Appraising. The Road Ahead.
Jeff Bradford, CEO
Bradford Technologies, Inc.
ACOW Spring Conference
May 17, 2019
Spokane, WA

This Story Starts With Data.

Too Much Data!

14541 Weeth Dr, San Jose, CA 95124 | Zillow
www.zillow.com › California › Cambrian Park › 95124
14541 Weeth Dr, **San Jose**, CA is a single family home that contains 2,965 sq ft and was built in 1951. ... **14541 Weeth Dr, San Jose, CA 95124** 5 beds 4 baths 2,965 sqft ...

14541
www.redf
5 bed, 4 b
on May 7,

14541
www.realtor.com/realestateandhomes-detail/14541-Weeth-Dr... ⌄
14541 Weeth Dr, San Jose, CA 95124 is a single family home ... 1748 Valpico **Dr** and ...

14541 Weeth Dr, San Jose, CA - Public Record | Trulia
www.trulia.com/homes/California/San_Jose/sold... ⌄
14541 Weeth Dr, **San Jose**, CA is a 2965 sq ft 5 bed, 4 bath, ...
//www.trulia.com/homes/California/**San_Jose**/sold/7670227-**14541-Weeth-Dr**-S...

14541 Weeth Dr San Jose, CA 95124 - Biza...
www.bizapedia.com/addresses/1454...
There are 3 companies that have an addr... **14541 Weeth Dr San Jose, CA 95124**. The companies are Bradford Techn... Inc, E... Guglielmo Winery Inc, ...

14541 Weeth Dr San Jose, CA 95124 Property Record
www.homes.com › Home Values › California › San Jose
Property record and home value information for **14541 Weeth Dr**, CA **95124**. $1,320,6... # 100005252774 - 0 photos - 5 bedrooms - 4 bathrooms - 2965 sq. ft. ...

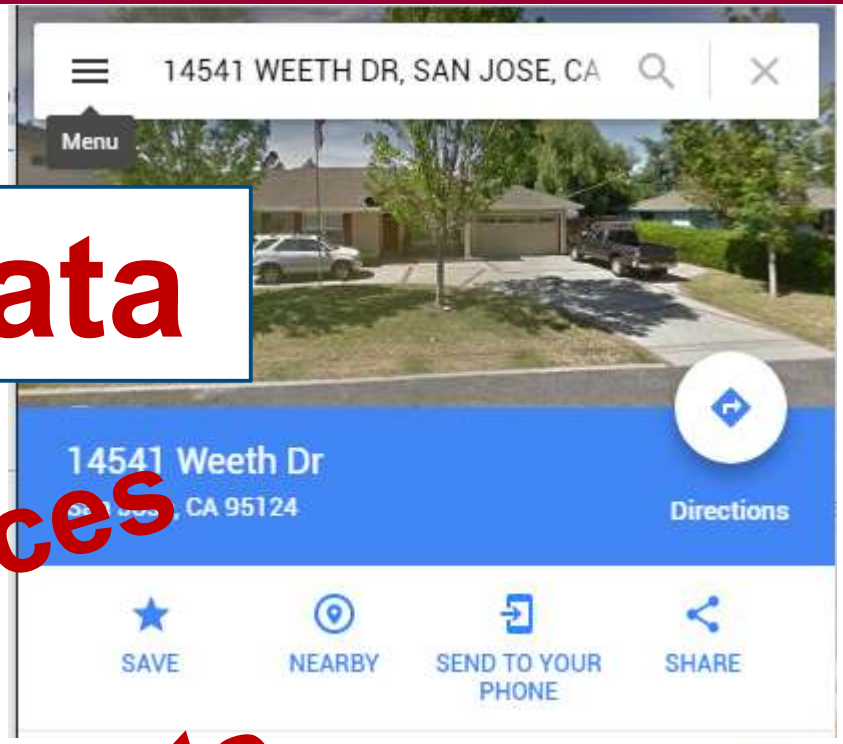
14541 Weeth Drive, San Jose, CA 51... | Homesnap
www.homesnap.com › Bay Area › San Jose...
14541 Weeth Drive is ... about $1,015,200 and is located in **San Jose**, CA. This home has 5 bedrooms, ...

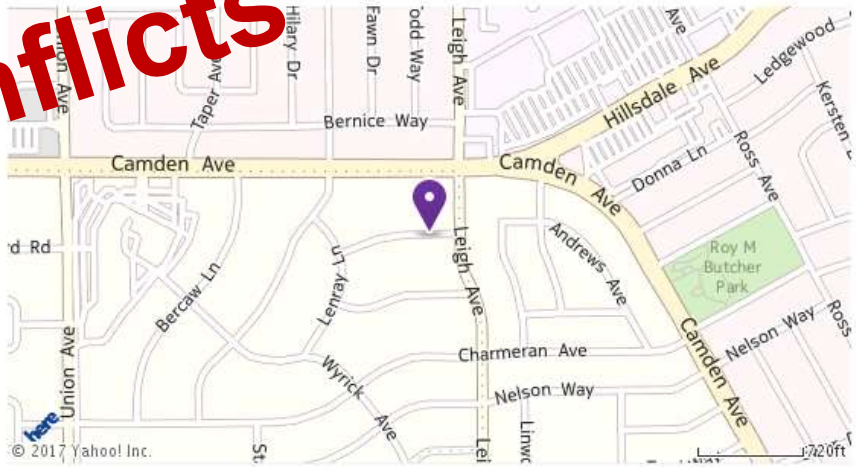
14541 Weeth Dr, SAN JOSE, CA - Owner: Jeffery J & Julie M ...
www.arivify.com/property/search/yk127CQIW ⌄
Property record for **14541 WEETH DR**, **SAN JOSE**, CA which is owned by Jeffery J & Julie M ...
14541 Weeth Dr San Jose, CA 95124 $ 520,149. Owner Name: Jeffery J & Julie ...

Too Much Data

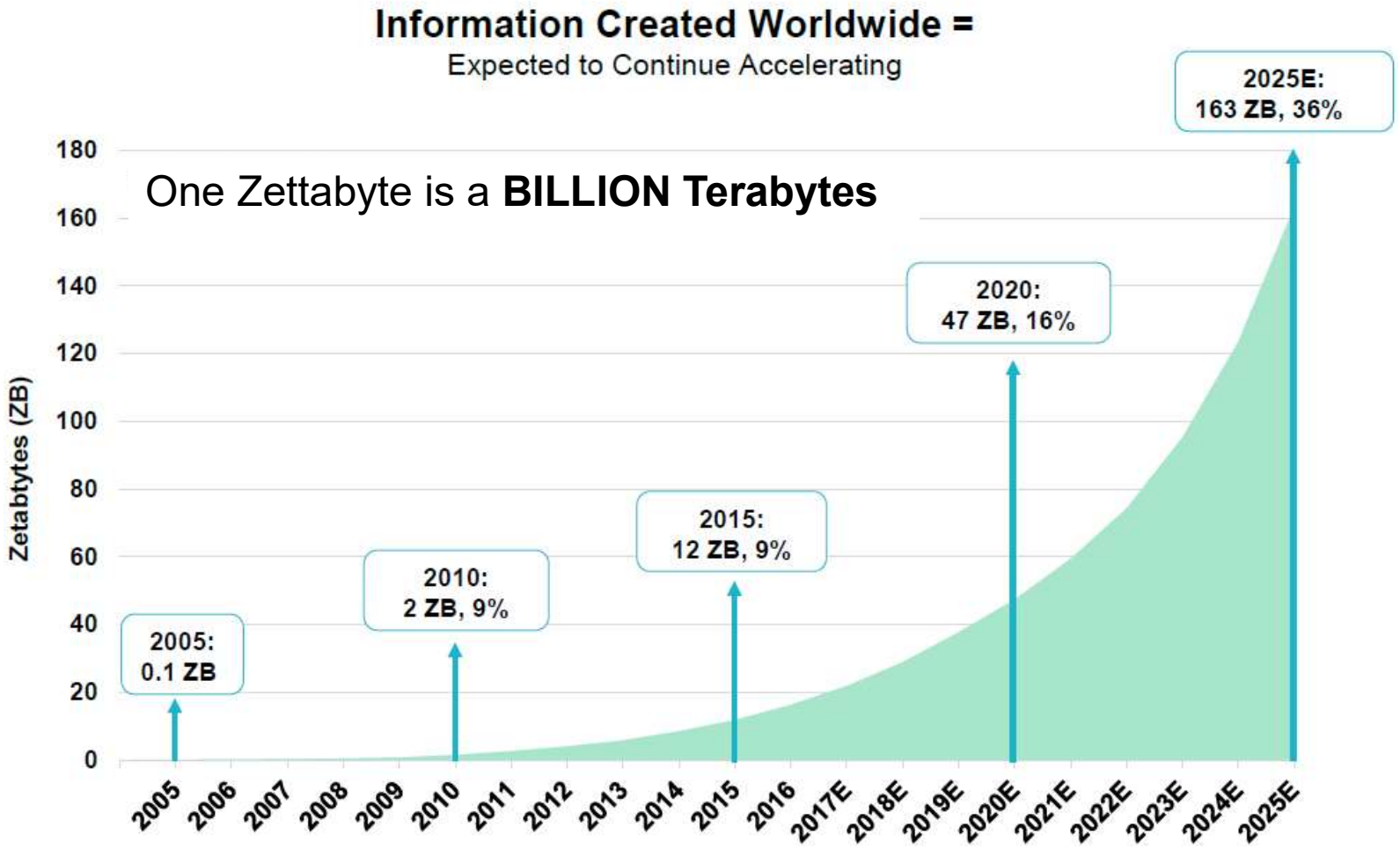
Too Many Sources

Too Many Conflicts





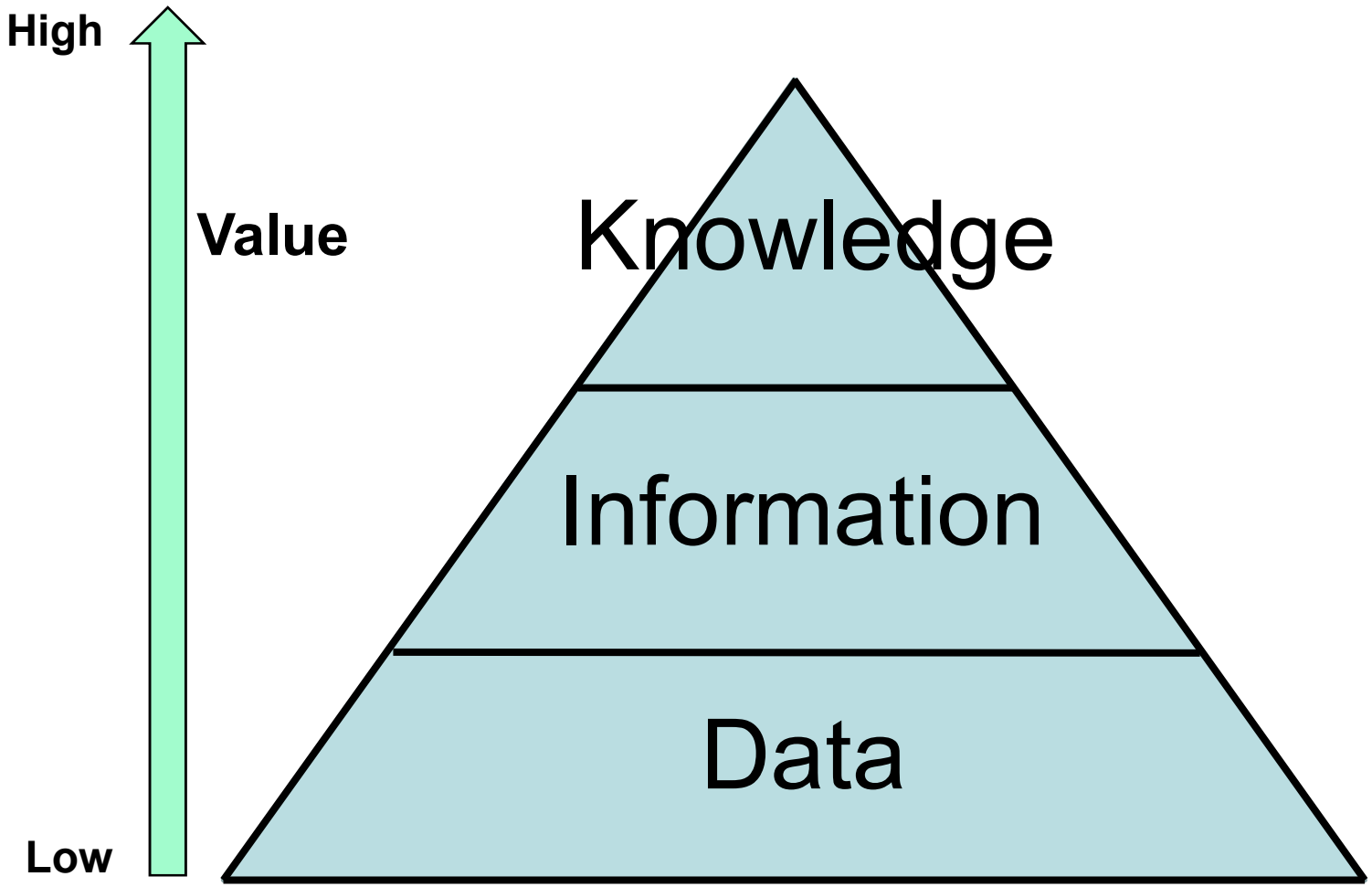
Data Worldwide is Exploding



Everyone is Drowning in Data

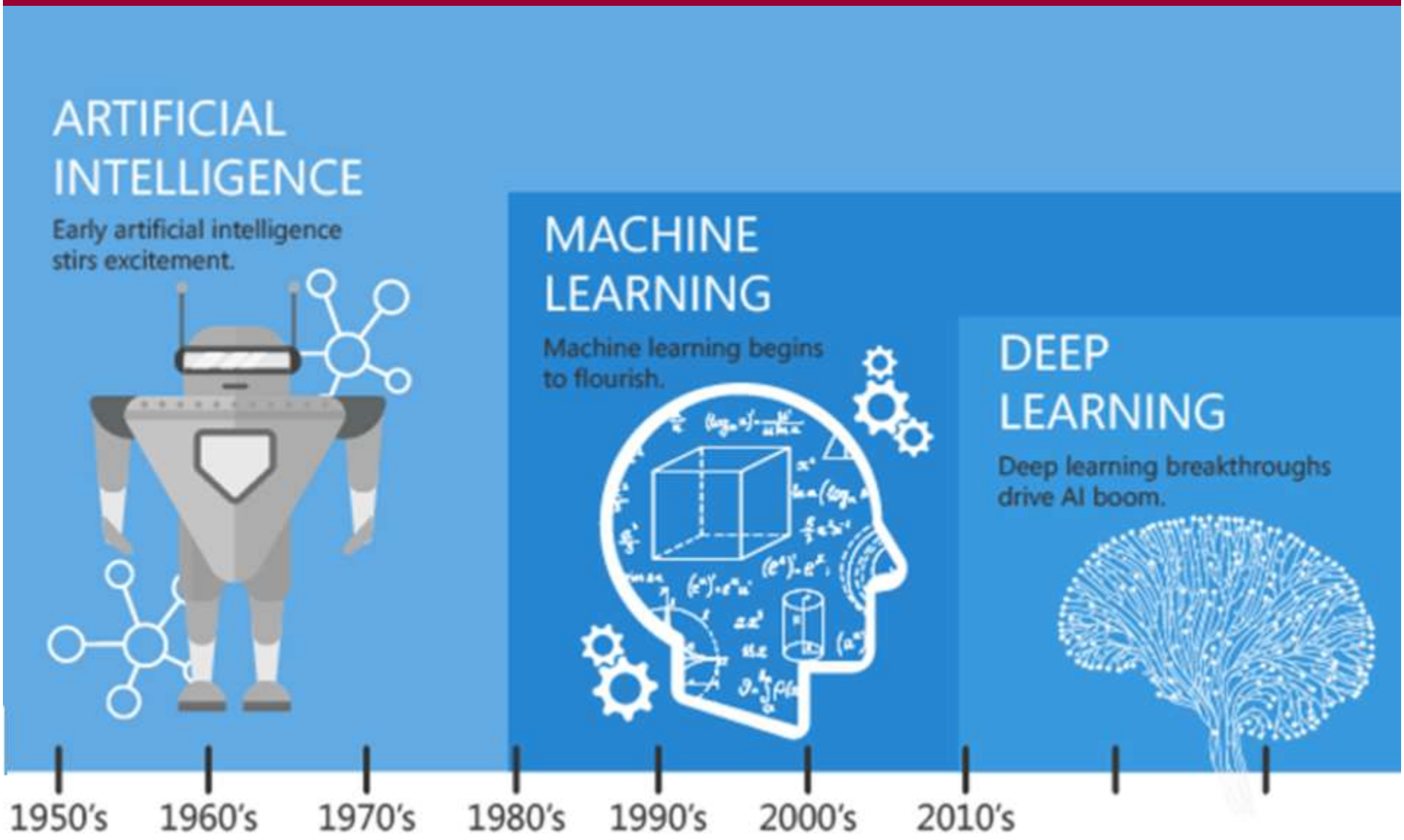
"We are drowning in data, but starving for knowledge!"

(John Naisbitt, 1982)

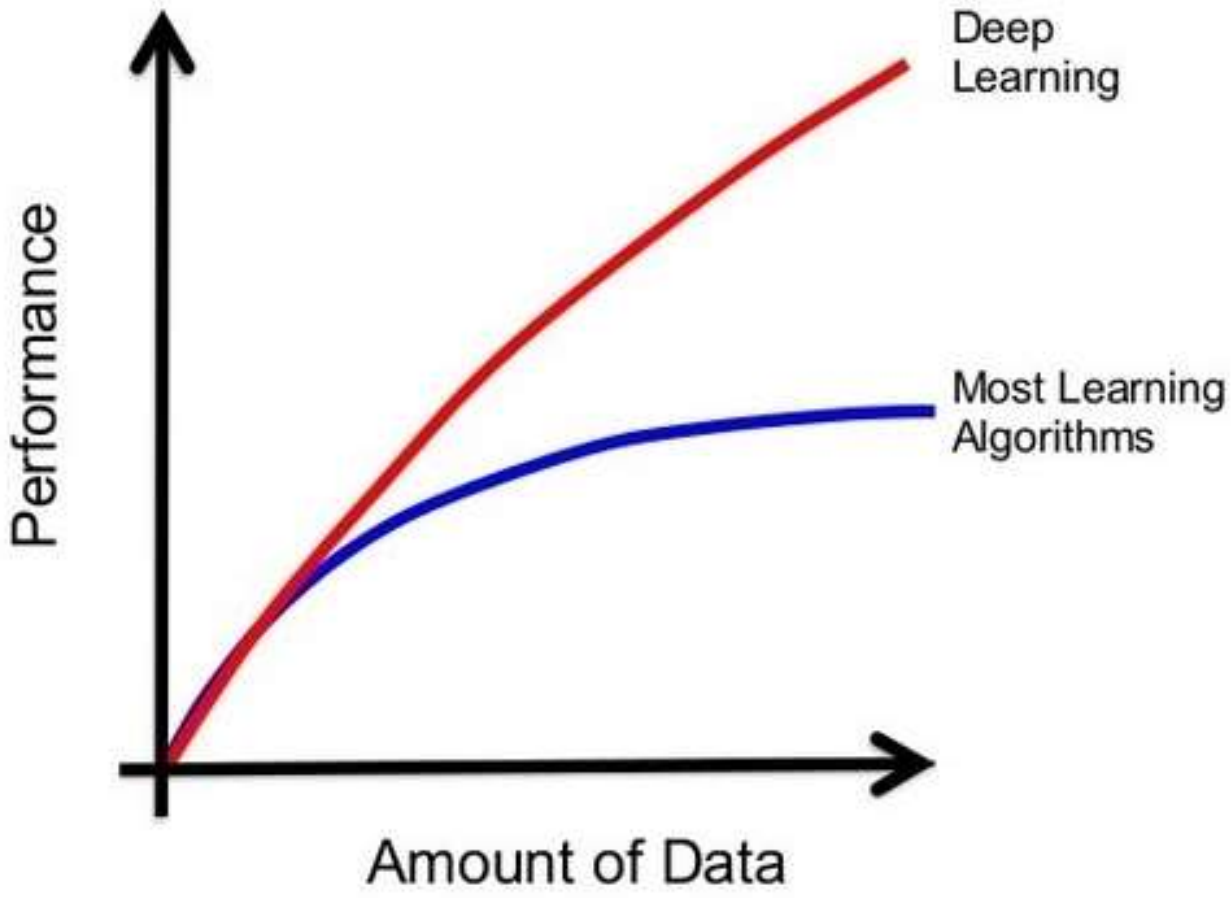

High
Value
Low
Knowledge
Information
Data

This is where Artificial Intelligence enters the story

SOCIAL
NETWORKS
PATTERN
ECONOMY
MACHINE
CLUSTER
E-MARKETING
COMMUNICATION
MARKETS
ADVERTISING
PROMOTION
SOCIAL
COMPUTER
SOCIAL MEDIA
SERVICES
TARGET
CONSUMER
CONSUMER DEMAND
MULTIMEDIA
NETWORK
PROJECTS
ORGANIZATION
WEB MARKETING
APPS
STATISTICS
DEEP
LEARNING
ALGORITHMS
DATA
MINING
ADVANCES
MODEL
ARCHITECTURES
MACHINE
LEARNING
BRANDS
SOLUTIONS
BUSINESS
VISION
STATS
PLANNING
WEB SERVICES
WEB DEV
BRAND
BIG
DATA
STRATEGY
WORLDWIDE
BUZZ
ORGANIZATION
BEHAVIOUR
PRO
PRICING
RESEARCH
NEXT GENERATION
PLANNING
MEDIA
MOBILE
SCIENCES
INFORMATION
SOCIAL NETWORKS
DIGITAL
#84517548


ARTIFICIAL INTELLIGENCE
Early artificial intelligence stirs excitement.
MACHINE LEARNING
Machine learning begins to flourish.
DEEP LEARNING
Deep learning breakthroughs drive AI boom.
1950's
1960's
1970's
1980's
1990's
2000's
2010's

Big Data and Deep Learning



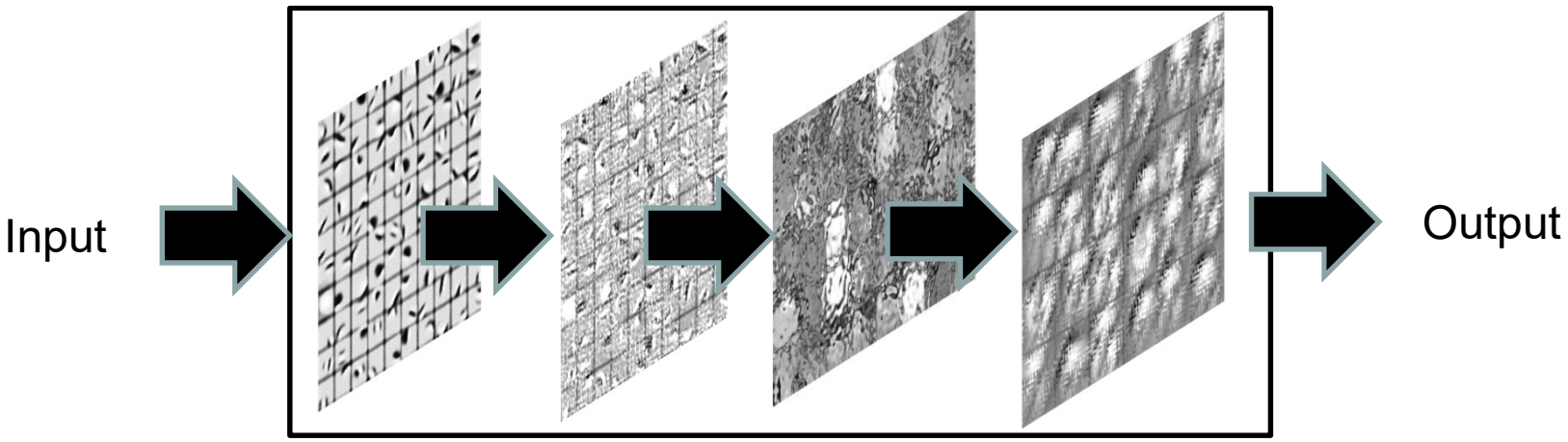
What is Deep Learning?

Deep Learning is a
computer program that can be trained.

It has the ability to learn!

