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A general framework for interoperability with applications to healthcare

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The contribution of this talk will be to provide a formalized methodology to define, specify or design a system of application modules that communicate information between the components. First this talk will define several types of interoperability. Second, it provides a framework for specifying and analyzing the interoperability of existing or proposed medical systems. Last, it provides a simple example of a provider ordering a prescription for a patient to illustrate the interoperability of the proposed healthcare application systems. Our theory-based methodology includes an extensive literature search on interoperability, practical experience in standardizing the Internet, and graph theory. Our results include a framework to specify, define, plan, and perform analysis on a set of applications that need to exchange information. Within this framework, an Interoperability Matrix and its associated Interoperability Flow Graph represent different types of interoperability between related applications. This formal representation is useful first to define the architecture and also provides the option of using graph algorithms that determine interoperability traits within a group of related applications. In conclusion, this framework presents a formal methodology to define and classify interoperability within a set of related applications.

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The business case for interoperability

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The goal of health information exchange (HIE) is to bring together a large array of healthcare information and records about the patient from across the entire continuum of care, and to improve the quality and coordination of care for patients while reducing healthcare costs. Those records include lab results, medications, allergies, conditions and various reports that are generated by physicians, hospitals, and specialists at the time of care. HIE brings together all the patient information and clinical records from a variety of disparate systems in a complete, timely and accurate record — in order to provide a comprehensive and collaborative care over time. As the healthcare world becomes interconnected, the need to scale the infrastructure will be critical, as more and more data will flow in and out of more systems and devices, in a more real time fashion as ever before. While “Big Data” has been present in some areas of healthcare (e.g. biotech or genomics), healthcare is, as an industry, just starting to scratch the surface of how to process, make sense and optimally utilize the vast amount of information coming our way. This presentation will focus on the value proposition in healthcare for interoperability - the exchange of electronic data between disparate systems, and includes real-time Use Cases, an examination of challenges and opportunities, a comparative view of current product and service offerings and a look into the future of interoperability for the U.S. and around the World. The presenters have combined over four decades of experience in health IT, including technology development, deployment, management, product sales & marketing and public policy advocacy.

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