**The Code Behind Care: SDLC Models for Epic Systems**

***Empowering Healthcare with a Structured and Adaptive SDLC Approach***

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**Abstract:**

Epic Systems, one of the leading healthcare software, deals with complex issues of patient data, billing, and compliance, hence needs to have a well-laid Software Development Life Cycle (SDLC). This report aims at analysing the aptitude of the Waterfall, Incremental, and Spiral models for Epic Systems and comparing them in terms of flexibility, risk management, and adherence to regulation. The Waterfall is somewhat stable but very rigid for changes in the healthcare regulations. The Incremental Model will capture the continuous improvements but has little on risk management. Thus, the Spiral On comes out as the most promising, and provides for iterative development, continuous assessment for risk, and adaptability for needing changes. It takes care of security, compliance requirements, and user-driven enhancements that suit the evolution of a dynamic healthcare system. The better software development strategy allows Epic Systems to upgrade the level of health care delivery, mergence of hospital operations, and nurturing future drives in health technology.

**Publishing:**

This paper was submitted to *Dr. Jason Elroy Martis, Associate Professor, Department of Information Science and Technology, NMAM Institute of Technology. Nitte Karnataka, India.* This paper is also hosted on a GitHub repository, along with the material used for preparing this research. The link to the GitHub Repository is given in the endnote.

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**1.INTRODUCTION:**

The Epic healthcare community is a worldwide group collaborating to improve patient care and innovate healthcare delivery. Epic offers a complete set of tools for patient care management, billing, scheduling, and other critical functions making it a key component of today’s healthcare.

**What Epic Does:**

**1.Electronic Health Records (EHR):** Epic's main product is EHR software. This allows doctors, nurses, and other healthcare providers to maintain patient information electronically instead of on paper.

**2.Solutions for Healthcare:** Epic offers a variety of tools to support different parts of healthcare like EpicCare, MyChart, Tapestry, Revenue Cycle Management.

**3.Data sharing between healthcare providers:** Epic has the ability to share data between different hospitals and healthcare providers.

**4.Customization:** Epic’s software can be customized to meet the needs of different healthcare providers. It is also flexible for various healthcare settings.

**Epic Systems as an Ideal Case for SDLC Analysis**

Epic Systems is a leading provider of healthcare management software which is an ideal choice for studying the Software Development Life Cycle (SDLC) due to many key factors:

* Epic is deployed across major hospitals and healthcare systems, handling large amounts of patient data and complex workflows.
* Epic plays a key role in managing critical healthcare tasks, so it’s essential that the system is reliable, secure, and performs well in real-time making it a perfect example for studying SDLC models in high-stakes situations.

**Purpose of the Report:**

This report aims to explore and compare different Software Development Life Cycle (SDLC) models specifically the Waterfall, Incremental Development and Spiral Model within the context of Epic. By analyzing these models we will highlight their suitability for meeting the specific needs of Epic’s functional and non-functional requirements, as well as their ability to manage risk, handle change, and meet time and cost constraints.

**2.Software Development Lifecycle Model (SDLC):**

The SDLC (Software Development Life Cycle) is a process that guides the development of software.

For a big healthcare system like Epic Systems which helps manage patient data, appointments, and medical records, the SDLC process is really important. In the Incremental Model, Epic Systems develops and releases the system in small parts or increments. For Epic Systems, the waterfall model creates a step by step approach where each phase happens one after the other. The spiral model of the Epic Systems combines the benefits of both waterfall and incremental models.