

SURVIVING THE COMPLEXITIES AND TURBULENCE OF THE 21-ST CENTURY

Per informazioni
Dipartimento di Studi Giuridici
"Angelo Braffa"
tel. 02 8635.5221
iscrizione online all'indirizzo
www.unibocconi.it/eventi

Dipartimento di Studi Giuridici
"Angelo Braffa"

Solvency II
**Gestione olistica
e dinamica
della compagnia
di assicurazioni**
Know-how e tecnologia
evolutiva

27 maggio 2015

Bocconi

In collaborazione con

Vittoria
Bocconi University

Università Commerciale
Luigi Bocconi

Via Santini 25
20136 Milano

ore 8.30
Aula NO3
piazza Braffa 13

Disclaimer

The concepts and methods presented in this document are for illustrative purposes only, and are not intended to be exhaustive. Ontonix assumes no liability or responsibility to any person or company for direct or indirect damages resulting from the use of any information contained herein.

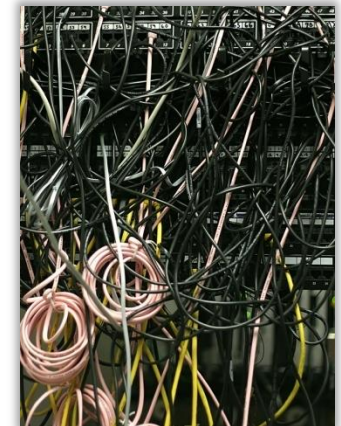
Any reproduction or distribution of this document, in whole or in part, without the prior written consent of Ontonix is prohibited.

The methods described in the present document are protected by US patents. Reverse-engineering of the concepts, methods or ideas contained in this document is strictly forbidden.

OntoNet™ is a trademark of Ontonix. All other trademarks are the property of their respective owners.

Copyright © 2005-2015 Ontonix S.r.l. All Rights Reserved.

Growing Complexity: A Threat to Sustainability



Our economy depends on the correct functioning of highly **interdependent** and **complex** systems, networks, processes and businesses.

However, their growing complexity threatens their **efficiency** and **profitability**. Modern technologies increase dramatically their **fragility**, accentuating the problem.

Why Complexity Management

- Most problems threatening humanity are the result of the **uncontrolled growth of complexity**.
- In fact, excessive complexity is a formidable source of **fragility**.
- This is why problems of **strategic** and **systemic** nature should be approached from a complexity management perspective.
- **Complexity** and **Resilience** are new and **fundamental KPIs** of every modern business.
- **Resilience** (opposite to fragility) measures the capacity to **absorb shocks**.

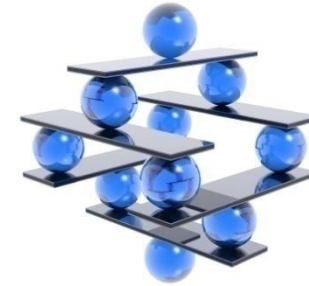


Properties of Highly Complex Systems

- In highly complex systems, malfunction and even total non-function may **not be detectable** for long periods, if ever.
- Complex systems usually operate close to **failure mode**.
- The **crucial variables** are discovered by accident.
- The larger the system, the greater the probability of **unexpected failure**.
- Colossal systems foster colossal errors.
And **costs**.



