

# Bill Tsay

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## Lead Software Engineer/Architect

*Software Development/Architecture Design*

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Over twenty years of rich experiences in software development, application architecture, infrastructure design, trouble shooting and project management in financial, IT, e-commerce industries and Research Institutes. The experiences are widely crossing in many areas:

- **Big Data Analytics in Hadoop, Spark, Solr platforms.**
- **Machine Learning Algorithm and Framework, System Design.**
- **Multiple years' experience in Java, Python, C/C++, Javascript, Scala etc popular programming Languages.**
- **OSGi Highly Modular Java Systems.**
- **Portal, CMS application and systems, IBM Websphere, JBoss & Weblogic.**
- **Trading settlement systems.**
- **Financial Information Transaction and Portal System.**
- **E-commerce high profile, transaction heavy web site system.**
- **Web services integration, security and single sign on.**
- **Business Process Workflow and Notification System.**
- **Enterprise Information Integration and Web Services System.**
- **Information Retrieval and Application Performance Monitoring System.**
- **SCADA, Manufacturing Data Analysis and Dashboard.**
- **Business to Business Messaging System.**
- **Application migration and performance monitoring.**

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## Key Competence

Software Development Lifecycle Management.

High Performance Team Building.

System Integration and Technical Supports.

Enterprise and Business Model Architecture.

New Product Research and Architecture.

Emerging Technologies and Solutions.

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## Certification and Affiliation

- *Splunk Certified Architect*
  - *Appian BPM Certified Designer*
  - *IBM Certified for e-business - Solution Designer*
  - *IBM Certified for e-business - Solution Technologist*
  - *IBM Certified Solution Developer - IBM WSAD*
  - *IBM Certified Systems Expert – Administration for IBM Websphere Application Server, WCS.*
  - *IBM Certified Specialist – IBM Websphere Application Server*
  - *Sun Certified Programmer for the Java 2 Platform 1.4*
  - *Member, IEEE*
  - *Member, IEEE Computer Society.*
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## Professional Experience

[www.solrup.com](http://www.solrup.com)

New York City, NY/Cupertino, CA

Principle Engineer

2016.7 – current

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www.solrup.com is a dream company established by school professor and classmates with great idea in AI software juggling probabilities of machine learning from social media and text data.

We are exploring a few opportunities such as Social Analytics that runs in clients' environment or public cloud to provide analysis and development of customer/product sentiment analysis profile.

Further application such as Social Miner that can analyze social media stream for competitor weakness and strengths for business needs.

The techniques include using Stanford NLP to process social media text messages and CRF, CNN as backend engines to analyze the events. The platform is built on top of Machine learning infrastructure, Hadoop ecosystem with spark, Cassandra, Kafka, Druid etc.

Cisco Systems Project(2017.10 - current):

DasCODE/DasDATA is a cloudified open development environment to provide a holistic integrated development experience while focusing on accelerating time-to-capability and increasing operational efficiency. We are the team to design and build platform, applications, as well as the security, integrity and manageability from an enterprise infrastructure.

Platform as a Service is the capabilities provided to the developer to deploy onto a cloud infrastructure, developer created, or acquired applications, and development environments created using programming languages and tools supported by the provider. The developer does not directly manage, or control the underlying cloud infrastructure; including network, servers, operating systems, or storage, but has control over the deployed applications, and environments.

On the other hand, DasDATA monitors all activities in DasCODE cloudified environment and leverage Big Data stack to generate notifications, reports and dashboard for the management.

As core technology, we leverage:

Karaf – A dual polymorphic OSGI container and application bootstrapping paradigms for the enterprise environment. (<https://karaf.apache.org/>)

JClouds – a multi-cloud toolkit to create cloud-specific applications with portable feature across various clouds services. (<https://jclouds.apache.org/>)

Docker - <https://www.docker.com/> to wrap up our applications and ship, deploy everywhere.

Spark, Spark Streaming - <http://spark.apache.org/> our big data engine to do large-scale data

processing for DasDATA system.

