



*The ITI Program @ SC&I Presents*

# DESIGN THINKING **AND** PROTOTYPING WORKSHOP

# Design and Prototyping Workshop

## Design and Prototyping Workshop - Video and Design Challenge

In this brief video, IT and Informatics Program instructor Connie Pascal and UX designer, Victoria Kulikowski review the basics of Design Thinking and show how to use Infragistics' [Indigo Design](#) tool to create high-fidelity user interfaces and interaction flows for software development applications. Students will also be given two design challenges to complete after watching the video. Please note... you don't need coding skills - that's the beauty of using a prototyping tool!

- *The Design and Prototyping Workshop video will be available on or about 5:00 pm on March 25, 2020. The link will be posted below.*
- *Please sign up to [get notified](#) when the Design Workshop video is available or check your Canvas Course site for more information.*

## Design and Prototyping Workshop Video

## Drop-In Office Hours on March 27 from 1:30 pm - 3:00 pm

Connie and Victoria will be hosting a drop-in office hours WebEx session on Friday, March 27 from 1:30 pm to 3:00 pm for any students who want to review their Design Challenge projects or find out more about how Indigo.Design works. You can join from your device or by phone.

- **When:** March 27, 2020 from 1:30 pm - 3:00 pm
- **Join by computer:** [DROP IN OFFICE HOURS](#)
- **Call in by phone:** 1-650-429-3300 / Access code: 797 034 467

**DOWNLOAD THE FREE INDIGO.DESIGN SOFTWARE BEFORE THE WORKSHOP**

# ATTENTION!!!

## macOS Catalina Users

The version of Indigo that we have access to is an academic license and does not run well on Catalina. If you need access to a PC, please contact Connie Pascal at [cpascal@comminfo.rutgers.edu](mailto:cpascal@comminfo.rutgers.edu)

# Presenters



**Connie Pascal** is a candidate for Ph.D. in Information, Communication and Media Studies and a full-time part-time lecturer in the Library and Information Department at the School of Communication and Information at Rutgers University in New Brunswick, N.J. She is also the Program Assistant of the Information Technology and Informatics Program. Her doctoral research focuses on knowledge management and the informatics of cannabis. Connie received her Master's in Communication and Information Studies from the School of Communication & Information at Rutgers University in 2011.  
cpascal@comminfo.rutgers.edu

