Madeira Interactive Technologies Institute

Magic Happens Here:

Myths, Models, and Methods in Design

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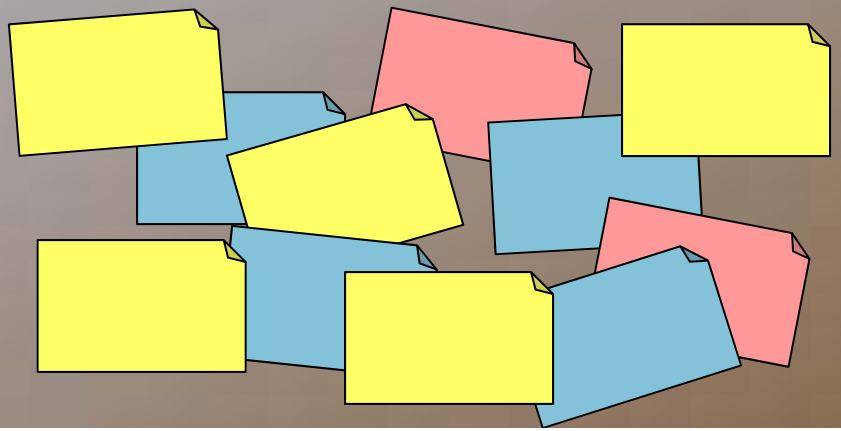
What Design Teams Really Do

