



# Digital Systems

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1.1 Introduction to MIS

**FOX**  
**MIS**

# Welcome!

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Fall 2020

**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**

# Introduction to Instructor

- ❖ Marie-Christine Martin
- ❖ E-mail: [mcmartin@temple.edu](mailto:mcmartin@temple.edu)
- ❖ Office: Speakman 209J (zoom)
- ❖ Office Hours:  
Tuesdays & Thursdays: 1-2 PM, and by  
appointment



# Introduction to Instructor (cont.)

## Education

- ❖ BS Industrial Engineering
- ❖ MBA, Finance

## Pre-Temple

- ❖ IBM (Canada, USA & Singapore)
- ❖ HP Global
- ❖ Oracle, USA
- ❖ Self Employed Consultant

## Adjunct Faculty

- ❖ Temple University, MIS

## Full-Time Faculty Temple University

- ❖ Undergraduate - MIS
- ❖ Graduate - FOX Business School MBA & MiM
- ❖ Director of MIS Masters Programs





# Course Support: Information Technology Assistants (ITAs)

- **Rose Listman**

[rose.listman@temple.edu](mailto:rose.listman@temple.edu)

**Office Hours: by appointment,  
send Rose an email to schedule**



***“Tell me and I forget.  
Teach me and I remember.  
Involve me and I learn.”***

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- Benjamin Franklin



# Managing Expectations

- **This class is unique!**
- **We will work through challenges together...plan on it!**
- **You will find the class engaging and fun!**
- **You will acquire knowledge and skills that you will use in future classes and your career!!!**

# Course Highlights

- **Systems Analysis**
- **Process Mapping (Modeling with swim lanes & entity relationship diagrams)**
- **Digital Product Management**
- **Information Systems CRM & ERP, Data Analytics & SCM**
- **Platforms & Digital Business models, including API's**
- **Cyber security and the Enterprise plus AI**
- **Programming including: JavaScript, HTML & CSS**

# Course Objectives

- **Explore the systems which organizations use to create their digital products**
- **Explore the platforms which these digital systems are built upon**
- **Explore the API ecosystems by which systems extend their reach and capability.**
- **Discuss cyber security including risks & responses surrounding digital products**
- **Introduction to the creation of software**
- **Learning the basics of programming in JavaScript**

# Graded Components

Component	Percentage
In-Class Activities & Worksheets (approximately 17) <del>* must be present in class to earn credit – no exceptions!</del>	10%
Learn IT! and Max Lab Assignments ** no late assignments accepted – no exceptions!	30%
Exam #1 (50 minutes)	20%
Exam #2 (50 minutes)	20%
Exam #3 (60 minutes – held during finals week)	20%

\*In-Class activities must be submitted while in class.

\*\*Completed assignments will not be returned in class. Grades will be posted to the gradebook. Please note that two weeks after a grade is posted, the grade will be considered “final.”

# Readings & Videos – Part 1

- **No required texts the first half of the semester!**



- **Engaging collection**
- **Current content**
- **Available for Free!!!**

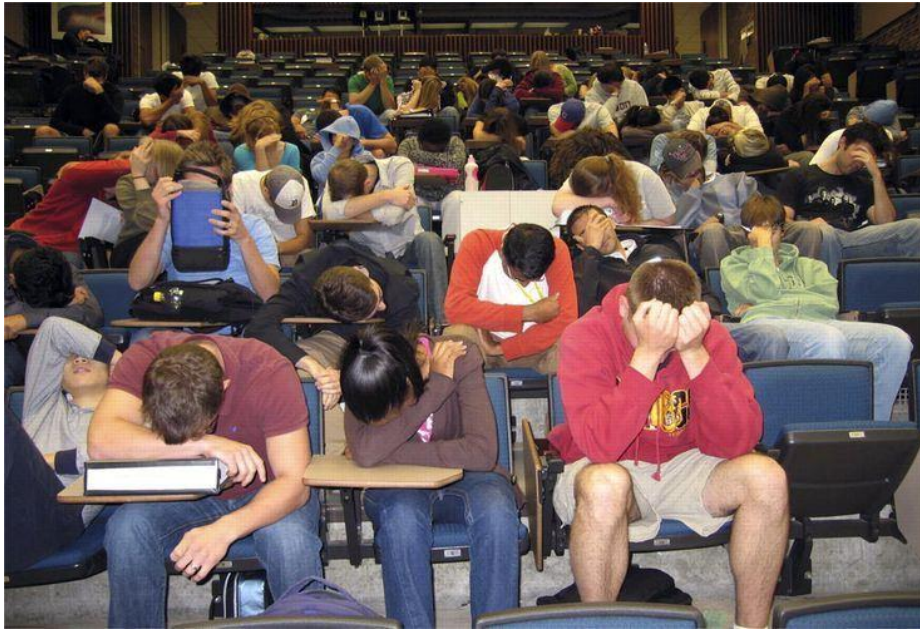
# Readings & Videos – Part 2

- **JavaScript**
  - Create simple JavaScript programs
  - Prompt users for input
  - Utilize loops
  - Process Information





