



IEEE 3rd International Conference on Blockchain and Cryptocurrency (ICBC 2021)

MIRIAM: A BLOCKCHAIN-BASED WEB APPLICATION FOR MANAGING PROFESSIONAL REGISTRATIONS OF MEDICAL DOCTORS IN BRAZIL

<https://br-miriam.github.io>

Raphael Saraiva¹, Allysson Allex Araújo², Pamella Soares¹, and Jerffeson Souza¹

¹ Graduate Program in Computer Science (PPGCC) - State University of Ceará (UECE)

² Information Systems and Digital Innovation Group (GESID) - Federal University of Ceará (UFC)



UNIVERSIDADE
ESTADUAL DO CEARÁ



Programa de Pós-Graduação
em Ciência da Computação



UNIVERSIDADE
FEDERAL DO CEARÁ



AGENDA

- INTRODUCTION;
- MIRIAM: AN ARCHITECTURAL OVERVIEW;
- WORKFLOW SCENARIO;
- WORKFLOW DEMONSTRATION;

INTRODUCTION

- In Brazil, medical doctors' professional information has to be **reliably managed** due to the **interaction among multiple institutions**, regions, and actors necessary to **guarantee the legal practice of medicine**;
- This motivation stems from the need to **avoid fraud and inconsistencies** of information, which can lead to crimes related to the **illegal exercise and lack of trust**.

INTRODUCTION

- In this context, the prominence of **blockchain** can be highlighted due to its unique capability of offering a **highly transparent, secure, and immutable data** structure against **frauds**.



INTRODUCTION

OBJECTIVE

- This paper presents **MIRIAM** (sisteMa para regIstro de pRofissionAis Medicos, in portuguese), a **blockchain-based web application** that allows storing, in a decentralized and reliable way, the information regarding the **professional history of a medical doctor**.



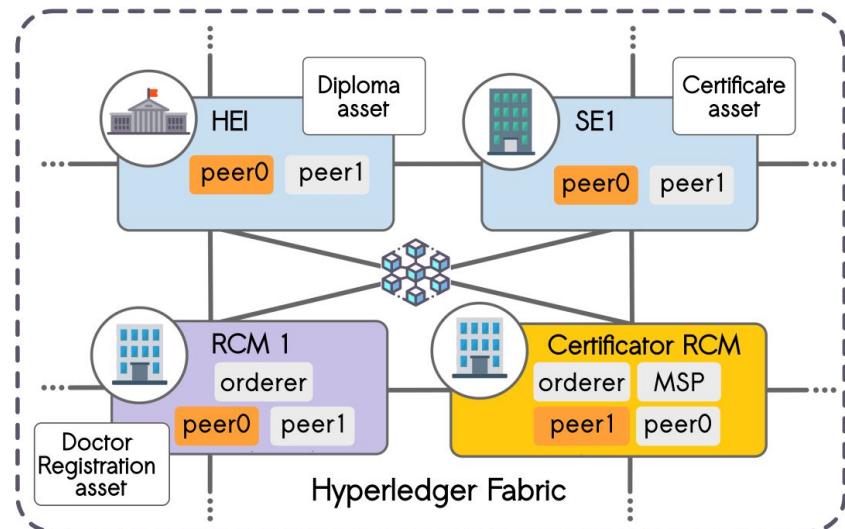
INTRODUCTION

CONTRIBUTIONS

- (i) the proposal and development of a **new solution** for increasing the **trust and transparency of medical professional history**;
- (ii) the **practical adherence** of the proposal to the **Brazilian context** according to current regulations;
- (iii) the **potential of adapting** the proposed architecture **to other countries**.

