

# Atelier: repurposing expert crowdsourcing tasks as micro-internships



Ryo Suzuki<sup>1</sup>, Niloufar Salehi<sup>2</sup>, Michelle S. Lam<sup>2</sup>,  
Juan C. Marroquin<sup>2</sup>, Michael S. Bernstein<sup>2</sup>

<sup>1</sup> University of Colorado Boulder

<sup>2</sup> Stanford HCI Group



**FLASH TEAMS**



[Retelny et al. 2014]



*Crowd work today is largely a dead-end job,  
offering few opportunities for career  
advancement and economic mobility.*

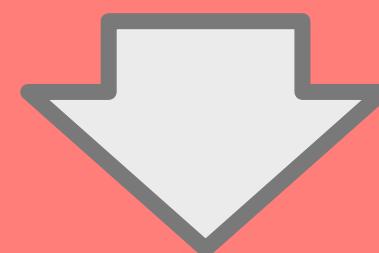
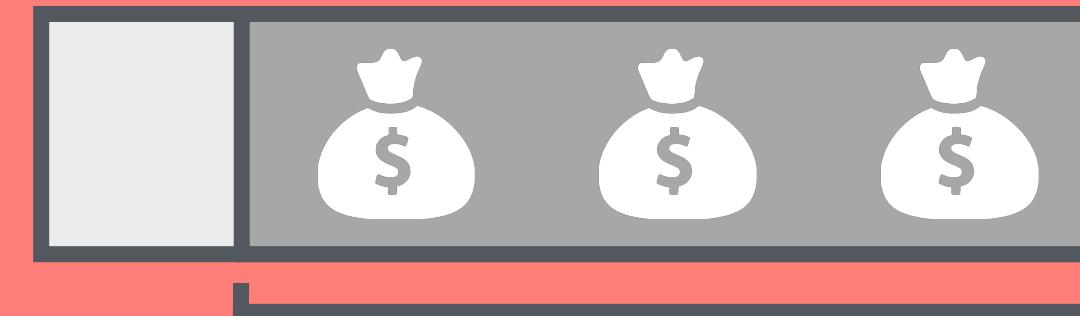
*The Future of Crowd Work [Kittur et al. 2013]*

# Crowd experts must be able to grow their skills.





worker



worker



Time spent learning  
is time spent  
**not working.**

They need to  
**sacrifice**  
**their earnings**  
to learn new skills

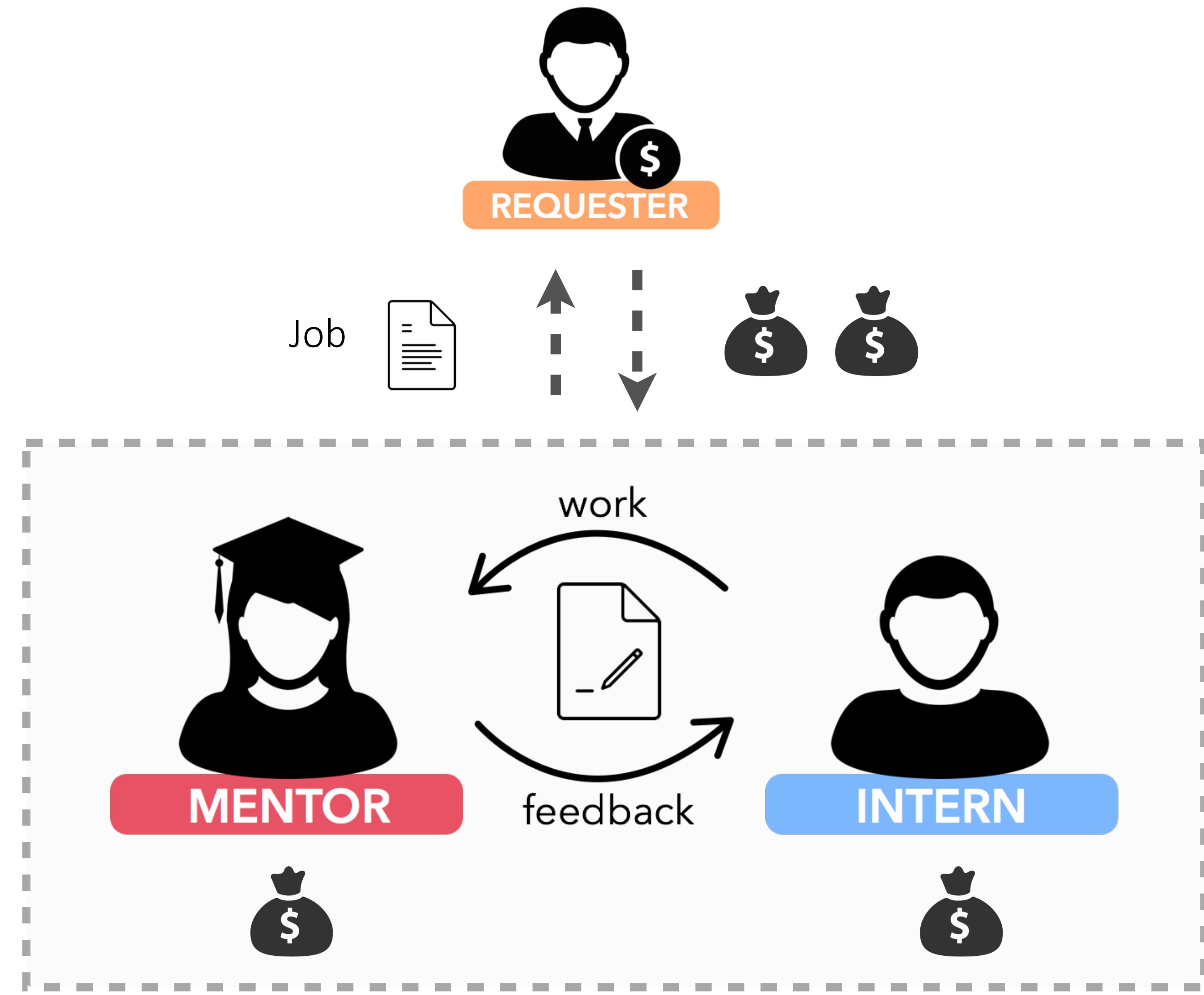
# Internship

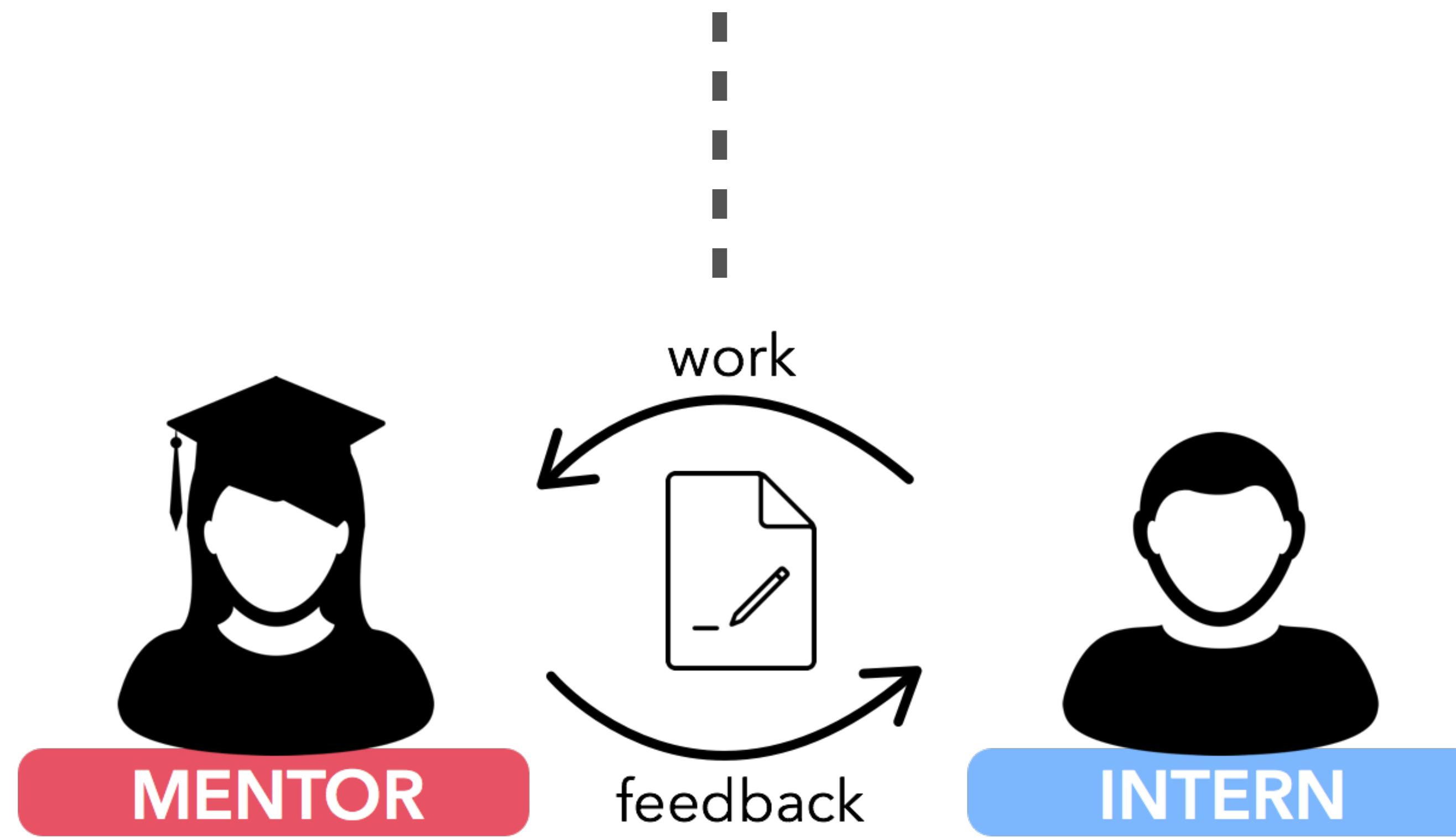


# Micro-internships:

## paid, mentored, real-world work experiences







- 💰 Earn extra income
- ⌚ Spend less time
- ❤️ Intrinsic motivations

- 🎓 Practice while paid
- 🏆 Ratings for future tasks

## MILESTONE 3



Mentor: Online



Joe

Pinned

1 Develop use cases & static content



2 Plan models and their relationships



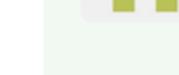
3 Create authentication and static pages



