

201916 Integrating MyHarmony (Harmonization & Codification of Unstructured Data using SNOMED CT) with Malaysian Health Data Warehouse

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Summary

MyHarmony is an application developed in silo by the Ministry of Health Malaysia and MIMOS, and is now integrated into Malaysian Health Data Warehouse (MyHDW). Using Cardiology Reference Set and discharge summary data, MyHarmony was able to generate Cardiology KPIs.

Audience

Clinical, Policy/administration, Research/academic, Technical

Learning Objectives

1. To demonstrate implementation of SNOMED CT in analysing unstructured data.
2. To showcase the integration process of SNOMED CT in the healthcare data warehouse.
3. To showcase the advantage of integrating SNOMED CT coded data to generate KPI in healthcare data warehouse.

Abstract

Summary

MyHarmony is an application developed in silo by the Ministry of Health Malaysia and MIMOS, and is now integrated into Malaysian Health Data Warehouse (MyHDW). MyHarmony is to harmonize and codifies unstructured data with SNOMED CT using Natural Language Processing technique whilst MyHDW is for visualisation and analysis of visit data. Using Cardiology Reference Set and discharge summary data, MyHarmony was able to generate Cardiology KPIs. The integration of MyHarmony into MyHDW is to ensure investment on the analytic tool is focused on Mi-Bis in MyHDW; saving on the training since most people have been trained in Mi-Bis of MyHDW; the Cardiology KPI and all the other KPIs developed is readily available to all authorised users.

Abstract

MyHarmony is an application developed in silo by the Ministry of Health (MoH) Malaysia and MIMOS. Now it is integrated into Malaysian Health Data Warehouse (MyHDW), which is a trusted source of truth for comprehensive healthcare data. The aim of MyHarmony is to harmonize and codify unstructured data with SNOMED CT using Natural Language Processing technique. A team of Health Informaticians from Health Informatics Centre (HIC) and Cardiologists worked on the Cardiology Refset (1), and Software Engineers from MIMOS developed Mi-Harmony platform and application (2). In 2016, MyHarmony was rolled out in silo with sample data in the form of discharge summary obtained from facilities with cardiology services. The team was able to demonstrate the ability to harmonize and codify cardiology discharge summaries in the form of unstructured data with SNOMED CT and LOINC (3). In the following year, the team was tasked to generate Cardiology Key Performance Indicators (KPIs) using MyHarmony. The team was supplied with about 30 000 discharge summaries from a private hospital. The discharge summaries were then harmonized and codified using MyHarmony through the use of Cardiology Reference Set. Validations of the codified data were made, followed by generation of Cardiology KPIs. MyHarmony were able to generate 7 out of 8 KPIs (4). The limitation of MyHarmony is the inability to produce the result in percentage. By integrating MyHarmony with MyHDW, these limitation can be overcome. The KPIs can also be visualised and analysed in a user-friendly manner. Another benefit of this integration is that the users only need to be trained to use one common platform, which is MyHDW. In 2019, the integration of MyHarmony with MyHDW has been executed successfully and the users can visualise the KPIs inside MyHDW.

Reference Documentation

- 1.Md. Khadzir Sheikh Ahmad & 'Ismat Mohd Sulaiman (2014). SNOMED CT Cardiology Reference Set Development, Malaysia. In Proceedings of the SNOMED CT Implementation Showcase. Amsterdam.
- 2.Nor Azlinayati Abdul Manaf, Khalil ben Mohamad Bouzekri, Dickson Lukose (2014). Harmonizing Electronic Health Records (EHR) Databases with SNOMED CT. In Proceedings of the SNOMED CT Implementation Showcase. Amsterdam.
- 3.Md Khadzir Sheikh Ahmad, Daniel J. Vreemen, Nur Shaema Darus, Syirahaniza Mohd Salleh (2015). Development and implementation of standards in Laboratory Information System (LIS) using SNOMED CT and LOINC. In Proceedings of the SNOMED CT Expo. Montevideo.
- 4.Md. Khadzir Sheikh Ahmad, 'Ismat Mohd Sulaiman, Mohd Syazrin Mohd Sakri, Muhammad Aiman Mazlan, Abdul Aziz Latip, Omar Ismail (2018). SNOMED CT Generating Cardiology Key Performance Indicators (KPIs). In Proceedings of the SNOMED CT Expo. Vancouver.