how to do “AI” in 2013

Joseph Turian

MetaOptimize

@turian

the ghosts of work

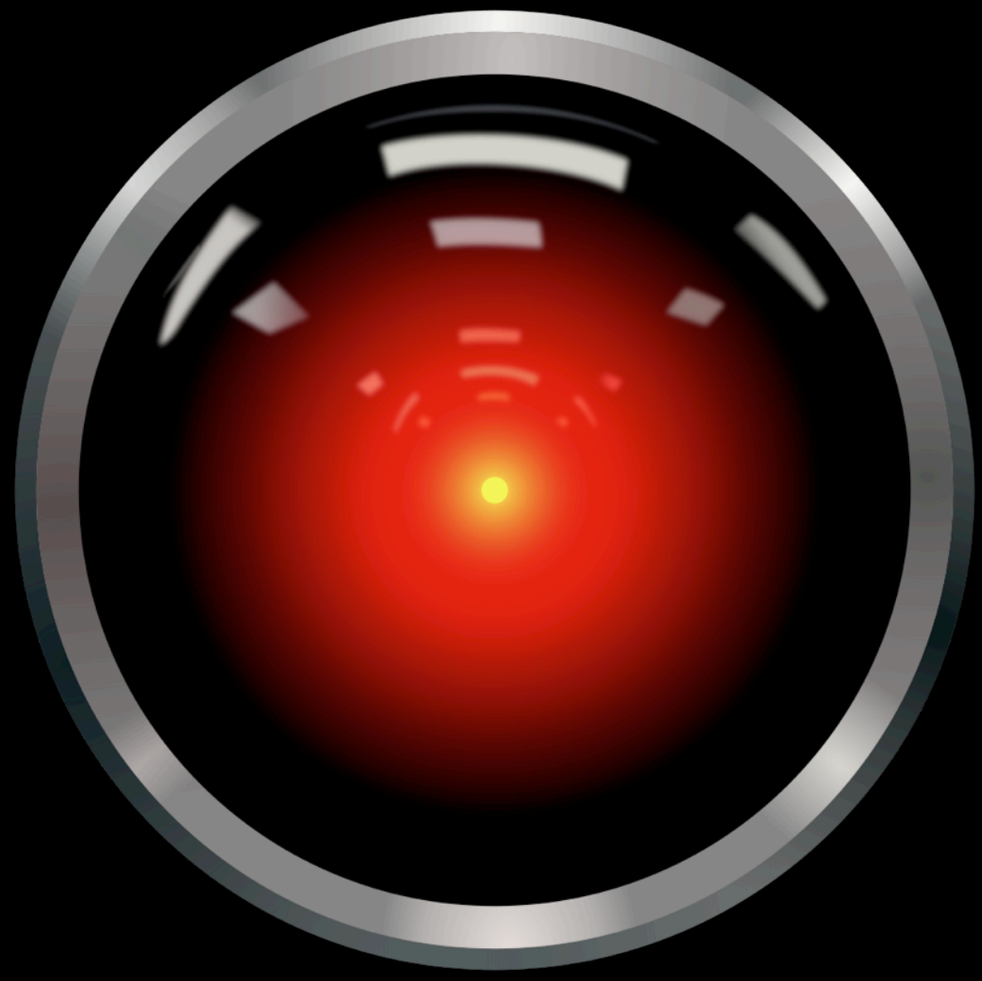
past, future, and present

Past

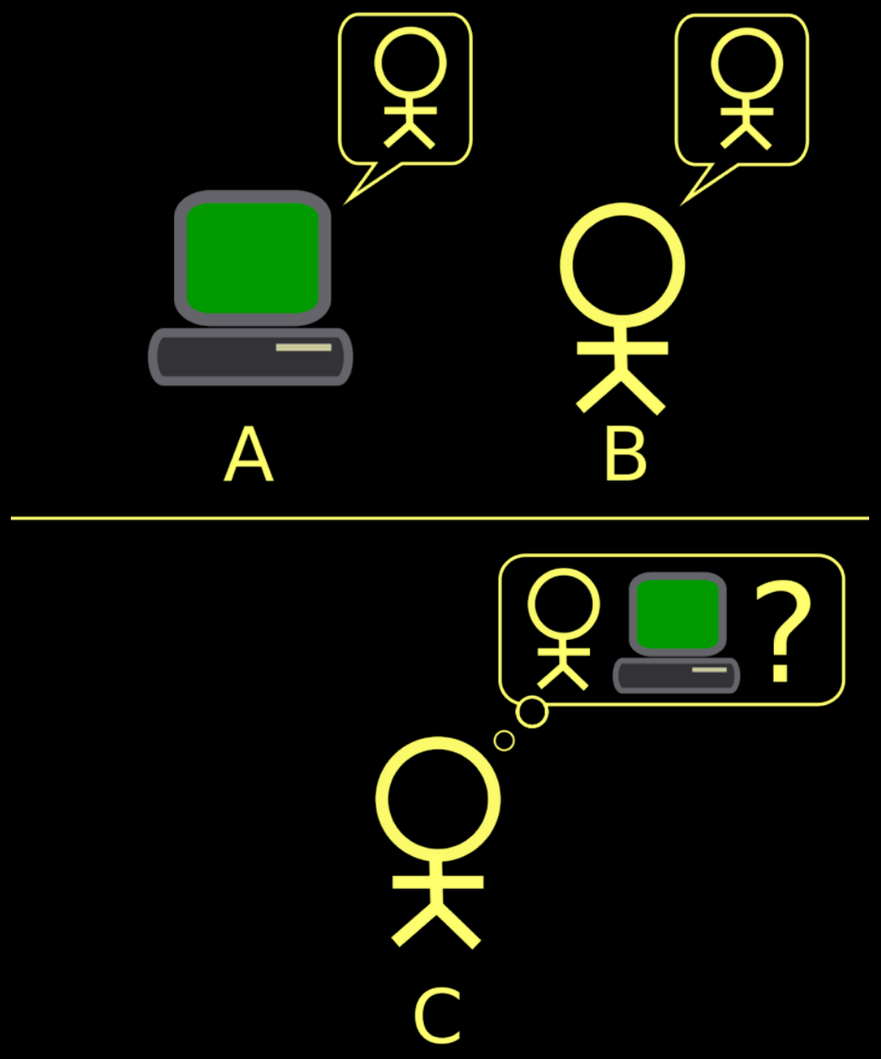
computer, *n.*, 1613: A person who makes calculations.

Present

Future



The Turing Test (1950)



The Golden Years of AI

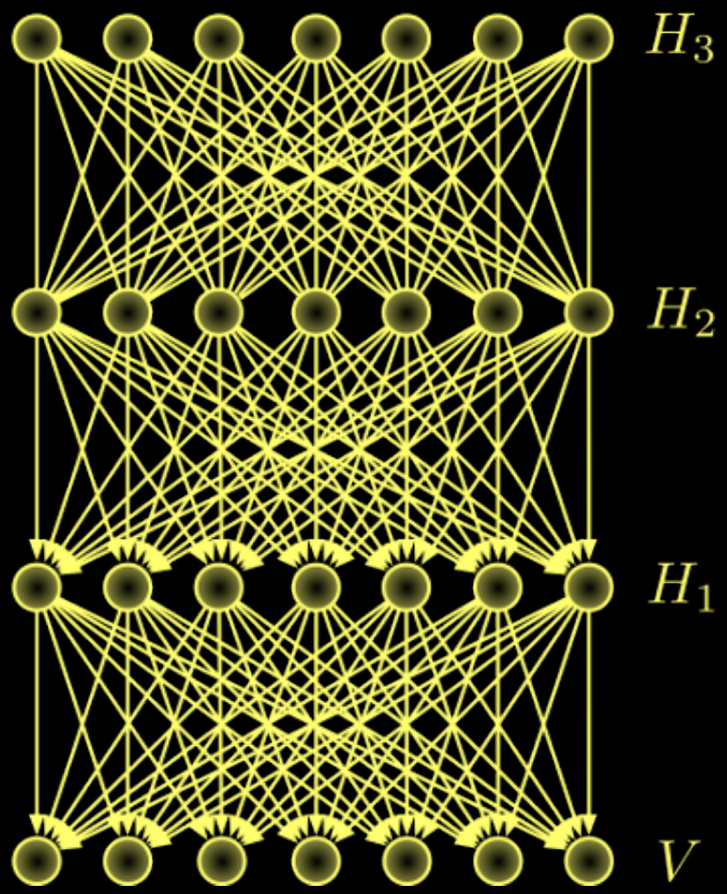
1965, H.A. Simon: "machines will be capable,
within 20 years,
of doing any work a man can do."