Step 1

- Find users (or potential users)
- Talk with them

- Maybe take notes
- Lots of them

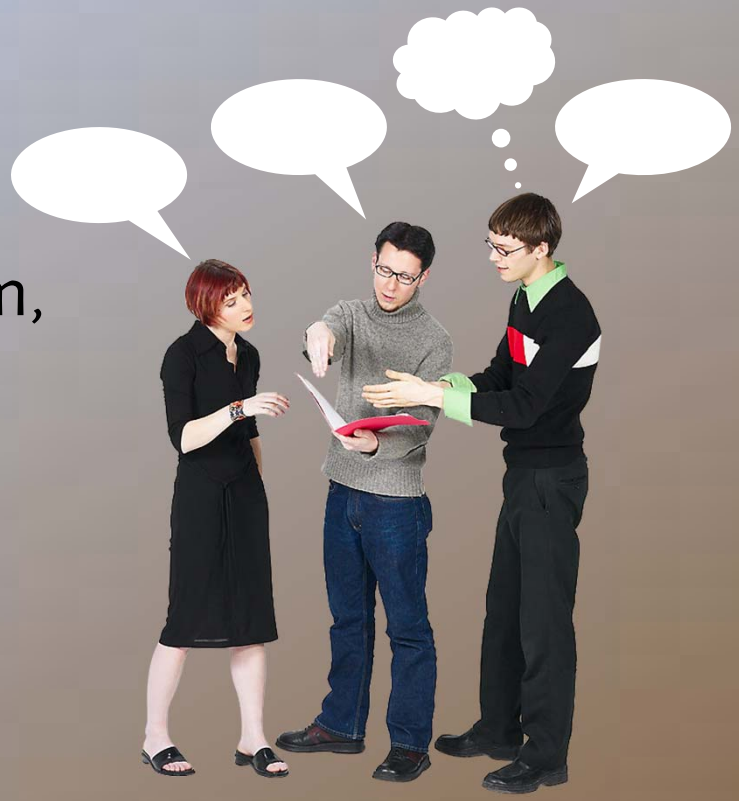


What Design Teams Really Do

Step 2

- Stand around (or sit)
- Talk about stuff
- Think about stuff

- Maybe brainstorm, take notes, and draw stuff



What Design Teams Really Do

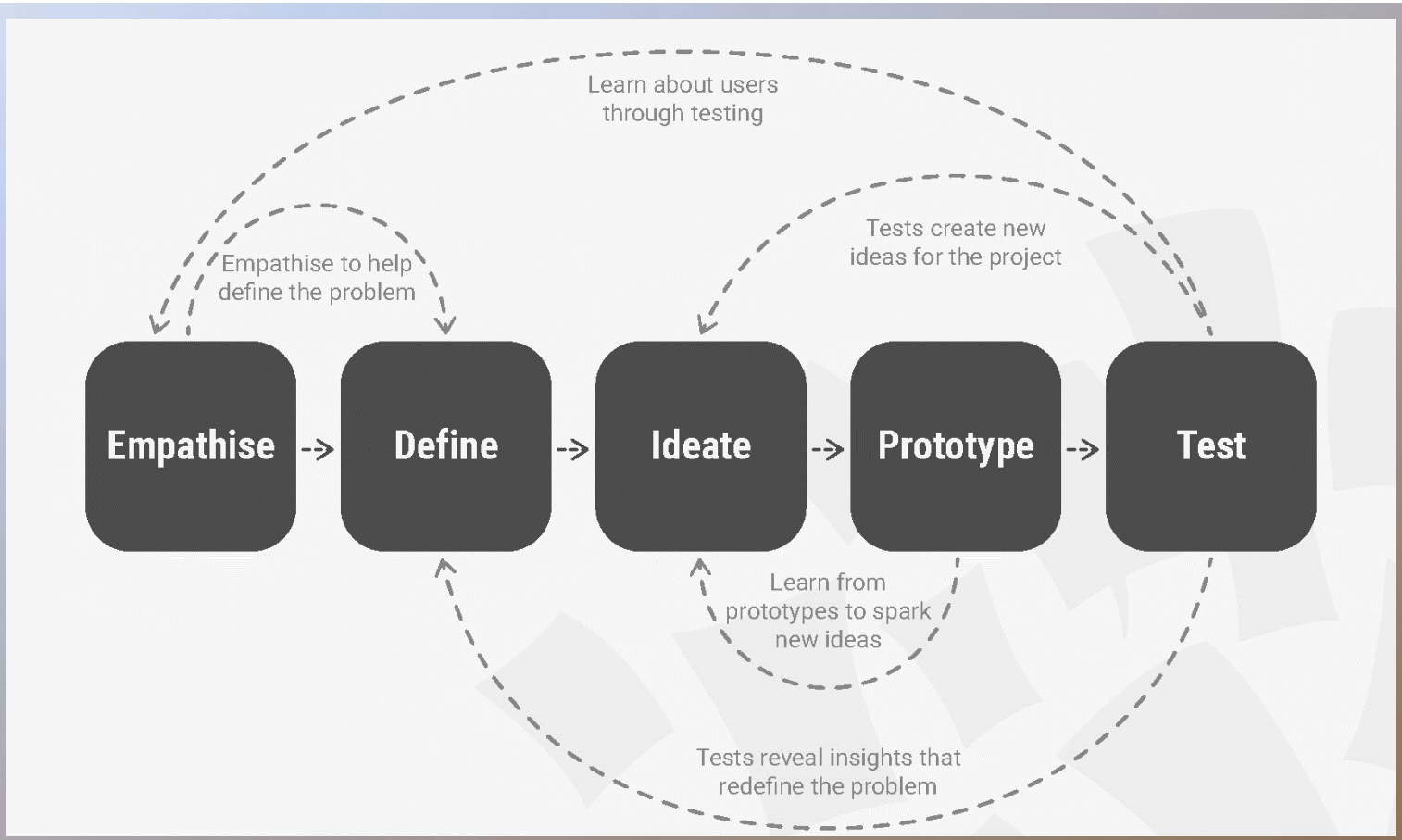
Step 3

- Build stuff
- Play around with it
- Fix it
- Repeat until happy (or boss unhappy)

Step 4

- Show it to users
- Ask them what they want different
- Go back to Step 3 (unless delivery deadline near)

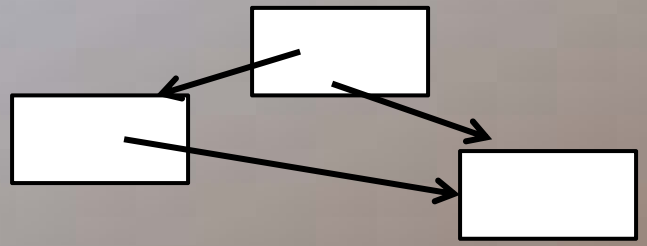
No, Really?

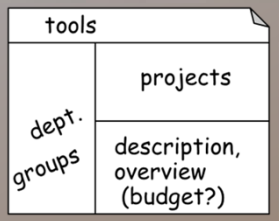


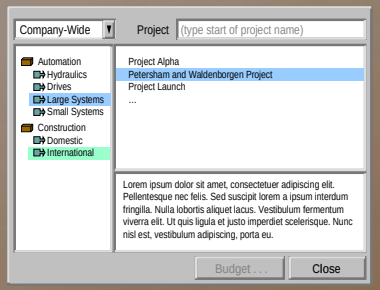
Credit: Teo Yu Siang and Interaction Design Foundation

Why?

- Why is the user experience of so many systems so bad?
- Why does it take rock-star designers to do it really well?
- UxD/IxD done right is **complicated**:
  - Understand problem
  - Understand users
  - Design solution architecture
    - Partitioning interaction spaces
    - Navigation among spaces
  - Design solution details
    - Organization/layout of spaces
    - Details of appearance, behavior,…
  - **ALL interdependent in complex ways**

