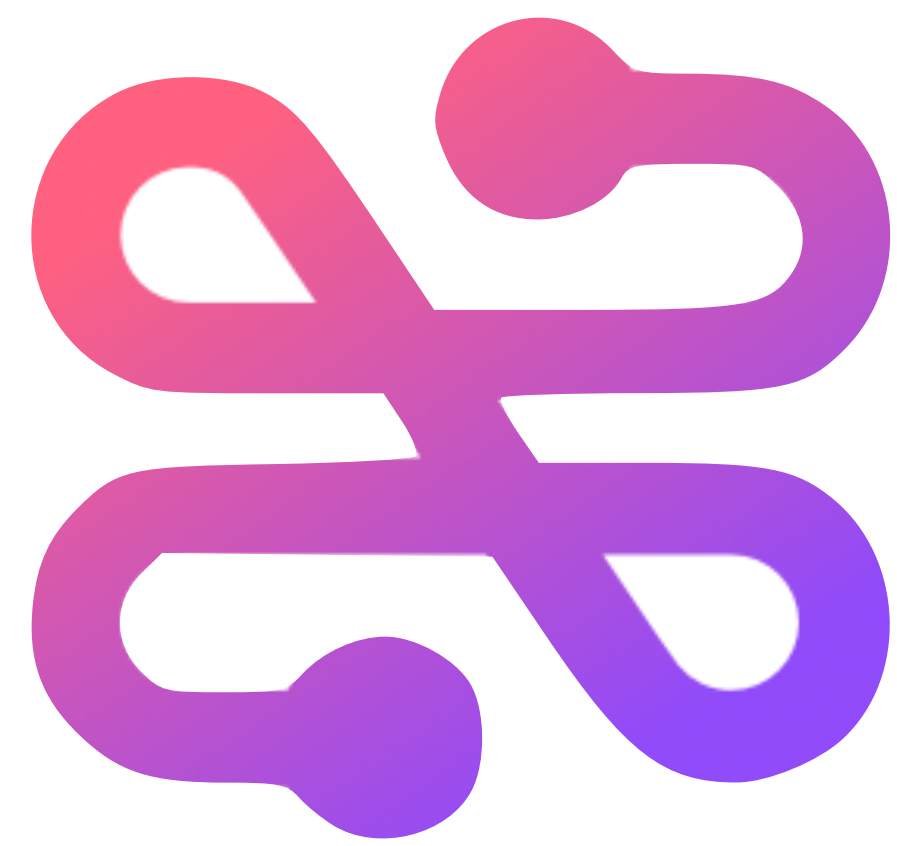
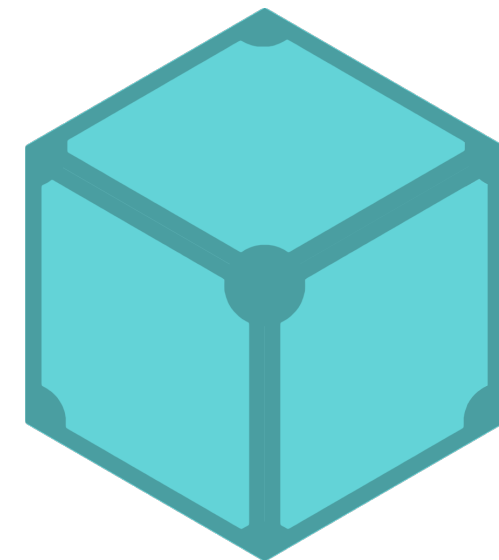


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IPFS 101 & THE NEXT-GEN WEB





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BROOKLYN ZELENKA



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- Cofounder at FISSION
- Better DX for everyone via Web3 tech!
- Early access: <https://tools.fission.codes>





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- Ethereum Core Dev work:
 - 615: Subroutines & Static Jumps
 - 902: Token Permissions & Validation
 - 1066: Status Codes
 - 1444: On-Chain Translation

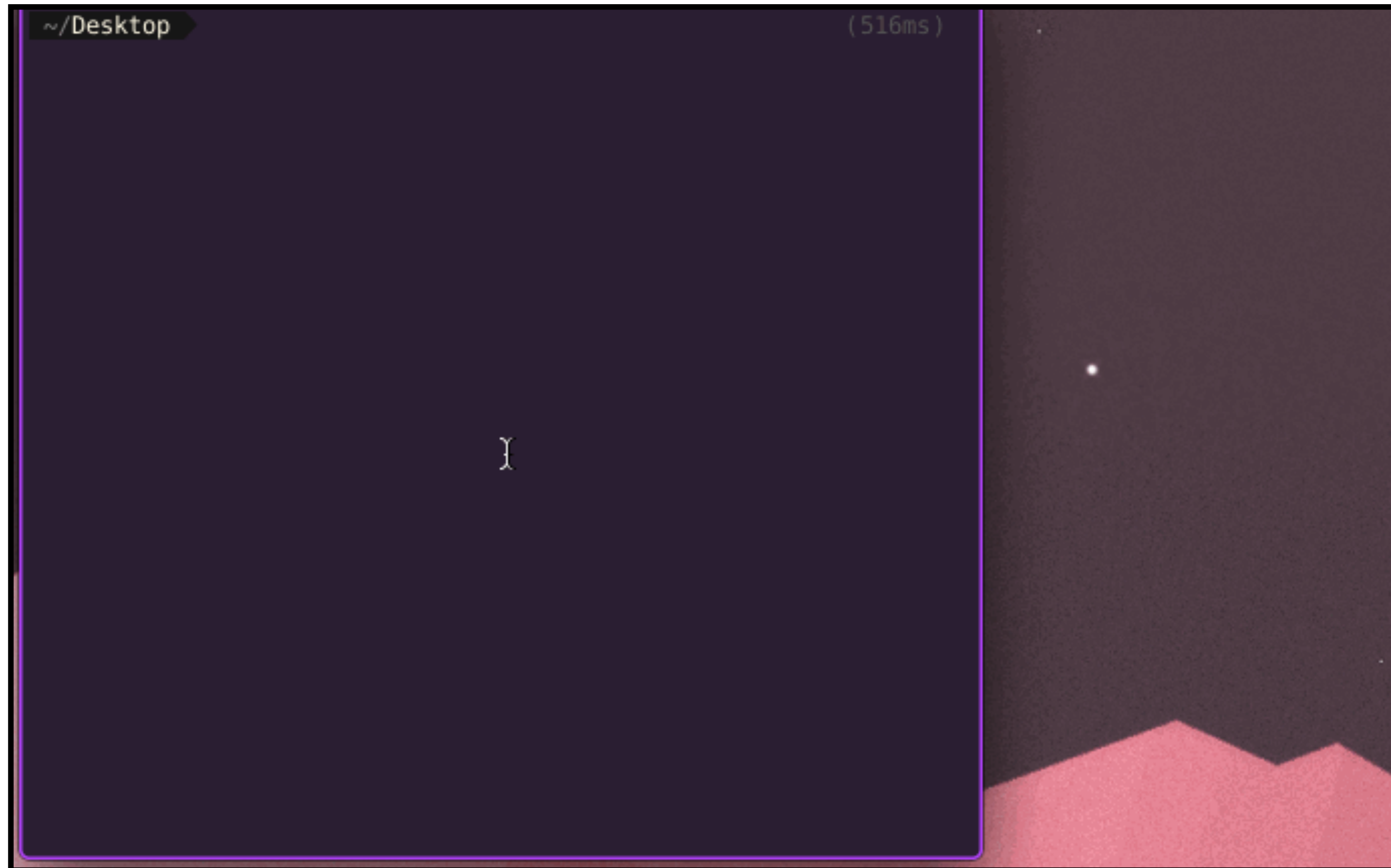


AN IPFS PRIMER

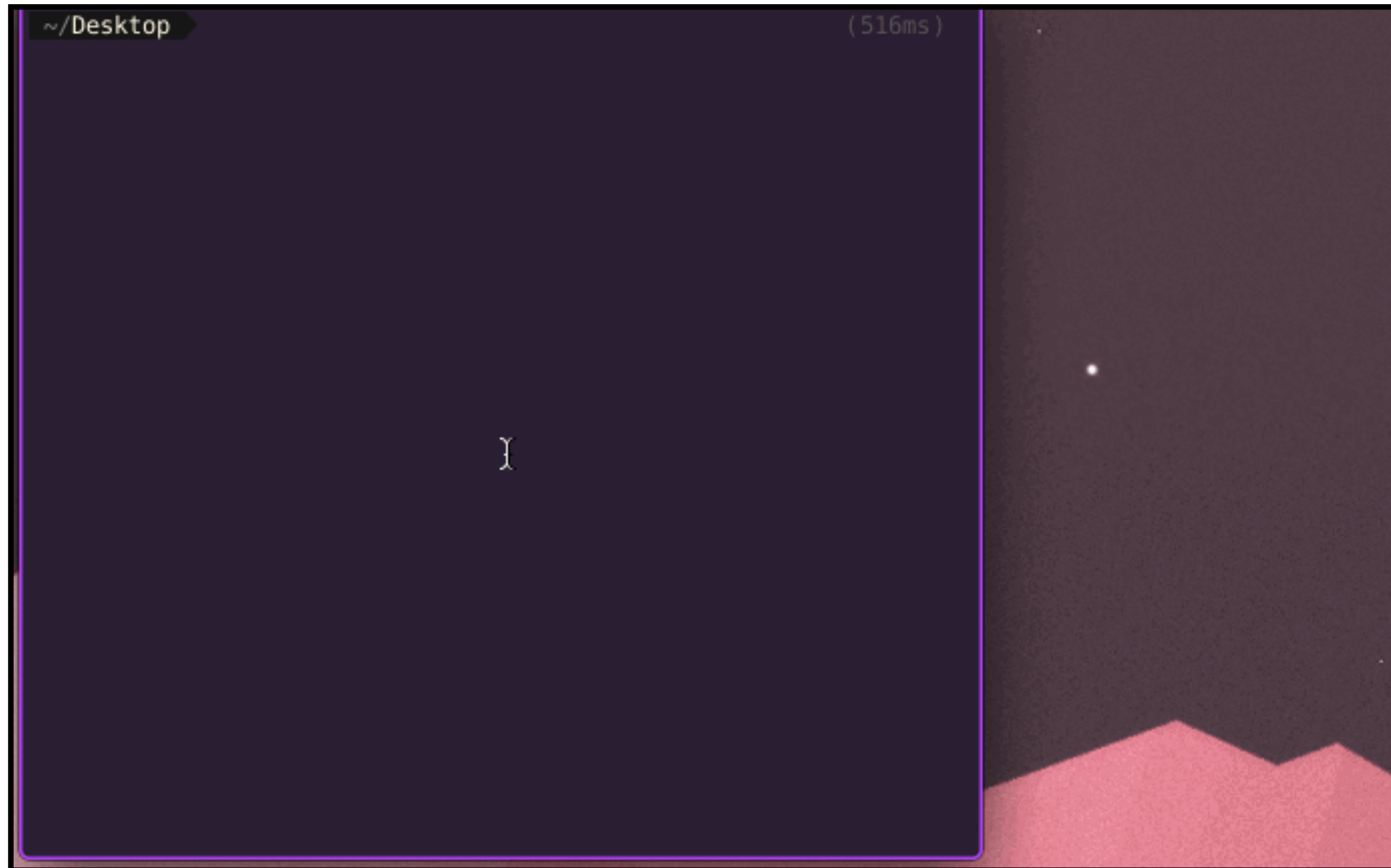
AN IPFS PRIMER

MEET THE CONTENT-ADDRESSABLE WEB

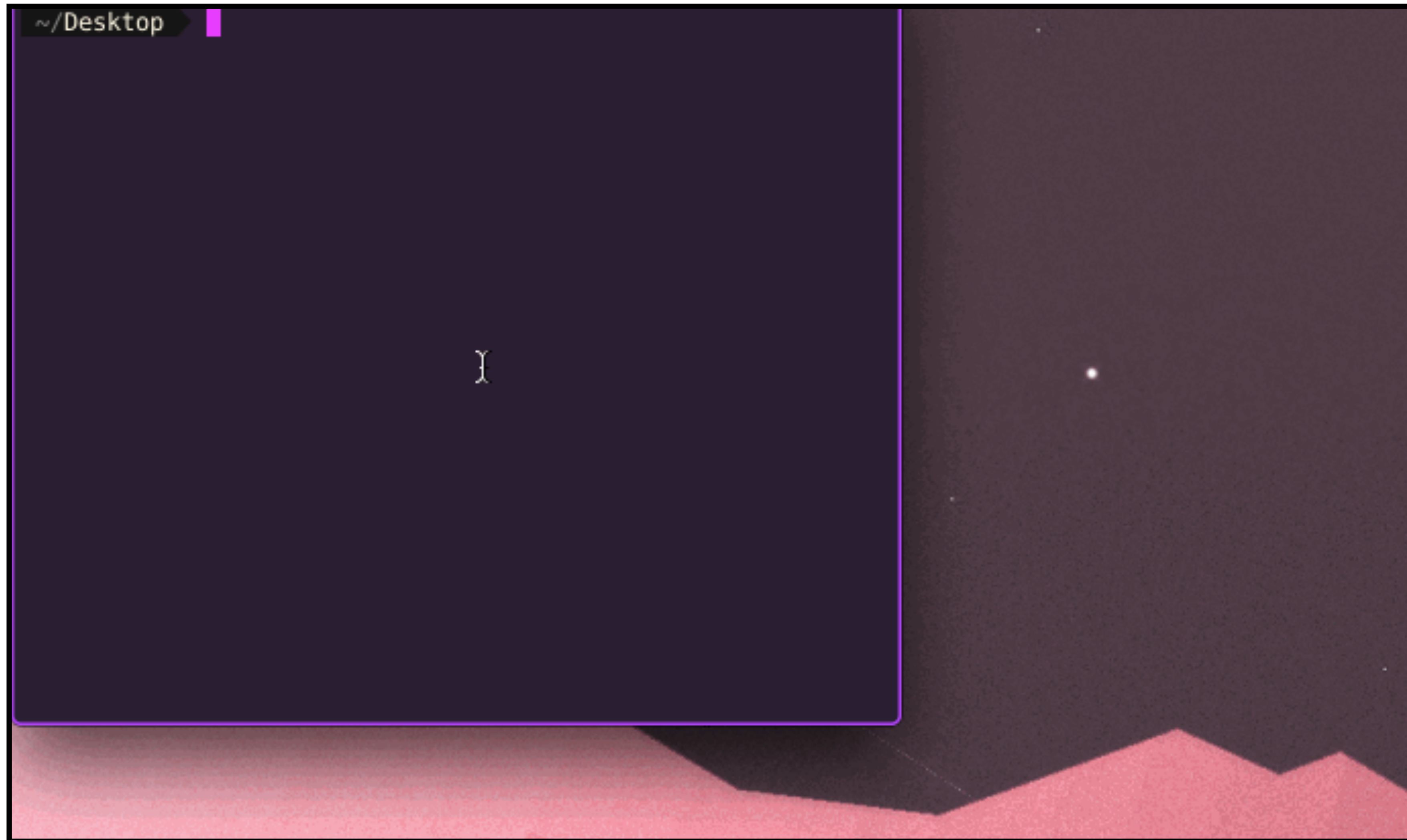
AN IPFS PRIMER
IN ACTION — TEXT (JSON, HTML, SOURCE, &C)



