Pathology Information Exchange
Operating Model

Introduction

1.1. PIE is a platform owned by the NHS and operated on behalf of a partnership of participating NHS and private organisations in conjunction with Synanetics as a strategic technology partner.
1.2. The objectives of the PIE are to improve reliability and performance of pathology testing whilst reducing costs. PIE will also be the source of data which be used for direct care, service design, population health management and research.
1.3. When there is a critical mass of participants PIE will be self-funding with the partners sharing its operating costs.
1.4. In the short-term there will be a funding shortfall which will be capitalised through central funding. Central capitalisation will also be used to develop repeatable onboarding processes and standardise PIE technology, enabling early adopters to onboard at an economic cost in accordance with a standard price book.
1.5. This document proposes a business model for PIE, defines operating processes and estimates operating costs.

Foundations

<u>PIE Governance and Partnership Agreement</u>

2.1. The PIE management team is hosted by University Hospitals of Derby & Burton NHS Foundation Trust.
2.2. The PIE management team reports to the PIE Board on which every partner organisation has representation.
2.3. The PIE is operated under a Software As A Service agreement on behalf of partner organisations.
2.4. The PIE roadmap is controlled by a Technical Design Authority on which every partner organisation has representation.
2.5. Partner organisations enter into a Partnership Agreement which defines terms of reference of PIE governance bodies, the rights of partner organisations, termination arrangements etc.
2.6. The PIE management team contracts with Synanetics to operate and develop the PIE under service levels which mirror those defined by the SAAS agreement.

<u>Scope of PIE Management</u>

3.1. Support and Operations: a) maintaining a secure, functional, available and performant platform as defined by minimum service levels and resolving incidents which impede the security, functionality, availability or performance of the platform including addressing problems with partners connections; b) assisting end-users with their use of PIE applications (including SORA).
3.2. Service Requests: undertaking ad-hoc tasks such as data analysis under instruction from partner organisations.
3.3. Onboarding: support for onboarding of connections for order originators and laboratories; deployment of SORA tenancies.
3.4. Development: ongoing refinement of the platform and development of applications which leverage usage of PIE.

Service Management

4.1. Partner SAAS agreement defines service levels which are contractually passed through to Synanetics.

4.2. Example performance and availability service levels:

- Platform availability: 99.8%
- Message round-trip time: 95% within 1.7s
- Message failure rate: < 0.1%
- SORA availability: 99.5%
- SORA screen refresh time: 95% with 2s

4.3. Example incident/service management service levels:

Priority	Definition	Response Time	Resolution Time	Progress Reports
P1/ Emergency	Reported incident of the product stack is not available, or a participant cannot interact with it. The issue will be worked on continuously regardless of time of day. A company director will be immediately informed.	1 hour (any time)	4 hours	Every hour
P2/ High	Significant issue/ loss of the service but the impacted business function is not halted. An issue identified as having potential to cause significant operational risk (e.g. clinical risk) with no acceptable work-a-round. The issue will be at the head of a support engineer's queue and will be worked on as a priority during normal working hours. A company director will be informed if the issue hasn't been resolved within 4 hours.	1 hour 9.00am to 6.00pm Mon-Fri	1 day	Every 4 hours
P3/ Normal	Reduced capacity of the service, a key module or major function but with a small impact on the business operation.	1 working day	5 days	Daily or by agreement

P4/ Low	Non-critical functionality where the software is still useable or there is a suitable alternative. Cosmetic issues that have limited impact. It will receive the periodic attention it requires. There is no formal reporting of progress unless otherwise agreed. The issue may have a deadline in which case the priority will be escalated if not resolved by the deadline.	1 working day	Not defined, deadline may be set for individual incidents.	None

Service Reporting

5.1. Service Reports are issued monthly by the PIE Management Team to the PIE Board and partner organisations.

5.2. The PIE Management Service Report is derived from a Service Report prepared by Synanetics and reviewed with the PIE Management Team at a Service Review Meeting.

5.3. Synanetics operates an open book policy and whilst a number of its services will be provided at fixed cost the Service Report will details actual costs incurred.

5.4. The Service Report contains the following sections:

a. Performance and Availability KPIs (actual v. SLA)
b. Incident Response
    i. Analysis of support costs
    ii. Analysis of response/resolution performance against SLAs
    iii. Details of tickets breached
c. Service Catalogue
    i. Service requests actioned (outcomes and costs)
    ii. Suggestions for catalogue item standardisation (see 12.3)
    iii. Analysis of service request performance against SLAs
d. Onboarding Activity (details of participants undergoing onboarding, status against plan, blockers)
e. Development
    i. Authorised development projects status against plan, costs and forecasts
    ii. Development proposals
f. Contract Summary
    i. Financial summary against contract lines
    ii. Contract amendments

Service Management System

6.1. PIE operates a service management system which Synanetics licenses from Atlassian

6.2. User accounts are granted to the PIE management team, representatives from partner organisations and operators of the partners' service desks.

6.3. Incident/service tickets can be raised and monitored by user accounts.

6.4. The Service Management System automates service delivery by allocating tickets to support engineers and escalating tickets.
6.5. Service Management System dashboards provide real time visualisation of service performance against SLAs.