Complexity – Beyond the Concept of Risk



C Business

x U Economy

=

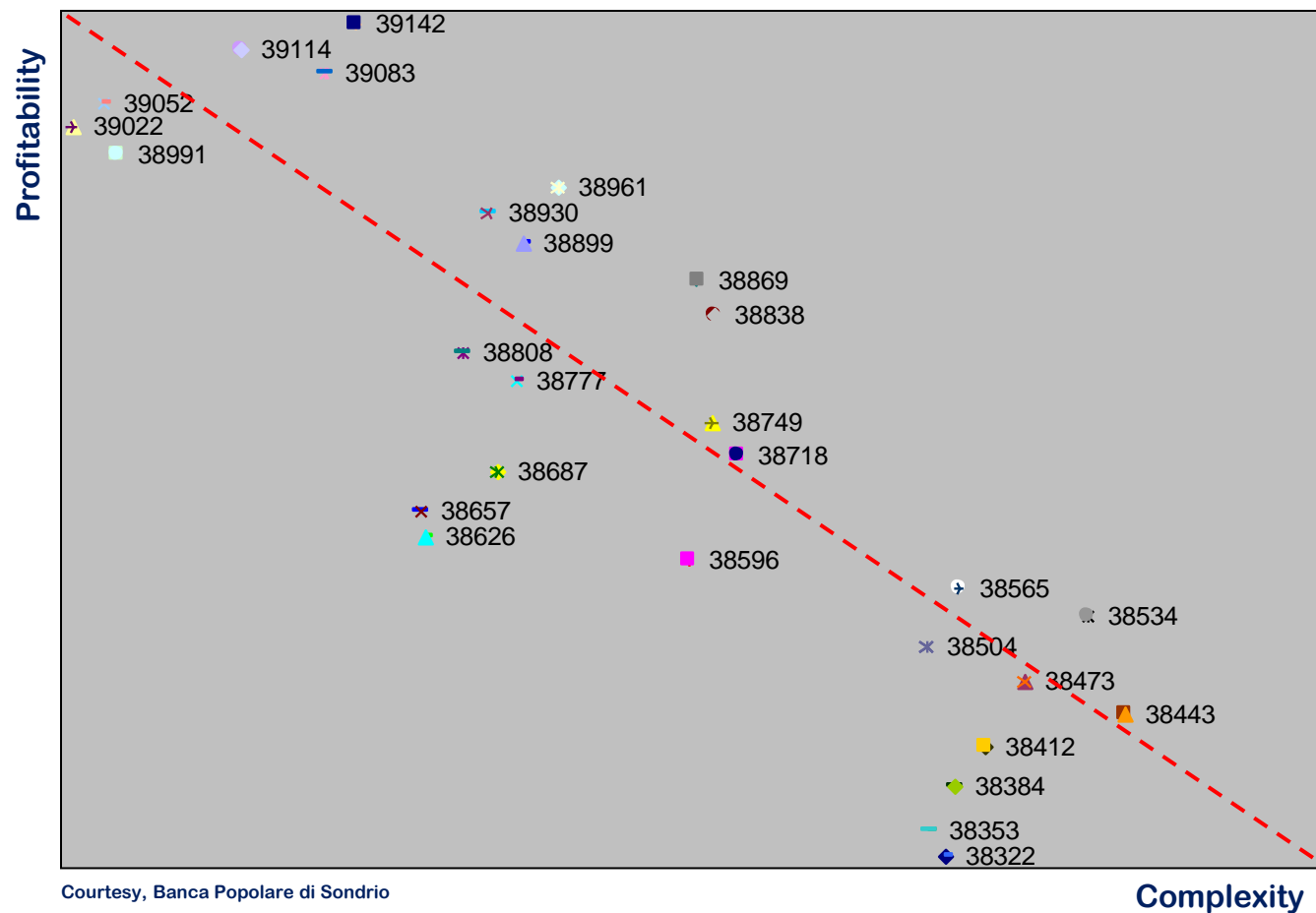
Fragility

Business fragility derives from two main sources:

- **Excessive Complexity**
- **Turbulence/Uncertainty** of economy/markets which acts as amplifier

Complexity Management is a new and modern form of Risk Management, devised specifically for turbulent regimes.

Complexity vs Profitability: Bank Branches



Complexity and Problem Classes

We may distinguish two main classes of problem:

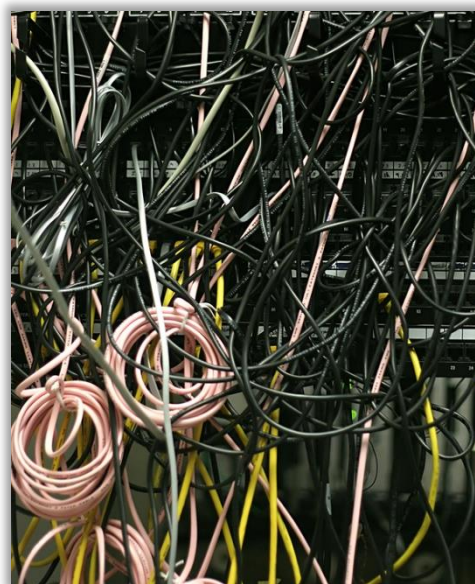
- **Type A (persistent):** Prolonged states of inefficiency, losses, low profitability, etc.
Cause: excessive complexity



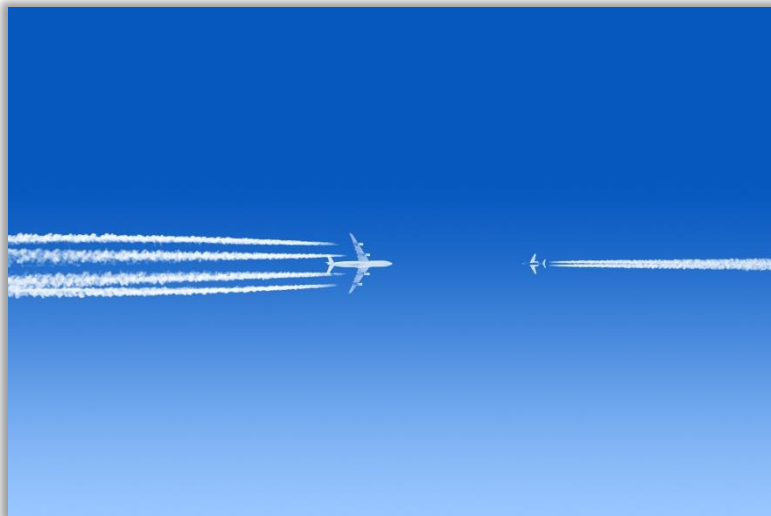
- **Type B (sudden) :** Unexpected collapse of critical systems, catastrophes, crises defaults, etc.
Cause: excessive fragility



Type A Problems (Persistent)



Type B Problems (Sudden)