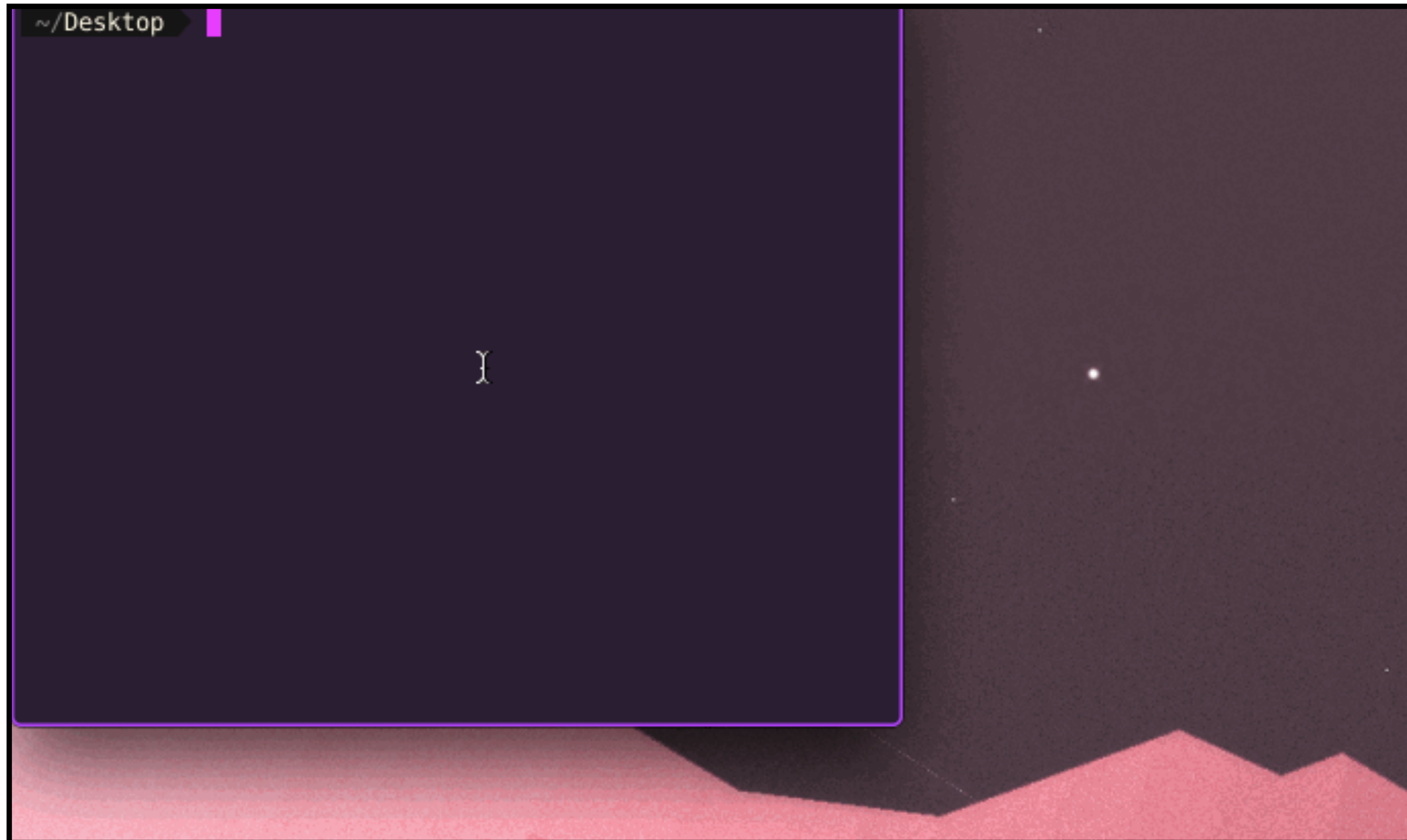
AN IPFS PRIMER
IN ACTION — TEXT (JSON, HTML, SOURCE, &C)



AN IPFS PRIMER
IN ACTION — IMAGE



AN IPFS PRIMER
IN ACTION — IMAGE



AN IPFS PRIMER

THE WEB TODAY

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- Predominantly single-source (per file) server/client

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- Like a key/value store **{ip => {path => content}}**

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 - DNS maps names to IP addresses
 - Focused on the physical network

VIRTUAL ADDRESS

PHYSICAL LOCATION

AN IPFS PRIMER

THE WEB TODAY

- Predominantly single-source (per file) server/client
- Like a key/value store **{ip => {path => content}}**
- “Location addressing”
 - DNS maps names to IP addresses
 - Focused on the physical network
- Mutable addressing via DNS
 - `www.foo.com/baz` may be JSON today, but a video tomorrow
 - ...or altered content

VIRTUAL ADDRESS

PHYSICAL LOCATION

AN IPFS PRIMER
CONTENT ADDRESSING

VIRTUAL ADDRESS

PHYSICAL LOCATION

AN IPFS PRIMER

CONTENT ADDRESSING

- A layer of abstraction above location

CONTENT ID

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PHYSICAL LOCATION

AN IPFS PRIMER

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- Like a key/value store **{hash(content) => content}**
 - Content hash AKA “content identifier” or CID
 - Special “universal” relationship to content

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- Focused on *the data*
- Does not care where it lives
- Still have paths
 - Immutable DAG
 - Why no loops?

CONTENT ID

VIRTUAL ADDRESS

PHYSICAL LOCATION

AN IPFS PRIMER
LINKED DATA

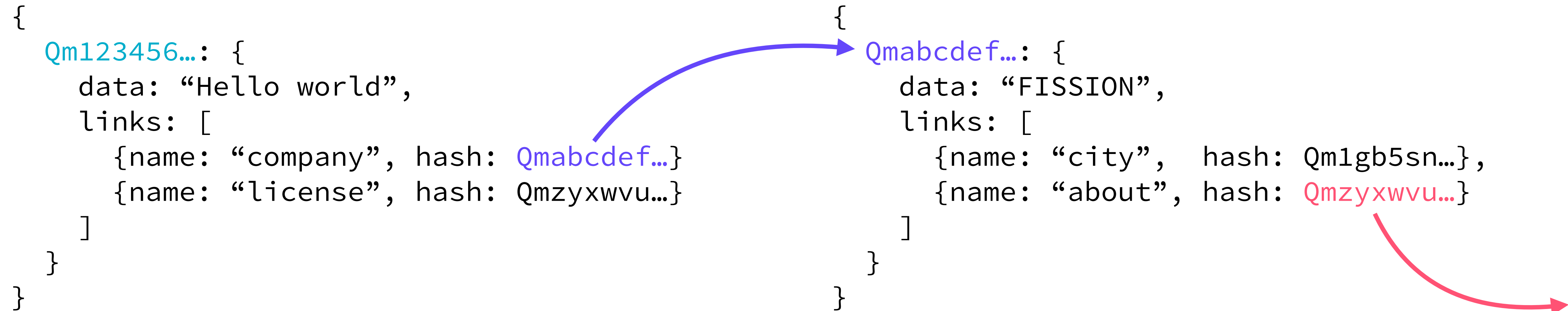
AN IPFS PRIMER

LINKED DATA

```
{
  Qm123456...: {
    data: "Hello world",
    links: [
      {name: "company", hash: Qmabcdef...}
      {name: "license", hash: Qmzyxwvu...}
    ]
  }
}
```

AN IPFS PRIMER

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      {name: "license", hash: Qmzyxwvu...}  
    ]  
  }  
}
```

```
{  
  Qmabcdef...: {  
    data: "FISSION",  
    links: [  
      {name: "city", hash: Qm1gb5sn...},  
      {name: "about", hash: Qmzyxwvu...}  
    ]  
  }  
}
```