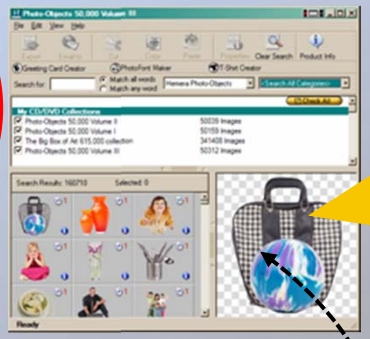


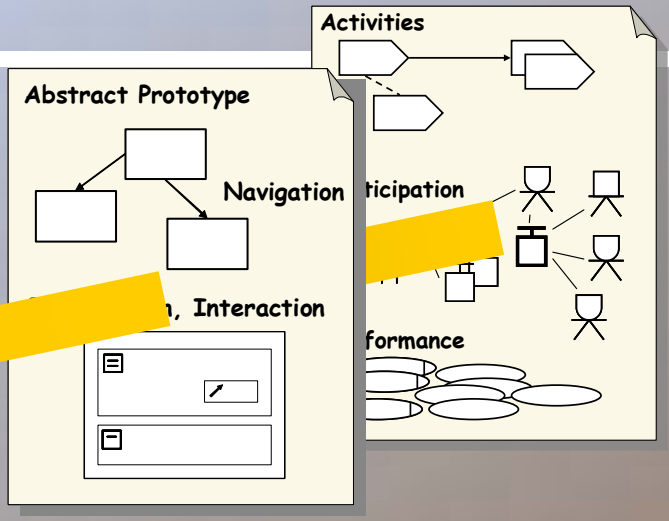




What Drives Design

PRACTITITONER-DRIVEN DESIGN





MODEL-DRIVEN DESIGN

PROCESS-DRIVEN DESIGN

RULES & GUIDLINES
Norman; Schneiderman;
Nielsen-Molich;
Constantine-Lockwood

PRINCIPLE-DRIVEN DESIGN

Modeling in Software Development

"It's about the code!"**

Prescriptive

"Research"
Look around, talk with people, think, "workshop".*

"Model"
Review info, draw stuff, keep going, ask opinions.

"Build"
Code software from model, except when model wrong.

"Deploy"
Deliver, keep debugging, modify to work right.

- Objective is to construct systems that improve performance, reduce costs, or sell more copies.
- If possible, automate code generation from model: "executable models".

No more magic, but BAD design.

** Bill Gates

* Sometimes "Contextual Inquiry" or "Model-Driven Inquiry"

Donald Norman, IDSA

"Focus upon humans detracts from support for the activities themselves."*

"Check out Activity Theory!"

Constantine, "Beyond user-centered design and user experience." 2004

* Norman, "Human-centered design considered harmful." (jnd.org) 2005

Activity Theory, Condensed

- Rubinshtein, Leontiev, and Vygotsky; Engeström, Nardi
  - More conceptual framework than theory.
    - Three levels of analysis
      - **activities**: complex, motivated and broadly shaped by overall **purpose** but essentially unpredictable
      - **actions**: directed toward specific conscious **goal** in service of purpose
      - **operations**: means of executing actions, either deliberately or reflexively, adapted to **conditions**

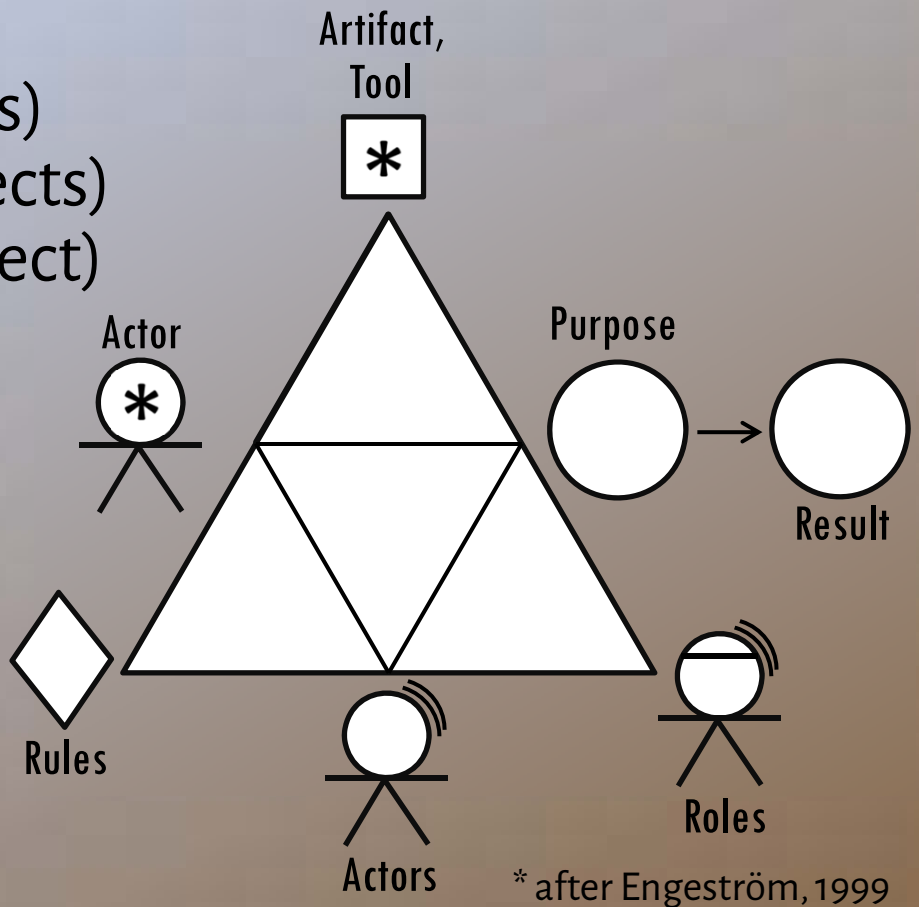
Framework can be used to understand ALL human activity.

