

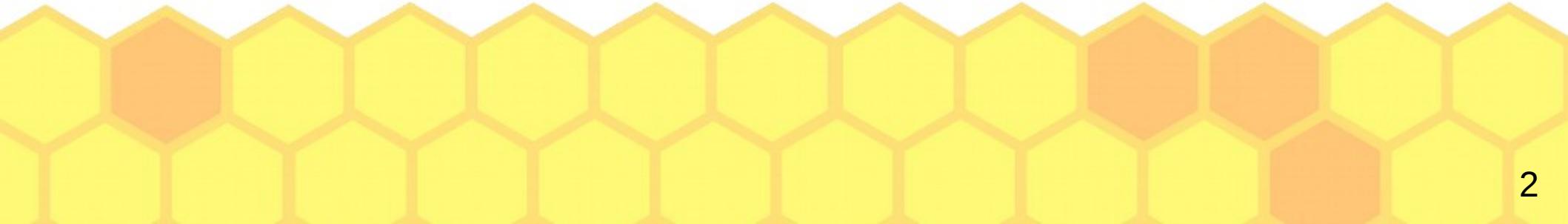


draft-richardson-secdispatch-idevid- considerations-02

IETF108 – secdispatch - 2020-07-30

Michael Richardson <mcr+ietf@sandelman.ca>
Jay Yang <jay.yang@huawei.com>

1972



1972



My Dad (cjr)
[Sociologist!]

1972



My Dad (cjr)
[Sociologist!]



Returned from UK

1972



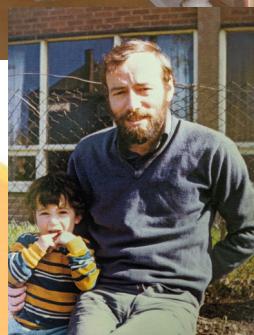
My Dad (cjr)
[Sociologist!]



Returned from UK



With
Baby Boy (mcr)



1972



My Dad (cjr)
[Sociologist!]



Returned from UK



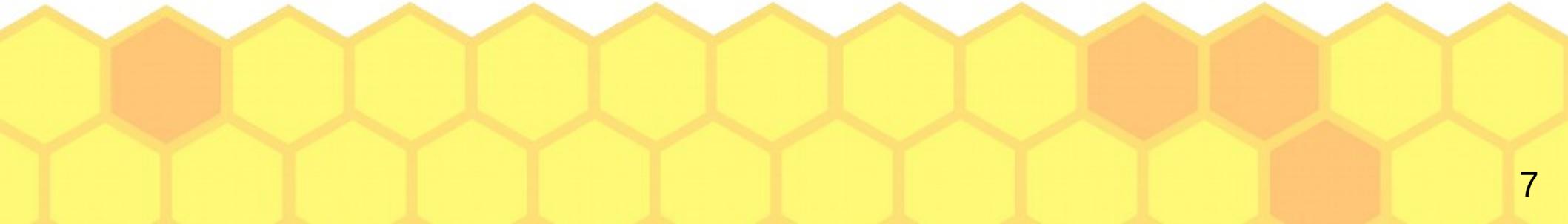
Alpha version of
SPSS: Statistical
Package for the
Social Sciences



With
Baby Boy (mcr)



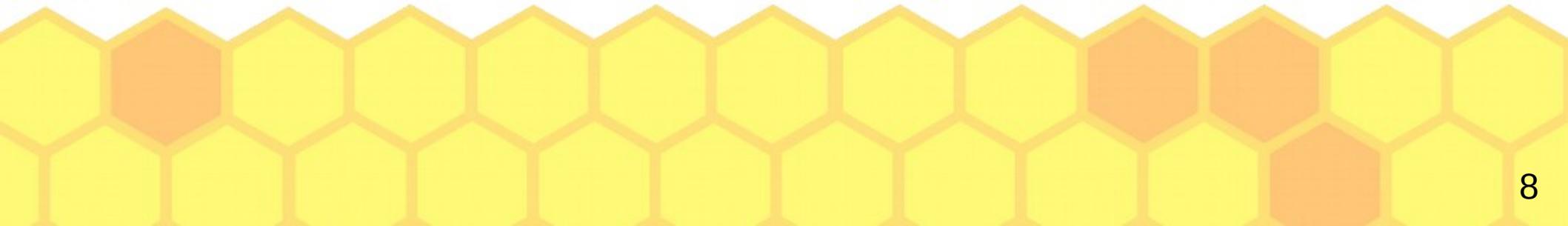
1975



1975



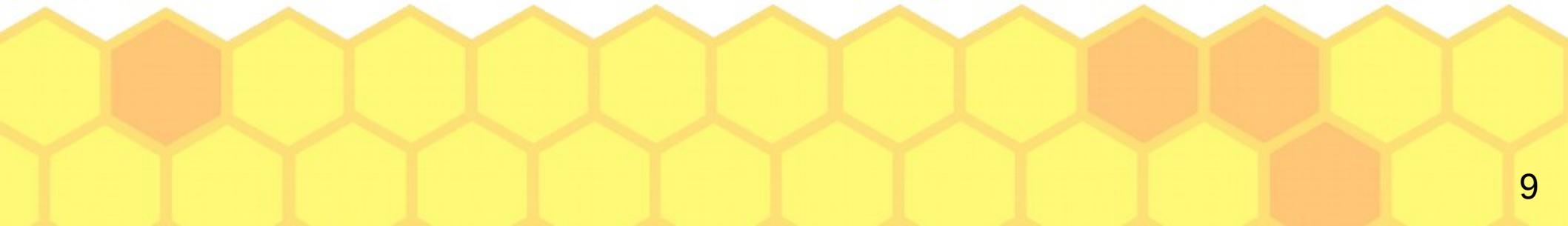
Got a “computer”



1975



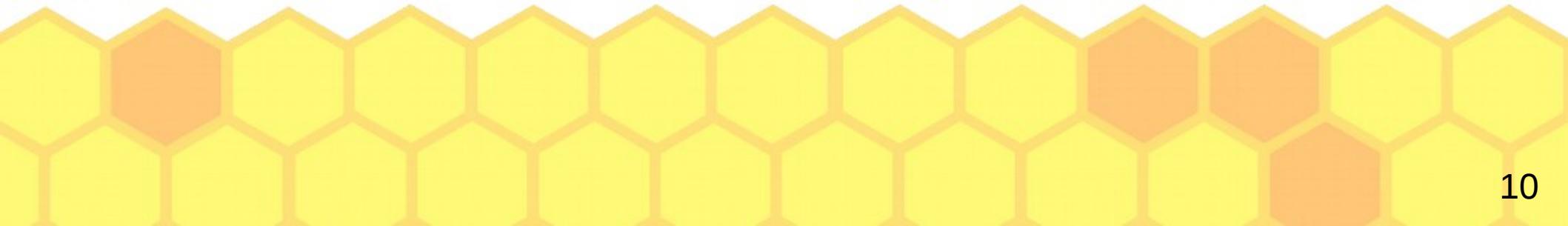
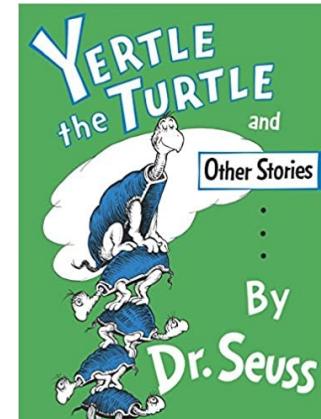
Got a “computer”



1975



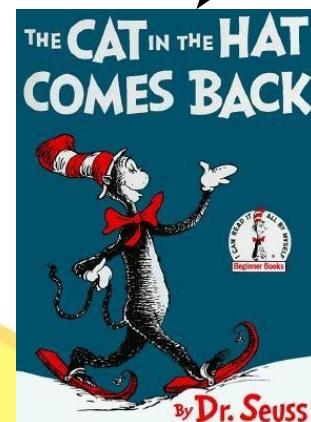
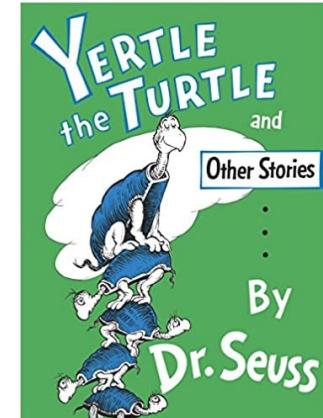
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1975



