IRMA, as simple as ABC

OUrsi

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IRMA,
as simple as
ABC

I Reveal My Attributes,
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I Reveal My Attributes

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ABC

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Attribute Based Credentials

Some attributes of the speaker

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- Studied Computer science
- PhD-thesis on Mobile communication security
- Post docs on smart grid security and attribute based credentials
- From 1 Jan. researcher at OU
- research subjects:
  - security of mobile telephony
  - security of smart grids
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- male,
- married, with children,
- over 18 years old,
- under 65 years old,
- bloodtype: `[redacted]`,
- living in Nijmegen,
- etc.

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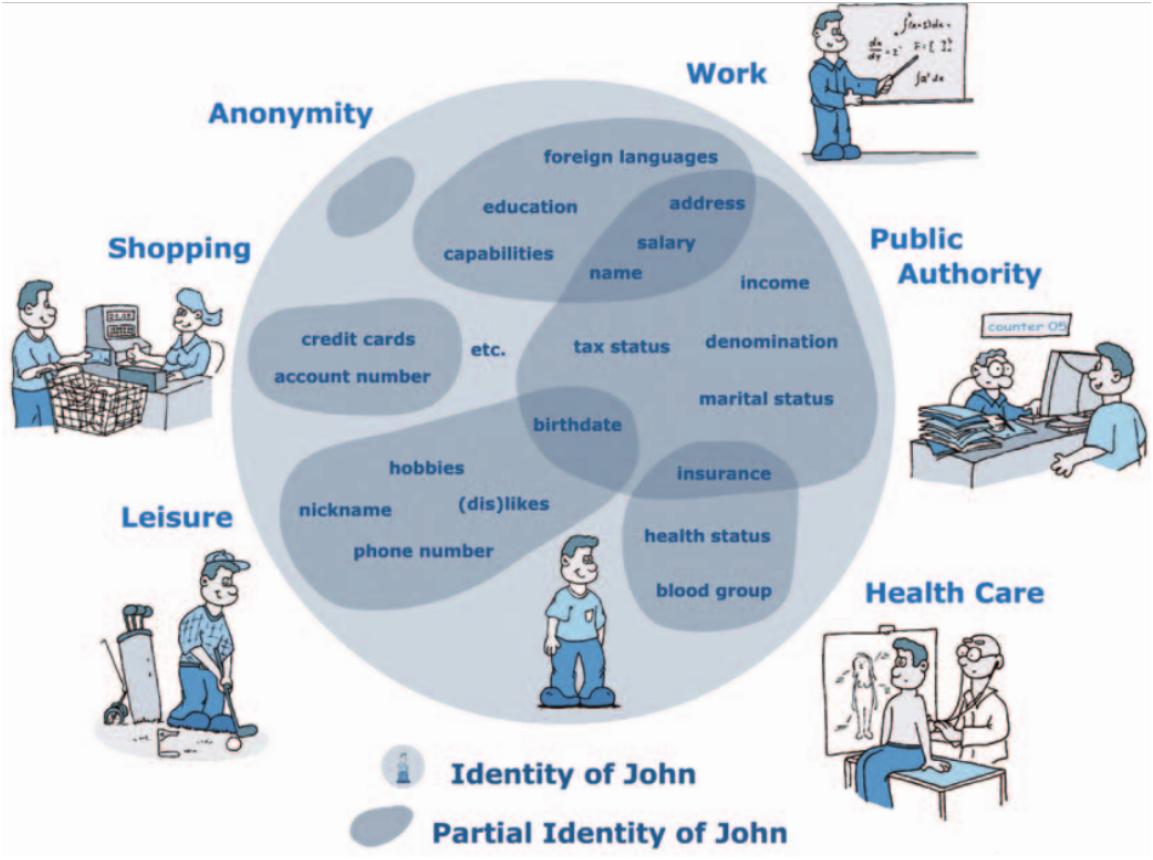
Identities versus attributes



