



Digital Systems

Platforms & Digital Business Models, including API's

FOX
MIS

Attendance

Please login to Canvas and “Check-In”

Attendance is not a part of your grade for this class. The university has mandated that we take attendance for all classes, face-to-face, online and hybrid, to assist in contact tracing should an outbreak of Covid-19 occur.

FOX
MIS

ROADMAP

START

Week 1:

Introduction & Systems Analysis

- Course Description
- Systems Thinking

Week 1:

Introduction to Process Mapping

- Systems & Processes
- Swim Lane Diagrams
- Max Labs 0- due
- Practice test - due

Week 2:

Digital Product Management & ERD

Week 2:

Introduction to Data Modeling

- Max Labs 1A/1B- due
- Max Labs 2A/2B due

Week 2:

Exam #1

10/30 – 11/1: Exam Availability

Week 4 :

Exam #2

11/13-11/5 Exam Availability

Week 4:

Cybersecurity & AI

- Protection Protocols
- Artificial Intelligence
- Cybersecurity/AI assignment due
- Max Labs 3a/3b due

Week 4:

Platforms & Digital Business Models

- API's
- Cloud

Week 3:

Information Systems

- ERP & CRM
- Data Analytics & SCM
- Lean IT #1 due

Week 5:

JavaScript Unit #1 & 2

- Hello World, Variables
- Input and Output
- Operator types
- Strings

Watch Lynda.com video – due
Code Academy due

Week 6:

JavaScript Unit #3&4

- Logical Operators
- Conditional Types
- Intro to Loops
- While and Do
- Writing the code
- Practice Coding Exam

Week 7:

HTML & CSS

- Coding Assignment -due
- Lean IT #2 due

Week 7:

Exam #3

12/8 – 12/ 9: Exam Availability

FINISH

Digital Platforms?

“...facilitates commercial interactions between at least two different groups...”

- What are some core functions of a platform?
 - Audience Building
 - Matchmaking
 - Providing Core Tools & Services



Source: <https://thumbor.forbes.com/thumbor/960x0/https%3A%2F%2Fblogs-images.forbes.com%2Fpeterbendorsamuel%2Ffiles%2F2018%2F03%2FDigital-Platform-Strategy-913629568.jpg>

Digital Platforms

What are the benefits?

- For Companies?
- For Consumers?
- For Industry?



Source: <https://www.arup.com/-/media/arup/images/perspectives/themes/cities/how-can-cities-benefit-from-becoming-digital-platforms-2000x833.jpg>

Network Effects

What is the impact of Network Effects on the different types of platforms?



Source: <https://www.snapsuites.com/wp-content/uploads/2017/05/o-SMARTPHONE-NIGHT-facebook.jpg>

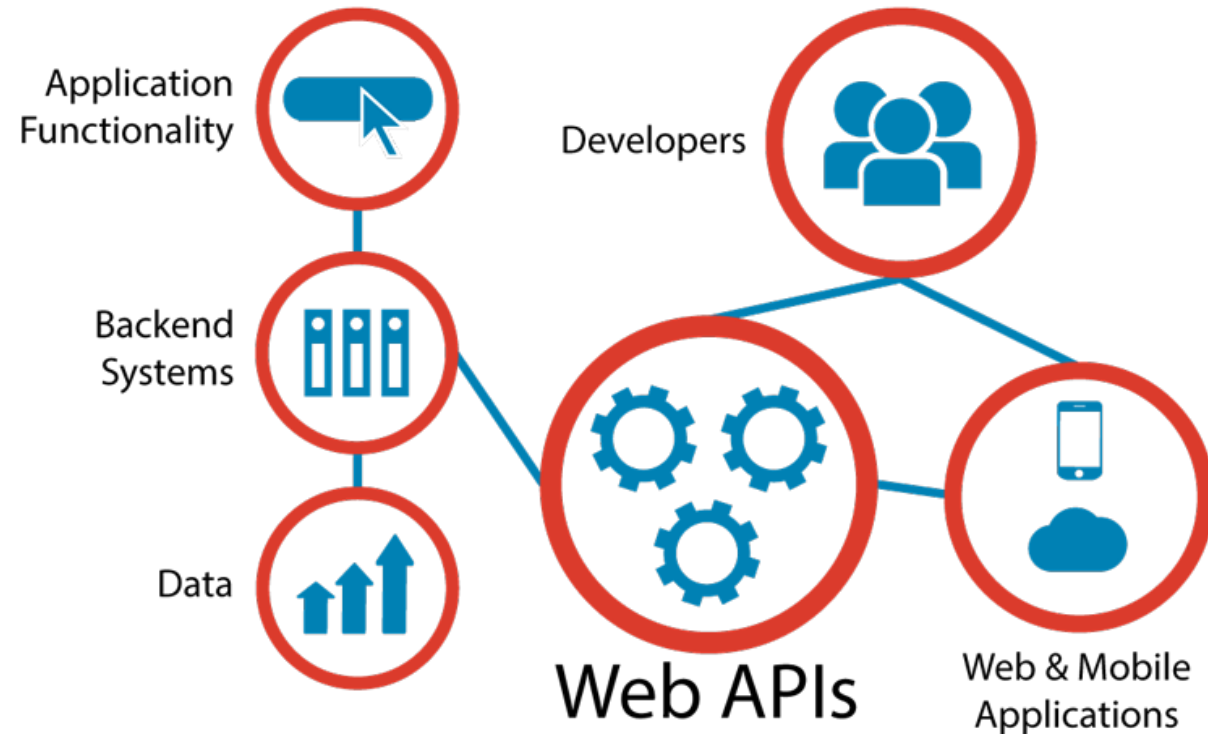


Source: <https://g.foolcdn.com/image/?url=https%3A%2F%2Fg.foolcdn.com%2Feditorial%2Fimages%2F428448%2Fthe-network-effect-getty.jpg&w=700&op=resize>

API's: Application Programming Interface

What is an API?

- Connect computer software components
- Contract for Data Interaction
 - Facilitates interactions between front & backend IT systems (Web API's)
- Can you think of any examples???
 - Hint...think smartphones and IoT.