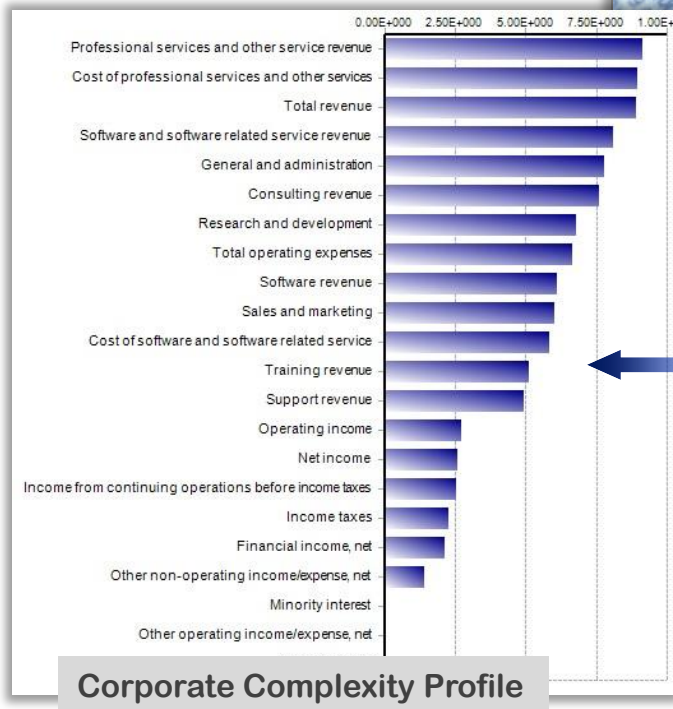


Measuring Business (Complexity) Resilience

Business Complexity and Resilience may be determined based on ERP data, Financial Reports, stock market performance, etc.



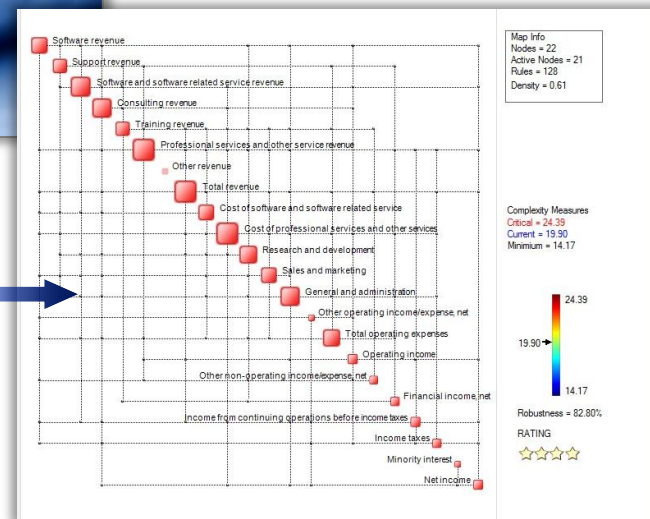
Data (ERP, BW)