[FIDIS] project

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  - Often uniquely identifying numbers, such as social security number, or passport number
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  - 'over 18', 'over 21', 'over 65', 'under 15', 'female', 'male'
  - 'student', 'doctor', 'lawyer', 'top secret clearance'
  - 'NL-citizen', 'resident of Nijmegen'
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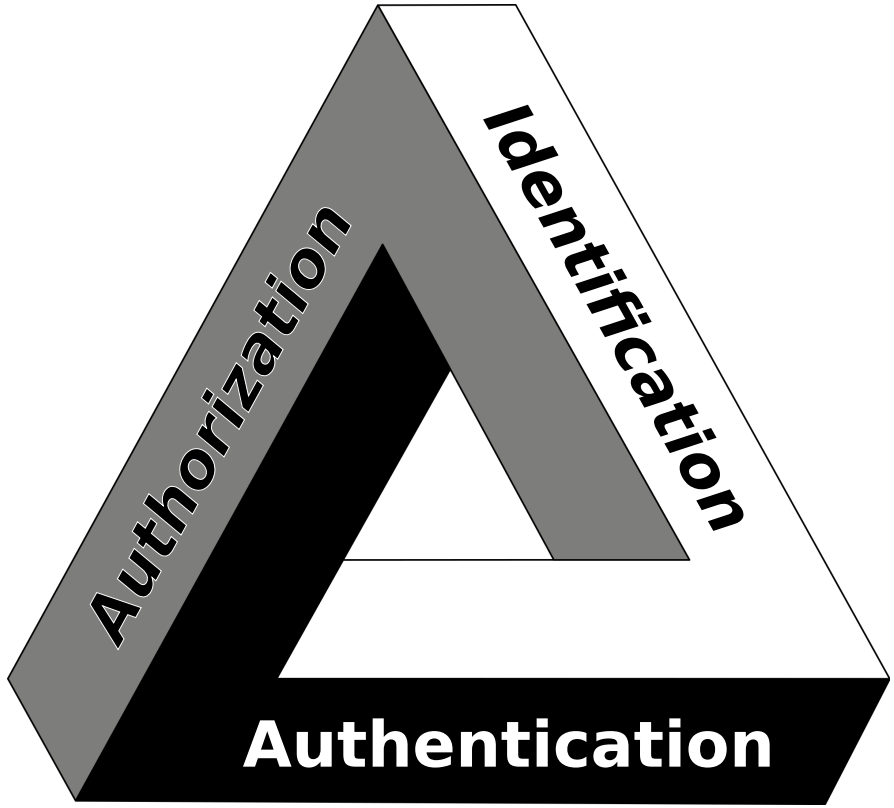
Your **identity** is the collection of attributes that hold for you