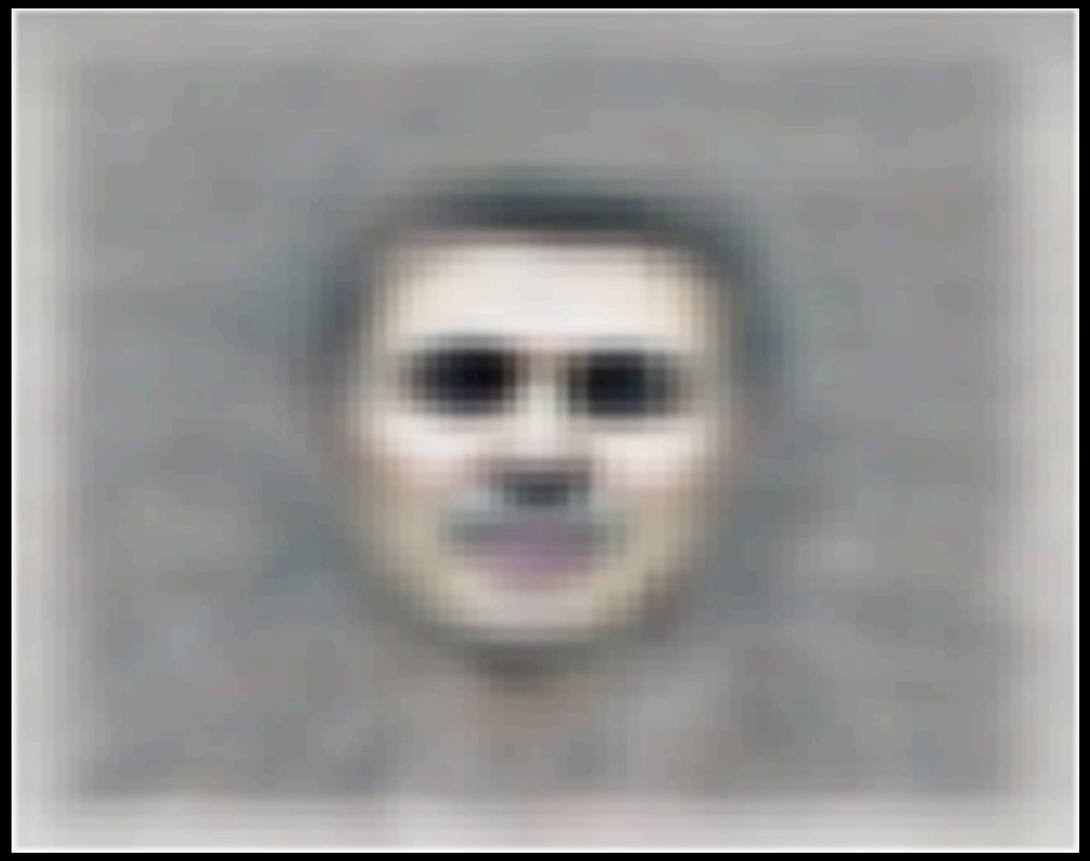
1970, Minsky: "In from 3-8 years we will have
a machine with the general intelligence
of an average human being."

The AI winter

A new dawn for AI?

Deep Machine Learning

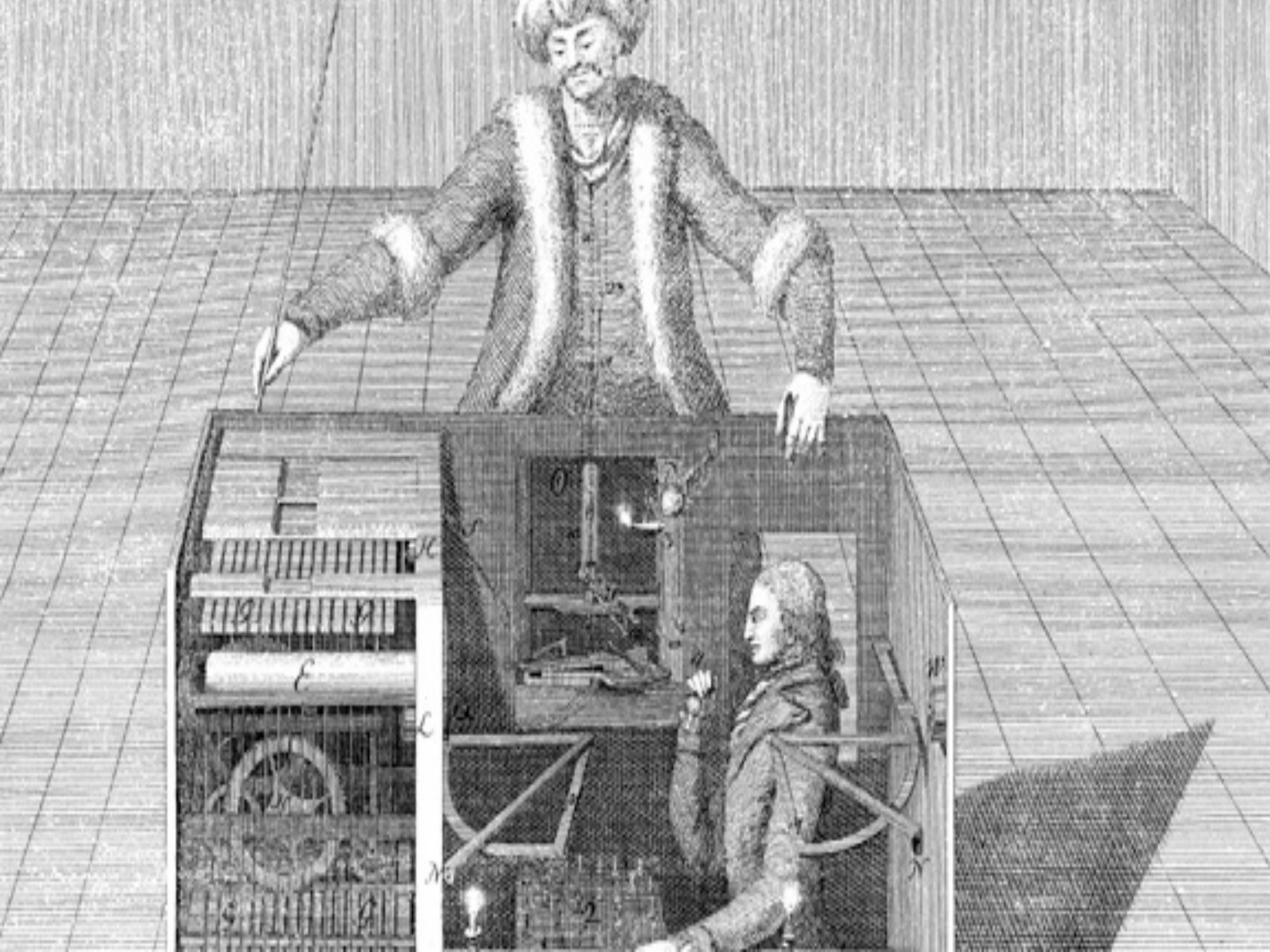




the Google “cat faces” paper,
NY Times cover Nov 23 2012

a trick to do “AI”

