Developing a Comprehensive Patient Care System in the Health Sector

Submitted in the partial fulfillment for the award of

the degree of

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IN

COMPUTER SCIENCE (Specialization in DevOps)

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Outline

- Introduction to Project
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- Research gaps
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- Objective of the work
- Methodology used
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- Conclusion
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INTRODUCTION

- Health care is a vital sector which seeks to improve the well-being of individuals and communities.
- The key stakeholders in healthcare includes healthcare providers, patients, policymakers and pharmaceutical companies.
- Advancements in medical technology, research, and healthcare delivery systems continuously shape the landscape of healthcare, aiming to enhance patient outcomes, improve access to care and contain costs.

Figure 1: Medical Logo - Rod of Asclepius [1]

INTRODUCTION

- In recent years several attempts have been made to make sure that the patient and the health care providers are well connected and the patient faces no problem during their treatment.
- Many different steps have been taken to tackle the same.
- But still the patient faces a lot of problems during their visits and treatment.

Figure 2: Figure of a Hospital [2]

INTRODUCTION

The major problems that Patients face are related to:

- Access to Care
- Coordination of Care
- Quality Assurance
- Cost Management
- Health Information Management
- Patient Engagement

Figure 3: Patient in Distress [3]

LITERATURE REVIEW

This is the result of the survey conducted among 23,507 patients. They were asked about the problems they were facing during their treatment.