# Lecture vs. Activities



Source: <https://www.theodysseyonline.com/11-things-college-lecture-hall>

- **3 Hours of zzzzzzzzz's**



- **1 Hour Discussion**
- **2 Hours of Activity**

# Active Learning Components

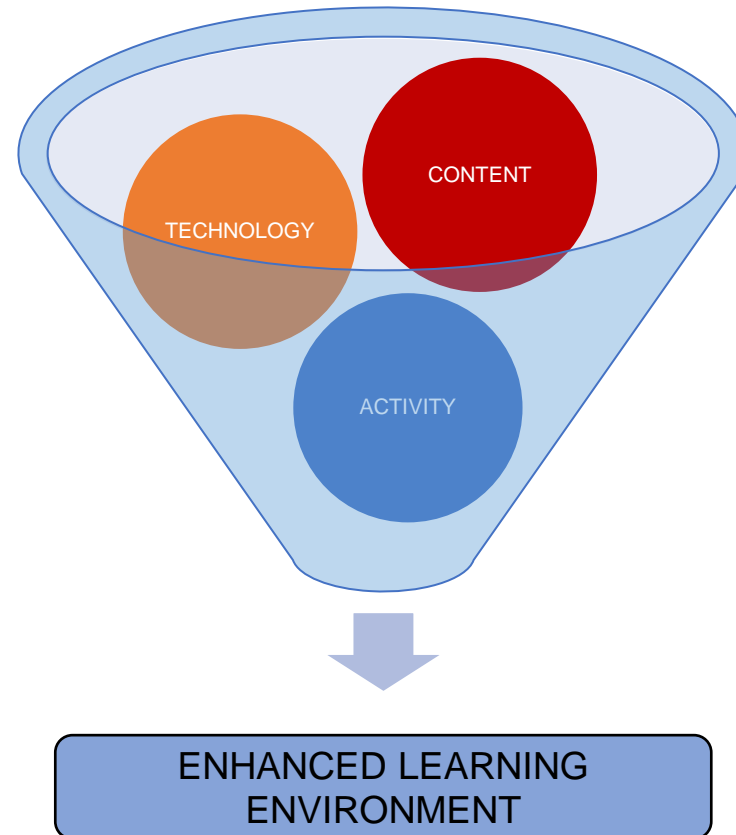
TECHNOLOGY

CONTENT

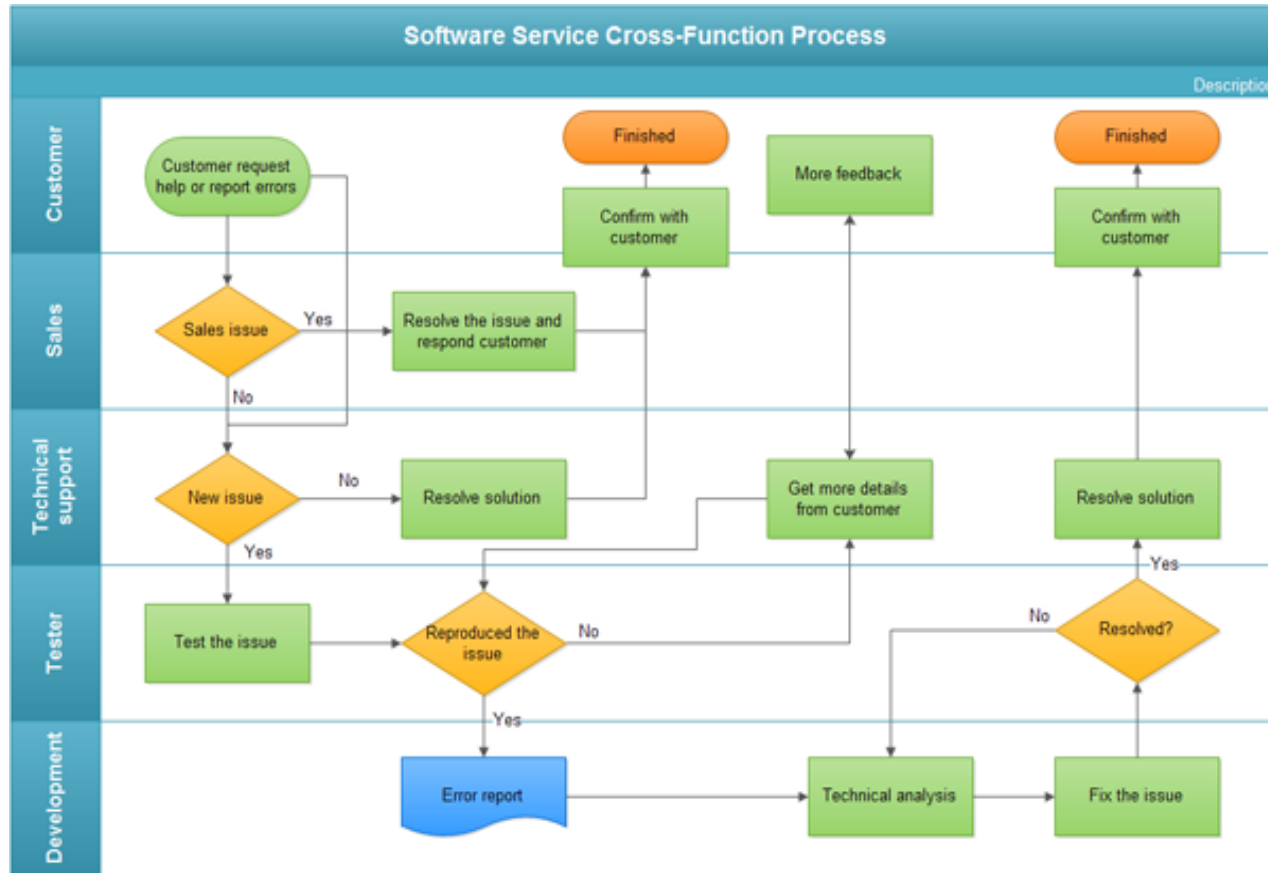
ACTIVITY



# The Active Learning Funnel



# The In-class Activity



- Process Diagrams
  - Swim lane diagram
- Real life scenarios
- Knowledge Application
- Problem Solve
- Synthesize Solutions

# The In-class Activity – Canvas

**Quiz Instructions**

After completing this activity you will be able to:

- State a key fact about this course, its instructor, and its subject
- List basic questions that can be applied to nearly any situation

**Question 1** 0 pts

Step 1: Prepare three questions (individually)

1. A question about this course
2. A question about the instructor
3. A question about Information Systems (IS)

HTML Editor

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0 words

- Reinforce assigned materials
  - Readings
  - Videos
  - Lecture
- Exam Preparation
- Work in teams
- ~~Must be present~~
- You keep your work

## Not Just Another Intro Class!

- Accounting
- Business Management
- Entrepreneurship & Innovation Management
- Financial Planning
- International Business Administration
- Marketing
- Risk, Insurance & Healthcare Management
- Supply Chain Management
- Actuarial Science
- Economics
- Finance
- Human Resources Management
- Legal Studies in Business
- Management Information Systems
- Real Estate
- Statistical Science and Data Analytics



ASSOCIATION FOR  
INFORMATION SYSTEMS

# Information Systems Job Index

*Careers in Information Systems*



Fox School of Business  
TEMPLE UNIVERSITY®



Read the full report at [isjobindex.com](http://isjobindex.com)

Based on 1420 recent graduates from 43 universities across the U.S.

## The 2019 IS Job Market is Steady



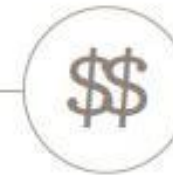
### Job Placement Rate

	At Graduation	6-Months after Graduation
Bachelor's:	70%	69%
Master's:	47%	81%



### Confidence in Job Market

Bachelor's:	64%
Master's:	55%



### Average Salary

Bachelor's:	\$65,314
Master's:	\$84,113

## IS Students are Happy About Their Future Jobs



### Satisfaction & Enthusiasm about Job Offer

Bachelor's:	83%
Master's:	70%



### Offer from Appealing Organization

Bachelor's:	89%
Master's:	75%

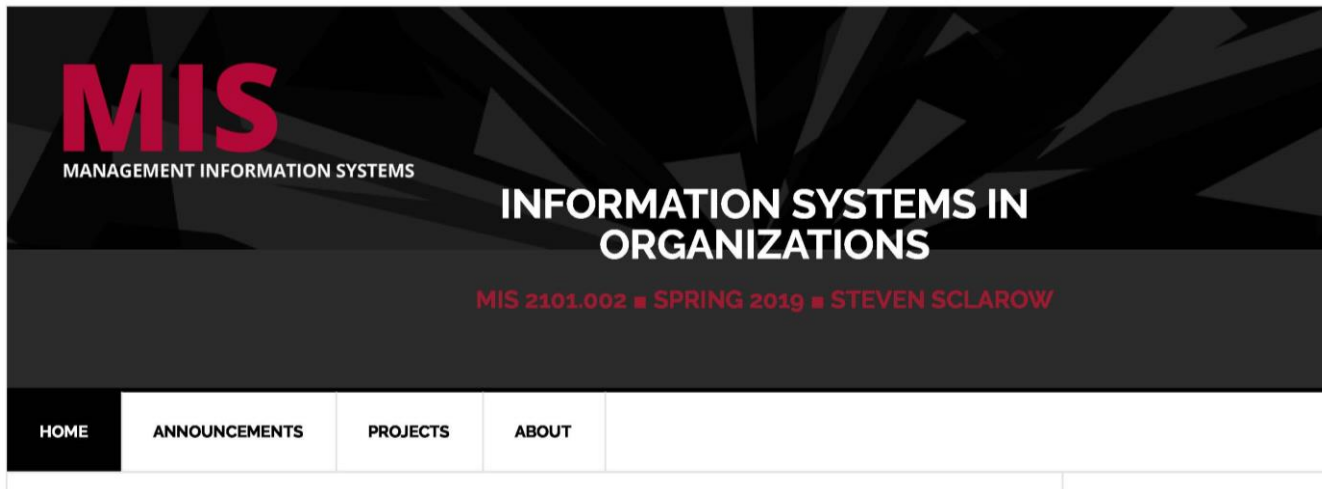
# Class Sites Review

- We use Canvas for our exams, assignments and in class activities.

