

It's Not Open Data Unless it is Usable Data

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Usability

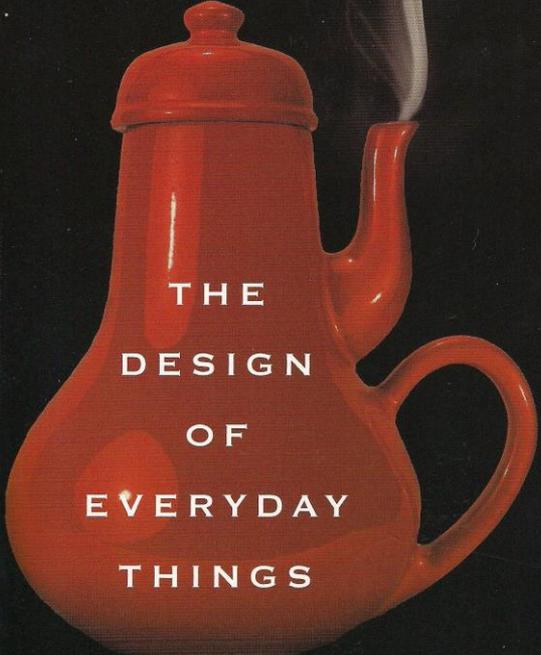
Usability is the ease of use and learnability of a human-made object. The object of use can be a software application, website, book, tool, machine, process, or anything a human interacts with.



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THE
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OF
EVERYDAY
THINGS

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DONALD A. NORMAN

AUTHOR OF *EMOTIONAL DESIGN*

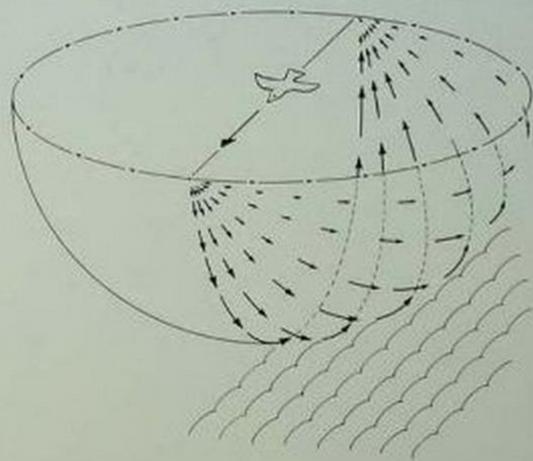
affordance

affordance. From afford + -ance; coined in 1977 by psychologist J. J. Gibson. A potential action that is made possible by a given object or environment; especially, one that is made easily discoverable.



THE ECOLOGICAL APPROACH TO VISUAL PERCEPTION

James J. Gibson



LEA



TECHNOLOGY AFFORDANCES

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ABSTRACT

Ecological approaches to psychology suggest succinct accounts of easily-used artifacts. Affordances are properties of the world that are compatible with and relevant for people's interactions. When affordances are perceptible, they offer a direct link between perception and action; hidden and false affordances lead to mistakes. Complex actions can be understood in terms of groups of affordances that are sequential in time or nested in space, and in terms of the abilities of different media to reveal them. I illustrate this discussion with several examples of interface techniques, and suggest that the concept of affordances can provide a useful tool for user-centered analyses of technologies.

KEYWORDS: ecological perspectives; human interface design; input/output design; multi-media

INTRODUCTION

There is a real tension between tasks and technologies in interface design. Designs based primarily on the features of a new technology are often technically aesthetic but functionally awkward. But equally, designs based primarily on users' current articulated needs and tasks can overlook potential innovations suggested by new technologies. We must understand the needs and abilities of prospective users. But equally, we must understand the capabilities and limitations of technologies in order to know the possibilities they offer for design.

In this paper, I explore the notion of *affordances* as a way of focussing on the strengths and weaknesses of technologies with respect to the possibilities they offer the people that might use them. The term "affordance" comes from the perceptual psychologist J. J. Gibson [9, 10], who

developed an "ecological" alternative to cognitive approaches. The cognitive approach suggests that people have direct access only to sensations, which are integrated with memories to build up symbolic representations of the environment and its potential for goal-oriented action. This account has recently come under attack, particularly for its decontextualized approach to design [e.g., 4, 17, 19]. In focussing on perception, action, memory and problem-solving "in the head," its descriptions of action in the world, tool-use, perceptually-guided learning, etc., often seem baroque and overly complicated.

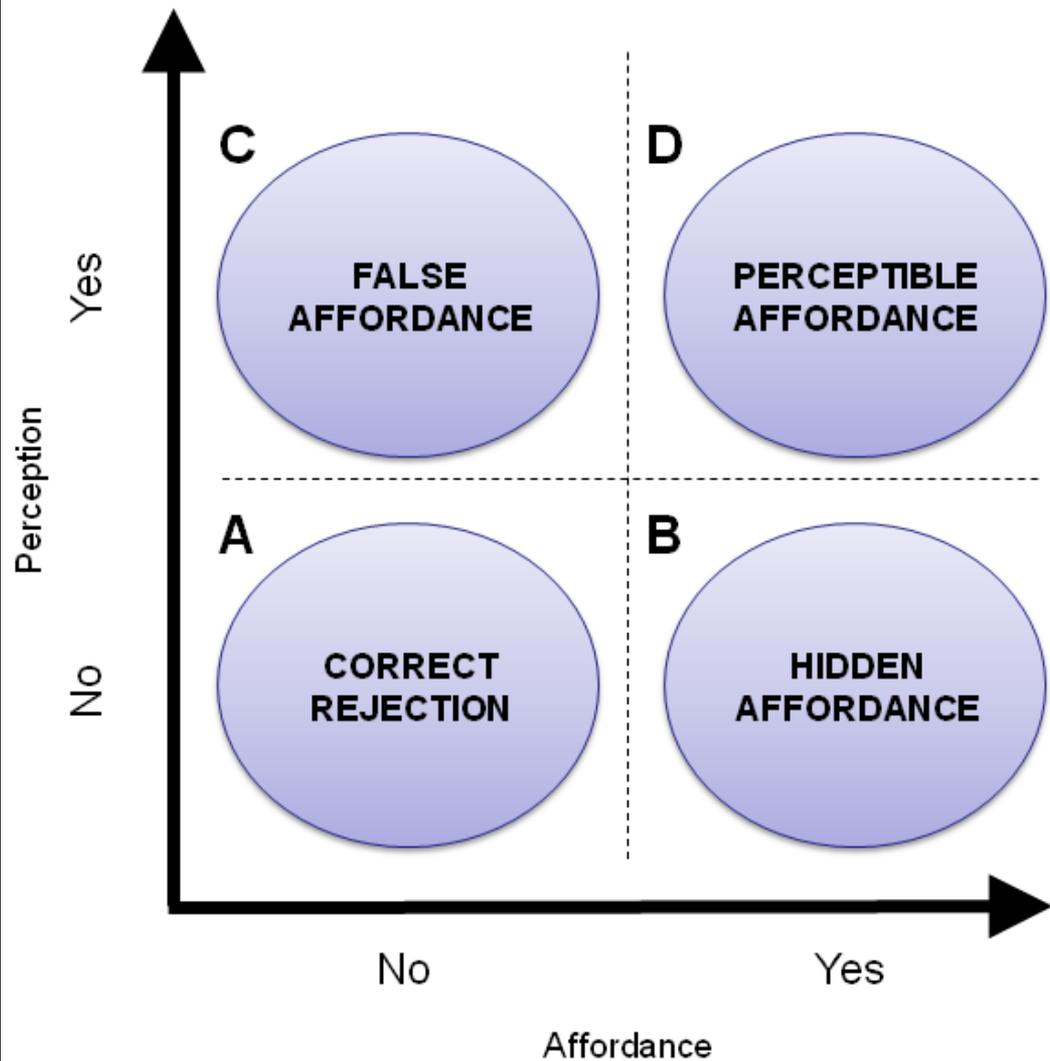
In contrast, the ecological approach stresses relevant human-scaled objects, attributes and events and the patterns of energy that provide effective perceptual information about them. It eschews detailed accounts of information processing as being unnecessary products of the abnormal situations found in laboratories. In focussing on everyday perception and action, the ecological perspective may offer a more succinct approach to the design of artifacts that suggest relevant and desirable actions in an immediate way. Cognitive approaches, from this perspective, are best reserved for artifacts which are complex, difficult to use, and error-prone.

