



Aladdin Overview

Local Government Pension Scheme
Welsh Funds

July 2016

BlackRock Solutions (“BRS”) overview

Uniquely positioned to address the risk management needs of institutional investors

- ▶ Combination of proprietary risk analytics and investment systems with capital markets expertise

Three primary lines of business:

- ▶ **Aladdin®**– highly scalable investment management platform including portfolio analysis and risk management tools; used in support of over 200 clients
- ▶ **Client Solutions** – provides customized multi-asset advice for institutional investors on portfolio construction and risk management strategies
- ▶ **Financial Markets Advisory** – solves complex problems for holders of financial assets through unbiased financial markets advice and integrated project execution



Aladdin risk and investment platform

Aladdin connects the information, people and technology needed to manage money in real time

ALADDIN PLATFORM

- Combines sophisticated risk, exposure and performance analyses with comprehensive portfolio management, trading, compliance and operations tools on a single platform
- Provides transparency and powers informed decision-making, effective risk management, efficient trading and operational scale



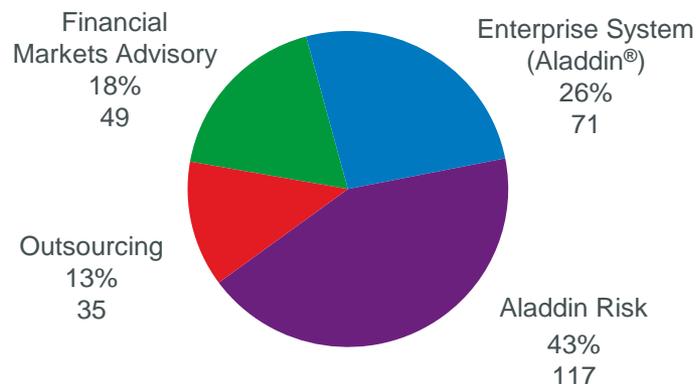
ALADDIN RISK

- Aladdin's risk, exposure and performance analysis capabilities are also available on a standalone basis
- Provides transparent, timely, and dynamic understanding of risks and returns across all asset classes

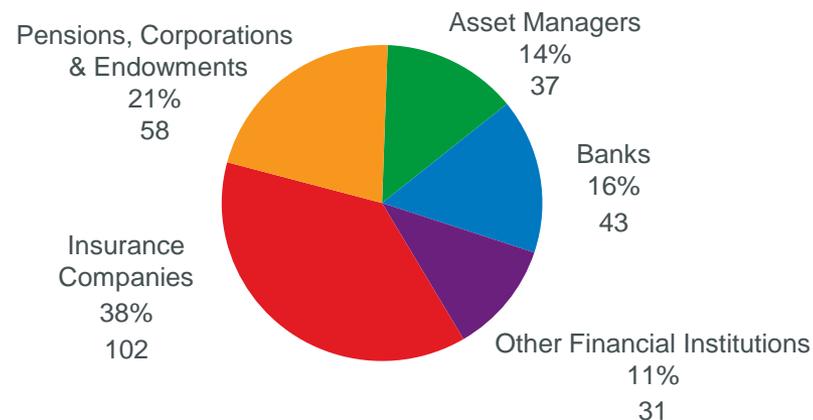


Representative assignments

Ongoing Assignments By Service



Ongoing Assignments By Client



Representative Ongoing Assignments

Asset Managers	Banks & Financial Institutions	Insurance Companies	Pensions & Corporations
AMP Capital Investors	Ally Bank	AEGON	AT&T
BlackRock	American Capital Mortgage	AFLAC	Arizona State University
Charles Schwab & Co.	Fifth Third Bank	Allstate	CalSTRS
Colonial First State Asset Management	Freddie Mac	American Family	Google
Columbia Threadneedle Investments	GIC Private Ltd.	Arch Capital	NY Common
Commonfund	JPMorgan	Aviva Investors	Orange County Employees Retirement System
Deutsche Asset Management	Mizuho Bank	Brit Insurance	Pennsylvania Public School Employees' Retirement System
DIAM	Nomura Holdings America	Liberty Mutual	Pension Fund Association
Guggenheim Capital	OneWest Bank	Munich Re	PensionSSSTE
Mizuho Financial Group	PNC Financial Services	Nippon Life Global Investors Americas	UK Coal Pension
Morgan Stanley Investment Management	Regions Financial Corporation	NN Investment Partners	VicSuper
Pioneer Investment Management, Ltd.	Sumitomo Mitsui Trust Bank	NY Life Investment Management	Virginia Retirement System
SEI Investments	Union Bank	Prudential Investment Mgmt	
Sumitomo Mitsui Asset Management	Wells Fargo	Swiss Re	

