

# Creating a Primary Market for Personal Data Exchange in an era of IoT: The HAT

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[hatcentral.hubofallthings.net](http://hatcentral.hubofallthings.net)



# On the Internet, we constantly give away our information

- **Filling in forms**
- **Browse websites**
- **Watch videos**
- **Like, comment, interact**



## DATA TRANSFER

UPLOAD

[Click here for more information](#)



# Personal data "transfer" is everything we do on the Internet

- It's a manifestation of digital "work"
- But more importantly..... it tells people who we are.....the type of persons we are.... and our preferences.



# the current state of the personal data "harvesting" system

- **is given away (not easily reused, unless you keep it on Google, Facebook, Amazon or Apple or other providers) - often without the right to dictate how it is used or reused**
- **After it is given away, services can resell the data in the name of 'better service'**



# And it's now a commodity

- **personal data becomes a powerful resource to know who we are and to influence how, when and what we buy**
- **It's a commodity not because it's precious.....**



**It is a commodity because there is a market for it**



**Unless a market happens, the worth of  
a commodity is unknown**

# The 'secondary' data market

**Now thriving with buyers and sellers**

**Using predictive analytics**

**Using AI and machine learning**

**Able to strip personal identifying information and 're-identify' you with a number or ID through 'very good analytics' - therefore it is inferential data and can bypass the law (maybe)**

**Sell on the inferential data for better targeting of consumers**

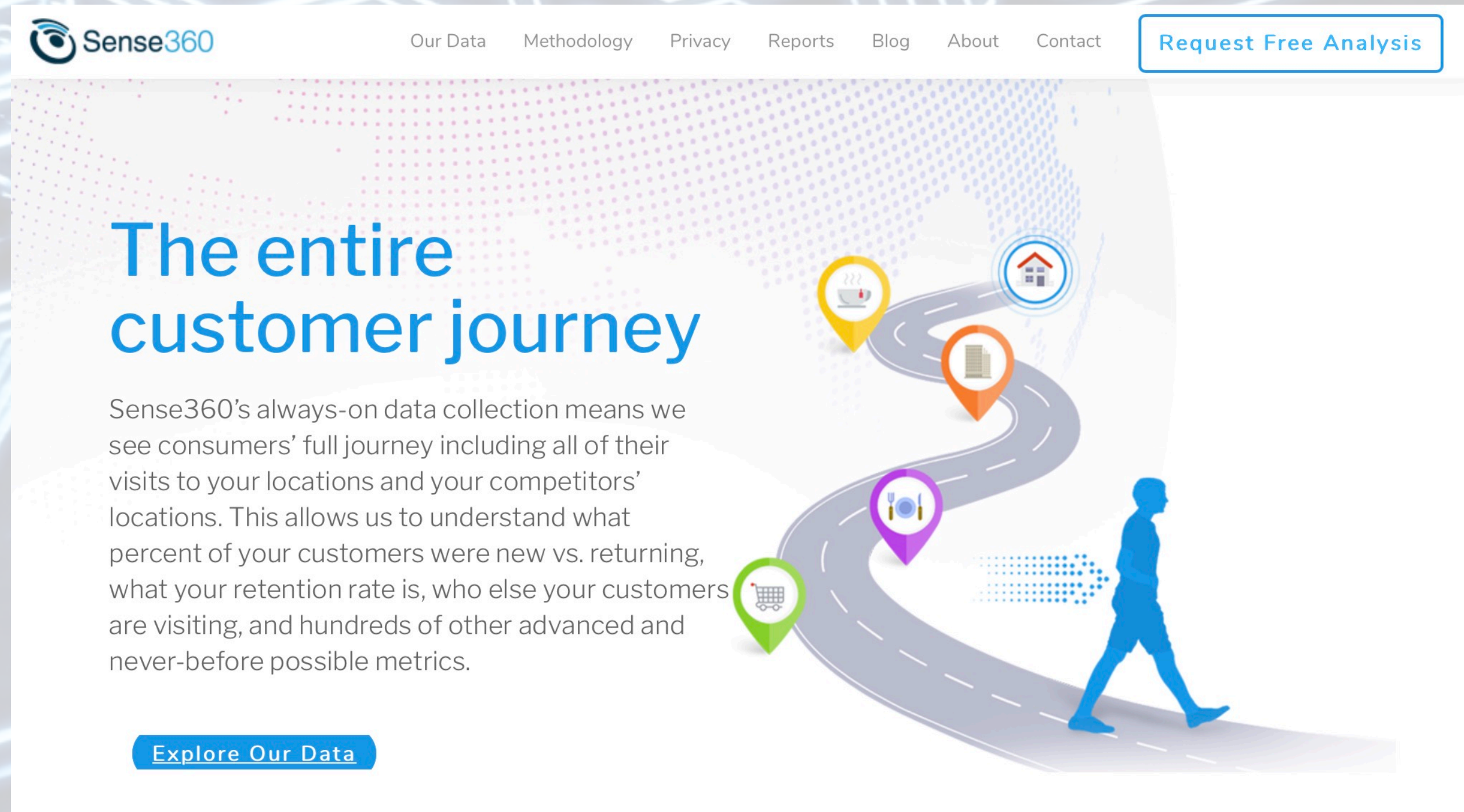


# **The market is after a lot more than "just" personal data**

- **The precious commodity of personal data is just symptomatic of the real commodity**
- **In an era of IoT, personal data would be everything about you**
- **It is your entire person, in a digital form**
- **That's the real game, not some scrappy few pieces of personal data**



# And the capabilities are there to do it



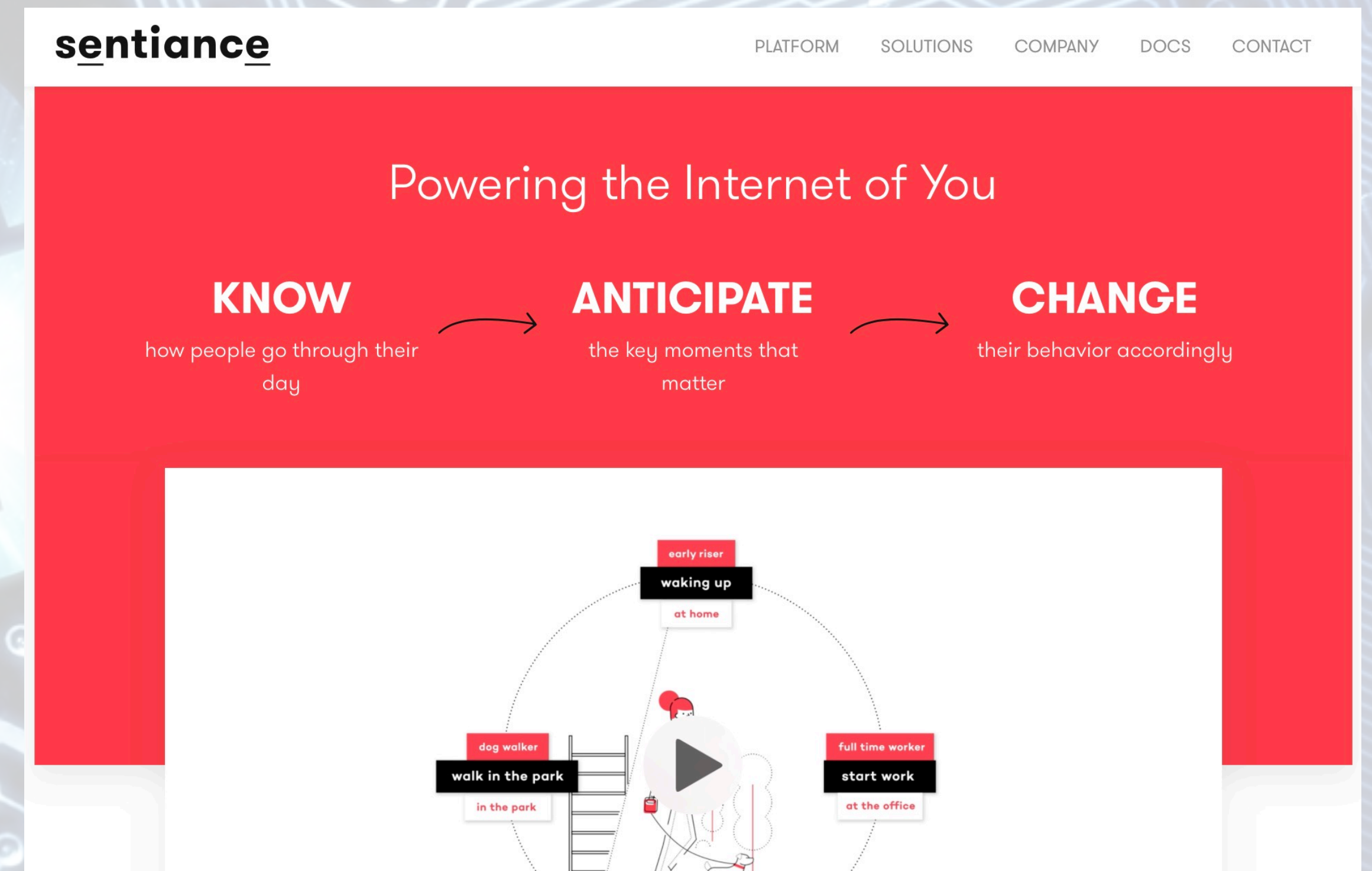
**Sense360** Our Data Methodology Privacy Reports Blog About Contact [Request Free Analysis](#)