a trick to do “AI”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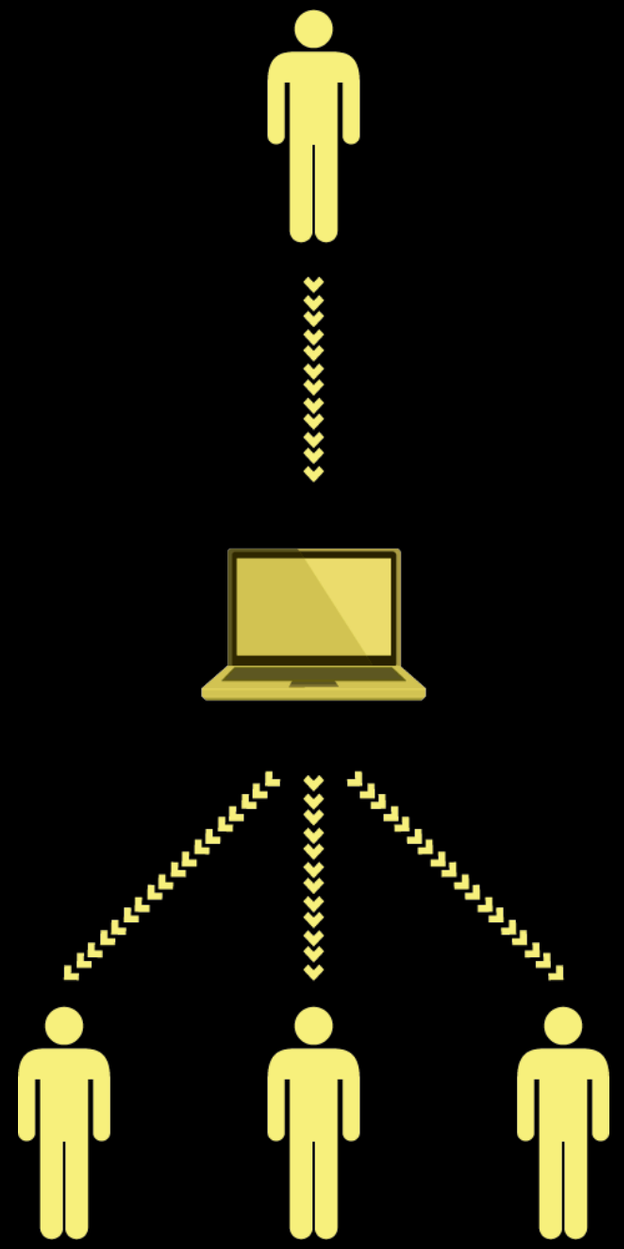
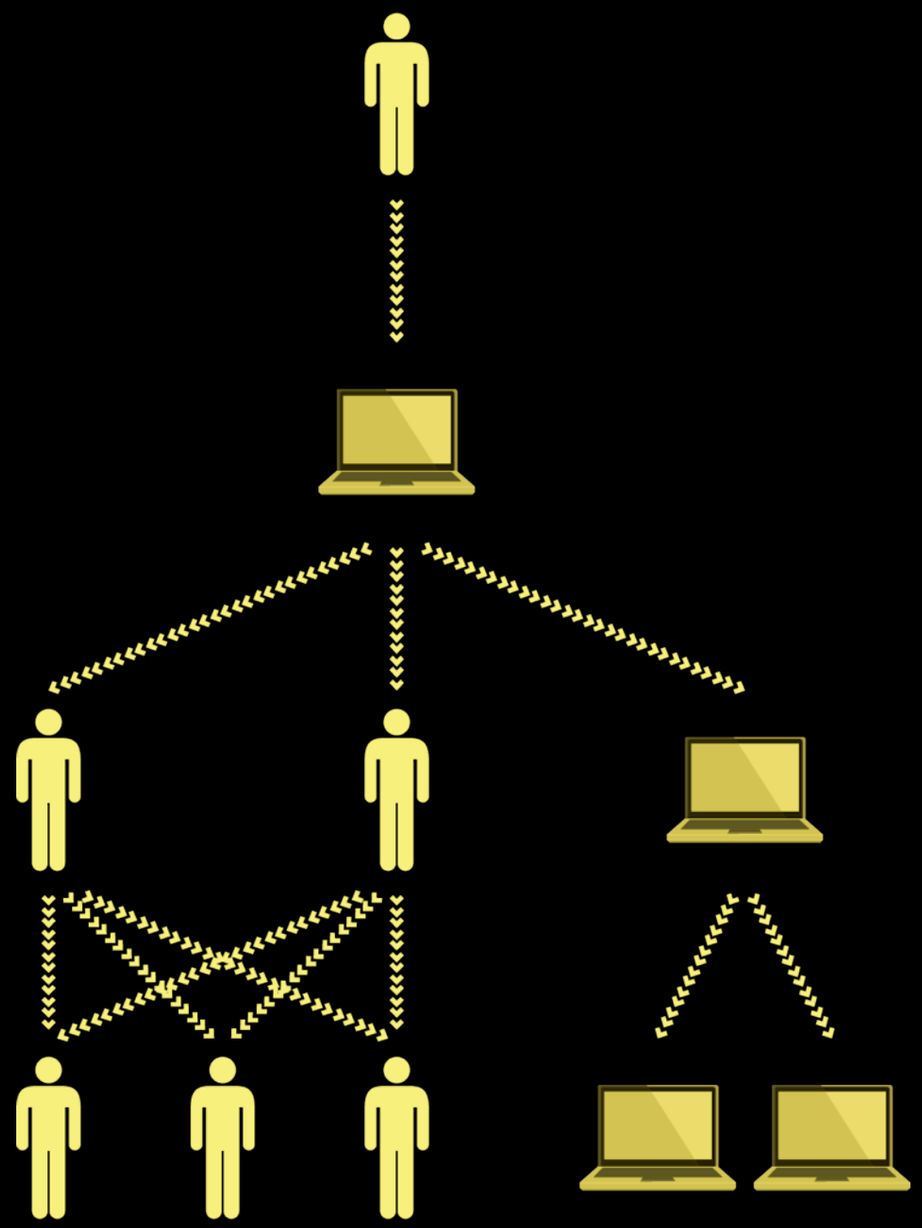


Crowd Labor



who am I and why do I care?

Hi.

Engineer with 20 yrs coding exp

PhD 10 yrs exp: large-scale ML+NLP

Founded MetaOptimize

Crowd-Labor applications

Common applications

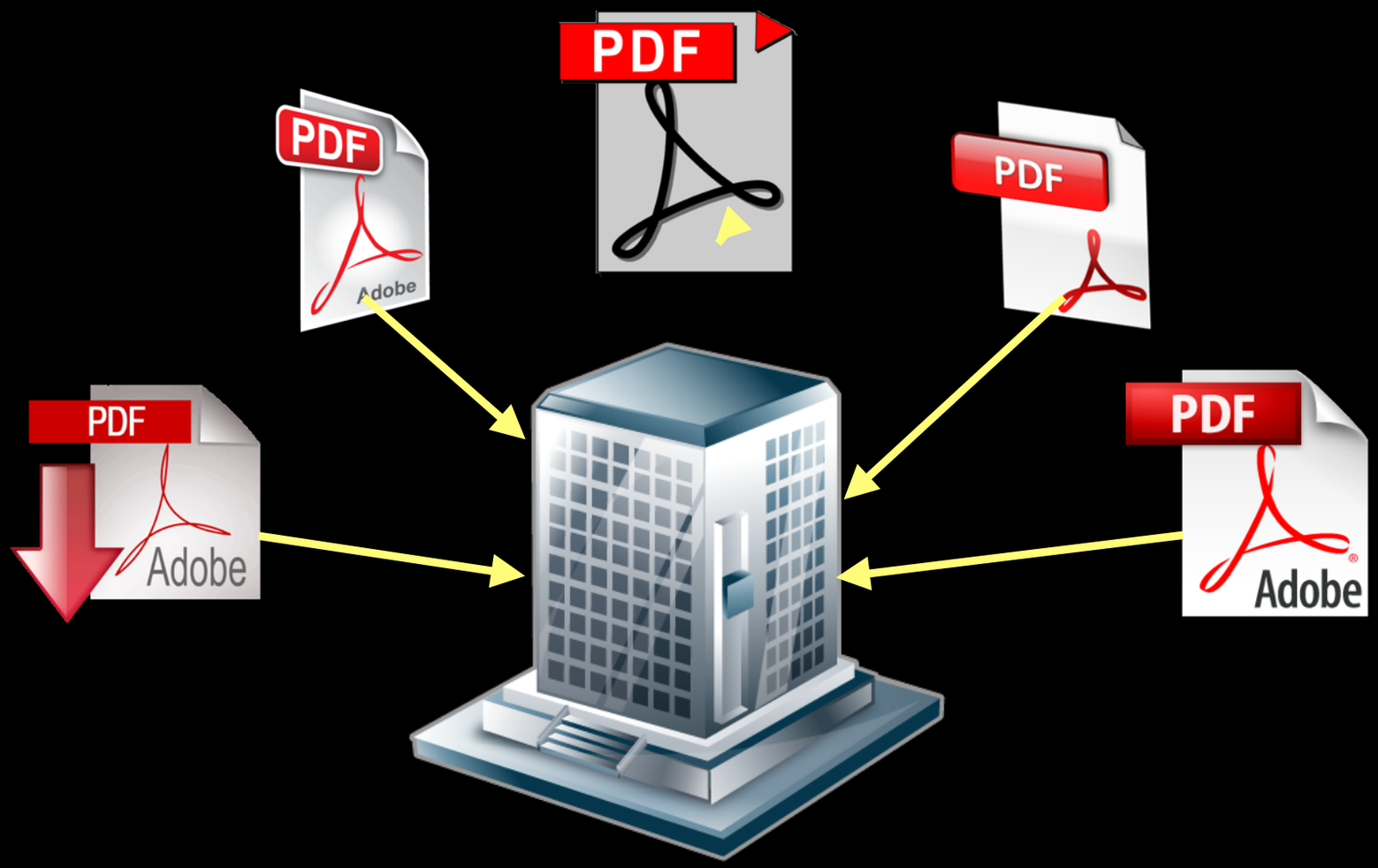
Data entry

Categorization

Content generation

...

