An Example of Knowledge Representation to a Real Problem

Risk Management

and the Insurance Business

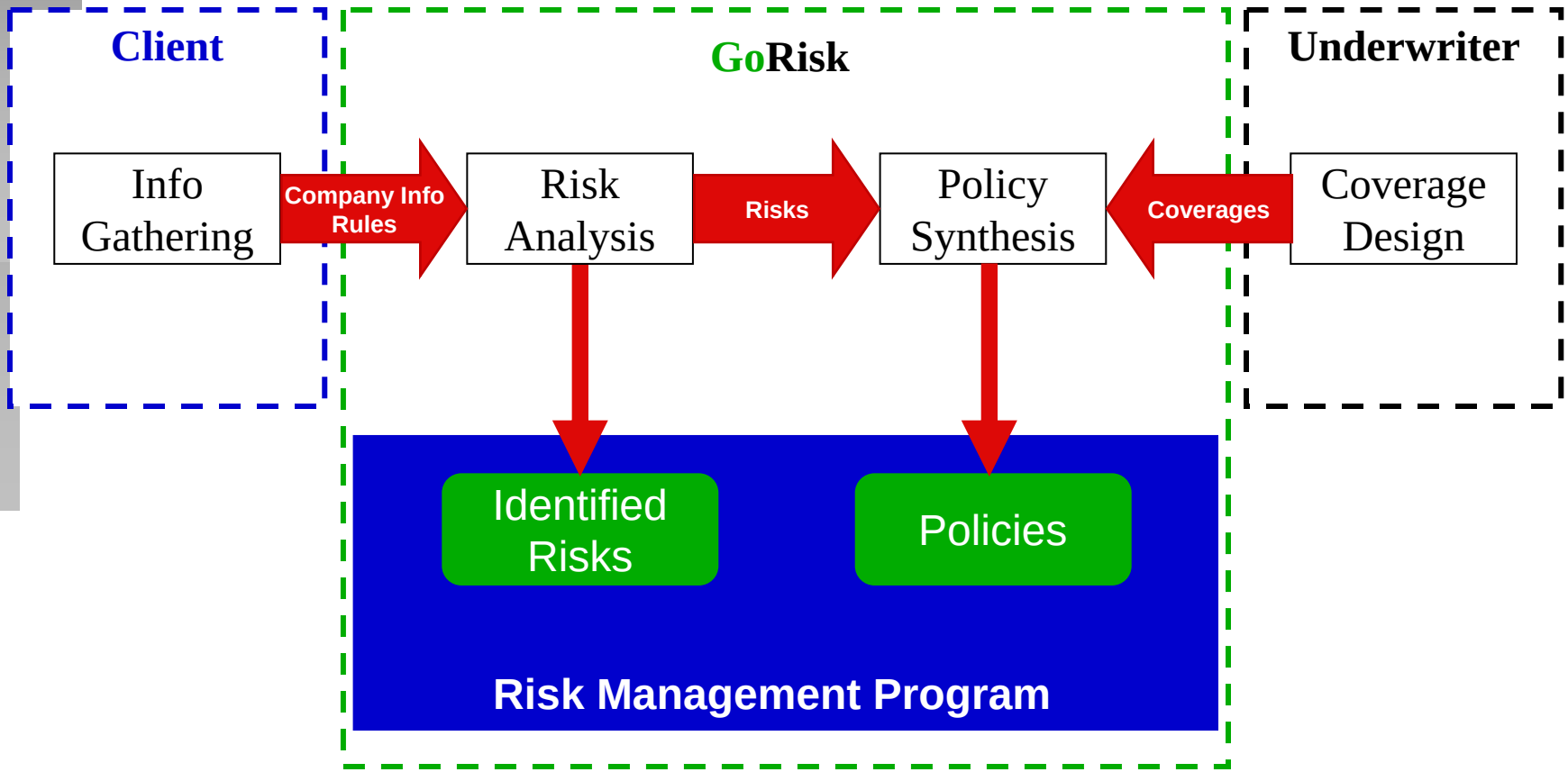
The Problem with Insurance Brokering

- Insurance Brokers interview their clients and determine their insurance needs.
  - How do they do it?
  - Accountability?
- Insurance Companies offer many policies they want brokers to sell.
  - How do they "advertise" what they have?
- Process often takes 6 months.
- Once policies are sold, how are are Claims handled?

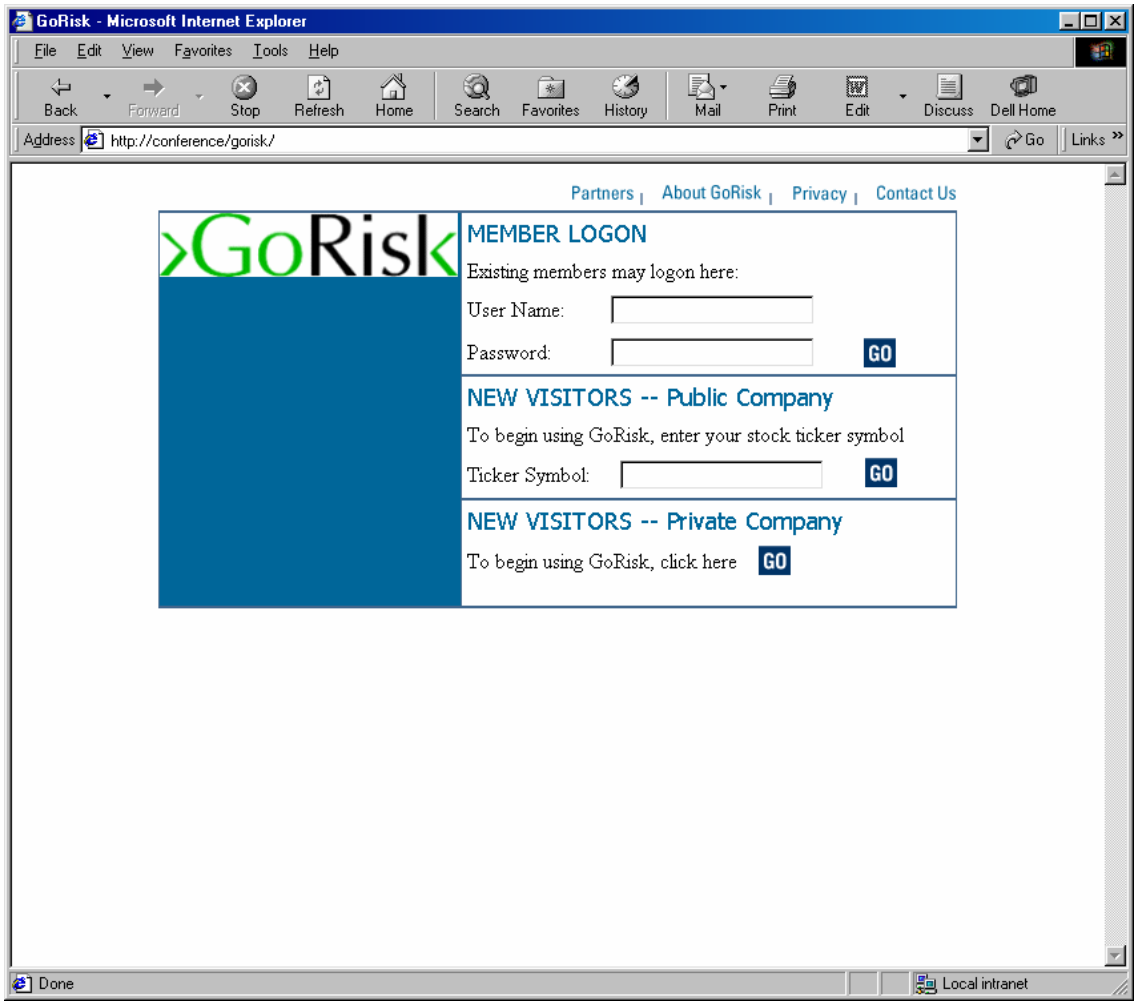
The Technology Challenge

- Perform typical broker functions
  - Intelligence, not just database lookup
- Knowing what is going on
  - Real-time status, not a “black box”
- Justify our decisions
  - Explanations, not just “trust us”
- Using the same knowledge to do claims

