

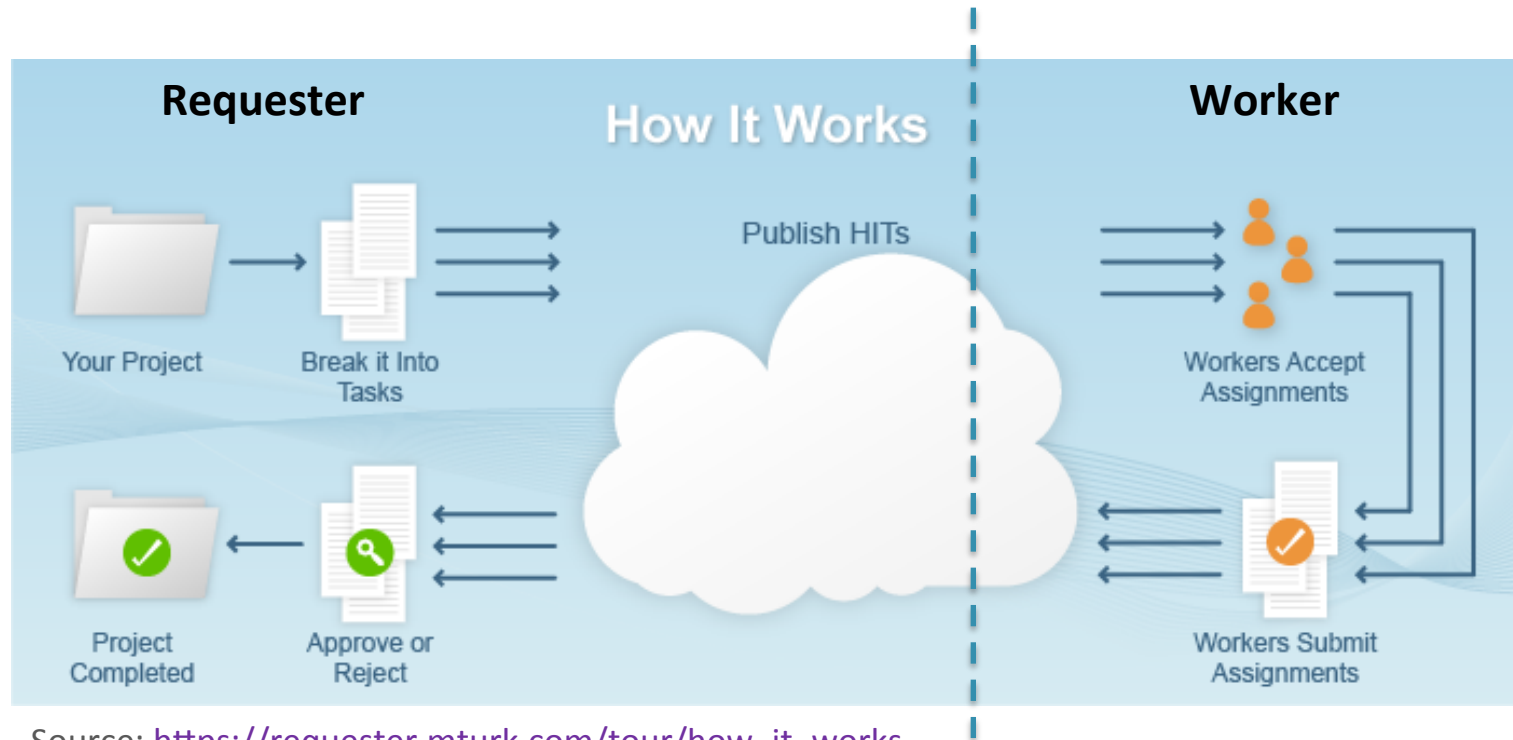
# Amazon Mechanical Turk **Hands-on session**

Maribel Acosta





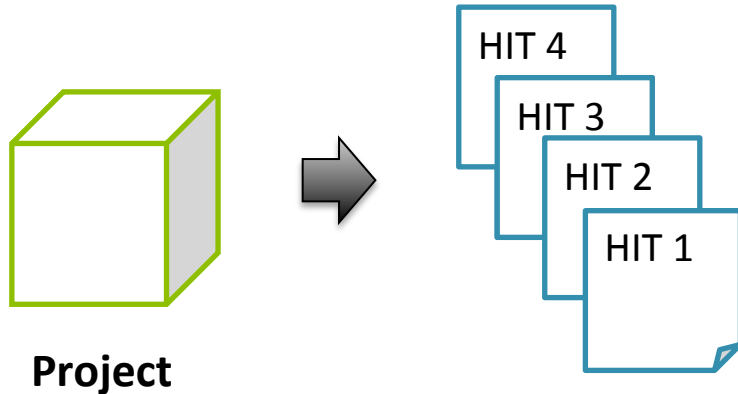
# MTurk Basic Concepts (1)



Source: [https://requester.mturk.com/tour/how\\_it\\_works](https://requester.mturk.com/tour/how_it_works)

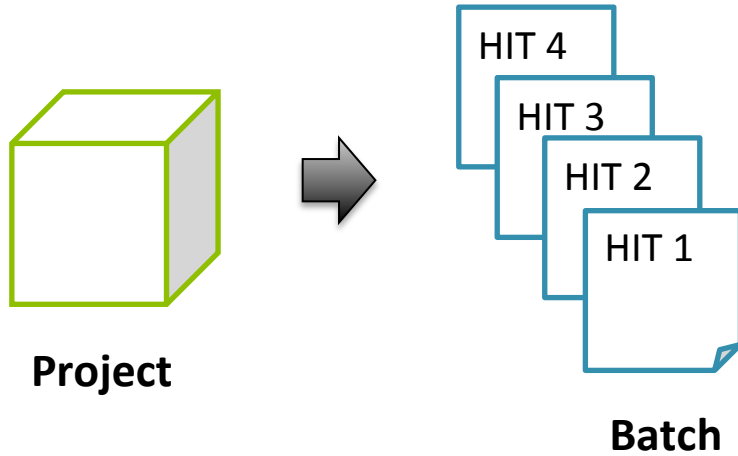
- **Requester:** creates and submits tasks to the platform.
- **Worker:** person who solves the tasks.
- **Human Intelligence Task (HIT):** work unit.