The notion of affordances is in many ways the epitome of the ecological approach, encapsulating ideas about ecological physics, perceptual information, and the links between perception and action. In this account, affordances are the fundamental objects of perception. People perceive the environment directly in terms of its potentials for action, without significant intermediate stages involving memory or inferences. For instance, we perceive stairways in terms of their "climbability," a measurable property of the relationship between people and stairs. The work required to climb a flight of stairs can be described by a U-shaped function relating work to riser height and leg length. Warren [18] showed that people's visually-guided judgements of the climbability of different staircases reflect this function with great accuracy: people perceive the affordance of stairclimbing.

An affordance of an object, such as one for climbing, refers to attributes of both the object and the actor. This makes

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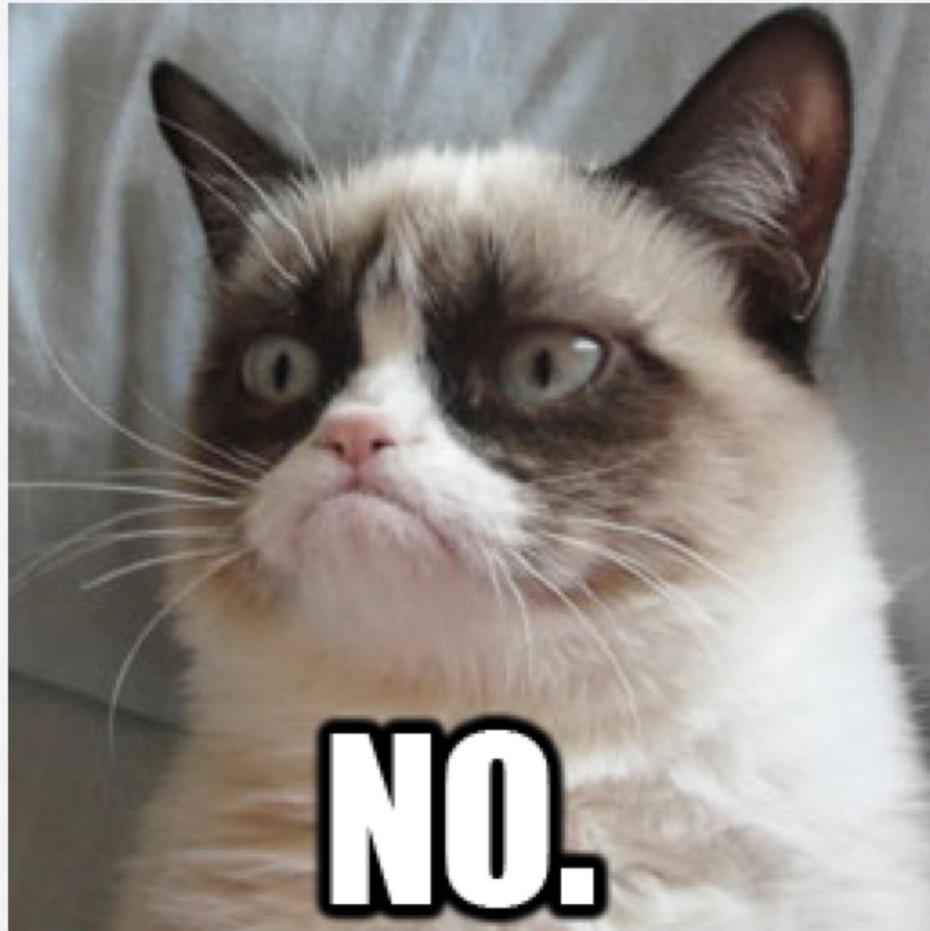


**rejected
affordance**



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**perceptible
affordance**







ZUVELFR. O.

ENTRANCE

12

PULLSH

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**false
affordance**



START CROSSING



Watch For
Vehicles



DON'T START
Finish Crossing
If Started



DON'T CROSS

PUSH BUTTON
TO CROSS





A photograph of a street scene featuring a utility pole with a white sign that reads "REBOOT UNIVERSE". The sign is mounted on a black metal bracket. Below the sign is a black cylindrical object, possibly a light fixture or a sensor. In the background, a silver car is parked on the street, and a person is visible on the sidewalk. The scene is captured in a cinematic style with a dark background on the right side.

REBOOT
UNIVERSE

**hidden
affordance**



Mirabeau Wine // How to open a bottle of wine - without a corkscrew



Subscribe to Mirabeau's YouTube Channel here

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**Usability =
Perceived Affordances**

I'll get back to this...

da·ta

/'datə, 'dātə/ 

- COMPUTING

the quantities, characters, or symbols on which operations are performed by a computer, being stored and transmitted in the form of electrical signals and recorded on magnetic, optical, or mechanical recording media.

