



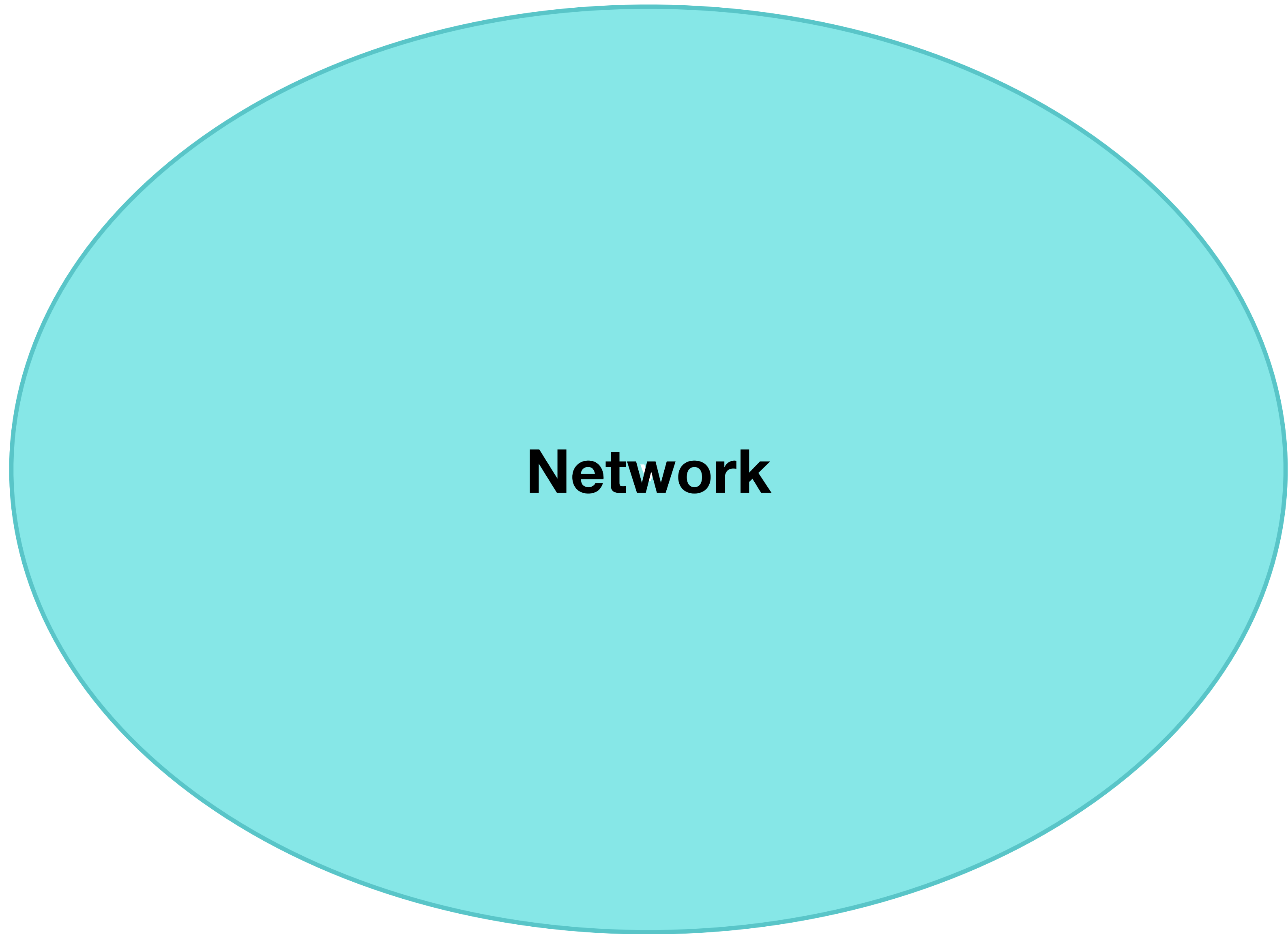
HUMAN COLOSSUS  
FOUNDATION

# Active and Passive Identifiers

Elements, objects and characteristics  
of a decentralized network

**Paul Knowles**

January 13th, 2021



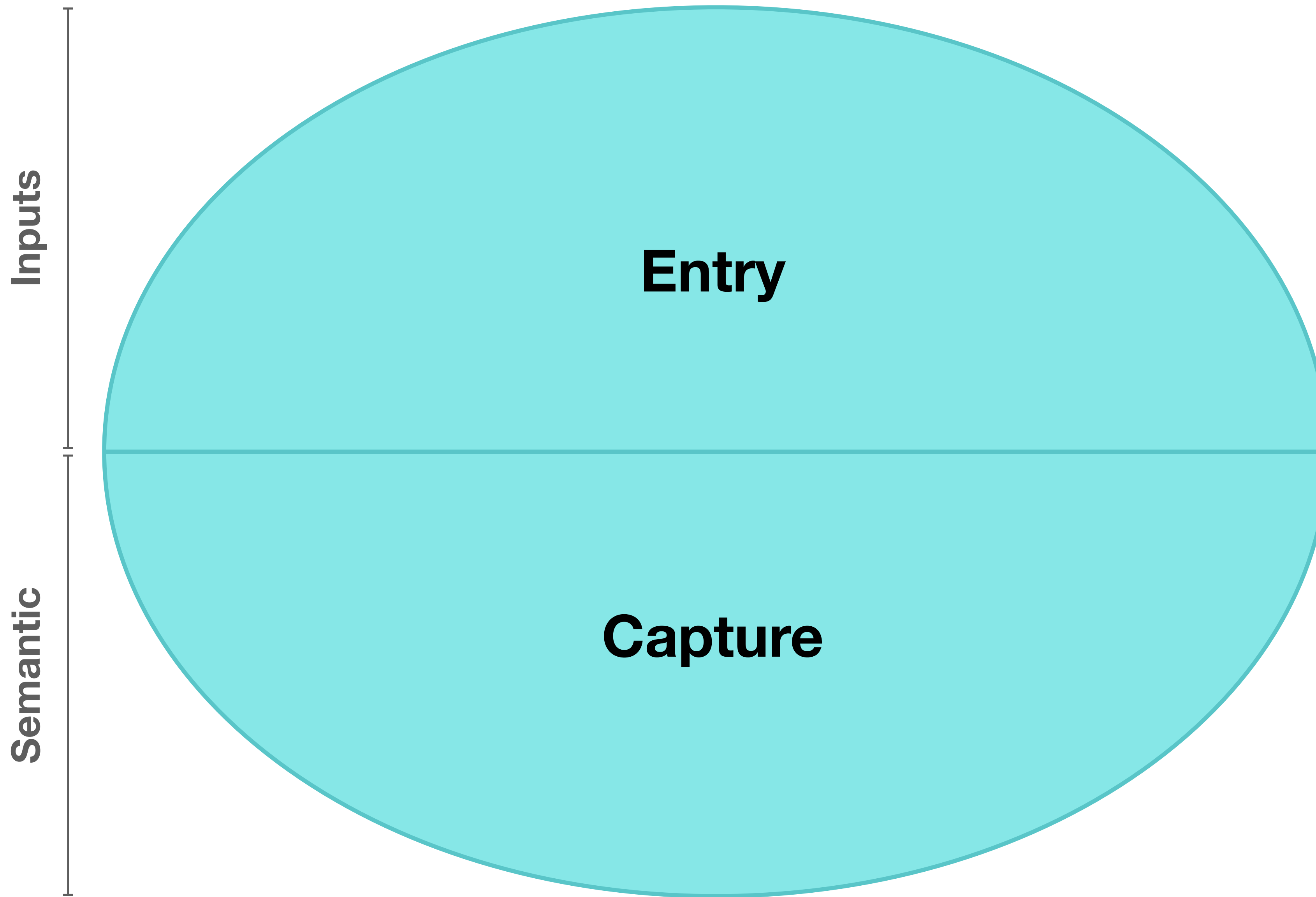
**Network**

## Network characteristics ...

*A digital network must contain authenticable data entry and immutable data capture elements in order to maintain balance and integrity.*