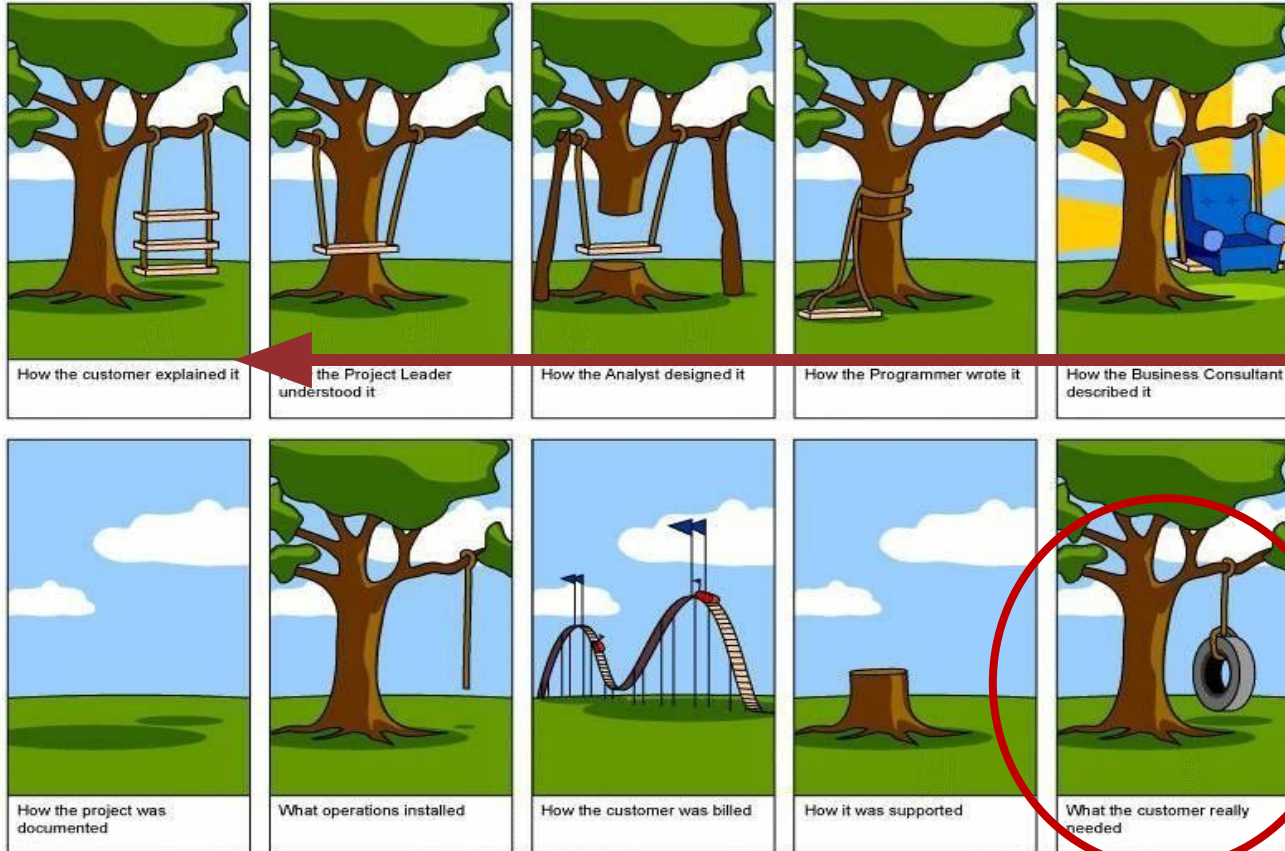


**Victoria K** is a graduate of the University of Baltimore Master's in Interaction Design & Information Architecture program. After a ten-year career in librarianship, she found her true passion in interface design and user experience, and is enjoying freelance projects ranging from website redesign to prototyping and user testing. Victoria is excited to bring her knowledge of academic theory and real world practice to a new group of designers in the world of UX.  
kuliko@comminfo.rutgers.edu

# WORKSHOP AGENDA

- I. Design Thinking Overview
- II. Our Focus - Mockups and Prototypes
- III. Indigo Studio Training - Follow Along Video
- IV. Design Challenges
  - Extras:
    - Privacy by Design
    - Prototyping Software Comparison
    - Working with Your Showcase Team Remotely on Indigo

# Why do we need to design things anyway?

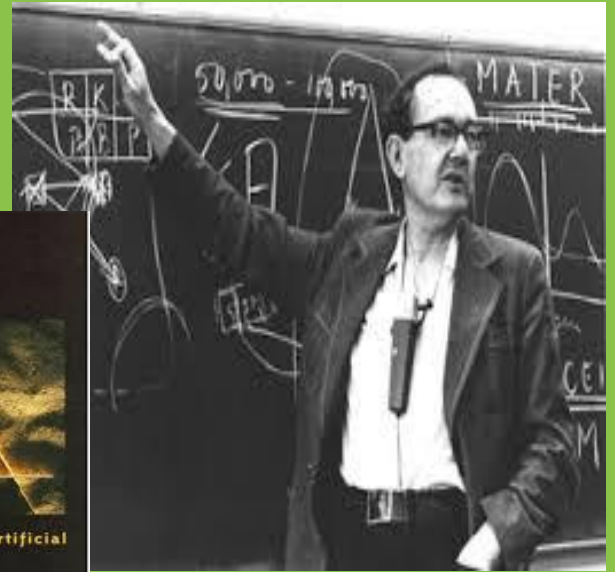
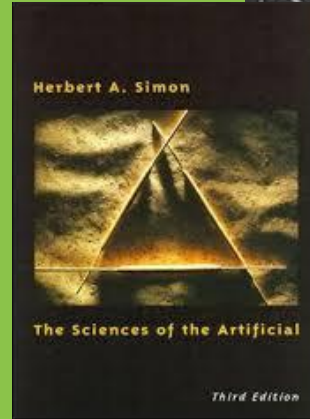


We need to design things to prevent miscommunication in the development process from happening - especially when the customer explains one thing -- but actually needs another

Design Thinking is how we design things that solve the problems they were intended to address

# Design Thinking

‘How to think about  
how to solve  
life’s problems”



Herbert Simon, in the "Sciences of the Artificial" (MIT Press, 1969) defined "design" as the "transformation of existing conditions into preferred ones" (p. 55).