Case study: Data entry



Workplace safety company

courtesy of CloudFactory

In-house approach

Complicated, undocumented business process

↓

Unreliable results

Costly training, high turnover

↓

Can't scale to meet demand

Crowd-Labor approach

Virtual assembly line

Multiple eyes per task

Reliable results

Small microtasks with no training required

Scales to meet demand

Data Entry

Temp workers

86% accuracy

Crowd-labor with auto QA

98% accuracy

source: Humanoid (acquired by CloudFactory)

Sentiment Analysis

Automatic

Error-prone

Coarse-grained (pos or neg)

Crowd-Labor

Accurate

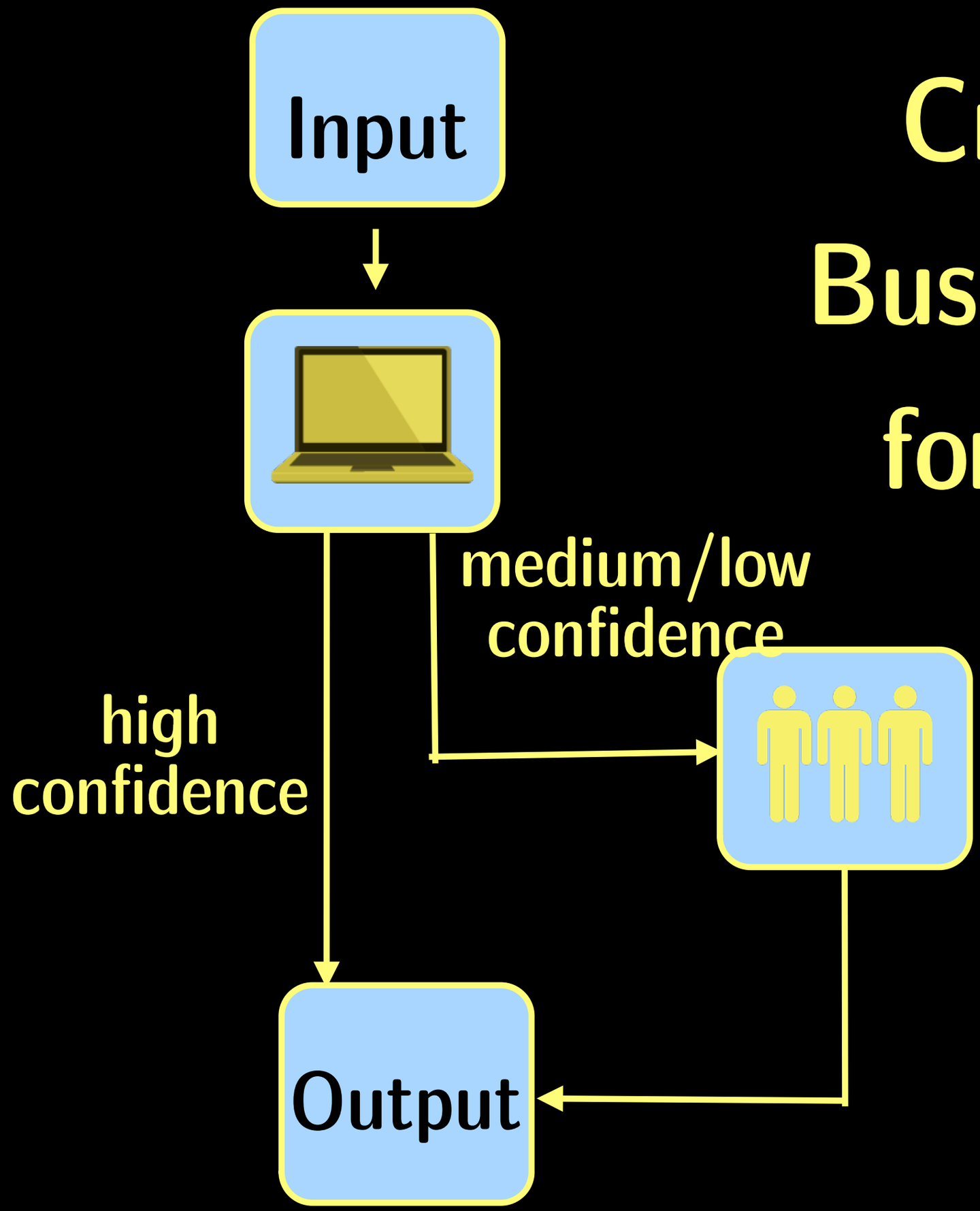
Fine-grained

“Did they think that my product is **cool**?”

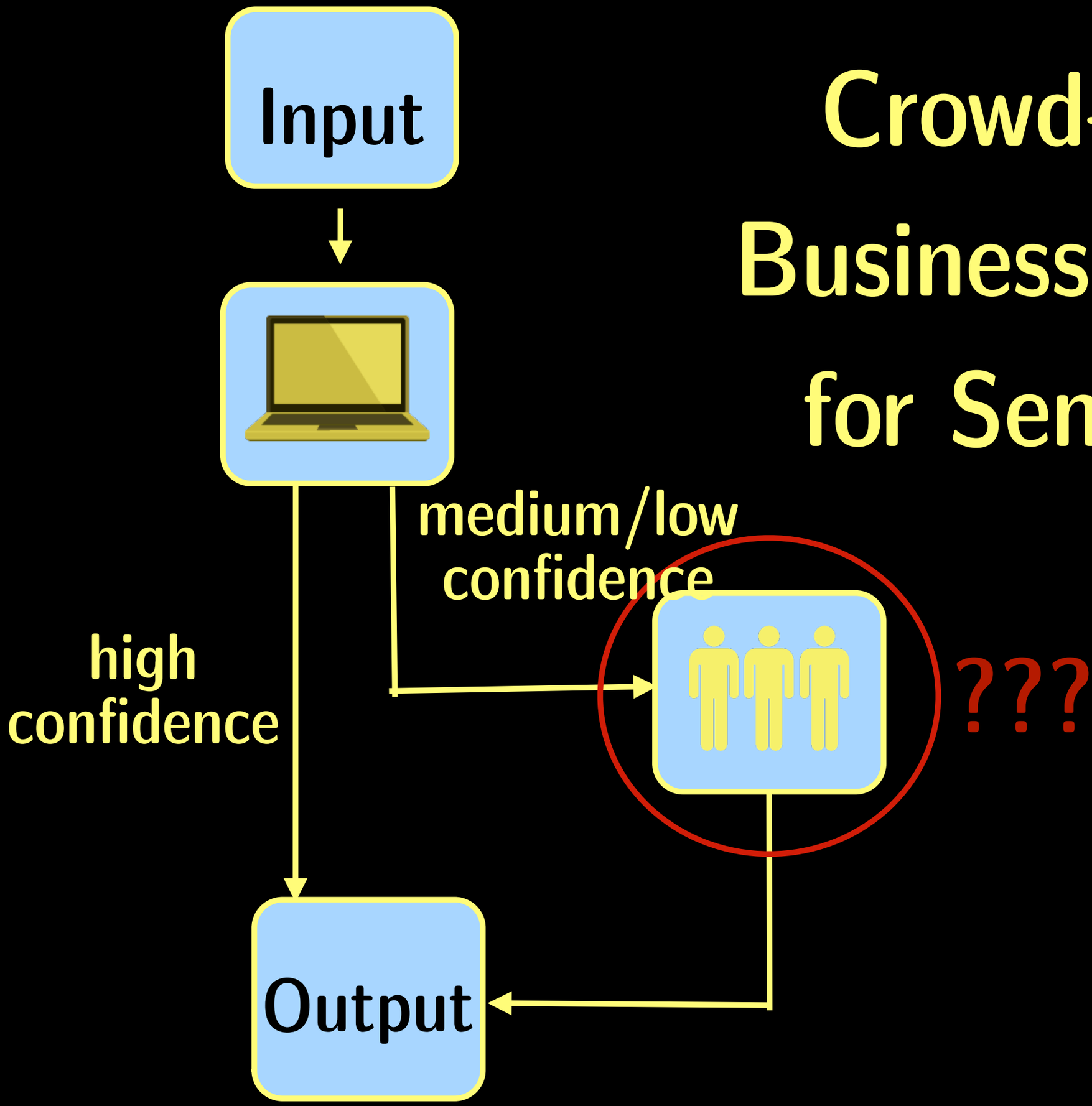
“Did they write that my car is **fast**?”