Kafka - <http://kafka.apache.org/> our messaging system to read, write streams of data from thousands of VMs running every day.

Open REST Api - <https://swagger.io/specification/> our REST API specification and framework we use to provide REST services.

There are more:

<http://flume.apache.org/>

<http://storm.apache.org/>

<http://cxf.apache.org/>

Prudential Financial Project (2017.3 – 2017.6):

The innovative fin-tech project of Prudential Financial, Advice is Prudential's vision to help customers and prospects achieve their financial goals by leveraging the modern, hybrid advisory model that contains fully automated digital advice, personal assistance via remote advisors and the proper access to in-person advisors.

Through this market place, customers with middle or lower affluence levels can access the proper information of all their life needs and offers from multiple resources of advisory channels.

As the lead of the development, the responsibilities are:

- Collaborate with technology, architecture, product management and design teams to drive outcomes with focus on enriched customer experience.
- Manage multiple task and projects simultaneously and lead technical design activities, ensures all technical hurdles are resolved and deliver high quality product roadmap.
- Conducts development life cycle, analyze and tune application performance with a focus on service/message throughput and latency.

NYU Graduate School Project (2016.8 – 2017.1)

Java Big Data Implementation, Hadoop, Spark, Spark Stream, Cassandra, Kafka, Financial Data Streaming and Scala Avro conversion with Kafka.

R Machine Learning, H2O engine, SVM, k-means, ANN Deep Learning, Text Mining, Topic Modeling and deep learning.

Platforms includes Cloudera, standalone and cluster with VMs.

All the project reports and source codes are at:

<https://github.com/billtsay/bigdataclass>

<https://github.com/billtsay/kafka-avro> (Scala Project)

<https://github.com/billtsay/final-exam>  
<https://github.com/billtsay/class-project>  
<https://github.com/billtsay/project-1>  
<https://github.com/billtsay/project-2>  
<https://github.com/billtsay/win-demo-opcua> (Python Project)

[www.splunk.com](http://www.splunk.com)

San Francisco, CA

Senior Software Engineer Lead

2011.11 – 2016.6

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Splunk is specialized in the context of monitoring large scale, distributed mission critical applications and systems. Industries use Splunk in many ways: to isolate problems, diagnose and troubleshoot issues, to monitor performance and service levels, to connect transactions across different components of the infrastructure and to provide operational insights about the application that aids in IT and business decision-making. Many of these uses would traditionally have been categorized as “Application Performance Monitoring” except that Splunk does more than just monitor the application – it also makes the data relevant to operational decision making.

My role is to architect, develop with development team in various projects. The responsibilities include

- *Information Retrieval Engine in REST web service protocol design and implementation.*
- *Java REST client API, JavaScripts (Foundation, AngularJS, NodeJS etc), UI components, ajax REST client API.*
- *Data ingestion technologies that significantly added to the bottom line of the company. From VMware add-ons, to database connectors, to manufacturing and internet of things, to event generators that simulate events from those systems.*
- *Commercial Product Splunk DB Connect allows Splunk to pull data from relational databases (<https://splunkbase.splunk.com/app/2686/>) and vice versa. With more than 50 thousand downloads from enterprise customers, it is probably the single most valuable app at Splunk.*
- *Big Data analytics, Hadoop, Hive, Solr, HBase, Cassandra with large data volume. The tasks are implemented in java and Scala.*
- *Business Analytics Design and Implementation.*
- *IoT Manufacturing SCADA dashboard and KPI implementation.*
- *Blogs I wrote for Splunk in POC projects are at <https://www.splunk.com/blog/author/btsay.html>*

[www.dnb.com](http://www.dnb.com), D&B

San Mateo, CA

Contractual Architect

2010.2 – 2011.8

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DNBi Risk Management is an easy-to-use Web-based solution that enables and view all the business information - when you want and how you want - for one set price. Flexible add-on modules to DNBi such as Online Credit Application, Account Manager and Decision Maker are also available for your convenience.

