# Neoteric

BUSINESS REPORT

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# Executive summary

Neoteric as a leading Healthcare organisation with the massive amounts of historical data, in addition to the profilic use of social and Internet of things, and the expansion of their markets; there is a neccisity of a solid data architecture in alignment with their vision, position in the industry market and theur digital transformation to ensure the organisation is comply with the data governance and industry standard.

## Part A: Current storage and security strategies and risks

**Current situation:**

1. On-prem electronic records database
2. Neoteric is using a legacy third-part application for the content management.

**Context:**

Neoteric enjoyes a leading position in the industry domestic market and has started the expansion to cover different countries around the world.

Neoteric is dealing with critical data/information like:

* Personal identifiable information
* Peronsal health data/medical records.
* Personal financial transactions data.

**Risks/Pain points:**

* As Neoteric is aiming to expand their size and market presence to cover new international markets, a centralised data warehouse is required to provide consolidated insights for corporate management over all markets’ data. The on-prem electornic records database has a limited scalability to align with those changes.
* Relying on an on-premise solution (records database) represent a single point of failure, this exposes higher risks of data/service availability, and it has higher cost for maintaining security and support.
* Possibility to loss of relationship with practitionars, hospitals and other parties because of the poor user experience or out-dated systems.
* The expand to different markets and joining new adventures exposes the risk of an ambiguous data governance framework/lack of propoer awareness to define and control the access to data (1).
* With using different solutions across the services, a the absense of/or uncontrolled health information data flow mechanism in the data architecture esposes the risk of loss or compromised data, and it even might has legal and financial impact when data includes patient or payment information. (2)
* Working in multiple countries, Noeteric should implement a data architecture that follows the national regulatory constaints and policies for each country they operate in, in addition to the global industry standards.
* The risk of the unauthorised access to the data by third parties.
* Security breaches and leacking of personal health information this includes cyber attacks, insecure cloud/on-prem services, insecure medical devices and employee negligence.

## Part B: Data quality ethical analysis

* Potential misrepresenting the quality of data or the limitation of data analysis, or using data in unitended harmful or unwanted pruposes, like using data to predict irrelevant information which healthcare or other organisations can use to provide unnecessary services.(3)
* The possible lack of transparency of the origin of the data and the context and operations on this data, which can impact the confidence/trusts among patients and third parties.
* The unauthorised use of personal healt data, this refers to not obtaining an informed consent from patients/people about their personal health/medical data and the possibility to decide the flow of these data.

## Part C: Towards a solution

**Data:**  
Identify the use caseas and define the valuable data and information which are needed for the business requirements and objectives.  
Patient personal   
Patient health records.  
Patient insurance claims and financial transactions.

**Data sources:**  
Content management solution  
Billing and ccounting.  
Web portal and mobile app.  
Smart watch.  
Surveys.  
Clinical trials.  
Social netowrks data.  
Open public data.

**Data Storage:**

Use a propeitary cloud data lake service to host and to store the SmartWatch, web, mobile and social media data, like AWS which provides available local site (in Australia). Machine learning and predictive analytics to be performed on this the data lake.

And also use a on-premise data warehouse to store the transactional and internal systems’ data, for a higher security and fast acces to local employees, this is recommended to be a distributed data centre across multiple local sites.

**Data processing:**

A spark stream processing is to be applied on the cloud data lake on the IoT real-time data (SmartWatch) where the data is continuous, and also on the analysis cases where a quick results are required.

A batch reporting is to be applied on the on-premise data warehouse, with ad-hoc analysis using SQL.

An internal awareness campaign about the data policies and SOPs to be launched to ensure all business and IT staff are aware of the importance and the sensitivity of data.

A data team of 10-15 personel with 2 data scientists, 4-6 data engineers and 4-7 in BI.   
in addition to having at least one in compliance, regulatory and legal (local) teams with the awareness of data governance and regulatory.

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