

# MAPPING AS A TOOL FOR THOUGHT

Yes, the title is borrowed from  
Iverson's Notation as a Tool for  
Thought).

**Test footnote, hello!**

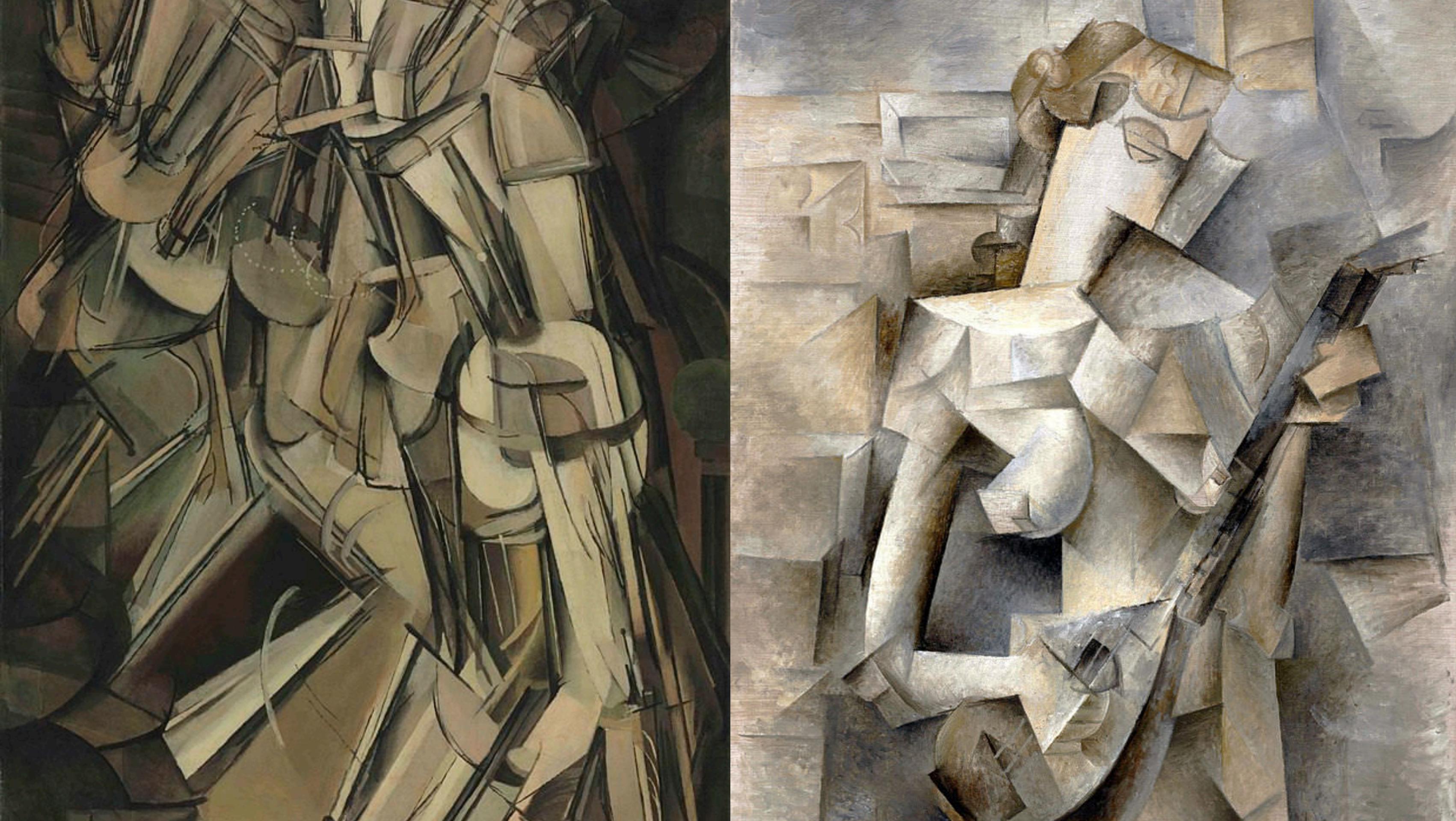
A portrait of a man with glasses and a cap, looking slightly to the side.

# WHOAMI

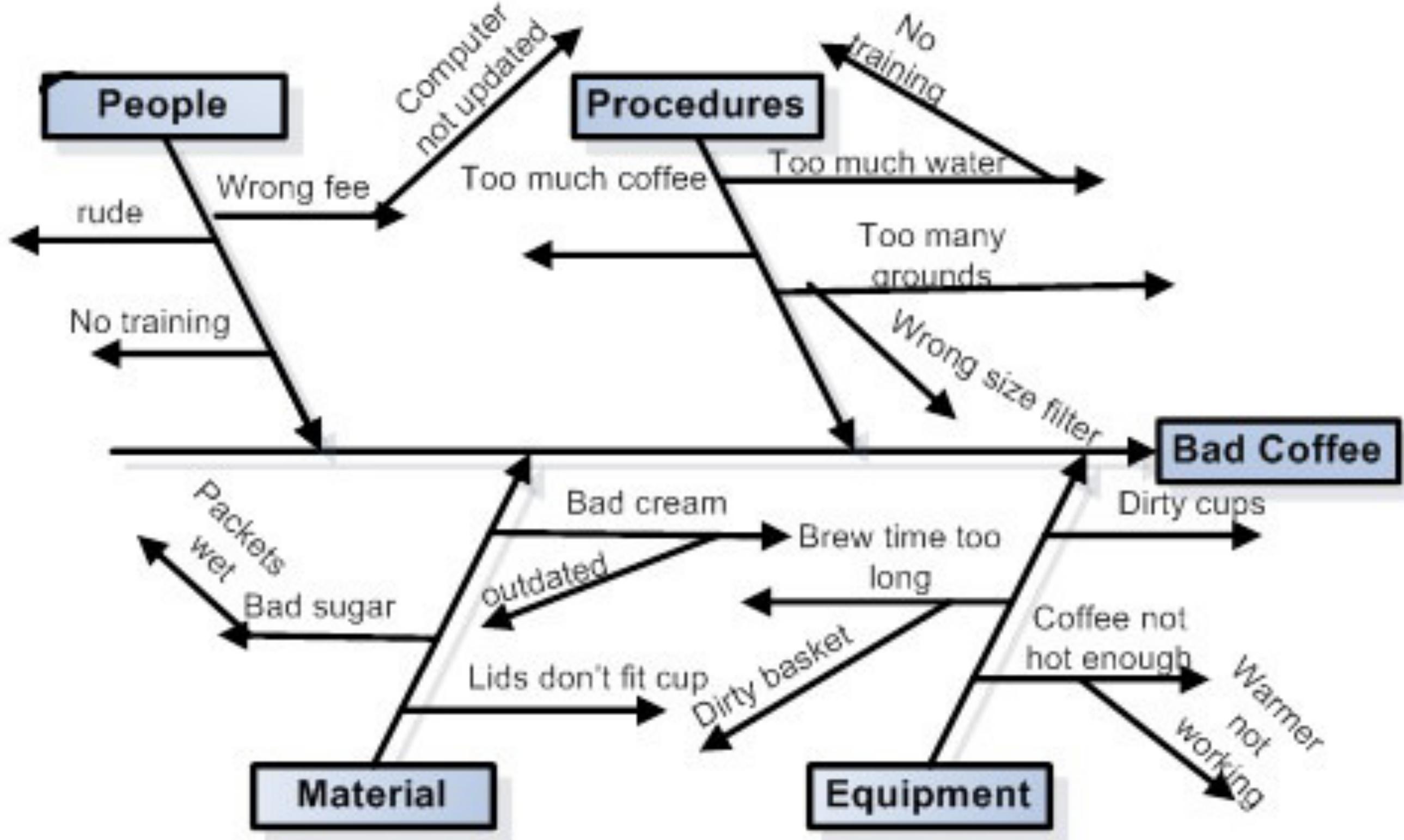
- > RUBEN BERENGUEL (@BERENGUEL)
  - > PHD IN MATHEMATICS
  - > (BIG) DATA CONSULTANT
- > LEAD DATA ENGINEER USING SCALA, PYTHON AND GO
- > RIGHT NOW AT AFFECTV

# TOOLS FOR THINKING

The inspiration for the approach taken in this presentation comes from Michael Nielsen's *Thought as a Technology*

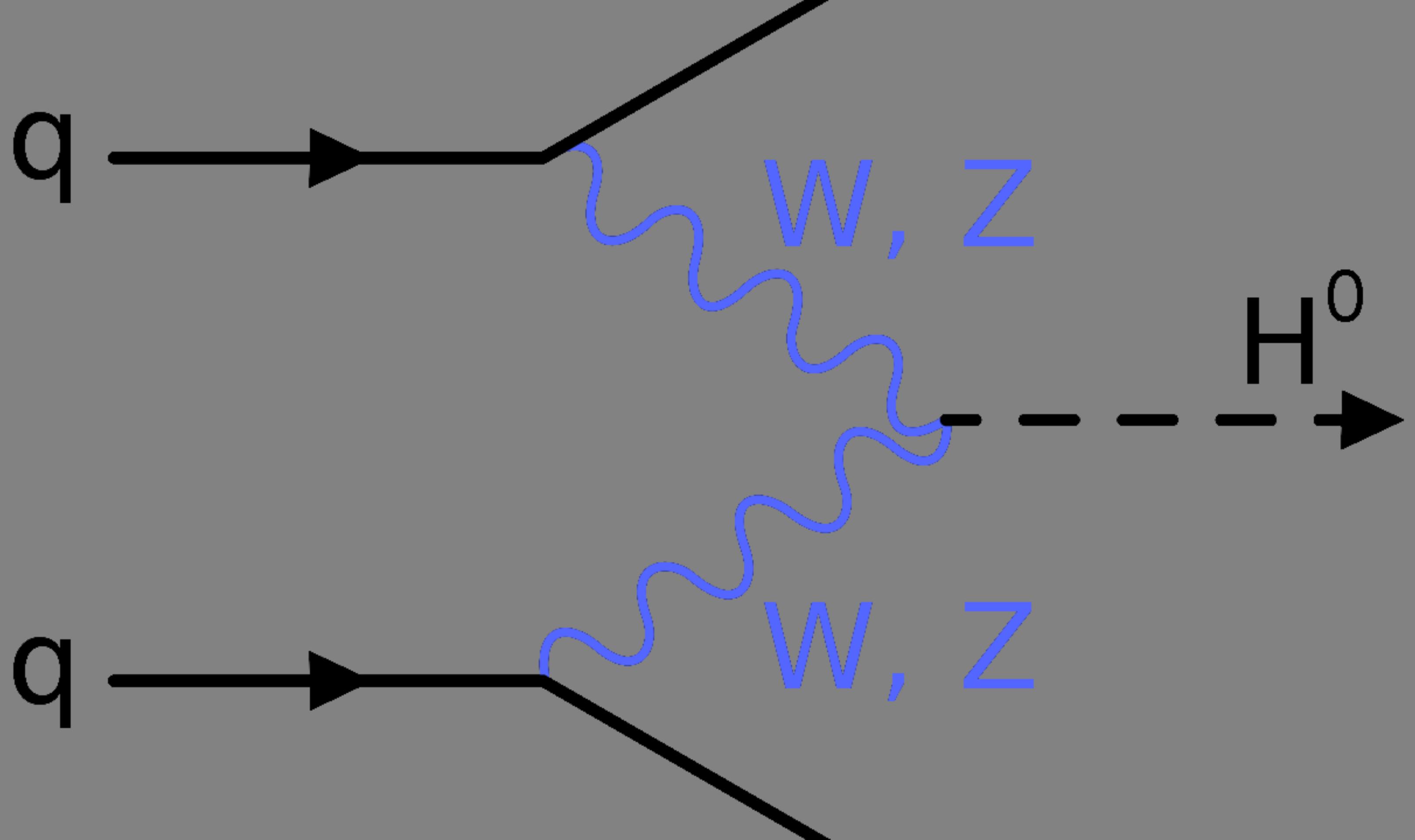


Marcel Duchamp's *Nude descending a staircase*  
n.2  
and Pablo Picasso's *Girl with a  
mandolin*:  
Cubism changed how  
painting and observers saw reality, by showing  
different perspectives in one  
image, or depicting time and space in different  
ways



# Reasons for bad coffee.

Ishikawa diagrams allowed people to analyse defects and reactions with ease



A Higgs boson maybe  
appears Feynman  
diagrams revolutionised  
theoretical particle physics

Reihen	Gruppe I. — R <sup>1</sup> 0	Gruppe II. — R0	Gruppe III. — R <sup>2</sup> 0 <sup>3</sup>	Gruppe IV. RH <sup>4</sup> R0 <sup>2</sup>	Gruppe V. RH <sup>3</sup> R <sup>2</sup> 0 <sup>3</sup>	Gruppe VI. RH <sup>2</sup> R0 <sup>3</sup>	Gruppe VII. RH R <sup>2</sup> 0 <sup>2</sup>	Gruppe VIII. — R0 <sup>4</sup>
1	H=1							
2	Li=7	Be=9,4	B=11	C=12	N=14	O=16	F=19	
3	Na=23	Mg=24	Al=27,8	Si=28	P=31	S=32	Cl=35,5	
4	K=39	Ca=40	—=44	Ti=48	V=51	Cr=52	Mn=55	Fe=56, Co=59, Ni=59, Cu=63.
5	(Cu=63)	Zn=65	—=68	—=72	As=75	Se=78	Br=80	
6	Rb=86	Sr=87	?Yt=88	Zr=90	Nb=94	Mo=96	—=100	Ru=104, Rh=104, Pd=106, Ag=108.
7	(Ag=108)	Cd=112	In=113	Sn=118	Sb=122	Te=125	J=127	
8	Cs=133	Ba=137	?Di=138	?Ce=140	—	—	—	— — — —
9	(—)	—	—	—	—	—	—	
10	—	—	?Er=178	?La=180	Ta=182	W=184	—	Os=195, Ir=197, Pt=198, Au=199.
11	(Au=199)	Hg=200	Tl=204	Pb=207	Bi=208	—	—	
12	—	—	—	Th=231	—	U=240	—	— — — —

Mendeleev's original. The periodic table organised information in a way that highlighted what was unknown

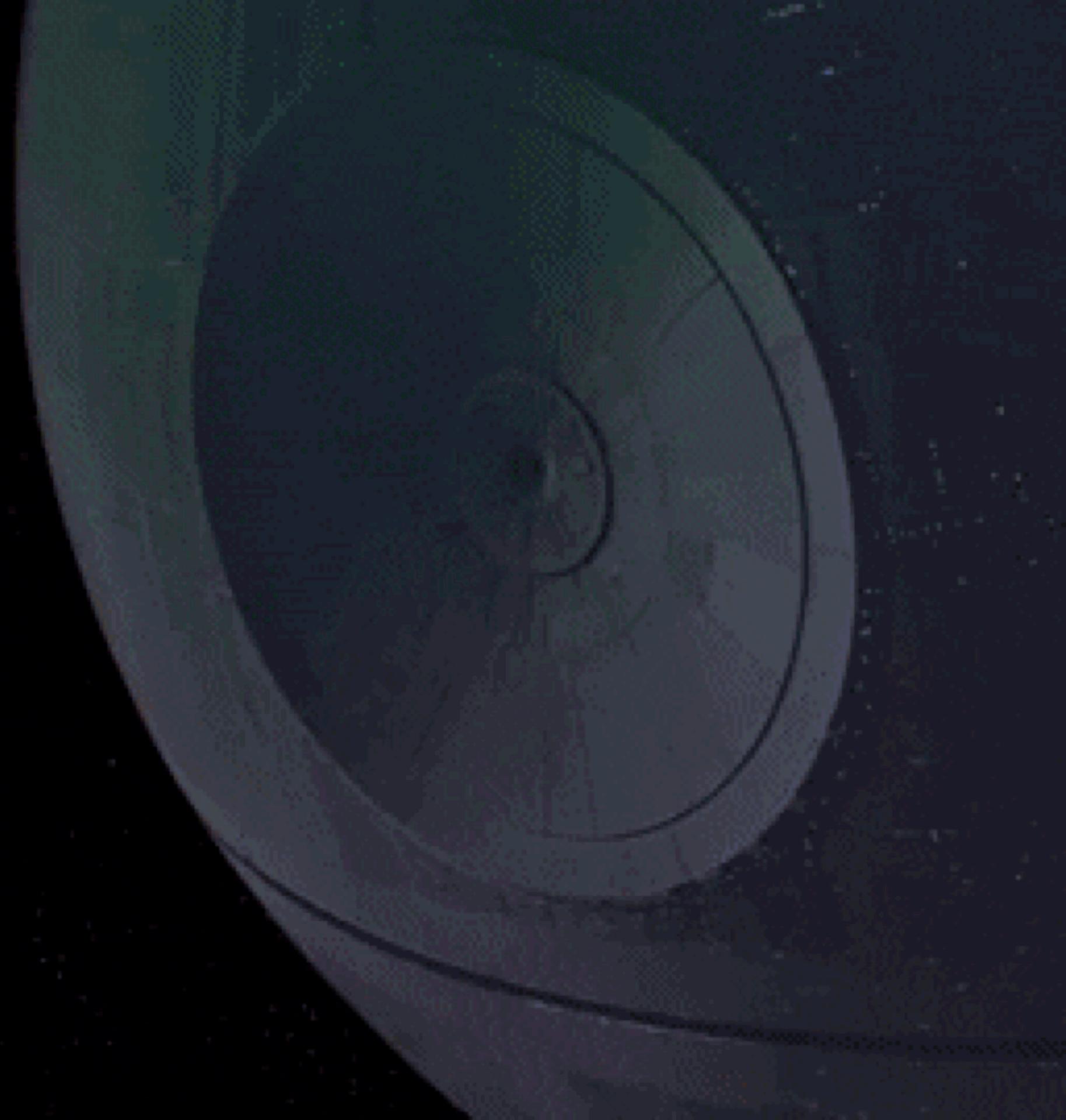
**BUT THERE ARE ALSO UNKNOWN  
UNKNOWNNS - THE ONES WE DON'T KNOW  
WE DON'T KNOW.**

- DONALD RUMSFELD

The potential of finding new ways to represent what you know is exactly this: realising what *you don't know*. Mendeleev's periodic table allowed him to predict the properties of missing elements, such as gallium and germanium

# WARDLEY MAPPING

WHAT HAPPENED  
BETWEEN...