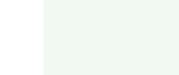
A Make the sign up and sign in processes



B Fill the static pages with content



C Customize these pages with CSS. You may choose to use a front-end framework like Twitter's Bootstrap.



4 Create the store and product gallery



5 Integrate payment methods and the contact page



**A. Mentor** 27 minutes ago

Have you used Devise before? It's an authentication solution for Ruby on Rails.

★ Pinned



**Joe** 20 minutes ago

No, I haven't used Devise before - let me try that. Thanks!

☆ Pin Message



**A. Mentor** 16 minutes ago

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**Joe** 15 minutes ago

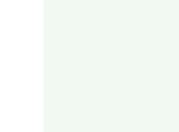
Q: I'm having an issue with Devise. I've added it to the Gemfile and ran the generator, but it's not working properly. Can you help?

Solved



**A. Mentor** 11 minutes ago

Did you run bundle install before running the generator?



**Joe** 10 minutes ago

Oh no, I forgot to do that. Now it's working!



**A. Mentor** 9 minutes ago

Nice! It's important to run bundle install because it installs the dependencies that you specified in your Gemfile



**Joe** 6 minutes ago

Alright, my sign up and sign in pages are now functional - here's how it looks now

☆ Pin Message  
Send Message  
Joe 10 mins ago

File Upload  
Joe 10 mins ago

Call  
Joe 10 mins ago

# Atelier



## 1. Mentors helped interns get unstuck

Atelier



## 2. Mentors introduced helpful resources

Business  
Development

Theoretical  
Approach



### 3. Mentors shared **best practice**



1. get unstuck



2. helpful resources



3. best practice



heavier use of Atelier



higher quality outcomes

Atelier <sub>14</sub>

- micro-internships
- atelier
- evaluation
- conclusion

- micro-internships
- atelier
- evaluation
- conclusion

# ● Upwork survey



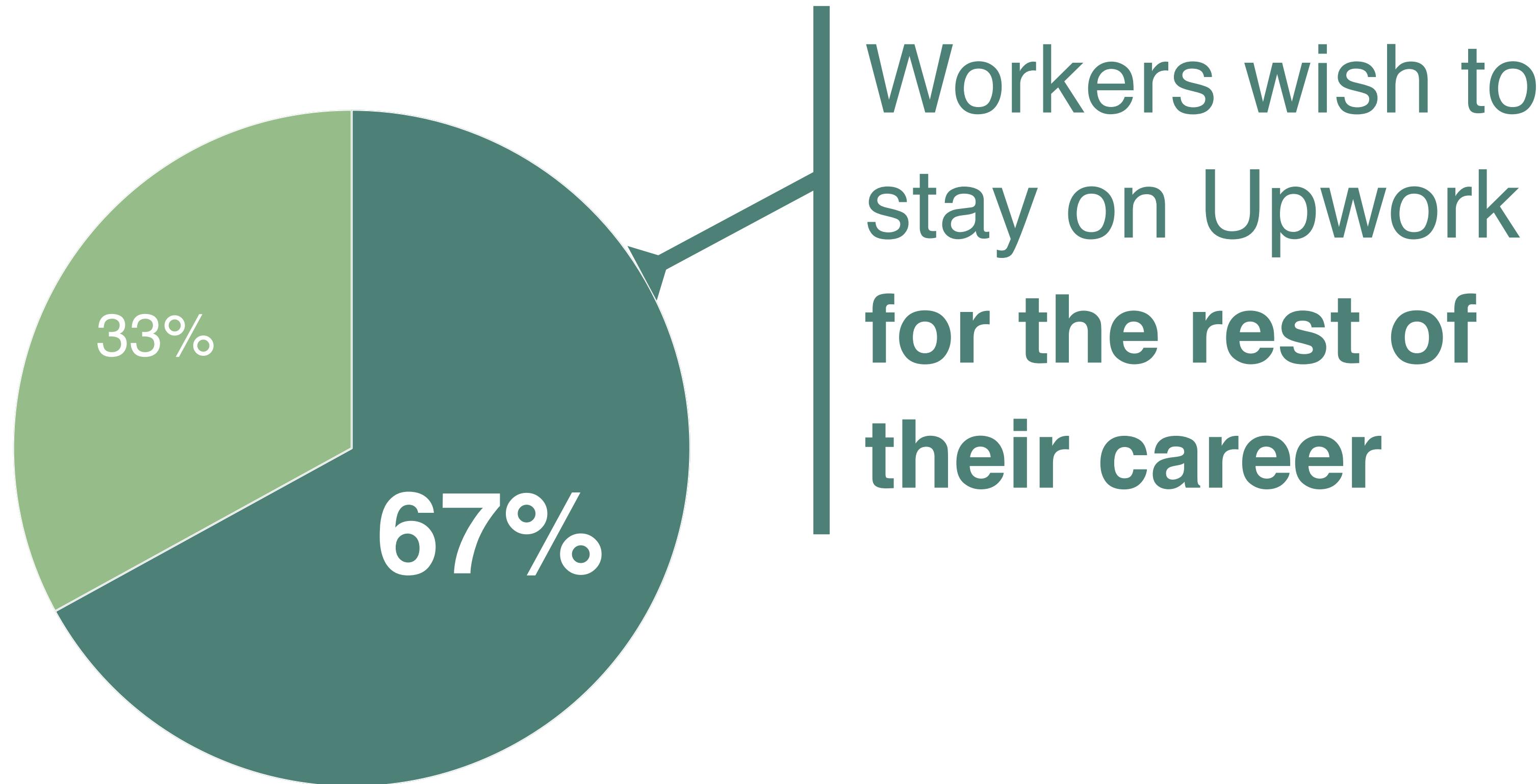
**96 responses**

male: 71, female: 25

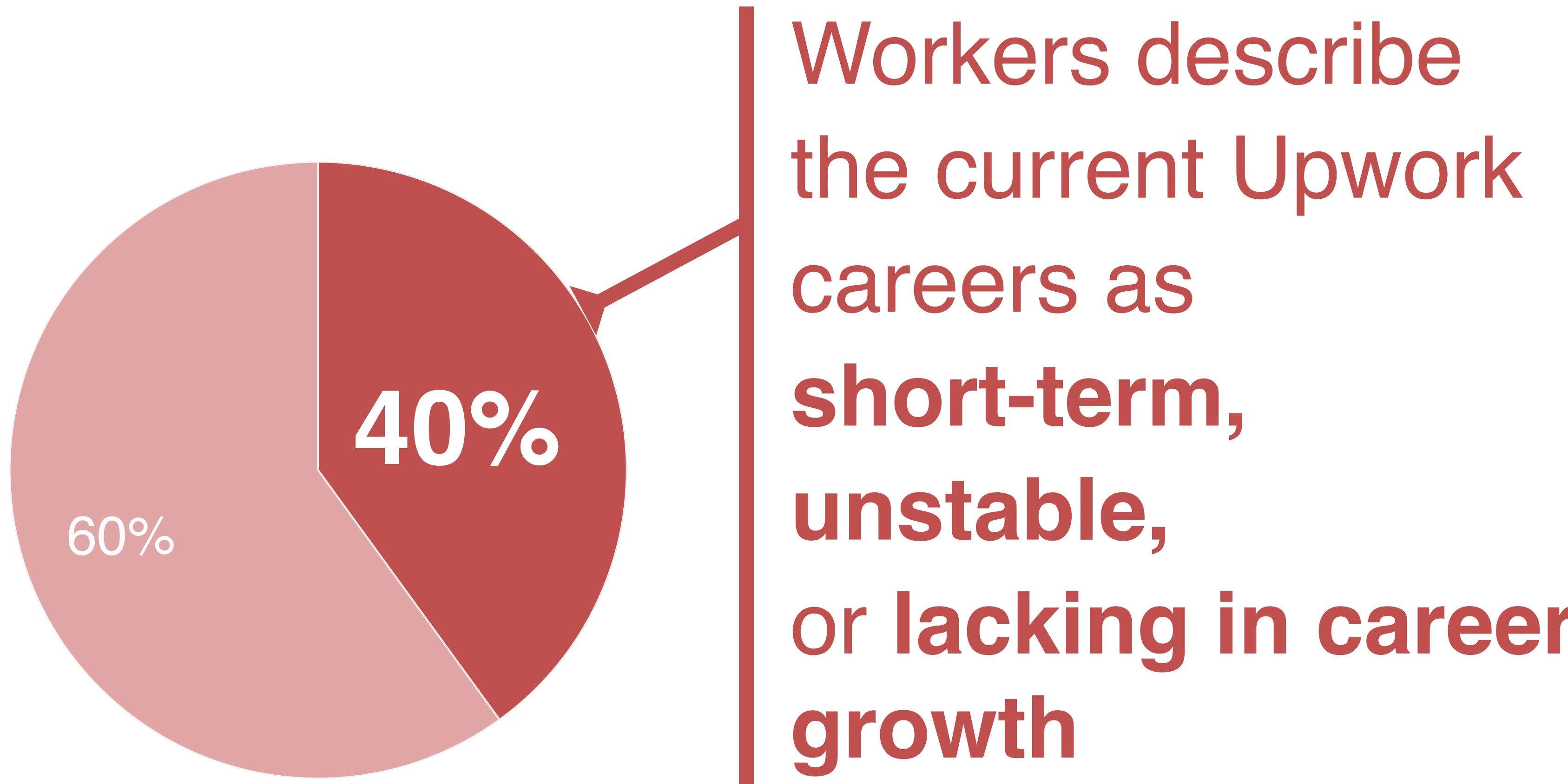
age: 18–66

categories: 9

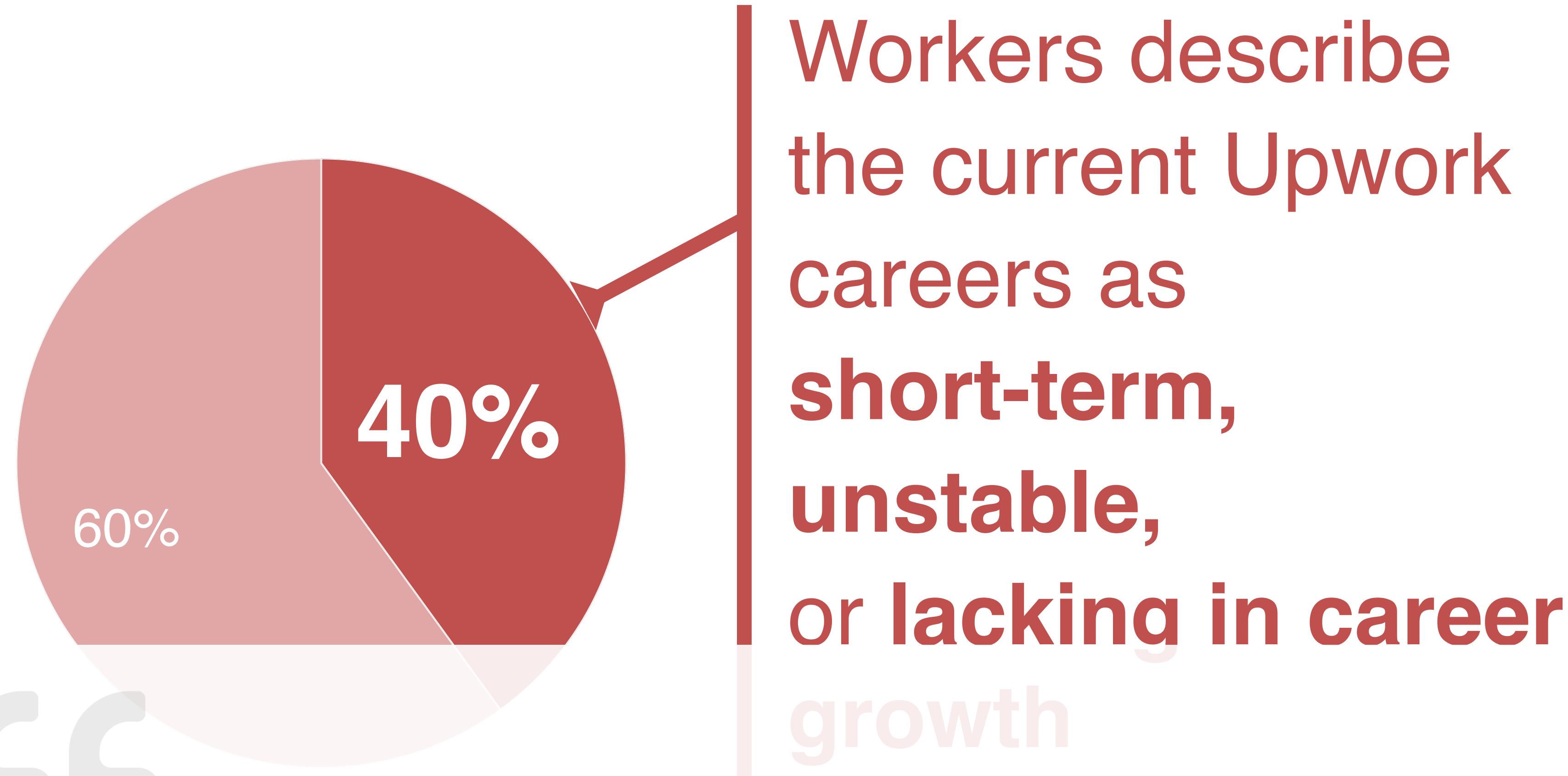
# Upwork survey



# Upwork survey

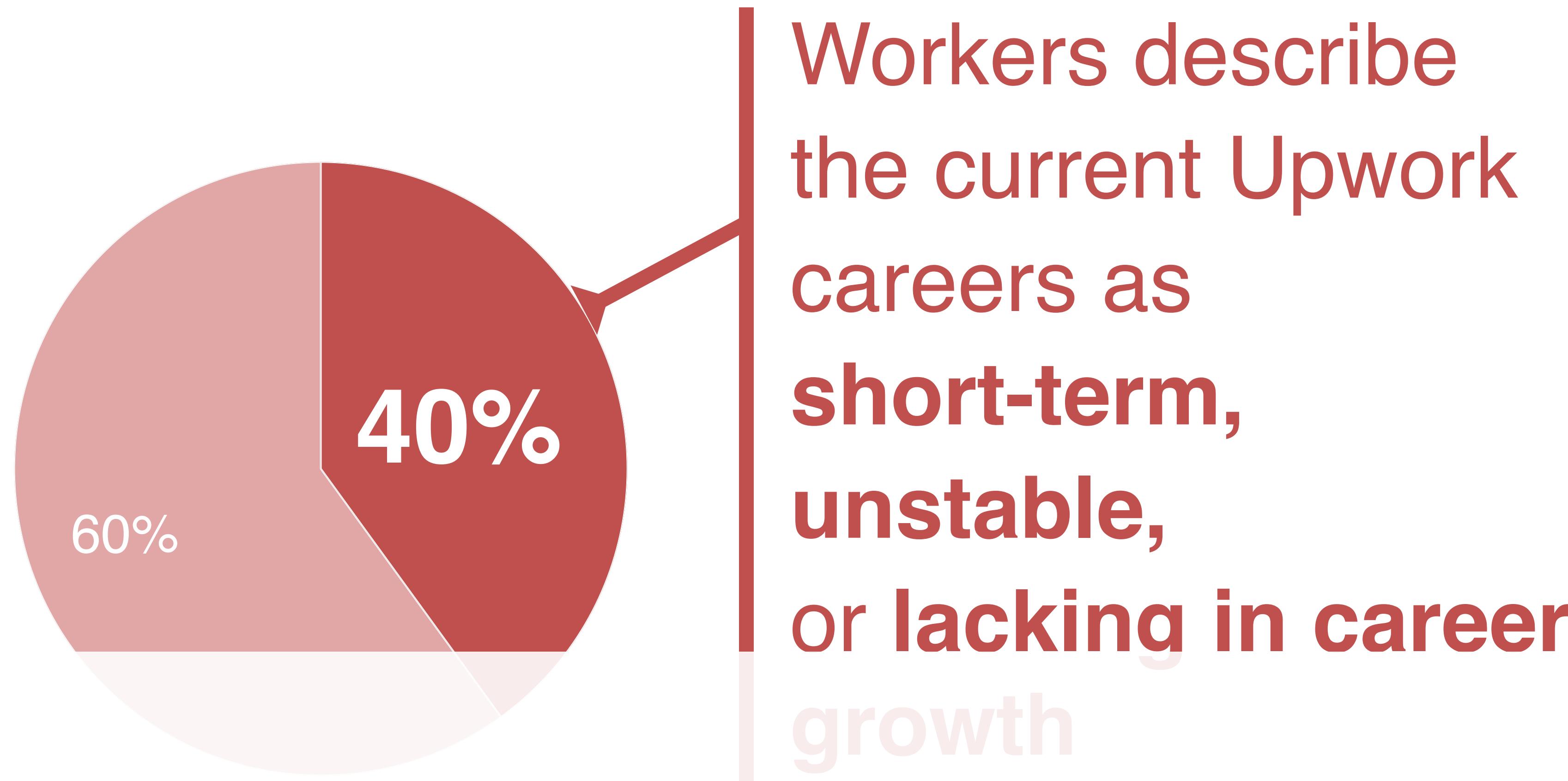


# Upwork survey



*“there’s **nothing with trajectory** into the field I really want to pursue.”*

# Upwork survey



Workers want to grow their careers, but face instability due to **heavy competition**