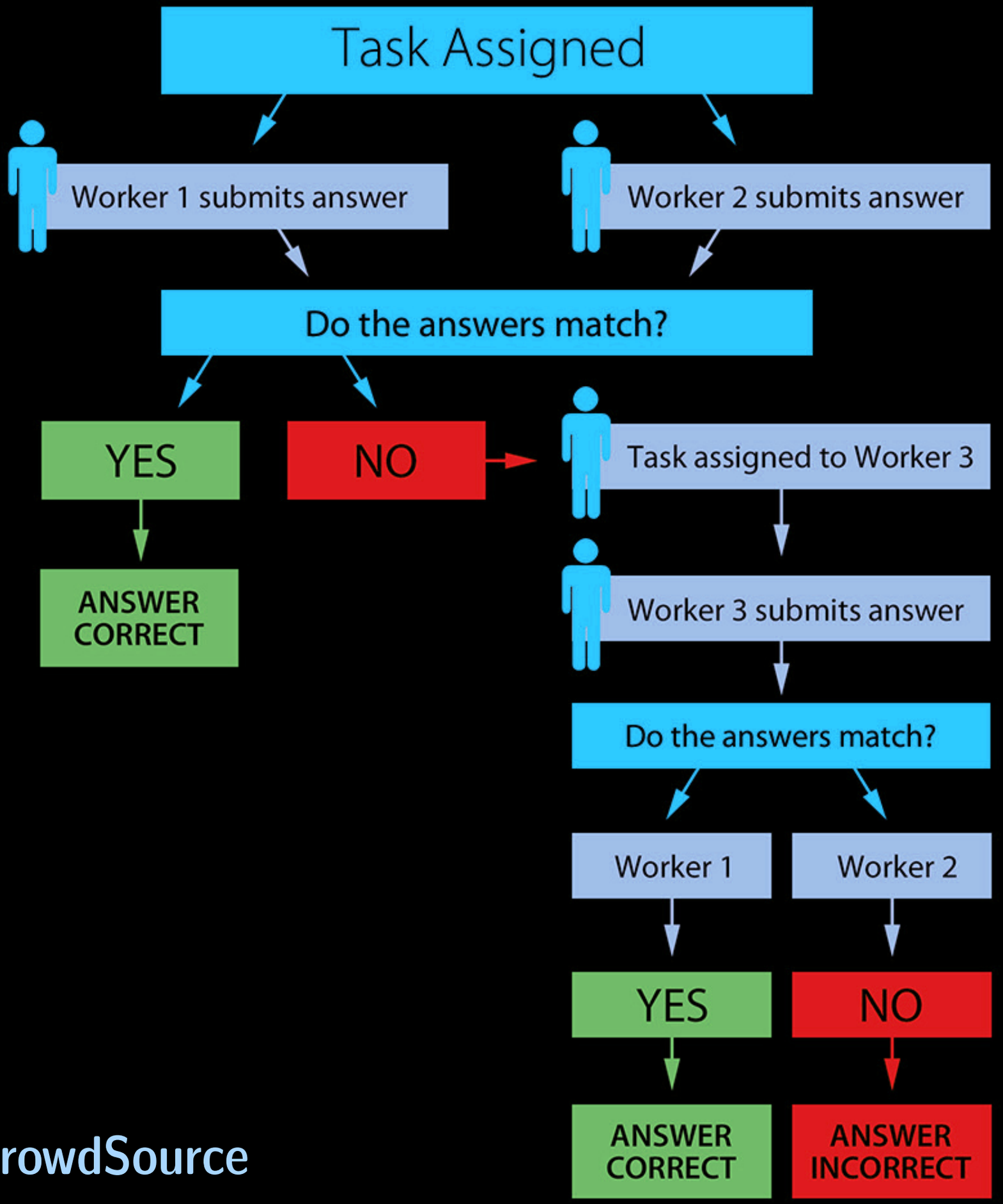
https://crowdflower.com/senti

Crowd-Labor Business Process for Sentiment



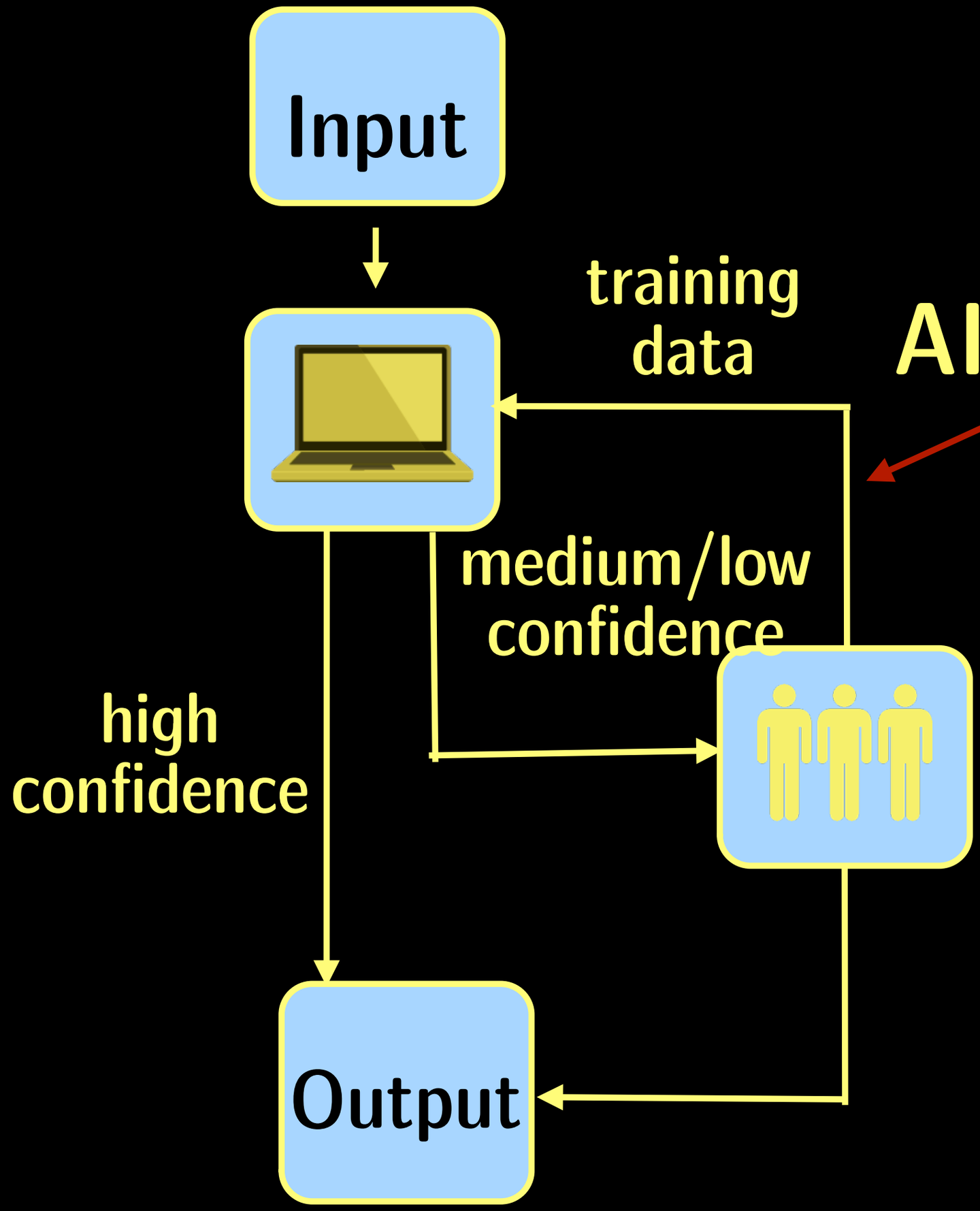
Crowd-Labor Business Process for Sentiment





courtesy of CrowdSource

AI Virtuous Cycle



Better grammar = $$$

“We noticed that

demand for a hotel **increases** if the **reviews** on TripAdvisor and Travelocity are **well-written**, without spelling errors;

this holds no matter if the review is

positive or negative.”

Source: Panos Ipeirotis

“we’ll just implement a grammar checker to do it”

“we’ll hire interns and outsourcers to do it”

“let’s hire the crowd to do it”

mturk tracker

General

Arrivals

Top requesters

Classification

Hit details: Check filtered product reviews flag for editing

Requester	Zappos Content Team
Reward	0.05
Time alloted	60
Occurrence date	April 19, 2009, 4:01 a.m.
Description	Prepare Zappos product reviews for editing
Keywords	editing, product, review, grammar, spelling, zappos

April

Adjust ch

Zoom: 1d 5d 1m

mturk tracker

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April

Zoom: 1d 5d 1m

Arrivals

Top requesters

Classification

Revenue lift > $1M

what we want

vs.