Corporate Complexity Profile

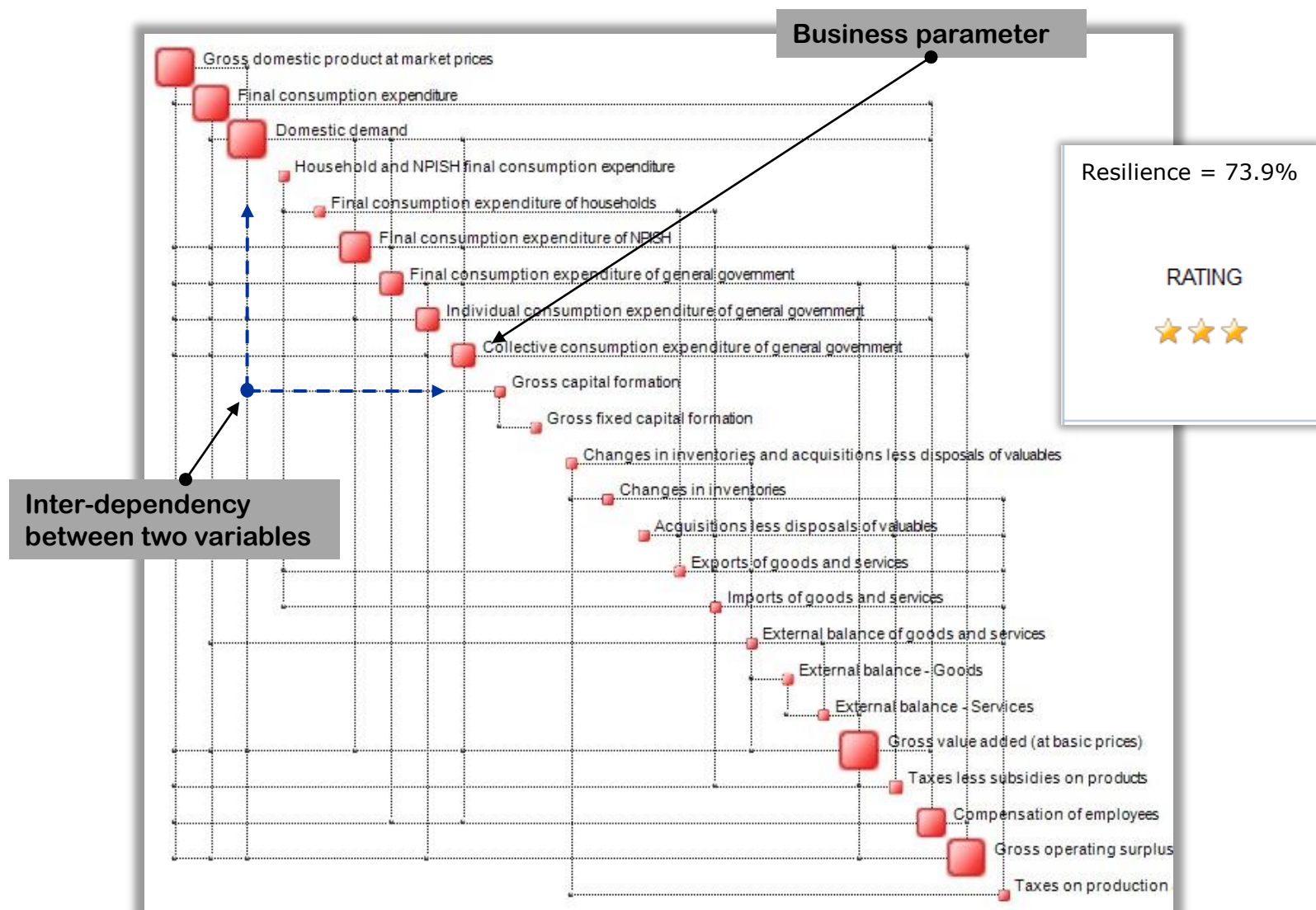


ONTONET™ Server



Business Complexity Map

The Complexity Map = “CAT Scan” of a Business

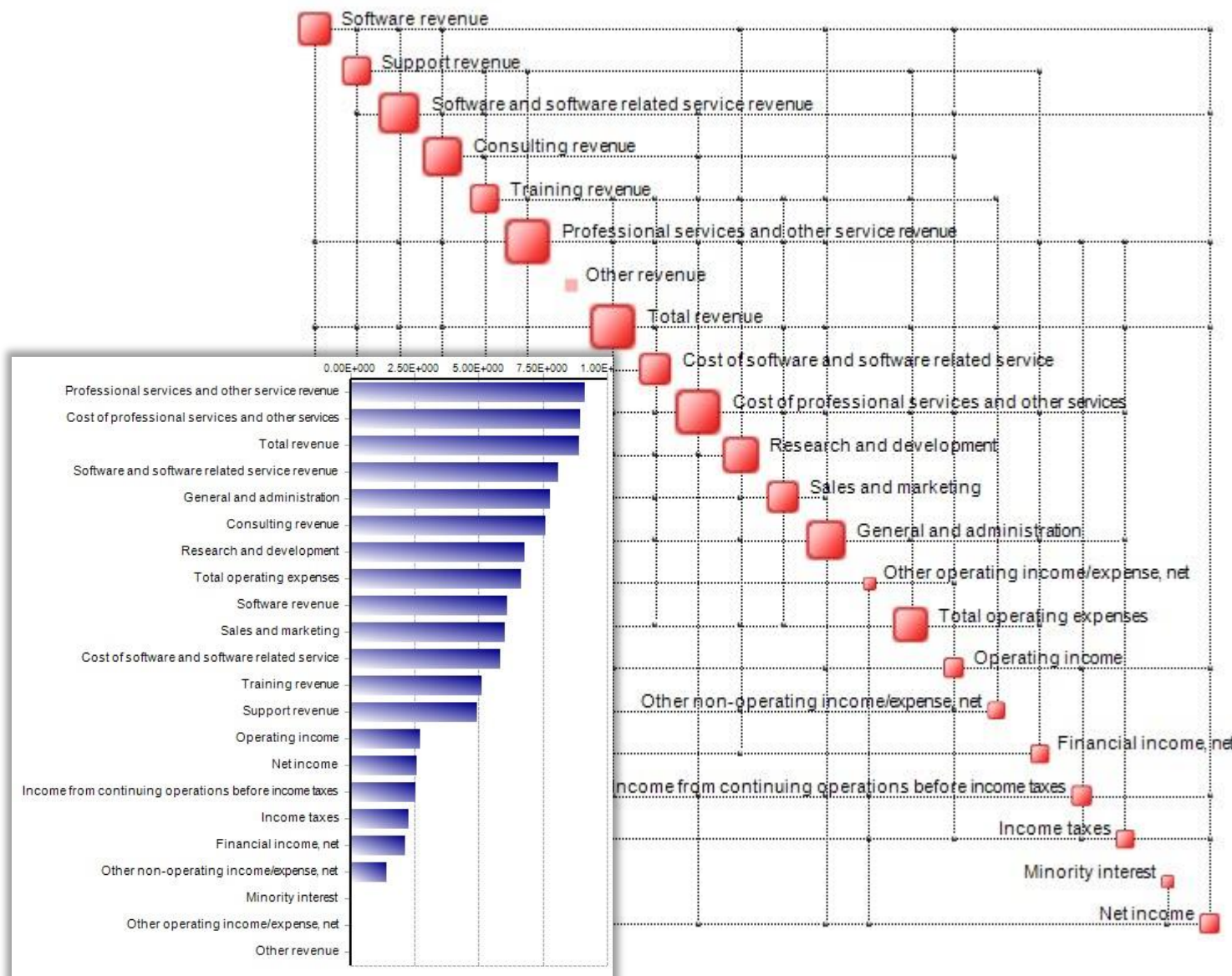


Complexity Profiling – Finding the Key KPIs

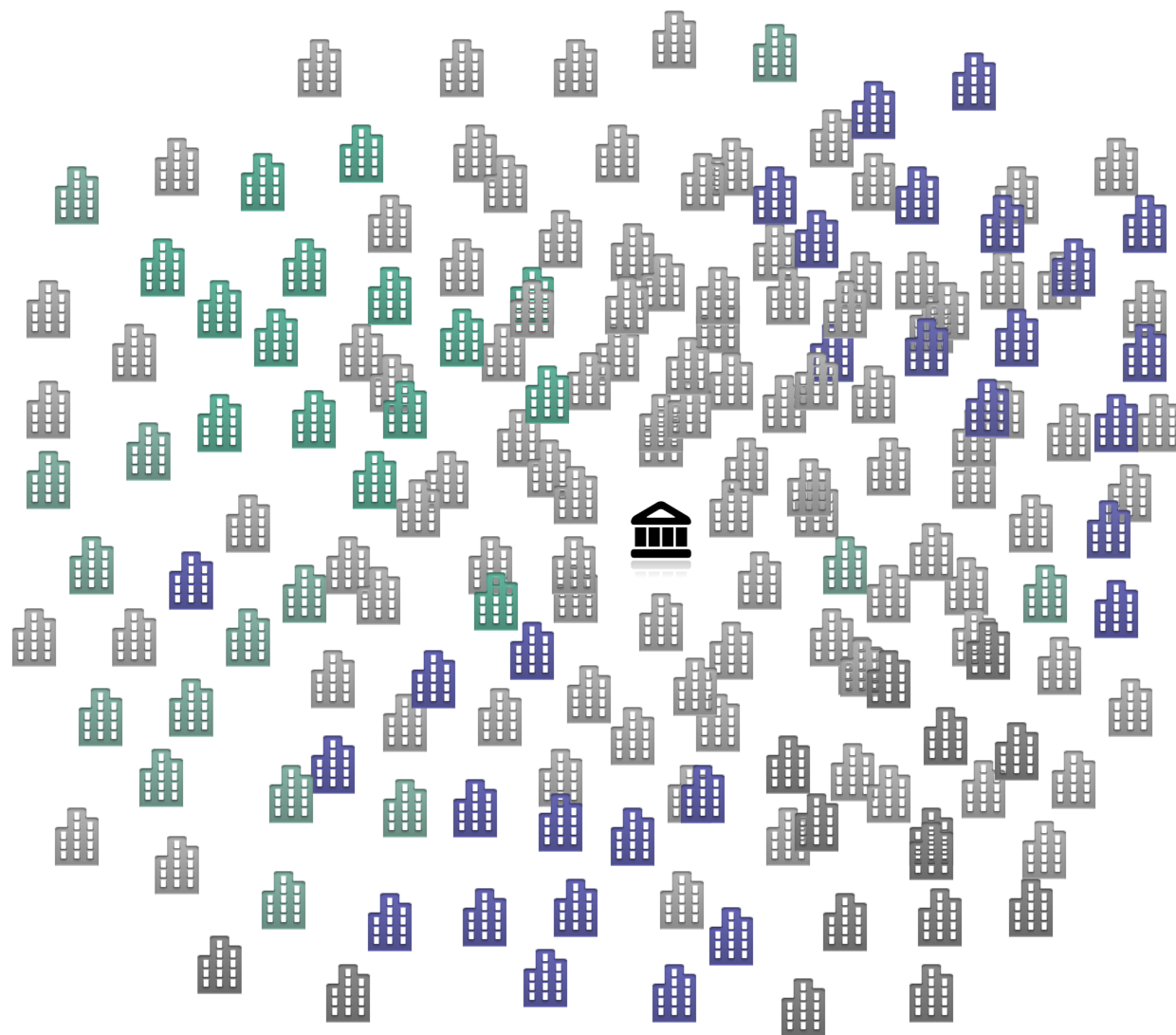
Complexity profiles provide a new means of **ranking** business KPIs and pointing out those that have the largest footprint and **impact** on the business.