# Upwork survey



# Upwork survey



66  
“I need more money to support my family,  
I take all the time I have for work.” 99

# Upwork survey

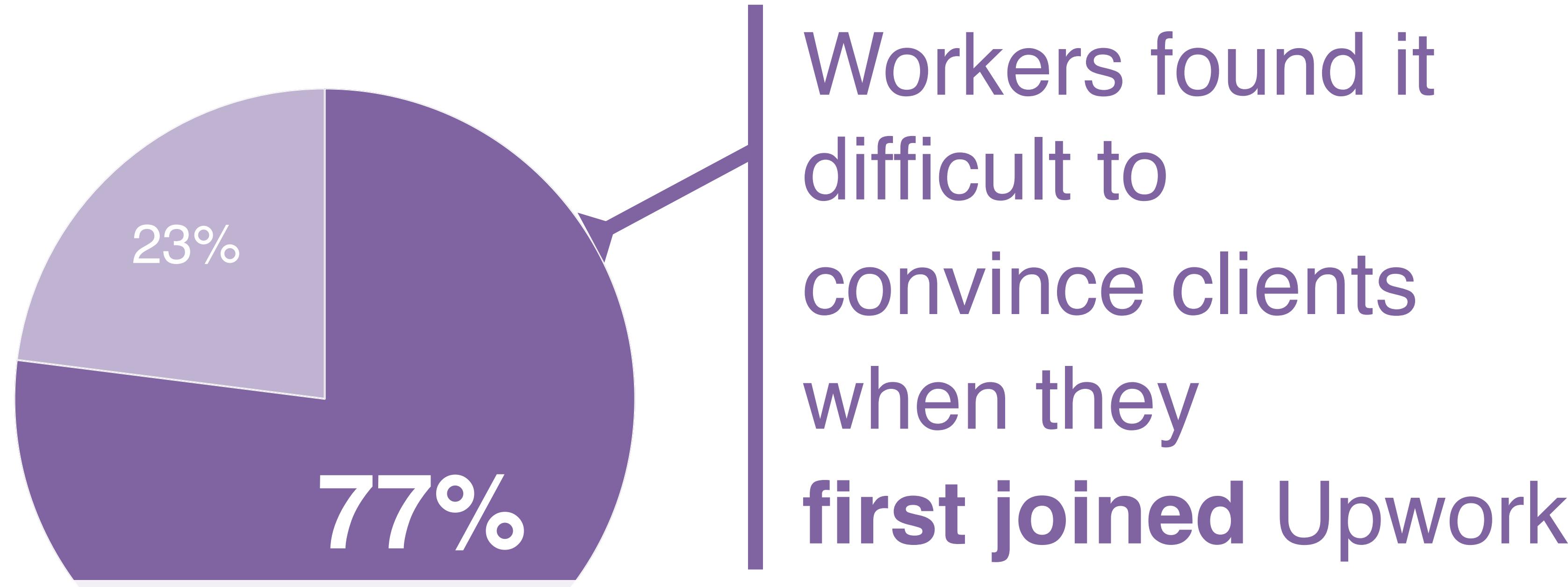


Workers don't have **time** or financial resources to learn new skills

# Upwork survey



# Upwork survey



66

*"I have to bid against more experienced,  
higher rated freelancers"*

99  
26

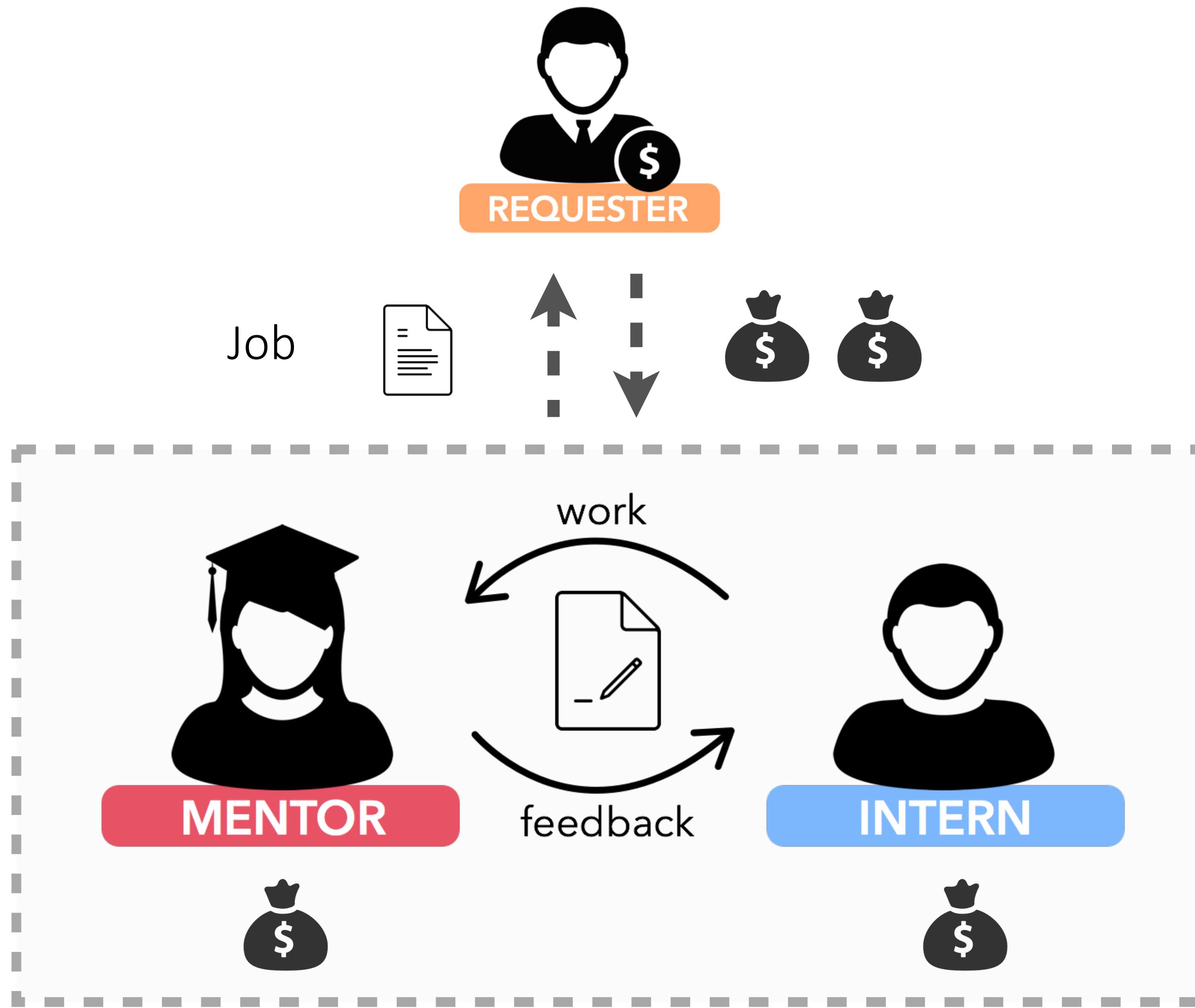
# Upwork survey



It is difficult to break into the new market due to the **lack of ratings** or prior reputation