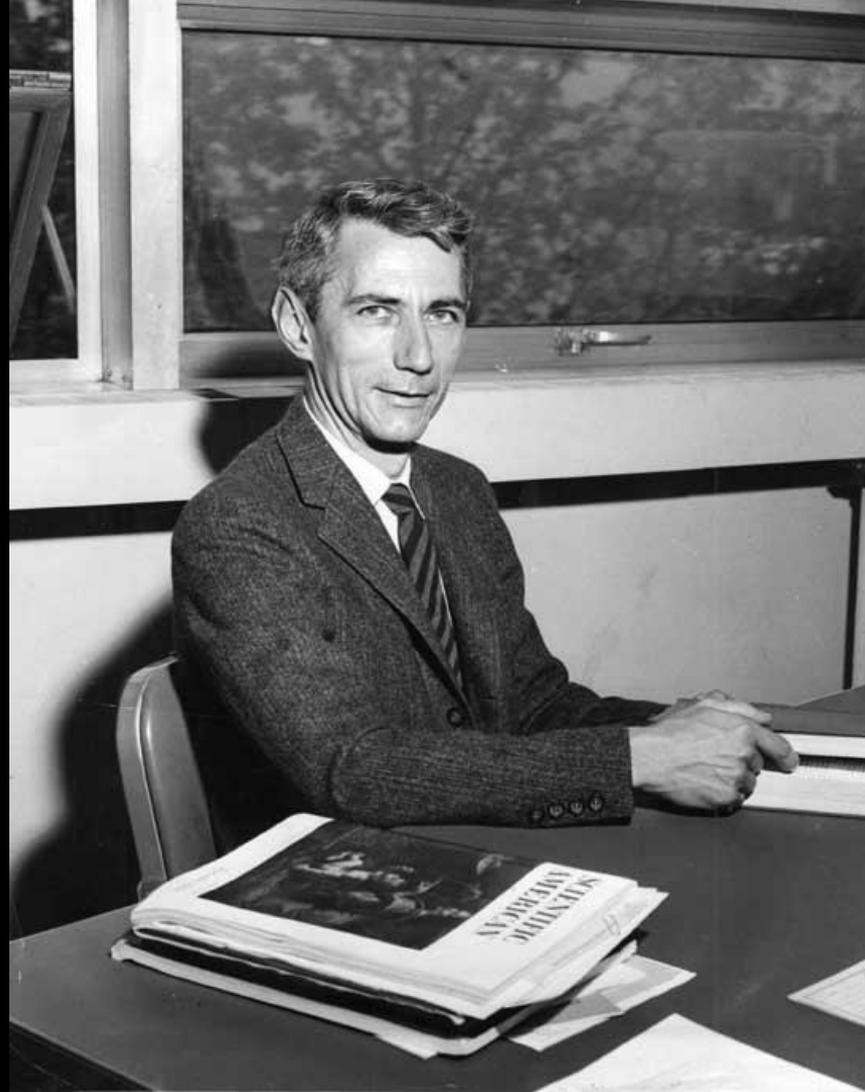


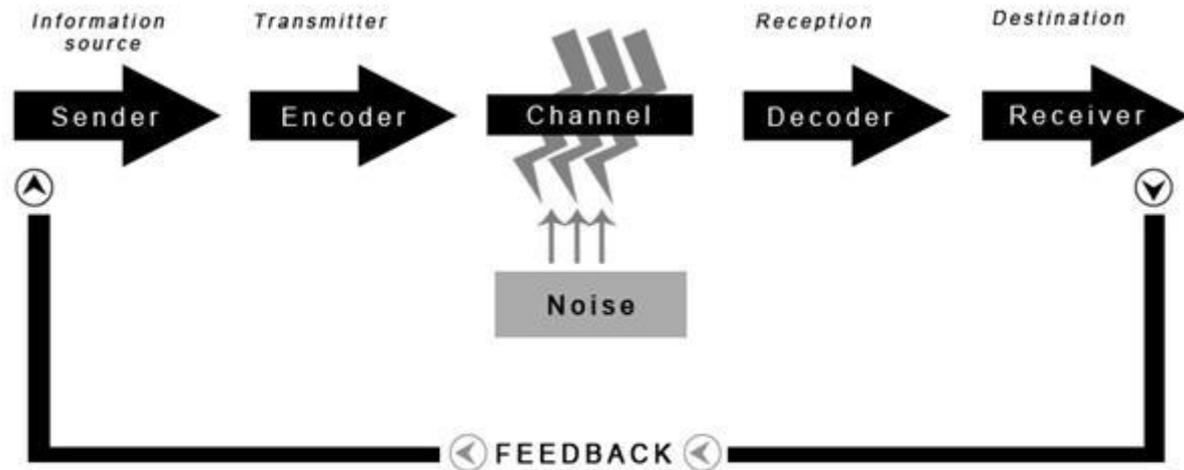
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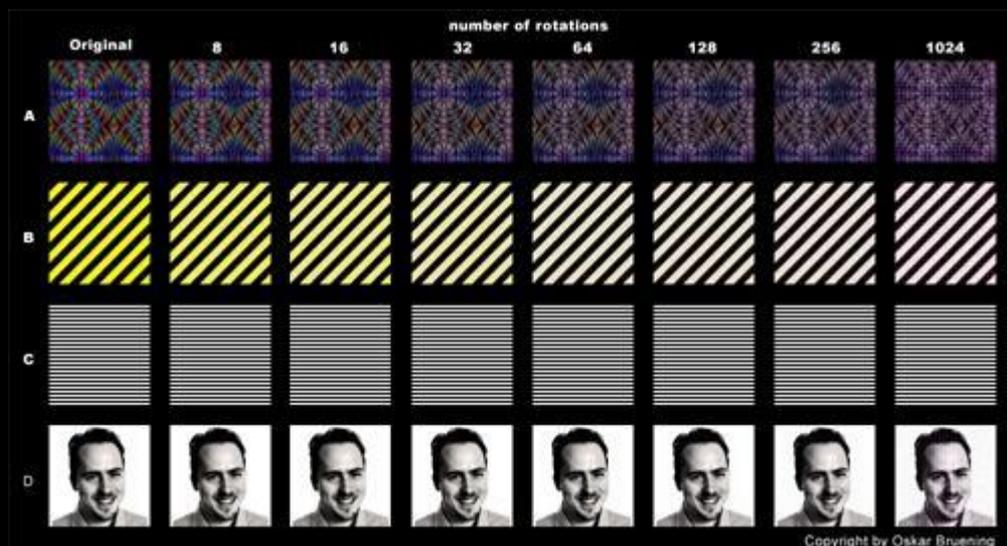
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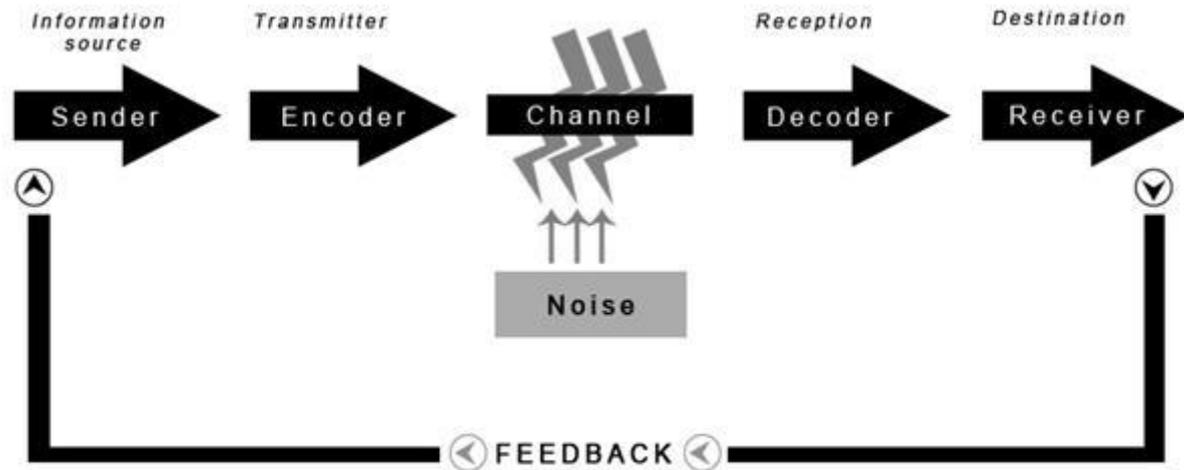
**It's called a database
not an informationbase**





SHANNON-WEAVER'S MODEL OF COMMUNICATION



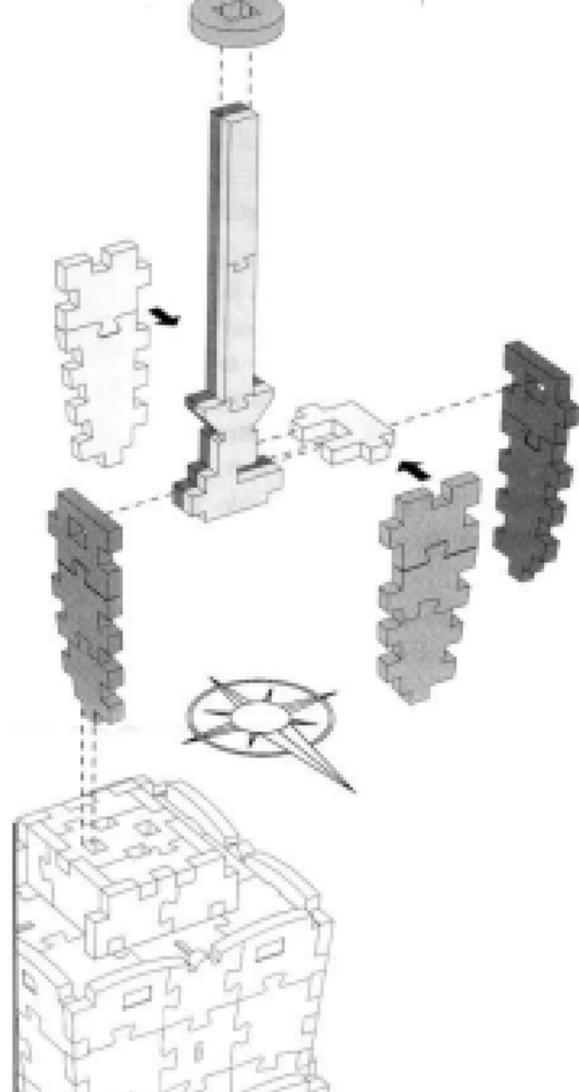


SHANNON-WEAVER'S MODEL OF COMMUNICATION

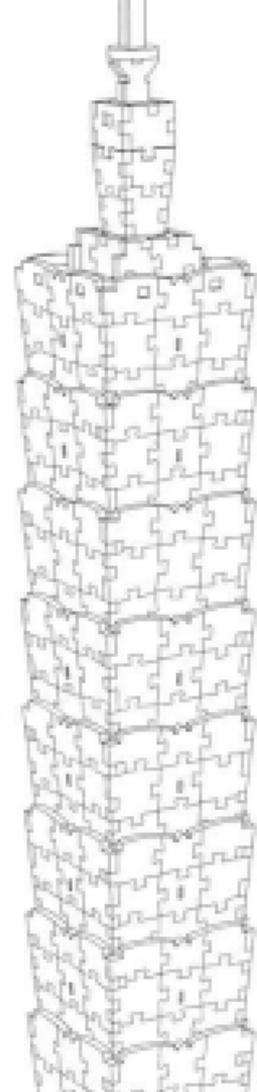
mod·el

/'mædl/ 

2. a system or thing used as an example to follow or imitate.
"the law became a model for dozens of laws banning nondegradable plastic products"