# MTurk Basic Concepts (2)



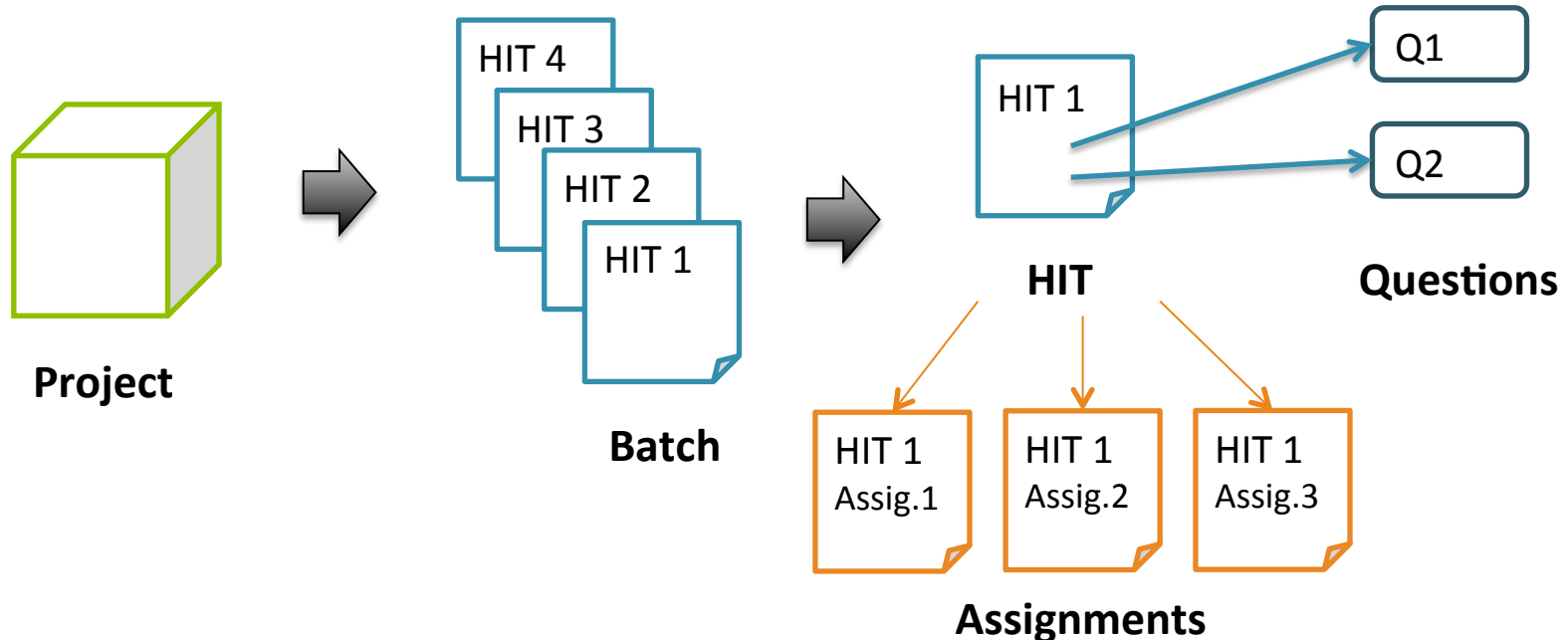
- **Project:** HIT HTML + HIT metadata
  - The elements that stay the same in every HIT are denominated **template**
  - The data that will vary from HIT to HIT are specified via **variables**
- NOTE: If no variables are specified in the project, we will create a single HIT
- **Variables:** allow creating several HITs in the project

# MTurk Basic Concepts (3)



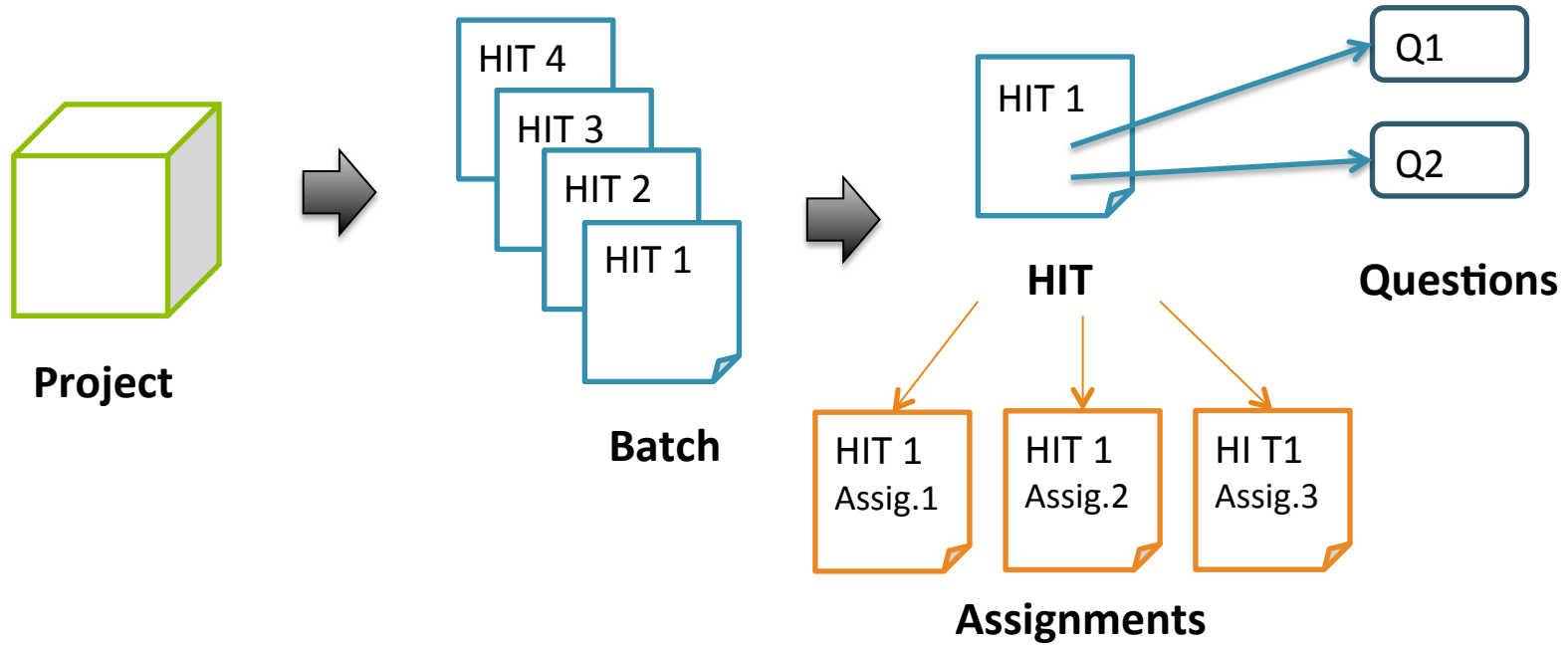
- **Batch:** Group of HITs created by instantiating the variable(s) of a project
- The values of the variables are specified in (CSV, TSV) files:
  - Each **column** corresponds to a variable
  - Each **row** is an instance -> HIT
  - Each file corresponds to a batch
- We can create **several batches** for the same project

# MTurk Basic Concepts (4)



- **HIT:** Work unit. The same HIT can be solved by 1 or more workers (assignments)
- **Assignment:** How many workers should solve one exact same HIT
- **Questions:** A single HIT may contain one or several questions