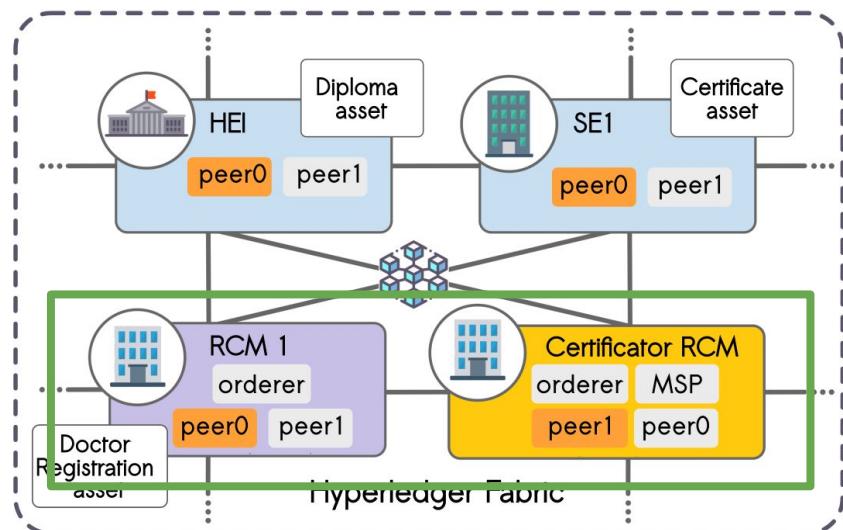
MIRIAM: AN ARCHITECTURAL OVERVIEW

- Regional Council of Medicine (RCM);
- Higher Education Institution (HEI);
- Specialty Entity (SE);



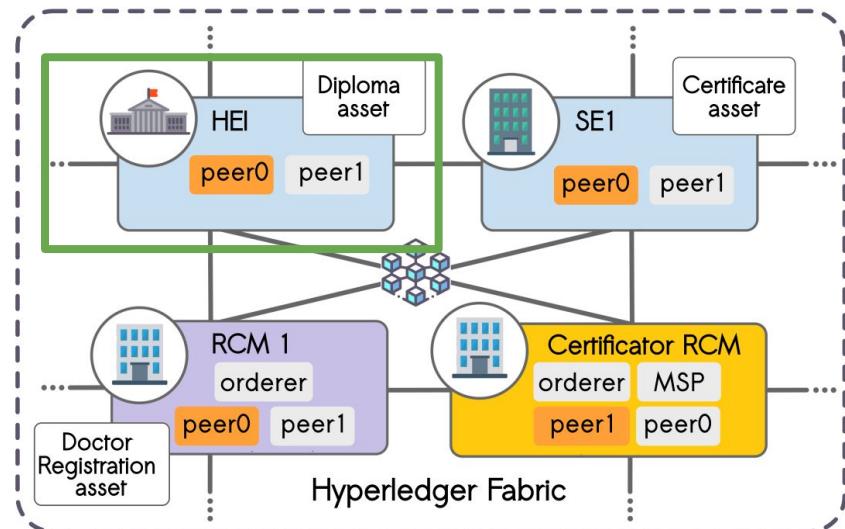
MIRIAM: AN ARCHITECTURAL OVERVIEW

- Regional Council of Medicine (RCM);
- Higher Education Institution (HEI);
- Specialty Entity (SE);