Human Activity

All human activity is

- mediated by **tools** (artifacts)
- performed by **actors** (subjects)
- motivated by **purpose** (object)

- shaped by **rules** and differentiated **roles**
- within a **community** of practice
- All can be modeled in Human Activity Modeling through simple notation

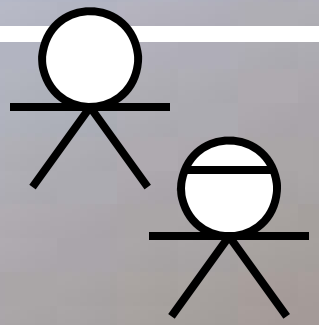


* after Engeström, 1999

Human Activity

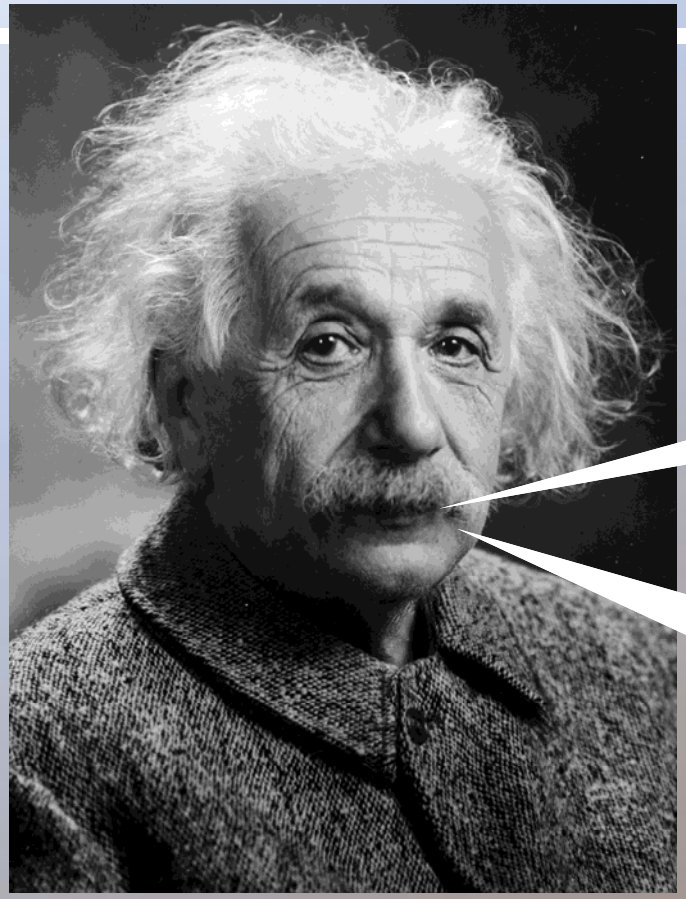
- All human use of and interaction with designed artifacts of all kinds (tools, objects, services,…) takes place within the context of larger activities.
- Designing for use requires understanding the activity context!
  - Activity modeling is a fast, simple way of understanding the activity context for design.

Human Activity Modeling Applied



- interaction design, product design
- service design, service engineering
- multi-modal, multi-channel, multi-device
- project management
- organizational change
- education and pedagogy

- practitioners: Helmut Windl, Larry Constantine, Raymond Fisk, Lia Patrício, Leonel Nóbrega, Ko-Hsun Huang, Jorge Teixeira, Eduardo Fermé, Elsa Fernandes ...



A theory should be as simple as possible, but no simpler.

Also, a modeling notation. Der.