<https://templeu.instructure.com/courses/79652>

- The rest of the information is on our MIS site:

<https://community.mis.temple.edu/mis2101sec701fall2020/>



# 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 Systems

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1.1 Intro to Information Systems in Organizations  
In-Class Activity

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# Digital Systems

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## 1.2 What are Systems?

**FOX**  
**MIS**

# Business Systems Innovation Labs

## Pre-lab Pre-flight Checklist

Max's Distinctive, Impressive BizTech Student Blog

### Day 1 - Introduction Context

The introductory chapter of the book "The Art of the Start-up" will introduce you to the concept of a business plan and the importance of having a clear vision of your business before you start. This chapter is a great starting point for understanding the importance of a business plan and the role of a business plan in the success of a business.

1. What is the purpose of a business plan?

2. Why is a business plan important?

3. How does a business plan help you?

4. What are the key components of a business plan?

5. How do you write a business plan?

6. What are the benefits of a business plan?

7. How do you use a business plan?

8. What are the common mistakes to avoid when writing a business plan?

9. How do you update a business plan?

10. What are the signs that you need to update your business plan?

11. How do you know when to update your business plan?

12. What are the consequences of not updating your business plan?

13. How do you avoid these consequences?

14. What are the key takeaways from this chapter?

15. How do you apply these takeaways to your business?

16. What are the next steps for your business?

17. How do you stay motivated and focused on your goals?

18. What are the key lessons learned from this chapter?

19. How do you use these lessons to improve your business?

20. What are the final thoughts on this chapter?



“Distinctive, Impressive BizTech Student Blog”  
(Backstory)

SJSU Business Systems student Max sets out to blog her class, stumbles into a startup adventure, and invites you to follow along.

Prep: What do you need to start?

To get the most out of this pre-lab, you need a healthy curiosity, a sense of humor and a little imagination. Focus, read for understanding, and put yourself in Max's shoes so you don't just read it—you *experience* it.

# Max Labs

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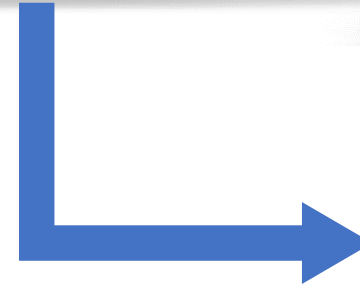
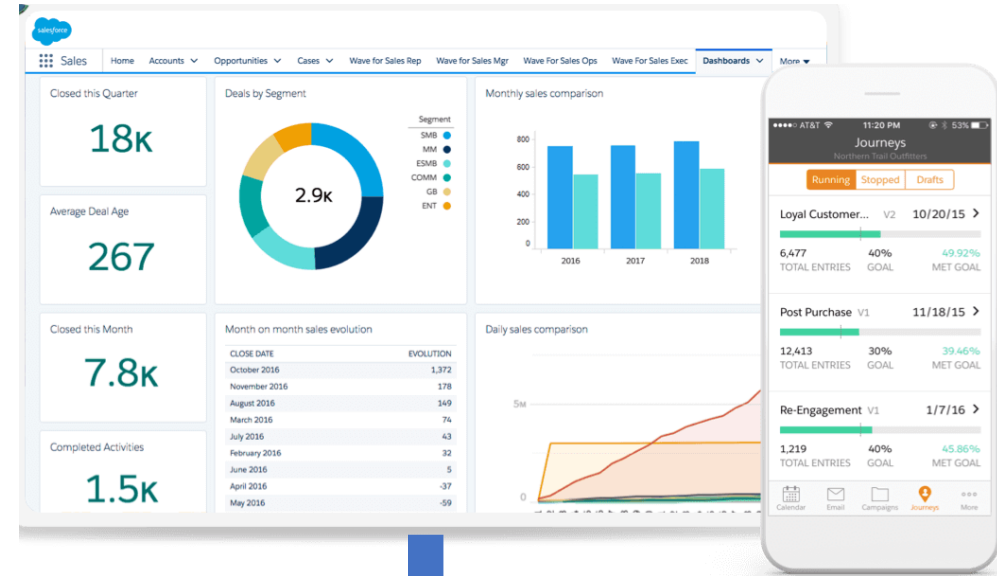
## DUE BY EOD SUNDAY!

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# What is MIS?

Using Information Technology to solve business problems.

- MIS is not Computer Science
- It's about business where we train people to do what?
- Use technology to solve day-to-day business problems`



Sources: [https://c1.sfdcstatic.com/content/dam/web/en\\_us/www/images/products/what-is-salesforce/whatis-jumbo-astro-product.png](https://c1.sfdcstatic.com/content/dam/web/en_us/www/images/products/what-is-salesforce/whatis-jumbo-astro-product.png)

[https://www.kindpng.com/picc/m/568-5683178\\_real-cash-stack-100-dollar-bill-hd-png.png](https://www.kindpng.com/picc/m/568-5683178_real-cash-stack-100-dollar-bill-hd-png.png)

# World View – A collection of “Systems”

## Systems = people + process + technology

- Manipulation of information = value
- Managed by MIS professionals
- Systems surround us 24/7
- Application Program Interface (API's)



Source: <https://www.aecom.com/ca/management-information-systems-mis/>

# Understanding Systems

## Buying textbooks on Amazon

- What is part of that system?
- Log-in (multiple steps)
- Search
- Shopping Cart
- Purchase (Multiple steps)
- And much more.....

The screenshot shows an Amazon search results page for the query "javascript absolute beginner's guide / kirupa chinnathambi". The page features a navigation bar at the top with the Amazon Prime logo, a search bar containing the query, and a "Stock up for college" banner. Below the navigation bar, there is a "1 result for 'javascript absolute beginner's guide / kirupa chinnathambi'" section. The main content area displays several book listings. The first listing is "JavaScript Absolute Beginner's Guide" by Kirupa Chinnathambi, published in July 2016. It has a 4.5-star rating from 29 reviews and is available in paperback for \$19.06 (originally \$29.99) and Kindle for \$14.39 (originally \$23.99). The second listing is "JavaScript: Programming Basics for Absolute Beginners (Step-By-Step) (Volume 1)" by Nathan Clark, published in August 2017. It has a 4.5-star rating from 33 reviews and is available in paperback for \$16.38. The third listing is "Programming for Beginners: 3 Books in 1- HTML+CSS+JavaScript (Basic Fundamental Guide for Beginners)" by MG Martin, published in September 2018. It has a 4.5-star rating from 13 reviews and is available in paperback for \$24.99. The page also includes a "Department" sidebar on the left with categories like "Books", "JavaScript Programming", and "Computer User Books".



# Understanding Systems (cont.)

## Buying lunch

- What is part of that system?
- Take the order
- Hand order to cook
- Prep to-go bag
- Order cooked (multiple steps)
- And much more....