- challenges
- atelier
- evaluation
- conclusion

# ● Atelier: a platform for micro-internship

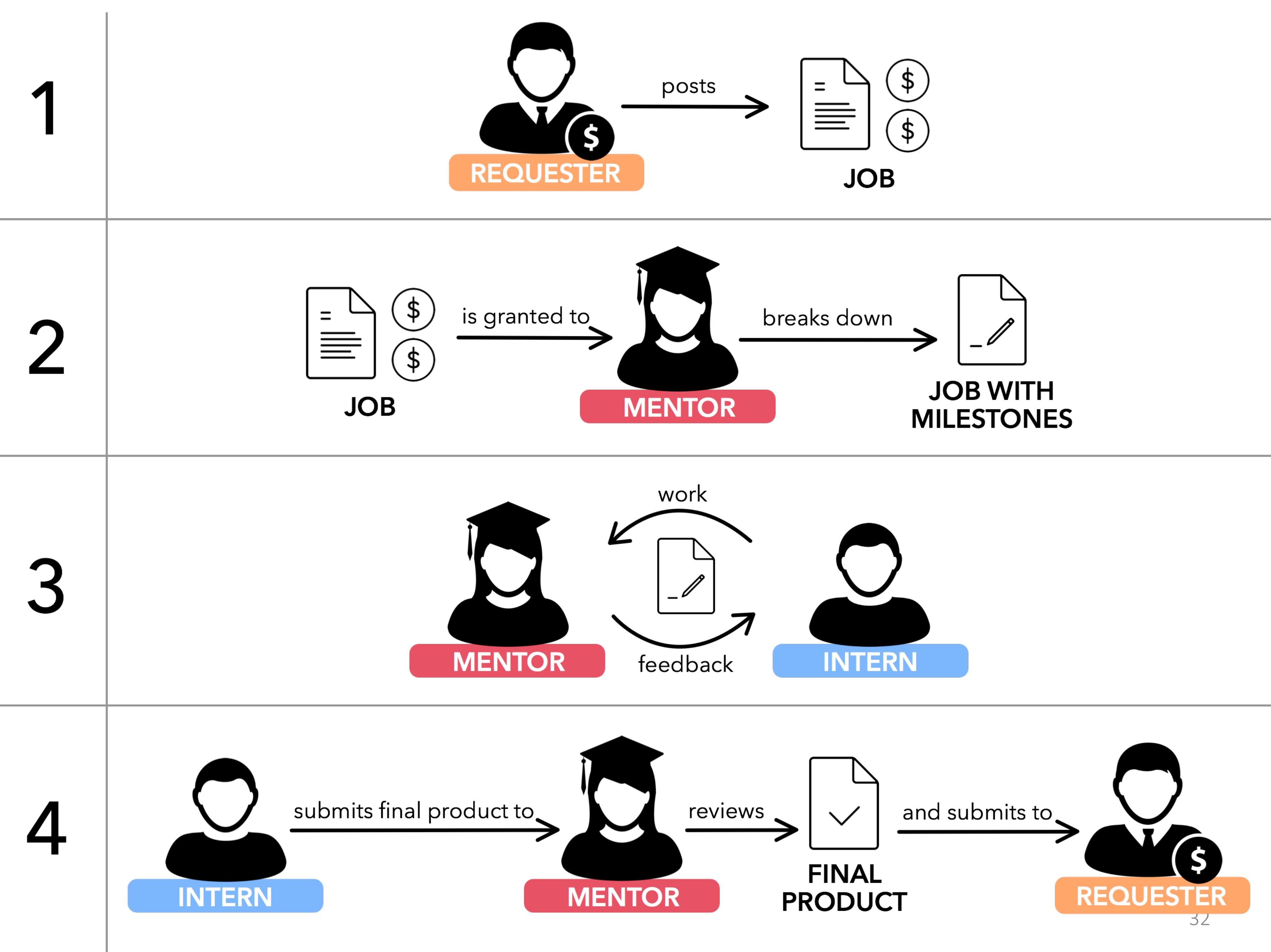


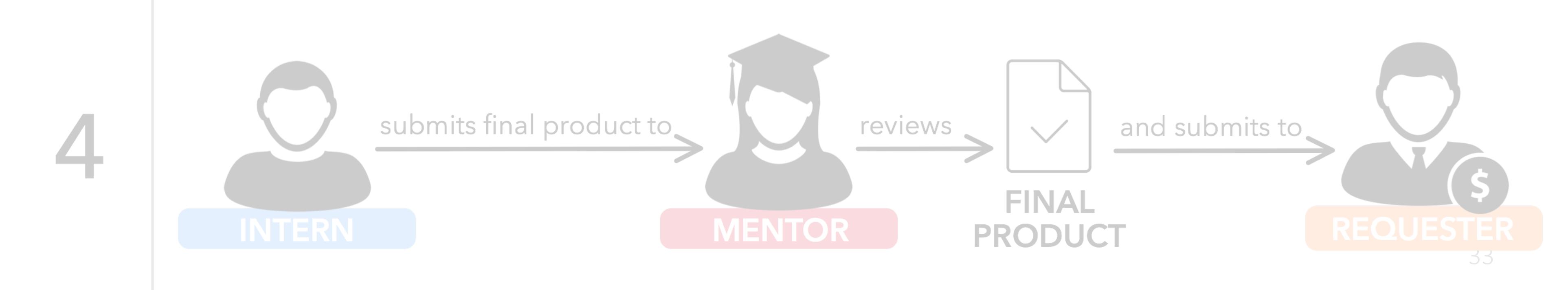
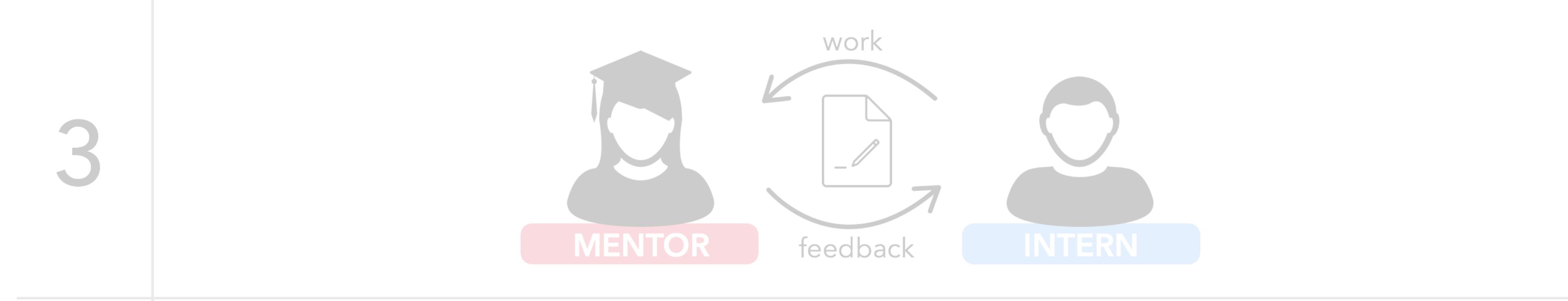
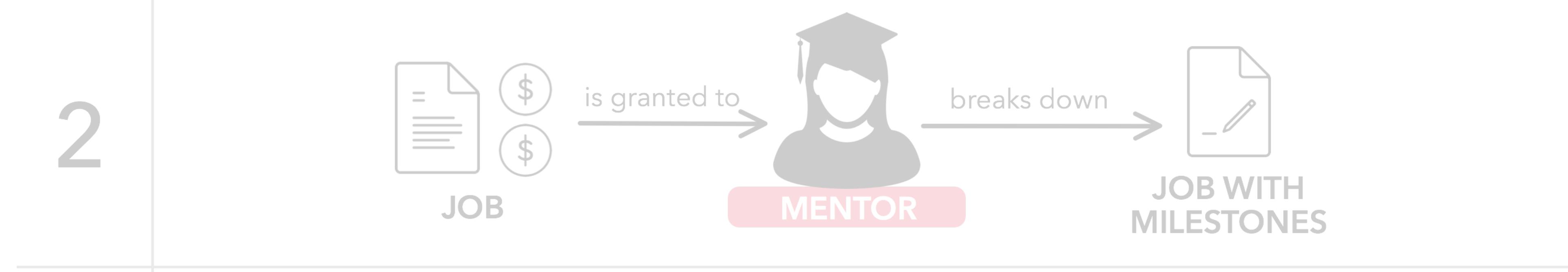
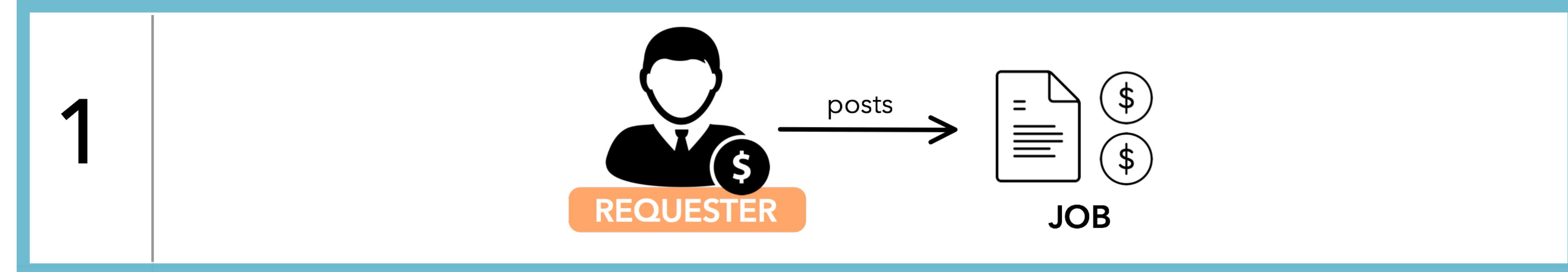
one on one training and mentorship  
real world jobs