*Within the context of a decentralized network, these fundamentals enable a self-regulating system where ...*

- (1) data inputs can be trusted as having come from an assured source under the control of a governing entity; and*
- (2) semantic items ensure that the meaning and use of inputted data remains unaltered for all interacting actors.*

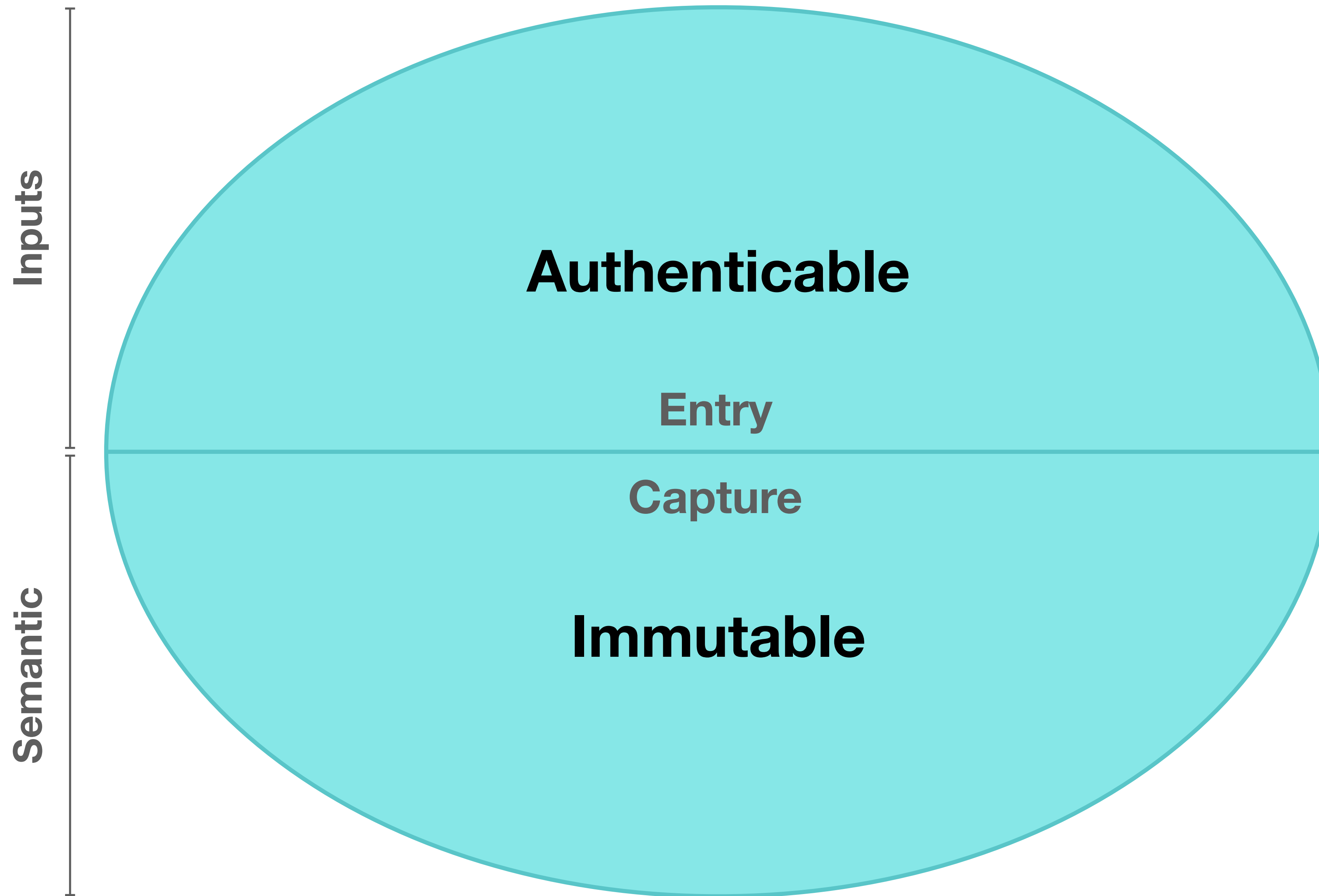


## Identifier characteristics ...

*The characteristics of the identifier types required for data entry and data capture differ.*

*- In the case of data entry, items are identified by active identifiers, a type of identifier that requires a signing key to authenticate the identity of an active governing entity.*

*- In the case of data capture, items are identified by passive identifiers, a type of identifier that has an association with a cryptographic hash of digital content which acts as an immutable fingerprint to identify a passive non-governing entity, an inanimate object or a static data input.*



# “Authenticable” vs “Immutable”

A hash grid table describing the different identifier states:

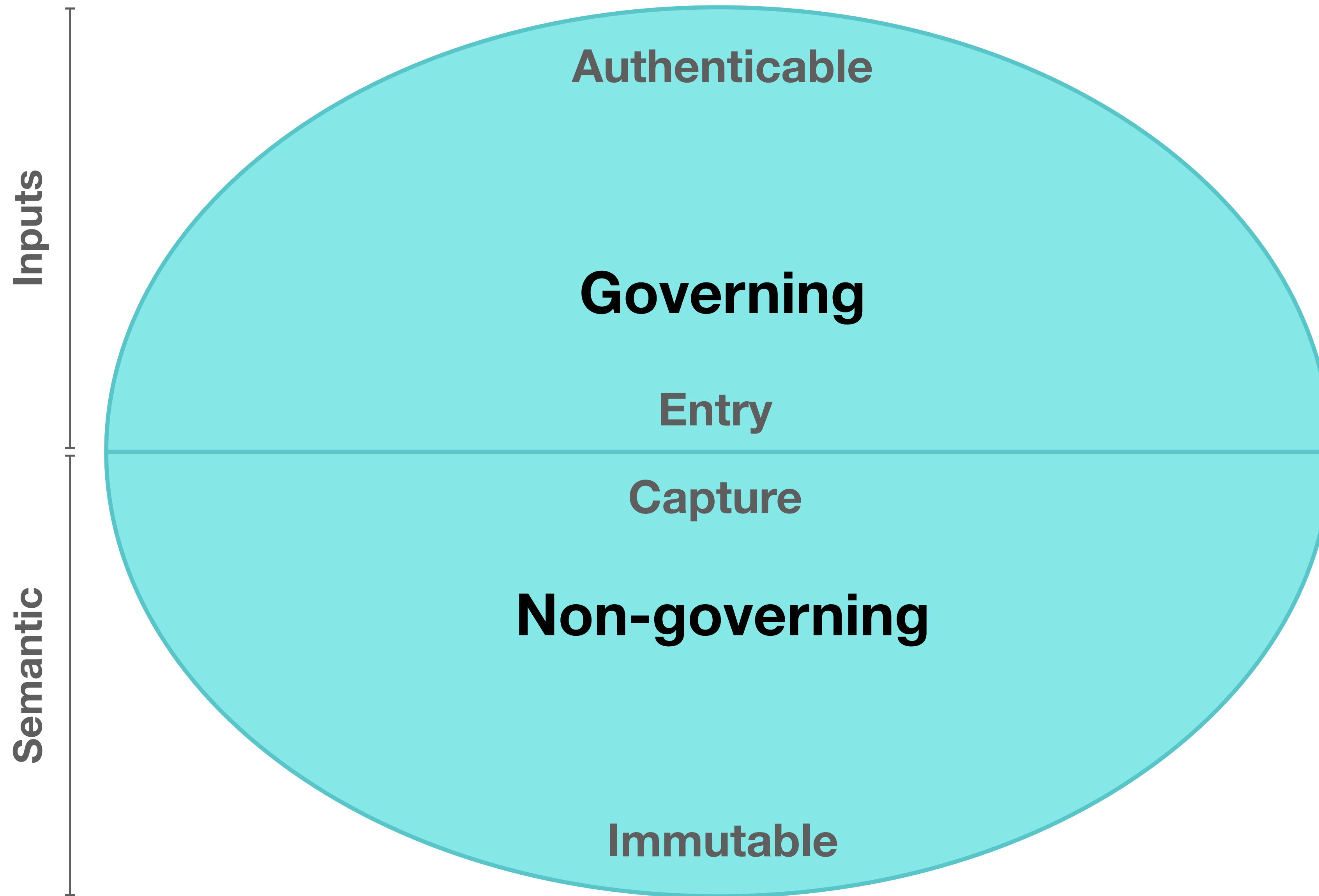
State	Governing	Non-governing
Authenticable	Active	Passive controlled by active
Immutable	Active controlled by passive <i>(This state cannot exist)</i>	Passive

## Authenticable

The identifier requires a signing key for identity authentication.

## Immutable

The identifier has an association with a cryptographic hash of digital content. Any change to the binary state of a single byte of the digital content will invalidate the hash. A hash value is an immutable fingerprint for digital content.





# “Governing” vs “Non-governing”

A hash grid table describing the different identifier states:

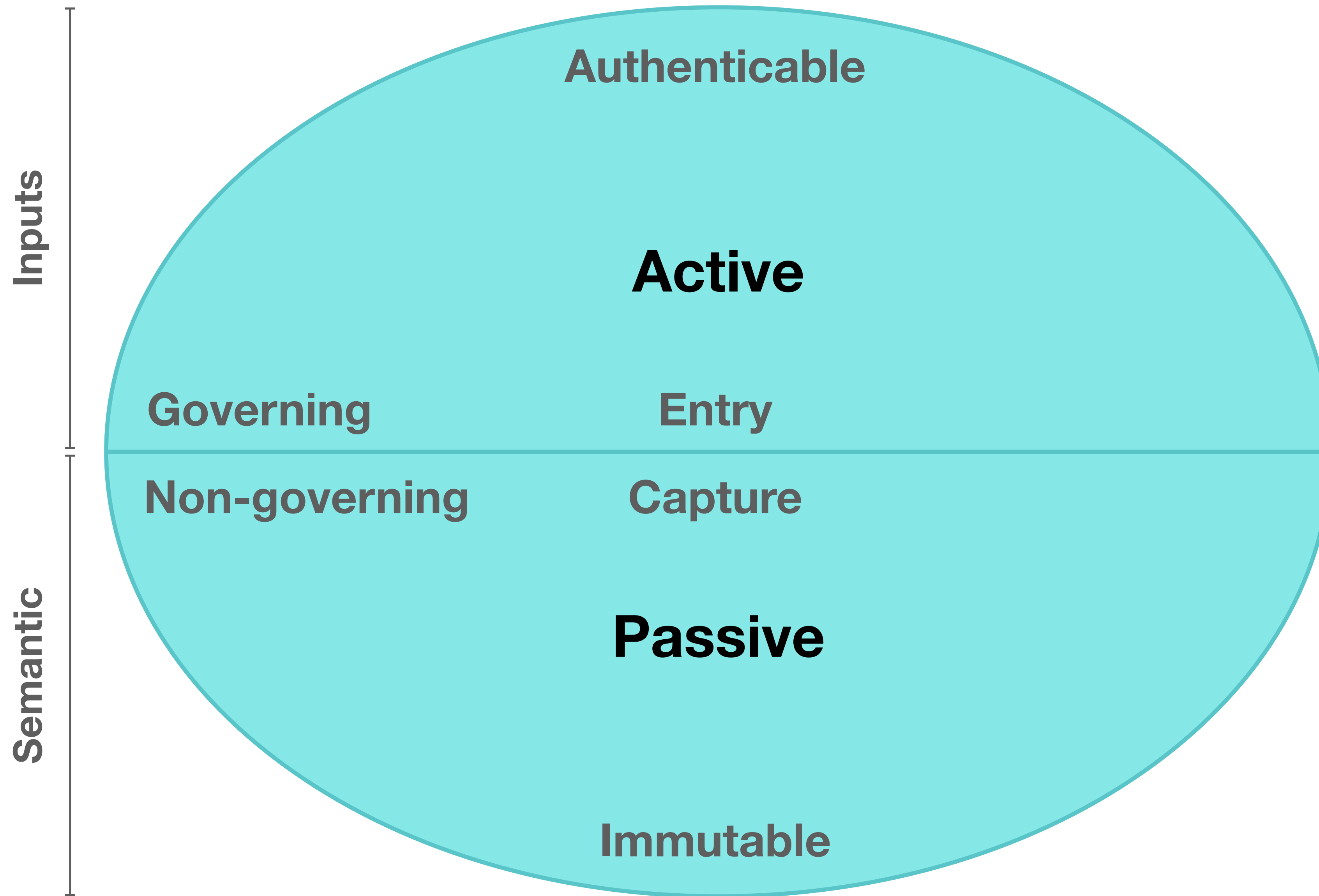
State	Governing	Non-governing
Authenticable	Active	Passive controlled by active
Immutable	Active controlled by passive <i>(This state cannot exist)</i>	Passive

## Governing

The identifier identifies an entity that has the capacity to govern.

## Non-governing

The identifier identifies a non-governing entity, an inanimate object or a static data input.



