



An OpenEdge Developer Getting Started with Modulus and MongoDB

Prepared especially for:



8 June 2015

Agenda

- Background
- The Integration Challenge
- Implementing our Integration Platform
- Our Learning Experience
- Conclusion

QSR Business Ops



QSR Business Ops Software Interface

Buttons: Other Tasks, Quick Reconciliation, Adjust Sale, Reprint Receipt, No Sale, Sales Snapshot, Cash Drop Deposits

DRILL	OPEN	ADJ	DETAIL	RESET		
O Tr #	T Ck	ST	Total	Tend	Chg Tender(s)	Cust #
96	n	Ownetko	.00	.00		
95	s	Ownetko	.00	.00		
94	s	Ownetko	2.25	10.00	7.75csh	
93	s	Ownetko	2.25	2.25	.00csh	
92	s	Ownetko	.00	.00	.00	
91	s	Ownetko	.00	.00	.00	
90	s	Ownetko	.00	.00	.00	
89	s	Ownetko	.00	.00	.00	
88	s	Ownetko	.00	.00	.00	
87	s	Ownetko	.00	.00	.00	
86	s	Ownetko	.00	.00	.00	

Buttons: Cash Register, Recall Order, Out Clerk Tasks

Multiple Cash Transactions Screen

Time	Trans Type	Trans	Total	Tend	Chg Tender	Chg Tender(s)	Trans #	Trans Date	Trans Time	Trans User	Trans Status
08:27:07	96	n	.00	.00			001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	95	s	.00	.00			001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	94	s	2.25	10.00	7.75	csh	001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	93	s	2.25	2.25	.00	csh	001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	92	s	.00	.00	.00		001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	91	s	.00	.00	.00		001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	90	s	.00	.00	.00		001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	89	s	.00	.00	.00		001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	88	s	.00	.00	.00		001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	87	s	.00	.00	.00		001100000000	08/27/2015	08:27:07	OWNETKO	0
08:27:07	86	s	.00	.00	.00		001100000000	08/27/2015	08:27:07	OWNETKO	0

Competitive Landscape

- Tablet and mobile POS
- “Free” POS
- Low barrier to entry



Topic: SMBs

Follow via:  

Harbortouch gives away POS systems to capture transaction fees

Summary: The financial services company subsidizes hardware and software for small restaurants and retailers, in exchange for a five-year-long merchant processing relationship.



By Heather Clancy for Small Business Matters | October 11, 2012 -- 22:16 GMT (15:16 PDT)

[Follow @heathclancy](#)

The most important investment that a small restaurant or retailer must make is in a decent point-of-sale (POS) system to keep track of trends, orders and inventory. The rub is that any company in start-up mode probably doesn't have the upfront cash to spend on one.

That's why Harbortouch Systems is giving its POS hardware and software away -- in exchange for a five-year commitment to its transaction processing services. You knew there was a catch, right? Especially since typical merchant agreements are usually in the three-year range.

Not surprisingly, Harbortouch started its life on the financial services side -- it serves about 140,000 businesses around the United States -- usually small companies such as dealerships, restaurants, and e-commerce merchants and mom-and-pop retail operations, said Jared Isaacman, founder and CEO of Harbortouch, which started life as financial services company United Bank Card.



- Source: <http://blog.laptopmag.com/astro-turns-any-ipad-or-iphone-into-a-feature-filled-pos-system>
- Source: <http://www.zdnet.com/article/harbortouch-gives-away-pos-systems-to-capture-transaction-fees/>

Changing Markets, Declining Sales

THE WALL STREET JOURNAL. | BUSINESS



646



343



BUSINESS

McDonald's CEO Is Out as Sales Decline

Fast-Food Chain Has Struggled to Attract Younger Customers

By JASON DEAN, ILAN BRAT and ANNIE GASPARRO

McDonald's Corp. said Chief Executive Don Thompson was leaving, less than three years into his tenure, and promoted a company veteran to try to revive the fast-food giant from its worst slump in more than a decade.

Steve Easterbrook, 47 years old, who started with McDonald's in 1993 and is currently chief global brand officer, will succeed Mr. Thompson on March 1, becoming the company's third CEO in the past decade.