# MTurk Basic Concepts (5)

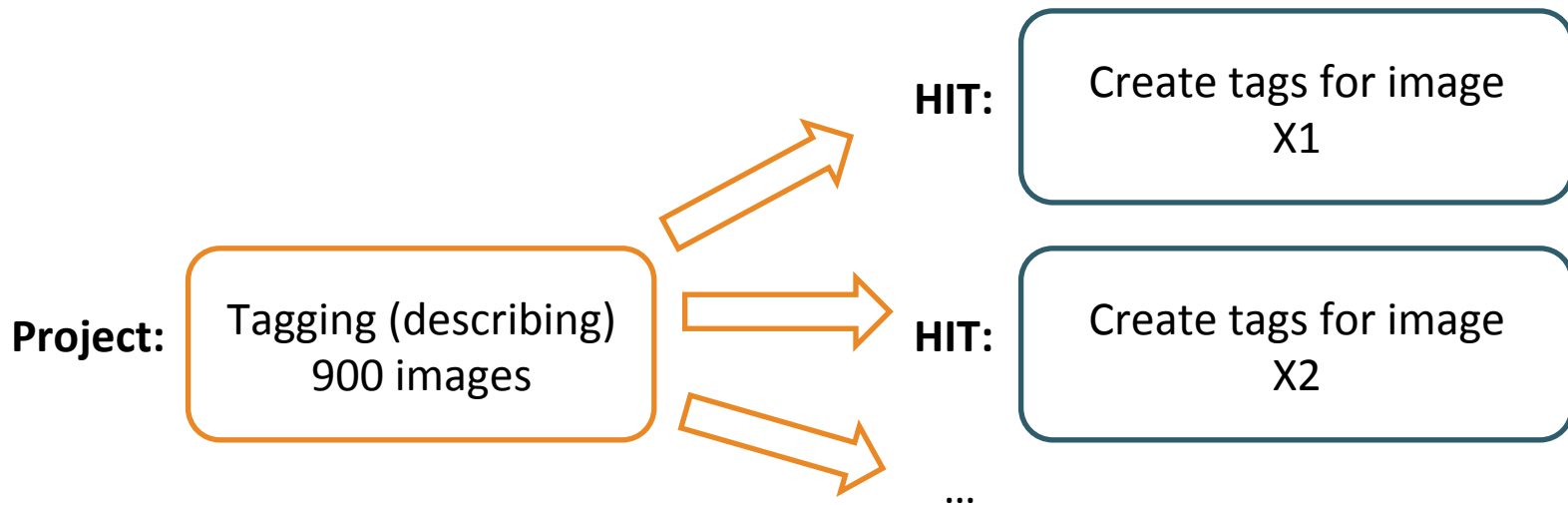


Total cost of the project = No. of HITs x No. of Assignments x (Reward per HIT + Fee)

# MTurk Basic Concepts (6)

## Example of Human Intelligence Tasks (HITs)

- Projects can be broken into smaller tasks called HITs
- A HIT represents a single work unit

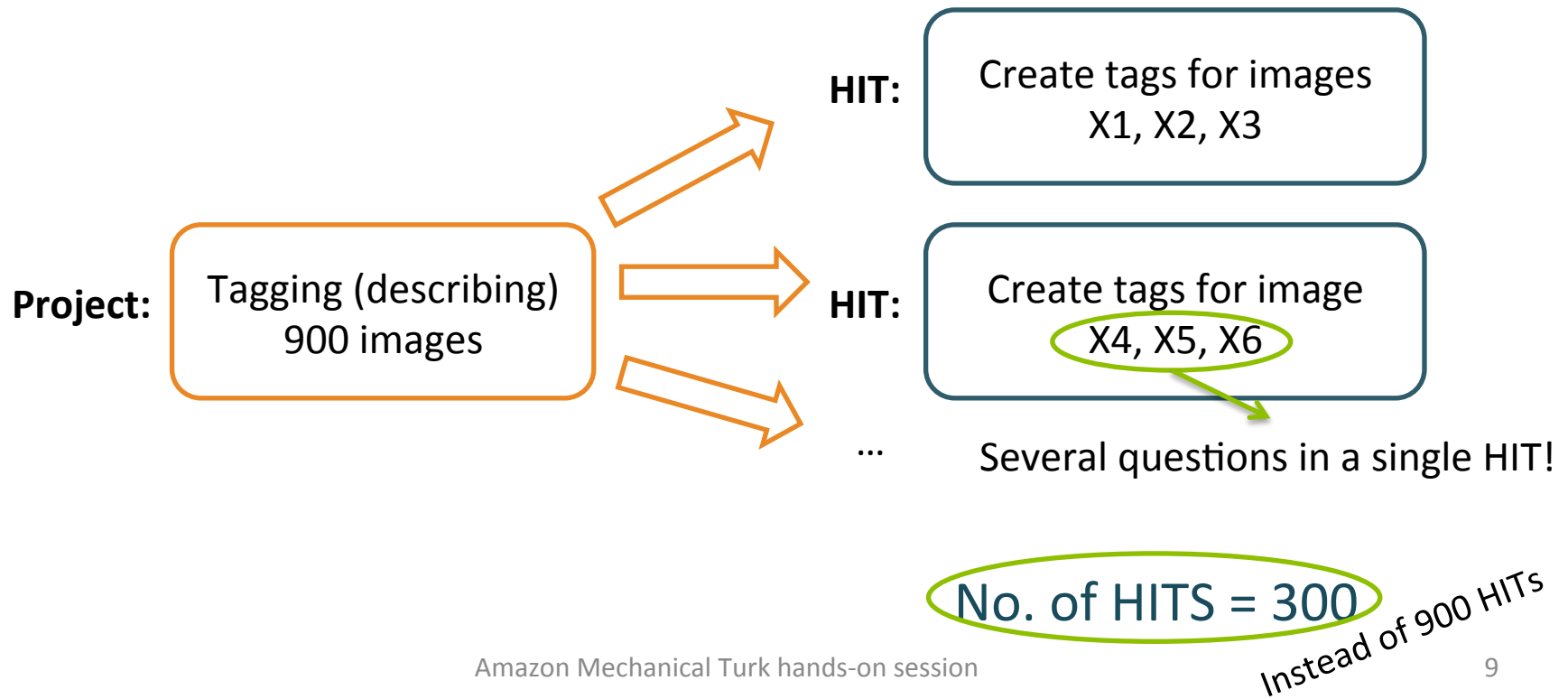


No. of HITS = 900

# MTurk Basic Concepts (7)

## Example of Human Intelligence Tasks (HITs)

- Projects can be broken into smaller tasks called HITs
- A HIT represents a single work unit