# **David Kelley** – the founder of the d.school at Stanford is credited with popularizing design thinking

<https://dschool.stanford.edu/>

**IDEO** We are a global design company. We create impact through design.

[Home](#) » [People](#) » David Kelley

## **David Kelley**



### **ABOUT**

David Kelley is the founder and chairman of IDEO. He also founded Stanford University's Hasso Plattner Institute of Design, known as the [d.school](#). As Stanford's Donald W. Whittier Professor in Mechanical Engineering, Kelley is the Academic Director of both the degree-granting undergraduate and graduate programs in design within the School of Engineering, and has been a professor in the program for more than 35 years. He is a graduate of Carnegie Mellon University and earned his master's degree from Stanford University in Engineering/Product Design. Kelley's work has been acknowledged with numerous design awards, and in addition to being inducted into the National Academy of Engineering, he holds honorary PhD's from both the Thayer School of Engineering at Dartmouth and Art Center College in Pasadena. Widely known for teaching human-centered design methodology and design thinking to students and business executives, Kelley and his brother Tom co-authored the New York Times best-selling book, [Creative Confidence: Unleashing the Creative Potential Within Us All](#).



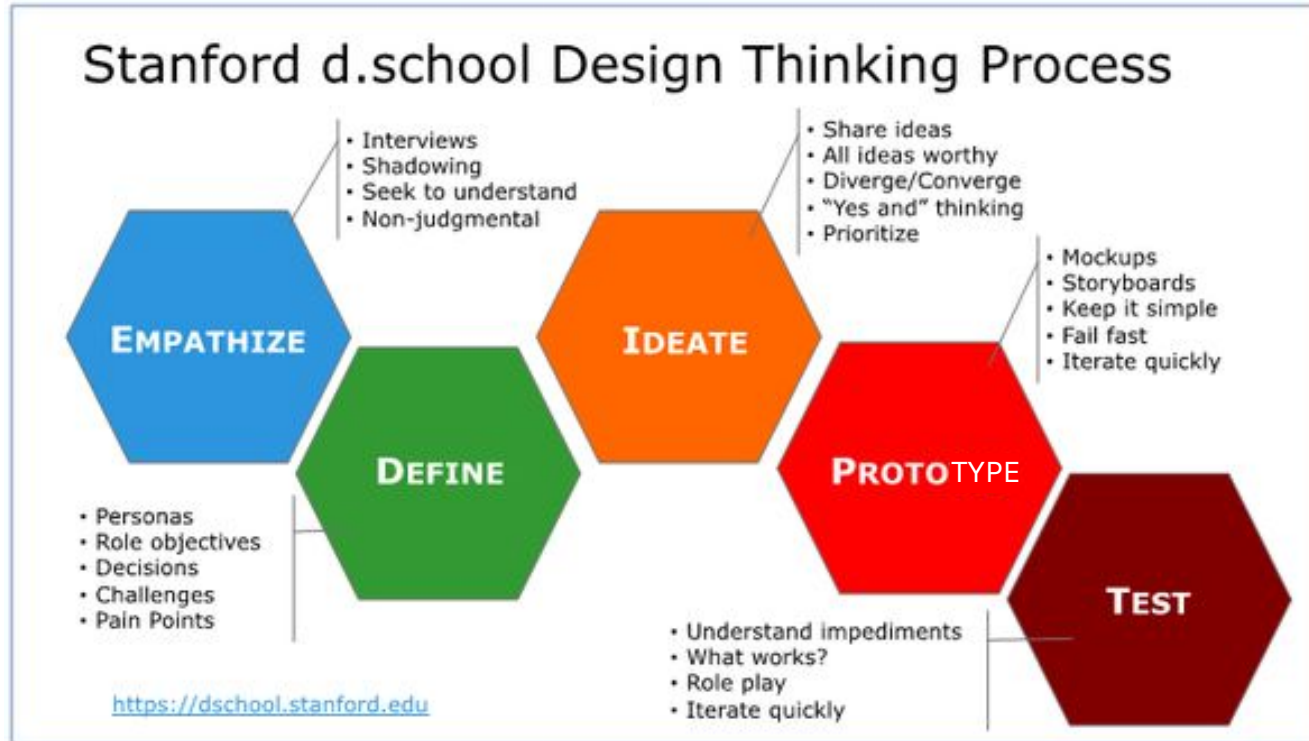
# WHAT IS DESIGN THINKING?