Represents ongoing assignments as of 31 March 2016. List is a representative sampling of clients based upon mandate, client type, and geographic location who allow their names to be publicly disclosed as of 31 March 2016. Disclosure does not indicate approval or disapproval by such client of BlackRock Solutions or of the services provided.

Drivers of Change in the LGPS

Drivers of change in LGPS*

	Issues facing LGPS	How Aladdin addresses these issues
LGPS Pooling	▶ Purpose: build scale, reduce costs, increase buying power	▶ Aladdin is a Multi-Asset multi-location single platform.
Pension Reforms	▶ Will require thorough oversight of assets to enable efficient scheme administration	▶ Aladdin enables look-through for efficient oversight
Actuarial Valuation	▶ Will require thorough oversight of liabilities to understand funding status as actuarial assumptions are adjusted	▶ Asset & Liability Management capabilities
Declining Returns & Cash Flow	▶ Ability to compare asset classes, individual investments, managers & liabilities on same framework	▶ Ability to compare asset classes, individual investments, managers & liabilities on same framework
Electronic Business Model	▶ Using technology as an enabler of efficiency and change	▶ Delivered as a service to reduce burden on clients ▶ Market leading tools that are always current
Employer Base Expansion	▶ More employers being added to the scheme – scalability, marginal costs	▶ Reduce complexity, simplify infrastructure -> scale
Risk Management	▶ Multi-Asset view of risk, across the whole scheme, and after pooling across the whole pool	▶ Market leading Multi-Asset risk models
Data Quality	▶ Compliance with regulations, speed of delivery, accuracy	▶ Multiple eyes on a single source of data
Increase In-House Asset Management	▶ Some pools have expressed a desire to ramp up internal capabilities	▶ Aladdin allows multiple business models and facilitates streamlining of processes

* Sourced from 2014/15 Annual Reports of multiple local government pension schemes

How can Aladdin address these needs

Aladdin: an operating system for investment organizations

Combines risk, exposure, and performance analyses with comprehensive portfolio management, trading, compliance, and operations tools on a single platform

- ▶ Connects the information, people and technology needed to manage money in real time to power informed decision-making, effective risk management, efficient trading, and operational scale
- ▶ Comprehensive support for front and middle office while feeding clean data to accounting systems
- ▶ Single version of Aladdin used by BlackRock and 60+ Aladdin clients, with a dedicated instance for each client
 - Flexible and configurable to support the unique needs of each client organization
- ▶ Global and highly scalable platform