No. 8121467 Japanese Patent No. 3,776,318 Hong Kong Patent No. 1,606,815



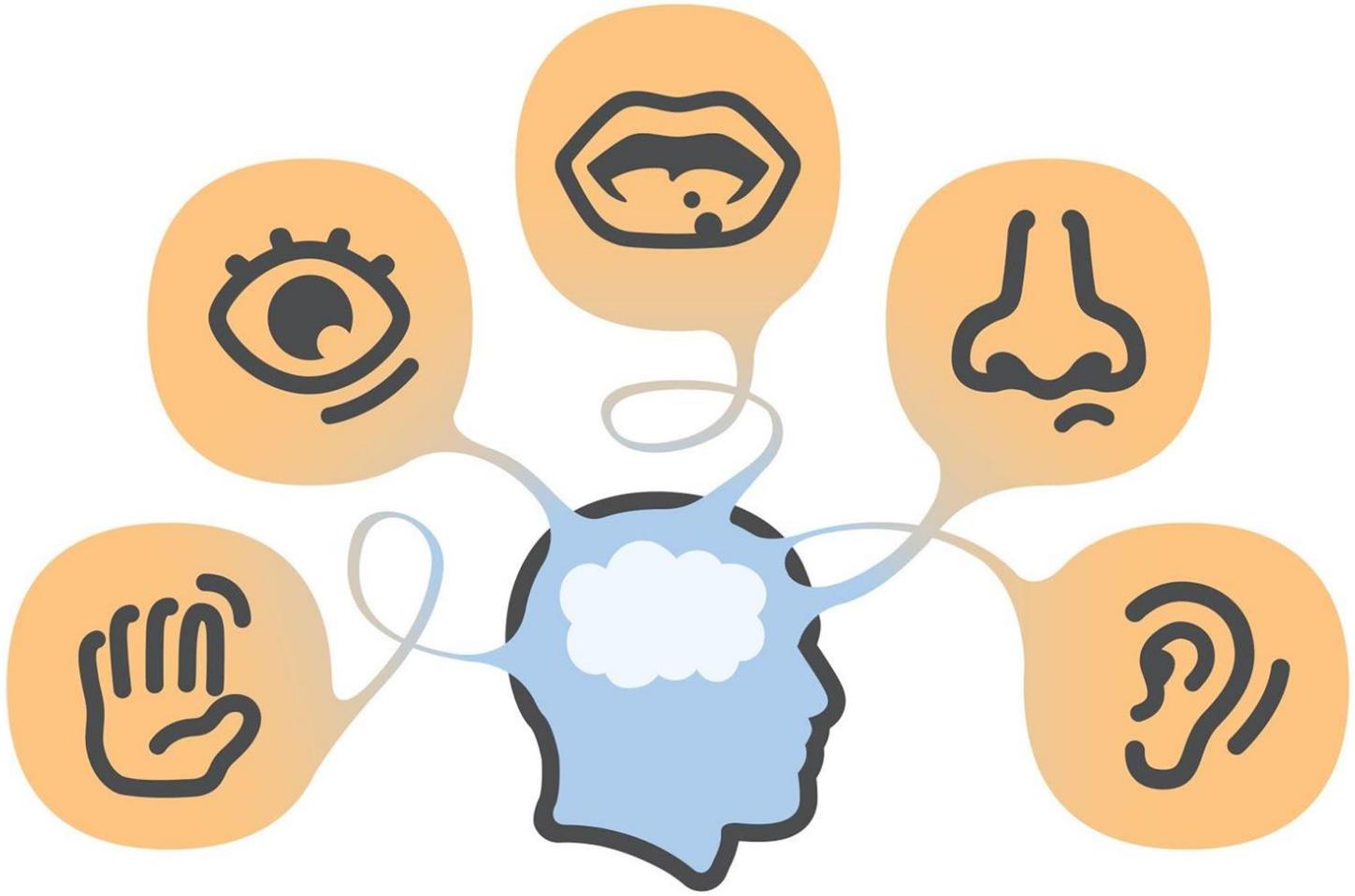
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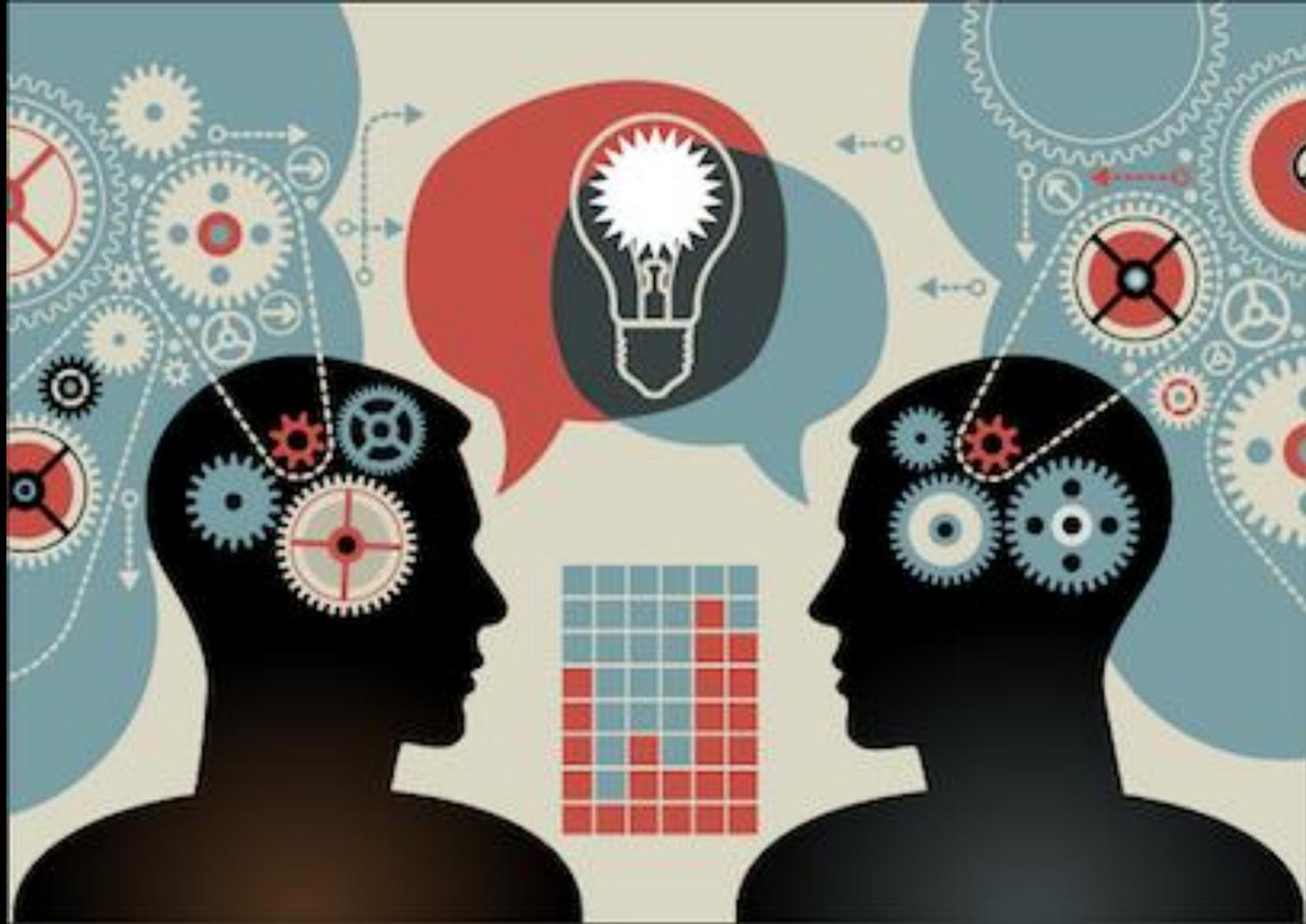
    "users_search" : {
      "map" : "function(doc){
        if(doc._id && doc.type==='user') {
          emit(doc._id,doc);
        }
      }"
    },

    "users_by_id" : {
      "map" : "function(doc){
        if(doc._id && doc.type==='user') {
          emit(doc._id,doc);
        }
      }"
    }
  }
}
```

**Models allow us to
add meaning to data**









data + model = information

in·for·ma·tion

/,ɪnfər'māSHən/ 

2. what is conveyed or represented by a particular arrangement or sequence of things.
"genetically transmitted information"



