

ALL ABOUT THE DATA

Parkinson's Institute and IO Informatics to collaborate on integrating data

BY ILENE SCHNEIDER

BERKELEY, Calif.—In late 2013, IO Informatics Inc. CEO Robert Stanley heard a talk by Dr. Carolee Barlow, CEO of the Parkinson's Institute and Clinical Center. They recognized their shared vision and embarked on "a great relationship," Stanley said.

Stanley realized that the Parkinson's Center had been collecting high-quality genomics, gene expression, gene mutation and pathology data for 25 years, and Barlow understood that the broad, deep data integration that IO could provide would make it easier for people to have access to the data and lift the barriers to success.

Barlow called it "challenging to connect and search the valuable data we have collected during all the years of clinical care and research," adding, "We have close to 100 different data sources containing the highest-quality information. Our physicians and scientists couldn't ask questions of the data without doing an enormous amount of tedious manual work."

The Parkinson's Institute and IO Informatics had already been working together for months, but in November announced their collaboration had resulted in the creation of Parkinson's Insight, an integrated data environment for personalized medicine, clinical informatics research and collaboration. The partnership is designed to apply advanced semantic technologies to integrate and search the Institute's data, including decades of carefully secured information related to disease presentation and progression, image data, treatment information and genetic, protein and metabolic information and information from extensive electronic medical records. Semantic technologies are the World Wide Web Consortium global standard for research data integration.

"Semantic technologies enable broad and deep data integration for public and private institutions and clinical and molecular applications for maximum flexibility," according to Stanley. "The technology is agile, enabling the integration of content according to the needs of the Parkinson's Center."

He adds that "The center may want to change its priorities and add different content. It can incorporate new data onto the network without reducing the efficiency of the whole project."

Stanley explained that IO's Sentient Informatics software platform uses "smart computation methods that let the computer do most of the work." Sentient combines artificial intelligence, advanced math and specialized scientific dictionaries to make it possible to ask mission-

critical questions across previously disconnected data sources. The platform acts as "a translator that harmonizes meanings and relationships from any language (or data source) to any other." Instead of separate data silos, it creates a seamlessly connected data network, uncovering insights hidden in the 25 years of data already accumulated.

The collaboration, which began in late 2014, has several phases that will last 28 months. Phase 1 includes fast, agile integration of 70 Parkinson's

Institute data sources. In a matter of less than five months, the objective was to provide data in a format quality suitable for interesting research. A publication is scheduled for release as proof of concept in a "top scientific journal," according to Stanley.

Phase 2 concerns deep electronic records. "It involves text mining and looking at image data," Stanley says.

For the next year, the project is developing an informatics platform framework. The Parkinson's Institute has supported clinical trials for many years. Now the data acquisition will be automated and shared in compliance with various regulations in the form of "clean, harmonized, secure data," Stanley adds.

Phase 3 will integrate records and images, while Phase 4 will provide access to a collaborative environment.

"Everybody is talking about conquering personalized medicine and big data. IO is at the cutting edge, enabling communication between pharmacy, healthcare providers and researchers," says Dr. J. William Langston, the founder and chief scientific officer of the Parkinson's Institute who, along with a dedicated group of Parkinson's disease experts, set out to create a better way to research and provide care for Parkinson's disease 25 years ago.

Stanley added, "This system will reduce costs, improve data quality, improve collaborations and make searching of patients more efficient. Gene mutation data, laboratory information and other records will be available at the point of care."

As Langston summarized in the news release about the collaboration, "By deploying the semantic technology tools and services, we are integrating our data and application resources in a powerful way that will allow us to interrogate the data and find new connections that otherwise would elude us. The solution to Parkinson's may very well reside in the data we already have in our archives. We just need to look at it in a new way and start connecting all the dots." ■

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