A way of thinking and doing that people employ by taking a creative, iterative and hands on approach to problem solving.

## IT IS ALWAYS

- About the creative process
- Open to new ideas
- Linked to an improved future
- About building up and iterating on ideas
- Participatory and team-based (but can be individuals)

# The Five Phases



# PHASE I - EMPATHIZE

*Identify your user and their problem*

## Ask

- Who are you designing for?
- Who will use this application in their everyday life?
- What is the problem they need to solve or the value they want to create?
- Ask why 5 times (by the fifth time you will get to the heart of the problem).



# PHASE 2 - DEFINE

Define all the options to solving the problem

This is an example of a Scrum board for a team that is following Agile Development Methods to design their software

## Ask

- What are all the options?  
*Don't get locked in too early. What are the pain points?*
- How can we gather the most diverse collection of options? *Better answers happen in diverse groups.*



# PHASE 3 - IDEATE

*Nurture ideas and refine direction*

## Explore

- New ideas based on your deeper understanding of the user, their needs, and what might be possible.
- How the ideas fit together.



# PHASE 3 - IDEATE (cont.)



**Even the strongest of new ideas  
can be fragile in their infancy**

- Encourage experimentation. No idea is too far out to be discussed.
- View mistakes and failures as a necessary part of the learning process.

# PHASE 4 - PROTOTYPE

*Choose a direction and get started*

## Process

- First develop a **low fidelity prototype** (paper, white board, sketch, etc)
- Refine the interactions and use a tool (such as Indigo Studio) to create a **mid (or medium) fidelity prototype**.
- If the mid-fidelity prototype solves the initial problem, create a **high-fidelity prototype**