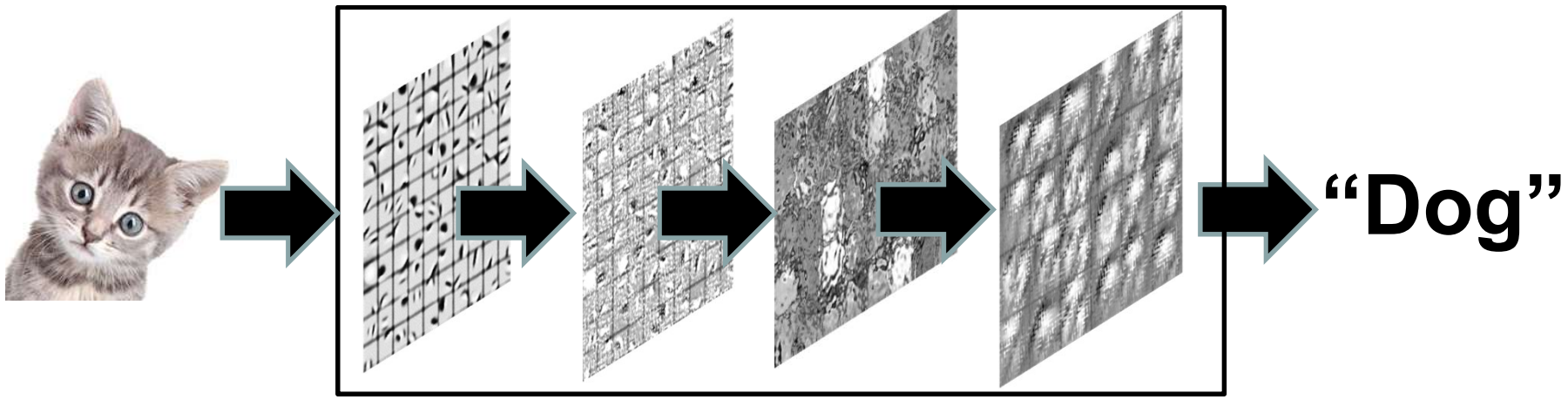
This is How Deep Learning Works

It learns in layers.
This is a four layers deep learning model



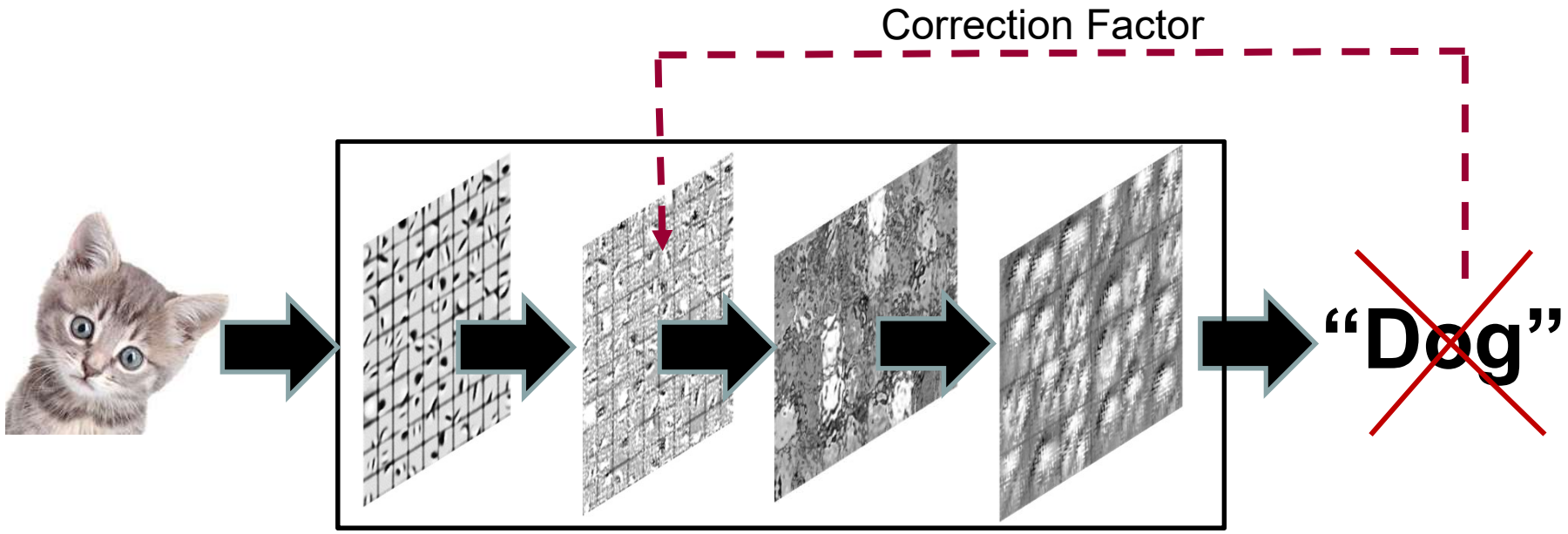
This is How Deep Learning Works

Lets teach it to recognize a cat



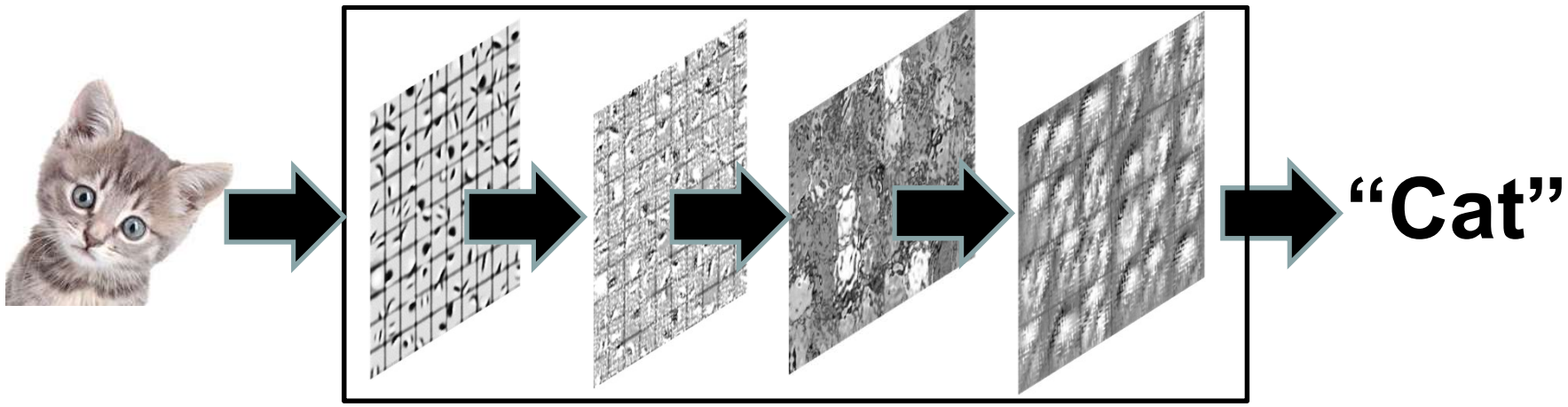
This is How Deep Learning Works

It starts to alter itself – it “learns”



This is How Deep Learning Works

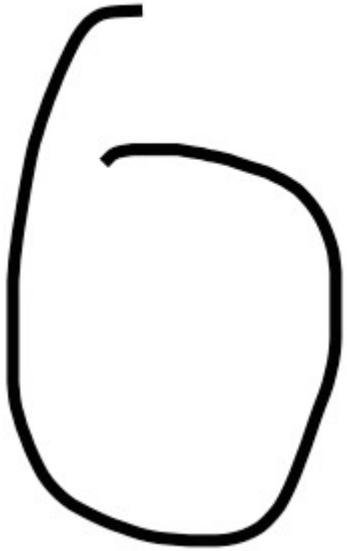
With enough training,
it starts to recognize all cats



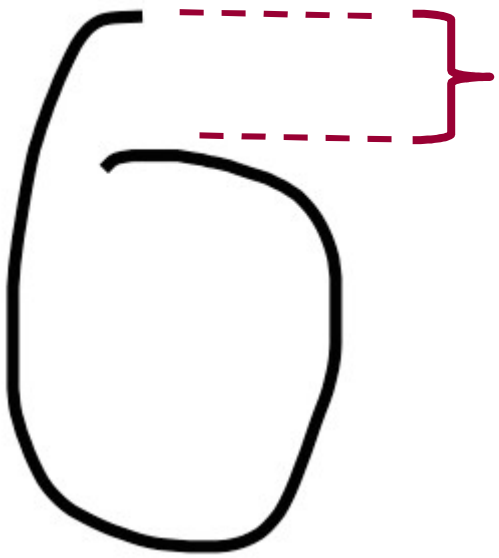
Recognize Handwriting Digits

Try to recognize this

Is this a 6 or a 0 ?



Is this a 6 or a 0 ?



This gap “feature” in the image takes considerable programming to decide if the digit is a six or a zero

Deep Learning Training

Show it many images of handwritten 0s and 6s so it “learns” what an acceptable gap is.

This is called supervised training, requiring little guidance from the programmer.

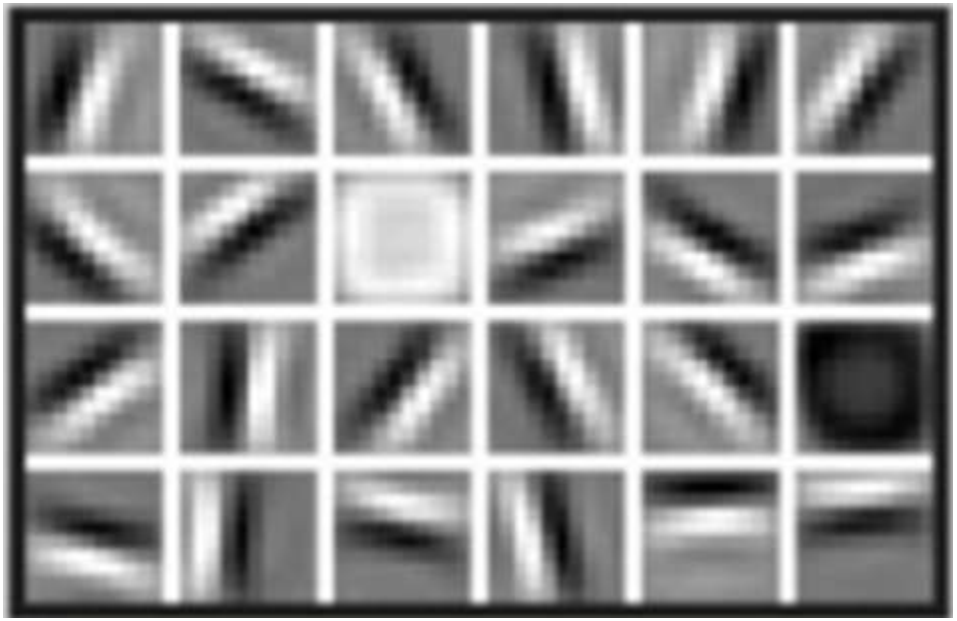
Training Data

Facial Recognition

Facial Recognition

Layer 1: The computer identifies pixels of light and dark

Facial Recognition



Layer 2: The computer learns to identify edges and simple shapes

Facial Recognition

Layer 3: The computer learns to identify more complex shapes and objects

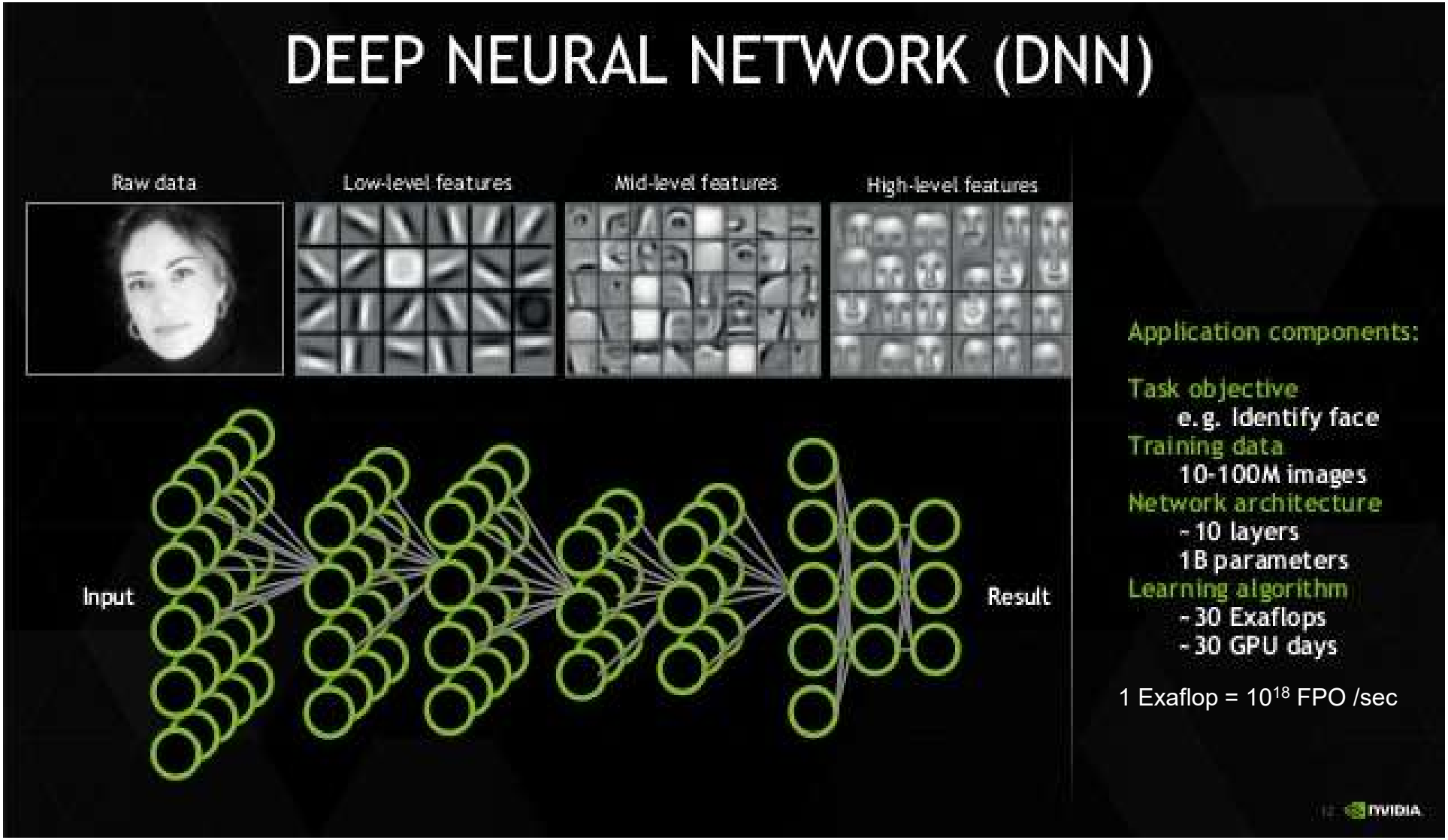
Facial Recognition

Layer 4: The computer learns which shapes and objects can be used to define a human face

Training Dataset - ImageNet

- 15,000,000 Images
- 22,000 Categories
- 48,000 people labeled the images (crowdsourcing)

Facial Recognition



“A man riding a wave on top of a surfboard”

“A group of people flying kites on the beach”

SMART

"a bus parked on the side of the beach"

kite: 99%
kite: 97%
kite: 82%
kite: 90%
kite: 85%
kite: 54%
kite: 92%
person: 76%
person: 54%
pers
person: 97%
person: 86%
person: 99%
person: 99%

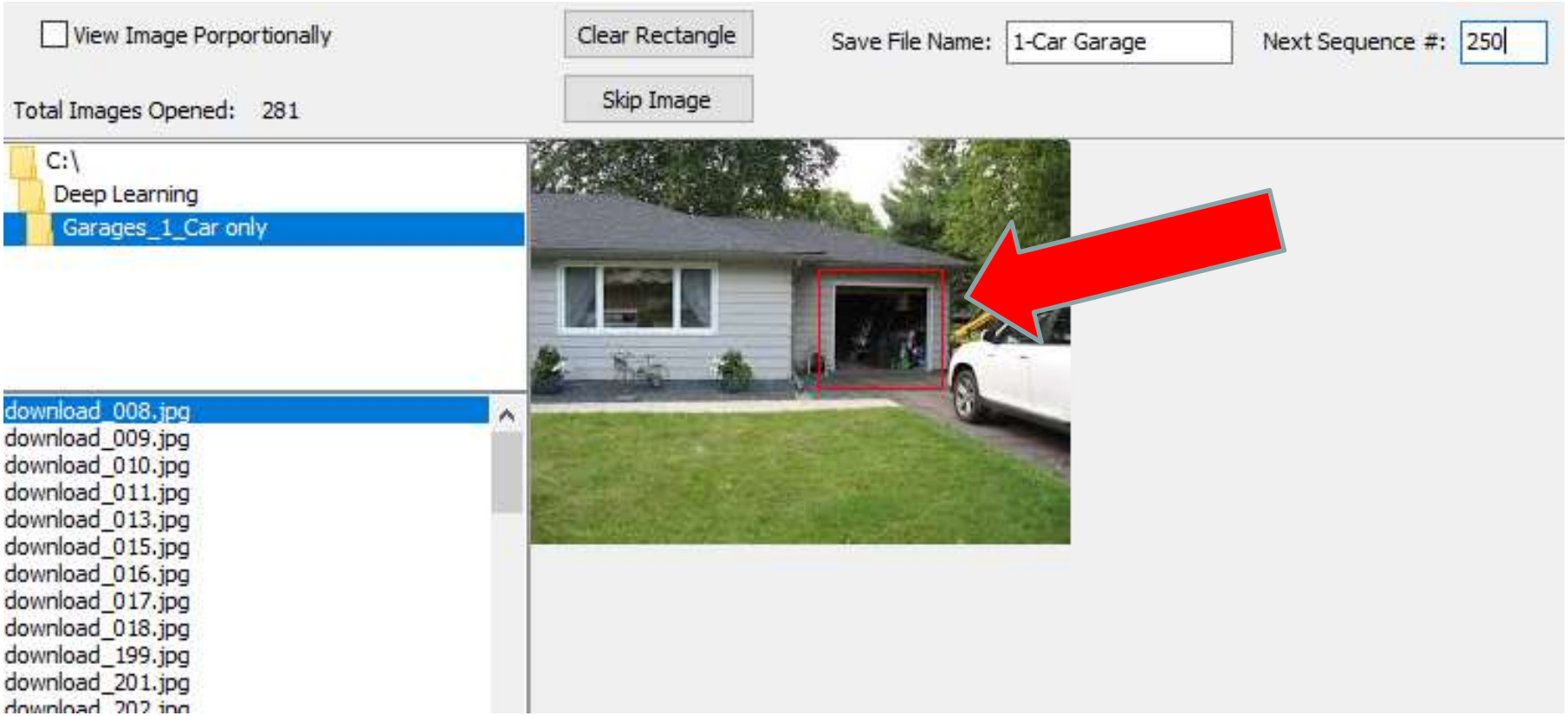
Our Deep Learning Projects

Identify & Recommend Comps

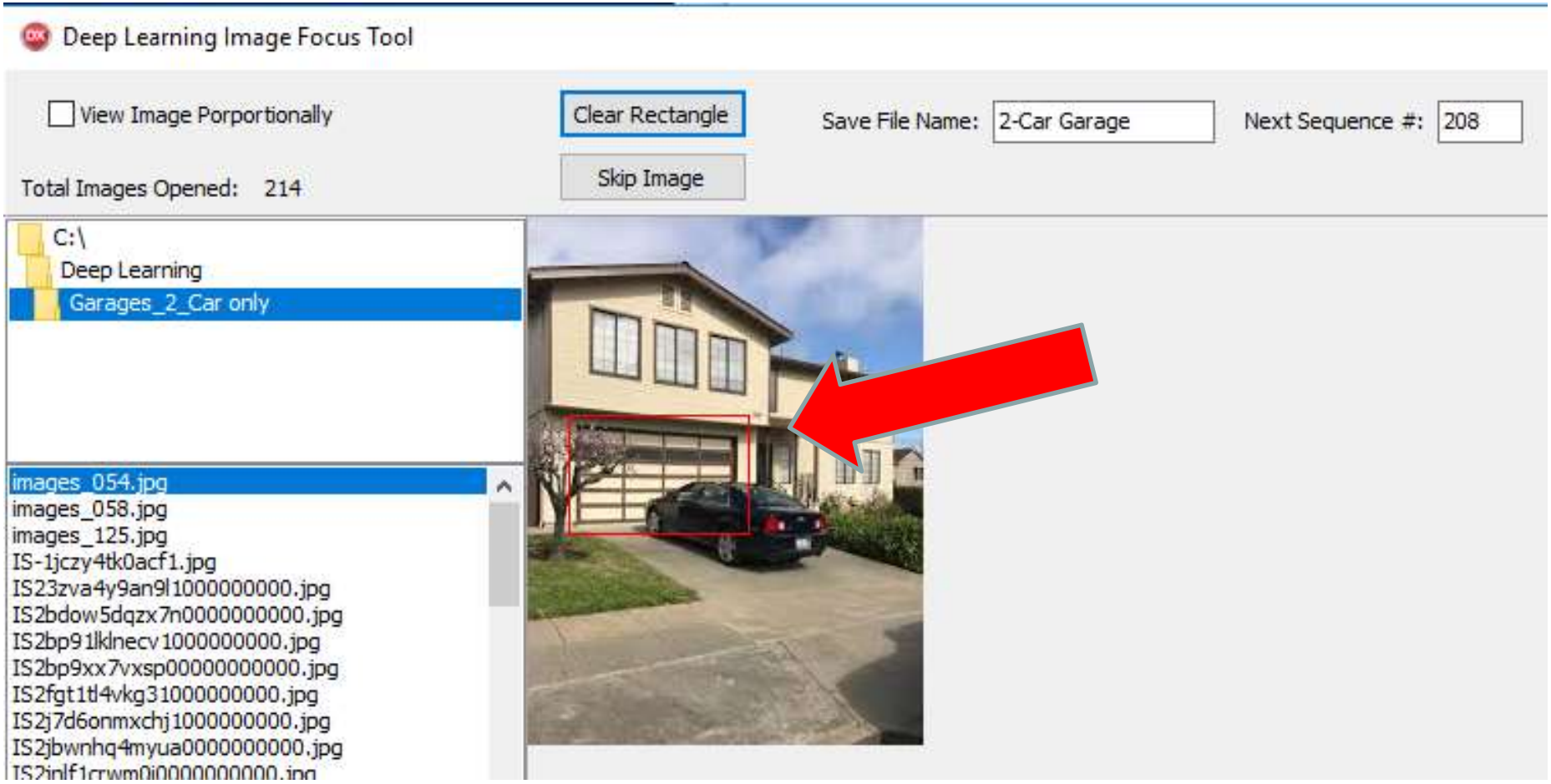
Subject

Possible Comp

We trained it on 1-Car garages



We trained it on 2-car garages



Sample Training Images

Garage Recognition Results

Garage Recognition Results

Garage Recognition Results

Garage Recognition Results

Garage Recognition Results

Garage Recognition Results

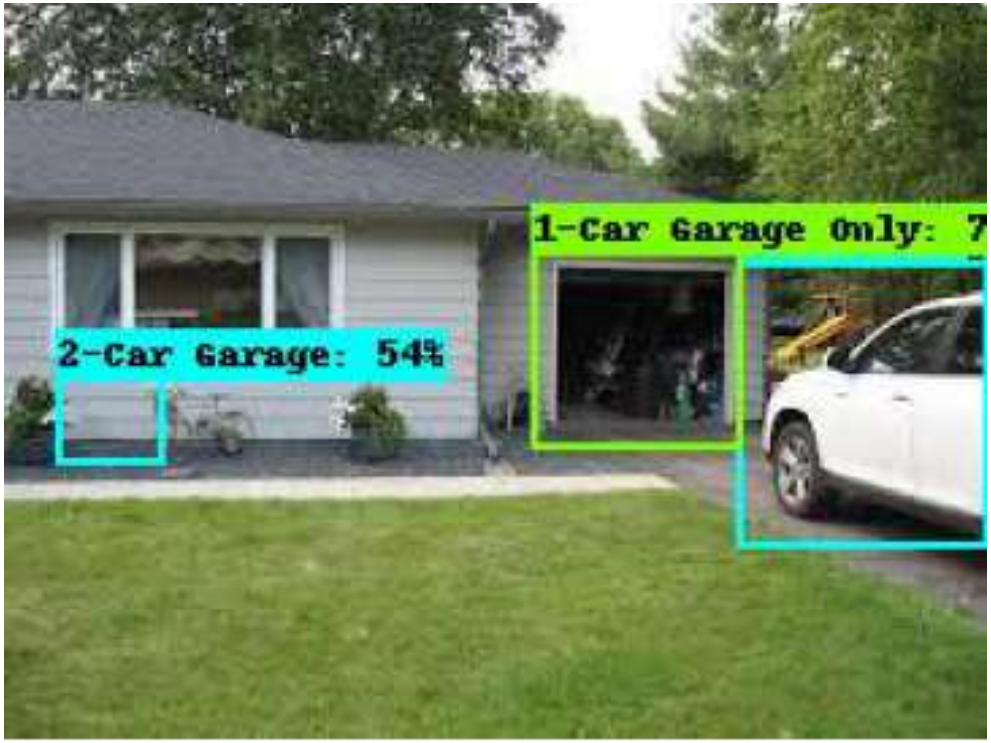
Garage Recognition Results

Garage Recognition Results

Garage Recognition Results

Garage Recognition Results

Garage Recognition Results



Garage Recognition Results

Garage Recognition Results

Identify Visually Similar Sales

Results of Visual Similarity

- ✓ Same 2 car garage
- ✓ Same roof tiles/angle
- ✓ Same color
- ✓ Same drive way
- ✓ Same landscaping
- ✓ Same rock siding
- ☒ 1 story vs 2 story. Oops!