Photo credit: Oren Jack Turner, Library of Congress

Human Activity Modeling:

Three Views

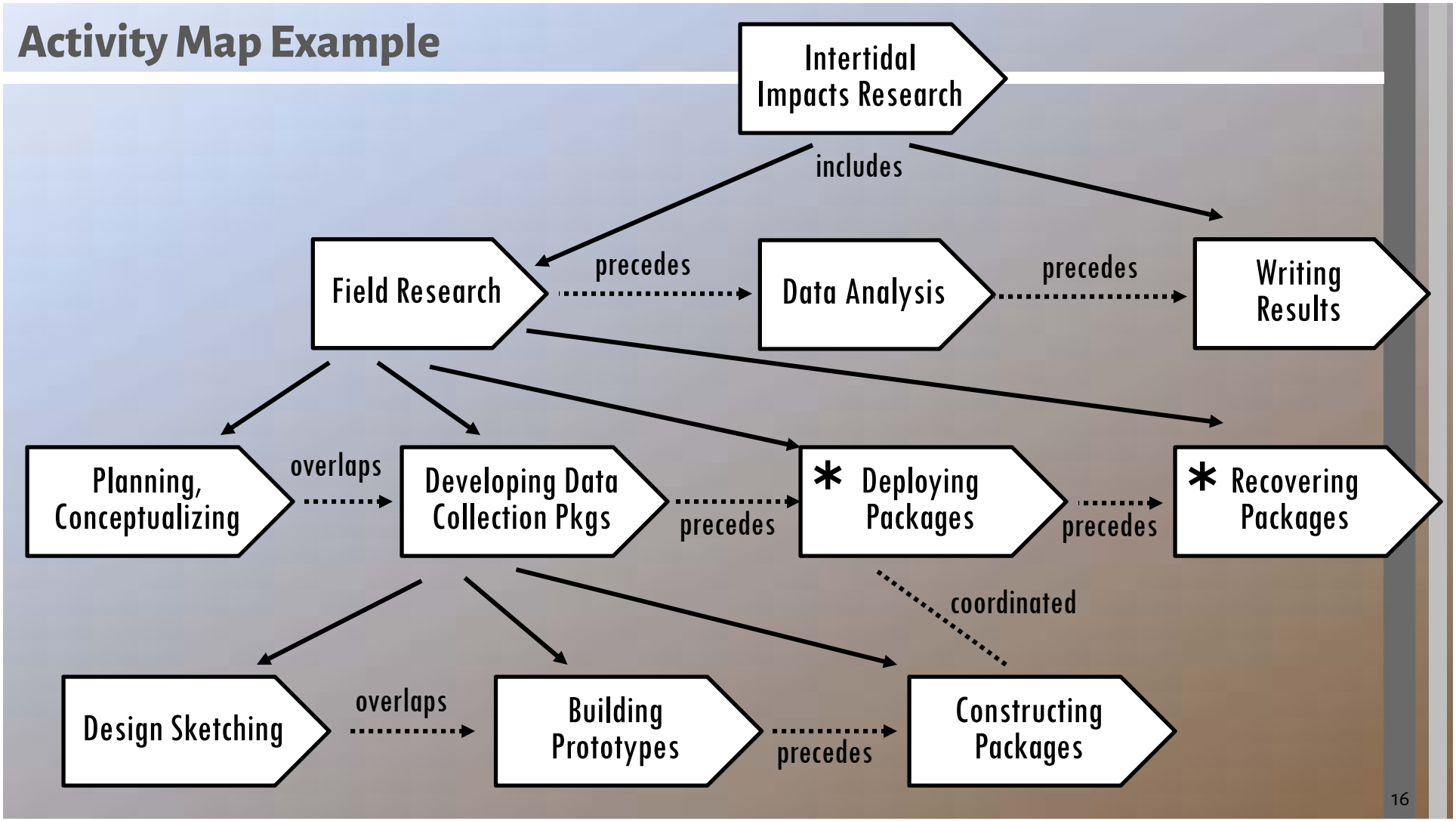
- What is going on and why? **Context Model**
- Who and what is involved and how? **Participation Model**
- How is it done? (And what is needed to help get it done.) **Performance Model**

Human Activity Modeling:

Three Representations

- **Maps**
  - diagrams/graphics representing interrelationships among elements
- **Inventories**
  - simple lists of members/objects
- **Profiles**
  - structured descriptions, simplified collections of salient attributes

Activity Map Example



Activity Profile

- **P**urpose – motives, objectives
- **P**lace and Time – where, when, conditions, context, duration, schedule
- **P**articipation – actors and roles, tools and artifacts, system actors, sources and resources
- **P**erformance Patterns – formal and informal rules, guidance, characteristic styles

plus

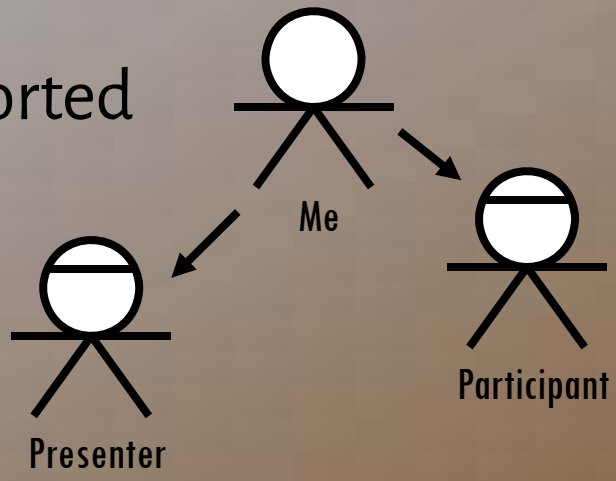
- **P**roduct Implications – provisional ideas and concepts