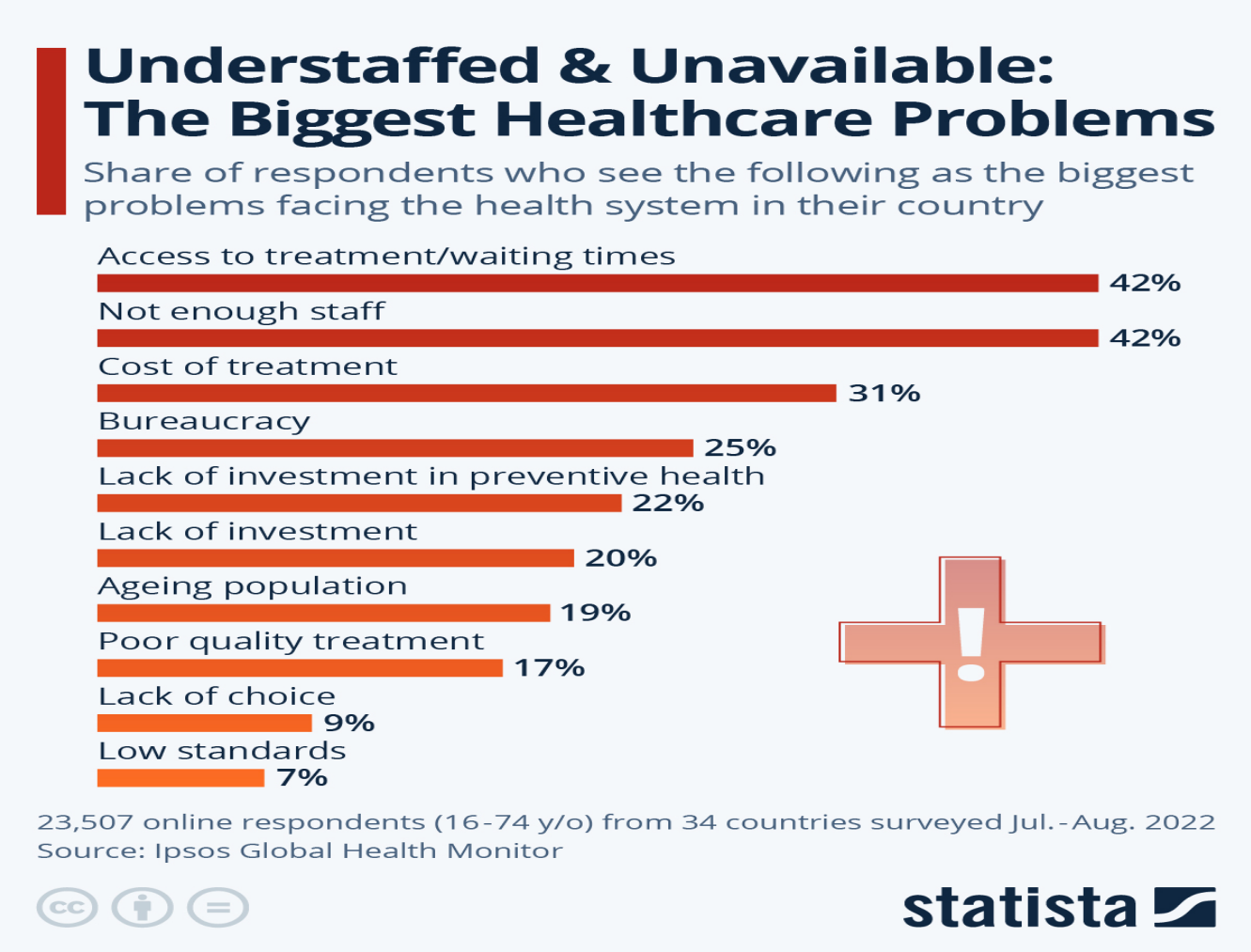


Figure 4:
Statistics related to the problems
That patients face [4]