Bad News For Casual Restaurants

HuffingtonPost.com | Caroline Fairchild | Posted 03.21.2013 | Business

Read More: [Fast Food](#), [Congress](#), [Job Growth](#), [Consumer Spending](#), [McDonalds](#), [Red Lobster](#), [Casual Dining](#), [Fast Food Sales](#), [Unemployment](#), [Payroll Tax Holiday](#), [Applebees](#), [Taco Bell](#), [Payroll Tax Hike](#) [America's Business News](#)

Far fewer Americans dined out last month as many adjusted to smaller paychecks, according to new data released from a closely watched index of restaur...

[Read Whole Story](#)

Decline Of Fastfoods In America: Fastfood Sales Slump As Americans Become Wise Eaters

Nov 10, 2014 11:29 AM EST

TAG: [decline of fastfoods in America](#), [Fastfoods](#), [McDonald's latest news](#), [Obesity](#), [healthy eating](#)

Like 9 Tweet 2 +1 0



- Source: <http://www.wsj.com/articles/mcdonalds-ceo-steps-down-1422485574>
- Source: <http://www.huffingtonpost.com/news/casual-dining/>
- Source: <http://www.foodworldnews.com/articles/8422/20141110/decline-fastfoods-america-fastfood-sales-slump-americans-become-wise-eaters.htm>

