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Market Data over the Web with **RESTEasy**

Joel Tosi

Application Architect

September 2, 2009

Overview

Background

Services introduced

Problems encountered

Where we are going

Questions

Background

Presenter

Developer → Manager → Architect

10 years Java development, predominantly front end

Company

CME – world's largest and most diverse derivatives exchange

CME focuses first on reliability and performance

Global growth

It all began...

Website had lots of changes...but no changes to data

2002

10-minute GLOBEX®2 flash quotes as of 12/17/01 11:20 pm (cst) for trade date 12/18/01

CONTRACT	LAST	NET CHGE
S&P 500 MAR02	1137.00	-100
E-MINI DECO1	1136.00A	-75
MAR02	1137.00	-100
NSDQ100 MAR02	1647.00	+200
E-NASDAQ MAR02	1645.00	UNCH
E-50 MAR02	351.00P	----
E-RUSSEL MAR02	483.50P	----
GSCI JAN02	168.80P	----
S&P GROW MAR02	594.90P	----
S&P VALU MAR02	540.90P	----

CONTRACT	LAST	NET CHGE
EUROFX MAR02	.8996	+1
EMINI EC MAR02	.9010A	+15
FX/BP MAR02	.61960A	+10
FX/JY MAR02	114.92A	+74
FX/SF MAR02	1.4688B	-7
J-YEN MAR02	7826	-52
EMINI JY MAR02	7852	-26

CONTRACT	LAST	NET CHGE
EURO \$ MAR02	97.93	+1
JUN02	97.485	+3
SEP02	96.865B	+5.5
DECO2	96.15	+6.5
MAR03	95.48B	+6
JUN03	94.865	+5
LIBOR JAN02	98.145	+.5
FEB02	98.15P	----

CONTRACT	LAST	NET CHGE
BENZENE JAN02	.730B	UNCH
XYLENE JAN02	.710P	----

CONTRACT	LAST	NET CHGE
HDD-ATL JAN02	679.0P	----
HDD-CHI JAN02	1315.0P	----
HDD-CINN JAN02	1059.0P	----
HDD-NY JAN02	990.0P	----
HDD-DALL JAN02	581.0P	----

2004

 [E-mail Page](#)

RESOURCES

Brochures

[2004 Equity Information Guide \(PDF\)](#)
[E-mini Brochure \(PDF\)](#)

Educational Materials

[Equity Research Center](#)

Quick Links

[Assignment of E-mini Calendar Spread Legs](#)
[Calculating Fair Value](#)
[Final Settlement Procedures](#)
[Month-End Fair Value Procedures](#)
[Price Limit Guide](#)

DELAYED QUOTES

- [Futures and Options](#)

E-MINI JUN04

LAST	1132.75
	+125

Updated:
06/09/04 08:20 PM CST

- [GLOBEX Flash Quotes](#)

QUOTES & DATA

[Daily Bulletin](#)
[E-quotes](#)

2006

QUICK LINKS

[Exchange for Physical \(EFP\) FAQ \(PDF\)](#)
[Quote Vendor Symbol Guide \(PDF\)](#)
[Block Trading FAQ \(PDF\)](#)

[Eurodollar Daily Settlement](#)
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DELAYED QUOTES

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OPEN OUTCRY

EURO \$ JUN06

LAST	95.15
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NET CHANGE	-1
------------	----

Updated:
12/30/05 03:20 PM CST

⌵ [CME RTH Flash Quotes](#)

2008

Delayed Quotes: Featured Products

Product	Month	Last	Change
Corn	Dec 09	326'4	+3'4
E-mini S&P 500 (Dollar)	Sep 09	1006.25	-0.25
EUR/USD	Sep 09	1.4172	-0.0158
30-Day Federal Funds	Feb 10	99.515	+0.005
Get Real-time Quotes ↗			

