

Financial Regulatory Compliance: Using Coherent software for Regulation W

Case Study from

Coherent Knowledge Systems, LLC

<http://coherentknowledge.com>

Banking Regulation

Problem:

- Complex set of regulations govern wide range of operations and activities that financial institutions engage in every day
- Compliance and *Proof* of compliance are essential
 - External: Outside regulators
 - Internal: Company's management chain
- Automated support needed –
 - Current methods are expensive and unwieldy

Solution:

- Coherent Knowledge Systems – software and services
 - Automates decisions for compliance with banking regulation
 - Advanced database with automated logical reasoning
 - Explains fully how compliance decisions were reached

USA Federal Reserve Act: Regulation W

- Concerns activities/transactions between a bank and “affiliates”
- Designed to limit risks
- Defines who is an “affiliate”, what is a “covered transaction”, whether a particular transaction is permitted



San Francisco's Federal Reserve building

Interpreting Regulation W: 3 key aspects

1. *Is the transaction's counterparty an affiliate of the bank?*
2. *Is the transaction contemplated a covered transaction?*
3. *Is the amount of the transaction permitted ?*

Document from Federal Reserve

Determining Whether Regulation W Applies

Two initial questions need to be answered in determining whether a transaction is subject to Regulation W. The first is whether the transaction is between a bank and an “affiliate” of the bank. The second is whether the transaction is a “covered transaction.”

Affiliate Definition. Regulation W applies to covered transactions between a bank and an affiliate of the bank.

The definition of an affiliate for purposes of Regulation W is set forth in section 223.2. The definition is broad, and includes:

- Any company that controls the bank;
- Any company that is controlled by a company that controls the bank;
- Any company that is controlled, directly or indirectly, by trust or otherwise, by or for the benefit of shareholders who beneficially or otherwise control, directly or indirectly, by trust or otherwise, the bank or any company that controls the bank;
- Any company in which a majority of its directors, trustees, or general partners (or individuals exercising similar functions) constitute a majority of the persons holding any such office with the bank or any company that controls the bank;
- Any company, including a real estate investment trust, that is sponsored and advised on a contractual basis by the bank or an affiliate of the bank;
- Any registered investment company for which the bank or any affiliate of the bank serves as an investment adviser;
- Any unregistered investment fund for which the bank or any affiliate of the bank serves as an investment adviser, if the bank and its affiliates own or control in the aggregate more than 5 percent of any class of voting securities or more than 5 percent of the equity capital of the fund¹;

Example Scenario:

A Loan to the Maui Sunset Hotel Group

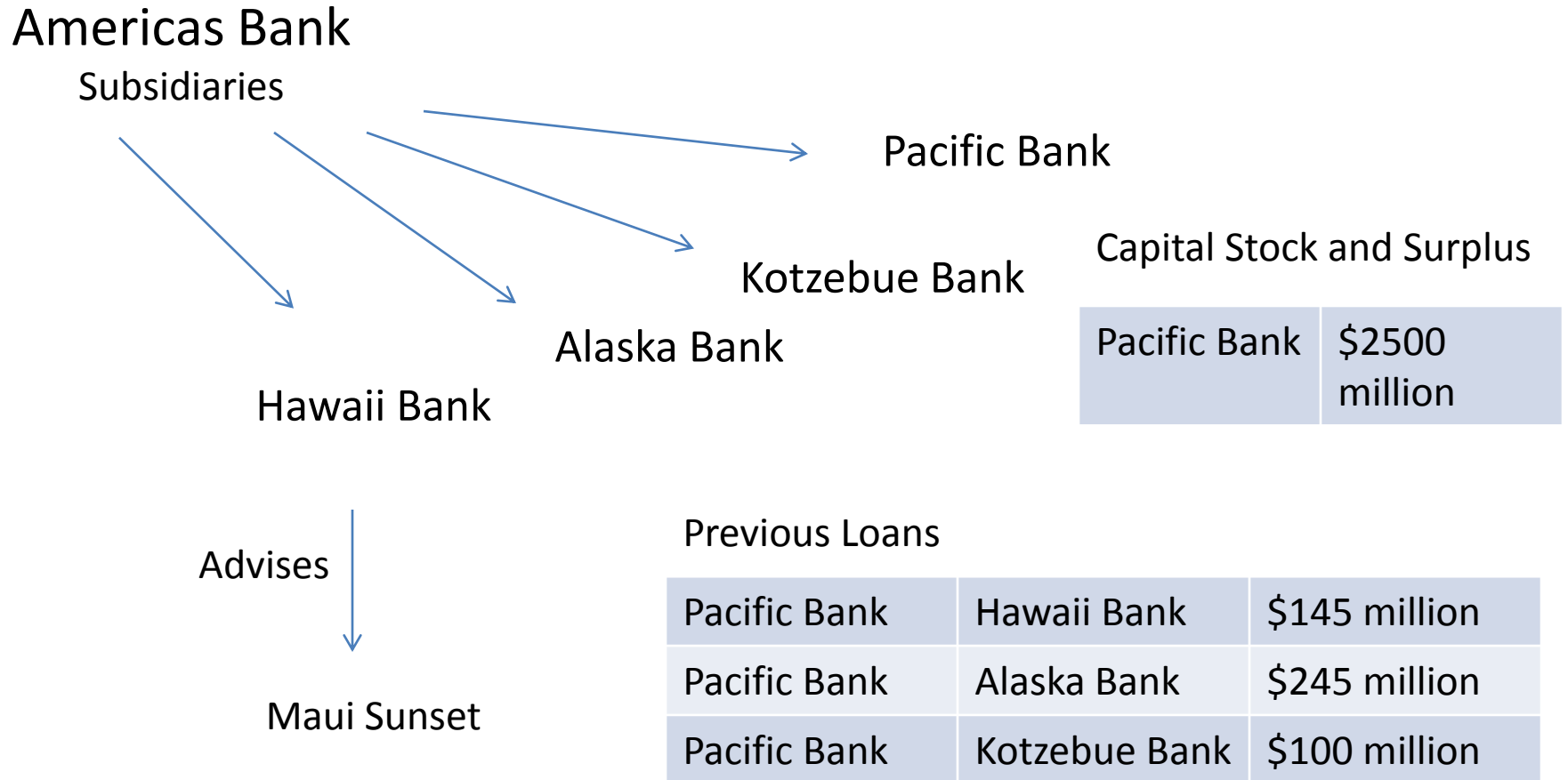
Pacific Bank is considering a loan of \$23 million dollars to the Maui Sunset hotel group to open a new location on the island.

Is this transaction allowed under Regulation W?

As part of that, one must ascertain if Maui Sunset could be considered an affiliate under Regulation W.

To watch the demo video, click here <TBD, on Coherent website>

Relationships and Other Data in the Demo Scenario



Pertinent Regulation W Rules and Definitions

For this scenario, the following specific rules and definitions from the Federal Reserve Act were utilized:

Section 223.2 Definition of Affiliate :

- Any company, including a real estate investment trust, that is sponsored and advised on a contractual basis by the bank or an affiliate of the bank.
- A financial subsidiary of the bank

Section 223.3(h) Definition of Covered Transaction:

- An extension of credit to an affiliate

Quantitative Limitations.

- A bank may not engage in a new covered transaction with an affiliate if the aggregate amount of covered transactions between the bank and the affiliate would be in excess of 10 percent of the bank's capital stock and surplus after consummation of the new transaction.
- Aggregate covered transactions between the bank and all affiliates are limited to 20 percent of the bank's capital stock and surplus.

Regulation W Becomes Coherent Logic

Using Coherent tools:

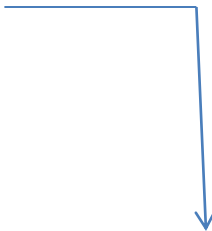
- Regulation W is translated from English into logic, rapidly.
- A knowledge base is created, ready to make decisions and provide detailed explanations.

Sample English Text:

Any company that is advised on a contractual basis by the bank or an affiliate of the bank is considered an affiliate of the bank.

Logical representation:

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114 affiliate(of)(?x1,?x2) :-  
115 ( advised(by)(?x1,?x2)  
116 or  
117 (affiliate(of)(?x3,?x2) and advised(by)(?x1,?x3))).
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Coherent User Interface

Coherent software includes various tools.