Goal of ABCs



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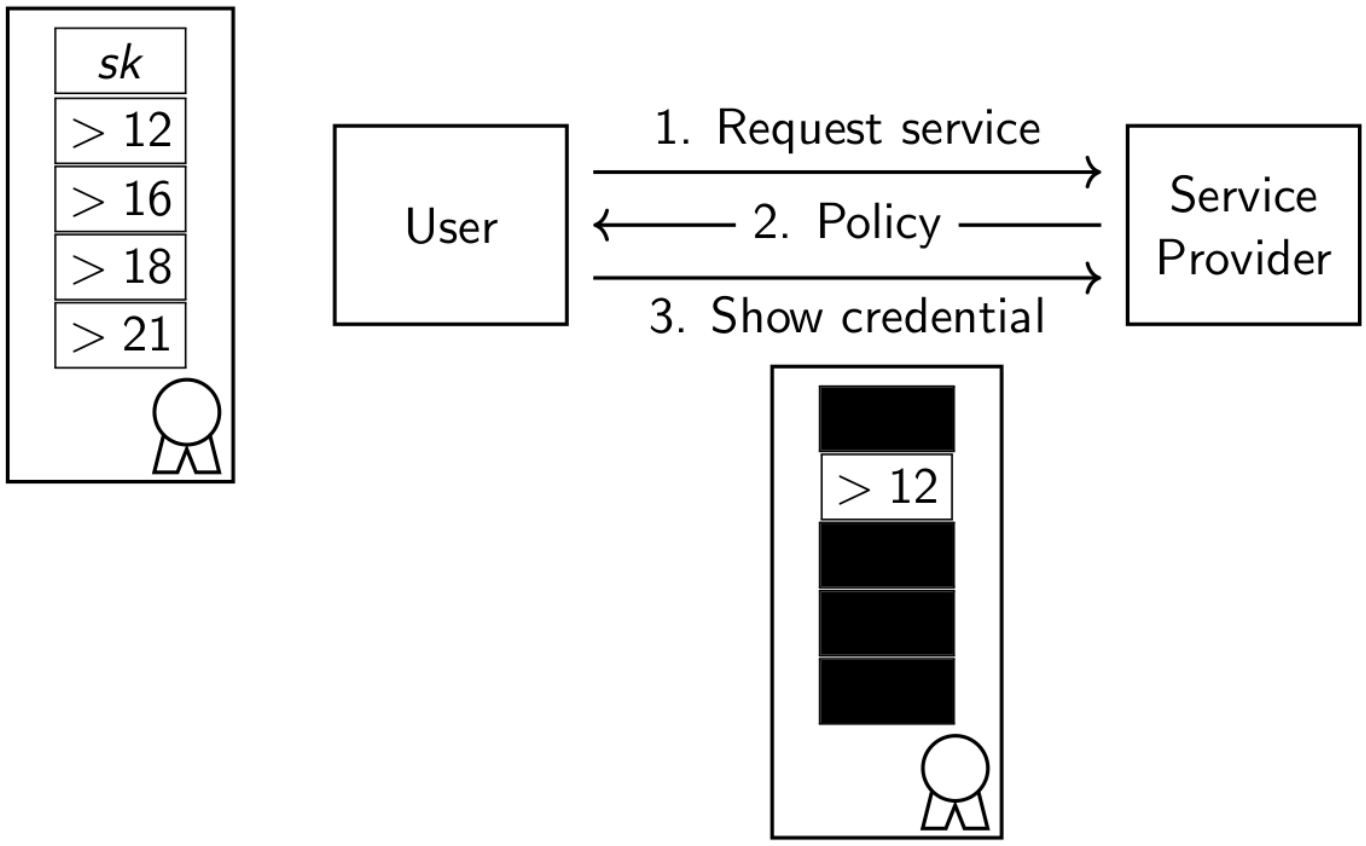
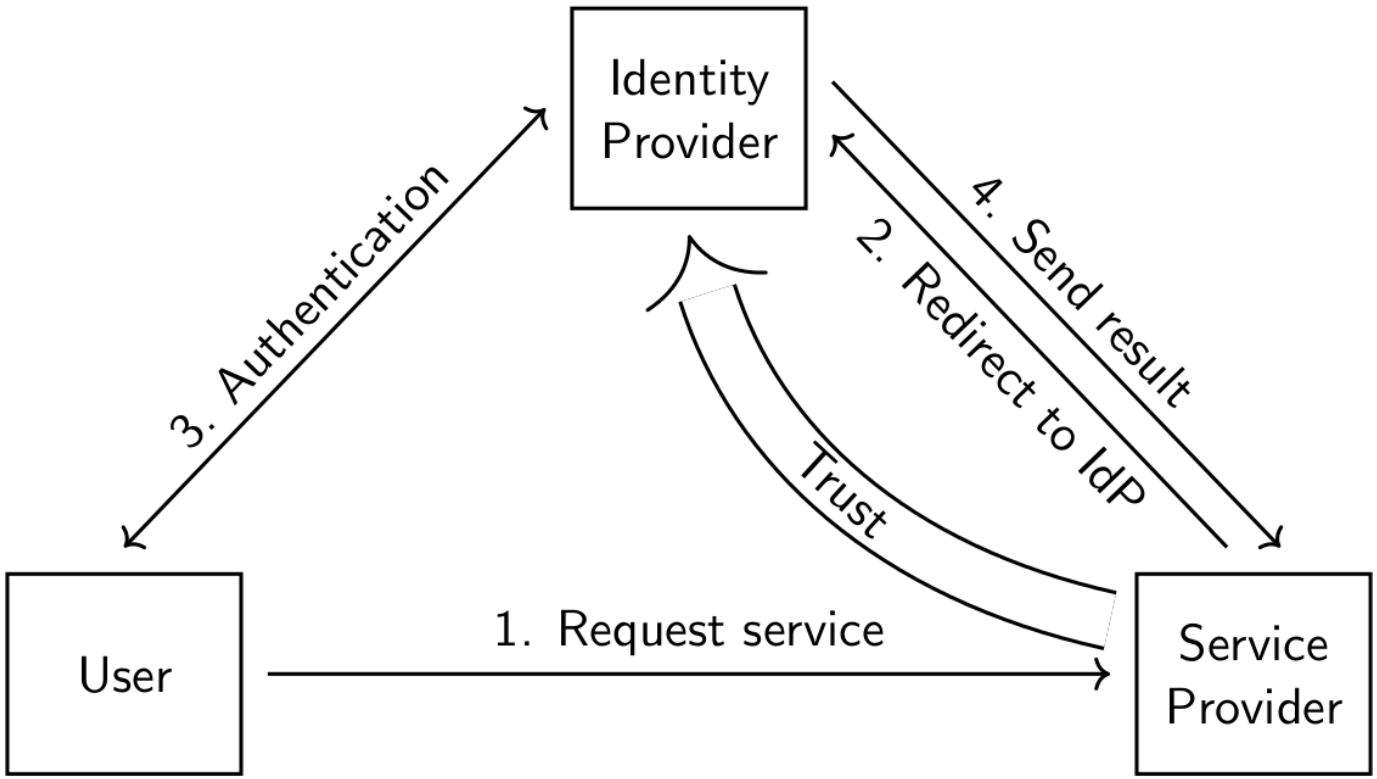
IRMA overview