Relationship between the PIE and other Service Desks

7.1. PIE support will operate at 3rd line for the Platform and 2nd line for SORA and other PIE applications.
7.2. Participating organisations will be required to provide 1st line support for Platform issues and PIE application issues. 1st line support will interact with end-users of pathology services and will perform basic issue resolution and triaging.
7.3. Participating organisations will be required to provide 2nd support for Platform issues and will be responsible for resolving issues with the participant's sending or receiving messages to the Platform.
7.4. The PIE Management team and Synanetics will facilitate skills development within participants' service desks by providing and maintaining problem solving guides and making available platform dashboards and alerts to support teams.
7.5. Relationships between support teams will be formalised as part of participant onboarding.

Support and Operations

8.1. The PIE is hosted on Google Cloud in an organisational structure managed by Synanetics.
8.2. The PIE platform and PIE applications are deployed in three environments:
- Sandpit.
- Staging/Training.
- Production.

8.3. The production environment has HSCN connectivity.
8.4. Synanetics supplies cloud environments at a fixed cost formula which is based on the number of participants / PIE application (including SORA) users. Costs are detailed in Appendix A.
8.5. Synanetics hosting costs are reviewed annually.
8.6. Synanetics provides support and operating services at a fixed cost formula which is based on the number of participants / PIE application (including SORA) users. Costs are detailed in Appendix A.
8.7. Support and operating services are defined below.

Security

9.1. Synanetics commissions independent penetration testing annually.
9.2. Synanetics configures GCP threat monitoring tooling and the GCP security console, reviews reported threats daily, and promptly undertakes remedial action. Any threats identified as being of risk to unauthorised access to data are reported immediately to the PIE Management Team.
9.3. Synanetics monitors appropriate security bulletins and patches software container images immediately on notification of a high risk security breach. Container images are otherwise patched monthly.
9.4. Synanetics reviews dependencies on third party software libraries and monitors related security bulletins. Libraries are upgraded in accordance to the security risk and where necessary emergency software releases are deployed.

9.5. Synanetics operators are security trained. Roles and access permissions are tailored to operator duties. Access to patient identifiable data is time-limited and restricted to nominated individuals.
9.6. Synanetics management reviews operator access logs weekly.

Monitoring

10.1. The PIE platform is monitored for availability and performance. Operators are alerted of potential impairments.
10.2. Participant connections are monitored. Operators and participant service desks are alerted of unusual activity including:
- prolonged absence of messages from a message source
- message queue build-up
- persistent errors in receiving/sending messages.

10.3. Dashboards summarise platform availability, performance and connection status. Dashboards are viewable by PIE Management Team and participant service desks.

Incident and Problem Management

11.1. It is a 24x7 service
11.2. Incidents are registered by raising a work ticket on a service desk, telephoning Synanetics support or sending Synanetics support an email. Regardless of contact is made a work ticket will be raised for every interaction.
11.3. The customer determines when an incident is closed, and the customer sets its priority.
11.4. If the incident occurs outside of the boundary of what the PIE operations team can control then we it work with partner organisations, and advise them to the best of abilities, given visibility of the issue, on the actions that they need to take.
11.5. Synanetics will help with any steps needed to recover from an incident, including replaying messages and repairing data.
11.6. The response to all incidents will be documented and where appropriate support procedures updated.
11.7. Incidents will be reviewed monthly to identify persistent problems. Problem response measures will be communicated to the PIE management team and where appropriate problem solving guides issued to partner support desks updated.

Service Catalogue

12.1. The PIE offers to partners a catalogue of ad-hoc services which are priced according to a price book.
12.2. The catalogue will evolve over time and be based on actual work undertaken for partner organisations.
12.3. Synanetics will use its experience of undertaking service requests to offer a definition and price for service catalogue items.
12.4. Synanetics will charge PIE for uncatalogued service requests at costs calculated using the rate card in Appendix A.

Onboarding

13.1. PIE participants are onboarded to the platform in one of the following roles:
a. Order source

b. Laboratory
c. PIE Application (including SORA) tenancy

13.2. Onboarding is undertaken using a repeatable methodology and is self-service wherever feasible.

13.3. Synanetics will support onboarding with goal of onboarding being a fixed cost activity but until onboarding processes have matured and interfaces have been developed with all ordering and onboarding costs will be higher. Synanetics estimate for target fixed price onboarding costs and costs of developing first-of-type interfaces is included in Appendix A.

13.4. Onboarding of Order Sources and Laboratories includes the following:
a. Project initiation including sign-up to SAAS and Partnership Agreement
b. Clinical process and use-case review/documentation
c. Connectivity setup and testing
d. Security compliance audit and testing
e. Order item catalogue mapping
f. Support desk alignment and knowledge transfer
g. Interface refinement
h. Routing rule configuration
i. Testing
j. Clinical safety approval
k. Data sharing agreement and DPIA approval
l. Go-live authorisation

13.5. PIE Application Tenancy onboarding includers the following:
a. Project initiation including sign-up to SAAS and Partnership Agreement
b. User requirements analysis and development of benefits case
c. Tailoring of user adoption strategy
d. Tenancy creation and configuration
e. Review of launch/authentication options
f. Tailoring of white label training material
g. Train the trainers
h. Execute training
i. Tenancy configuration testing
j. Clinical safety approval
k. Data sharing agreement and DPIA approval
l. Go-live authorisation
m. Post go-live benefits realisation

13.6. Where feasible PIE Applications will be context launched. Synanetics estimate od developing a first of type context-launch mechanism is included in Appendix A.

Development

14.1. The development roadmap will be controlled by the PIE Management Team under authorization from partner organisations

14.2. Developments will be managed on a project by project basis and costs reported within the Service Report.