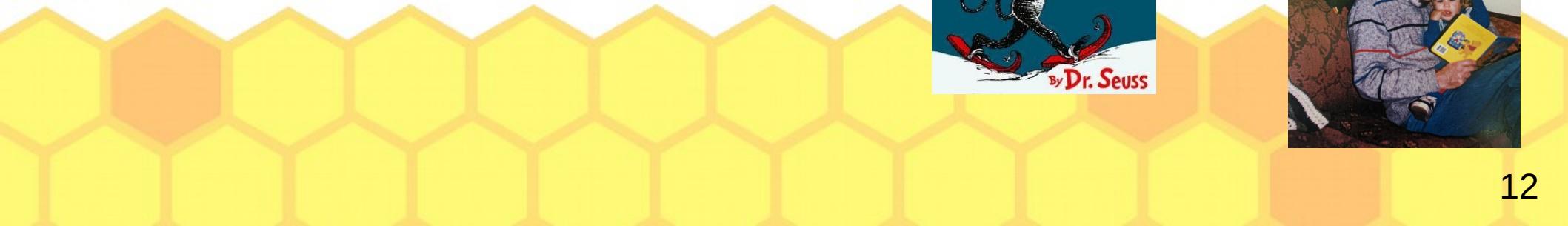
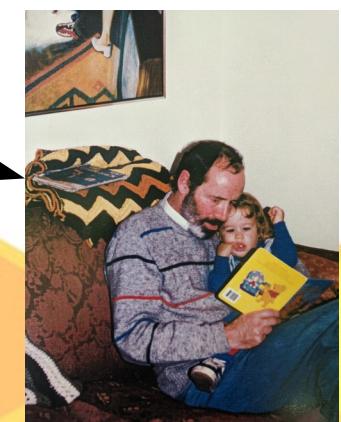
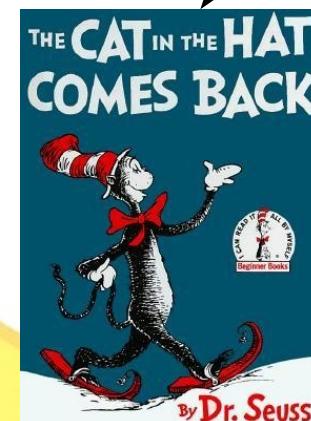
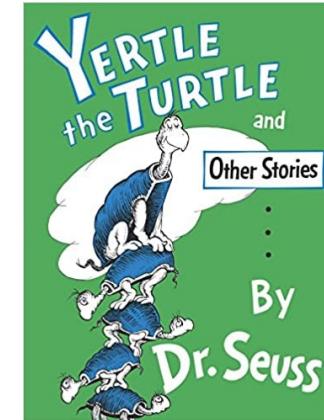
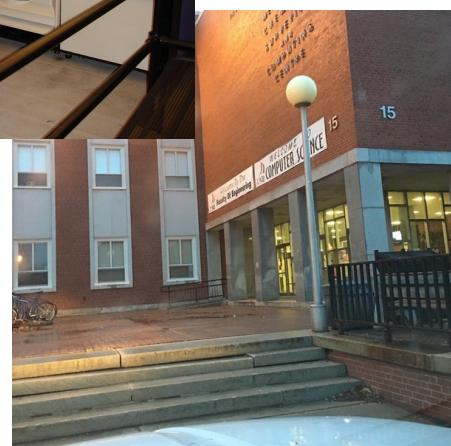
Got a “computer”



1975



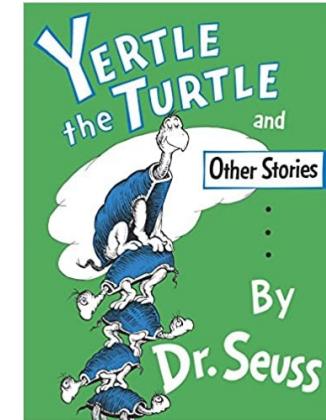
Got a “computer”



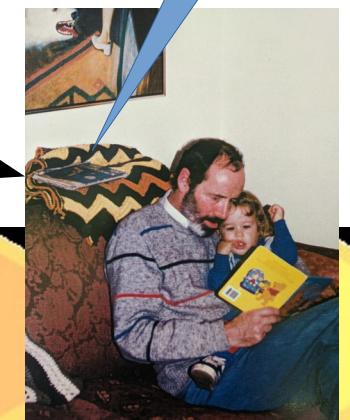
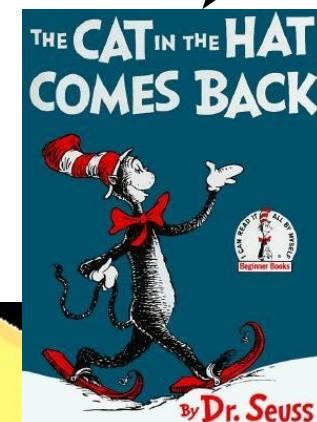
1975



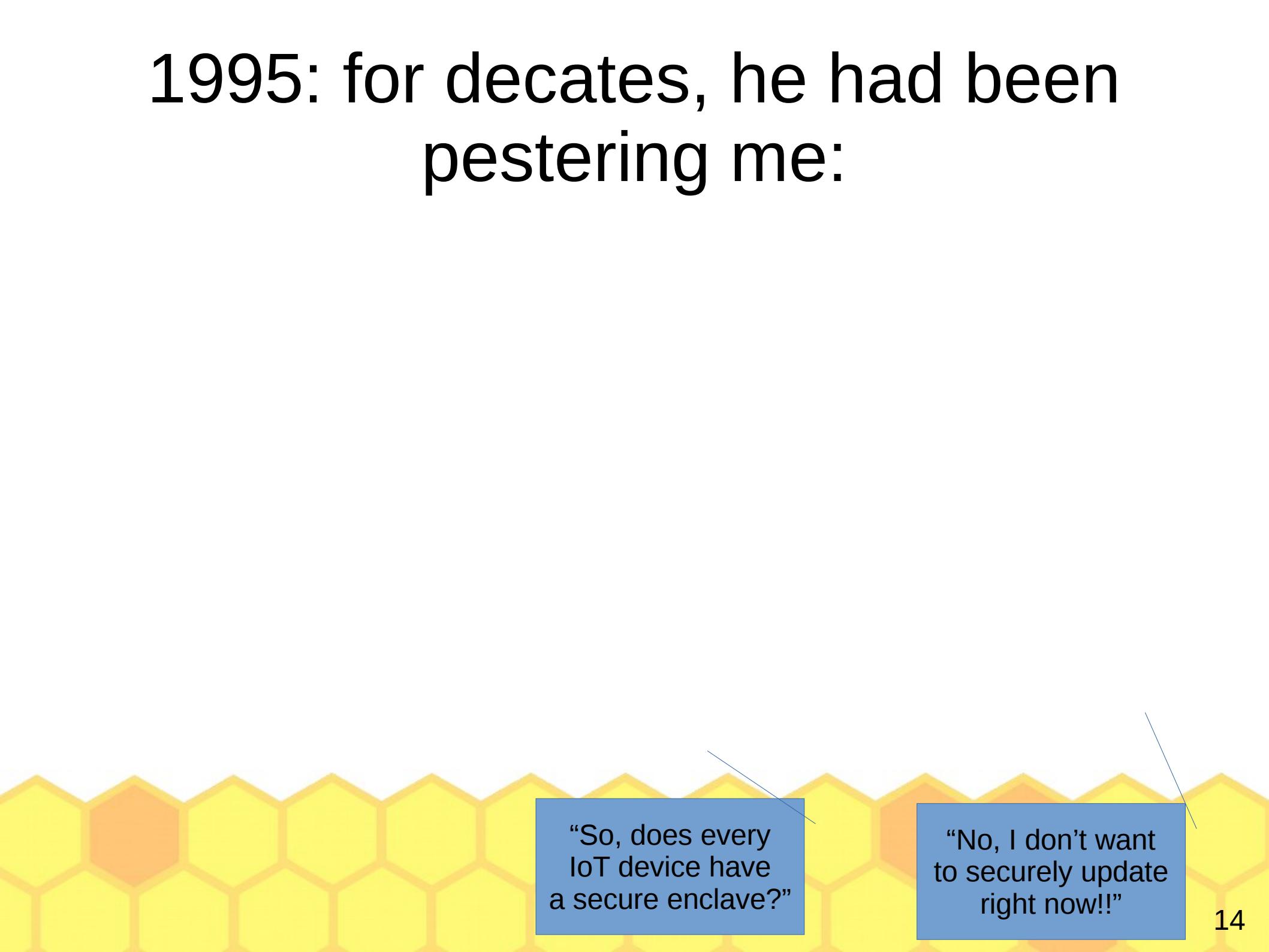
Got a “computer”