Standard centralized solution



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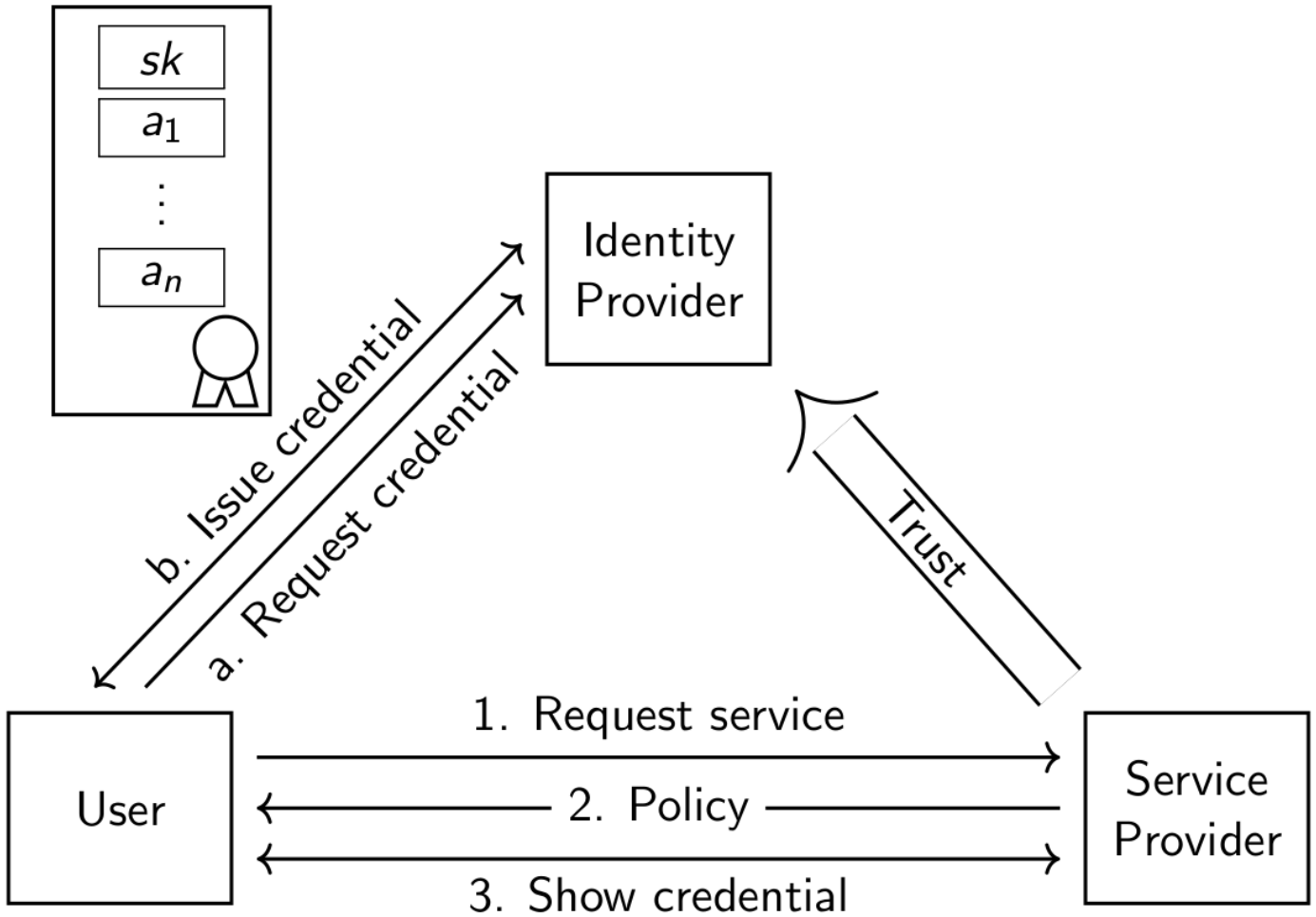
IRMA is a decentral solution



Essentials of IRMA = I Reveal My Attributes

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- Attributes are stored locally, under direct control of the user
  - storage on mobile phone is most convenient
  - attributes are cryptographically bound to the user, and are non-transferrable

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- Revocation: rogue attributes (via stolen/lost cards) should be blockable.
  - partly in conflict with previous requirements

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When I got involved with IRMA

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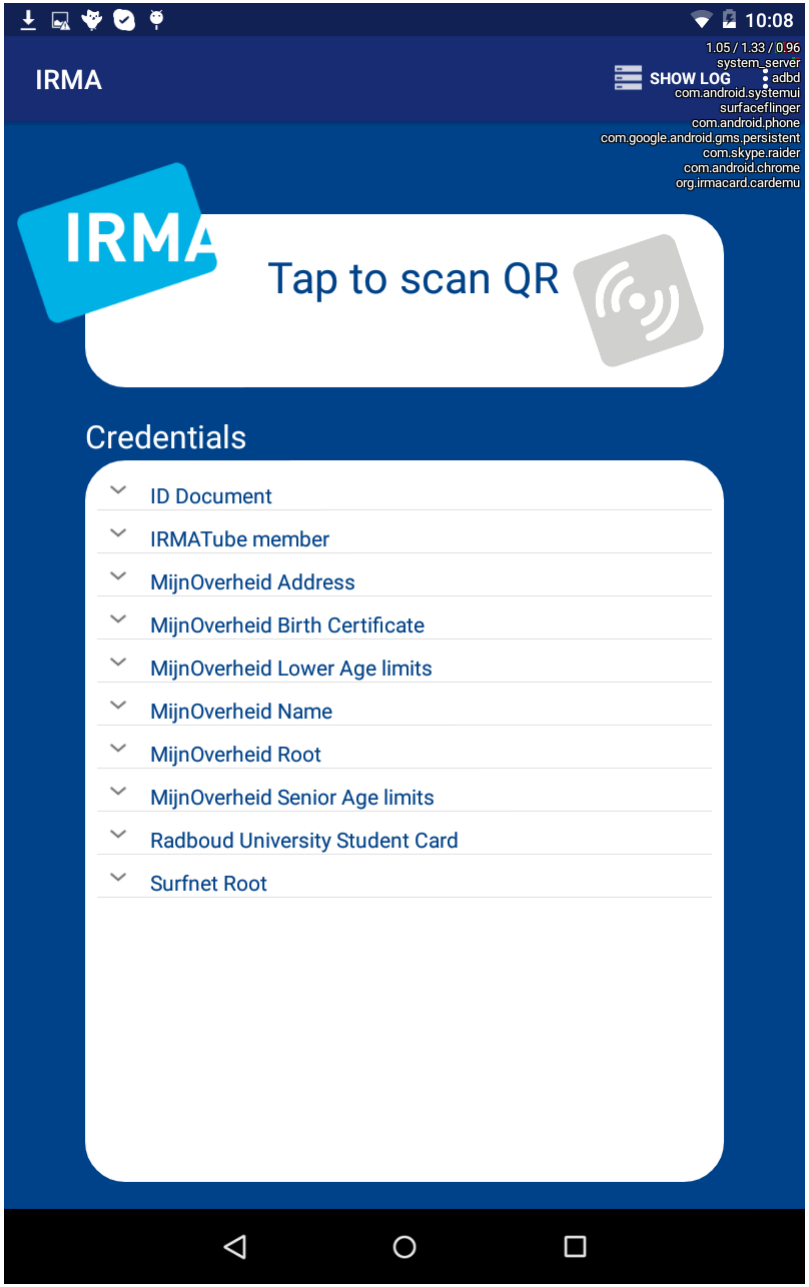
and we moved to:



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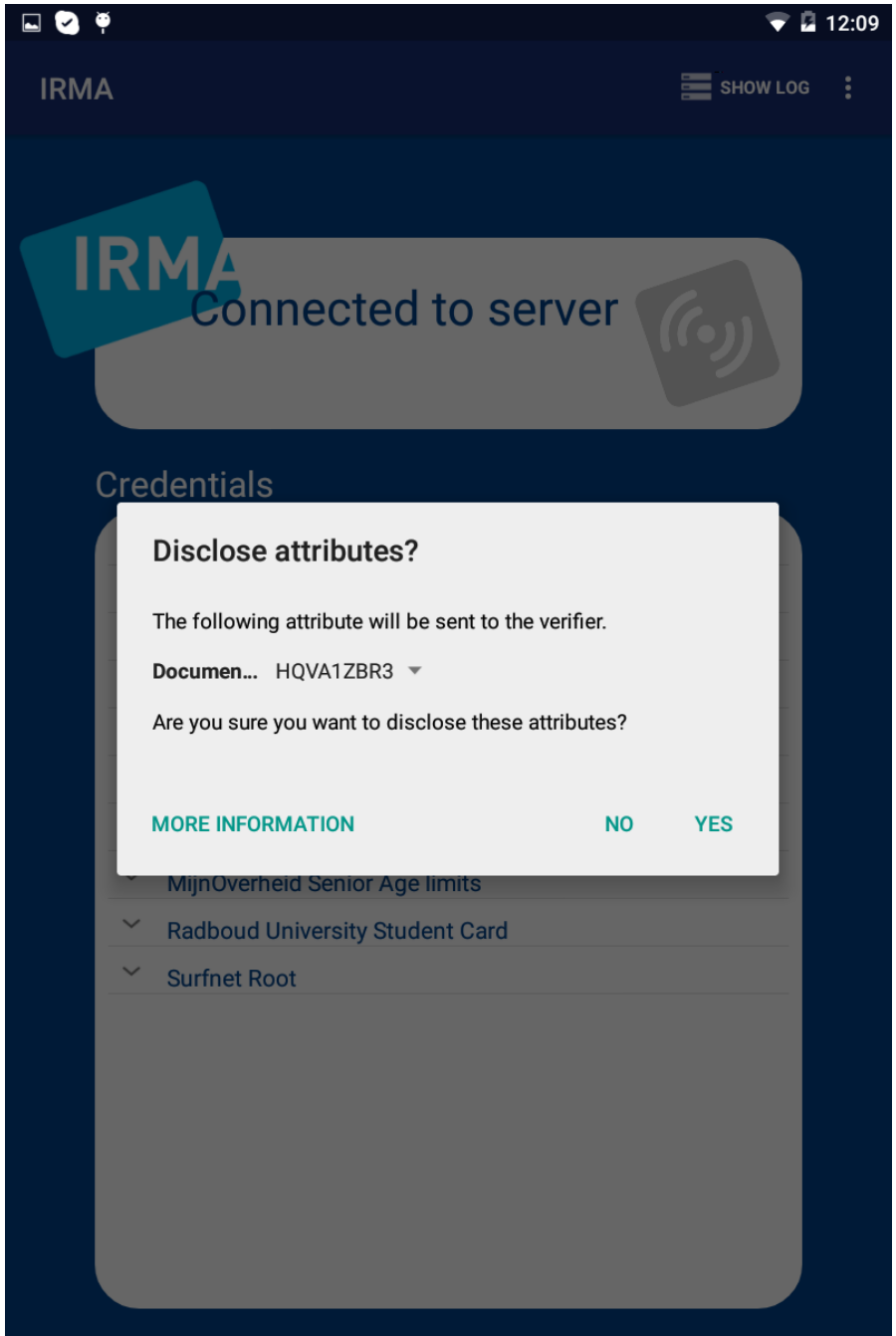
Demo time



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IRMA carrier comparison

A smartcard offers:

- Secure key storage
- Strong(er) offline user binding

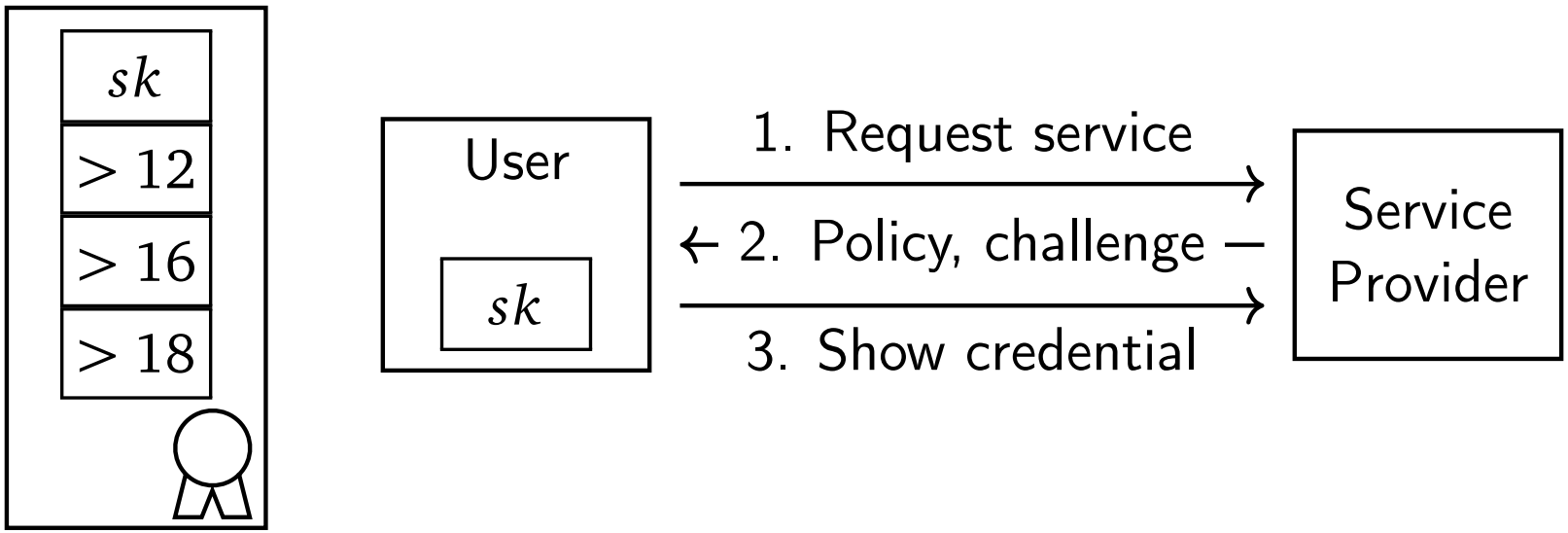
- A horrible user experience
- Poor computational power
- No Internet connectivity

A smartphone offers:

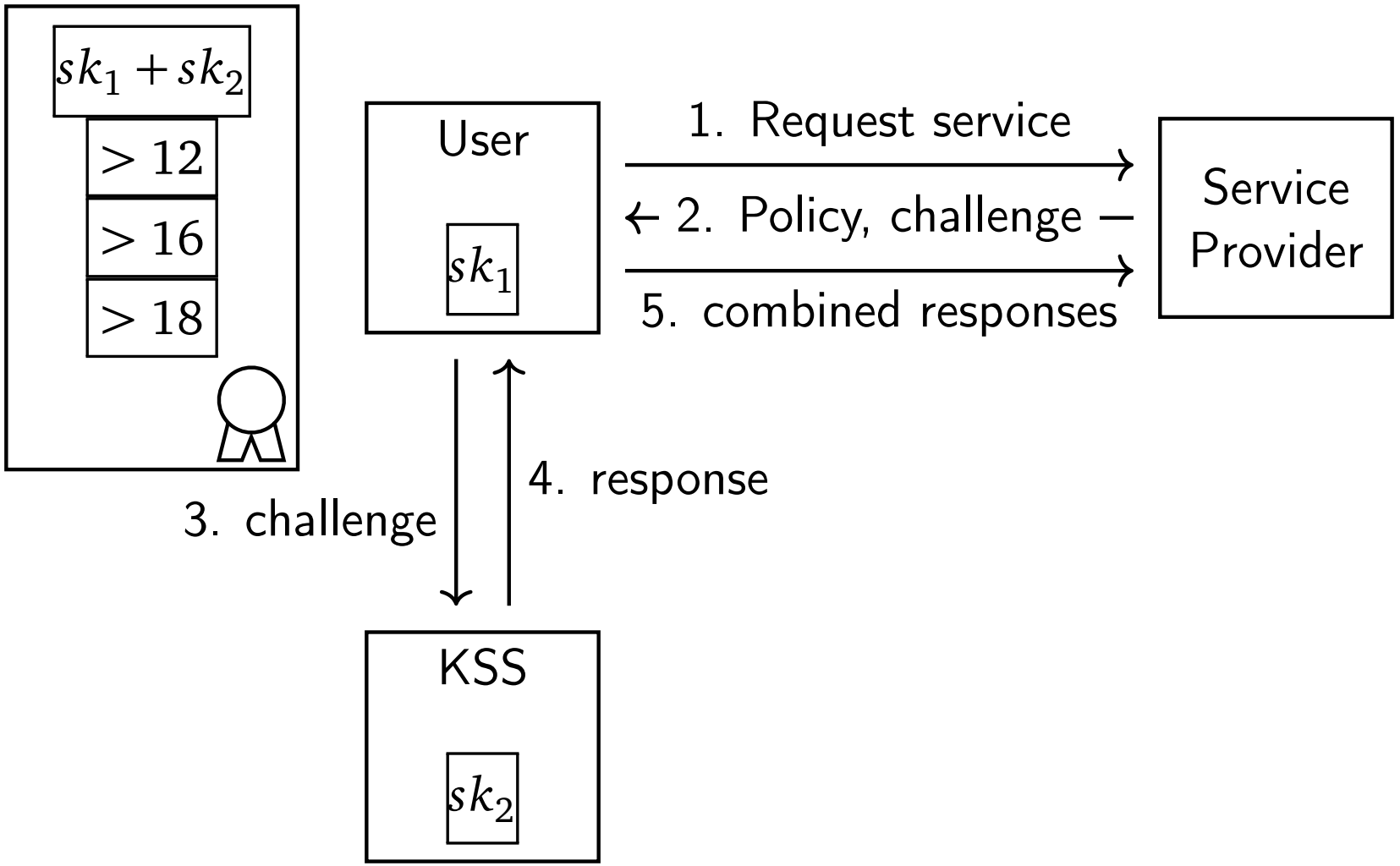
- Weak key storage
- Weak offline user binding

