**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](http://blog.alexonasp.net/post/2011/04/15/Microsoft-Web-API-e28093-the-REST-is-done-by-WCF-%28Part-1%29.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](http://msdn.microsoft.com/en-us/library/ms731082%28v%3Dvs.110%29.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](http://msdn.microsoft.com/en-us/library/windows/desktop/ee354195%28v%3Dvs.85%29.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