```
ipfs cat /ipfs/Qm123456.../company/about/founder  
=> "Brooke"
```

AN IPFS PRIMER

ROUTING & LOOKUP  

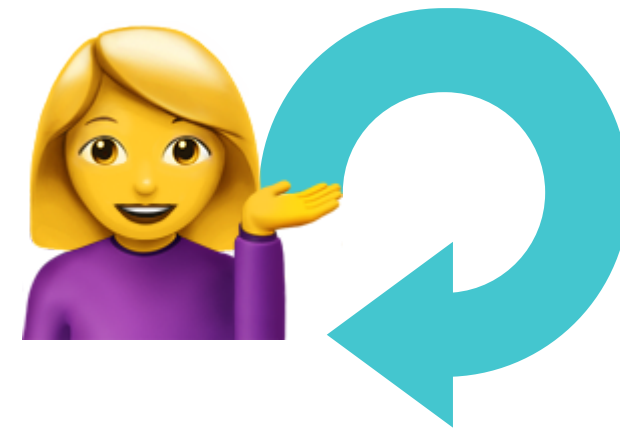
AN IPFS PRIMER

ROUTING & LOOKUP  



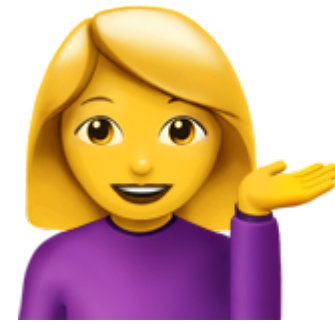
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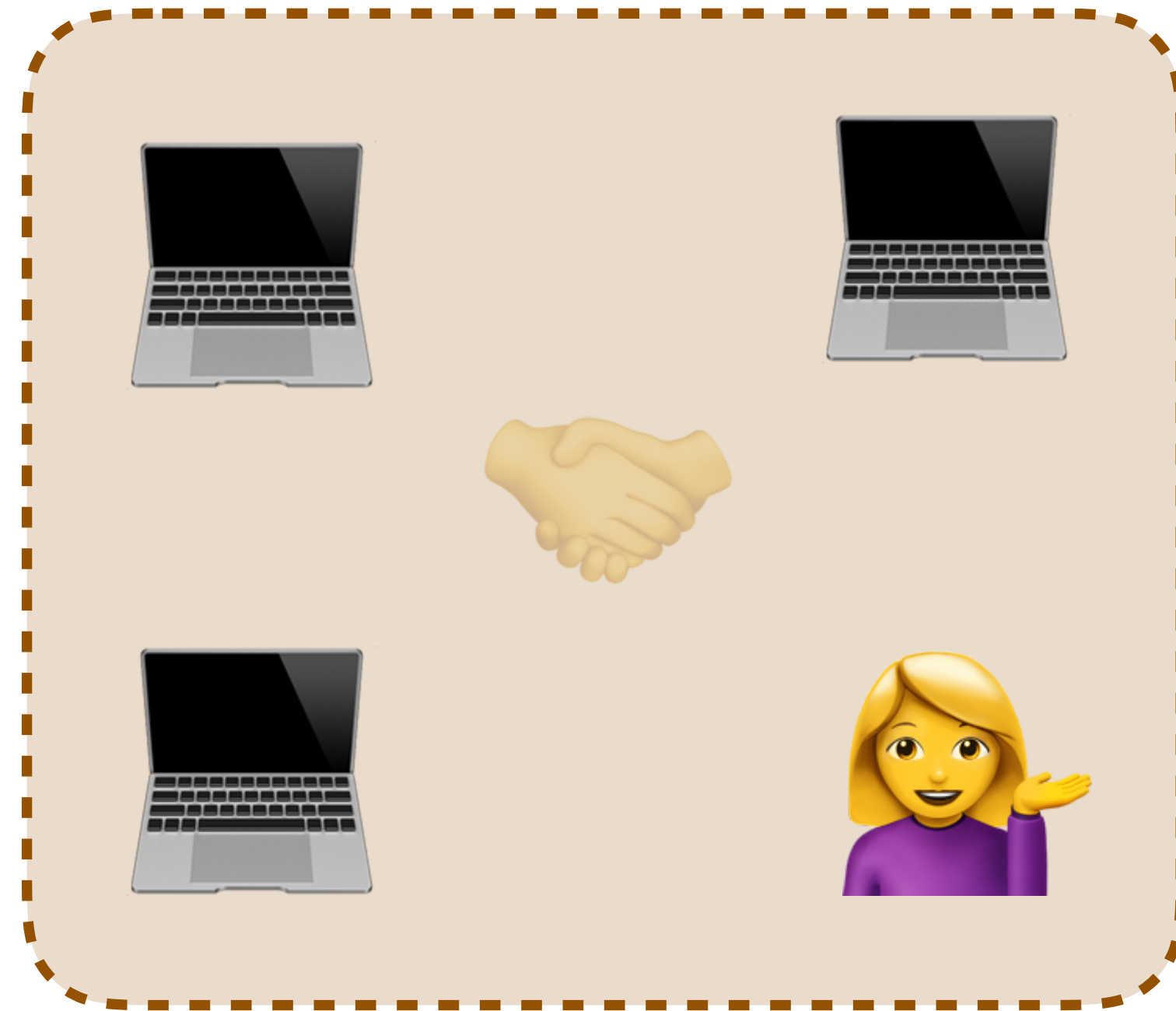
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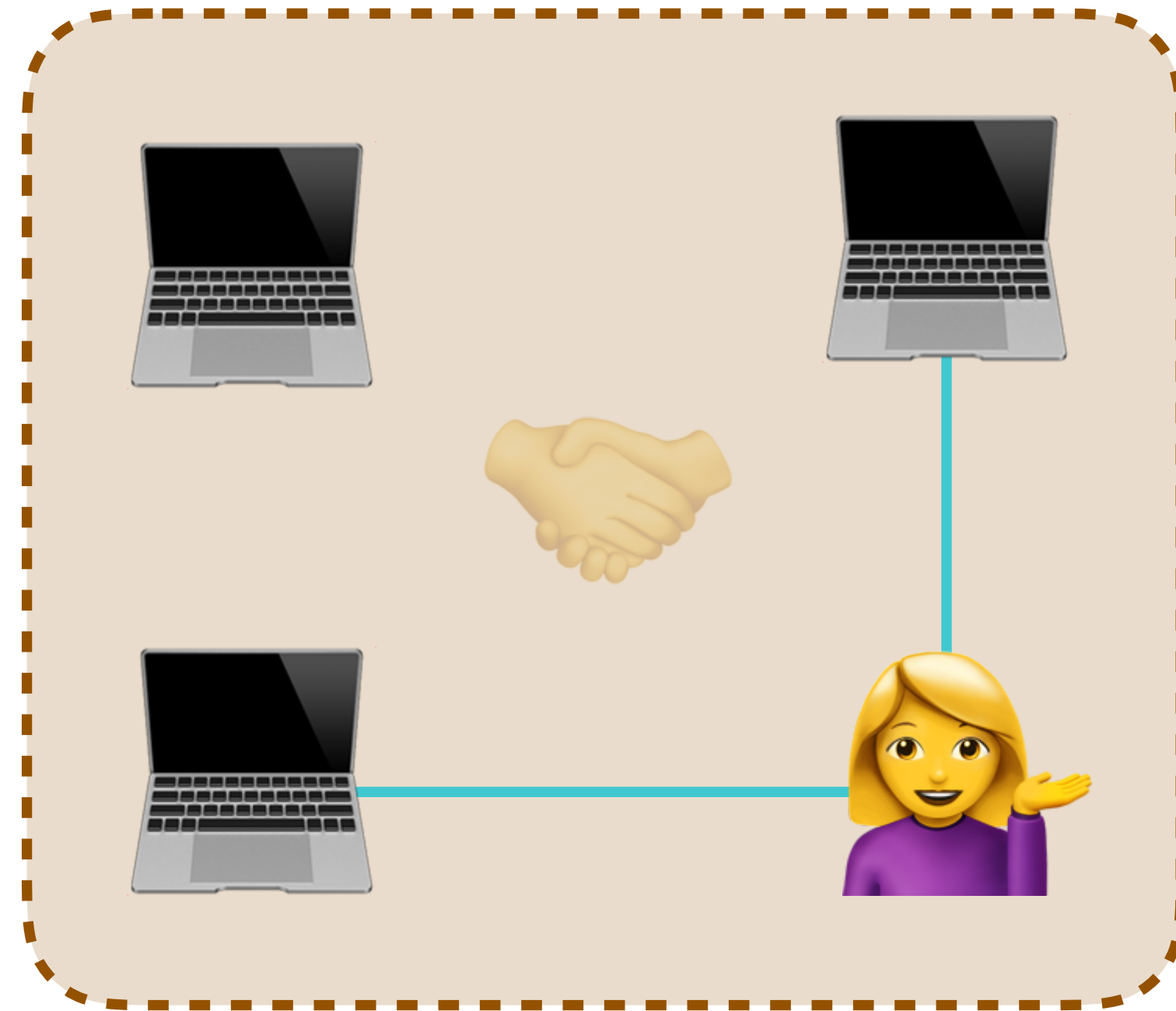
AN IPFS PRIMER

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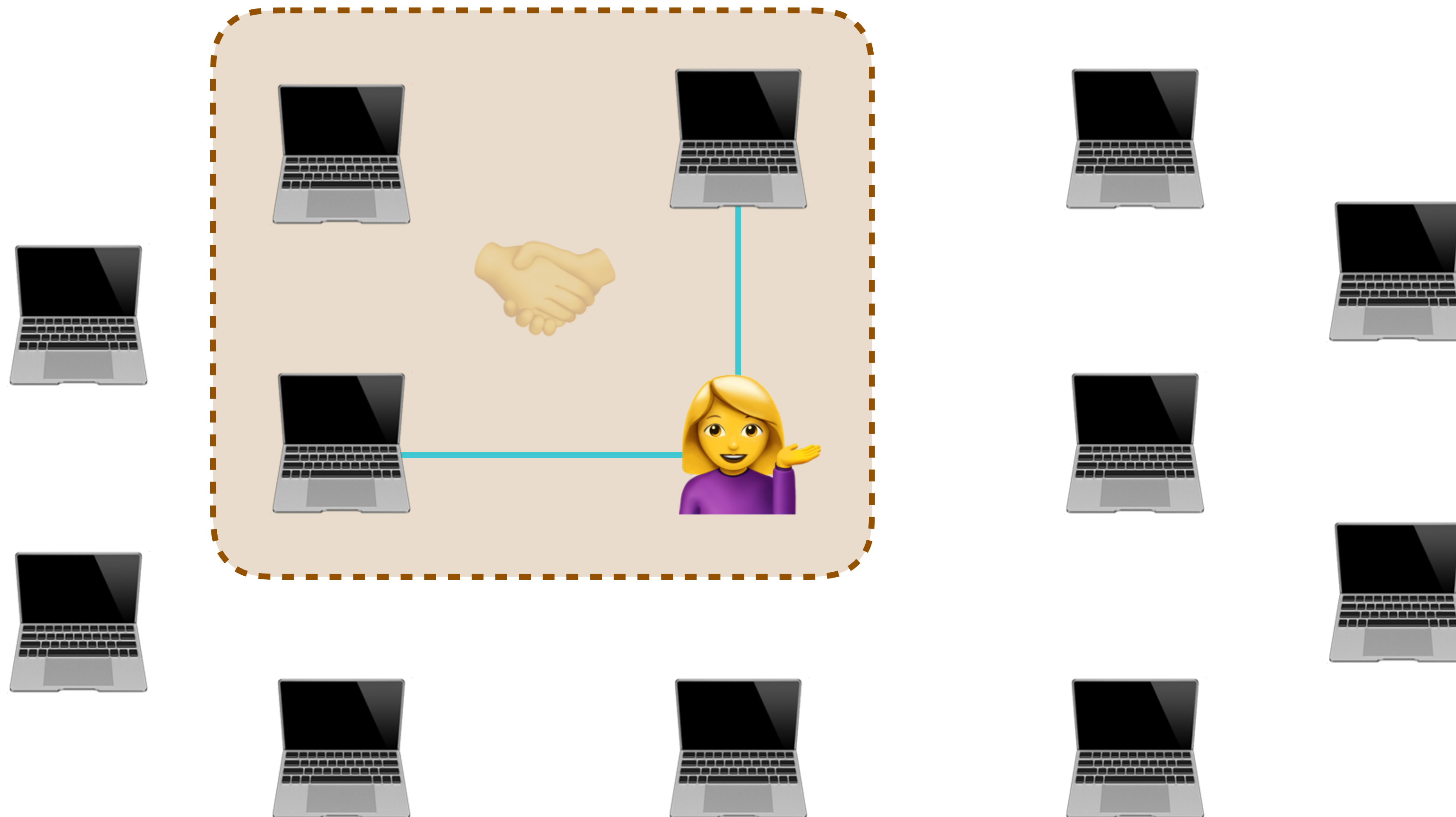


AN IPFS PRIMER

ROUTING & LOOKUP 🔍🌊

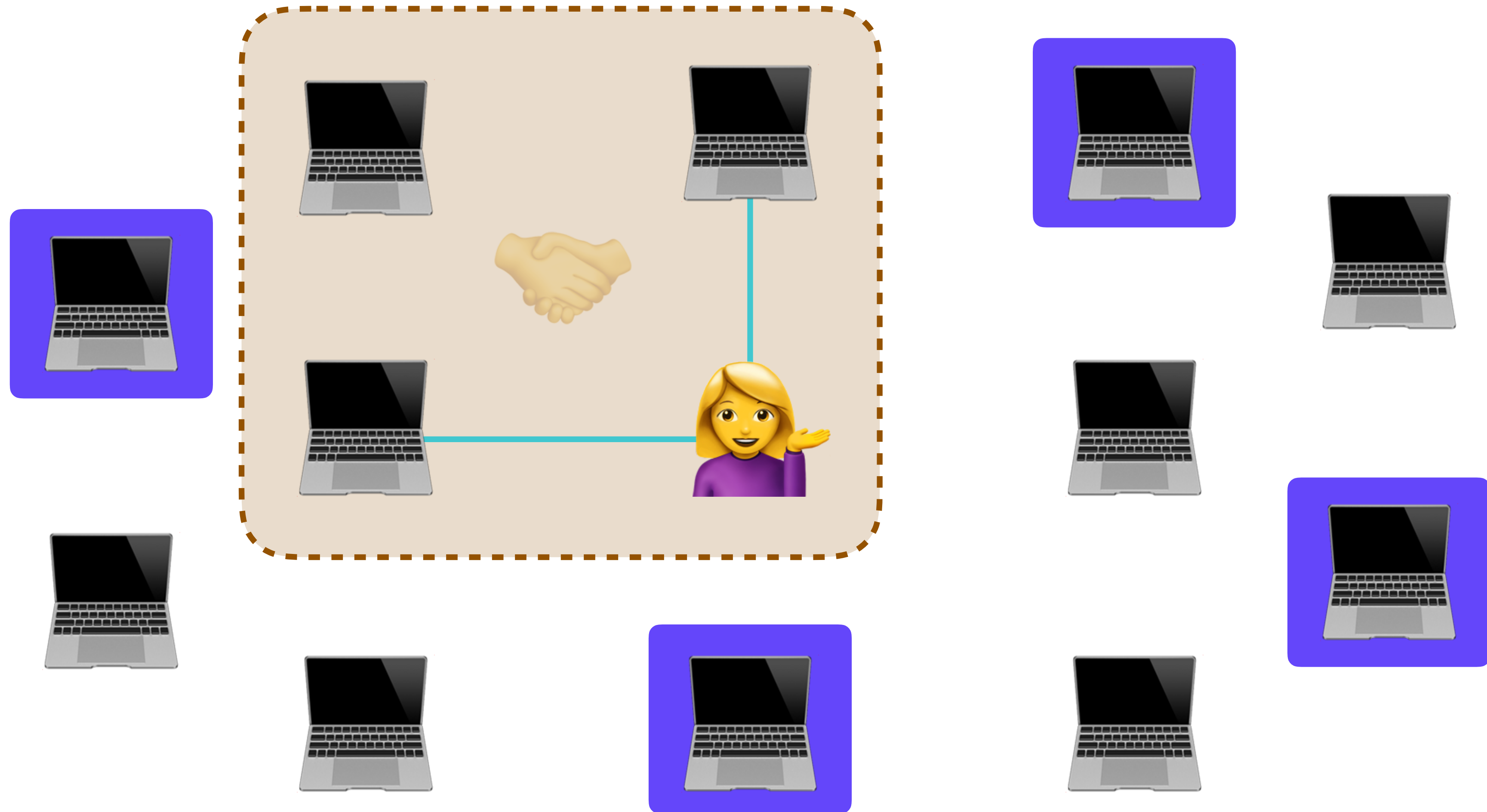


AN IPFS PRIMER ROUTING & LOOKUP 🔍🌊



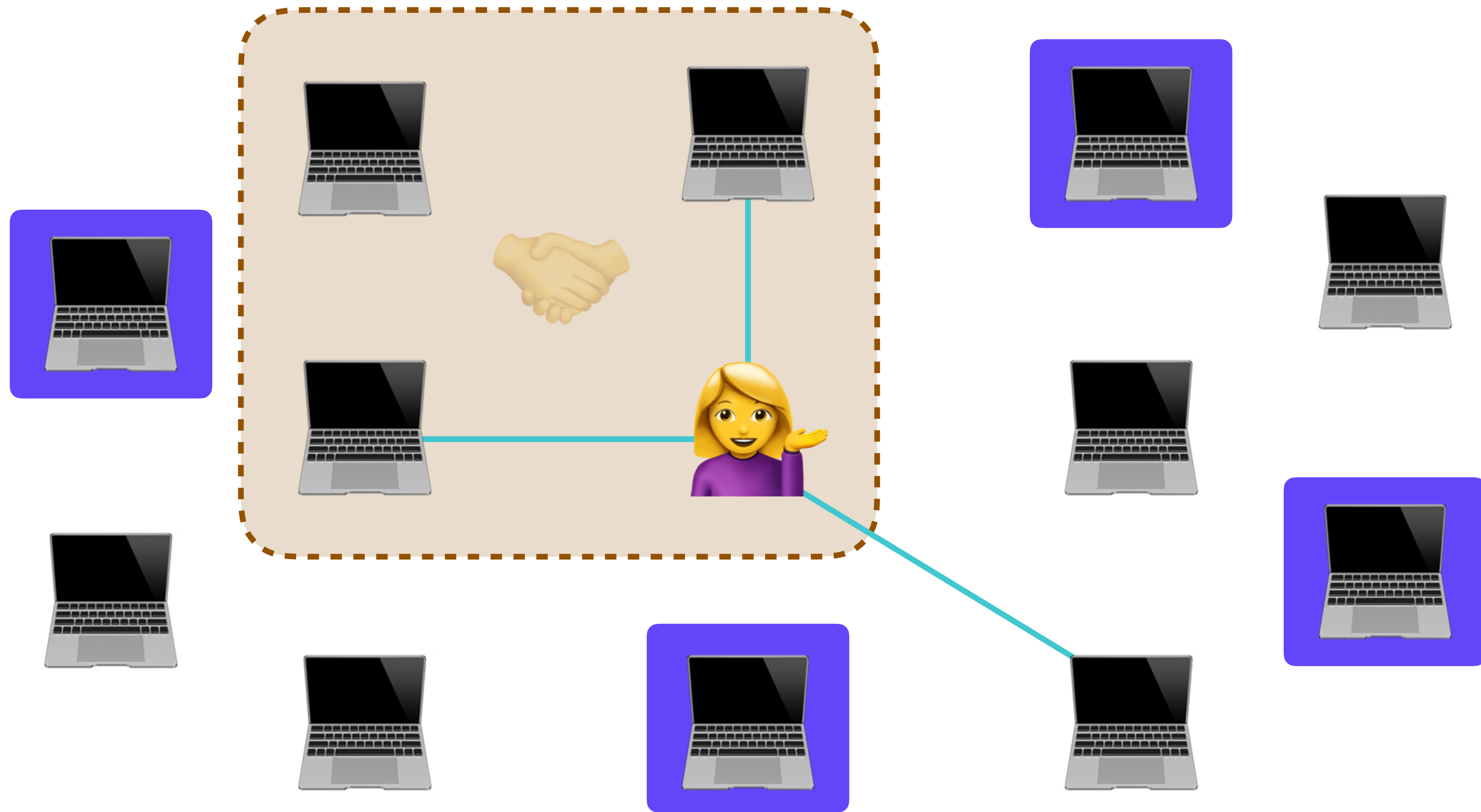
AN IPFS PRIMER

ROUTING & LOOKUP 🔍🌊



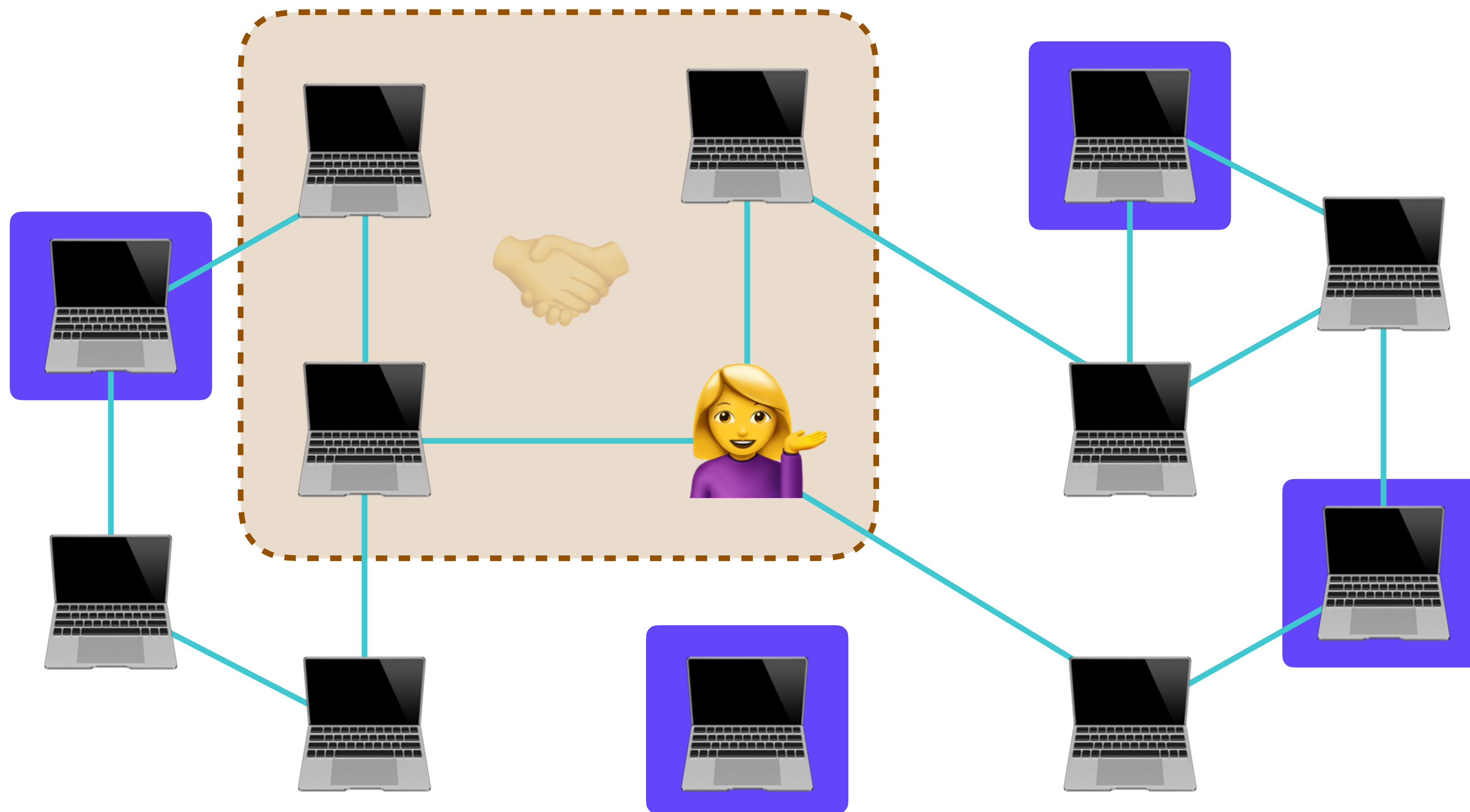
AN IPFS PRIMER

ROUTING & LOOKUP 🔍🌊



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ROUTING & LOOKUP 🔍🌊



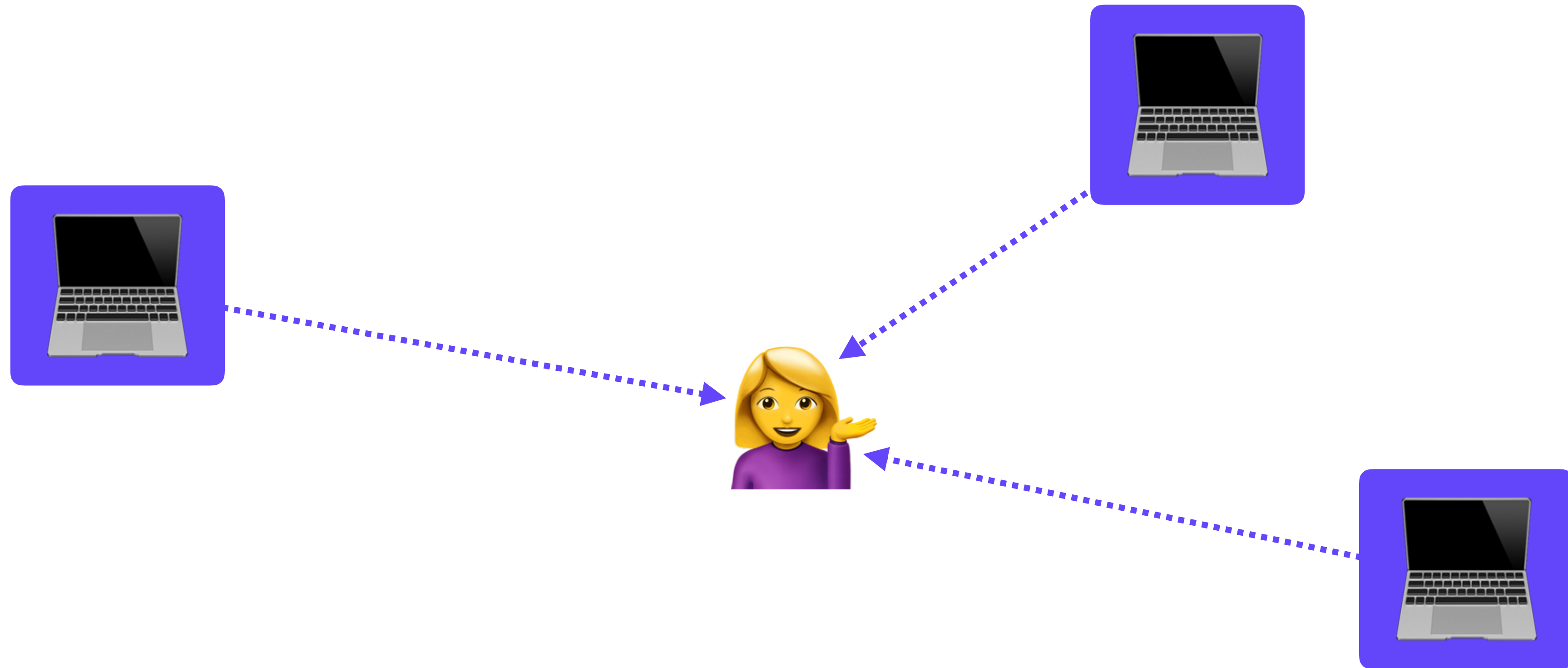
AN IPFS PRIMER

ROUTING & LOOKUP



AN IPFS PRIMER

ROUTING & LOOKUP



AN IPFS PRIMER

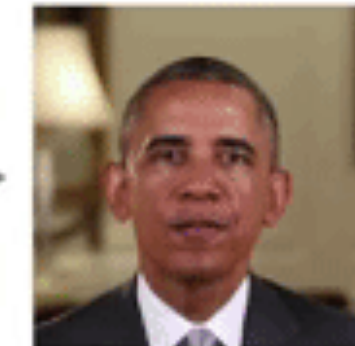
AUTHENTIC DATA (FINGERPRINTING)



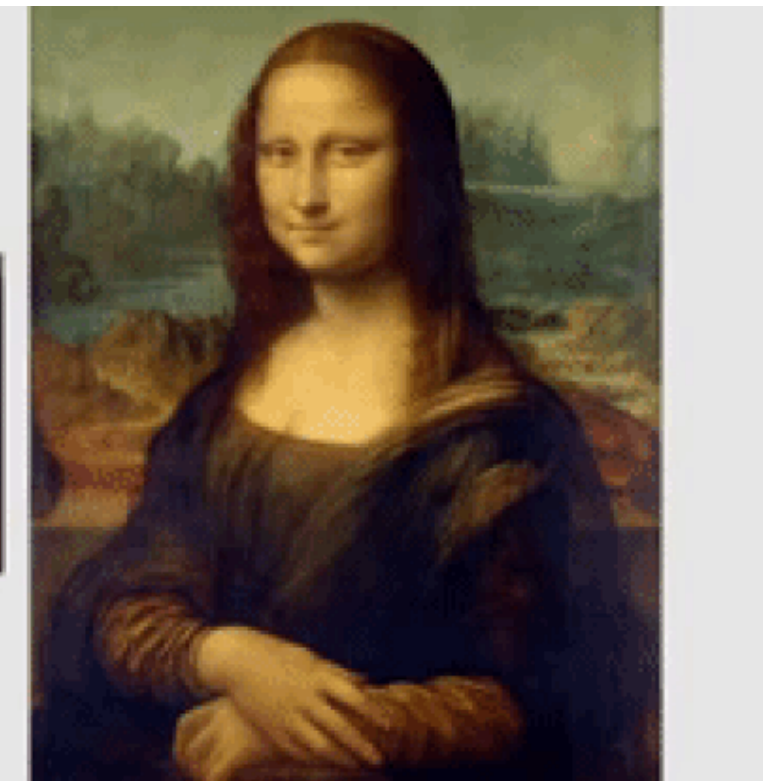
