

#### Project Title

Turning to Self Service Analytics to Empower Core Breast Cancer Multi Disciplinary Team (MDT) Member to Make Data Informed Decisions More Efficient

#### **Project Lead and Members**

- Fuh Yong Wong
- Grace Kusumawidjaja
- Kiak Mien Veronique Tan
- Shao Wei Sean Lam
- Hing Pong Matthew Che

#### **Organisation(s) Involved**

National Cancer Centre Singapore, SingHealth

#### Healthcare Family Group(s) Involved in this Project

Medical, Nursing

#### **Applicable Specialty or Discipline**

General Surgery, Oncology, Histopathology, Plastic

#### Aim(s)

- Standardize the data in centralized data science platform
- Allow MDT to learn about analytics best practices and data literacy
- Leverage tools to take data beyond historical analytics
- Shift the analytics team and MDTs' mind set
- Follow data security procedures and policies (or governance).

#### Background

See poster appended/ below



#### Methods

See poster appended/ below

#### Results

See poster appended/ below

#### Conclusion

See poster appended/ below

#### **Project Category**

Technology

Data Analytics, Big Data, Machine Learning

#### Keywords

Breast Cancer Data, Joint Breast Cancer Registry, Self-Service Analytics, Data Engineering, ODySSEy (On-Premise Data Science And System Explorer Platform), Data-Informed Decisions

#### Name and Email of Project Contact Person(s)

Name: Fuh Yong Wong

Email: <a href="mailto:singaporehealthcaremanagement@singhealth.com.sg">singaporehealthcaremanagement@singhealth.com.sg</a>

# **Turning to self-service analytics to empower core** breast cancer multi-disciplinary team (MDT) member to make data-informed decisions more efficient

Fuh Yong, Wong<sup>1</sup>; Grace Kusumawidjaja<sup>1</sup>; Kiak Mien Veronique, Tan<sup>1</sup> Shao Wei Sean, Lam<sup>2</sup>; Hing Pong Matthew, Che<sup>2</sup>

Billing

Data

### <sup>1</sup>National Cancer Centre Singapore, <sup>2</sup>SingHealth

### Singapore Healthcare Management 2022

Data

19190011 10110011 1190111 **1011001**00 00**000101** 



# Background

Breast cancer data is an extremely broad category of clinical measurements and disciplines, self-service analytics has recently emerged as a significant driver of accelerated digital transformation.

People with breast cancer are cared by a team of healthcare professional and each with their own expertise. Joint Breast Cancer Registry is an excellent collaborative effort by specialists from multiple disciplines across all institutions in SingHealth to build a registry of breast cancer patients. Selfservice analytics can empower the professionals to streamline operations, improve strategy, and breast cancer patient experience. Today's world, data analytics has been increasingly used in medicine, especially in oncology.

# Result & Discussion

101 10020116 00130211 010010331033034039 1.0100010 01110001 11111100:#555605566566566566566566566566566566566 101111 11110000 01100010 10111100 100000**00 0066666666** []]]][][][]] Visit  $0010100 \ 10111101 \ 00010$ 11,110101 100001001000 10110110 00021111000 10111101 0010146-14946-14961 0100110 01100110 0101163.16163680 Data 10201111 02021123 1020101 0164600310500500001010000111111110100 the stand to the stand to orangelaran en araban den den 1953 - Tari a Constitution 1966 - Barl Grand den des 0010110 10111011 00000000 10011100 100 LANDARD & FLEREN SOL LI 901110 65116316 61116111 61515016 651 1110 11001000 00100110 01011001 00016000 00056 100100/01010110 511010 011001000010101 1001001 10101 00101001 01100100 111 00001001 11101110 11001000 001 1020110 10101111 01211000 011 1100000 11211100 11100110 111 **111**001 10101110 01111111 10  $1100110\ 00011001\ 10011011\ 100$ 1000111 01000100 0011110 1110 11101000 01110101 11111555095500955999 0.01101110.01110000.001011003h011 11110100 00000101 110016

 $\sqrt{3}$  11 00 11 10 holesboard contracts (h) for 60.045

Information of the second state of the seco

1011100 11100110 00011001 10011011 10010101 01010110 01110100 10101001

11001111 10110011 01100102 0011 0024 02210 012 0010100 00110100 00110000 10011101 01101001 011000 010000 0101010 0100001

1100011 00111010 00010DCIRCELICCORDENESS

0111001 01001001 10100011 07172570707571719-1719-1705070707 151795000 1101101 01011010 00001010 024,4934,4934,944,049,44597,44597,44590



ODySSEy Methodology

At the heart of digital transformation in clinical, scheduling, operations, finance, and other multi-functions is the move from manual spreadsheet-based data processing to structured, robust, and efficient automated processing using self-service analytics tools.

