

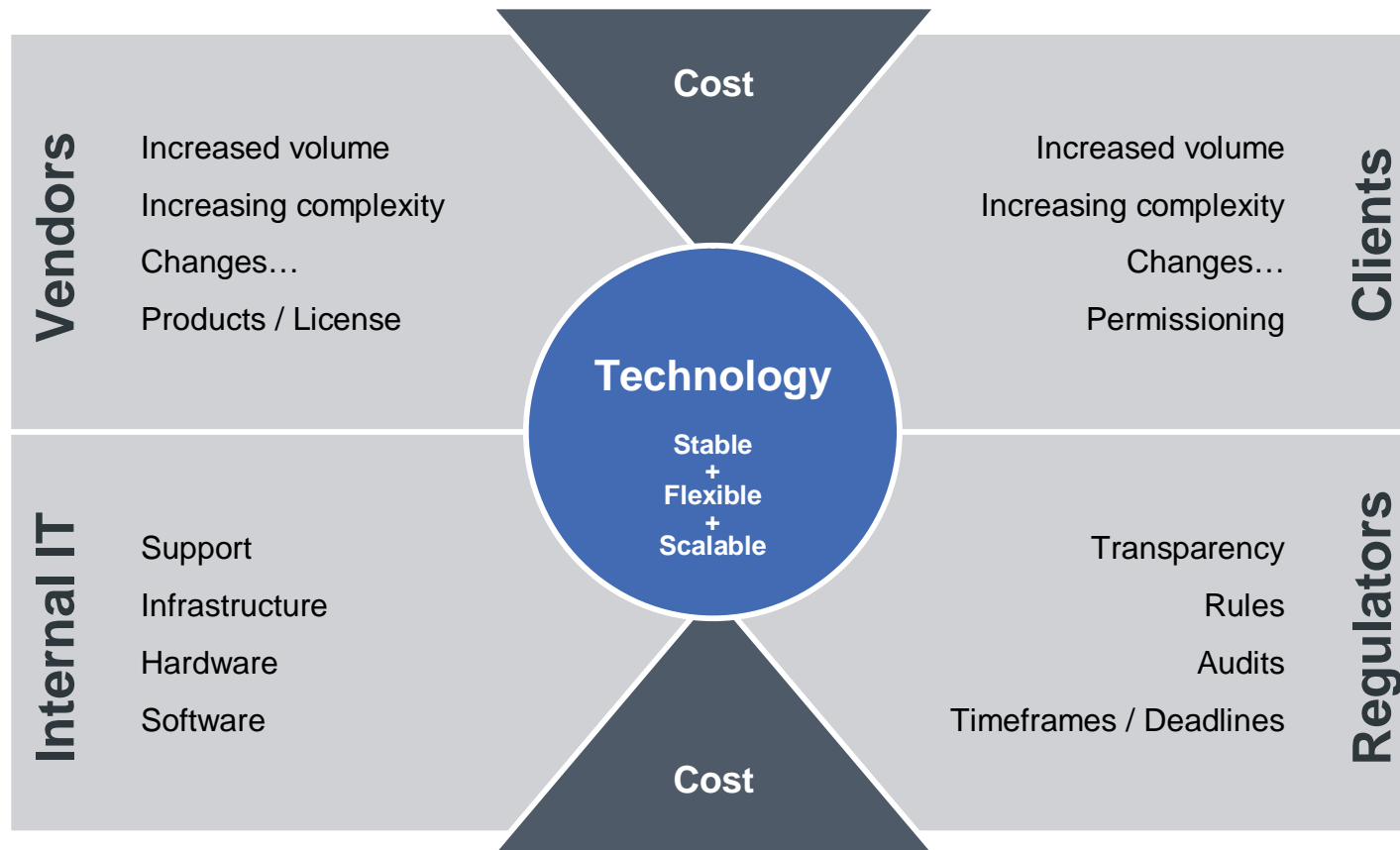
## **Market Data as a Service**

**Closing the open-source loop**

**Developing a multi-source market data system**

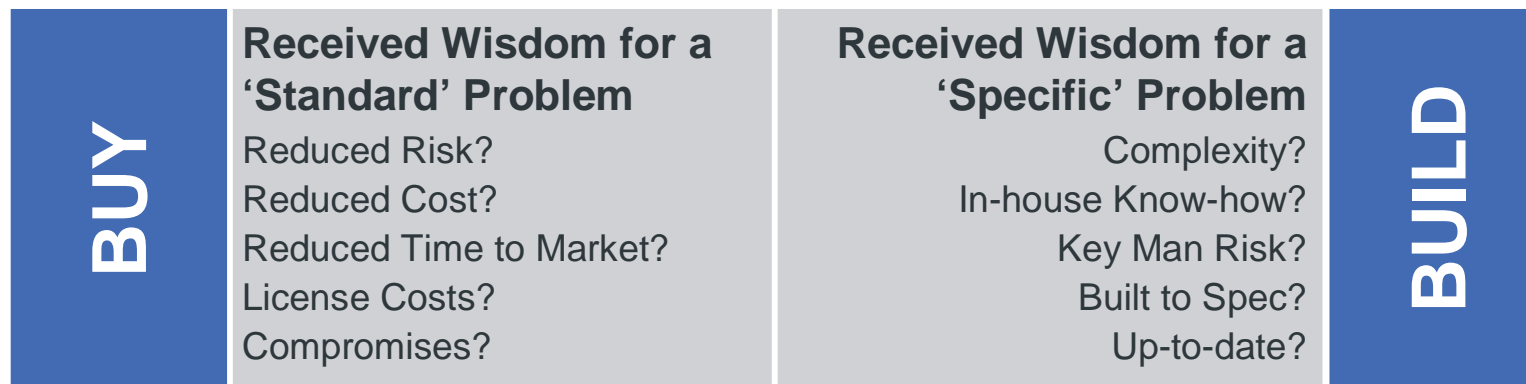
**1. D-A-CH Kongress für Finanzinformationen 2011  
Munich 5th April 2011**

# Market Data as a Service – an introduction to the challenges



## Buy vs. Build

- Can you buy a complete system 'off-the-shelf'?