Worn Out copy



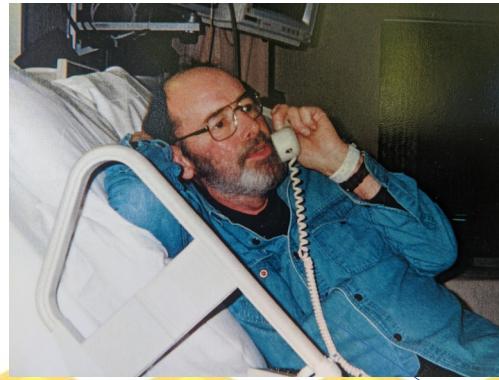
1995: for decades, he had been pestering me:



“So, does every IoT device have a secure enclave?”

“No, I don’t want to securely update right now!!”

1995: for decades, he had been pestering me:

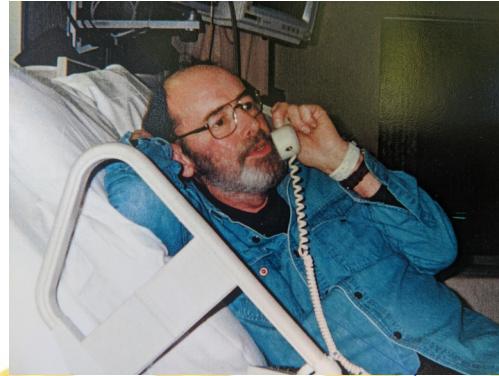


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HOW DOES MY COMPUTER KNOW

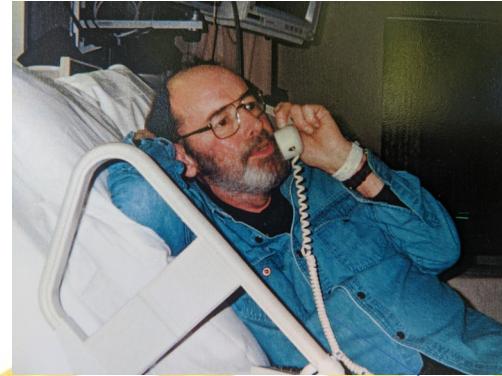


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HOW DOES MY COMPUTER KNOW
WHAT TO DO WHEN I TURN IT ON?



“So, does every IoT device have a secure enclave?”

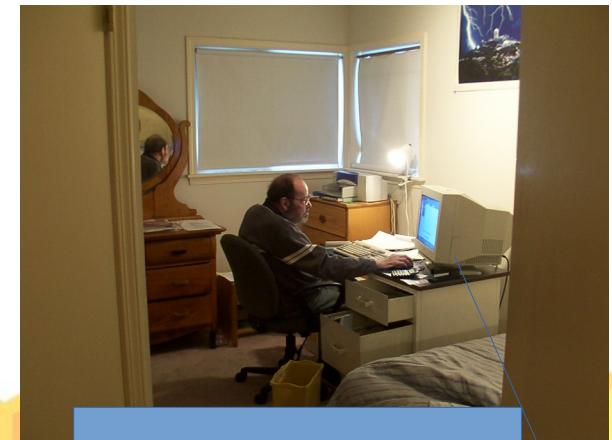
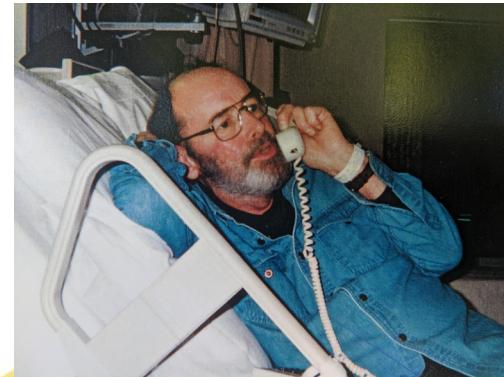
“No, I don’t want to securely update right now!!”

1995: for decades, he had been pestering me:

HOW DOES MY COMPUTER KNOW
WHAT TO DO WHEN I TURN IT ON?

HOW DOES IT KNOW IT WHO IT CAN TRUST?

Me, explaining
What a BIOS is

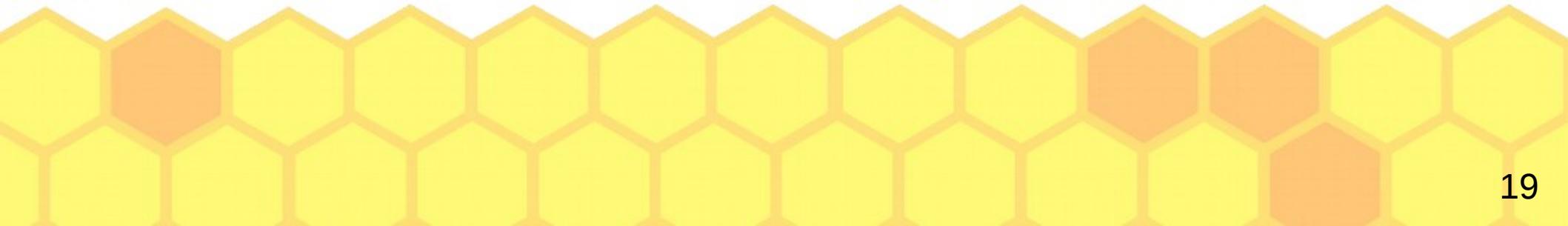


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IoT device have
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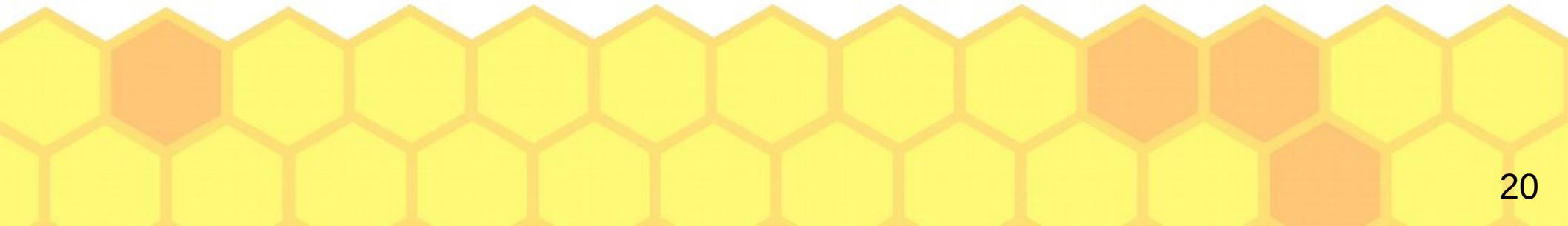
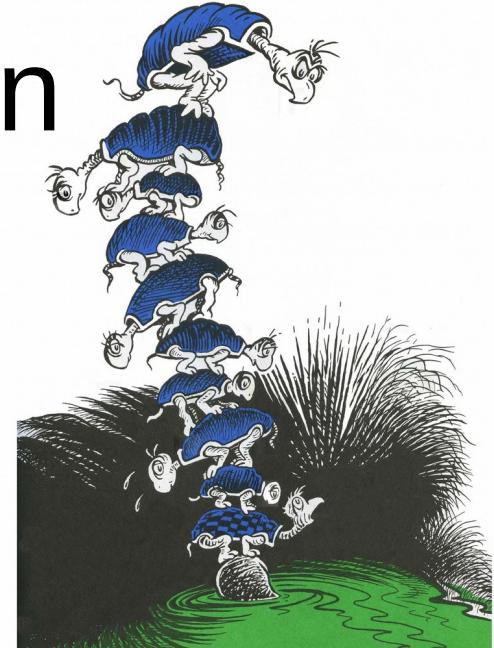
Turtles all the way down

- Everytime I thought I'd convinced him, he'd just just complain:
 - You've just added a turtle.



