Geospatial Analytics: Acceptability & Pricing of Risks

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Agenda

- Introduction to CoreLogic (Who are we?)
  - Huge data resources
- Importance of Location Accuracy
  - Parcel database
  - Parcels vs street extrapolation
  - Examples of why location matters
- Natural Peril Hazards
  - Flood
  - Wildfire
  - Others
- Examples of how this type of information can be used
  - High Risk Flood
  - Wildfire
- Questions?

CoreLogic Spatial – Who are we?

	First American	CoreLogic		
	2007-2010	2011-2012	2013	2014
Acquisitions	Proxix		CDS Riskmeter	EQECAT , MSB, WeatherFusion
Platforms	PxPoint	Xiance	RiskMeter	RQE, CE/RCT, Reactor
Capabilities	Spatial Analytics Geo-Coding	Hazard Analytics	Custom Territories SaaS / Integrations	Catastrophe Modeling Replacement Cost Real Time Hail Impacts

Spatial Solutions History – A Story of Momentum

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Spatial Solutions is a key business in the CoreLogic D&A segment:

- Delivers premium hazard data & locational accuracy solutions
- Staffed with GIS experts, Hazard Scientists and Engineers
- Founded in Flood Operations as a new way to deploy core assets
- Growth through recent acquisitions of RiskMeter, EQECAT and MSB
- Diversifies CoreLogic into Insurance, Oil & Gas and Utility markets
- Expands business footprint into new global markets

CoreLogic Spatial Solutions

Importance of Location Level Data

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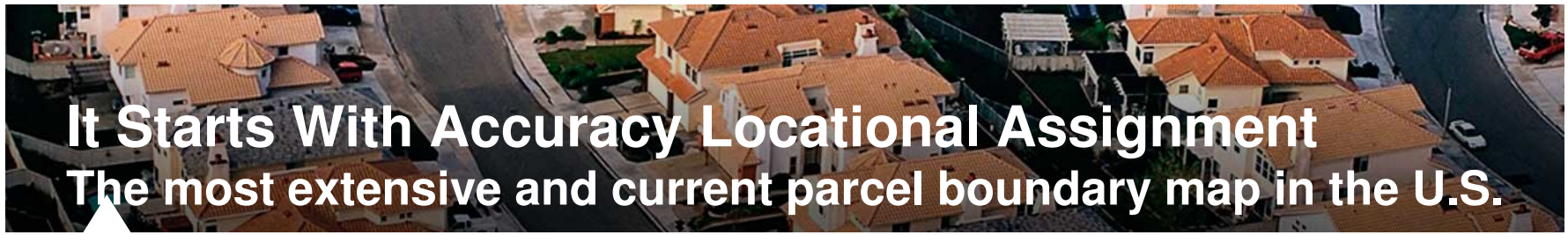
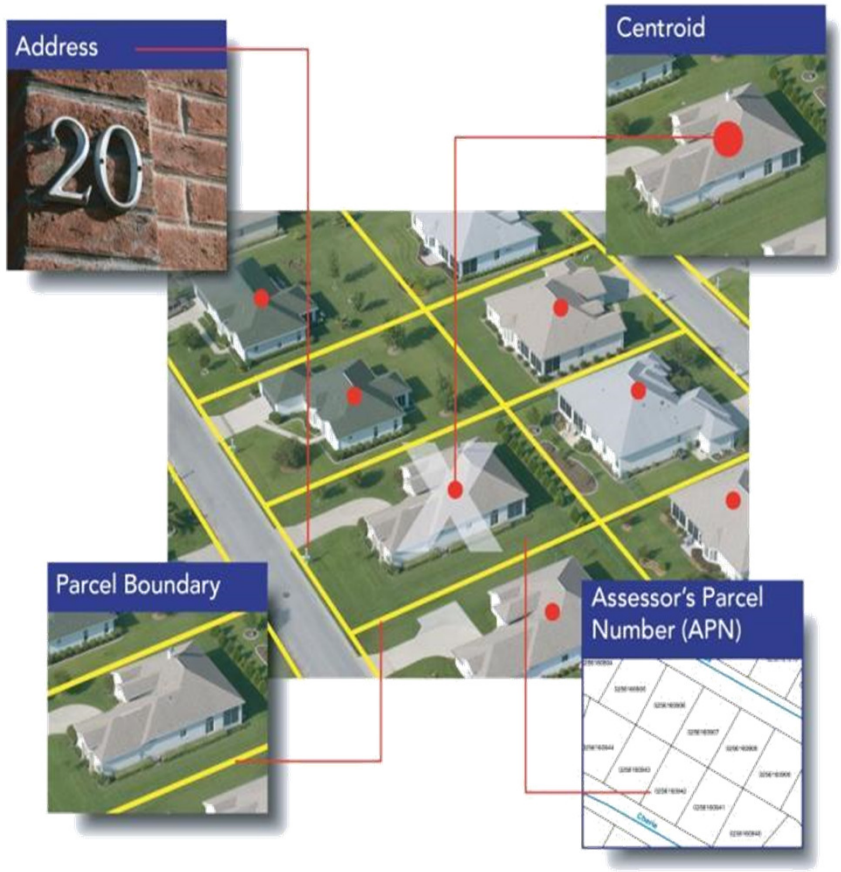


It Starts With Accuracy Locational Assignment

The most extensive and current parcel boundary map in the U.S.

- There are an estimated 148 million privately owned parcels in the U.S.
- CoreLogic has converted and normalized around 143 million parcels
- This is combined with an innovative and proprietary geo-coding engine
- Together, these tools go beyond county, zip or estimated accuracy to enable property level:
  - Geocoding accuracy
  - Risk assessment
  - Risk concentration
  - Granular and accurate results



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Geocode Comparison

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Parcels as the Relational Link

Geocode	
Latitude	25.898951
Longitude	-80.126806
Address Line	276 BAL BAY DR
City/State Zip	MIAMI BEACH FL 33154
PxPoint Data Set	PARCEL
Elevation, Slope, and Aspect	
Elevation (Feet)	1.31
Slope (Degrees)	0
Aspect	Flat
Mainland Determination & Distance	
Distance to Seaward Water Feature	101 feet
Seaward Water Feature Name	Biscayne Bay
Mainland: Yes or No	No
Coastal Storm Surge	
Risk Value	5
Risk Level	Extreme
Hurricane Landfall Probability	
% Tropical Storm Risk (Winds 39 - 73mph)	5.3
% Tropical Storm Risk (50-yr)	93.5
% Hurricane Risk (Cat 1-5 Storms)	1.6
% Hurricane Risk (50-yr)	56.3
% Intense Hurricane Risk (Cat 3-5 Storms)	0.4
% Intense Hurr. Risk (50-yr)	19.9
Flood Risk	
Flood Hazard Zone	AE
Undeveloped Coastal Barrier Area	COBRA_OUT
Special Flood Hazard Area (SFHA)	IN
Damaging Winds	
Straight Line Wind (SLW) Risk	Moderate
SLW Frequency	1 Event Every 4 - 6 Years
Hurricane Risk	Very High
Hurricane Frequency	1 Event Every 3 - 5 Years
Tornado Risk	Moderate
Tornado Frequency	1 Event every 5 - 8 Years
Sinkhole	
Risk	Low
Distance to Very High Sinkhole Risk	Greater than 10 miles
Wildfire Risk	
Brushfire Risk	Urban
Nearest high-risk value	Very High
Distance to High/Very High	> 1 mile

- The Parcel Identification Number (PIN) or Address links the physical parcel to real estate data; and
- Latitude/Longitude links the hazard risk and reg. compliance data to the parcel.