# PHASE 5 - TEST

*Solicit and incorporate feedback*

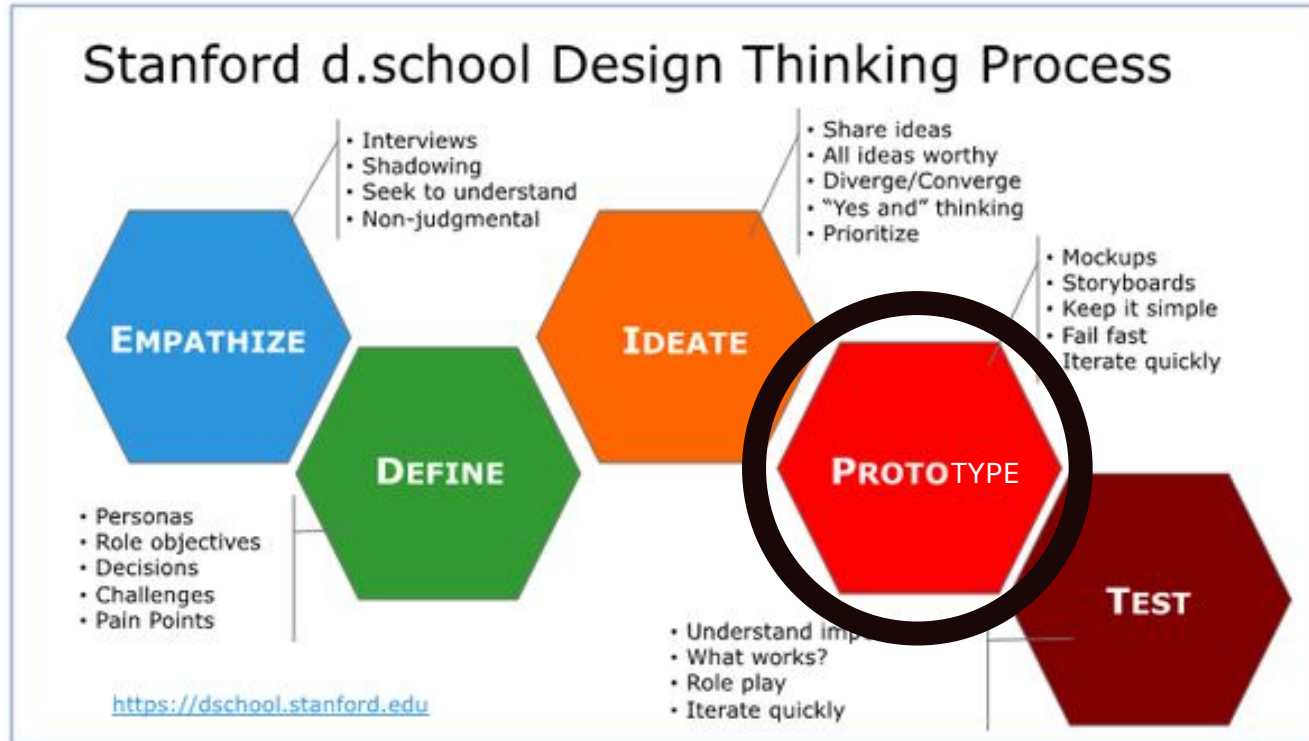
## How

- Gather feedback from users.
- Figure out what they like, dislike, or is missing.
- Ask ‘What can they do?’
- Ask ‘What can’t they do that they want to do?’





# In this workshop, we are focusing on the Prototype Stage





What are...

# MOCKUPS & PROTOTYPES?

# WHAT IS A...

**MOCKUP**: a visual way of representing a product. It shows the way a product will look and is **not** interactive (clickable).

**PROTOTYPE**: representation of the final product which is meant to simulate user interaction. It is **interactive** (clickable).

SOURCE

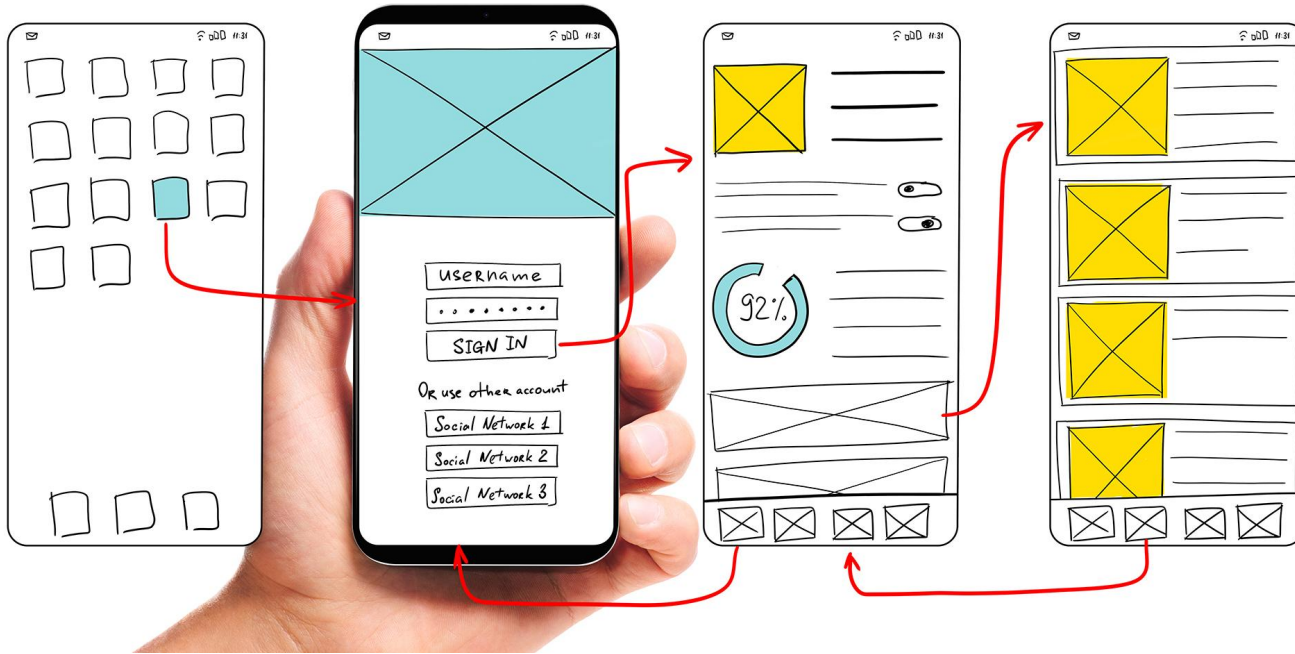
<https://uxplanet.org/wireframe-mockup-prototype-what-is-what-8cf2966e5a8b#targetText=Mockup.way%20of%20representing%20a%20product.&targetText=But%20still%2C%20a%20mockup%20is.schemes%2C%20visual%20style%2C%20typography.>