- Nicer user experience
- Stronger keys, faster performance, unlimited attributes, etc.
- Online issuance & verification, updatability, etc.

Securing the private key



Securing the private key



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The Key Share Server

has tremendous benefits:

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- What does the KSS learn?

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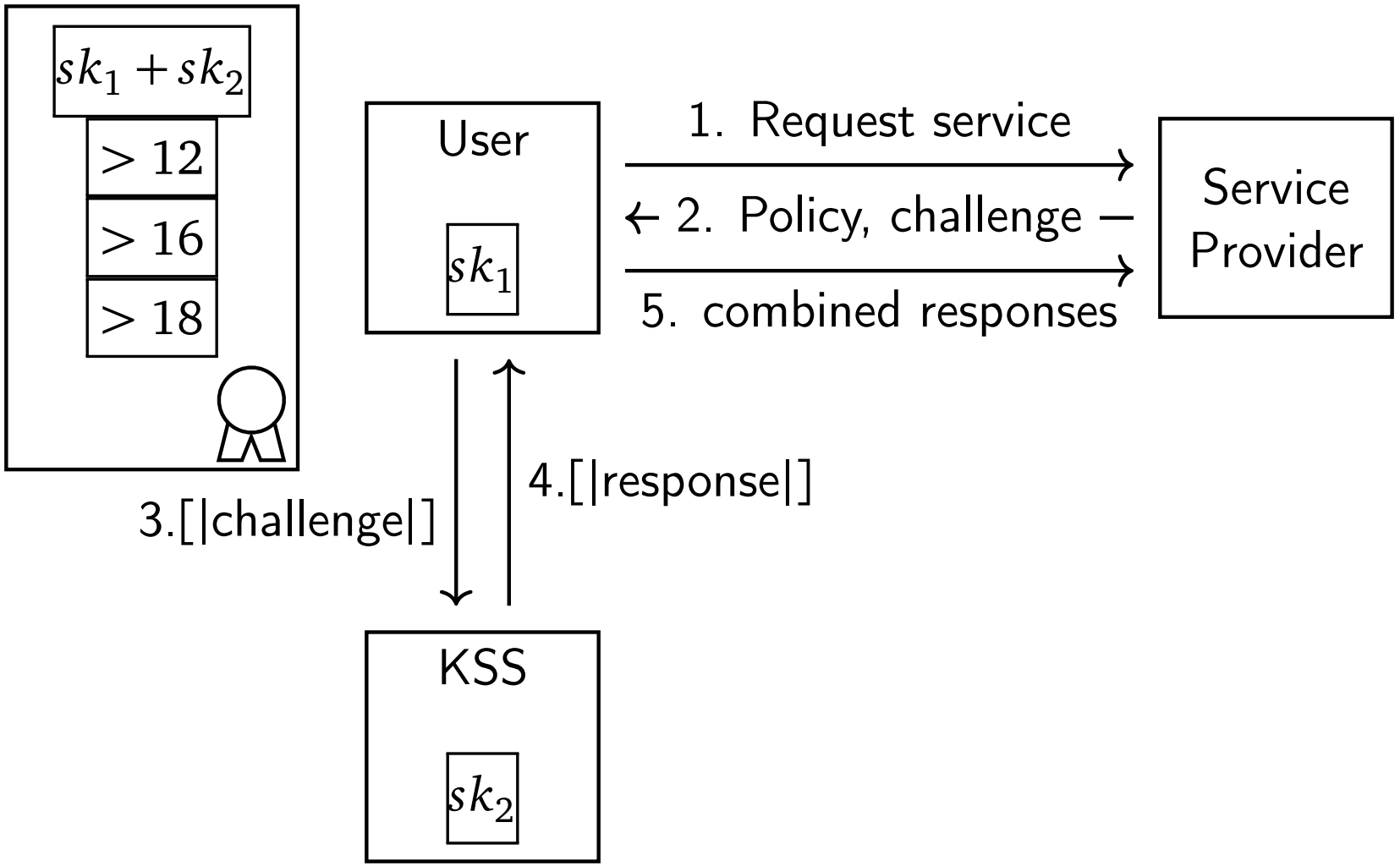