The Tsunami of Regulations*

- Labor
- ObamaCare

* In the United States, in recent years



Key Industry Trends

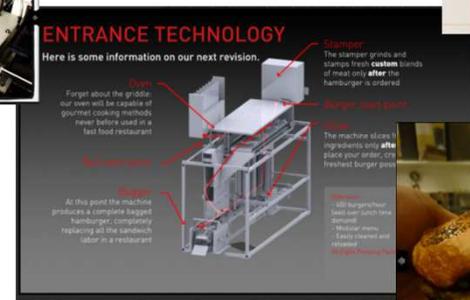
Mobile Order



Secure Payments



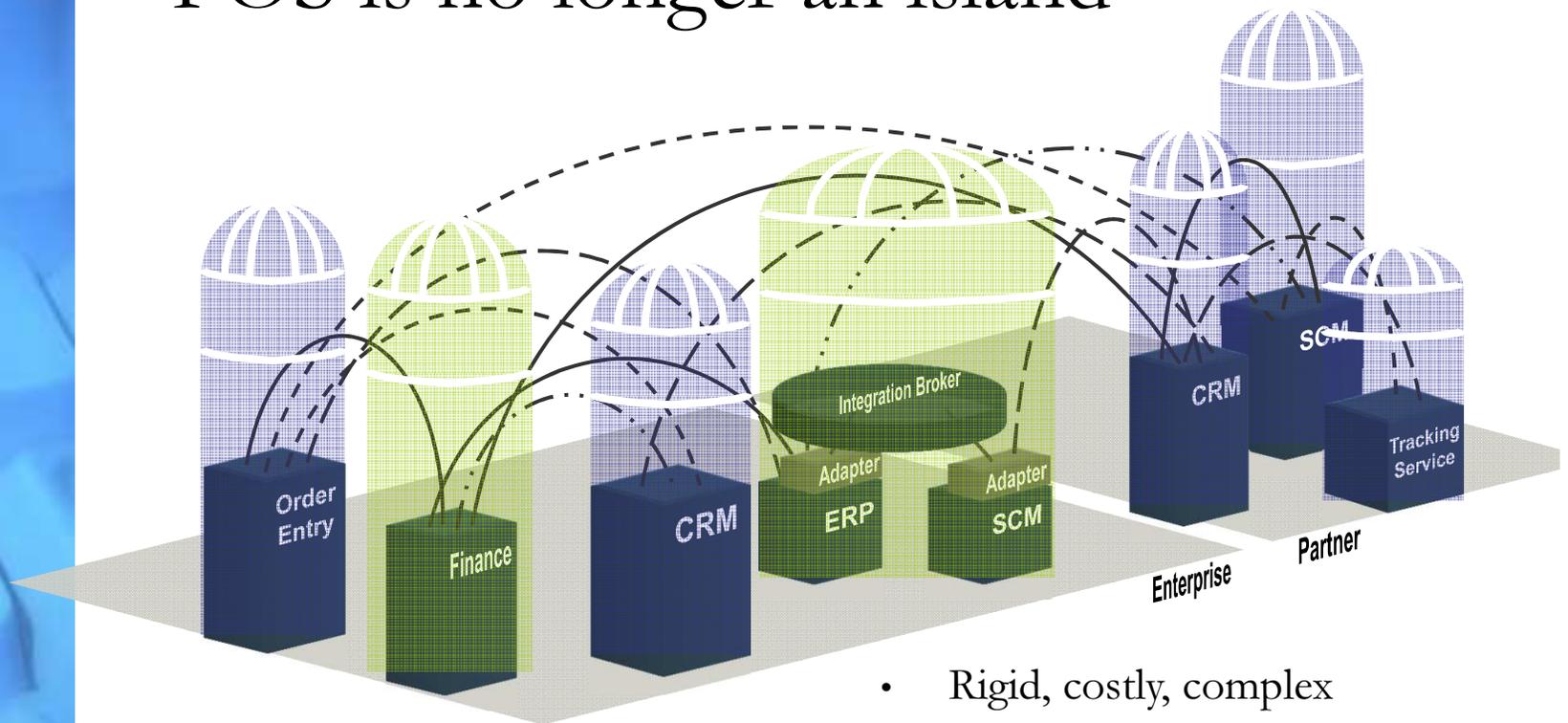
Automation



- Source: <http://www.verifone.com/>
- Source: <http://new.abb.com/products/robotics/yumi/>
- Source: <http://www.momentummachines/>