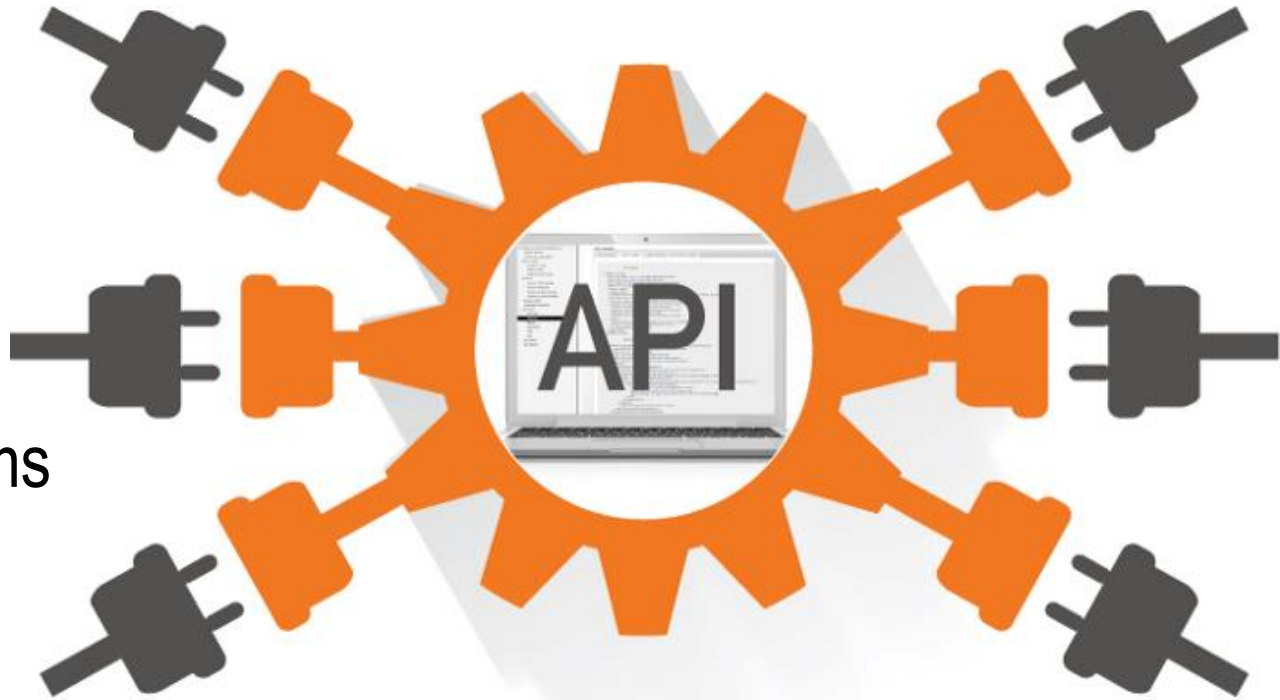


Source: https://www.apiacademy.co/assets/2015/04/Web-APIs-v5_0.png

API's: "...a strategic business imperative"

API's Key Considerations

- Extract more value from existing assets
- Drive new innovations
- Easier access across multiple ecosystems
- API's are Products – “building blocks”
 - “live beyond any one project”
 - “reusable assets”

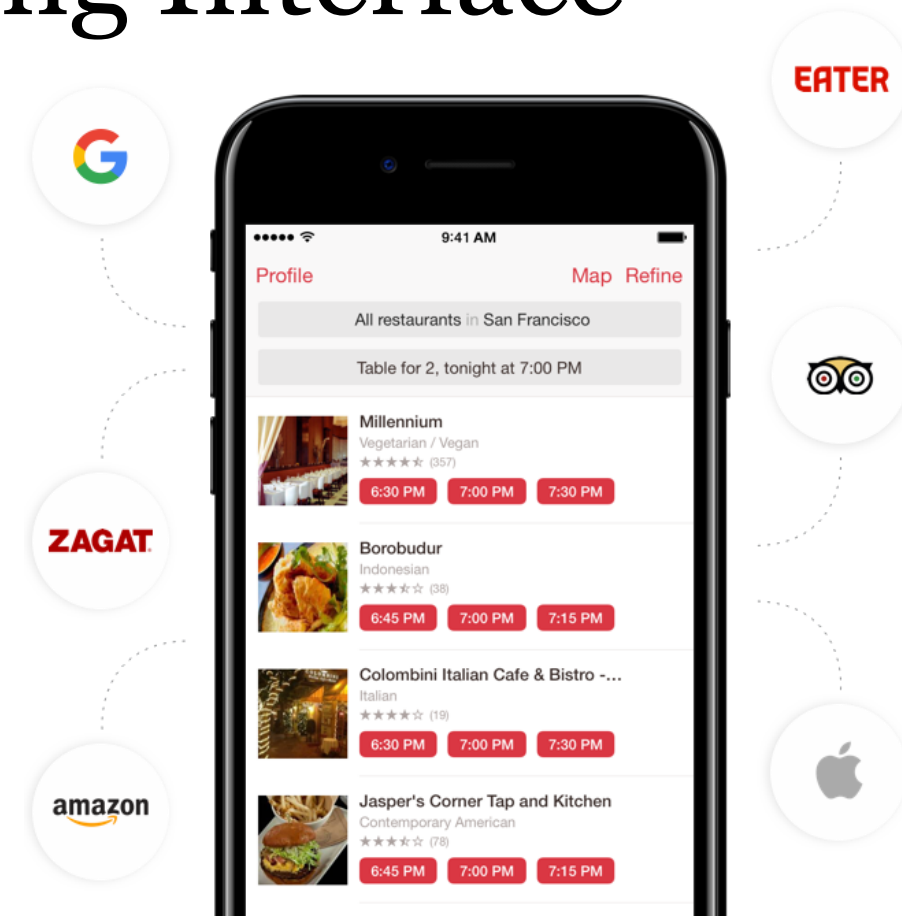


Source: https://miro.medium.com/max/700/1*6K4eQYf0R7cPCzukMCtu7Q.png

API's: Application Programming Interface

API Case Study: OpenTable

- What happens when you search for a restaurant?
- What types of data is being retrieved?



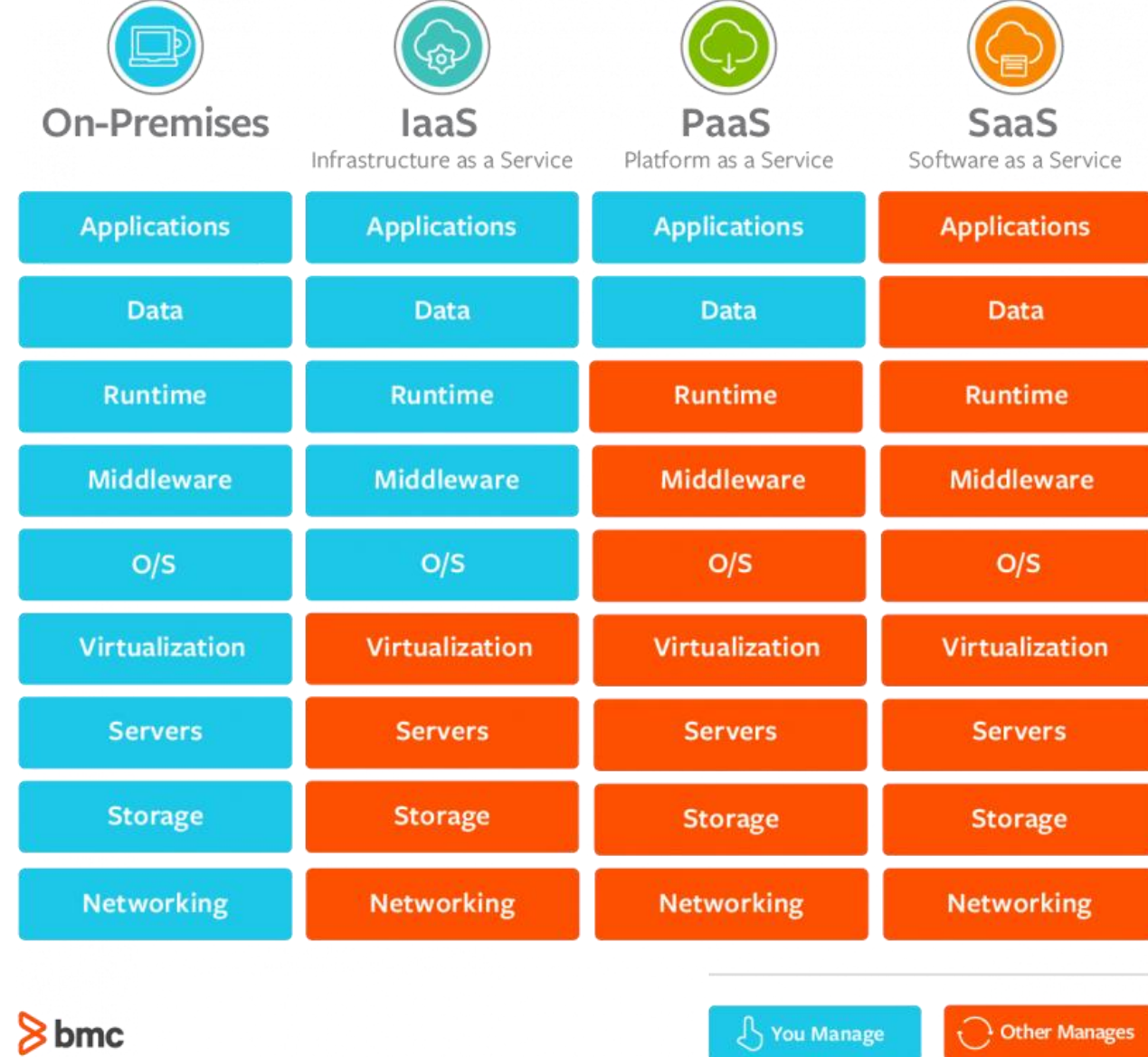
Source: <https://restaurant.opentable.com/assets/fg/g/opentable-iphone-app-partner-logos.png>

Cloud Computing

3 Basic Service types to Consider

1. Infrastructure as a Service (IaaS)
2. Platform as a Service (PaaS)
3. Software as a Service (SaaS)

Which one do you use (consume) on a daily basis?