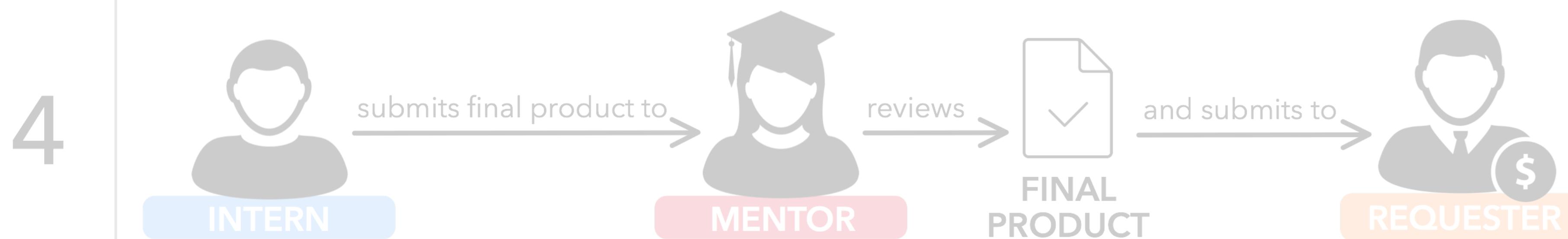
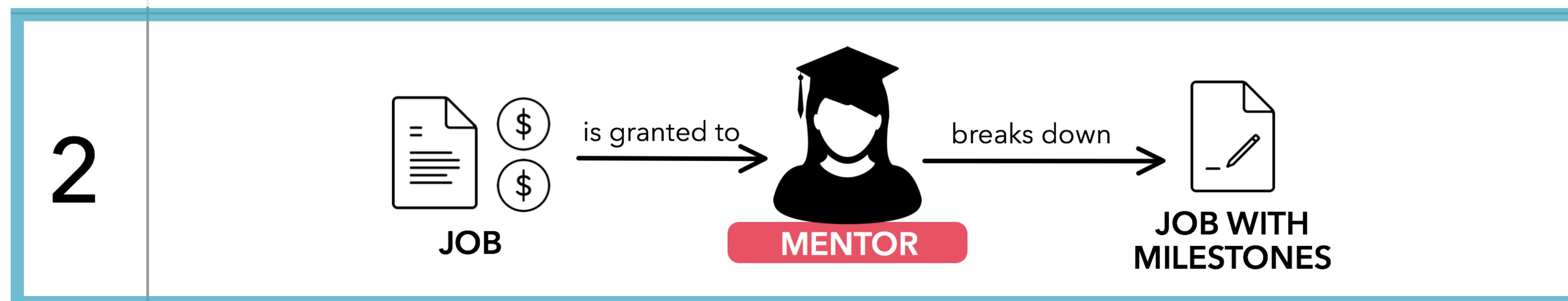


**cognitive apprenticeship:**  
apprentice learns by observing and practicing with  
an expert mentor

[Brown et al. 1989, Collins et al. 1989]







## MILESTONE 3

- 1 Develop use cases & static content
- 2 Plan models and their relationships
- 3 Create authentication and static pages
  - A Make the sign up and sign in processes
  - B Fill the static pages with content
  - C Customize these pages with CSS. You may choose to use a front-end framework like Twitter's Bootstrap.
- 4 Create the store and product gallery
- 5 Integrate payment methods and the contact page

Mentor: Online Joe Pinned

 A. Mentor 27 minutes ago  
Have you used Devise before? It's an authentication solution for Ruby on Rails.

 Joe 20 minutes ago  
No, I haven't used Devise before - let me try that. Thanks!  
☆ Pin Message

 A. Mentor 15 minutes ago  
Ok, great. I highly recommend using Devise since it simplifies the authentication process quite a bit.  
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☆ Pin Message

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☆ Pin Message

 A. Mentor 11 minutes ago  
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 Joe 10 minutes ago  
Oh no, I forgot to do that. Now it's working!

 A. Mentor 9 minutes ago  
Nice! It's important to run bundle install because it installs the dependencies that you specified in your Gemfile

 Joe 1 minute ago  
All my sign up and sign in pages are now functional. Thank you!

Send Message

File Upload

Call

[Locke 1980]

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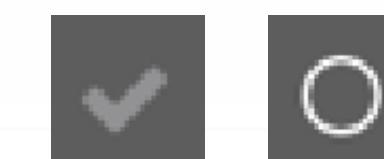
A. Mentor 9 minutes ago  
Nice! It's important to run bundle install after adding new dependencies that you specified in your Gemfile.

# Milestone

**1. guide interns with concrete achievable goals**

**2. keep mentors updated on intern progress**

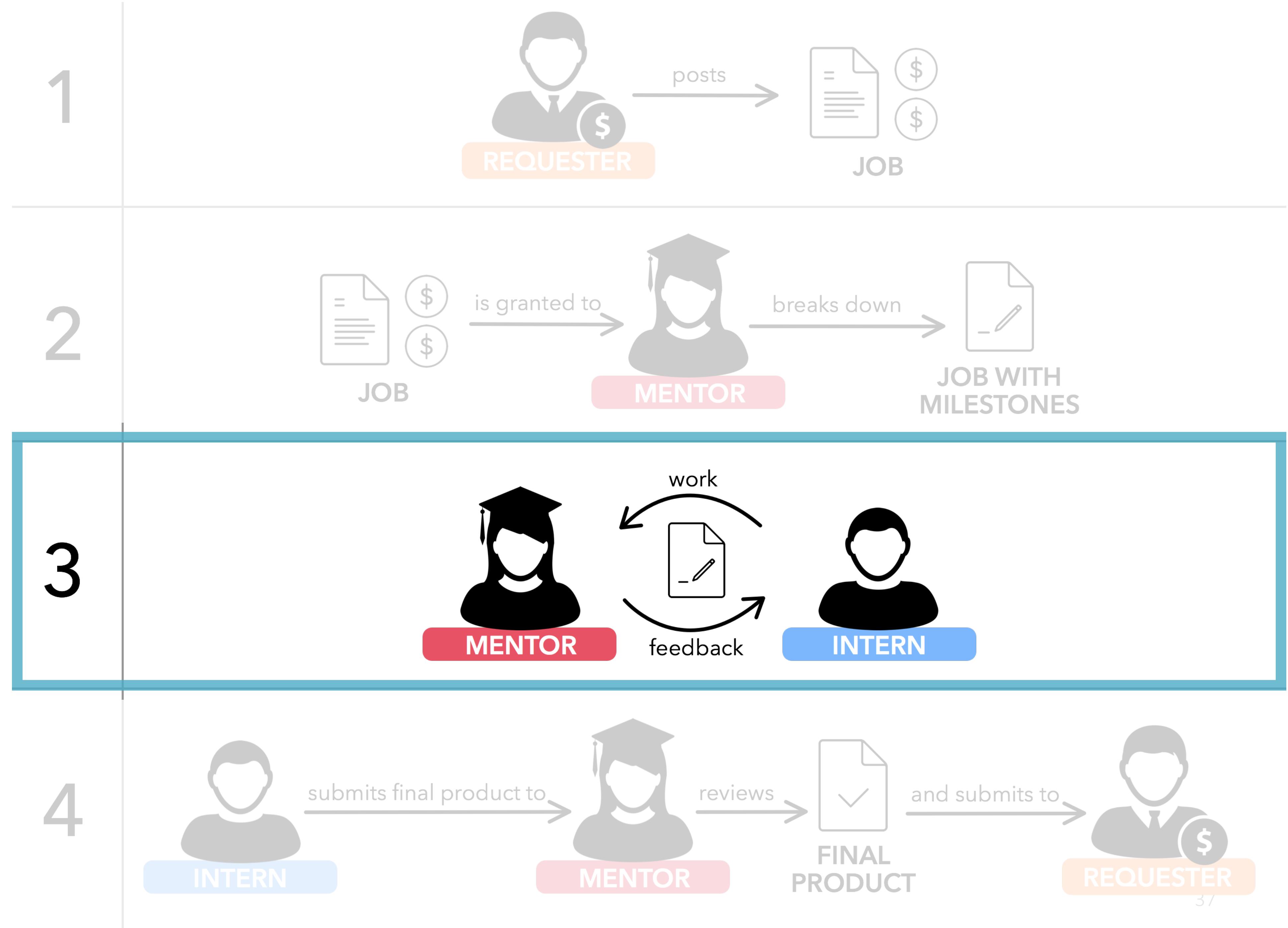
Solved



Send Message

File Upload

Call



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Send Message  
Joe

File Upload

Call

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Mentor: Online



Joe

Pinned

# Questions and Answers

## help interns get unstack

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Joe 15 minutes ago

Q: I'm having an issue with Devise. I've added it to the Gemfile and ran the generator, but it's not working properly. Can you help?

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Send Message

File Upload

Call

[Furnas et al. 1987, Schwartz et al. 1998]

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## Office Hours Calendar

← Today → Mentor Intern Office Hours (BOTH)

Wed 9/9	Thu 9/10	Fri 9/11	Sat 9/12	Sun 9/13	Mon 9/14	Tue 9/15
07:00	07:00	07:00	07:00	07:00	07:00	07:00
08:00	08:00	08:00	08:00	08:00	08:00	08:00
09:00	09:00	09:00	09:00	09:00	09:00	09:00
10:00	10:00	10:00	10:00	10:00	10:00	10:00
11:00	11:00	11:00	11:00	11:00	11:00	11:00
12:00	12:00	12:00	12:00	12:00	12:00	12:00
13:00	13:00	13:00	13:00	13:00	13:00	13:00
14:00	14:00	14:00	14:00	14:00	14:00	14:00
15:00	15:00	15:00	15:00	15:00	15:00	15:00
16:00	16:00	16:00	16:00	16:00	16:00	16:00
17:00	17:00	17:00	17:00	17:00	17:00	17:00
18:00	18:00	18:00	18:00	18:00	18:00	18:00
19:00	19:00	19:00	19:00	19:00	19:00	19:00
20:00	20:00	20:00	20:00	20:00	20:00	20:00

Solved

Joe 10 minutes ago  
Oh no, I forgot to do that. Now it's working!