Large SW Corporation – Business Map



Getting the Big Picture: A Retail Bank + Ecosystem of Corporate Clients



Conventional approaches focus on establishing a rating of a **single entity**.

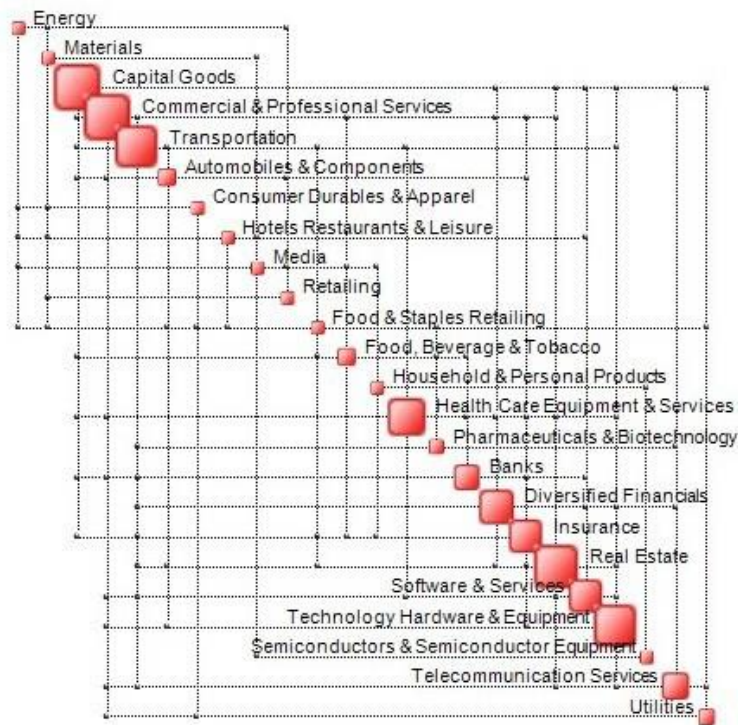
In a turbulent and **interdependent** economy it is important to establish the state of health (rating) of the **entire eco-system** of a bank's clients.