## The entire customer journey

Sense360's always-on data collection means we see consumers' full journey including all of their visits to your locations and your competitors' locations. This allows us to understand what percent of your customers were new vs. returning, what your retention rate is, who else your customers are visiting, and hundreds of other advanced and never-before possible metrics.

[Explore Our Data](#)

The image shows a blue silhouette of a person walking on a winding road. The road is marked with various location pins: a coffee cup, a house, a building, a shopping cart, and a fork and knife. The background is a light blue and white pattern of dots and lines.



**sentiance** PLATFORM SOLUTIONS COMPANY DOCS CONTACT

## Powering the Internet of You

**KNOW** how people go through their day → **ANTICIPATE** the key moments that matter → **CHANGE** their behavior accordingly

The image shows a diagram of a person's daily routine. A central figure is surrounded by various activities: 'early riser', 'waking up at home', 'dog walker', 'walk in the park in the park', 'full time worker', and 'start work at the office'. A play button icon is in the center, suggesting a video or interactive content.

# Of course, with user consent

# The issue with user consent

**Temptation to cheat** (long user agreements)

**Opacity** (no one knows how it's handled)

**Creep** (let's do something else with the data)

Because the incentive of the market is not aligned with the incentive of society



# Your personal data on sale to scammers and cold callers for just 4p



Potential nuisance callers and scammers could be able to buy sensitive personal and financial information for as little as 4p a record

By  
DAVID BEHRENS, DIGITAL EDITOR



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People Don't Know You Can Check For PPI Without A Phone Call

The Claims Guys



<http://www.yorkshirepost.co.uk/lifestyle/personal-finance/your-personal-data-on-sale-to-scammers-and-cold-callers-for-just-4p-1-8344959>

# We've seen this before?

- It wasn't long ago that we had a secondary market of exchanges that didn't involve the source that produced it
- Quality was dubious, legality was questioned and later deemed illegal
- The market for personal data is starting to behave like the market for contraband and music in 1990s

The screenshot shows the Napster v2.0 BETA 7 interface. The window title is "Napster v2.0 BETA 7". The menu bar includes "File", "Actions", and "Help". The toolbar has buttons for "Home", "Chat", "Library", "Search", "Hot List", "Transfer", "Discover", and "Help". The main area displays two tables of file transfer information.

Filename	File Size	User	Status	Speed	Progress	Rate	Time Left
Comedy - Maclean & Maclean - The Gross Manual (14 Sure Fire Jo...	299,200 of 2,220,560	ldhul	Downloading..	Unknown	13%	5.06 k/s	00:06:19
(Comedy) Maclean & Maclean - Johnny Marijuana Seed .mp3	270,049 of 7,381,800	nrtrin	Downloading..	Cable	2%	6.50 k/s	00:18:13
Comedy - Maclean & Maclean - The Gross Manual (14 Sure Fire Jo...	539,936 of 2,220,560	big_bang_	Downloading..	Cable	24%	7.33 k/s	00:03:49
MacLean and Maclean - Bowser and Blue.mp3	5,606,005	adie_m	Getting Info..				
Andrews Sisters - Little Toot.mp3	375,392 of 8,528,129	F4phantom_...	Downloading..	DSL	4%	4.14 k/s	00:32:50
78's CHILDREN'S STORY RECORD -- LITTLE TOOT .mp3	89,512 of 5,840,561	dude_way	Downloading..	14.4	1%	1.10 k/s	01:26:59
Disney Parks Toontown-Little Toot.mp3	64,608 of 2,354,597	hitmerbiter	Downloading..	Cable	2%	1.28 k/s	00:29:47
Maclean & Maclean - Little Toot MP3	12,288 of 602,112	KASDJFLKJ..	Downloading..	Cable	3%	0.24 k/s	00:41:39
Disney Parks Toontown-Little Toot.mp3	185,648 of 2,354,597	Cresno1	Downloading..	56K	9%	5.82 k/s	00:06:12
Maclean & Maclean - Little Toot .mp3	210,944 of 882,688	steach	Downloading..	56K	24%	4.44 k/s	00:02:31
Big Tiny Little & Mickey Finn - Toot Toot Tooti .mp3	40,128 of 2,808,844	obear69	Downloading..	Cable	1%	1.89 k/s	00:25:08
Comedy - Maclean & Maclean - Little Toot .mp3	5,816 of 882,688	catalina2136	Downloading..	DSL	0%	0.55 k/s	00:26:45
Brenda Lee - Toot Toot Tootie Goodbye (Little Miss Dynamite, CD ...	44,368 of 2,250,710	enge3339	Downloading..	Unknown	1%	1.10 k/s	00:33:26
MacLean & MacLean - Little Toot (edf) .mp3	115,600 of 1,180,444	123412341...	Downloading..	14.4	9%	4.68 k/s	00:03:47
Maclean & Maclean - Little Toot .mp3	882,688	seybauduc	Getting Info..				

Filename	File Size	User	Status	Speed	Progress	Rate	Time Left
Crosby, Stills, Nash And Young - Ohio.Mp3	2,725,888 of 3,709,496	cybermoose	Uploading..	56K	72%	1.55 k/s	00:10:33
lollipop lust kill - jezuz chrysler .mp3	3,339,493	45ringMF	File Complete!				
Simpsons - The Life Of Homer Simpson .mp3	1,406,976 of 2,756,736	soldude67	Uploading..	56K	51%	1.45 k/s	00:15:30
Fear Factory - Cars .mp3	3,921,141	subbedbird	File Complete!				
Comedy - Richard Pryor - New Niggers .mp3	3,796,451	subbedbird	File Complete!				
Unknown - Mopar (Drysler) 440 6-pk V8 race-bait - real men don't...	869,049	TYLERSEX..	File Complete!				
Comedy - Jerky Boys - Fanning My Balls .mp3	675,840 of 1,784,264	subbedbird	Uploading..	14.4	38%	7.33 k/s	00:02:31
Ben Stiller & Andy Dick - Can We Get It Together Again .mp3	1,230,600	fluidpockets...	Waiting..				

Concurrent Downloads: 25      Concurrent Uploads: 1

Clear Finished      Cancel

Online (f/g/fudfvdvvcv): Sharing 2703 files.      Currently 526,589 files (2,246 gigabytes) available in 8,411 libraries.



**A Primary Exchange Market for  
Personal Data is the solution**

**Data exchanged by the source**

## Why do we need it?

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The value of our **personal data** is the **fastest-growing market** on the **internet**

– worth “€272 billion in the EU alone” according to the European Commission.

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**Why do we need it?**

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**Markets and society thrive when  
all stakeholders prosper.**

(See: Why Nations Fail: The Origins of Power, Prosperity, and Poverty by Daron Acemoğlu)

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## **What is the HAT (Hub-of-all-things)?**

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**The HAT enables a primary exchange of personal data between the source (individuals) and firms**

**By giving every individual a HAT Private 'Microserver' Data Account**

**To control and process personal information easily, much like the way you manage a smartphone.**

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# What is the HAT (Hub-of-all-things)?