The GoRisk Sales Scenario



Demo


GoRisk - Microsoft Internet Explorer
File Edit View Favorites Tools Help
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To begin using GoRisk, enter your stock ticker symbol
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GO
Done
Local intranet

GoRisk Solutions

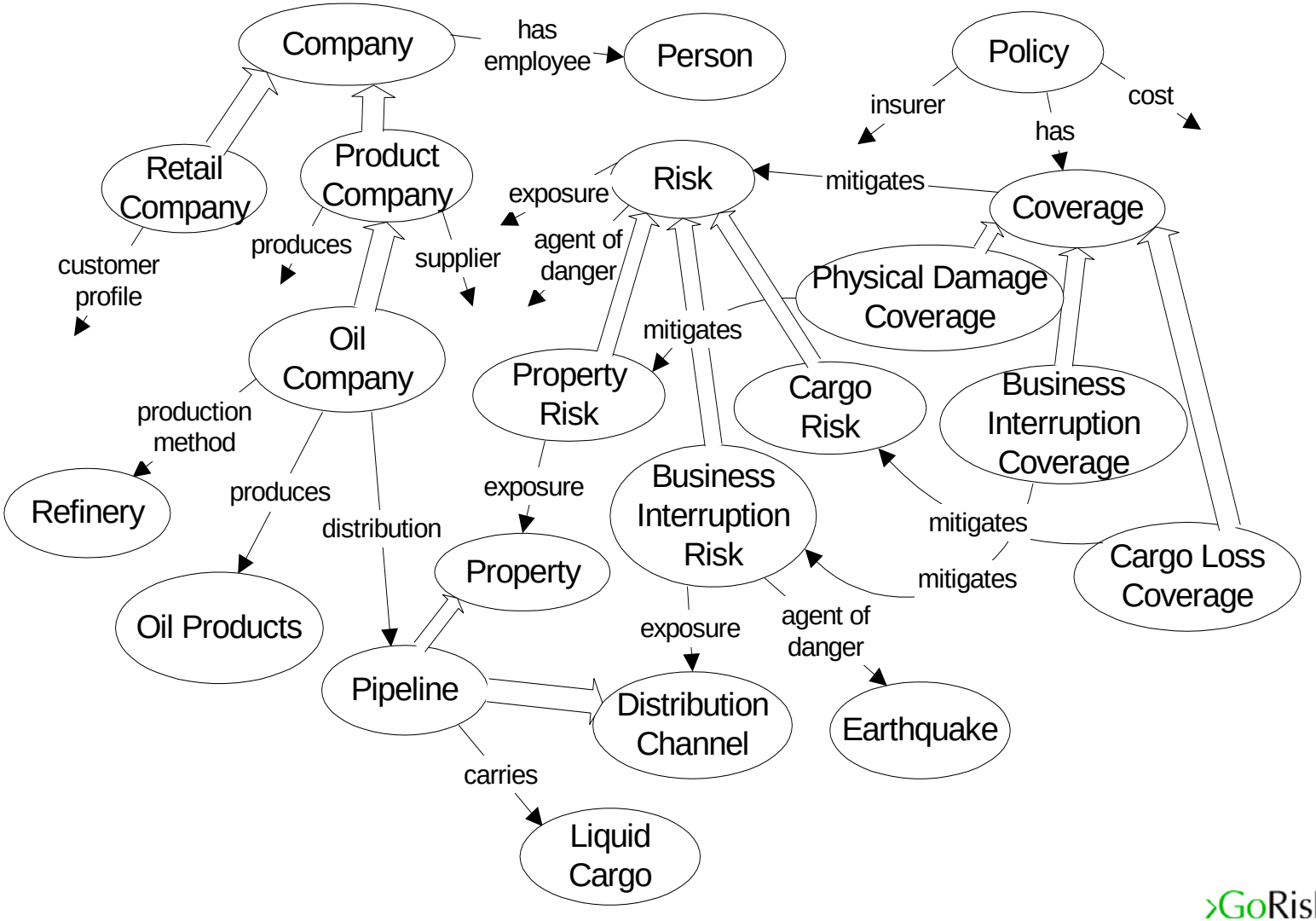
- A KR solution to programming intelligent systems
- A Software Agent solution to programming cooperative behavior

KR: Most Programs Are Ignorant

- Search for dog, but miss poodles; search for boxer, get dogs and Muhammad Ali
- No models, taxonomy, recognition, reflection, accountability
- What little knowledge a program may have is embedded in its code