Parcel Information	
PIN:	1222260022310
Address Line:	276 BAL BAY DR
City/ State/ Zip:	BAL HARBOUR FL 33154
Latitude:	25.898951
Longitude:	-80.126806

PIN:	1222260022310
Property Address:	276 BAL BAY DR
Owner:	BEV SIEVERT
Land Value:	$9,892,934
Building Value:	$2,349,327
Market Value:	$12,242,261
Assessed Value:	$9,375,066
Adj Sq Footage:	9,988
Year Built:	1977
Bedrooms:	9
Baths:	10
Stories:	2
Living Units: 2	2
Adj Sq Footage:	9,988
Lot Size (Sq Ft):	46,279
Year Built:	1977
Construction:	Composite
Pool:	In Ground
Roof Cover:	Tile

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COMPLETE VIEW OF PROPERTY

FINANCIAL RISK

RECONSTRUCTION COST OF THE BUILDING

EARTHQUAKE RISK

ROOF CONDITION

IS THIS A HIGH CRIME AREA?

HOW FAR AWAY IS THE CLOSEST FIRE DEPARTMENT?

CONTENTS, BUILDING AND BUSINESS INTERRUPTION EXPOSURE

WHAT ARE THE FIRE HAZARDS?

PROXIMATE OCCUPANCIES

WHAT IS THE CLASS OF CONSTRUCTION?

FIRE RATING

SIDING AND EXTERIOR OF THE BUILDING

INDUSTRY CODE

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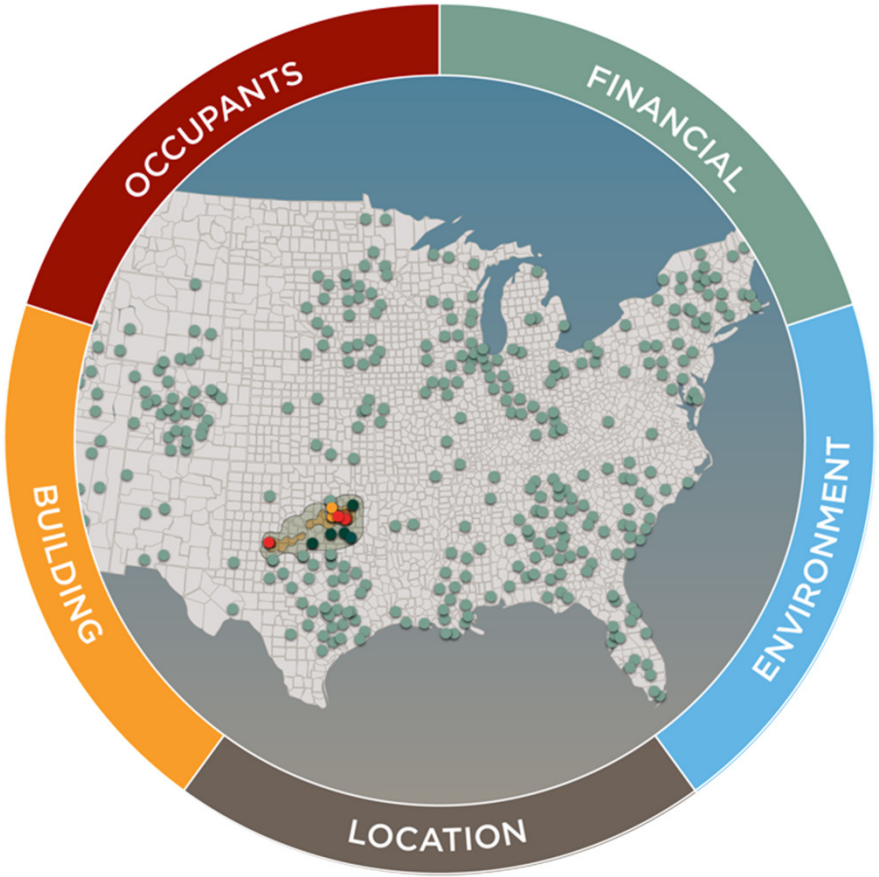
POINT TO PORTFOLIO



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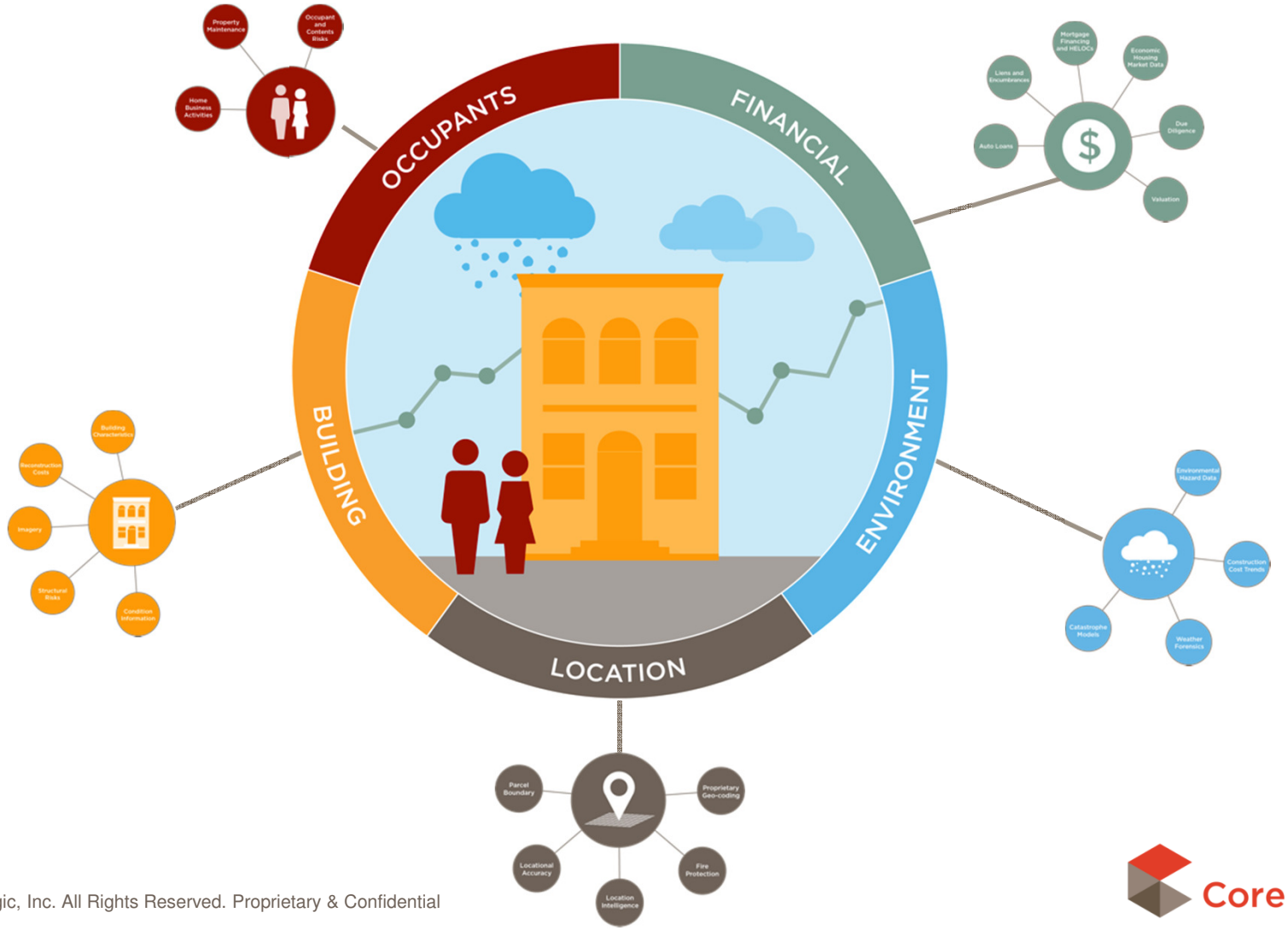
Complete. Current. Connected.™