Actors and Roles, People and Personas

Must understand users and customers, but

- NOT people
- NOT personality, life story
- NOT "personas" (archetypal abstractions)

- **Actors** within activities to be supported
- **Roles** played within activities and in relation to artifacts/tools



Roles or Personas

a relationship between actors and activities or artifacts

ROLE

Field Research Assistant

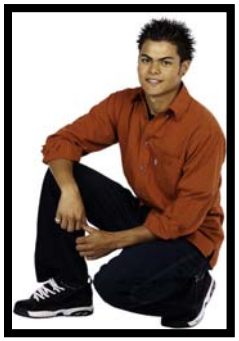
Orientation: *enthusiastic, grade-marked participant, learning*

Responsibilities: *assist researcher, take notes, carry equipment, spotting*

Background: *some knowledge of field methods, environmental science or biology, tech savvy, physically fit*

PERSONA

a concocted archetypal person



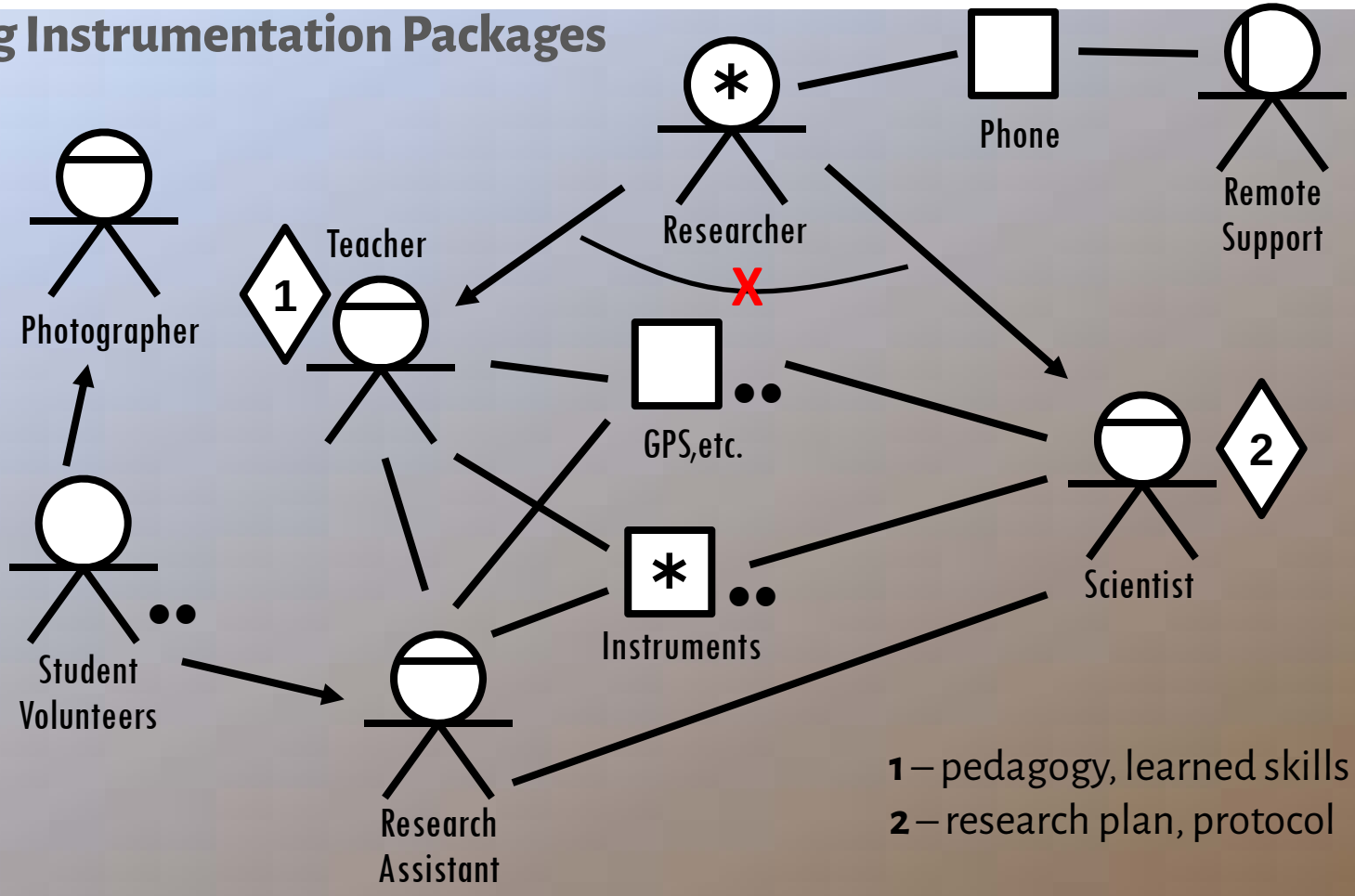
Stu Marker is a tall, lanky senior in the School for the Environment at UMass Boston. He grew up in Falmouth in a middle-class family with three sisters and two family dogs. He is a highly motivated student and is enthusiastic about his hopes to become the first in his family to graduate from college. He is never without his iPhone, which is loaded with diverse apps and in frequent use to converse with his girlfriend in New Hampshire. He skis in the winter and sail-boards in summers. He wants to become a teacher after getting his Master's in Education.