Alderaan didn't shoot first

AND THIS

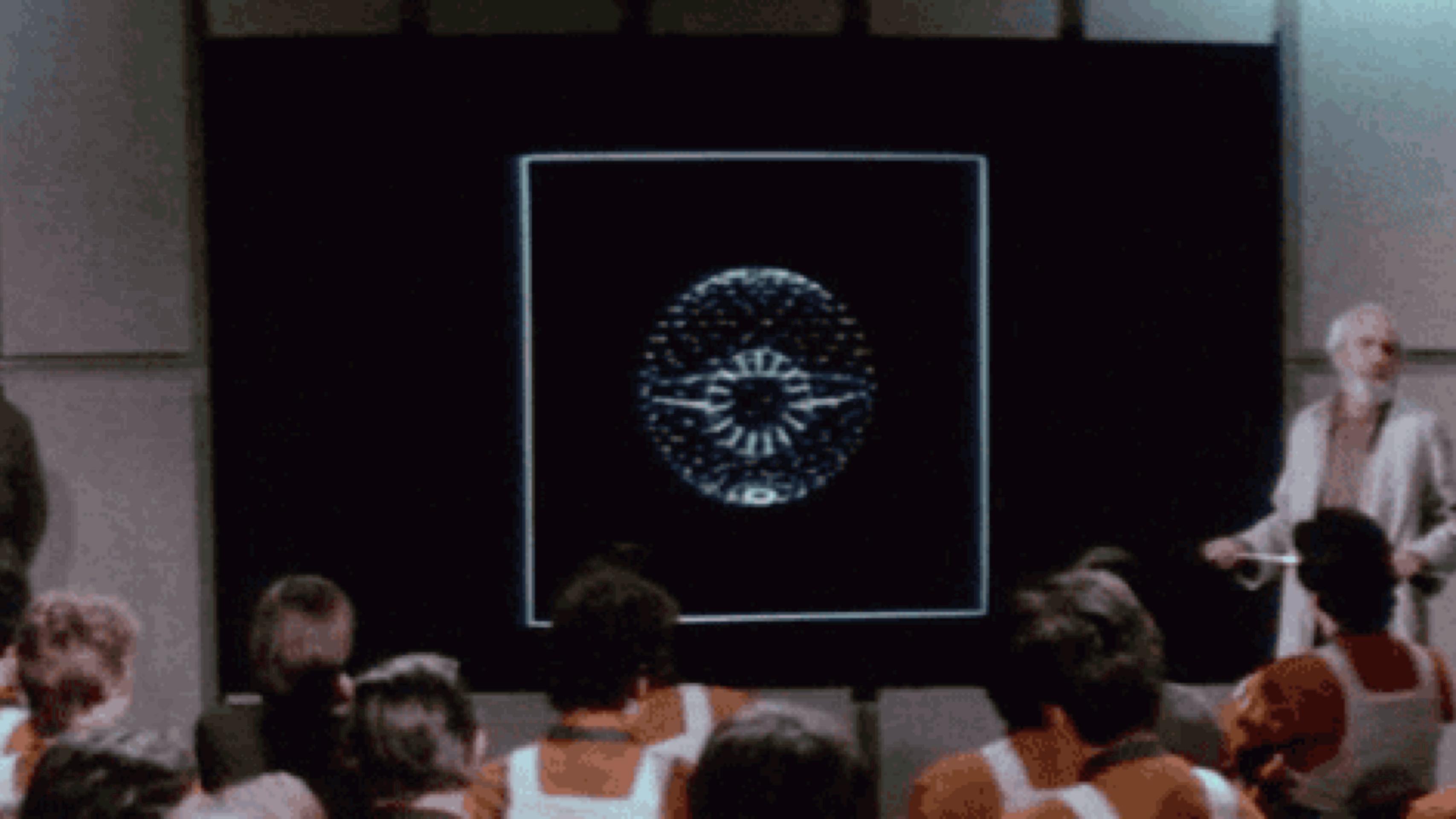


Fig. 1. A bullet fragment found at the scene.

?<sup>1</sup>

<sup>1</sup> AND IT'S NOT THE FORCE

IT'S ACTUALLY THIS



HAVING A MAP  
&  
HAVING A PLAN

BUT WHAT WOULD HAVE HAPPENED IF  
THE REBEL ALLIANCE WAS...  
**A BUSINESS?**

STRENGTHS	WEAKNESSES
OPPORTUNITIES	THREATS

STRENGTHS	WEAKNESSES
Lots of small ships Noob Jedi	
OPPORTUNITIES	THREATS

STRENGTHS	WEAKNESSES
Lots of small ships Noob Jedi	Not enough ships
OPPORTUNITIES	THREATS

STRENGTHS	WEAKNESSES
Lots of small ships Noob Jedi	Not enough ships
OPPORTUNITIES	THREATS
Unified galaxy Move from Yavin to Hoth	

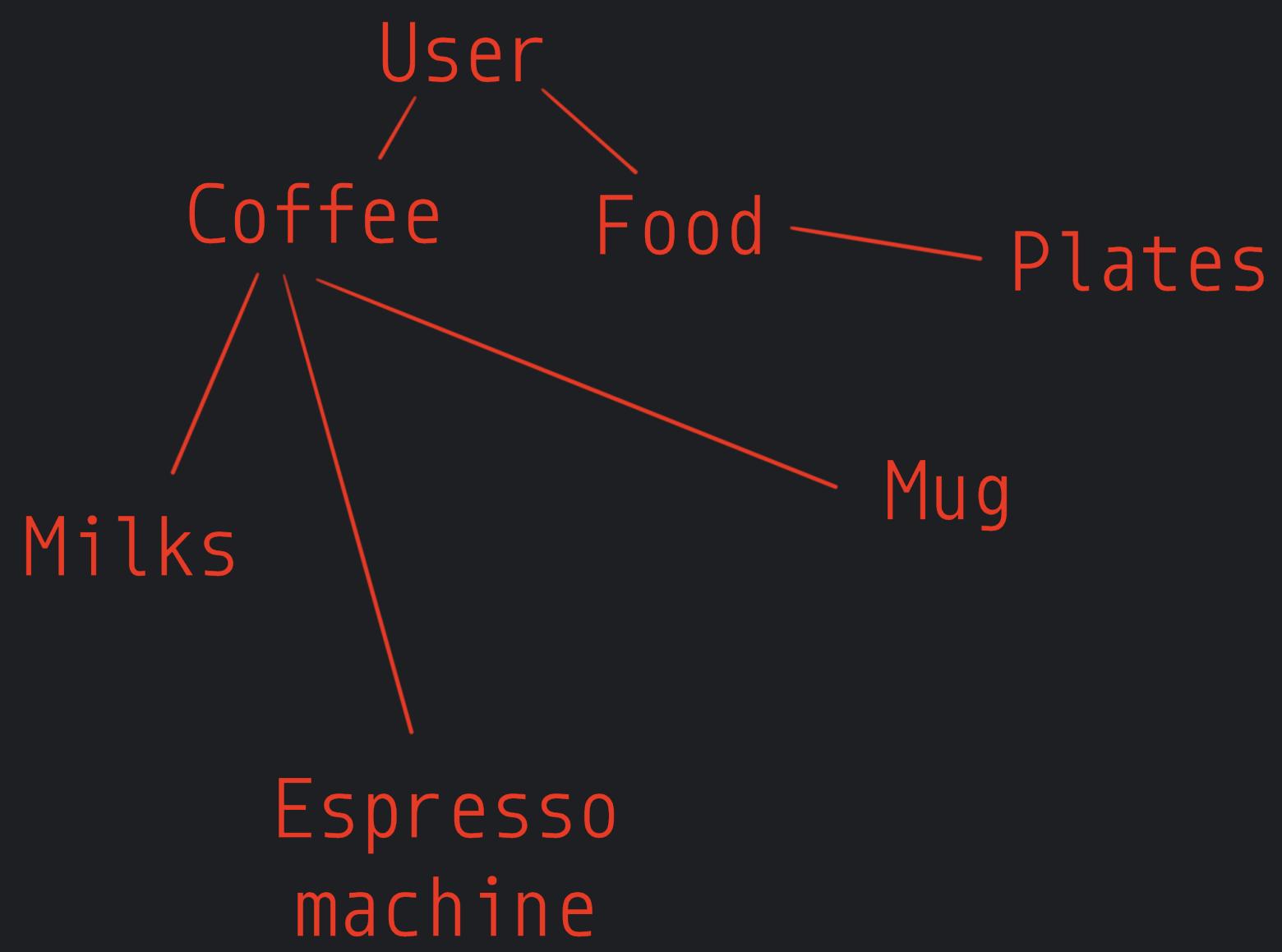
STRENGTHS	WEAKNESSES
Lots of small ships Noob Jedi	Not enough ships
OPPORTUNITIES	THREATS
Unified galaxy Move from Yavin to Hoth	Asphyxia Big laser