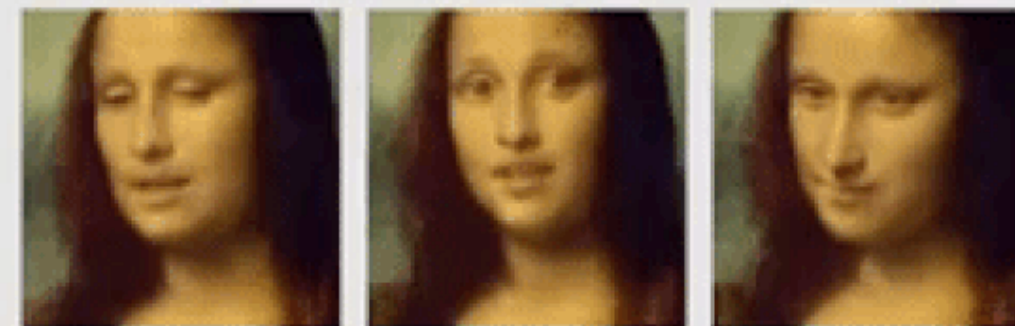
Source Sequence



Conditioning Images



Result (Target)



AN IPFS PRIMER

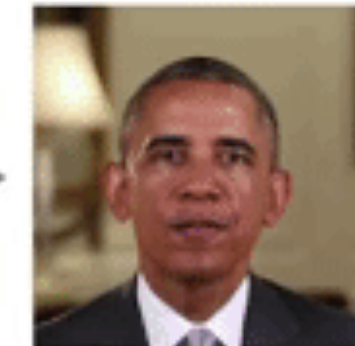
AUTHENTIC DATA (FINGERPRINTING)



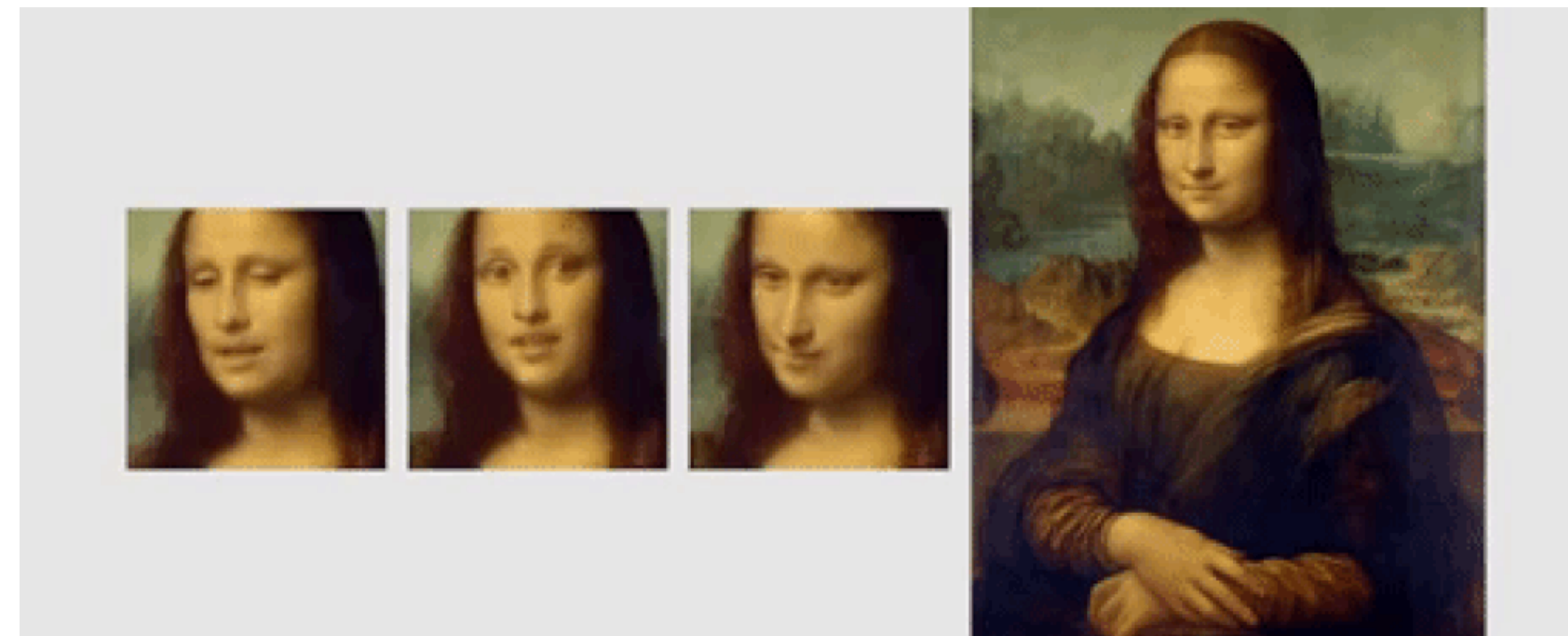
Source Sequence



Conditioning Images



Result (Target)





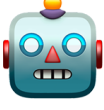





AN IPFS PRIMER

ONE NAMESPACE TO RULE THEM ALL  

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- Same file = same hash
 - No matter when 
 - No matter where  
 - No matter who     

AN IPFS PRIMER

ONE NAMESPACE TO RULE THEM ALL

- Same file = same hash
 - No matter when 
 - No matter where  
 - No matter who     
- Zero file duplication per node
- Replication = CDN-like features
- Immutable data structures
- Files & data living together!



AN IPFS PRIMER

DISADVANTAGES (IN MID-2019)

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- vs. location-addressing
 - Less consistent lookup performance
 - Not yet natively supported by browsers (other than Opera for Android)

AN IPFS PRIMER

DISADVANTAGES (IN MID-2019)

- vs. location-addressing