# Understanding Systems (cont.)

## Describe the Process of Ordering

- What keeps info accurate?
  - Data
- Who is involved?
  - Customer ♦ Store ♦ Warehouse Mgr. ♦ Admin ♦ UPS driver...
- How much effort?
  - None...it's automated!
  - Technology !!!

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Building Enterprise JavaScript Applications  
Learn to build and deploy



**“information system –  
an integrated set of components for  
collecting, storing, and processing data  
and for providing information, knowledge,  
and digital products.”**

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- Encyclopedia Britannica

# A collection of technologies

Including:

- Hardware
- Software
- Policies
- Education tools
- API's
- Etc...



Source: <https://www.kisspng.com/png-laptop-computer-hardware-computer-repair-technicia-1180595/preview.html>

# API's Case Study: UBER

## Requesting a ride?

- Describe what happens...
  - What are these systems?
  - How do they work?



Source: <https://www.okta.com/security-blog/2019/05/how-uber-takes-advantage-of-the-api-economy/>

# Four Core Steps of Designing UX (user experience)

- Problem Definition
- Documenting Business Processes
- Process Decomposition
- Data Modeling



Source: <http://www.petraware.com/consulting/>



# Software Development Lifecycle (SDLC) methodologies

- Waterfall
- Agile
- Lean
- Scrum
- DevOps



Image: <http://www.xanadutech.com/software-as-a-service.html>

**“Once a Product Manager / Technologist understands the *business problem*, they can architect a solution.”**

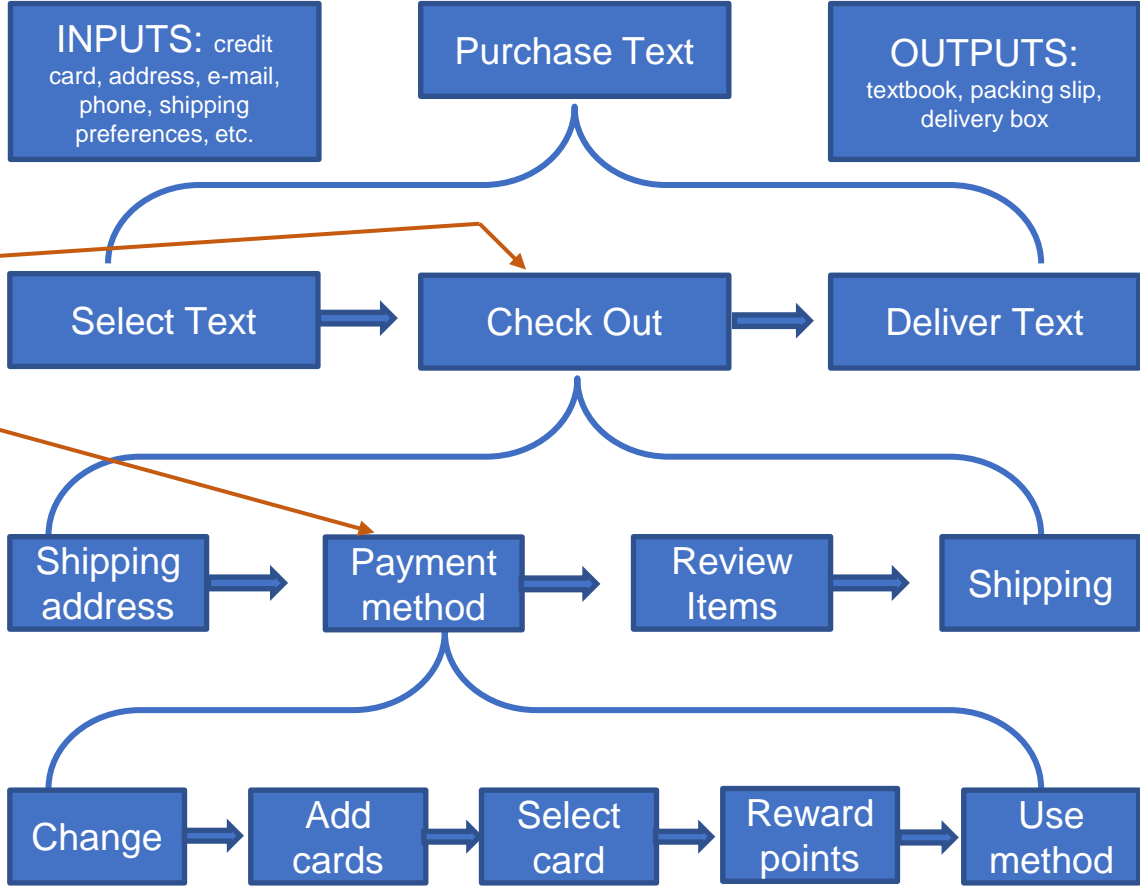
- Mart Doyle

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**What is “Systems analysis?”: Problem solving technique that “decomposes” a system into its component pieces for the purpose of studying how well these parts work & interact to accomplish their purpose**

# Process Decomposition

- **Single entity**
- **Subsystem**



**“Systems Architecture is a response to the conceptual and practical difficulties of the description and the design of complex systems.”**

- Boris Golden

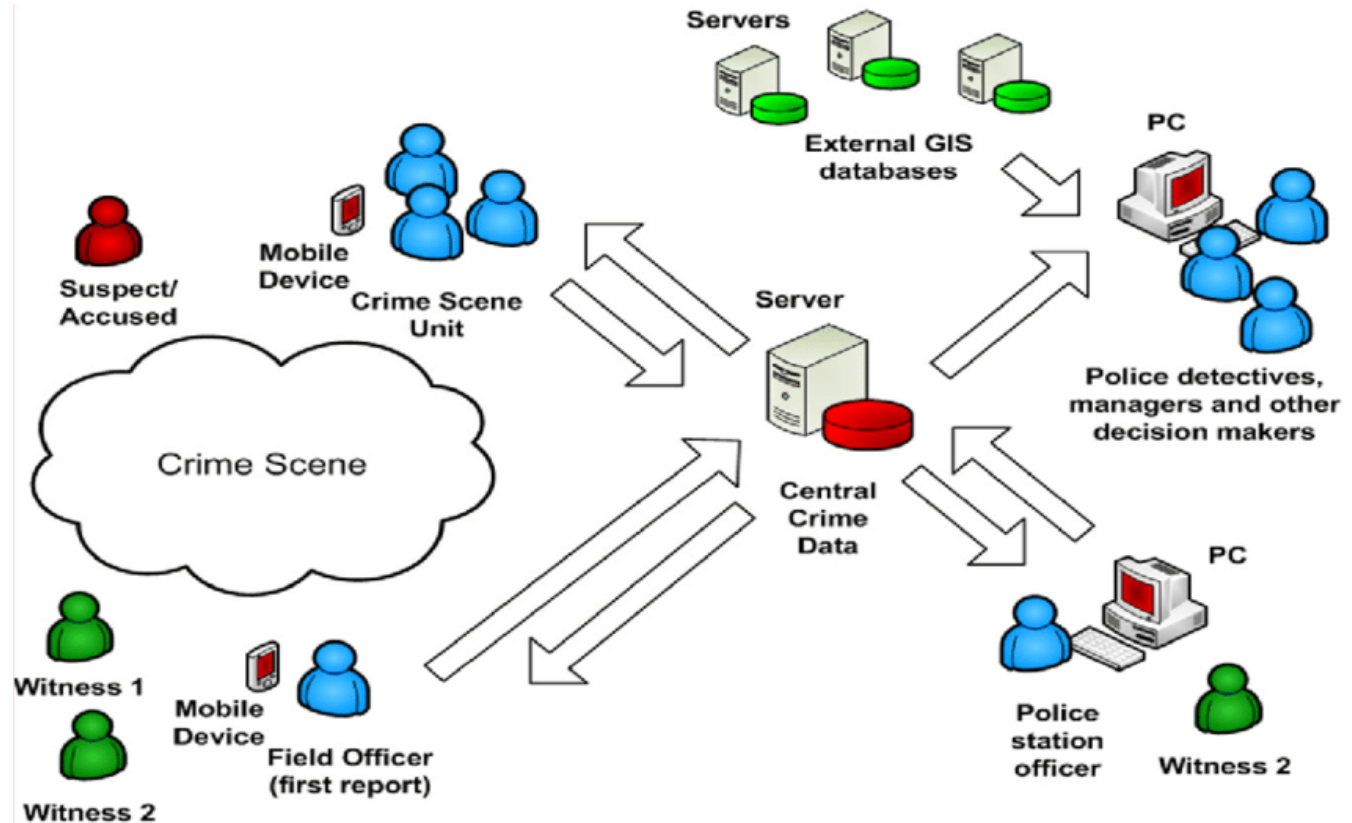
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**What is “Systems Architecture?”: Representation of the system & all of its parts/components**