Wordy, filled with irrelevant detail

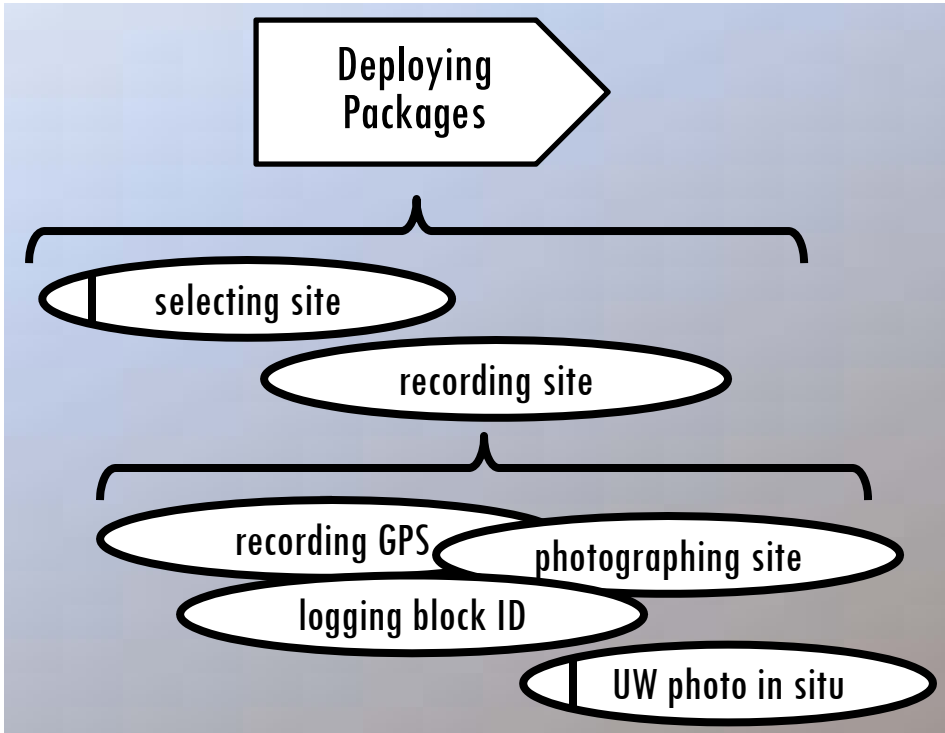
Concise, focused on design relevance

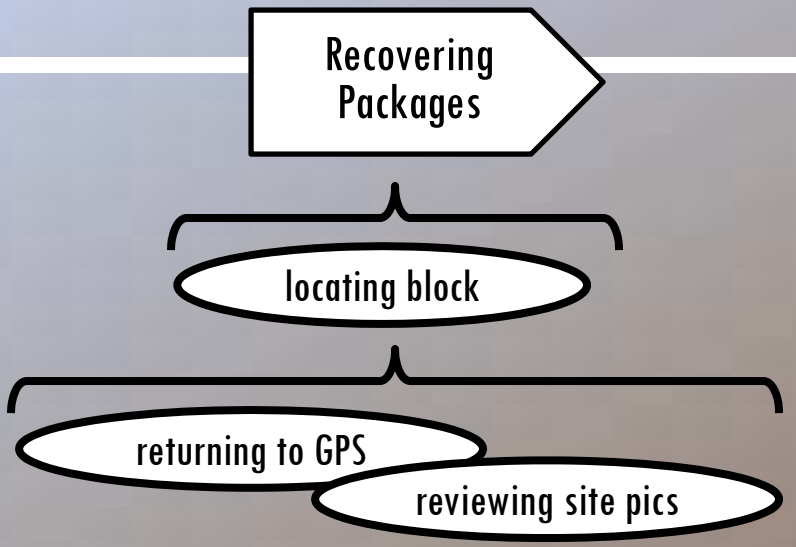
Participation Map:

