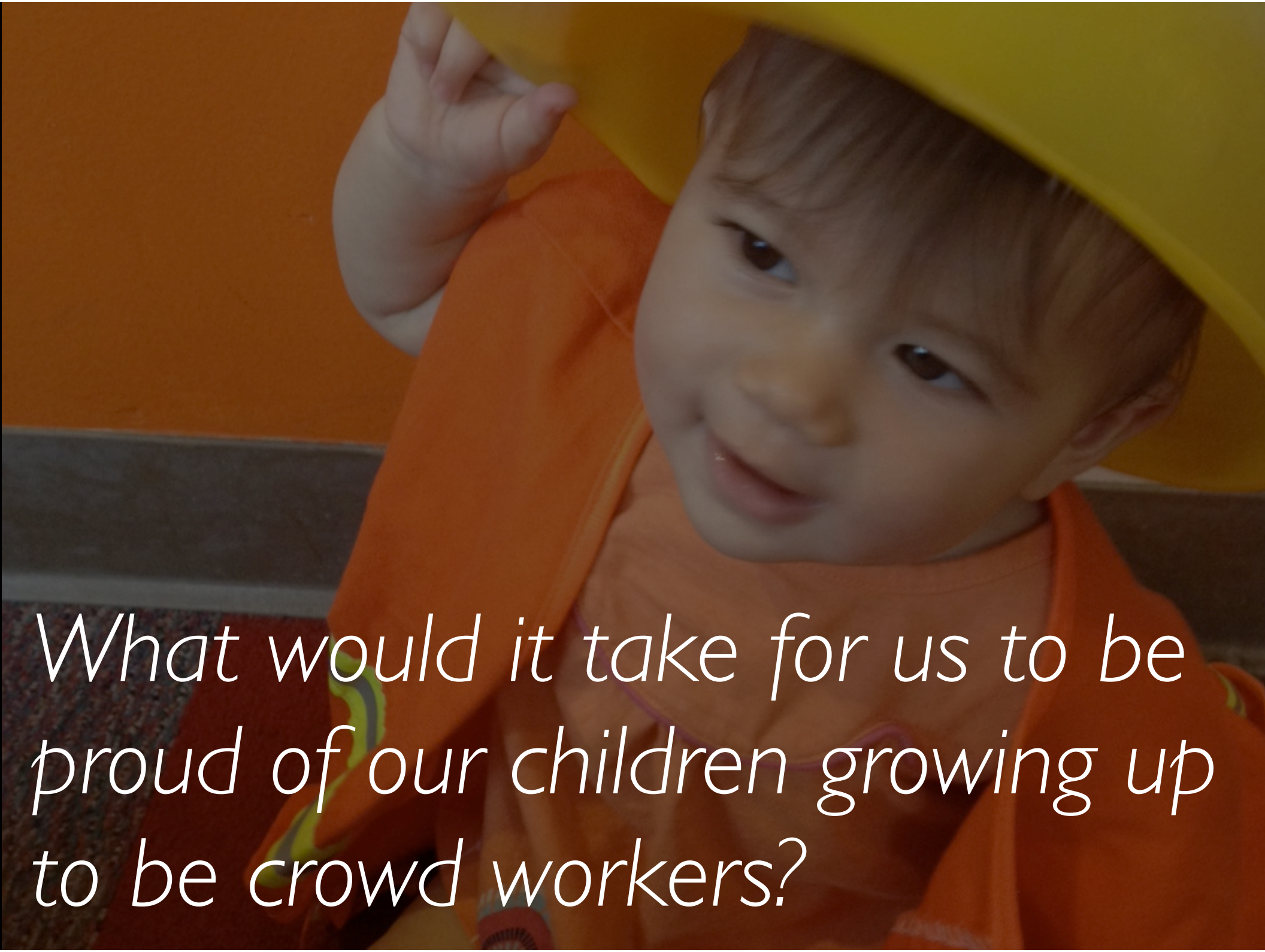
Aniket Kittur, CMU
Jeff Nickerson, Stevens
Michael Bernstein, Stanford

Elizabeth Gerber, Northwestern
Aaron Shaw, Northwestern
John Zimmerman, CMU

Matthew Lease, UT Austin
John Horton, oDesk


What would it take for us to be proud of our children growing up to be crowd workers?

cognitive psych, management,
computer science, design,
sociology, economics

Crowd work

Tasks completed online by a distributed, elastic workforce in exchange for pay.

http://fav.me/d2c1s1a

About 20% of current jobs have a work product that could be sent "down the wire"

[Blinder 2006]

estimated future volume [Blinder 2006, Horton 2013]

$454,000,000,000 per year

91,000,000,000 hours per year

45,000,000 full-time workers

Dashboard - Michael Bernstein

(If you're not Michael Bernstein, click here.) Your Work

Total Earnings (What's this?)

