**CPET 499/ITC 250 Web Systems**

**Topics in Web System**

December 2 and 4, 2014

**Topics**

* Web Services
* Cloud Computing and Services
  + NIST Definition of Cloud Computing, <http://www.etcs.ipfw.edu/~lin/CPET581-CloudComputing/2013-Spring/1-Lectures/CPET581-CloudComputing-Lect-2-CloudStandardRoadMap-2013Spring.pdf>
    - SaaS (Software as a Service)
    - PaaS (Platform as a Service)
    - Iaas (Infrastructure as a Service)
* Amazon Web Services/Cloud Computing Infrastructure Service, <https://aws.amazon.com/>
  + What is Amazon Web Services, 2:56 minutes video, <http://aws.amazon.com/products/>
  + Compute
  + Storage & Content Delivery
  + Networking & Content Delivery
  + Databases
  + Analytics
  + Application Services
  + Deployment & Management
  + Mobile Services
  + Enterprise Applications
  + AWS Support
  + AWS Marketplace
  + Additional Services
* Microsoft Azure
* Microsoft 365, <http://office.microsoft.com/en-001/business/what-is-office-365-for-business-FX102997580.aspx>
  + How Office 365 works, 1:32 minutes video, [http://office.microsoft.com/en-001/business/what-is-office-365-for-business-FX102997580.aspx#](http://office.microsoft.com/en-001/business/what-is-office-365-for-business-FX102997580.aspx)
  + Developing on the Office 365 platform, <http://msdn.microsoft.com/en-us/office/office365/howto/platform-development-overview>
* Enterprise service bus
* Windows Communication Foundation
* Service-Oriented Architecture (SOA)

**Web Services**

* Programmable, self-describing, discoverable, application-centric web-based software systems
* Can perform any kind of tasks
* SOAP (Simple Object Access Protocol), UDDI (Universal Description, Discovery and Integration), WSDL (Web Service Description Language)
* Web Service Architecture, Feb. 11, 2004, <http://www.w3.org/TR/ws-arch/>
  + [Definition: A Web service is a software system designed to support interoperable machine-to-machine interaction over a network. It has an interface described in a machine-processable format (specifically WSDL). Other systems interact with the Web service in a manner prescribed by its description using SOAP messages, typically conveyed using HTTP with an XML serialization in conjunction with other Web-related standards.]
* Definition, 2001, <http://www.w3.org/2001/03/WSWS-popa/paper13>
* W3C Web Services Specifications, <http://www.service-architecture.com/articles/web-services/world_wide_web_consortium_w3c.html>
  + SOAP
  + WS Choreography Description Language (CDL)
  + WS Choreography Model
  + Web Service Description Language (WSDL)
  + XML Encryption
  + XML Key Management Specification (XKMS)
* Web service examples
  + Stockquote
    - NASDAQ Data-On-Demand, <http://www.nasdaqdod.com/>
    - NYSE Market Data Web Services, 3:18 minutes video, <http://www.nyxdata.com/Market-Data-Web-Services>
  + Weather
    - National Weather Services, <http://graphical.weather.gov/xml/>
      * National Digital Forecast Database (NDFD)
      * Simple Object Access Protocol (SOAP)
    - OpenWeatherMap API, <http://openweathermap.org/api>
    - RestFul Weather Forecast Service, <http://www.restfulwebservices.net/Service.aspx?ID=25>
  + CRM
  + WebserviceX.NET, <http://www.webservicex.net/WS/default.aspx> (SOAP, WSDL, UDDI)
    - Stock quote, Currency converter, Global weather, …
  + RestFul Web Services, <http://www.restfulwebservices.net/servicecategory.aspx>
    - Communications, Financial, CRM, Marketing, Government, E-Commerce, Lead Verification, Data Enhancement, Utilities

IBM SaaS Resources, <http://www.ibm.com/cloud-computing/us/en/saas.html>

RESTful Web Services

* Learn REST: A Tutorial, <http://rest.elkstein.org/>
* A Guide to Designing and Building RESTful Web services with WCF, by Aaron Skonnard, Oct. 2008, <http://msdn.microsoft.com/en-us/library/dd203052.aspx>
* Microsoft Web API – the REST is done by WCF, Alexander Zejtler, <http://blog.alexonasp.net/post/2011/04/15/Microsoft-Web-API-e28093-the-REST-is-done-by-WCF-(Part-1).aspx>
* AWS REST API, <http://docs.aws.amazon.com/AmazonS3/latest/API/APIRest.html>
* Using Amazon’s Web Services with REST, <http://www.cs.usfca.edu/~brooks/S06classes/cs682/slides/amazon-printable.pdf>

Enterprise service bus

* Open source ESB, <http://java-source.net/open-source/enterprise-service-bus>
* Apache Synapse Enterprise Service Bus, <http://synapse.apache.org/>
* IBM WebSphere Enterprise Service Bus, <http://www-03.ibm.com/software/products/en/wsesb>
  + IBM WebSphere ESB 6.2 – SOA Connectivity, Video, Oct. 24, 2008, <https://www.youtube.com/watch?v=H72s78so6DM>
* Oracle SOA EBS, <http://www.oracle.com/technetwork/articles/soa/ind-soa-esb-1967705.html>
* SAP NetWeaver Technology Platform, <http://scn.sap.com/community/netweaver>
* SAP NetWeaver Process Integration as ESB, Jan. 2012, <http://itknowledgeexchange.techtarget.com/enterprise-IT-tech-trends/sap-netweaver-pi-as-enterprise-service-bus-esb/>

