Interpolated International Interoperability and Inclusive Efficiency in Ubiquitous Electronic Health Records (EHRs)

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Abstract - **The *Electronic Health Record* (EHR) refers to an electronically maintained, connectible, mass of pertinent, patient-related, healthcare information collected during one or many patient encounters. It constitutes patient demographic data, encounter notes, laboratory reports, prescription details, and past medical records, besides other medical data. The EHR in essence should facilitate the precise future diagnosis, treatment, and decision support processes of patient healthcare. Since EHR technology is a *burgeoning science*, many facets lie *under-used* or *under-utilized*. Its implementation is primarily confined to *national pockets*, managed by individual *National Health Systems* (NHS). True, universally interoperable, consolidated EHR schemes are still a thing for the future; a *migratory* patient may not have his *national EHR* available in distant territories. Further, global consolidation of related EHRs are still a distant dream. This paper articulates a unified, sound, precise, and secure methodology for achieving much-desired *International Interoperability* and *inclusive efficiency* in *Ubiquitous, Universal, Consolidated Electronic Health Records*, optimising the derived merits of this prime technology. Utilizing some popular *EHR* schemes as base models, such as *Health Level 7's* (HL7) *Electronic Health Record Functional Model* (EHR-FM) and similar systems, this overarching solution can be extrapolated to any ubiquitous *EHR* environment.**

Index Terms – **Consolidated, Electronic Health Records, International Interoperability, Ubiquitous.**

1. INTRODUCTION

The *Electronic Health Record* (EHR) in its present-day manifestation is a dynamic, longitudinal, often localized data structure of valued, pertinent healthcare information. Data content covers patient encounters, patient, healthcare provider, and medication demographic data, treatments, laboratory reports, prescriptions, and medical history; infact efficient EHR implementations should embrace the entire spectrum of pertinent, captured healthcare data, enabling efficacious, prompt future diagnosis and treatment/cure of patients and diseases. The *Health Information Management System Society* (HIMSS) defines *EHRs* as follows [1]:

"The Electronic Health Record (EHR) is a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. Included in this information are patient demographics, progress notes, problems, medications. vital signs, past medical history, . immunizations, laboratory data, and radiology reports. The EHR automates and streamlines the clinician's workflow".

In consequence of *EHR* interpolation in the *IT-driven* healthcare sector, many allied healthcare standards were instituted. For instance, *Health Level 7* (HL7) developed the *Electronic Health Record System Functional Model* (EHR-S FM) which *"provides a reference list of functions that may be present in an Electronic Health Record System (EHR-S). The function list is described from a user perspective with the intent to enable consistent expression of system functionality "* [2]. Functional profiles are created thereafter affording standardized descriptions of selected areas and settings. *"A Functional Profile is a selected set of functions that are applicable for a particular purpose, user, and care setting"* [2]. It is a pertinent subset of the complete function list in the *EHR-S FM*. Hence the functional model acts as really an overarching reference to the allied *EHR* system, which in turn manifests in the form of one or many functional profiles. Currently in release 2, the *EHR-S FM* is presently *International Organization for Standards* (ISO) and *American National Standards Institute* (ANSI) approved; its prime objectives being [1][3] :

- Improved Quality of Patient Care.
- Efficient Patients/Costs Monitoring.
- Filips to the Healthcare Industry.