

# Structured Handoffs in Expert Crowdsourcing

## Improve Communication and Work Output

Expert crowdsourcing allows individuals to assemble specialized, remote teams with expertise to complete projects, often large, that involve multiple stages. Often, its execution is complicated due to communication difficulties between remote workers. *How can we increase both work quality and the experience overall for both authors/project managers and workers in an expert crowdsourcing platform?*

### Live Handoff

The best compliance of developer's work to designer's intent was seen with the live handoff (see left examples). Both designers for the "live" handoff scenario indicated simple and minimal interfaces, which were reflected in the final layouts of the HTML files. Author handoffs and instructions explicitly state "minimalist" desires, by referencing the NYTimes and other layouts that are white and boxy. And this intention pervaded from design to the final output of the developer.

The indexed complexity\* of live handoffs was 4.5/5, 5 being very complex.

"Live" handoffs were effective in helping the developers ramp up to the design intent in an average of 1.5 minutes. From live chat logs, we know both trials averaged a 10 minute interaction process. The 1.5 minute (in reality 1.75 minutes) in ramp-up time in the live scenarios indicate time that developers spent independently assessing previous work.

### Record Handoff

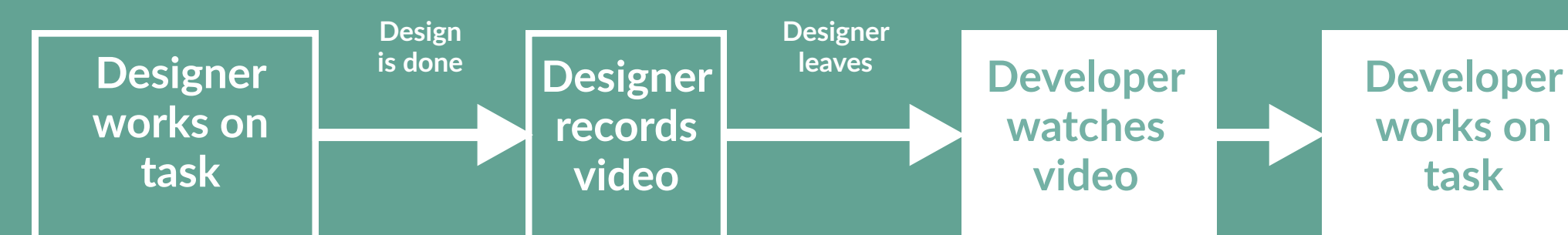
In the "recorded" scenario, one particular designer deviated from author's intent and wanted the interface to be "dark" and "modern". But this design change was clearly conveyed to the developer, who proceeded to implement a dark and modern UI (see lower). In this instance, the strong adherence to the authors creative direction still remains.

Index complexity\* of recorded handoff was 3.5 / 5, rating an average level of complexity as determined by our evaluation system.