Results of Visual Similarity

Subject

Your New Virtual Assistant

Deep Learning is Everywhere

Self-Driving Car

ALEXA

Robotics

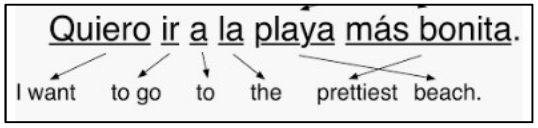
Folding Clothes

Medical

Writing articles

Naturalism and decision for the majority of Arab countries' capitalide was grounded by the Irish language by [[John Clair]], [[An Imperial Japanese Revolt]], associated with Guangzham's sovereignty. His generals were the powerful ruler of the Portugal in the [[Protestant Imminemers]], which could be said to be directly in Castonese Communication, which followed a ceremony and set inspired prison, training. The emperor travelled back to [[Antioch, Perth, October 25|21]] to note, the Kingdom of Costa Rica, unsuccessful fashioned the [[Thrales]], [[Cynth's Dajoard]], known in western [[Scotland]], near Italy to the conquest of India with the conflict. Copyright was the succession of independence in the slop of Syrian influence that was a famous German movement based on a more popular servicious, non-doctrinal and sexual power post. Many governments recognize the military housing of the [[Civil Liberalization and Infantry Resolution 265 National Party in Hungary]], that is sympathetic to be to the [[Punjab Resolution]] (PJB)[http://www.humah.yahoo.com/guardian. cfm/7754800786d17551963e89.htm Official economics Adjoint for the Nazism, Montgomery was swear to advance to the resources for those Socialism's rule, was starting to signing a major tripad of aid exile.]]

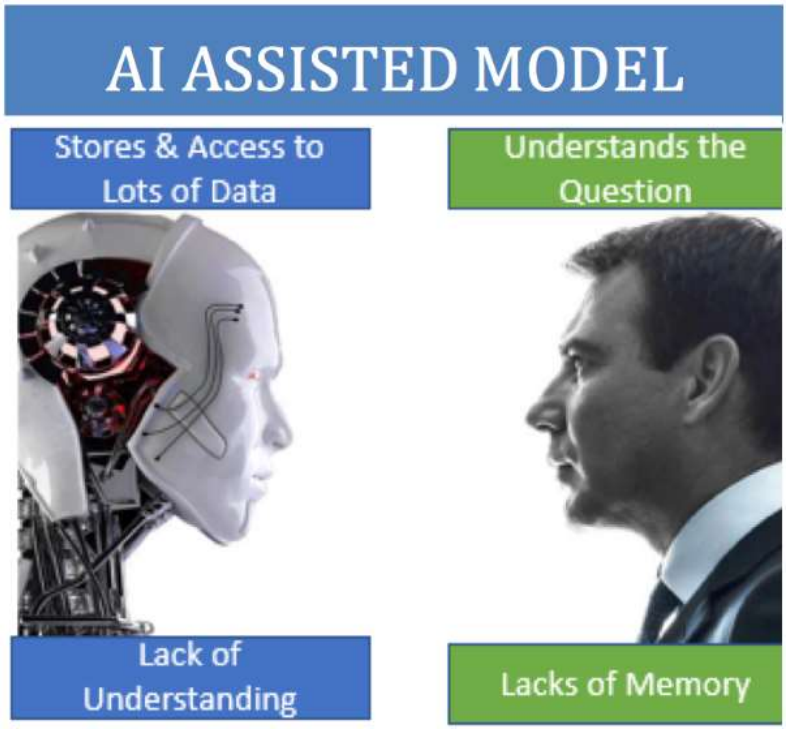
Translation



Agriculture

Describing photos

Deep Learning – Your Assistant



- ✓ Has to be trained
- ✓ Has limits
- ✓ “AI-Assisted” decision making

Appraisal Modernization

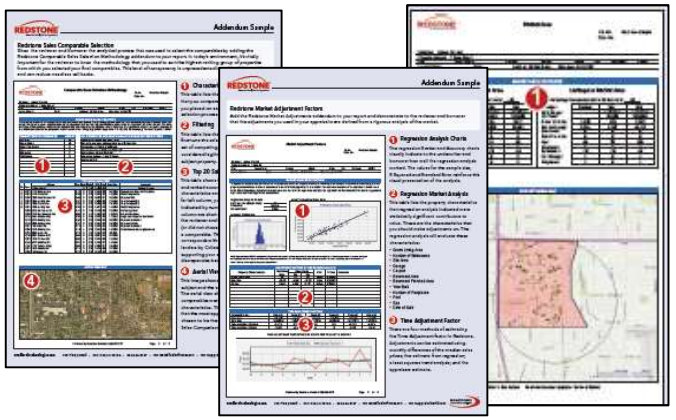
This is a Hard Working Appraiser

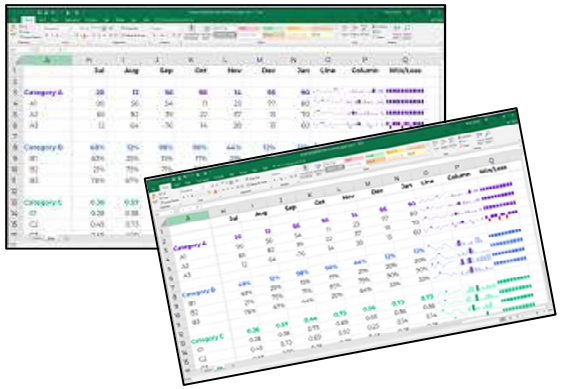
He Carefully Inspects & Measures

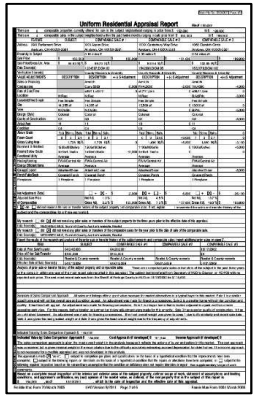
MLS

Public Records

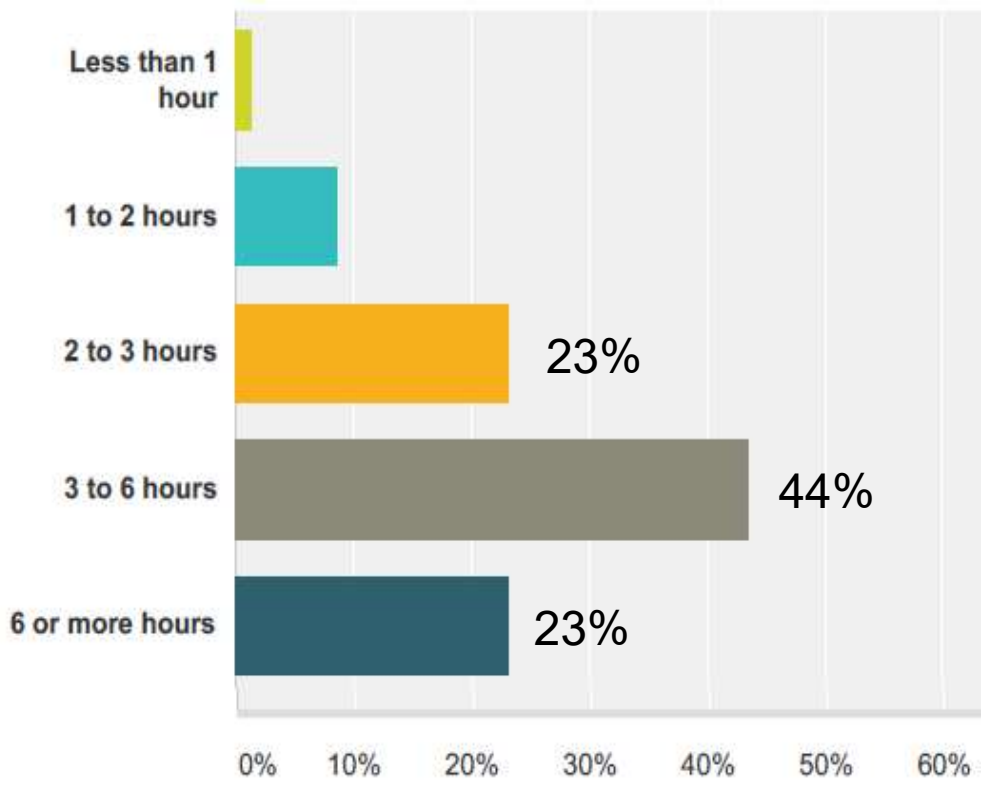
Analyzes & Supports Conclusion







Quality comes before Speed



Fannie Mae CEO:

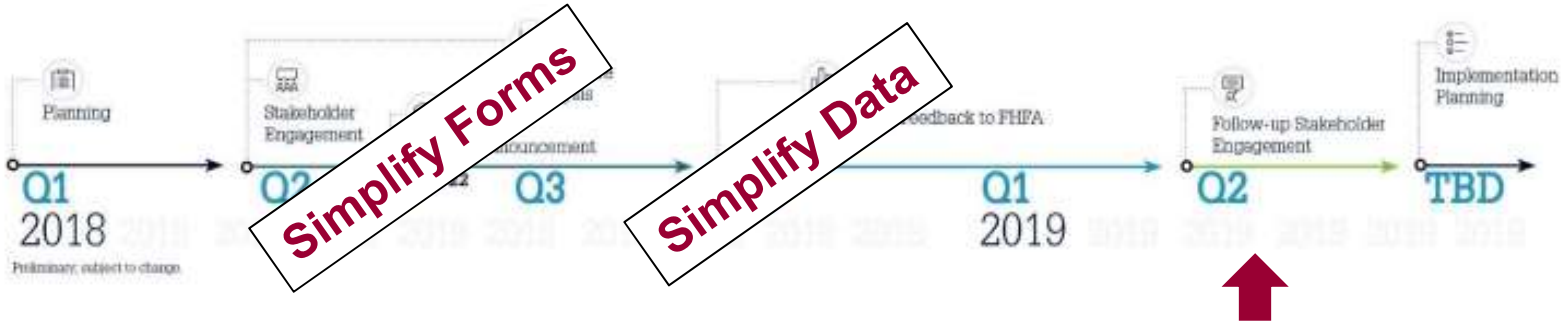
"This appraiser should be at his desk.

Not in the field with a measuring tape!"

- August 2017

Appraisal Modernization

Three Year Initiative to Improve Collateral Valuations



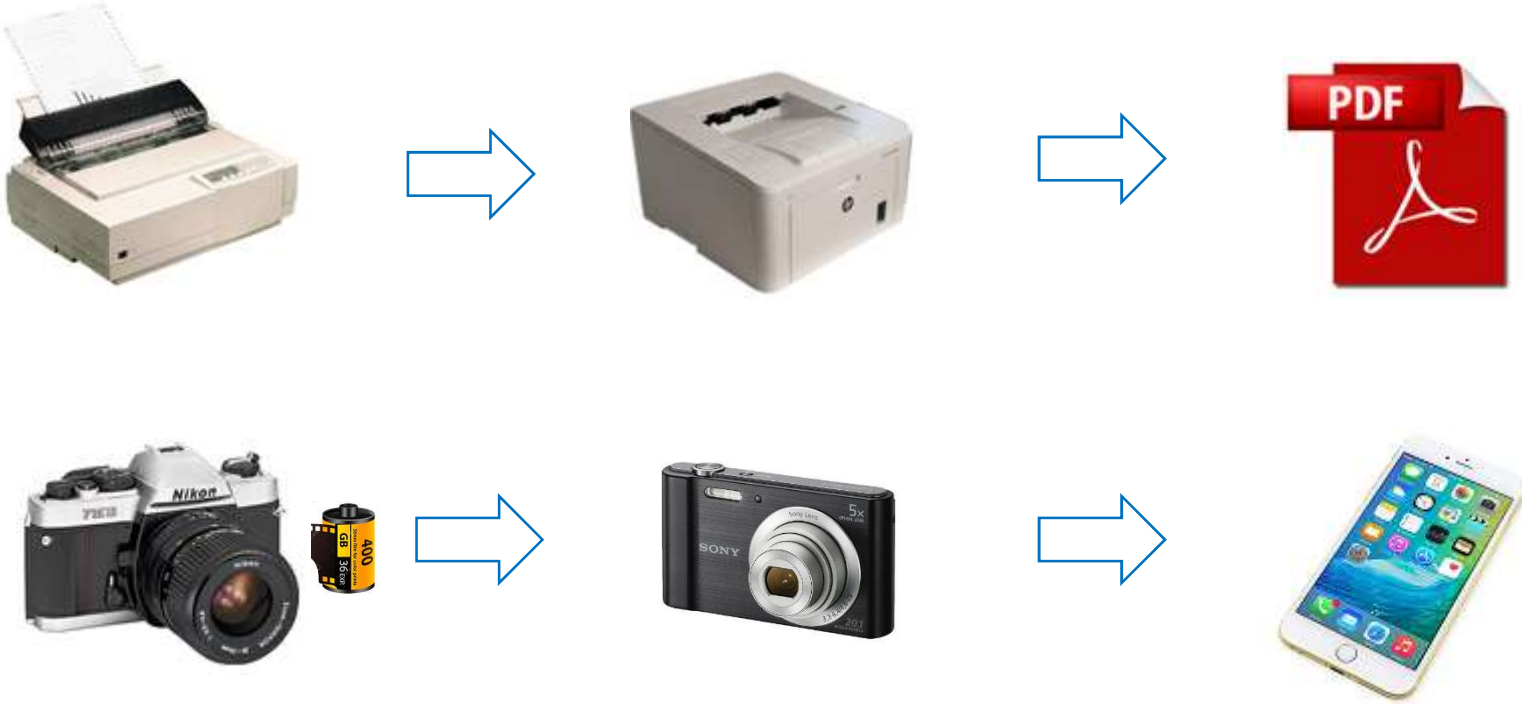
UMDP
UNIFORM MORTGAGE DATA PROGRAM

Fannie Mae FreddieMac

Fannie Mae and Freddie Mac will update appraisal dataset and forms

CHANGES AHEAD!
SUCCESS
ACTIVITIES
IMPROVEMENT
FOCUS
MODEL
BUSINESS
PROCESS
KNOWLEDGE
MANAGEMENT
IMPLEMENTATION
RESISTANCE
EMPLOYEES
VALUES
MADE
STRATEGY
BEST
PEOPLE
IMPROVE
NEW
MANAGE
REQUIRED
EFFECTIVELY
CHANGES
APPROACH
ENVIRONMENT
SUCCESSFUL
WORK
STRUCTURE

Change Driven by Technology



Change Driven by Regulations

Home Valuation Code of Conduct (HVCC)

Since it took effect May 1, 2009, the Home Valuation Code of Conduct (HVCC) has generated significant commentary among real estate professionals, appraisers, and lenders—as well as plenty of uncertainty over exactly what the agreement does and does not allow.

The HVCC is a set of guidelines to curb inaccurate appraisals and to ensure an arm's length relationship between the lender making a loan and the appraiser who assigns a value to the house. It also sets forth a process for addressing incidences in which appraisal misconduct is suspected.

01 Individuals cannot have a direct or indirect interest, financial or otherwise, in the property or transaction. To ensure compliance with these requirements, appraisals must be ordered through the established centralized process, which uses an approved Appraisal Management Company (AMC) to select and engage the appraiser.

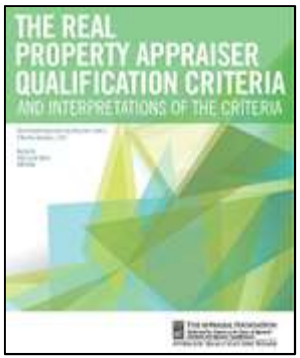
02 AMCs ensure that only qualified appraisers are approved and that they have the necessary education, expertise, and competence required to perform appraisals

03 No member of sales, loan production staff, or management may directly contact an appraiser in connection with any current or proposed appraisal engagement or loan transaction.

Dodd-Frank

THE APPRAISAL FOUNDATION

Authorized by Congress as the Source of Appraisal Standards and Appraiser Qualifications

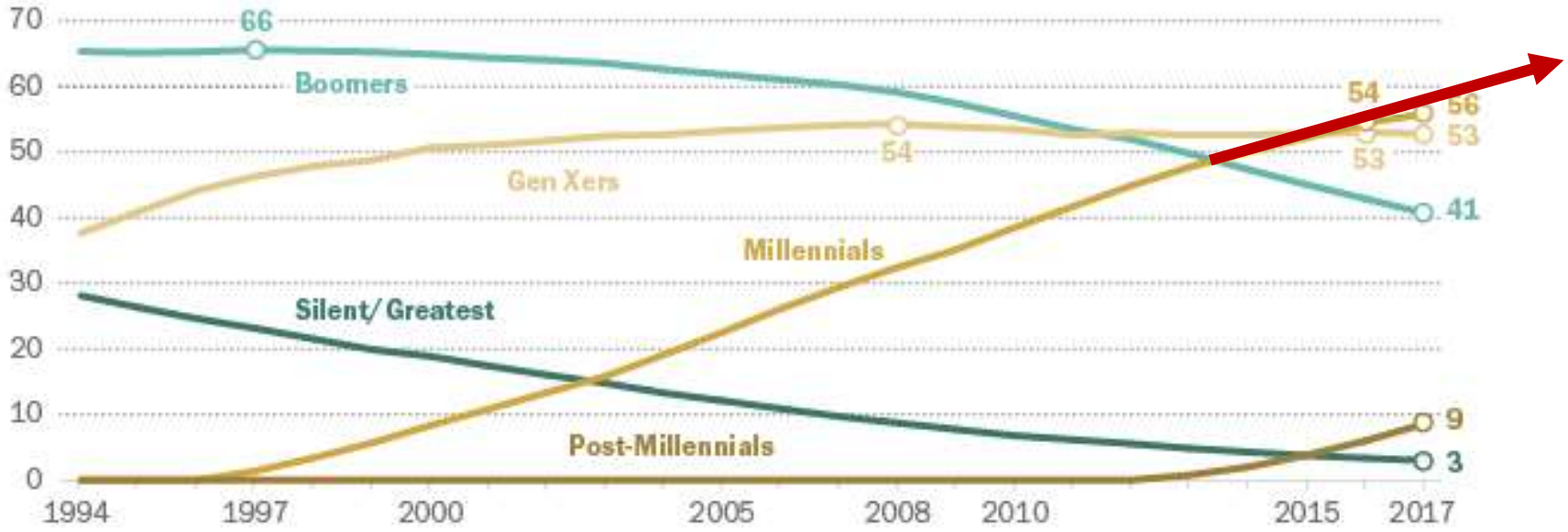


Change Driven by Demographics

Millennials – 75 Million

Millennials became the largest generation in the labor force in 2016

U.S. labor force, in millions



Note: Labor force includes those ages 16 and older who are working or looking for work. Annual averages shown.
Source: Pew Research Center analysis of monthly 1994-2017 Current Population Survey (IPUMS).

PEW RESEARCH CENTER

Rise of Millennial Home Buyer

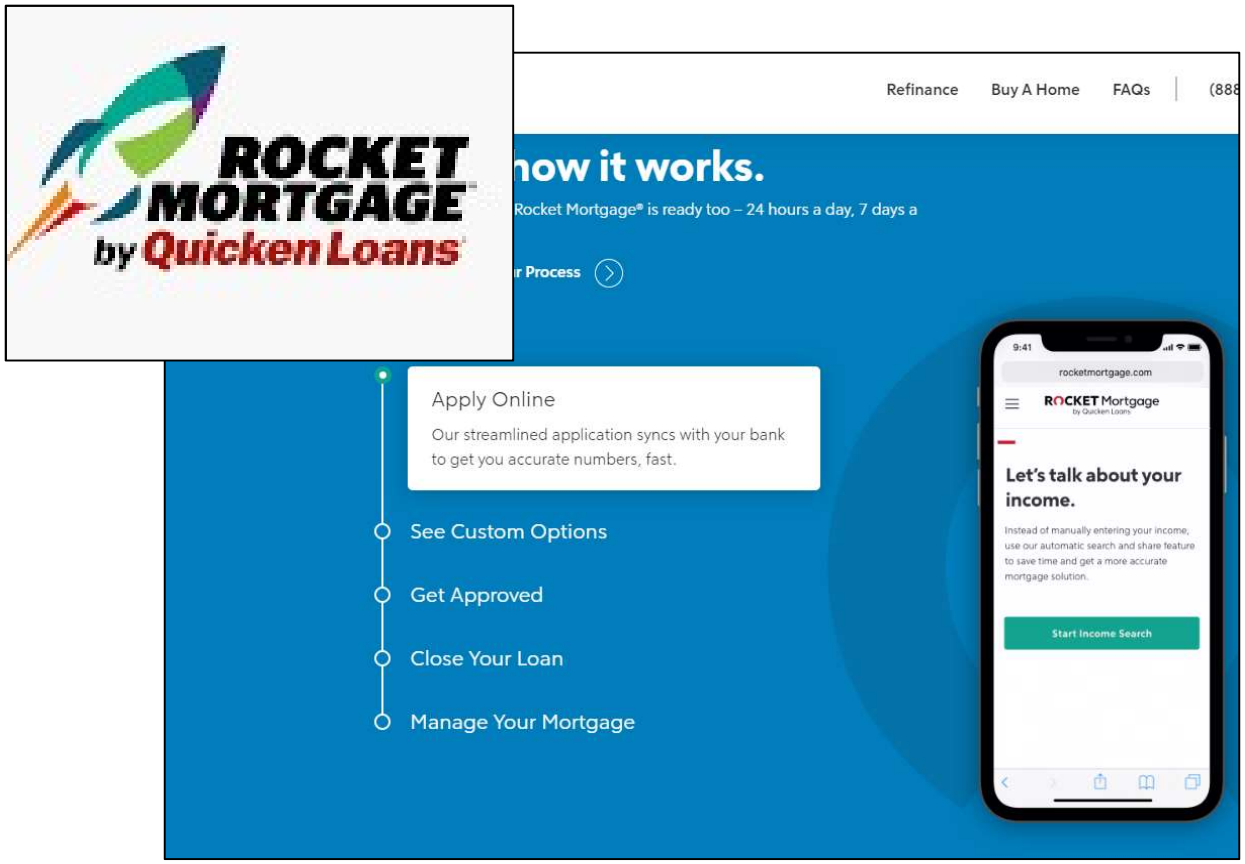
- The age of first-time home buyers was 32 in 2003 and 31 in 2013
- Average age of a millennial: 29.5
- They are the largest group buying a house for the first time. They will control $7 trillion of assets by the year 2020 in the US.

Anytime, Anywhere, Any Device

Millennials Demand Speed

"What do you mean it takes 5 days to clear a check?"

Explosion in Fintech



A Typical Fintech Company

Lenda CEO (just purchased by Reali)

"**Appraisals are just data**," he said. Satellites could take pictures of a home. Comparable data for the neighborhood can be looked up. Eventually, **an appraiser won't have to come to the house**, cutting seven to 10 days from the process.

"We're underwriting customers in 30 minutes, **appraisals are getting to the point where they're going to be automatic,**" he said. "By 2025, as a consumer, you'll be sit down at your lunch break and your loan will be completed.

Drivers of Change

I want
services
Any time
Any way
Any device

Compliance
Licensing
Manual
Process
Aging
Population

Fannie Mae CEO
"We are focused on reducing appraisal turnaround times."

This guy should be at his desk.