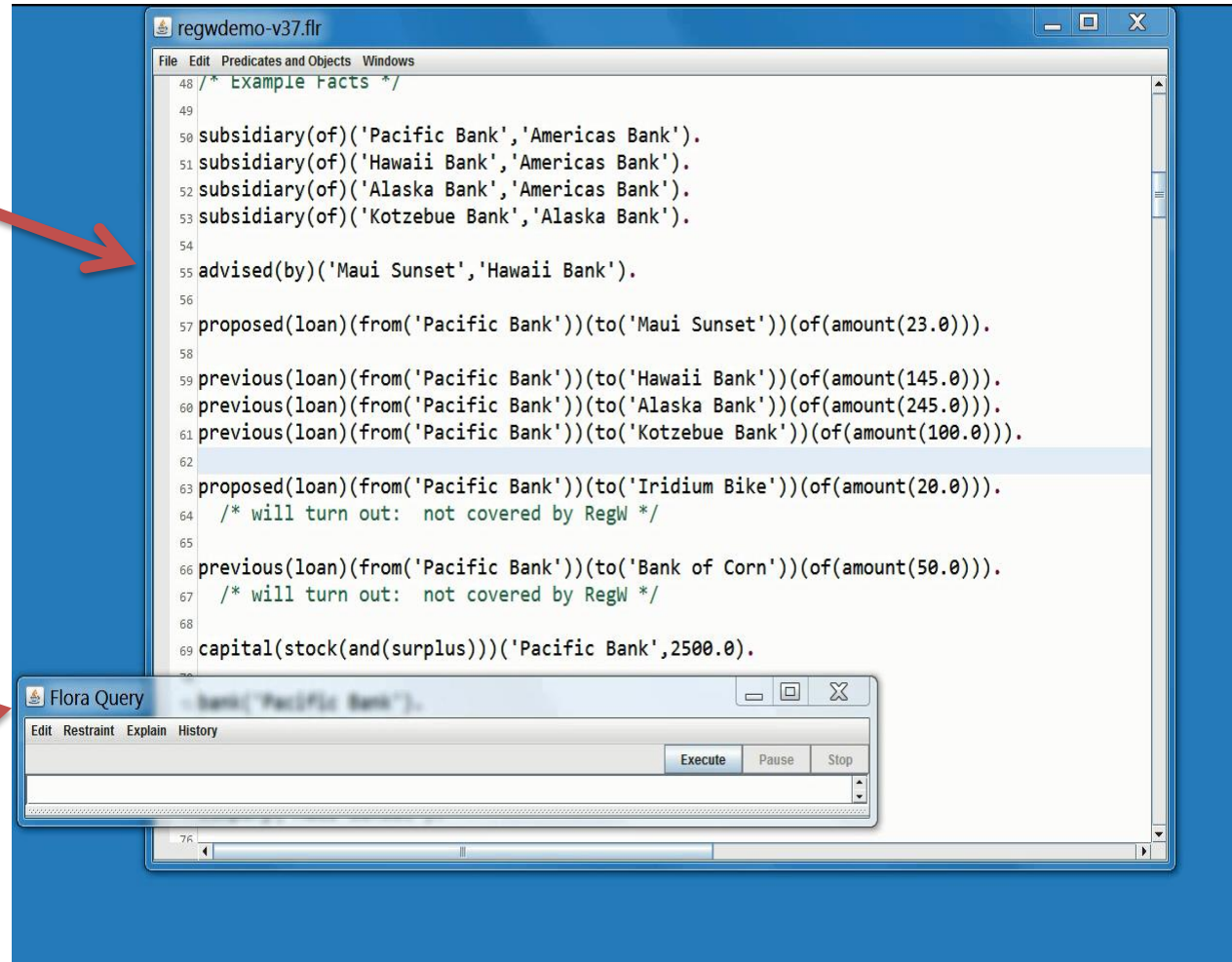
Two are:

- **Knowledge-base editor**

Regulations, data, and linguistic information are entered here as logical formulations. Additional editing tools (not shown here) start directly from English.