# “Active” vs “Passive”

A hash grid table describing the different identifier states:

State	Governing	Non-governing
Authenticable	Active	Passive controlled by active
Immutable	Active controlled by passive <i>(This state cannot exist)</i>	Passive

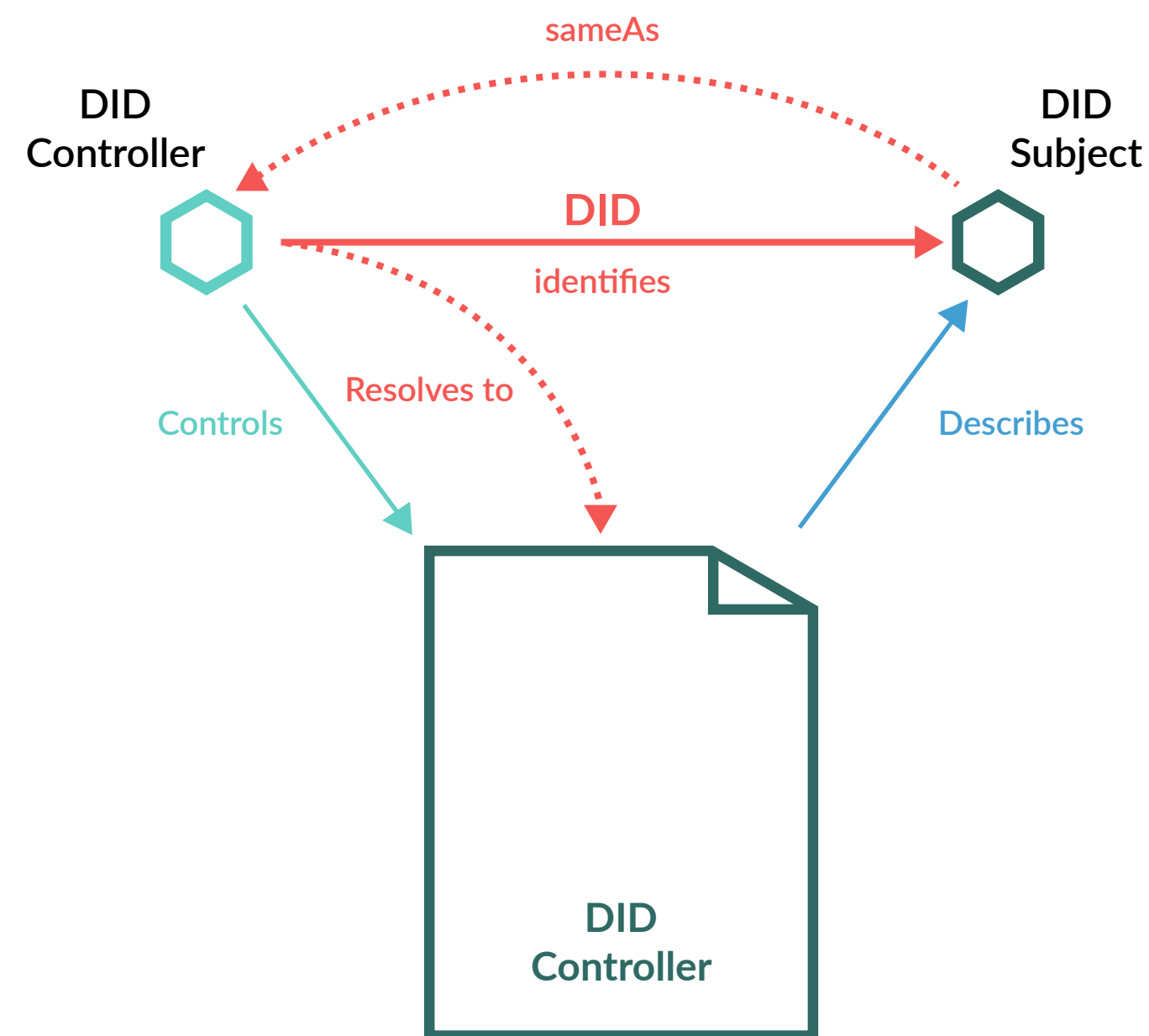
## Active

An identifier that requires a signing key to authenticate the identity of an active governing entity. An active identifier cannot be controlled by a passive identifier.

## Passive

An identifier that has an association with a cryptographic hash of digital content which acts as an immutable fingerprint to identify a passive non-governing entity, an inanimate object or a static data input. A passive identifier can either be (1) controlled by an active identifier or (2) not controlled.

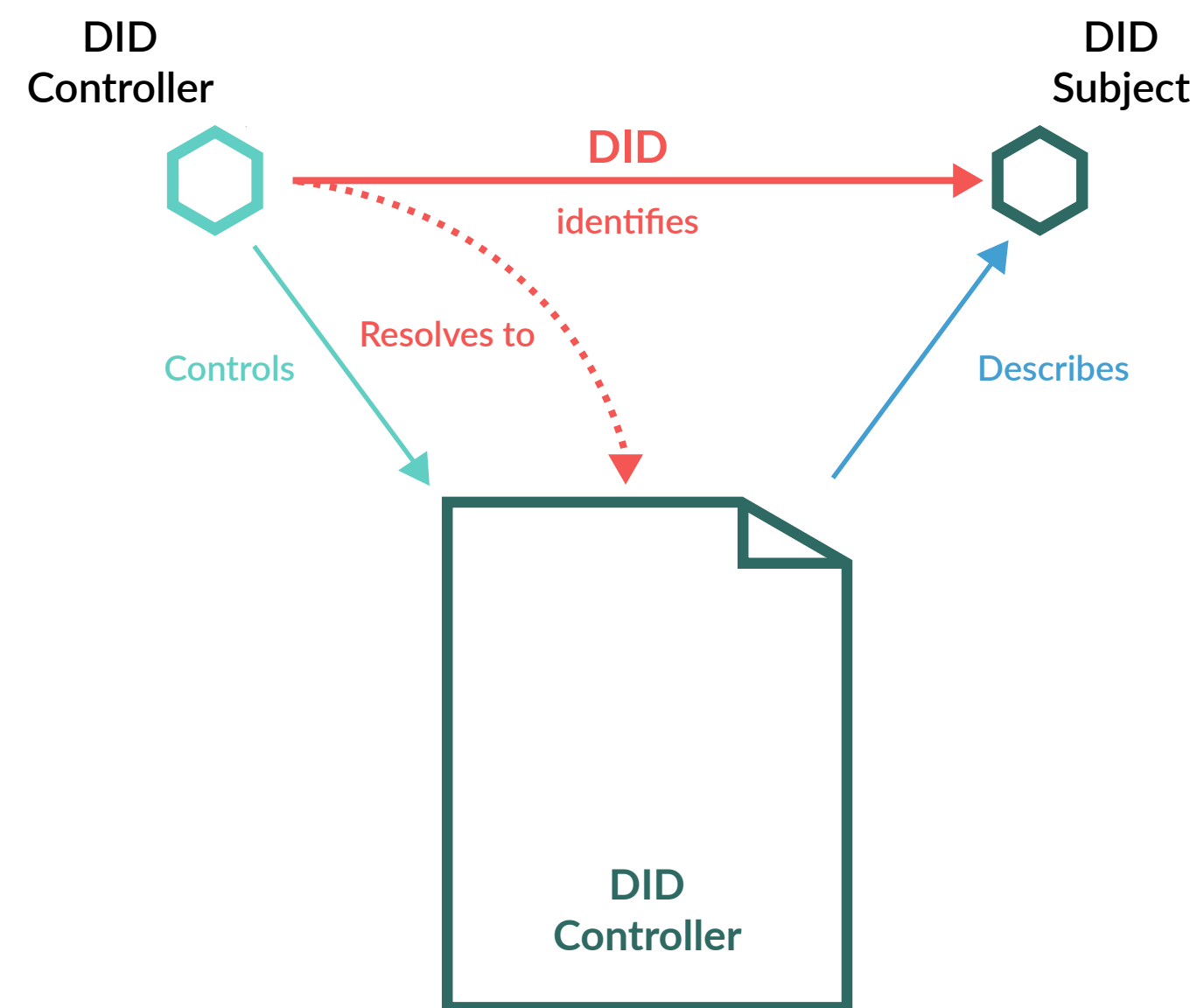
# Active state



## Example of an active identifier

The figure shows an instance when the DID subject is the same as the DID controller. In this scenario, the controller represents itself, an active entity that requires a signing key for identity authentication. Through the authentication process, the controller is able to establish full rights of control over the active identifier.

