**Usability Engineering Report for Symptomsolver**

**Introduction**

As the final segment of our SaMD project, we will delve into the crucial aspects of usability engineering as applied to Symptomsolver, our innovative medical software designed to enhance diagnostic accuracy and patient care. In this section, we ensure that Symptomsolver adheres to all usability principles stipulated by ISO 62366, emphasizing effectiveness, safety, and user satisfaction.

**Usability Engineering Principles**

Usability engineering entails designing intuitive and efficient products. For Symptomsolver, this translates into creating a user interface (UI) and user experience (UX) that facilitate accurate diagnosis and seamless interaction for healthcare providers. The development of Symptomsolver's UI/UX design incorporated extensive stakeholder feedback and observational studies. We emphasized minimizing cognitive load and ensuring usability across different environments and user skill levels during testing sessions with representative users. Testing protocols included measuring functional errors and assessing user satisfaction.

**Integration with Risk Management**

Integration of usability engineering with risk management practices is pivotal. We identified and analyzed hazards associated with Symptomsolver's UI interactions using methods such as Failure Mode and Effects Analysis (FMEA). Subsequently, we implemented design improvements to mitigate identified risks effectively. Our approach is aligned with ISO 62366 standards, ensuring that all usability activities meet stringent regulatory requirements for medical software.

**Post-Market Surveillance**

Post-market surveillance remains integral to Symptomsolver's lifecycle management. It enables continuous gathering of user feedback and monitoring of usability issues in real-world clinical and medical settings, facilitating ongoing refinement and enhancement of the software.

**Use Specification (IEC 62366, Chapter 5.1)**

The USE SPECIFICATION prepared for Symptomsolver includes:

* **Intended Medical Indication:**
  + Conditions or diseases to be diagnosed. (screened, monitored, treated, or prevented.)
* **Intended Patient Population:**
  + People of any age, weight, or height without any critical conditions or chronic diseases. (Age group, weight range, health, or condition.)
* **Intended Part of the Body or Type of Tissue:**
  + All symptoms, whether internal or external, that are not normal (There is a limited set of symptoms included in our application). (Specific body parts or tissue types that Symptomsolver interacts with.)
* **Intended User Profile:**
  + All users aged 18 to 80 without any health conditions or chronic diseases. (The profile of the healthcare providers and other users.)
* **Use Environment:**
  + Various devices, platforms, and search engines are used in indoor and outdoor places. (The various clinical and medical settings where Symptomsolver will be utilized.)
* **Operating Principle:**
  + The fundamental operating principles of Symptomsolver involve leveraging advanced algorithms and medical data analysis to provide accurate diagnostic recommendations based on input symptoms and patient information, while recommending the patient to visit their doctor for further and precise medical diagnosis. (The fundamental operating principles of Symptomsolver. )

**Usability Testing Plan (Do you share the same Idea, Mostafa?)**

The usability testing plan for Symptomsolver includes:

* **Objective:**
  + To evaluate the effectiveness, efficiency, and satisfaction of Symptomsolver's UI/UX design.
* **Participants:**
  + A diverse group of representative users, including healthcare providers of varying experience levels.
* **Testing Environment:**
  + Simulated clinical settings that mimic real-world environments.
* **Tasks:**
  + Specific tasks that users will perform to evaluate different aspects of the software.
* **Metrics:**
  + Functional errors, task completion times, and user satisfaction ratings.

**Summative Usability Test**

A summative usability test was conducted as a practical part of this project:

* **Test Objective:**
  + To gather quantitative and qualitative data on the usability of Symptomsolver.
* **Methodology:**
  + Users performed a series of tasks under observation, and their interactions were recorded and analyzed.
* **Results:**
  + The results indicated areas of strength and opportunities for improvement, which informed subsequent design iterations.

**Conclusion**

By placing a strategic emphasis on usability engineering, Symptomsolver not only enhances diagnostic accuracy and user satisfaction but also mitigates potential usability-related risks in healthcare settings. Our steadfast commitment to delivering safe, effective, and user-friendly medical software solutions is exemplified through Symptomsolver's adherence to ISO 62366 standards.

***END OF PART 1***