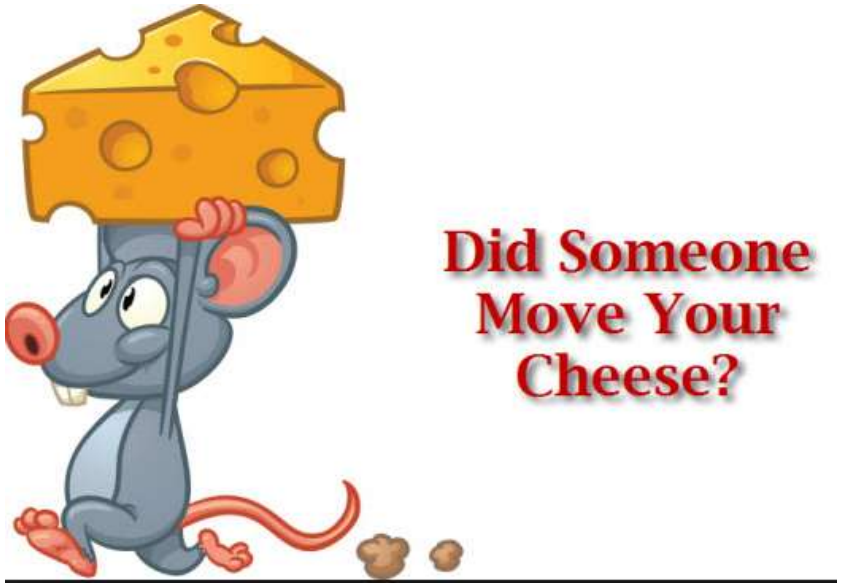
Not in the field with a measuring tape!

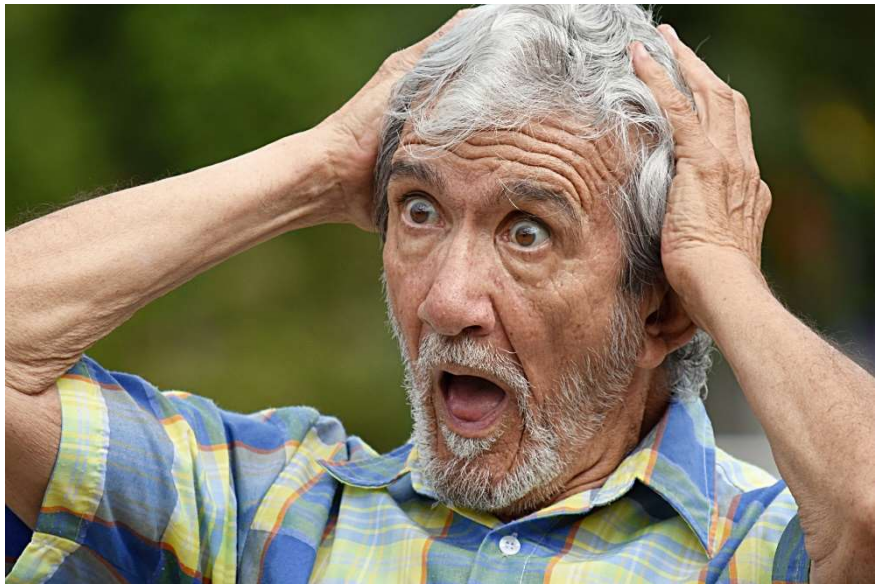
Fintech
Competition
Cloud Tech
Digital
Collaboration

Major Changes Coming

- Appraisal Process
- Appraisal Inspections
- Appraisal Dataset
- Appraisal Forms
- USPAP Changes

How do You Handle Change





Think of Change This Way

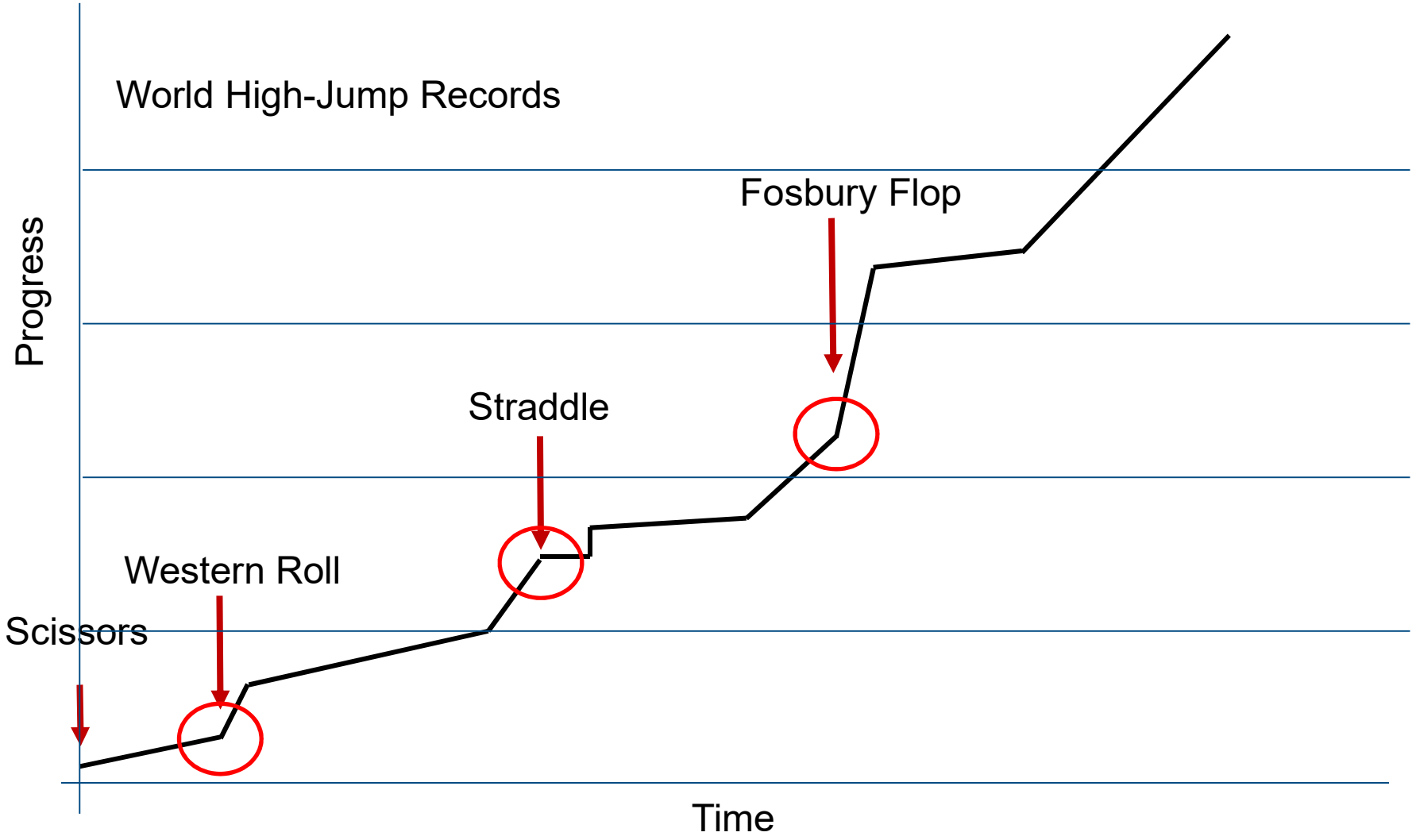
What you do does not change

How you do it does change

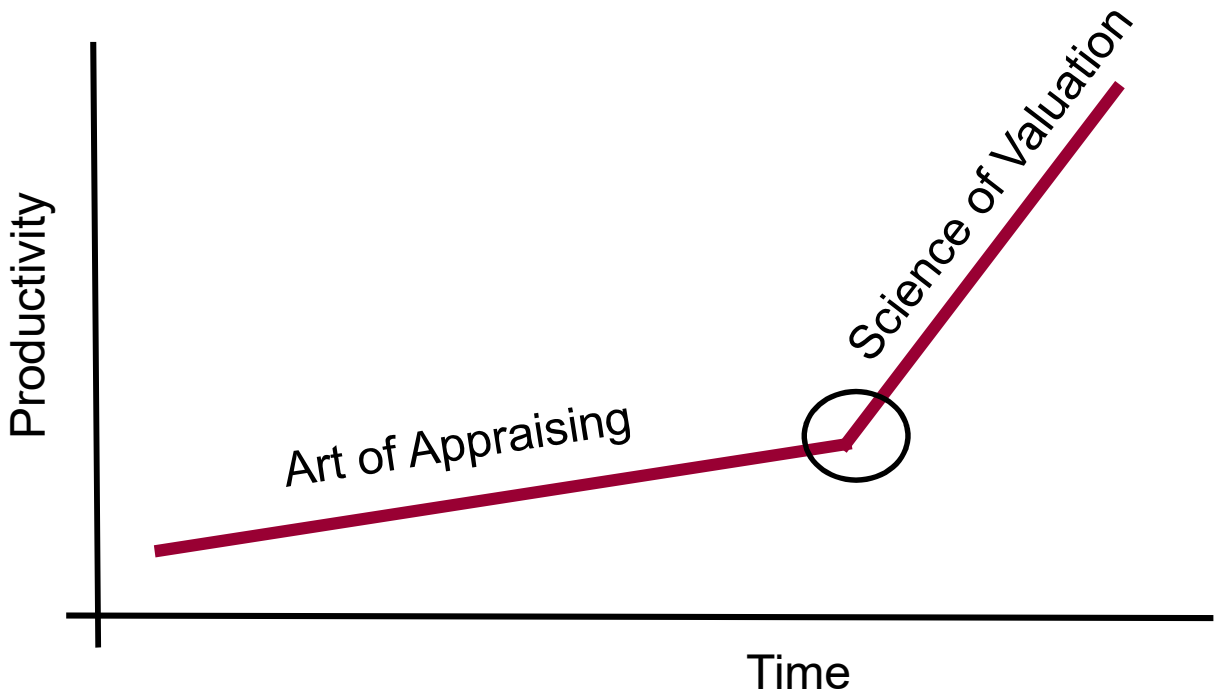
High Jump – Western Roll

High Jump - Straddle

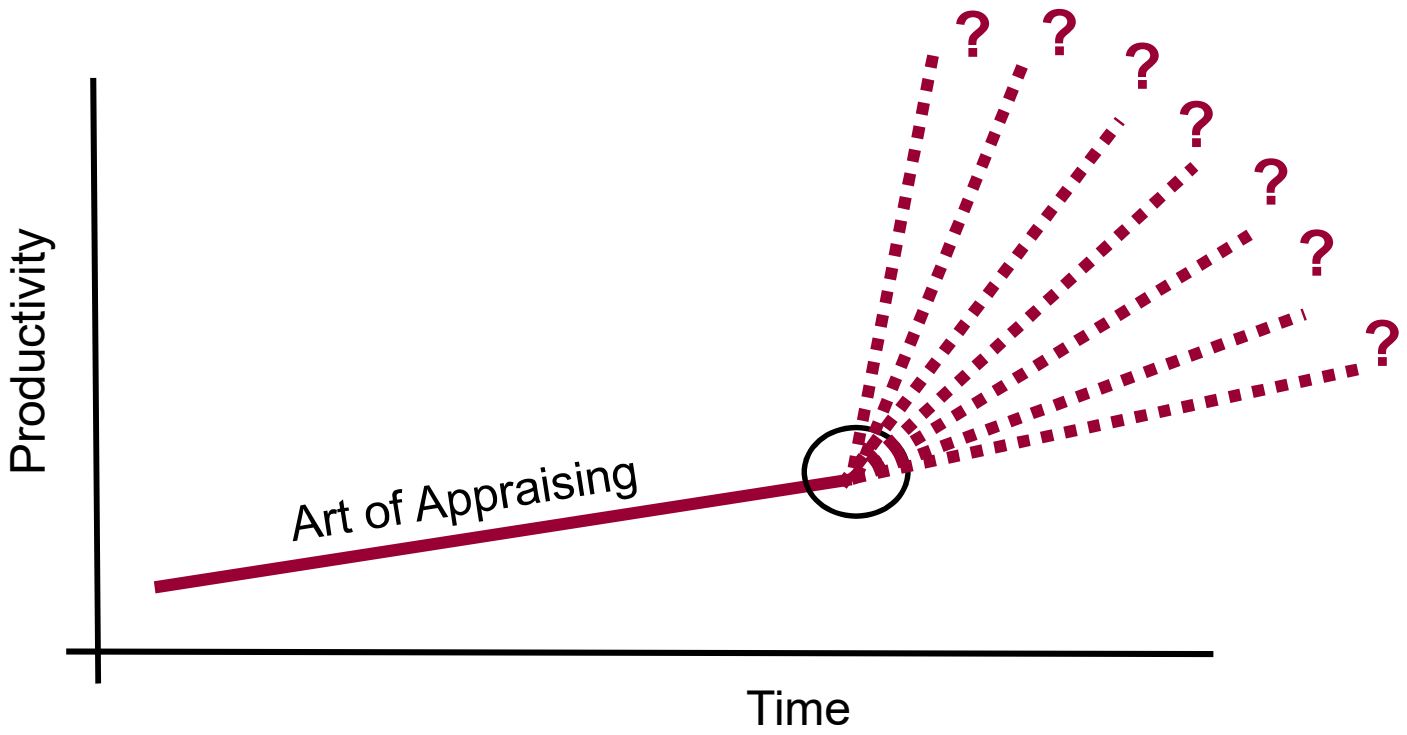
Inflection Points in the History of the High Jump



Appraising is at an Inflection Point

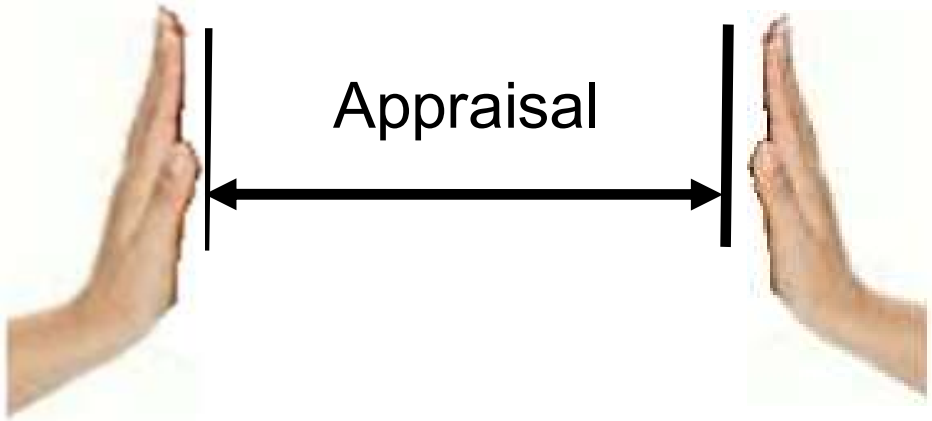


What is the Winning Technique?



Traditional 6 Hour Appraisal

How?

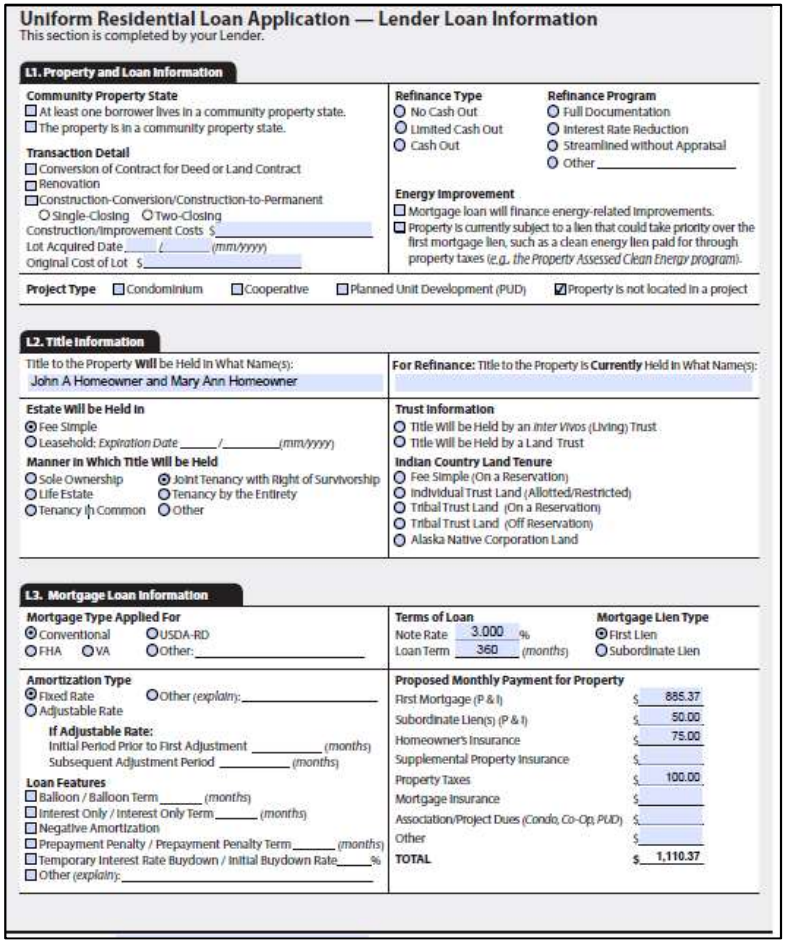


Is It Appraisal Bifurcation?

Panel of brokers are trained to inspect homes

Appraiser performs valuation from office

Is It Simplified Appraisal Forms



Uniform Residential Loan Application — Lender Loan Information
This section is completed by your Lender.

L1. Property and Loan Information

Community Property State
☐ At least one borrower lives in a community property state.
☐ The property is in a community property state.

Transaction Detail
☐ Conversion of Contract for Deed or Land Contract
☐ Renovation
☐ Construction-Conversion/Construction-to-Permanent
○ Single-Closing ○ Two-Closing
Construction/Improvement Costs $
Lot Acquired Date / (mm/yyyy)
Original Cost of Lot $

Refinance Type
○ No Cash Out
○ Limited Cash Out
○ Cash Out

Refinance Program
○ Full Documentation
○ Interest Rate Reduction
○ Streamlined without Appraisal
○ Other

Energy Improvement
☐ Mortgage loan will finance energy-related improvements.
☐ Property is currently subject to a lien that could take priority over the first mortgage lien, such as a clean energy lien paid for through property taxes (*e.g., the Property Assessed Clean Energy program*).

Project Type ☐ Condominium ☐ Cooperative ☐ Planned Unit Development (PUD) ☑ Property is not located in a project

L2. Title Information

Title to the Property **Will** be Held in What Name(s):
John A Homeowner and Mary Ann Homeowner

For Refinance: Title to the Property is **Currently** Held in What Name(s):

Estate Will be Held in
◉ Fee Simple
○ Leasehold: *Expiration Date* / (mm/yyyy)

Manner in Which Title Will be Held
○ Sole Ownership ◉ Joint Tenancy with Right of Survivorship
○ Life Estate ○ Tenancy by the Entirety
○ Tenancy in Common ○ Other

Trust Information
○ Title Will be Held by an *inter Vivos* (Living) Trust
○ Title Will be Held by a Land Trust

Indian Country Land Tenure
○ Fee Simple (On a Reservation)
○ Individual Trust Land (Allotted/Restricted)
○ Tribal Trust Land (On a Reservation)
○ Tribal Trust Land (Off Reservation)
○ Alaska Native Corporation Land

L3. Mortgage Loan Information

Mortgage Type Applied For
◉ Conventional ○ USDA-RD
○ FHA ○ VA ○ Other:

Terms of Loan
Note Rate 3.000 %
Loan Term 360 (*months*)

Mortgage Lien Type
◉ First Lien
○ Subordinate Lien

Amortization Type
◉ Fixed Rate ○ Other (*explain*):
○ Adjustable Rate

If Adjustable Rate:
Initial Period Prior to First Adjustment (*months*)
Subsequent Adjustment Period (*months*)

Loan Features
☐ Balloon / Balloon Term (*months*)
☐ Interest Only / Interest Only Term (*months*)
☐ Negative Amortization
☐ Prepayment Penalty / Prepayment Penalty Term (*months*)
☐ Temporary Interest Rate Buydown / Initial Buydown Rate %
☐ Other (*explain*):

Proposed Monthly Payment for Property

First Mortgage (P & I)	$ 885.37
Subordinate Lien(s) (P & I)	$ 50.00
Homeowner's Insurance	$ 75.00
Supplemental Property Insurance	$
Property Taxes	$ 100.00
Mortgage Insurance	$
Association/Project Dues (Condo, Co-Op, PUD)	$
Other	$
TOTAL	**$ 1,110.37**

Will Bifurcation Save Time?

Inspector

Inspection

Manual Process

Appraiser

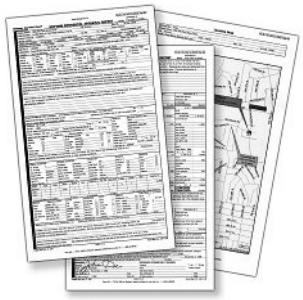
Data Gathering | Analysis | Report

Manual Process | Manual Process | Manual Process

Fannie Mae Bifurcation Pilot Test

Vision:

CURRENT



Rigid
Forms-Driven
Limited Market Insights

FUTURE

Dynamic
Data-Driven
Transparent

Credit Fannie Mae

Bifurcation Testing In Progress

Panel of brokers are trained to inspect homes

Questions

- Trust inspection ?
- Fee Splits ?
- Saves Time ?
- Reduce Costs ?
- Improves Quality ?

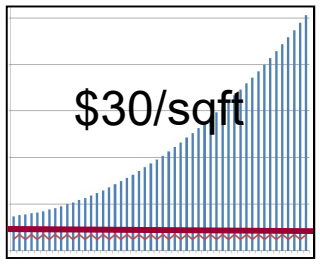
Appraiser performs valuation from office

Fannie Mae Bifurcation Pilot Test

Current Issues:

Appraisal Results

Timeline



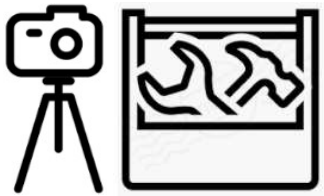
Adjustments

Appraisal QC

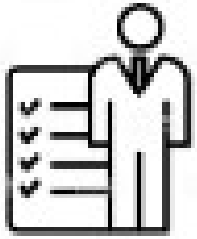
Credit Fannie Mae

Fannie Mae Bifurcation Pilot Test

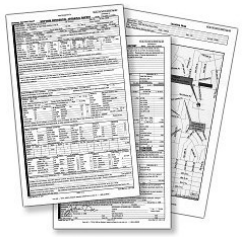
Challenges:



Data gathering tools



Appraiser's role



Appraisal forms

Appointment scheduling

Appraiser business model

Aging appraiser industry

Credit Fannie Mae

Fannie Mae Bifurcation Pilot Test

Robust Property Inspection:

129	Data Points Collected
45	Photos Collected
1	Detailed Floor Plan

(Not strictly designed for appraiser)

Credit Fannie Mae

Fannie Mae Bifurcation Pilot Test

Testing New Technologies:

Mobile apps to capture data

Artificial Intelligence to process data

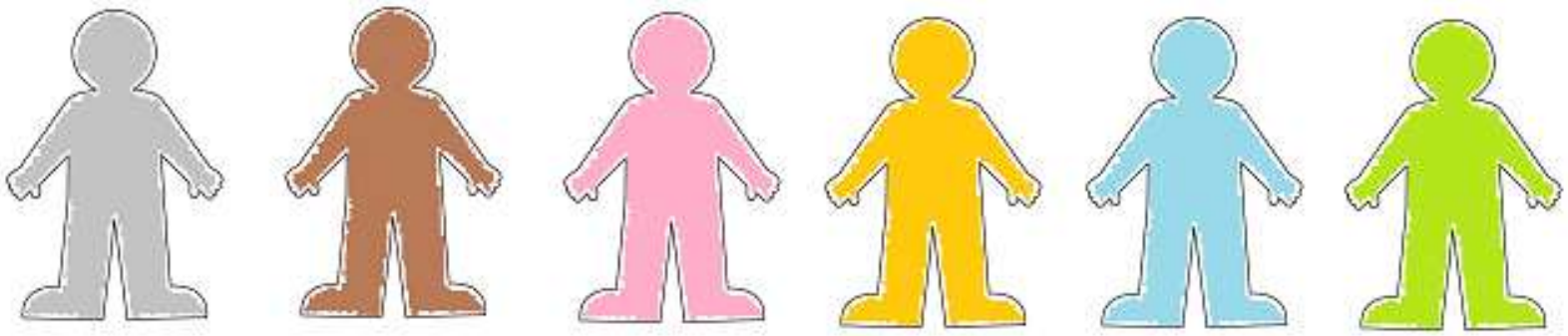
New cameras

New integration processes

Credit Fannie Mae

Fannie Mae Bifurcation Pilot Test

Who can collect the best data?



