



THE UNIVERSITY  
of EDINBURGH

# Crowdsourced Labour: insights for crowd-based digital research

---

EUDACT 2015

# Crowdsourcing Labour

---

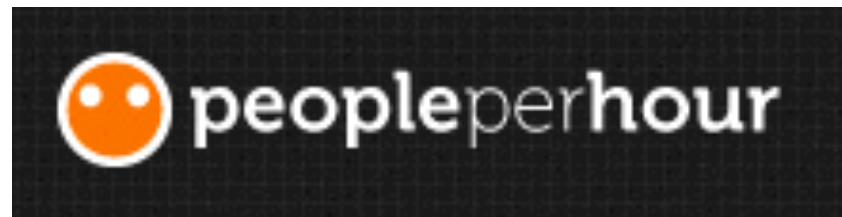
Digital Citizen Science draws heavily on crowdsourcing for other uses

- Ideas and Innovation competitions
- Crowdsourced Microwork
- Freelance exchanges

# Online work exchanges

---

New ways of finding work,  
finding workers,  
*being employed*  
*and getting work done*



Other work exchanges:

Uber, ebay, Airb'n'b

# The World's Largest Workforce

Instantly hire millions of people to collect, filter, and enhance your data.

## Business Data

Data collected at scale

The accuracy of in-house teams, the cost advantage of the crowd

## Senti

Sentiment Analysis

Fast, accurate human review of user-generated social media content.

## Contributors & Channels

Interested in completing microtasks or displaying a task wall to your user base?

Real-time Crowd Labor

5 judgments/sec  
current velocity

951,933,538  
total judgments

### On-Demand

Pay for only what you need when you need it.

### Accurate

Guaranteed quality with rich analytics.

### Fast

100x faster than traditional methods.

### Experienced

Creating crowdsourcing solutions since 2007.

“CrowdFlower gives us the on-demand scalability, flexibility, and speed of the crowd that we need to improve eBay products.”

— James Rubinstein, eBay

## Custom solutions

Big-data services

## Builder

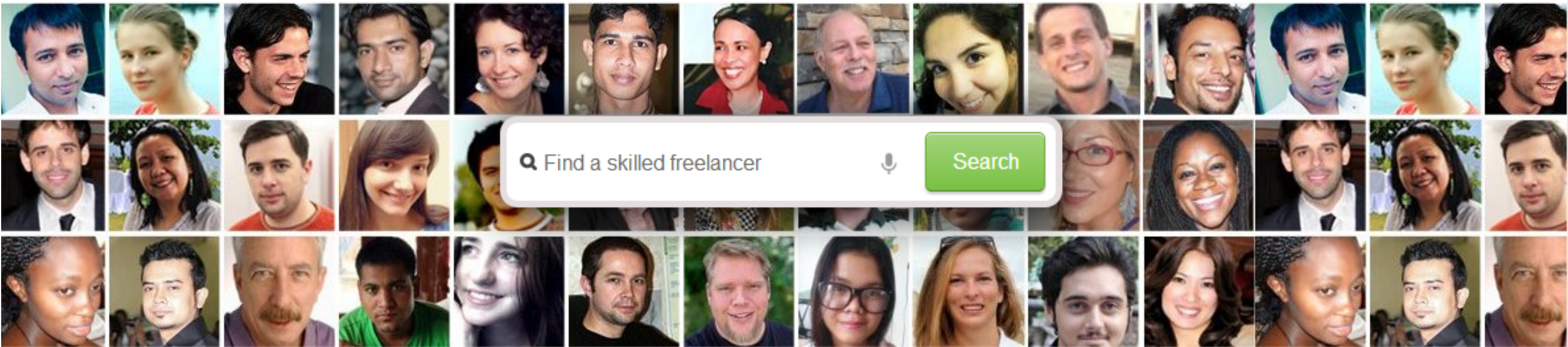
Create your own crowdsourcing jobs



[Hire Freelancers](#) [Find Work](#) [How It Works](#)

[Log in](#)

[Sign up](#)



Get the right freelancer. Get the job done.

