

Technology Overview

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What we'll cover today

- Horizontal standards
- Mortgage technology areas
- Key types of technologies
- How they all fit together

Horizontal Standards

- TCP/IP, FTP, HTTP, WiFi, Bluetooth
 - Network and communication transport
- XML (Extensible Markup Language)
 - Data transactions over the internet
- HTML (HyperText Markup Language)
 - Web page design and formatting for browsers
- XHTML (Extensible HTML)
 - Advanced HTML built on XML standards

XML: Extensible Markup Language

- Text-based, human-readable
- Open/Close tags identify each field as data
- *Example:*
<BorrowerFirstName>Harry</BorrowerFirstName>
- Defines rules for tagging data
 - Create custom transactions
 - Use pre-defined standard transactions
 - Extend standard transactions with custom data, without “breaking” them
- De facto standard for data communications via the internet

Important XML Concepts

- DTD (Document Type Definition) and Schema
 - Define XML transaction structures
 - Schema is more recent and more advanced
- Namespaces
 - Key to data extensions – prevents custom data from different organizations from interfering
- XSL / XSLT (XML Stylesheet Language and XSL Transformation)
 - Powerful tools to transform raw XML data into structured output, or into other data formats
 - The same raw data can be transformed into multiple formats
 - web pages, PDAs, printable versions, or a data transaction to a business partner

HTML: HyperText Markup Language

- The standard for web page formatting
- Combines both content (page text) and formatting codes (bold, heading, bullets) in a single file
- Web browsers interpret formatting codes, display content
- Microsoft (in particular) has created many non-standard variants by supporting additional codes in Internet Explorer – led to browser incompatibilities in Netscape, Firefox, Opera, etc.

XHTML: Extensible HTML

- Next-generation of HTML, beyond HTML 4.0
- Based more strictly on XML coding standards
- Can be extended, just like XML, according to standardized rules
- Used for the SMART Doc Category 1 VIEW section

Key Mortgage Technology Areas

- Origination
- Servicing
- Secondary

Origination Technology

- Mortgage Application
- Marketing
- Loan Processing
- Loan Closing

Servicing Technology

- Bill collection
- Default management
- Investor reporting

Secondary Technology

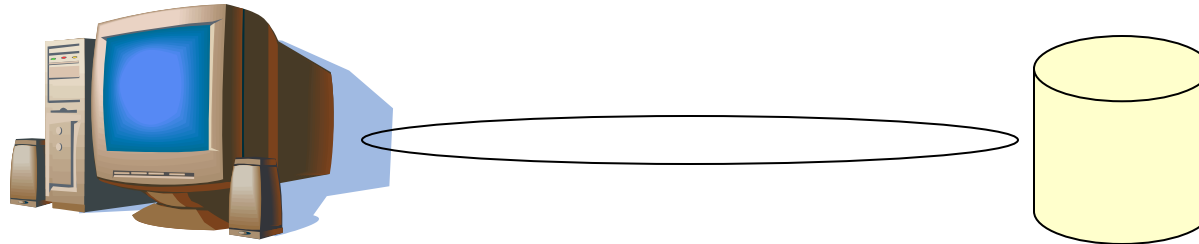
- Product and price
- Locking
- Pooling and sales (bulk and flow)
- Investor delivery

Key Types of Technologies

- Client/Server
- Web Services
- Document Imaging
- MBA Technology Initiatives
 - MISMO (XML Data)
 - eMortgage
 - SISAC (Security)

Client/Server Technology

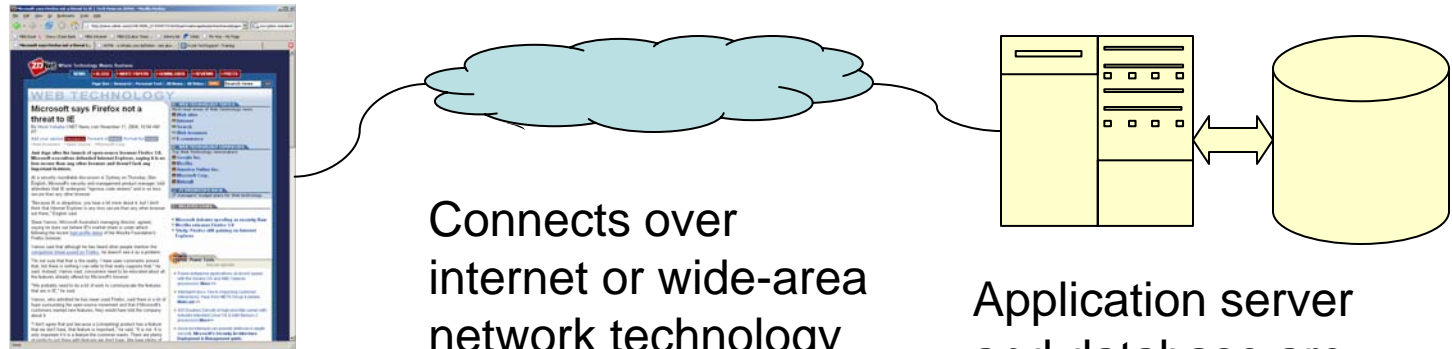
Thick Client



Requires full workstation
Application installed locally

Connects to back-end database,
usually over a local area network

Thin Client



Runs in browser

Connects over
internet or wide-area
network technology

Application server
and database are
centralized

Web Services

- Web-based application server provides specific services, upon request from remote servers
- Allows your website or web application to provide services without developing them all internally (ie, a mortgage rate calculator)
- Uses XML-based request/response