# Systems Architecture

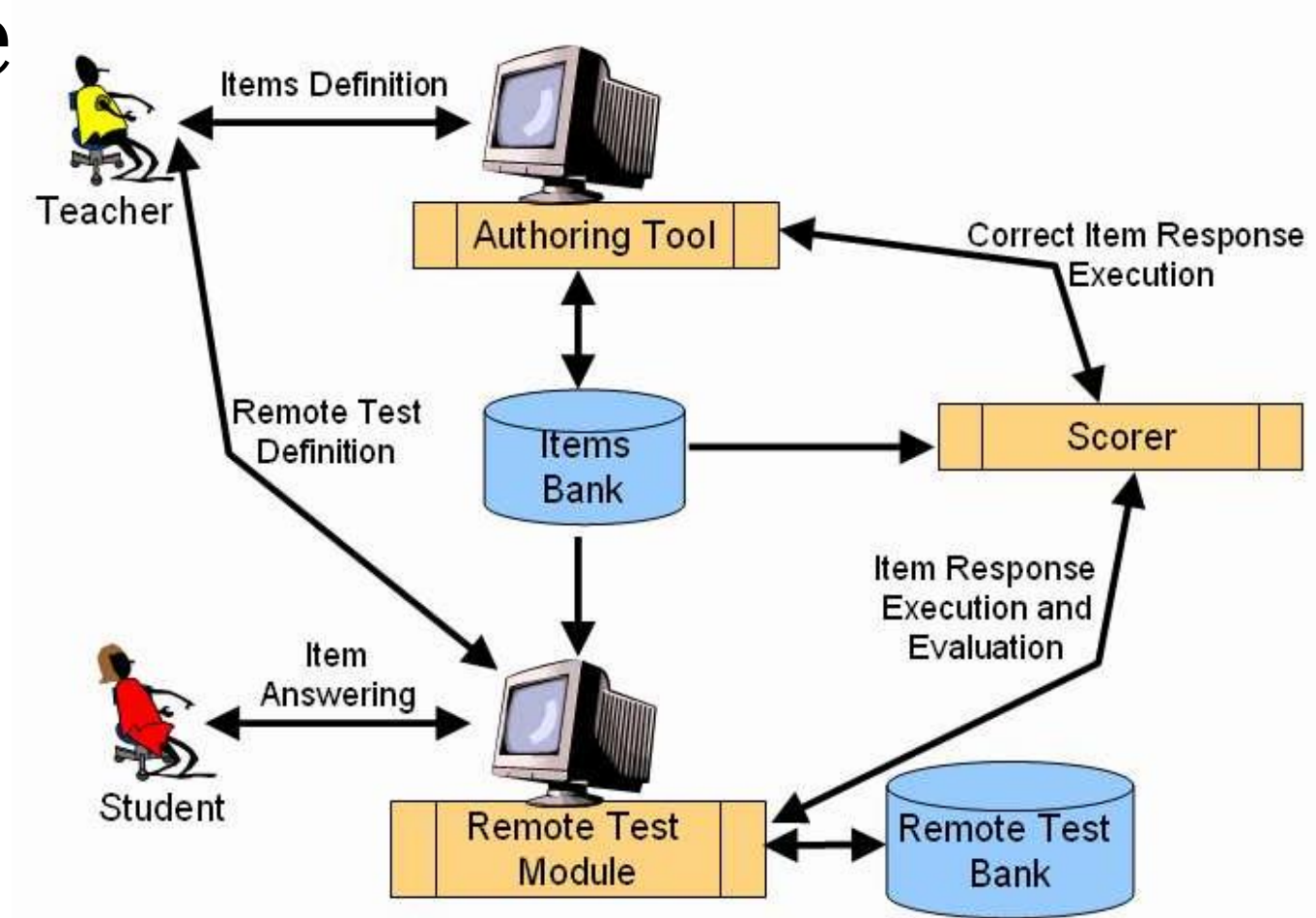
- Conceptual Diagram
- Structural components
- Identify/Solve Problems
- Existing or New
- Communication tool



Source: [https://www.researchgate.net/figure/Conceptual-System-Architecture\\_fig2\\_327987580](https://www.researchgate.net/figure/Conceptual-System-Architecture_fig2_327987580)

# Systems Architecture

- **Test question defined**
  - Authoring tool
- **Remote test created**
  - Test module
- **Student responses**
  - Test module
- **Execution & Evaluation**



Source: <http://spmarchitecture.com/systems-architecture/system-architecture-learning-environment-for-automatic-rating-64721-2/>



# Digital Systems

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2.1 Intro to Process Mapping