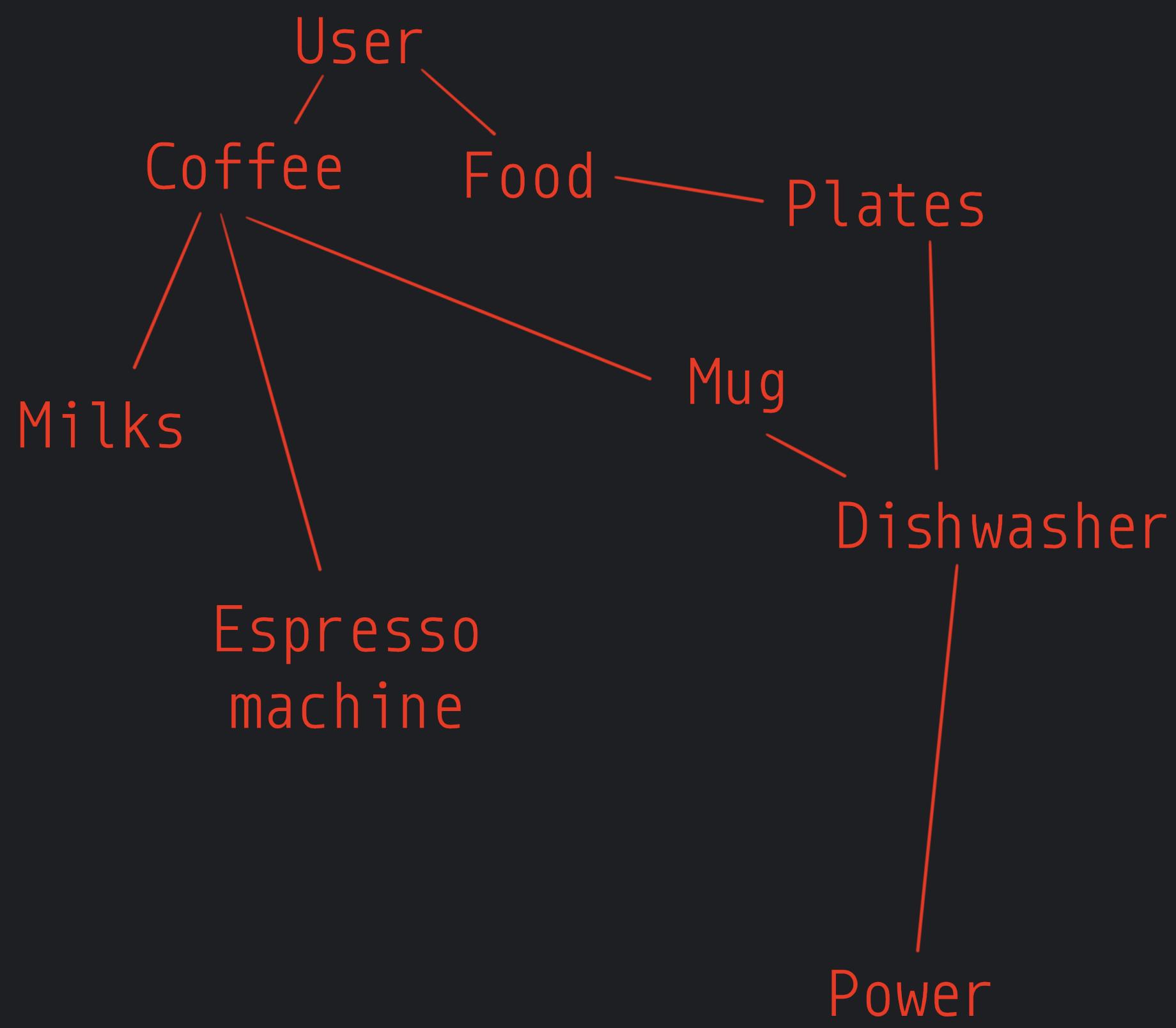
AS A BUSINESS WE CAN  
DO BETTER

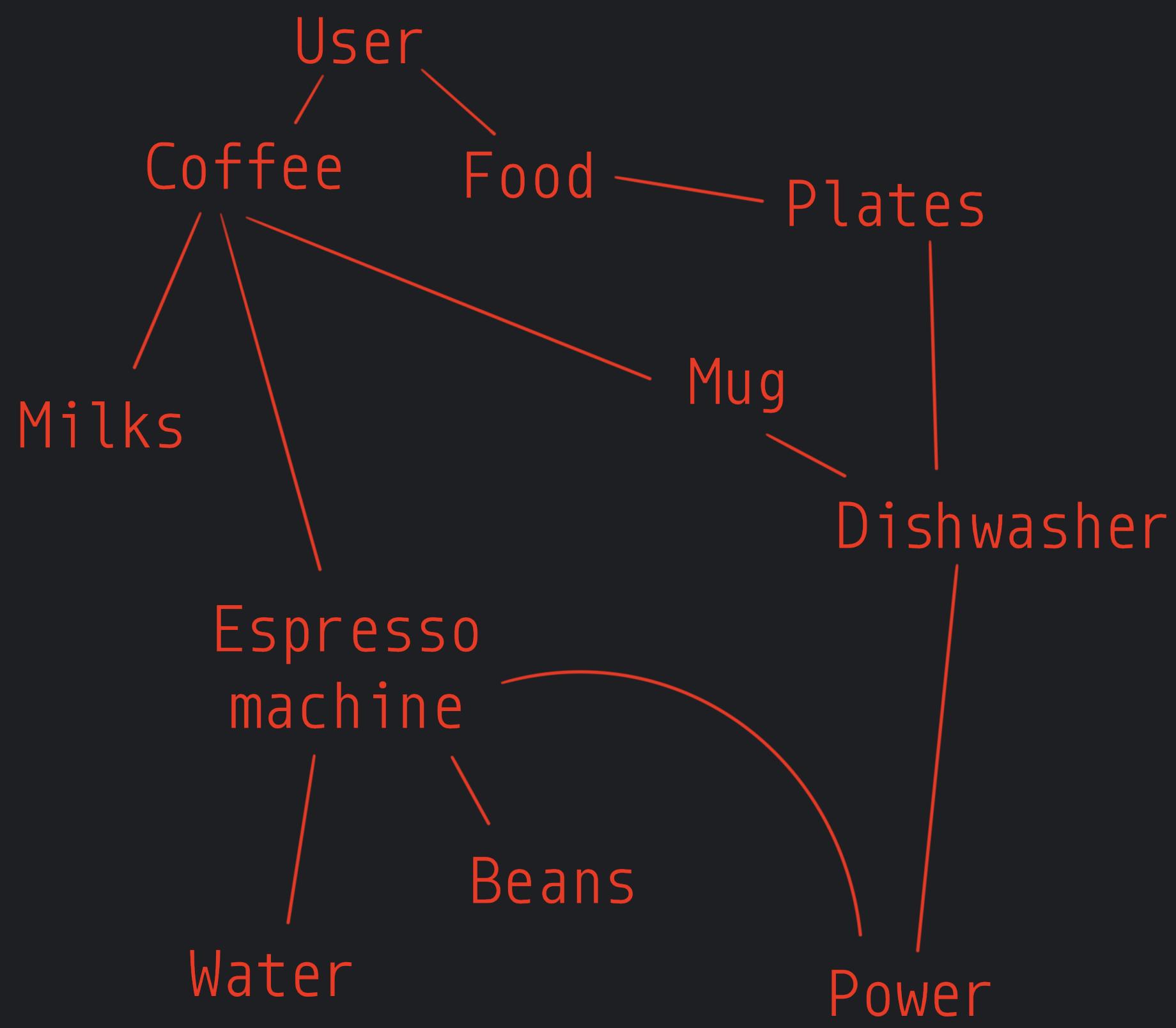
User

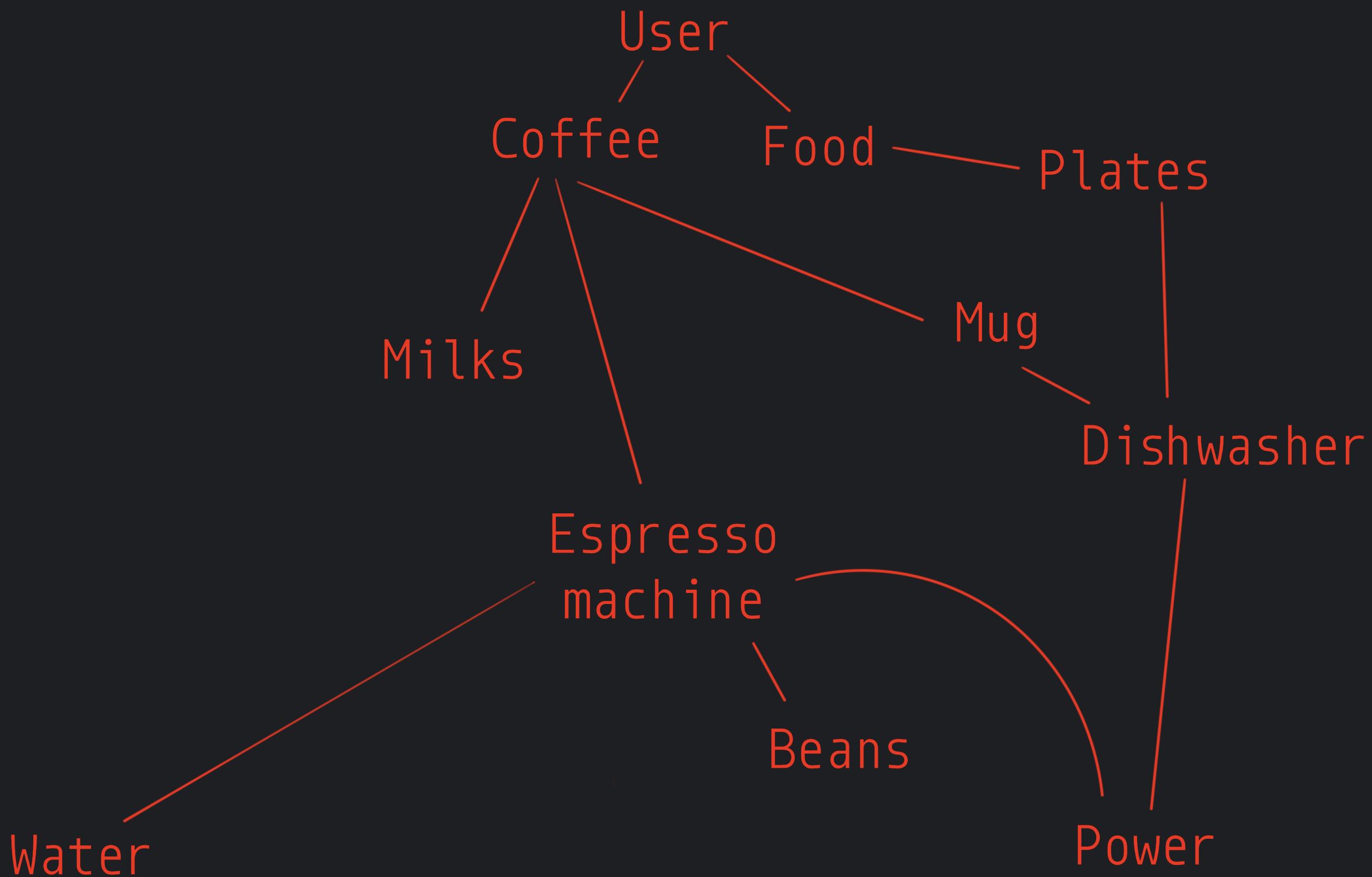
Start with a User

User  
/      \  
Coffee      Food

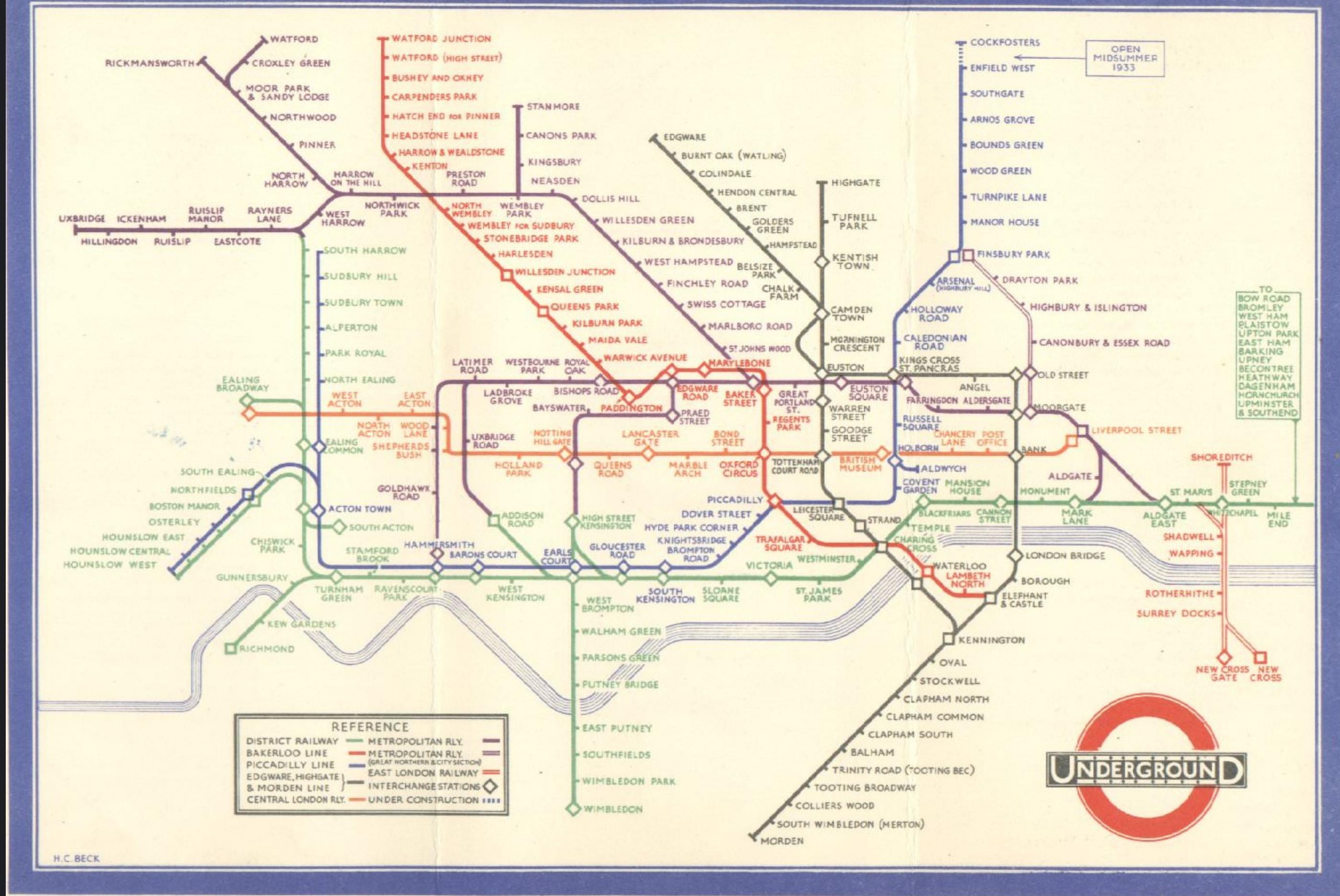








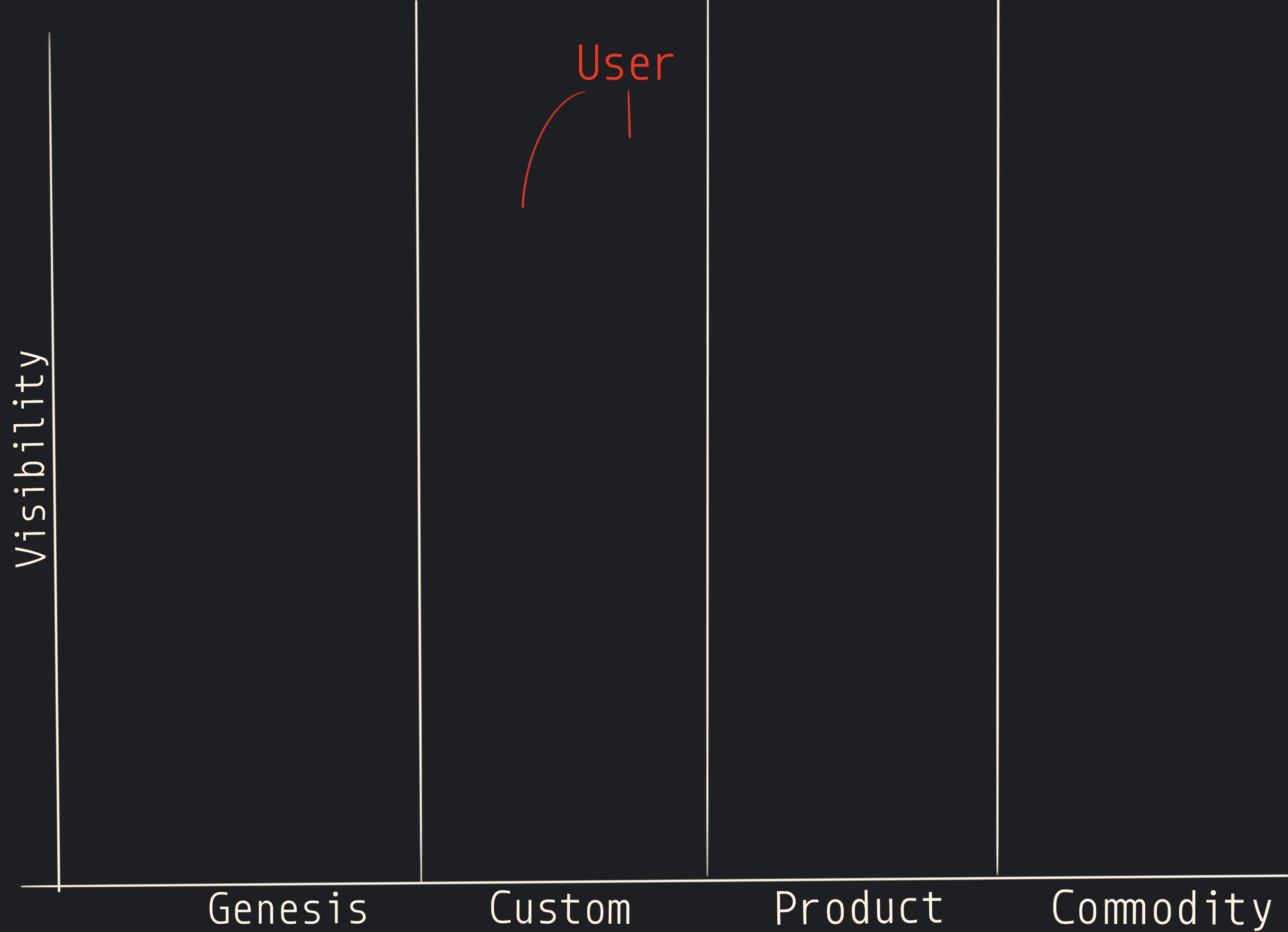
But, not really a map, since position is *totally* un-important, and there is absolutely no concept of movement or any flow of any kind



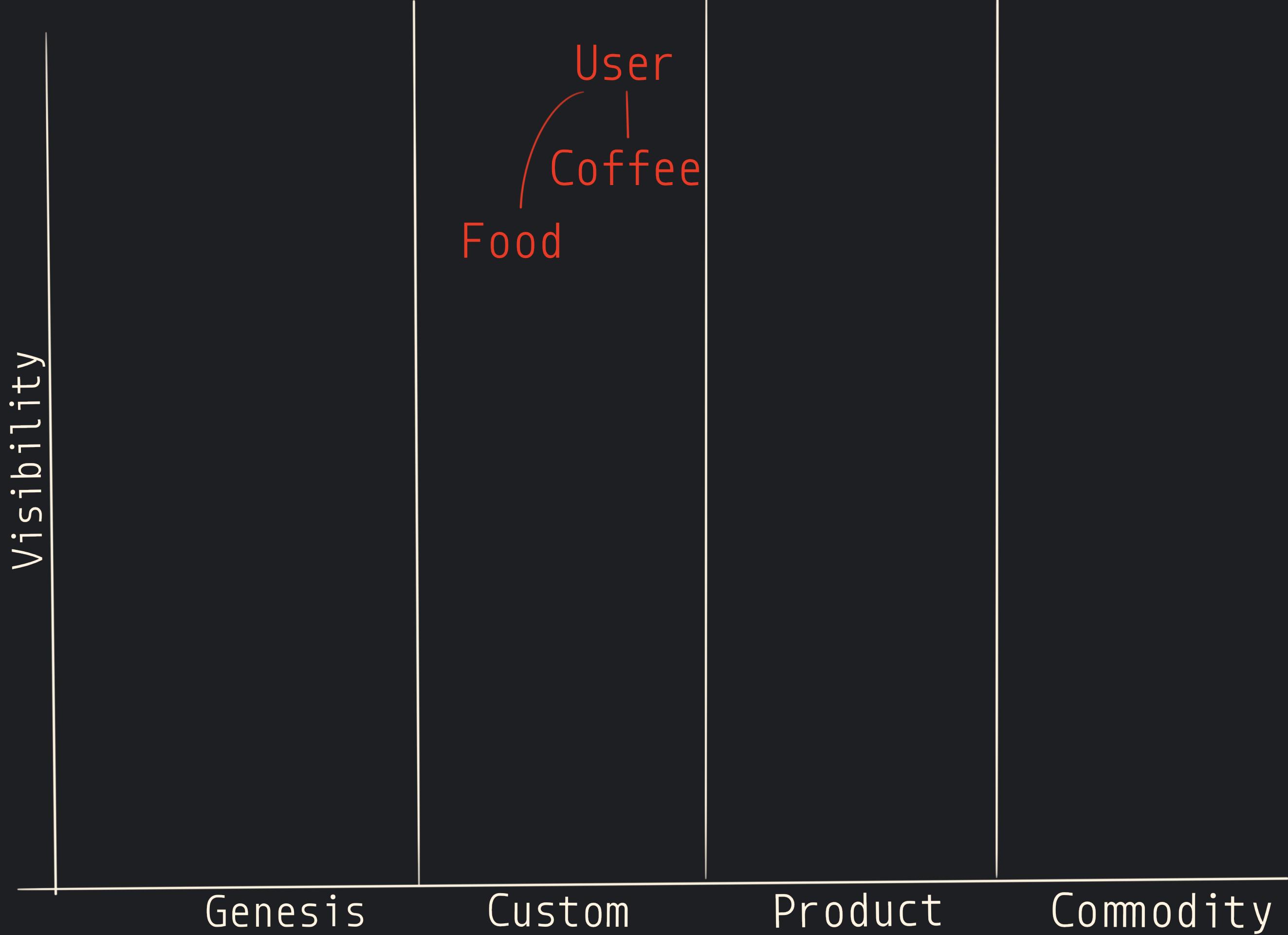
The first topological tube map by Harry Beck, 1933. Location is only approximate and relative, but there is no reasonable person that would move Shoreditch to the bottom left corner



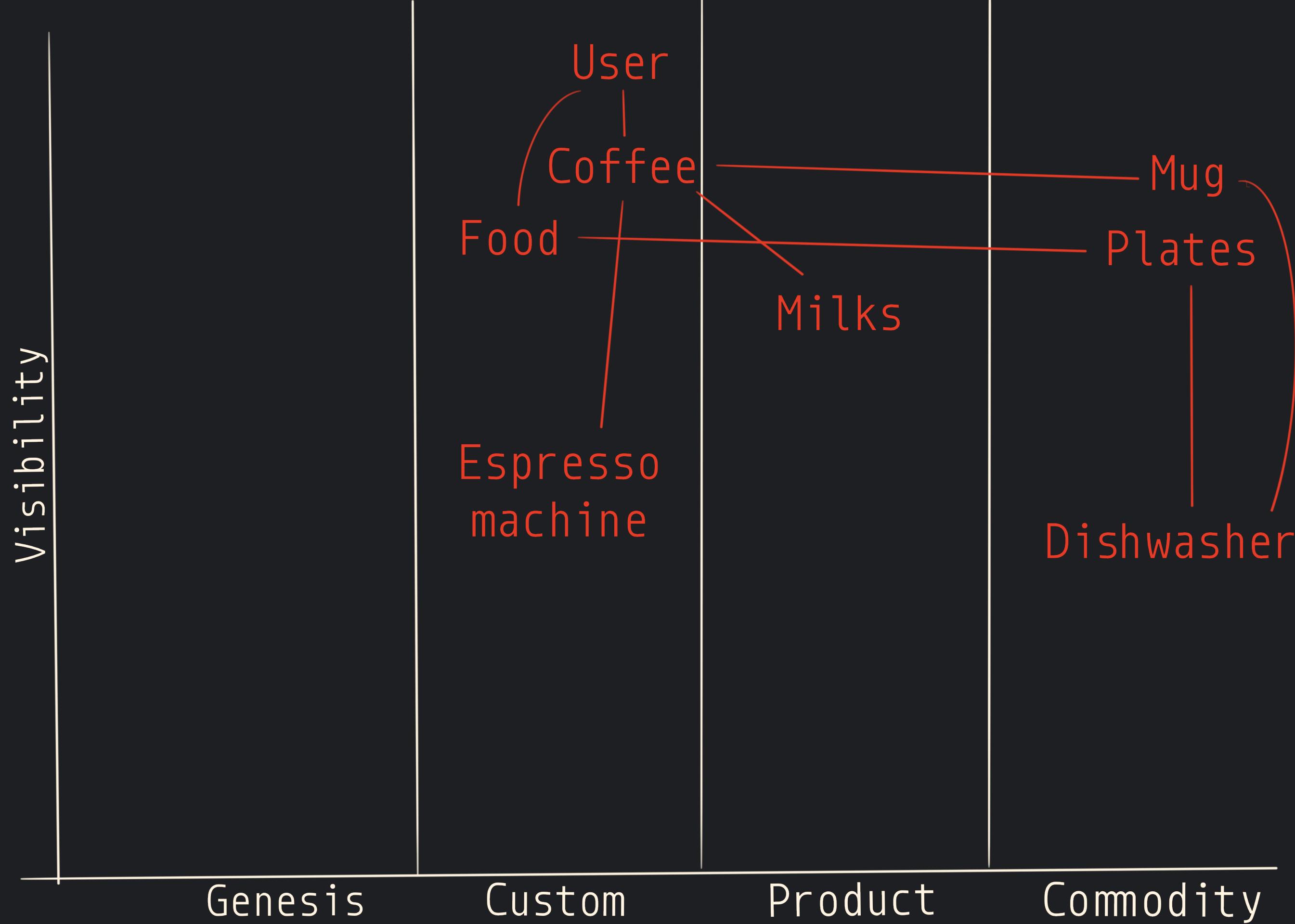
These are the axes used when drawing a Wardley map. There is a relatively large list of properties to decide what goes where, but there is a certain amount of wiggle room for a reason: one big part of a Wardley map is *the discussion* that goes into creating it



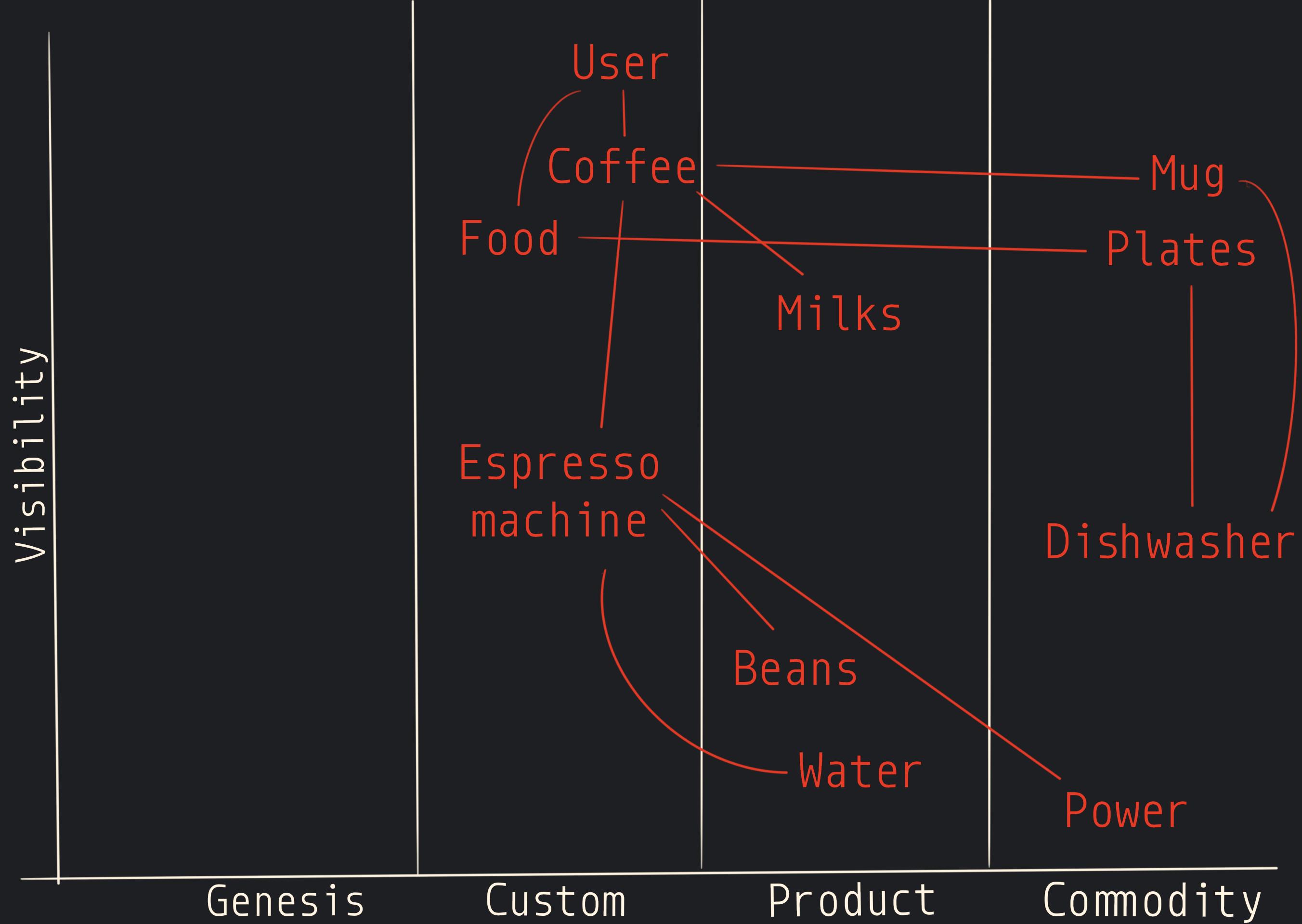
You start by placing the user somewhere in the top. Depending on your area of work, this user could be in either zone, depending on how tight the relationship might be.