Source: <https://blogs.bmc.com/wp-content/uploads/2017/09/saas-vs-paas-vs-iaas-810x754.png>

IaaS (Infrastructure as a Service)

Case Study: AWS and Capital One

1. Run any application anywhere
2. Bring products to market quickly
3. More resilient architecture around systems
4. Design for customer needs
5. Protect customer assets



Source: <https://d1.awsstatic.com/case-studies/US/Capital%20One%20Cafe.bb6b7a7a133a573f381e9bb4e6860f68c00fea8c.jpg>

PaaS (Platform as a Service)

Case Study: Salesforce

1. Mobile Software Development
2. Rich Developer Environment
3. Fully managed cloud database
4. Point-and-click app building
5. Multi-language development
6. Cloud app marketplace

Source: <https://www.salesforce.com/ap/learning-centre/tech/paas/>



Source: https://c1.sfdstatic.com/content/dam/web/en_us/www/images/app-cloud/products-mobile-open-source-applications.jpg

SaaS (Software as a Service)

Case Study: G Suite

1. Third Party Provider
2. Subscription based
3. OS-agnostic
4. Runs its software on its own servers in the cloud,
5. Reduced risk of piracy



Source: <https://empireflippers.com/9-saas-examples/>

Source: <https://images.idgesg.net/images/article/2018/11/g-suite-logos-8-rows-100781657-large.jpg>

Cloud Computing

Pros

- Collaboration
- Environment
- Cost
- Ease of use

Cons

- Security?
- Data Integrity?
- Availability
- Privacy




Source: http://blog.ionixxtech.com/wp-content/uploads/2017/09/Image_1-2.jpg

Business Systems Innovation Labs
Lab 3a Pre-flight Checklist

“Need Superpowers? Go Cyborg w/SF.....8-0”

In this episode, Max’s job is getting out of control and she can’t keep up. Fortunately, she figures out how to build business rules into SF to make it help do the work. That’s *process automation*—how you make the computer do the busywork so your job is *scalable*. She also uses Customer Relationship Management (CRM) to better deal with customers (VCs & Angels, in her case), even when there’s tons!

Prep: What do you need to start?



Max Labs 3a & 3b

Digital Product Management

Due by end of day Sunday!

FOX
MIS

Max Labs – 3a Discussion

Data Driven Humans = Cyborg?

- Technology Awareness
- Managing Data
 - Scalability
 - Automation
 - Templates

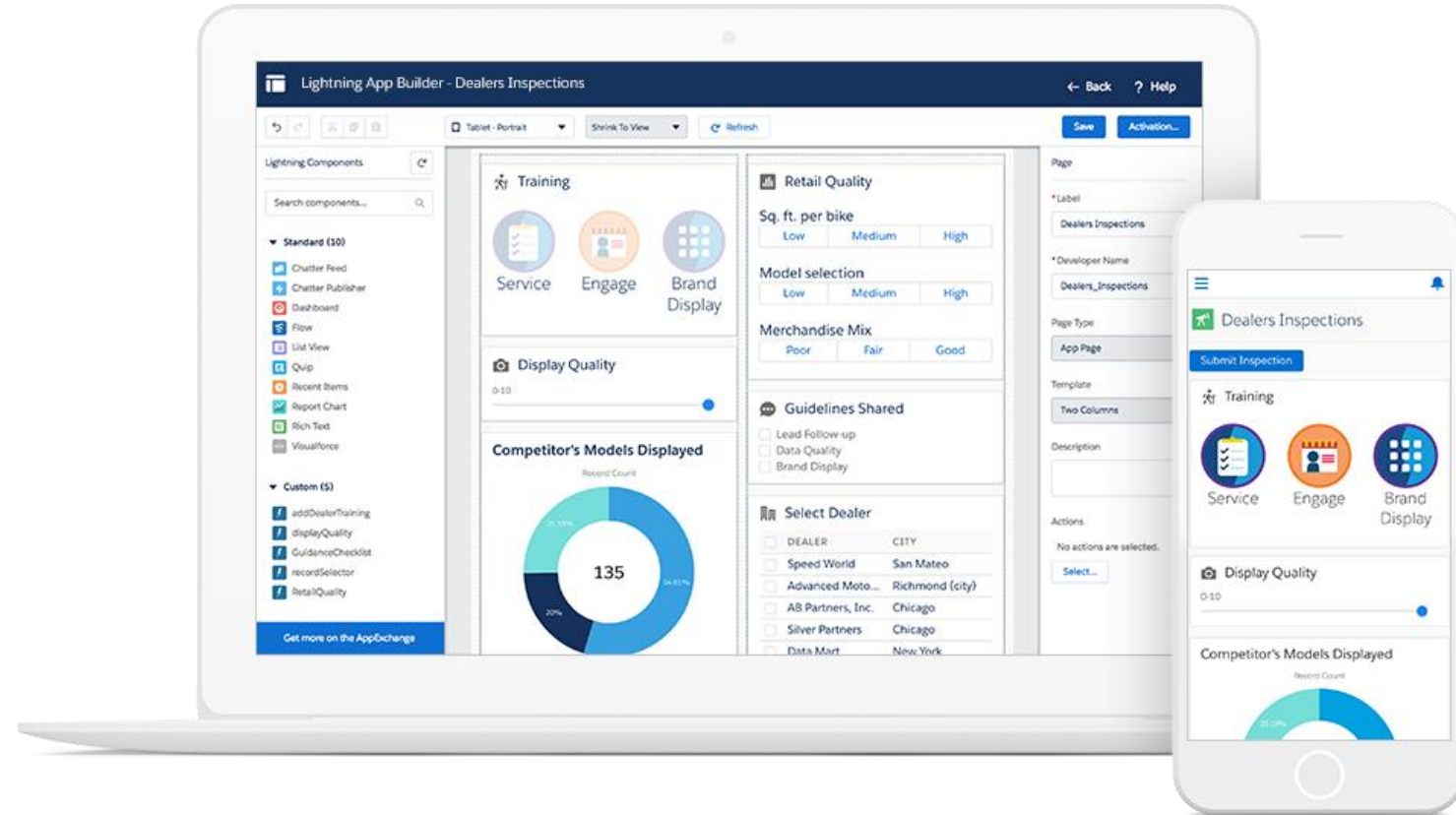


Source: <https://thumbor.forbes.com/thumbor/960x0/https%3A%2F%2Fspecials-images.forbesimg.com%2Fdam%2Fimageserve%2F935226186%2F960x0.jpg%3Ffit%3Dscale>