- OSGi Service Oriented Architecture – Design and Development of new service oriented architecture in all OSGi bundle forms with Apache Felix, Jboss osgi and spring DM etc blueprint containers .
- Global Decision Maker – web-based application to enable consistent, automated credit decisions across the organization, based on risk rules.
- Data Integration – cost-effectively integrate critical D&B information across diverse systems and applications, allowing faster and more precise risk decisions.
- Portfolio monitor and Risk Assessment management – A portfolio management tool that integrates customer, third part and D&B data, allowing to prioritize accounts for review and collection.

My role in this project is to architect and develop the next generation of risk management system, that is based on OSGi, SOA, web services and transactional system to provide the client and server application integration portal. The responsibilities include

- *Research and Develop the new Service oriented architecture with OSGi R4.2 and Development of OSGi services in springDM, apache felix embeded into jboss etc highly scare modular SOA systems.*
- *Technically build up the framework to support the business development team to develop the portal application, web services, ESB event driven solutions for the enterprise application.*
- *To design and architect the entire structure and architecture of risk management resided at dnb.com and work with and tutor out-source team in India to develop the business requirements.*

**www.nixle.com, Social Network**

**San Francisco, CA**

**Contractual Architect**

**2008.7 – 2009.12**

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Nixle.com, a startup, is providing a free service of receiving trusted, up-to-the-minute, neighborhood information for where you live, work, visit - or for where your family and friends are located throughout the country.

- Nixle Secure Group Private Messaging application - allows agencies and organizations to use the same trusted Nixle platform for public messaging to communicate internally via private groups. Agencies/Organizations can define custom groups and use mobile phone text messages (SMS) to keep group members up-to-date with real-time messages on any mobile phone in any location where mobile phone service is available.
- Nixle's LiveWire marketing, advertising, and promotional service - is a text messaging service allowing for immediate connection between businesses and their customers. Create effective mobile advertising, promotional, and marketing campaigns with ease.

As the principle architect, my role in this project is to build up a development team, plan, research, manage and develop the highly transactional web site nixle.com and internal portal system for the nixle.com with its vendors, partners to deliver secure, reliable messages to consumers. The responsibilities include

- *Build and lead the development team to develop nixle.com at the earliest stage. The front end of nixle.com is built with Django and Python.*
- *Technically provide the knowledge of core java, SEDA architecture, ServiceMix ESB, hibernate, groovy, grails, portal, cache and spring framework to the entire development team members.*
- *To design and architect the entire structure and architecture of website nixle.com and internal portal and data access objects using hibernate services to meet the business requirements.*
- *To design, manage and architect the highly transactional system with high capability of sms and email*

*delivery, failover and workload balanced, grid, cluster computing environment.*

**www.overstock.com, E-Commerce**

**Salt Lake City, UT**

**Contractual Lead Developer**

**2008.1-2008.6**

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Overstock.com is one of the biggest players in ecommerce industry. The projects are covering commercial web site design for more than 10 million hits per week, shopper behavior research, advanced search engine and advertising tools etc. overstock.com web site is based on the philosophy of fast data retrieval and heavy transactions. Shopper behavior research primarily studies the shopper behavior and experience within overstock.com to find out the valuable information from shopping patterns etc. Search engine is critical for the shopper to quickly search their products and services.

- advanced e-commerce
- catalog management
- promotion & pricing management
- order management (sales & purchase)
- customer management (part of general party management)
- warehouse management
- fulfillment (auto stock moves, batched pick, pack & ship)
- accounting (invoice, payment & billing accounts, fixed assets)
- manufacturing management
- general work effort management (events, tasks, projects, requests, etc)
- content management (for product content, web sites, general content, blogging, forums, etc)

My role in this project is to plan, research and develop the high transaction web site overstock.com and internal portal system for the overstock.com ecommerce retails line of business with many enhanced features, shopper behavior research, search engines etc. The responsibilities include