Rewards You Have Earned

Approved HITs	
Bonuses	
Total Earnings	Show earnings details

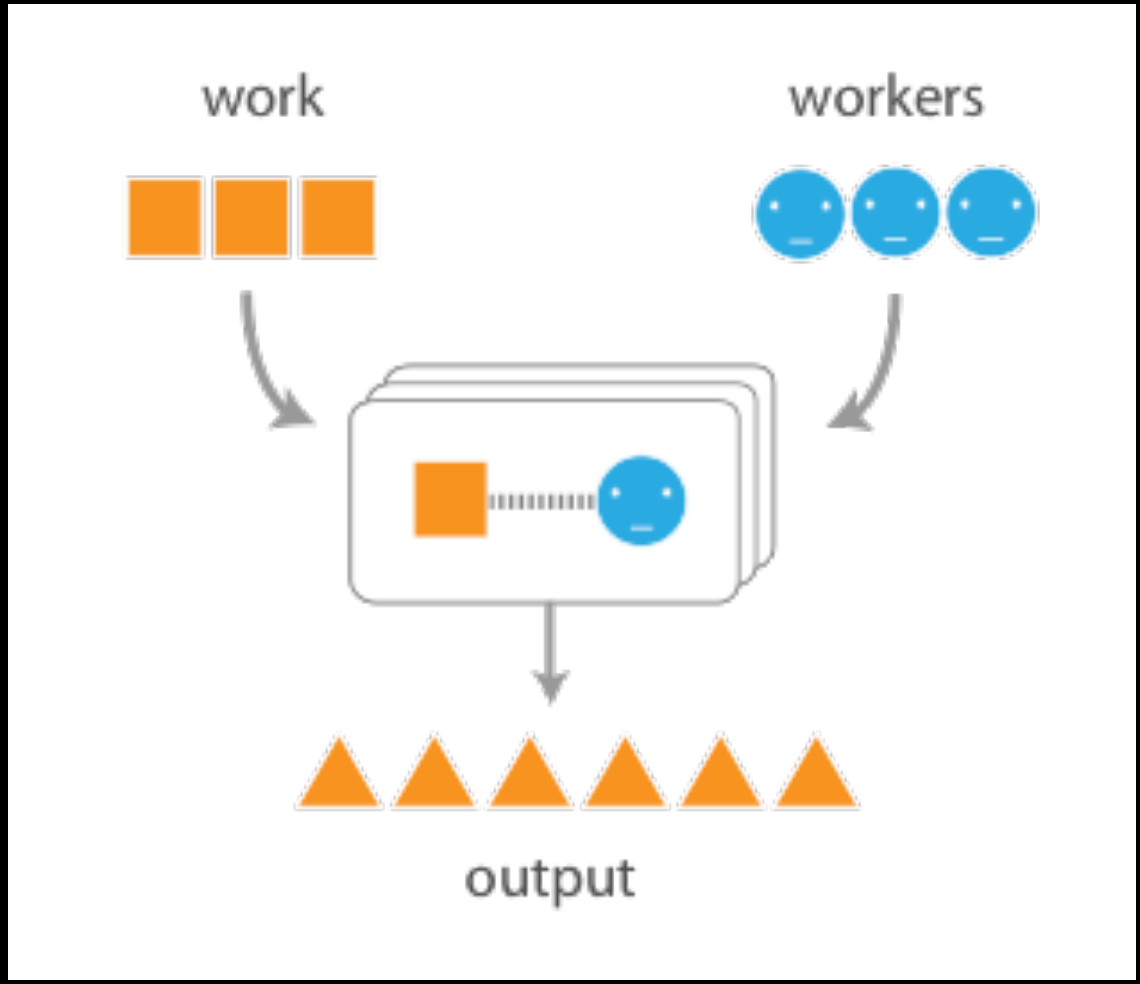
HIT Totals (What's this?)

HITs You Have Accepted	Value	Rate
HITs Accepted	124	—
... Submitted	90	72.6%
... Returned	16	12.9%
... Abandoned	18	14.5%

HITs You Have Submitted	V
HITs Submitted	
... Approved	
... Rejected	
... Pending	

©2005-2013 Amazon.com, Inc. or its Affiliates

Crowd work: Present



http://flic.kr/p/dbAu4k

Intellectual framing of low-cost results & exploitative labor
Requesters view workers as exchangeable and untrustworthy
Workers view requesters as distant and capricious

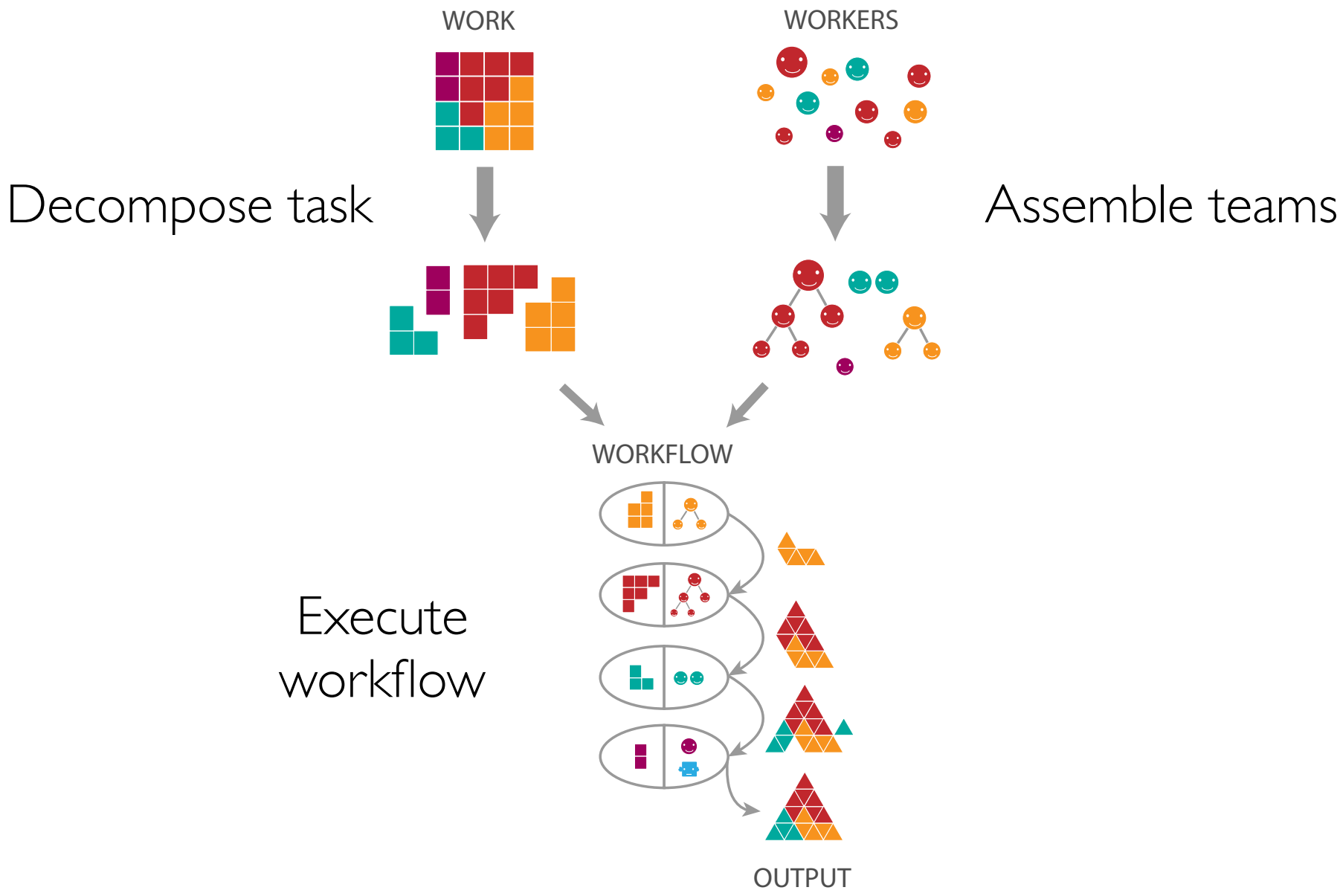
Crowd work: Future

- Much real work is **complex, creative,** and **interdependent**
  - Writing a news story
  - Programming software
  - Composing a symphony