Max Labs – 3a Discussion

Platform Tools

- Programming
- Implementing Business Rules
- Automation

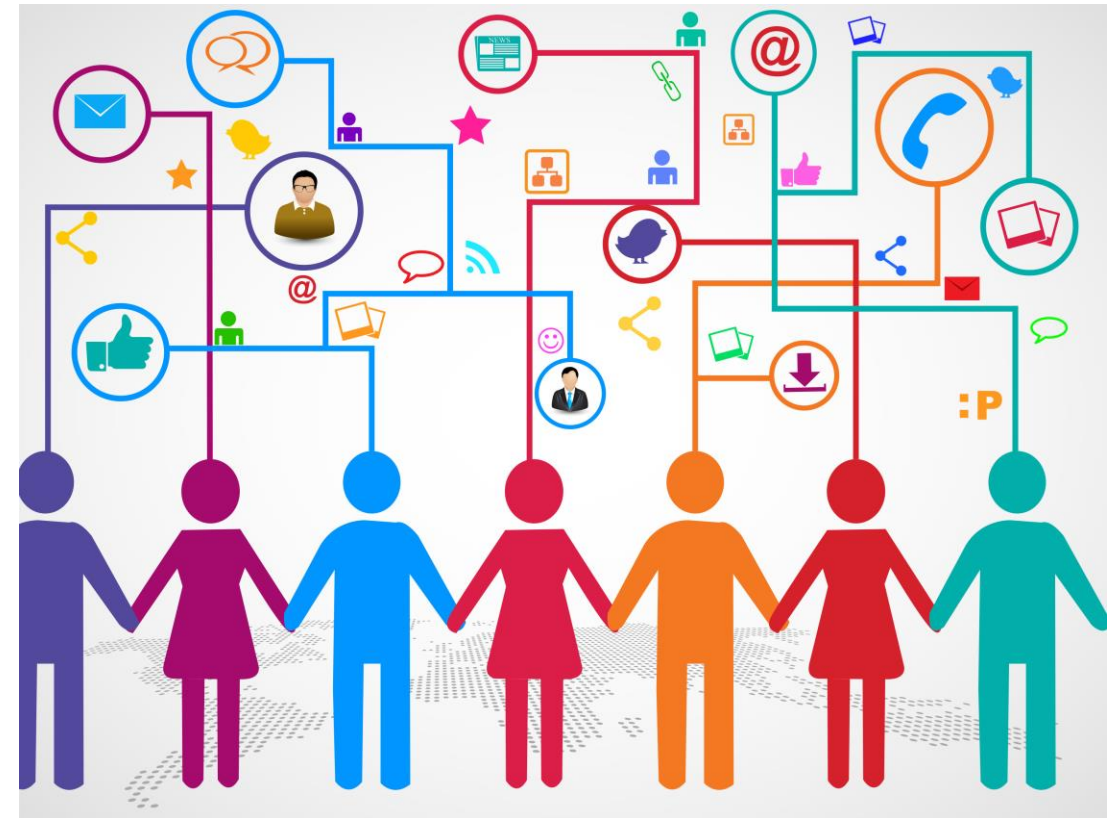


Source: <https://www.salesforce.com/products/platform/lightning/>

Max Labs – 3b Discussion

“Social Business”

- Internal vs. External
- Communication Tools
- Enterprise Environment
- Practice Professionalism

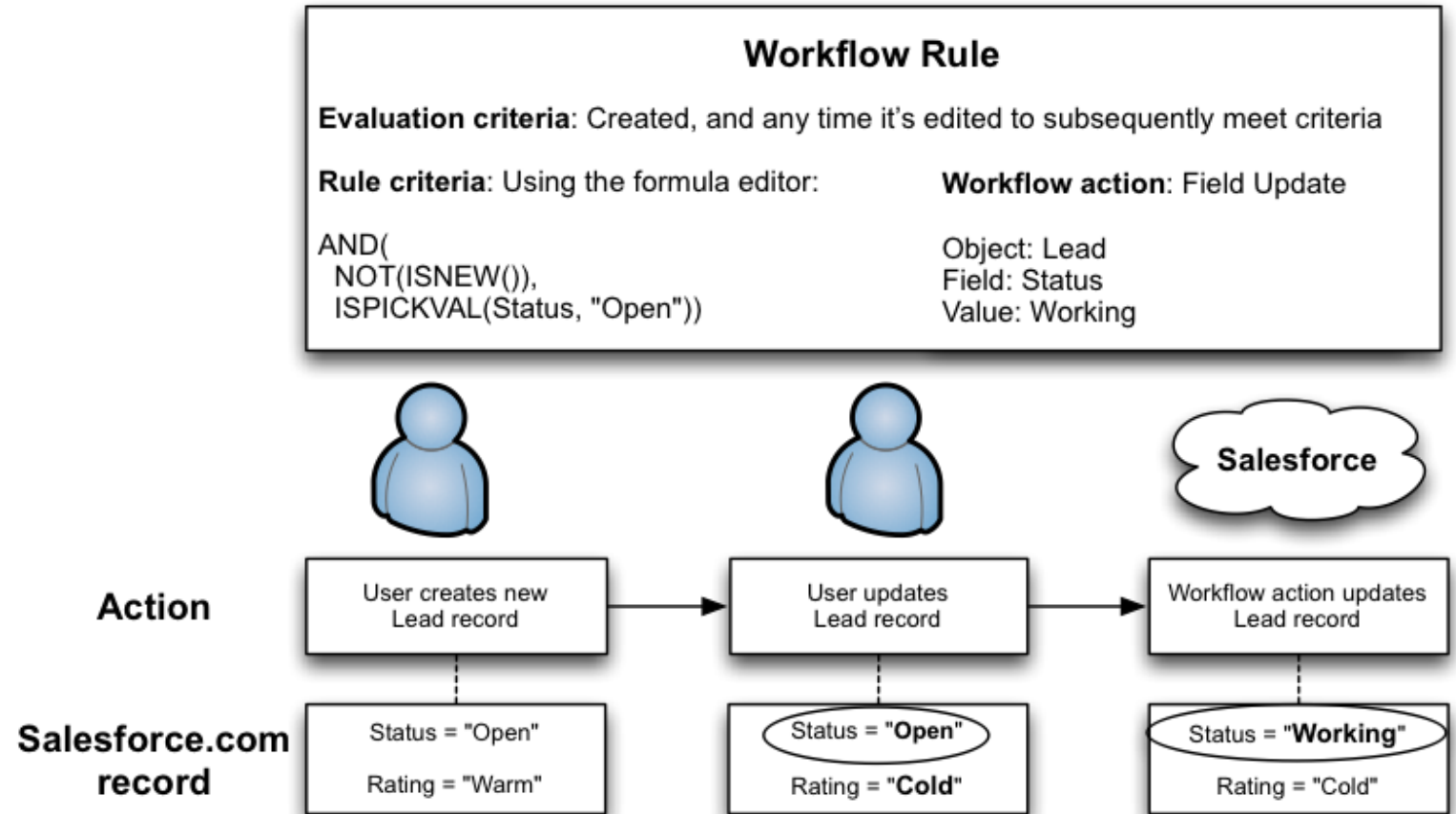


Source: https://joannemccall.com/wp-content/uploads/2017/02/social-network_110003543-012814-int.jpg

Max Labs – 3b Discussion

Workflows

- Task Sequences
- Rule Creation
- Assignment



Source: <https://c1.sfdcstatic.com/content/dam/blogs/us/May2016/Picture15.png>

Max Labs – 3b Discussion

Email Messaging

- Creating forms & templates
- Auto-response
- Configuration

Available Merge Fields
Select Field Type
Lead Fields
Select Field
Annual Revenue
Copy Merge Field Value
{Lead.AnnualRevenue}

Copy and paste the merge field value into your template below.

Step 2. Text Email Template: New Template Step 2 of 2

[Previous](#) [Save](#) [Cancel](#)

Email Template Information ! = Required Information

Folder: Unfiled Public Email Templates

Available For Use:

Email Template Name: Test

Template Unique Name: Test i

Encoding: General US & Western Europe (ISO-8859-1, ISO-LATIN-1)

Description:

Subject: test

Email Body: {Lead.AnnualRevenue}

[Previous](#) [Save](#) [Cancel](#)

Source: <https://developer.salesforce.com/forums/servlet/rtalImage?eid=906F0000000D6Js&feoid=Body&refid=0EMF000000TjgE>

Max Labs – 3b Discussion

Coding – It's as simple as that!