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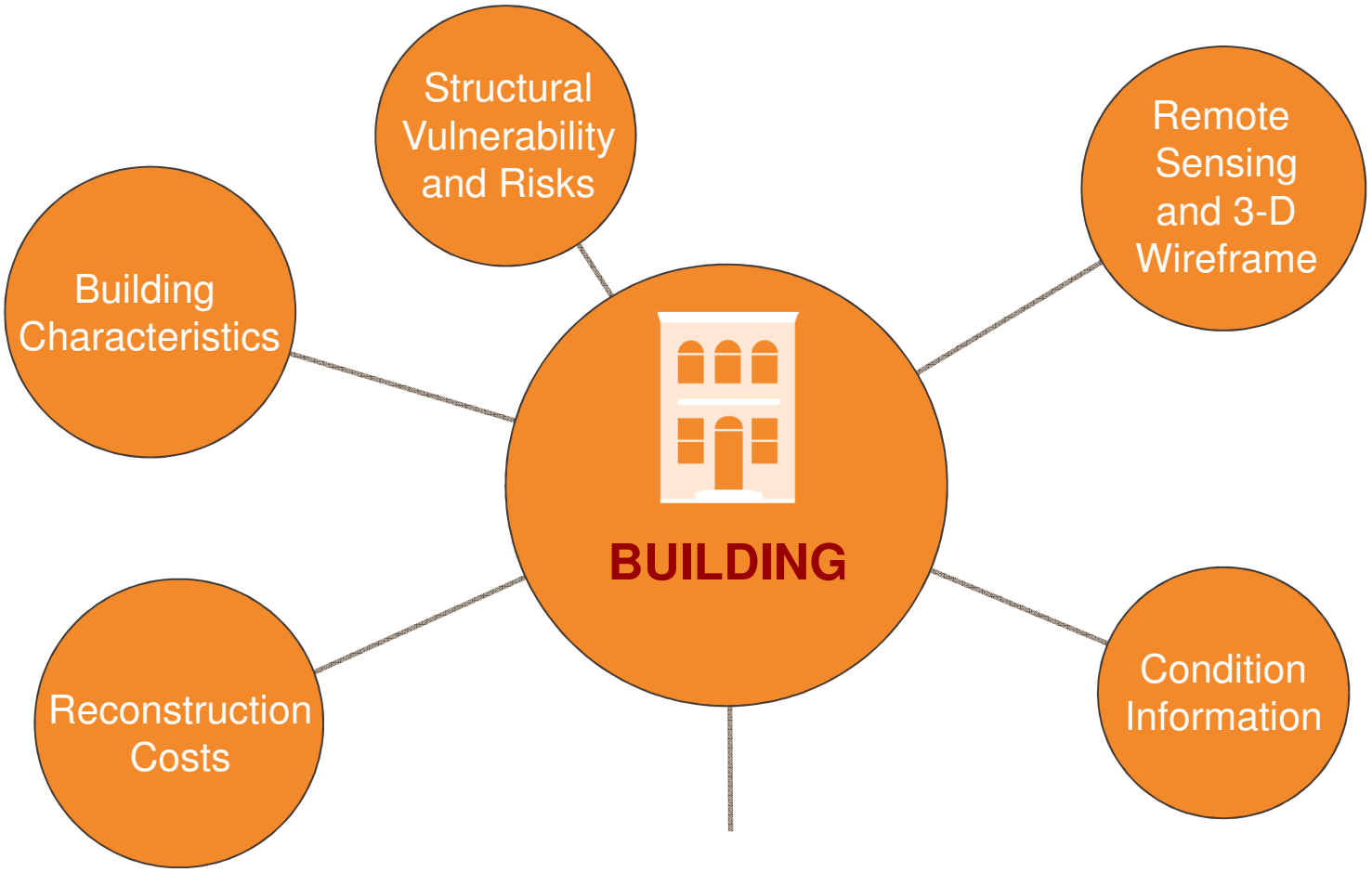

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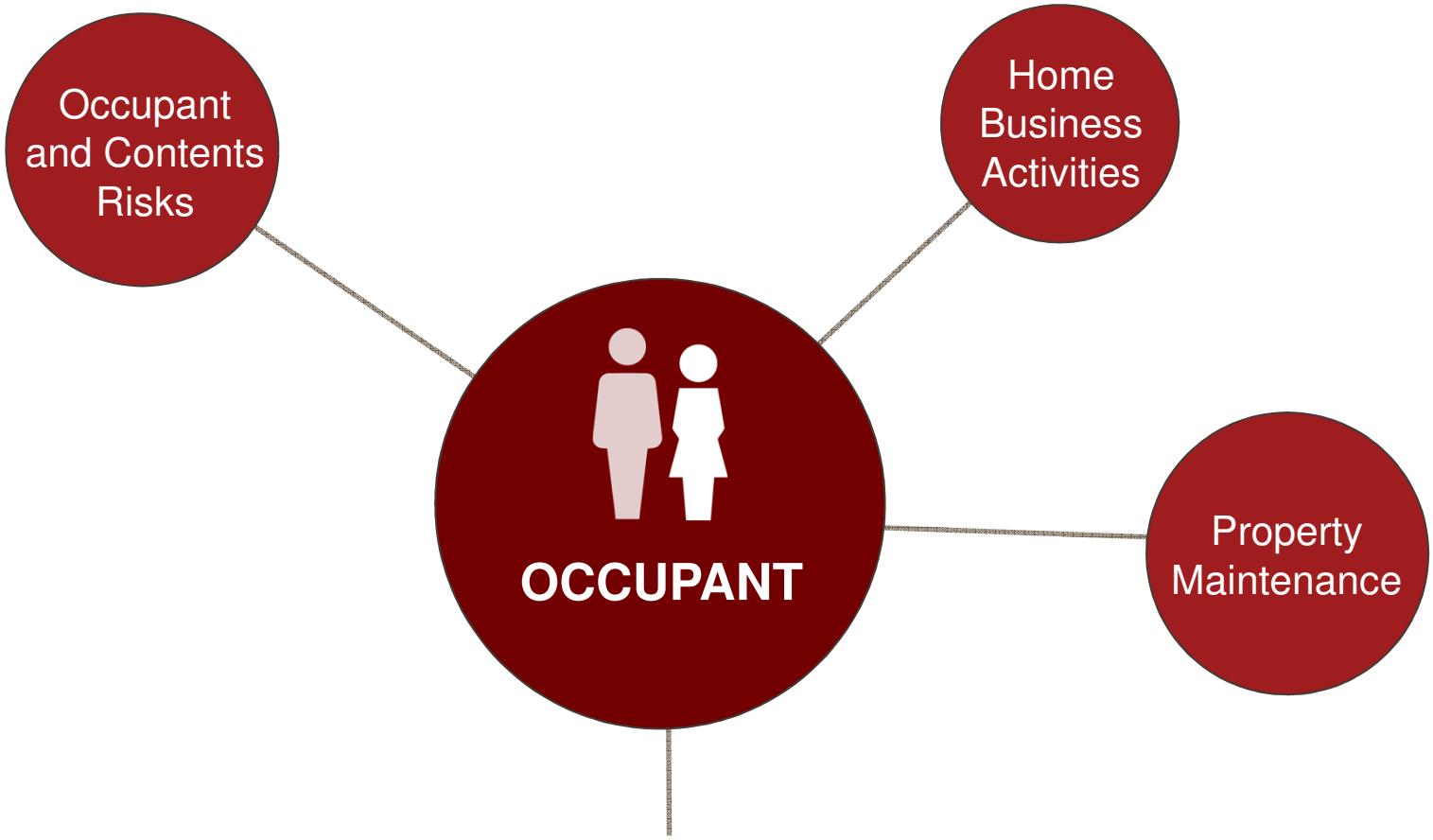