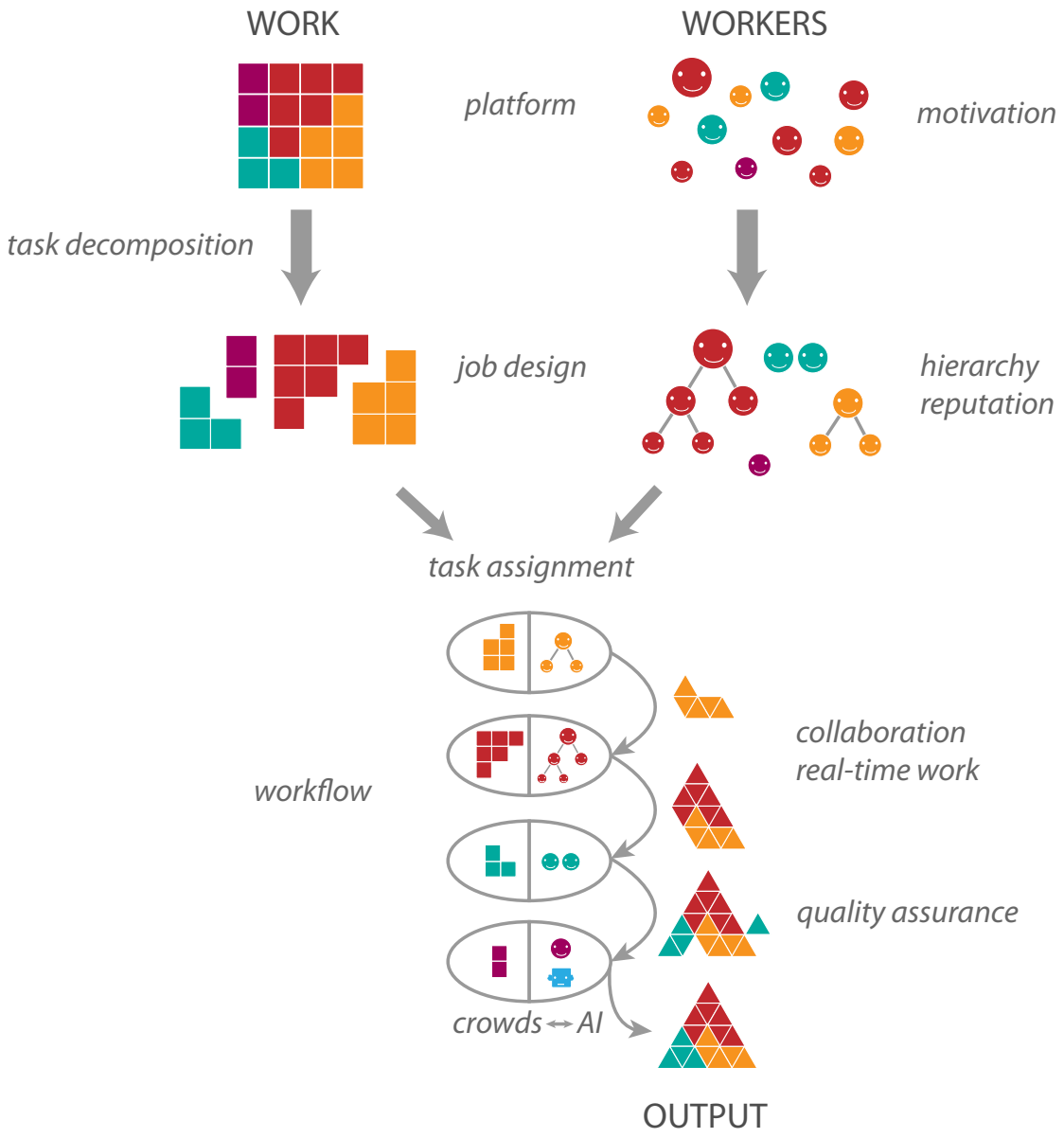
http://flic.kr/p/7nEE5K

http://flic.kr/p/bLcQBX

http://flic.kr/p/6SZom


WORK
WORKERS
Decompose task
Assemble teams
WORKFLOW
Execute
workflow
OUTPUT

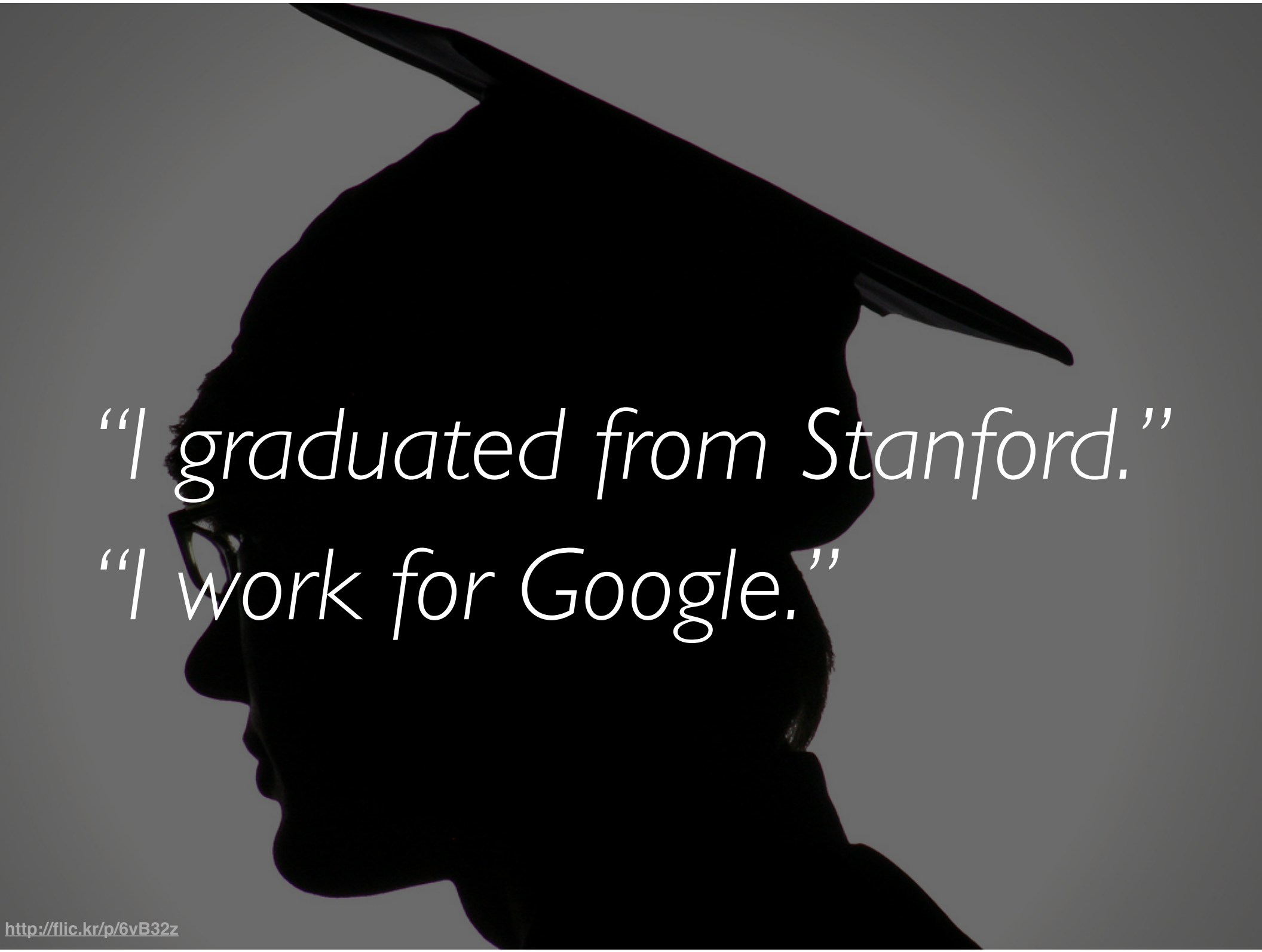
Future Model of Crowd Work



Outline

- Brief flavor of three core areas:
  - Crowd Workers
  - Crowd Work
  - Crowd Computation

CROWD WORKERS:
credentials and education


“I graduated from Stanford.”
“I work for Google.”
http://flic.kr/p/6vB32z

Alexei L.

Senior PHP/HTML5/Magento/Wordpress/Joomla/Drupal Developer

Save

☆☆☆ Don't miss chance to work with me! 24/7, RAPID DEVELOPMENT, HIGHEST QUALITY, EXACT DEADLINE Support ☆☆☆The Hourly rate would be negotiable for long term relationship.☆☆☆ I've developed a wide range of websites using PHP/Mysql … more