 - Less consistent lookup performance
 - Not yet natively supported by browsers (other than Opera for Android)
- vs. blockchain
 - No availability guarantee



AN IPFS PRIMER
DEVELOPMENT

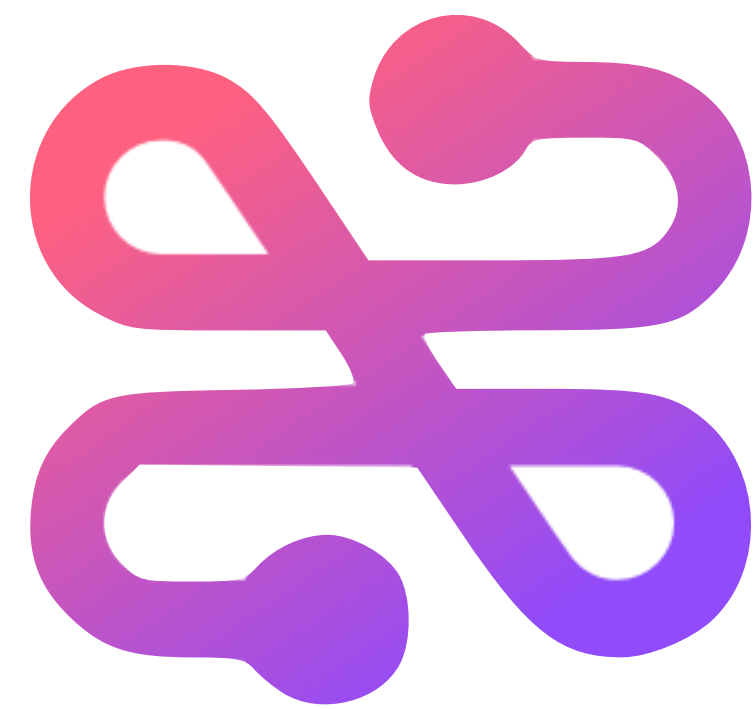
AN IPFS PRIMER DEVELOPMENT

- Backed by Protocol Labs 

AN IPFS PRIMER

DEVELOPMENT

- Backed by Protocol Labs 
- FileCoin 
 - Pre-ICO: raised \$52M USD
 - ICO: \$200M USD
 - Network launching “soon”



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WHAT ARE WE DOING WITH THE DISTRIBUTED WEB?



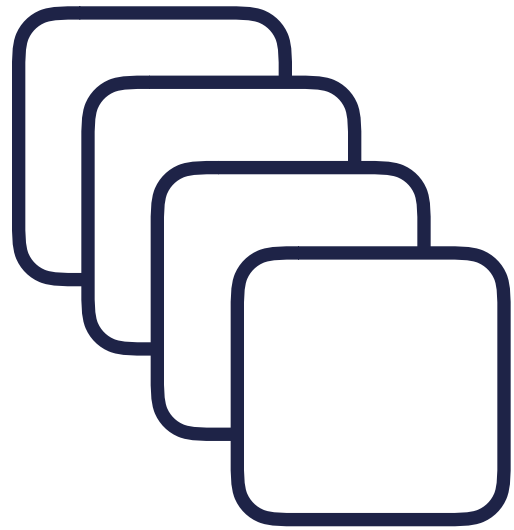
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PARADIGM WAVES



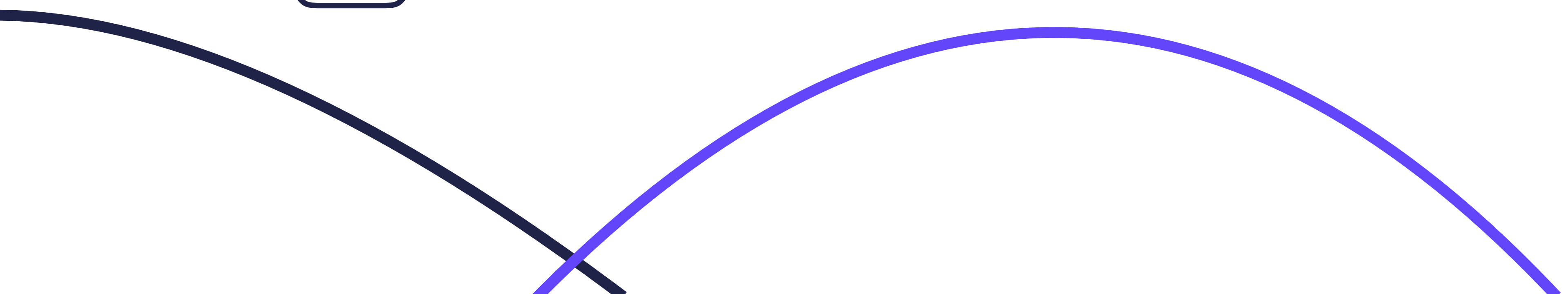
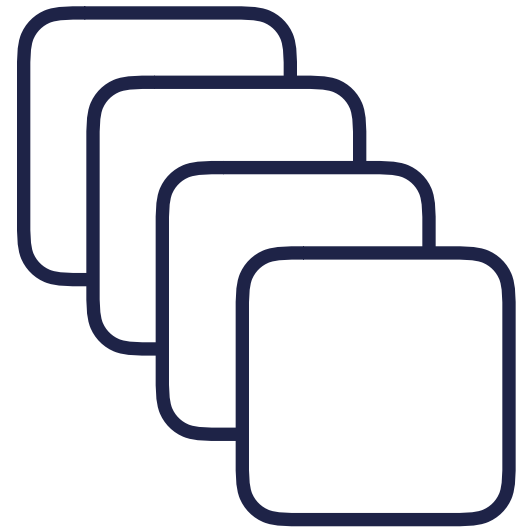
PARADIGM WAVES

CONTAINERS



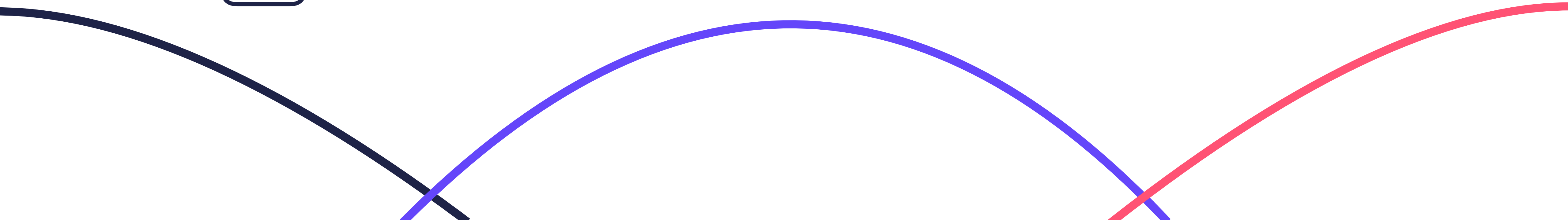
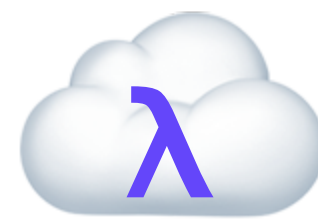
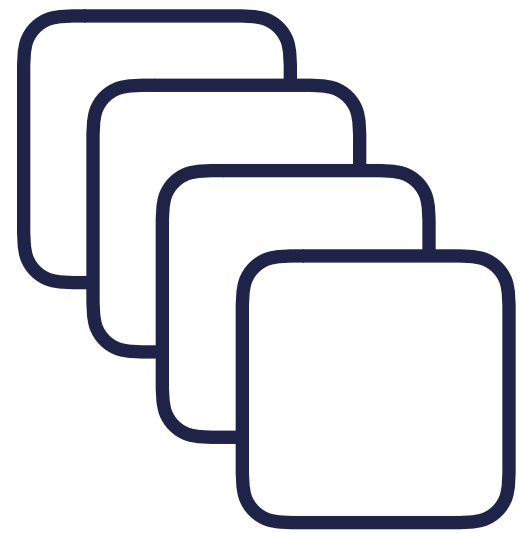


PARADIGM WAVES





PARADIGM WAVES

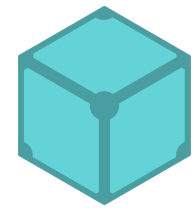




A PLATFORM FOR THE NEXT WAVE



A PLATFORM FOR THE NEXT WAVE



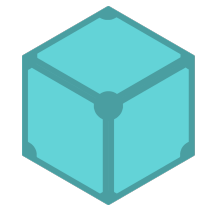
Global
Storage

FILES 

DATABASE 



A PLATFORM FOR THE NEXT WAVE