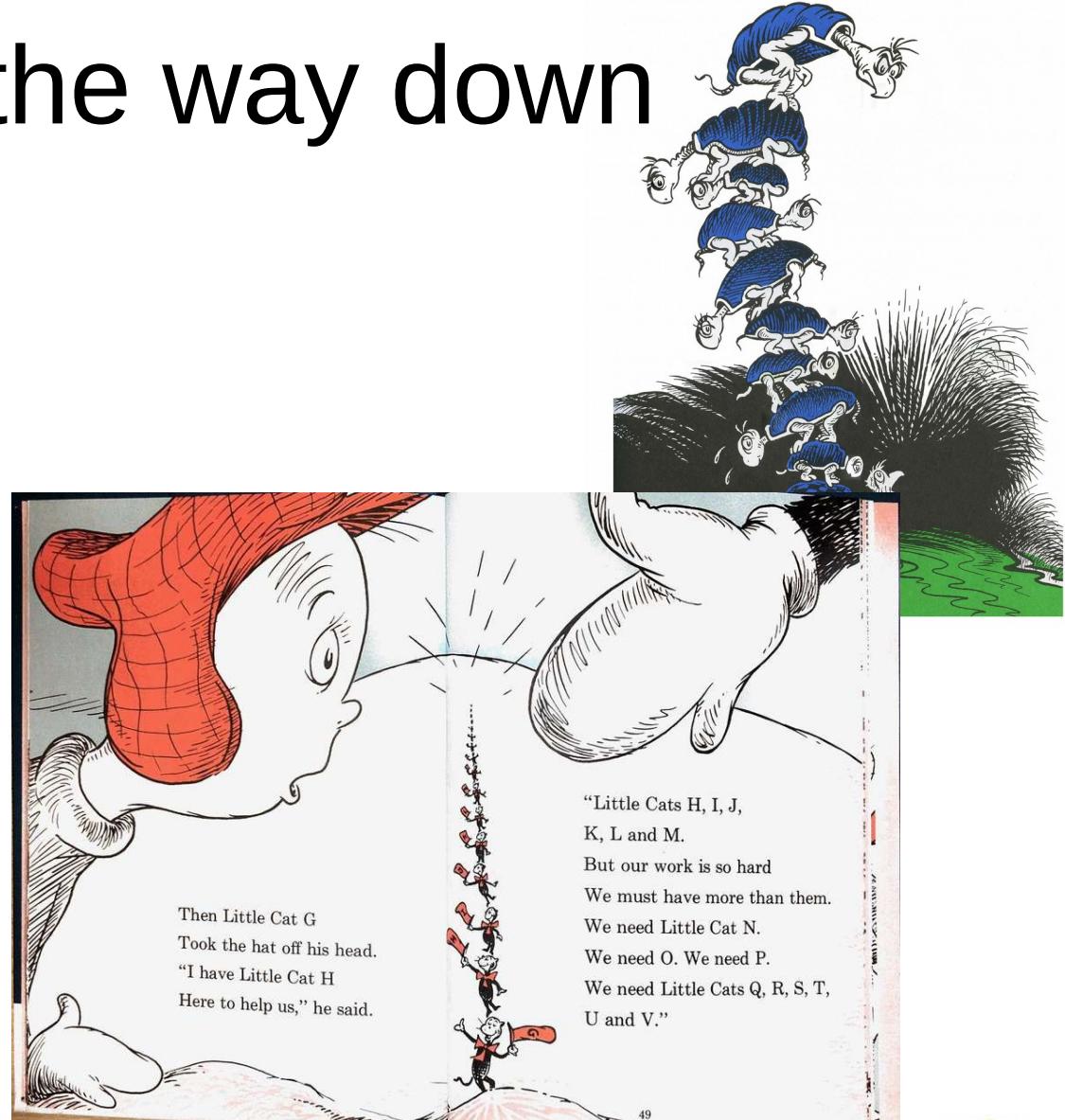
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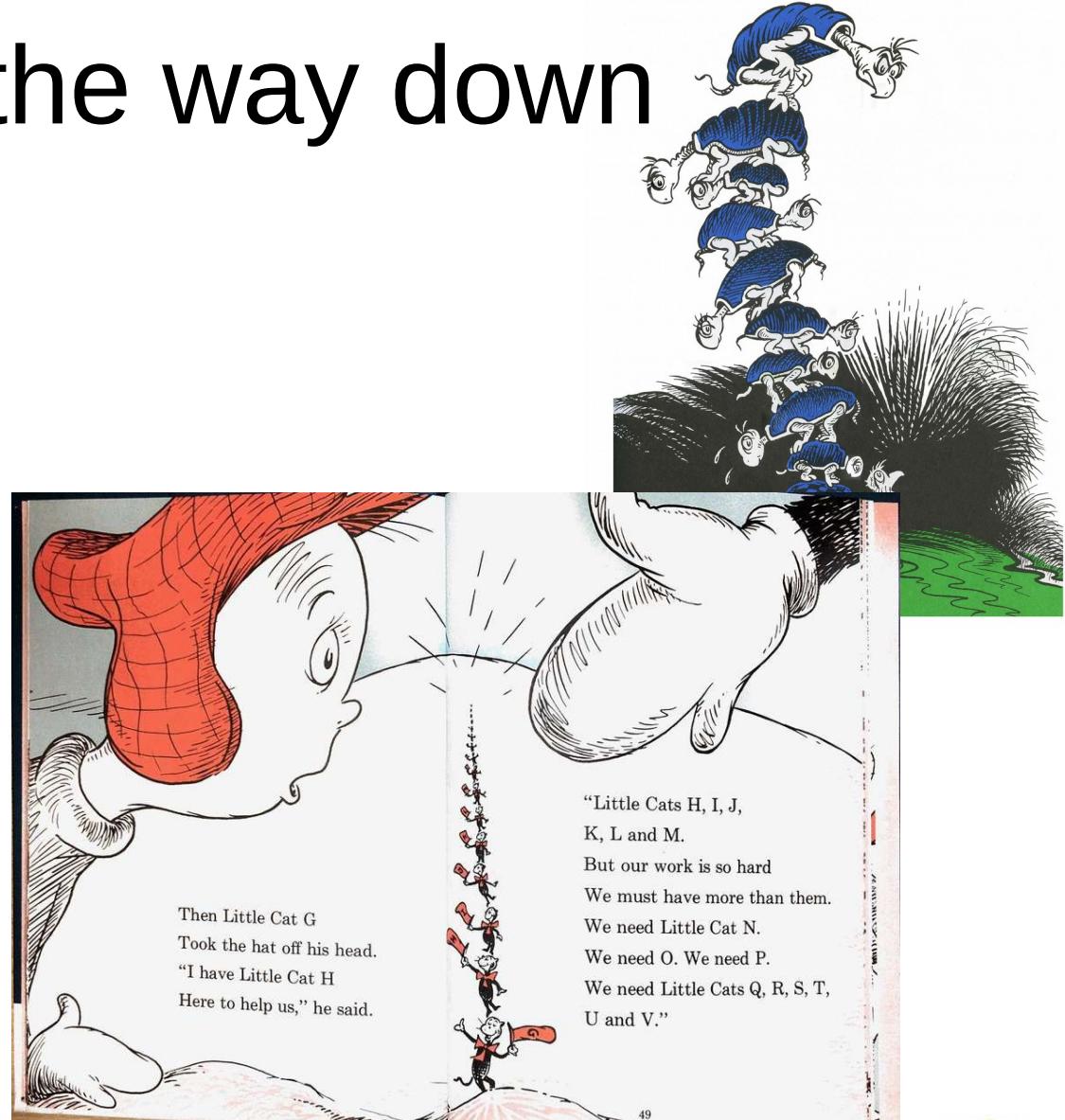