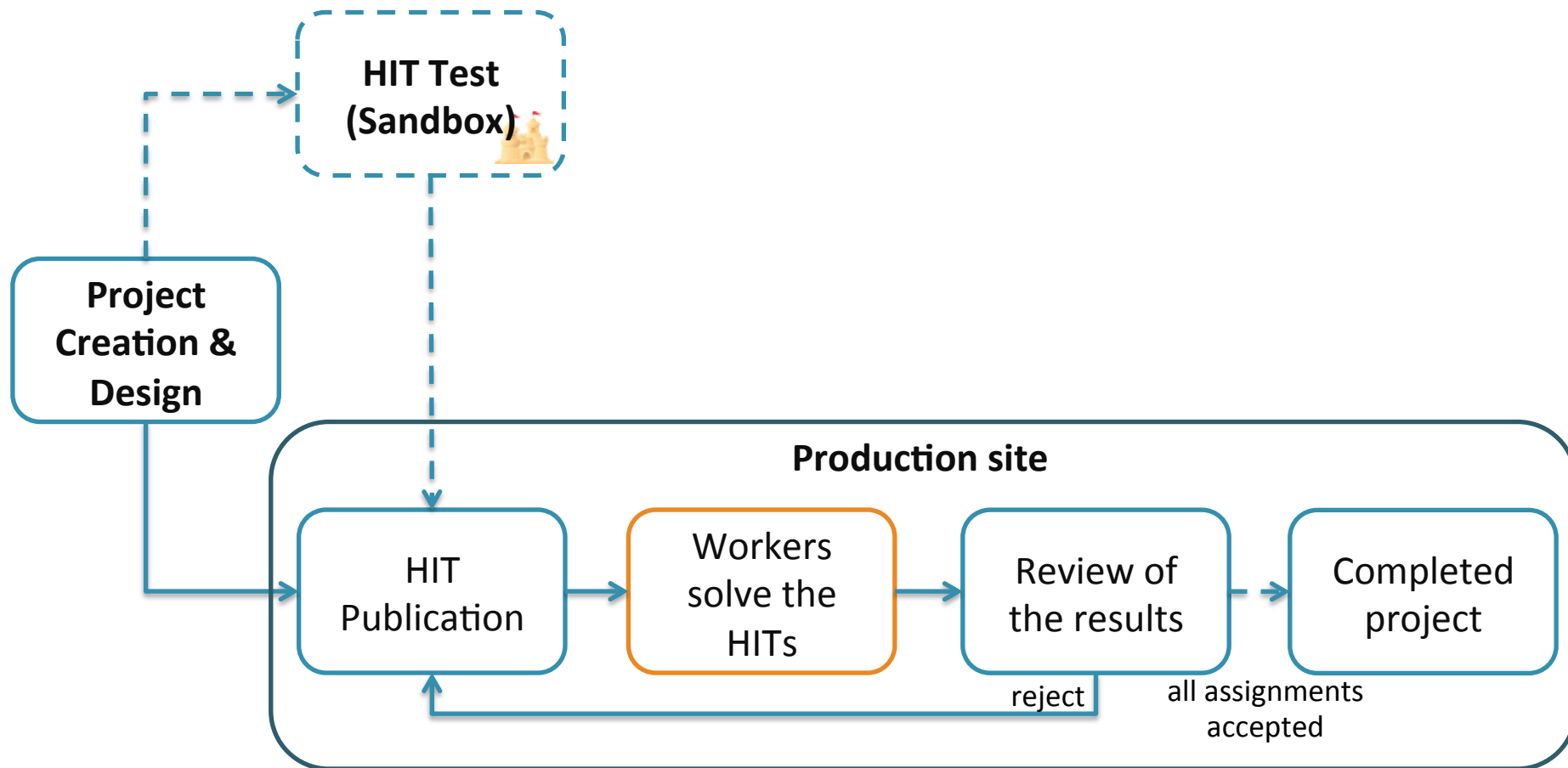


# MTurk Basic Concepts (8)

When creating a project or individual HITs, the **HIT properties** must be specified:

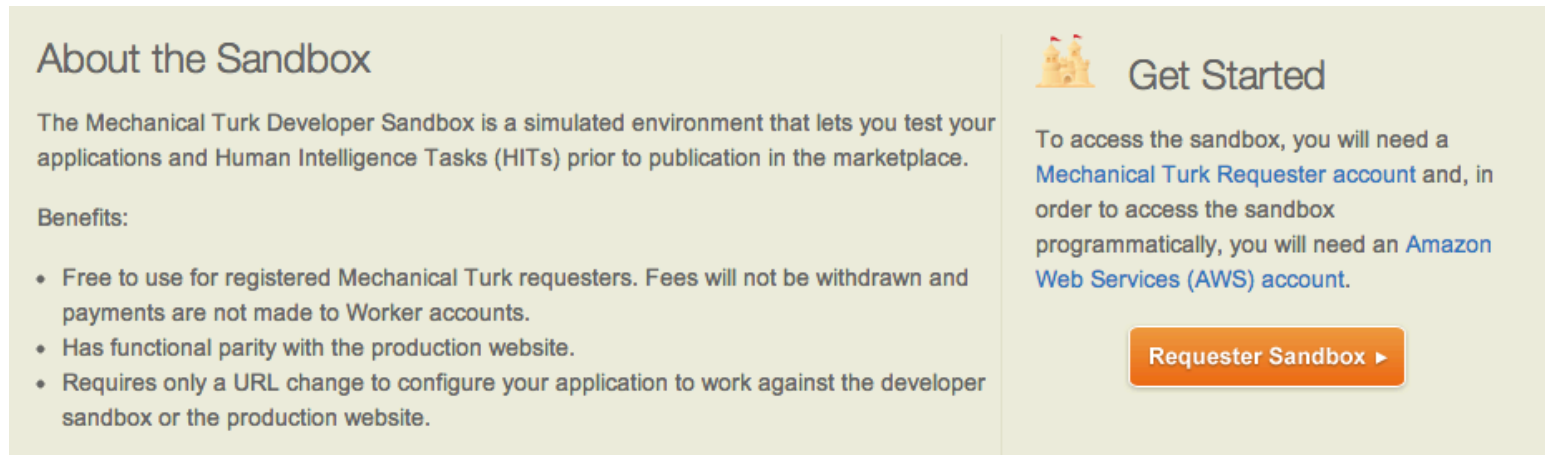
- **General information:** includes the title and description of the HIT, as well as keywords which are used by worker for searching HITs
- **HIT duration time:** time allotted to solve the HIT (before it is given to another worker)
- **HIT life time:** how long will the HIT be available on the platform
- **# Assignments:** number of different persons that will perform the exact same HIT
- **Reward:** payment for correctly solving each assignment

# MTurk Workflow for Requesters



# MTurk Sandbox

The Sandbox is a simulated MTurk environment to test HITs.



The screenshot shows two columns of text on a light beige background. The left column is titled 'About the Sandbox' and describes the Mechanical Turk Developer Sandbox as a simulated environment for testing applications and HITs before publication. It lists three benefits: free use for registered requesters, functional parity with the production website, and the ability to switch between sandbox and production URLs. The right column is titled 'Get Started' with a castle icon and explains that users need a Mechanical Turk Requester account and an Amazon Web Services (AWS) account for programmatic access. An orange button labeled 'Requester Sandbox' with a right-pointing arrow is at the bottom right.

**About the Sandbox**

The Mechanical Turk Developer Sandbox is a simulated environment that lets you test your applications and Human Intelligence Tasks (HITs) prior to publication in the marketplace.

**Benefits:**

- Free to use for registered Mechanical Turk requesters. Fees will not be withdrawn and payments are not made to Worker accounts.
- Has functional parity with the production website.
- Requires only a URL change to configure your application to work against the developer sandbox or the production website.

**Get Started**

To access the sandbox, you will need a [Mechanical Turk Requester account](#) and, in order to access the sandbox programmatically, you will need an [Amazon Web Services \(AWS\) account](#).