Mentor 9 minutes ago  
Nice! It's important to run bundle install because it installs the dependencies that you specified in your Gemfile

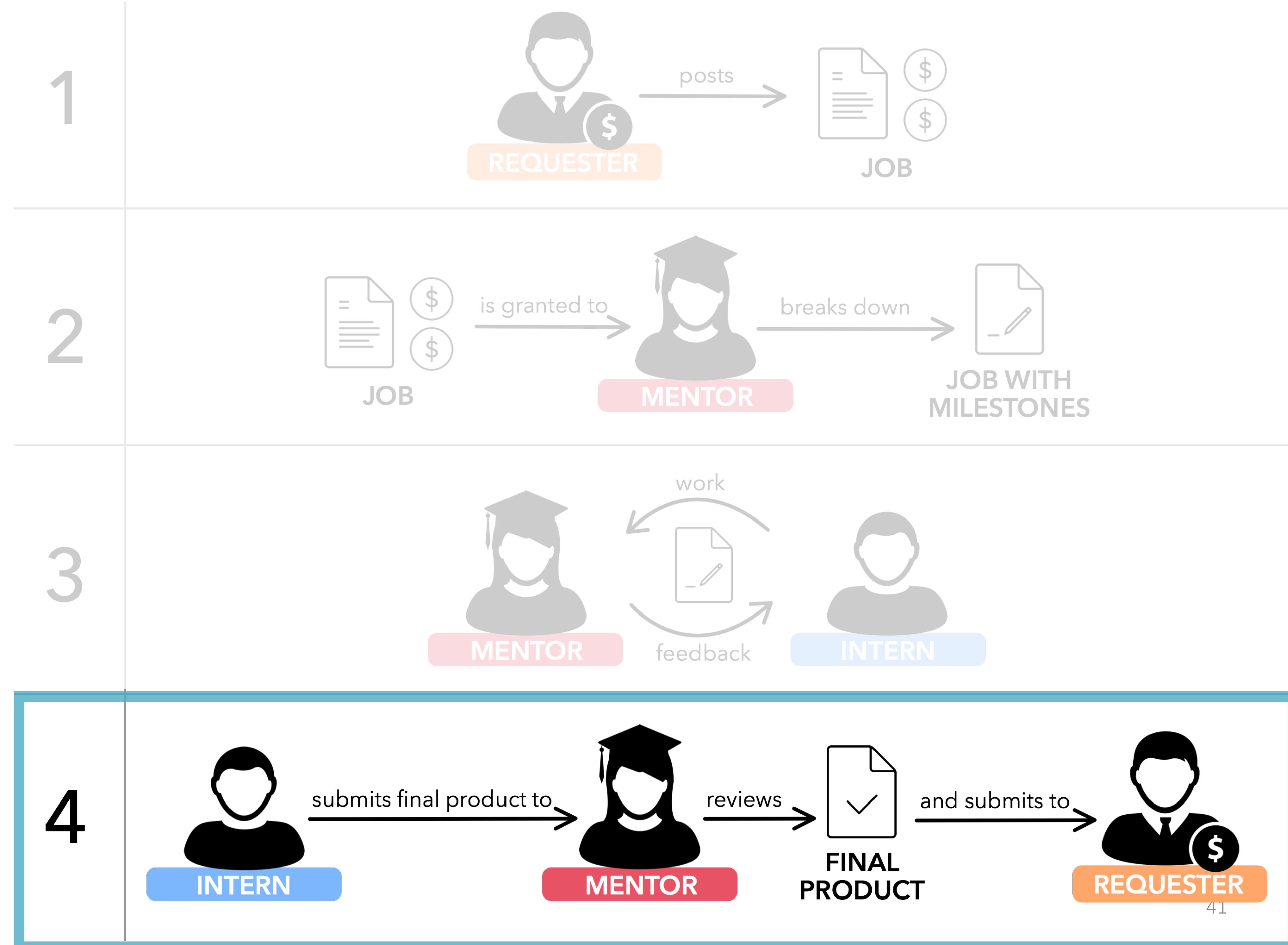
# Office Hours coordinating distributed workers

Send Message

File Upload

Call

[Hinds 2002]



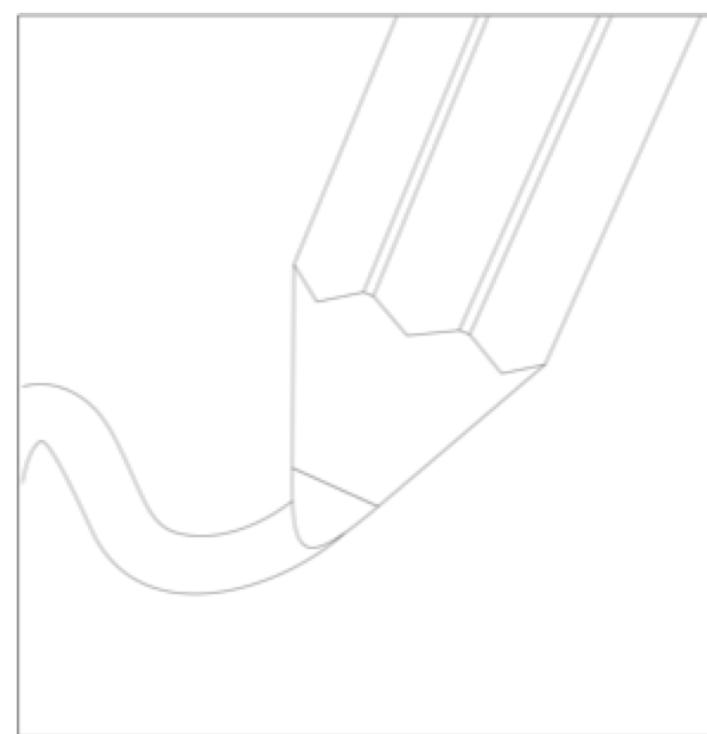
# Tutorial: Company logo design with Illustrator

## STEP 1

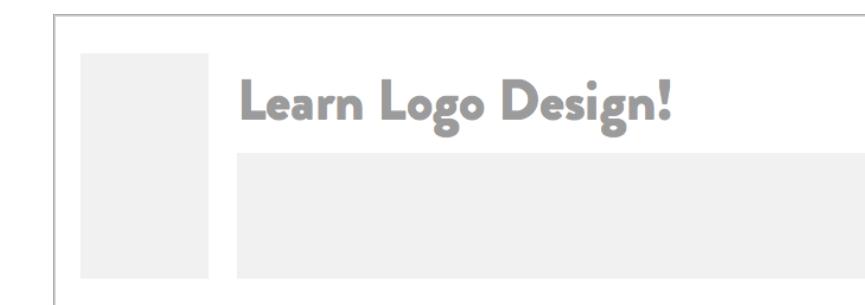
Brainstorm the goals of the company and associated icons/symbols

A Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor

B Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia



Here's a good resource:  
[LearnLogoDesign.com](http://LearnLogoDesign.com)



SOLVED



Do you have any resources I could use to learn how to complete this step?



Ok, thanks!  
(question marked as solved)



## STEP 2

Create sketches integrating these icons

A Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor

B Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia

C Sint occaecat cupidatat non proident, sunt in culpa qui officia



I usually create rough designs involving a few of my brainstormed ideas, and then after sketching a few, I refine the ones that seem more promising!

SOLVED



How do you usually approach these initial design sketches?



Hmm.. Let me try that out right now



42

- challenges
- atelier
- evaluation
- conclusion

# evaluation

[FIND WORK](#)[MY JOBS](#)[REPORTS](#)[MESSAGES](#)[Find Jobs](#)[Saved Jobs](#)[Proposals](#)[Profile](#)[My Stats](#)[Tests](#)

Create a Ruby on Rails web application for a company's e-commerce store.

[Flag as inappropriate](#)[Scripts & Utilities](#)

Posted 20 days ago

**Fixed Price**

Delivery by July 24, 2015

**\$300**

Budget

**\$\$ Intermediate Level**

I am looking for a mix of experience and value

**About the Client****★★★★★ (5.00) 10 reviews**

## Details

I'm looking for a worker who has an experience in Ruby on Rails. I want to create a company's e-commerce website that has the following features:

- 1) a store and a gallery to show products with pictures and prices
- 2) shopping cart function that can save products
- 3) checkout function that allows payment via Paypal, Google Wallet and major credit cards
- 4) contact us page that allows users to post comments and feedback
- 5) i want users to sign up and create profile upload a profile pic