LITERATURE REVIEW

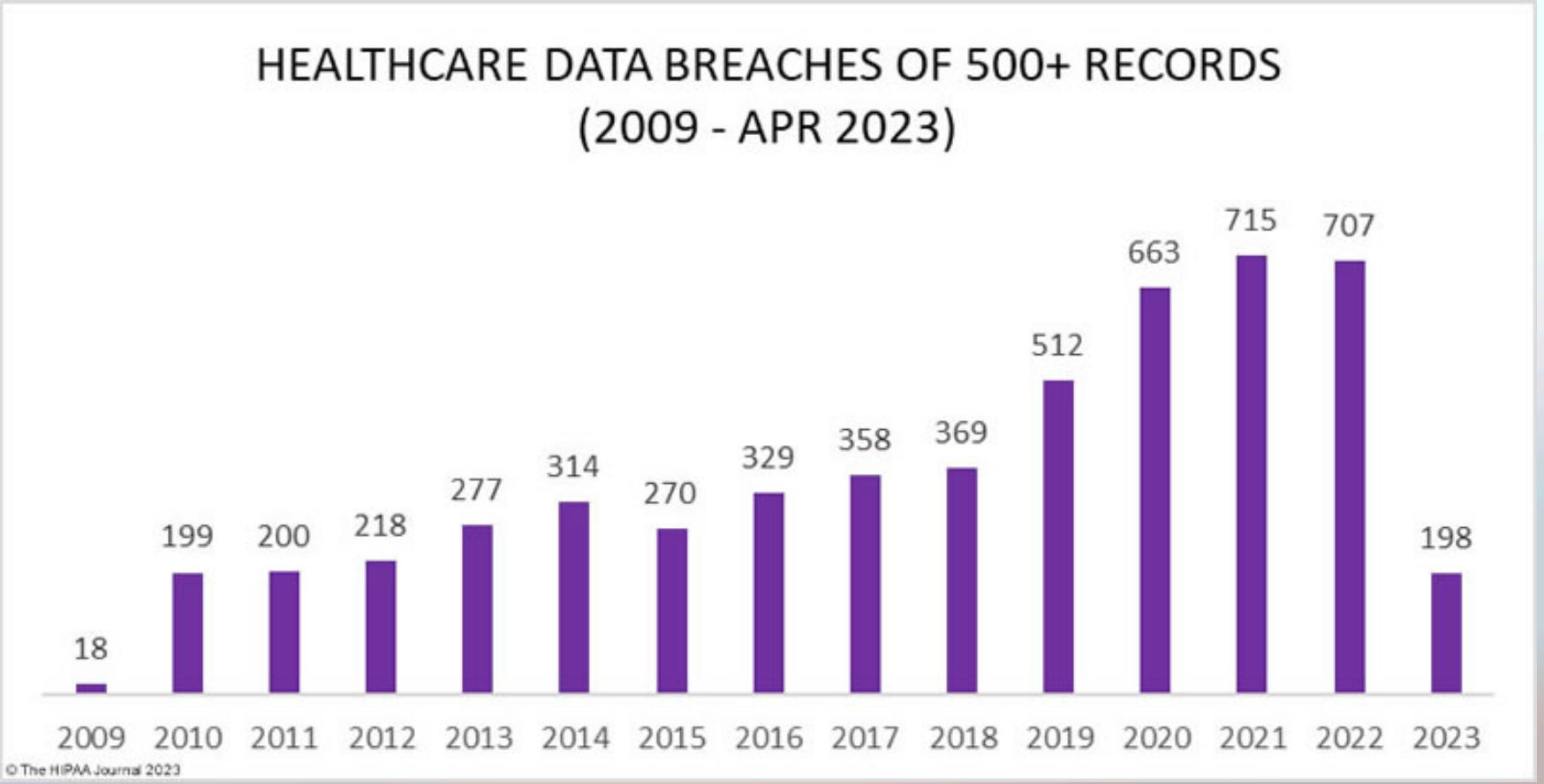


Figure 5: Statistics related to the data breaches [5]

LITERATURE REVIEW

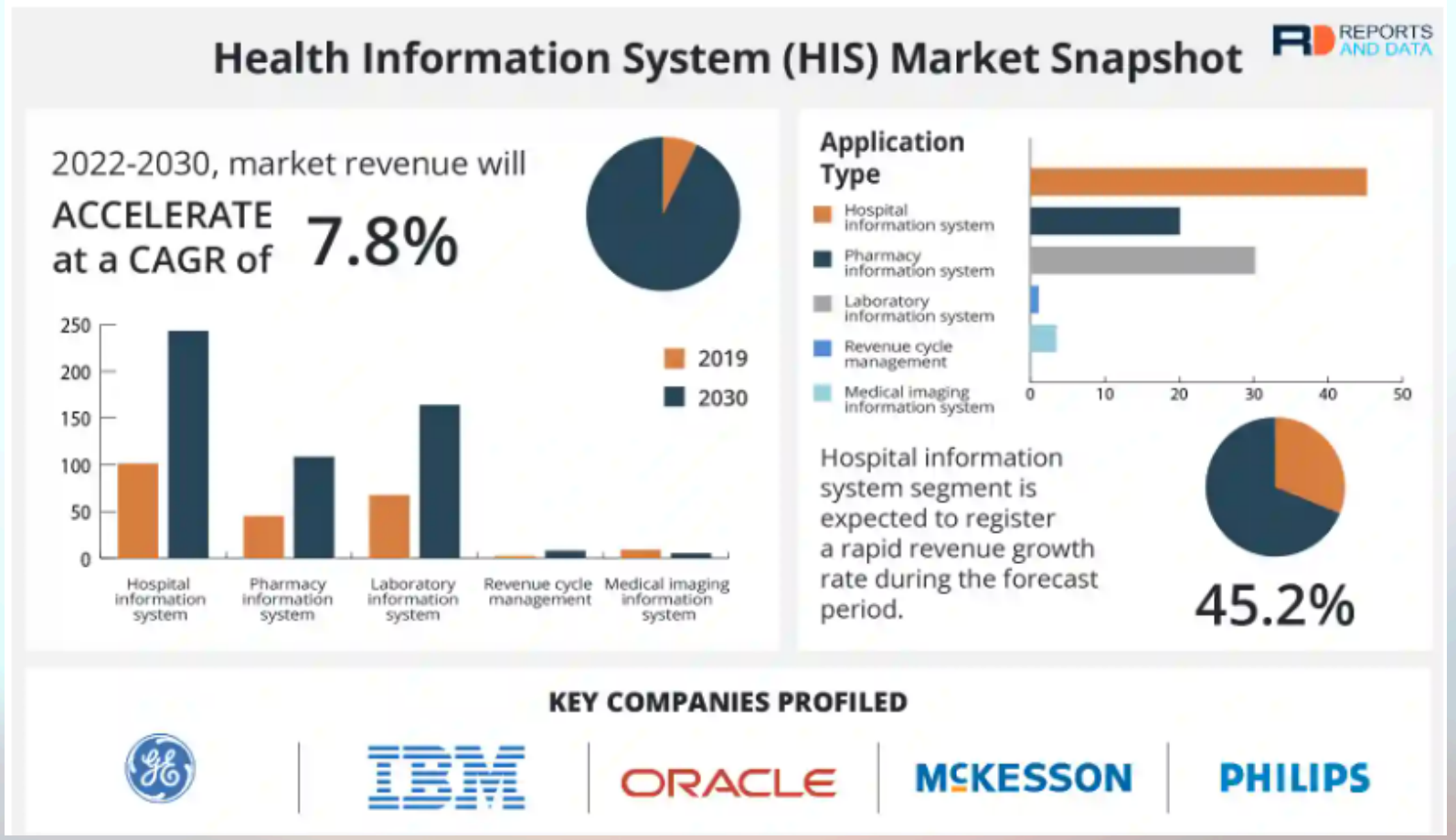


Figure 6: Statistics related to the revenue generated by HIS [6]