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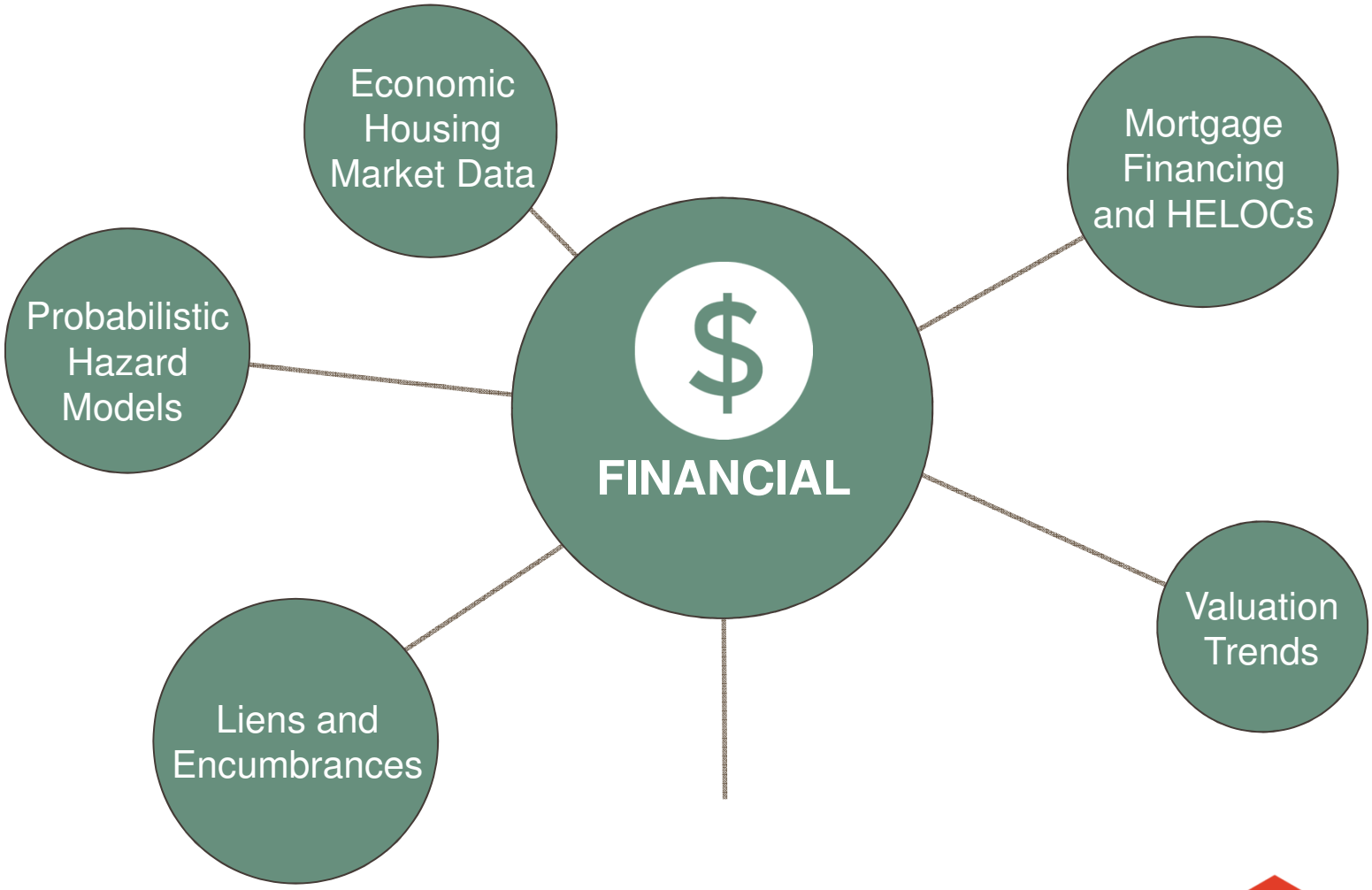

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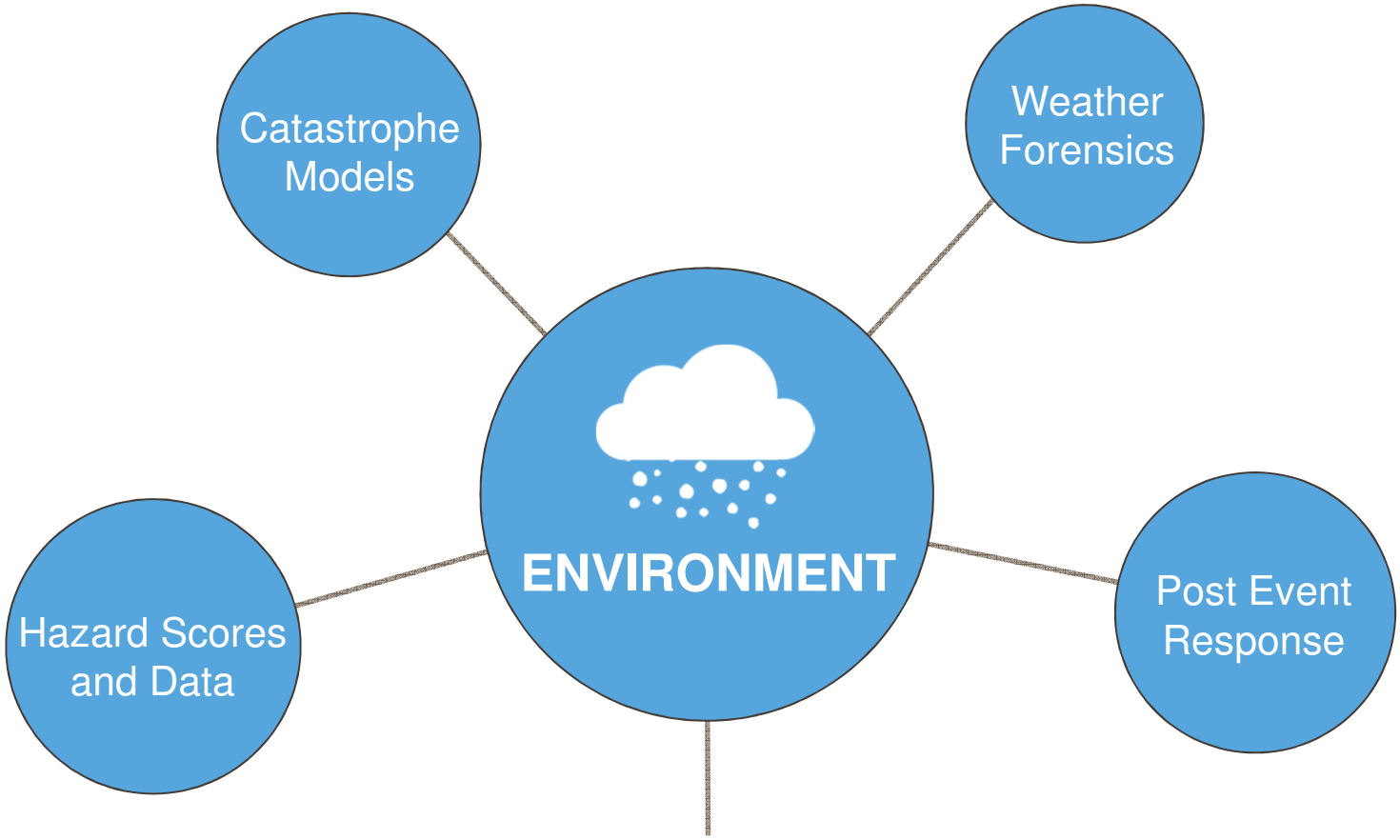