# Passive state



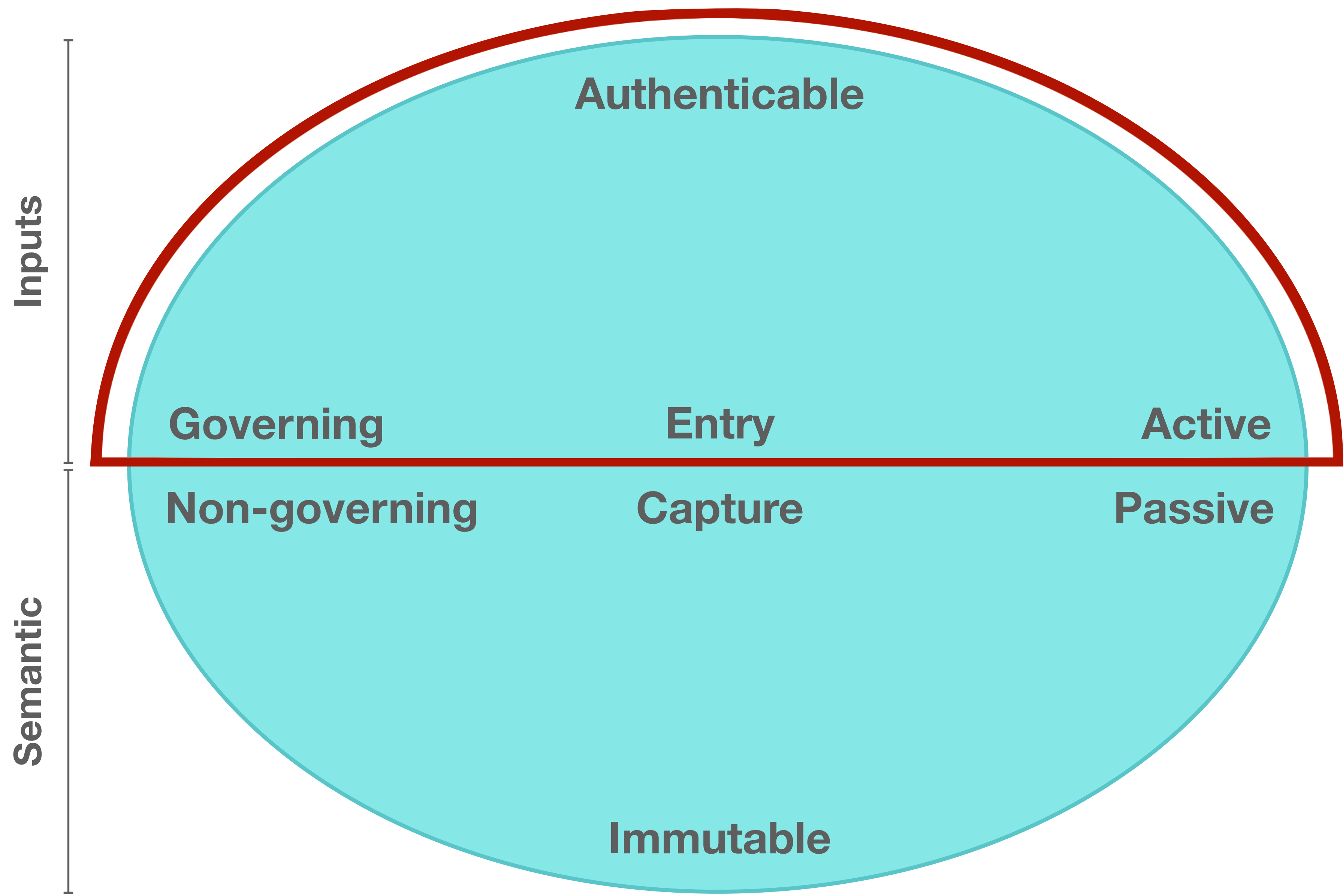
## Example of a controlled passive identifier

The figure shows an instance when the DID subject may not be the same as the DID controller. In this scenario, the subject may represent a passive non-governing entity, an inanimate object or a static data input with the controller's DIDs being active, requiring a signing key for identity authentication. Through the authentication process, the controller is able to express ownership, control, or management of the passive resource.