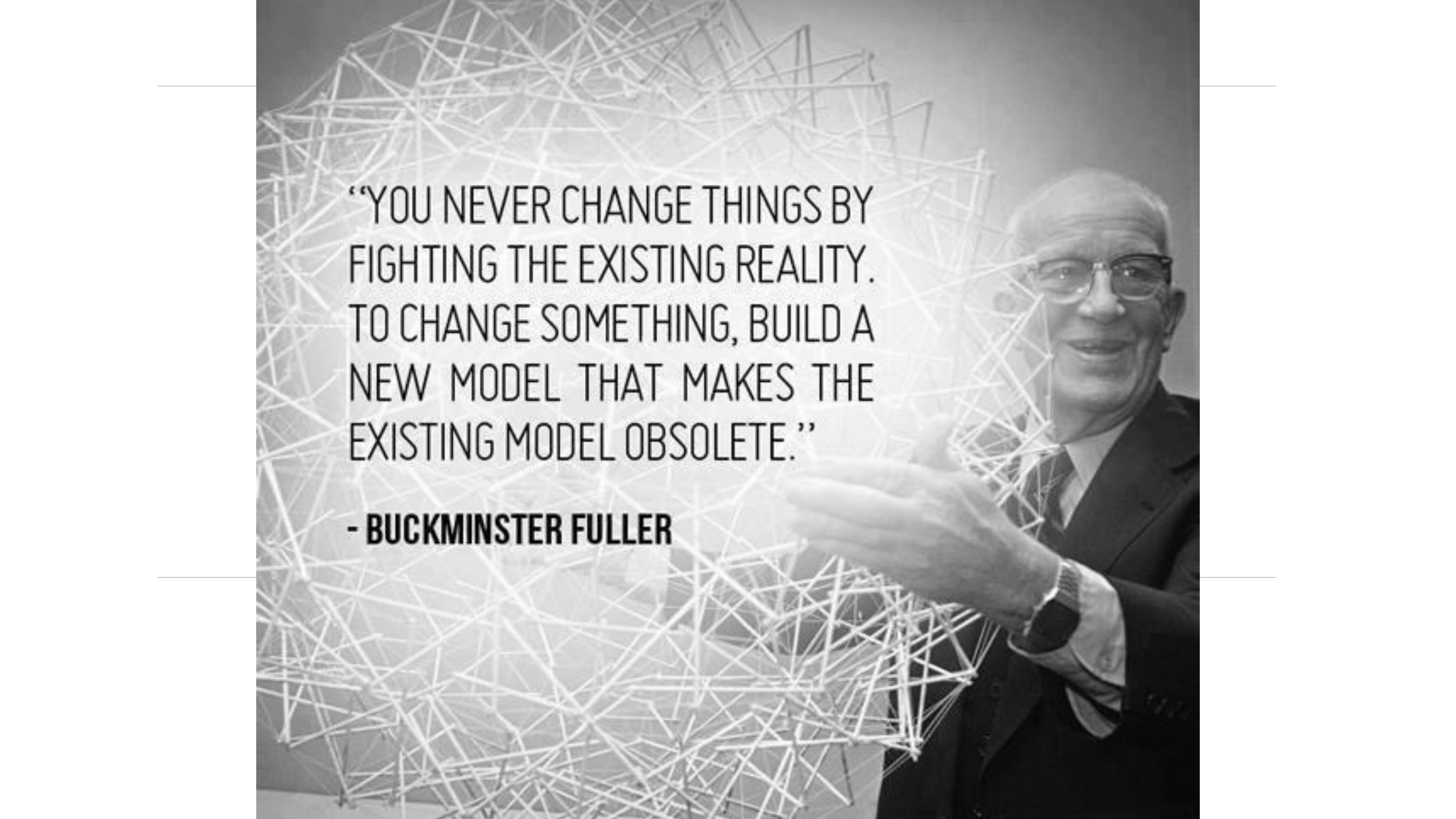
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**To create a primary data exchange, you need 2 crucial artefacts**

**The personal data store/account**

**The exchange infrastructure**

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“YOU NEVER CHANGE THINGS BY  
FIGHTING THE EXISTING REALITY.  
TO CHANGE SOMETHING, BUILD A  
NEW MODEL THAT MAKES THE  
EXISTING MODEL OBSOLETE.”

**- BUCKMINSTER FULLER**

# The existing model

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**Your 'user account'**

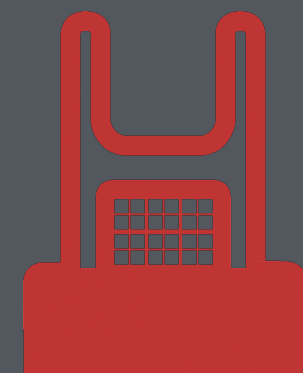
**Every app has one**

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# Let's make user accounts obsolete

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# Rise..... personal data accounts



Powered by the HAT

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## The HAT PMDA is a 'user account'

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- **It behaves like one**
  - **It authenticates just as fast as your own app's user account**
  - **It is secure. Apps can keep the data (and so can the user); but they don't really need to**
  - **Apps don't even need to build their own user account**
- 

**And HATs are better....for 4 reasons.**

# 1. HATs will have more data

Collectively, we will be generating more and more data, especially with Internet-of-Things

That means the Internet of the Future will have more data than the Internet of the now

**That also means, if we start collecting all our data now, HATs will have more data than any company on the Internet (on a distributed basis)**

# **Market Power, People Power**

**That means that applications built on HATs will have richer, better datasets, capable of better personalisation, and privacy preserving data exchanges**

**HAT data can provide a better service**

**2. HATs can share data more efficiently, in a privacy preserving way, than other platforms**

**Slicing and dicing to share data vertically  
(health, finance, social media)**

**AND**

**horizontally (by time, by location, by sentiment)**

**PRIVATELY**



### **3. HAT Apps can be built faster, easier and less risky in using personal data**

One single sign on with a HAT, build the service/views with APIs

## 4. Full shareable, fully in user control

We might finally feel safe again on the Internet

# Building the future Internet

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The current  
inefficient data  
exchanges

Move me to...



**New apps  
with my HAT  
as a user  
account**

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Powered by the HAT

# Building the future Internet

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The current  
inefficient data  
exchanges

Move me to...



**HAT as a  
student  
account**

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Powered by the HAT

# Building the future Internet

---

The current  
inefficient data  
exchanges

Move me to...



**Public  
services with  
HAT as the  
digital citizen**

---

Powered by the HAT

# Building the future Internet

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The current  
inefficient data  
exchanges

Move me to...



**Community  
services  
with HAT as  
the digital  
user**

---

Powered by the HAT

# Building the future Internet

---

The current  
inefficient data  
exchanges

Move me to...



**Commercial  
services with  
HAT as the  
customer**

---

Powered by the HAT

# Building the future Internet

---

The current  
inefficient data  
exchanges

Move me to...



**Private  
services with  
HAT-to-HAT  
private spaces  
without any  
third party**

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Powered by the HAT



# Building the future Internet

---

The current  
inefficient data  
exchanges

Move me to...



**Better  
relationship  
with the  
current  
Internet**



---

Powered by the HAT

# Building the future Internet

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My email  
My messages  
My personal data  
My apps

Move me to...



**Safety**  
**Control**  
**Privacy**  
**Choice**

**HAT**

---

Powered by the HAT

# How does it work?

## HAT Open Innovation Ecosystem

Building Space  
Researchers  
Students  
Equity  
Startups

Public apps

Private apps

Commercial apps



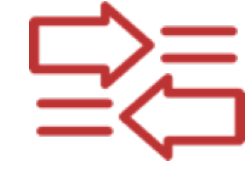
# Who's involved?