[Requester Sandbox ►](#)

- Log in as **requester**: preview and test the interface of your HITs
  - <https://requestersandbox.mturk.com>
- Log in as **worker**: solve your own HITs to test their functionalities and result output
  - <https://workersandbox.mturk.com>
- **Best practice**: Always test your HITs (**as requester and worker**) before publishing them in the production site

# Managing HITs in MTurk

There are three different mechanism to manage your HITs in MTurk:

Web  
Interface



Command  
Line Tools



API



# MTURK WEB INTERFACE

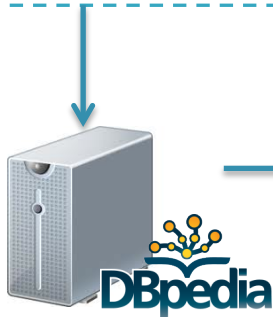
# Hands On!

- **Project:** Crowdsourcing DBpedia triples to verify the links to external web pages

```
prefix dbpedia-ont:<http://dbpedia.org/ontology/>
prefix foaf:<http://xmlns.com/foaf/0.1/>
SELECT *
WHERE {
  ?s dbpedia-ont:wikiPageExternalLink ?o;
    foaf:name ?s_name;
    foaf:isPrimaryTopicOf ?s_wikipedia .
} LIMIT 200
```

→ Triple to crowdsource

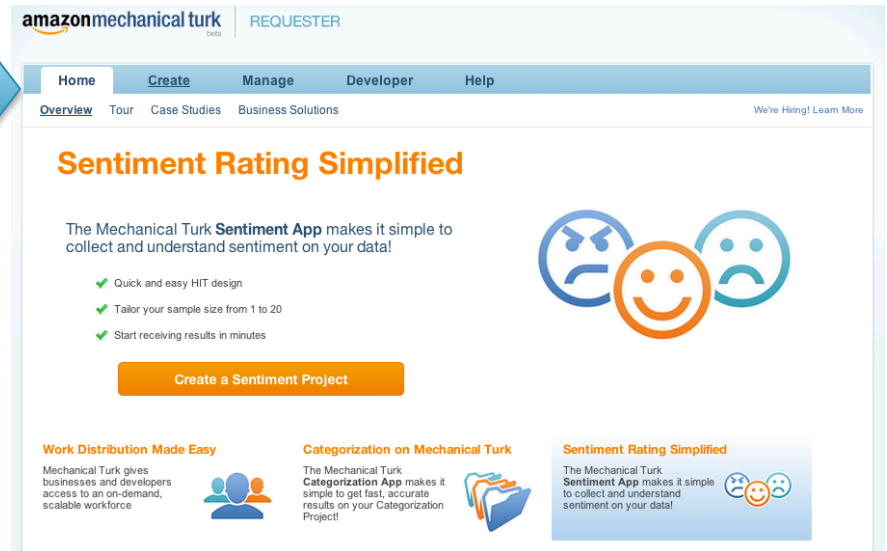
} Triples to build the UI



MTurkDemo/data/sparql.csv

# Hands On!

- Go to Mturk Sandbox as a **requester**:
  - <https://requestersandbox.mturk.com/>
- Click on **Sign In**
  - Email address: own\_tp@gmx.li
  - Password: sourcrowd
- Now we are at “home”



# 1. Creating a Project

The screenshot displays the Amazon Mechanical Turk requester dashboard. At the top, the 'Create' button in the navigation bar is highlighted with a red rectangle. Below it, the 'New Project' link is also highlighted with a red rectangle. A sidebar on the left, titled 'Start a New Project', lists various project categories, with the entire list enclosed in a red rounded rectangle. The 'Example of Categorization' section on the right shows a task where the user must choose the best category for a given image of a bedroom. The categories are radio buttons: kitchen, living, bath, bed, and outside. A note at the bottom states, 'You must ACCEPT the HIT before you can submit the results.'

amazonmechanical turk beta REQUESTER

Home **Create** Manage Developer Help

New Project New Batch with an Existing Project Create HITs individually


Start a New Project

**Categorization**

- Data Collection
- Moderation of an Image
- Sentiment
- Survey
- Survey Link
- Tagging of an Image
- Transcription from A/V
- Transcription from an Image
- Writing
- Other

**Example of Categorization**

**Choose the best category for this image**



[View Instructions ↓](#)

Select the room location in home for this picture. Seating areas outside are outside not living. Offices or dens are living not bedrooms. Bedrooms should contain a bed in the picture.

- ☐ kitchen
- ☐ living
- ☐ bath
- ☐ bed
- ☐ outside

You must ACCEPT the HIT before you can submit the results.

Different predefined  
templates: Select “other”

## 2. Setting up the HIT Properties (1)

amazonmechanical turk beta REQUESTER

Home Create Manage Developer Help

New Project New Batch with an Existing Project [Create HITs individually](#)

### Edit Project

Specify the properties that are common for all of the HITs created using this project.

1 Enter Properties 2 Design Layout 3 Preview and Finish

Project Name:  This name is not displayed to Workers.

#### Describe your HIT to Workers

**Title**   
Describe the task to Workers. Be as specific as possible, e.g. "answer a survey about movies", instead of "short survey", so Workers know what to expect.

**Description**   
Give more detail about this task. This gives Workers a bit more information before they decide to view your HIT.

**Keywords**   
Provide keywords that will help Workers search for your HITs.

☐ This project may contain potentially explicit or offensive content, for example, nudity. ([See details](#))

HIT description

## 2. Setting up the HIT Properties (2)

**Setting up your HIT**

**Reward per assignment**   
Tip: Consider how long it will take a Worker to complete each task. A 30 second task that pays \$0.05 is a \$6.00 hourly wage.

**Number of assignments per HIT**   
How many unique Workers do you want to work on each HIT?

**Time allotted per assignment**  **Minutes**   
Maximum time a Worker has to work on a single task. Be generous so that Workers are not rushed.

**HIT expires in**  **Days**   
Maximum time your HIT will be available to Workers on Mechanical Turk.

**Results are automatically approved in**  **Days**   
After this time, all unreviewed work is approved and Workers are paid.

**HIT properties**

**Very IMPORTANT:**  
Set up quality mechanisms  
Masters are selected by default

[Advanced »](#)

### 3. Selecting Qualifications

Advanced

Worker requirements «

Worker requirements:

Customize Worker Requirements...

Specify ALL the qualifications Workers must meet to work on your HITs:

Masters remove

HIT Approval Rate (%) greater than or equal to 95 remove

Number of HITs Approved greater than or equal to 1000 remove

✓ -- Select -- to 0 remove

Masters to 0 remove

Categorization Masters

Photo Moderation Masters

Masters

System Qualifications

HIT submission rate (%)

Location

HIT rejection rate (%)

HIT Approval Rate (%)

Number of HITs Approved

Only Y

view my HITs.

Worker requirements (filters)

Masters expect higher rewards  
MTurk charges 20% for masters

# 4. Defining the Task

## Edit Project

Use the HTML editor below to design the layout of your HIT. This layout is common for all of the HITs created with this project. You can define variables for data that will vary from HIT to HIT ([Learn more](#)).