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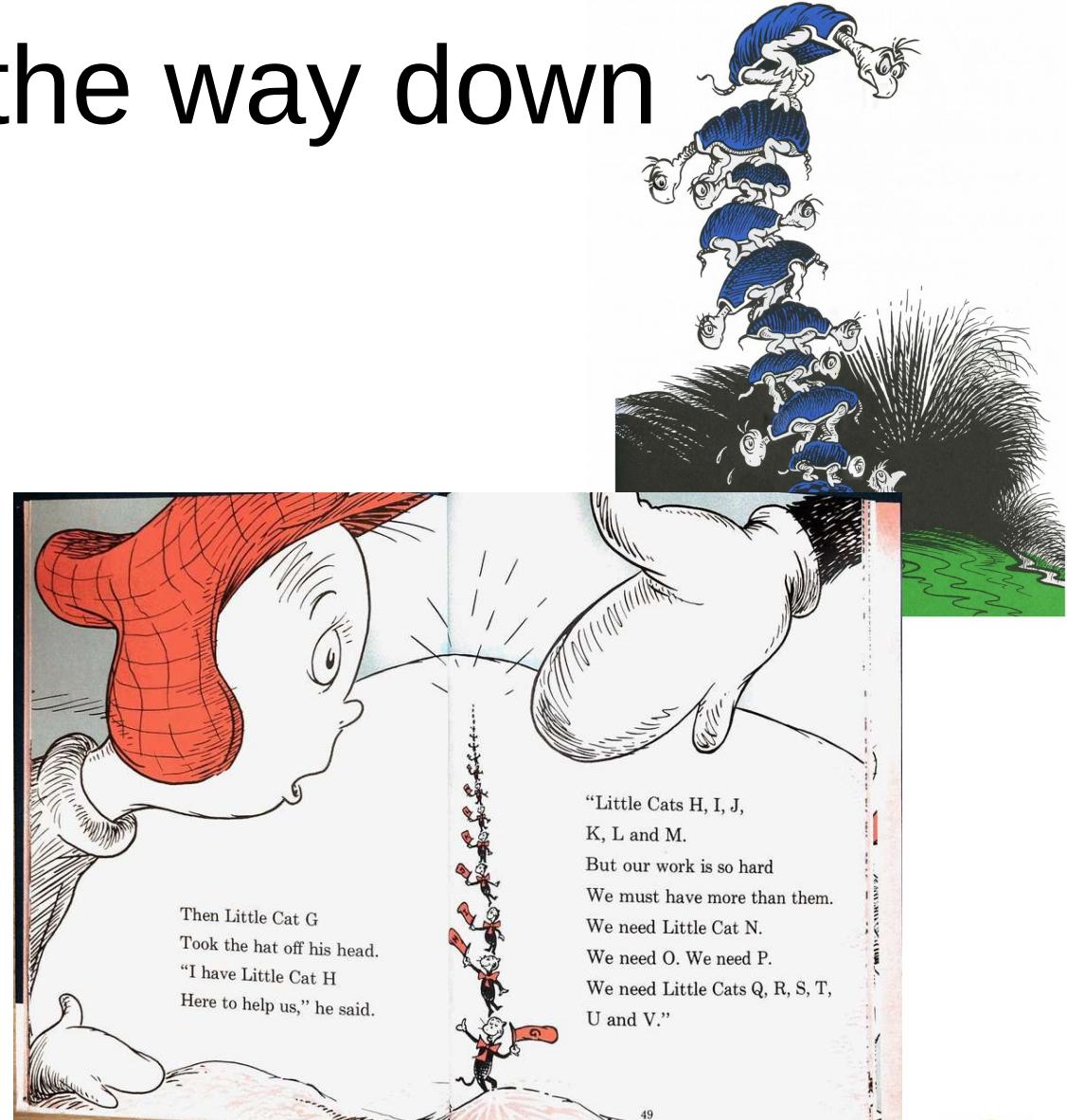
At some point, it's gotta stop,



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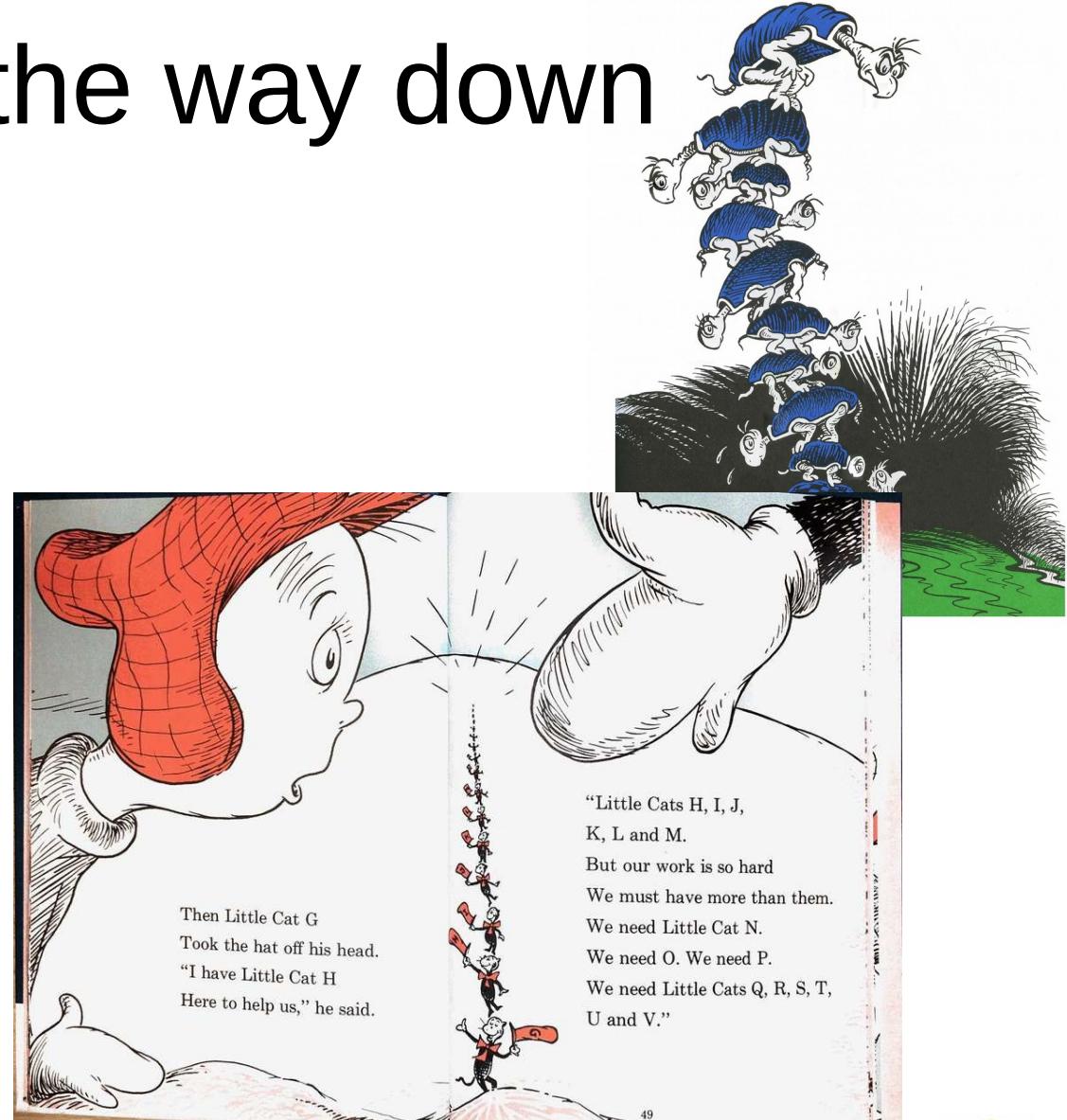
At some point, it's gotta stop,
There must something down



Turtles all the way down

- Everytime I thought I'd convinced him, he'd just just complain:
 - You've just added a turtle.