[Post a job. It's free!](#)

[Want a job? Sign up!](#)

# Crowdsourcing?

---

An *on-demand*, online, distributed *problem-solving, financing*

and *production* model

combining *top-down* (control)

and *bottom-up* elements (voluntarism, choice, 'social'),

with a *software-based intermediary*

coordinating *tasks* and facilitating a *market*

*Crowd*-sourcing <- *Out*-sourcing



# Types of Work

---

Work organised/scheduled online, but conducted at least partly face to face/on-site

e.g. plumbers, social care, etc

Work submitted on-line/off-site

Information, data, knowledge, creative, software, organising



# Types of tasks (after Frei)

---

|                  | Size, org,pay   | example  |
|------------------|---|--|
| Microtasks       | High volume; low pay per task; automated                              | Transcription, classifying, price search, find simple info               |
| 'Macro'-tasks    | High volume, low pay, automated                                       | Product review, simple testing, simple info collecting (e.g marketing)   |
| Simple projects  | Low volume, single tasks, with skill and moderate pay. Direct contact | Design a website<br>Do accounts<br>Write a presentation<br>Design a logo |
| Complex projects | Single projects, high pay, often multiple people, direct contact      | Scientific challenges<br>Algorithm design<br>Complex research            |

# Key Ideas in crowdsourcing

Computational thinking (Papert) applied to work and the **algorithmic** solving of complicated problems of scale

- Inter-twining of computers and people for ‘big data’
- ‘Social computing’
- Machine based quality control of anonymous workers
- Outsourcing of specialist work
- Algorithmic matching of work and workers

Outsourcing, globalisation and de-skilling of labour ‘virtual work’

# Crowdsourced Microwork

---

Collective Intelligence

Human Computing

Peer production

Online markets and e-reputation

Online labour markets

Human computation and  
'cognitive intelligence' tasks

2006 Jeff Howe  
'crowdsourcing'

2006 Tapscott  
+Williams Wikinomics

Online  
Community or  
'Peer' production

New Digital Labour

(Distributed)  
Collective  
Intelligence

E.g. Levy

1998  
Malone and  
Laubacher  
'elancing'

Open Online  
markets  
ecommerce and  
e-reputation

Freelance and  
casual labour job  
boards

# Brabham – Classes of Crowdsourcing

---

1. *The Knowledge Discovery and Management Approach*
2. *The Broadcast Search Approach*
3. *The Peer-Vetted Creative Production Approach*
4. *Distributed Human Intelligence Tasking*

