Session 15: User and Task Analysis
UA: Users

UA is typically targeted to a particular segment of users which fall somewhere on a range from...

Novice  ⇐  Expert

...and...

End user  ⇐  Administrative User  ⇐  Developer
The genre you create depends on the “slice” you focus on:

Novice → End user

Administrative User

Expert → Developer

What genres?
Consider 3 levels of action:

1. *Activities* that are motivated
2. *Action* that are goal oriented
3. *Operations* that have conditions

Note that most complex activities are comprised of all three...so...
Tell us about your project

What...

1. *Activities* go on there?
2. *Actions make up those activities*?
3. *Operations* characterize the specific conditions?

What do you aim to transform and why?
Observing Activity: The Steps

1. Identify Activity
2. Select Instances
3. Initiate Contact
4. Plan Observation
5. Observe
6. Document Mediation
7. Follow Up Interview
Begin with your Project: An Activity and a Problem

A general sense of what your activity is...

Filing run reports to support emergency 911 calls

A general problem users are having:

How can EMTs more easily, accurately record patient information on emergency runs
Identify An Opportunity & Target User Group

A general sense of the technological solution:

A way to extend current PDA technology to the emergency care market.

Describe user group in some detail…who? In what kind of situations?

EMT’s on emergency runs…
Think about Actions & Activity

What would participants be doing when they use this HCI?
Going on a call, taking patient history, administering care, documenting services

Why would participants be taking these actions?
How does patient info, documentation, etc. help them to provide care & transport for patients?
Target the Activity to Observe

Participants + Actions + Activity

*We will observe (participants) doing (actions) for the purpose of (activity).*

*We will observe EMTs going on a call to provide care and transport for emergency victims*
Choosing Mediations to Watch

At any given time in culture, expect to find:
- high-tech instances: activity mediated by state of the art technologies
- low-tech instances: activity mediated with legacy tech

Low-tech instances represent
the opportunity
the market & its problems

High-tech instances represent
current directions
the competition & its mistakes
This week:

Identify participants, actions and activity that you will target with your HCI design.

You’ll be creating storyboards of your activities...think of what you need to do to gather the info.
Locate & Group Participants

Who?
- is my real user?
- Is available, willing, interested?

Group by
- experience
- gender
- affiliation
- interest
- or any other relevant attribute
Selecting Participants

<table>
<thead>
<tr>
<th></th>
<th>Typical</th>
<th>Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced</td>
<td>X, Y, Z</td>
<td></td>
</tr>
<tr>
<td>Beginner</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Choose your own user attributes

multiple observations of the same kind of participant  

or  

single observations of several kinds of participants
Introduce Your Purpose

- I am ___
- Working on a project
- Want to understand how ___
- You look like a good person to talk to because _____
- Would you be willing to help?
Identify What You Want

- Watch you ___
- Collect some samples of ___
- Interview you ___
Inquire about Frequency, Duration and Scheduling

How long does a typical run take?
How often do you go on one?
When do they usually occur?
Your Purpose: When can I observe?
Inquire about Partners & Others

- Are there others along with you on runs? Who are they?
- Your Purpose: Are there others that I must arrange with?
What to watch: a working session

- 2 hours or less
- typical for the participant
- results in an identifiable product or outcome by which success can be measured
- occurs frequently

Be sure to get permission ahead of time!

Try out recording practices first too, rehearse if you can
Recording Practices

- tape recording
- video recording
- note taking
- screen capture (download.com)
- timing technology

Note taking is the primary goal here, all of the other tools should help you take accurate notes...
When you start...

- Define purpose
- Review available artifacts and tools
- Get permission to record on site
- Start recording

Here’s where having a pre-designed note format and a rehearsed procedure will help!
Take Time-Stamped Notes

On actions:
12:31: opened file “My schedule”

On comments representing goals, concerns
12:32: “Just trying to remember where I was”

On changes in mediation
12:37: Reaches for piece of paper, Memo dated 12/12/97
Time-Stamped Notes, 2

On comments of emotion:
12:39: “wow, there are, like, a ton of buttons here!”