A user interface is no substitute for knowledge

A Deep KR Model



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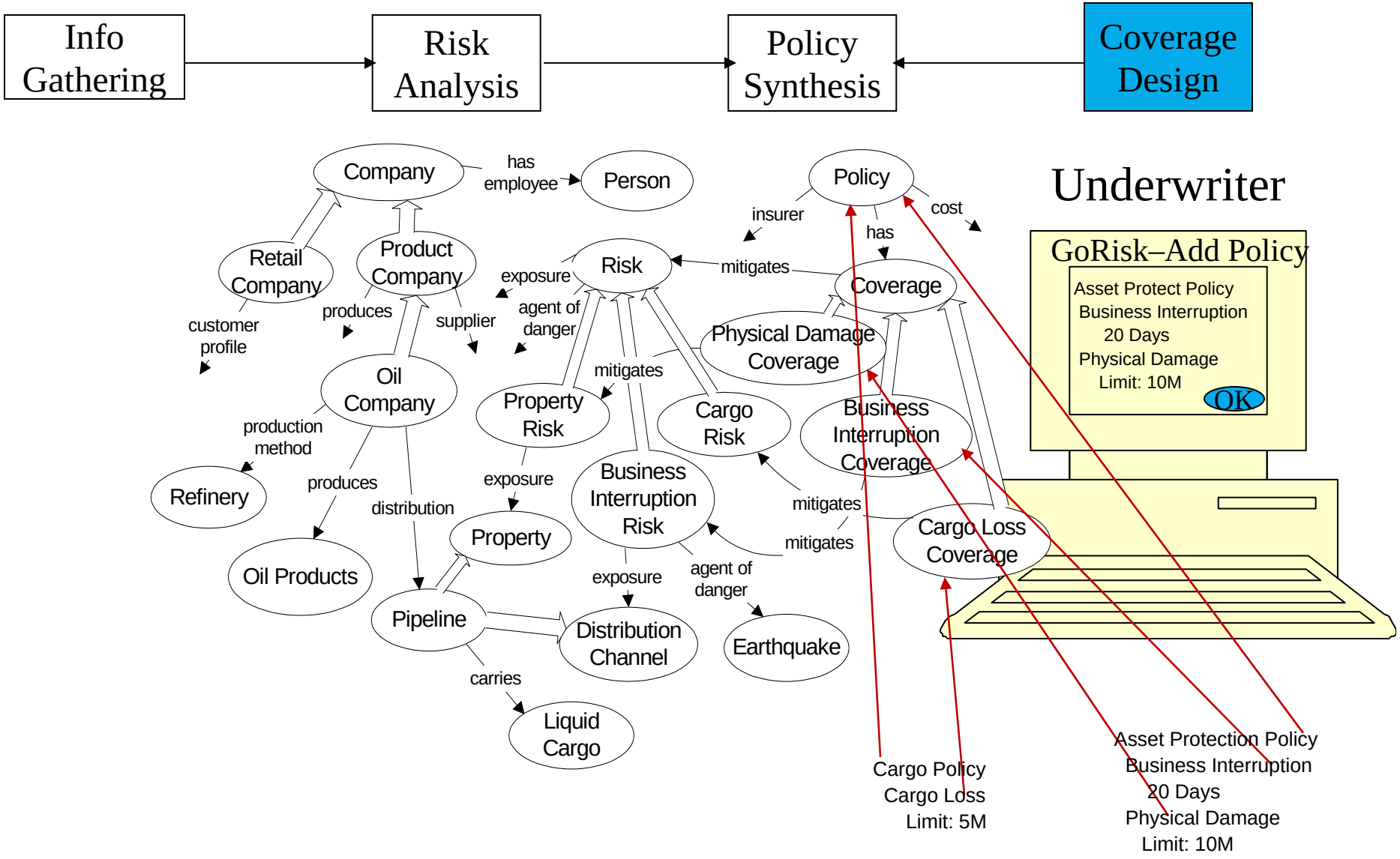
Info Gathering
Risk Analysis
Policy Synthesis
Coverage Design
Company
has employee
Person
Retail Company
Product Company
customer profile
produces
supplier
Oil Company
production method
Refinery
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Pipeline
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Liquid Cargo
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Cargo Risk
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Cargo Loss Coverage
Underwriter
GoRisk–Add Policy
Asset Protect Policy
Business Interruption
20 Days
Physical Damage
Limit: 10M
OK
Cargo Policy
Cargo Loss
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Asset Protection Policy
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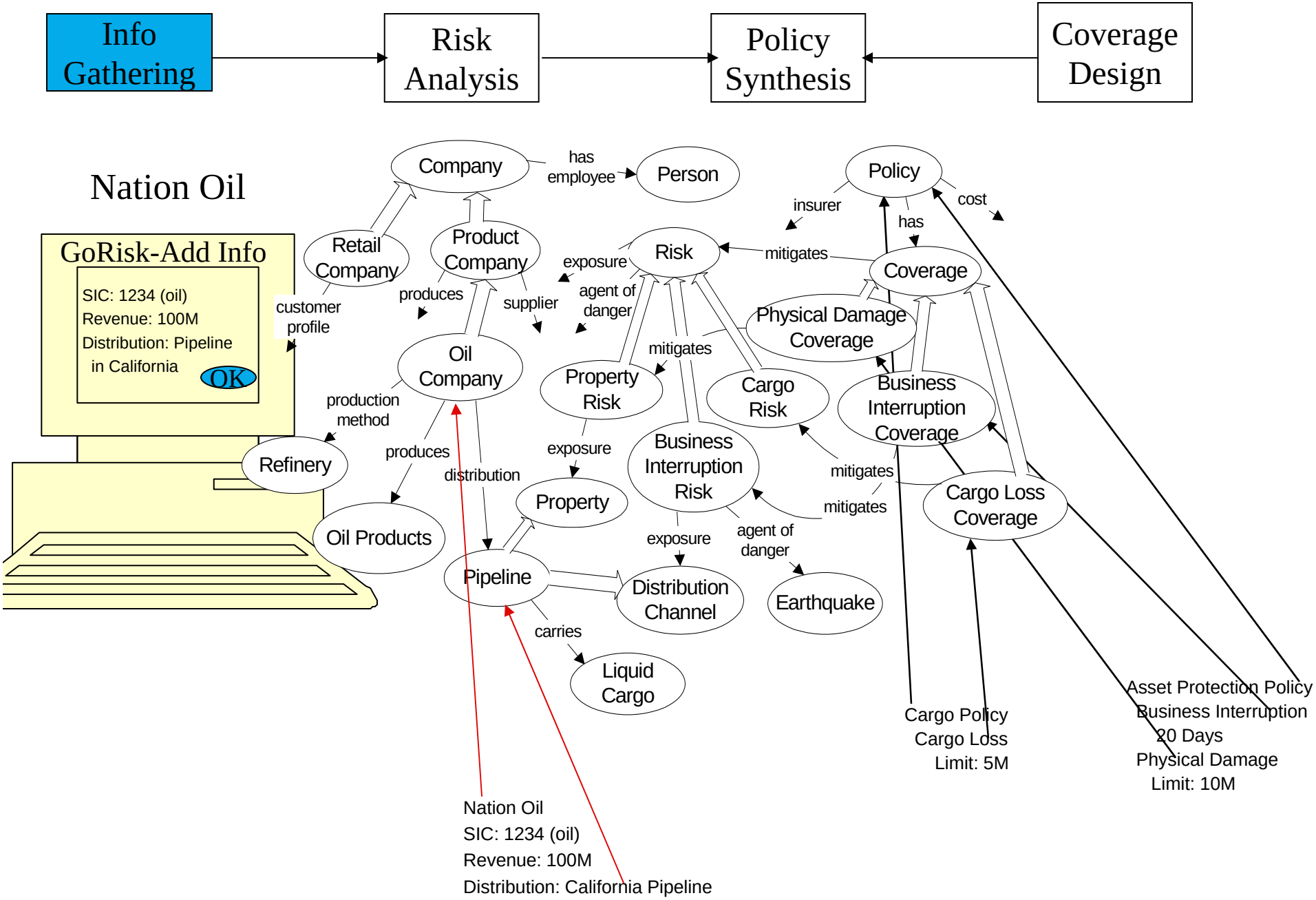