# Saxton et al – types of 'crowdsourcing'

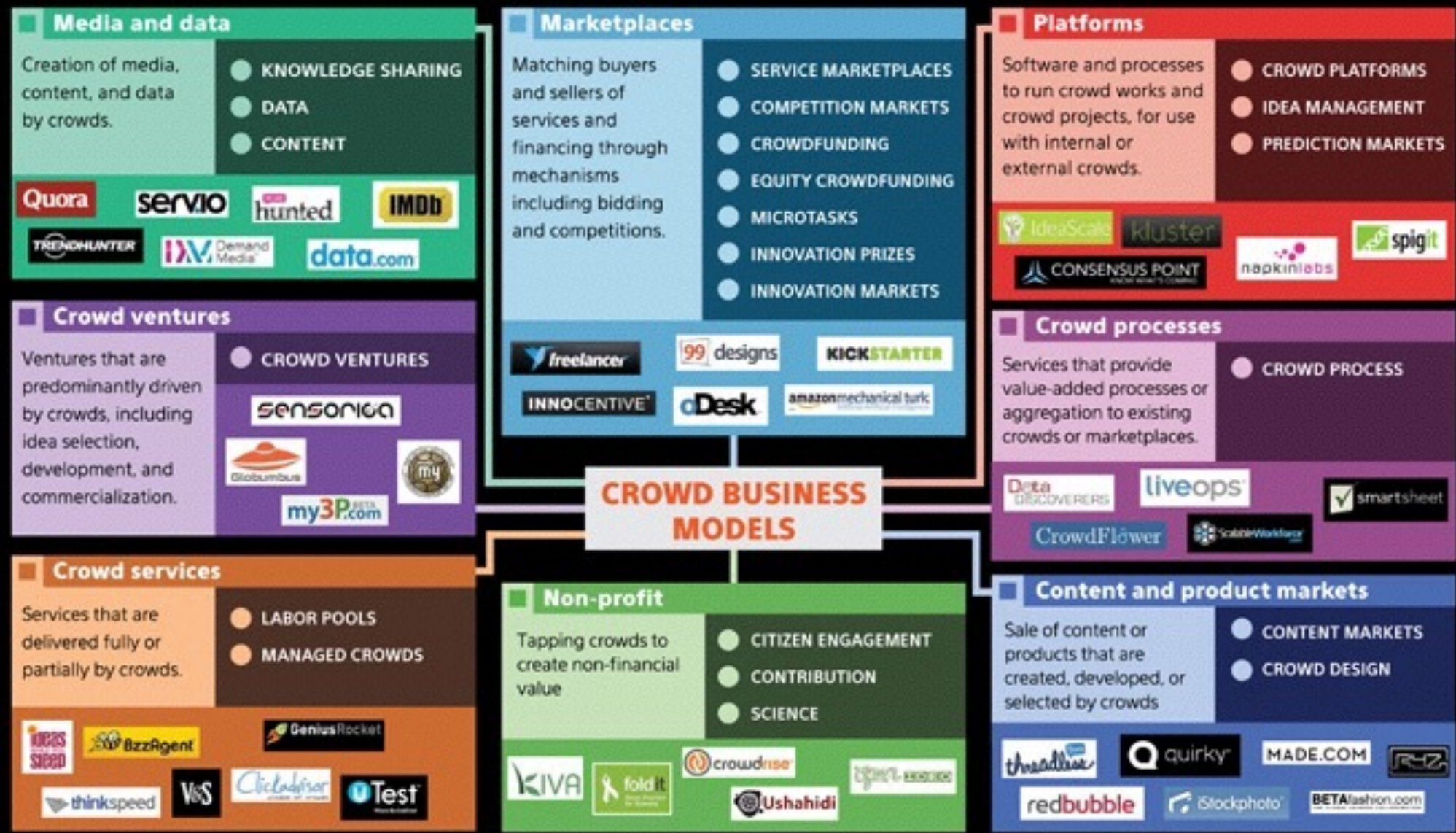
---

1. **Intermediary - *Find finish and earn model (mTurk, innocentive)***
2. Citizen media - *collective media production*
3. **Collaborative software development - *Topcoder***
4. **Digital goods sales – *istockphoto***
5. **Product design – *Threadless***
6. Peer-to-peer financing – *Kiva*
7. Consumer report model – *users share product reviews*
8. Knowledge base building – *wiki, trendwatching*
9. Collaborative science projects *Foldit, Captcha etc*



# Business models – many frameworks

## Crowd business models



Excerpted from  
**Getting Results From Crowds**  
by Ross Dawson and Steve Bynghall