Month	Charts	Last	Change	Prior Settle	Open	High	Low	Volume	Upd
Aug 2009 OPT		99.5300	+0.0025	99.5275	99.5375	99.5400	99.5175	7863	4:50:28 8/7/200
Sep 2009 OPT		99.510	+0.010	99.500	99.510	99.520	99.475	156983	4:50:28 8/7/200
Oct 2009 OPT		99.405	+0.015	99.390	99.400	99.405	99.370	4067	4:50:28 8/7/200
Nov 2009 OPT		99.295 a	0.000	99.295	99.290	99.300	99.285	169	4:50:28 8/7/200
Dec 2009 OPT		99.210	+0.010	99.200	99.245	99.255	99.160	287563	4:50:29 8/7/200
Jan 2010		99.075	0.000	99.075	99.005	99.005	99.075	75	4:50:28

Commodity Interest Rate Equity Index FX

Market Data is delayed at least 10 minutes

STREAMING QUOTES ARE **ON** | [About this Report](#)

Grains and Oilseeds

Product	Venue	Month	Price	Change
Corn	Globex	Sep 09	321'6	-0'4
Corn	Floor	Sep 09	321'4	-0'4
Mini-sized Corn	Globex	Sep 09	322'0b	+0'0
Mini-sized Corn	Floor	Sep 09	322'0	+0'0
Wheat	Globex	Sep 09	489'4	-0'4
Wheat	Floor	Sep 09	491'0	+1'4
Mini-sized Wheat	Globex	Sep 09	488'0	-1'4
Mini-sized Wheat	Floor	Sep 09	487'4	-2'0
Soybeans	Globex	Sep 09	1095'0b	+4'4
Soybeans	Floor	Sep 09	1090'4	+0'0
Mini-sized Soybean	Globex	Sep 09	1093'0	+2'4
Mini-sized Soybean	Floor	Sep 09	1091'0	+0'4
Soybean Meal	Globex	Sep 09	343.9	-0.3
Soybean Meal	Floor	Sep 09	342.7	-1.5
Soybean Oil	Globex	Sep 09	36.97	+0.05

Dairy

Product	Venue	Month	Price	Change
Class III Milk	Globex	Aug 09	11.09	0
Class III Milk	Floor	Aug 09	11.10	+0.01
Class IV Milk	Globex	Aug 09	-	-
Class IV Milk	Floor	Aug 09	-	-
Nonfat Dry Milk	Globex	Aug 09	-	-
Nonfat Dry Milk	Floor	Aug 09	-	-
Dry Whey	Globex	Aug 09	29.525	0
Cash-Settled Butter	Globex	Aug 09	122.500	0
Butter	Floor	Aug 09	-	-

Forest

Product	Venue	Month	Price	Change
Random Length Lumber	Globex	Sep 09	197.20	+0.10
Random Length Lumber	Floor	Sep 09	197.20	+0.10

First services

Used Jersey

```
@GET
@Produces("application/json")
@Path("/Venue/{venue}/Exchange/{exchangeCode}/FOI/{foi}/Product/{productCD}")
public MarketDataInfoAsStringList getGETMarketData(@PathParam("exchangeCode") String exchangeCode,
                                                    @PathParam("productCD") String productCD,
                                                    @PathParam("foi") String foi,
                                                    @PathParam("venue") String venue,
                                                    @QueryParam("currentTime")String currentTime,
                                                    @QueryParam("contractCDs")String contractCDsString,
                                                    @Context UriInfo uriInfo) {

    return getMarketData(exchangeCode, productCD, foi, venue, currentTime, contractCDsString, uriInfo);
}
```

Response looks like...

