Monitor ME – Architectural Characteristic Analysis

StayHealthy, Inc

- StayHealthy, Inc. is a large and highly successful medical software company located in San Francisco, California, US. They currently have 2 popular cloud based SAAS products: **MonitorThem** and **MyMedicalData**.
- **MonitorThem** is a comprehensive data analytics platform that is used for hospital trends and performance analytics—alert response times, patient health problem analytics, patient recovery analysis, and so on.
- **MyMedicalData** is a comprehensive cloud-based patient medical records system used by doctors, nurses, and other health professionals to record and track a patient's heath record with guaranteed. partitioning between patient records.
- **StayHealthy, Inc**. is now expanding into the medical monitoring market, and needs a new medical. Patient monitoring system for hospitals that monitors a patient's vital signs using proprietary medical. Monitoring devices built by StayHealthy, Inc.

MonitorMe Requirements

- **MonitorMe** reads data from eight different patient-monitoring equipment vital sign input sources: heart rate, blood pressure, oxygen level, blood sugar, respiration rate, electrocardiogram (ECG), body temperature, and sleep status (sleep or awake). It then sends the data to a consolidated monitoring screen (per nurses' station) with an average response time of 1 second or less. The consolidated monitoring screen displays each patient. Vital signs, rotating between patients every 5 seconds. There is a maximum of 20 patients per nurse's station.
- For each vital sign, **MonitorMe** must record and store the past 24 hours of all vital sign readings. A medical professional can review this history, filtering on time range as well as vital signs.
- In addition to recording raw monitoring data, the **MonitorMe** software must also analyze each patient vital. Signs and alerts a medical professional if it detects an issue (e.g., decrease in oxygen level) or reaches a preset threshold (e.g., temperature has reached 104 degrees F).
- Some trend and threshold analysis are dependent on whether the patient is awake or asleep. For example, if the blood pressure drops, the system should notice that the patient is asleep and adjust its alerts accordingly. The same is true with the respiration rate and heart rate. For example, all these vital signs are reduced. When the patient is asleep, but if awake something might be wrong.

- Medical professionals receive alert push notifications of a potential problem based on raw data analysis to a **StayHeathy mobile app** on their smart phone as well as the consolidated monitoring screen in each nurse's station.
- If any of vital sign device (or software) fails, MonitorMe must still function for other vital sign monitoring. (Monitor, record, analyze, and alert).
- Medical staff can generate holistic snapshots from a patients consolidated vital signs at any time. Medical staff can then upload the patient snapshot to **MyMedicalData**. The upload functionality is within the scope of the
- **MonitorMe** functionality and is done through a secure HTTP API call within **MyMedicalData**.

- Each patient monitoring device transmits vital sign readings at a different rate:
  - *Heart rate: every 500ms*
  - *Blood pressure: every hour*
  - *Oxygen level: every 5 seconds*
  - *Blood sugar: every 2 minutes*
  - *Respiration: every second*
  - *ECG: every second*
  - *Body temperature: every 5 minutes*
  - *Sleep status: every 2 minutes*
- **MonitorMe** will be deployed as an on-premises system. Each physical hospital location will have its own installation of the complete MonitorMe system (including the recorded raw monitoring data).
- Maximum number of patients per physical MonitorMe instance: 500
- StayHealthy. Inc. will be providing comprehensive hardware and software for this system. The platform, data stores, databases, and other technical tools and products are unspecified at this time and will be based on your
- on-prem architectural solution.

Other Considerations

- StayHealthy, Inc. is looking towards adding more vital sign monitoring devices for MonitorMe in the future.
- Vital sign data analyzed and recorded through MonitorMe must be as accurate as possible. After all, human lives are at stake.
- As this is a new line of business for StayHealthy, they expect a lot of change as they learn more about this new market.
- StayHealthy, Inc. has always taken patients confidentially seriously. MonitorMe should be no exception to this rule. While patient monitoring data must be secure, MonitorMe does not have to meet any government regulatory requirements (e.g., HIPPA).

Architectural Characteristics- Legends

1. Agility
2. Abstraction
3. Configurability
4. Cost
5. Deployability
6. Domain part.
7. Elasticity
8. Evolvability
9. Fault-tolerance
10. Integration
11. Interoperability
12. Performance
13. Scalability
14. Simplicity
15. Testability
16. Workflow
17. Security