Creating Assistive Technologies

UNDERSTANDING THE PROBLEM

Intro   **Gayle Curtis**

Lecture   **Understanding – What, Why and How**

Exercise   **Discover by Interviewing**

Discussion   **Your ideas, your questions**

Gayle Curtis

Engineering Product Design – SU

Lecturer
HCI Design Studio – CS247
Visual Thinking – ME101/313

BioMedical Engineer – VA Palo Alto
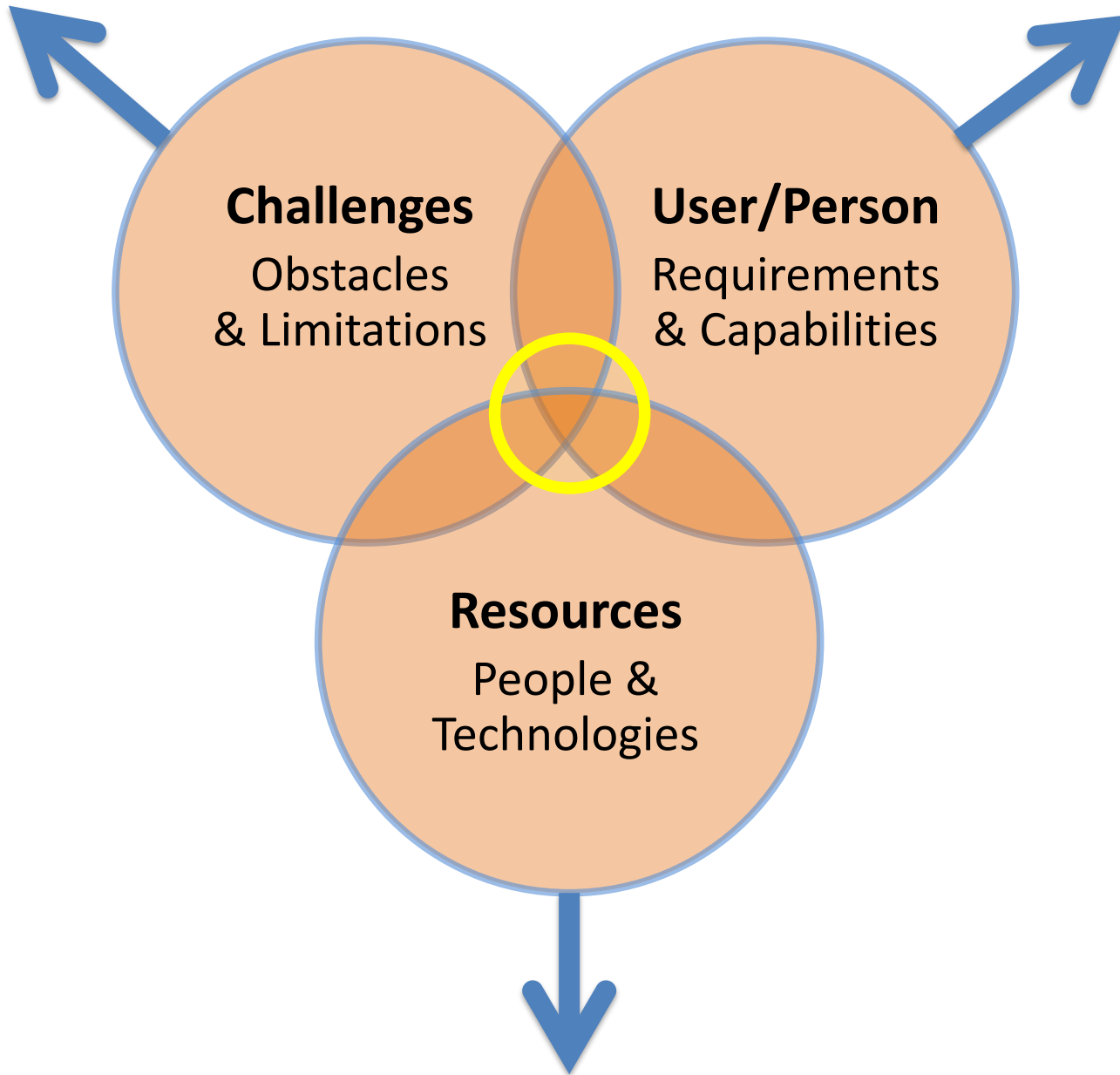
Information Architecture – vivid studios SF
User Experience Design – Yahoo!

