

Building a Risk System Using MATLAB

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Aegon Asset Management
June 11th 2015

Key Takeaways

1. Developed in-house risk management system in MATLAB to have flexibility and control over functionality
2. System integrated in existing IT environment for daily execution
3. System integrated with a third party business intelligence tool

Aegon Asset Management at a glance



- Aegon Asset Management is a global asset manager
 - Investing our clients' money

- We are helping our clients to manage their financial future
 - Long term investments to meet long term obligations
 - Pension funds and other financial institutions

- Expertise in Fixed Income investment strategies
 - Government bonds, corporate bonds, etc.

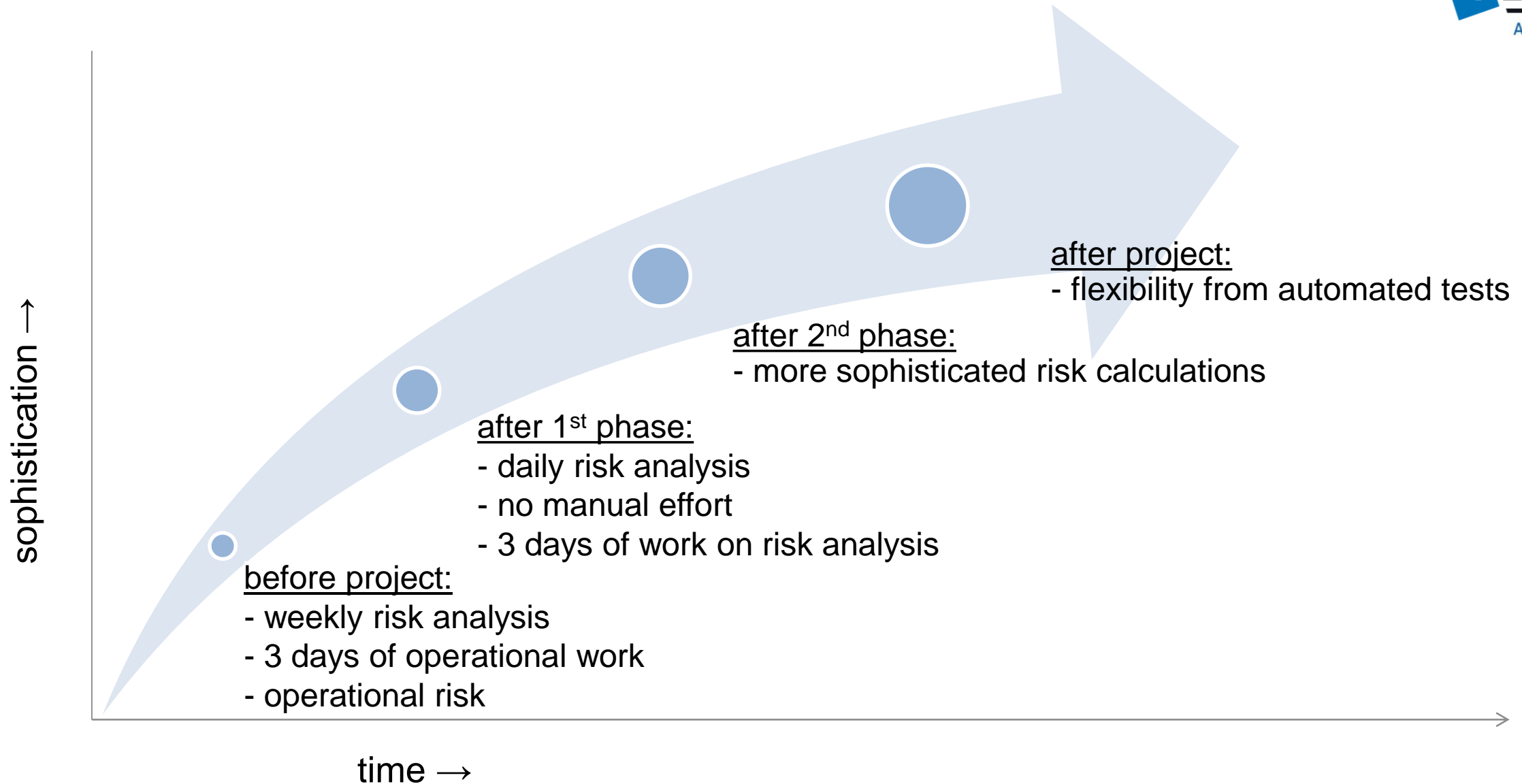
- Currently managing € 340 billion assets worldwide