On artifacts produced
12:50: created new to-do list, called do1/22/20001.doc

On task success & failure
12:52: overwrote to-do list file
Collect & Duplicate Artifacts

- Get copies of initial and revised files
- screen dumps
- xeroxes of all papers consulted
- xeroxes of all paper written on

Try to match up artifacts & tools – take note of tools used and any interactions that seemed important
The follow up interview, 1

Used to:

- confirm routine activity, mediation, and outcome
- Explore alternate conditions & scenarios

I saw you doing X, is that typical?

What happens when the phone rings in the middle of X?
The follow up interview, 2

Used to:
- Get personal history
- Get institutional history

How long have you been doing X this way?

Is this way of doing X a standard way?
The follow up interview, 3

Used to:
- Identify dissatisfaction & problems
- Explore plans for future changes

What would you like to do differently?
Are there any plans to change X?
Products of Your Observation

1. Time-stamped notes
2. Documentation of tools and artifacts
3. Personal and Institutional History

A basis from which to do further User-Needs Analysis, and to begin your design work...
Analyzing Observation Data

1. Identify actions
2. Note Duration
3. Construct Activity Graph
4. Assess Typicality
5. Identify opportunities to develop task support
Identify Actions

- Segment notes at changes in participants, acts, or tools
- Name and define the action to answer the question “What?”
- Use a single set of categories

An action is:
1. a set of acts
2. by a distinct set of participants
3. using a distinct set of artifacts and tools.
16:07 Joe closes door; leaves station
16:10 Joe writes on run report:
   dispatch information
16:11 Carla prepares equipment for possible cardiac
16:13 arrive at 2 family house
woman crying about husband inside
man found lying in bed
Carla takes first vitals; look okay
man moved to stretcher
Carla asks wife some questions; doesn't write
Riding

Definition: going to the scene prior to arriving at the scene; minimal writing to record dispatch information

Segmentation
16:07 Joe closes door; leave station

16:13 arrive at 2 family house
Recipient: Routine Care

Definition: providing treatment to patient and filling out some parts of run report

Segmentation

16:13 arrive at 2 family house

....

16:44 Joe calls in; gives patient information
Tricky things about actions...

- Watch for actions embedded in other actions
- Pay attention to the way tools are associated with actions
- Keeping a running log of events is important, you’ll need it to do your duration analysis later
## Charting Duration: Your Log

<table>
<thead>
<tr>
<th>CLOCK</th>
<th>ACTION</th>
<th>MINUTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:07</td>
<td>RIDING</td>
<td>6</td>
</tr>
<tr>
<td>16:13</td>
<td>ROUTINE CARE</td>
<td>31</td>
</tr>
<tr>
<td>16:44</td>
<td>RADIO REPORT</td>
<td>2</td>
</tr>
<tr>
<td>16:46</td>
<td>ROUTINE CARE</td>
<td>7</td>
</tr>
<tr>
<td>16:53</td>
<td>F-TO-F REPORT</td>
<td>5</td>
</tr>
</tbody>
</table>
### Calculate Percentage of Total

<table>
<thead>
<tr>
<th>ACTION</th>
<th>?/83 min</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIDING</td>
<td>6 / 83</td>
<td>7%</td>
</tr>
<tr>
<td>ROUTINE CARE</td>
<td>31 / 83</td>
<td>37%</td>
</tr>
<tr>
<td>RADIO REPORT</td>
<td>2 / 83</td>
<td>2%</td>
</tr>
<tr>
<td>ROUTINE CARE</td>
<td>7 / 83</td>
<td>8%</td>
</tr>
<tr>
<td>F-TO-F REPORT</td>
<td>5 / 83</td>
<td>6%</td>
</tr>
</tbody>
</table>
Activity Graph

- Riding
- Routine Care
- Radio Report
- Oral Report
- Writing the Report

Percentages from 0% to 110%
Reading an Activity Graph

- X axis = % of working time
- y axis = activity
- length of the horizontal = relative duration of action
- height of line = type of action

The activity graph gives us a tool to see patterns, and a chance to ask about typicality.
Why Use Graphs?

We graph multiple instances to understand:

- Standard set of actions
- Standard order of actions
- Standard duration
- Standard onset
Use graphs to discover how activity is developing:

- Direction & reasons for individual change
- Direction & reasons for variations across institution
- Dissatisfactions, conflicts, plans
Use Graphs to Guide Design

- Design for what actions?
- Design with what mediation?
- Design with what transitions?
- Design for what contingencies?