**More than £3m funding for HAT grants from EPSRC/RCUK from 2013-2017**



# Who's being invited to get involved?



## To scale the HAT open innovation platform

BILL & MELINDA  
GATES *foundation*



Innovate UK

wellcome trust



# Our Global Community

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**300 live HAT users, now, technology ready to scale**



**USA**

New York,  
San Jose,  
Cleveland



**UK**

London,  
Cambridge,  
Warwick  
Surrey



**Japan**

Tokyo



**Singapore**



**Malaysia**

**500,000 live HAT users forecast by 2018, sustainable growth by 2019**

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# Join the HAT Foundation Group, and help us scale

## Join our community

search for us online at  
[hubofallthings.slack.com](https://hubofallthings.slack.com)

request an invite from  
[jonathan.holtby@hatdex.org](mailto:jonathan.holtby@hatdex.org)

## Subscribe to: #madhatters

register for the weekly  
newsletter  
[www.hubofallthings.com](http://www.hubofallthings.com)

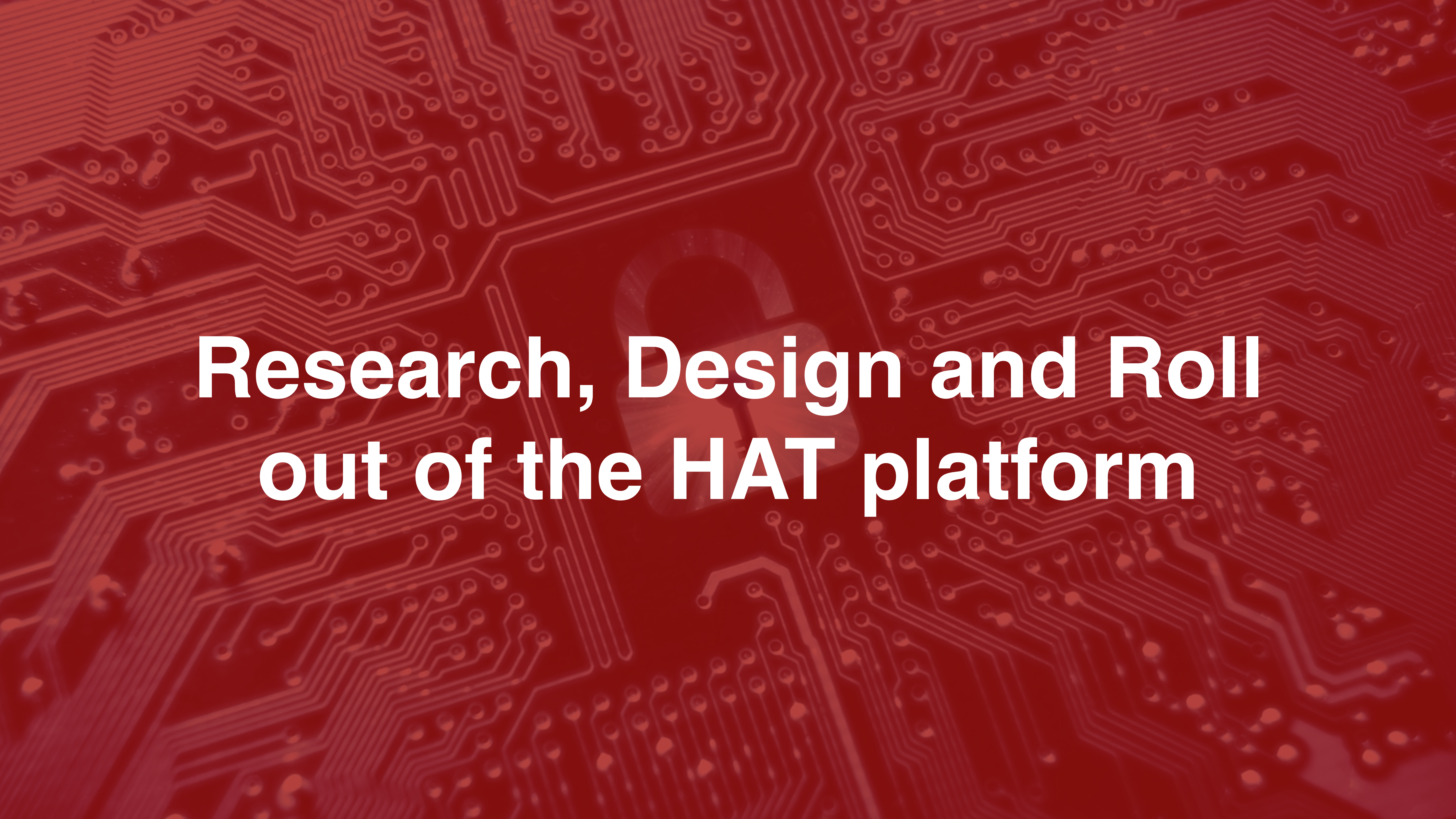
find us on twitter - search  
#madhatters

## Register to: #getahat

download your HAT online for  
free  
[www.hubofallthings.com](http://www.hubofallthings.com)

find us on the Apple App Store



The background is a dark red color with a complex, repeating pattern of white circuit board traces and nodes. In the center, there is a faint, semi-transparent icon of a padlock, suggesting security or protection.

# **Research, Design and Roll out of the HAT platform**



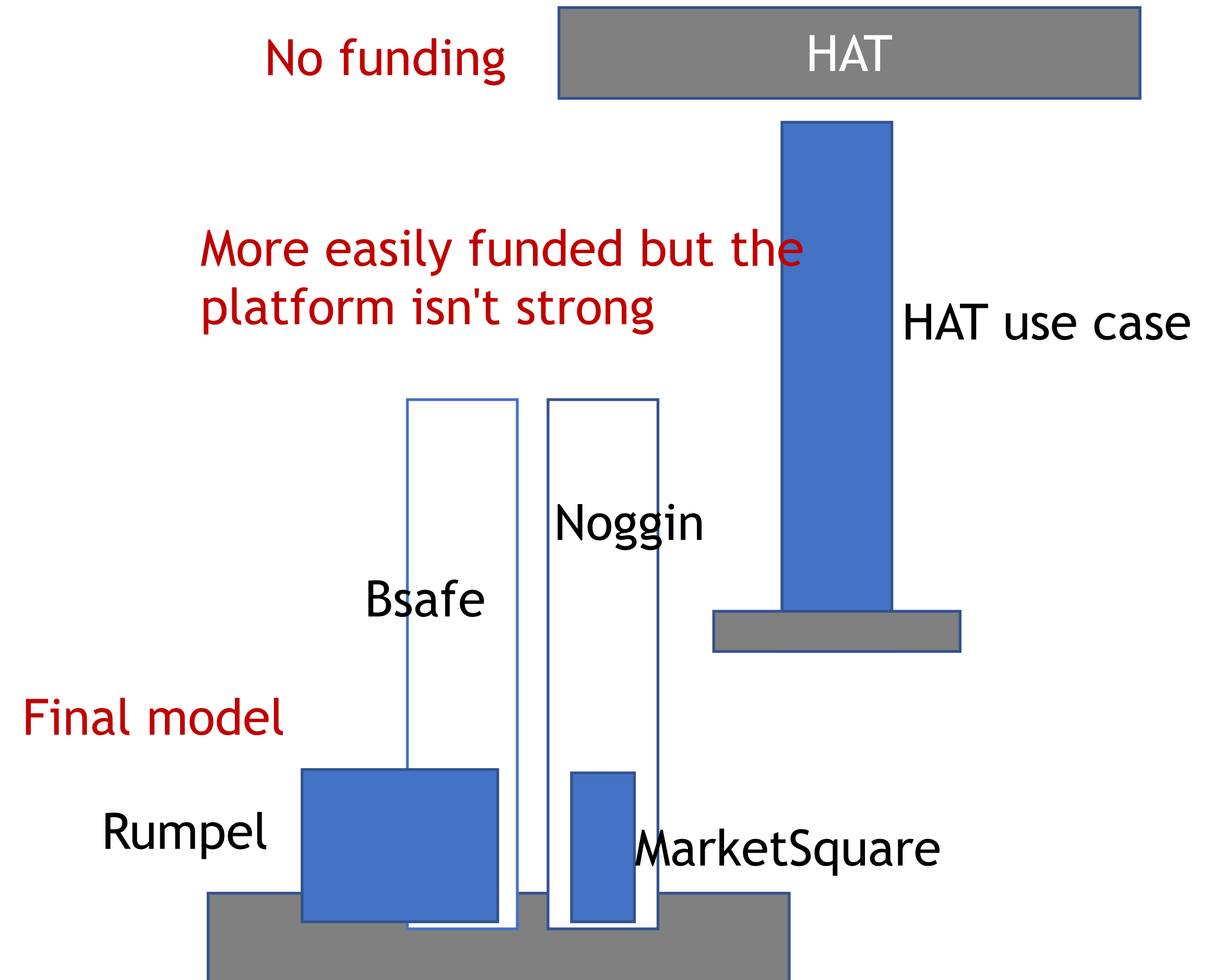
# Personal Data Store/Account

design principles a personal data account/store should follow

Based on > £3m EPSRC/RCUK Funding on personal data platform design

# Platform roll out: pressure to be vertical

- "What is your use case?"
- "What are users using the HAT for?"
- "You've got to give users a superior value proposition"
- Even wanting to stay horizontal is incredibly hard
- Are platforms only possible through evolution of the verticals?
- How do we think about platforms as a service/infrastructure v service/vertical?