The Integration Challenge: POS is no longer an island

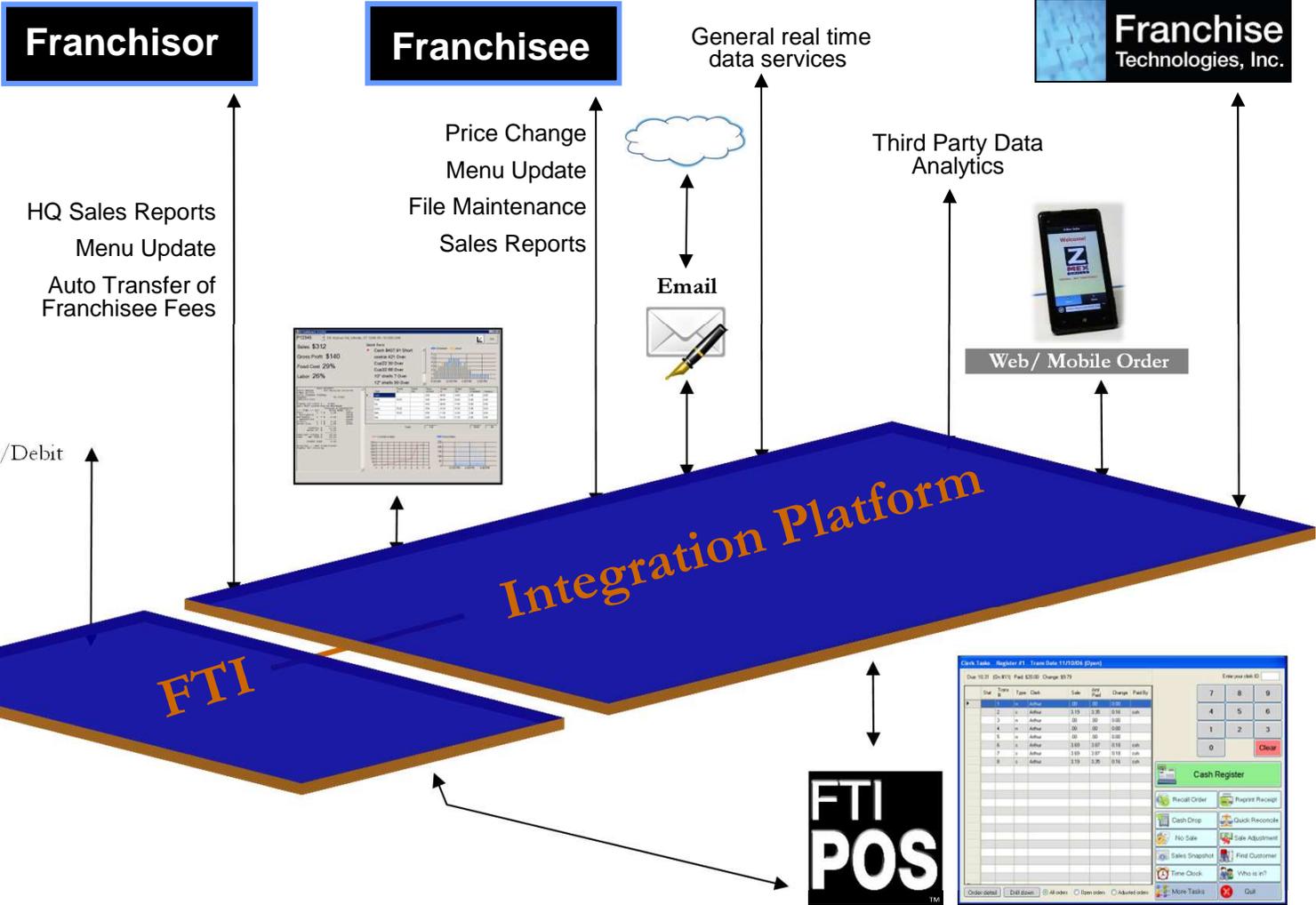


- Rigid, costly, complex
- Nightmare to update
- Security risks: 3P access to POS
- Fragmented install bases