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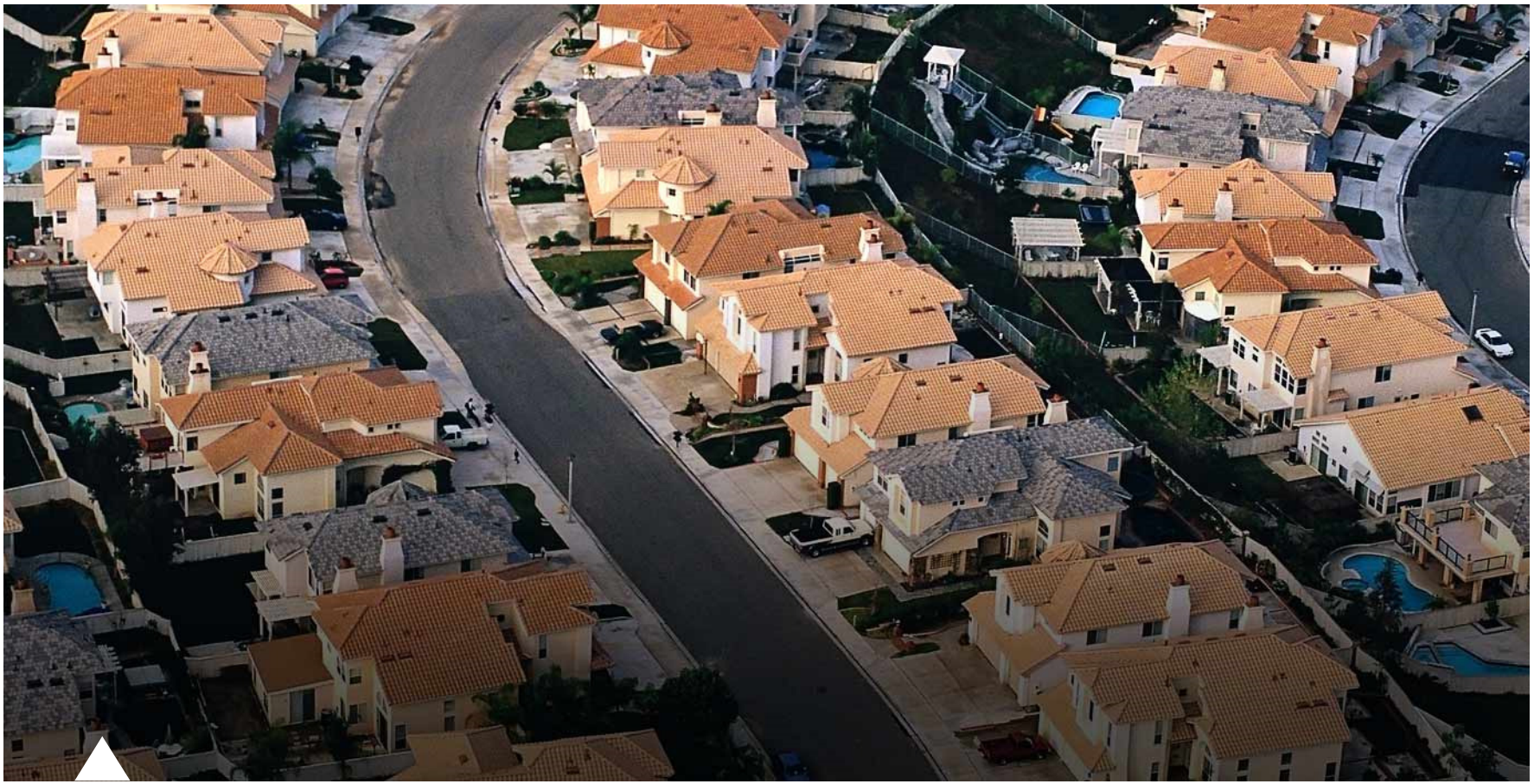

Natural Hazard Perils

- Flood

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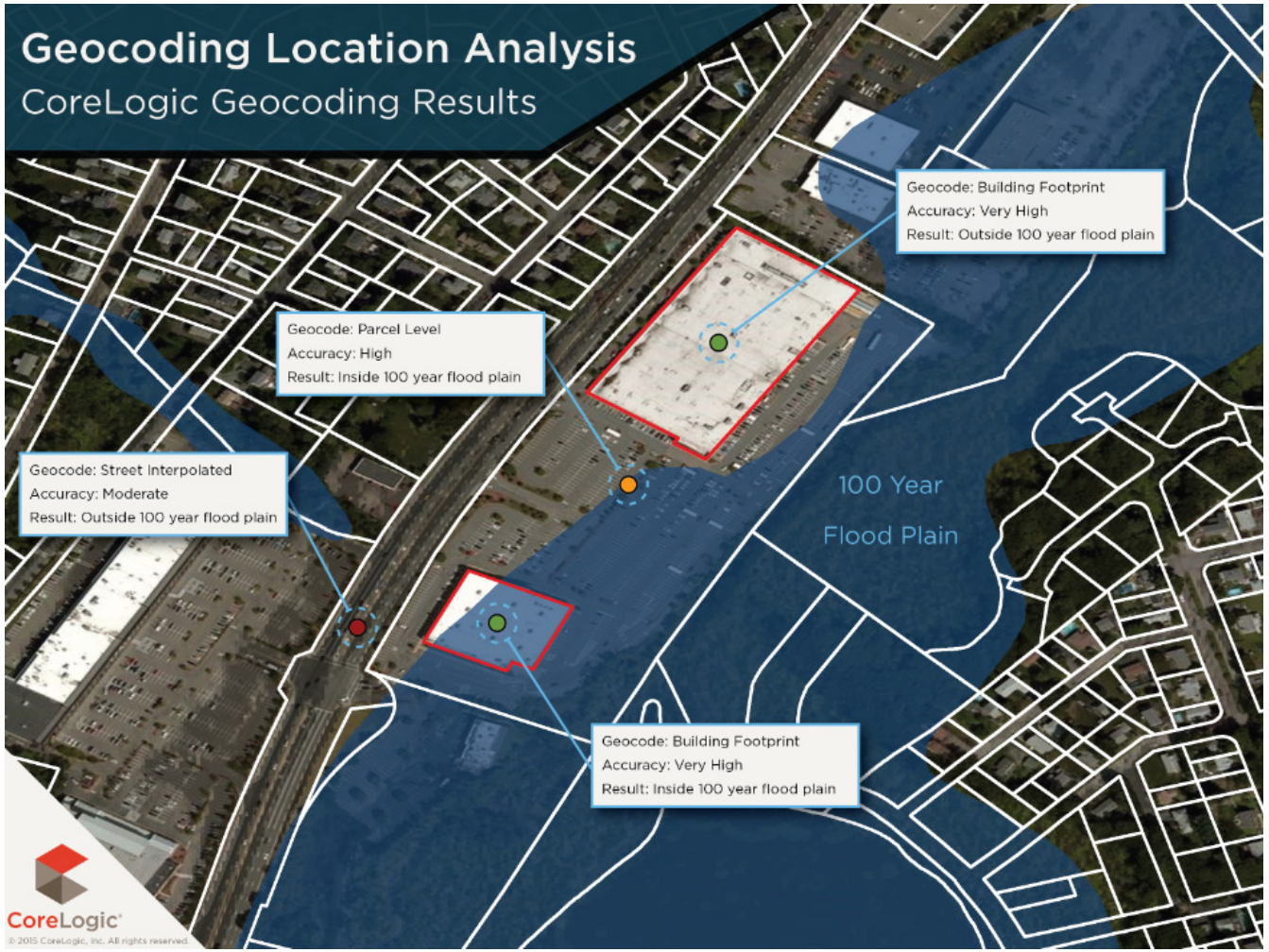
Flood Risk Score (FRS)