# WHAT IS DESIGN FIDELITY

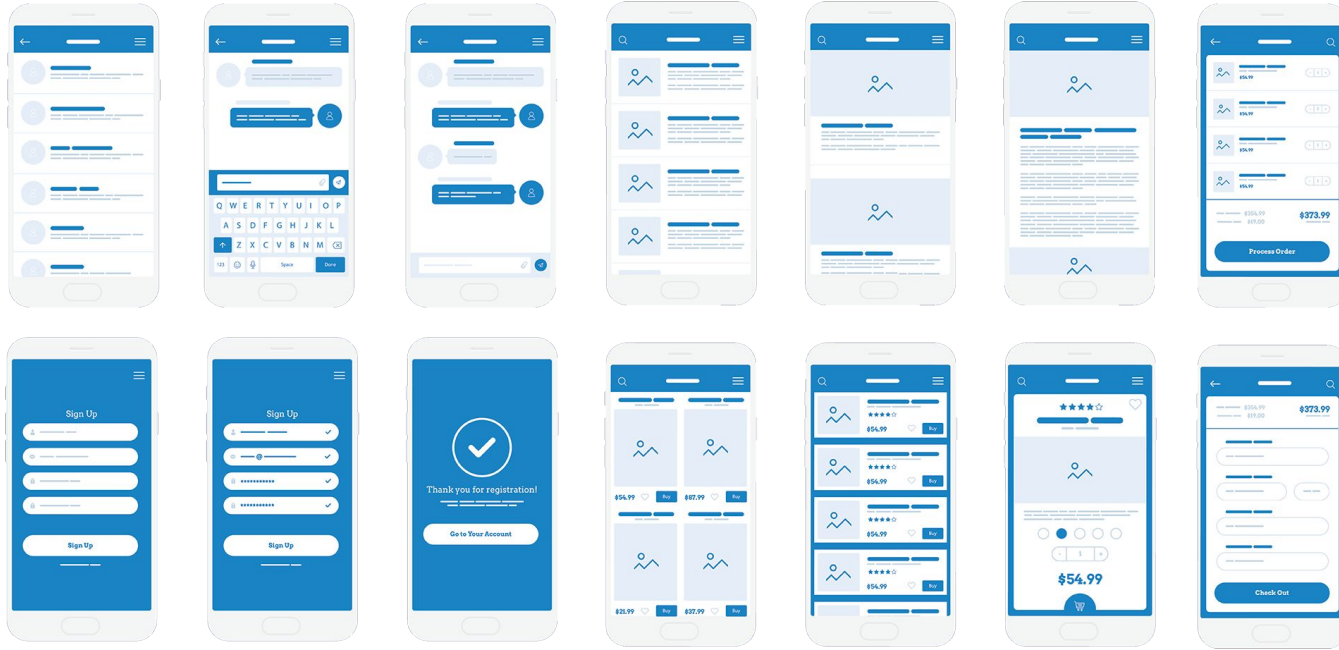
*...for mockups and prototypes*

*“The level of detail and functionality”*

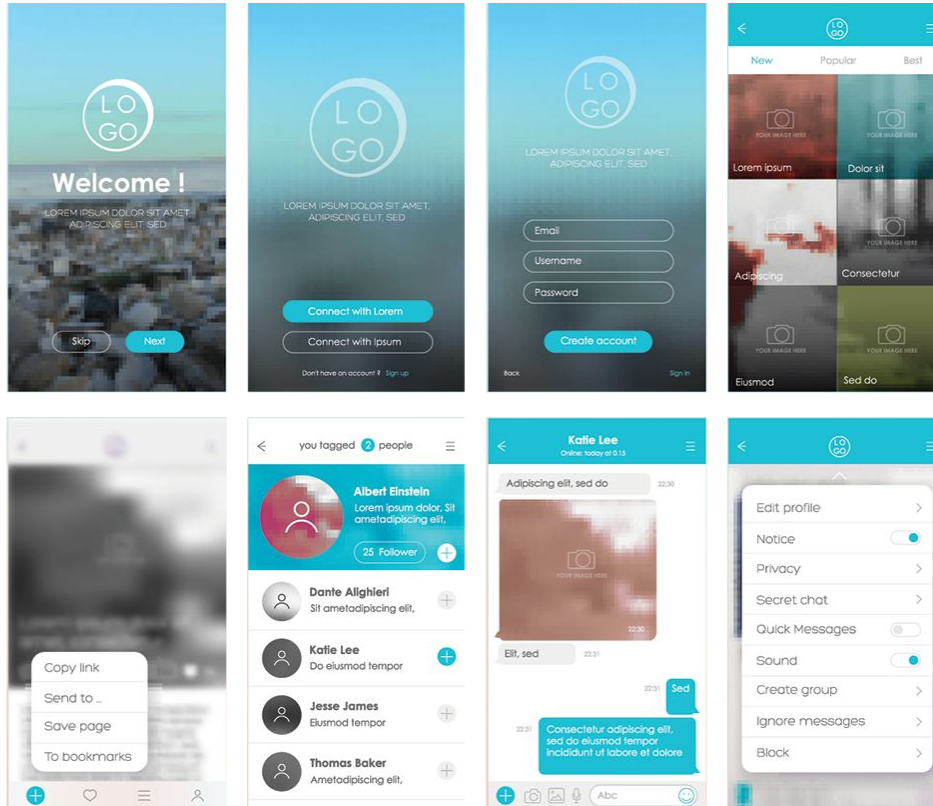
*Low-fi = sketches    Mid-fidelity = wireframes    High-fi = full design*



LOW FIDELITY (low-fi)



## MEDIUM FIDELTY (mid-fidelity)



HIGH FIDELITY (high-fi)



# INDIGO VIDEO

OPEN UP INDIGO STUDIO AND FOLLOW ALONG  
WITH THIS DEMO VIDEO

More tutorial videos can be found on the Workshop  
webpage <https://itishowcase.rutgers.edu/design-workshop-materials>





# DESIGN CHALLENGE

You work in an IT consulting company and have a new client

1. Review and choose one of the two challenge scenarios
2. Sketch out screen flows using paper and pencil (download Handout #3 template from the Workshop webpage, see link below)
3. Use your imagination!
4. And create at least 4 interactive screens and 3 administrative screens (login, dashboard, etc.) of your own design, based on one of following real world scenarios

\*This challenge may be eligible for extra credit -- check with your instructor or on Canvas for instructions on how to submit your Challenge project for consideration.

# SCENARIO #1

CLIENT:  
JACKOS TACOS & MORE,  
CAMPUS FOOD TRUCK

- ▶ What are the problems this business faces?