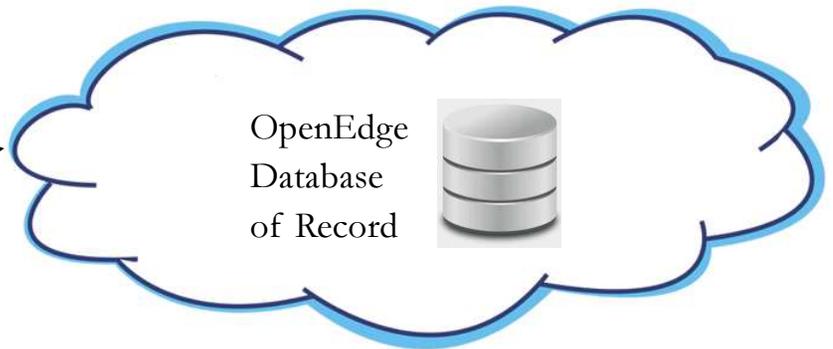
StatBridge™

QSR Operations System

Every Store ▪ Every Transaction ▪ Real Time



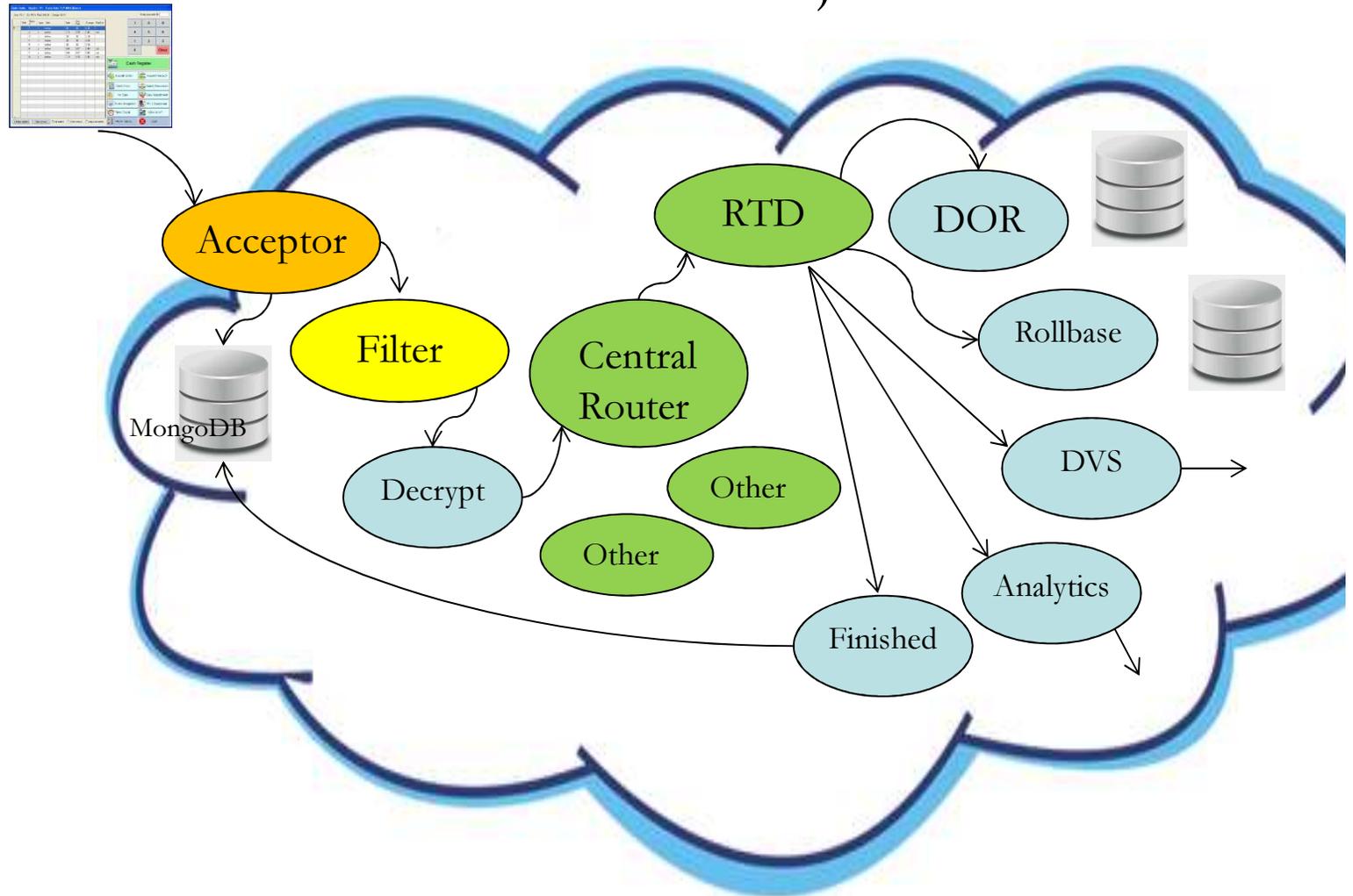
Building the Integration Platform



Building the Integration Platform

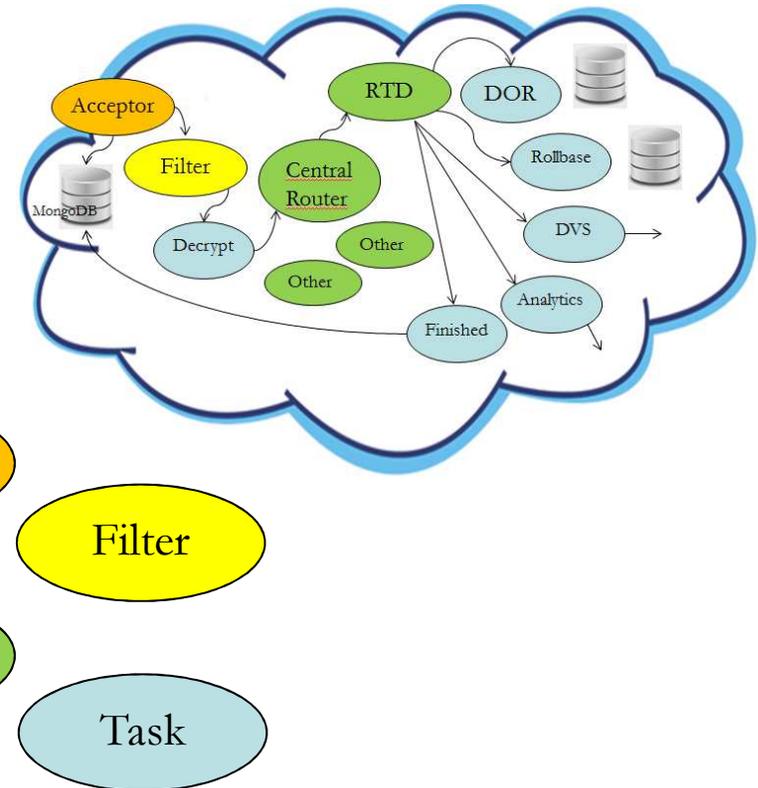
- SonicMQ
- AWS
- Modulus
- AWS Lambda

Building the Integration Platform with Node.js



Node-Based Routing

- Forward processing
- Node roles
 - Sentry
 - Filter
 - Router
 - Task



Designing the API

- URI: `mydomain.com/api/pf/pr/mt/ver/br/do/lo/de`
 - Protocol family (pf)
 - Protocol (pr)
 - Message Type (mt)
 - Version (ver)
 - Brand (br)
 - Domain (do)
 - Location (lo)
 - Device (de)
- Example
 - `.../api/fti/pos/rtd/2015-02-15/peppersCafe/pcOfBoston/123/reg1`



