Upstream – How it REALLY Works
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Pilot 1 DEV Teams Work w/ API

Q3 2016

Pilot 2 Kickoff

Q4 2016

Projects Modified w/ New Participants

Live Demo @ NAR Annual

Pilot 2 DEV Work
Goal: Efficiency

Brokerage Data

Transaction Data

Parcel Centric

Goal: Standards

Business Rule Implementation

Business Rule Rationalization

Upstream API

Web API

Goal: Broker Control of Access and Economics at Listing Level

RETS Listings / MLS DD v1.5
Discovering What’s Relevant in Practice

Additional Attributes for Consideration

Real-Time Use Case for Accelerated Learning

Evolving from Simple Syndication to “Update”

Goal: Efficiency

Brokerage Data

Transaction Data

Parcel Centric

Goal: Standards

Business Rule Implementation

Business Rule Rationalization

Upstream API

Web API

Goal: Broker Control of Access and Economics at Listing Level

RETS Listings / MLS DD v1.5

#RESO16
✓ Restricted Brokerage Access
✓ Enterprise Class, High Availability
✓ Entitled Access Only
✓ No Public Facing Platform

✓ Brokers Determine Who, What, When
✓ Extends Beyond Parcel Data. Roster, Vendor, Transactions, Contacts, etc.
✓ Agreements Between Brokerage and Recipients (use, display, etc.)
✓ Optional Participation
✓ Upstream integrates into the MLS ecosystem
✓ Web, Mobile, Native

UpstreamRE is akin to the Google Drive of Real Estate Data
Upstream & RESO Standards
Standard Names

• Listing input, data storage, and delivery is natively implemented using RESO standard Data Dictionary names (v. 1.5)
• Fields not supported use names that can be changed as the Dictionary evolves
• Parcel-centric nature introduces new attributes

• RESO standard names leverage XML-world, PascalCasing conventions
• RESO evolved to adopt a JSON standard
• Upstream fully embraces JSON with Google's JSON Style Guide which states names must be camelCased, ASCII strings
Standard Names & Field Level Compliance

<table>
<thead>
<tr>
<th>PascalCasing</th>
<th>camelCasing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iphone</td>
<td>iPhone</td>
</tr>
</tbody>
</table>

"The applicant’s field name MUST identically match the Data Dictionary Standard Name when the definitions match."

Not an identical match - Therefore a failure of Field Level Compliance
RETS Layout

• Upstream implemented modified RETS delivery layout that:
  – supplemented it with enumerated collections
  – better expresses the parcel-centric design

• Upstream was responsive to the feedback loop
  – RETS layout as an alternative option, using the RESO Dictionary Platinum format.
Business Rules

• Upstream will incorporate the business rules across hundreds of MLSs.
  – There are hundreds, sometimes thousands per MLS
  – Patterns emerged

• Upstream continues to contribute to the evolution of a business rules standard in the RESO R&D workgroup
Web API

• The RETS layout and the current Web API definition works well for syndication (distribution)
• RESO and the Data Dictionary are expanding beyond MLS fields and evolving from simple syndication to “Update”
• Updating presents interesting challenges not seen in today's distribution paradigm
Web API – MLS to RETS Mapping

**MLS Statuses**
- Active Kickout
- Active Contingent
- Active Option Contract

**RESO Status**
- Active Under Contract
Web API – RETS to MLS Mapping

**RESO Status**

- Active Under Contract

**MLS Statuses**

- Active Kickout
- Active Contingent
- Active Option Contract

#RESO16
Web API – RETS to Multiple MLS Mapping

**RESO Status**

- Active Under Contract

**MLS Statuses**

- Active Kickout
- Active Contingent
- Active Option Contract
- Bumpable Buyer
- Short Sale Pending

- MLS 1
- MLS 2
Web API – Evolution to “Update”

• Designating a listing in a RESO status alone may not be enough
  – Other attributes will be needed to indicate the intended status in the MLS.

• Similar challenges must be resolved in enumerations:
  – A water source of “Private” in Upstream listing entry using the Dictionary could be “Private Co-op” or “Private/Mutual” in one of our pilot MLSs
  – A water source of “Public” could be “City Water” or “MUD Water.”
Upstream Progress - Timeline

- Development Begins
- CEO Hired
- Pilot 1 DEV Teams Work w/ API
- Pilot 2 Kickoff
- Pilot 1 Complete
- Beta Testing in Pilot 1 Markets
- Agreements Modified to Protect Participants
- Live Demo @ NAR Annual
- Pilot 2 DEV Teams Work w/ API
- Pilot 2 Complete
Upstream Progress – Pilot Markets

- MLSListings Inc.
  - Pacific Union International, Inc.
  - Keller Williams Los Gatos Estates
  - RE/MAX Gold

- NorthstarMLS
  - Edina Realty, Inc
  - RE/MAX Results
  - Keller Williams Classic Realty Northwest

- NTREIS
  - RE/MAX DFW Associates
  - Keller Williams Arlington

- RMLS
  - Coldwell Banker Bain/Seal
  - RE/MAX Equity Group
  - Berkshire Hathaway HomeServices Northwest Properties
  - Keller Williams Realty of Eugene and Springfield

- West Penn MLS Inc.
  - RE/MAX Select
  - Northwood Realty Services
  - Berkshire Hathaway HomeServices The Preferred Realty
  - Howard Hanna

Phase 2 Pilot: 7 new MLSs, 11 new Brokers and adds FlexMLS and Paragon
Upstream Progress – Pilot Vendors

- Engaged with 42 select vendors
- 20 have active teams authenticating and accessing the API
- All using Upstream API w/ Enumerations
- Implementation has taken a little as two weeks
- Live Demo at NAR Annual
- Current pace targets 100+ in Q1

- BackAgent
- Boston Logic
- Collateral Analytics
- Corefact
- Imprev
- Instanet Solutions
- Listings to Leads
- Lone Wolf Paperless Pipeline
- Real Scout
- ShowingTime
- Skyslope
- VoicePad
- Xpressdocs
• Goal is Transparency
• Look for Updates, Presentations, Q&A and more
• Good... Bad... Ugly... See Behind the Scenes
• Sign up today!

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