Walter Sujansky, MD PhD

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Summary

- A seasoned health I.T. professional with a medical degree, medical informatics training, and over 15 years of industry experience designing, building, and operating healthcare software applications and data resources.
- A successful track record of leading a data-engineering consulting firm providing services to large H.I.T. vendors, provider organizations, and government agencies.
- Capabilities and interests include biomedical data modeling, health data standards and interoperability, data analytics, product management, and software development lifecycle management.

Skills

- <u>Biomedical informatics</u>, including the modeling and analysis of biomedical data in EHRs, disease registries, and data warehouses, as well as the exchange of health data using interoperability standards and health information organizations.
- <u>Biomedical data standards</u>, including HL7 FHIR, HL7 v2 messaging, C/CDA and CCD documents, OMOP data model and analytical tools, SDTM/CDASH/ADaM, and numerous standard terminology systems (ICD-10, SNOMED-CT, LOINC, RxNorm, etc.).
- <u>Machine learning</u>, including linear/logistic regression, neural networks, and unsupervised learning techniques. Feature engineering for ML.
- <u>Modern technical environments and tools</u>, including data management systems (MySql, MS SqlServer, DataBricks), programming languages (Java, R, SQL), IDEs (Eclipse, Git), collaborative tools (Jira), and data-analytics platforms (Tableau, PowerBI).
- <u>Product management and development</u>, including all facets of product conceptualization, business modeling, requirements analysis, implementation, support, testing, and life-cycle management. Experienced in Agile and Waterfall development methods
- <u>Broad-based knowledge of the healthcare and health I.T. industries</u>, including landscape of provider organizations, payers, ancillary service providers, I.T. vendors, and trade associations.
- <u>Extensive knowledge of government policies that impact healthcare and health I.T.</u>, including HIPAA, ONC EHR Certification, CMS alternative payment models, electronic prescribing regulations, and CLIA laboratory requirements.

Work History

President and Senior Consultant Sujansky & Associates, LLC San Carlos, CA 01/2003 – Present

- Leads a healthcare I.T. consulting practice that addresses product-management and dataengineering challenges in the development of novel biomedical software applications, data warehouses, and analytic solutions. See <u>www.sujansky.com</u> for details.
- Has managed a team of up to 10 medical informatics consultants and support staff.
- Has served over 50 clients, some repeatedly, and achieved gross billings over \$15M. Clients have included EHR vendors (eClinicalWorks, McKesson), pharmaCos (Johnson and Johnson, Lilly), provider organizations (Kaiser Permanente, Amazon One Medical, Partners Healthcare), government agencies (Veteran Health Administration, ASTP/ONC, FDA), and non-profits (California HealthCare Foundation, Robert Wood Johnson Foundation).

Chief Technology Officer CA Joint Replacement Registry San Francisco, CA 02/2010 – 07/2016

- Designed the functional specifications for the first regional level-3 joint replacement registry in the United States, including specifications for data engineering, data ingestion, and data analysis. Oversaw the technical implementation, data collection, and operations of this cloud-hosted statewide resource,
- Recruited, onboarded, and helped to support 30 academic medical centers and community hospitals using the registry for quality improvement and research, including Stanford University, Sutter Health, and Providence Health. Over 100,000 patient cases were collected and analyzed in the registry.
- In 2016, facilitated the successful exit of the CJRR when it merged with the National Joint Replacement Registry.

Adjunct Professor Stanford University Stanford, CA

03/2020 - Present

- Adjunct Faculty Member, Center for Biomedical Informatics Research (part time).
- Taught over 250 graduate and undergraduate students taking courses offered by the BMIR, including BIOMEDIN 210: Modeling Biomedical Systems.
- Developed over 300 instructional slides for new lecture topics in EHRs, clinical data modeling, health data interoperability, and probabilistic reasoning.

Additional Experience

Director, Product Development	ePocrates, Inc. (mobile health)	San Carlos, CA
Director, Commercial Products	Apelon, Inc. (terminology middleware)	Alameda, CA
Director, Clinical Data Engineering	Oceania, Inc. (EHR)	Redwood City, CA

Education

Stanford University, Stanford, CA

• Earned M.D. and Ph.D. in Medical Informatics. Doctoral work addressed the integration of heterogenous clinical databases and data sources.

Harvard College, Cambridge, MA

• Earned B.A. in Economics.

Continuing Education Certification

Supervised Machine Learning: Regression and ClassificationDeepLearning.AlAdvanced Learning AlgorithmsDeepLearning.AlUnsupervised Learning, Recommenders, Reinforcement LearningDeepLearning.AlUnderstanding and Applying Text EmbeddingsDeepLearning.Al

List of publications available upon request.