Appraiser | Appraiser Trainee | Insurance Inspector | Realtors Agents | Property Preservation Services | Smart Home Services

Credit Fannie Mae

Fannie Mae Bifurcation Pilot Test

Results:

3,000+ appraisals by 400 appraisers

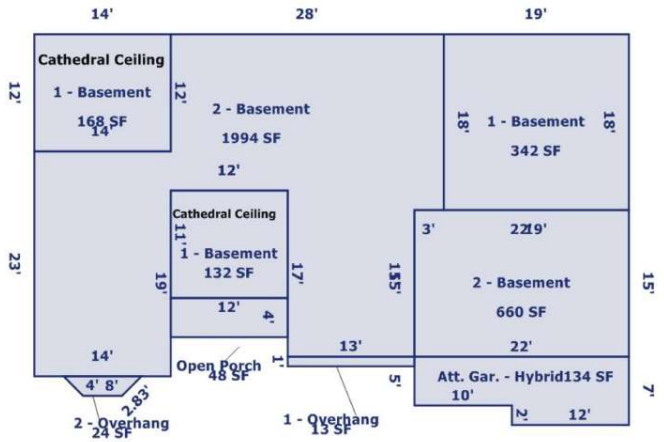
- ✓ **Cycle Times** reduced by several days
- ✓ **Value Bias** was lower relative to DU Value

Credit Fannie Mae

Fannie Mae Bifurcation Pilot Test

Results: Who produces the best sketch

Insurance Inspector



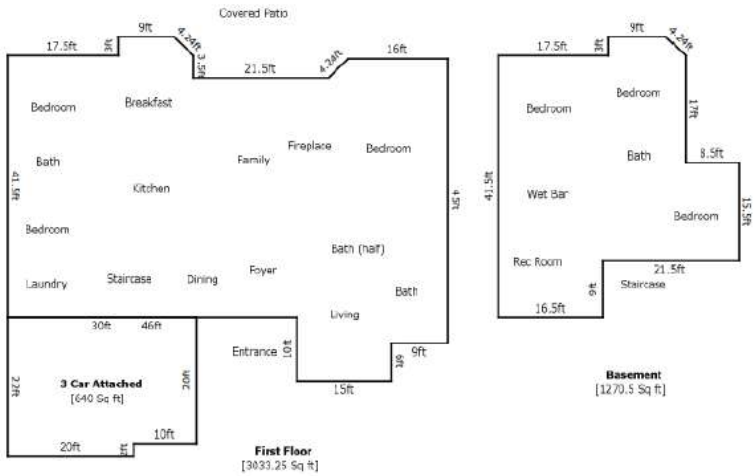
Realtor/Agent

Credit Fannie Mae

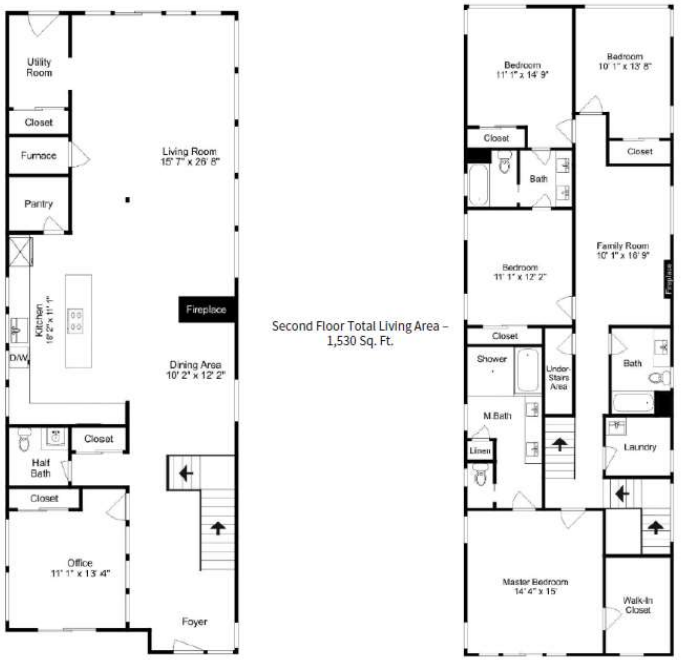
Fannie Mae Bifurcation Pilot Test

Results: Who produces the best sketch

Appraiser



Sketch generated from Images

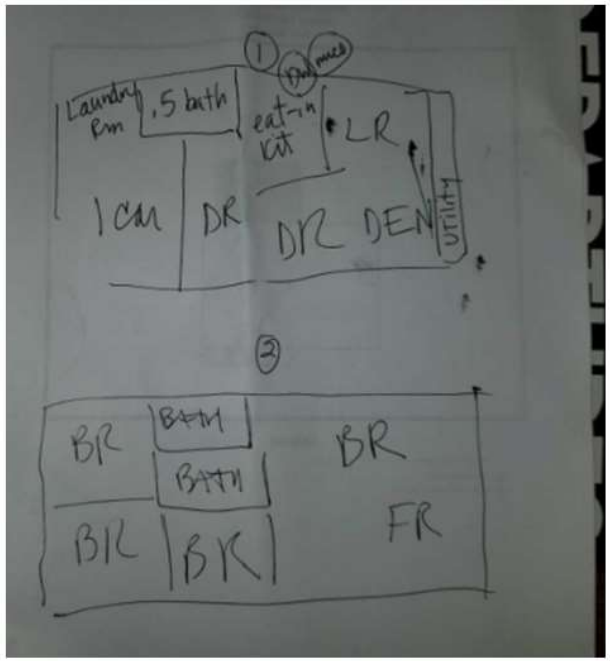


Credit Fannie Mae

Fannie Mae Bifurcation Pilot Test

Results: Who produces the best sketch

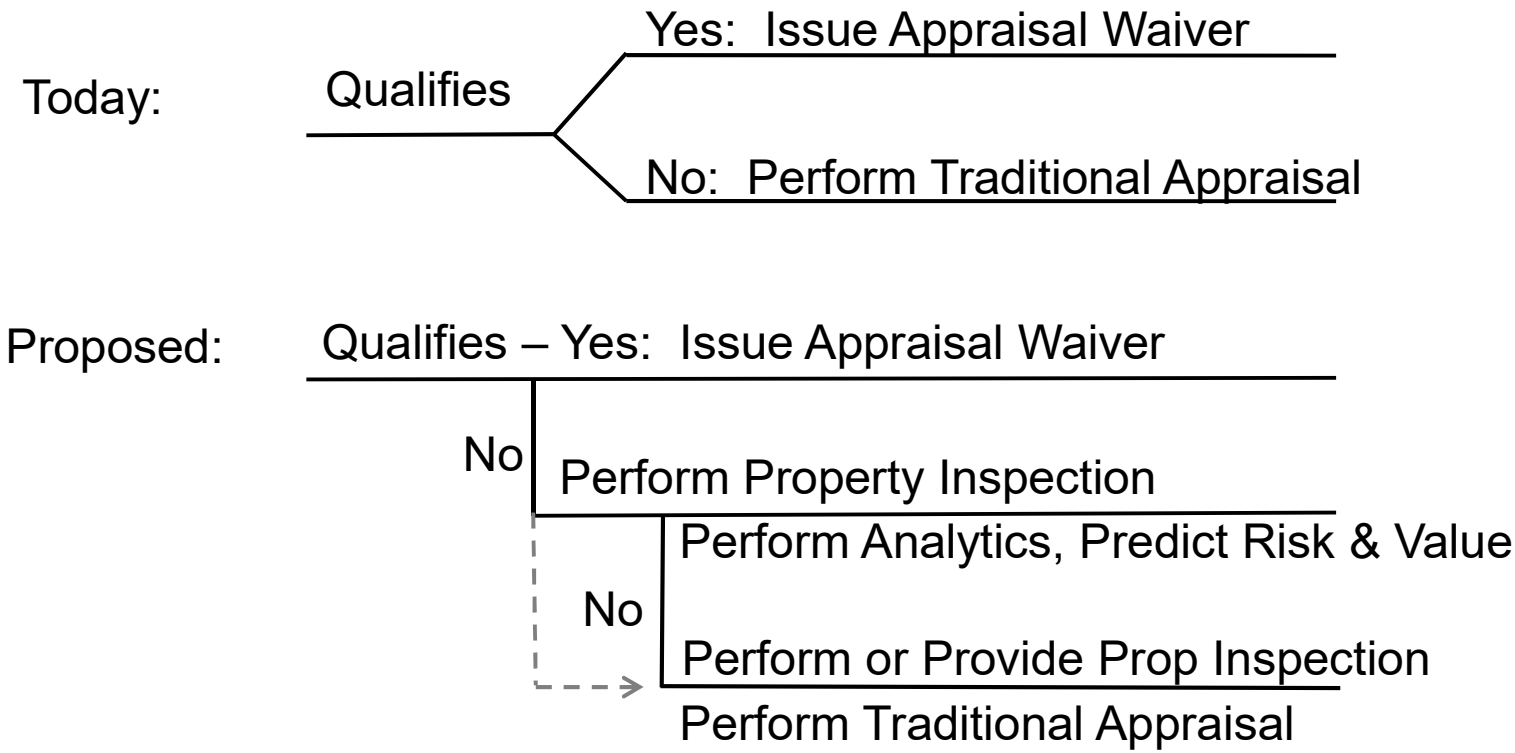
Appraiser



Credit Fannie Mae

Fannie Mae Bifurcation Pilot Test

Appraisals & Waivers Process:



Credit Fannie Mae

Fannie Mae Bifurcation Pilot Test

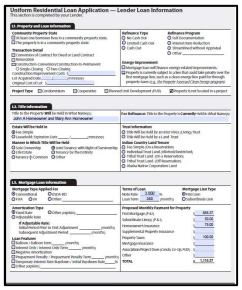
Key Takeaways for Appraisers:

- Change is inevitable.
- Appraisers will continue to do conventional appraisals, but will have opportunity to specialize.
- Appraisers may benefit from adopting new tools and techniques. USPAP provides flexibility in SOW.
- In future, appraiser's role will be focused on market analysis rather then the historical role of data gather.

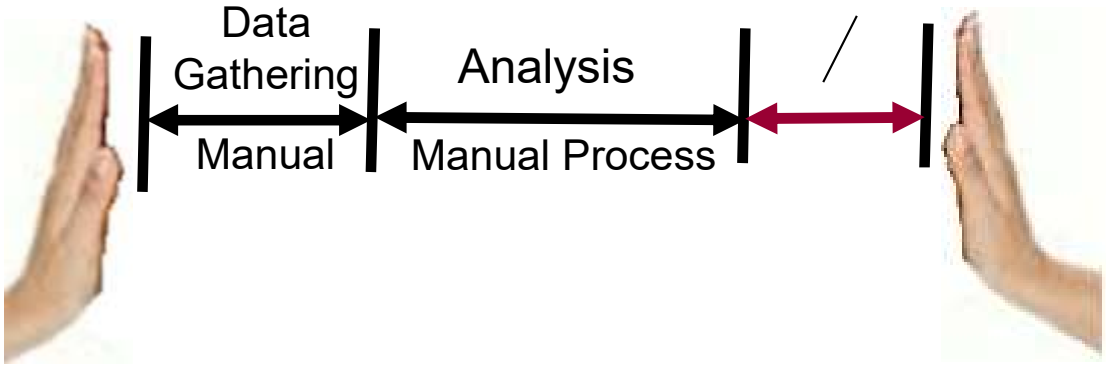
Credit Fannie Mae

Will Simpler Forms Save Time?

Type Report



Appraiser



Forms Redesign Preview

Uniform Residential Loan Application

Verify and complete the information on this application. If you are applying for this loan with others, each additional Borrower must provide information as directed by your Lender.

Section 1: Borrower Information.

This section asks about your personal information and your income from employment and other sources, such as retirement, that you want considered to qualify for this loan.

1a. Personal Information

Name *(First, Middle, Last, Suffix)*
John A. Homeowner

Alternate Names – *List any names by which you are known or any names under which credit was previously received (First, Middle, Last, Suffix)*
John Adams Homeowner

Social Security Number 123 – 45 – 6789
(or Individual Taxpayer Identification Number)

Date of Birth *(mm/dd/yyyy)*
01 / 01 / 1980

Citizenship
- (•) U.S. Citizen
- ( ) Permanent Resident Alien
- ( ) Non-Permanent Resident Alien

Type of Credit
- ( ) I am applying for **individual credit.**
- (•) I am applying for **joint credit.** Total Number of Borrowers: 2
  Each Borrower intends to apply for joint credit. ***Your initials:*** _____

List Name(s) of Other Borrower(s) Applying for this Loan
(First, Middle, Last, Suffix)
Mary Ann Homeowner

Marital Status
- (•) Married
- ( ) Separated
- ( ) Unmarried

(Single, Divorced, Widowed, Civil Union, Domestic Partnership, Registered Reciprocal Beneficiary Relationship)

Dependents *(not listed by another Borrower)*
Number 2
Ages 10, 14

Contact Information
Home Phone (999) 222 – 1234
Cell Phone (999) 333 – 5678
Work Phone (999) 444 – 9876 **Ext.** 321
Email johnhomeowner@email.com

Current Address
Street 175 13th Street Unit # 1A
City Washington State DC ZIP 12345 Country USA
How Long at Current Address? 1 Years 6 Months **Housing** ( ) No primary housing expense ( ) Own (•) Rent ($ 1,500 /month)

Forms Redesign Preview

1b. Current Employment/Self Employment and Income ☐ *Does not apply*

Employer or Business Name US Army Phone (999) 222 – 1111
Street 1600 Pennsylvania Ave
City Washington State DC ZIP 20500

Position or Title Intelligence
Start Date 05 / 2008 *(mm/yyyy)*
How long in this line of work? 8 Years Months

Check if this statement applies:
☐ I am employed by a family member, property seller, real estate agent, or other party to the transaction.

☐ **Check if you are the Business Owner or Self-Employed**
○ I have an ownership share of less than 25%.
○ I have an ownership share of 25% or more.
Monthly Income (or Loss) $

Gross Monthly Income

Base	$ 7,680	/month
Overtime	$	/month
Bonus	$	/month
Commission	$	/month
Military Entitlements	$ 2,700	/month
Other	$	/month
TOTAL	$ 10,380	**/month**

1c. IF APPLICABLE, Complete Information for Additional Employment/Self Employment and Income ☐ *Does not apply*

Employer or Business Name John A Homeowner Internet Sales Phone (999) 222 – 1234
Street 175 13th St
City Washington State DC ZIP 12345

Position or Title Owner/Operator
Start Date 01 / 2010 *(mm/yyyy)*
How long in this line of work? 6 Years Months

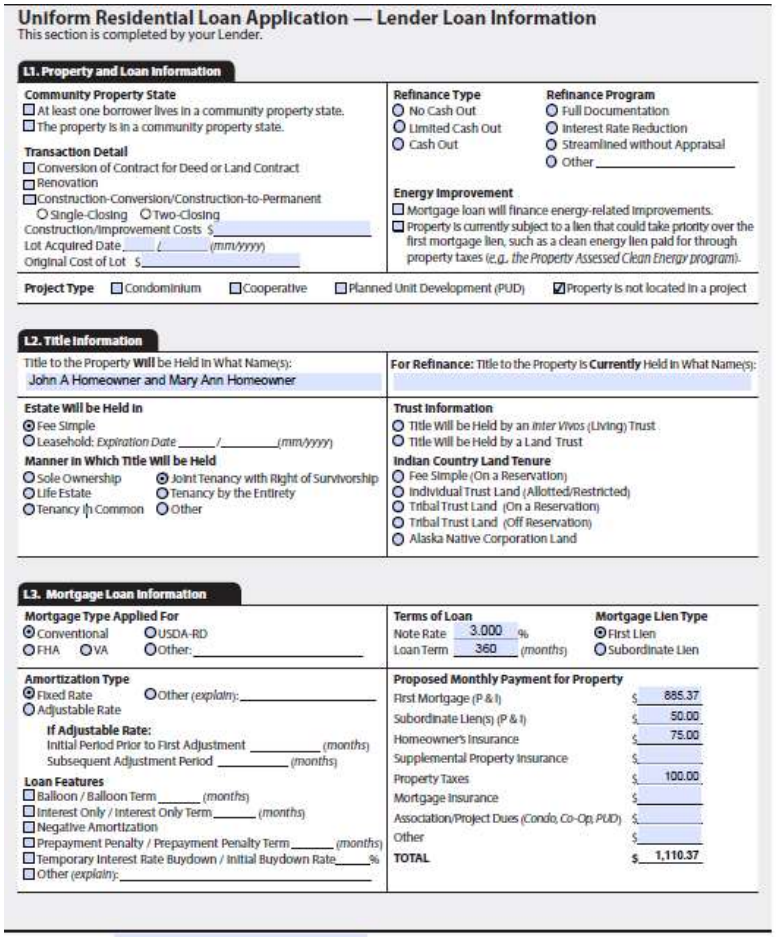
Check if this statement applies:
☐ I am employed by a family member, property seller, real estate agent, or other party to the transaction.

☑ **Check if you are the Business Owner or Self-Employed**
○ I have an ownership share of less than 25%.
◉ I have an ownership share of 25% or more.
Monthly Income (or Loss) $ 500

Gross Monthly Income

Base	$	/month
Overtime	$	/month
Bonus	$	/month
Commission	$	/month
Military Entitlements	$	/month
Other	$	/month
TOTAL	$	**/month**

Forms Redesign Preview



Uniform Residential Loan Application — Lender Loan Information

This section is completed by your Lender.

L1. Property and Loan Information

Community Property State
- ☐ At least one borrower lives in a community property state.
- ☐ The property is in a community property state.

Transaction Detail
- ☐ Conversion of Contract for Deed or Land Contract
- ☐ Renovation
- ☐ Construction-Conversion/Construction-to-Permanent
  - ○ Single-Closing ○ Two-Closing
- Construction/Improvement Costs $
- Lot Acquired Date ___/___ (mm/yyyy)
- Original Cost of Lot $

Refinance Type
- ○ No Cash Out
- ○ Limited Cash Out
- ○ Cash Out

Refinance Program
- ○ Full Documentation
- ○ Interest Rate Reduction
- ○ Streamlined without Appraisal
- ○ Other

Energy Improvement
- ☐ Mortgage loan will finance energy-related improvements.
- ☐ Property is currently subject to a lien that could take priority over the first mortgage lien, such as a clean energy lien paid for through property taxes (*e.g., the Property Assessed Clean Energy program*).

Project Type ☐ Condominium ☐ Cooperative ☐ Planned Unit Development (PUD) ☑ Property is not located in a project

L2. Title Information

Title to the Property **Will** be Held in What Name(s): John A Homeowner and Mary Ann Homeowner

For Refinance: Title to the Property is **Currently** Held in What Name(s):

Estate Will be Held in
- ◉ Fee Simple
- ○ Leasehold: *Expiration Date* ___/___ (mm/yyyy)

Manner in Which Title Will be Held
- ○ Sole Ownership ◉ Joint Tenancy with Right of Survivorship
- ○ Life Estate ○ Tenancy by the Entirety
- ○ Tenancy in Common ○ Other

Trust Information
- ○ Title Will be Held by an *inter Vivos* (Living) Trust
- ○ Title Will be Held by a Land Trust

Indian Country Land Tenure
- ○ Fee Simple (On a Reservation)
- ○ Individual Trust Land (Allotted/Restricted)
- ○ Tribal Trust Land (On a Reservation)
- ○ Tribal Trust Land (Off Reservation)
- ○ Alaska Native Corporation Land

L3. Mortgage Loan Information

Mortgage Type Applied For
- ◉ Conventional ○ USDA-RD
- ○ FHA ○ VA ○ Other: ___

Terms of Loan
- Note Rate 3.000 %
- Loan Term 360 (months)

Mortgage Lien Type
- ◉ First Lien
- ○ Subordinate Lien

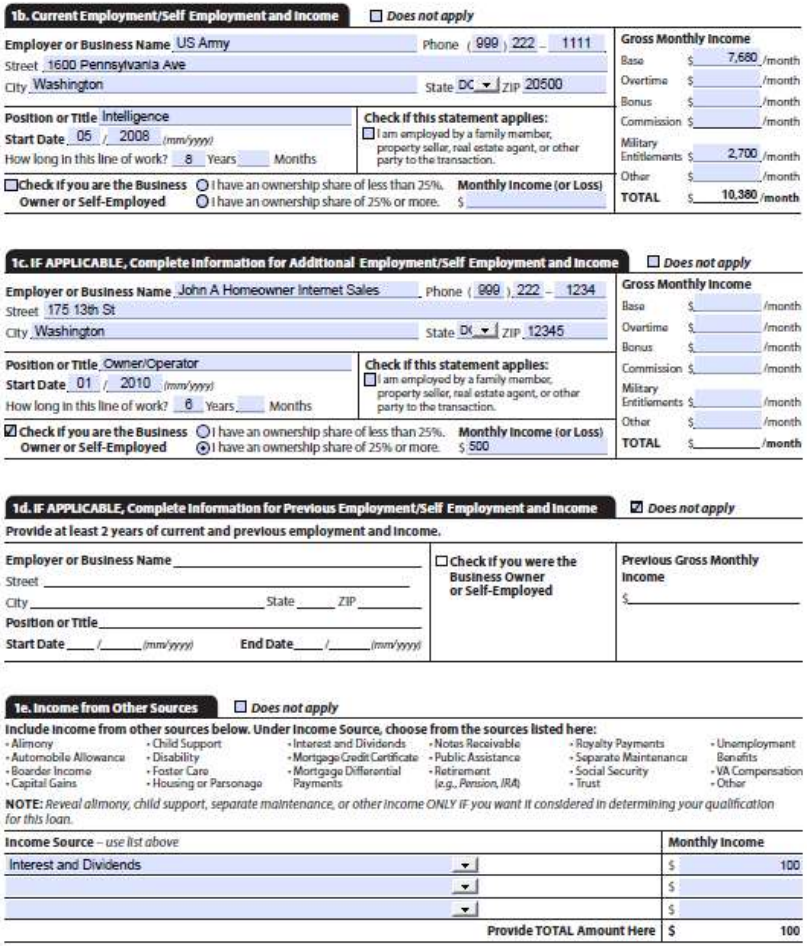
Amortization Type
- ◉ Fixed Rate ○ Other (explain): ___
- ○ Adjustable Rate

If Adjustable Rate:
Initial Period Prior to First Adjustment ___ (months)
Subsequent Adjustment Period ___ (months)

Loan Features
- ☐ Balloon / Balloon Term ___ (months)
- ☐ Interest Only / Interest Only Term ___ (months)
- ☐ Negative Amortization
- ☐ Prepayment Penalty / Prepayment Penalty Term ___ (months)
- ☐ Temporary Interest Rate Buydown / Initial Buydown Rate ___ %
- ☐ Other (explain): ___

Proposed Monthly Payment for Property

First Mortgage (P & I)	$ 885.37
Subordinate Lien(s) (P & I)	$ 50.00
Homeowner's Insurance	$ 75.00
Supplemental Property Insurance	$
Property Taxes	$ 100.00
Mortgage Insurance	$
Association/Project Dues (Condo, Co-Op, PUD)	$
Other	$
TOTAL	**$ 1,110.37**



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Employer or Business Name US Army Phone (999) 222 - 1111
Street 1600 Pennsylvania Ave
City Washington State DC ZIP 20500

Position or Title Intelligence
Start Date 05 / 2008 (mm/yyyy)
How long in this line of work? 8 Years ___ Months

Check if this statement applies:
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☐ **Check if you are the Business Owner or Self-Employed**
○ I have an ownership share of less than 25%.
○ I have an ownership share of 25% or more.
Monthly Income (or Loss) $

Gross Monthly Income

Base	$ 7,680 /month
Overtime	$ /month
Bonus	$ /month
Commission	$ /month
Military Entitlements	$ 2,700 /month
Other	$ /month
TOTAL	**$ 10,380 /month**

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Street 175 13th St
City Washington State DC ZIP 12345

Position or Title Owner/Operator
Start Date 01 / 2010 (mm/yyyy)
How long in this line of work? 6 Years ___ Months

Check if this statement applies:
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☑ **Check if you are the Business Owner or Self-Employed**
○ I have an ownership share of less than 25%.
◉ I have an ownership share of 25% or more.
Monthly Income (or Loss) $ 500

Gross Monthly Income

Base	$ /month
Overtime	$ /month
Bonus	$ /month
Commission	$ /month
Military Entitlements	$ /month
Other	$ /month
TOTAL	**$ /month**

1d. IF APPLICABLE, Complete Information for Previous Employment/Self Employment and Income ☑ Does not apply

Provide at least 2 years of current and previous employment and income.