- Flood underwriters are moving beyond the flood zone determination to CoreLogic Flood Risk Score (FRS)
  - A more advanced risk assessment tool that combines federal flood zones with hydrological science and critical risk data
- Elevation and comprehensive hydrology data, combined with an internal database of over 90,000 dams, levees and customized flood analysis provide an extensive flood risk management solution
- FRS provides a precise and graduated risk assessment that distinguishes incremental levels of risk for properties located both “in” and “out” of designated floodplains
- When used in conjunction with CoreLogic Combined Sewer Area layer, the technology can identify properties that that pose an highly elevated risk of Sewer Backup (recently released a Sewer Back Score product).
- Also available is a Flash Flood Risk Score (FFRS) and Basement Flooding Risk Score

Commercial Location – More complex



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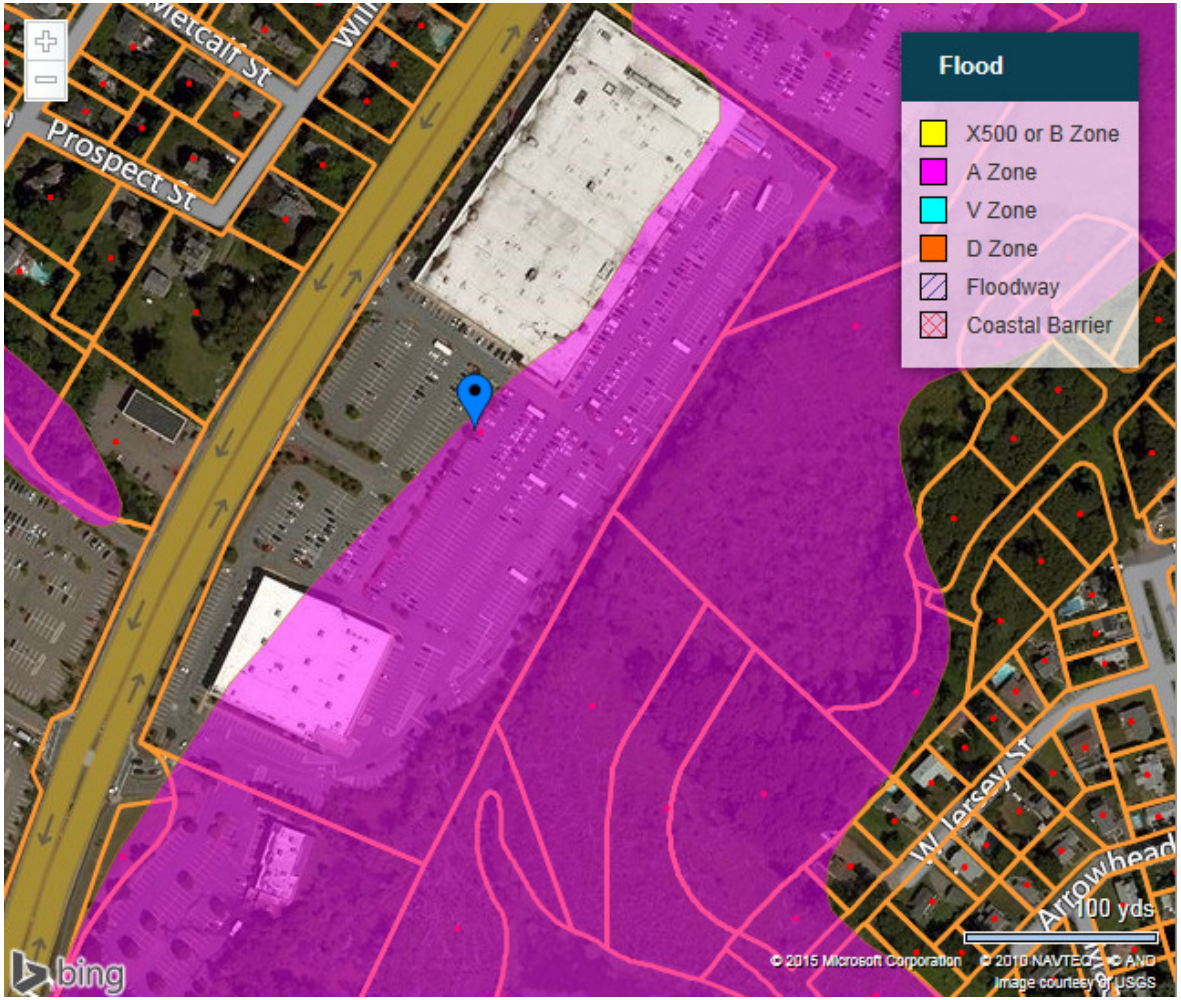