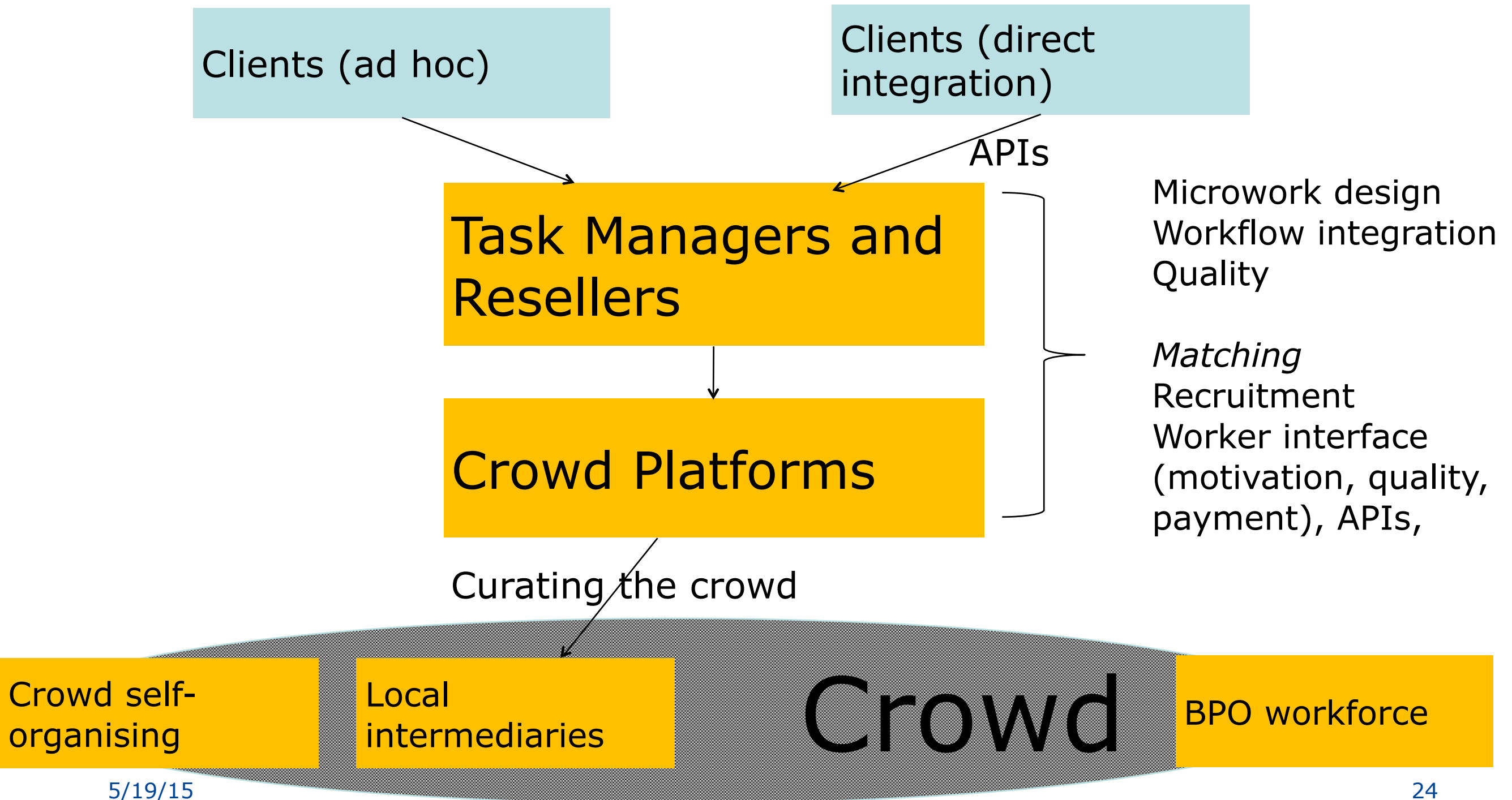
For definitions, analysis, free book chapters,  
and other crowdsourcing resources go to:  
**[www.resultsfromcrowds.com](http://www.resultsfromcrowds.com)**

Note: examples only; see website for full list of crowdsourcing services





# Crowdsourced Microwork model



# Note on terminology

---

## **Those who do work**

- Contractors
- Freelancers
- Volunteers
- Workers
- Contributors
- Sellers
- Customers
- Players

## ***Brand terms***

- Clickworkers
- Turkers
- Elancer

## **Those who pay for work**

- Employers
- Clients
- Requesters
- Buyers
- Customers

## **Intermediaries**

- Platform
- Marketplace
- Service Provider
- Crowd Manager
- Vendor
  
- NOT Agency ?

# Challenge of Quality

---

Driven by Platform need to find customers and workers

How to assure the Quality of work done?

# Quality mechanisms

---

Quality of work, data, outcomes etc is ensured, facilitated, assured, encouraged, and policed through a variety of mechanisms.

1. **‘Technical standards’** by technical committee, with commercial and government influence : with compliance tests, kite marks, sanctions etc
2. **Cultural norms** set by elites? Opinion leaders? The audience?
3. **Professional standards** - elites, - exams, closed profession, titles, sanctions etc, commodification of skills.
4. **The Market** - by customer choice, competition and innovation. Buyers and sellers both do work in the marketplace. - Sociologist of markets Callon+ Muniesa etc many more actors, the market as a calculating machine for qualities
5. **Peer reviewing** - by ‘peers’... e.g in science Replicatability , transparency of method..

These processes not only measure quality, but define how it is measured, the scales, what counts as a quality to be measured, and then what levels can be considered ‘good’, within tolerance etc.

# Microwork quality mechanisms

---

Reputation systems

Qualification systems

Matching systems

Task design

Crowd techniques

Motivation and Incentive

Curation of the crowd

# Crowd techniques

---

## **Pre-work**

- Qualifying Tests - Accumulation of qualifications
- Training. Workers will be reluctant to do this if they do not expect to be given much work. The task design might be such that there is an expected learning period at the beginning when quality is low.