Integration of people, processes and systems



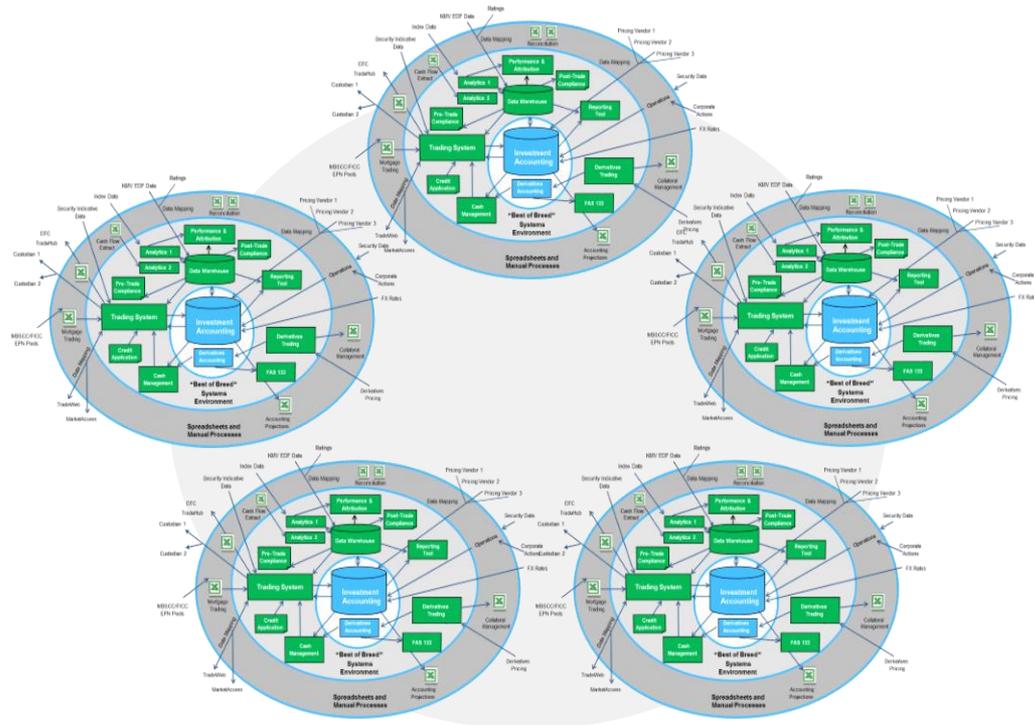
Delivered as service, not software

- ▶ Implementation Services
- ▶ Business Process Consulting
- ▶ Daily Risk Reporting
- ▶ Data and Interfaces
- ▶ Technology and Facilities Management
- ▶ Systems Operations and Administration
- ▶ Ongoing Enhancements and Support

Allows clients to focus on core business responsibilities, not system and data issues

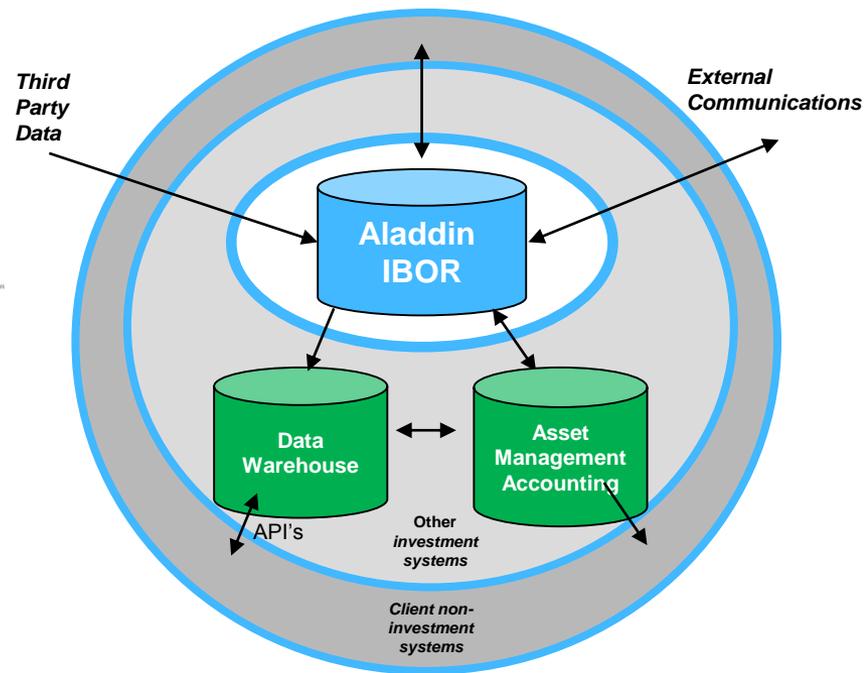
Infrastructure drives information transparency

Multi-Vendor Environment



- No centralized view of Risk Analytics or Market Data
- Same process performed multiple times, by multiple people, in multiple locations
- Numerous tools with overlapping functionality creating inefficiencies and data discrepancies