/CmeWS/md/MDServer/V1/Venue/G/Exchange/XCBT/FOI/FUT/Product/ZC?
currentTime=1249872468905&contractCDs=,ZCU9,ZCZ9,ZCH0,ZCK0,ZCN0
,ZCU0,ZCZ0,ZCH1,ZCK1,ZCN1,ZCU1,ZCZ1,ZCN2,ZCZ2

[-] GET http://www.cmegroup.com/CmeWS/md/MDServer/ mootools...e-1.11.js (line 1)

Params Headers Response JSON

[-] marketDataInfoAsStringList Object searchCriteria= Object message={15}

+ message [Object closePrice=- cumulativeVolume=- exchangeCode=-, Object closePrice=322'0 cumulativeVolume=8719, Object closePrice=326'4 cumulativeVolume=13181, 12 more... 0=Object 1=Object 2=Object 3=Object 4=Object 5=Object]

+ responseHeader Object RCode=0 serverAlias=pwprap31w

+ searchCriteria Object productCd=ZC venue=G foi=FUT exchange=XCBT

More applications start using

DataSuite

Senior Project with Rose-Hulman

Portal

New site features (adding spreads)

Dubai Merc

Internal 'Product Store'

Good Success...brings more challenges

Want to grow use internally

Some want more of an API

Want to grow externally, globally

Provide an API

Jersey is a good framework – why RESTEasy

Problems Encountered

Business logic layer wasn't best code

Services allow for refactoring

Easier integration test cases

Resource mapping strategy not well thought out

Some requests not well thought out

Where are we going

Consolidation of systems

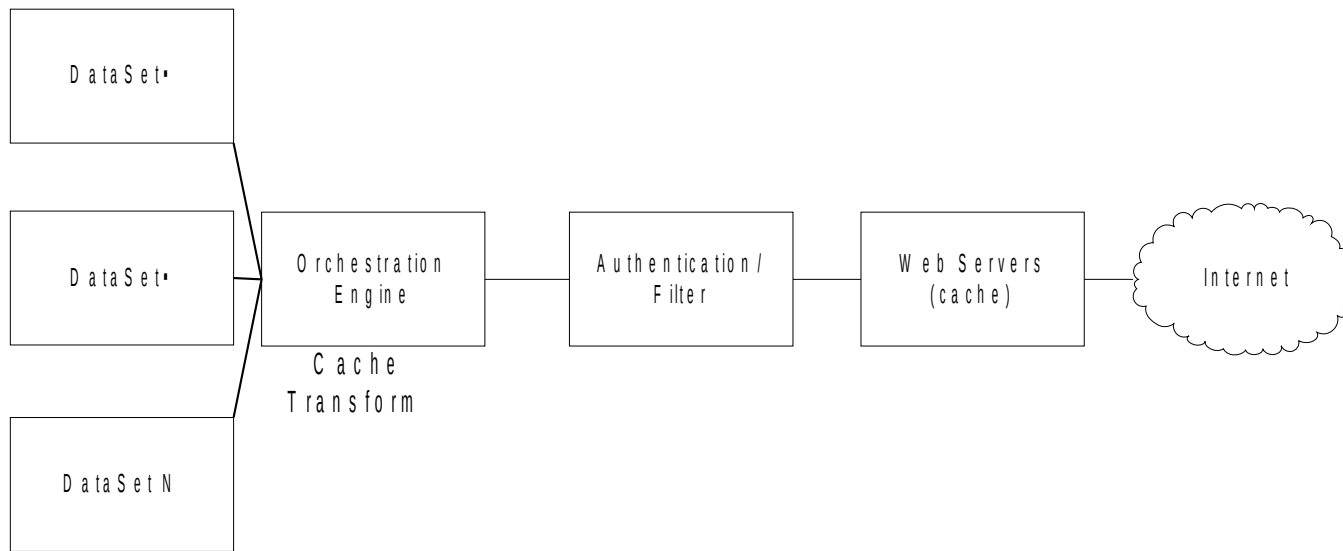
Consolidation of datasets

Consolidation of functionality

Authentication layer

Orchestration

Where we are going ... flow



QUESTIONS?

**TELL US WHAT YOU THINK:
[REDHAT.COM/JBOSSWORLD-SURVEY](https://redhat.com/jboss-world-survey)**