- *Technically provide the knowledge of core java, jda, hibernate, groovy, grails, portal and spring framework to the entire development team members.*
- *To design and architect the entire structure and architecture of website overstock.com and internal portal and data access objects using hibernate services to meet the business requirements.*
- *To foresee the future development of e-commerce high transactions line of business and provide the further web application services for the team.*

**[www.mformation.com](http://www.mformation.com), Telecom Software**

**Edison, NJ**

**Contractual Lead Developer**

**2005-2007**

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mFormation® Technologies Inc., the leading provider of mobile device management (MDM) software, has integrated its mFormation SERVICE MANAGER™ Suite and HP Automated Device Detection (ADD) software. The integrated solution enables the automated detection of device and user changes to be combined with automated, real-time, over-the-air correction of device settings and software. The combined solution enables mobile operators to automatically configure their entire device population without human intervention, dramatically accelerating data service availability and usage while reducing device configuration calls to their support desk. The objectives of web Service project is to

provide a seamless web service integration of the entire mFormation product lines to customers' external systems. The system provides the following functions

- WS-I profile compatibility.
- WS-Security User Token and Encrypted soap body message, SSL and 128-bit encryption/decryption.
- Vasp application with mm7 etc.
- Single sign on with web services and LDAP base directory.
- JBI messaging integration bus including varied binding components such as http servlet, rule based
- workflow engine, wsif external web services integration and mm7 etc.
- JSR 94 compatible rule based engine integration and data model development for rule engine to process.
- JBoss, weblogic web services migration and integration.
- JMeter web service plugin to support web service testing.

The architecture is based on WSDL 1.1 and SOAP 1.1 specification to develop the entire web service integration message bus. Many open source modules are bound to this message bus such as jsr 94 rule engine, wsif external web service invocation framework and axis 1.3 etc.

- Security services & Single Sign On – by using features from axis 1.3 that is based on pipeline design pattern with a serial of message handlers to manipulate the incoming and outgoing soap messages. These includes ws-security, user token, encrypted message etc.
- WSIF external web services invocation framework – wsif can invoke many service components with different protocol including web services, ejb, jms etc from the exposed WSDL of each component. With a revised version that we have developed, we can also invoke the services from mm7 etc.
- SOA/SCA services design and development – standardize API, service design with SCA (service component architecture) and service binding framework so that a universal service locator can locate services from varied binding protocols such as ejb, ws, hibernate, sdo etc.
- JBI – a java universal message bus development that will allow to bind service components with unique interface and to communicate with each other. This enterprise message bus is extended to serve a cross hosts messaging system with mq technology.
- JSR 94 rule based engine – provides flexible and diverse rule updates by using appropriate data models during business process evolution.
- JAX-RPC and extended axis pivot handlers – provides further opportunities to extend the capability of web services soap message manipulation for integration purpose with legacy and complicated systems.

My role in this project is to plan, research and develop the web services system for the company's existing product lines. The responsibilities include

- *Technically provide the knowledge to the entire development team members.*
- *To design and architect the entire structure and architecture of web services to meet the business requirements.*
- *To develop and maintain the entire web services project and port it to different platform such as weblogic and jboss etc.*
- *To provide and develop Vasp application with mm7 soap messaging client and server.*

- *To foresee the future development of web services and provide the further web services for the company.*
- *To develop jmeter plugin to support web services testing and security token manipulation.*
- *To integrate other systems based on customers' requirement.*

**JPMorganChase, Financial Institute**  
**Contractual Architect/Project Manager**

**NYC, NY/Houston, TX**  
**2001-2005**

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The IB Global Pipeline System functions as the aggregator and analyzer of deal across multiple products and deal stage. It captures opportunity (pre-mandated) deals and allows enrichment of LOB (Line of Business) sourced product-mandated deals. In addition, it provides the following functions

- Deal lifecycle management and revenue projection.
- Reconciliation of deals at different stages of the lifecycle
- Reporting using standard and adhoc queries.
- Non-Client administration.
- Security and access control administration, SSL, Cookie and certificates (128 bit encryption/decryption).