# How do you view this analytically

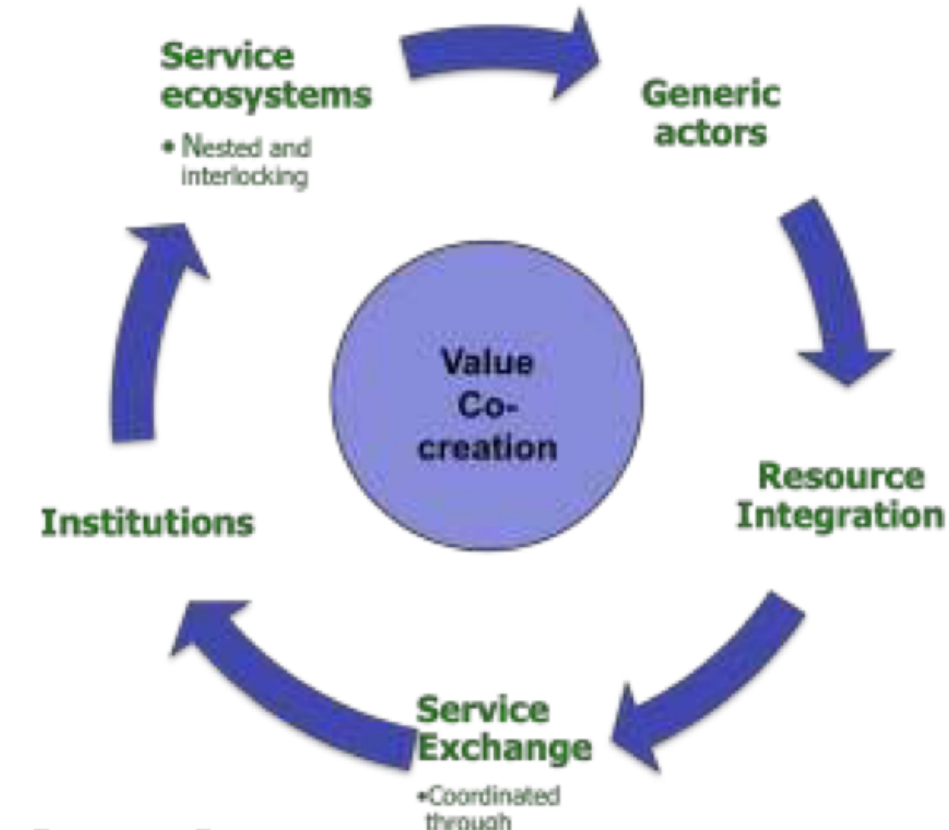
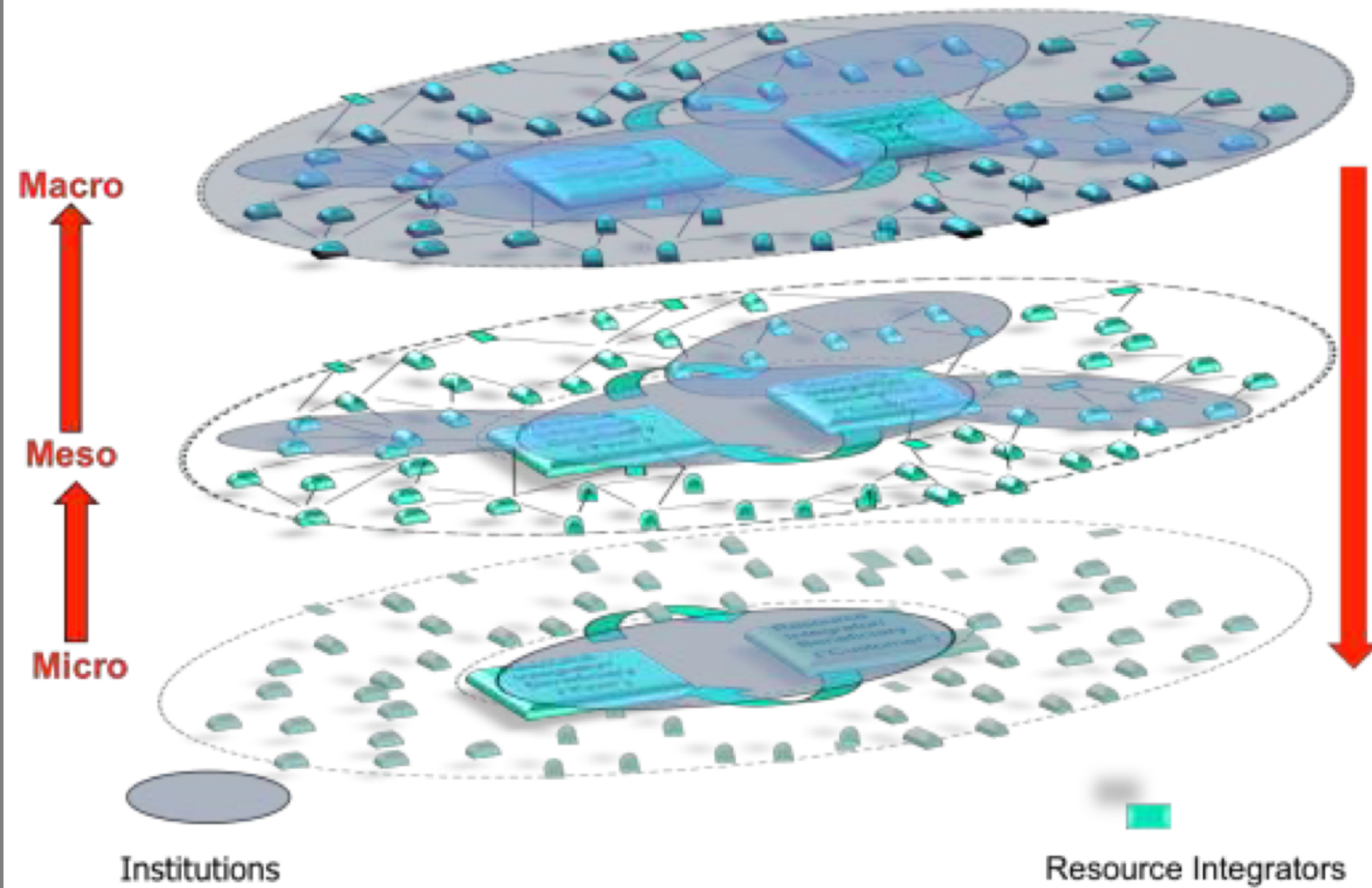
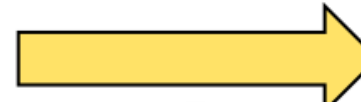
- From an SD Logic point of view
  - **Institutions**
    - any structure or mechanism of social order and cooperation governing the behavior of a set of individuals within a given human
  - **Service Ecosystems**
    - relatively self-contained, self-adjusting systems of resource-integrating actors connected by shared institutional logics and mutual value creation through service