- *Guest Lecturer, Biomedical Informatics 210, Stanford University.* Prepared and presented five lectures for this graduate -level course on biomedical data modeling and decision support, covering the topics of probabilistic reasoning, clinical data modeling, and health information exchange. Annually, 2020 2024.
- *To Switch or Not to Switch: A Guide for Community Clinics Considering Changing EHRs.* Presentation at California Primary Care Association Annual Conference. October, 2019.
- Open Issues in Measurement Frameworks for Interoperability Standards. Presentation at the 2019 Office of the National Coordinator Interoperability Forum Standards Measurement Workshop. August, 2019.
- The State of Interoperability and Health Information Exchange: Advancing Steadily or Treading Water? Panel Presentation at the American Medical Informatics Association Annual Symposium. November, 2017.
- *Health Information Exchange: Challenges and Methods*. 3-hour education session, American Medical Informatics Association 2015 Annual Symposium. San Francisco, CA. November, 2015.
- *The Informatics of Health Information Exchange*. 3-hour education session, American Medical Informatics Association 2012 Annual Symposium. Washington, D.C. November 3, 2012.
- Standards for Storing and Exchanging Clinical Data in Electronic Health Record Systems. 3-hour education session, American Medical Informatics Association 2010 Annual Symposium. Washington, D.C. November 13, 2010. Also presented this tutorial at the 2007, 2008 and 2009 Annual Symposia.

Other Activities and Honors

- Adjunct Faculty Member, Biomedical Informatics Research Department, Stanford Medical School. January 2020 Present.
- Co-chair, Special Interest Group on Interoperability and Health Information Exchange, American Medical Informatics Association, 2017 present.
- Member of Scientific Committee, Frontier of AI-Assisted Care Scientific Symposium, Stanford Medical School. 2019.
- Invited expert at Workshop on Exploring Legal Challenges to Fulfilling the Potential of mHealth in a Safe and Responsible Environment. American Association for the Advancement of Science (AAAS). October 6-7, 2014.
- Member of Advisory Panel to HHS Health Information Technology Policy Committee on the topic of disease registries as data intermediaries for clinical quality measures. 2013 2014.
- Member of Expert Panel for Lab Data Integration for Diabetes Care Improvement. Brookings Institution, November 2009.
- Member of Technical Expert Panel for the development of "Privacy and Security Solutions for Interoperable Health Information Exchange -- Perspectives on Patient Matching." 2009.
- Judge, Electronic Medical Record Product Awards. Towards Electronic Patient Records (TEPR) Conference. 2003-2005.

Publications

W. Sujansky W, K. Campbell. A Formal Model for the Representation of Binary Temporal Relations in Healthcare Applications and an Efficient Algorithm for Logic-Based Temporal Subsumption Testing and Pattern Matching. MedRxiv 2023. <u>https://medrxiv.org/cgi/content/short/2023.11.17.23298715v1</u>.

W. Sujansky, K. Campbell. Modeling Limitations of the Argonaut HL7 FHIR Implementation Guide: Implications for Patient Safety. Submitted to the Proceedings of the American Medical Informatics Association Annual Symposium, March 2020.

W. Sujansky. To Switch or Not to Switch: A Guide for Community Clinics Considering Changing EHRs. *California Health Care Foundation*. May 2019. (<u>https://www.chcf.org/publication/switch-guide-community-clinics-changing-ehrs/</u> accessed April 2, 2020).

W. Sujansky. Promise and Pitfalls: A Look at California's Regional Health Information Organizations. *California Health Care Foundation*. January 2019. (<u>https://www.chcf.org/publication/promise-pitfalls-californias-regional-health-information-organizations/</u> accessed April 2, 2020).

W. Sujansky, T. Wilson. DIRECT Secure Messaging as a Common Transport Layer for Reporting Structured and Unstructured Lab Results to Outpatient Providers. *The Journal of Biomedical Informatics*. Volume 54, April 2015, Pages 191–201.

W. Sujansky, D. Kunz. A Standards-Based Model for the Sharing of Patient-Generated Health Information with Electronic Health Records. *Personal and Ubiquitous Computing*. Volume 19, Issue 1 (2015), Page 9-25.

W. Sujansky. Evaluation Results from the SoCalHIE Pilot: An Implementation of DIRECT Messaging and Provider Directory Services for Health Information Exchange in North San Diego County. *California Health Care Foundation*. March 2014. (<u>https://www.chcf.org/wp-content/uploads/2017/12/PDF-EvaluationTestingHIEDIRECTMessaging.pdf</u> accessed April 2, 2020).

W. Sujansky, S. Faus, et. al. A Method to Implement Fine-Grained Access Control for Personal Health Records using Standard Relational Database Queries. *The Journal of Biomedical Informatics*. 2010 Oct;43(5 Suppl): S46-50. Epub 2010 Aug 7.

W. Sujansky, M. Overhage, et. al. The Development of a Highly Constrained HL7 Implementation Guide to Facilitate Electronic Laboratory Reporting to Ambulatory EHRs. *The Journal of the American Medical Informatics Association*. 2009; 16: 285-290.

W. Sujansky, R. Sterling, R. Swafford. Practice Management Systems for Safety-Net Clinics and Small Group Practices: A Primer. *California Health Care Foundation*. February 2009. (https://www.chcf.org/publication/practice-management-systems-for-safety-net-clinics-and-small-group-offices-a-primer/ accessed April 2, 2020).