- Display values
- Create Attributes
- Configuration
- API's

The screenshot displays the Salesforce Page Editor interface. The top navigation bar includes 'Home', 'Leads', 'Accounts', 'Contacts', 'Reports', 'Dashboards', 'Documents', and 'Products'. The 'Accounts' tab is selected, showing a 'Hello Liz!' greeting and the text 'You are viewing the Hello World account.' Below this is a 'Recent Items' list with entries for 'Hello World', 'Liz Garcia', 'Marc Ryan', and 'Working Writer'. The Page Editor toolbar is visible, and the code editor shows the following Apex code:

```
1 <apex:page standardController="Account">
2   Hello {!$User.FirstName}!
3   <p>You are viewing the {!account.name} account.</p>
4 </apex:page>
```

Annotations with red boxes and lines point to specific elements:

- A box around the 'Accounts' tab in the navigation bar.
- A box around the text 'You are viewing the Hello World account.' with the text: "... and allows the page to display field values for a specific record."
- A box around the code attribute `standardController="Account"` with the text: "Setting the standardController attribute to 'Account' tells the page to use the Account styling ..."

Source: https://developer.salesforce.com/docs/atlas.en-us.pages.meta/pages/pages_quick_start_display_field_values.htm

Max Labs – 3b Discussion

Human/Cyborg – Process Improvement

- Organizational Benefits?
 - Better/Faster/Smarter
 - Leveraging Technology
 - Scalability



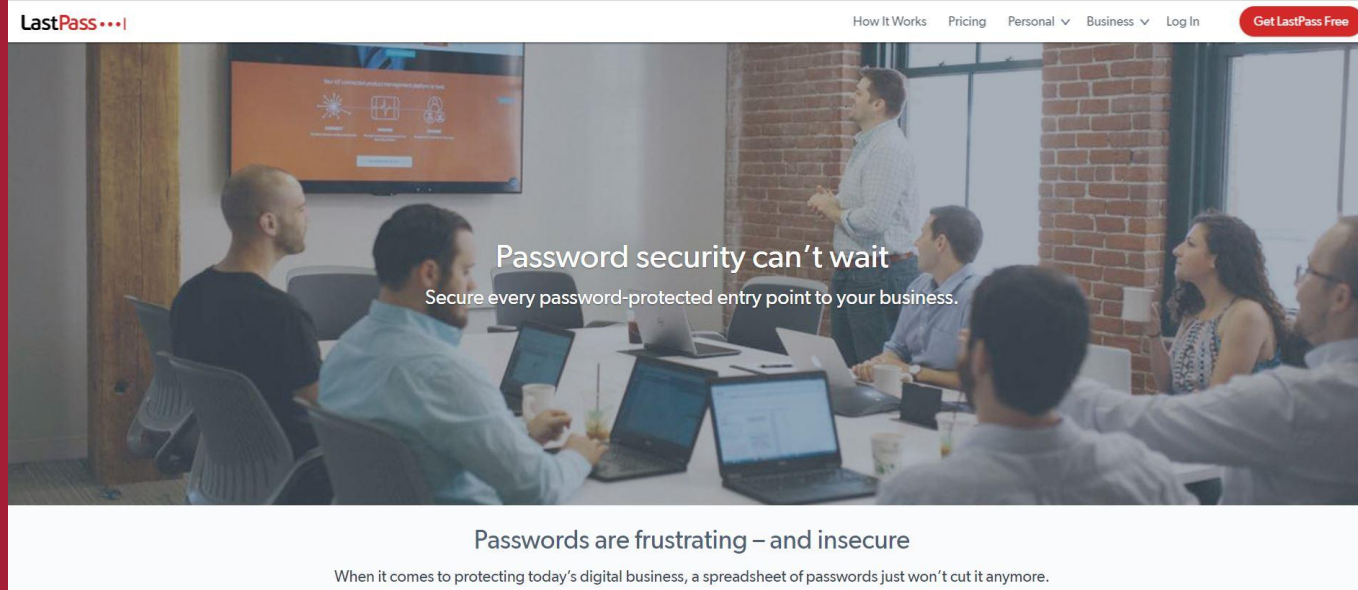
Source: <https://geospatialmedia.s3.amazonaws.com/wp-content/uploads/2019/01/AI-1.jpg>



Digital Systems

Cybersecurity & AI

FOX
MIS

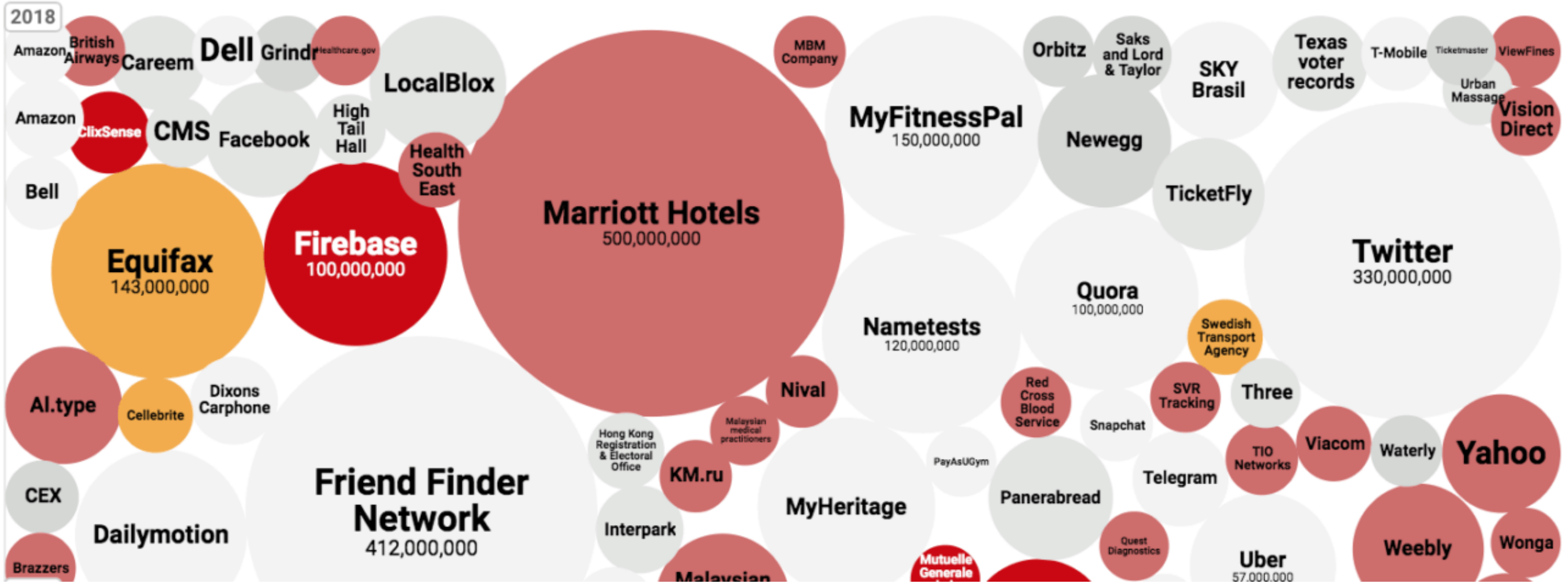


Cybersecurity Lab

Due by end of day Sunday!

FOX
MIS

World's Biggest Data Breaches & Hacks



Source: <https://www.oyster-ims.com/news/worlds-biggest-data-breaches-hacks>

Corporate Hacks

Who was Hacked?

Why should you care?