- What is involved building it yourself?



### Experience tells us:

No market offered system will meet all requirements without substantial modifications

Building from scratch involves high risk and cost

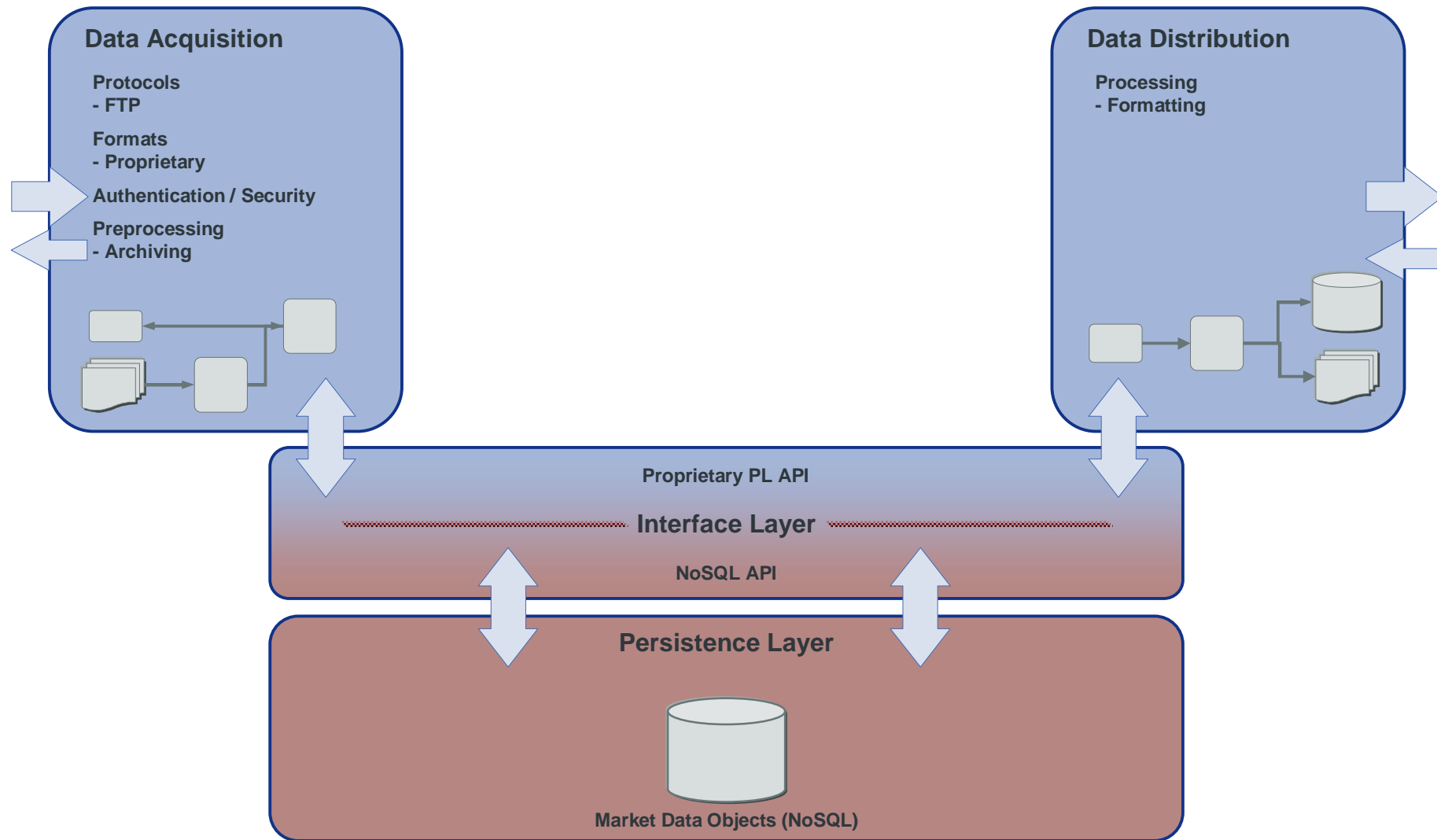
Are individual components available which can be integrated into a whole?