1 Enter Properties

2 Design Layout

3 Preview and Finish

Project Name:  This name is not displayed to Workers.

Frame Height  Height in pixels of the frame your HIT will be displayed in to Workers. Adjust the height appropriately to minimize scrolling for Workers.

Format

Font

U *I* **B** A *I*<sub>x</sub>

Source

### Instructions

[Jump to questions](#)

In this task, you will help us verify whether the links to external pages contained in Wikipedia articles are correct or not. The content of these external pages should be related to the content of the Wikipedia article. In this task, you will verify whether this is the case or not. In order to solve this task, we will provide the Wikipedia article and an external website that the article links to.

**Your job:** Compare whether the Wikipedia article and the external website are related.  
Try to **refresh the page** if the content is not displayed properly.

Example of **incorrect** data

In the following example, we are checking whether the external web pages are related to the Wikipedia article "John Two-Hawks".

body h2

WYSIWYG HTML editor



## 4. Defining the Task (with Variables)

[Edit Project](#)

Use the HTML editor below to design the layout of your HIT. This layout is common for all of the HITs created with this project. You can define variables for data that will vary from HIT to HIT ([Learn more](#)).

1 Enter Properties 2 Design Layout 3 Preview and Finish

Project Name: DBpedia outlinks This name is not displayed to Workers.

Frame Height 400 Height in pixels of the frame your HIT will be displayed in to Workers. Adjust the height appropriately to minimize scrolling for Workers.

Normal Font U I B A Ix [List Icons] [Source]

Question

The content in "External page" corresponds to the topic covered in the Wikipedia article?

About:

**Template:** elements that stay the same in every HIT

**Variables:** data that will vary from HIT to HIT. Are denoted as follows:  $\${var\_name}$

Wikipedia article about:  $\$(s\_name)$

# 5. Previewing the Template

## Edit Project

This is how your HIT will look to Mechanical Turk Workers. Before you publish these HITs, any variables in the HIT will be replaced with the input data that you provide when you publish the HIT. You can download a sample of the input file for this project or learn more about [acceptable file formats](#)

[Download sample](#)

1 Enter Properties

2 Design Layout

3 Preview and Finish

This is what the workers will see

Project Name: DBpedia outlinks

This name is not displayed to Workers.

Comparing content between two web pages

Requester: mac21

Reward: \$0.04 per HIT

HITs available: 0

Duration: 10 Minutes

Qualifications Required: HIT Approval Rate (%) greater than or equal to 95 , Number of HITs Approved greater than or equal to 1000

### HIT Preview

#### Question

The content in "External page" corresponds to the topic covered in the Wikipedia article?

About:

**`${s_name}`**

[Wikipedia article about: `\${s\_name}`](#)

The variables will be replaced by the input data

## 6. Creating Batches

The screenshot shows the Amazon Mechanical Turk interface for creating a new batch. The top navigation bar includes 'amazonmechanical turk' and 'REQUESTER'. The left sidebar has 'Home' and 'Create' tabs, with 'New Project' and 'New Batch with an' links. The main area is titled 'New Batch' and contains the instruction 'Choose a .csv file with the variables you specified in your project.' Below this are three buttons: 'Choose File', '<no file selected>', and 'Upload'.

Below the main area is a table with columns 'Project Name', 'Title', and 'Creation Date'. The first row has 'DBpedia outlinks' in the 'Project Name' column, 'Comparing content between two web pages' in the 'Title' column, and 'October 16, 2013' in the 'Creation Date' column. To the right of the table are buttons for 'New Batch', 'Edit', 'Copy', and 'Delete'.

A red arrow points from the 'New Batch' button in the table to a detailed view of the 'DBpedia outlinks' batch. This view shows the 'Layout ID: 27MSNQQ7Q67066KV8KI15TQC1Z3UAT' and the 'Parameters: o, s\_name, s\_wikipage'. To the right of this view is a preview of the 'sparql.csv' file, which contains the following data:

	sparql.csv
1	"s","o","s_name","s_wikipage"
2	"http://dbpedia.org/resource/!Action_Pact!","http://www."
3	"http://dbpedia.org/resource/!Action_Pact!","http://www."
4	"http://dbpedia.org/resource/!Action_Pact!","http://www."
5	"http://dbpedia.org/resource/!Action_Pact!","http://www."

# 7. Previewing the HITs

## DBpedia outlinks

Comparing content between two web pages

Requester: mac21      Reward: \$0.04 per HIT      HITs available: 200      Duration: 10 Minutes

Qualifications Required: HIT Approval Rate (%) greater than or equal to 95 ,  
Number of HITs Approved greater than or equal to 1000

### HIT Preview

**Question**

The content in "External page" corresponds to the topic covered in the Wikipedia article?

About:

**!Action Pact!**

[Wikipedia article about: !Action Pact!](#)

Create account   Log in

Article   Talk   Read   Edit   Search

**!Action Pact!**

**Variables** are replaced with the data from the input file

# 8. Publishing the HITs

DBpedia outlinks

Batch Summary		
Batch Name	HITs	between a Wikipedia article
Batch Product	Number of HITs in this batch:	200
Title:	Number of assignments per HIT:	x 3
Description:	Total number of assignments in this batch:	600
Batch example		
Results		
Workers		
Qualifications		
HITs		
Number		
Number		
Total number		
Cost		
Reward		
Estimated		
Estimated fees to Mechanical Turk		
Estimated Total Cost:	\$27.000	(this is the amount that will be deducted from your Available Balance when you click "Publish HITs")
Your Available Balance:	\$10,000.000	(before clicking "Publish HITs")
Your Projected Balance:	\$9,973.000	(after clicking "Publish HITs")

Summary of the project:

- # of HITs
- Rewards
- Total payment
- Account balance

# 9. Retrieving the Results

## Review Results

Select the check boxes on the left to approve or reject results. You only pay for approved results. To evaluate results offline, select Download CSV.

For additional batch information, [view batch details](#).

### DBpedia outlinks 10

Customize View

Filter Results

Upload CSV

Download CSV

1 of 1 assignments (FILTER APPLIED: only show assignments that are in 'Submitted' status)

Approve

Reject

<input type="checkbox"/>	<a href="#">HIT ID ▲</a>	<a href="#">Worker ID</a>	<a href="#">Lifetime Approval Rate</a>	<a href="#">Input Data</a>	<a href="#">Q1</a>
<input type="checkbox"/>	2N6Q1SNQQ7Q685ZCMH3NU12T1XJS8I	A3QBKUNGNMLHTF	98% (131/133)	BatchId:58757;	correct
<input type="checkbox"/>	<a href="#">HIT ID ▲</a>	<a href="#">Worker ID</a>	<a href="#">Lifetime Approval Rate</a>	<a href="#">Input Data</a>	<a href="#">Q1</a>

Approve

Reject

# MTURK SUMMARY

# Project/HIT Creation & Design (1)

- The requester is able to create **projects** or **individual HITs**
- Build **user-friendly interfaces** (using web technologies)
- Then, the **HIT properties** must be specified:
  - **General information**: includes the title and description of the HIT, as well as keywords which are used by worker for searching HITs.
  - **HIT duration time**: time allotted to solve the HIT (before it is given to another worker).
  - **HIT life time**: how long will the HIT be available on the platform.
  - **# Assignments**: number of different persons that will perform the same HIT.
  - **Reward**: payment for correctly solving each assignment.