## **In tasks:**

- 'Ground truth Seeding' or Gold - insertion of tasks with known answers
- Output agreement (between 2 or more workers)
- Redundancy (or multiple task performance)
- Multilevel review, where workers review each other's work
- Expert review, where an expert checks discrepancies or does spot checks (e.g. the client)
- Statistical tests on consistency of work,
- Speed and reliability metrics

## **Across different tasks**

- Accumulated automatic quality scores for workers using multiple metrics - 'Reputation' indicators (e.g. Quinn and Bederson, 2011 consider this the main quality control mechanism)

# Quality cont

---

Qualification and Reputation systems combine:

- Improve **Matching of work to workers** (automatic or manual) so that workers get appropriate work
- For access to **better paid work** that requires higher quality.
- For promotion (e.g. to reviewer, mentor),
- Getting work outside (transferable reputation score)



# A voluntary workforce

---

## Control of task design - guidelines, practice

- poor design is difficult to complete - rejection by workers. An industry has developed to help Users design tasks that will work, and design training and tests.

## ‘Empowerment of workers’

- Communities of workers circulating information about poor buyers of work and fly-by-night platforms; maintaining ‘closed shop’;
- Communities of learning supported by intermediary platform

# Worker Support and networking

---





## Forum

### Workers

### Last Post



A place for workers.



#### mTurk Forum (10 Viewing)

The main hub for general mturk discussion.

**Sub-Forums:** [Introductions](#) , [Turker of the Month](#)



Threads: 3,661  
Posts: 28,501

How to make a HIT that makes...   
by tory  
Today, 10:25 AM



#### Great HITS (290 Viewing)

The most valuable forum you will ever find.



Threads: 729  
Posts: 223,984

Can't Find Great HITS? 5/31...   
by cutbackdropturn  
Today, 12:55 PM



#### Requesters (9 Viewing)

Discuss and rate requesters.

**Sub-Forums:** [Top](#)



Threads: 824  
Posts: 14,221

Justin Coombs   
by shalo  
Today, 12:23 PM



#### Statistics (1 Viewing)

Share your hit statistics.



Threads: 150  
Posts: 3,190

:a My monthly earnings...   
by vaas  
Today, 07:02 AM



#### Goals (2 Viewing)

Share your goal and your progress.



Threads: 11  
Posts: 87

Smart Deco Furniture   
by lunarobverse  
Today, 12:52 AM

### Requesters

### Last Post



A place for requesters.



#### Do My HIT!

Recruit workers and advertise your HIT.



Threads: 55  
Posts: 497

\$50 USD reward for helping...   
by Musical\_life  
05-28-2013, 08:57 AM

# “Incentives and Motivation”

---

## **Unpaid;**

- a game, a security feature ([Von Arn](#), re-CAPTCHA)
- Built (tradeable) experience (e.g. Open Source projects); Freelance platforms
- engaged volunteers - e.g. Finnish Library, Zooniverse (contributing, community etc)

## **Paid or other reward**

- Direct payment per task, or some exchangeable token
- Access to future better paying work

## **Gamification**

- leaderboards, badges etc

## **“Curation of the Crowd” v. self organising market**

- Practice shows that to ensure a reliable quality workforce, intermediaries often have to support workers fairly, transparency, education, facilitate interactions and peer support, voice to the workers, reward loyalty, provide training, deal with disputes fairly
- Different sorts of ‘crowd’ require different approaches ([Haythornthwaite 2009](#)) but the distinction is not so clear in practice

# Reflection

---

# Using Crowdsourced work in Research

---

## 1. Volunteer Digital Citizen Research

Engagement or Data?

Known Targeted Community or Unknown Crowd

Analysis and visualisation, or just data?

Part of a process of engagement

## 2. Paid Crowdsourced Work

Human computing tool: Analysis of “Big Data” - where the computer fails

Paid community data collection





# Research on online exchanges

---

**Crowdsourcing – business models** +some critical user studies (Brabham 2010, 2011, 2013).

Elancing' from an **HR perspective** (Aguinis and Lawal 2013)

**Microtask platform** use – e.g. in scientific experiments (Iperitos 2008,210a, 2010b)

**Labour economics** perspective (Agrawal et al 2013)

**Virtual labour** Huws 2003; Scholz 2012; Kleemann and Voß, 2008; Huws 2013; Holts (2013) Caraway (2010) )

**Legal issues** (Felstiner (2011)

**Microworker identity** (Lehdonvirta and Mezier (2013)

**Microworker empowerment** - Turkopticon (Irani and Silberman 2013).