W. Sujansky & S. Chang. The California Clinical Data Project: A Case Study in the Adoption of Clinical Data Standards for Quality Improvement. *The Journal of Health Information Management*. 2006. Vol. 20, Num. 3.

W. Sujansky. Clinical Terminologies for Data Analysis and Structured Data Entry. Book chapter in J. Silva, Ed. Cancer Informatics: Essential Technologies. 2002. Springer-Verlag, New York.

W. Sujansky. Heterogeneous Database Integration in Biomedicine. *The Journal of Biomedical Informatics*. 2001 Aug; 34(4):285-98.

W. Sujansky. A Document-Centric Electronic Medical Record System with Database-Centric Reporting Capabilities. *Toward An Electronic Patient Record, Proceedings Manual*. San Antonio, TX. 1999.

W. Sujansky. The Benefits and Challenges of an Electronic Medical Record: Much More than a "Word-Processed" Patient Chart. *Western Journal of Medicine*, 169(3): 176-83, Sept. 1998.

Jenders RA, Sujansky W, Broverman CA, Chadwick M. Towards improved knowledge sharing: assessment of the HL7 Reference Information Model to support medical logic module queries. *Proceedings of the 1997 AMIA Annual Fall Symposium*, Washington, D.C., 308-12.. Hanley & Belfus, 1997.

W. Sujansky. *A Formal Model for Bridging Heterogeneous Relational Databases in Clinical Medicine*. (DOCTORAL THESIS). April 1996.

W. Sujansky & R. B. Altman. An Evaluation of the TransFER Model for Sharing Clinical Decision-Support Applications. In James J. Cimino, Ed., *Proceedings of the 1996 AMIA Annual Fall Symposium*, Washington, D.C., 468-472. Hanley & Belfus, 1996.

W. Sujansky & R. Altman. Towards a Standard Query Model for Sharing Decision-Support Applications. *Proceedings of the Eighteenth Annual Symposium on Computer Applications in Medical Care*, Washington, DC, 325-331. 1994.

W. Sujansky & R. Altman. Bridging the Representational Heterogeneity of Clinical Databases. AAAI Spring Symposium on Artificial Intelligence in Medicine, Stanford, CA, 157-161. 1994.

W. Sujansky & R. Altman. Towards a Universal Interface to Clinical Databases. *Abstract Book of the American Medical Informatics Association Spring Congress*, p. 122. San Francisco, May 1994.

W. Sujansky & M. Shwe. The SQLX System: Generating Explanations for Clinical Rules Encoded in SQL. *Proceedings of the Sixteenth Annual Symposium on Applications in Medical Care*, Baltimore, MD, 239-243. 1992.

W. Sujansky, D. Zingmond, M. Toshiyuki, & T. Barsalou. PENGUIN: An Intelligent System for Modeling and Sharing Declarative Knowledge Stored in Relational Databases. In K.C. Lun et al., Ed., *MEDINFO 92*, Palexpo Geneva, Switzerland, 466-471. 1992.

W. Sujansky, T. Barsalou, & G. Wiederhold. Structural Semantics and Complex Objects for the Coupling of Relational Databases and Knowledge-Based Systems. *AAAI Workshop on Knowledge Base Management Systems*, Boston, MA. 1990.

W. Sujansky, T. Barsalou, L. Herzenberg, & G. Wiederhold. An Enhanced Relational Database Model to Support the Design of Flow Cytometry Protocols. Abstract in *Proceedings of AMIA Educational and Research Conference*, Joyce Mitchell, Ed., p. 30. June 1990.

M. Shwe, W. Sujansky, & B. Middleton. Reuse of Knowledge Represented in the Arden Syntax. *Proceedings of the Sixteenth Annual Symposium on Computer Applications in Medical Care*, Baltimore, MD, 47-51. 1992.

T. Barsalou, W. Sujansky, L. Herzenberg, & G. Wiederhold. Management of Complex Immunogenetics Information Using an Enhanced Relational Model. *Computers and Biomedical Research*, 24(Issue):476-498, 1991.

T. Barsalou, W. Sujansky, & G. Wiederhold. Expert Database Systems in Biomedicine: The PENGUIN Project. *AAAI Spring Symposium Series on AI in Medicine*, Stanford, CA, 14-17. 1990.

G. Wiederhold, W. Sujansky, T. Barsalou, N. Siambela, D. Zingmond. Supporting Access to Multiple Databases for Multiple Views. *Extended Abstract, NLM Biomatrix Conference Proceedings*, George Mason Univ., Fairfax VA, July 1990.

G. Wiederhold, T. Barsalou, W. Sujansky. Sharing Information Among Biomedical Applications. Presented at the SEMI Conference on Medical Informatics, Amsterdam, October 1990.

K. Law, G. Wiederhold, T. Barsalou, N. Siambela, W. Sujansky, D. Zingmond. Managing Design Objects in a Sharable Relational Framework. CIFE, Stanford University, March 1990.