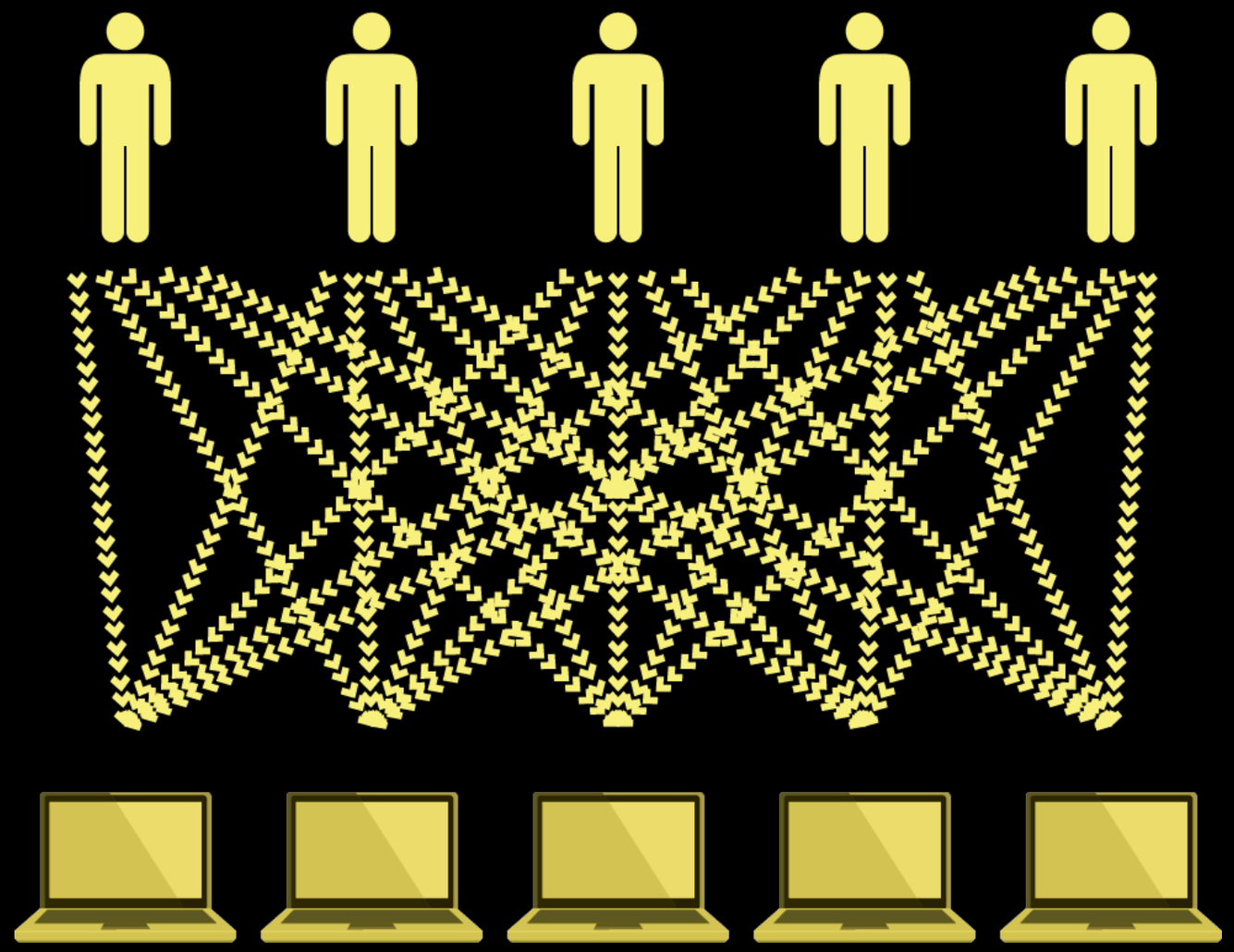
what we have

intelligent applications we want

vs.

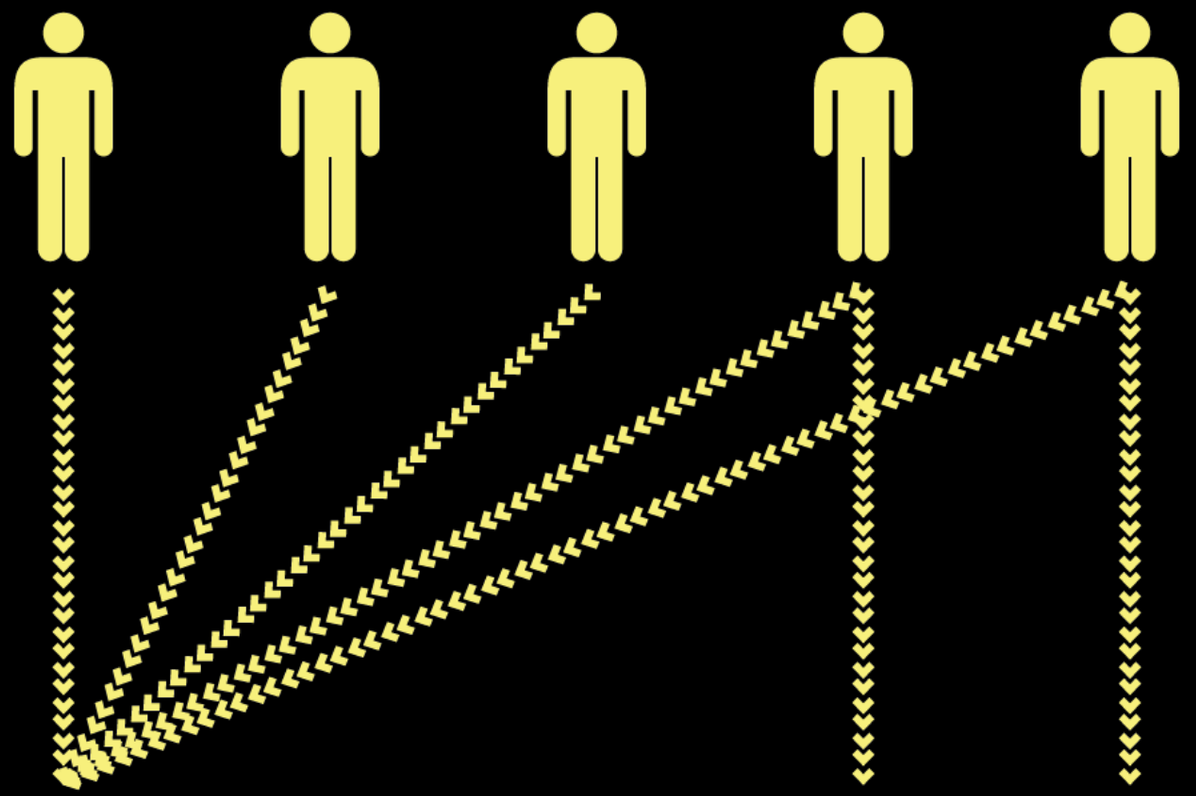
intelligent applications we have

intelligent applications we want



Applications

intelligent applications we have



commoditized Crowd-Labor Apps

Enterprise Crowd-Labor Apps

Cloud-computing

vs.

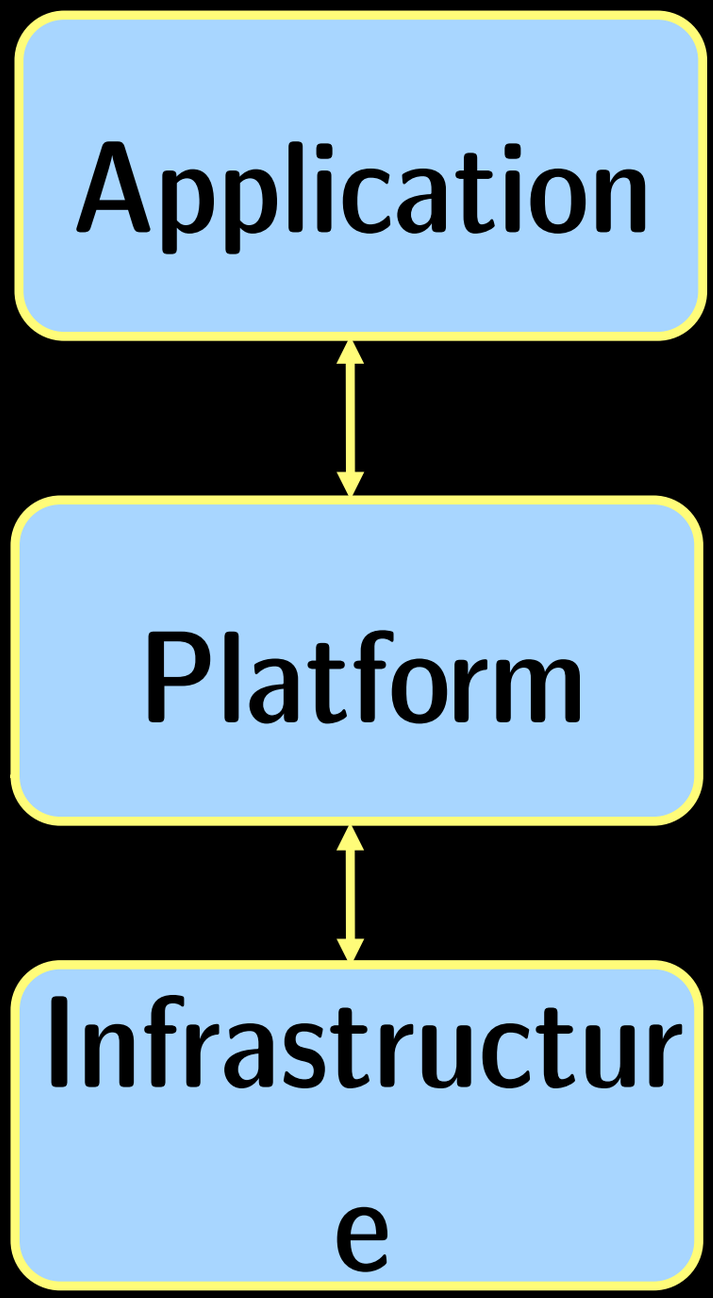
Crowd-Labor

Cloud-Computing vs Crowd-Labor

Web apps, APIs

Deploy app reliably

Processing, storage, ...