```
{
  total_rows: 678,
  offset: 0,
- rows: [
  - {
    id: "0c8b4d6cefc1123854429a9f0f2d6dd6",
    key: "0c8b4d6cefc1123854429a9f0f2d6dd6",
  - value: {
      rev: "2-f2261c5bc9f640188416bb1511d0faa9"
    }
  },
  - {
    id: "0c8b4d6cefc1123854429a9f0f3fb4db",
    key: "0c8b4d6cefc1123854429a9f0f3fb4db",
  - value: {
      rev: "1-f86b1553cdaeb859ae5ead24895abf3c"
    }
  },
  - {
    id: "0c8b4d6cefc1123854429a9f0f65dab5",
    key: "0c8b4d6cefc1123854429a9f0f65dab5",
  - value: {
      rev: "1-5e2f59b8c82e6e28aa93d3aceb393df0"
```

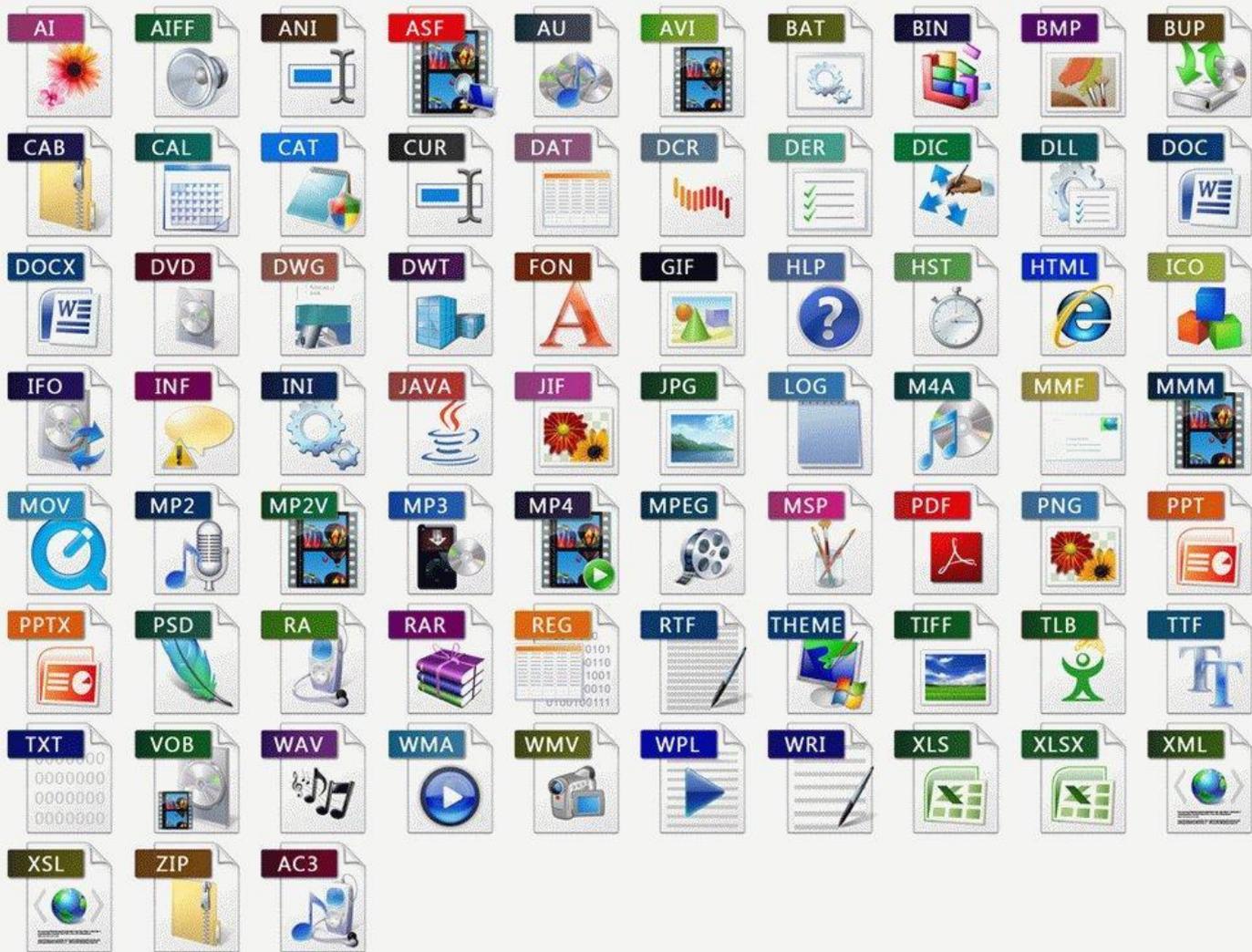
We can improve

**We can improve
the usability of messages**

**We can improve
the usability of messages
by adding affordances**

**There are three ways to
do that...**

1. Format



application/json

adds very little affordance

```
{"message":"Hello, there!","id":"7416349041741341","date":"2014-05-28T02:17:25.362Z"}
```

**collection+json
adds quite a bit
of affordance**

```
{
  "collection" :
  {
    "version" : "1.0",
    "href" : "http://localhost:1337/api/",

    "items" :
    [{
      "href": "http://localhost:1337/api/5266722824890167",
      "data": [
        {
          "name": "text",
          "value": "tasting"
        },
        {
          "name": "date_posted",
          "value": "2013-01-09T15:58:22.674z"
        }
      ]
    }
  ],

  "template" : {
    "data" : [
      {
        "prompt" : "Text of message",
        "name" : "text",
        "value" : ""
      }
    ]
  }
}
```

2. Protocol





XMPP



HTTP



XMPP



HTTP



FTP



XMPP



HTTP



FTP



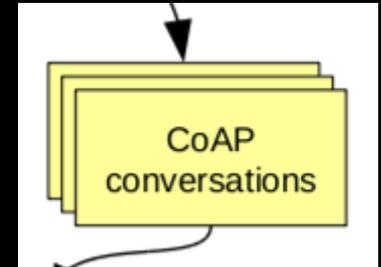


XMPP





XMPP

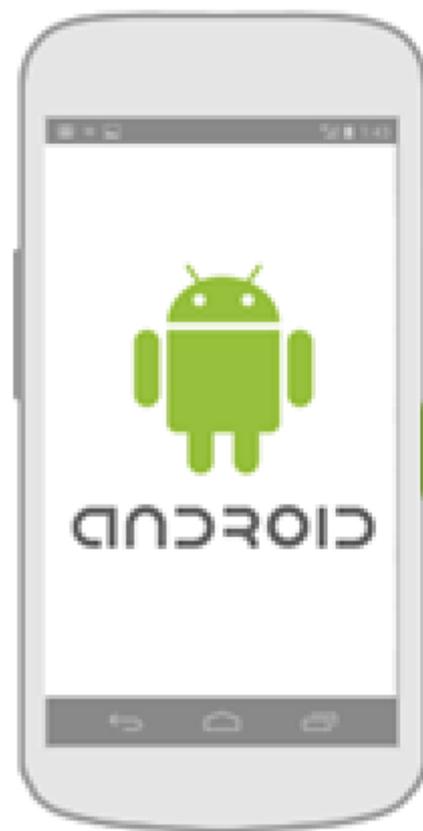


for the

action

his new





HTTP POST JSON

Internet

URI

```
graph LR; URI((URI)) -- POST --> Resource[Non-idempotent representation of a resource];
```

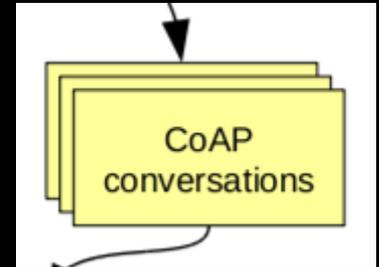
The diagram consists of a light blue circle on the left containing the text 'URI'. A horizontal blue arrow points from the right side of the circle to the left side of a light blue rounded rectangle on the right. Above the arrow, the word 'POST' is written in black. Inside the rounded rectangle, the text 'Non-idempotent representation of a resource' is written in black.

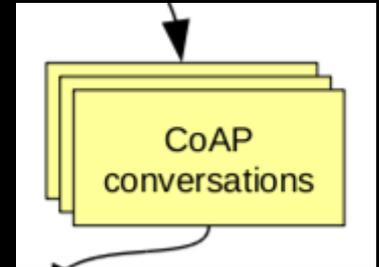
POST

Non-idempotent
representation
of a resource

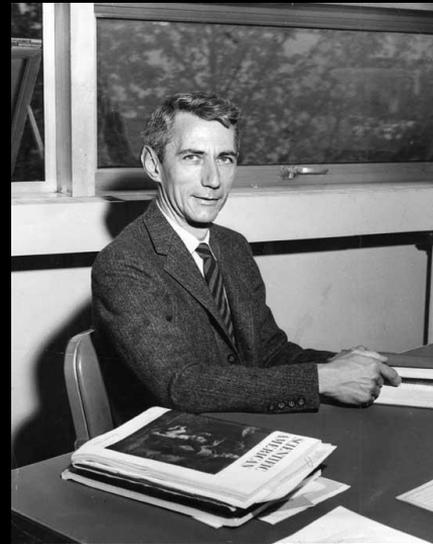


XMPP





**So far, we're still in
"Shannon-land"**



3. Semantics

THEM'S FIGHTIN' WORDS,
MISTER...UNLESS 'N, O' COURSE,
THEM'S JUST SEMANTICS.



9-6
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SPEEDBUMP.COM
Dist. BY CREATORS SYND. INC.

**On the web,
the "internal model"
is represented by
Semantics**