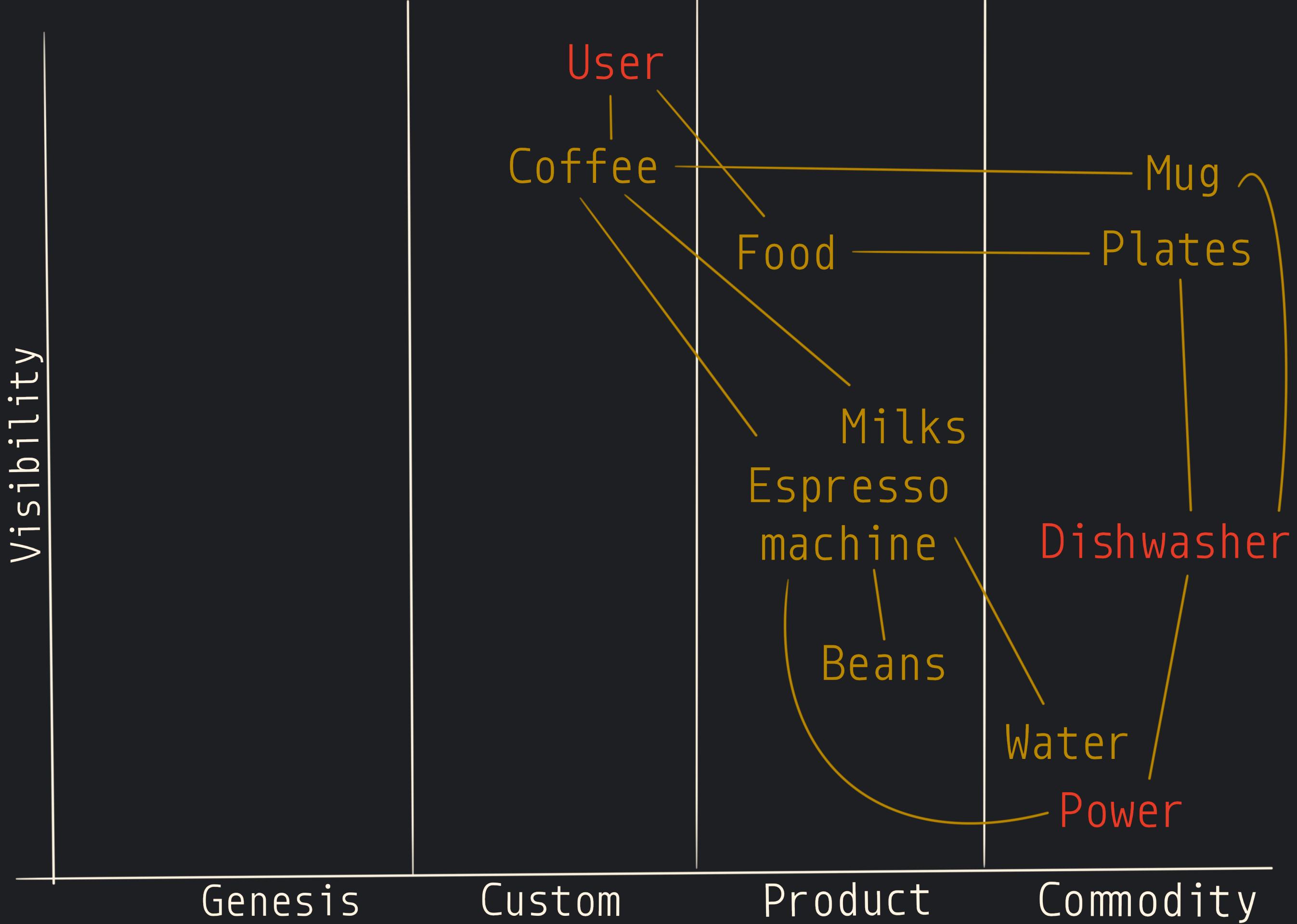
What are the user *needs*? We have done this exercise already, so it's easy. Our coffee shop serves quality coffee and in-house produced food



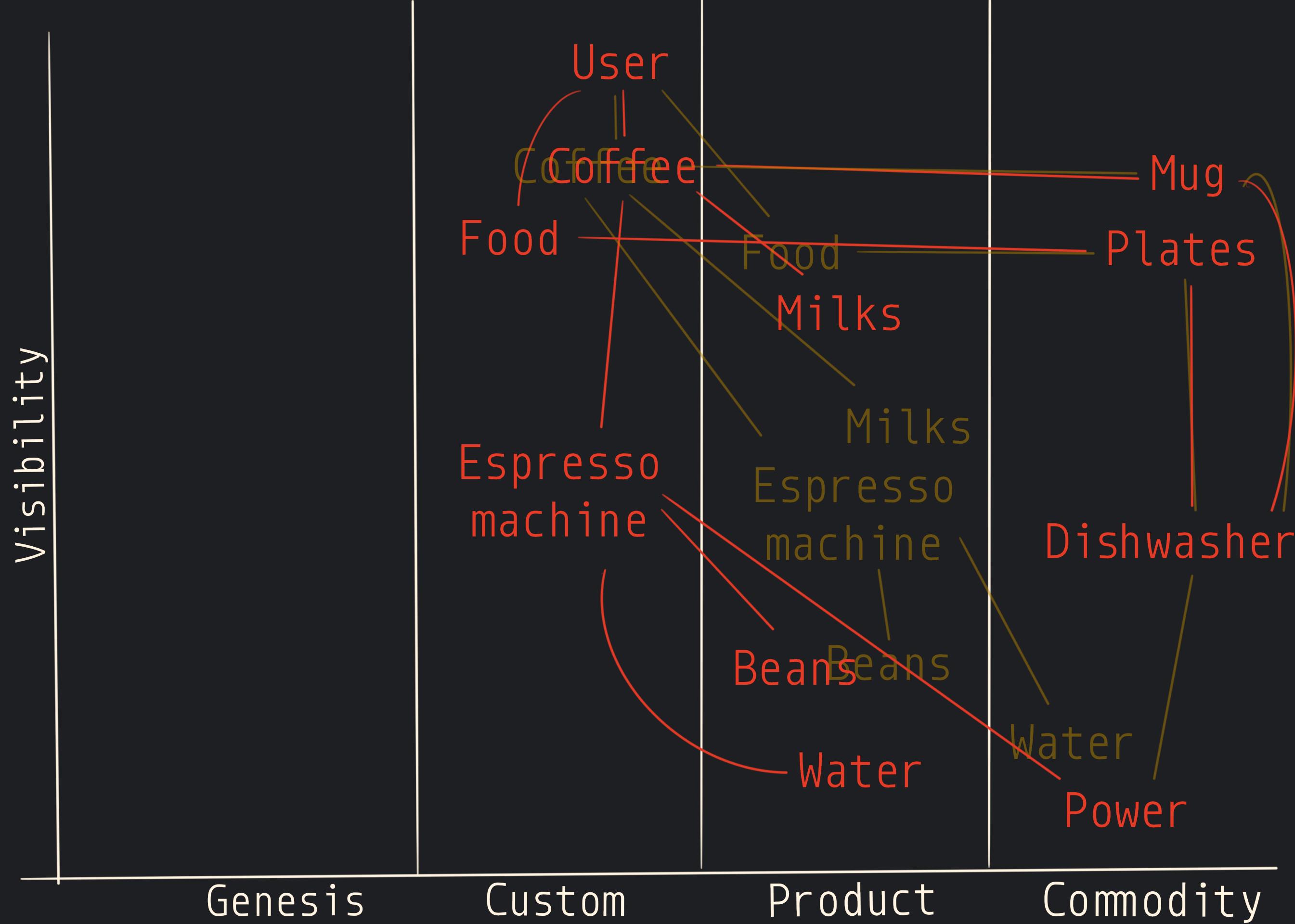
Food and coffee have needs, which have needs in turn. We go down the further from the user this is visible



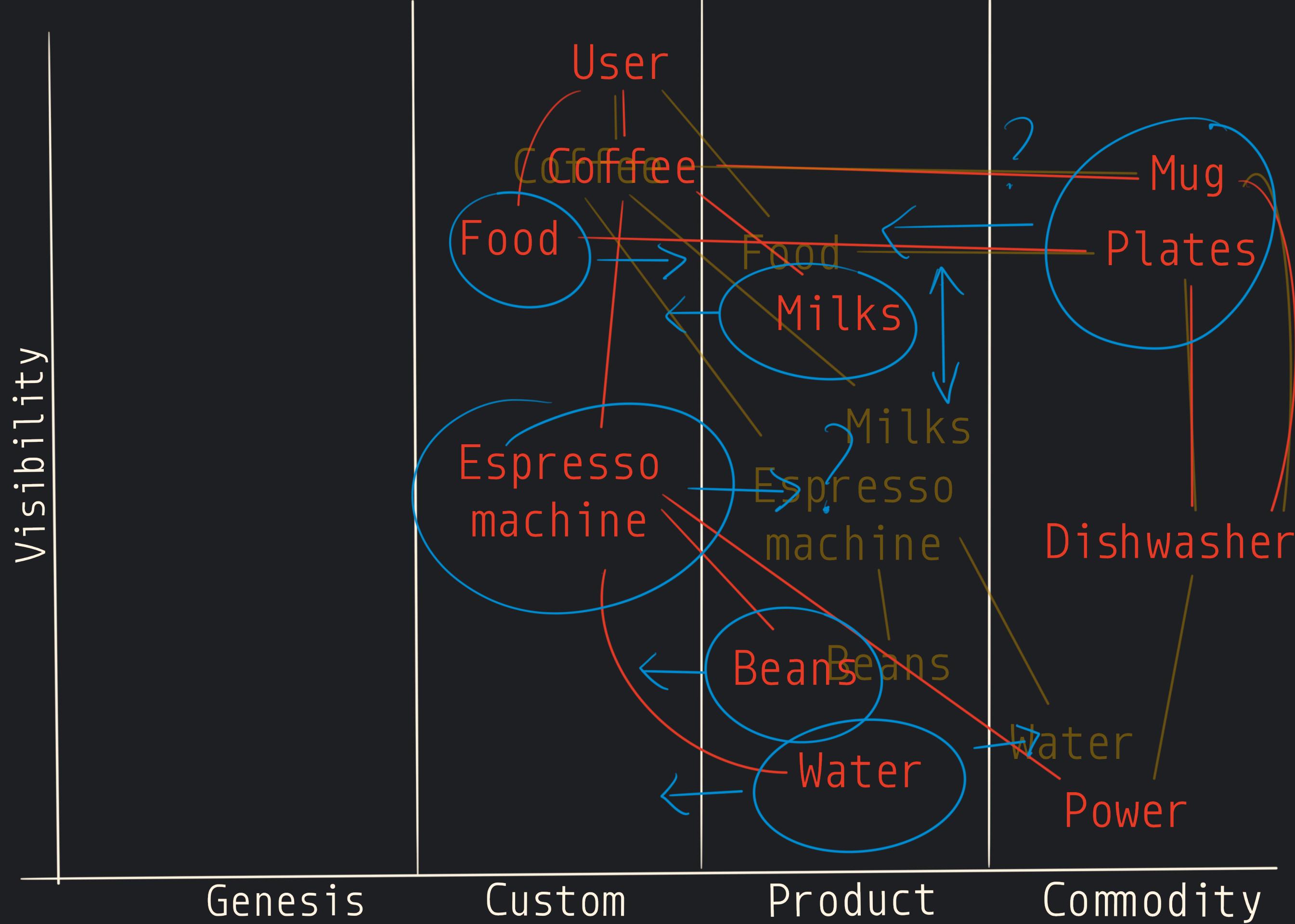
We get to beans, water (not commodity because the seller of the espresso machine was very specific) and power. From this map we could already draw some conclusions: we are getting generic beans to prepare high quality coffee with a good machine. Doesn't that look like a contradiction?



Now, we could map our surrounding area. This would be an aggregate of all the close-by coffee shops.



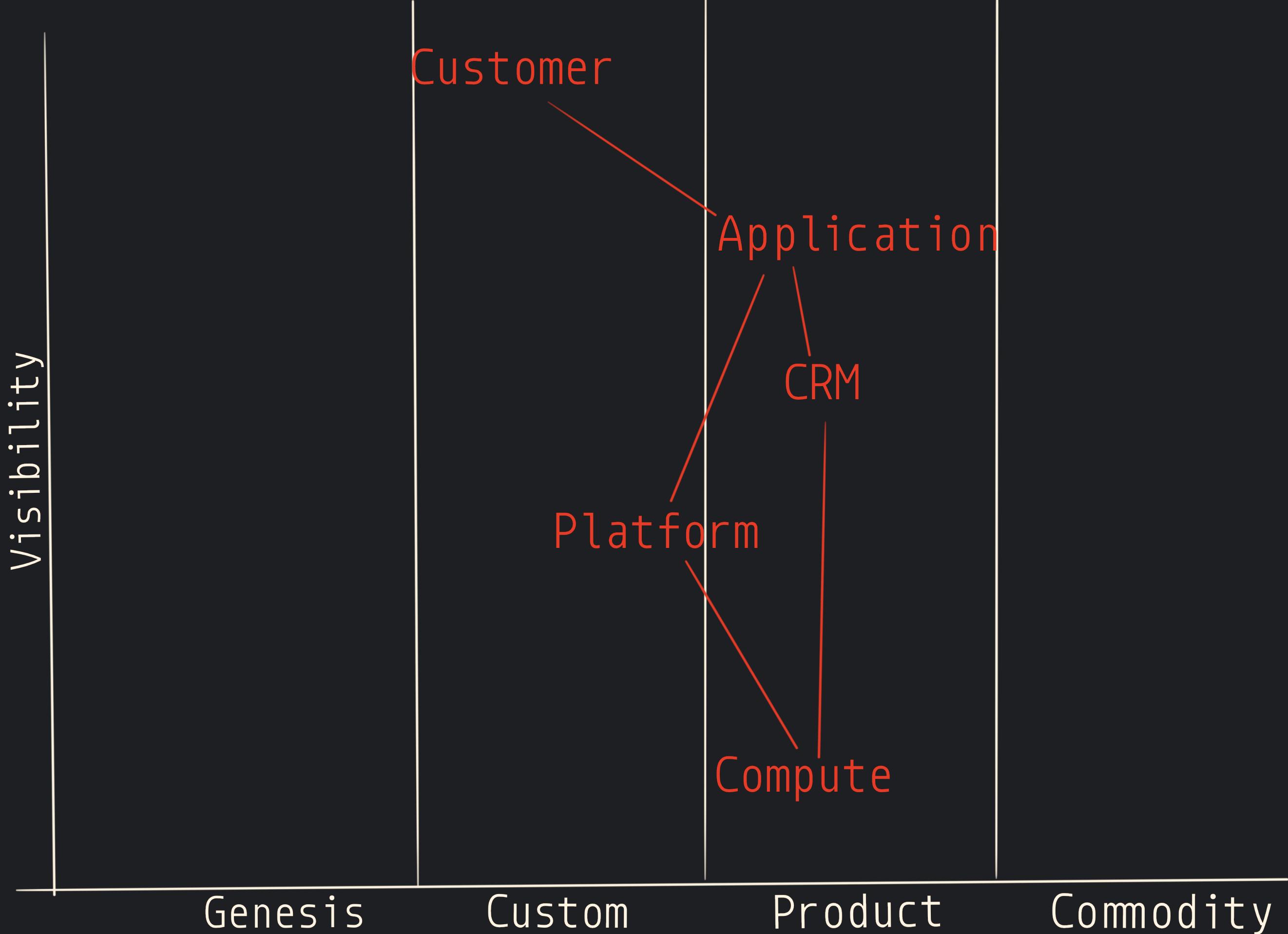
As you can see, there is a lot of overlap, but there are differences. Now, plan. What do we want to do? Differentiate? Blend? There is *no right answer* because it will depend on what you want to do with your business. I.e. differentiating is good if you don't plan on extending into a franchise: a franchise wants uniformity with the surroundings. If you plan on staying in the area only, you probably want to be unique.