Physical Damage
Limit: 10M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Nation Oil
GoRisk-Add Info
SIC: 1234 (oil)
Revenue: 100M
Distribution: Pipeline in California
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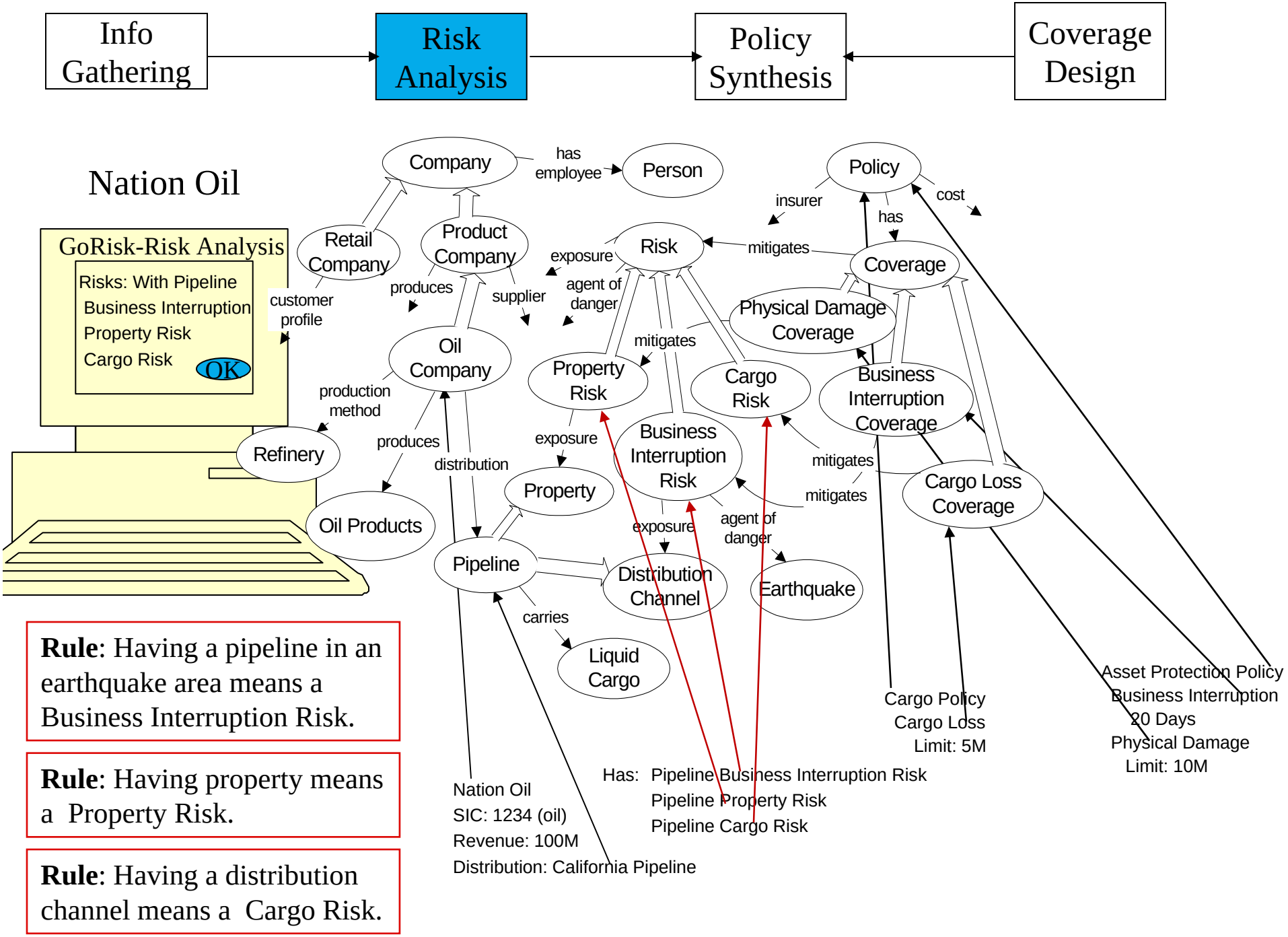
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Rule: Having property means a Property Risk.
Rule: Having a distribution channel means a Cargo Risk.
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Revenue: 100M
Distribution: California Pipeline
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Pipeline Cargo Risk
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Asset Protection Policy
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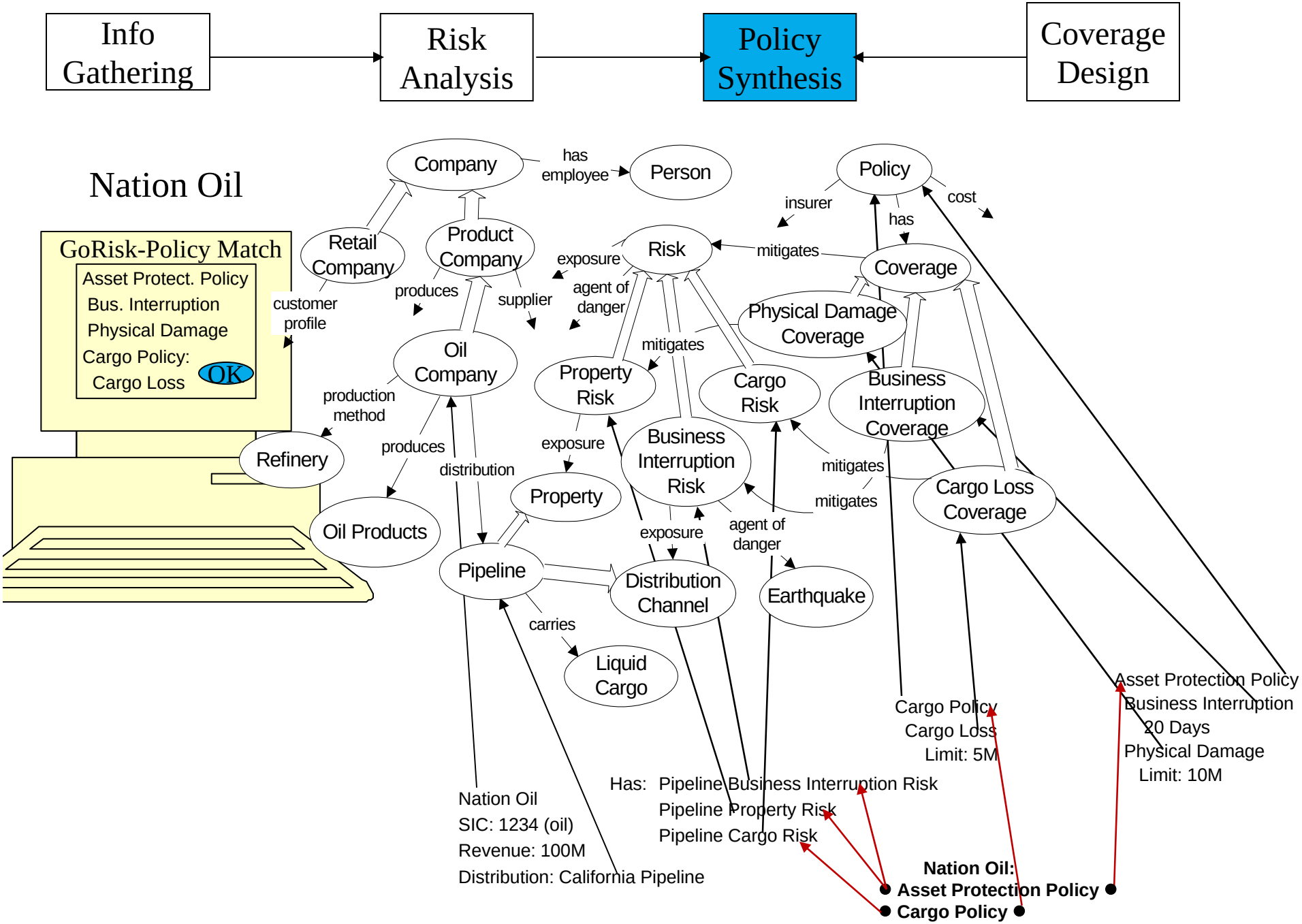
Physical Damage
Limit: 10M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Accountability:
Systems should know what's going on