```
{
  "collection" :
  {
    "version" : "1.0",
    "href" : "http://localhost:1337/api/",

    "items" :
    [{
      "href": "http://localhost:1337/api/5266722824890167",
      "data": [
        {
          "name": "text",
          "value": "tasting"
        },
        {
          "name": "date_posted",
          "value": "2013-01-09T15:58:22.674Z"
        }
      ]
    }
  ]
},

  "template" : {
    "data" : [
      {
        "prompt" : "Text of message",
        "name" : "text",
        "value" : ""
      }
    ]
  }
}
```

Relation Name <small>✕</small>	Description <small>✕</small>	Reference <small>✕</small>
about	Refers to a resource that is the subject of the link's context.	[RFC6903] , section 2
alternate	Refers to a substitute for this context	[http://www.w3.org/TR/html5/links.html#link-type-alternate]
appendix	Refers to an appendix.	[http://www.w3.org/TR/1999/REC-html401-19991224]
archives	Refers to a collection of records, documents, or other materials of historical interest.	[http://www.w3.org/TR/2011/WD-html5-20110113/links.html#rel-archives]
author	Refers to the context's author.	[http://www.w3.org/TR/html5/links.html#link-type-author]
bookmark	Gives a permanent link to use for bookmarking purposes.	[http://www.w3.org/TR/html5/links.html#link-type-bookmark]
canonical	Designates the preferred version of a resource (the IRI and its contents).	[RFC6596]
chapter	Refers to a chapter in a collection of resources.	[http://www.w3.org/TR/1999/REC-html401-19991224]
collection	The target IRI points to a resource which represents the collection resource for the context IRI.	[RFC6573]
contents	Refers to a table of contents.	[http://www.w3.org/TR/1999/REC-html401-19991224]
copyright	Refers to a copyright statement that applies to the link's context.	[http://www.w3.org/TR/1999/REC-html401-19991224]
create-form	The target IRI points to a resource where a submission form can be obtained.	[RFC6861]
current	Refers to a resource containing the most recent item(s) in a collection of resources.	[RFC5005]
describedby	Refers to a resource providing information about the link's context.	[http://www.w3.org/TR/powder-dr/#assoc-linking]
describes	The relationship A 'describes' B asserts that resource A provides a description of resource B. There are no constraints on the format or representation of either A or B, neither are there any further constraints on either resource.	[RFC6892]

Relation Name <small>⌵</small>	Description <small>⌵</small>	Reference <small>⌵</small>
about	Refers to a resource that is the subject of the link's context.	[RFC6903], section 2
alternate	Refers to a substitute for this context	[http://www.w3.org/TR/html5/links.html#link-type-alternate]
appendix	Refers to an appendix.	[http://www.w3.org/TR/1999/REC-html401-19991224]
archives	Refers to a collection of records, documents, or other materials of historical interest.	[http://www.w3.org/TR/2011/WD-html5-20110113/links.html#rel-archives]
author	Refers to the context's author.	[http://www.w3.org/TR/html5/links.html#link-type-author]
bookmark	Gives a permanent link to use for bookmarking purposes.	[http://www.w3.org/TR/html5/links.html#link-type-bookmark]
canonical	Designates the preferred version of a resource (the IRI and its contents).	[RFC6596]
chapter	Refers to a chapter in a collection of resources.	[http://www.w3.org/TR/1999/REC-html401-19991224]
collection	The target IRI points to a resource which represents the collection resource for the context IRI.	[RFC6573]
contents	Refers to a table of contents.	[http://www.w3.org/TR/1999/REC-html401-19991224]
copyright	Refers to a copyright statement that applies to the link's context.	[http://www.w3.org/TR/1999/REC-html401-19991224]
create-form	The target IRI points to a resource where a submission form can be obtained.	[RFC6861]
current	Refers to a resource containing the most recent item(s) in a collection of resources.	[RFC5005]
describedby	Refers to a resource providing information about the link's context.	[http://www.w3.org/TR/powder-dr/#assoc-linking]
describes	The relationship A 'describes' B asserts that resource A provides a description of resource B. There are no constraints on the format or representation of either A or B, neither are there any further constraints on either resource.	[RFC6892]

Property	Expected Type	Description
Properties from <u>Thing</u>		
<u>additionalType</u>	URL	An additional type for the item, typically used for adding more is a relationship between something and a class that the thing is 'typeof' attribute - for multiple types. Schema.org tools may have defined externally.
<u>alternateName</u>	Text	An alias for the item.
<u>description</u>	Text	A short description of the item.
<u>image</u>	URL	URL of an image of the item.
<u>name</u>	Text	The name of the item.
<u>potentialAction</u>	Action	Indicates a potential Action, which describes an idealized action
<u>sameAs</u>	URL	URL of a reference Web page that unambiguously indicates the item's page, or official website.
<u>url</u>	URL	URL of the item.

Relation Name	Description	Reference
about	Refers to a resource that is the subject of the link's context.	[RFC6903], section 2
alternate	Refers to a substitute for this context	[http://www.w3.org/TR/html5/links.html#link-type-alternate]
appendix	Refers to an appendix.	[http://www.w3.org/TR/1999/REC-html401-19991224]
archives	Refers to a collection of records, documents, or other materials of historical interest.	[http://www.w3.org/TR/2011/WD-html5-20110113/links.html#rel-archives]
author	Refers to the context's author.	[http://www.w3.org/TR/html5/links.html#link-type-author]
bookmark	Gives a permanent link to use for bookmarking purposes.	[http://www.w3.org/TR/html5/links.html#link-type-bookmark]
