RESTful Health by Opening Confidential Data and Learning from Hackers

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Jun, 2012

Abstract

RESTful web services feed the self-accelerating cycle of posing research questions; building data and ICT settings to answer them; and transferring the answers to practice.

Open-source for clinical data, analysis applications [2] and clinical trial [1] results are critical to accelerate discovery and its diffusion to clinical practice. We argue that open data and open source-code are partial solutions: the key for open health architectures is adoption of RESTful services. REST (REpresentational State Transfer) are the design principles that make the WWW a success.

RESTful services will provide healthcare practitioners and scientists the ability to build tools that meet their data analysis needs from easy-to-use bricks of data and ICT. RESTful services provide data consumers and ICT developers with improved evaluation and development capabilities [3, 4, 5]. The interoperability of the bricks and tools/services is fully defined by REST-based specifications of their output and possible input (data, parameters). The service consists of self-governed repositories with RESTful services for storing, accessing and updating the bricks; web facilities for integrating or accessing third-party ICT and building tools and defining analysis tasks from the bricks; and layer for executing the tasks.

To foster a community effect in clinical analytics, we follow three socio-technical principles:

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1. After registration and commitment to report the results, people can access and contribute to repositories of data and ICT.

2. To enable ease-of-use and reproducibility of results, the repositories are connected with data and ICT standards, community interaction, and third-party solutions; implement data governance, de-identification, and record linkage; and store all analysis outcomes in association with the bricks used in their generation.

3. Dialogue between all actors along the value chain of using and developing data and ICT for health is improved via community building and ICT.

This supports the virtuous cycle of scientists proposing new research questions; data and ICT developers building settings to answer them; and healthcare practitioners and policy-makers transferring the answers to practice.

References


Acknowledgments: NICTA is funded by the Australian Government as represented by the Department of Broadband, Communications and the Digital Economy and the Australian Research Council through the ICT Centre of Excellence program.