- SSN
- Credit Cards
- Loans
- Identity



Source: <https://grandmutual.com/blog/tips-for-protecting-your-business-from-a-data-breach/>

Cybersecurity – Core Fundamentals

Five Questions for threat modeling:

1. What do you want to protect?
2. Who do you want to protect it from?
3. How likely is it that you will need to protect it?
4. How bad are the consequences if you fail?
5. How much trouble are you willing to go through in order to try to prevent those consequences?

Myths of Protection

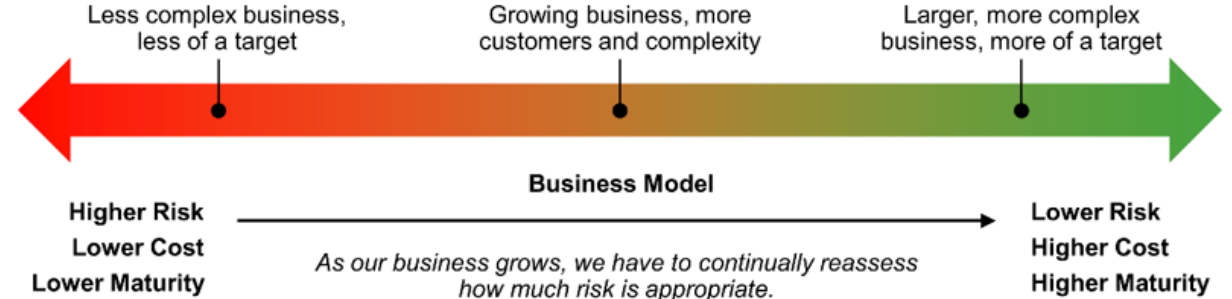
Right fit for the Organization

Five key elements:

- **Build 1: do/not do**
- **Build 2: risk/cost ratios**
- **Build 3: industry risk profile**
- **Build 4: growth perspective**
- **Build 5: sustainability**

What Is Appropriate Risk?

There is no such thing as "perfect protection"



Our goal is to build a sustainable program that balances the need to protect against the needs to run our business.

Gartner for IT Leaders Toolkit
2 © 2016 Gartner, Inc. and/or its affiliates. All rights reserved.

Example

Gartner

Source: <https://www.gartner.com/document/3238218?ref=solrAll&refval=225614986&qid=d248be3bbbed581909ef8a9d18f/>

Regulations

Privacy and Personal Data Protection

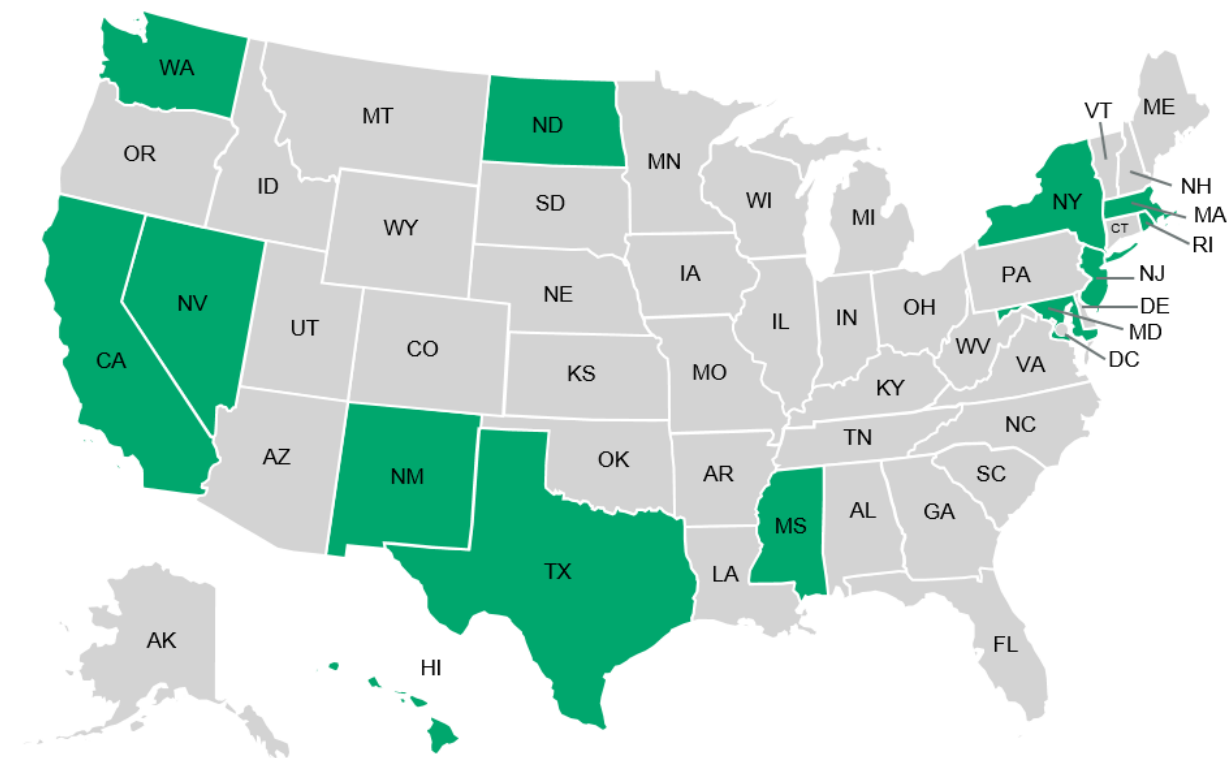
California Consumer Privacy Act (CCPA)

Few Federal cybersecurity regulations

- 1996-Health Insurance Portability and Accountability Act (HIPAA)
- 1999-Gramm-Leach-Bliley Act
- 2002 Homeland Security Act, includes
 - Federal Information Security Management Act (FISMA)

IT Professional need to consider regulatory acts when developing systems (example: ERP)!

The CCPA Effect — Privacy Regulations Introduced by State



Source: Gartner

Footnote: California (AB375), Hawaii (SB418), Maryland (SB0613), Massachusetts (SD341), Mississippi (HB2153), New Mexico (SB176), New Jersey (S2834), New York (S00224), North Dakota (HB1485), Rhode Island (S0234), Washington (SB5376), Texas (HB4518), Nevada (SB220)
ID: 376084

Source: https://www.gartner.com/resources/376000/376084/376084_0002.png

Case Study

Ransomware forces shutdown

- The incident led to the cancellation of 2,800 patient appointments at the NHS Trust.
- Took 3 days to resolve
- Hospitals are an appealing target for cyberwar...why?

Because Hospital Rely on up-to-date information from patient records



<https://www.zdnet.com/article/ransomware-blamed-for-cyber-attack-which-forced-hospitals-to-cancel-operations-and-shut-down-systems/>

Source: Getty Images/iStockphoto

Vulnerability

What puts users at risk?

- Forms of malware?
- Who is impacted?
 - Are we safe?
- Can this problem be solved?
 - Combat strategies?



Source: <https://www.itweb.co.za/content/KWEBb7yaExK7mRjO>

Protection

Considerations

- Antivirus
- Ad blocker
- Avoid dodgy plugins
- VPN
- Disable macros
- Back-up files
- Don't just open attachments



Source: <https://www.pcmag.com/roundup/256703/the-best-antivirus-protection>

Cybersecurity

Hijacking your systems!