canonical	Designates the preferred version of a resource (the IRI and its contents).	[RFC6596]
chapter	Refers to a chapter in a collection of resources.	[http://www.w3.org/TR/1999/REC-html401-19991224]
collection	The target IRI points to a resource which represents the collection resource for the context IRI.	[RFC6573]
contents	Refers to a table of contents.	[http://www.w3.org/TR/1999/REC-html401-19991224]
copyright	Refers to a copyright statement that applies to the link's context.	[http://www.w3.org/TR/1999/REC-html401-19991224]
create-form	The target IRI points to a resource where a submission form can be obtained.	[RFC6861]
current	Refers to a resource containing the most recent item(s) in a collection of resources.	[RFC5005]
describedby	Refers to a resource providing information about the link's	[http://www.w3.org/TR/powder-dr/#assoc-linking]

describes	Term Name: contributor	
	URI:	http://purl.org/dc/elements/1.1/contributor
	Label:	Contributor
	Definition:	An entity responsible for making contributions to the resource.
	Comment:	Examples of a Contributor include a person, an organization, or a service. Typically, the
	Term Name: coverage	
	URI:	http://purl.org/dc/elements/1.1/coverage
	Label:	Coverage
	Definition:	The spatial or temporal topic of the resource, the spatial applicability of the resource
	Comment:	Spatial topic and spatial applicability may be a named place or a location specified by a range. A jurisdiction may be a named administrative entity or a geographic place in a vocabulary such as the Thesaurus of Geographic Names [TGN]. Where appropriate, references may be as sets of coordinates or date ranges.
	References:	[TGN] http://www.getty.edu/research/tools/vocabulary/tgn/index.html
	Term Name: creator	
	URI:	http://purl.org/dc/elements/1.1/creator
	Label:	Creator
	Definition:	An entity primarily responsible for making the resource.
	Comment:	Examples of a Creator include a person, an organization, or a service. Typically, the
	Term Name: date	

Keyword	Effect on link	Effect on a, area	Brief description (from the relevant specification where possible)
acquaintance	not allowed	external relation	the person represented by the current document considers the person represented by the referenced document to be an acquaintance
alternate	external resource	external relation	Designates substitute versions for the document in which the link occurs. When used together with the lang attribute, it implies a translated version of the document. When used together with the media attribute, it implies a version designed for a different medium (or media).
appendix	allowed	allowed	Refers to a document serving as an appendix in a collection of documents.
bookmark	not allowed	allowed	Refers to a bookmark. A bookmark is a link to a key entry point within an extended document. The title attribute may be used, for example, to label the bookmark. Note that several bookmarks may be defined in each document.
chapter	allowed	allowed	Refers to a document serving as a chapter in a collection of documents.
child	not allowed	external relation	the referenced person is a child of the person represented by the current document
colleague	not allowed	external relation	the referenced person is a colleague of the person represented by the current document
contact	not allowed	external relation	the person represented by the current document considers the person represented by the referenced document to be a contact
contents	allowed	allowed	Refers to a document serving as a table of contents. Some user agents also support the synonym ToC (from "Table of Contents").
copyright	allowed	allowed	Refers to a copyright statement for the current document.

additionalType	URL	An additional type for the item, typically used for adding more types. It is a relationship between something and a class that the thing is a member of - for multiple types. Schema.org tools may have been defined externally.
alternateName	Text	An alias for the item.
description	Text	A short description of the item.
image	URL	URL of an image of the item.
name	Text	The name of the item.
potentialAction	Action	Indicates a potential Action, which describes an idealized action that can be performed on the item.
sameAs	URL	URL of a reference Web page that unambiguously indicates the item's page, or official website.
url	URL	URL of the item.

Relation Name	Description	Reference
about	Refers to a resource that is the subject of the link's context.	[RFC6903], section 2
alternate	Refers to a substitute for this context	[http://www.w3.org/TR/html5/links.html#link-type-alternate]
appendix	Refers to an appendix.	[http://www.w3.org/TR/1999/REC-html401-19991224]
archives	Refers to a collection of records, documents, or other materials of historical interest.	[http://www.w3.org/TR/2011/WD-html5-20110113/links.html#rel-archives]
author	Refers to the context's author.	[http://www.w3.org/TR/html5/links.html#link-type-author]
bookmark	Gives a permanent link to use for bookmarking purposes.	[http://www.w3.org/TR/html5/links.html#link-type-bookmark]
canonical	Designates the preferred version of a resource (the IRI and its contents).	[RFC6596]
chapter	Refers to a chapter in a collection of resources.	[http://www.w3.org/
collection	The target IRI points to a resource which represents the collection resource for the context IRI.	[RFC6573]
contents	Refers to a table of contents.	[http://www.w3.org/
copyright	Refers to a copyright statement that applies to the link's context.	[http://www.w3.org/
create-form	The target IRI points to a resource where a submission form can be obtained.	[RFC6861]
current	Refers to a resource containing the most recent item(s) in a collection of resources.	[RFC5005]
describedby	Refers to a resource providing information about the link's	[http://www.w3.org/

describes	Term Name: contributor	
