

Digital Health Infrastructure for futuristic Health Systems

Pedro Martins, Infrastructure IT Coordinator
Shared Services of the Ministry of Health, Portugal



SPMS_{EPE}

Serviços Partilhados do Ministério da Saúde



PORTUGUESE HEALTH CHALLENGES FOR THE FUTURE

INFRASTRUCTURE INNOVATIONS

- Healthcare digital records
 - Centralized information and Bigdata
 - Predictive analytics
 - Infrastructure capabilities
- Access to Healthcare
 - IoMT
 - Telemedicine
 - Homecare
- Privacy and Security
 - Regulation and compliance
 - RIS – integrated network in healthcare
 - NOC and SOC
- Infrastructure automation
 - Simplify operations
 - Auto-healing



HEALTHCARE DIGITAL RECORDS

DATA FOR HEALTHCARE, PROFESSIONALS AND PATIENTS

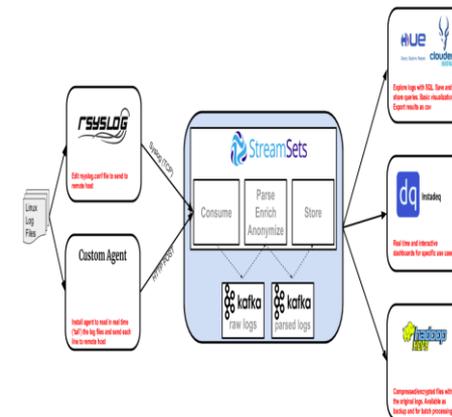
- **Centralized information**

- The need of real time integrated and accurate information regarding patients is critical.
- All this data helps to improve care quality and patient experience.
- Therefore, sharing this information with professionals, but also with patients, provides means to better healthcare and better informed patients.



- **Bigdata, predictive analytics and infrastructure**

- The collection, centralization and integration of electronic medical records requires great infrastructure and technical resources.
- The ability to work this information according to medical needs will face the challenge of processing capabilities as well as clearly defined structures in order to process the information and react on it.
- Devices and wearables communicate with central core services to store, analyze and operate the data generation huge flows of information that should be properly stored, supported by a large capacity of storage.
- Alarmistic and online processing of clinical information to predict and avoid clinical episodes of risk patients is already a reality with IoMT and the back office technical resources must be in place.





ACCESS TO HEALTHCARE

IoT, DATA AND PATIENT-CENTRIC CARE

- **Telemedicine**
 - Is an answer to homecare or inter facility care, and a response to the lack of medical specialized resources.
 - The introduction of new standards like 5G will make possible the needed speed and quality for medical specialties
 - Again the IoMT will bring integration and communication capabilities directly to hospitals equipment's and professionals.
- **Homecare and IoMT**
 - The costs of specialized care are moving patients to their home, big data and IoT makes it possible
 - Cost reduction, hospital infection and better technology are a push towards homecare
 - The medical devices and the Internet of Medical Things provide the means to implement that
 - Integration with the patient Electronic Health Records is a must
 - Operation centres to manage remotely these patients based of IoT real time data and information analysis.
 - By the end of the decade, Business Insider Intelligence, predicts that there will be 24 billion Internet of Things, (IoT) devices in use the world over, or about four per every human on the planet.



PRIVACY AND SECURITY

REGULATION AND COMPLIANCE, PORTUGUESE INTEGRATED NETWORK IN HEALTHCARE

- **Regulation and compliance**
 - New privacy laws, like the European GDPR or the Californian Act, push the need for risk methodologies and ethical controls to be implemented.
 - Anonymization technics that can for instance enable clinical trials or Patient Support Programs, without interfering with the personal rights of the patients, are pushing the development of technology and new security standards.
- **RIS – integrated network in healthcare**
 - The healthcare networks that unify healthcare providers must be secure. Clinical information is one of the most valued, and must be protected.
 - Enhance remote sites and homecare coverage through 5G.
 - Provide hospitals and primary care facilities with connectivity means to IoT and central services secure communication.
 - The internet as a channel of communication is a reality and security measures like private networks, encrypted communications, private VPN's are a must.
- **NOC and SOC**
 - In Portugal the Healthcare Informatics Network (RIS) supports all the communications between the public healthcare system players. A NOC and a SOC are being putted in place so the monitorization and response to events is as fast and assertive as possible.
 - Based on the channeling and analysis of different kinds of information to perceive treats, trends and behaviors.

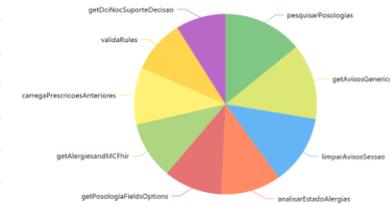
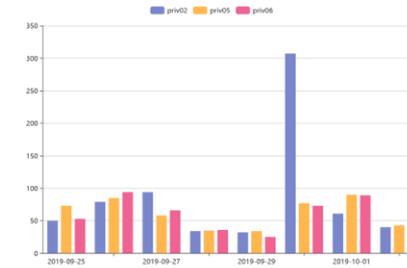




INFRASTRUCTURE AUTOMATION

SIMPLIFY OPERATIONS

- Infrastructure Operations
 - Correlating distinct flows of information to predict and react to incidents.
 - Automation to simplify implementation, design and deploying.
 - Self-healing features.
- Datacentre Infrastructure
 - Easy to implement and deploy container Data centre.
 - Automation to manage critical services
- Network
 - SD-WAN implementation on core network



Resumo - Média Tempo, Erros, Total chamadas e Taxa sucesso (Última hora)

Ação	Instância	Média Tempo em s (5m)	Média Tempo em s (15m)	Média Tempo em s (1h)	Erros	Total Chamadas	Taxa Sucesso (%)
pesquisaPosologias	priv05	0.294	0.278	0.303	0	165	100.0
pesquisaPosologias	priv06	0.000	0.398	0.379	0	119	100.0
analisarEstadoAlergias	priv06	0.015	0.013	0.012	0	116	100.0
carregaPrescricoesAnteriores	priv05	0.008	0.008	0.008	0	109	100.0
getAlergiasandMCFhr	priv05	0.007	0.007	0.007	0	109	100.0
getPosologiaFieldOptions	priv05	0.019	0.018	0.019	0	109	100.0
analisarEstadoAlergias	priv05	0.010	0.015	0.012	1	100	99.0
getInscricaoGenerico	priv06	0.012	0.011	0.010	0	99	100.0
getPosologiaFieldOptions	priv06	0.018	0.019	0.023	1	99	99.0
validaRules	priv06	0.006	0.006	0.006	0	99	100.0
getAlergiasandMCFhr	priv06	0.006	0.006	0.007	0	98	100.0



A solução está na partilha!

Obrigado



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