RESEARCH GAPS

- Platforms that empower patients to actively participate in their healthcare journey and provide tools for remote monitoring and self-management could fill this gap.
- Many healthcare systems still face challenges in achieving seamless interoperability and efficient data sharing between different healthcare providers and systems.
- Solutions that facilitate secure and standardized data exchange across diverse platforms and institutions are in demand. While telemedicine has gained popularity, there is a need for comprehensive telemedicine infrastructure that includes standardized protocols, secure communication channels, and interoperability with other healthcare systems.

Problem Formulation

- According to a report by the Office of the National Coordinator for Health Information Technology (ONC) in the United States, as of 2020, over 90% of hospitals had adopted electronic health record (EHR) systems and even the use of mobile health applications is on the rise. [17]

- As of 2019, there were over 318,000 health apps available on major app stores, with the number of mHealth app downloads expected to reach 3.7 billion globally by 2022. [18]

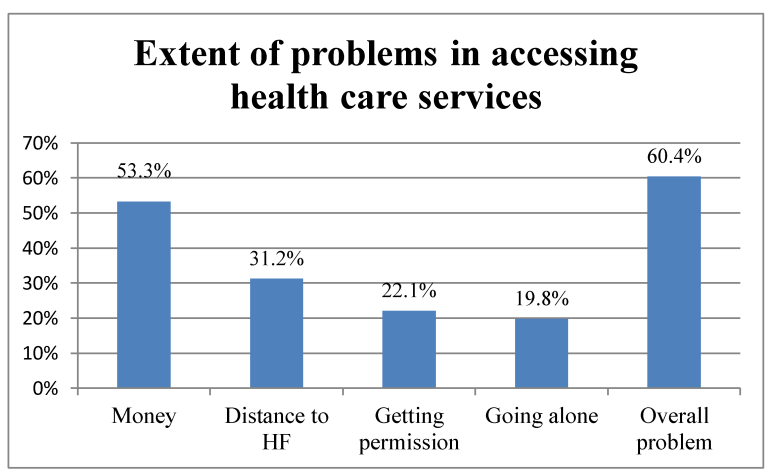


Figure 7: Statistics related to the revenue generated by HIS [7]

Problem Formulation

• But still, there are many gaps that exists in the existing systems. There is a growing need for healthcare systems that prioritize a patient-centric approach, enhancing patient engagement, empowerment, and personalized care.

This system seeks to eradicate all of these problems.

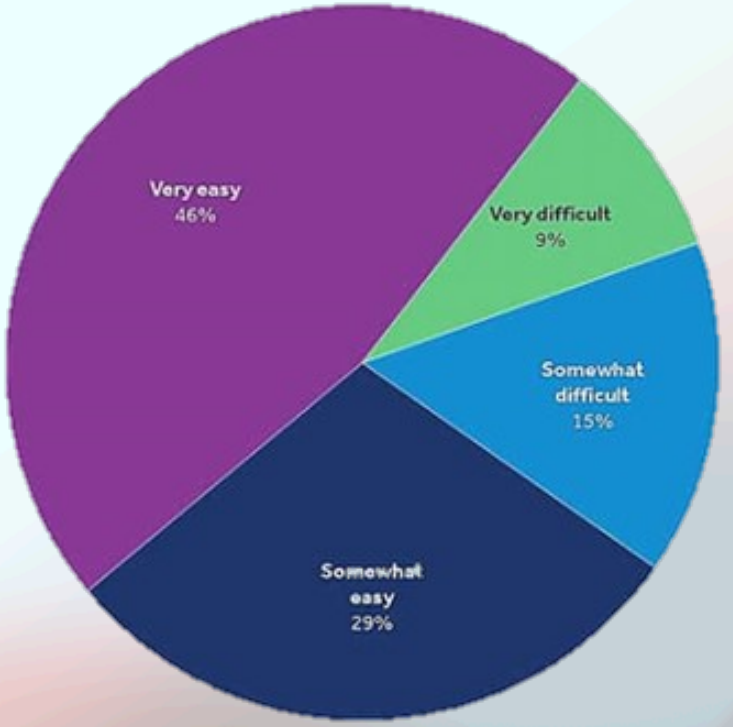


Figure 8: Statistics related to the patient experience during their treatment [8]

Objectives of the Work

• This projects seeks to create a platform which can standardize the data exchange between various healthcare providers and make the whole system transparent and efficient.