Clinicians who spend their days assembling and enriching information from disparate sources in spreadsheets, performing routine formulaic

processing steps, comparisons, and aggregations, now have data analytics tools at their disposal to rapidly automate the least value-added portions of their roles. The well-formed datasets (e.g. JBCR) are stored in the ODySSEy data science platform. The platform can allow MDT to access and use modern



Using few hundred number of patients to summarize the data of disease presentation such as breast cancer surgeries and outcomes, treatment utilization and costs are analyzed and presented in data visualization ways. With the visualization, the MDT can easily understand and use the charts, icon arrays, spider diagrams and survival estimates to get the insights and make better decisions.

111 10010001 01140999000 2010/20112001 01001001 10: §E101 01011.010 00

20222222222222222020010 11110D10 D1 3名90921393992921511 11011 D10 10D は特別時には現実は認識で10-01111100-001

pgpgggggggggggggglb1 001D1D01 D13

**200002022122002211 00001111 10**2 63322123636363535557 11151116 11 

 $01011010 \ 01100000 \ 11111100 \ 11$ 

01110101 00111001 10101110 01

 $(1011100\ 11100110\ 00011001\ 10$ 

1100101 00101001 1100011 1 01

1111100.00100000.01010000.0  $100011\ 11011010\ 00111011\ 1011$ 

010100-00011010-11

10010101 00101001 00100010 10000010 10010101 10000100

The benefits of self-service analytics can be:

- 1. Standardize the data in centralized data science platform
- 2. Allow MDT to learn about analytics best practices and data literacy
- 3. Leverage tools to take data beyond historical analytics
- 4. Shift the analytics team and MDTs' mind-set
- 5. Follow data security procedures and policies (or governance).



We conclude that the use of well curated data such as from JBCR together with the Singhealth Odyssey platform can retrieve, transform and visualize data in ways that are more intuitive, timely and insightful. Without the need to involve IT or to await the technology investment cycle, self-service analytics solutions can be developed and implemented in only hours or days directly by those overseeing the process. Such capabilities allow for dramatic acceleration of routine processes and reduce the likelihood that manual processing errors are introduced. Perhaps most importantly, they transform the role of healthcare professionals who can reclaim time to focus on higher-order data analysis, the implementation of improved controls, or on other emerging business priorities.

These benefits taken together amount to a quantum leap forward for organizations intent on truly harnessing data capabilities and optimally deploying human capital. Shortening the distance between masses of data and the drawing of insights may empower MDT to include data drive decision-making more readily. While self-service analytics deployments can improve process control and efficiency in the operation and finance function, they also markedly impact the internal control of breast cancer care environment.

business intelligent tools to allow them to explore and visualize the breast cancer patient data. The visualization can make the data in an easy-to-understand way. Besides, the platform has data engineering and anonymization capability to allow different stakeholders collaborate and work together for their data projects.

## Outcome

A new data science platform (ODySSEy, On-premise Data Science and System Explorer Platform) allows MDT to analysing data from different perspectives and visualizing it into useful information. It is the process of finding correlations or patterns in large historical datasets from various sources of clinical systems. We are also encouraging other MDTs from various cancer registries in NCCS to use their data for data science research in the platform.





Breast Cancer Dashboard (KPI)

### **Self-Service** Analytic



In Singapore, the top cancer is breast and colorectal. The National Cancer Centre Singapore shares the top ten cancers that affect local women and men. According to the Singapore Cancer Society, during the period from 2014 to 2018, an average of 41 people are diagnosed with cancer daily, with 15 people dying from it every day. Although 1 in 4 people may develop cancer in their lifetime, the good news is, with early detection and treatment, it is possible to have better clinical and management outcomes.