**FOX**  
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# Process Mapping

## What

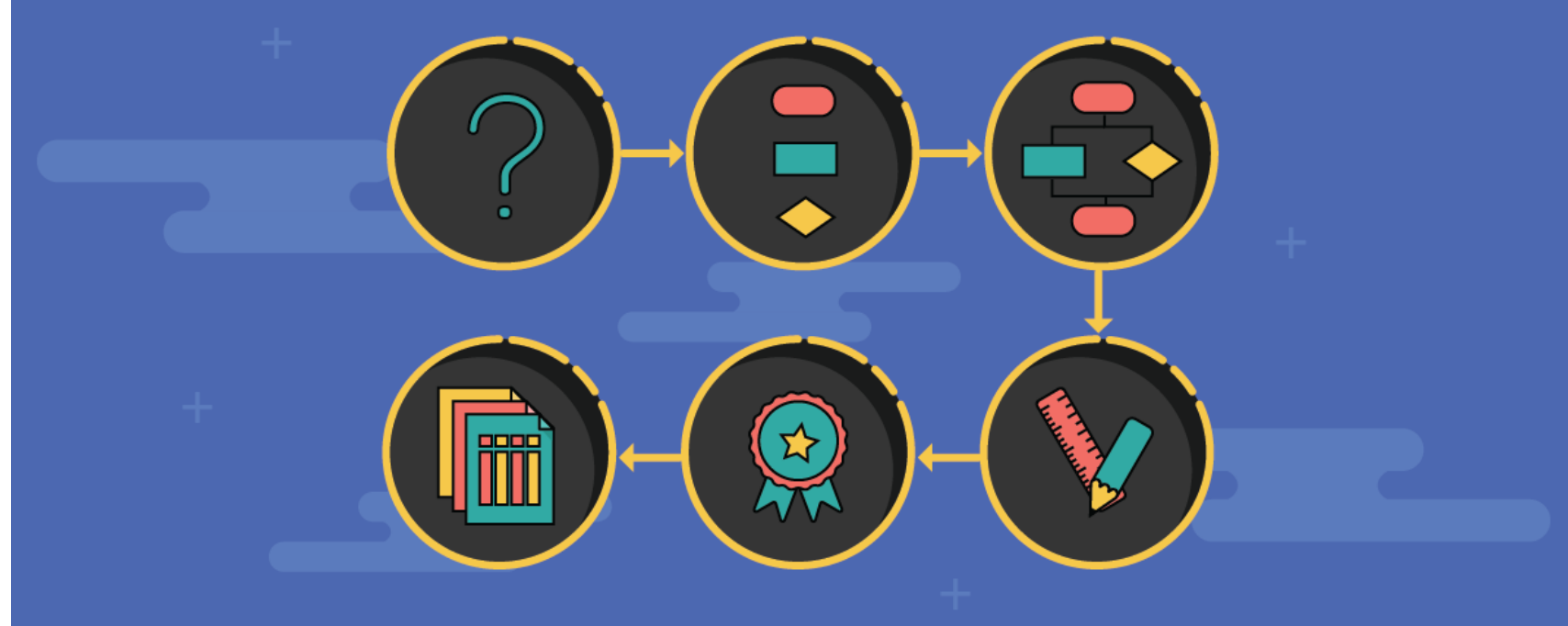
- Visual Representation

## Why

- Identify Problems

## How?

- Draw the “as-is”

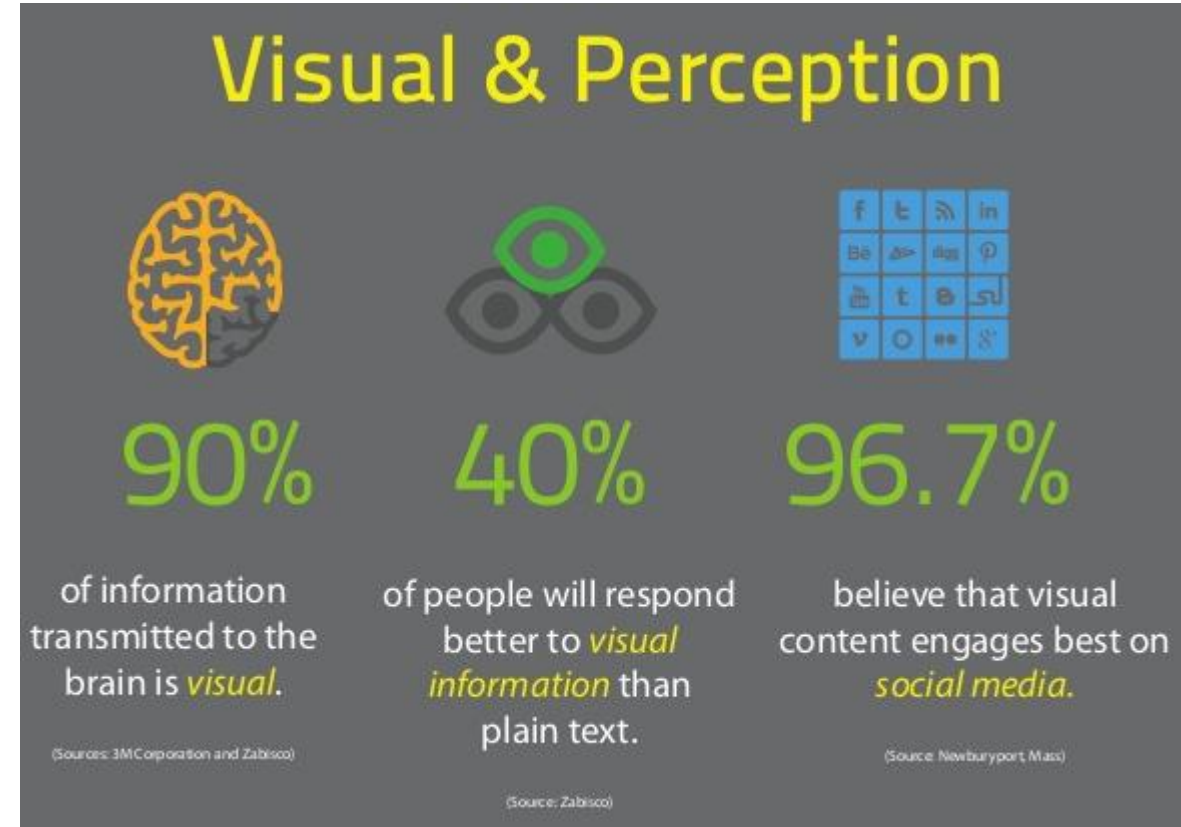


Source: <https://creately.com/blog/diagrams/process-mapping-guide/>

# What's a Picture Worth?

## How about a diagram???

- How fast does the brain process images?
- 70% of your sensory receptors are in your eyes
- 50% of your brain is active in visual processing



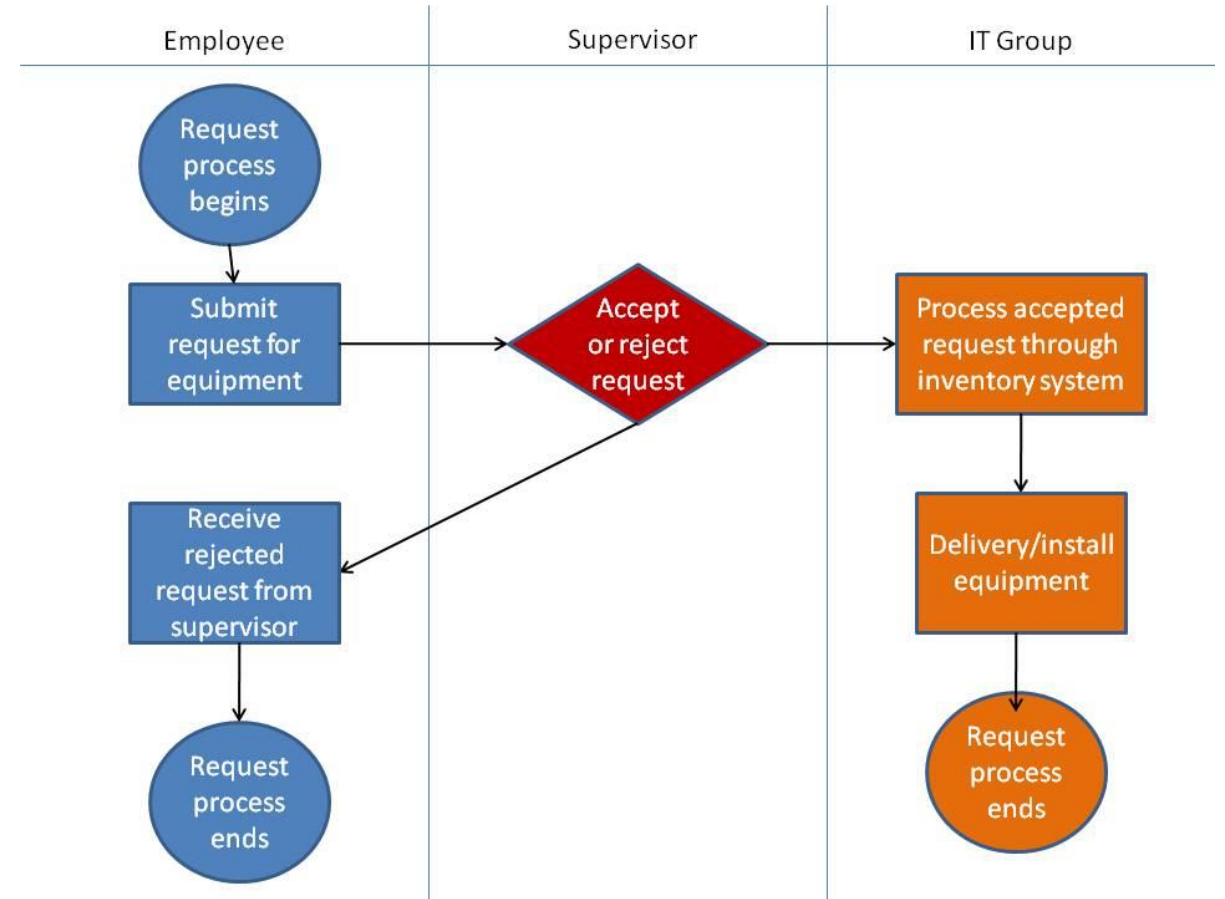
Source: <https://tax.thomsonreuters.com/blog/the-importance-of-visual-content-marketing-infographic/>