- Inferences can be traced and explained
- People hate systems that act like black boxes, especially when they misbehave

Sophisticated explanations and justifications give users confidence

GoRisk Solutions

- A KR solution to programming intelligent systems
- A Software Agent solution to programming cooperative behavior

Programming is Still an Art

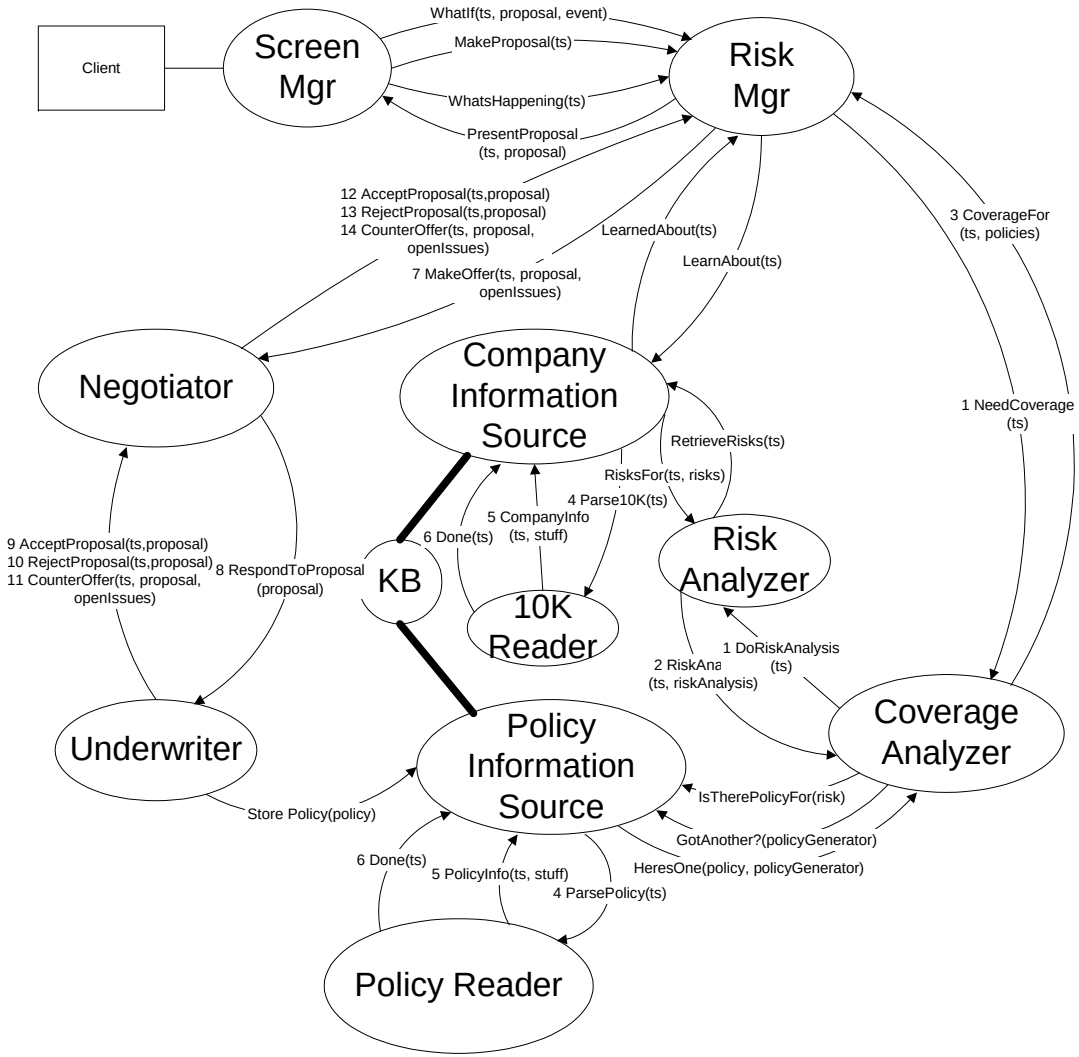
- Sharable, reusable software: The Holy Grail
  - Programmers can barely use one another's code
  - Independent systems barely interact
  - Granularity is usually
    - Too small (too little power), or:
    - Too big (no way to combine)
- Design and Build: A flawed methodology
  - Prototyping enables evolutionary designs
  - Prototyping requires enlightened managers

Agent Methodology:
Getting the Granularity Right

- Independent programs with responsibilities; strategic messages, not tactical messages
- Think how a house is built—no one is in control, each employee does a job
  - Architect designs house
  - Contractor selects subs
  - Mason lays foundation
  - Framers, electricians, plumbers doing their thing

Flexible, non-hierarchical control;
Path to Evolutionary Implementation

Agent Design for Sales Process



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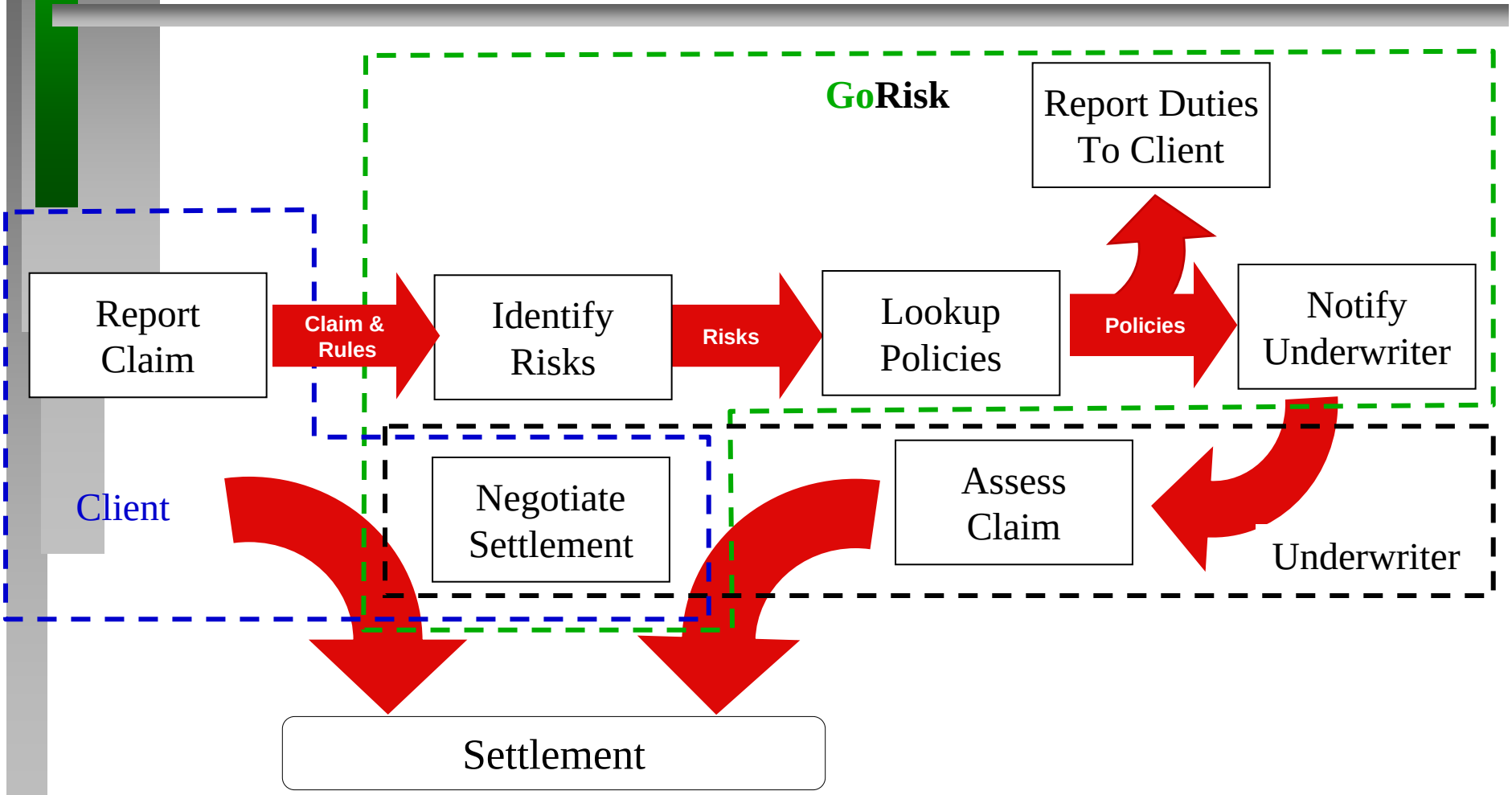
The Claims Process