## Are open-source solutions really a reliable alternative?

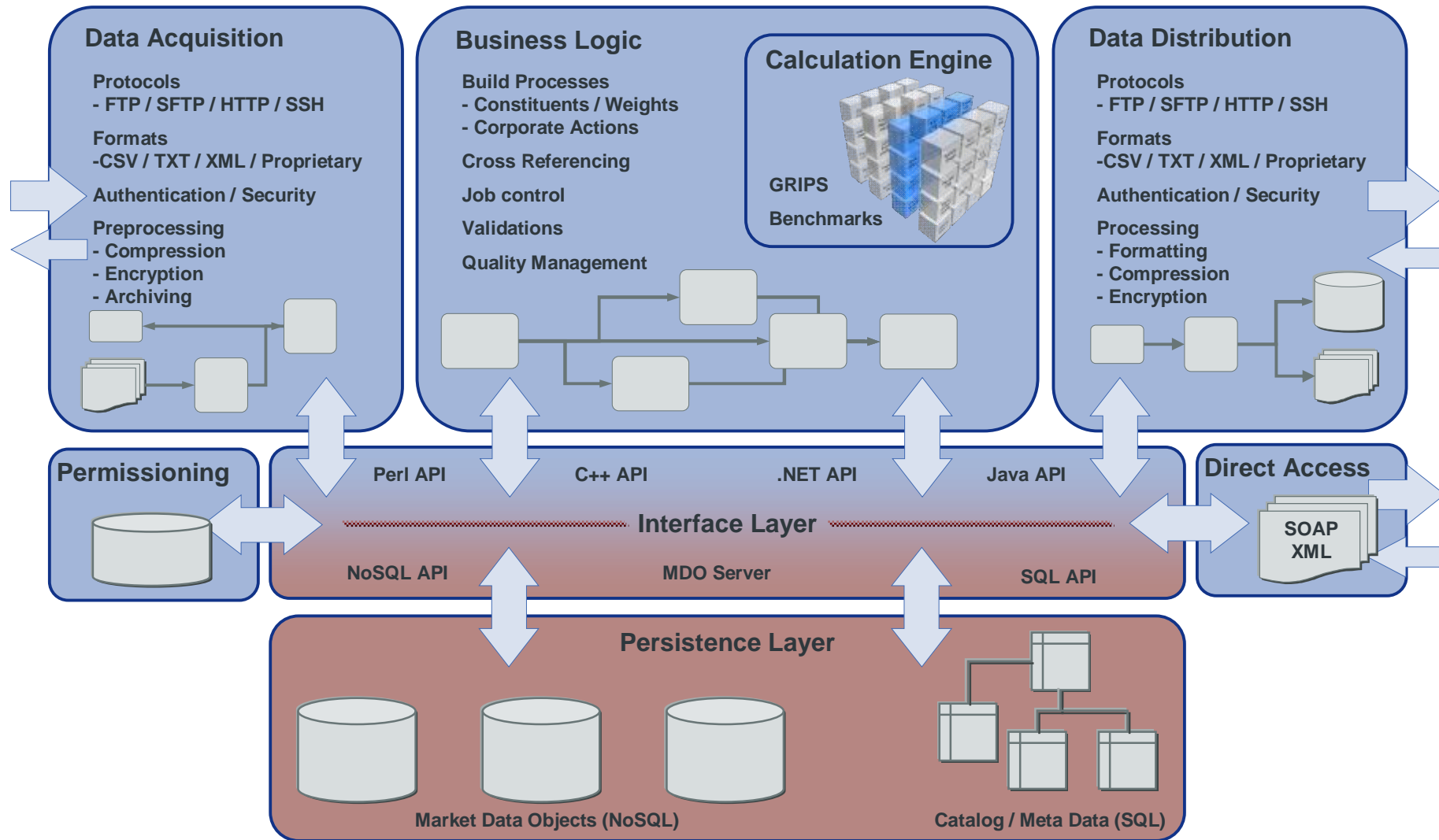
### Solutions with a proven track record