- Who borrows flash drives?
- How else do you share data?
- Vectors for Virus & Malware



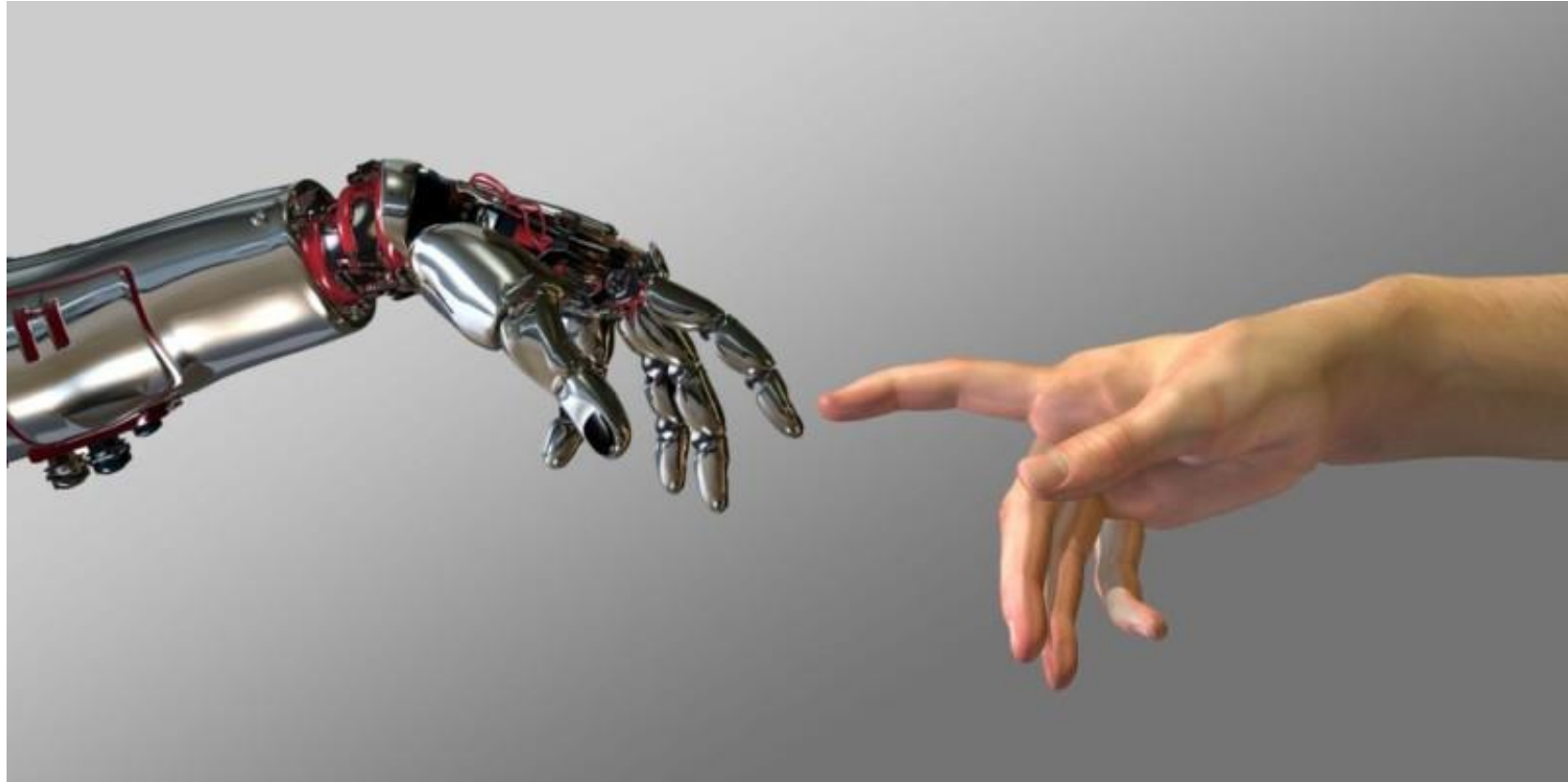
Source: <http://www.ommdvd.com/images/services/USB-Pile.jpg>

Artificial Intelligence

What is Artificial Intelligence?

Three Types

- Narrow (ANI)
- General (AGI)
- Superintelligence (ASI)



Source: <https://matrixni.org/artificial-intelligence-workshop-january-2018-register-now/>

What are the two most likely scenarios with AI?

AI is programmed to do something DEVASTATING

AI is programmed to do something BENEFICIAL,
but it develops a destructive method to achieve its goals

The AI Revolution

2010 Flash Crash

- ANI caused stock market to plummet
- \$1 trillion decline in value
- Quick recovery

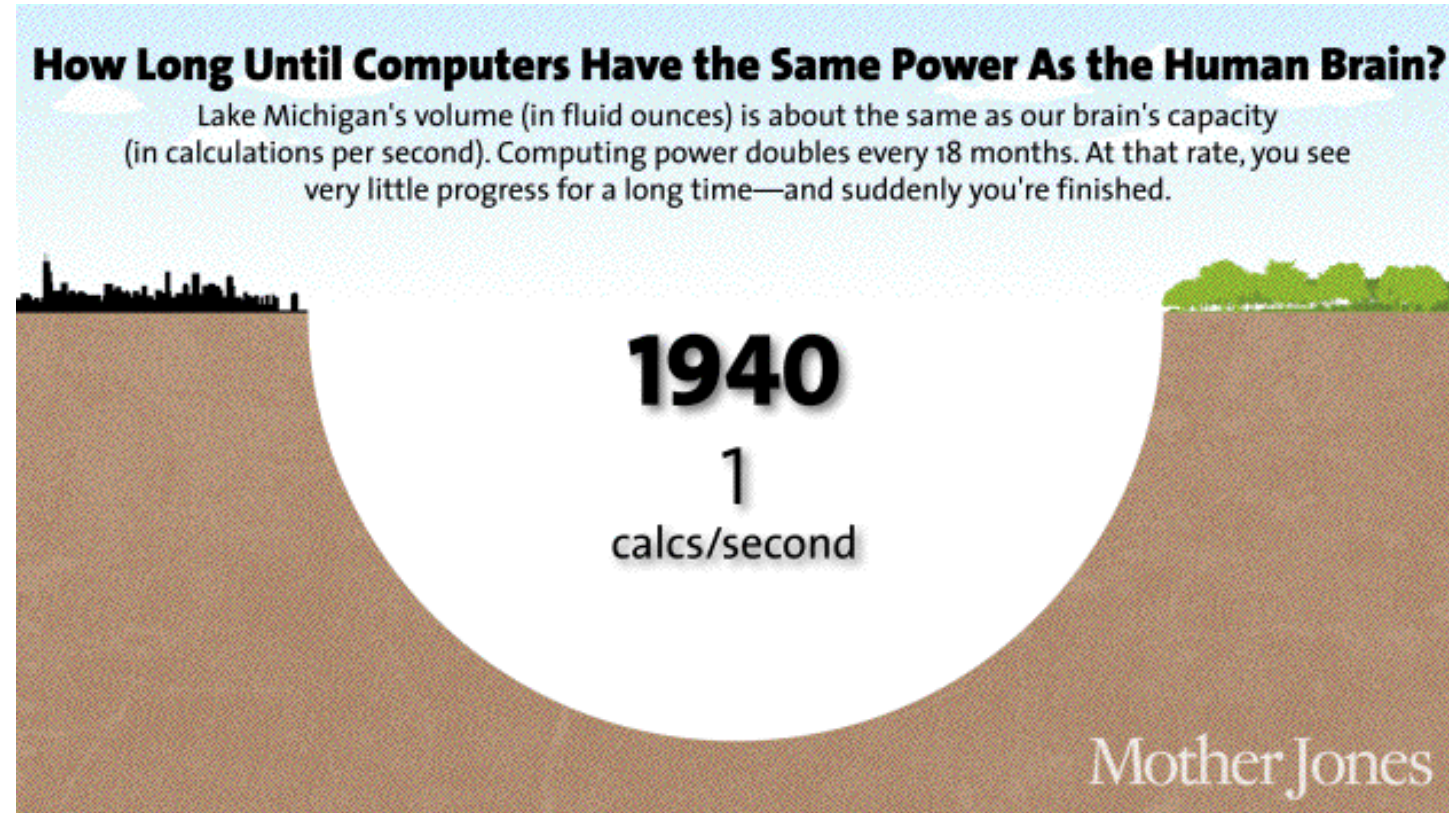


Source: <http://graphics8.nytimes.com/images/2010/10/02/business/flash-crash-dow/flash-crash-dow-popup.png>