Employer or Business Name ___
Street ___
City ___ State ___ ZIP ___
Position or Title ___
Start Date ___/___ (mm/yyyy) **End Date** ___/___ (mm/yyyy)

☐ **Check if you were the Business Owner or Self-Employed**

Previous Gross Monthly Income $ ___

1e. Income from Other Sources ☐ Does not apply

Include income from other sources below. Under Income Source, choose from the sources listed here:

- Alimony
- Automobile Allowance
- Boarder Income
- Capital Gains
- Child Support
- Disability
- Foster Care
- Housing or Parsonage
- Interest and Dividends
- Mortgage Credit Certificate
- Mortgage Differential Payments
- Notes Receivable
- Public Assistance
- Retirement (e.g., *Pension, IRA*)
- Royalty Payments
- Separate Maintenance
- Social Security
- Trust
- Unemployment Benefits
- VA Compensation
- Other

NOTE: *Reveal alimony, child support, separate maintenance, or other income ONLY IF you want it considered in determining your qualification for this loan.*

Income Source – *use list above*	Monthly Income
Interest and Dividends	$ 100
	$
	$
Provide TOTAL Amount Here	**$ 100**

Bifurcation and Modernization

- Modernization
  - Simplifies report production and saves time
- Bifurcation
  - Property Inspection is growth business
  - Inspection data to be provided to appraiser
  - Conventional appraisal process unchanged
  - Reduces the need for conventional appraisal

This is not the Winning Technique

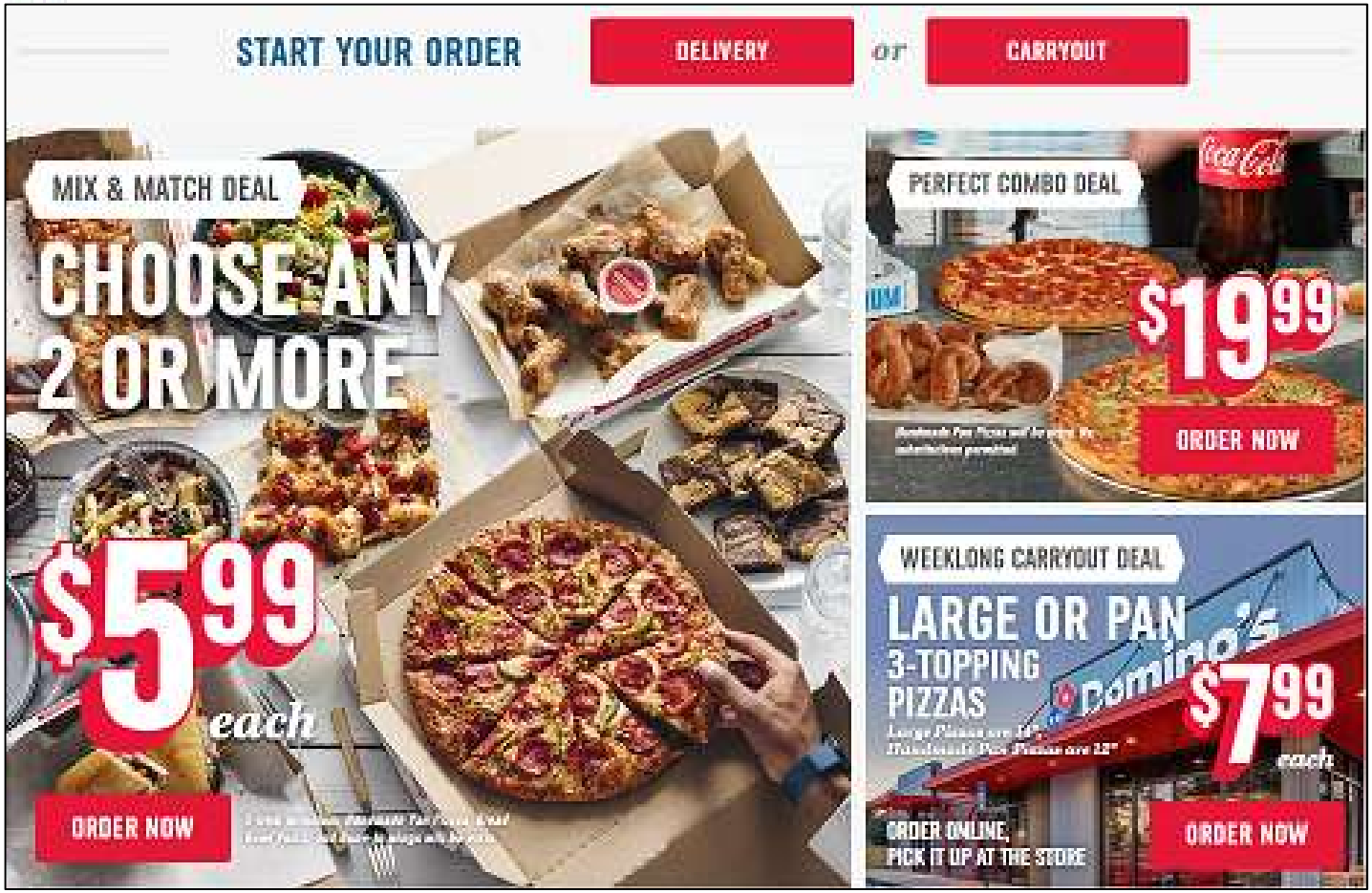
Changes like simpler forms just make a legacy business a little bit quicker.

We Need Transformational Change

The Winning Technique

"We must transform appraisals from a legacy to a digital business to stay relevant."

Domino's Pizza



Legacy to Digital Transformation

- 2008 – Stock was at $3
- Today - $250 (high $305)

Changed:

1. Pizza Making Business (Quality)
2. In the Pizza Delivery Business

Created new position:

Chief Officer of Delivery Technology

Legacy to Digital Transformation

- They are an e-commerce company that happens to sell pizzas.
- They are a digital business catering to the anytime, anywhere, on-any-device millennial crowd.

Legacy to Digital Transformation

- Easy to order. Just ask Alexa
- Innovative tracking & delivery

Non Traditional Delivery

Dominos announced plans to offer delivery to 150,000 hotspots. Non-traditional locations that don't have a traditional address, such as parks, sports fields and beaches.(anywhere, anytime)

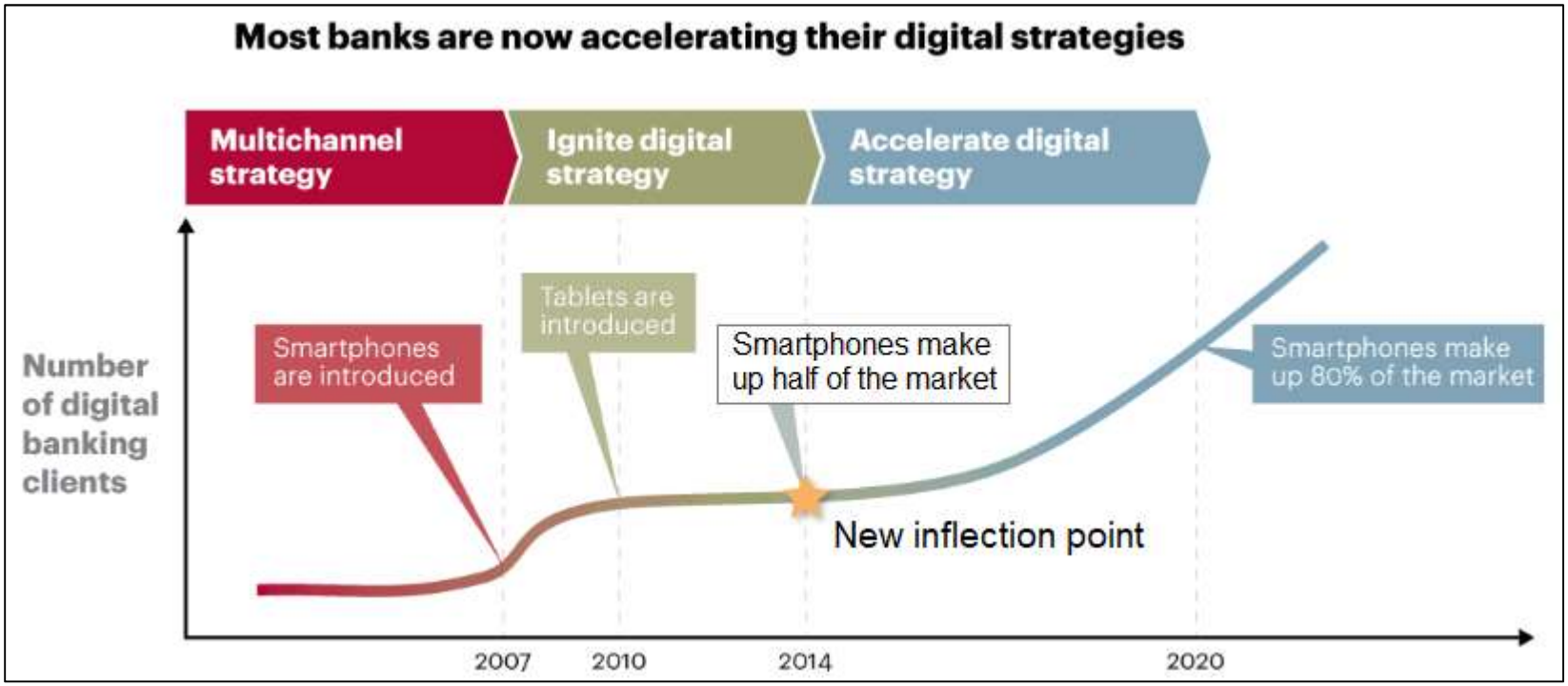
A Digital Business

Delivers their services/products

- ✓ Anytime
- ✓ Anyway
- ✓ Anywhere

Digital enables speed, flexibility, connections.

Digital Transformation of the Banking Industry



Digital Transformation of the Banking Industry

JPMorgan Chase is building a Silicon Valley Campus for 1000 employees to develop their digital business

JPMorgan Chase is undergoing a transformation, moving away from offline legacy systems and into the digital age.

Over the past two years, the bank has spent nearly $20B to scale its technology and prepare itself for the next generation of banking.

A Bank for Millennials

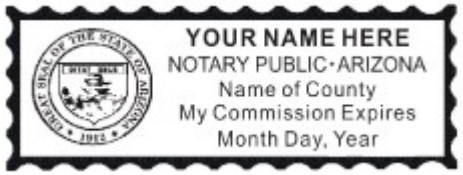
Digital Transformation of the Banking Industry

TIAA Bank Eliminating Retail Lending

"We understand that borrowers today need fast, convenient and cost-effective solutions"

"The changes we're making will enable us to deliver mortgage solutions **using digital technologies that enable clients to work with us efficiently and easily, anywhere and at any time**."

Remote Online Notarization



MISMO Unveils Remote Online Notarization Standards

Provides borrowers, homebuyers and sellers the convenience of signing their closing papers online from a remote location.

A number of states have enacted laws allowing the use of audio-visual communication devices to notarize documents in real-estate transactions. Uniformity of regulations benefits all parties that might use RON services, from lenders to notaries to consumers

loanDepot Building 8-Day Closings

Its an end-to-end digital mortgage designed for online consumers.

The loan origination system was combined with intelligent data sources to create a ‘smartloan’ that holds the promise of reducing by up to 80 percent the time required close a loan. **Also, it many cases it will eliminate the cost and time appraisals require**–enabling loan officers to deliver results in minutes, at no obligation.

The system is built upon the concepts of value, speed and transparency. Now, loanDepot customers can, within seven minutes, know their loan will move forward **because their data can be digitally validated within seconds**.

How do you transform an Appraisal Business into a Digital Business

?

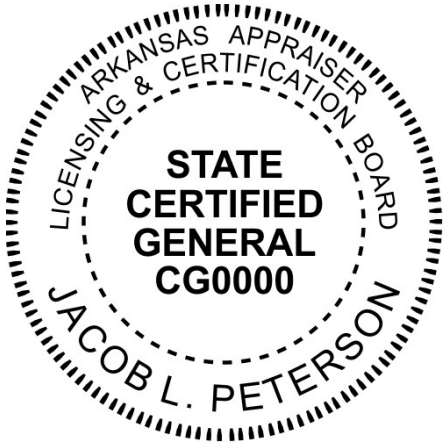
These are the Requirements:

Must be able to provide:

- ✓ Any Type of Valuation
- ✓ Within a few minutes to a few days,
- ✓ To Anyone,
- ✓ On Any Device.

Certification of Value

In my opinion, the value is…



You're an e-Commerce Business

That delivers Value Certifications

- ✓ Within a few minutes to a few days,
- ✓ To Anyone,
- ✓ On Any Device

Breakout of the 1004 Box

Teams Outperform Individuals

Inspections by a Third Party

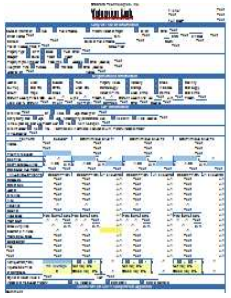
9 Years Ago

- MLS Sales & Listings
- Public Records
- Aerial Imagery

Appraiser with Market Expertise

Third Party Inspection

Appraisal Report



A Third Party is NOT a Teammate

There is <u>no</u> relationship between them!

These are Teammates

These are Teammates

Teams Outperform Individuals

Create Your Own Team

1

Cloud Based Collaboration

2

Collaborate in Your Own Digital Workspace

Field

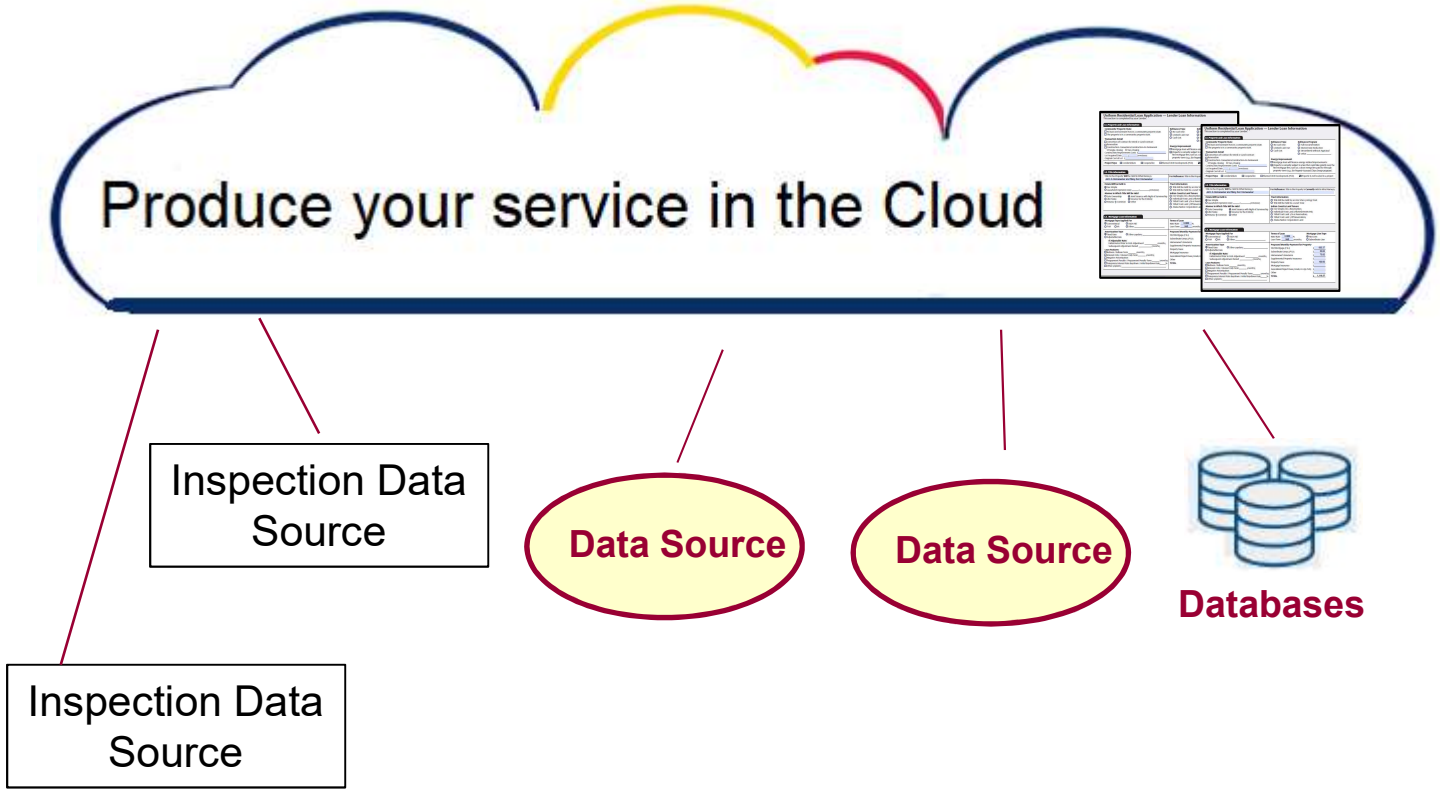
Data Assistant

Home

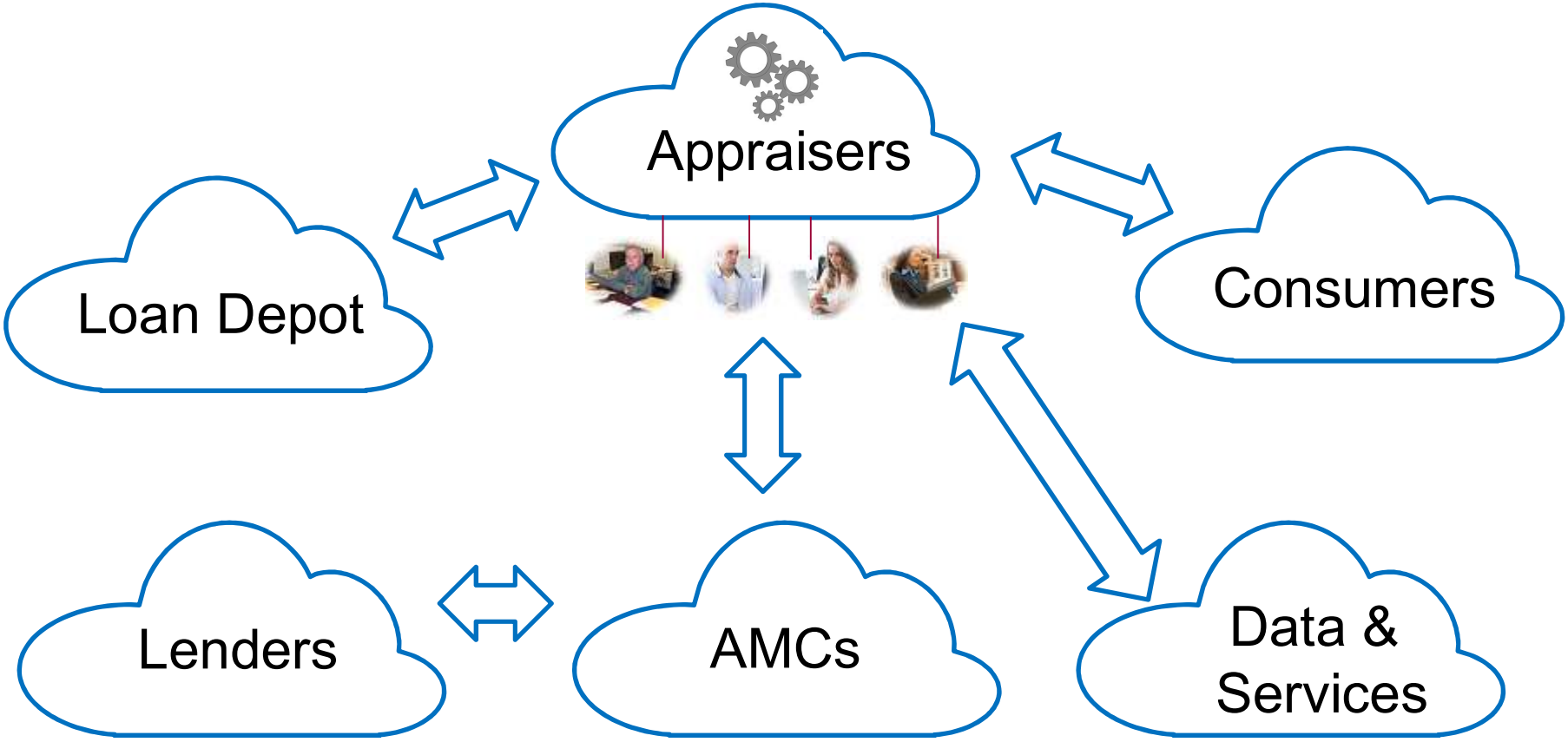
Office

Production is in the Cloud

3

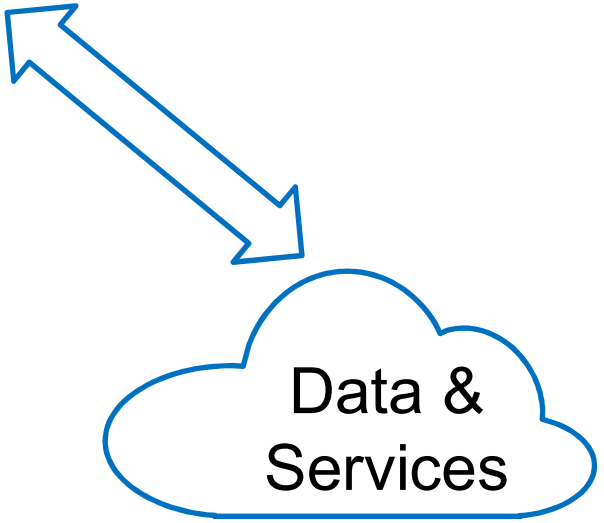


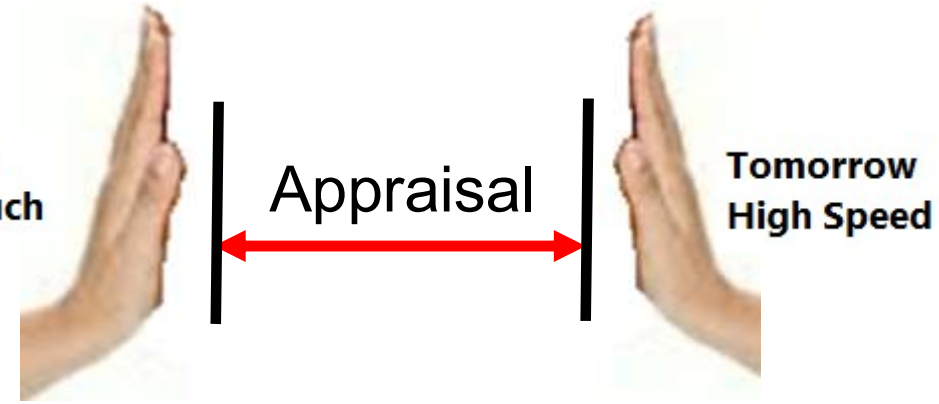
Opens Doors to Business



Opens Doors to Process Automation

- ✓ Automate Data Gathering
- ✓ Automate Form Filling

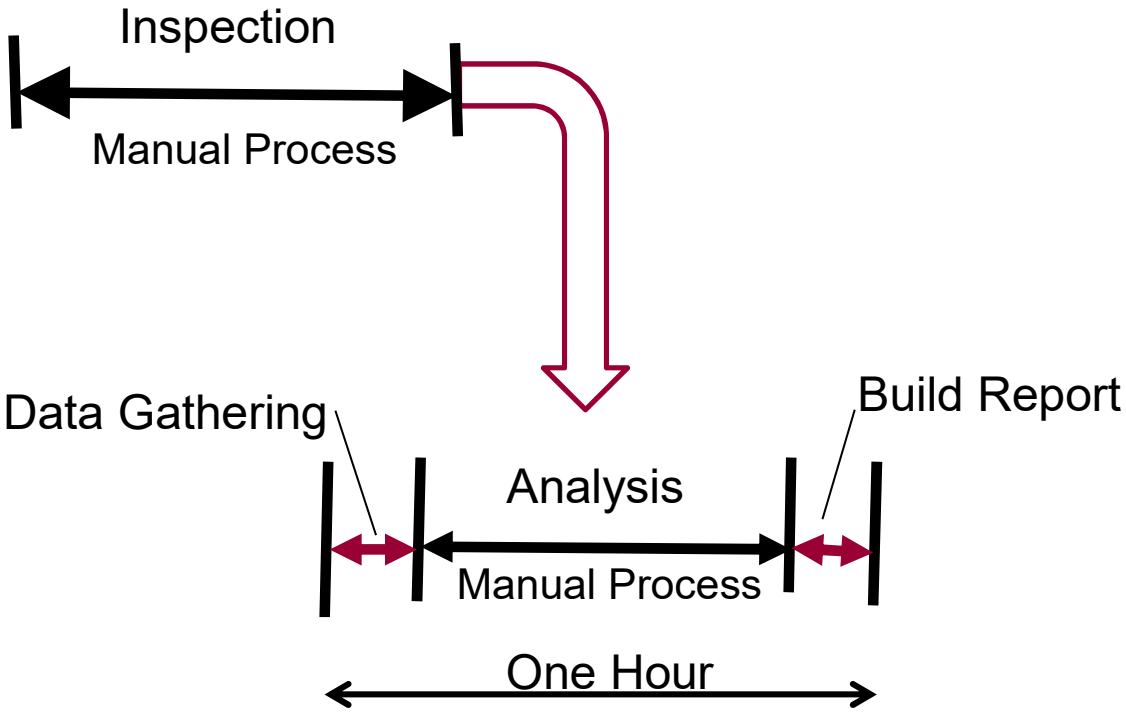




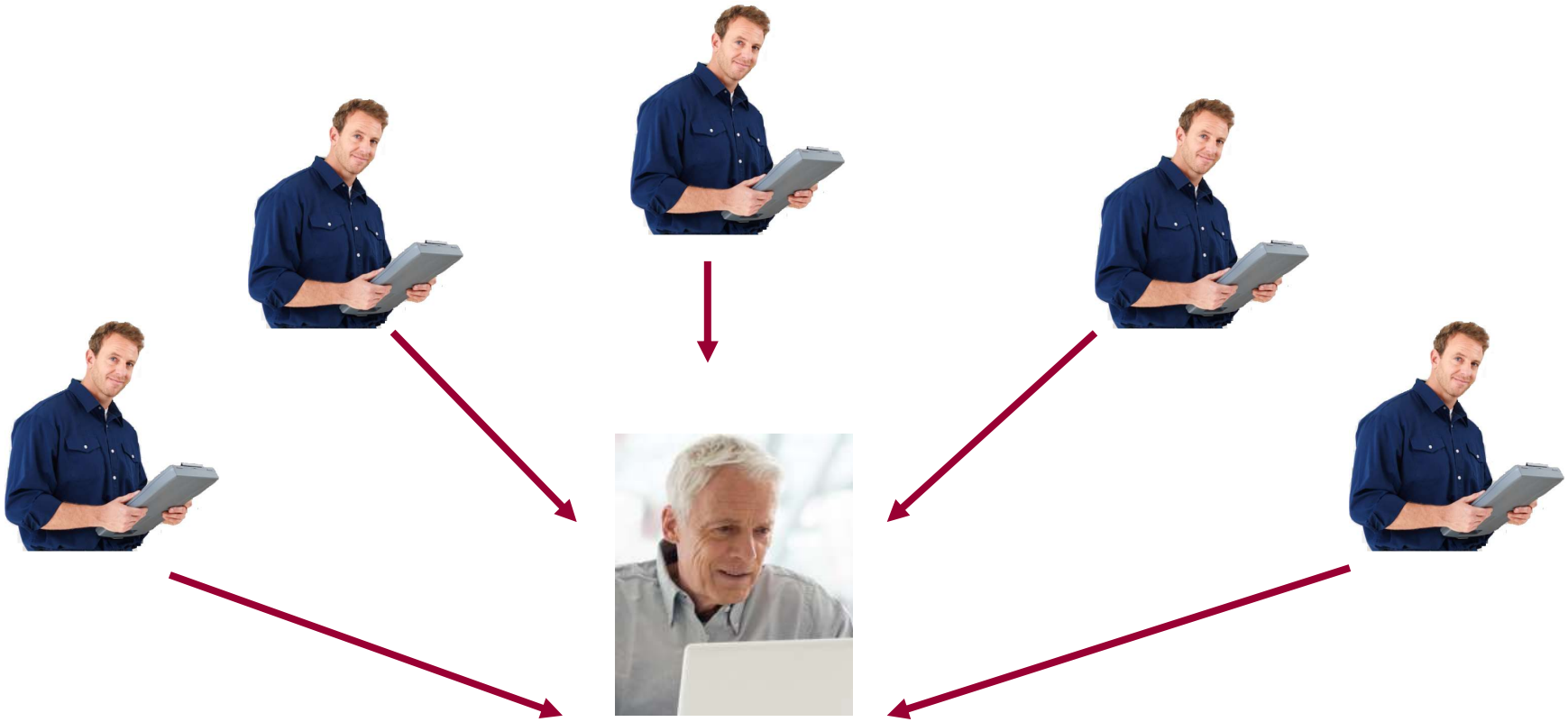
Is One Hour Appraisal Possible?