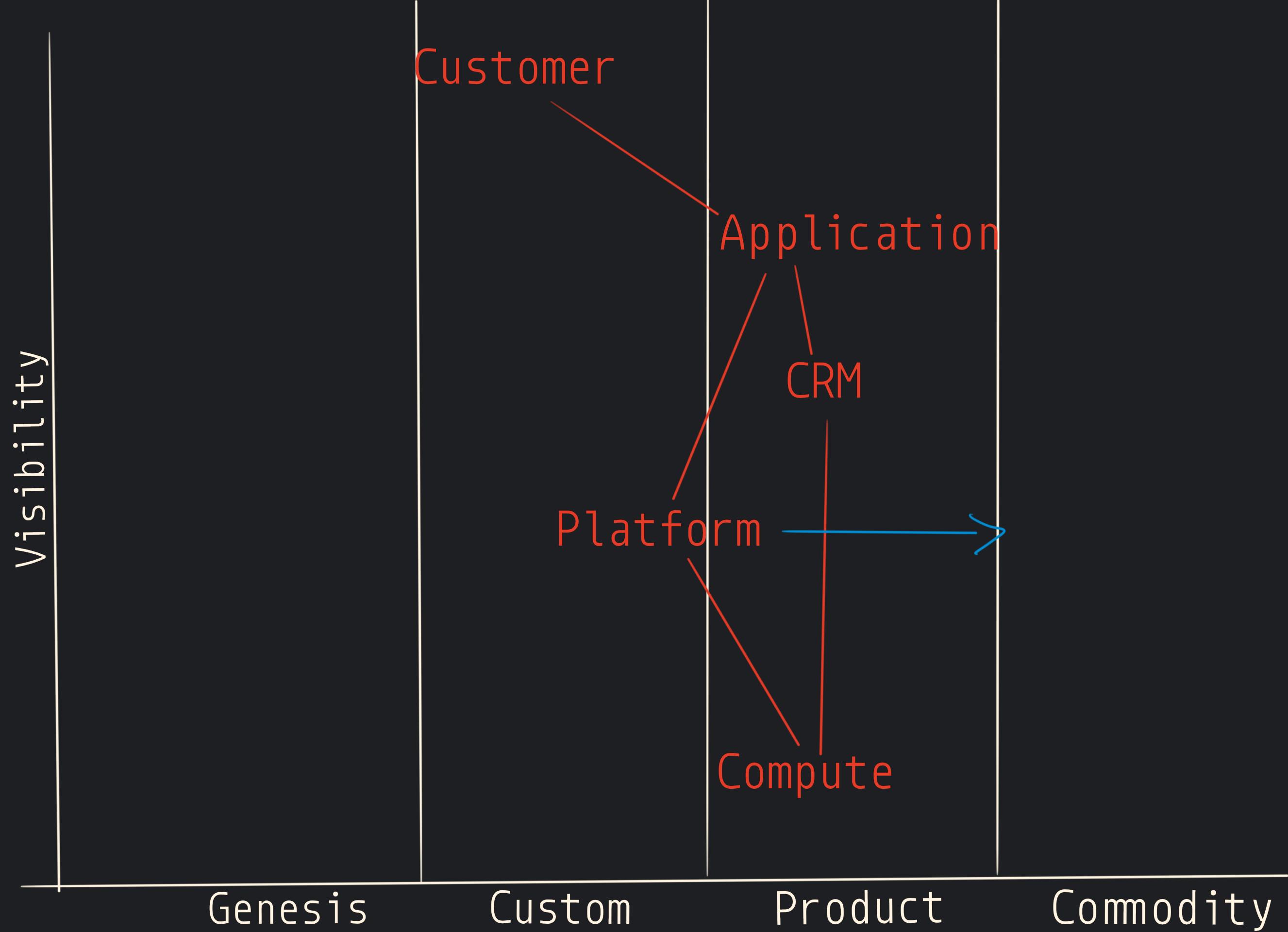
So this is a set of decisions you may want to take. You can decide to go for more "normal" food to save on costs. You can also move milk to be more of a centerpiece, even going as far as preparing your own nut milks in-house, or partnering with a "local" milk provider. You could also ditch the fancy espresso machine and go for an easier to use machine, to make staff training cheaper and quicker. You could raise the quality of the beans (even as far as in-house roasting), or go for geographic-specific water used for the coffees.

# THERE'S MORE

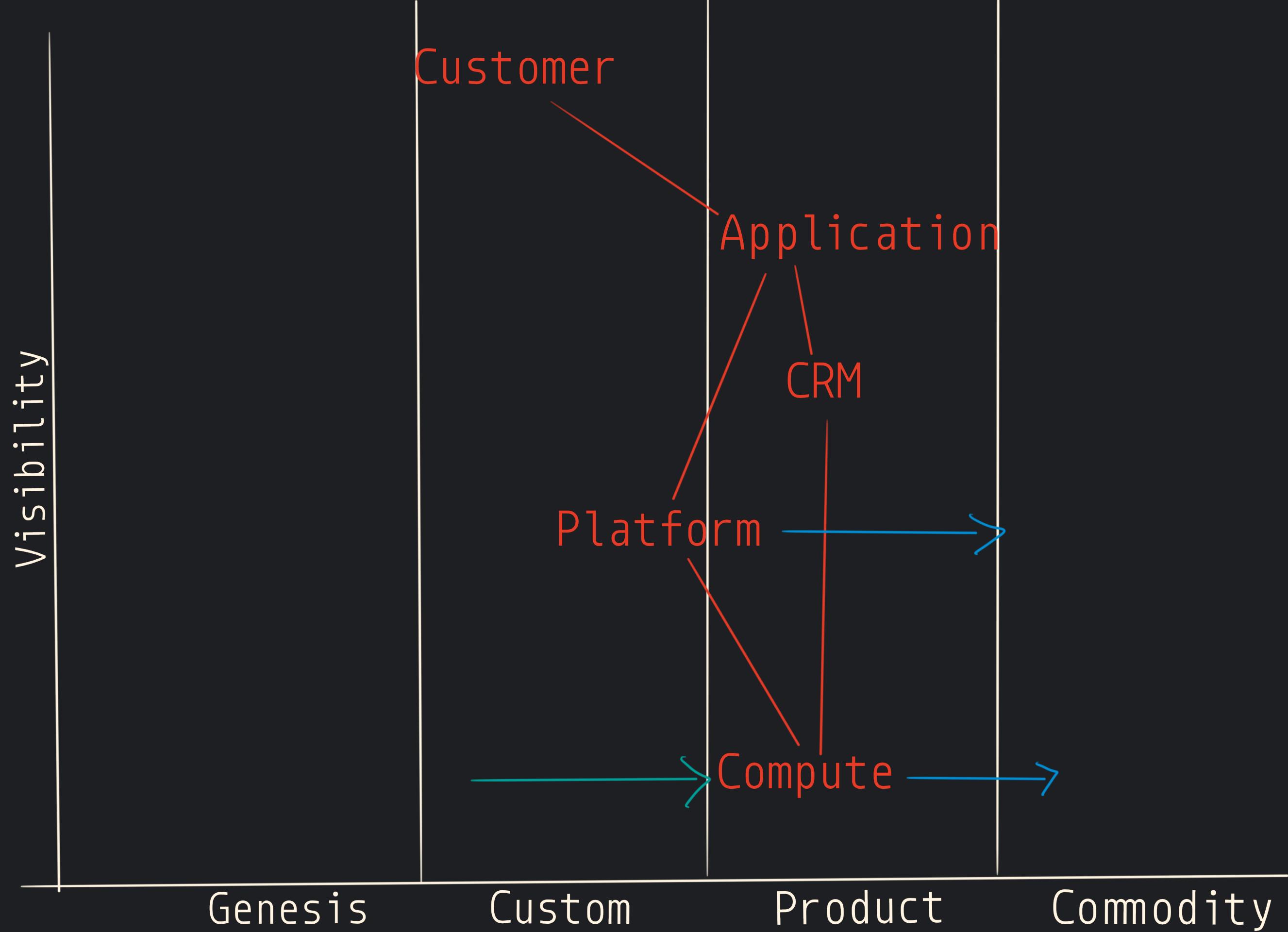
But it's hard to fit into a coffee shop theme! Let's get into technology



A company with some web-based system, probably a SaaS, deploying the applications on some execution platform. Needs compute. Omitted power



A constant force in the market is evolution to commodity. That's because market pressure will drive *all* companies in most ecosystems to bring anything non-core to commodity.



The quintessential example could be *compute*. Where we went from the Analytical Machine to ENIAC style computers, to data center racks, to cloud, to serverless. Something similar is happening currently with rocketry, to see another example. Note though that this doesn't mean *all* companies do the same. A consultancy may do a lot of custom work, but for them, that's core work. Also note that this evolution is pushed back with inertia. Moving to a cloud faced a lot of inertia, for instance

# CLIMATIC PATTERNS

OR. HOW'S THE WEATHER IN YOUR BUSINESS LANDSCAPE?

There are a certain amount of commonalities that are shared in all business landscapes, which you can assume apply to your area unless there is a strong reason on why they don't

- › EVERYTHING EVOLVES THROUGH SUPPLY AND DEMAND COMPETITION
- › EVOLUTION CONSISTS OF MULTIPLE WAVES OF DIFFUSION WITH MANY CHASMS
  - › YOU CANNOT MEASURE EVOLUTION OVER TIME OR ADOPTION
  - › THE LESS EVOLVED SOMETHING IS THEN THE MORE UNCERTAIN IT IS
    - › NO CHOICE OVER EVOLUTION
  - › COMMODITISATION DOES NOT EQUAL CENTRALISATION
  - › CHARACTERISTICS CHANGE AS COMPONENTS EVOLVE
    - › NO SINGLE METHOD FITS ALL
    - › COMPONENTS CAN CO-EVOLVE
    - › EFFICIENCY ENABLES INNOVATION
  - › HIGHER ORDER SYSTEMS CREATE NEW SOURCES OF VALUE
- › FUTURE VALUE IS INVERSELY PROPORTIONAL TO THE CERTAINTY WE HAVE OVER IT
  - › EFFICIENCY DOES NOT MEAN A REDUCED SPEND
- › EVOLUTION TO HIGHER ORDER SYSTEMS RESULTS IN INCREASING ENERGY CONSUMPTION
  - › CAPITAL FLOWS TO NEW AREAS OF VALUE
- › EVOLUTION OF COMMUNICATION CAN INCREASE THE SPEED OF EVOLUTION OVERALL
  - › CHANGE IS NOT ALWAYS LINEAR
- › SHIFTS FROM PRODUCT TO UTILITY TEND TO DEMONSTRATE A PUNCTUATED EQUILIBRIUM
  - › SUCCESS BREEDS INERTIA
  - › INERTIA INCREASES THE MORE SUCCESSFUL THE PAST MODEL IS
    - › INERTIA CAN KILL AN ORGANISATION
    - › CREATIVE (FAST) DESTRUCTION
  - › COMPETITORS ACTIONS WILL CHANGE THE GAME
- › MOST COMPETITORS HAVE POOR SITUATIONAL AWARENESS
  - › ECONOMY HAS CYCLES

This is *on purpose* unreadable  
from even a short distance

# DOCTRINE

There is a set of rules that you can apply to any business setting *regardless*

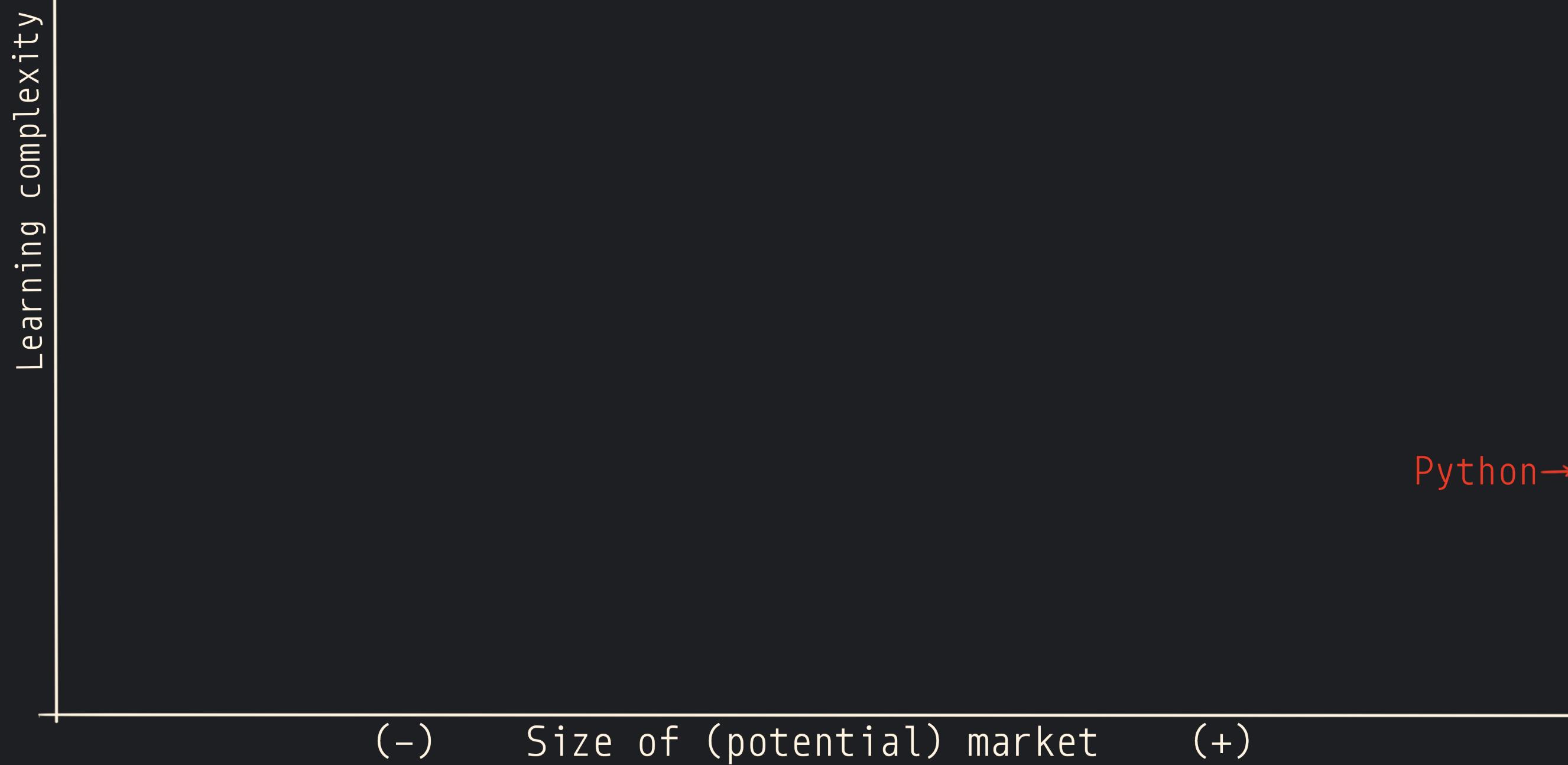
- > BE TRANSPARENT
- > FOCUS ON HIGH SITUATIONAL AWARENESS
  - > USE A COMMON LANGUAGE
  - > CHALLENGE ASSUMPTIONS
  - > KNOW YOUR USERS
  - > FOCUS ON USER NEEDS
- > THINK FAST, INEXPENSIVE, ELEGANT AND RESTRAINED (FIRE)
  - > BE PRAGMATIC
  - > REMOVE BIAS AND DUPLICATION
  - > USE APPROPRIATE METHODS AND TOOLS
  - > FOCUS ON THE OUTCOME NOT A CONTRACT
  - > USE STANDARDS WHERE APPROPRIATE
    - > OPTIMISE FLOW
    - > EFFECTIVENESS OVER EFFICIENCY
      - > MANAGE INERTIA
      - > MANAGE FAILURE
      - > THINK SMALL
  - > DISTRIBUTE POWER AND DECISION MAKING
  - > PROVIDE PURPOSE, MASTERY & AUTONOMY
    - > THINK APTITUDE AND ATTITUDE
    - > THERE IS NO ONE CULTURE
    - > SEEK THE BEST
  - > DESIGN FOR CONSTANT EVOLUTION
  - > USE A SYSTEMATIC MECHANISM OF LEARNING
- > A BIAS TOWARDS ACTION (DO NOT ATTEMPT TO CREATE THE PERFECT MAP)
  - > LISTEN TO YOUR ECOSYSTEMS
  - > A BIAS TOWARDS THE NEW
    - > BE THE OWNER
  - > STRATEGY IS ITERATIVE NOT LINEAR
    - > DO BETTER WITH LESS
  - > SET EXCEPTIONAL STANDARDS
  - > STRATEGY IS COMPLEX
- > COMMIT TO THE DIRECTION, BE ADAPTIVE ALONG THE PATH
  - > MOVE FAST
  - > THERE IS NO CORE
  - > EXPLOIT THE LANDSCAPE
    - > THINK BIG
    - > BE HUMBLE

This is also supposed to be  
unreadable



# PICK YOUR OWN AXES

What I like about Wardley maps, is that they open up new ways of seeing and interpreting reality, they are a tool for thought. New ways of seeing reality are not rare, but are usually constrained, and you may not be aware of its existence. Photo by Jason Abdilla on Unsplash



Here's now an example of a type of map that I needed (this will be an abbreviated version). First, the axes: size of the potential market and learning complexity. Basically I wanted to decide where I should focus effort in my personal technology learning. Right is larger market demand, left is less market demand. One thing that is not represented but is important for the consideration is how large of a pool of candidates is already in the market (there are ways to represent this in 2D, but would make this exposition harder). This representation helps us form an idea of where we may want to focus our efforts, which can be seen in the following

Here are the axis, with Python in place

Learning complexity

(-)

Size of (potential) market

(+)

Go →

Python →

Learning complexity

(-)      Size of (potential) market      (+)