At some point, it's gotta stop,
There must something down
there, he would complain.



IDevID considerations document

- This document is about the quality of the turtles
 - How do they get there?
 - Can they be trusted?
 - How much?
 - **For what?** (Is the risk mitigation appropriate to the user's threat model?)
- Three fundamental ways to provision initial roots of trust.
- Ultimately, the software update trust anchor **rules everything**.



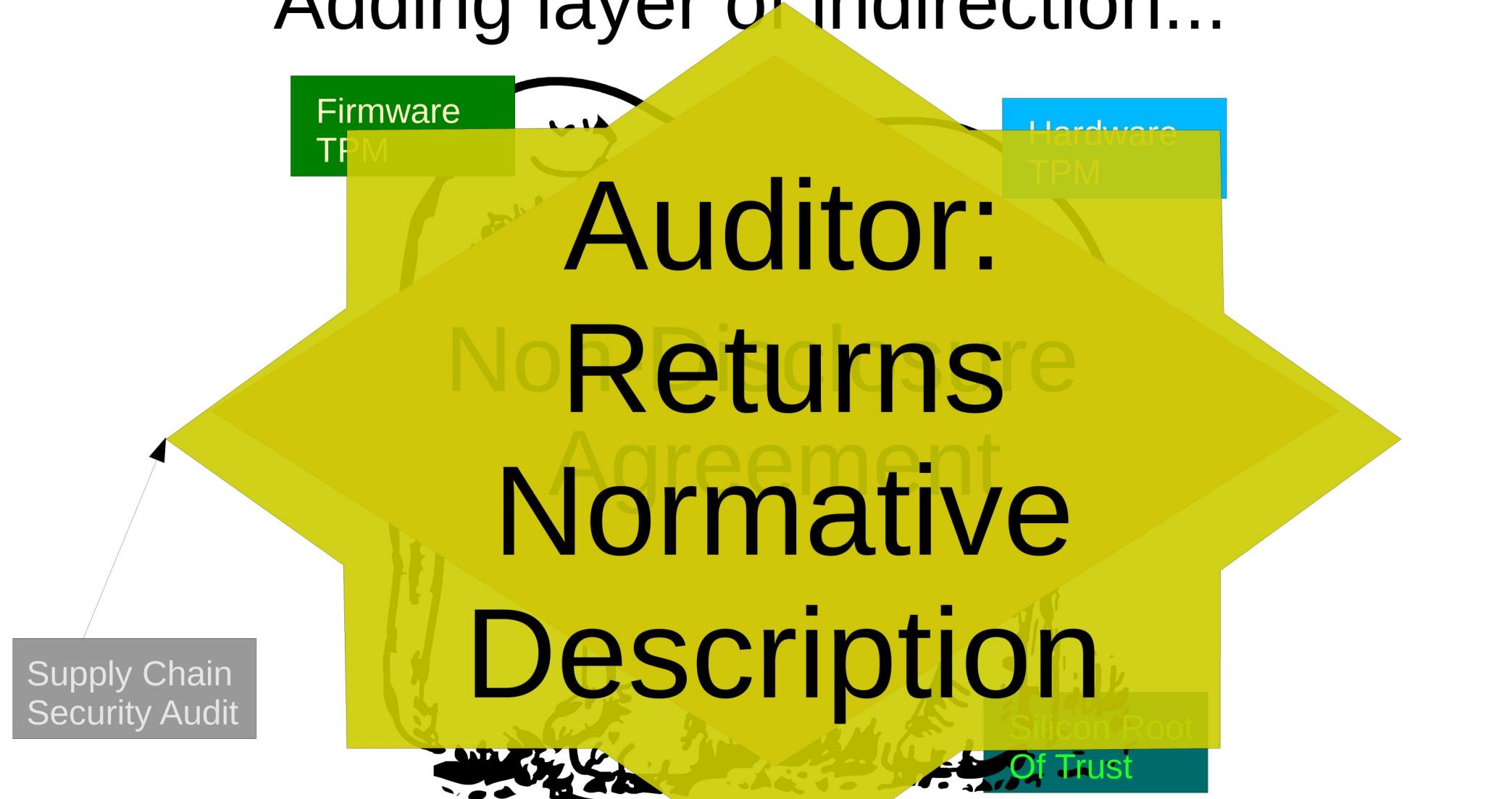
- Insert parable about blind people examining different parts of an elephant.
- https://en.wikipedia.org/wiki/Blind_men_and_an_elephant



Confidentiality of IDevID private key..



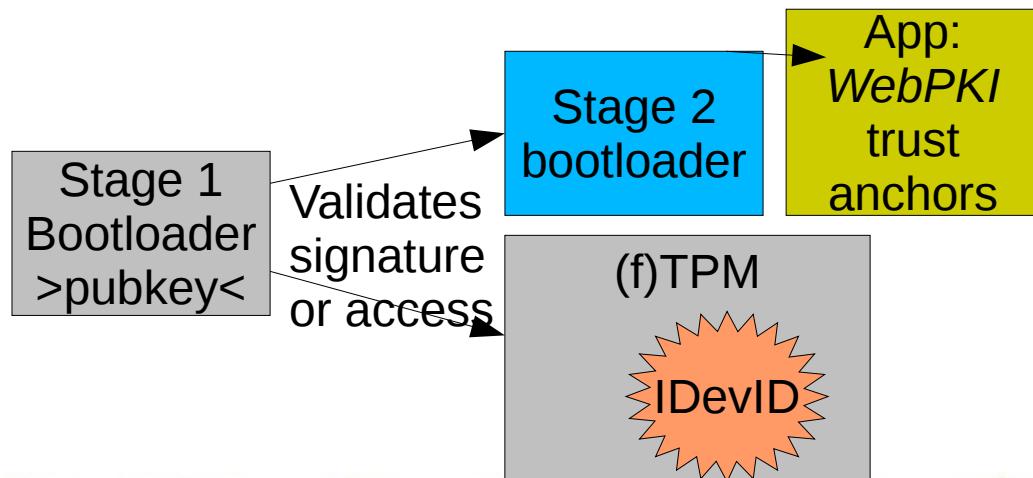
Adding layer of indirection...



Audit Model

Recognize:

Posessor of Bootloader
software update key
wins all battles.



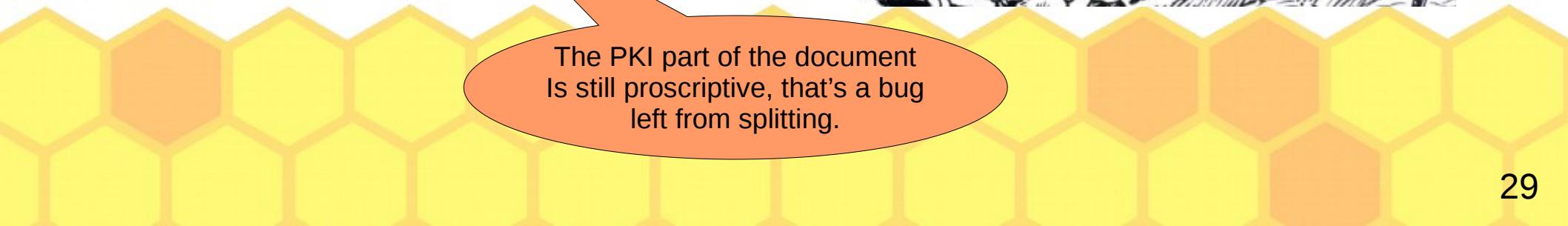
- However >pubkey< is provisioned determines in-system risk of entire system.
 - This is the bottom turtle, “Mack”, and he’d better not burp.
- Even more critical: how is the private key that can sign code kept?

Non-Goals of the document

- 1) Not aiming to write an ISO27001-ish evaluation process.
- 2) Not going to make any recommendation as to an appropriate solution for a given risk situation.