Global
Storage

FILES 

DATABASE 



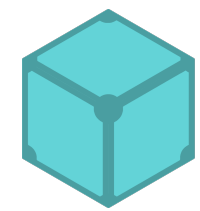
Digital
Scarcity

IDENTITY 

ASSETS 



A PLATFORM FOR THE NEXT WAVE



**Global
Storage**

FILES 

DATABASE 



**Digital
Scarcity**

IDENTITY 

ASSETS 



**Portable
Compute**

DISTRIBUTED COMPUTE 

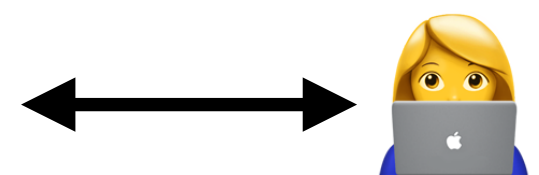
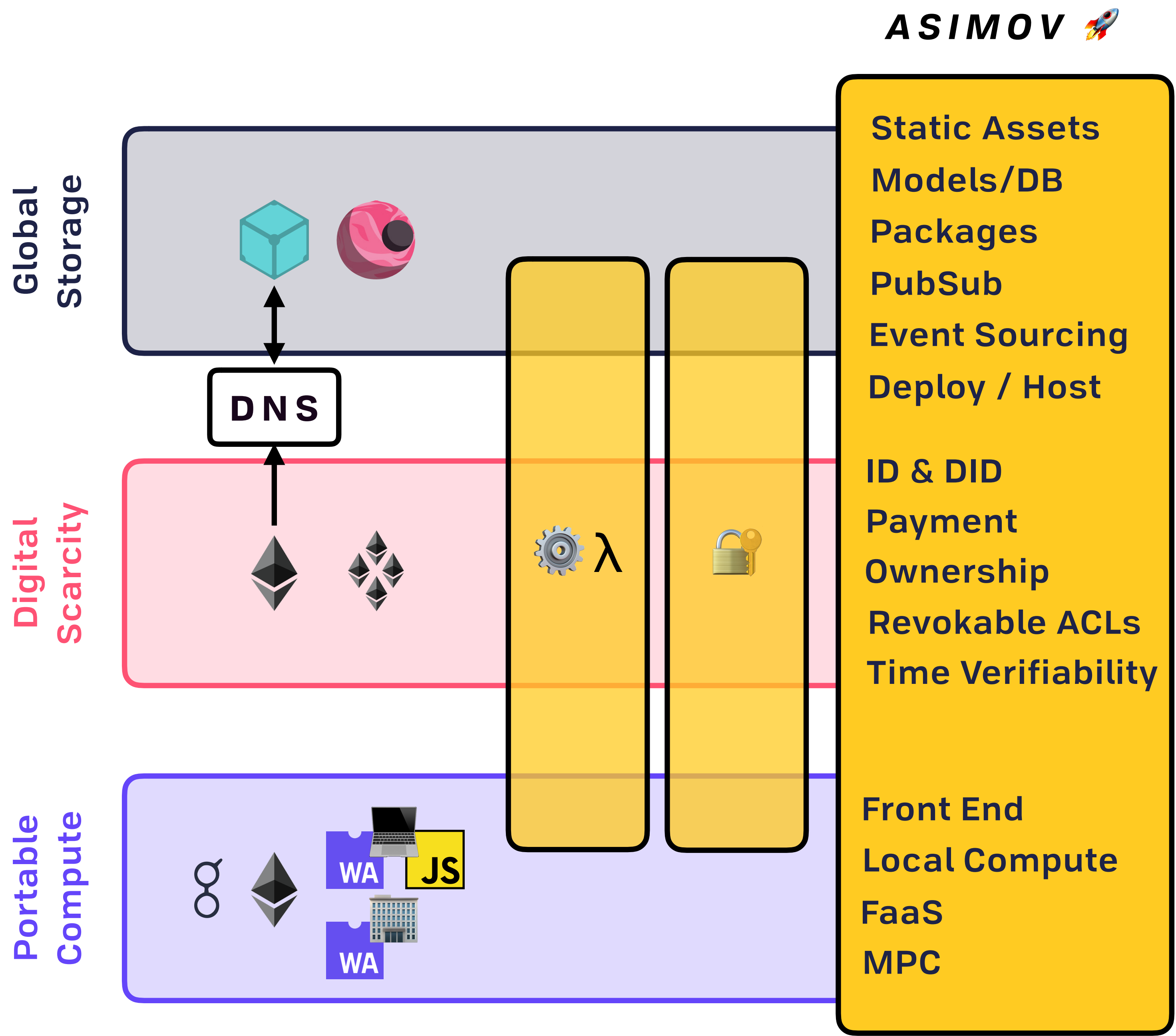
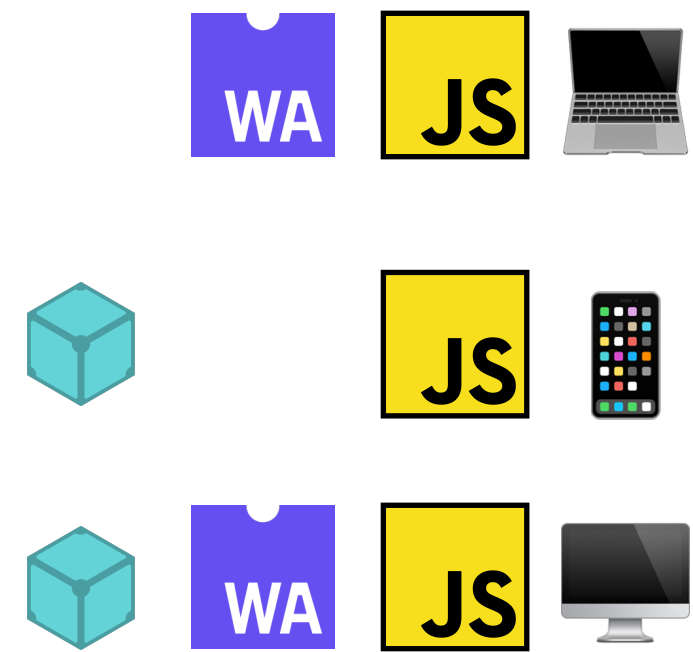
SMART CONTRACTS 



ASIMOV: FISSION FRAMEWORK

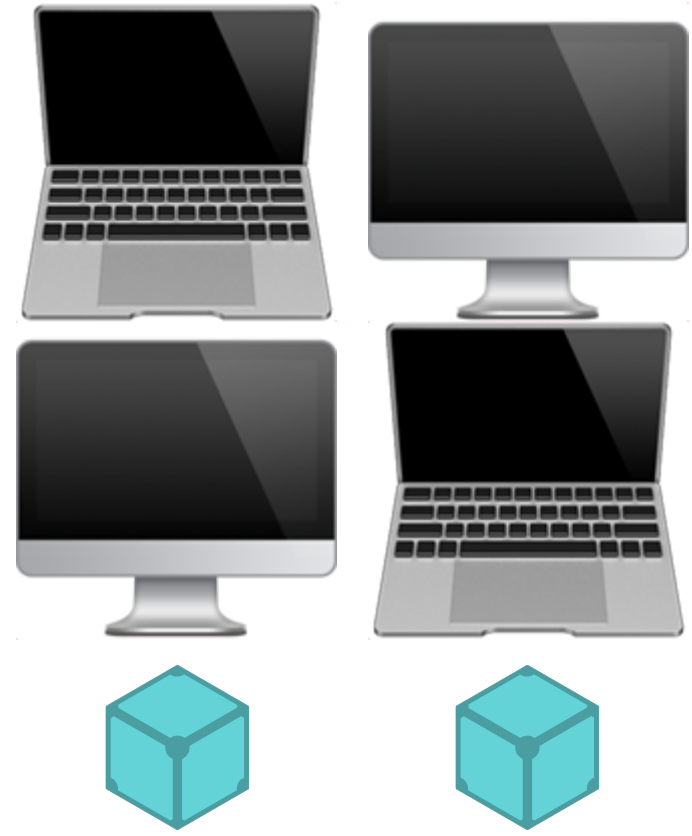
- **Asimov** is our opinionated, batteries-included hostless framework
- The “Rails” for the needs of 2020 and beyond
 - Hybrid private/public infrastructure (IPFS, Ethereum, Wasm, P2P, Cloud)
 - Public infra means FE libraries can include deployment, DB, &c
 - Makes distributed & web development feel more like native app dev

fission
ASIMOV

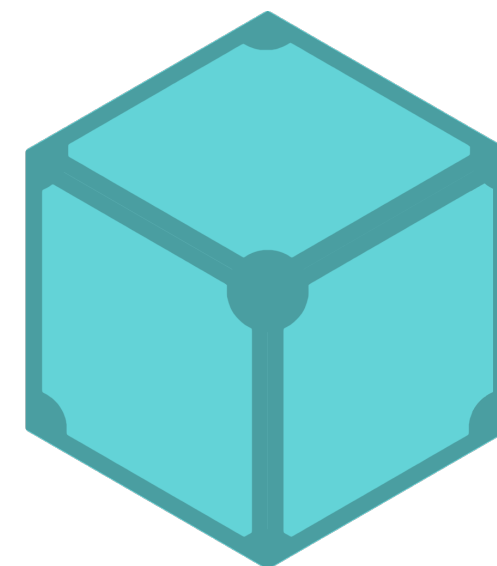




BETTER LIVING THROUGH SCIENCE 🧑💻 🧑💻

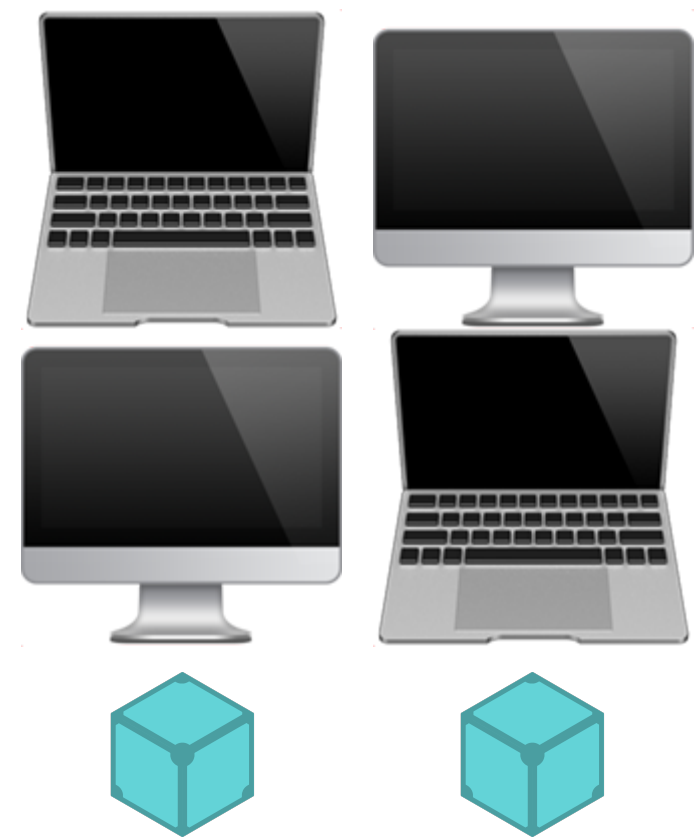


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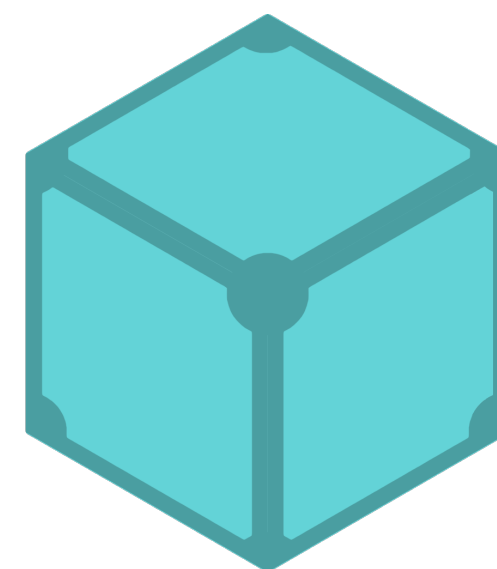




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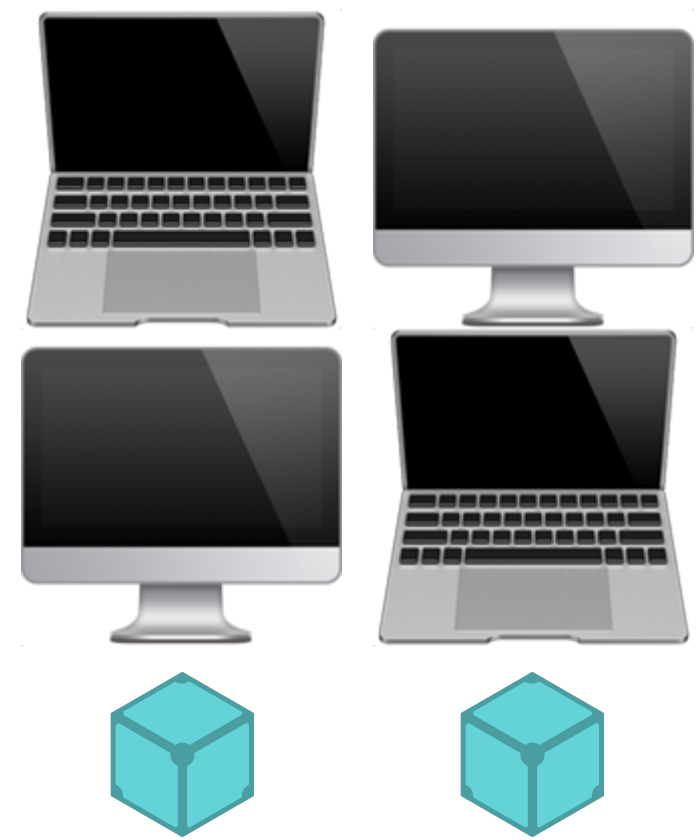