# Inputs domain

*[“the active domain”]*

*What is put in, taken in, or operated on  
by any process or system.*

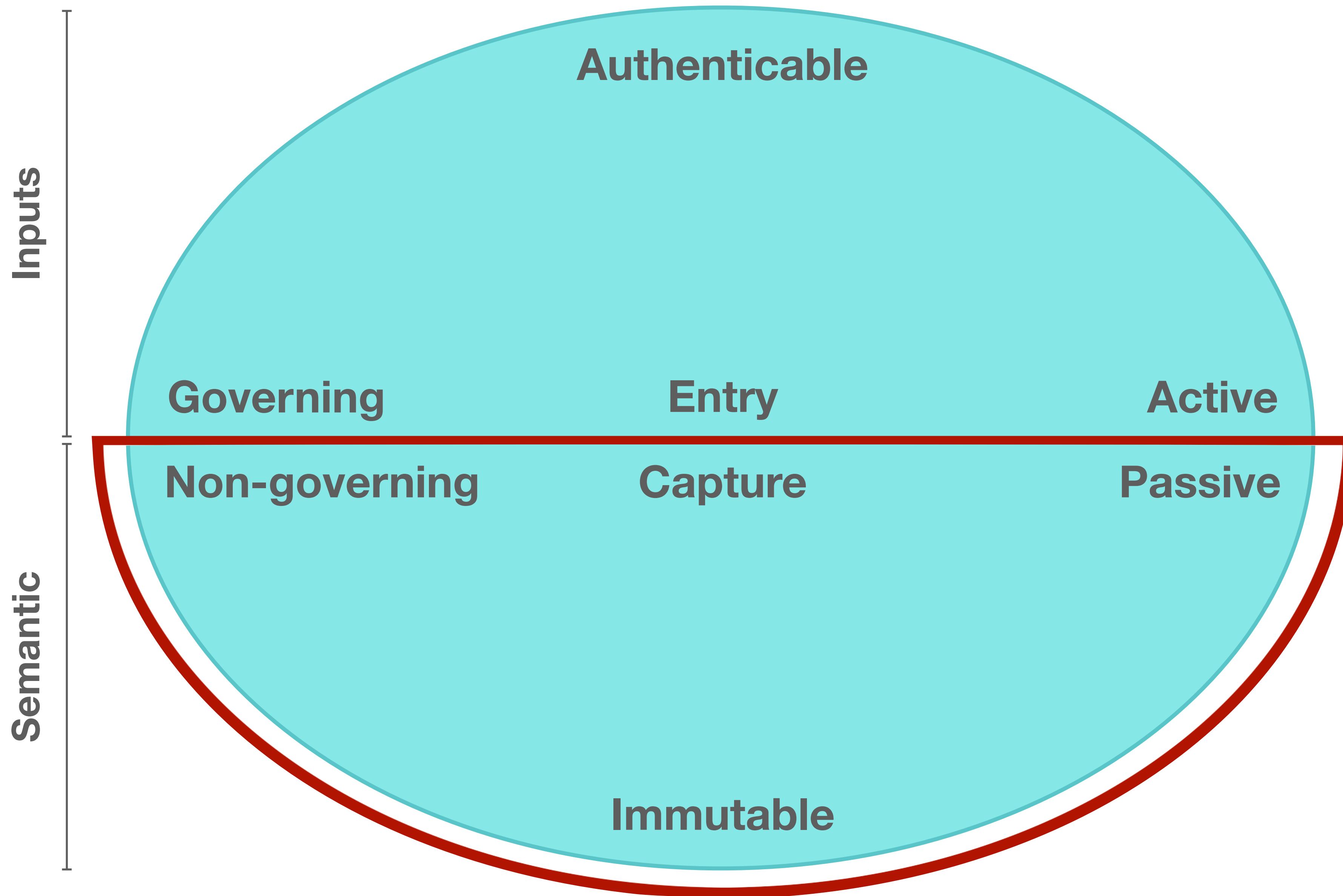


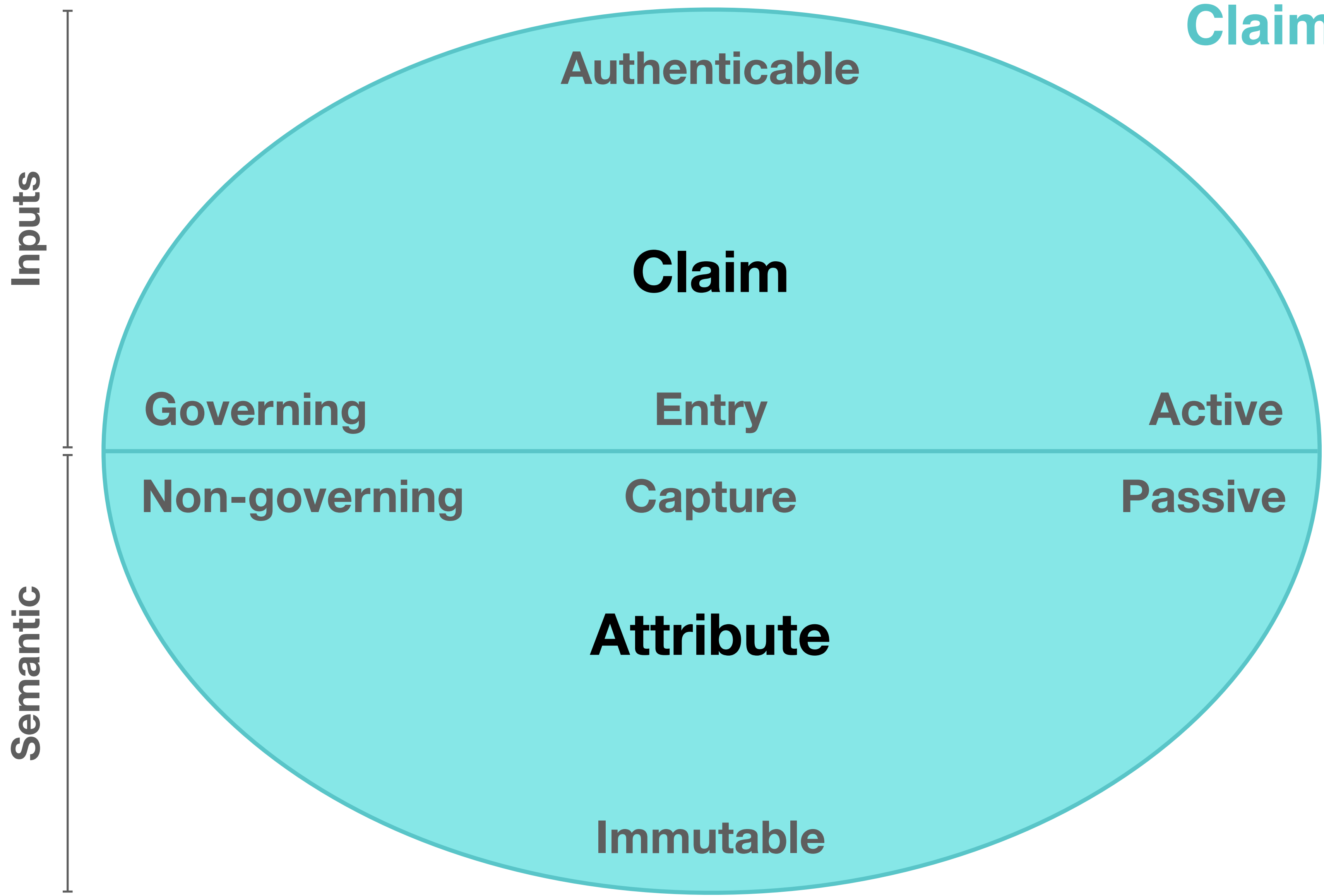
## Semantic domain

*["the passive domain"]*

*The meaning and use of what is put in, taken in,  
or operated on by any process or system.*







