:
 - To fix an issue raised by end-user, promptly.
 - If it contains a security fix, within a month.
 - Other, 6 monthly.
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