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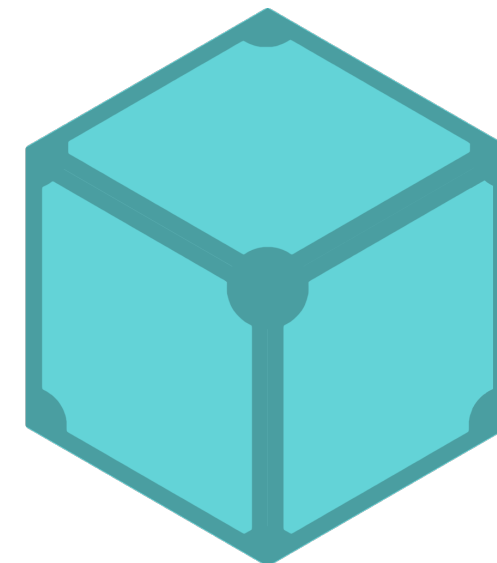
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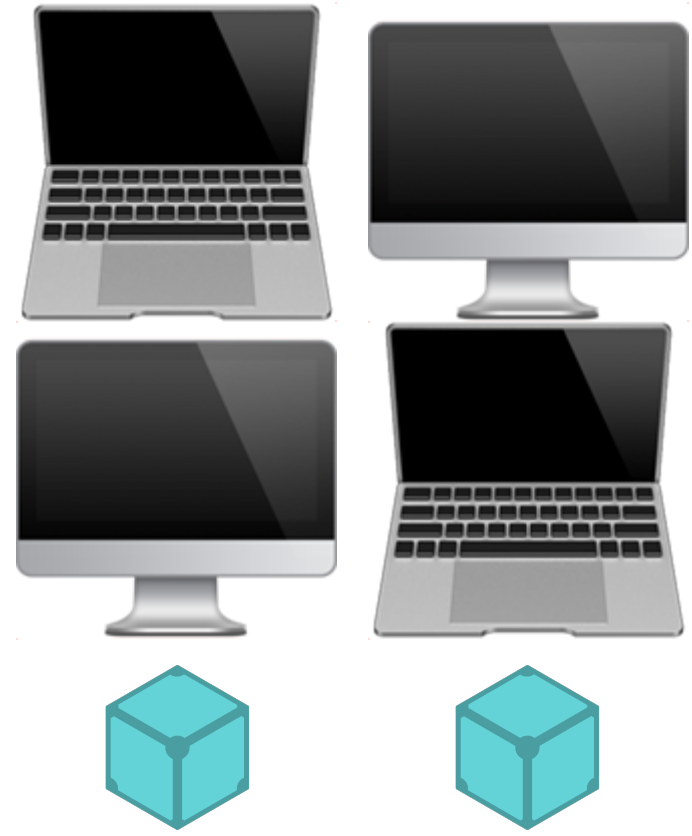


TXT => CID

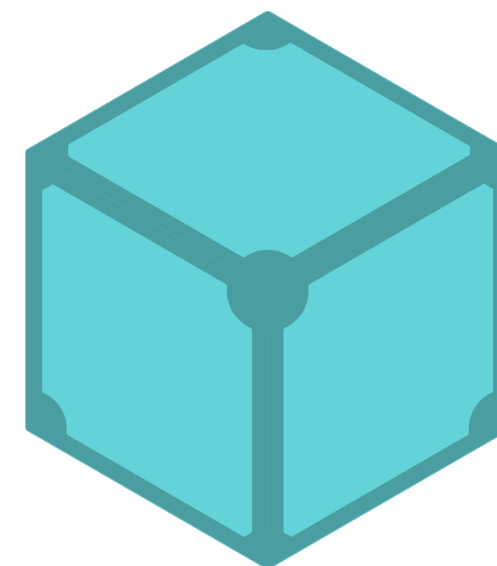




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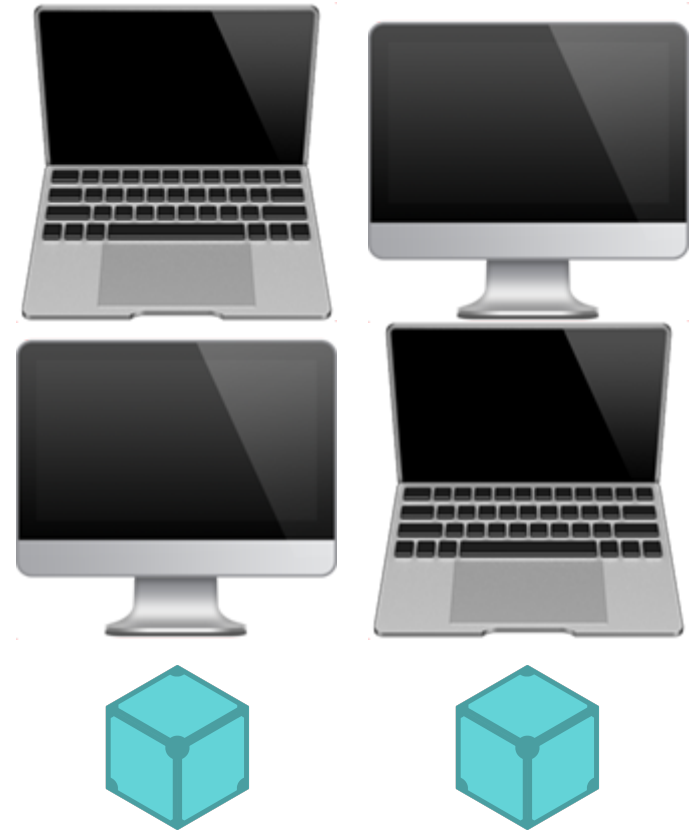


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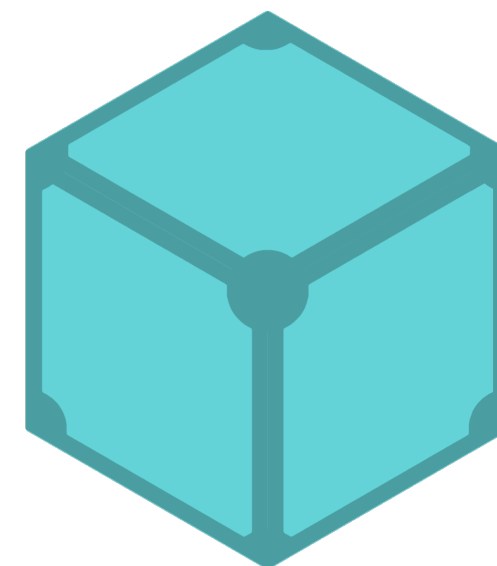




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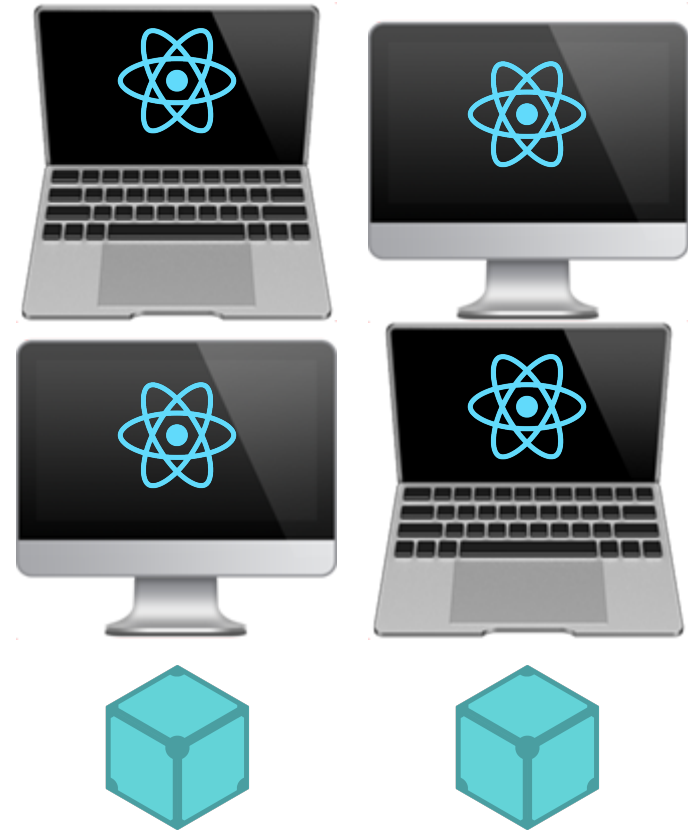


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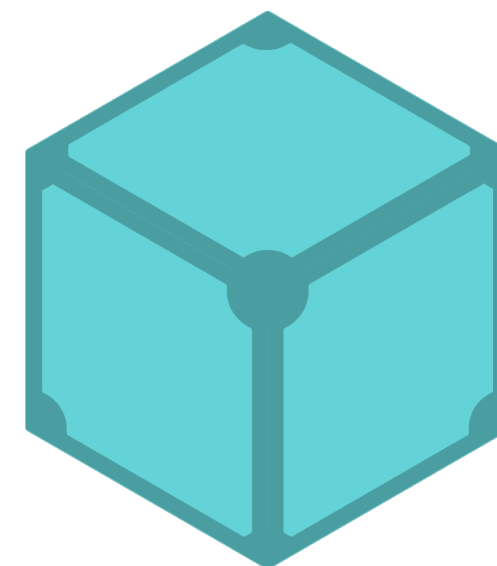




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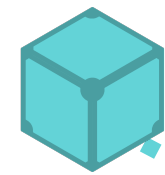
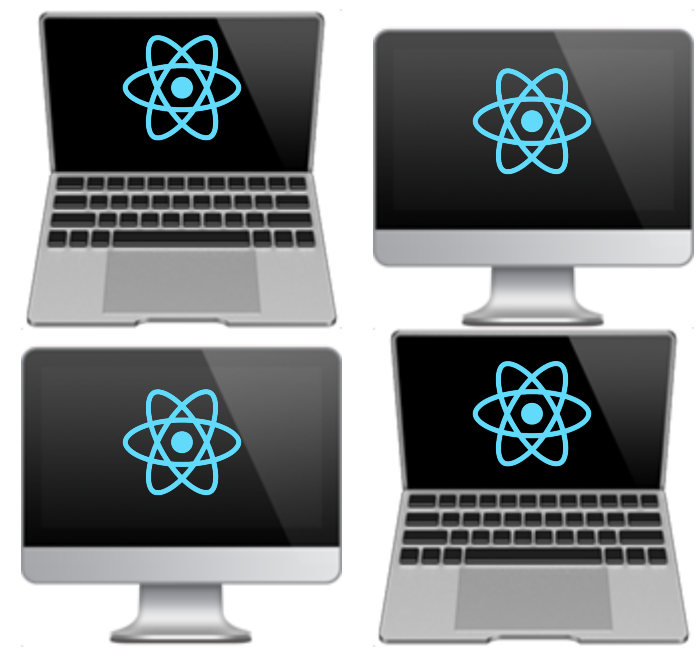


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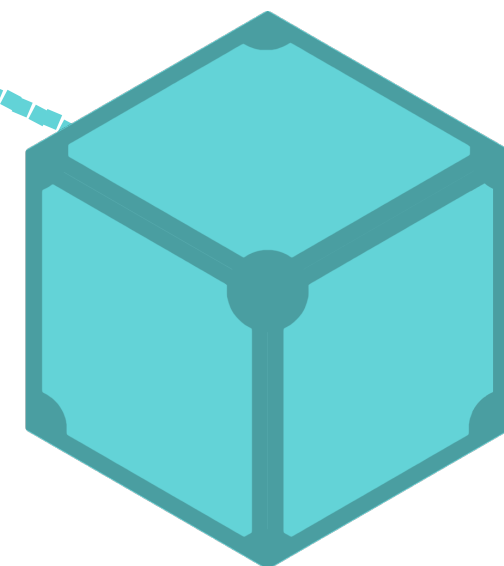
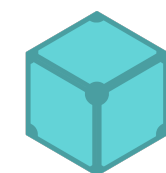
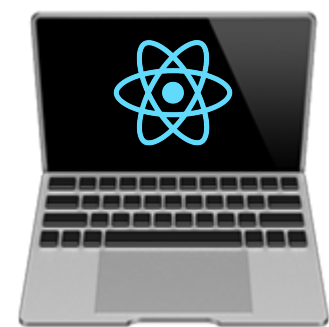




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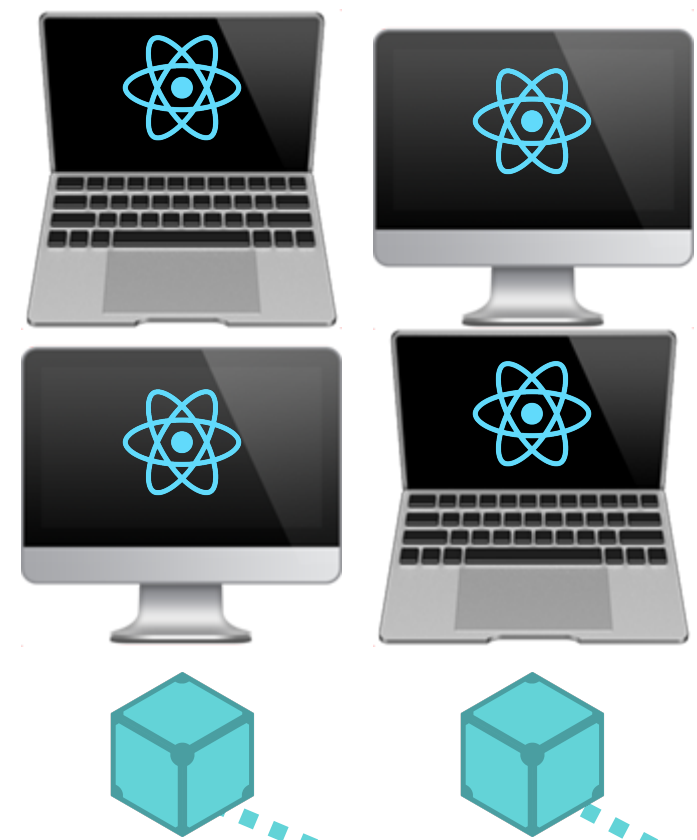