# "Hip-Pocket" S-D Logic

S-D Logic

Components & Structural Perspectives



**Societal:**  
National, Global, etc

**(Sub)culture:**  
Brand, Market, "industry, etc

**Exchange**  
B2C, B2B, C2C, etc

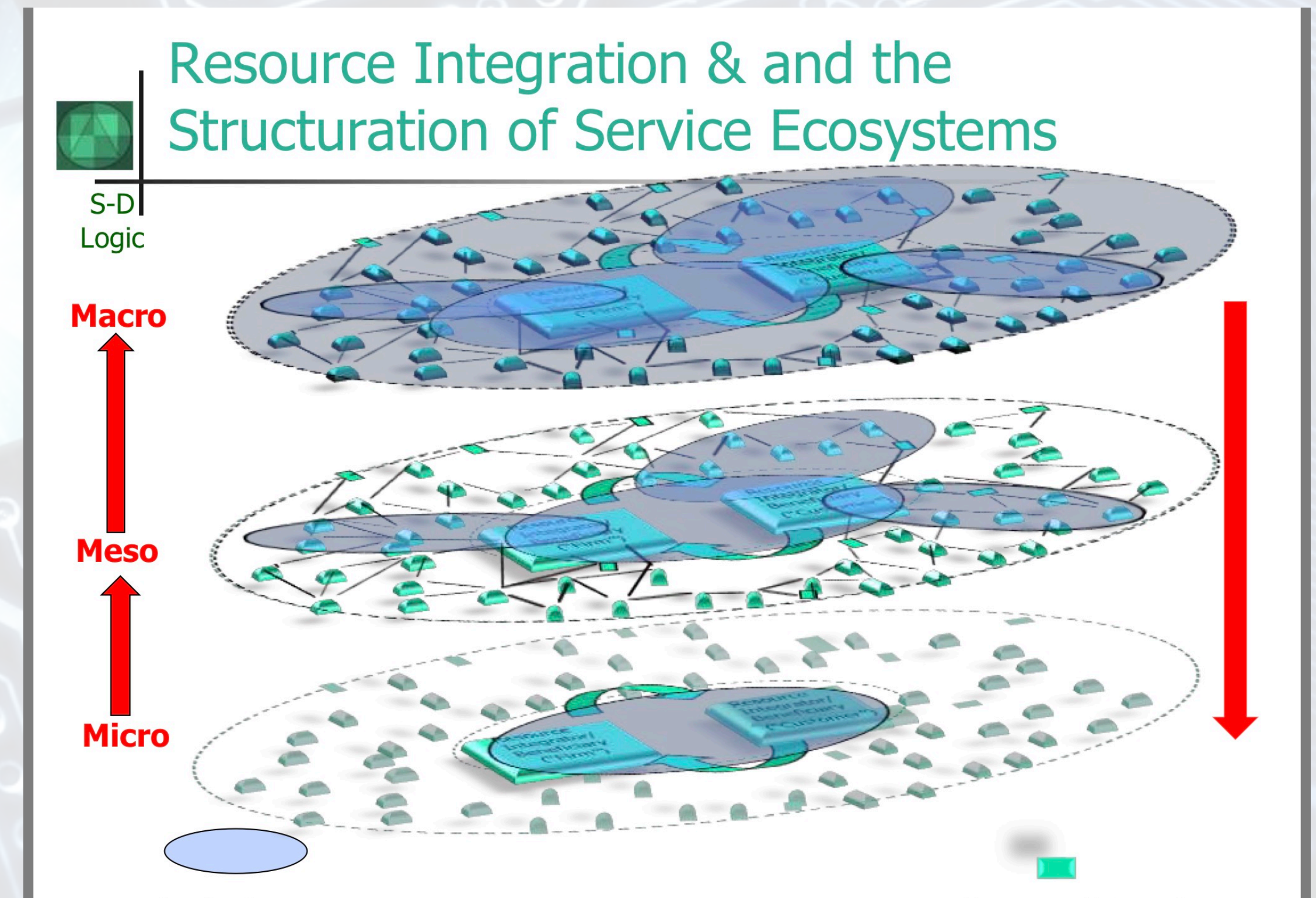
Societal benefit



Micro interactions

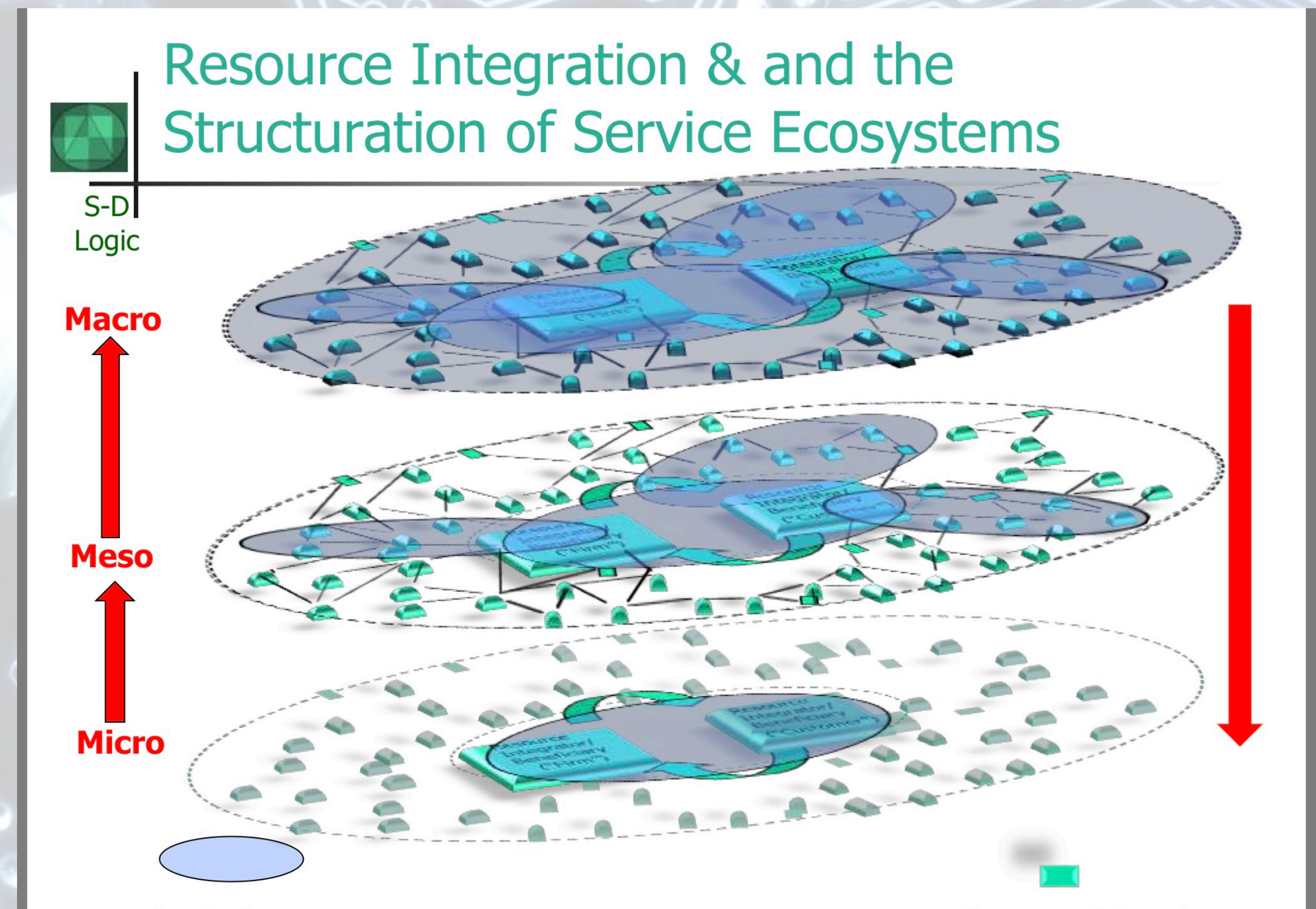
# 1. The personal data store must be open-sourced - at the core (even if services to and from the core is commercial)

- To ensure that the handling of private data is fully transparent to those who wish to scrutinise the code
- Open-innovation would result in more communities building up services on the platform
- Need to build public, community and private services