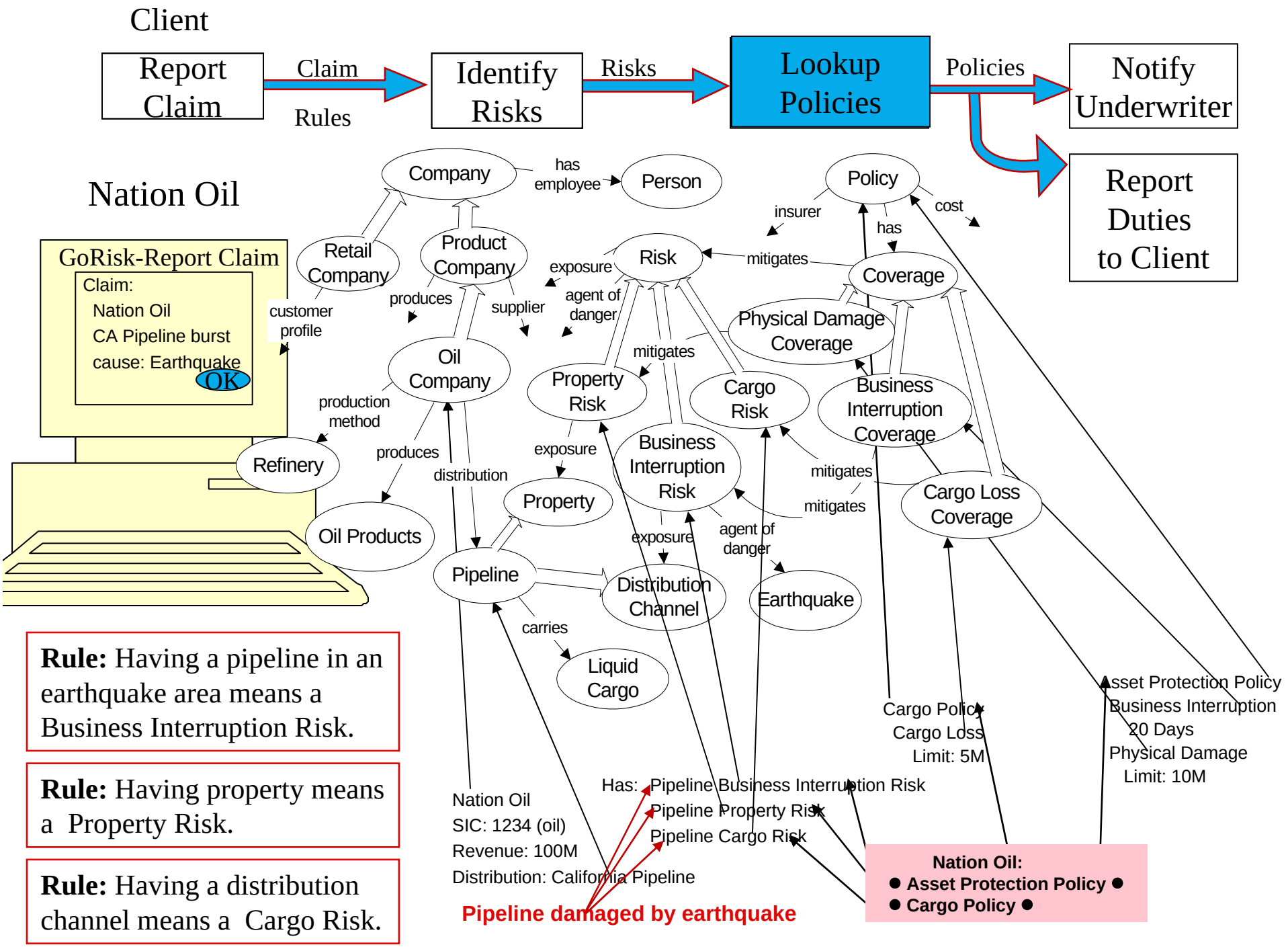
- The client makes a claim
- The client or his broker find the relevant coverages
- The underwriters are notified;
  The client is informed of his duties
- Underwriter assesses the claim
- A settlement is negotiated

Claims: Finding the Policies

- A claim happens, how do you find the relevant policies?
- Today, a broker or the client has to search for them
- GoRisk does it automatically
  - by reconstructing the original risk analysis that led to covering policies

The GoRisk Claims Scenario





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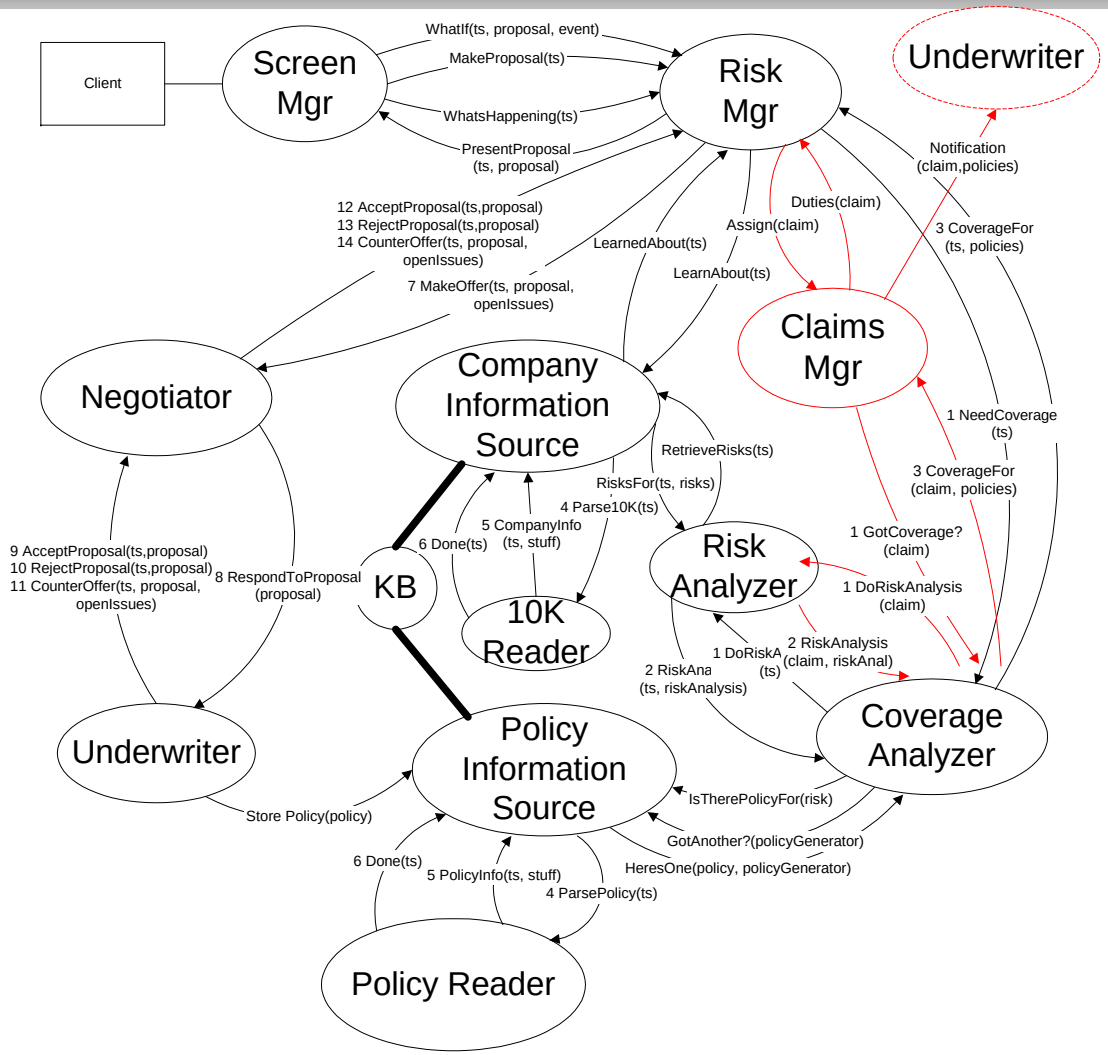
Agent Design for Claims Process