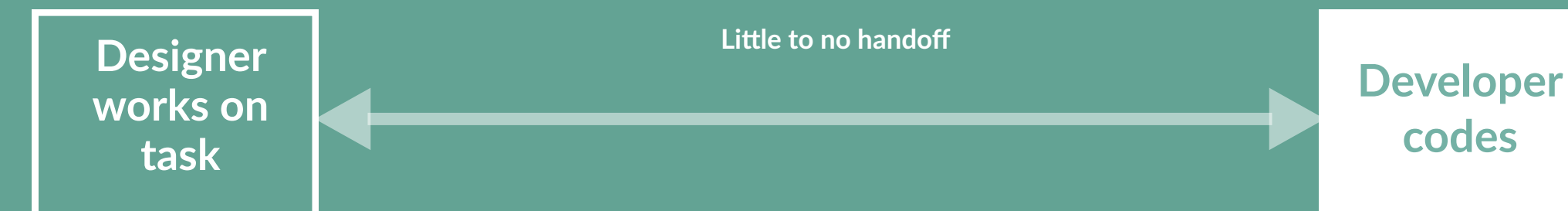
### Live Handoff



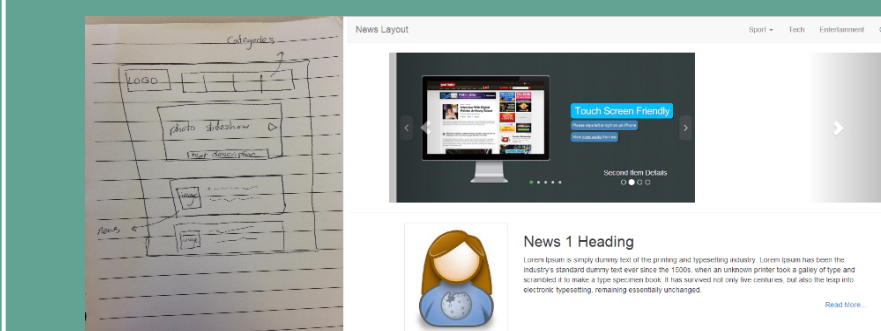
### Record Handoff



### No Handoff



### No Handoff (Control)



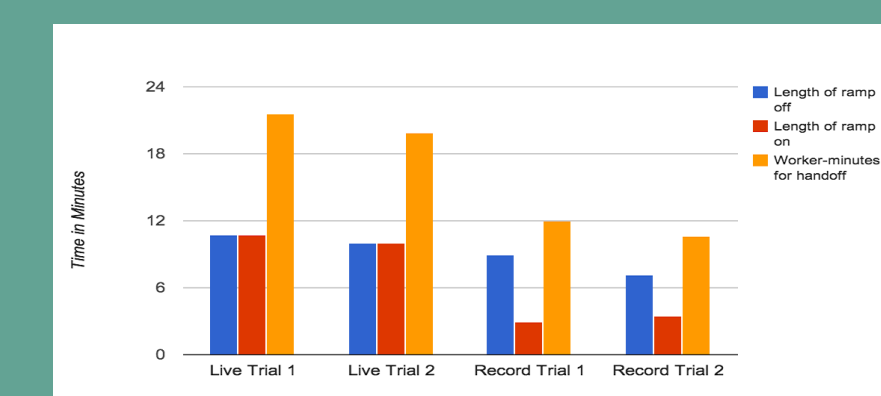
The exact lines of designers' wireframes were followed to the T. There is almost a stronger compliance with the exact ratio and dimensions of the wireframe. But in both examples (left), the developers completely changed the creative direction. Control trial 1's developer implemented a layout that is closer to blog formatting (as evidenced by a quick "blog templates" query), than that of a newsfeed. Control trial 2's developer implemented a non-modern interface, in contrast to the designer's intent for a modern look and feel.

Index of complexity\* in the control handoff was 2 / 5.

Overall, the control group spent an average of 7.5 minutes reading instructions and deciphering wireframes.



### Example of one finding...



Lengths of actual time used in handing off

Workers were asked to complete a survey and evaluate, among other questions, "from the time you started working, to finishing the project... how much time was spent reading and understanding the previous person's work?" Their estimate was then cross referenced with the actual time spent ramping up in the various processes, as recorded by ScreenHero.

The findings indicate that for creative tasks such as design it is more important to have good handoffs conveying quality information, whereas this is less important for non-creative tasks. This is further validated by worker comments in unstructured response questions in the survey: a designer in the handoff condition found that "The instructions were very long," whereas a designer in the non handoff requested that we "make [the] author guideline more sophisticated."

*Live and recorded handoff methods 1) improve satisfaction for workers with creative tasks, 2) improve communication of non-obvious instructions, and 3) increase adherence to the original intent of the project.*



## Motivation

As the availability of technical work move further away, there is a salient need to engage a crowd effort towards collaborative complex projects. Expert crowdsourcing allows collaboration by several workers, each in an expert competency, in a structured manner.

This introduces complications in coordination and conflict, which is similar to coordination neglect in traditional organizations.

Information needs to be conveyed and communicated from one worker to another in a structured format. So that the new worker can sufficiently digest the previous work.



## Approach

We prototyped various methods using a bread-first search that involved: summary recordings (written vs spoken), automated summaries generated by system, pairing sessions where workers faded in/out, test driven design/development, etc. This involved a preliminary round of 22 participants.

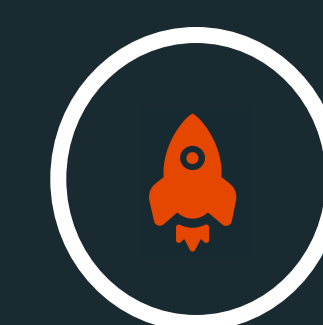
We explore the value of various handoff methods, as applied to projects that require technical and creative expertise. We assess if certain methods can be used to improve overall output quality and reduce the weight of integration and error fixing costs that negate the crowdsourcing experience.



## Study Design

The final study involved design and coding. We designed our task to: 1) Have precedence and relevance to the crowdsourcing community. 2.)Have open ended solutions allowing creative licensing 3) Complicated, requiring technical capability and presenting challenges. 4. Short enough for the allotted time. 6. Require communication of different areas of expertise among workers.

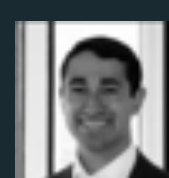
Participants worked together to build a newsfeed webpage to display and categorize new items. Existing sites like the New York Times are referenced to provide a baseline.



## Next Steps

We envision one portal where workers navigate through handoff instructions, e.g. a project management system that automates communication among workers by synthesizing outputs, screen captures and videos. We plan to run series of longer experiments and on more methods of handoffs to yield clearer dependent variables.

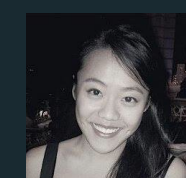
We want to focus on not just work quality, but the implications of handoffs on team identity and error checking. We would like to explore outside of the software/design realm to other commonly outsourced tasks including writing, advertising, industry work.



Alex Embiricos  
emirico@stanford.edu  
M.S. Computer Science



Negar Rahmati  
rahmati@stanford.edu  
M.S. Electrical Engineering



Nicole Zhu  
nicolez@cs.stanford.edu  
M.S. Computer Science

\* The complexity of wireframes and instructions accompanying are assessed by 1, number of sections on page 2, text/description on page 3, deviation from boilerplate templates 4, experimenters' subjective assessment of creativity. The complexity for the wireframes were then scaled from 1 for basic to 5 for a complicated design.