How to think about design
How to think about projects
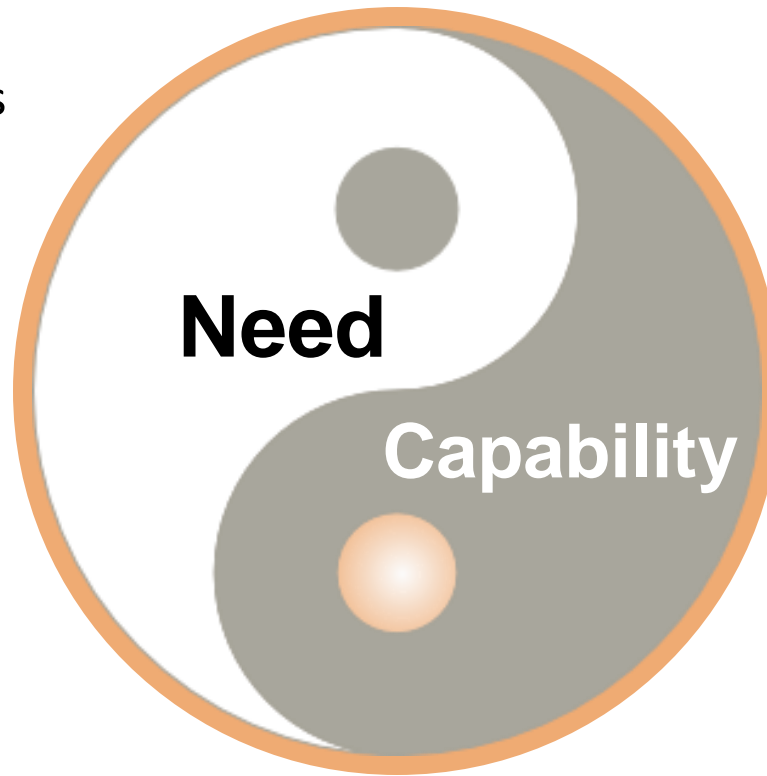**How to think about people in design of projects**

The problem space

Definitions

Need Finding
Working to identify a person's requirements, wishes, and aspirations related to a particular task or goal.

Capability
Resources, skills, tools, systems that enable a person to satisfy their needs and reach their goals.

Need

Capability

Context Discovery
To identify the circumstances, forces and limitations that affect how people satisfy their needs

Assistive Technology
Devices, systems or technologies that enable a person reach their goals

What are needs? Maslow's Hierarchy

Independence

Self-actualization
desire to become the most that one can be

Esteem
respect, self-esteem, status, recognition, strength, freedom

Love and belonging
friendship, intimacy, family, sense of connection

Safety needs
personal security, employment, resources, health, property

Physiological needs
air, water, food, shelter, sleep, clothing, reproduction

Three things to know about needs…

Things don't have needs; people do.	It helps to define the need in *experience* terms.	See what happens when the need is met.
Who are all the people in the problem space?	How does the person experience the need?	What changes when the person experiences satisfaction?
What are their needs related to the problem and the person?	What about the other people in the picture? How are they affected?	How are the other key people affected?

Warm Up Exercise – How did you get here today?

Think about what you did to get into this Zoom class today – From the time you woke up, or from your last class.

Make a list

The things you did to get here…

Make note

1. What things were important?
2. Why was it important to be done in that way?
3. Tools/enablers you used
4. Blocks you managed

Self-actualization

Esteem

Love & belonging

Safety needs

Physiological needs

Four things we want to learn about the problem

WHAT

Goals
What does the person want to do, have, or accomplish?

WHY

Values
What's important about what they want or the way they achieve it? What does it mean for them?

Four things we want to learn about the problem

WHAT

Goals
What does the person want to do, have, or accomplish?

HOW

Capabilities
What resources, skills or abilities does the person have or bring to the situation?

WHY

Values
What's important about what they want or the way they achieve it? What does it mean for them?

BLOCKS

Constraints
What kinds of obstacles, limitations, or deficits are at work in the situation?

How do we do it?

Interview – talk to people

Observation – watch people's activity, in context

Prototype – make something and see what they do with it

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Then what?

CRITICAL THINKING

Facts

Assumptions

Inferences

DESIGN THINKING

Ideate

Sketch

Prototype

Iterate

Observing

TIPS

Observe *actual* activity

Approximate the design target

Immerse yourself in context

Shadow, record, review

Collect a rich description of activity

Look for

Resources used to accomplish

Hindrances that get in the way

Interviewing

TIPS

Avoid leading questions

Ask them to show as well as tell

+ We get information directly from the person – the user

We get their perspective, how they feel about it

- Time and skill intensive

Must be careful when generalizing

What people say is often different than what they do

Exercise – How they got here today

Work in groups of 2-4

One person volunteers to be 'interviewee'

Ask about how *they* got here today

Activity | Materials | Gear

See what you can learn about their:

Goals – why they wanted to be here – their purpose in coming

Values – what was important about the way they got here

Capabilities – what resources were available or used

Constraints – what blocks stood in the way

2020 – Team Project Titles: (year originally suggested)

Projects with Abby: - **Background   Camping Cot Project** (2020) **Laptray Project** (2020) **Alert Project** (2020) **TravelScoot Camping Project** (2020) **WHILL Model Ci Enhanced Visibility Project** (2020)
Projects with June: - **Background   Clean House Project** (2018) **Within Reach Project** (2019)
Project with Paul: Access to Photography (2020)
Projects with Olenka at the Magical Bridge Playground (2 projects) **Accessible and Inclusive Playground Attractions** (2020)
Project with Danny & Stanford: -
Background   Wheelchair Position & Transfer Project (2020) **Wheelchair Restraint Project** (2020)

Projects with Amy: Wheelchair Dancing (2019) **Creative Expression using an Instrumented Wheelchair** (2019)
Projects with Nick: - **Background   Arm Rest Project** (2020) **Improved Wheelchair Caster Project** (2020)
Project with Nathan & Zia: Wheelchair Accessories Project (2020)
Project with Ben: Laptray for Ben (2020)
Project with Jerry: Smartphone and Tablet Holder for Easy Viewing and Stability (2020)

Projects suggested by Dave: Creative Expression (2014) **Designing Your Afterlife** (2014)
Student-defined Team Projects