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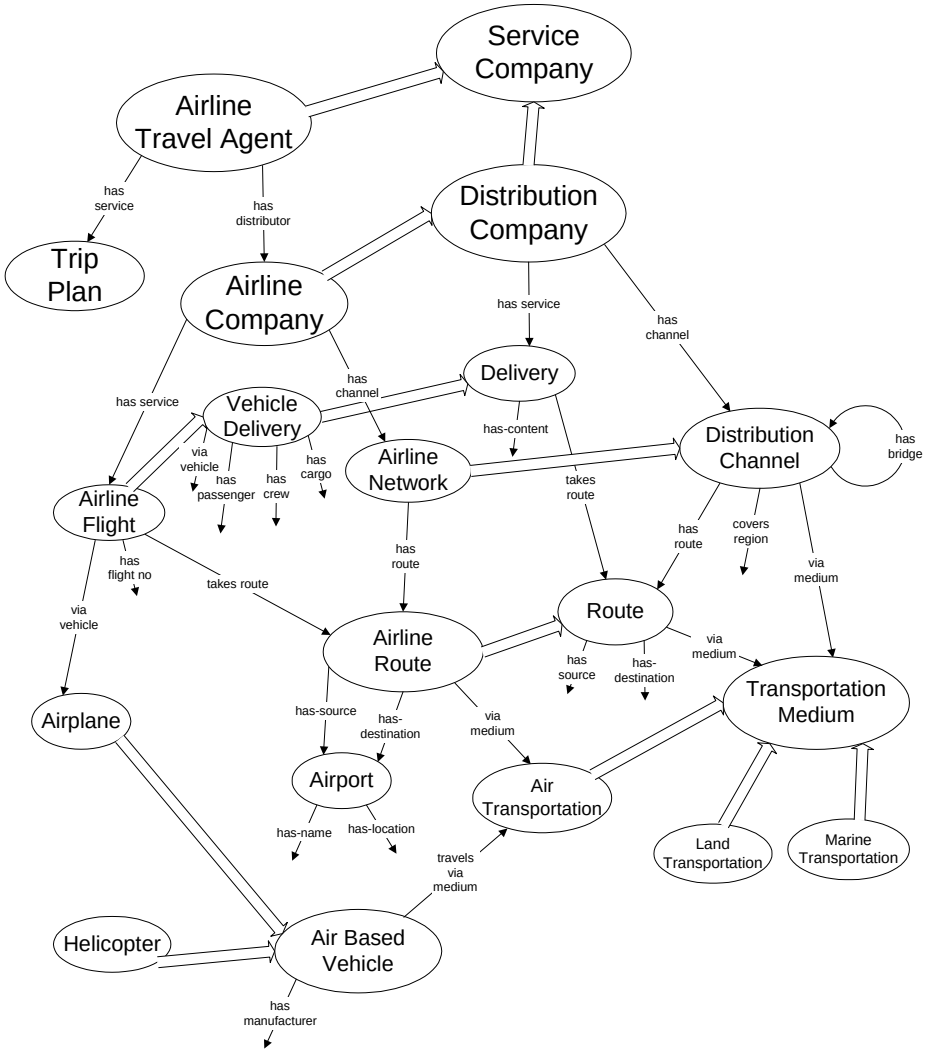
eCommerce to iCommerce
(Intelligent Internet Information)

- **Go**Risk - Next Wave Web application
  - All “simple” web applications are done
    - Shallow and passive
    - Links and databases
    - Users do all of the work
  - Business-Business apps waiting to be written
    - Active, in-depth, and informed
    - Attending to analysis, decisions, and process
    - Users have the right tools to do their job

Airlines Taxonomy



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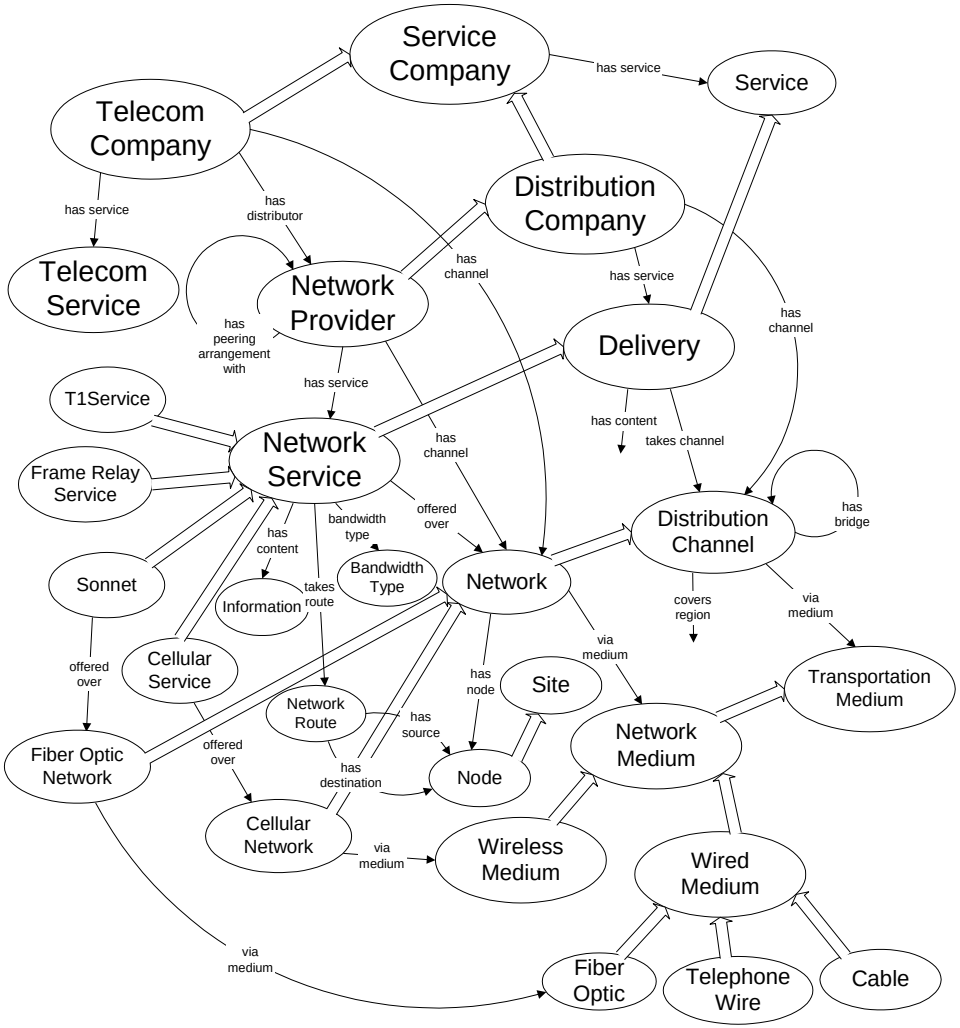
Network Provider Taxonomy



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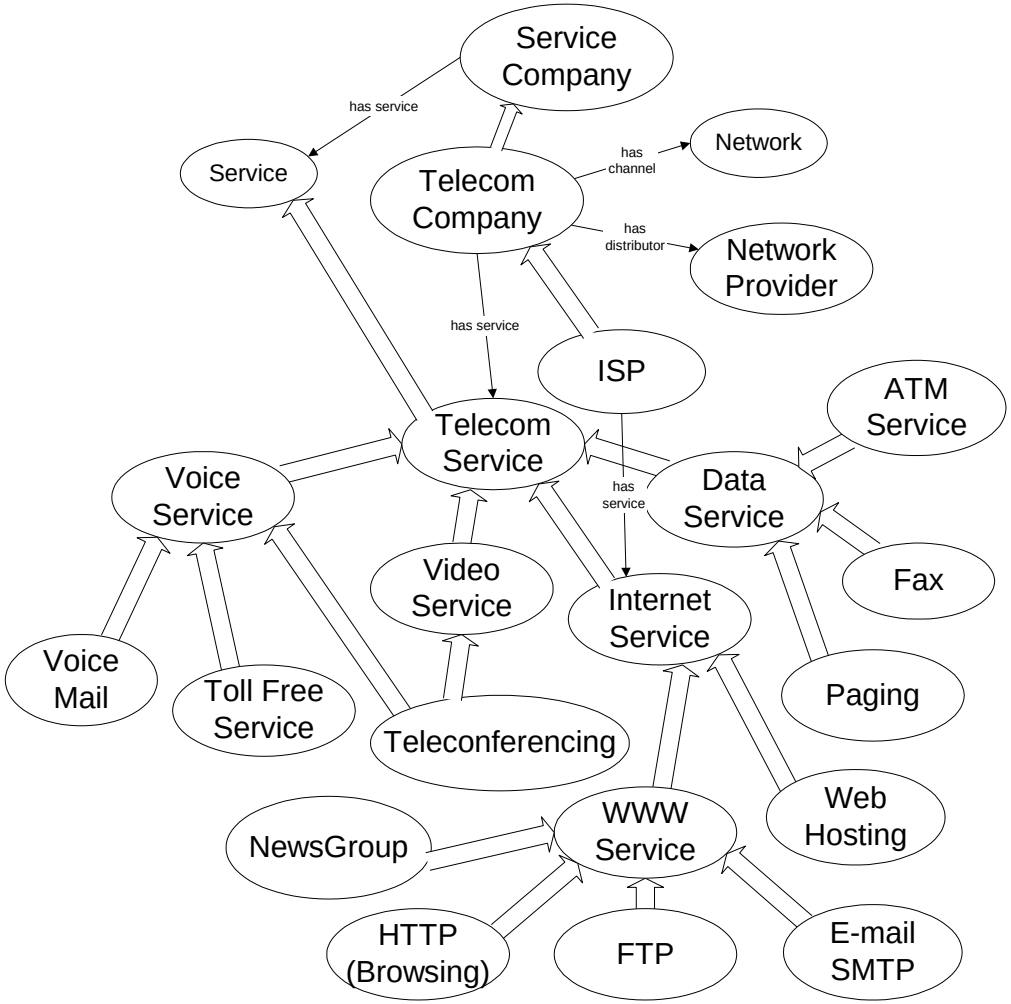
Telecom Taxonomy