Today, this is possible thanks to QCM technology and supercomputers.

Hundreds of thousands of corporations can be analyzed as a system based on Balance Sheets or transactional data.

The analysis can be performed grouping businesses in specific industry sectors. The result is the **resilience** of the **entire bank-clients system**.

Getting the Big Picture: A Bank + Ecosystem of Clients

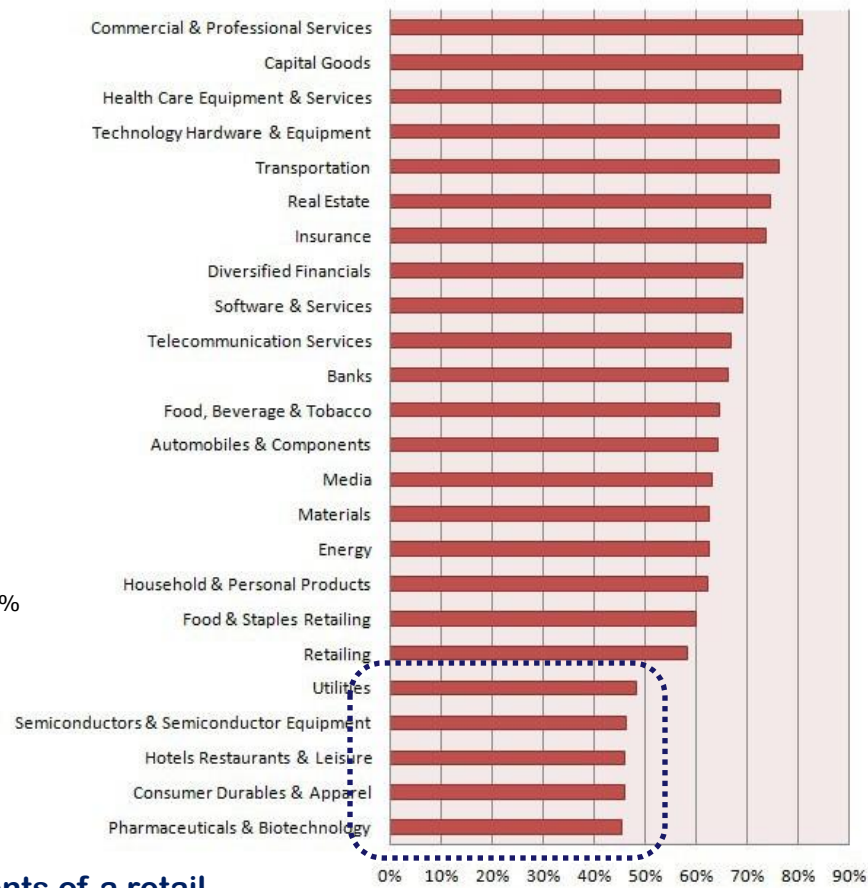


Resilience = 72.1%

RATING

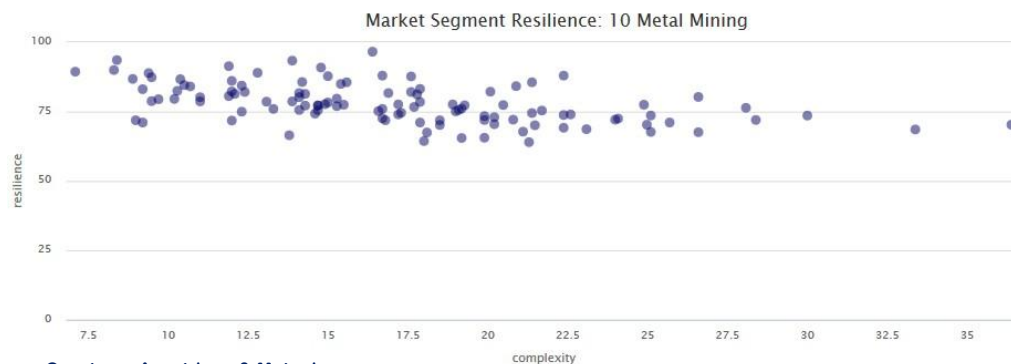
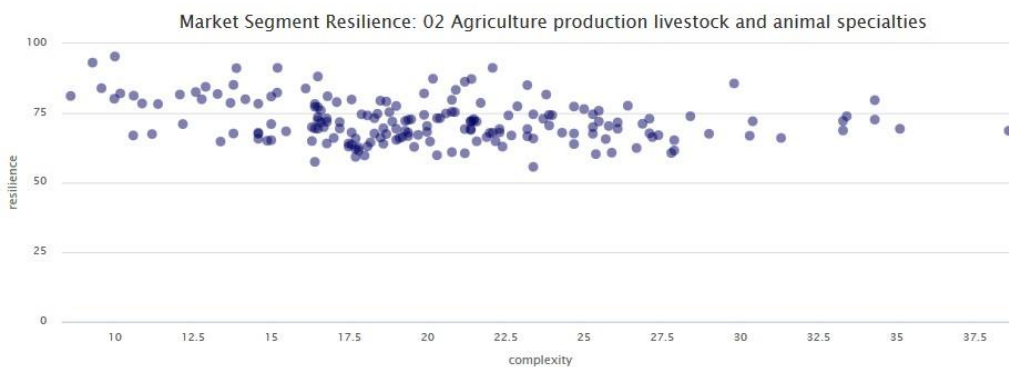