# CLIENT INFORMATION:

## Scenario #1



**NAME:** Jack

**AGE:** 23

**EDUCATION:** Rutgers, B.A.

**GOALS:** To use technology to compete with other food vendors and establish a financially successful food truck on the Rutgers Campus

**PROBLEMS:**

- ▶ Long ordering lines
- ▶ Wait times for getting order
- ▶ Advertising location (geolocation)



## SCENARIO #2

CLIENT:

REPURPOSE IT!

POP-UP FLEA MARKET

- ▶ What problems does this business face?





## CLIENT INFORMATION:

### Scenario #2



**NAME:** Jill

**AGE:** 23

**EDUCATION:** Rutgers, B.A.

**GOALS:** To use technology to be a unique pop-up flea market with RU students as both vendors and customers

**PROBLEMS:**

- ▶ Simple signup for new vendors
- ▶ Accepting payment for table rental
- ▶ Advertising goods being sold
- ▶ Advertising location (geolocation)

# OVERVIEW OF THE SCENARIOS

## JACKOS TACOS

1. Jack is the client, but think about his food truck customers. You are designing for them.
2. Think through his business problems
  - ▶ Long ordering lines
  - ▶ Wait times for getting order
  - ▶ Advertising location (geolocation)
3. Sketch a low-fi prototype on the paper handout.
4. Recreate the screens in Indigo Studio (at least 4 screens plus admin screens)
5. Add links and make the prototype interactive.