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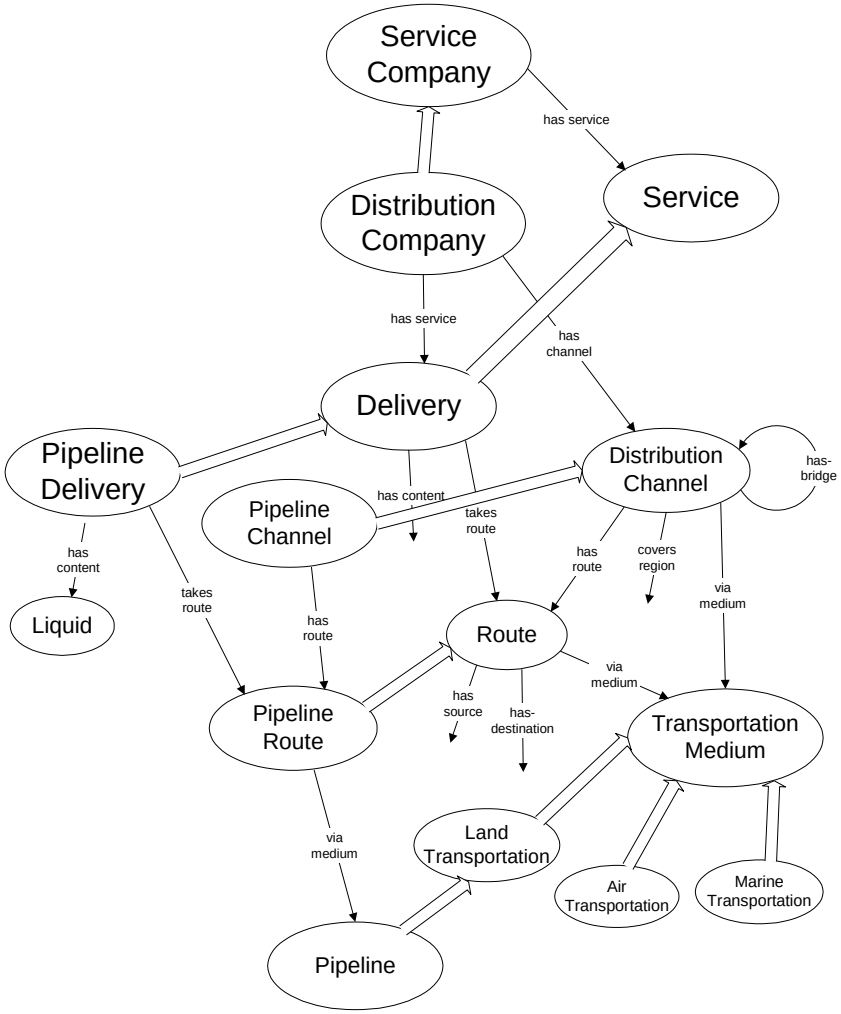
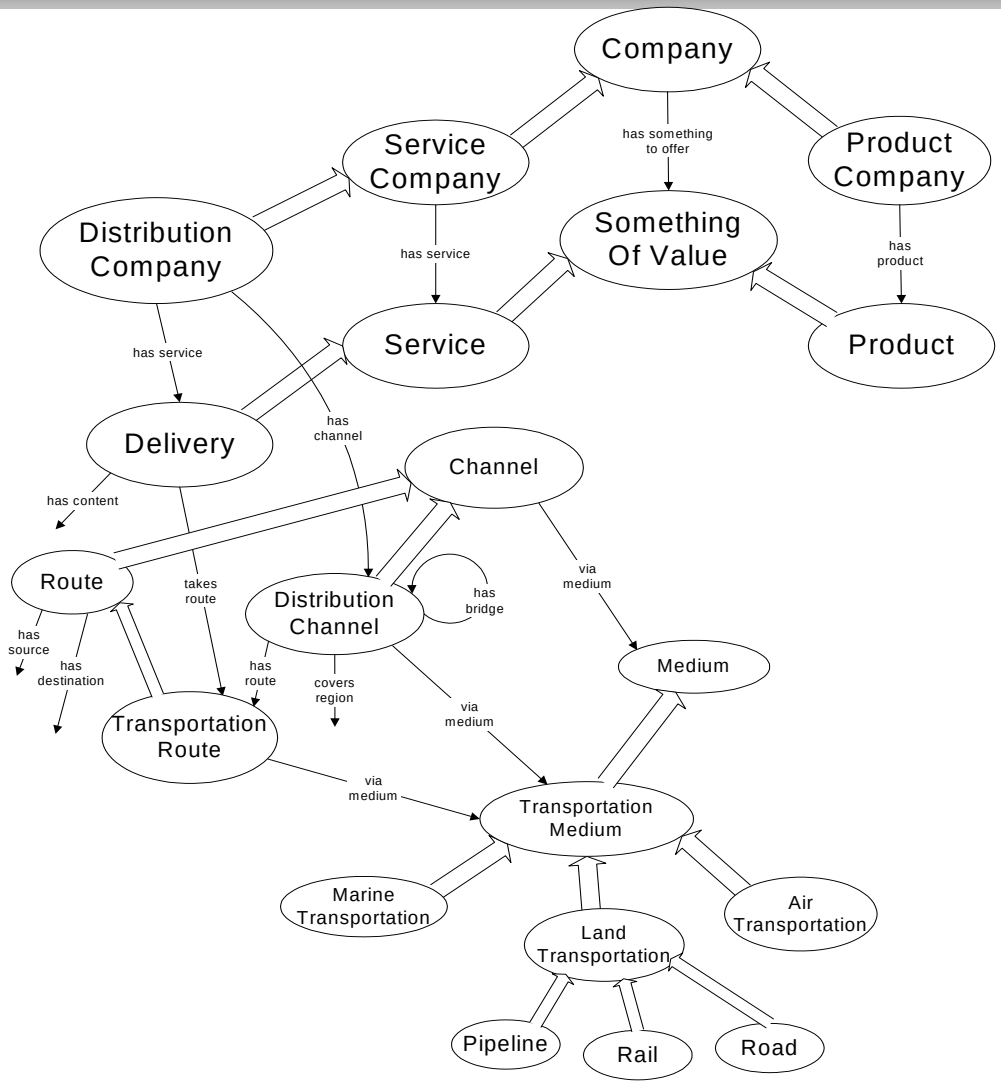
The Pipeline Taxonomy



Company Taxonomy



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