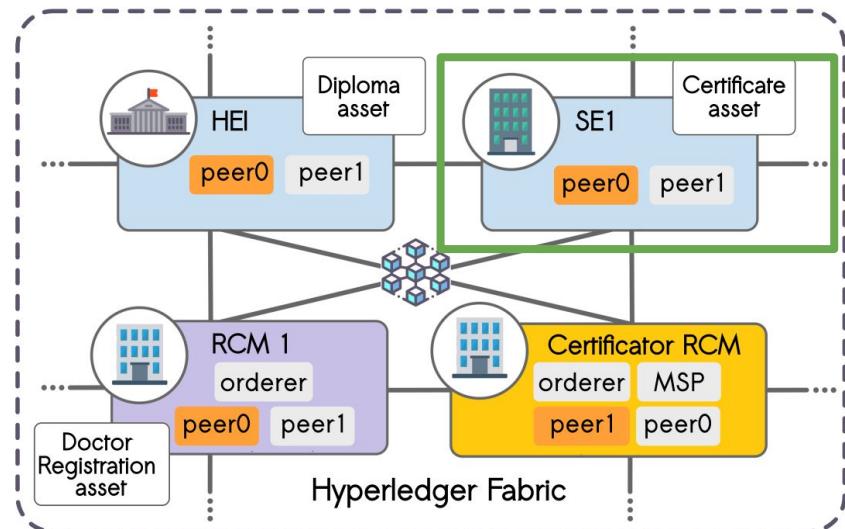
MIRIAM: AN ARCHITECTURAL OVERVIEW

- Regional Council of Medicine (RCM);
- Higher Education Institution (HEI);
- Specialty Entity (SE);



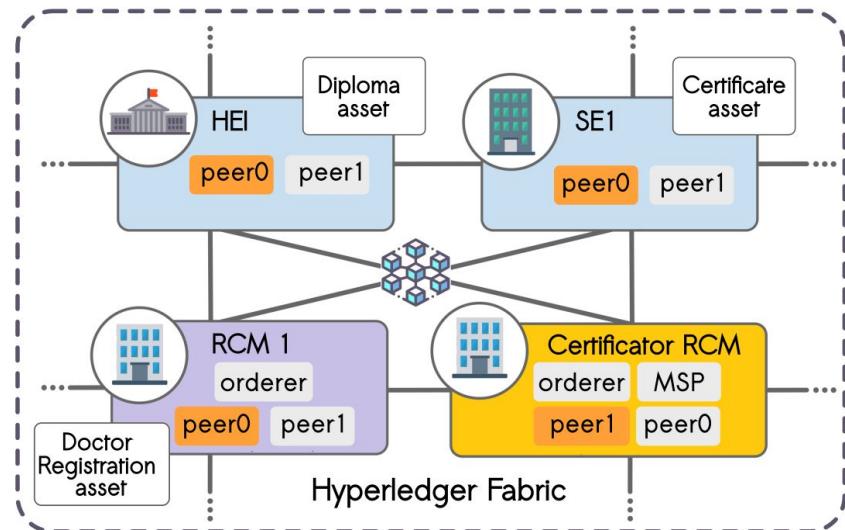
MIRIAM: AN ARCHITECTURAL OVERVIEW

- Regional Council of Medicine (RCM);
- Higher Education Institution (HEI);
- Specialty Entity (SE);