Deploying Instrumentation Packages



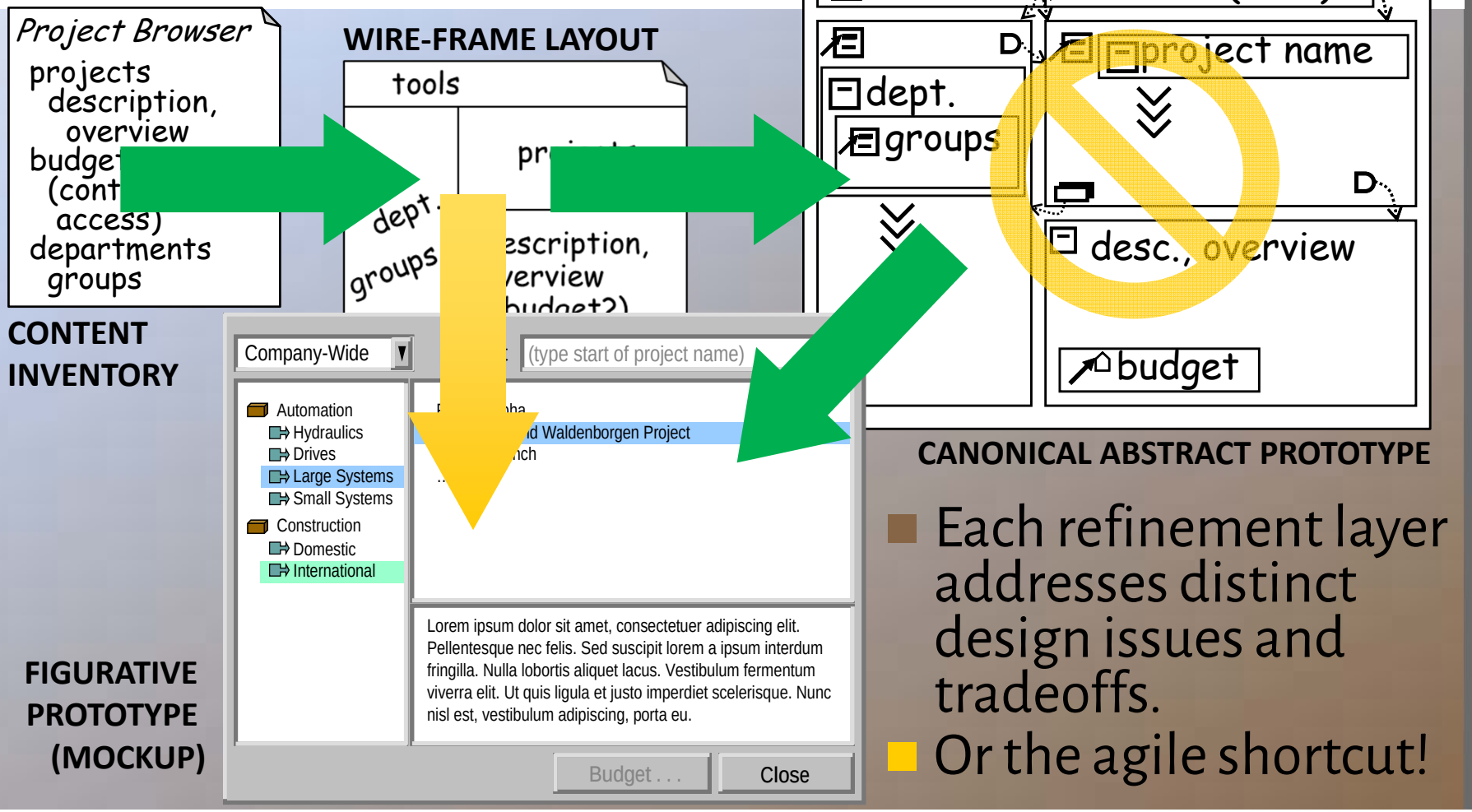
Performance Maps





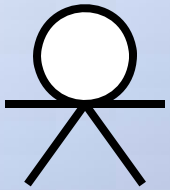
- A complex system might need to support hundreds of interrelated task cases.

Separation of Concerns

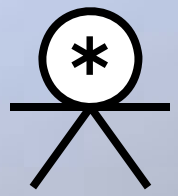


- Each refinement layer addresses distinct design issues and tradeoffs.
- Or the agile shortcut!

Human Activity Modeling 3.1

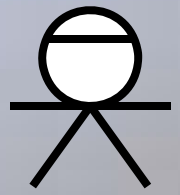


actor, any participant

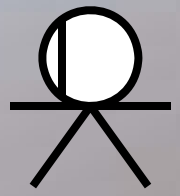


focal actor

optional participant



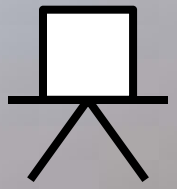
actor in role



player, peripheral participant, mediated (indirect) user

artifact, any tool

focal artifact



system actor, non-human active participant

system actor in role

Non-physical Artifact

Non-human actor

Human Activity Modeling 3.1

target: goal, purpose, objective

alternate symbol

any activity

focal activity

rules, guidelines, conventions, protocols, procedures

alternate symbol

task, task case

relationship, connection

focal task, task case

conflict

action, non-system interaction

temporal relationship

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