Document Imaging

- Scan paper documents into central server using high-speed sheet-fed scanners
- Users can view page images on demand at their desktops, rather than search for paper copies
- System performs OCR (optical character recognition) and full-text indexing as docs are scanned in
- Zone OCR: Converts a specific area of page into text for key index field (ie, loan number in top right corner)
- Customizable keyword indexes
- Search docs using keywords, index fields, or full text

MBA Vertical Tech Initiatives

- MISMO – XML data transactions
- eMortgages – Fully paperless mortgages
- SISAC – Secure Identity Standards

MISMO: Mortgage Industry Standards Maintenance Organization

- XML Data standards for B2B transactions
- Over 5,000 data elements defined in Logical Data Dictionary (LDD)
- Covers all parts of the mortgage process from Application, Origination and Underwriting through to Secondary, Servicing, and Investor Delivery

eMortgage Technologies: eMessaging

- Request/Response architecture
- Request: “I need a Title policy, here’s the data that goes into it”
- Response: “Title policy has been created, here is the data for creating your closing package”

eMortgage Technologies: eDocuments

- Templates (that change and evolve)
- +
• Data (from an origination system)
- =
• Merged together for presentation

SMART Doc Concept

- Template is easily presented for viewing
 - Web browser
- Data is easily extracted for downstream processing
 - XML data tags
- Template and Data electronically locked together
 - Digitally signed = tamper-evident seal

eSignatures

- Electronic signatures
 - Buyer/seller signatures
 - Common form: signing pad at checkout
- Digital signatures
 - Apply PKI digital certificate
 - Can be used for the “legal” signatures required on an electronic contract, or
 - Can be applied as tamper-evident seal to secure an electronic document
- SPeRS
 - Standards for eSignatures, consumer disclosure/consent, and records retention

eRecording

- Critical piece of the eMortgage process
- PRIA developing industry standards
 - eRecording
 - eNotarization
- Issues:
 - Legal framework
 - Technology infrastructure
 - Some requirements (ie, 100-year storage medium)
 - Industry buy-in

National eNote Registry (MERS eRegistry)

- Provides ESIGN / UETA Safe Harbor compliance infrastructure for negotiable instruments
- Identifies the Controller and Location of the Authoritative Copy of the eNote

Security Components

Identification & Authentication	<i>You are who you say you are</i>
Encryption (data, messages, web)	<i>Data cannot be intercepted and read</i>
Tamper-Evident Seals	<i>Data or eDocs cannot be modified without detection</i>
PKI (Public Key Infrastructure)	<i>Digital signatures: For legal signatures or for tamper-evident sealing</i>

SISAC: Secure Identity Services Accreditation Corporation

- Wholly-owned non-profit subsidiary of MBA
- Setting baseline industry standards for accrediting Certificate Authorities
- Goal: Interoperable PKI certificates that all meet the same baseline standards
- www.sisac.org

PKI in 60 Seconds

- PKI = Public Key Infrastructure
- Key Pairs: Each Public Key has a corresponding Private Key
- Docs encrypted with one key can be decrypted by the other key (but NOT by the same key)
- Private key stays secret, public key is... public!
 - You send docs encrypted with your private key
 - You receive docs encrypted with your public key
 - Thus: secure encryption without ever revealing your private key
- Complexity behind-the-scenes: Certificate Authorities, Certificate Policies, Certificate Revocation Lists, etc

SISAC Details

- SISAC services define minimum standards for technology, and policies and rule sets for governance of digital credentials
- Technology and governance combine autonomous and heterogeneous systems so that parties to a transaction may not be previously known to each other and must rely on a digital credential
- Allows non-affiliated organizations to transact business in a trusted environment
- *Policy and liability became the keys to these standards*

SISAC Participants

- Auditors
 - Audit Issuers for compliance
- Issuers
 - Issue and credentials life cycle management
- Subscribers
 - Credential users
- Relying Parties
 - Rely on credentials during transactions

How they all fit together

How do we choose our ESIGN and UETA solutions? What should we be thinking about?

How do we know this is the real eNote?

How do we create and process eMortgage files? How is the business data defined?



How do we know which digital signatures to trust?

How do we plug all this into the County Recorder?

Questions?

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