National Applied R&D Centre

MIMOS

TPC OHCIS

Teleprimary Care and Oral Health Clinical Information System

TPC-OHCIS is a single unified clinical information system for health and dental outpatient treatments.

MIMOS in Healthcare

MIMOS is Malaysia's national applied research and development centre focussing on generating technology solutions that enable the government to provide better services. In the field of healthcare and medical technologies, MIMOS develops need-based, consumer-centric solutions that have supported the consistent and quality delivery of medical and healthcare services.

Ongoing and successful projects include applications for the Ministry of Health; namely the Teleprimary Care and Oral Health Clinical Information System, the Malaysian Health Data Warehouse, Medical Treatment Information System, Patient Registry Information System, and Food Safety System of Malaysia.

Backed by strong capabilities in Artificial Intelligence, Data Analytics and Integration; along with other cutting-edge technologies such as photonics, smart sensors and Internet of Things, MIMOS is committed to driving continuous improvement in healthcare for Malaysia.

TPC-OHCIS is a holistic clinical information system for primary and oral health with an Electronic Medical Record (EMR). Developed in partnership between the Ministry of Science, Technology and Innovation (MOSTI), the Ministry of Health (MOH) and MIMOS, the system serves as one of the impetuses for the National Digital Health Reform initiatives to improve population health, reduce burden of disease and have a resilient and sustainable healthcare system.

TPC-OHCIS OFFERS

Flexibility to suit facilities of different sizes and operations

Pick and choose from more than 100 individual medical components

Comprehensive, intelligent and integrated clinical documentation

Seamless and integrated operations in highly secured environment.

VALUE

TPC-OHCIS offers a comprehensive clinical solution for health and dental outpatient treatments in a single system. As a fully digital service, TPC-OHCIS meets the rakyat's expectation on an efficient government service delivery.

The application represents an efficient data management in an integrated system where patients' health records are accessible to the authorised personnel from all health and dental clinics.

The efficient data management also provides for improved efficiency in clinic administration; and leads toward insightful analysis and planning by healthcare providers and authorities. Finally, with a single, locally-developed system, operating and maintenance costs are reduced.

BENEFITS

1. **Improves communication** between health professionals and patients as all records are centralised

2. **Fast and error-free registration** using MyKad

3. **Continuous care and lifetime health records** as a result of digital management of records

4. **Better treatment** as the information that clinicians need to make good decisions are made available

5. **Easy access and uninterruptible operation from any location** with cloud-based system and offline mode

6. **Easier outreach and off-clinic services** with digital files

7. **Seamless interaction** with the pharmacy, lab, radiography etc as well as external systems such as **eGL, MIMS, MyHDW, SIMKA and eNotifikasi.**

8. **Reduced medical errors** as a result of digitalisation.

FEATURES

TPC-OHCIS comprises of:

Primary Health – covers outpatient and specialist care for clinical disciplines such as family medicine, obstetrics and gynaecology, paediatrics, dermatology and epidemiology.

Oral Health – covers primary and specialist dental care including periodontics, orthodontics and paediatric dental.

The main function modules:

1. **Patient Management** – Registration and management of patient visit, household accounts, appointments calendar and status

2. **Medical Records** – More than 100 components including chief complaints, diagnosis, body annotations, allergy etc

3. **Dental Records** – Dental charting, treatment plans, oral health status, gingival index score, risk assessments, denture orders

4. **Dental Specialists** – Assessment and treatment plans for periodontal, restorative and orthodontics management

5. **Prescription** – Hierarchical multi-level drug prescription approval, per-facility drug configuration and integration, Monthly Index of Medical Specialities (MIMS) integration

6. **Orderable Item** – Lab tests, imaging, procedure orders, specimen barcode label printing and remote order management

7. **Reports and Dashboards** – Static and dynamic reports, patient demographic, trending and statistics

8. **Self-Monitoring Portal** (runs on mobile devices) – Profile management, appointment management, personalised health management, general examination, smoking status, asthma control test, notifications

9. **Administration** – Billing, reports, queue management and system administration.

FUTURE PLAN

1. To improve integration with medical devices using Internet of Things (IoT) towards increasing patient engagement i.e. self-monitoring and self-empowerment. This will include self-registration, e-referral and self-monitoring by patients via web-portals.

2. To integrate multitenant architecture to enable multiple healthcare providers to subscribe to the application and provide the services with much lower initial investment and maintenance cost.

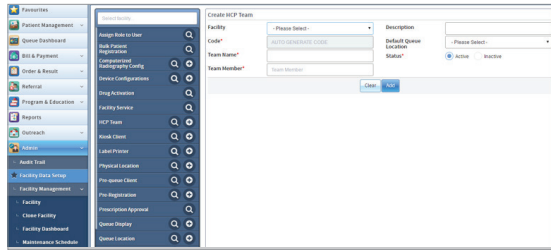3. To enhance support for virtual consultation and uberisation services.
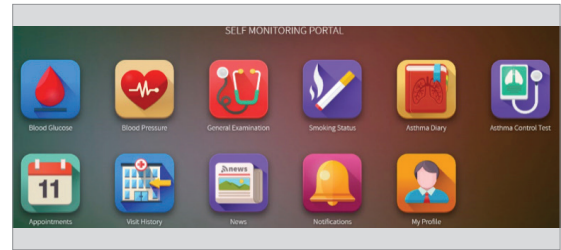
MODULES