The PKI part of the document
Is still prescriptive, that's a bug
left from splitting.



Goals of this document

- Enumerate the reasonable, and maybe some less reasonable ways to provision and secure keys, and give them **names**.
- Not just the most secure way, because it is not always worth it.



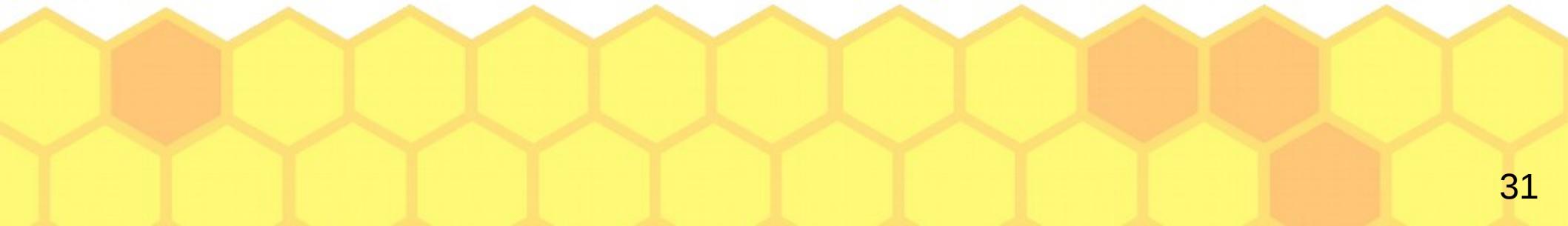
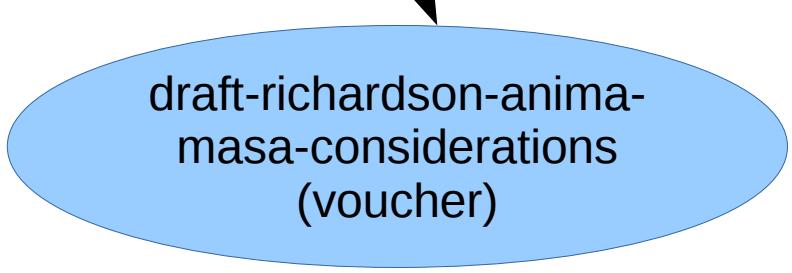
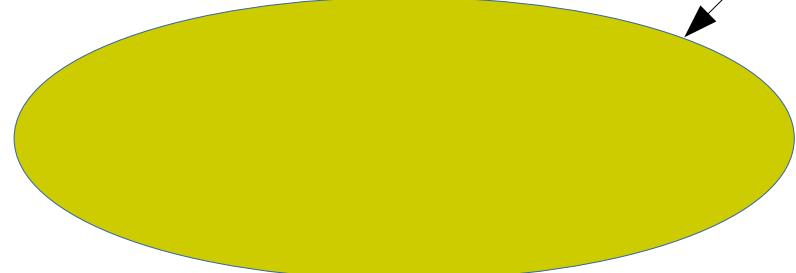
History of Document

ANIMA!

draft-ietf-anima
Autonomic-control-plane
(ACP). At IESG.

draft-ietf-anima
Bootstrapping-keyinfra
(BRSKI). In RFC-editor Q

ANIMA!



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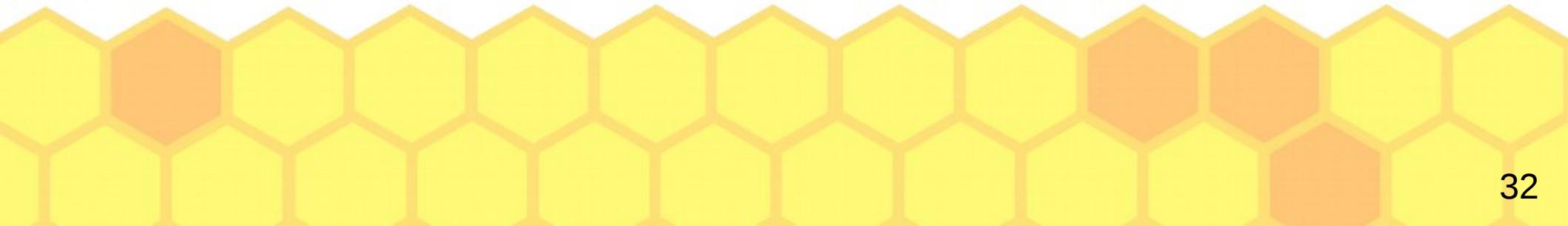
ANIMA?!

draft-richardson-anima-
registrar-considerations
(enterprise private CA)

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Bootstrapping-keyinfra
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ANIMA!

draft-richardson-anima-
masa-considerations
(voucher)



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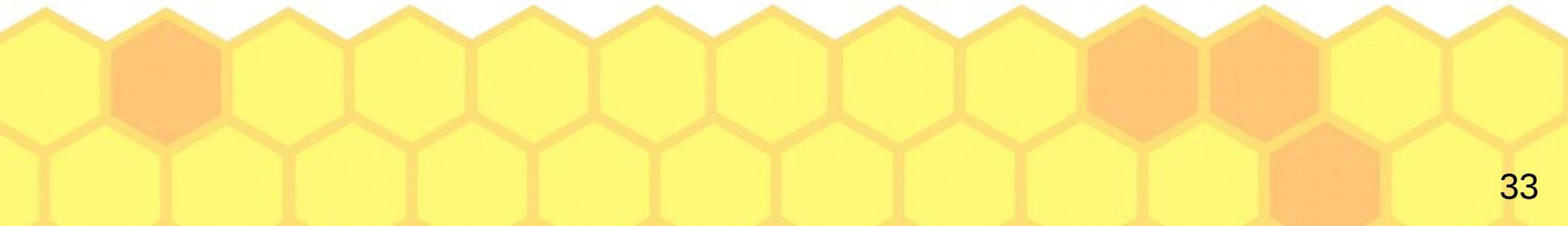
draft-richardson-anima-
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ANIMA!

draft-richardson-anima-
masa-considerations
(vendor private CA + voucher)

draft-richardson-anima-
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(voucher)



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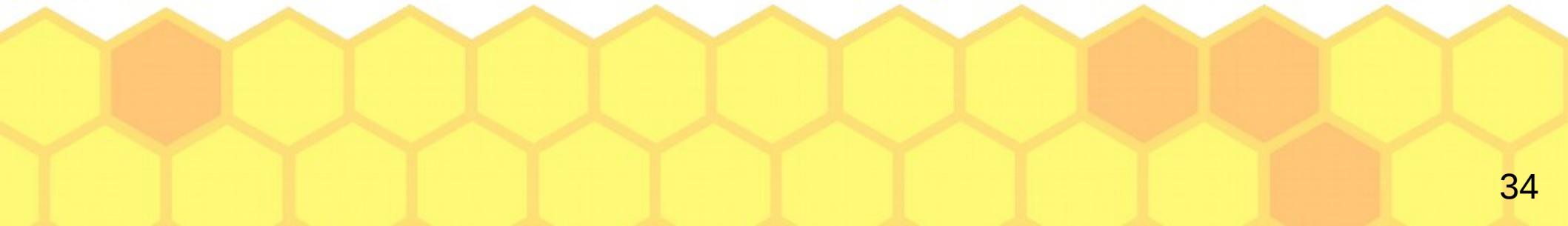
ANIMA!

draft-richardson-anima-masa-considerations
(vendor private CA + voucher)