# Project/HIT Creation & Design (2)

- Selection of **MTurk quality control** mechanisms:

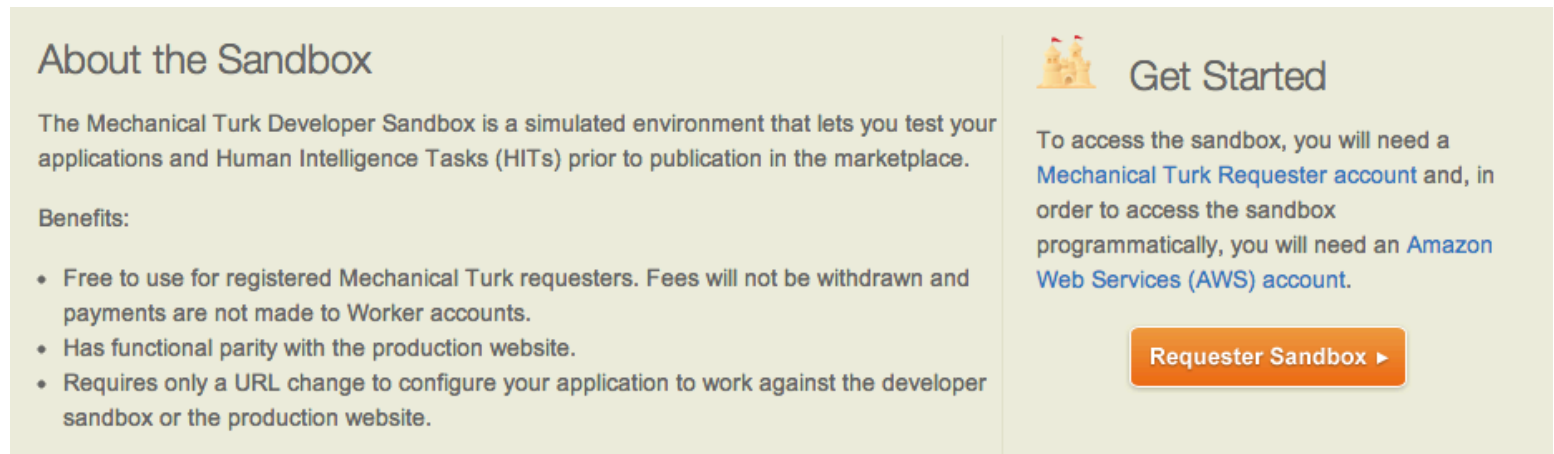
Worker  
requirements

- **High quality workers**
  - Masters
  - Photo moderation masters
  - Categorization masters
  - Masters expect higher rewards
  - MTurk charges 20% for masters
- **System qualifications**
  - Location by country
  - HIT submission rate (%)
  - HIT approval/rejection rate (%)
  - (Absolute) Number of HITs approved
- **Qualification types**
  - Simply granted or attributed via customized tests

- These filters are automatically performed by the platform

# HIT Test

- **Best practice:** Always test your HITs before publishing them
  1. Perform **technical tests** (both as requester and worker) in the MTurk Sandbox environment.

A screenshot of the Mechanical Turk Developer Sandbox page. The page is divided into two main sections: 'About the Sandbox' on the left and 'Get Started' on the right. The 'About the Sandbox' section describes the environment and lists three benefits: it's free for registered requesters, has functional parity with the production website, and requires only a URL change. The 'Get Started' section explains that a Mechanical Turk Requester account and an Amazon Web Services (AWS) account are needed for programmatic access, and includes a 'Requester Sandbox' button.

**About the Sandbox**

The Mechanical Turk Developer Sandbox is a simulated environment that lets you test your applications and Human Intelligence Tasks (HITs) prior to publication in the marketplace.

**Benefits:**

- Free to use for registered Mechanical Turk requesters. Fees will not be withdrawn and payments are not made to Worker accounts.
- Has functional parity with the production website.
- Requires only a URL change to configure your application to work against the developer sandbox or the production website.

**Get Started**

To access the sandbox, you will need a [Mechanical Turk Requester account](#) and, in order to access the sandbox programmatically, you will need an [Amazon Web Services \(AWS\) account](#).

[Requester Sandbox ►](#)

Source: <https://requester.mturk.com/developer/sandbox>

2. Publish a small subset of tasks in the production site to test **usability** and **responsiveness**.

# Run live HITs

- **HIT publication:**
  - Make the HITs available to the workers
- **Review the results:**
  - Monitor the submitted assignments constantly
  - Download the results
  - Accept/reject assignments, provide feedback when rejecting
  - Block spammers (optional)
- **Update HIT/Project:**
  - Extend/expire HITs or modify other HIT properties
  - Add additional assignments

# Lessons Learned

- Introduce yourself on Worker forums (regular requester)
- Be responsive to workers
  - Reply to emails with questions about tasks
- Use monitoring tools:
  - Forums
  - Turkopticon (Source:<http://turkopticon.differenceengines.com/>)