Source: <http://esheninger.blogspot.com/2018/08/a-picture-is-worth-thousand-words.html>

# Swim Lane Diagrams

## Advantages

- Identifies who does what & in what order
  - Logical & Chronological
  - Indicates hand-offs
- Versatile
  - Applied to other diagrams
  - Training tool



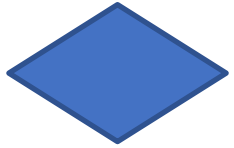
# Swim Lane Diagrams - symbols



- A circle signifies the starting and ending of an event in the process



- A rectangle represents an activity in the process.



- A diamond represents a decision that must be made.



- Arrows indicate the flow of the process.



- A cylinder represents stored data.



# Swim Lane Diagrams – Order to Cash (O2C)

The process starts when the customer contacts Sales to place an order. The person in Sales creates the sales order. As part of doing this, the person in sales first checks to see if the customer has enough available credit to cover the order. They do this by looking up the customer's credit on a report that is generated by Accounting and sent to Sales every Monday morning. If the customer doesn't have enough available credit then the person in sales notifies the customer who can then either update or cancel their order. Next the person in sales checks to see if the items being ordered are in stock. They do this by checking a report on inventory that the Warehouse created at the end of each day. If the items being ordered are not in stock then the person in Sales notifies the customer who can then update or cancel their order. If the report indicates the items are in stock then the order goes to the Warehouse where the workers there will pick the order. Since Sales is looking at a report that is only updated at the end of each day, there is a chance that they accepted an order for an item that is not really in stock. If that is the case the Warehouse notifies Sales who then notifies the customer who can update or cancel their order...

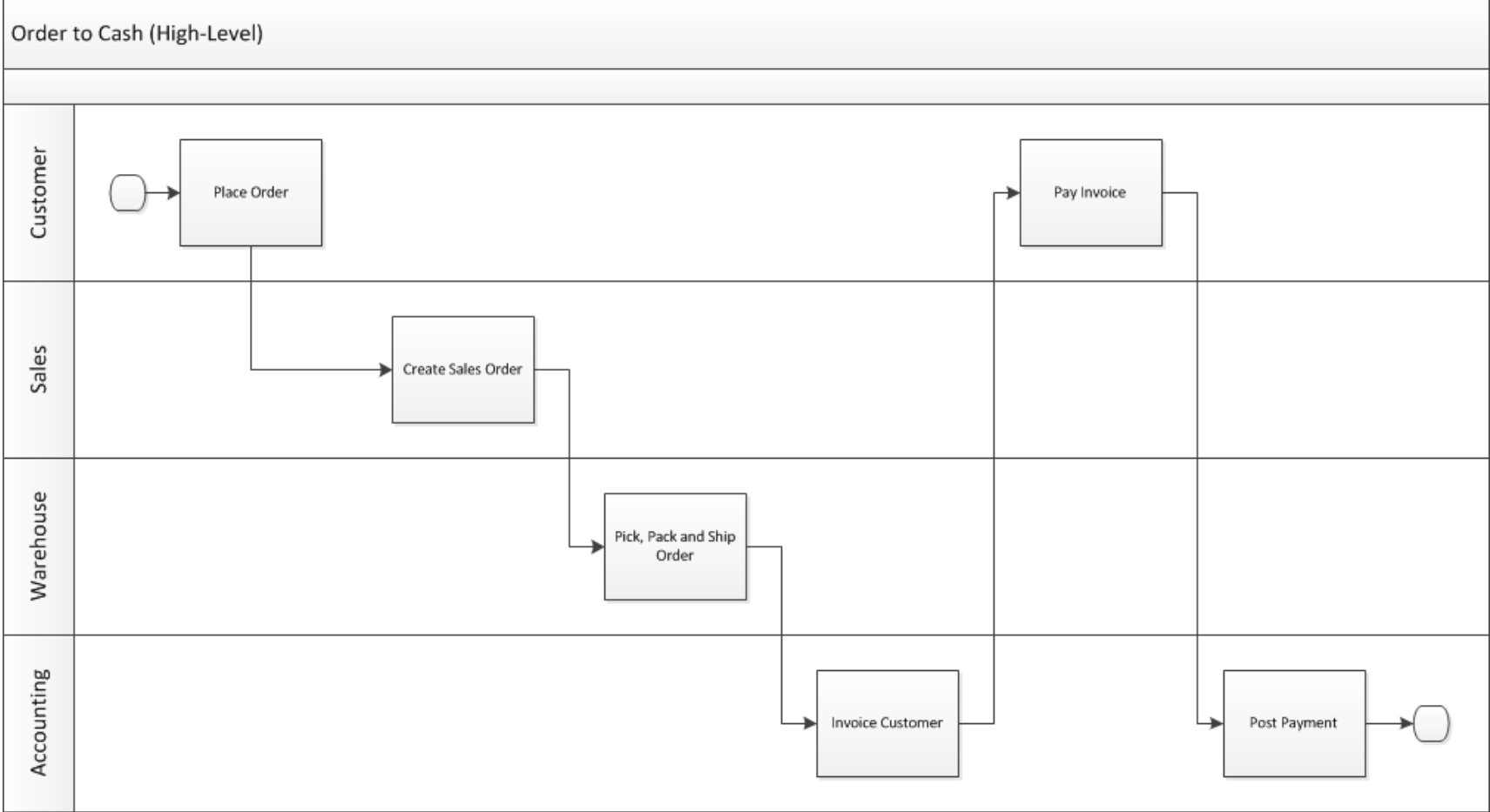
# Swim Lane Diagrams – Order to Cash (O2C)

...Once the people in the warehouse pick the order, the people in Accounting have to make sure that the customer actually has enough credit to cover the order. Since the people in Sales use a credit report that is generated on Monday morning, there is a chance that the information on the credit report is old. If the customer doesn't have enough available credit then Accounting notifies Sales who then notifies the customer who can then choose to update or cancel their order. If the customer has enough available credit then their available credit is reduced by the total cost of the order and the warehouse is notified and they pack and ship the order. As soon as the order is shipped the people in the warehouse notify accounting and accounting generates and sends the invoice to the customer. When the customer pays the invoice the people in Accounting increase the customer's available credit by the amount of the payment, they post the payment and we're done.