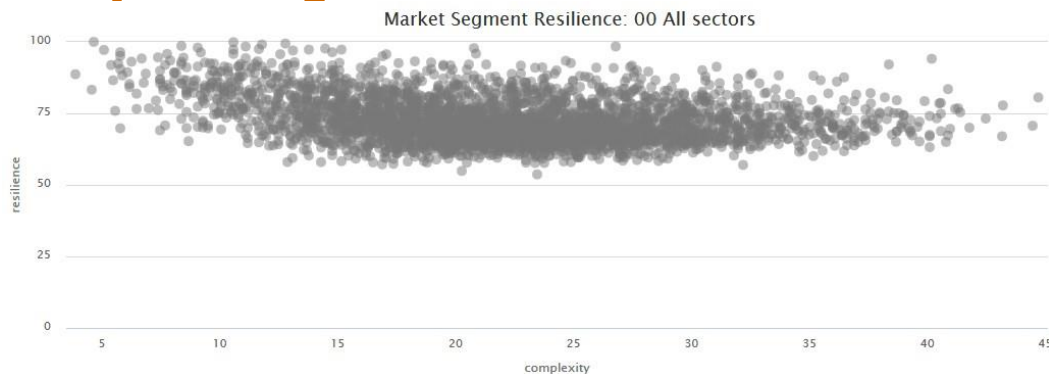


Resilience by Sector (%)



Analysis performed on a system of approx. 1000 corporate clients of a retail bank. Sectors of greatest exposure for the bank are indicated at the bottom of the chart on the right.

Complexity & Resilience on Wall St.



Courtesy, Assetdyne & Metack

Over 4000 public companies listed on Wall Street have been analyzed as a single interacting system.

Analysis based on quarterly Balance Sheets.

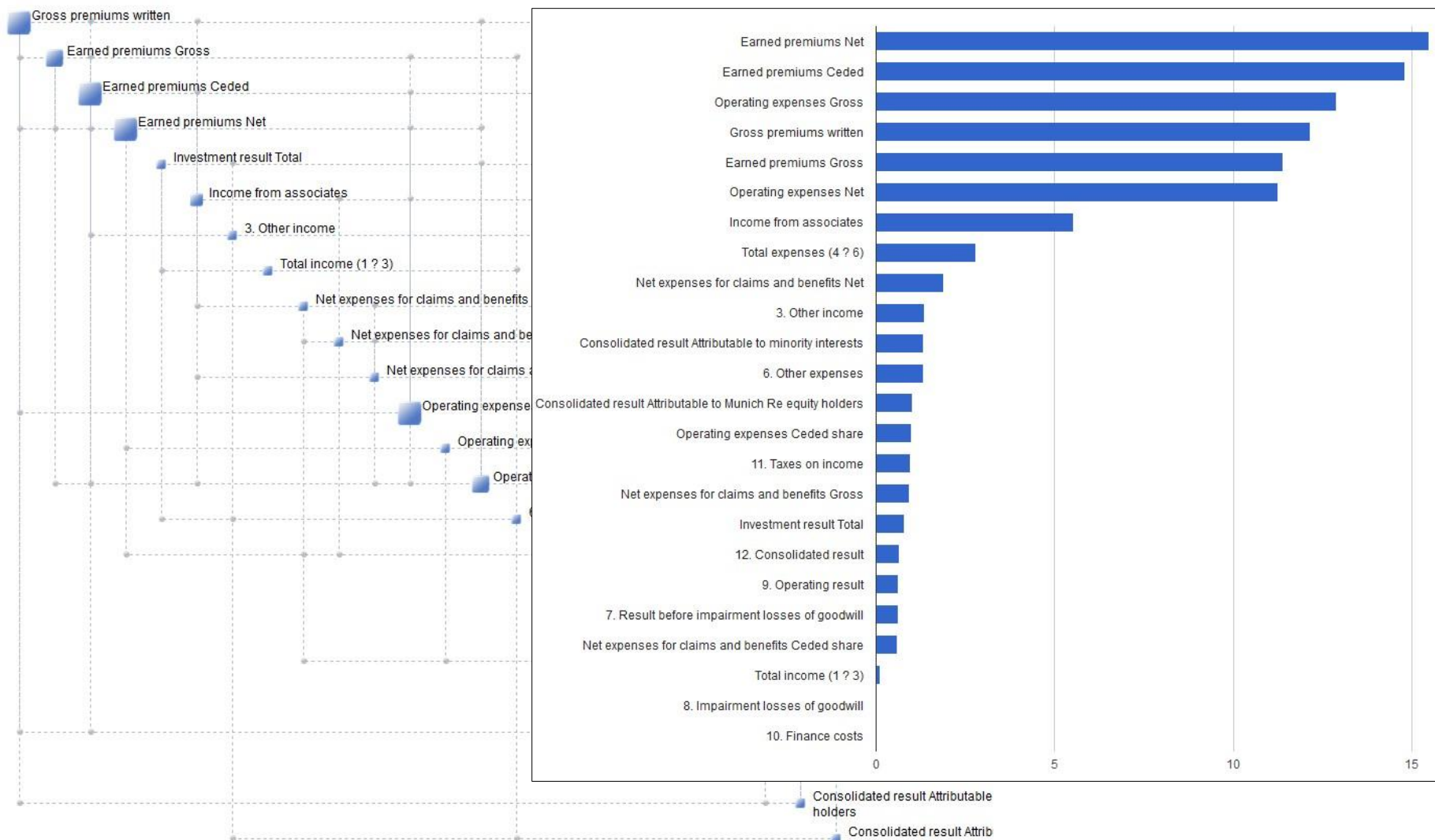
Total of 260 000 variables.