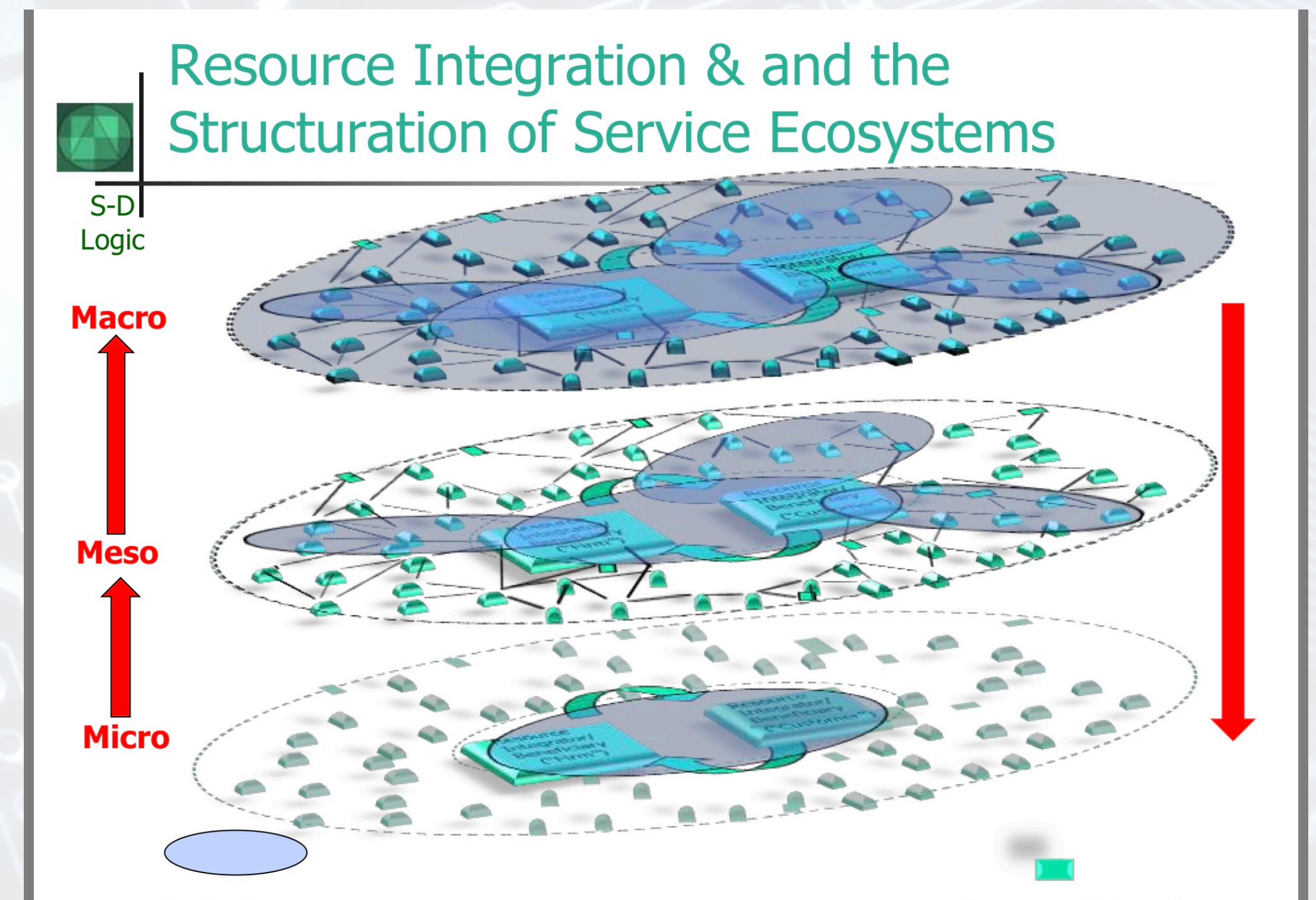
## 2. The Personal Data Store must be Portable between all cloud systems

To prevent economic 'lock-in' and to let others compete fairly



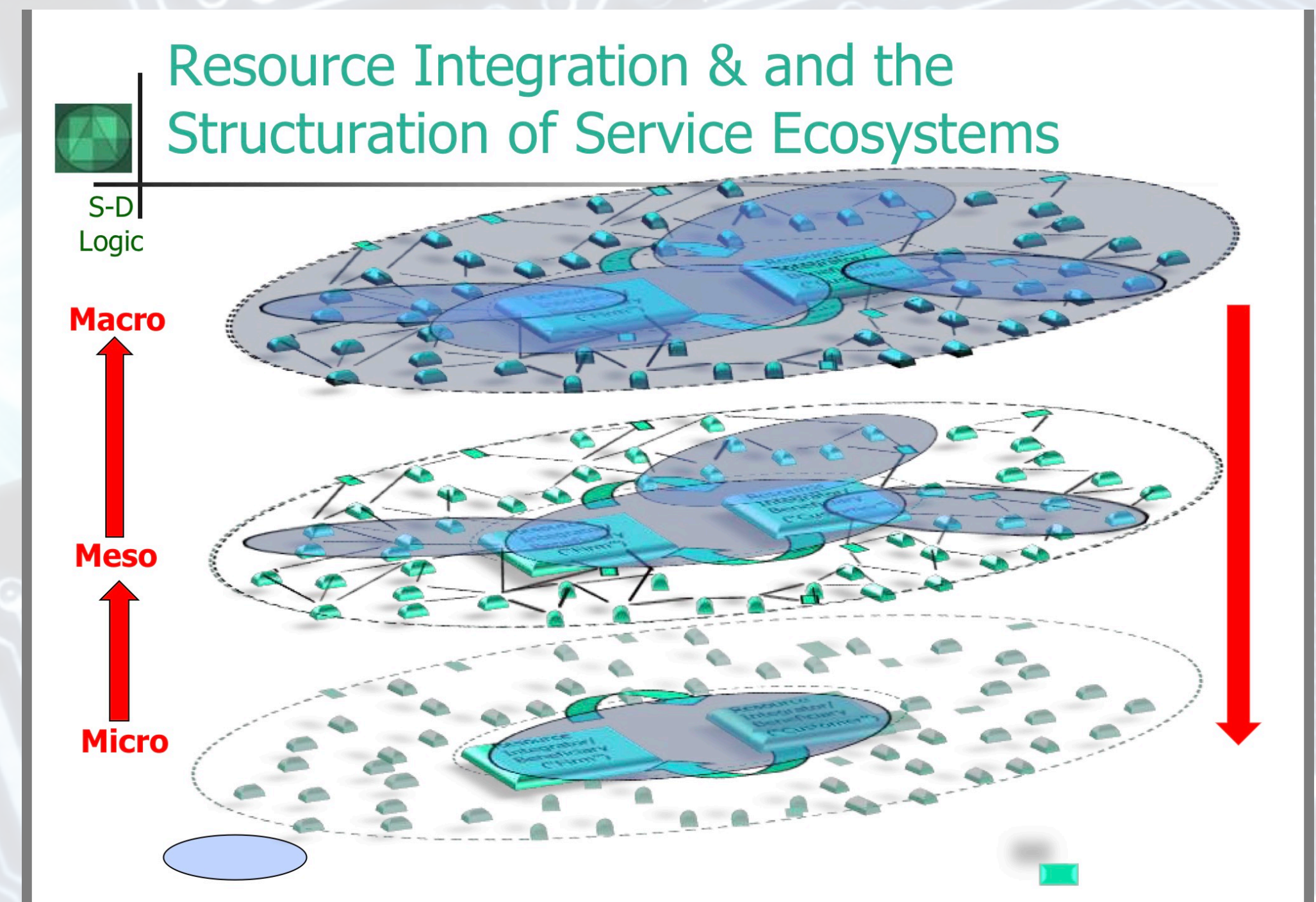
# 3. Personal data store/account has to be future proof for all future personal data uses

- One way to future proof personal data exchange is through **ownership** of data stores instead of merely rights, so that custodial and 'super' rights can guarantee future access
- users become stakeholder in their own data, its uses, its quality and as digital assets
- Bestowing the database with a **Bundle of rights** under property law 1790, simplified in 1925
  - Right of possession
  - Right of control
  - Right of enjoyment
  - Right of exclusion
  - Right of disposition