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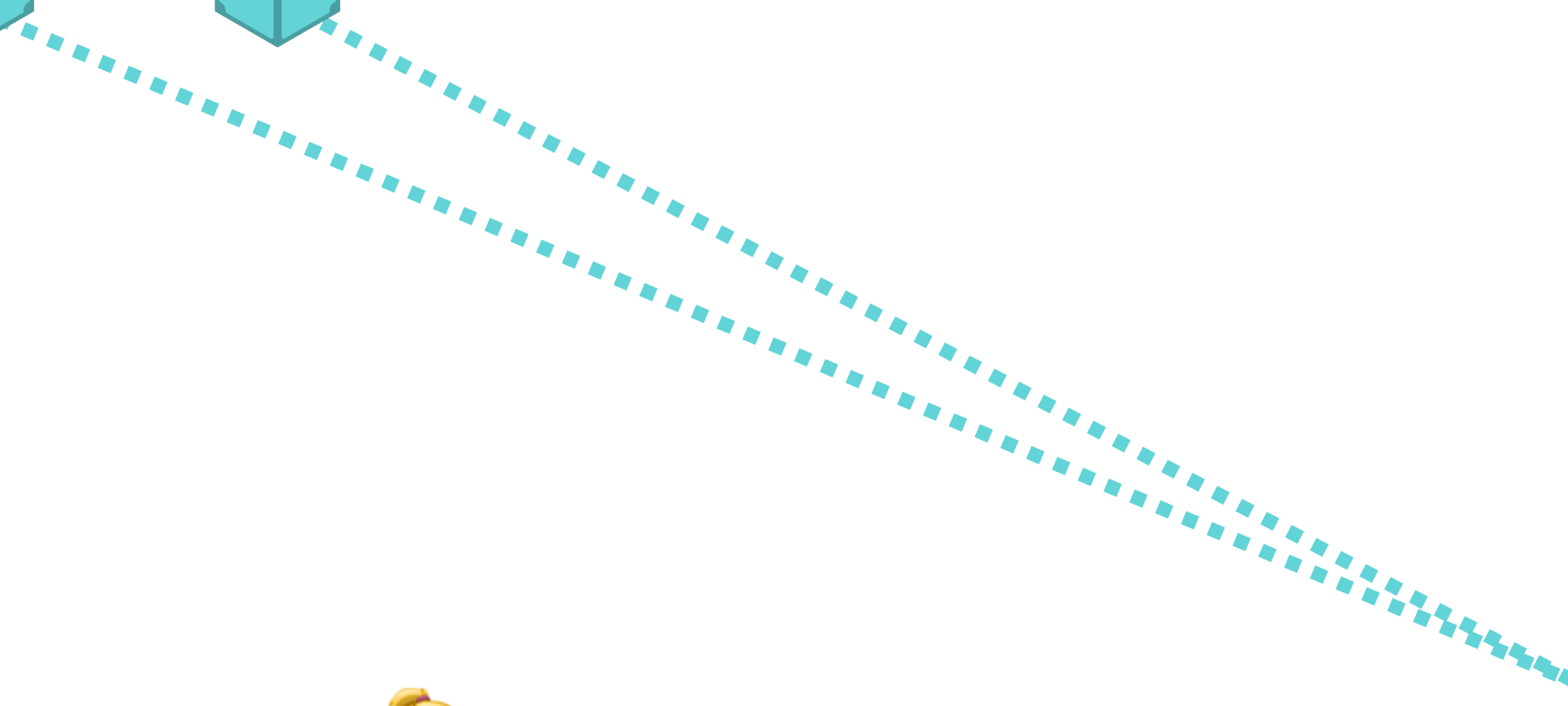
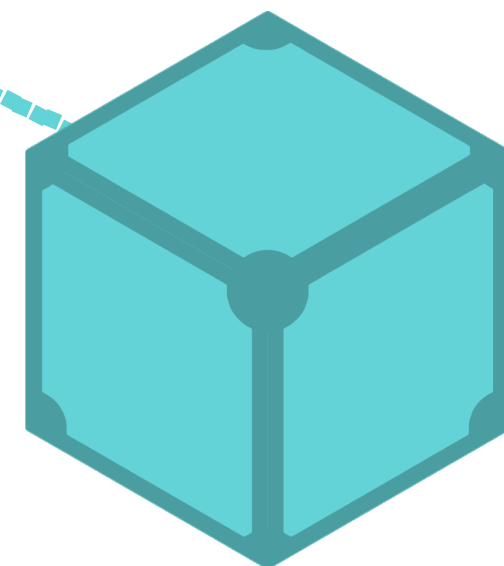




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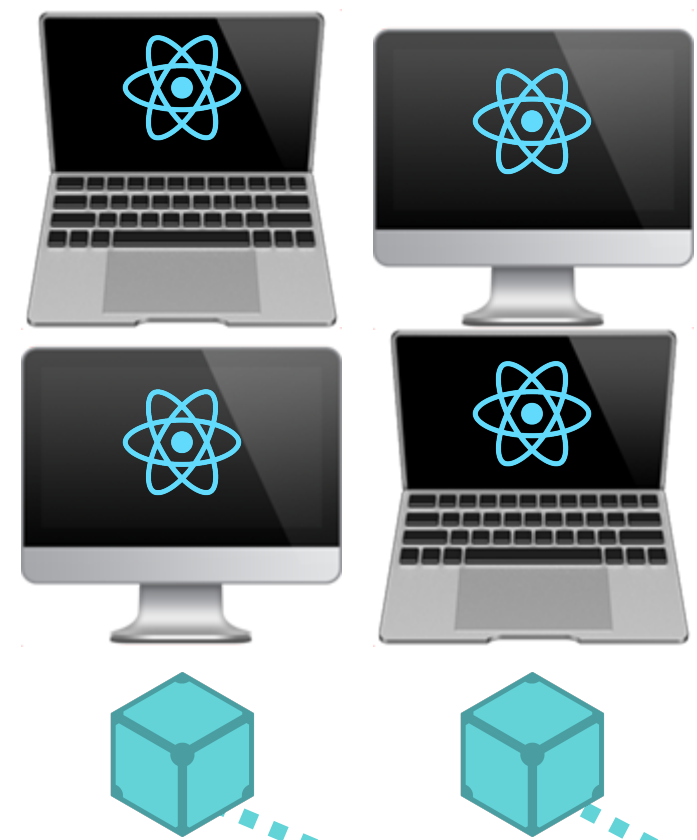


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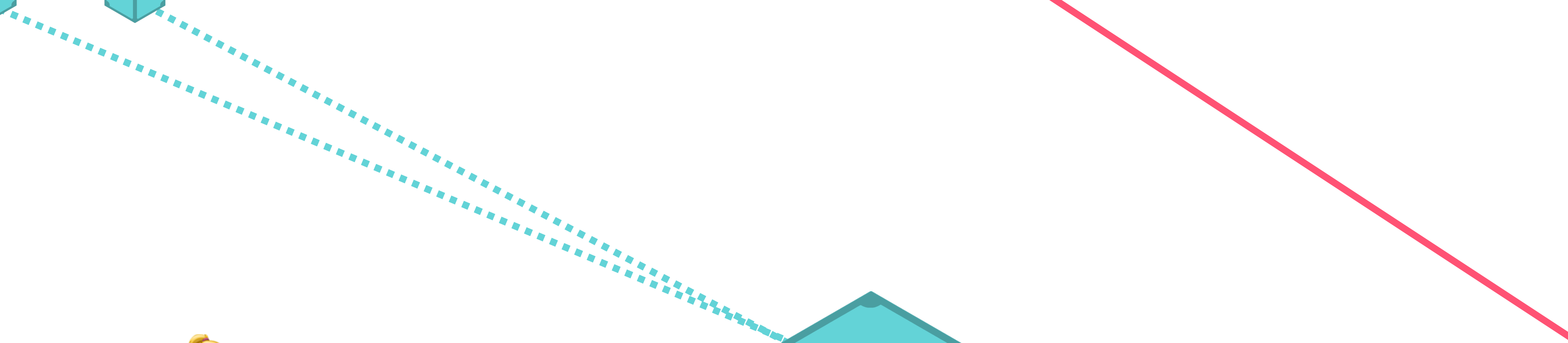
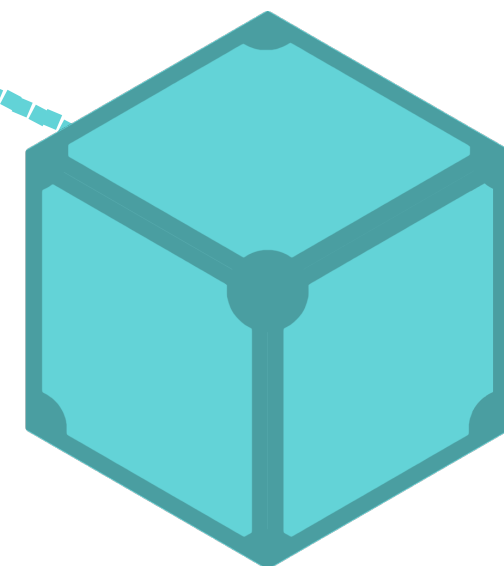
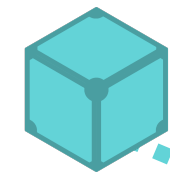




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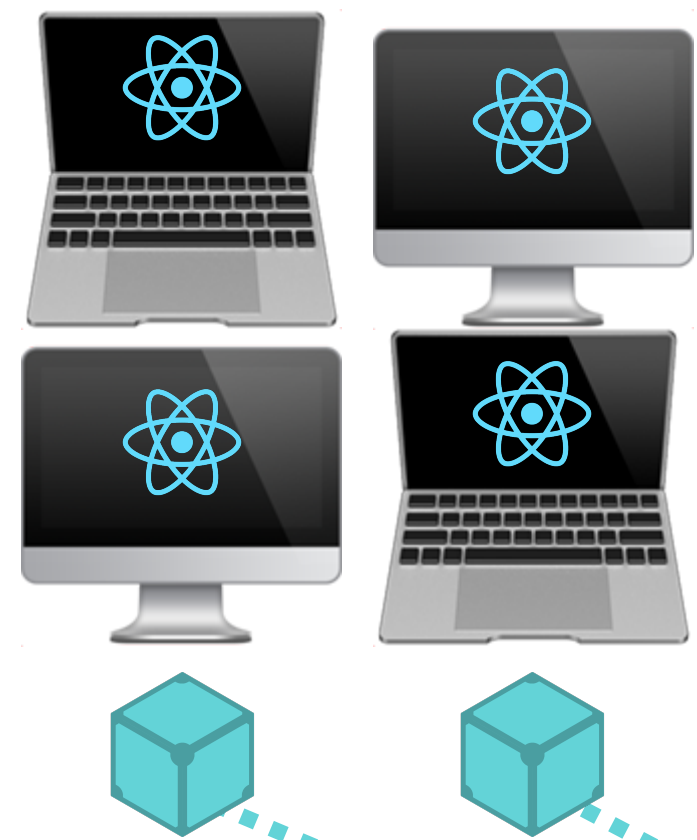


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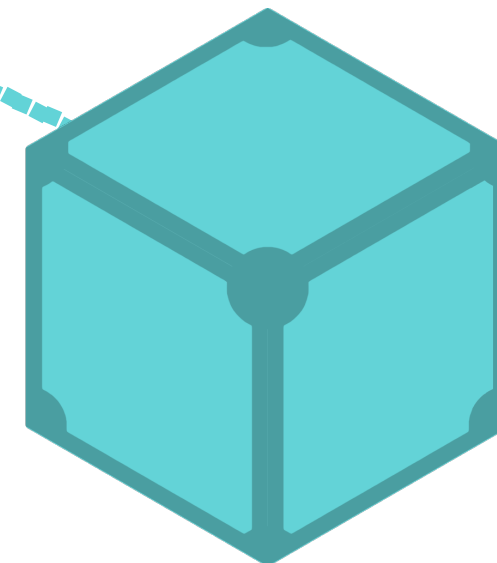
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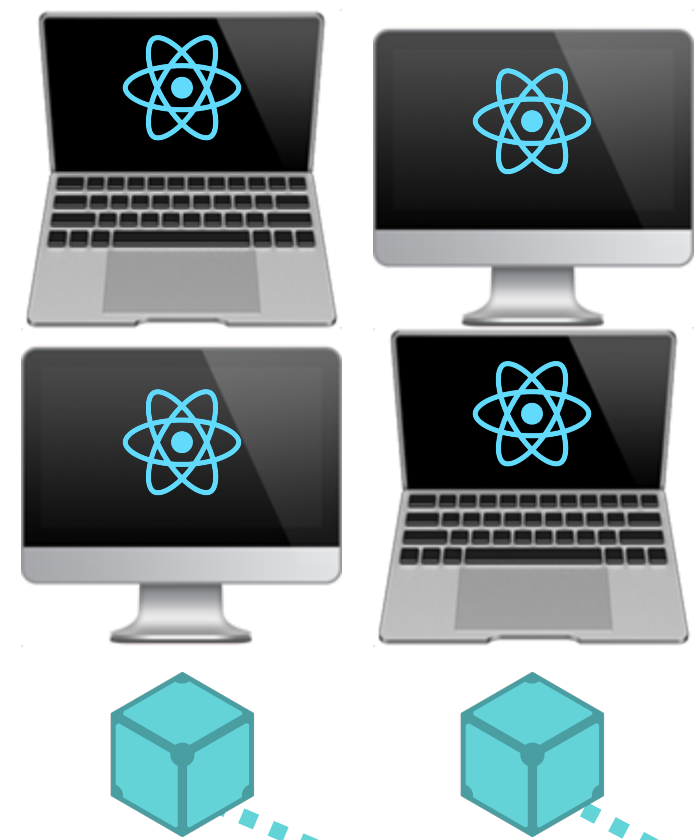


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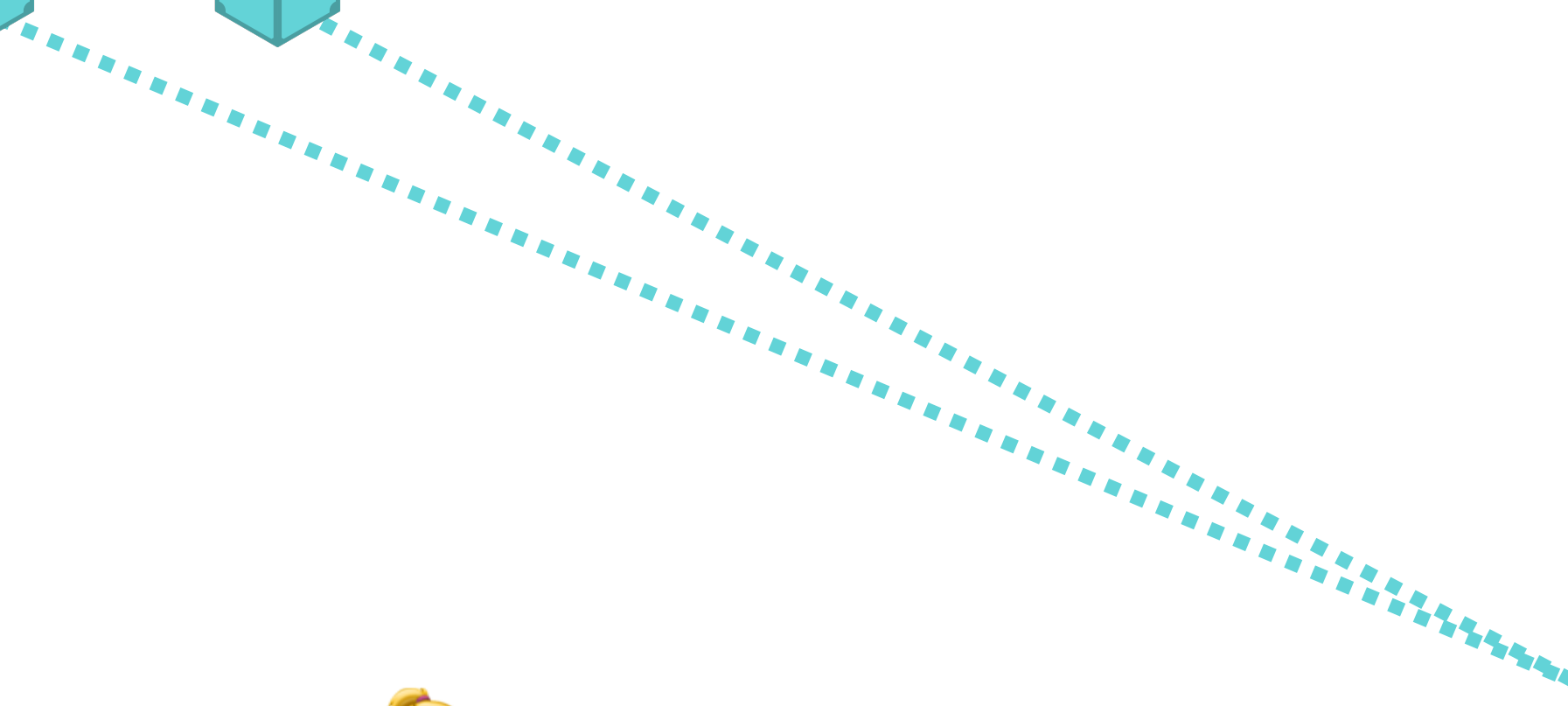
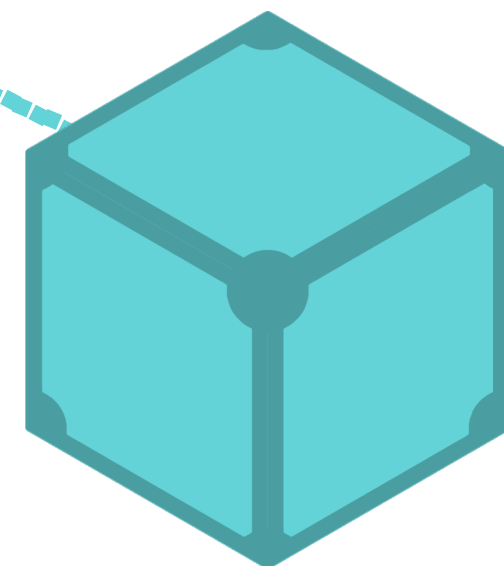




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Invisible

High Touch

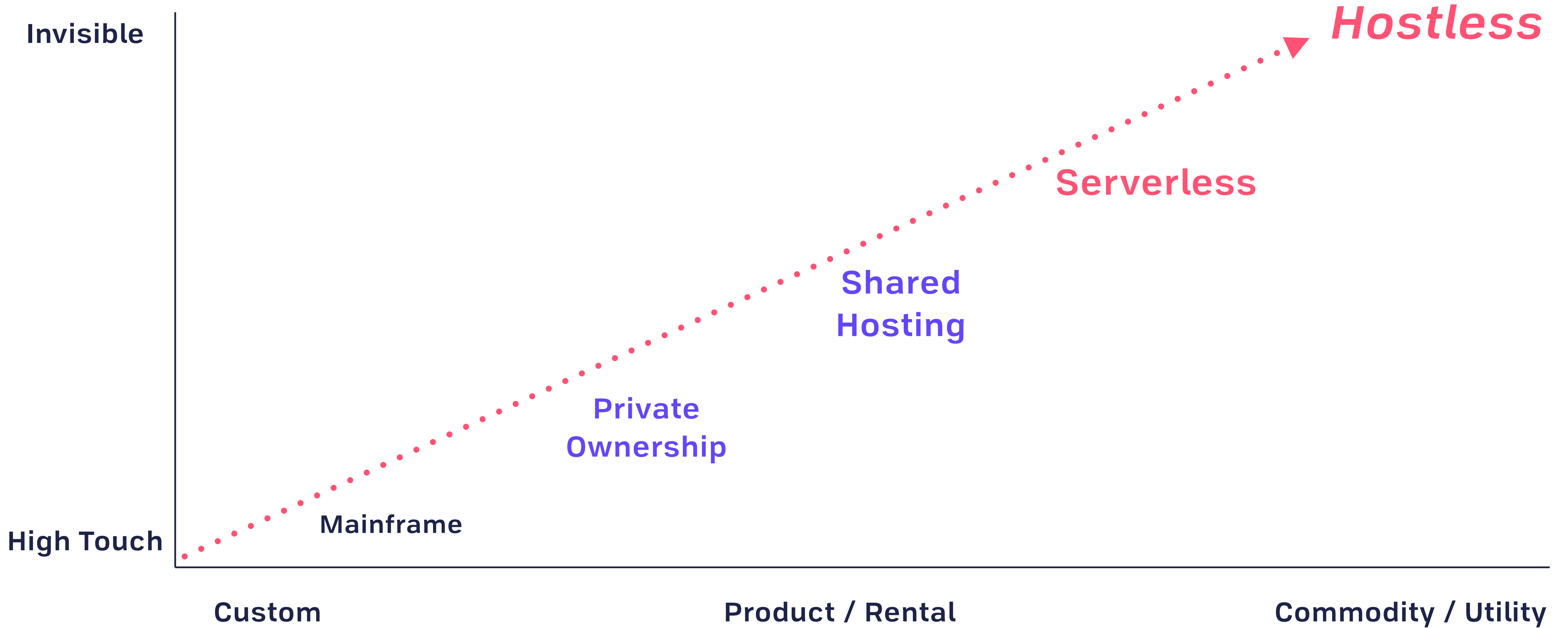
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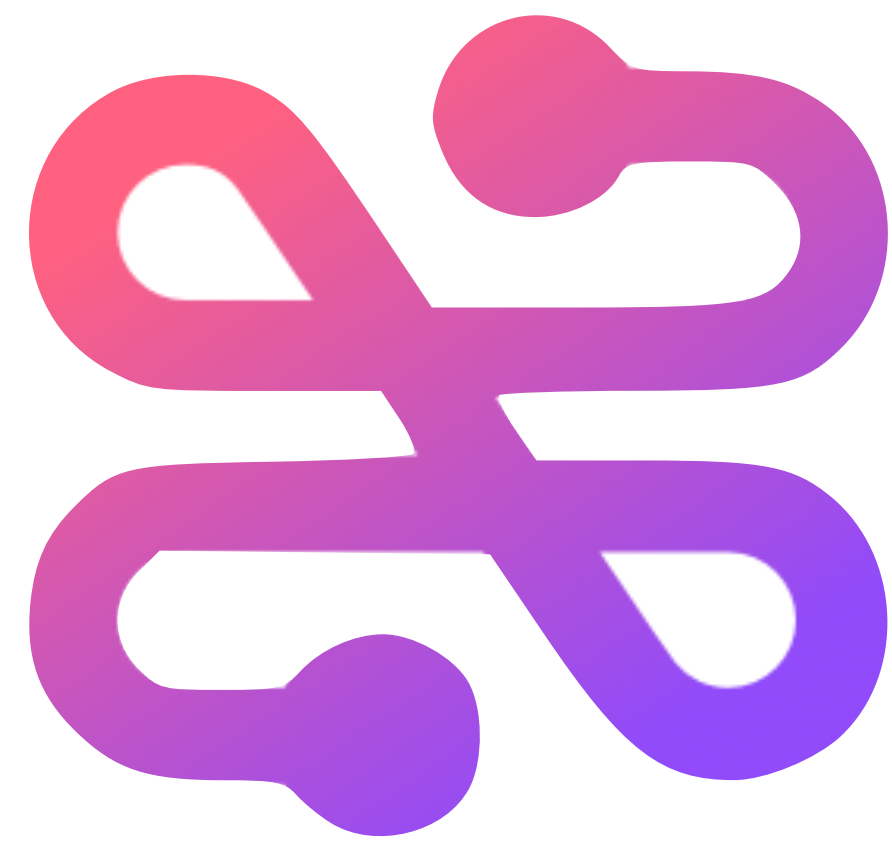
Product / Rental

Commodity / Utility



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