php magento wordpress drupal …

$27.78/hr - Hours: 422 - Ukraine - Last active: 2 days ago - Tests: 15 - Portfolio: 11

David A.

Agency Contractor

eCommerce Architect, Oxwall & Web Rockstar

Save

I'm well-experienced and highly qualified in standard and cross-browser compatible programming. Over 2400 hours of work on oDesk, not a single unsatisfied customer and always a high quality work, this is the way I do work. I look forward to build a … more

wp-ecommerce paypal-integration authorize.net web-scraping …

$33.33/hr - Hours: 2,433 - China - Last active: 1 day ago - Tests: 20 - Portfolio: 27

Groups: AspDotNetStorefront, BigCommerce

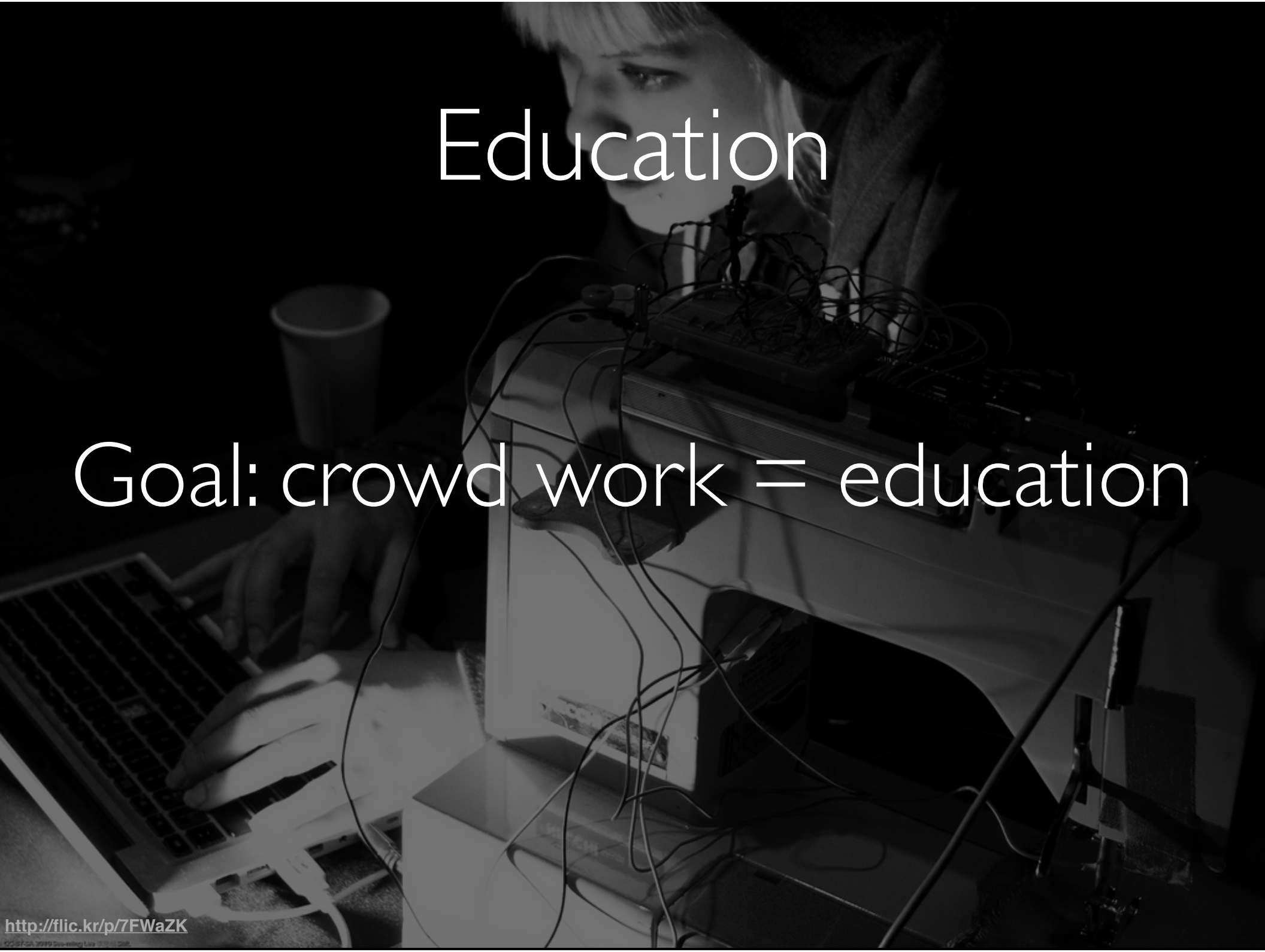
"I have 4.2 stars out of 5 as a composer!"