• Through this project we seek to contribute to the ongoing evolution of the healthcare landscape and make this world a better a place to live in.

Figure 9: Figure emphasizing on the essence of Health care system[9]

Methodology used

- Patient-centric platforms: Develop platforms that allow patients to access their medical records, track their health data, manage medications, and communicate with healthcare providers securely.

- Interoperability solutions: Develop standardized data formats and APIs to facilitate seamless data exchange between different EHR systems and platforms.

- Telemedicine infrastructure: Establish standardized protocols for telemedicine consultations, including guidelines for patient assessment, diagnosis, and treatment.

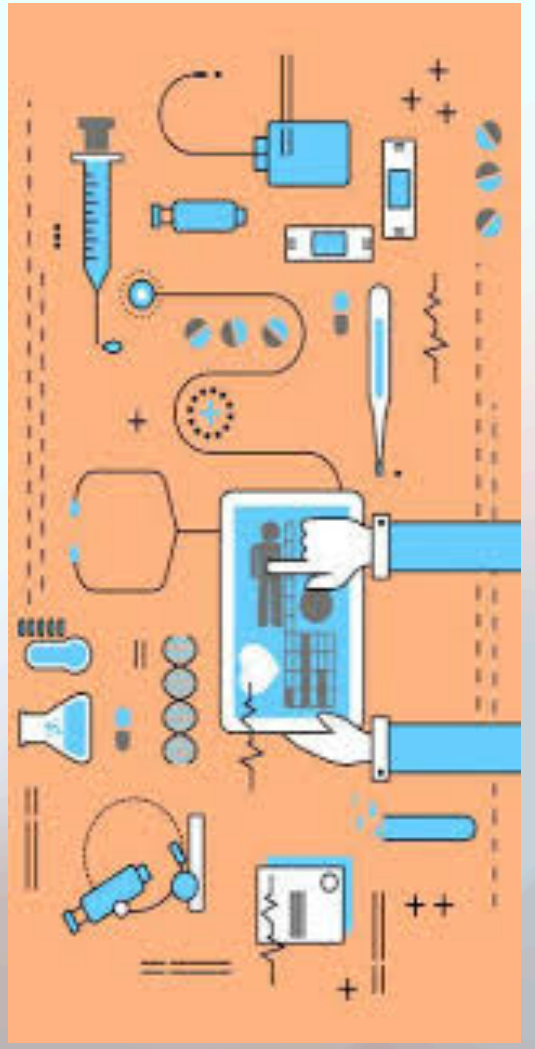


Figure 10: Integration of Health Care system [10]