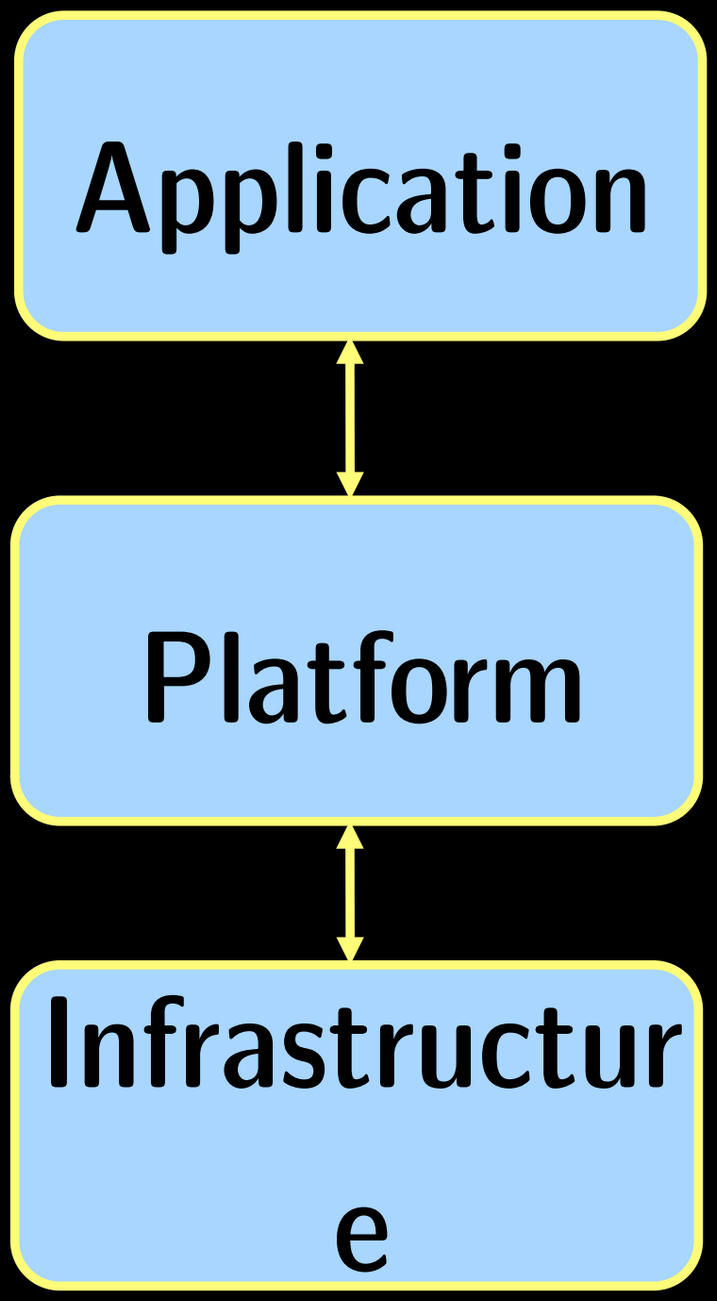


OCR, sentiment, ...

Dispatch work, ensure quality

Workers from the crowd

Crowd-Labor stack



Chirpsy, CastingWords, uTest, ...

CrowdFlower, MobileWorks, CCS, ...

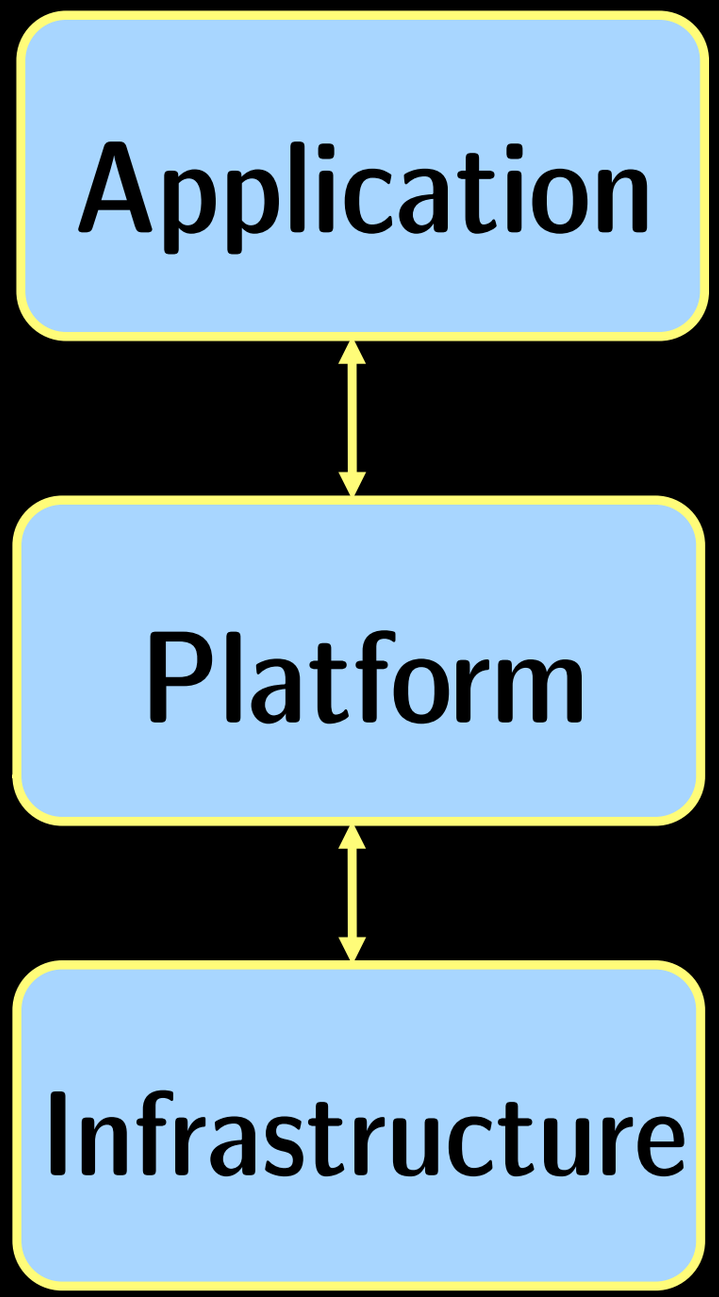
Mechanical Turk, Elance, ...

the Crowd-Labor stack we want

vs.