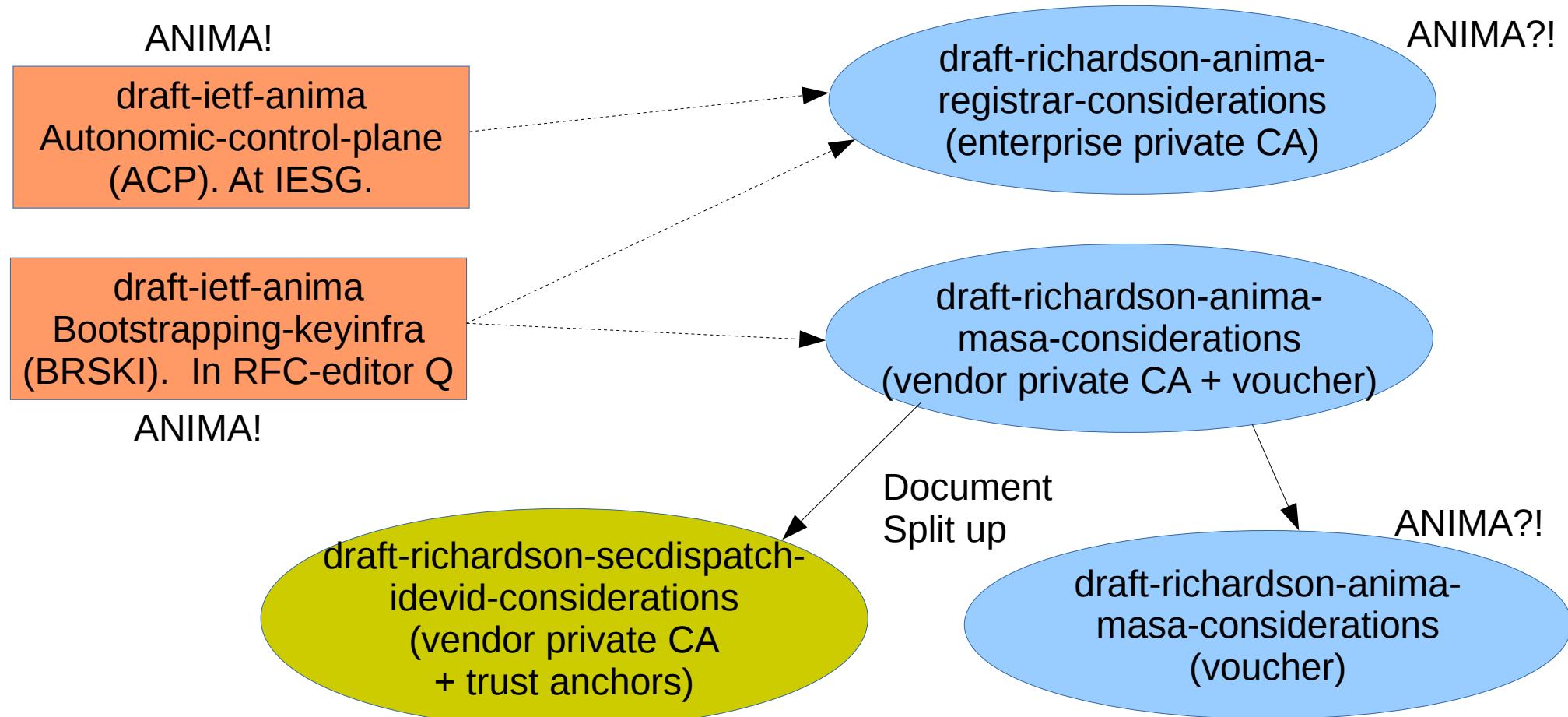
Document
Split up

draft-richardson-secdispatch-idevid-considerations
(vendor private CA
+ trust anchors)

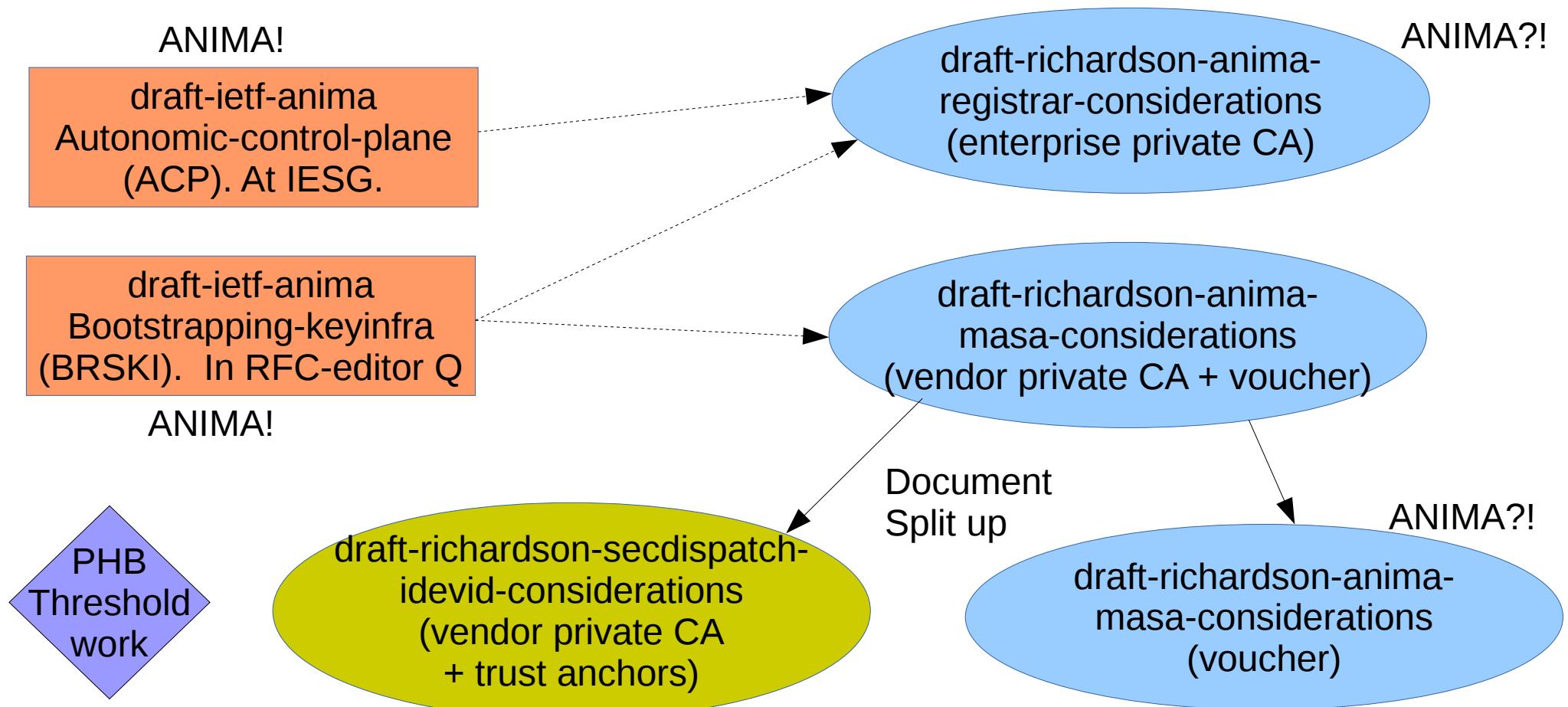
draft-richardson-anima-masa-considerations
(voucher)



History of Document



History of Document



Useful Links

- IDevID discussions

- https://mailarchive.ietf.org/arch/msg/secdispatch/Hqe1IHG2wnW_9NxJLazEYbmGYN0/
- https://mailarchive.ietf.org/arch/msg/anima/-2Niz98BNSopDi4GpgxrDfI_Mdc/
- <https://mailarchive.ietf.org/arch/msg/anima/eMOH3NFbEDjZOi5gZgB9EkI6yxw/>
- <https://mailarchive.ietf.org/arch/msg/anima/-6-eQJgtUWrz5v067u9Xb030qnQ/>

- MASA operational considerations

- https://mailarchive.ietf.org/arch/msg/anima/PSkpYZs0C_RLzUFD2BSMipEggfQ/

Useless Links and Irrelevant Facts

- Return of Cat in the Hat

https://www.youtube.com/watch?v=YJf2f_LqnLo

- Yertle the Turtle

<https://www.youtube.com/watch?v=xY5vs2WtlKM>

– ..in which the eponymous Yertle, king of the pond, stands on his subjects in an attempt to reach higher than the moon—until the bottom turtle (Mack) burps and he falls into the mud, ending his rule.



Dr. C. James Richardson

1941-2003



Actually, Sardinia,
Not London.



Actually,
My brother jjrh