Rust →

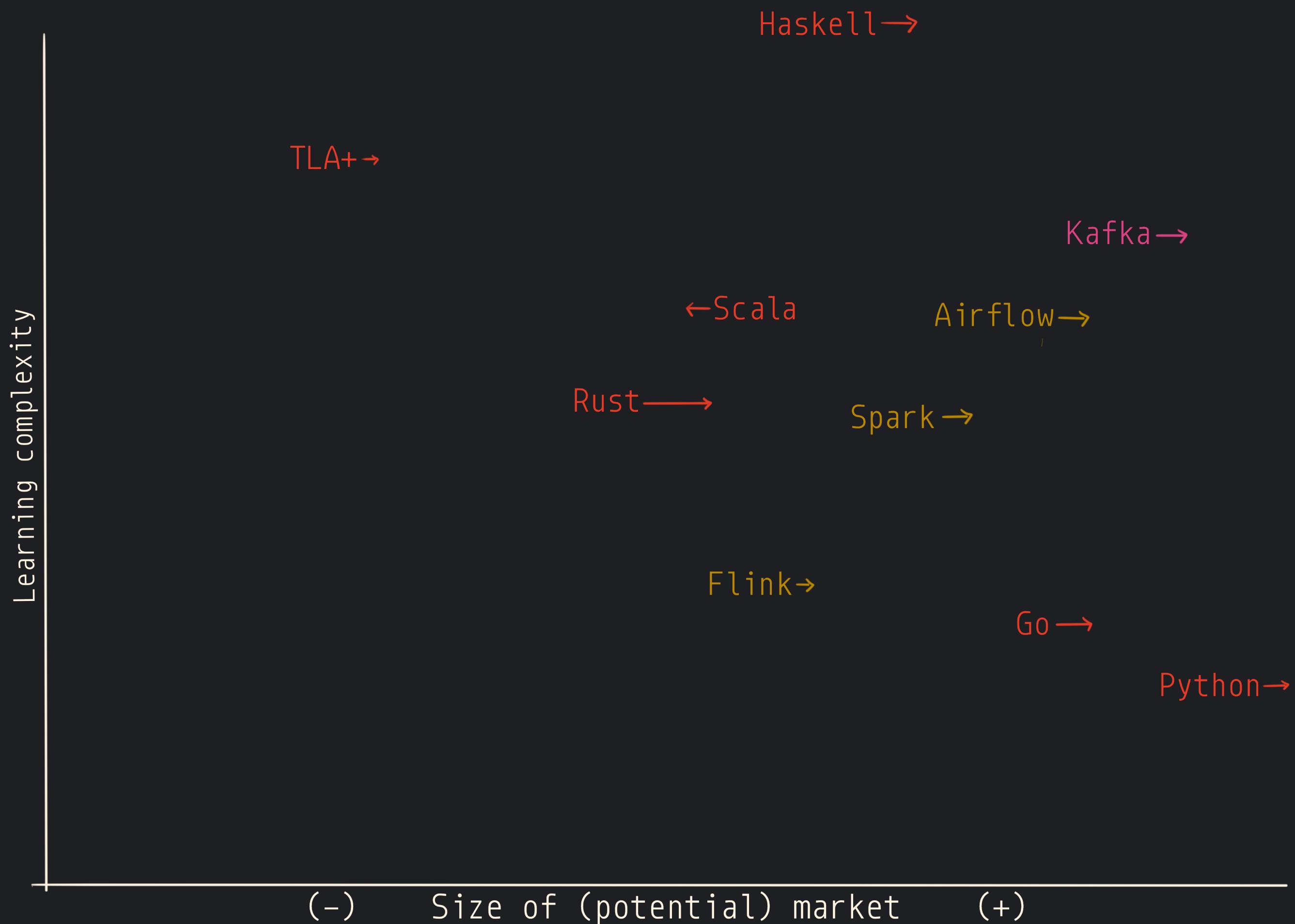
Go →

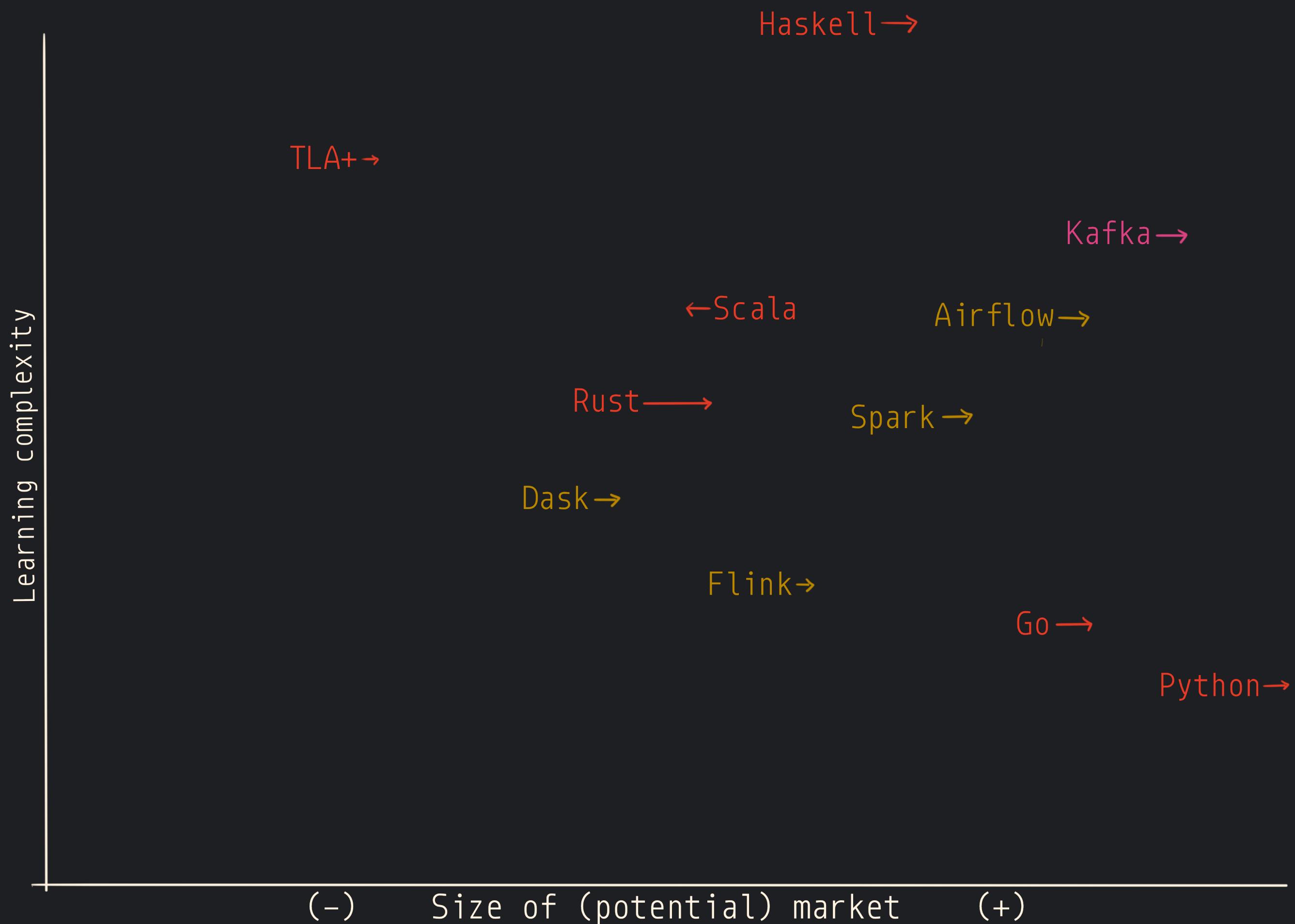
Python →

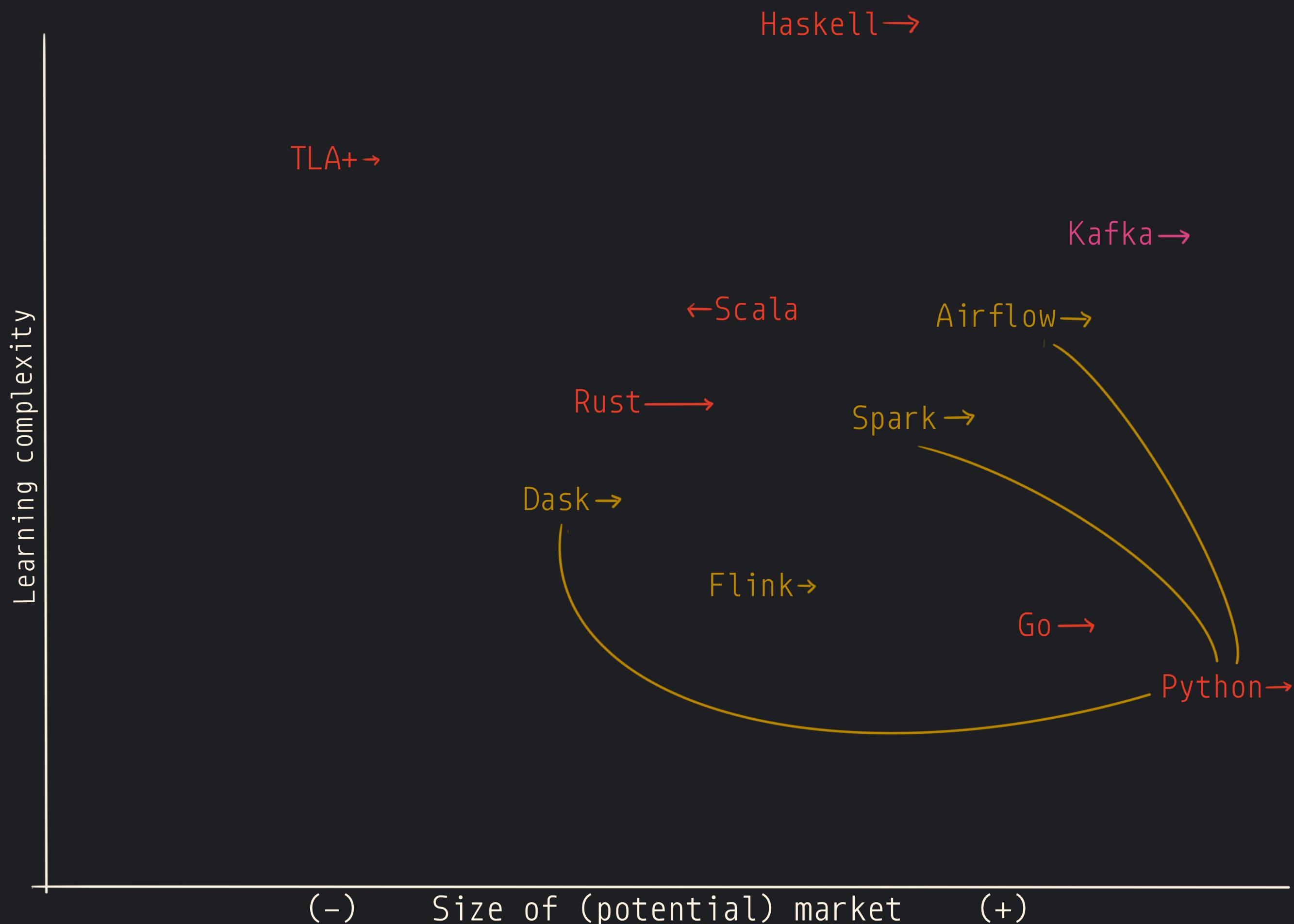


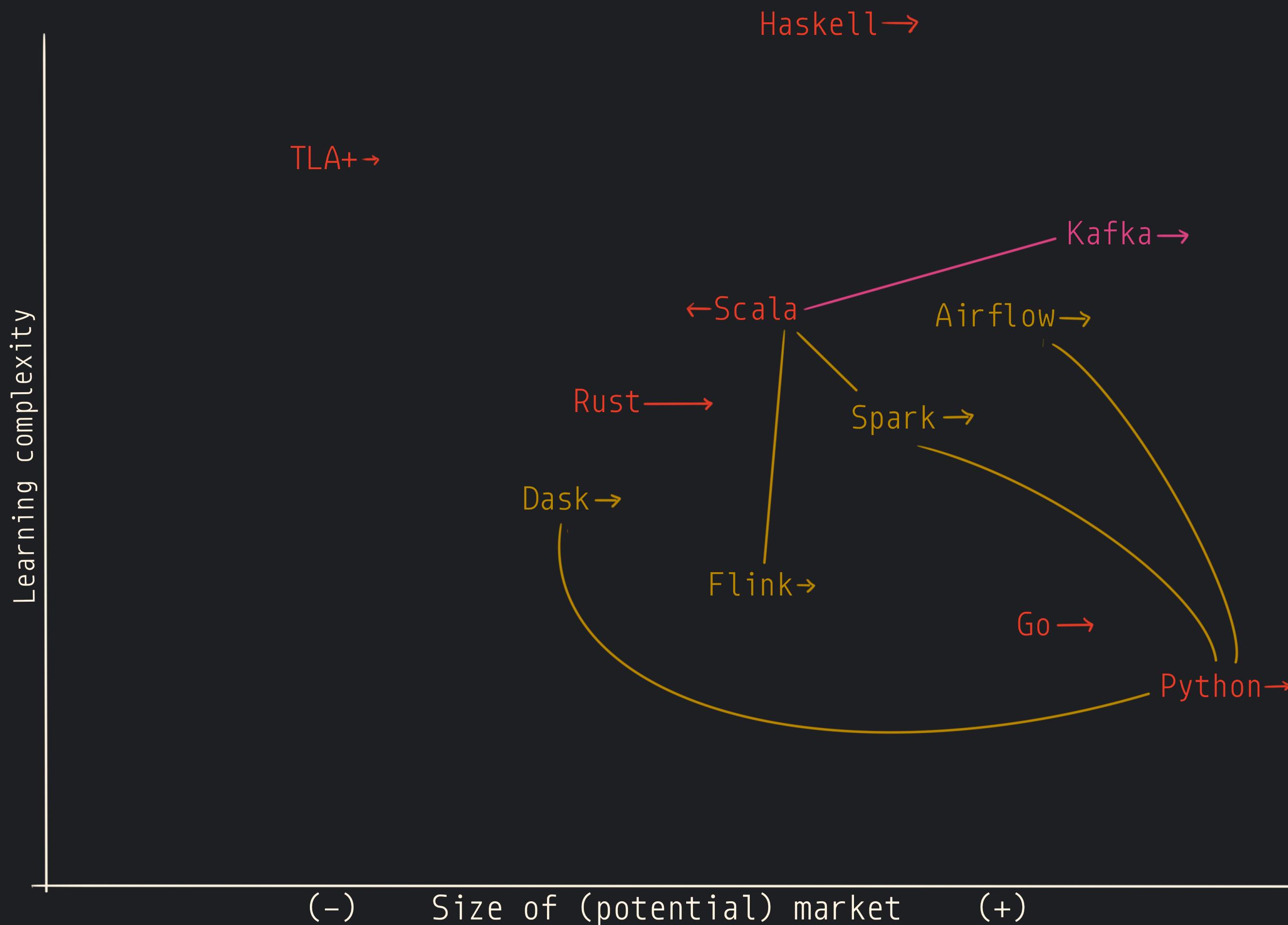












So here's an overview of some tools. I love Scala, but I'm not 100% sure if it's the right fit for the next 20 years. I already know Python, so, should I focus on Dask? And, what is happening with Rust?



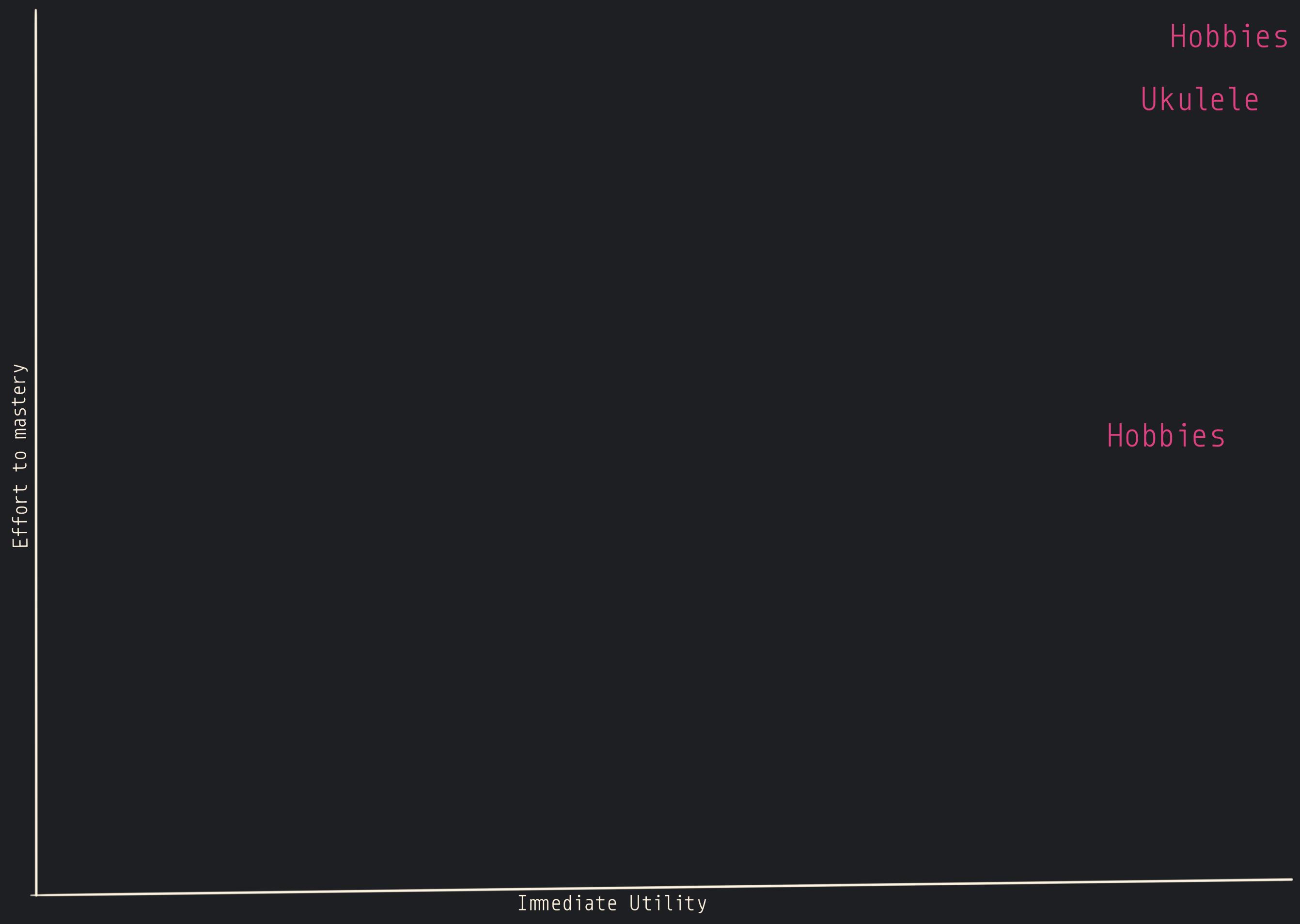
Here's an example of personal project allocation. I don't know about you, but