<b>Operating Systems</b>	<b>Linux</b> is one of the most prominent examples of free and open source software collaboration.
<b>SQL Databases</b>	<b>PostgreSQL</b> is an object-relational database management system (ORDBMS)
<b>NoSQL Databases</b>	<b>BerkeleyDB (BDB)</b> is a computer software library that provides a high-performance embedded database for key/value data.
<b>Interfacing</b>	<p>The <b>gSOAP</b> toolkit is a development toolkit for SOAP/XML Web services.</p> <p><b>GNU Wget</b> is a command line tool that retrieves content from web servers. It supports downloading via various protocols.</p> <p><b>cURL</b> is a command line tool for getting or sending files using URL syntax. It supports a range of common Internet protocols.</p>
<b>Calculation</b>	<p><b>QuantLib</b> is a software library which provides tools for financial instrument valuation and related subjects.</p> <p><b>R</b> is a programming language and software environment for statistical computing and graphics. The R language has become a de facto standard among statisticians.</p>

## Where we started...



## ... "Cronus" architecture today



# How complicated does your data model need to be?

## Time Series Objects

Values change at a regular frequency (E.g. Pricing)

Time

Date (Business)	Value
23/03/2011	23.03
24/03/2011	24.65
25/03/2011	26.22
28/03/2011	24.32
29/03/2011	24.89
30/03/2011	27.02
31/03/2011	27.66
01/04/2011	29.23
04/04/2011	32.85

## Const Series Objects

Groups of values (E.g. Index Constituents and Weights)

Time

Constituent	Value
DE05468	0.1320
DE75158	0.0234
DE72015	0.2340
DE01587	0.0944
DE09753	0.0439
DE74156	0.1266
DE95013	0.2213
DE12841	0.1520
DE42110	0.0022

## Sparse Series Objects

Values change irregularly (E.g. 'Static' Data)

Time

Date	Value
01/07/2000	Allianz AG
13/10/2006	Allianz SE

## A Few Statistics

Description	
Vendors integrated	41
Files received	daily: 3,500 weekly: 10,000
File size	daily: 3.4 GB weekly: 22 GB
Jobs run	daily: 27,000 weekly: 44,000
Instruments loaded	31,670,000
Data objects available	4,500,000,000
Index constituents calculated	427,000
Benchmarks calculated	18,900



Last but not least. Questions?

# CRONUS

DRIVING THE INTELLIGENT USE OF MARKET DATA

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