Background

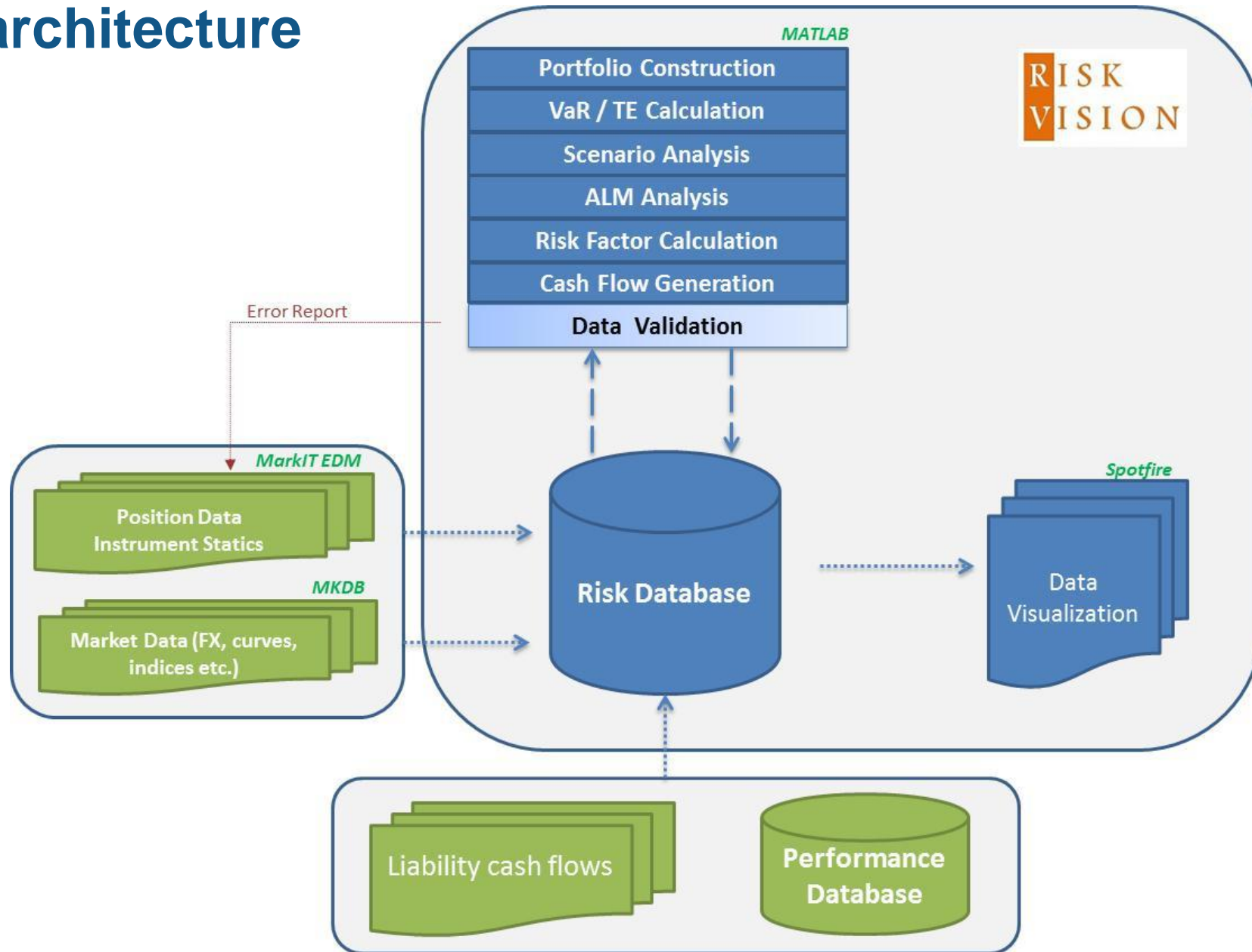


- Subprime debt crisis and government debt crisis in Greece increased risk awareness
- New government regulations require more sophisticated risk calculations
- Clients' focus on risk management increased
- Increase in the operational effort for risk management team

Innovation Challenges and Achievements



System architecture



Demonstration of Risk Vision

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222Demo SpotFire - Copy.dxp - TIBCO Spotfire

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Fund Active Positions - Treemap Dashboard Relative UnitPrice-spread Dashboard Absolute Performance DV01- Contributions per bucket GA Dashboard Page Fund Active Position

RelativePosition by Country

RelativePosition by Sector

Sector +

Sector	Color
BANKING	Red
BROKERAGE	Pink
CASH	Purple
CONSUMER_CYCLICAL	Green
ELECTRICAL	Pink
FINANCIALS	Pink
FINANCIALS	Pink
FUTURE	Dark Green
INDUSTRIALS	Pink
NATURAL_GAS	Pink
TECHNOLOGY	Light Green
TRANSPORTATION	Pink

Sum(Active position Last) +

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How did we get there and leverage MathWorks

- MATLAB was used as the main calculation engine
- MATLAB was integrated with a data warehouse
- Multiple MATLAB toolboxes were used:
 - Parallel computing toolbox
 - Database toolbox
 - Statistics toolbox
 - Optimization toolbox
- The unit test framework in MATLAB was used for automated testing

Why MATLAB?

- Easy to learn
- Enables focus on risk management
- Flexible!

Concluding Remarks

complexity

flexibility

reliability

OO design

automated
tests

DTAP street

error handling

- Giving Aegon Asset Management a competitive advantage in the current market

Thank you!

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