Microsoft

* Windows Communication Foundation (WCF), <http://msdn.microsoft.com/en-us/library/ms731082(v=vs.110).aspx>
* WCF Data Services 5.0 for OData V3, <http://www.microsoft.com/en-us/download/details.aspx?id=29306>
* An Introduction to RESTful Services with WCF, <http://msdn.microsoft.com/en-us/magazine/dd315413.aspx>

Web Services

* Web of Services, <http://www.w3.org/standards/webofservices/>
  + SOAP, <http://www.w3.org/standards/techs/soap#w3c_all>
* Web Services, <http://www.w3.org/DesignIssues/WebServices.html>
* WEbServiceX.net, <http://www.webservicex.net/ws/WSDetails.aspx?CATID=12&WSID=56>
* Online REST Web Service Demo, <http://predic8.com/rest-demo.htm>
* FedEX Web Service, <http://www.fedex.com/us/webservices/demo/>
* IBM Web Services, <http://www-01.ibm.com/software/solutions/soa/web-services.html>
* SOA and Web Services, <http://www.ibm.com/developerworks/webservices/>
* IBM Web Service Demos with WebSphere Studio, <http://www.ibm.com/developerworks/websphere/library/demos/0310_WSdemo.html>
* Windows Web Services Examples, <http://msdn.microsoft.com/en-us/library/windows/desktop/ee354195(v=vs.85).aspx>
* Amazon Web Services and Microsoft, <http://aws.amazon.com/microsoft/>

SOA (Service Oriented Architecture)

* Definition: SOA is a paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains, lines 128-129, <http://docs.oasis-open.org/soa-rm/v1.0/soa-rm.pdf>
* IBM SOA, <http://www-01.ibm.com/software/solutions/soa/>
* OASIS SOA Reference Model TC, <https://www.oasis-open.org/committees/soa-rm/>
  + Reference Model for Service Oriented Architecture 1.0, OASIS Standard, Oct. 12, 2006, <http://docs.oasis-open.org/soa-rm/v1.0/soa-rm.pdf>
* Oracle SOA, <http://www.oracle.com/us/products/middleware/soa/overview/index.html>
* Understanding Service Oriented Architecture, <http://msdn.microsoft.com/en-us/library/aa480021.aspx>
* Ch 1: Service Oriented Architecture (SOA), <http://msdn.microsoft.com/en-us/library/bb833022.aspx>
* SAP SOA Governance, <http://www.soa.com/index.php/solutions/sap/sap_soa_governance/>

Enterprise Web Services

* Oracle Web Services Manager, <http://www.oracle.com/us/products/middleware/application-server/web-services-manager-066515.html>
* SAP NetWeaver Process Integration, <http://en.wikipedia.org/wiki/SAP_NetWeaver_Process_Integration>

REST vs. SOAP, <http://searchsoa.techtarget.com/tip/REST-vs-SOAP-How-to-choose-the-best-Web-service>

JSR 109 – Implementing Enterprise Web Services, <http://help.eclipse.org/indigo/index.jsp?topic=%2Forg.eclipse.jst.ws.doc.user%2Fconcepts%2Fcjsr109.html>

* Amazon Web Service/Cloud Computing Infrastructure Service, <https://aws.amazon.com/>
  + What is Amazon Web Services, 2:56 minutes video, <http://aws.amazon.com/products/>
  + Compute
    - Elastic Compute Cloud (EC2), 4:01 minutes video, <http://aws.amazon.com/ec2/>
    - AWS Lambda
  + Storage & Content Delivery
    - Amazon S3 (Simple Storage Service), 3:08 minutes video, <http://aws.amazon.com/s3/>
    - Amazon Glacier
    - AWS Storage Gateway
    - Amazon EBS (Elastic Block Store)
  + Networking & Content Delivery
    - Amazon Redshift (data warehouse service)
    - Amazon ElastiCache
    - Amazon VPC (Virtual Private Cloud)
    - Amazon Route 53 (DNS web service)
    - AWS Direct Connect
  + Databases
    - DynamoDB
    - Amazon RDS (Relational Database Service)
  + Analytics
    - Amazon EMR (Elastic MapReduce)
    - Amazon Kinesis
    - Amazon Redshift
    - AWS Data Pipeline
  + Application Services
    - Amazon AppStream
    - Amazon CloudSearch
    - Amazon SWF (Simple Workflow Service)
    - Amazon SES (Simple Email Service)
    - Amazon SNS (Simple Notification Service)
    - Amazon SQS (Simple Queue Service)
    - Amazon Elastic Transcoder
  + Deployment & Management
    - AWS Identity and Access Management (IAM)
    - AWS Directory Service
    - Amazon CloudWatch
    - AWS Elastic Beanstalk
    - AWS CloudFormation
    - AWS CodeDeploy
    - AWS Data Pipeline
    - AWS OpsWorks
    - AWS Config
    - AWS CloudHSM
    - AWS Key Management Service
    - AWS CloudTrail
  + Mobile Services
    - Amazon Cognito
    - Amazon Mobile Analytics
  + Enterprise Applications
    - Amazon WorkSapces (desktop computing service)
    - Amazon Zocalo
  + AWS Support
  + AWS Marketplace
  + Additional Services
    - Amazon FPS (Flexible Payment Service)
    - Alexa Web Information Service