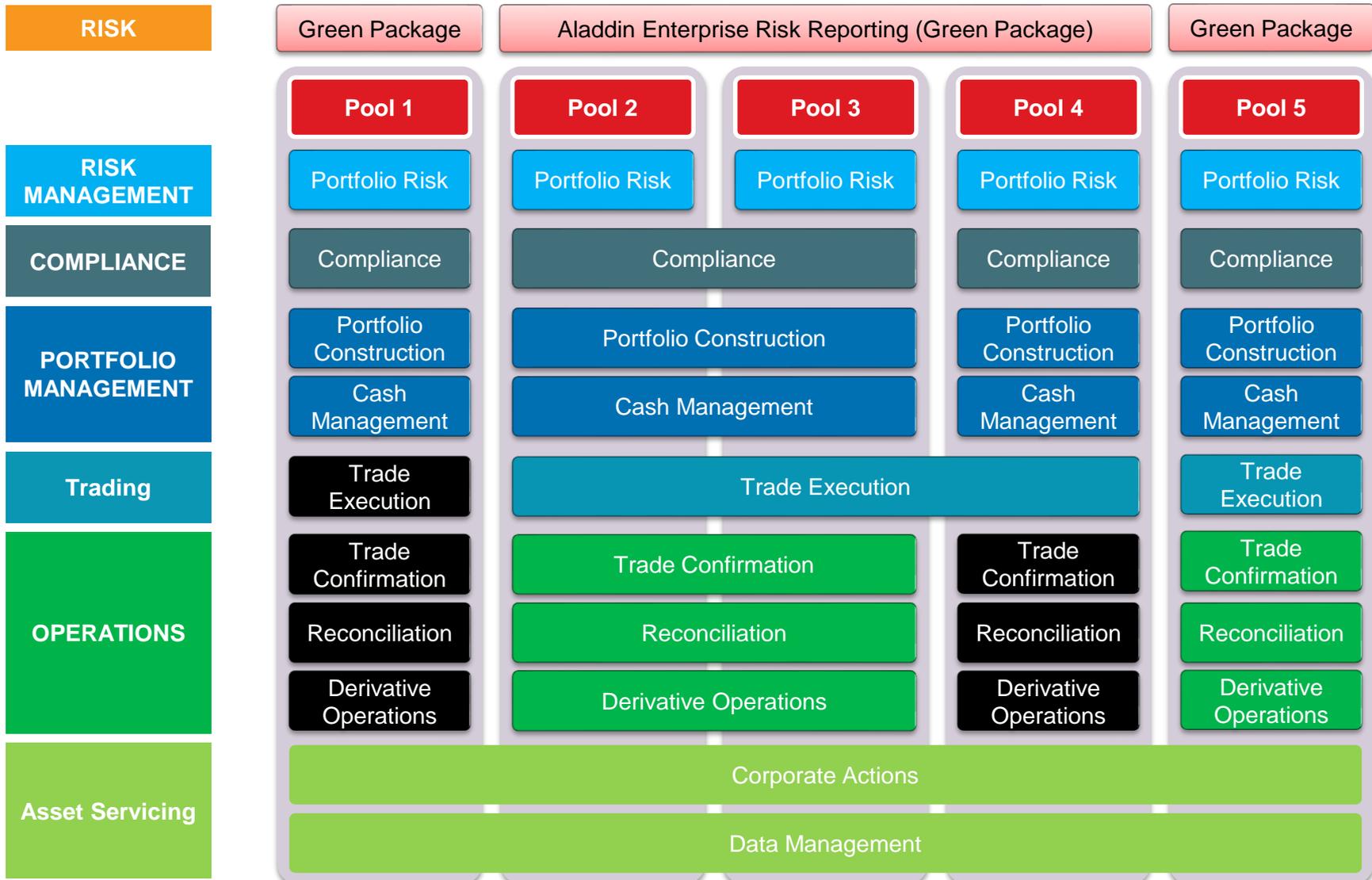
Single Aladdin Environment



- One Database, One System, One Process for the entire LGPS - All portfolios, all product types
- Full information transparency
- Result: simplicity, control, efficiency, scalability

Operating Model Example & Case Study

Example (Independent Risk + Multiple Shared Service Options)