Methodology used

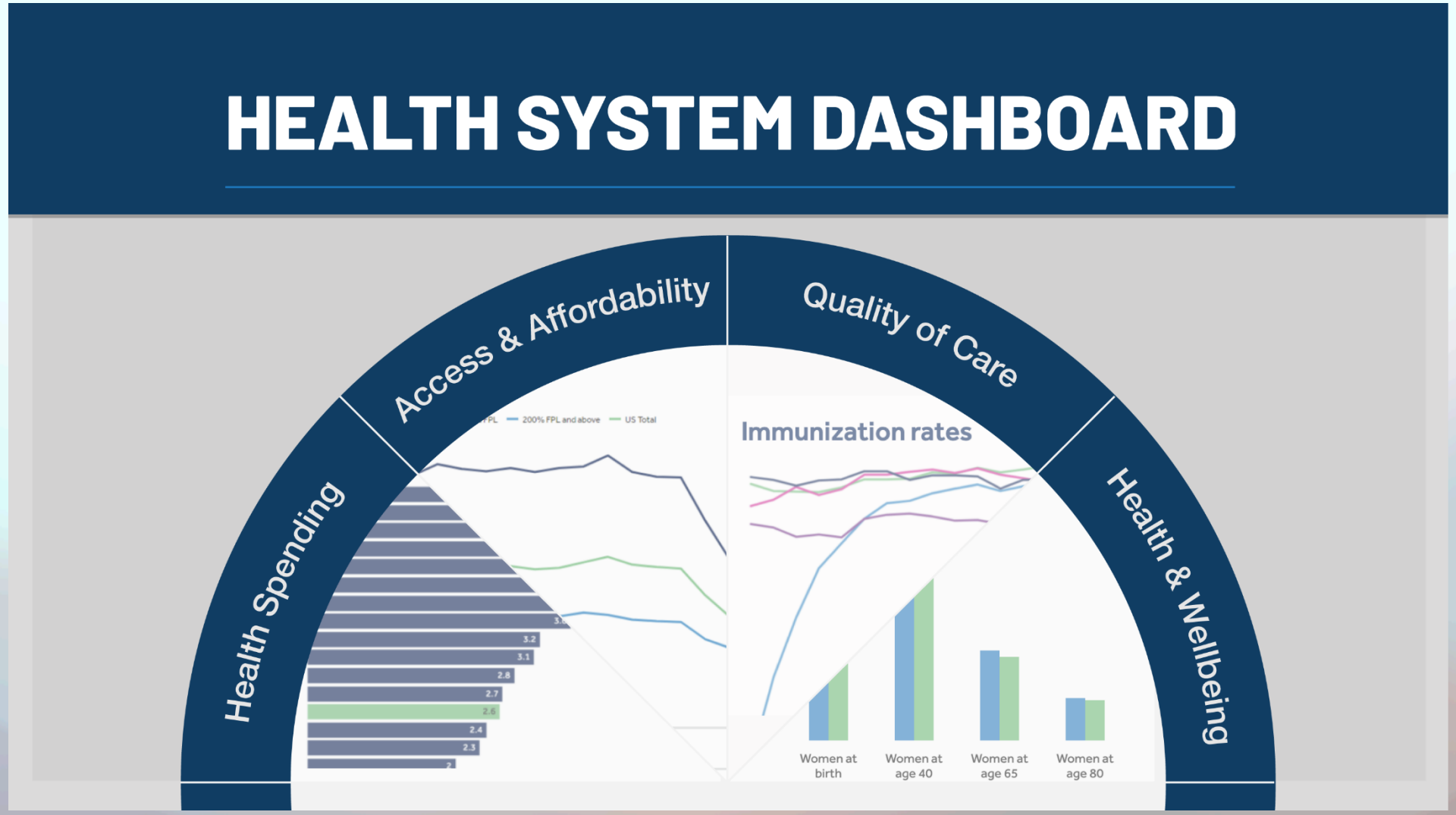
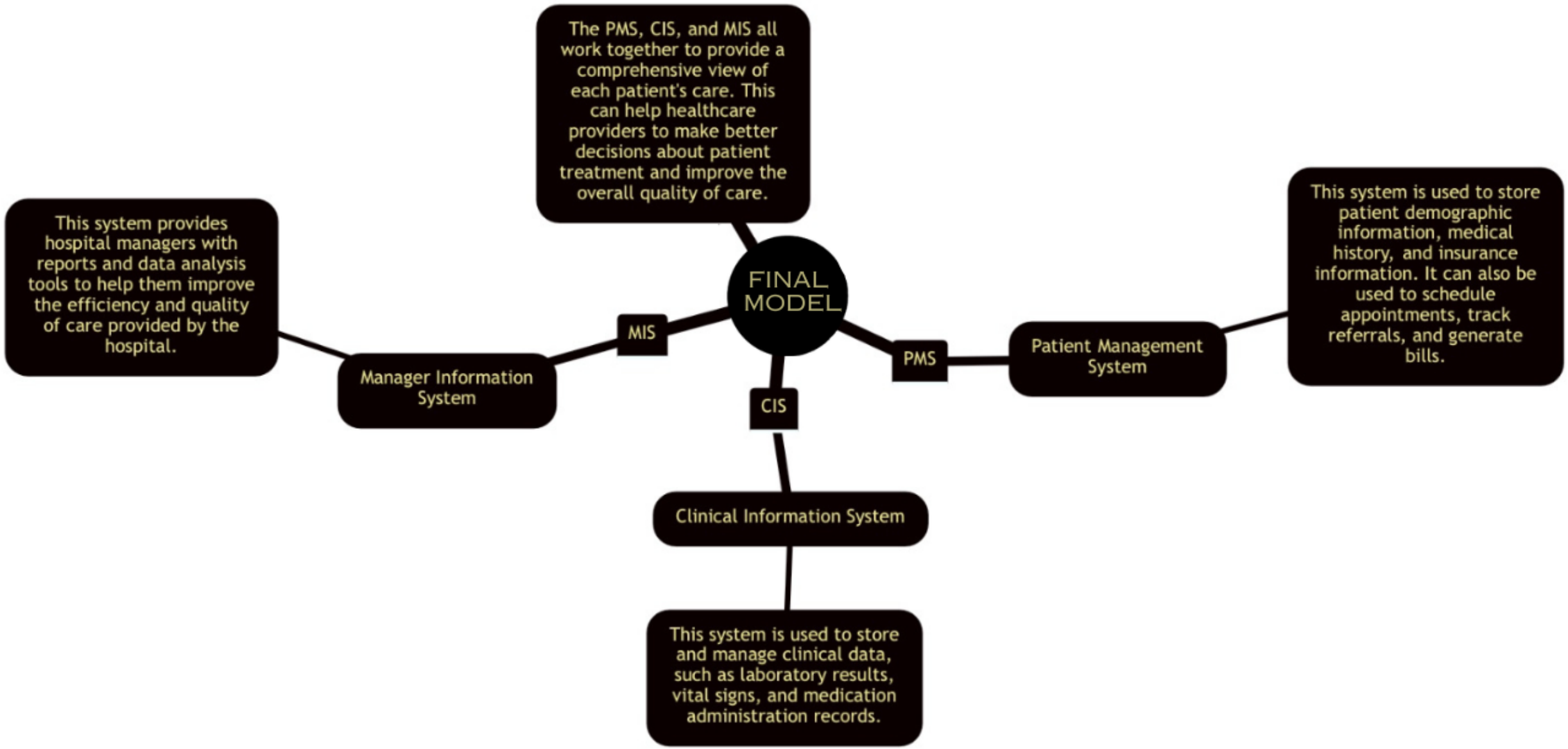


