HMDA in FIBO:
promoting interoperability

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What is IT?

- **FIBO**: Financial Industry Business Ontology

- **FIBO Loan Content team**: an industry effort led within the FIBO standards organization, focused on defining concepts and terms used for Loans and Mortgages using OWL.
FIBO Loan Content Team Goals

In collaboration with industry participants, create and maintain FIBO Loan content for the industry to use.

- **Create and Define terms and definitions** for the characteristics and events or activities for Loans that are needed by industry participants.

- **Align new content with existing data standards** established and used by the industry.

- **Maintain existing terms and characteristics** and their relationships within the existing FIBO domains.

- **Support industry use** and implementation of Loan content.
FIBO Loan Ontology

- Terms and concepts common to all loans
- Functional details related to common operations, services and administration
Why Would FIBO Look at HMDA?

The Home Mortgage Disclosure Act requires US lenders to report on credit applications and core characteristics for fair lending analysis and demonstration of equal access to credit.

This rule has recently been revised by the US Consumer Finance Protection Bureau (CFPB), and the new data collection requirement will become effective in 2019 reporting for 2018 applications.

- New reporting required for lenders and originators in US lending
- New reporting data requirement is significantly enlarged
- Reporting includes integration across business lines and revised scope
- New rule adds quarterly reporting for large filers
Data Integration for HMDA Reporting

Lines of Business: Originations Process
- Home Equity
- Mortgage
- Commercial/Multi Family
- Other

Creates LOB-Specific Data
- Data
- Data
- Data
- Data

Rationalized Through FIBO

Forms Integrated Regulatory Report

FIBO Translation/Integration

HMDA Data File Format from Rule

Integrated LAR Report
Demo: HMDA Mapping

- HMDA mapping document—from the Rule to actionable detail
Core Loan Concepts

**Mortgage**: A LoanContract that has a SecurityAgreement where the collateral is RealEstate. Can infer into this class.
Example: Loans Data as Triples

Loan Contract

- **loan:**LoanContract -
  - data: _MC123
  - TnC lends to Jane

- **loan:**LoanContract -
  - data: _FL456
  - TnC borrows from FED

Security Agreement

- **loan:**fibo-fbc-SecurityAgreement -
  - data: _PropSecurityAgr123

- **fibo:**fn-d-plc-loc:RealEstate -
  - data: _Property123

Collateral

- **cur:**MonetaryAmount -
  - data: _650kUSD

- **cur:**MonetaryAmount -
  - data: _600kUSD

Appraisal

- **loan:**PropertyAppraisal -
  - data: _Appraisal123

Borrower & Lender

- **pty:**IndependentParty -
  - data: _Jane
  - Jane

- **org:**Organization -
  - nic: _TnC
  - Town and Country

- **org:**Organization -
  - reg: _FED
  - Federal Reserve

- **loan:**hasCollateral
  - **loan:**hasBorrower
  - **loan:**hasLender
A LoanContract that has a SecurityAgreement with RealEstate as collateral.
Challenges

- Linking to existing FIBO ontology modules

- Roles: what needs to be represented and when?
  - Town and Country Bank
  - Town and Country Bank as a lender, in general
  - Town and Country Bank as a lender on my mortgage

- Data, Documents & Reports:
  - real world vs. document world
  - information on a report vs. the report itself.

- Real world vs. Application World
  - what is genuinely part of the loans subject matter that is stable over time versus
  - what is the regulation or reporting requirement of the day

- An intriguing possibility--using SHACL
  (SHApes Constraint Layer)
Summary: FIBO Loan Ontology

- Add Loan Ontology to FIBO network of ontologies
- Goal: achieve interoperability among applications and databases for loan data
- Compliments existing XML standards (MISMO)
  - broader in scope
  - semantics vs. structure
- Driven by HMDA and a schema.org use case
- Input from a dozen or so SMEs around the world
- Generating a fair amount of interest in industry