the Crowd-Labor stack we have

the Cloud-computing stack

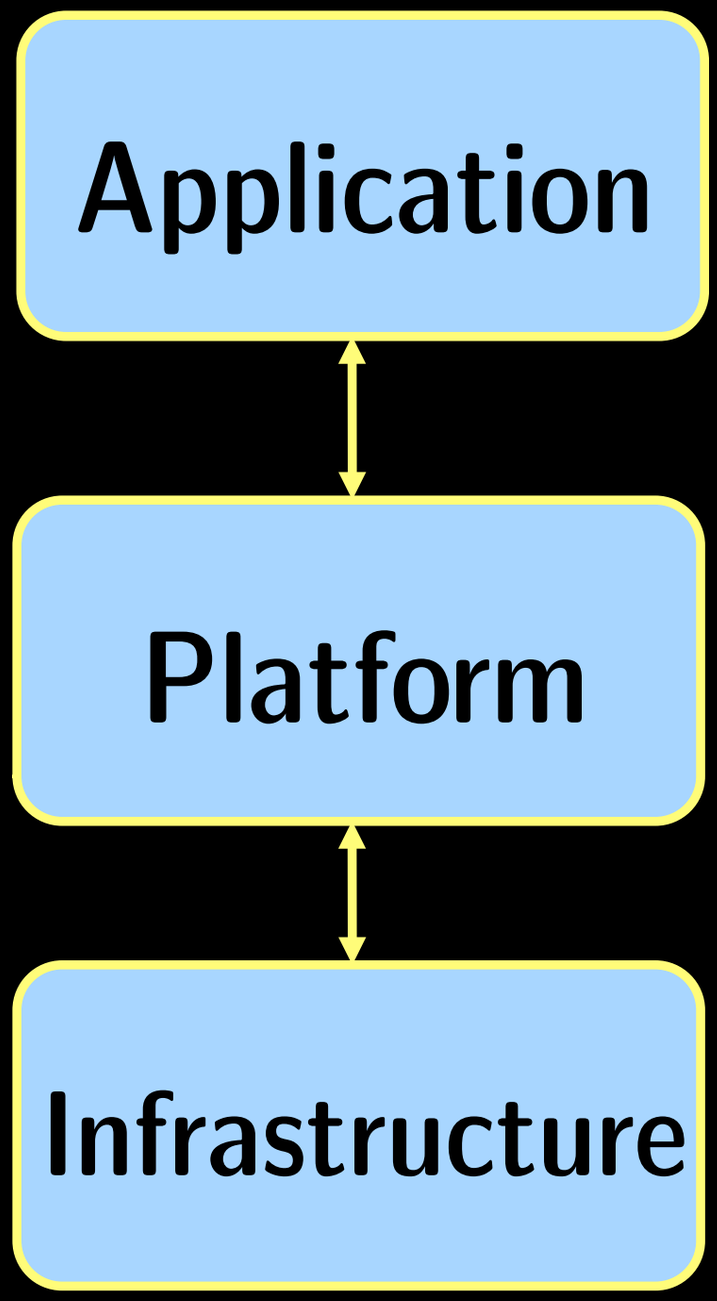


Abundant

Robust

Unreliable hardware

the Crowd-Labor stack we want



Abundant

Robust

Unreliable workers

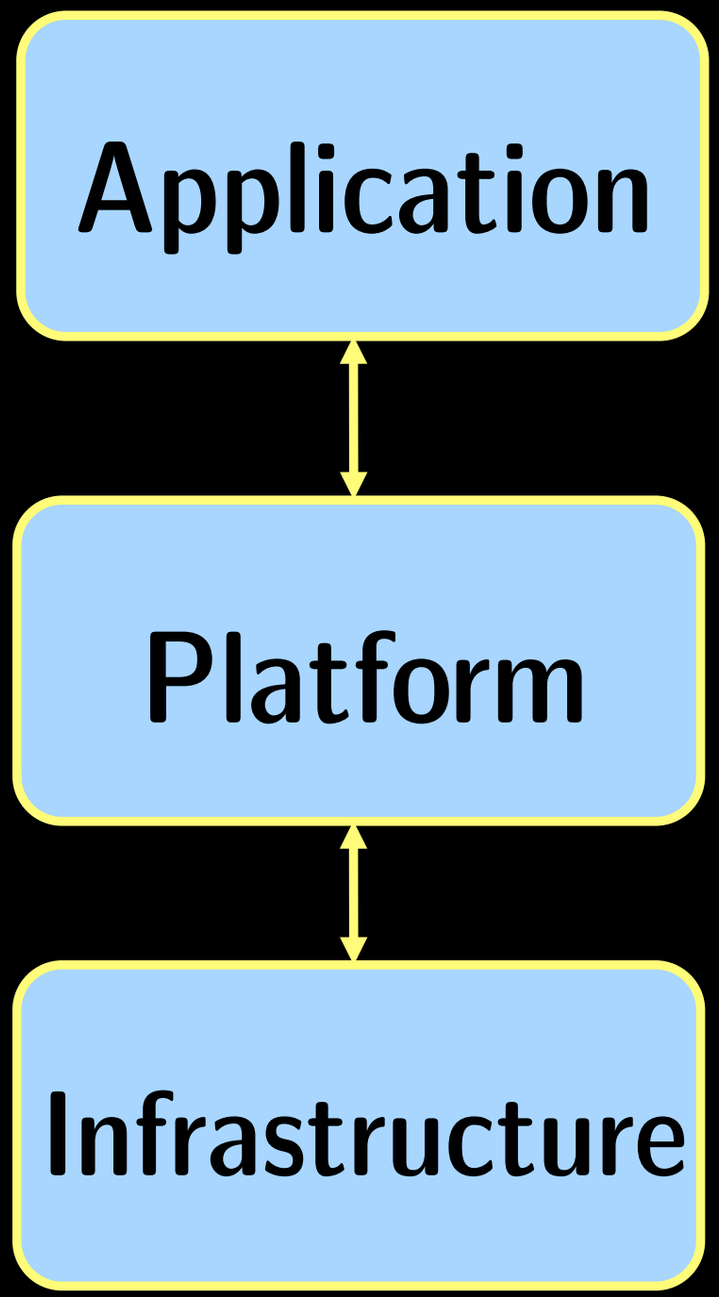
the Crowd-Labor stack we have

Commoditized

Few

Enterprise

Some



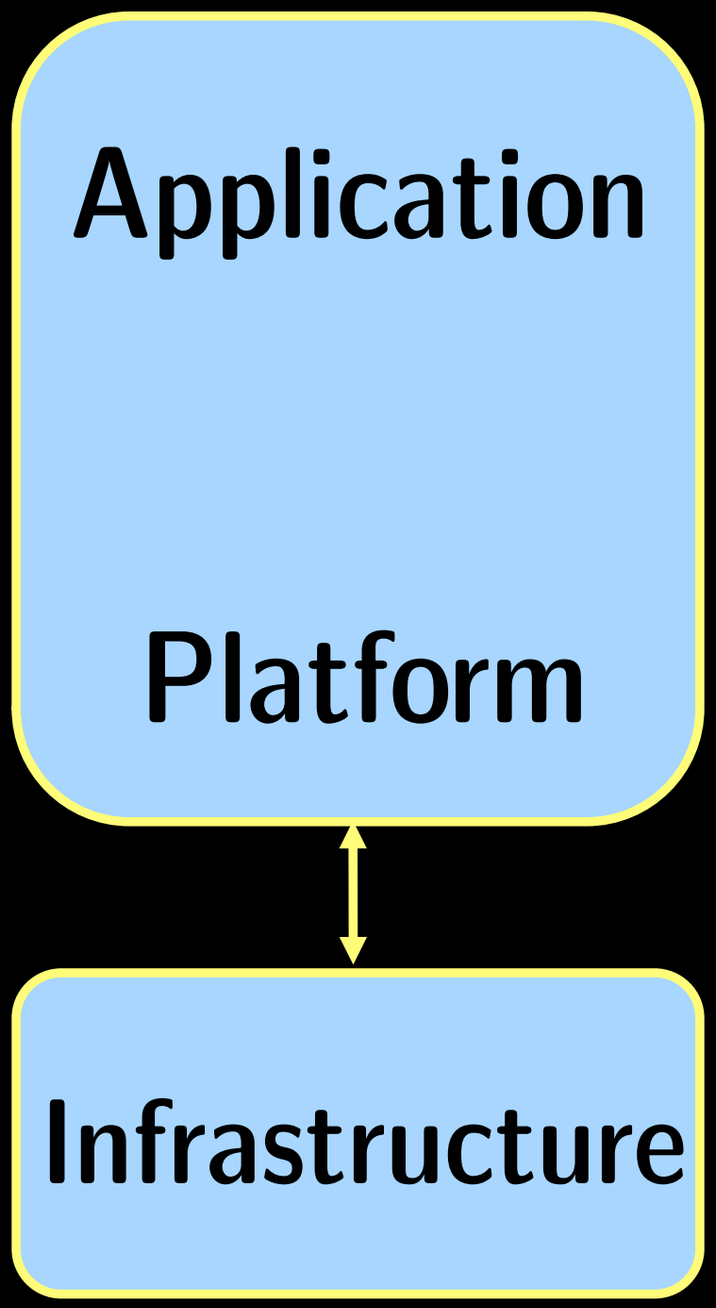
Immature

Not generic

Unreliable

Unreliable

Crowd-Labor applications in 2012



Chirpsy,
CastingWords,
uTest, Senti,
Expensify, etc.

Crowd-Labor

enabling new applications

0:23 male and female companions inspect socks

“What % of shoppers spend over 30 sec in my store?

Where do they browse?

What do they buy?”

what Crowd-Labor applications can you imagine?

Sector RoadMap: crowd labor platforms in 2012

Joseph Turian, Ph.D.

November 5, 2012

Crowd-Labor

1. game-changing "AI" applications
2. enterprise-ready in 2012
3. ubiquitous soon...

MetaOptimize

Joseph Turian

@turian