- **Query window**

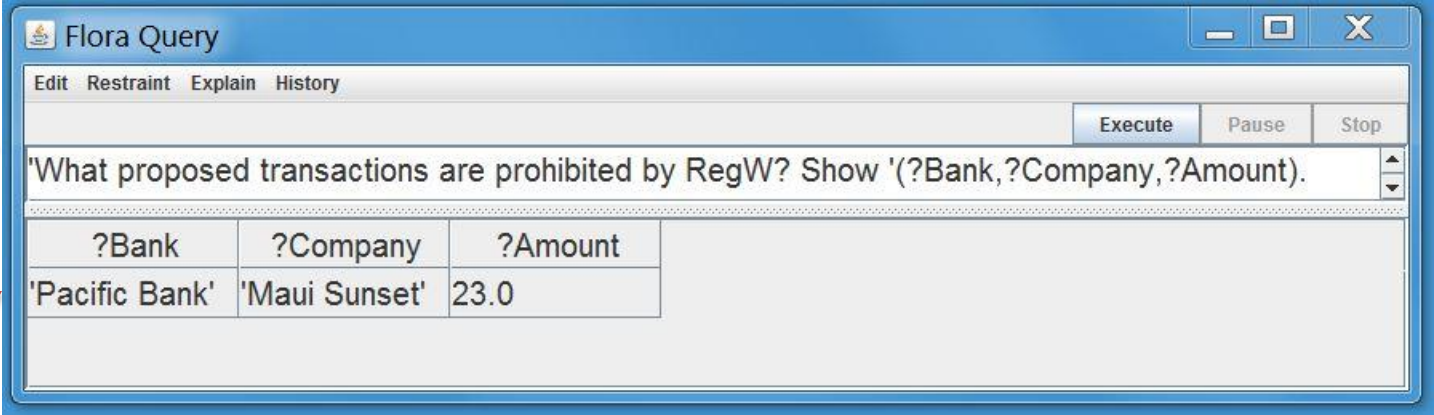
Ask the knowledge base and get answers for decision making.



Sample Question:

“What proposed transactions are prohibited by Regulation W?”

Query



A decision answer is generated

The screenshot shows a window titled 'Flora Query' with a menu bar (Edit, Restraint, Explain, History) and buttons for Execute, Pause, and Stop. The query text is: 'What proposed transactions are prohibited by RegW? Show '(?Bank,?Company,?Amount)'. The results are displayed in a table with three columns: ?Bank, ?Company, and ?Amount. The first row of data shows 'Pacific Bank', 'Maui Sunset', and 23.0.

?Bank	?Company	?Amount
'Pacific Bank'	'Maui Sunset'	23.0

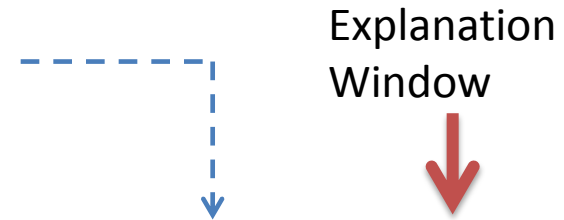
Coherent software automatically makes a decision using the Regulation W knowledge base, including data facts from the example scenario:

The proposed transaction between Pacific Bank and Maui Sunset in the amount of \$23.0 million is prohibited.

Explanation of How Decisions Are Reached

?Bank	?Company	?Amount
'Pacific Bank'	'Maui Sunset'	23.0

Why?



Why 'What proposed transactions are prohibited by RegW? Show '(Pacific Bank','Maui Sunset',23.0) ?

Edit Operations

- RegW prohibits the proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million
 - The proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million is a RegW covered transaction
 - There is a limit of \$10.0 million for any proposed RegW covered transaction by Pacific Bank with Maui Sunset
 - The proposed transaction of \$23.0 million is greater than the RegW limit of \$10.0 million

- Clicking on the 'why' button for a decision answer opens an explanation window.
- Clicking on any line in the explanation drills down to its supporting steps.

Why is the proposed transaction prohibited by Regulation W?

1. *Is the transaction's counterparty an "affiliate" of the bank?*

YES.

The screenshot shows a legal analysis tool window titled "Why 'What proposed transactions are prohibited by RegW? Show ('Pacific Bank','Maui Sunset',23.0) ?". The window contains a tree of reasons for the prohibition, with a red arrow pointing to the node "Hawaii Bank is a RegW affiliate of Pacific Bank".

- RegW prohibits the proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million
 - The proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million is a RegW covered transaction
 - Maui Sunset is a RegW affiliate of Pacific Bank
 - Hawaii Bank is a RegW affiliate of Pacific Bank
 - There is common control of Hawaii Bank and Pacific Bank
 - Hawaii Bank is controlled by Americas Bank
 - Hawaii Bank is a subsidiary of Americas Bank
 - Pacific Bank is controlled by Americas Bank
 - Pacific Bank is a subsidiary of Americas Bank
 - Maui Sunset is advised by Hawaii Bank
 - There is a proposed loan from Pacific Bank to Maui Sunset of \$23.0 million
 - There is a limit of \$10.0 million for any proposed RegW covered transaction by Pacific Bank with Maui Sunset
 - The proposed transaction of \$23.0 million is greater than the RegW limit of \$10.0 million

And here's why ...