## REPURPOSE IT!

1. Jill is the client and will be the main user of this application .
2. Think through her business problems
  - ▶ Simple signup for new vendors
  - ▶ Accepting payment for table rental
  - ▶ Easy way to advertise the vendors
  - ▶ Advertising location (geolocation)
3. Sketch a low-fi prototype on the paper handout.
4. Recreate the screens in Indigo Studio (at least 4 screens plus admin screens)
5. Add links and make the prototype interactive.

# Show Us Your Prototypes! Drop In Office Hours

Join us Friday, March 27, 2020 for a live online meeting from 1:30 - 3:30 pm where you can share your prototypes and get feedback or ask questions about Indigo.

Go to <https://itishowcase.rutgers.edu/design-and-prototyping-workshop> for the link to Drop In Office Hours

Also, you are welcome to ask questions or want to talk about your Showcase or Capstone projects

# EXTRAS

1. Privacy by Design
2. Prototyping Software Comparison
3. Working with Your Showcase Team Remotely on Indigo



# PRIVACY BY DESIGN

## An urgent consideration

- Developed by Dr. Ann Cavoukian in the 90's it outlines seven principles for designers, systems engineers, and businesses to consider
- The new EU General Data Protection Regulation (GDPR) includes 'data protection by design' and 'data protection by default' in its parameters

## Seven Principles

- Proactive not reactive; preventative not remedial
- Privacy as the default setting
- Privacy embedded into design
- Full functionality – positive-sum, not zero-sum
- End-to-end security – full lifecycle protection
- Visibility and transparency – keep it open
- Respect for user privacy – keep it user-centric



Dr. Ann Cavoukian  
photo: Wikimedia Commons, by Laurelrusswurm

# Prototyping Software for UX and UI Design

| Software      | Function  | Pricing   |
|---------------|---|---|
| Adobe XD      | Wireframes, prototypes, screen mockups                    | Free starter plan   |
| Axure RP      | Wireframes, prototypes, screen mockups, other UX flows    | \$29/mos., free student subscription (1 year)                                     |
| Balsamiq      | Wireframes, simple prototypes                             | Cloud-based plans are \$9/mos. and up or single-user license for desktop app \$89 |
| Figma         | Prototyping, design                                       | Free starter plan   |
| Flinto        | Prototypes  | \$99/yr., 50% student discount  |
| Indigo Studio | Wireframes, prototypes, screen mockups, usability testing | Free student subscription and free Essential plan                                 |

*\*Check product website for most recent plan information. (3/2020)*

# Prototyping Software for UX and UI Design

| Software | Function  | Pricing                                   |
|----------|---|---|
| InVision | Wireframes, prototypes, screen mockups, add-on features | Plans range from free to \$15/mos. and up |
| Marvel   | Wireframes, mockups, prototypes                         | Free plan, \$12/mos. and up               |
| Proto.io | Wireframes, prototypes, screen mockups                  | \$24/mos., 50% student discount           |
| ProtoPie | Prototypes  | \$11/mos., 50% student discount           |
| Sketch   | Prototypes, design                                      | Free (3 projects), \$39/mos.              |
| UXPin    | Prototypes, developer handoff features                  | \$29/mos.                                 |

*\*Check product website for most recent plan information. (3/2020)*

# WORKING WITH YOUR SHOWCASE TEAM REMOTELY ON INDIGO

- To share project between team members, zip and email your file
- To share your prototype with team members or for usability testing, publish your prototype and share the link. Instructions can be found at <https://itishowcase.rutgers.edu/design-workshop-materials>

# CREDITS

- Presentation by Connie Pascal and Victoria K
- Presentation template by [SlidesCarnival](#)
- Template photographs by [Unsplash](#)

**THANK YOU FOR JOINING US---  
NOW GO FORTH AND CREATE!!**

**QUESTIONS?**

**Contact Connie Pascal at  
[cpascal@comminfo.rutgers.edu](mailto:cpascal@comminfo.rutgers.edu) or  
Victoria at [kuliko@comminfo.rutgers.edu](mailto:kuliko@comminfo.rutgers.edu)**