# Claim / Attribute

## Inputs domain

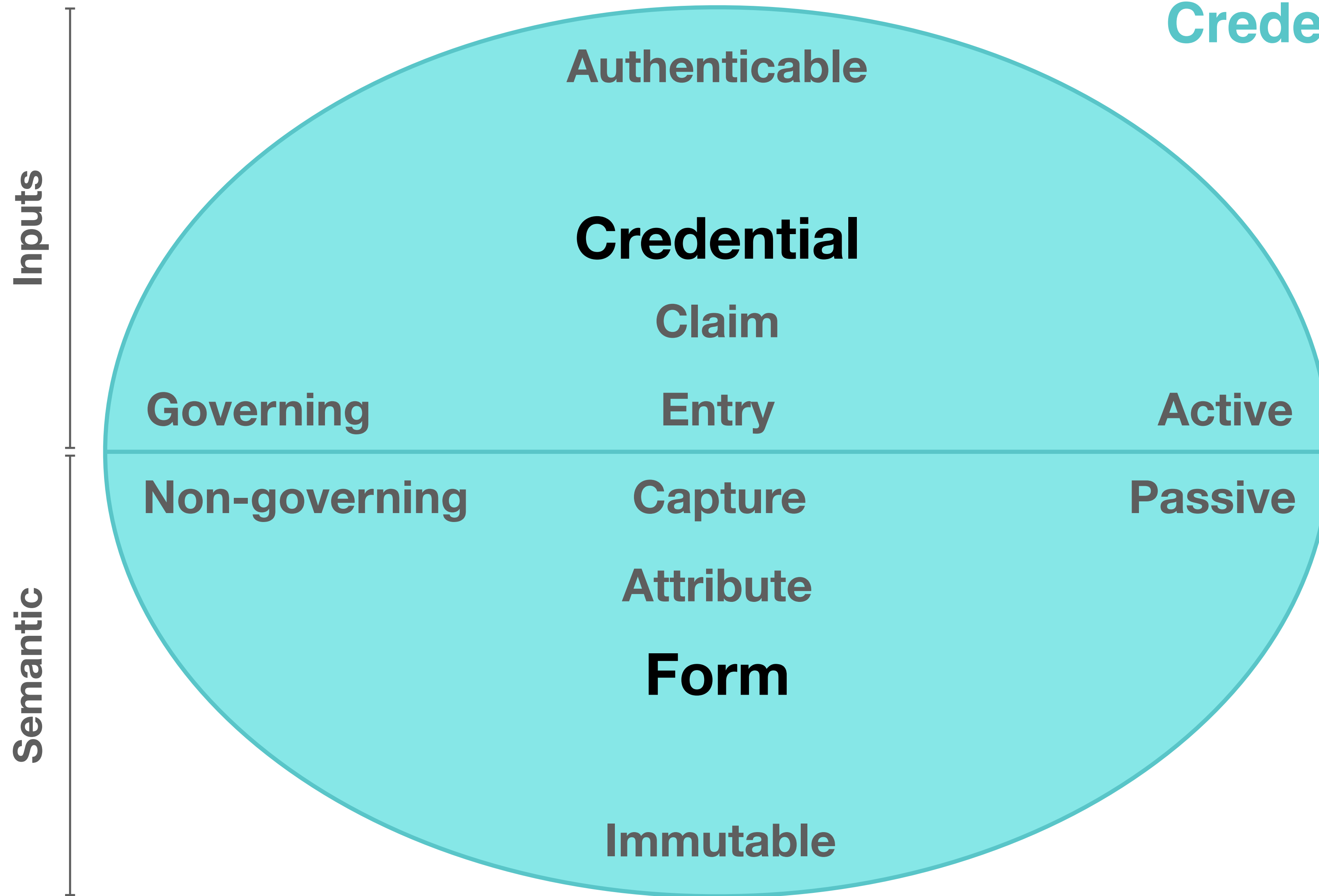
### **Claim**

*A single assertion made by a governing entity.*

## Semantic domain

### **Attribute**

*A piece of information which determines (i.) the properties of a field; (ii.) a tag in a database; or (iii.) a string of characters in a display.*



# Credential / Form

## Inputs domain

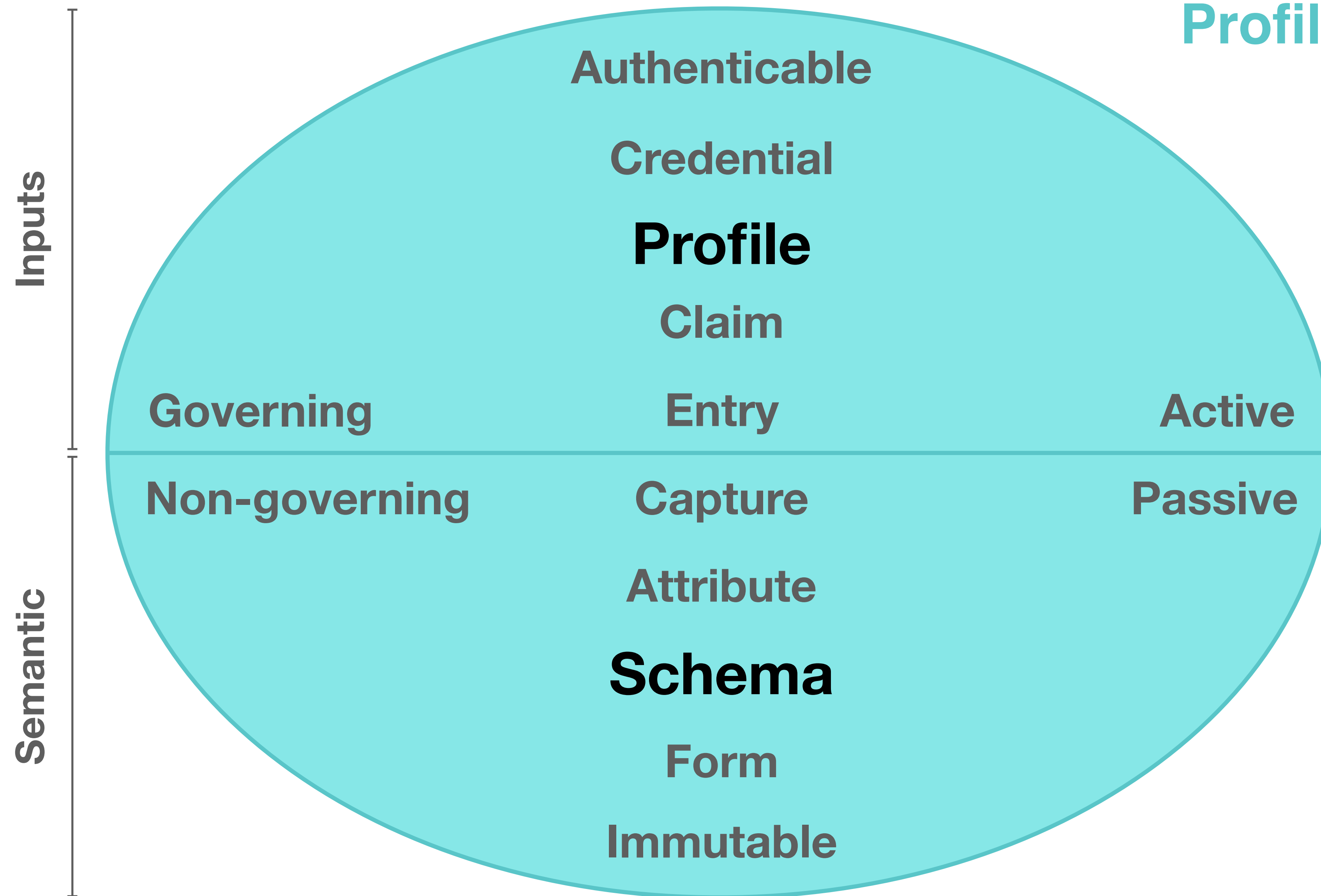
### **Credential**

*A set of one or more assertions made by a governing entity.*

## Semantic domain

### **Form**

*A digital version of a paper document used for capturing data.*



# Profile / Schema

## Inputs domain

### *Profile*

*A set of data inputs associated with a governing entity in the form of a data structure.*