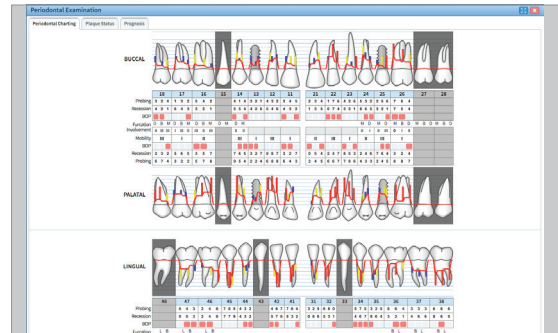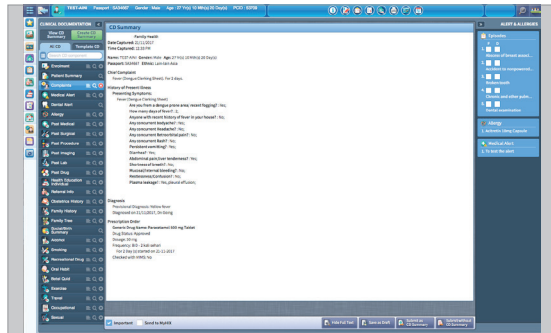## Patient Management
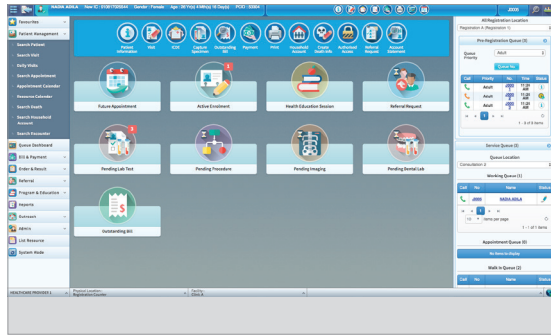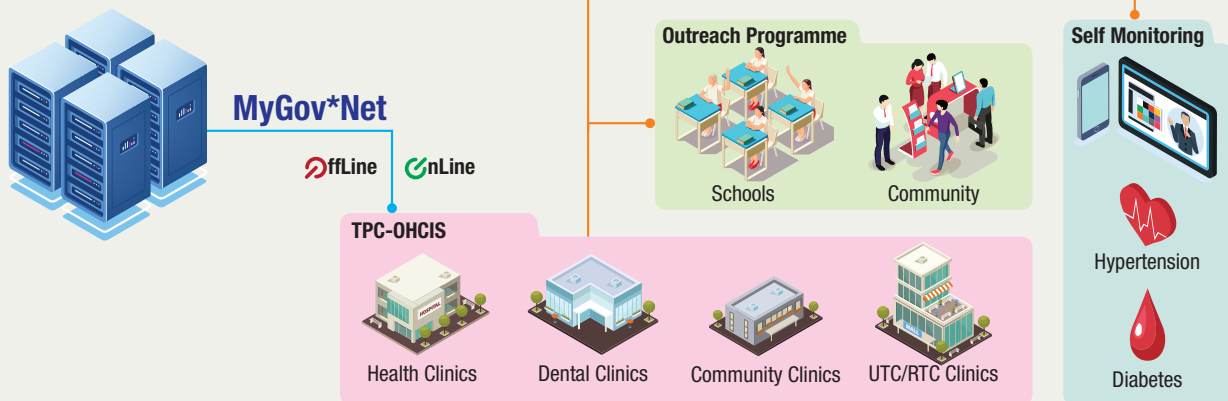

Reports and Dashboard

System Administration

Self-Monitoring Portal (Runs on Mobile Devices)

Medical Records

SYSTEM ARCHITECTURE

MyGov*Net

OffLine   OnLine

TPC-OHCIS

Health Clinics   Dental Clinics   Community Clinics   UTC/RTC Clinics

Outreach Programme

Schools   Community

Self Monitoring

Hypertension

Diabetes

National Applied R&D Centre

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TPC-OHCIS
Teleprimary Care and Oral Health Clinical Information System

INTELLECTUAL PROPERTY

1. User Authentication for Online and Offline Applicability. **PI2015702497 - Filed**

2. A System and a method for identification of a web browser. **PI2016000505 - Filed**

3. A Method for Generating One-Time Keys for Single Line Authentication. **PI2016001041 - Filed**

4. System and Method for Adaptive Authentication with Segregation of Evaluation Stages and Security Vectors. **PI2015700568 - Filed**

5. Method and System for One Time user-to-user Delegation. **PI2016001041 - Filed**

6. Secure Installation and Management of Mobile Applications for Multi-mode User Authentication. **PI2015702370 - Filed**

7. Method of Presenting Live, Interactive Interfaces to Recognize Bots. **PI2015703654 - Filed**

8. Secure Communication Mechanism between Applications on A Computing Device. **PI2015001988 - Filed**

9. System And Method For Generating Rest Service Bundle At Runtime In An Osgi Based Enterprise Service Bus. **PI2016002286- Filed**

10. System For Dynamic Information Dissemination Through Multiple Channels. **PI2016000507 - Filed**

11. Collaborative Workflow in Occasional Disconnected Environment. **PI2016000726 - Filed**

12. System and method for an integrated personalised per patient guided clinical documentation framework with effectiveness evaluation. **Disclosure**

13. System and method for an intelligent dental charting application with effectiveness evaluation. **Disclosure**

14. System and Method for an intelligent client monitoring and personalized remote experience enhancement. **Disclosure**

15. System & Method for Automating Selection of Operating Mode in Hybrid Computer Application. **Disclosure**

16. System & Method for Offline Authorization. **Disclosure**

PUBLICATION

Hybrid Dental Charting System (HyDeCS) - 8th International Conference on Social Science Research (ICSSR 2019).

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