Benefits

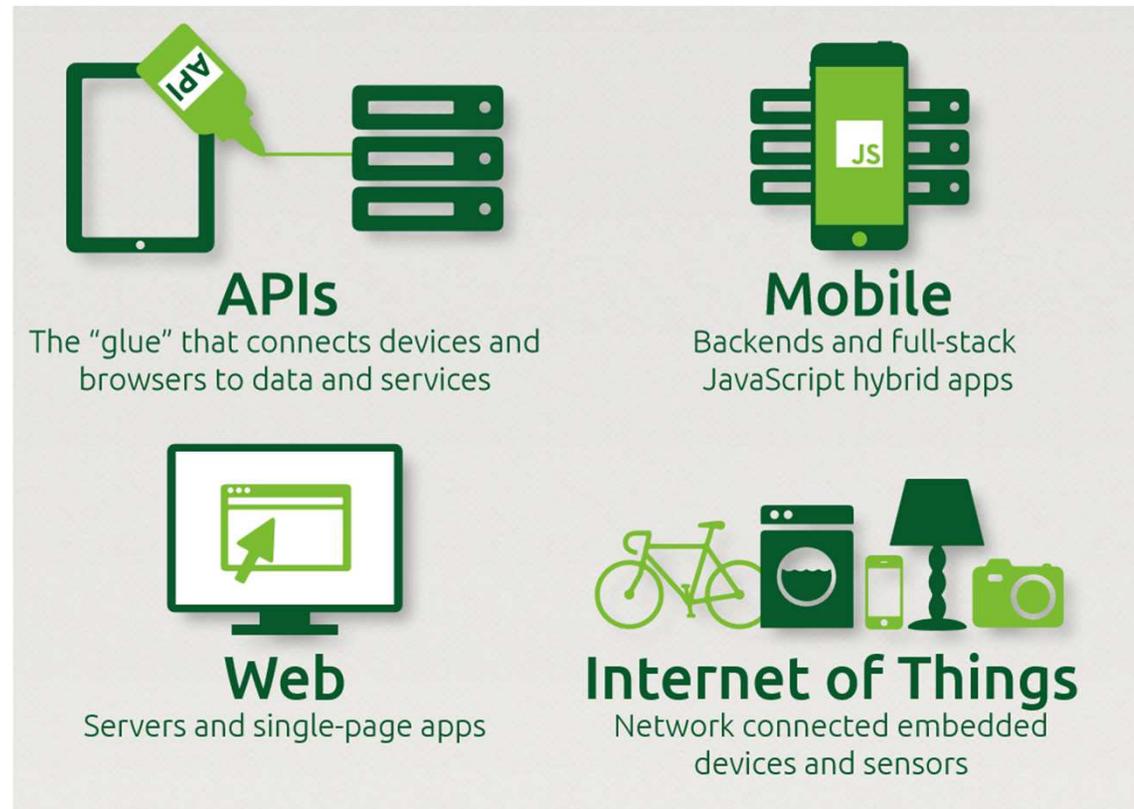
- Extreme...
 - Flexibility and customization
 - Scalability and elasticity
 - Agility
 - Roadmap
- Minimal cloud resource utilization



Our Learning Experience: Why Modulus?

- It's part of Progress
- Enterprises are betting on node.js
- Auto scaling elasticity and load balancer
- Help with security
- Node plus integrated MongoDB
- More options as we grow
 - More powerful Servos
 - Enterprise Class
- Innovativeness
 - Docker; Servers for Java, PHP, Meteor, etc.