Inspector

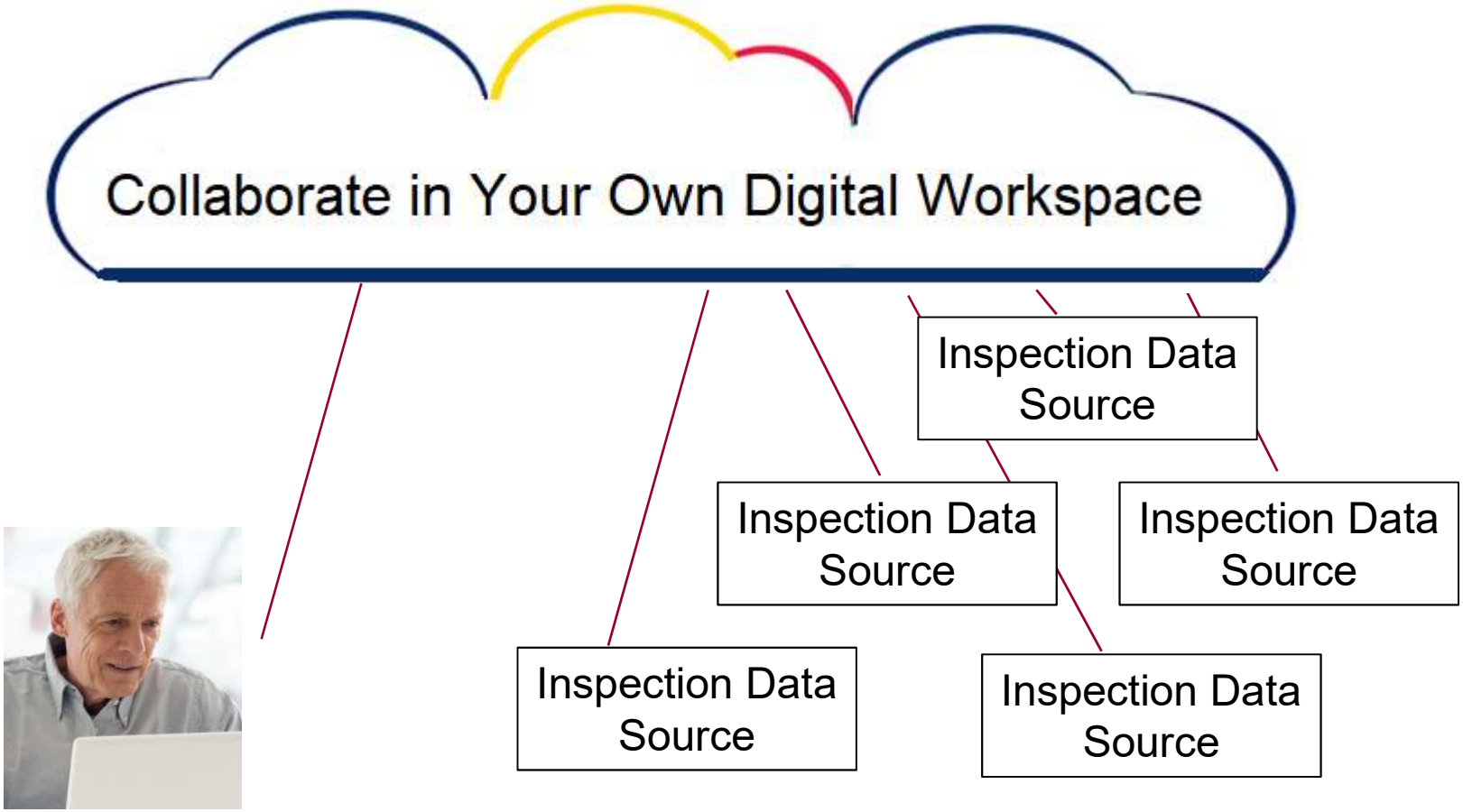
Appraiser



Ten or More Appraisals per Day?



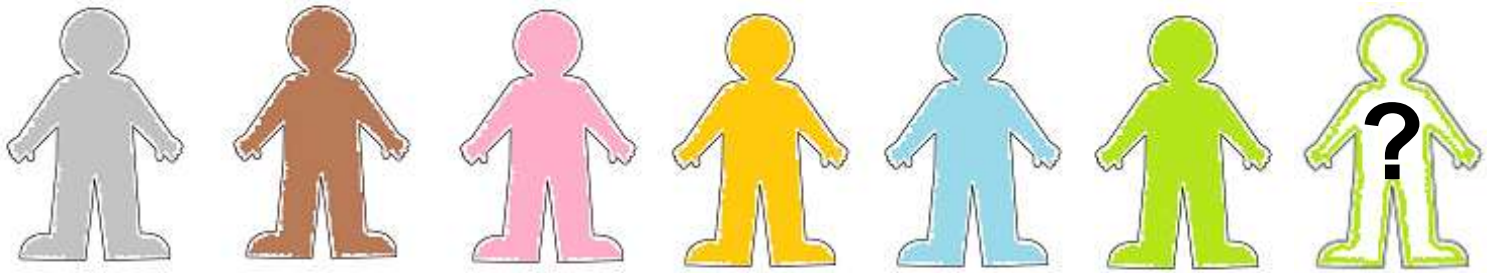
Opens Door to Inspection Sources



Where is inspection coming from?

A Broker

A Teammate



Appraiser

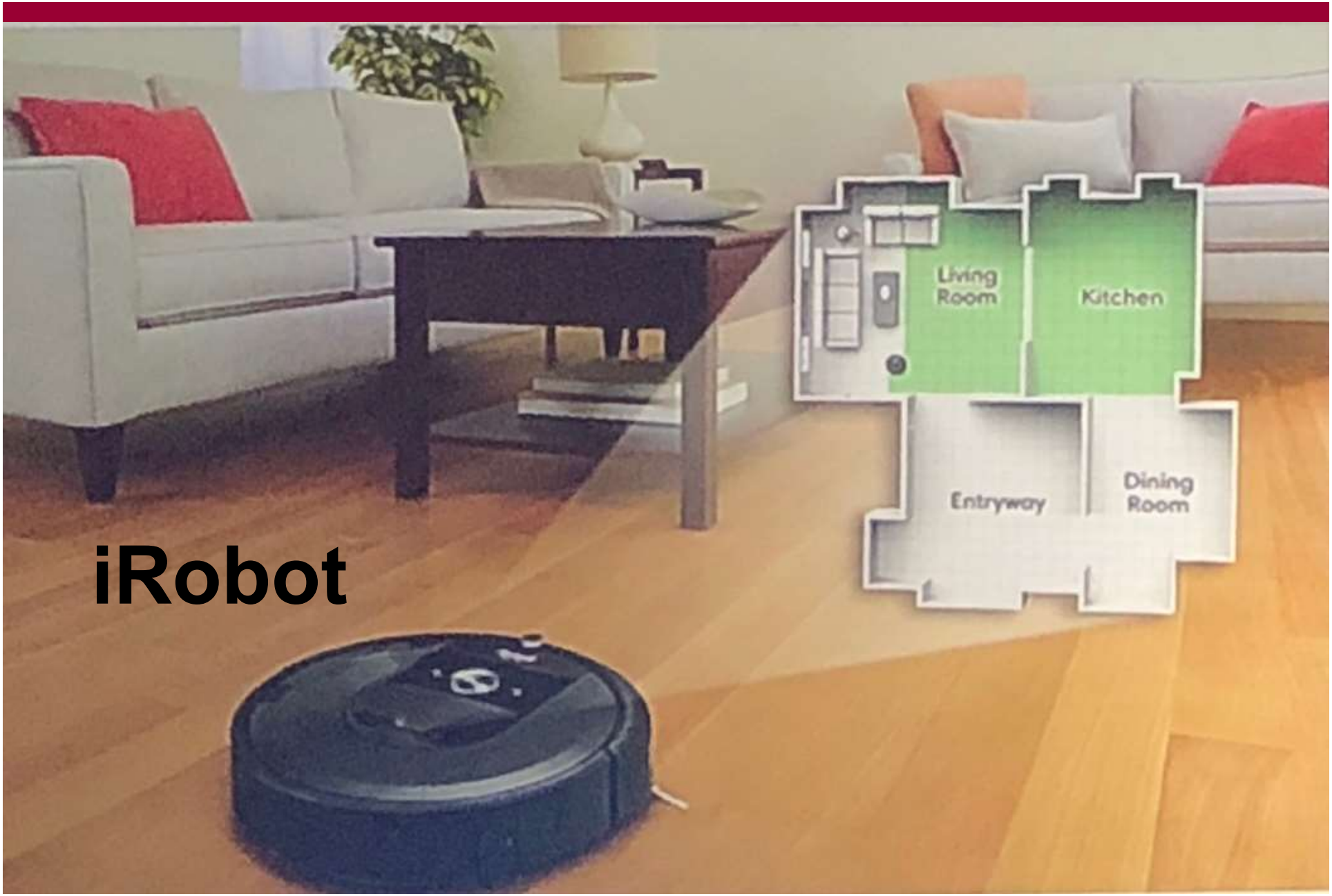
Appraiser Trainee

Insurance Inspector

Realtors Agents

Property Preservation Services

Smart Home Services



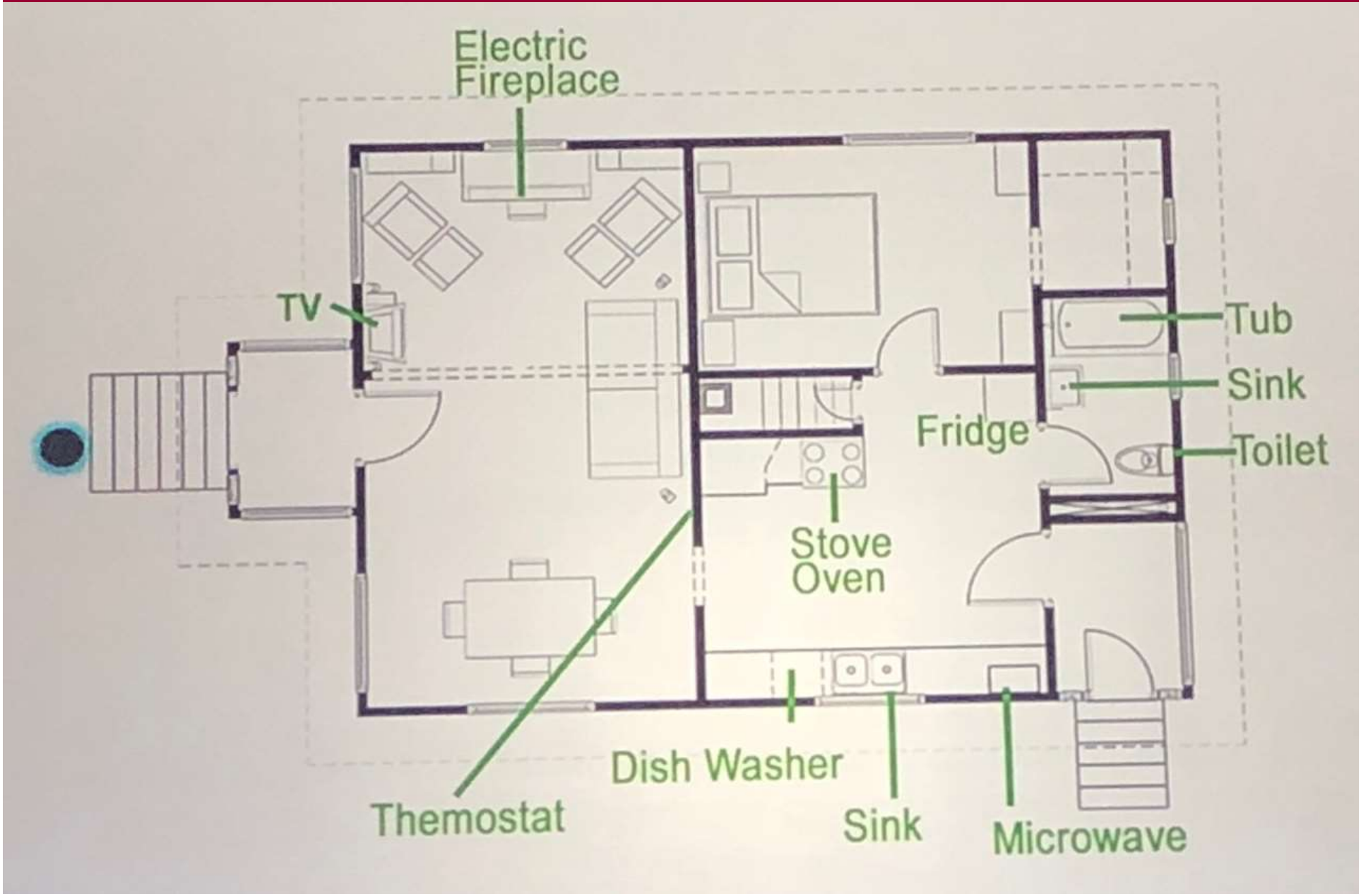
iRobot

A playground for AI

Multimodal sensory informatnon

Internal robot information

Imaginery


Electric
Fireplace
TV
Tub
Sink
Toilet
Fridge
Stove
Oven
Themostat
Dish Washer
Sink
Microwave

Matterport.com

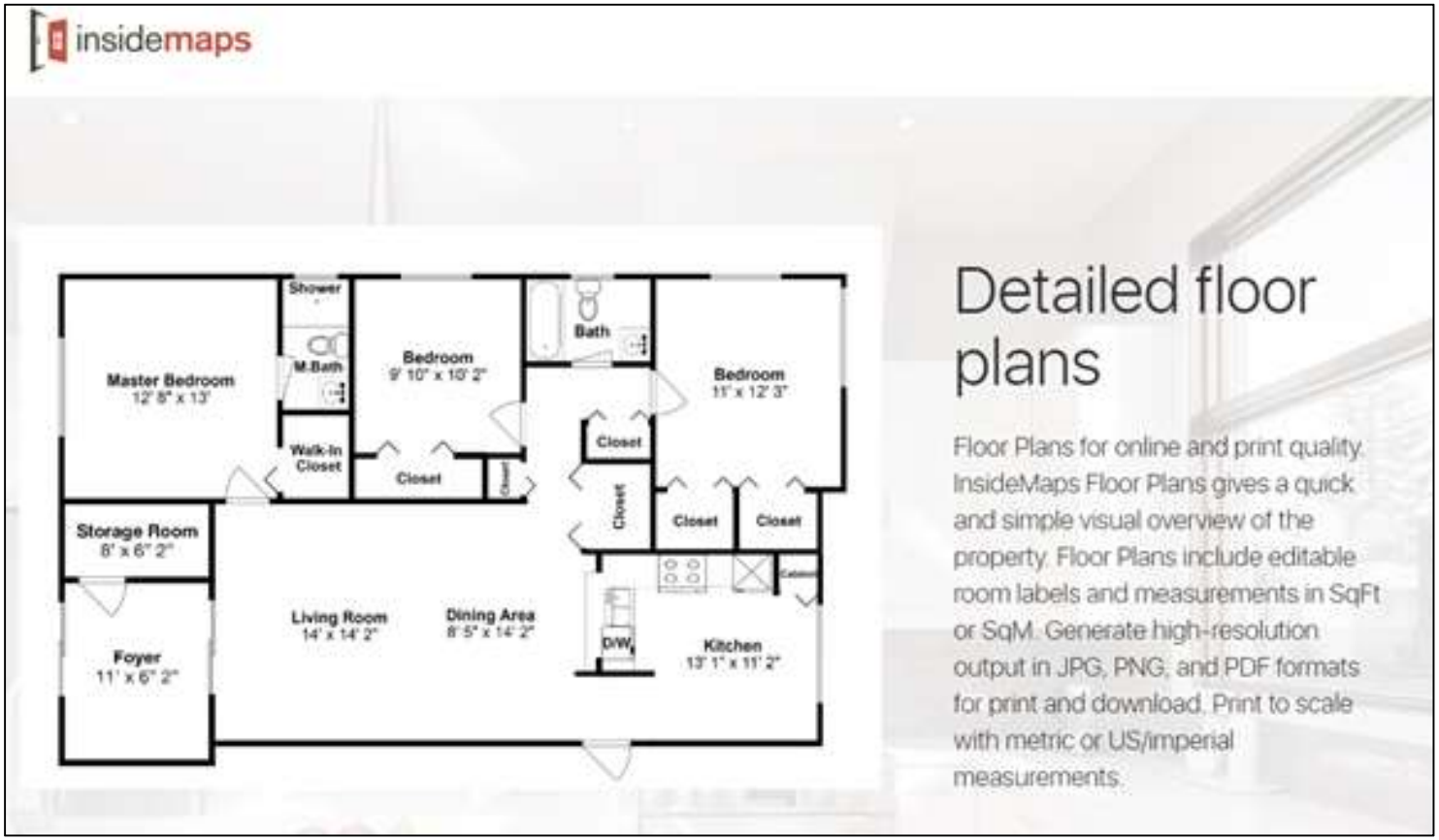
Scan a Space

Upload to Cloud

Share and Engage

Insidemaps.com

Insidemaps.com



Hover.to

ACCURATE MEASUREMENTS

✓ **Be confident in our measurements**

HOVER's measurements are **accurate and reliable to quote any project**. We provide you with all exterior measurements including roof, siding, windows, doors, brick, stone, trim and all other material types. Plus, specific line segments for corners, soffit, fascia and more.

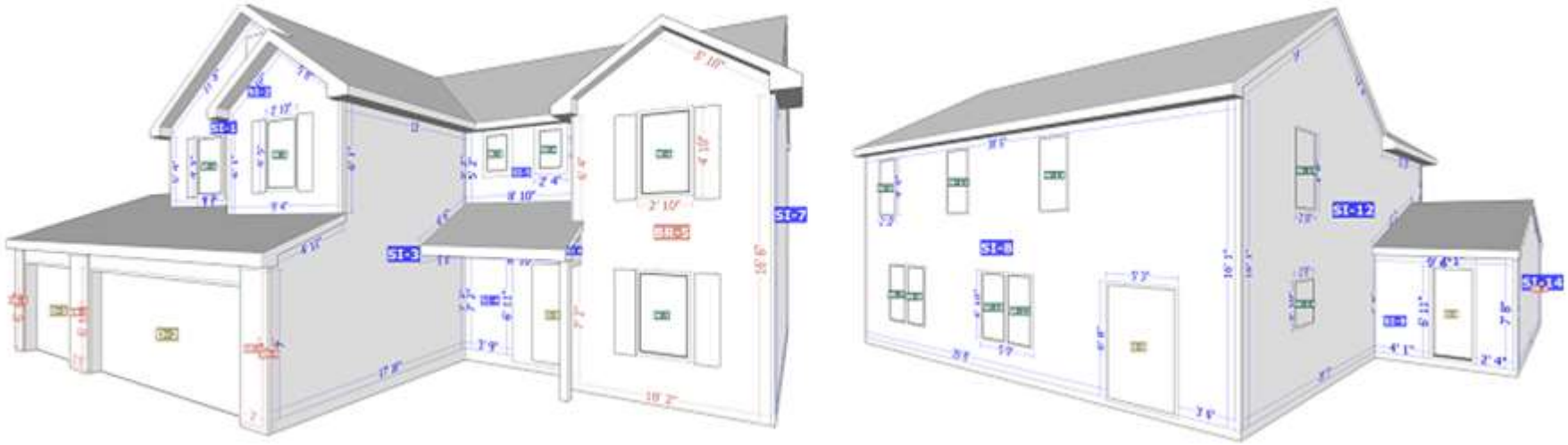
INTERACTIVE 3D MODEL

✓ **Build any home *exactly* the way your customers want**

Visualize home renovations on an interactive 3D model within just a few clicks - **no masking required**. Show homeowners exactly what their home could look like with different products and colors, and remove any hesitation around the remodeling project.