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Improvements

The move to a phone allows for several other improvements:

- Extended enrolment scenario's
- Attribute based signatures
- Online credential store

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Enrolment

New enrolment options:

1. Self-enrolment

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   - 1.1 Passport + SIM
   - 1.2 iDIN
   - 1.3 Combining

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2. Desk-enrolment

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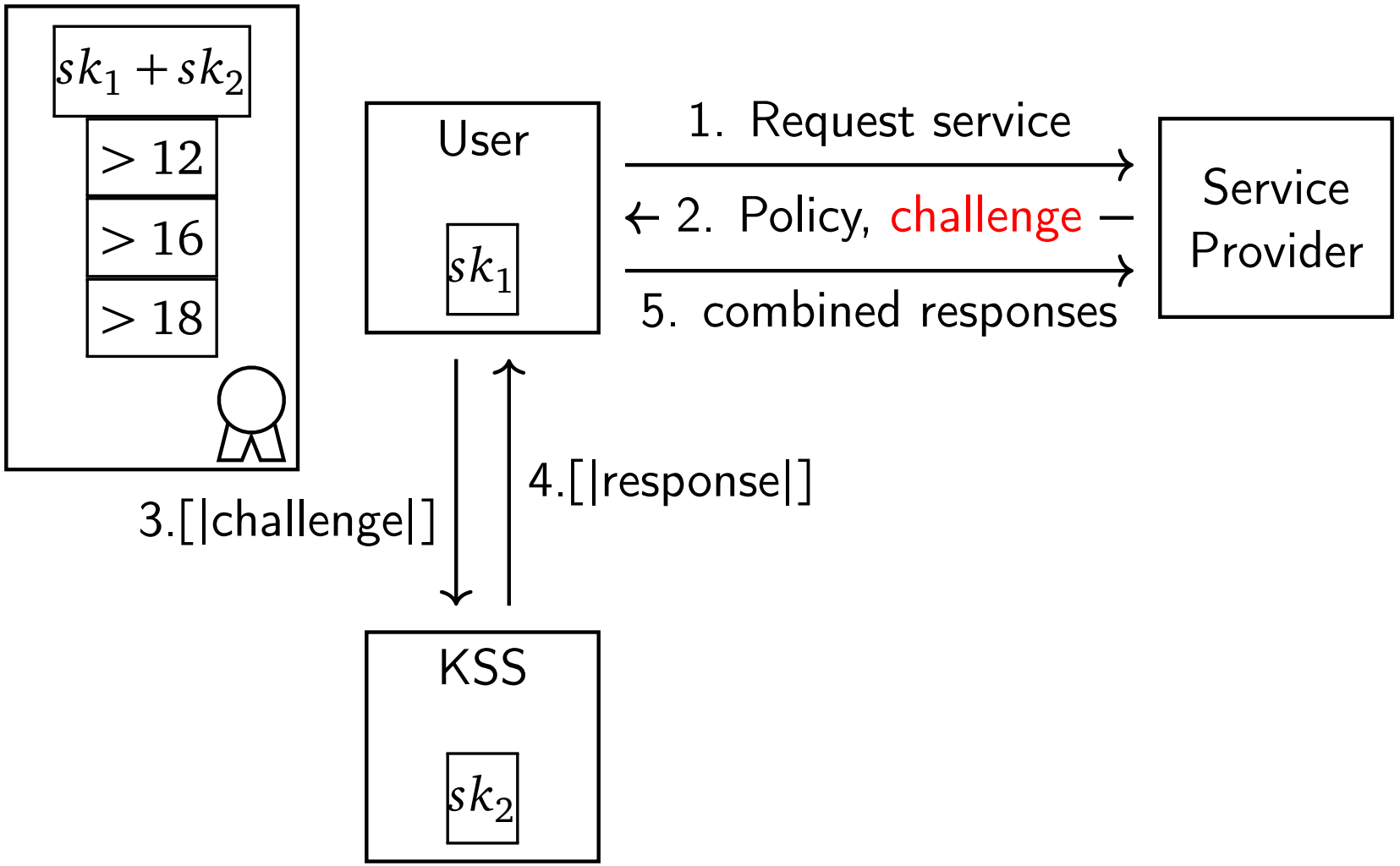
Atttibute based signatures



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Attribute-based signatures can show much more information!
e.g. signed by a docter with speciality ..., >18, a sergeant, etc.

Credential store

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Future work

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Thank you

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