	URI:	http://purl.org/dc/elements/1.1/contributor
	Label:	Contributor
	Definition:	An entity responsible for making contributions to the resource.
	Comment:	Examples of a Contributor include a person, an organization, or a s
	Term Name: coverage	
	URI:	http://purl.org/dc/elements/1.1/coverage
	Label:	Coverage
	Definition:	The spatial or temporal topic of the resource, the spatial applicabil
	Comment:	Spatial topic and spatial applicability may be a named place or a location specified by range. A jurisdiction may be a named administrative entity or a geographic place in a vocabulary such as the Thesaurus of Geographic Names [TGN]. Where appropriate, r as sets of coordinates or date ranges.
	References:	[TGN] http://www.getty.edu/research/tools/vocabulary/tgn/index.html
	Term Name: creator	
	URI:	http://purl.org/dc/elements/1.1/creator
	Label:	Creator
	Definition:	An entity primarily responsible for making the resource.
	Comment:	Examples of a Creator include a person, an organization, or a service. Typically, the
	Term Name: date	

Verb	Description	Example
accepts	Indicates that the actor has accepted the object. For instance, a person accepting an award, or accepting an assignment.	<pre>{ "actor": { "objectType": "person", "displayName": "Sally"}, "verb": "accept", "object": { "objectType": "job", "displayName": "Director of Marketing", "title": "Sally accepted the Director of Marketing job." } }</pre>
access	Indicates that the actor has accessed the object. For instance, a person accessing a room, or accessing a file.	<pre>{ "actor": { "objectType": "person", "displayName": "Joe"}, "verb": "access", "object": { "objectType": "file", "displayName": "AQ0812 Sales Forecast.xls", "published": "2012-12-12T12:12:12Z", "title": "Joe accessed the file \AQ0812 Sales Forecast.xls" } }</pre>
acknowledge	Indicates that the actor has acknowledged the object. This effectively signals that the actor	<pre>{ "actor": { "objectType": "person", "displayName": "Sally"}, "verb": "acknowledge", "object": { </pre>

Keyword	Effect on link	Effect on a, area	Brief description (from the relevant specification where possible)
acquaintance	not allowed	external relation	the person represented by the current document considers the person represented by the referenced document to be an acquaintance
alternate	external resource	external relation	Designates substitute versions for the document in which the link occurs. When used together with the lang attribute, it implies a translated version of the document. When used together with the media attribute, it implies a version designed for a different medium (or media).
	..wed	allowed	Refers to a document serving as an appendix in a collection of documents.
	wed	allowed	Refers to a bookmark. A bookmark is a link to a key entry point within an extended document. The title attribute may be used, for example, to label the bookmark. Note that several bookmarks may be defined in each document.
	wed	allowed	Refers to a document serving as a chapter in a collection of documents.
	wed	external relation	the referenced person is a child of the person represented by the current document
	wed	external relation	the referenced person is a colleague of the person represented by the current document
	wed	external relation	the person represented by the current document considers the person represented by the referenced document to be a contact
	wed	allowed	Refers to a document serving as a table of contents. Some user agents also support the synonym ToC from "Table of Contents".
	wed	allowed	Refers to a copyright statement for the current document.
	..type	URL	An additional type for the item, typically used for adding more s is a relationship between something and a class that the thing is 'typeof' attribute - for multiple types. Schema.org tools may have defined externally.
alternateName	Text		An alias for the item.
description	Text		A short description of the item.
image	URL		URL of an image of the item.
name	Text		The name of the item.
potentialAction	Action		Indicates a potential Action, which describes an idealized action
sameAs	URL		URL of a reference Web page that unambiguously indicates the i page, or official website.
url	URL		URL of the item.

Format Protocol Semantics



Formats

Add support for:

- collection+json
- siren
- uber
- hal



Protocols

Add support for:

- CoAP
- MQTT



Semantics

Make it easy to use existing semantics:

- IANA
- schema.org
- microformats
- dublin core
- activity streams



PROJECT OPEN DATA

Open Data Policy – Managing Information as an Asset

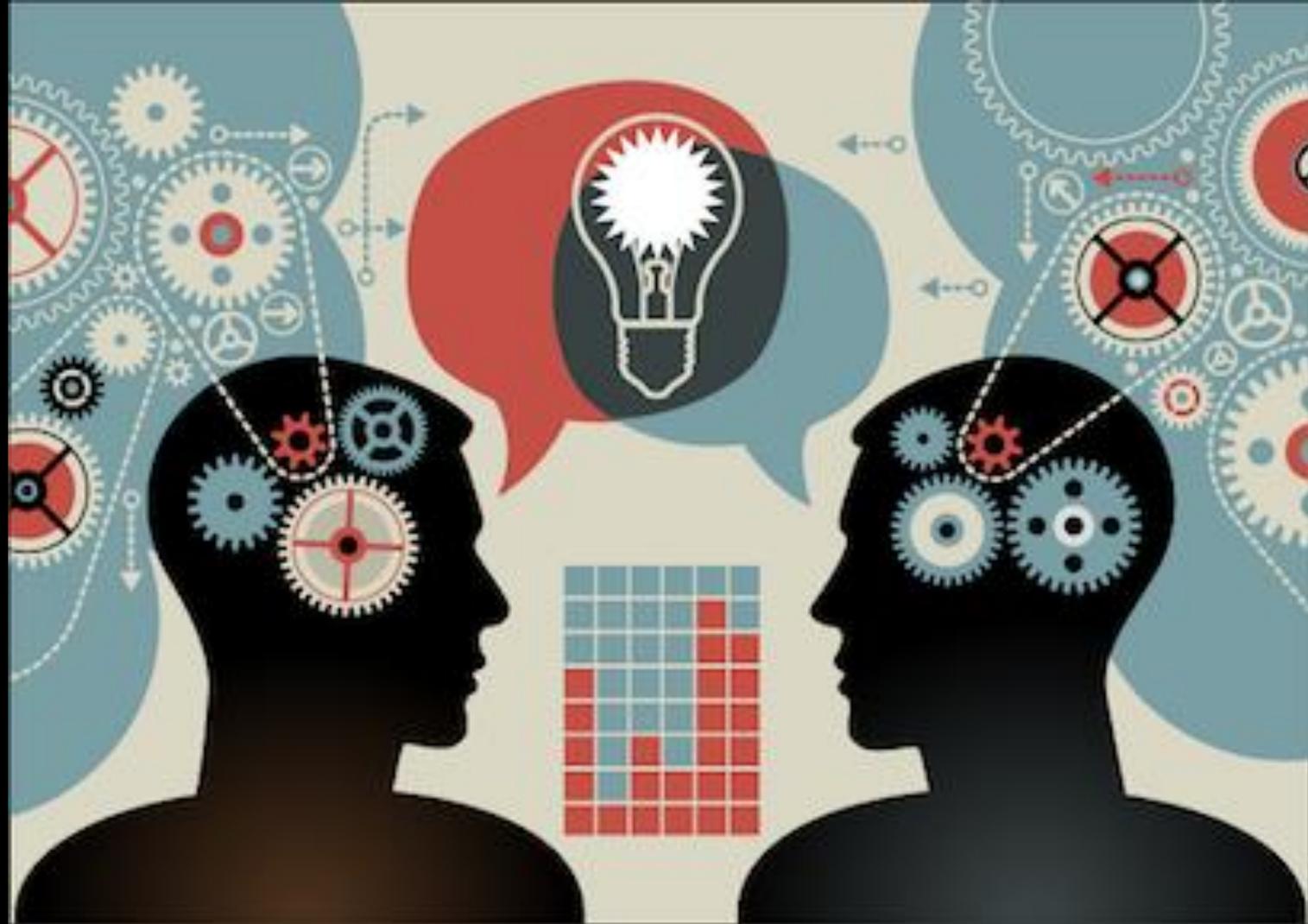
1. Background

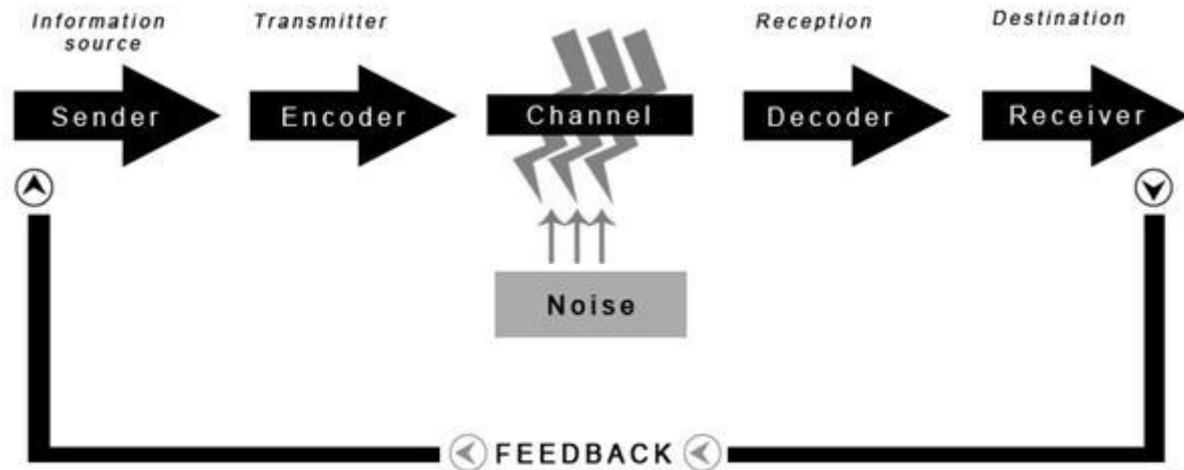
Data is a valuable national resource and a strategic asset to the U.S. Government, its partners, and the public. Managing this data as an asset and making it available, discoverable, and usable – [in a word, open](#) – not only strengthens our democracy and promotes efficiency and effectiveness in government, but also has the potential to create economic opportunity and improve citizens' quality of life.

Data.gov is a rich resource for civic hackers, tech entrepreneurs, data scientists, and developers of all stripes. Here you'll find information about APIs, open source projects, and relevant developer resources across government. You'll also find updates on the data.gov infrastructure itself, an [open source project](#) managed on GitHub.

So...

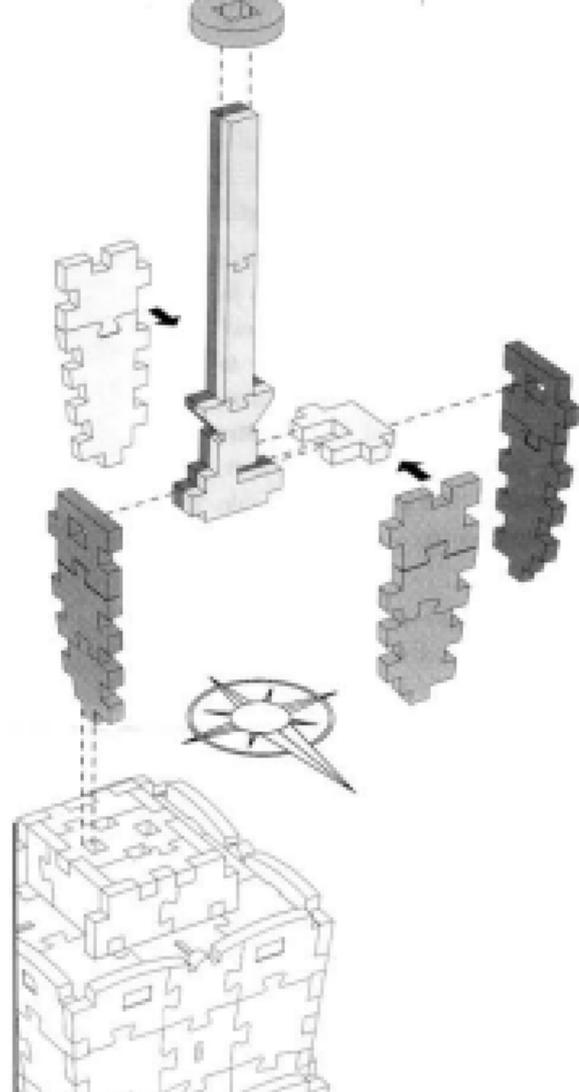
Format Protocol Semantics



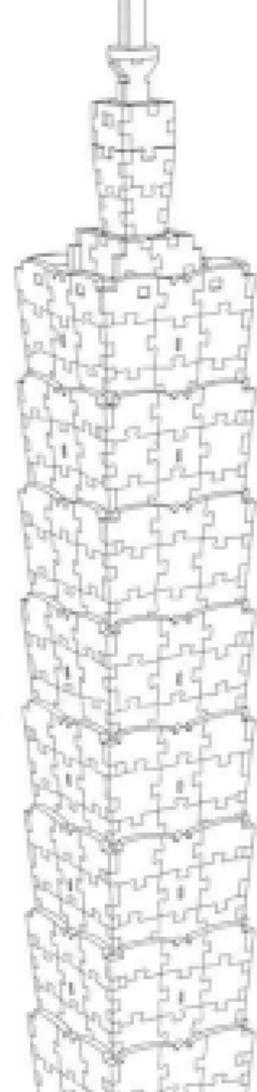


SHANNON-WEAVER'S MODEL OF COMMUNICATION





No. 8121467 Japanese Patent No. 3,776,318 Hong Kong Patent No. 1,606,815







It's Not Open Data Unless it is Usable Data

**Mike Amundsen,
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