From AGI to ASI

This could happen soon

- Advancements in technology
- Experimentation
- Innovation



Source: <https://assets.motherjones.com/media/2013/05/LakeMichigan-Final3.gif>

AGI Tests

- The Turing Test
- The Coffee Test
- The College Student Test
- The Employment Test

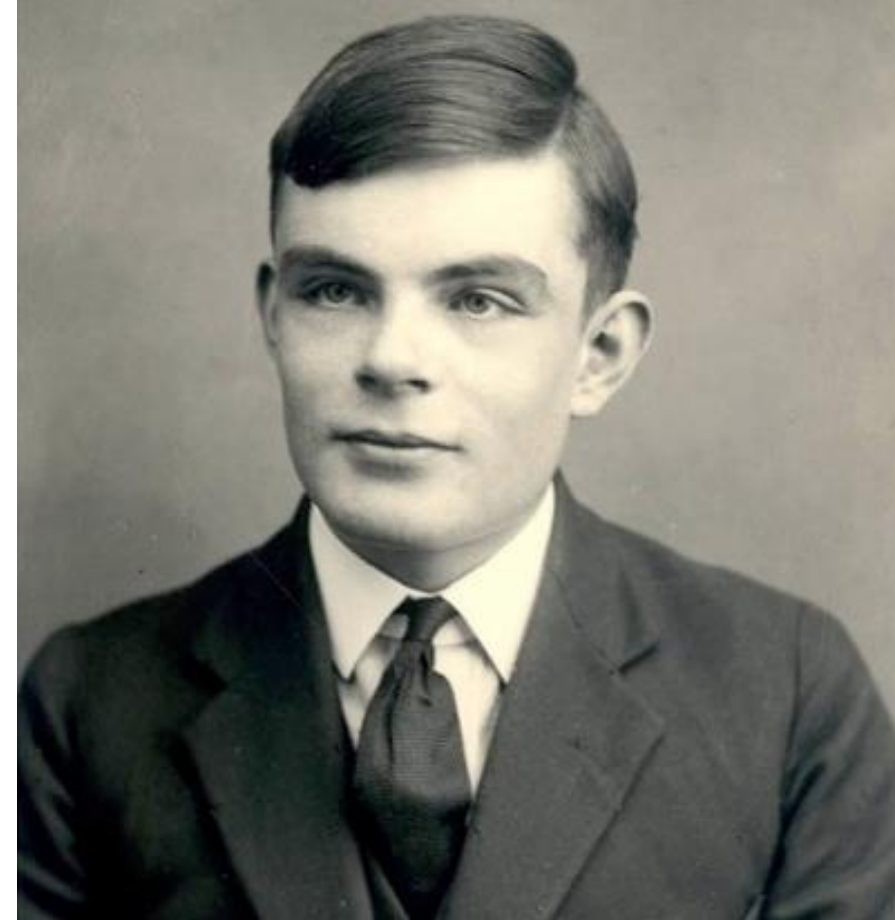


Source: <https://www.newsweek.com/black-mirror-season-4-callister-star-trek-769795>

Source: <http://robotfacebook.edwindertien.nl/product/ex-machina/>

Alan Turing (1912-1954)

- Father of AI and computer science
- Cryptanalyst during WWII
- Cracked code that enabled Allies victory
- Contributions to physical sciences
- Prosecuted by UK and castrated for being gay
- Died of cyanide poisoning
- Receives public apology in 2009 & royal pardon in 2013



Source: <https://www.historyextra.com/period/second-world-war/bletchley-park-facts-alan-turing/>

The Future...

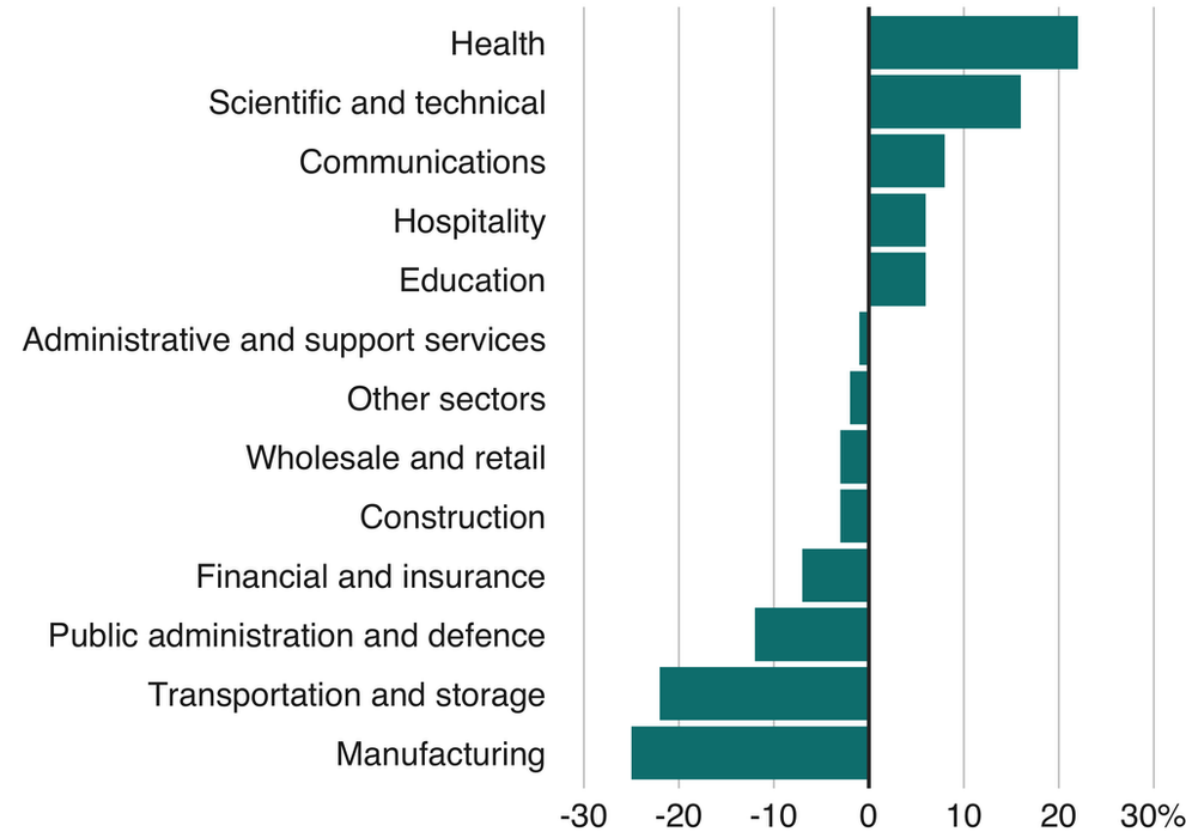
What will the job market look like when you graduate?



Source: <https://www.weforum.org/agenda/2018/06/ai-arms-race-global-collaboration/>

How AI could change the job market

Estimated net job creation by industry sector, 2017-2037



Source: PwC

BBC

Source: <https://www.bbc.com/news/business-44849492>



Digital Systems

The Turning Test and Mitsuku
In-Class Activity

FOX
MIS

The Turing Test and Mitsuku

- **What?**
 - **Develop strategies to differentiate a person from a computer**
 - **Test these strategies with a chatbot to see how they work**
 - **Refine these strategies and try an actual Turing Test and determine if you are interacting with a person impersonating a computer or a computer impersonating a person**
- **Why?**
 - **See for yourself how far AI has come**
 - **Get you thinking about the implications on business and your career**

Exam 2 prep discussion

More to Come

Prepare with Readings & Videos before our next class!!!