Geospatial Analytics for Anti-Money Laundering & Counter Threat Finance Investigations

Dan Steiner
Adjunct Faculty, Penn State University & Owner, Orion Mapping
DanSteiner@OrionMappingLLC.com
Mitigate the Threat

Q: What actions should a financial organization take in finding, freezing, and forfeiting criminally derived income and assets?

• Anti-Money Laundering (AML)

• Counter Threat Finance (CTF)

• Transactions = relationships between entities
Typical Cash Money Laundering Scheme

Collection of Illicit Money

1. Placement
2. Layering
3. Integration

More than just money is transferred

High Value Transactions
• Cash & Currency
• Antiquities, Artwork
• Real Estate

How to handle Banking Anomalies?

Bitcoin … Digital Currency?
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<thead>
<tr>
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<th>Date</th>
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<th>Originator Acct Number</th>
<th>Beneficiary</th>
<th>Beneficiary Acct Number</th>
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Financial Data is Geospatial Data

- People
- FIs
- Financial Link-Network
- Transactions

- Risks
- Proximities
- Unusual Activity
- Large Amounts of xxxx

“Know Your Customer” & Verify Client Identities
## Geospatial Analysis

<table>
<thead>
<tr>
<th>Method</th>
<th>Analytic Question</th>
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</thead>
<tbody>
<tr>
<td>Descriptive</td>
<td>What happened?</td>
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<tr>
<td>Real Time</td>
<td>What is happening now?</td>
</tr>
<tr>
<td>Predictive</td>
<td>What could happen? Likelihood?</td>
</tr>
<tr>
<td>Prescriptive</td>
<td>What should we do?</td>
</tr>
</tbody>
</table>
Data Collection & Management

• Georeferenced data & Data enrichment
• Imagery, where relevant
• Geospatial information
• Regulatory & International Organizations
  ✓ Dep’t Homeland Security, FBI, State Department
  ✓ Financial Action Task Force (FATF)
Current Geospatial View of Money Laundering

“Strategic” money laundering deficiencies
Countries designated by the Financial Action Task Force (Oct. 2016)

Major illicit drug transit or drug production
Countries designated by the President (Sept. 2016)

“Major” money laundering concern
Jurisdictions identified by the State Department (March 2016)

“Primary” money laundering concern
Designated by the Financial Crimes Enforcement Network
- Countries
- Financial Institutions
Geospatial Analysis

Detection and Visualization Techniques

1. Outliers or Anomalies
2. Colocation Patterns
3. Hotspot – Clustering Statistics
4. Teleconnection
5. Predictions
Outliers & Anomalies

- Patterns
- Risk Areas
- R Statistics

What happened?
Where?
Colocation Technique

Modeling with Structured & Unstructured Data

- Link Networking
- Statistical Evaluation & Significance
- Fraud Analysis
- Geospatial Patterns
Hotspot Detection

- Corridors
- Funding Streams
- Geospatial Information
- Activity-Based Intelligence (ABI)
- Risks to Nearby Financial Institutions
Using ENVI® to Rectify VIIRS Imagery

Teleconnection Technique: Space & Time
Predictions

What could happen?
Applying Prescriptive Analytics to AML / CTF Investigations
Geospatial Analysis Methodology for AML/CTF

1. Geospatial EDA
2. Problem & Environment
3. Enrich Data
4. Prescriptive Analytics
5. Recommend COA

COA 1
COA 2
COA X

ABI Related
Prescriptive Analytics: Advise on possible outcomes

What should we do?

Course of Action 1

Course of Action 2

Course of Action x
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