## We used an actual job posted on Upwork

**United States**

Washington 01:34 AM

**33 Jobs Posted**

46% Hire Rate, 1 Open Job

**\$3,860 Total Spent**

18 Hires, 1 Active

**\$11.33/hr Avg Hourly Rate**

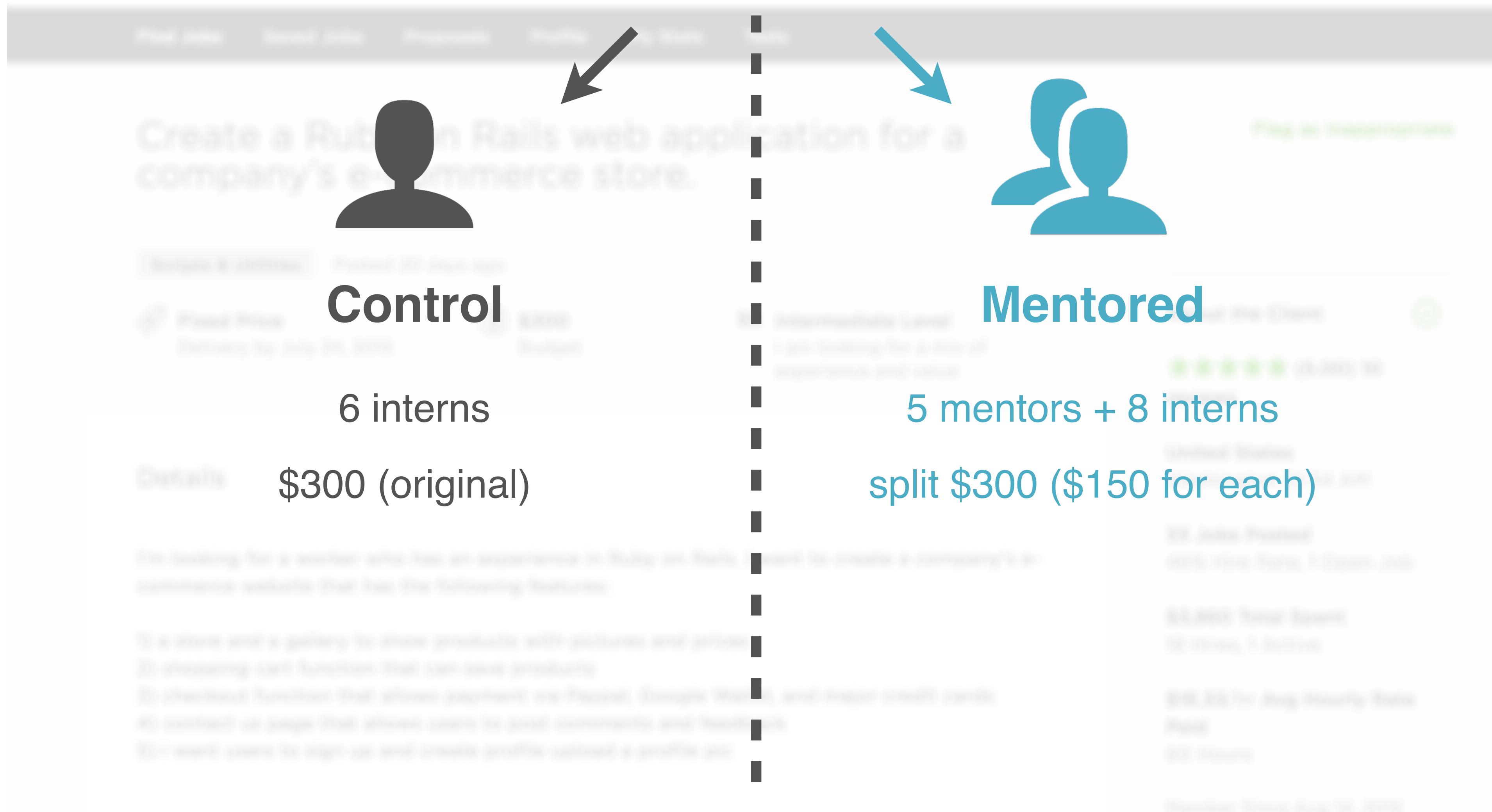
Paid

60 Hours

Member Since Aug 14, 2015

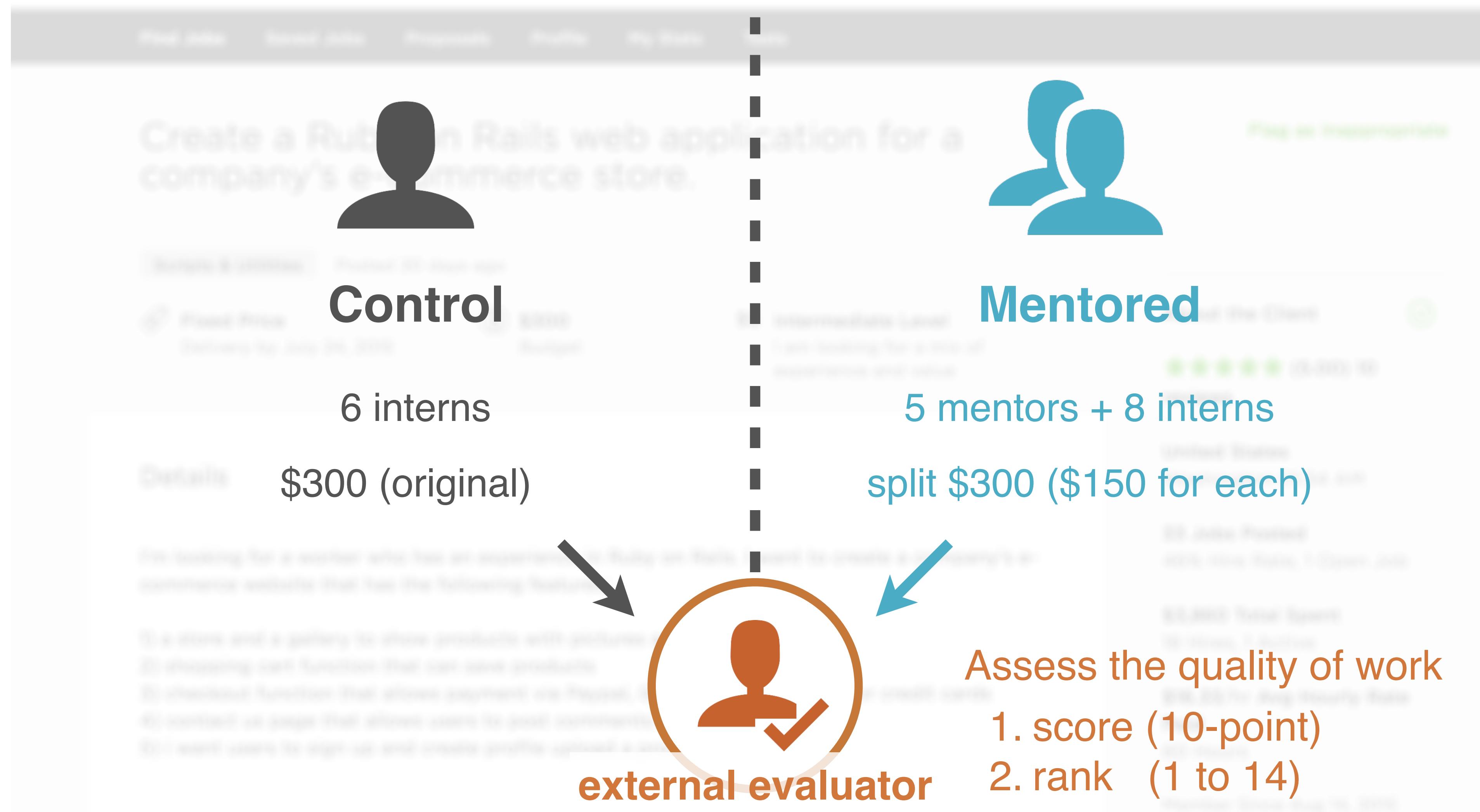
# ● method

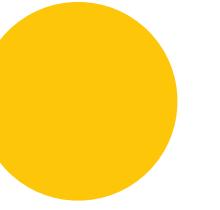
## randomized two conditions



# method

## assessment of the quality





# results

# ● results

## task completion time



Control



37.4 hours (SD=21.4)



Mentored



mentor: 5.3 hours (SD=1.8)

intern: 40.8 hours (SD=21.0)

# results

## quality of the outcomes



Control



**score:** 5.5/10 (median)

Q1: 5.0 Q3: 6.0



Mentored



**score:** 6.0/10 (median)

Q1: 5.0 Q3: 6.3

- - - - -

no significant results

**score:**  $t=0.22, p>0.05$     **ranks:**  $t=0.25, p>0.05$

# ● results



1. Mentors helped interns **get unstuck** by providing conceptual guidance

Intern 6: “*I got great advice on how to think in an OOP way, and I was able to ask someone for advice **when I couldn't find any searching the internet.***”

# ● results



## 2. Mentors suggest **helpful resources** and new technologies

Intern 4: “My mentor **introduced me to a lovely templating language** – Slim – that I’ve now used and will keep on using”

# ● results



3. Mentors shared **best practice** and industry convention

66

Mentor 3: “*make a seed file as it is more appropriate and **according to Rails conventions.***”

99

# ● results



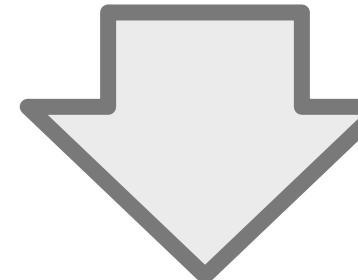
1. get unstuck



2. helpful resources



3. best practice

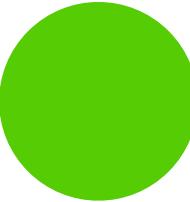


Heavier use of Atelier was associated  
with **higher quality**

**# of questions:**  $\text{corr}(x, y)=0.84, t=3.84, p<0.01$

**# of messages:**  $\text{corr}(x, y)=0.89, t=4.68, p<0.01$

- challenges
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# conclusion

1. concept of repurposing existing crowdsourcing tasks as **micro-internship**
2. **a survey** of crowd workers' career development opportunities
3. quantitative and qualitative **evaluation** with the field deployment of Atelier

# micro-internships

## paid, mentored, real-world work experiences



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