Figure 11: Health System Dashboard[11]


The PMS, CIS, and MIS all work together to provide a comprehensive view of each patient's care. This can help healthcare providers to make better decisions about patient treatment and improve the overall quality of care.
FINAL MODEL
MIS
Manager Information System
This system provides hospital managers with reports and data analysis tools to help them improve the efficiency and quality of care provided by the hospital.
PMS
Patient Management System
This system is used to store patient demographic information, medical history, and insurance information. It can also be used to schedule appointments, track referrals, and generate bills.
CIS
Clinical Information System
This system is used to store and manage clinical data, such as laboratory results, vital signs, and medication administration records.

Conclusion

There have been multiple attempts to make a system that makes the entire healthcare convenient and affordable for the patient but failed to do so in one way or another.

Thus, this project aims at superseding all those failures and create a system that excels in this field.

Figure 13: Healthcare system [13]

FUTURE SCOPE

- **Artificial Intelligence (AI):** AI can analyze vast amounts of medical data to identify patterns, predict potential health risks, and personalize treatment plans. AI-powered chatbots can answer patient queries and even triage basic health concerns.
- **Telehealth and Virtual Care:** Video conferencing and remote monitoring will enable more convenient and accessible healthcare, especially for those in remote areas or with mobility limitations.
- **Precision Medicine:** Advancements in genomics and personalized medicine will allow for treatments tailored to an individual's unique genetic makeup, leading to more effective and targeted therapies.
- **Patient Empowerment:** Patients will have greater access to their health data and play a more active role in managing their own health. Educational tools and apps will promote self-care and preventative measures.
- **Focus on Prevention:** The emphasis will shift from reactive treatment to preventative measures. This could involve using AI to identify people at risk of certain diseases and intervene early.

Project Management and Professional Communication

TEAM MEMBERS:

Giftson Johnson(22bdo10054):

Worked upon the Methodology and discovered the features of this project.

Tarush Chauhan(22bdo10073):

Worked upon Problem Formulation and identified the constraints that influence this project .

Sakshi(22bdo10064):

Identified the gaps in the current market and Proposed the model to tackle the same.

Teesha(22bdo10076):

Helped to identify the advantages in the system and possible challenges we could face and found out the Future Scope of this project.

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