The architecture is based on SOA. There are six main services involved in supporting the global pipeline business process:

- Viewer services - This service allows requestors to view the appropriate information. A requestor can be a user or another application. The user can only view/edit the information based on the region coverage, industry coverage and the role.
- Maintenance services - This service is used by information owners to maintain relevant information.
- Product groups use the system to send data periodically and scrubbing data before releasing to production repository.
- Report and Query services - These services allow individuals to retrieve information in a standard or adhoc format such as pdf, spreadsheet etc. All result format are exportable via the export services.
- Import and Export services - These services allow requestors to upload or download information from and to the system.
- Reconciliation services - This service is used to reconcile information sourced from different systems.
- Single sign on – The service connects to Rx with user tracking, authentication and auditing etc.

FAMIS is a global application used to track all client-related expenses - client marketing; product marketing and mandated transactions are captured. Non-deal related expenses for revenue making business groups are also captured (where the business group is supported by FAMIS). All projects are identified by use of a globally unique project alias. Reference data from FAMIS (projects and their receivable accounts, etc.) is fed through to AP Express where they are available for selection. Once the T&Es / payment requests are 'exported' by Accounting Services they are fed into FAMIS at transaction level, where ECAG will onward charge the client, etc.

- Project Tracking – Project Tracking provided for all major project expenses, financial assistance to project managers, ensure project expenses are either expense or capitalized in accordance



with policy.

- Highlight financial risk areas in terms of budgetary control and ensure that appropriate levels of management are aware of risks, report project expenses to appropriate project managers. Provide financial assistance in developing business cases for major projects.
- Automated Expense Feed – A universal dispatch interface is built so that it accepts any kind of feeds and keeps great flexibility.
- Security Login and Single Sign On – FAMIS Security Login is a functionality that provides single login into the FAMIS system and synchronizes user password between Sybase and LDAP.
- Web Reporting System – Using Actuate 7.x to create and deploy various reports for business needs. Additionally, integrate Actuate Web with Famis Web as a seamless web application.
- Disaster Recovery and Contingency – Setting up entire backup system for Disaster Recovery and Restoration.
- Executive View – provide a web link for executives to review analysis data and organization activities.
- FSG Pipeline – A transactional system that serves the Financial Sponsor Group to track proposals, deals, and revenues and generate ad hoc reports for senior management uses.
- TMT Pipeline – Serve bankers, analysts and their managers to track revenues and status for many industry sections and regions, especially for Telecommunication, Media and Technology sectors. The report generation is using Business Objects.

My role in this project is to set up a team and deliver the project to production. My responsibility includes all development and management for the team

- To recruit and build up a development team in Houston area for developing the project.
- To design and architect the entire structure and architecture of global pipeline to meet the business requirements.
- To establish the development standards, approaches.
- To code the common framework including Presentation, MVC, Logging, exception handling, Persistence and database scroll modules, Java DAO etc.
- To build up SOA (Service oriented architecture) for registering web services to other applications.
- To perform the code review, refinement with developers and tutoring & training.
- To manage the development team, deployment of application through SIT, UAT and production processes.
- To design and architect the entire structure and architecture of Famis to meet the business requirements.
- To conduct system management and deployment procedures and aid with disaster recovery etc issues.
- To lead the team to perform the development of the entire project based on project plan, schedule and deliver the project on time through the entire software development cycle.

## **Before 2001, Canada/US Work Profiles**

Senior Consultant, Deutsche Bank, New York  
Senior Consultant, CitiBank, Tampa, FL  
Senior Consultant, Verizon, White Plains, NY  
Consulting Researcher, IBM T. J. Watson Lab., Hawthorne, NY  
Consulting Developer, IBM Toronto Lab., Toronto, Canada  
Senior Consultant, CIBC Bank, Toronto, Canada

## **Education**

Master Degree in Cybersecurity Program – CS, New York University, USA  
Master Degree in Physics Science, Tsinghua University, Taiwan.

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