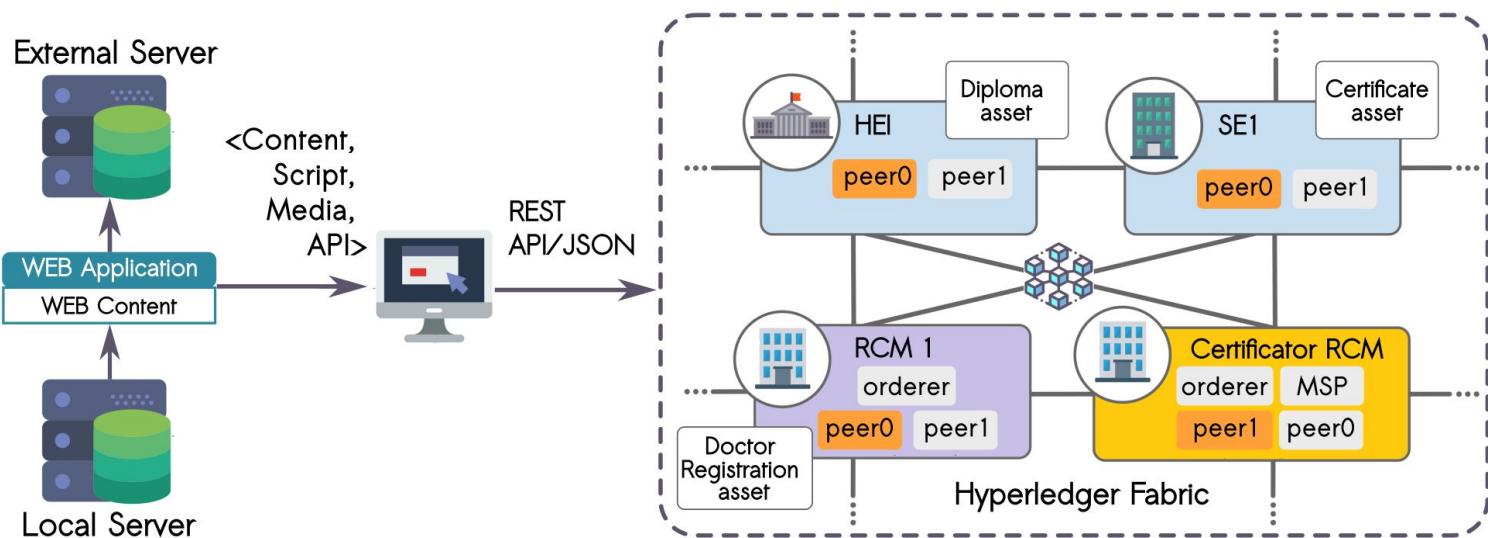
MIRIAM: AN ARCHITECTURAL OVERVIEW

- Regional Council of Medicine (RCM);
- Higher Education Institution (HEI);
- Specialty Entity (SE);



Hence, we mapped 27 nodes in the RCM category that represent the RCM of each **Brazilian state** and the **Federal District**.

MIRIAM: AN ARCHITECTURAL OVERVIEW



WORKFLOW SCENARIO

The doctor **John Smith** has a degree in medicine from a **State University of Ceará** (2010) and holds the title of specialist in Endocrinology and Metabolism by the Brazil Medical Association (2014). He performed all the processes necessary for this legal practice in medicine with the Regional Council of Medicine of Ceará, from his First Registration to the Specialty Registry.

PARTICIPANTS



Doctor

John Smith



HEI

State University
of Ceará



RCM

Regional Council of
Medicine of Ceará



SE

Brazilian Medical
Association

WORKFLOW SCENARIO

The doctor **John Smith** has a degree in medicine from a **State University of Ceará** (2010) and holds the title of specialist in Endocrinology and Metabolism by the Brazil Medical Association (2014). He performed all the processes necessary for this legal practice in medicine with the Regional Council of Medicine of Ceará, from his First Registration to the Specialty Registry.

PARTICIPANTS



Doctor

John Smith



HEI

State University
of Ceará



RCM

Regional Council of
Medicine of Ceará



SE

Brazilian Medical
Association

WORKFLOW SCENARIO

The doctor **John Smith** has a degree in medicine from a **State University of Ceará** (2010) and holds the title of specialist in Endocrinology and Metabolism by the Brazilian Medical Council (2015). He is registered in the processes necessary for the registration of medical professionals at the Council of Medicine of Ceará and is registered in the National Registry.

It should be noted that this approach can be generalized to more participants, including all 27 regional councils existing in Brazil. Furthermore, new HEI and SE participants can be included. **We will use these four participants presents for demonstration purposes.**

PARTICIPANTS



Doctor

John Smith



HEI

State University
of Ceará



RCM

Regional Council of
Medicine of Ceará



SE

Brazilian Medical
Association



Login

E-Mail Address

Password

 Remember Me[Login](#)[Forgot Your Password?](#)[Link](#)



IEEE 3rd International Conference on Blockchain and Cryptocurrency (ICBC 2021)

Thank you!

Any questions?

raphael.saraiva@aluno.uece.br
<https://br-miriam.github.io>



UNIVERSIDADE
ESTADUAL DO CEARÁ



Programa de Pós-Graduação
em Ciência da Computação



UNIVERSIDADE
FEDERAL DO CEARÁ