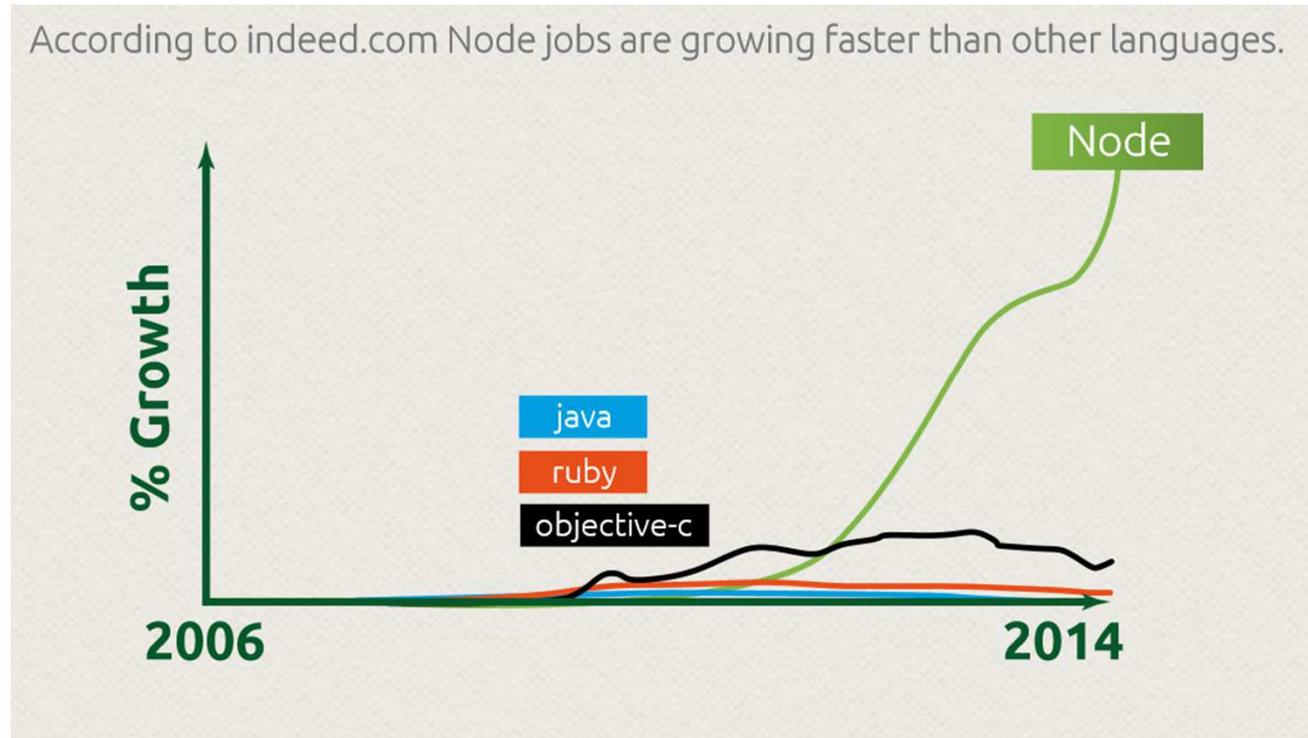
What's Node Good For?



- Source: <https://strongloop.com/wp-content/uploads/2015/02/final-node-infographic-2-10-15v3.pdf>

Node is Good for Your Career

According to indeed.com Node jobs are growing faster than other languages.



- Source: <https://strongloop.com/wp-content/uploads/2015/02/final-node-infographic-2-10-15v3.pdf>

Learning JavaScript

A Smarter Way to Learn JavaScript

The new tech-assisted approach that requires half the effort



1 Read a 10-minute chapter of this book to get each concept.

2 Make the knowledge stick. Do the chapter's free interactive exercises at ASmarterWayToLearn.com.

Mark Myers

- JavaScript (as a second language)
- Extend by using lodash or underscore
- Promises, promises
- Visibone