# 4. Private by default, with no leakage of data

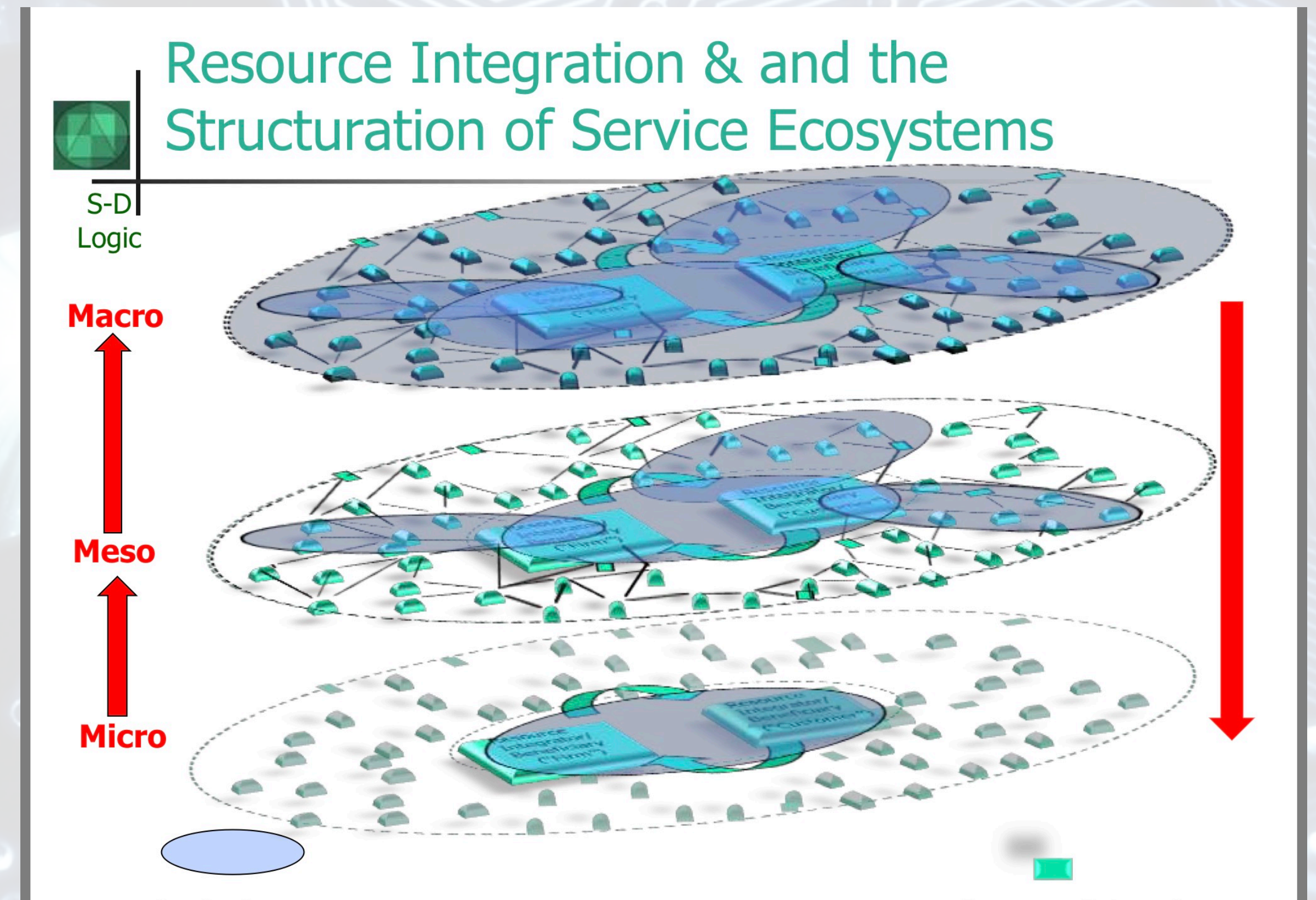
- **Able for third parties to build new services for users themselves on their own platform without having to buy services (i.e. without data sharing) - much like a PC not connected to the Internet**
- **Allow for purchase of services with money, not just with data**
- **No means no. Cancellable Data debits. Apps use of data certified & rated**





# 5. Market-making

**Allow brand owners (e.g. Banks, Insurance companies, new startups) to brand the private data account and customise it in the way they want to be consistent with their own branding initiatives for their customers for their own data exchange use cases**

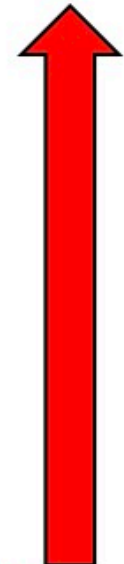


# Resource Integration & and the Structuration of Service Ecosystems



S-D  
Logic

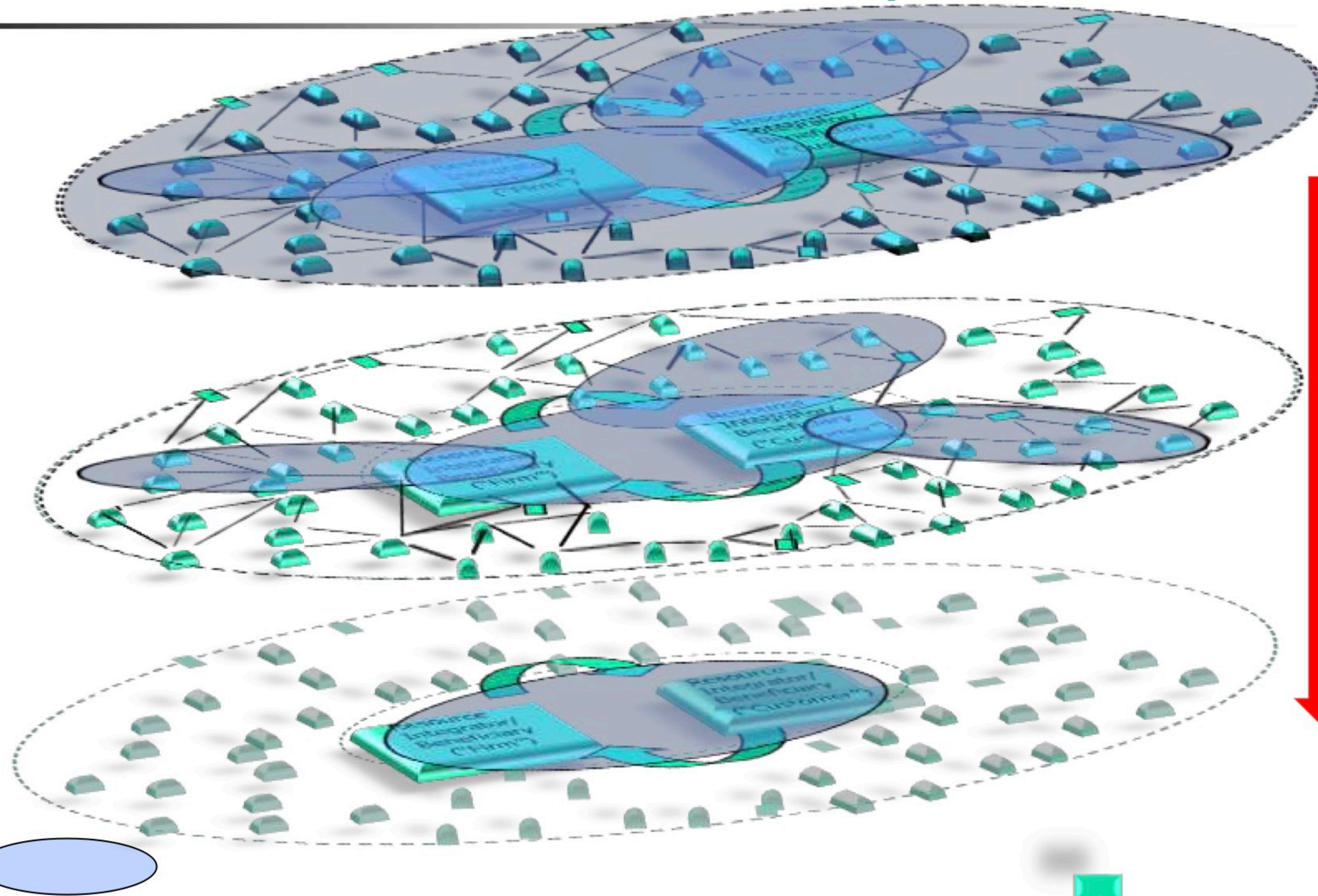
Macro



Meso



Micro



# From reflection to shaping

- How do we make it work? How do we make it successful?
- Academic v activism
- Where is the mid range theory?