Computing time: 4 hrs

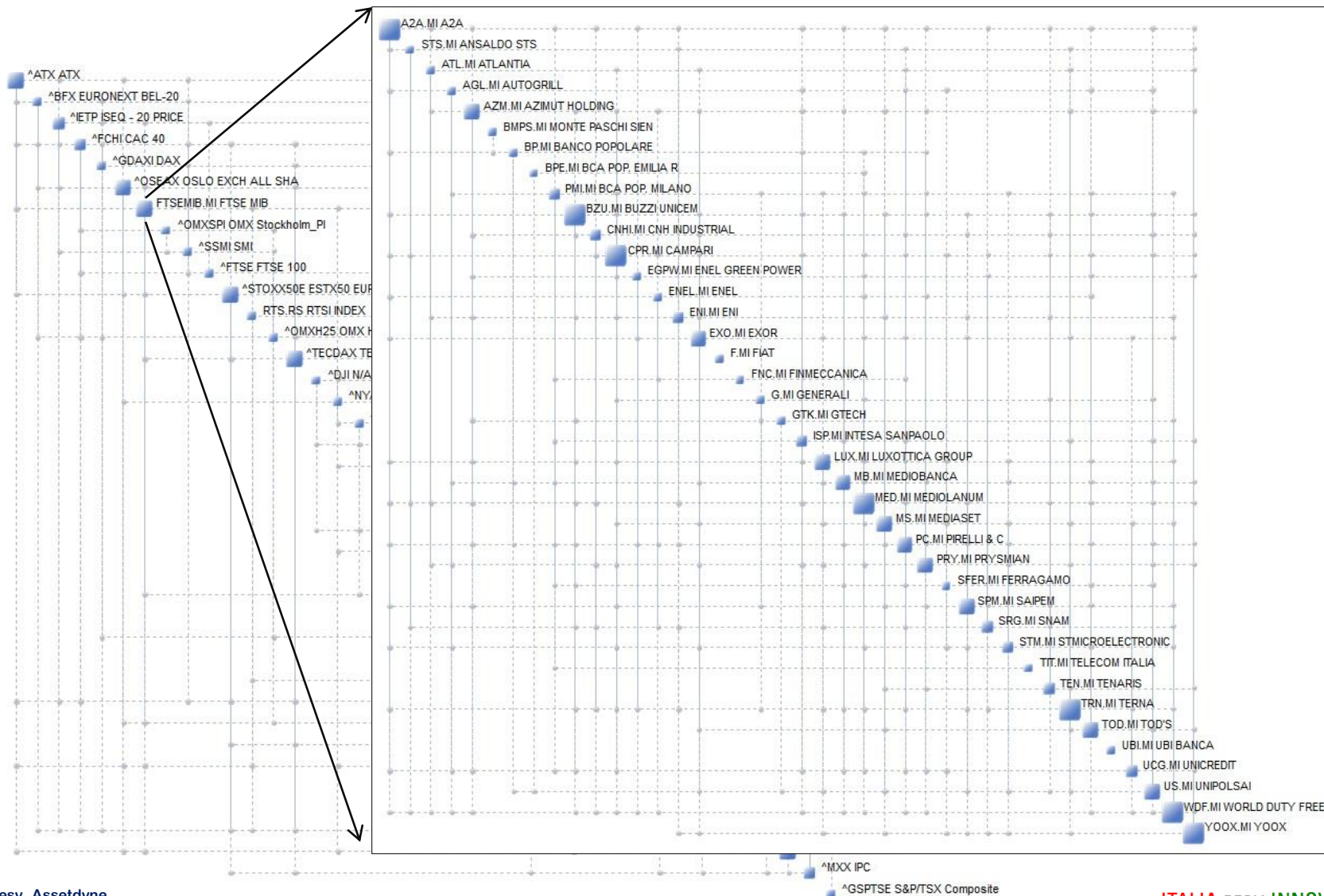
Analysis performed in collaboration with CINECA super computer center (Bologna).



Resilience of System of Major Insurance Companies



Resilience of the Global Financial System (GFRI)



The Bottom Line

- **Complexity** and **Resilience** are two new fundamental KPIs of a modern business.
- In a turbulent economy **resilience** is more important than sheer performance.
- In an **interdependent** economy, systemic analysis is of paramount importance.
- Yesterday: 'Too Big To Fail' Today: '**Too Complex To Survive**'.