# Swim Lane Diagrams – Order to Cash (O2C)

## Who does What & When

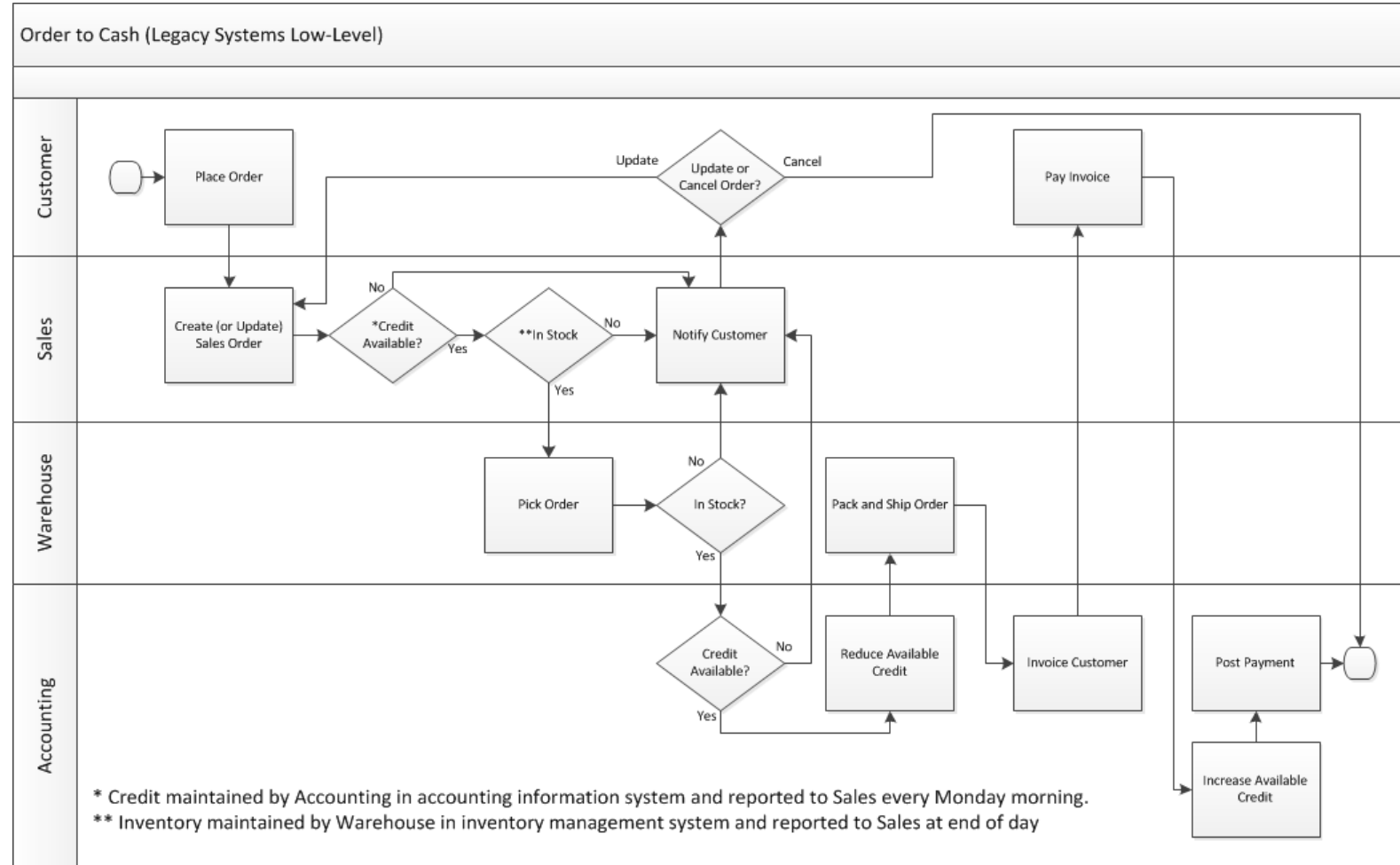
- Overview example



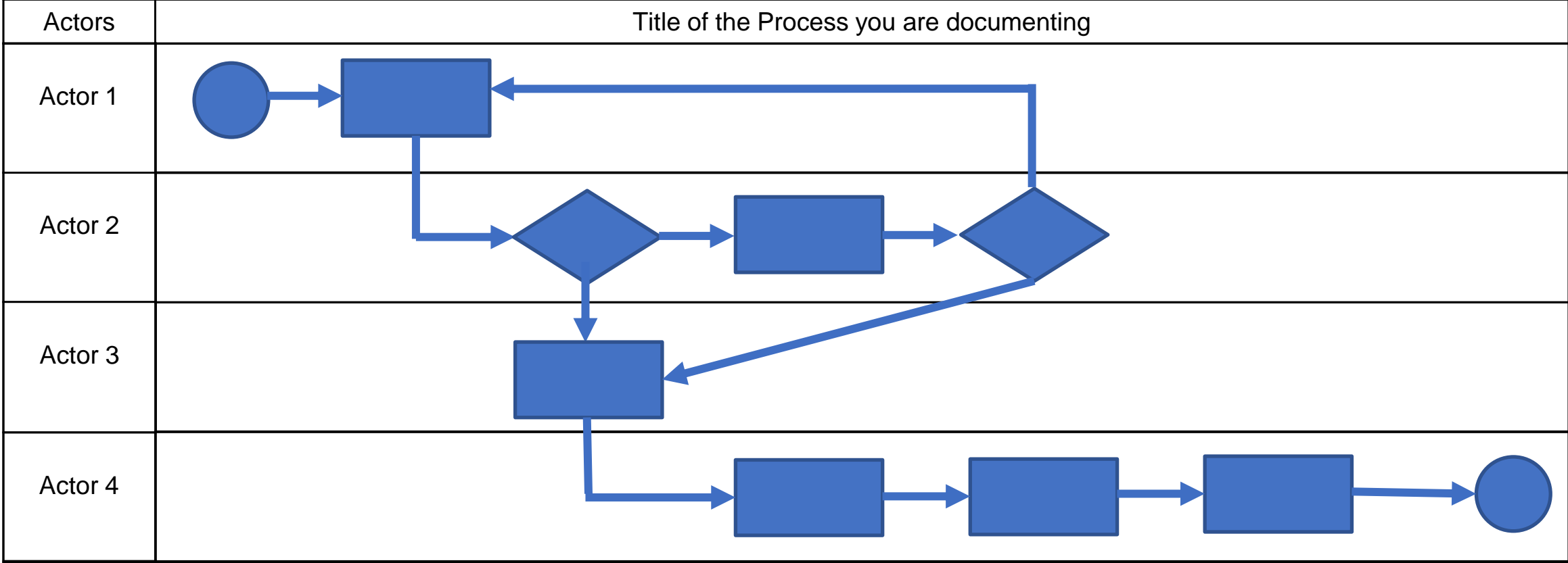
# Swim Lane Diagrams – Order to Cash (O2C)

## Who does What & When

- Complexity added
- Legacy system



# Swim Lane Diagrams – Create your own





# Digital Systems

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Swim Lane Diagrams #1  
In-Class Activity

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# More to Come

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