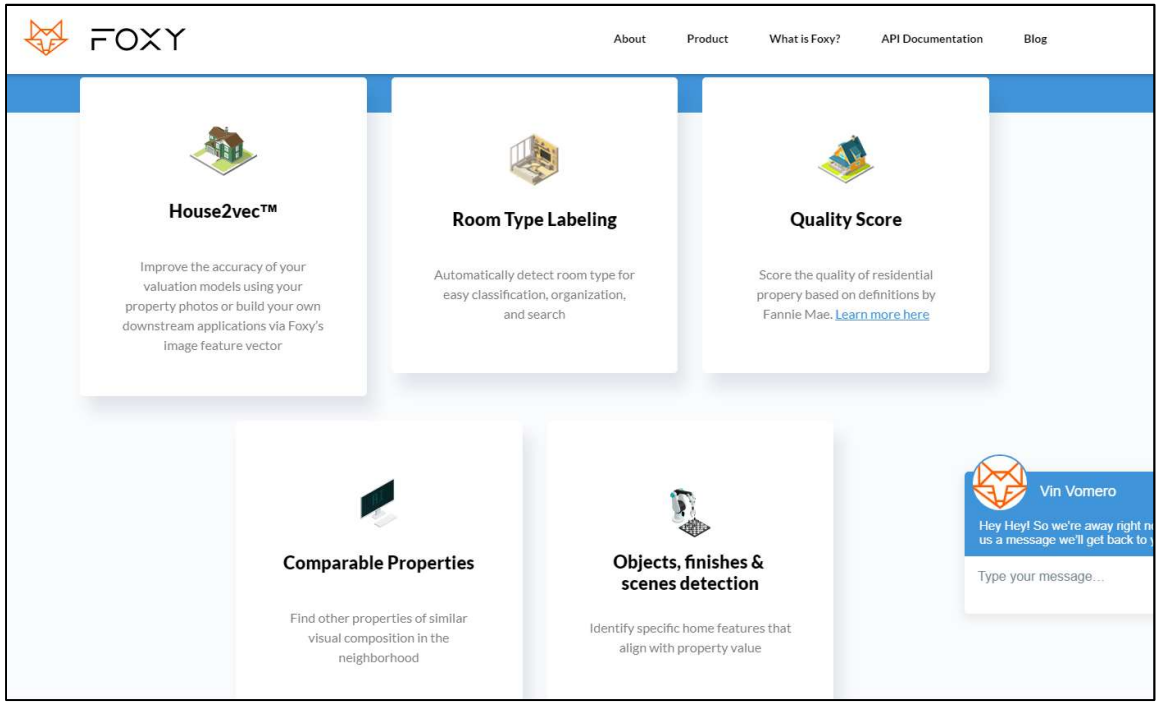
Hover.to

Measurements within 30 minutes of submitting photos



Artificial Intelligence & Photos

Use Artificial Intelligence to help you more accurately value residential property.



foxyai.com

Artificial Intelligence & Photos

Cape Analytics.com

Property Condition for Insurance

Aerial Imagery (from a plane)

The View from the Drone

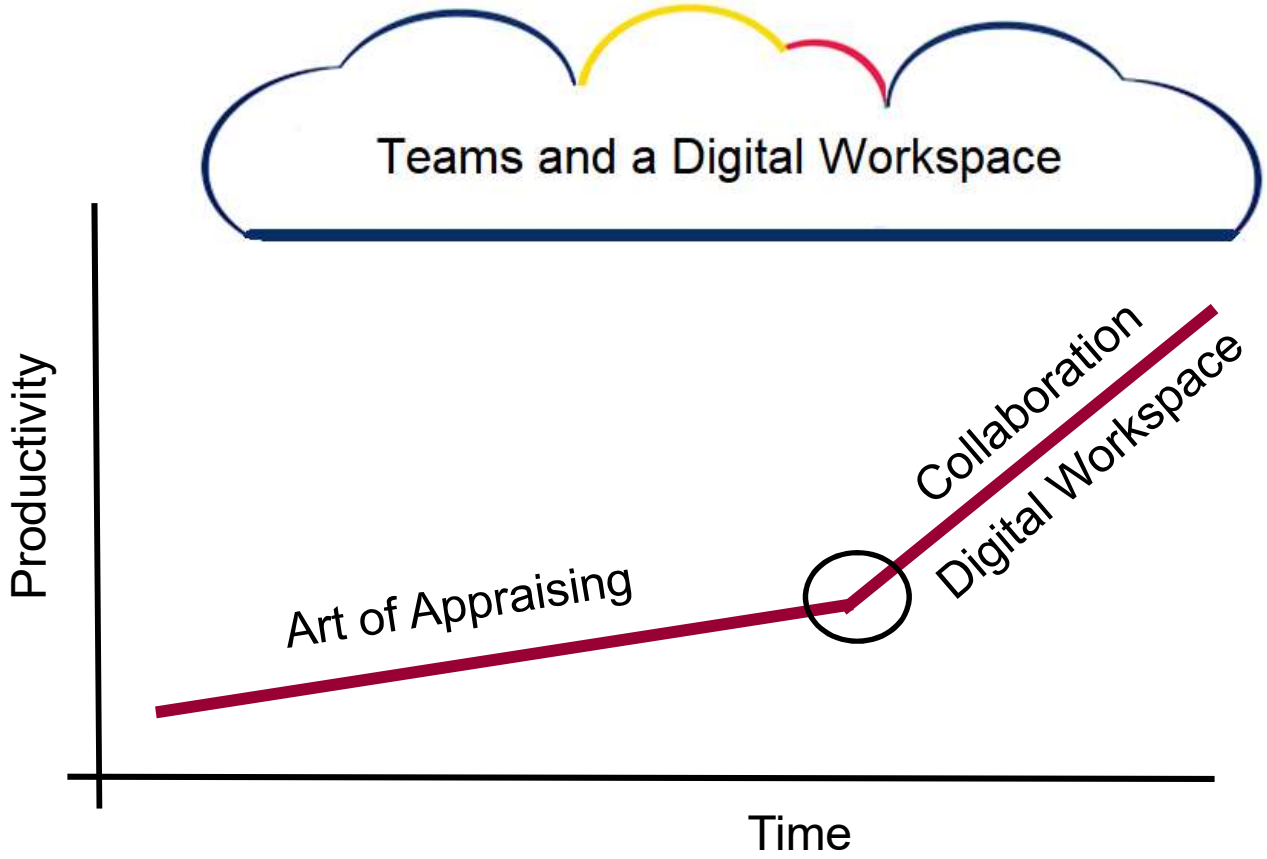
Virtual Tours now Common

Virtual Reality Inspections

Inspections by Homeowner

Summary

The Winning Technique



Think: e-Commerce Business

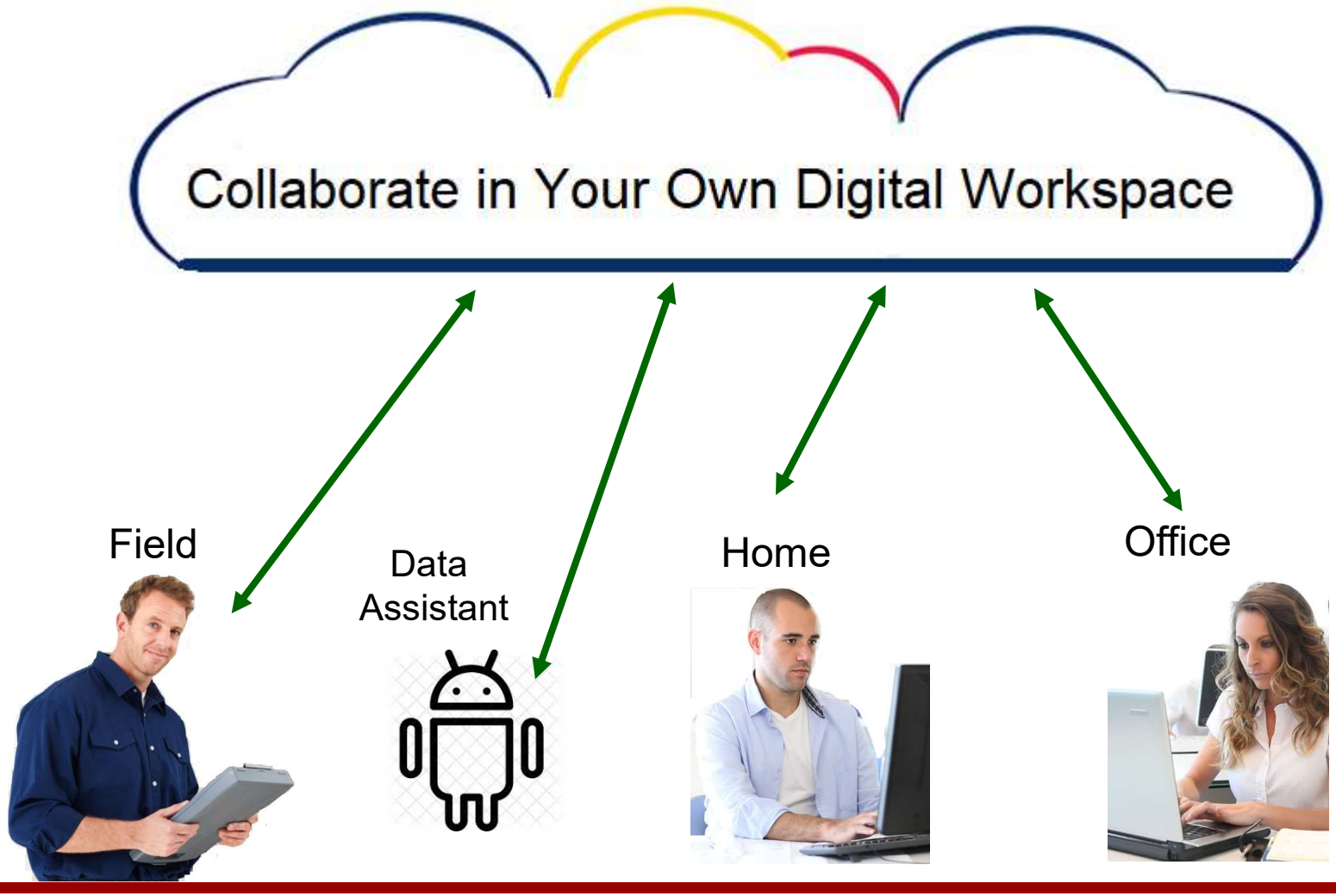
That delivers Value Certifications

- ✓ Within a few minutes to a few days,
- ✓ To Anyone,
- ✓ On Any Device

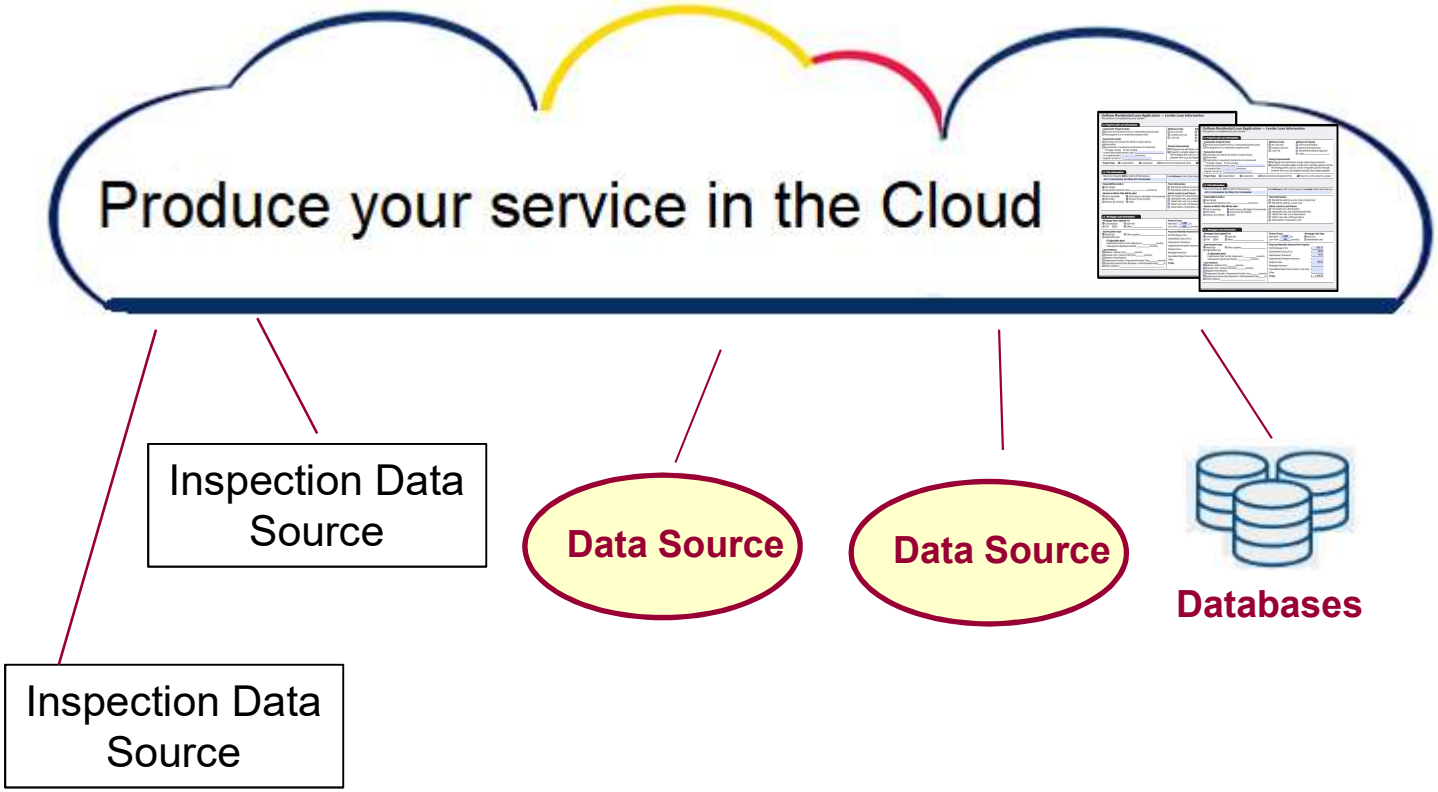
Breakout of the 1004 Box

Create an Appraisal Team

Make it easy to Collaborate

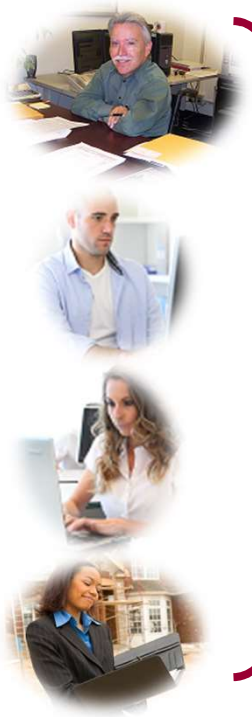


Production is in the Cloud

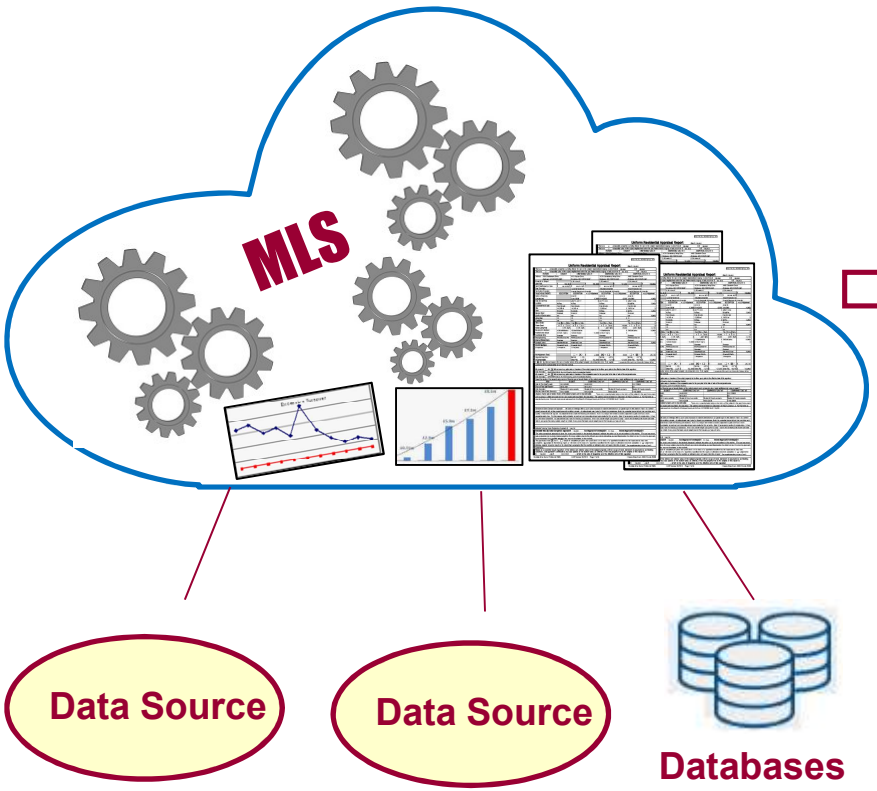


Team Appraising™

TEAM MEMBERS



DIGITAL PROPERTY VALUATION PLATFORM

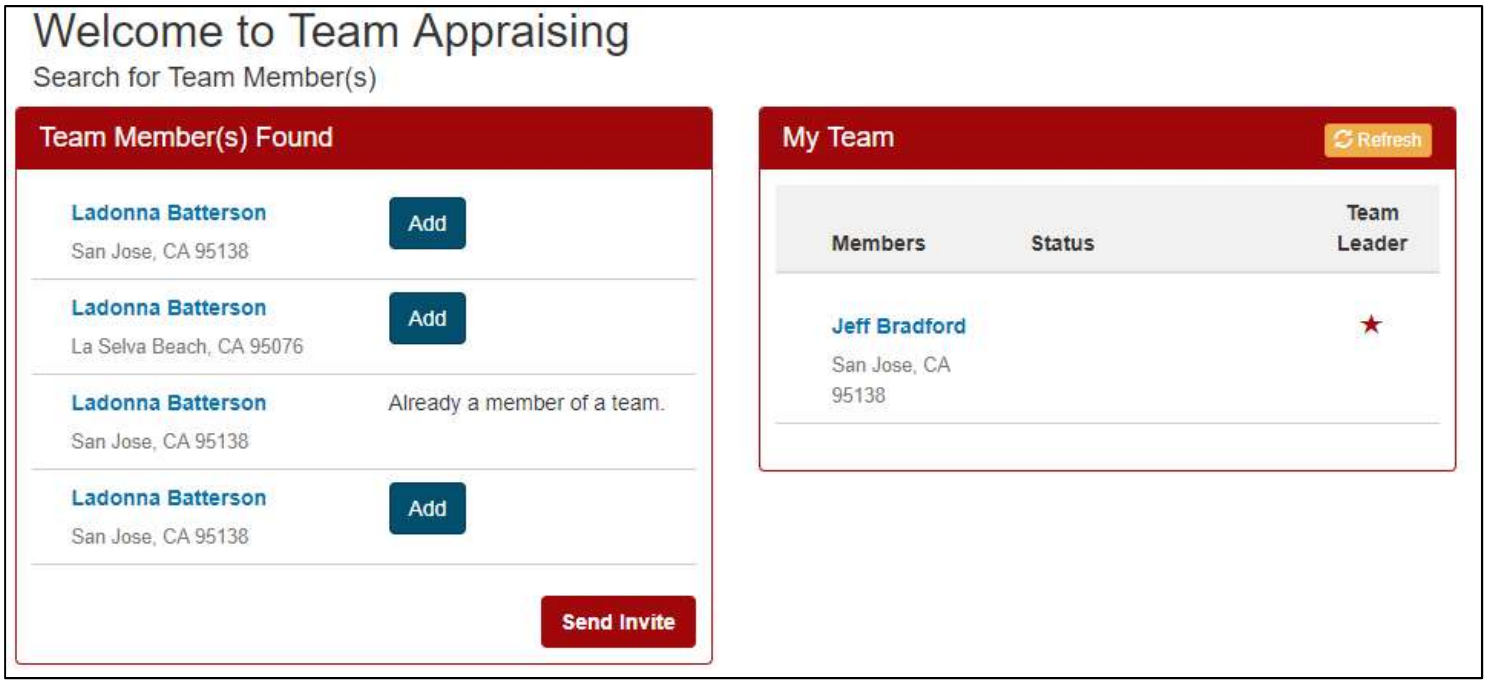


SERVICES

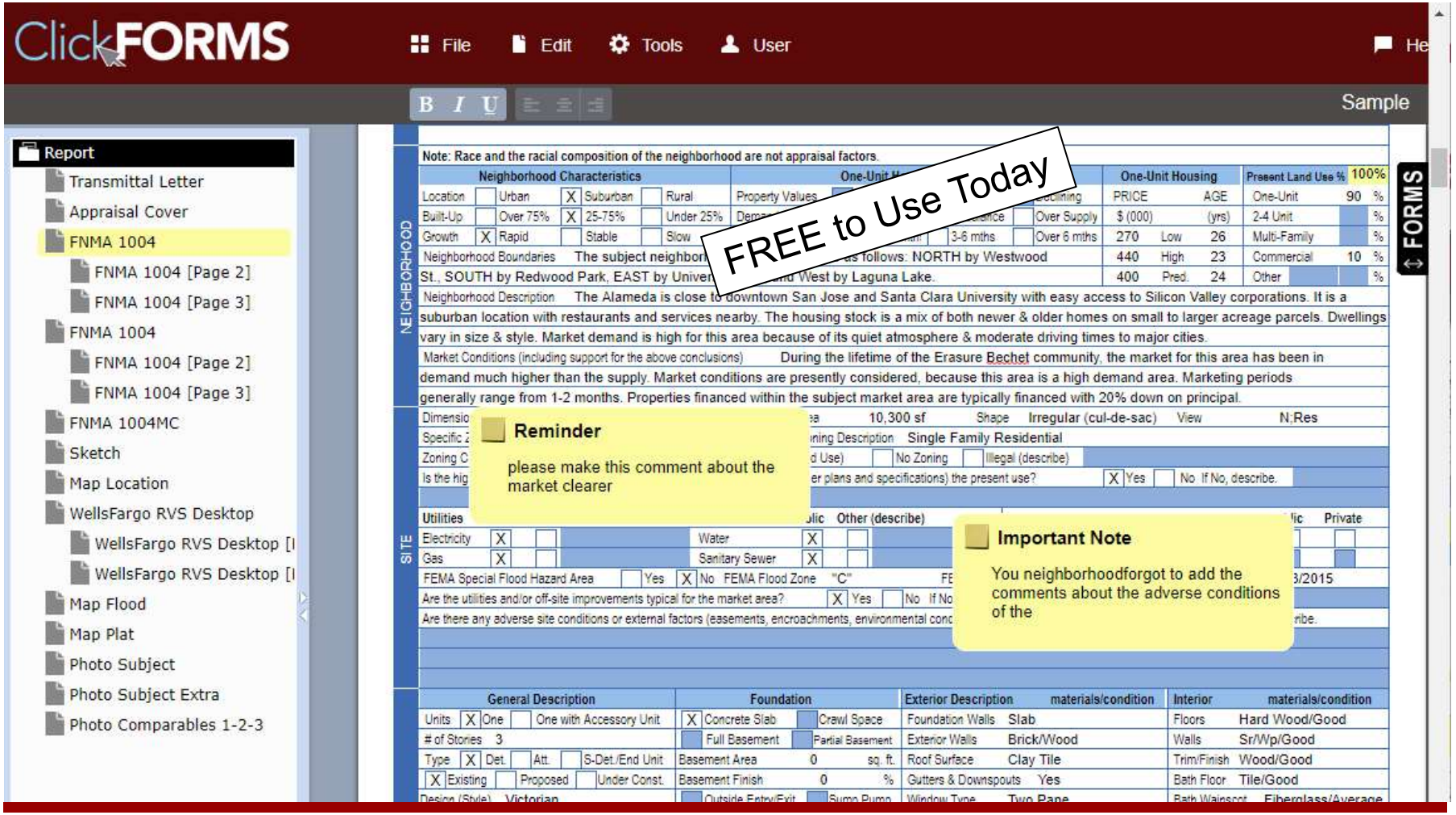
- Traditional
- Bifurcated
- Hybrid
- Instant

AppraisalWorld.com

Build Your Team



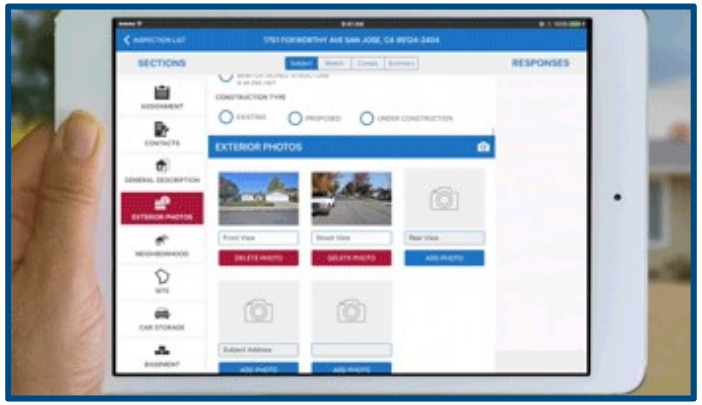
Online Form Processor



Inspect-a-Lot - Mobile App

Field

Office



Team Appraising

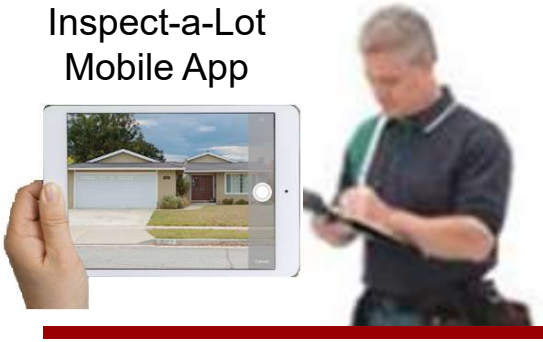
Trainee
Works in Field

Assistant
Works from Home

Trainee
Works in Office

Team Lead

Inspect-a-Lot
Mobile App



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How do you compete with Domino's?

Zume Robot Making Pizzas

This startup is raising $750 million to outmaneuver Domino's with pizzas made by robots

Zume Mobile Pizzeria

Doughbot can press any ball of dough into a pizza crust in nine seconds