## Semantic domain

### *Schema*

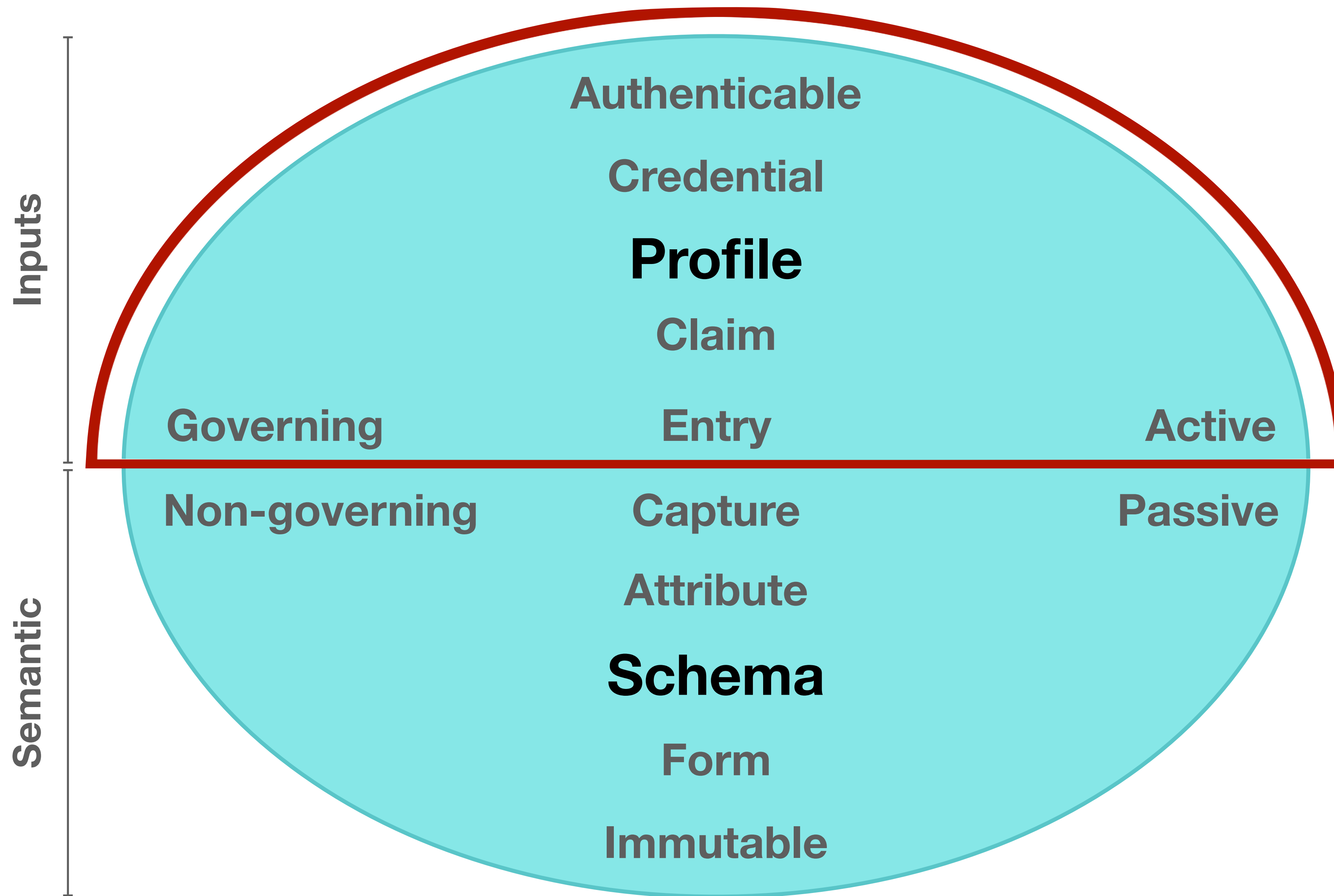
*A machine-readable definition of the semantics of a data structure.*

# Inputs domain

*["the active domain"]*

*What is put in, taken in, or operated on  
by any process or system.*

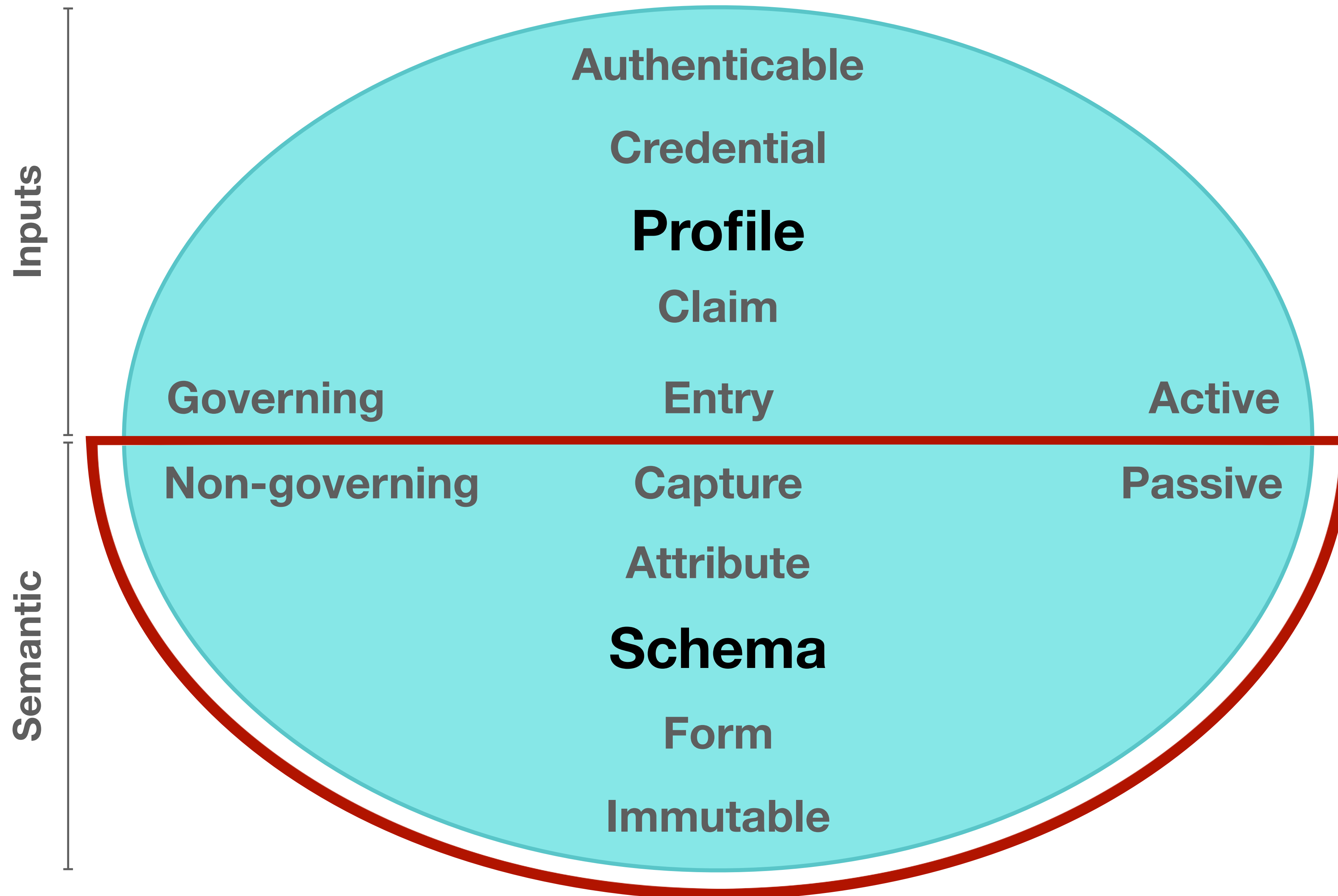




## Semantic domain

*["the passive domain"]*

*The meaning and use of what is put in, taken in,  
or operated on by any process or system.*



## Summary statement

*Active identifiers bring authenticability and passive identifiers bring immutability to a decentralized network.*



HUMAN COLOSSUS  
FOUNDATION

▶ Paul Knowles [paul.knowles@humancolossus.org](mailto:paul.knowles@humancolossus.org)