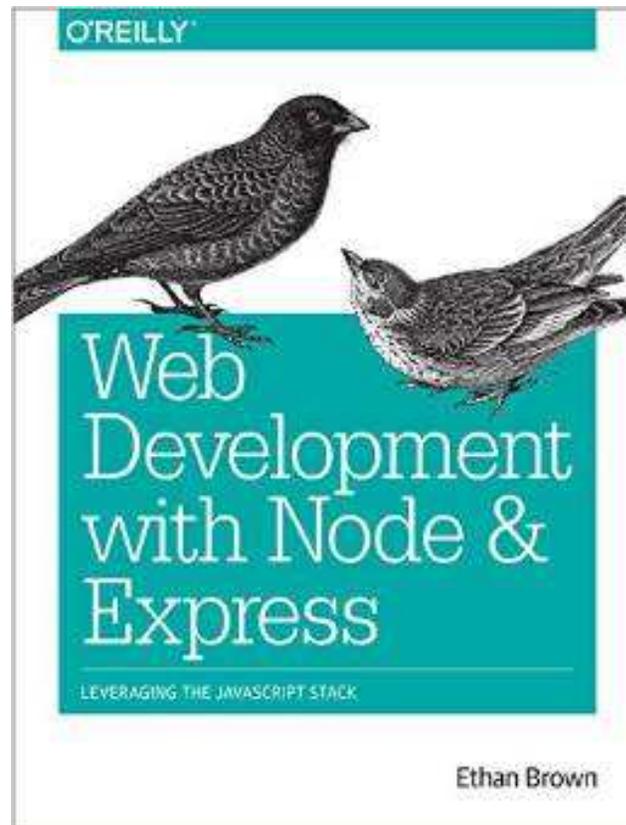


- Source: <http://asmarterwaytolearn.com>
- Source: <http://visibone.com>

Learning Node

- Download from nodejs.org
- Modulus tutorials on blog.modulus.io
 - The absolute beginner's guide to node.js (20 Aug 13)
 - Build your first HTTP server in node.js (20 Jan 15)
 - Express video tutorial: express in a nutshell (30 Jan 15)
 - Learning Express 4.0 (27 May 14)
 - Top 10 Reasons to use Node.js (10 Sep 14)
 - Using MongoDB with Node.js (3 Mar 15)
- StackOverflow

Learning Node



- Features Express 4.0
- Templates instead of frameworks
- REST and security

- Source: <http://shop.oreilly.com/product/0636920032977.do>

Learning MongoDB

Introduction to MongoDB



Welcome to MongoDB. This document provides a brief introduction to MongoDB and some key concepts. See the [installation guides](#) for information on downloading and installing MongoDB.

What is MongoDB

MongoDB is an open-source document database that provides high performance, high availability, and automatic scaling.

Document Database

A record in MongoDB is a document, which is a data structure composed of field and value pairs. MongoDB documents are similar to JSON objects. The values of fields may include other documents, arrays, and arrays of documents.

```
{
  name: "sue",
  age: 26,
  status: "A",
  groups: [ "news", "sports" ]
}
```

← field: value
← field: value
← field: value
← field: value

The advantages of using documents are:

- Documents (i.e. objects) correspond to native data types in many programming languages.
- Embedded documents and arrays reduce need for expensive joins.
- Dynamic schema supports fluent polymorphism.

```
{
  _id: <ObjectId>,
  username: "123xyz",
  contact: {
    phone: "123-456-7890",
    email: "xyz@example.com"
  },
  access: {
    level: 5,
    group: "dev"
  }
}
```

Embedded sub-document
Embedded sub-document

- MongoDB.org
 - Esp. Data Modeling Intro
- MongoDB University
- Start with mongoose

- <https://www.mongodb.com/lp/white-paper/architecture-guide>
- IOT example: <http://www.mongodb.com/presentations/webinar-internet-things-bosch-concept-code>

Learning Lambda Functions

Introducing AWS Lambda functions



DevOps

- <https://aws.amazon.com/lambda/>

NPM: Intro to Open Source

- NPM packages: npmjs.com
 - express (minimalist web framework)
 - request (simplified HTTP request client)
 - lodash, underscore (programming helper utilities)
 - async (for control flow (series or parallel))
 - mongoose (for easier MongoDB integration)
- How to evaluate modules
 - Identifying Good NPM Modules (blog.modulus.io, 3 Sep 2014)
 - npmsearch.com; npmjs.com “find packages”

REST and Learning REST API Design

- REST+JSON API Design - Best Practices for Developers (by Stormpath)
 - <https://www.youtube.com/watch?v=hdSrT4yjS1g#t=763>
- OE “REST out” in 11.5.1.
- SSL Performance in node.js
 - <https://www.paypal-engineering.com/2014/04/01/outbound-ssl-performance-in-node-js/>



Conclusion

- Thank you for your time