Reputation

Goal: mechanisms as straightforward to deploy and interpret as today's affiliations and degrees

Education
“hello world!”
http://flic.kr/p/7FWaZK

Education
“hello world!”
expert
http://flic.kr/p/7FWaZK


Education
Goal: crowd work = education
http://flic.kr/p/7FWaZK

Crowd Work

Crowd Work

hierarchy

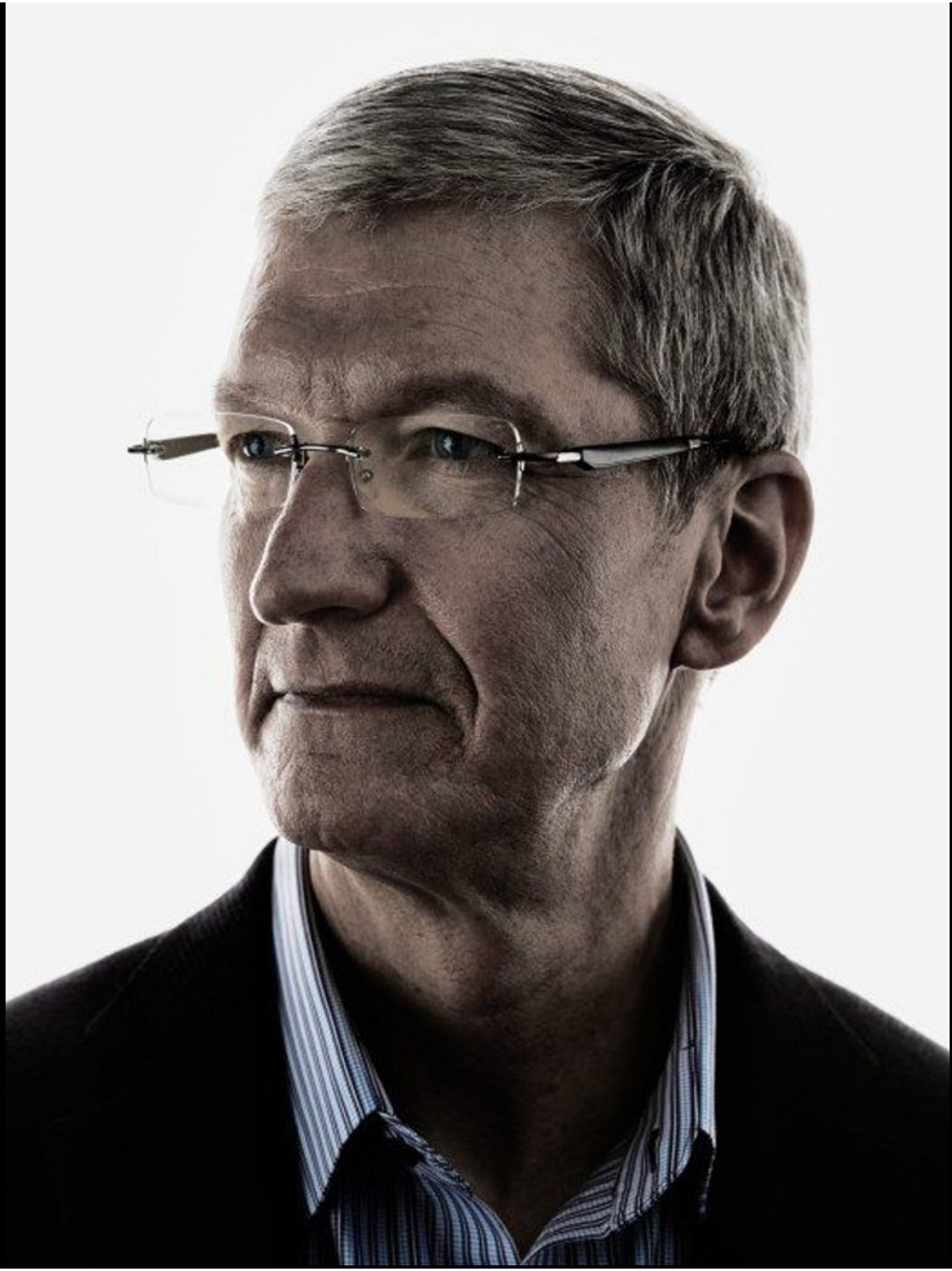