Why is the proposed transaction prohibited by Regulation W?

2. *Is the transaction contemplated a “covered transaction”?*

YES.

And here's why ...

The screenshot shows a software interface with a title bar that reads "Why 'What proposed transactions are prohibited by RegW? Show '(Pacific Bank','Maui Su...". Below the title bar is a menu bar with "Edit" and "Operations". The main content area displays a hierarchical list of reasons in green text:

- RegW prohibits the proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million
 - The proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million is a RegW covered transaction
 - Maui Sunset is a RegW affiliate of Pacific Bank
 - Hawaii Bank is a RegW affiliate of Pacific Bank
 - Maui Sunset is advised by Hawaii Bank
 - There is a proposed loan from Pacific Bank to Maui Sunset of \$23.0 million
 - There is a limit of \$10.0 million for any proposed RegW covered transaction by Pacific Bank with Maui Sunset
 - The proposed transaction of \$23.0 million is greater than the RegW limit of \$10.0 million

Red arrows point from the text "And here's why ..." to the first item in the list, and from "YES." to the top-level item.

Why is the proposed transaction prohibited by Regulation W?

3. *Is the amount of the transaction permitted?*

Why 'What proposed transactions are prohibited by RegW? Show ('Pacific Bank','Maui Sunset',23.0) ?

Edit Operations

- RegW prohibits the proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million
 - The proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million is a RegW covered transaction
 - There is a limit of \$10.0 million for any proposed RegW covered transaction by Pacific Bank with Maui Sunset
 - There is an aggregated-affiliates limit of \$10.0 million for any proposed RegW covered transaction by Pacific Bank with any affiliate
 - There is an individual-affiliate limit of \$250.0 million for any proposed RegW covered transaction by Pacific Bank with Maui Sunset
 - The overall RegW limit of \$10.0 million is the lesser of \$10.0 million and \$250.0 million
 - The proposed transaction of \$23.0 million is greater than the RegW limit of \$10.0 million

And here's why ...

NO.
It went over the limit.

Why is the proposed transaction prohibited by Regulation W?

3. (continued) How was the limit calculated, using the bank's capital, to determine whether the covered transaction was permitted?

Why 'What proposed transactions are prohibited by RegW? Show ('Pacific Bank','Maui Sunset',23.0) ?

Edit Operations

- RegW prohibits the proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million
 - The proposed transaction by Pacific Bank with Maui Sunset of \$23.0 million is a RegW covered transaction
 - There is a limit of \$10.0 million for any proposed RegW covered transaction by Pacific Bank with Maui Sunset
 - There is an aggregated-affiliates limit of \$10.0 million for any proposed RegW covered transaction by Pacific Bank with any affiliate
 - The aggregated total of previous RegW covered transactions by Pacific Bank with all affiliates is \$490.0 million
 - The maximum threshold for aggregate RegW covered transactions by Pacific Bank with all affiliates is \$500.0 million
 - The capital stock and surplus of Pacific Bank is \$2500.0 million
 - The RegW threshold percentage for aggregate affiliates is 20.0 percent
 - \$500.0 million is \$2500.0 million multiplied by 20.0 percent
 - The limit of \$10.0 million is the result of subtracting the previous RegW covered transactions total of \$490.0 million from the RegW threshold \$500.0 million
 - There is an individual-affiliate limit of \$250.0 million for any proposed RegW covered transaction by Pacific Bank with Maui Sunset
 - The overall RegW limit of \$10.0 million is the lesser of \$10.0 million and \$250.0 million
 - The proposed transaction of \$23.0 million is greater than the RegW limit of \$10.0 million

Here's how the aggregate-affiliates limit was determined

Demo Summary:

Coherent software ...

- Translates Regulation W into a Coherent Logic knowledge base, integrated with financial data
- Automates decisions for regulatory compliance
- Explains how conclusions were drawn
 - In readable English
 - The user can select the level of detail wanted
 - Supports human decision making, review, assurance, and *proof* of compliance