# Choosing the Right Tool

## Tool Comparison Table



Web Interface



Command Line Tools



API

### Creating and managing your work

Start with our sample HTML templates



Create HITs visually with an HTML editor



Create and manage your HITs in batches



Support tab-delimited input files



Manage HITs created via the CLT or API



Define HITs in XML



Host HITs on your own server



Can be integrated into back-end systems



Create notifications indicating when HITs are updated

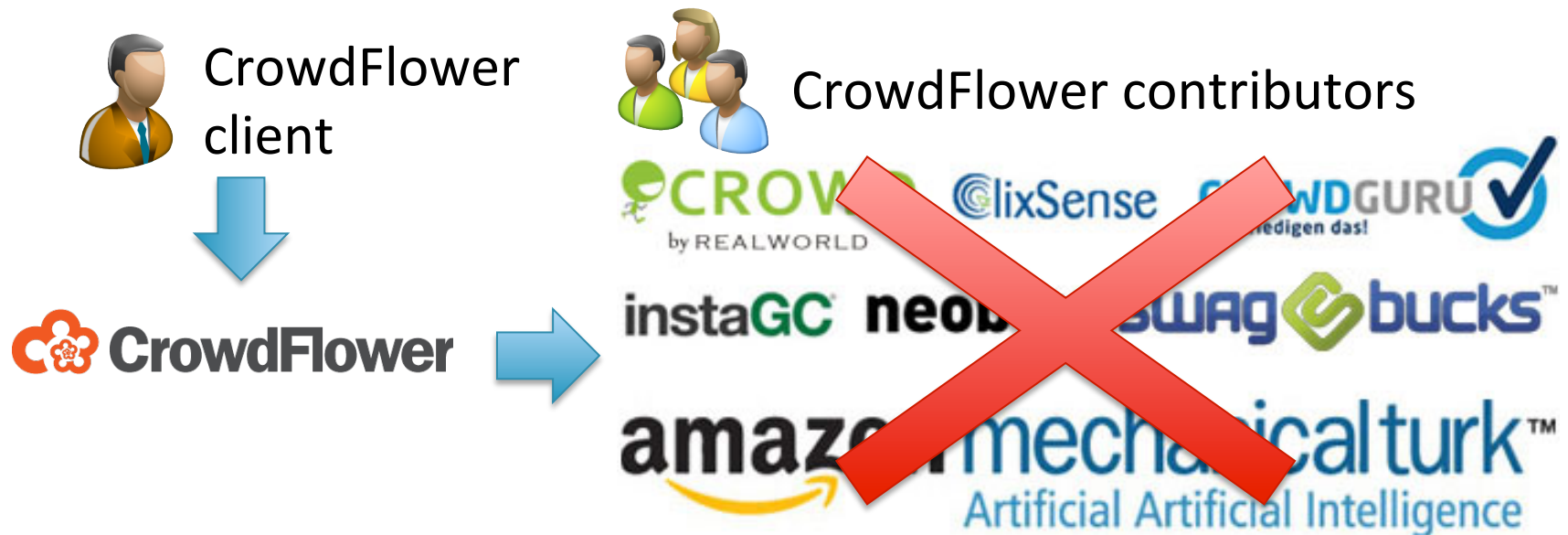


Source: [https://requestersandbox.mturk.com/tour/choose\\_the\\_right\\_tool](https://requestersandbox.mturk.com/tour/choose_the_right_tool)

# IS THERE MORE THAN MTURK?



# CrowdFlower Platform



- **Client:** Creates and submits jobs (MTurk = requester)
- **Contributor:** person who solves the jobs (MTurk = worker)
- **Job:** unit work (MTurk = task)

# Why CrowdFlower? (1)

## Neat UI

### Comparing content between two pages

Instructions ▲

#### Instructions

[Jump to questions](#)

In this task, you will help us verify whether the links to external pages contained in Wikipedia articles are correct or not. The content of these external pages should be related to the content of the Wikipedia article. In this task, you will verify whether this is the case or not. In order to solve this task, we will provide the Wikipedia article and an external website that the article links to.

**Your job:** Compare whether the Wikipedia article and the external website are related.  
Try to **refresh the page** if the content is not displayed properly.

#### Example of **incorrect** data

In the following example, we are checking whether the external web pages are related to the Wikipedia article "John Two-Hawks". The following link shows a website not related to "John Two-Hawks".

# Why CrowdFlower? (2)

## Quality control mechanisms

**Job 261779** Comparing content between two pages Not Ordered

Overview Data Edit Gold Analytics Skills Reports

[Edit Gold](#)

[Judgment Stats](#)

[Gold Stats](#)

**Unit #333574812** [Show job instructions](#) ☐ Copy unit to source ☐ Dig randomly [Skip](#)

The content in External page corresponds to the topic covered in the Wikipedia article?

**About: !Action Pact!**

Wikipedia article about: `$(s_name)`

Create account Log in

Article Talk Read Edit Search

**!Action Pact!**

From Wikipedia, the free encyclopedia

*"Action Pact" redirects here. For the album by Sloan, see [Action Pact \(album\)](#).*

**!Action Pact!** were a punk rock band, formed in 1981 as the Bad Samaritans by guitarist Wild Planet, bassist Dr. Phibes, and drummer

<b>!Action Pact!</b>	
<b>Also known as</b>	The Bad Samaritans
<b>Origin</b>	Stanwell, London, England
<b>Genres</b>	Punk rock

Allows for easily creating a “gold standard”, which is further used to detect low quality workers

# Why CrowdFlower? (3)

## Report generation and analytics

**Job 230234** Categorization of fashion images

Finished ▼

Overview Data Edit Gold Contributors Analytics Skills Reports

Summary

Contributors

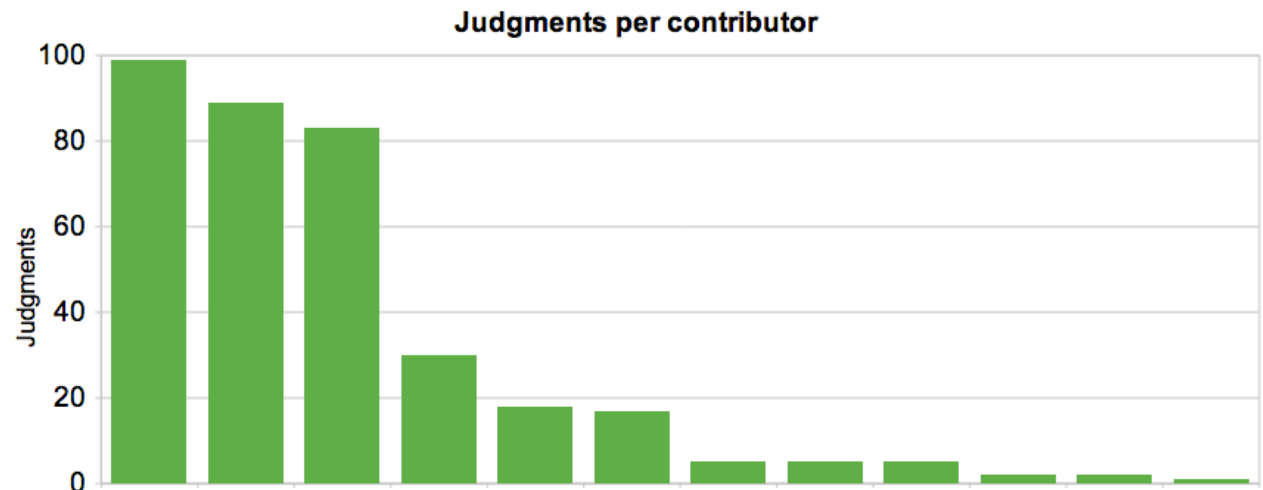
Quality

Gold

Distributions

Times

Each bar represents a contributor and the number of judgments they have submitted for this job. Contributors who have a low trust score and have submitted a significantly larger amount of judgments than other contributors are likely scammers. If your gold is working correctly, their work will be rejected. (Only the top 100 contributors are displayed in this graph.)



Each bar represents a contributor

# Why NOT CrowdFlower?

- At the beginning, clients must wait until their **projects are approved** by the CrowdFlower staff before publishing them
  - Wait time: From a couple of hours up to (5)\* days
- Jobs must be specified in a **non-standard language**:
  - CML: CrowdFlower Markup Language
- There are certain **configurations** that cannot be executed in the platform

\*Personal experience of the presenter

# References

- AMT. Getting Started Guide. API Version 2012-03-25  
<http://s3.amazonaws.com/awsdocs/MechTurk/latest/amt-gsg.pdf>
- The Mechanical Turk Blog  
<http://mechanicalturk.typepad.com/>
- MTurk Java API  
<http://people.csail.mit.edu/glittle/MTurkJavaAPI/>
- CrowdFlower Platform  
<http://crowdflower.com>