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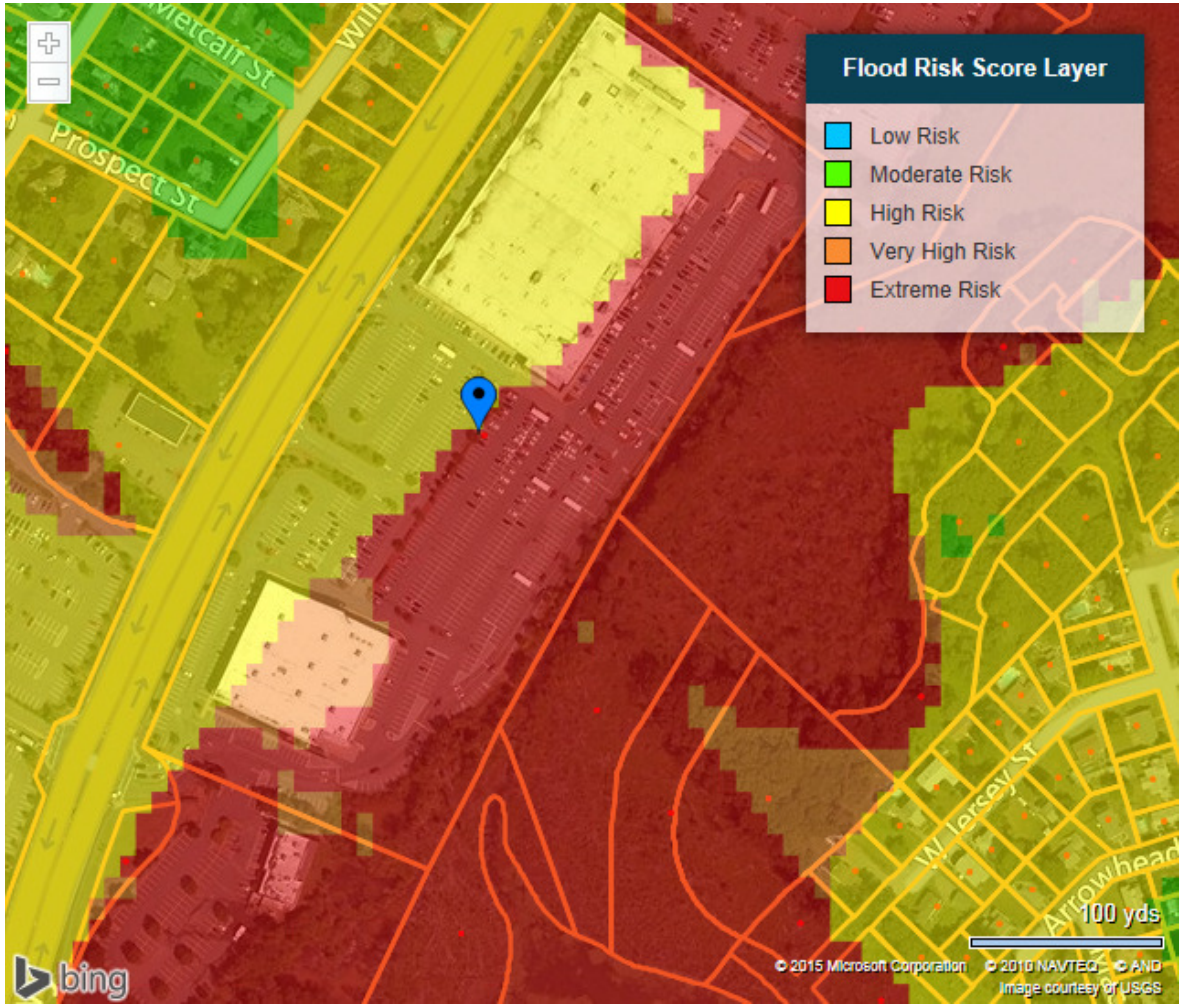

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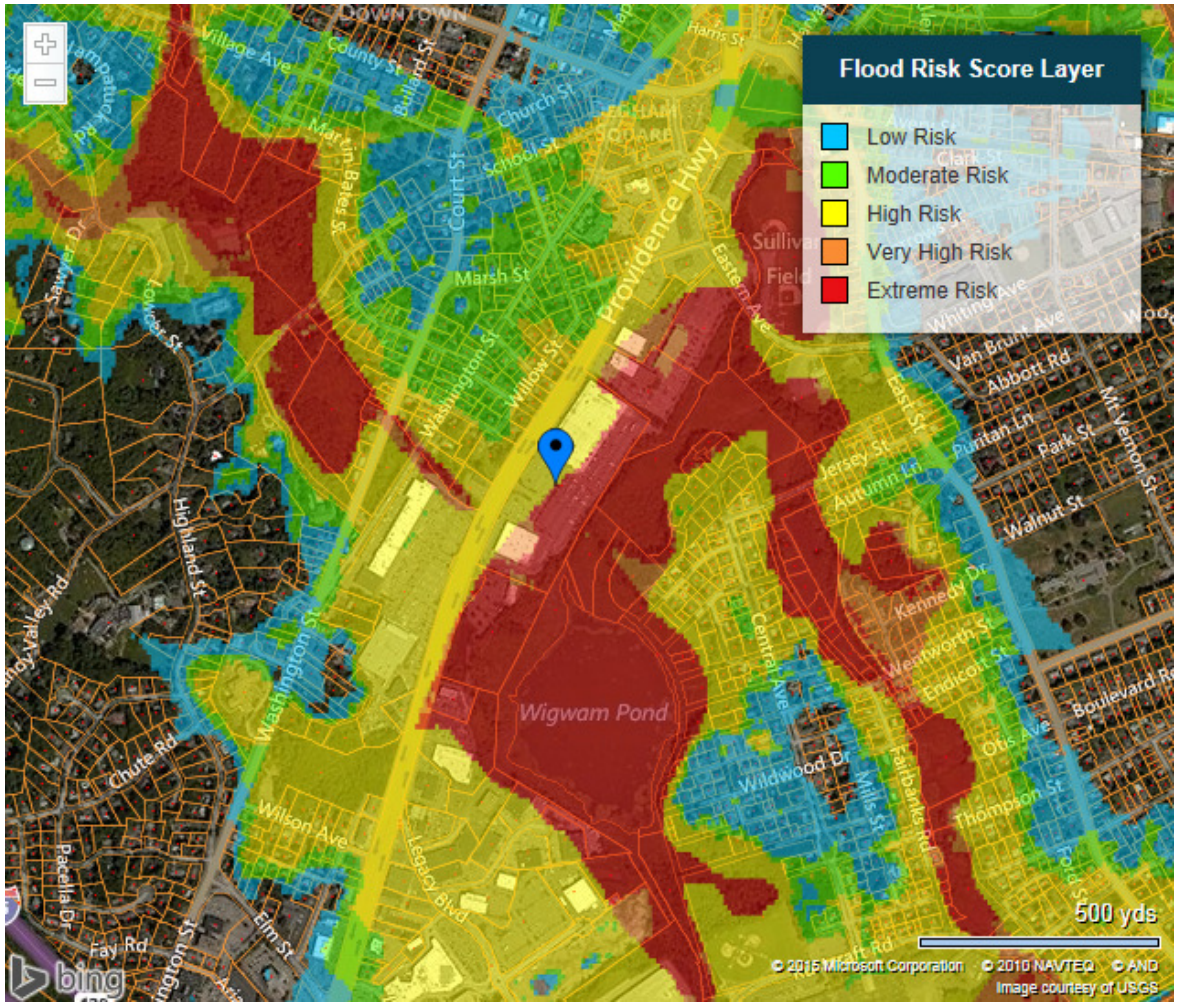
Commercial Location – More complex



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Profitably Insuring the risk of flood

A probabilistic model supports key insurance activities

- Risk Differentiation
  - Ability to use a catastrophe model to differentiate the insured risk to a property, including credits and deficiencies as identified in underwriting cycle
- Pricing Adequacy
  - Ability to use a catastrophe model to measure the cost of risk, as an input into a rating/pricing formula
- Capital Management
  - Ability to evaluate concentration risk and manage capital adequacy for ratings and regulation

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Flood Model Analysis in Brief

- Data
  - Over 100 different data layers, spanning digital elevation maps, flood zonation, stream boundaries, coastal defenses, levee and other flood defenses and many more were used to develop the most coherent flood model
  - Uses same Flood zone / digital elevation maps as FRS
- Science
  - CoreLogic's flood risk scientists (hydrologists, meteorologists, GIS specialists, engineers) have been supporting flood risk management in the US for more than a decade
- Analytics
  - Grid-scale computing delivers probabilistic stochastic modeling results into a production underwriting environment to support insurance