Hierarchy

goal: crowd work as good as the best managers

Tim Cook

CEO, Apple

$378,000,000

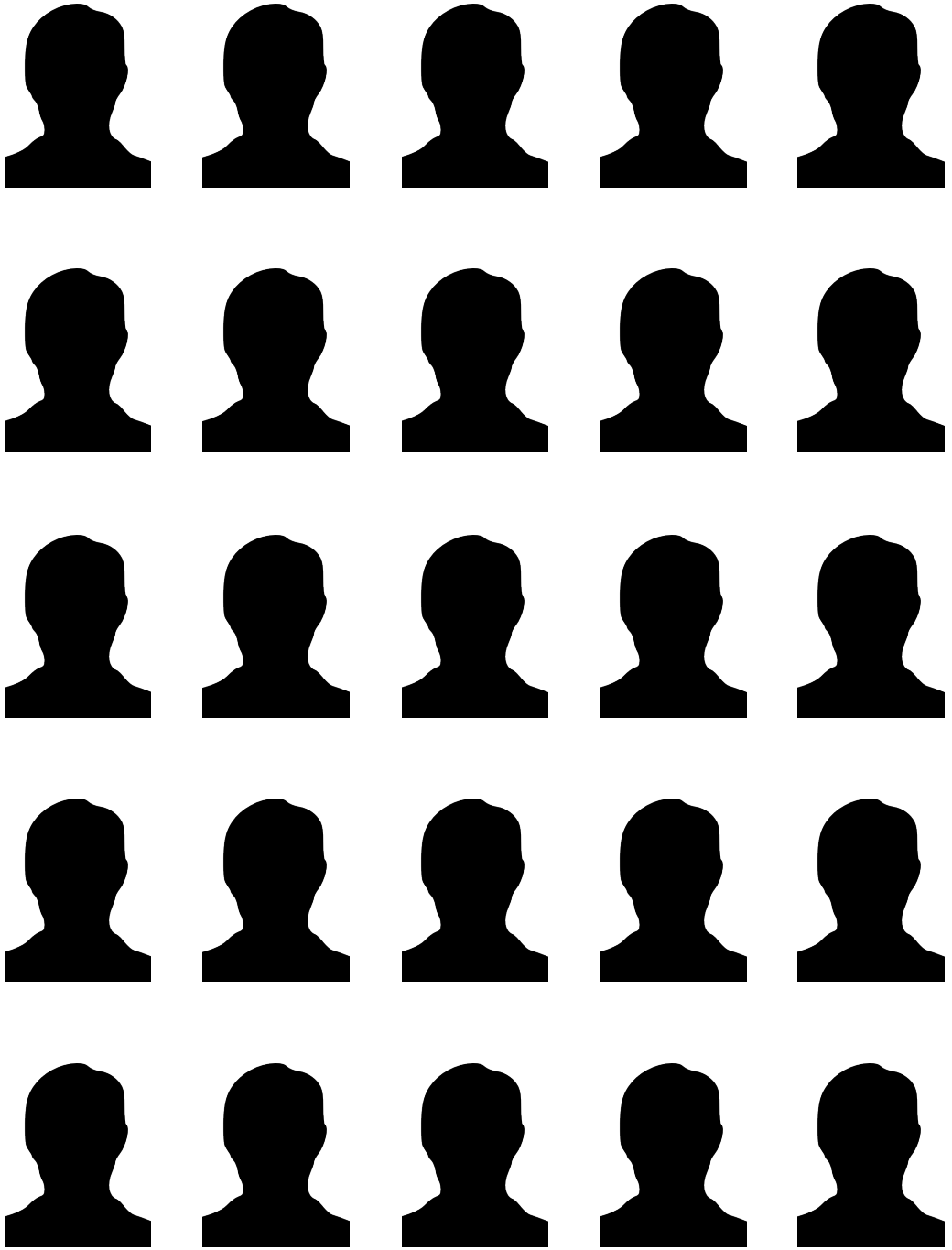


John Doe
CEO, Crowd
$378,000,000

{John, Jane, Joe, ...} Doe

CEOs, Crowd

$378,000,000

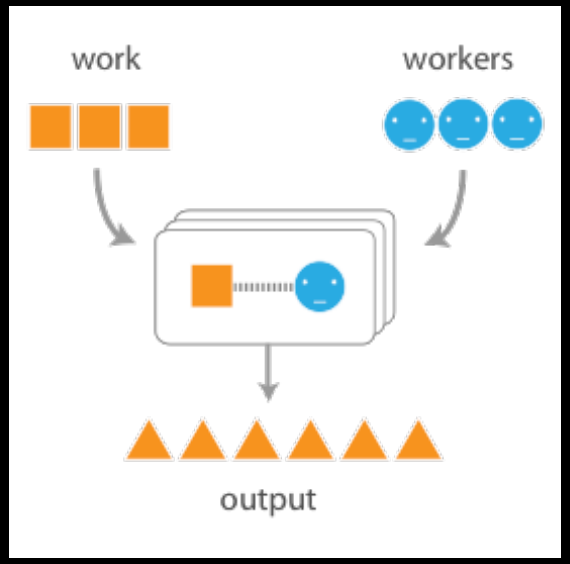


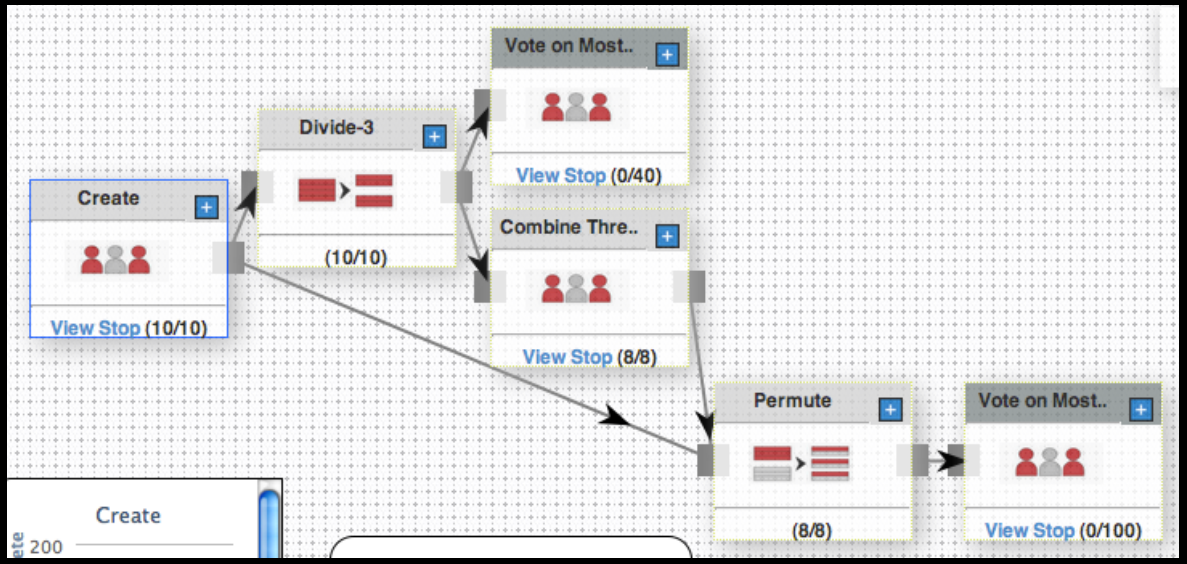
Crowd Work:

hierarchy

workflow

Workflow



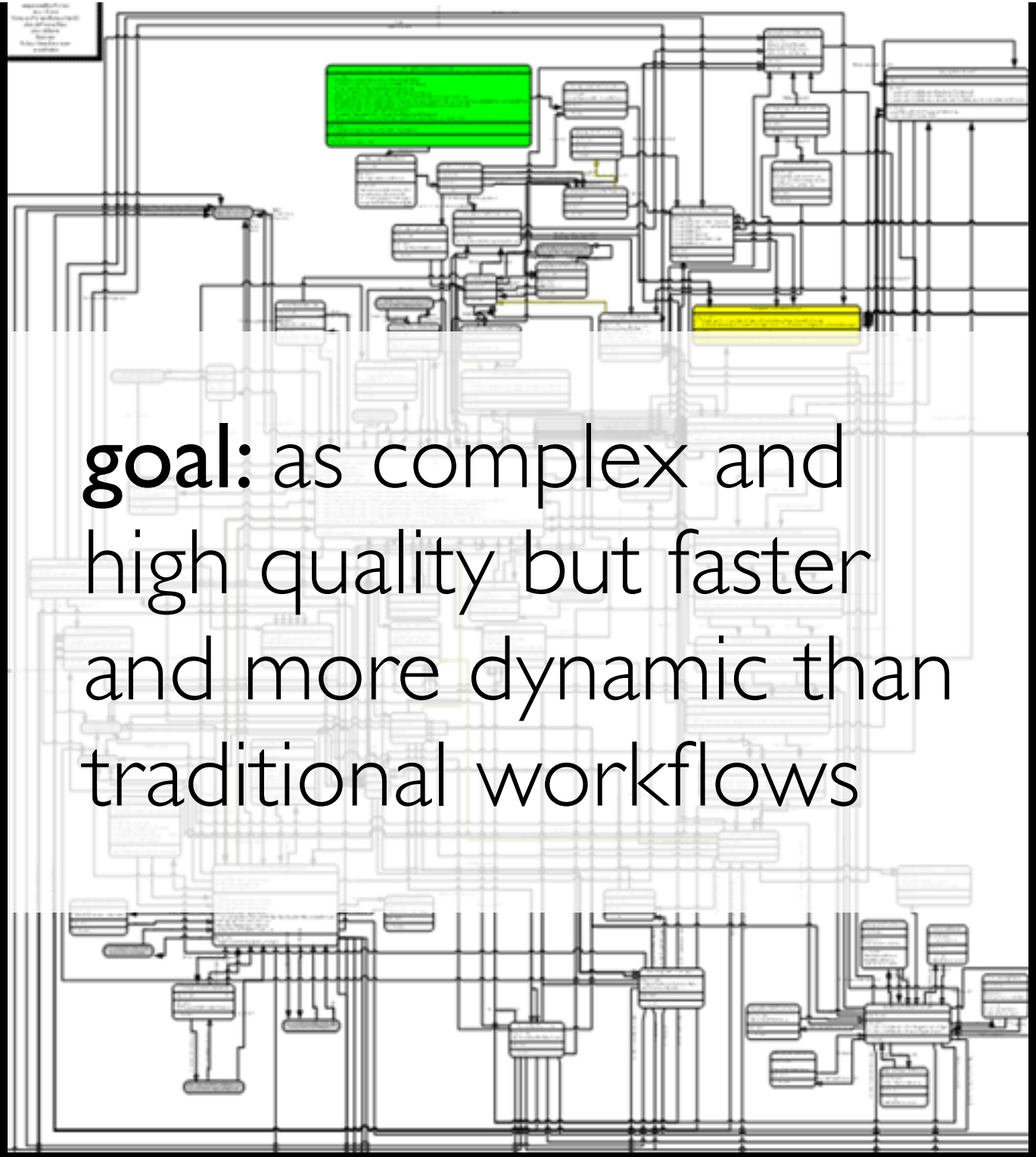


CrowdWeaver [Kittur et al. 2012]

Find-Fix-Verify [Bernstein et al. 2010]

TurKit [Little et al. 2009]

CrowdForge [Kittur et al. 2011]



goal: as complex and high quality but faster and more dynamic than traditional workflows

http://www.vsn-tv.com/blog/view/51-risks-in-ui-based-workflows-systems

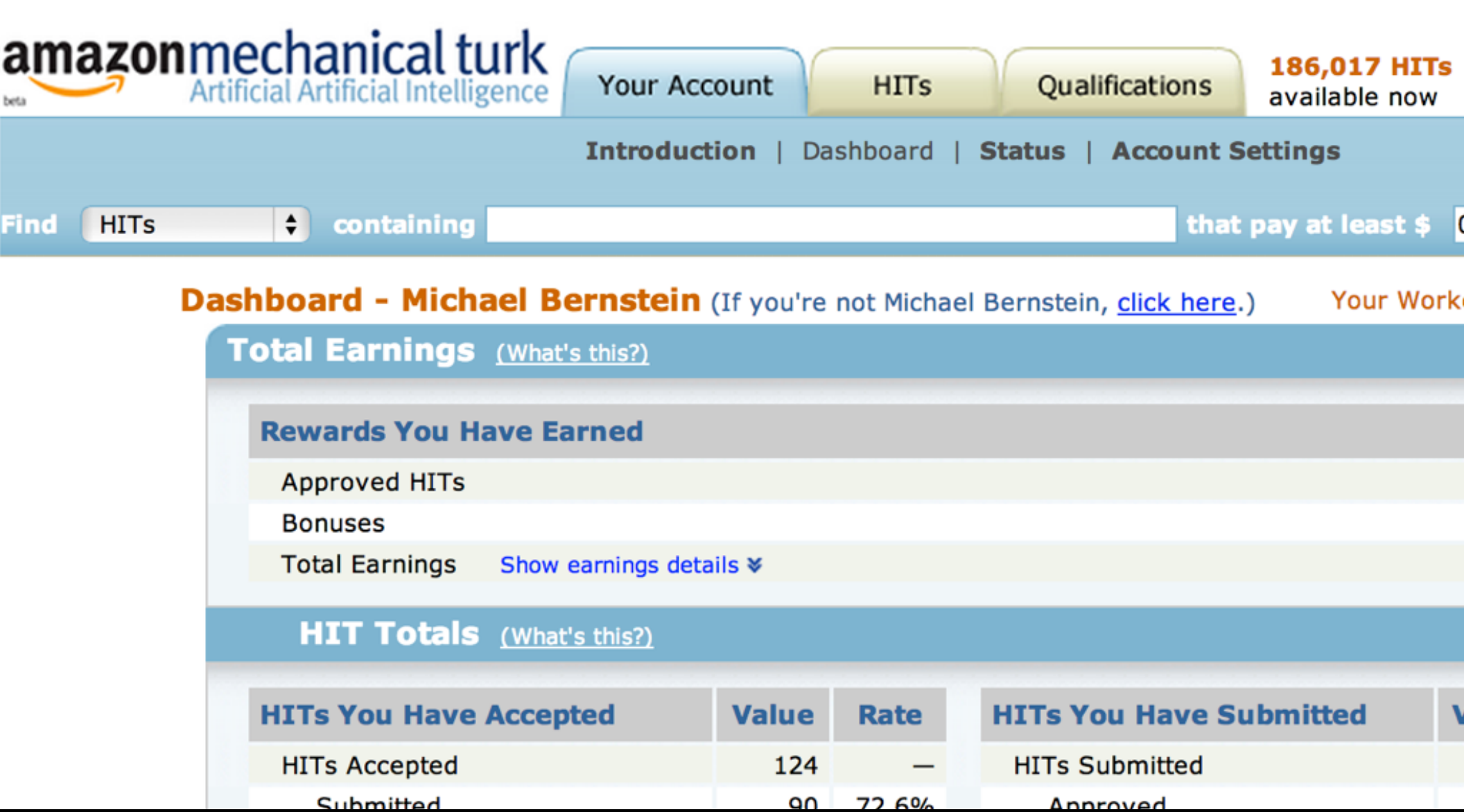
http://www.vsn-tv.com/blog/view/51-risks-in-ui-based-workflows-systems