I have *too many* personal/semi-work related projects. The axes are effort to master vertically and (immediate) utility in the horizontal. Something can be utility 0 and "infinite" effort to master (ukulele). Here I add some so you have

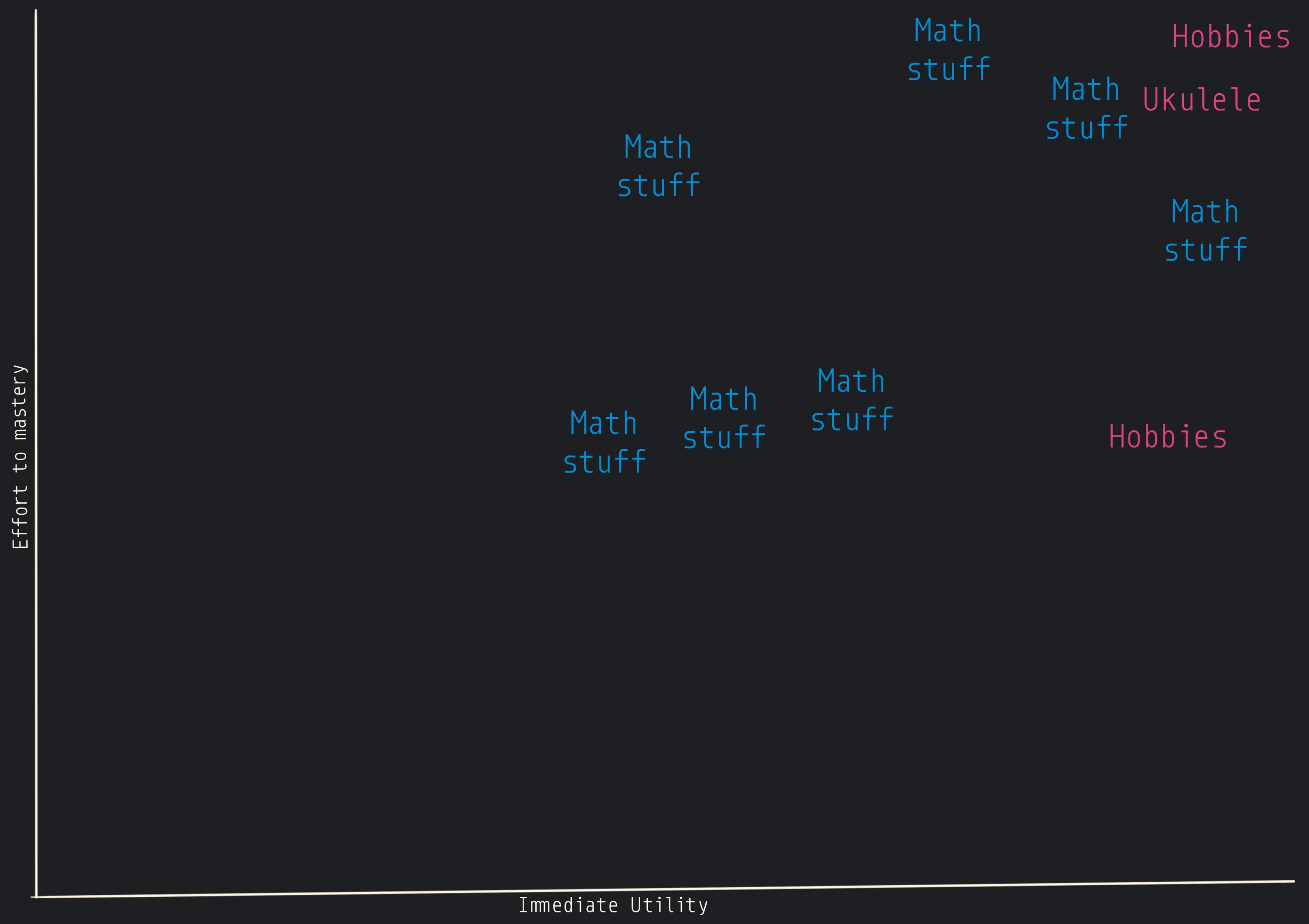
an idea. I added lines to link related projects (I have blurred the text for privacy). Clearly, I had an overbooking of not-that-useful-but-quite-effortful projects. So, I axed a large deal.

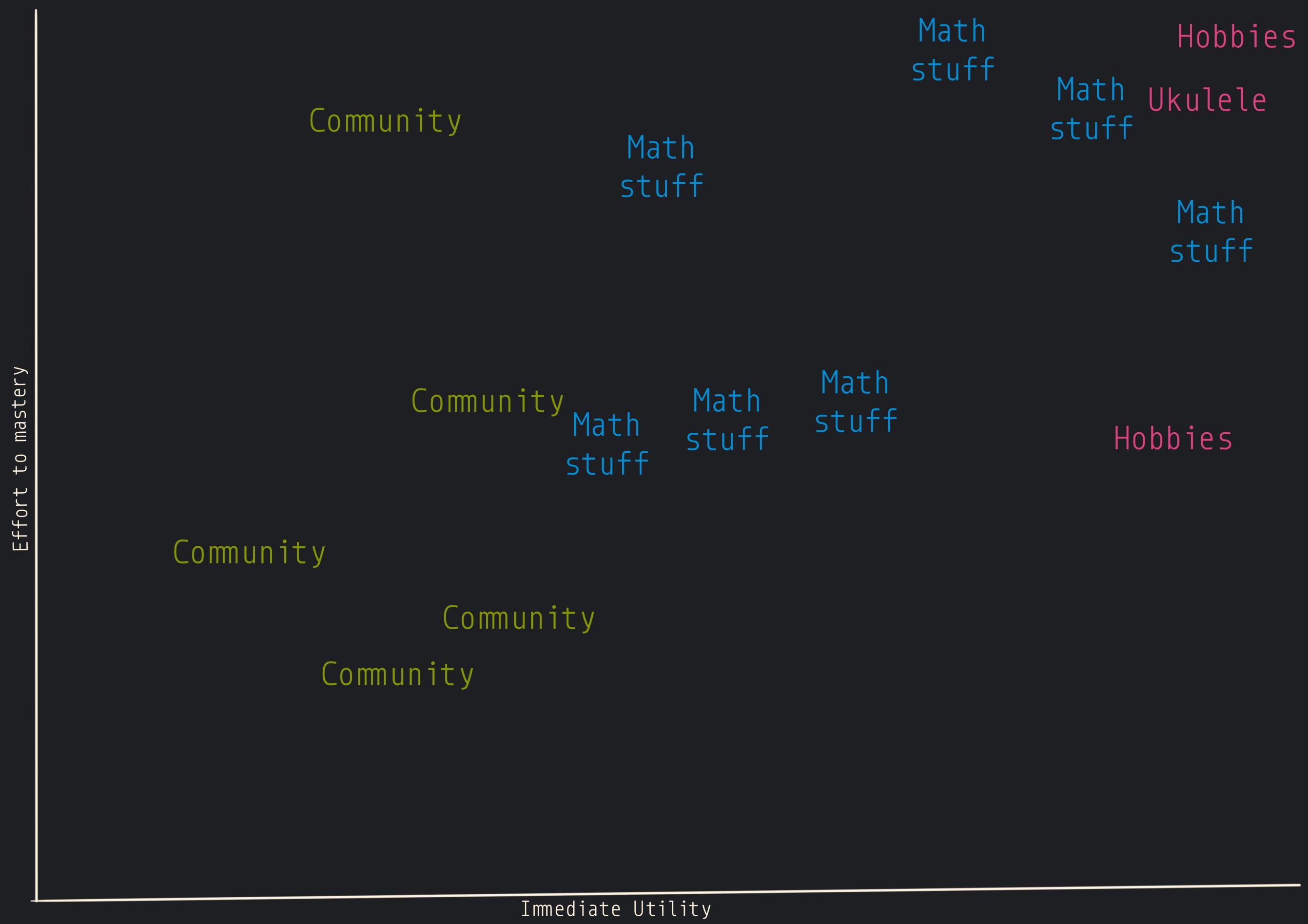
The axes. Note that this is close-but-not-quite a quadrant diagram, because

all positioning is relative to anchors, avoiding having a "0" or a clearly delimited quadrant.

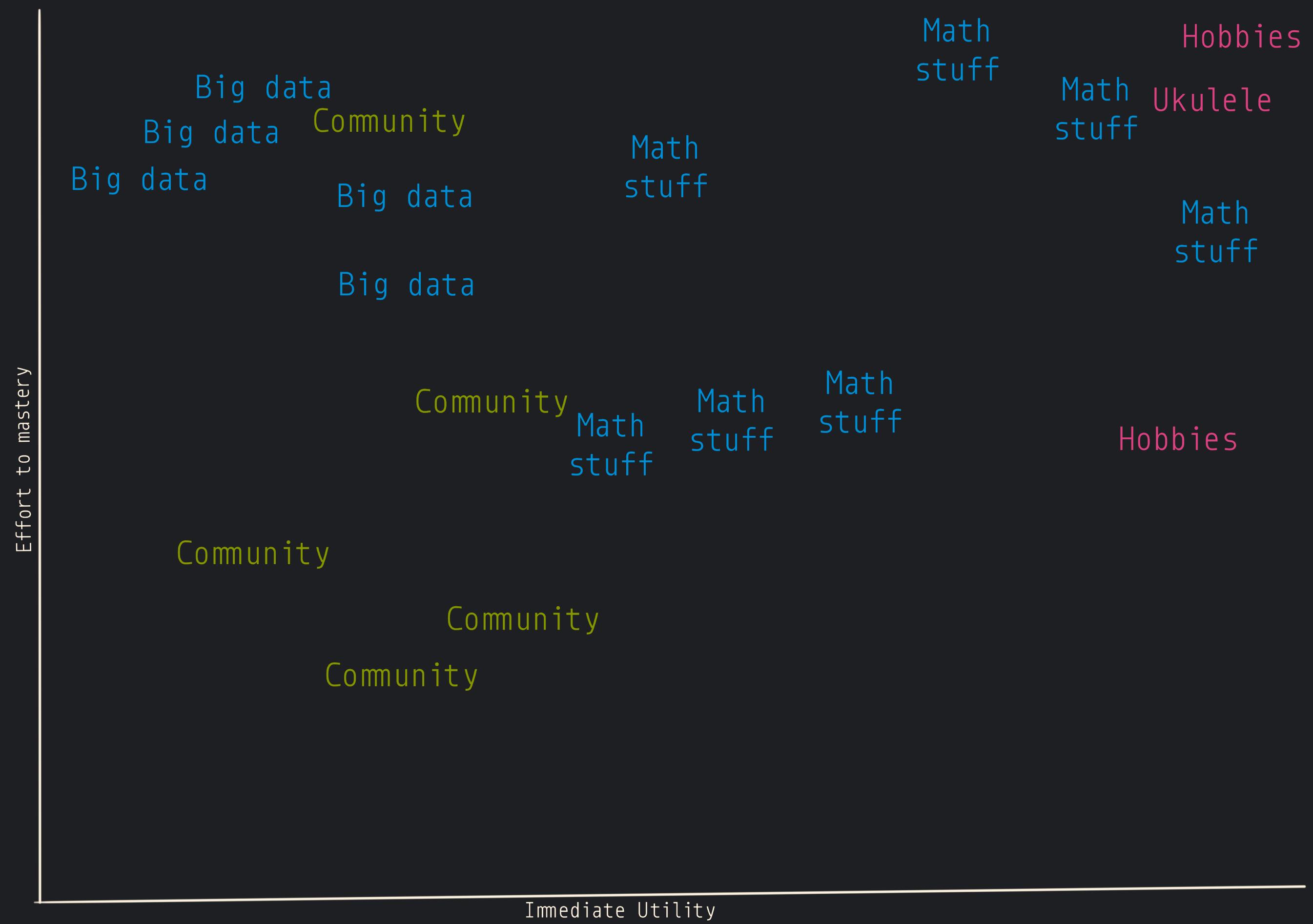


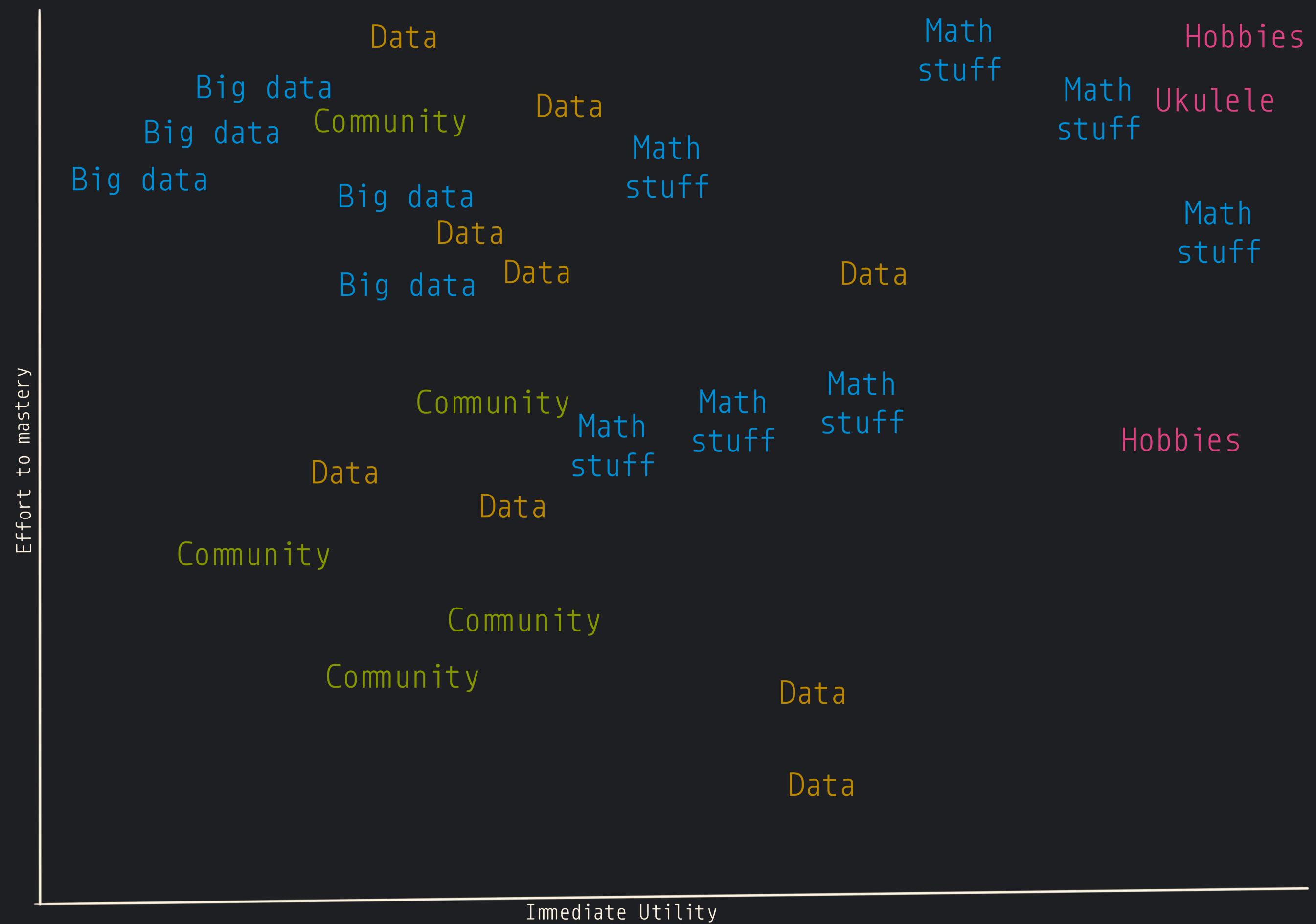
# Hobbies, to make clear what's the positioning