CoreLogic Flood offerings to Insurers

A suite of products to cover the insurers' needs

Insurance activity

Screening → Pricing → Portfolio Risk

CoreLogic Products and Value Proposition

Flood Risk Score

Single dimensional evaluation of risk
Easily implemented into u/w Process

Probabilistic Flood Model

Comprehensively include mitigation credits,
u/w info and policy terms into enterprise risk

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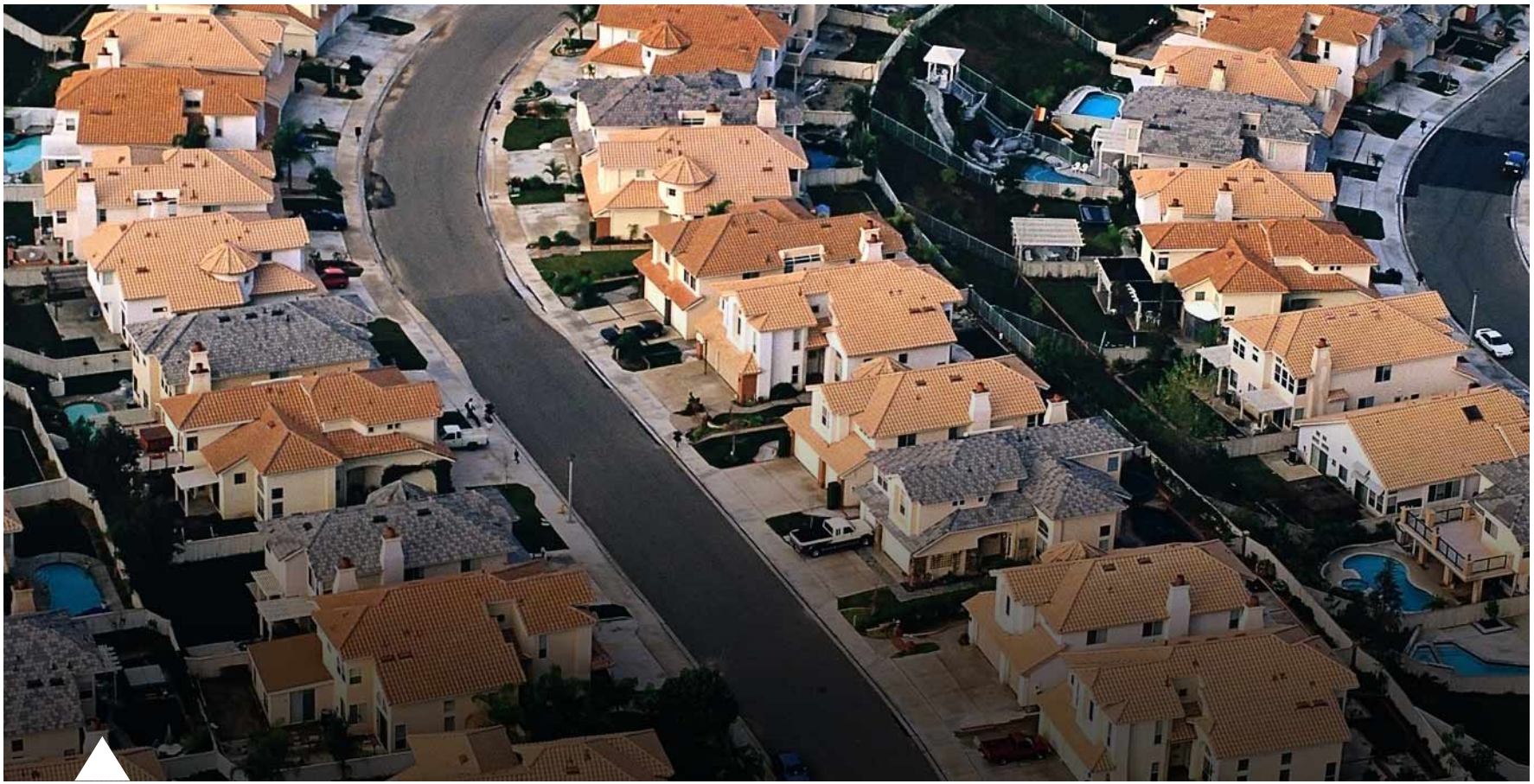

Natural Hazard Perils

- Hazard Risk Score (HRS)

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Hazard Risk Score (HRS) Overview

- Is a unique product designed to combine nine natural hazard products into a single easy-to-use score.
- For every location across the United States, a Hazard Risk Score is derived with underlying data for each of the nine natural hazards.
- All of this underlying data is combined into an aggregated, consistent and normalized value that allows statistically valid combinations to be made.
- Locations with higher risk levels, or exposure to multiple hazard risks, will receive higher scores than those with minimal risk levels.
- Locations with lower risk scores would have a lower exposure to loss from the underlying risks.
- The Hazard Risk Score also factors in an individual risk's contribution to total loss as part of the overall score.

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Hazard Risk Score Overview

One comprehensive score spanning nine natural hazards

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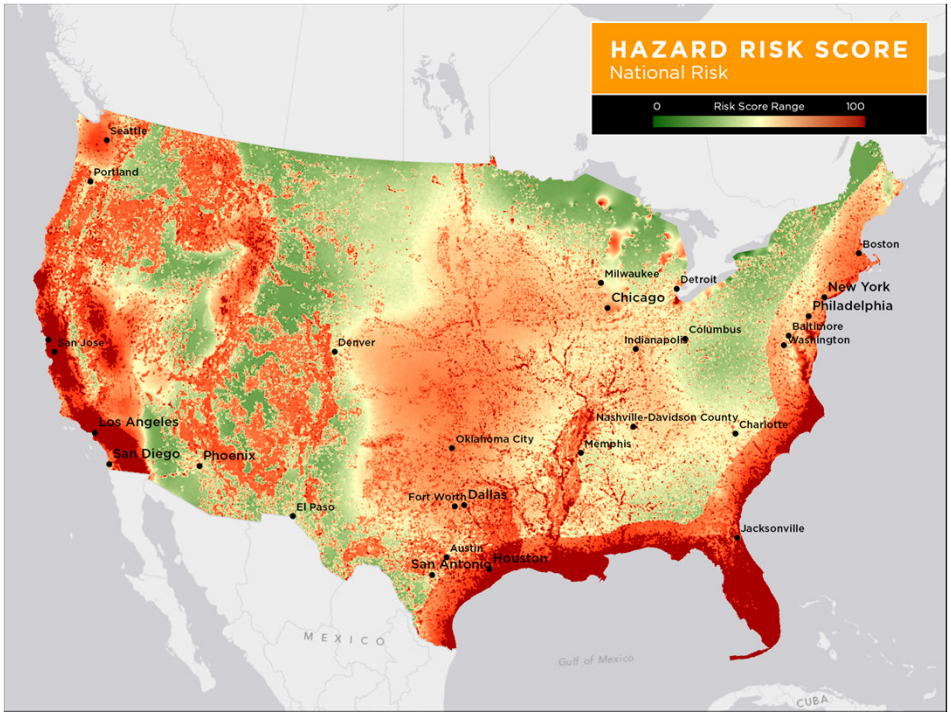
Hazard Risk Score Overview

- The single normalized score is used to predict the risk of loss from multiple natural hazard events, as well as the associated probability of financial losses occurring.
- The probability of an event, or the frequency of those events, is a significant factor in determining the risk levels associated with the individual hazard layers (i.e. a higher risk level indicates a higher probability that the risk event will occur).



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Additional Hazard Databases

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