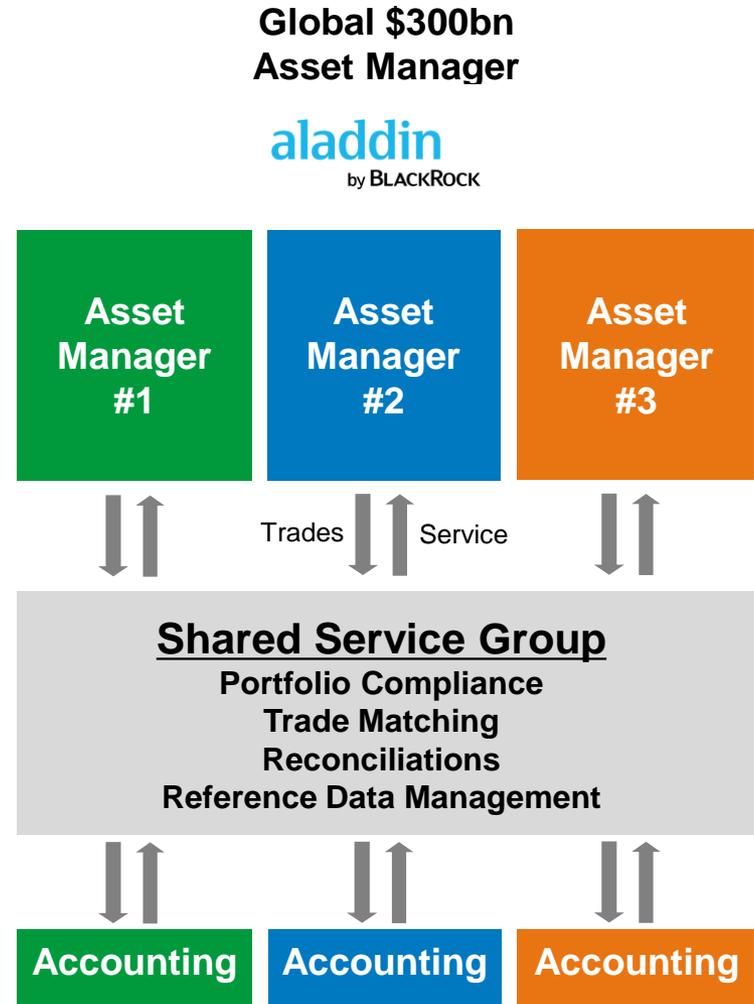


Case Study: Aladdin for Integration and Operational Efficiency

- ▶ BlackRock Solutions (BRS) was approached by a large financial group in Asia to share best practices around increasing operational efficiencies across their asset management businesses.
- ▶ BRS conducted “Top-Down” and “Bottom-Up” business process reviews across asset management subsidiaries under the group
- ▶ There were 3 asset management subsidiaries totaling \$300Bn+, the question was how to create operational efficiency, consistency and readiness for growth without formally merging companies

Our proposal was to use Aladdin to create a “shared platform”

- ▶ Aladdin was implemented to create operational efficiencies around shared services: portfolio compliance, trade matching, reconciliations, data management within a framework allowing each legal entity to perform its reporting obligations.



aladdin

by **BLACKROCK**

©2016 BlackRock, Inc. All Rights Reserved. BLACKROCK, BLACKROCK SOLUTIONS and ALADDIN are registered trademark of BlackRock, Inc. All other trademarks are the property of their respective owners

This material is not to be construed as an offer or solicitation to buy or sell securities, or to engage in any trading or investment strategy. The views contained in this material are those of BlackRock as of the date of this report, may change as subsequent conditions vary, and are based on information obtained by BlackRock from sources that are believed to be generally reliable. BlackRock has no obligation to update this material or to notify you of changes. The information in this report is not all-inclusive and is not guaranteed as to accuracy. Model-based methodologies and calculations are based on assumptions and historical correlations between data and other factors, and are not assured to predict future results. BlackRock is not responsible for typographical or clerical errors in this material or in the dissemination of its contents. Reliance upon this material is at the sole discretion of the reader. The analysis provided herein is for informational purposes only and estimated in nature. This material is not intended for distribution to third parties without the prior written permission of BlackRock. The recipient of this report undertakes sole responsibility and liability for investment or other decisions. For additional information on any of the descriptions contained in this document, please contact your Aladdin Relationship Management representative. BlackRock may modify or discontinue any functionality or service component described herein at any time without prior advance notice to you.