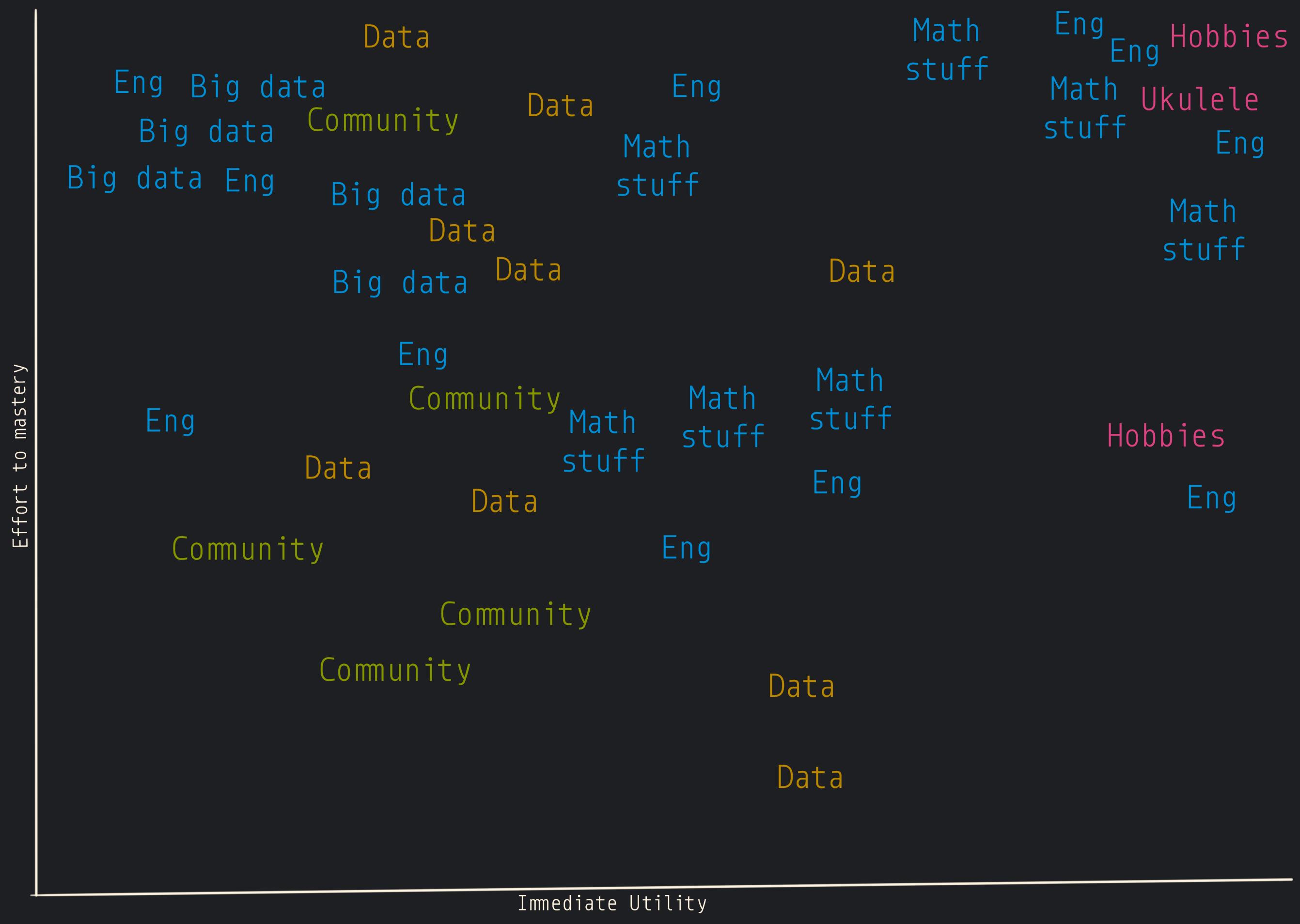


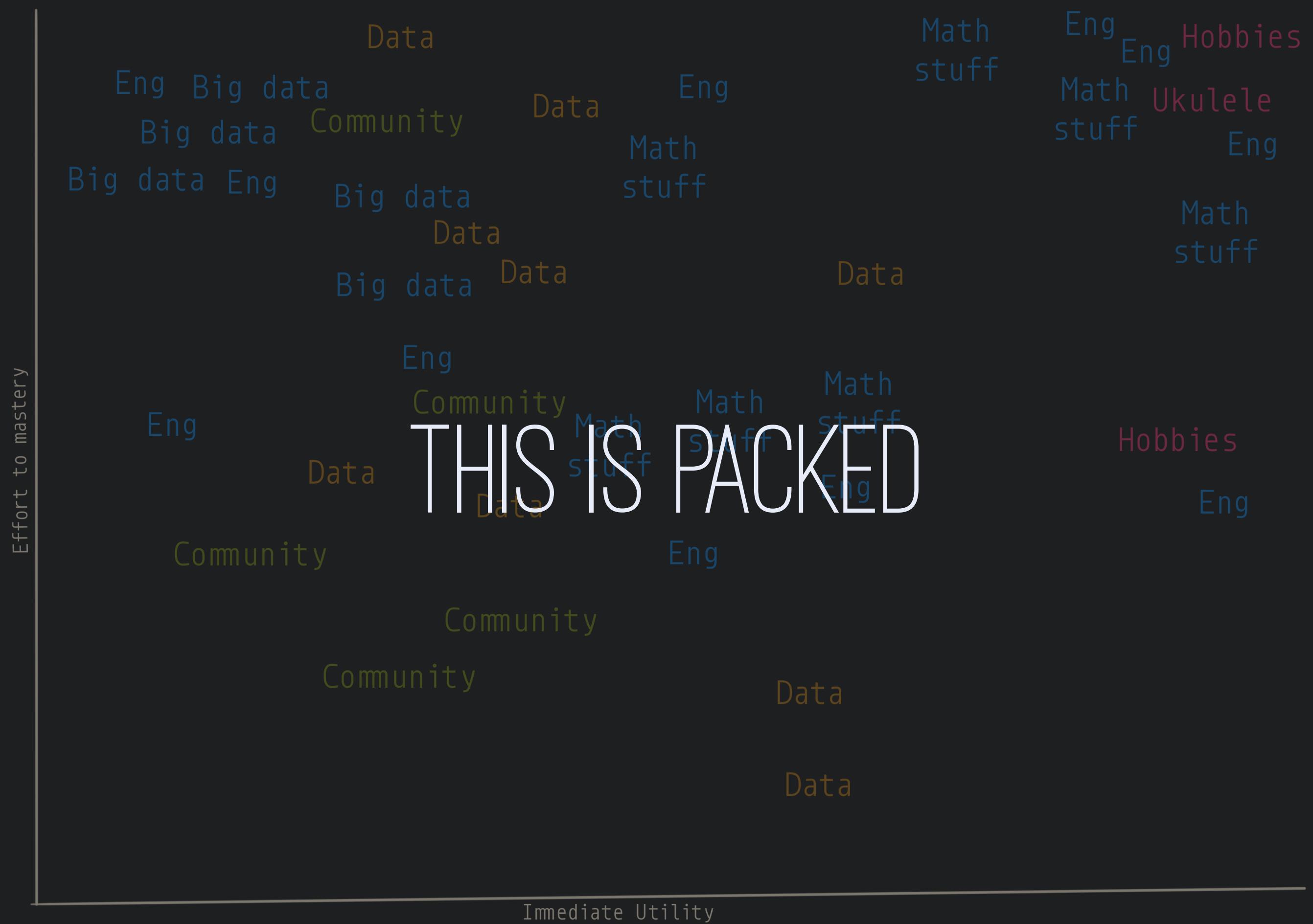


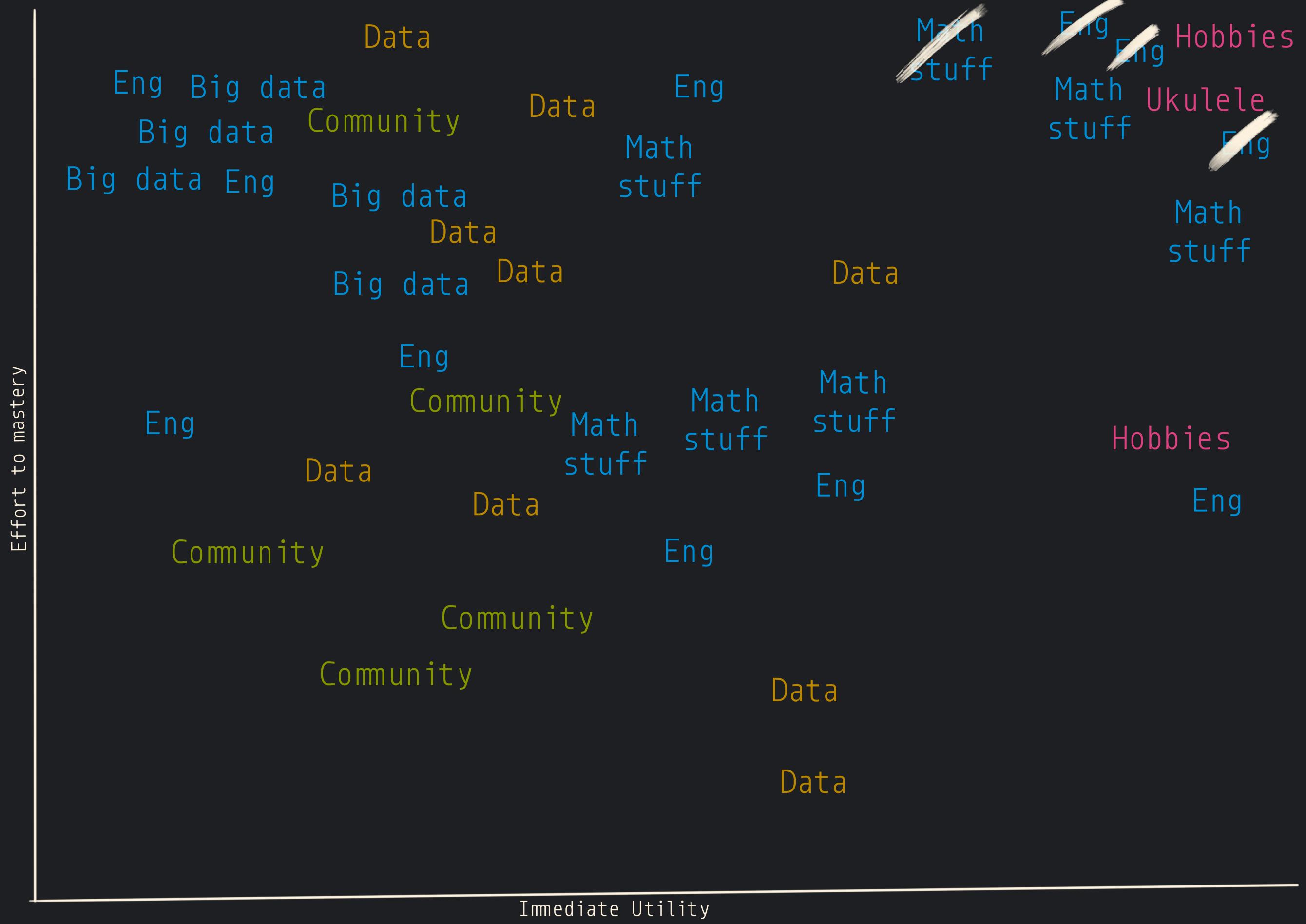
Open source, meetups,  
presentation...



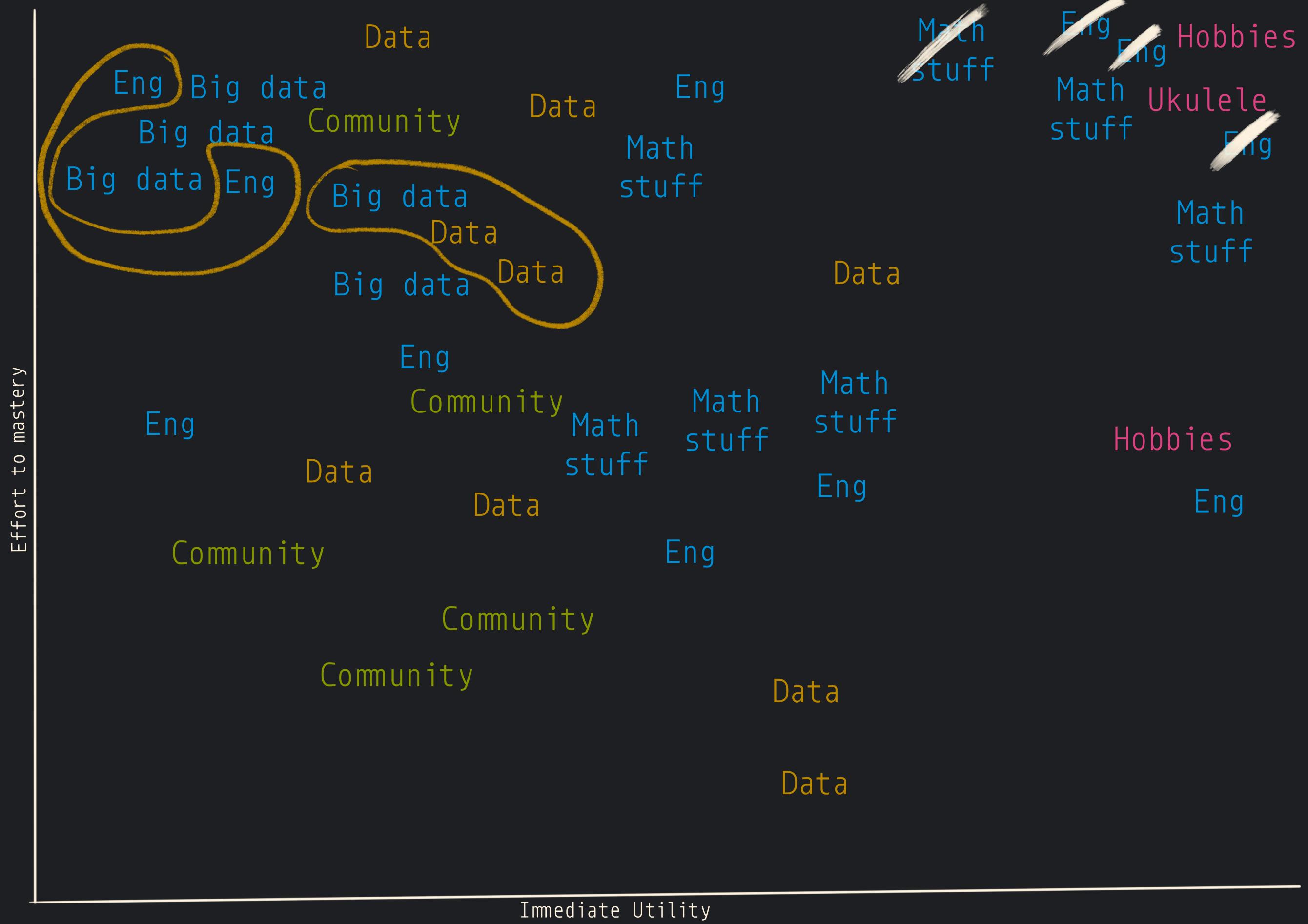




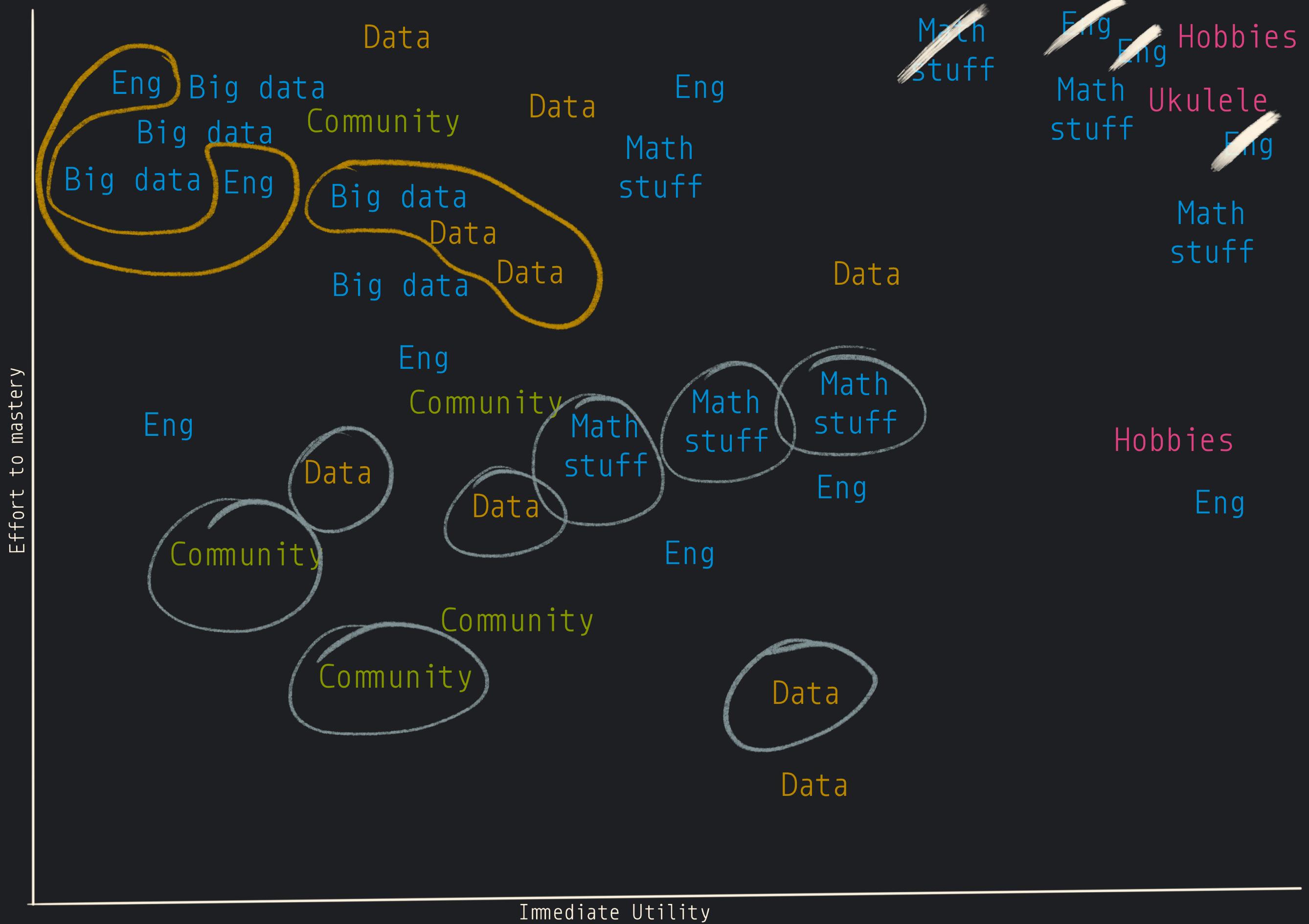




# First, kill obvious painful projects



# Group stuff



# Prioritise "low hanging fruit"

# SUMMARY

# SUMMARY

- › THERE IS MORE TO PLANNING THAN GANTT CHARTS

# SUMMARY

- > THERE IS MORE TO PLANNING THAN GANTT CHARTS
- > YOU DON'T NEED TO BE A BUSINESS TO PLAN LIKE ONE

# SUMMARY

- > THERE IS MORE TO PLANNING THAN GANTT CHARTS
- > YOU DON'T NEED TO BE A BUSINESS TO PLAN LIKE ONE
- > YOU JUST NEED TO HAVE A PROBLEM, A PIECE OF PAPER AND SOMETHING TO WRITE WITH

# SOME RESOURCES AND REFERENCES

- > **S. WARDLEY.** WARDLEY MAPPING ONLINE BOOK
- > **M. NIELSEN.** THOUGHT AS A TECHNOLOGY
- > **D. MEADOWS.** THINKING IN SYSTEMS
- > **E. TUFTE.** ENVISIONING INFORMATION
- > **M. LIMA.** VISUAL COMPLEXITY: MAPPING PATTERNS OF INFORMATION
- > **K. IVERSON.** NOTATION AS A TOOL FOR THOUGHT

# QUESTIONS?



# THANKS!

**GET THE SLIDES FROM MY GITHUB:**  
[github.com/rberenguel/  
THE REPOSITORY IS  
mapping](https://github.com/rberenguel/mapping)



# FURTHER REFERENCES

- › S. WARDLEY. PLAYING CHESS WITH COMPANIES (OSCON 2017, ON SAFARI BOOKS ONLINE)
- › [S. WARDLEY CROSSING THE RIVER BY FEELING THE STONES][HTTPS://SKILLSMATTER.COM/SKILLSCASTS/13456-KEYNOTE-SIMON-WARDLEY](https://skillsmatter.com/skillscasts/13456-keynote-simon-wardley)

# EOF