Workflow

- Flexible: dynamic and flexible
- Predictable: time and monetary costs
- Shareable: libraries, design patterns

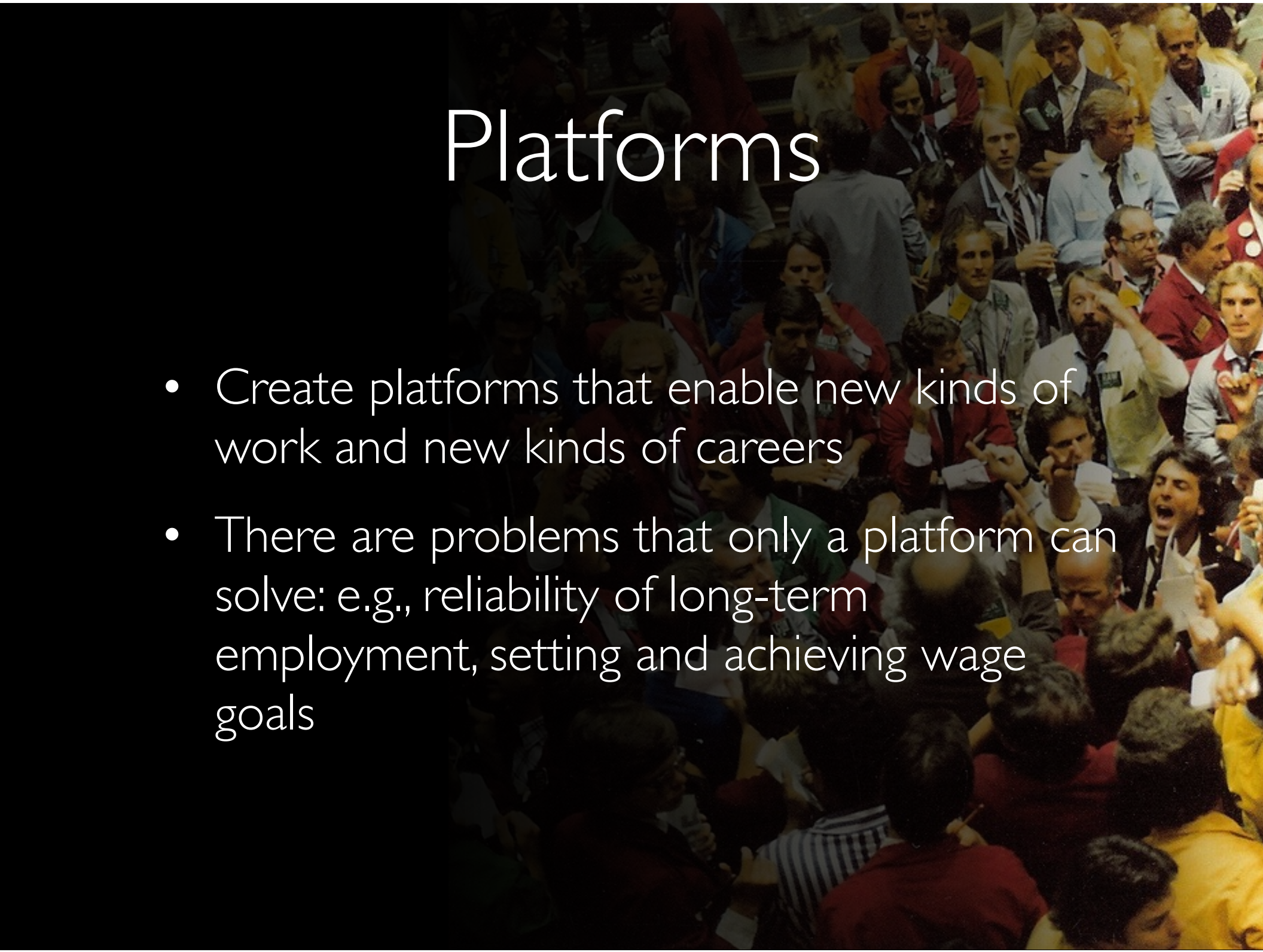
Crowd Computation: platforms

Goal: crowd platforms replace firms



Platforms determine work

Platforms



- Create platforms that enable new kinds of work and new kinds of careers
- There are problems that only a platform can solve: e.g., reliability of long-term employment, setting and achieving wage goals

Crowd Workers
Crowd Work
Crowd Computation

?

?

?

?

?

?

?

?

?

?

?

?

?

?

?

?

?

?

?

WORKERS
education & credentials
motivation & rewards
job design
WORK
hierarchy
workflow
task assignment
realtime, synchronous work
quality control
COMPUTATION
platform
crowds guiding AIs
AIs guiding crowds