ISMAR 2021 T1 Interoperability and Standards Tutorial

Christine Perey, Neil Trevett,
Muriel Deschanel, Bill Bernstein

ISMAR 2021
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Agenda

Pacific Time	Topic (and Format)	Speakers/Participants
:00 to 0:10	Introductions	All
0:10 to 1:10	What is the problem? Why is interoperability important for AR Adoption? How do we create tools to address AR interoperability obstacles?	Christine Perey Muriel Deschanel Neil Trevett
1:10 to 1:25	Current Status of Standards for AR Interoperability – what's in the interoperability toolbox already?	Christine Perey
1:30 to 2:00	How to use standards as tools	Bill Bernstein
2:00 to 2:30	Panel Discussion	Bill, Christine, Muriel and Neil

Tutorial Chairs/Speakers

Neil Trevett,
NVIDIA/Khronos Group

Christine Perey,
PEREY Research & Consulting

Muriel Deschanel,
B<>Com/ETSI

William Bernstein
Air Force Research Laboratory, Digital Manufacturing/Future Factory Interest Area

What is the problem? Why is interoperability important for AR Adoption?

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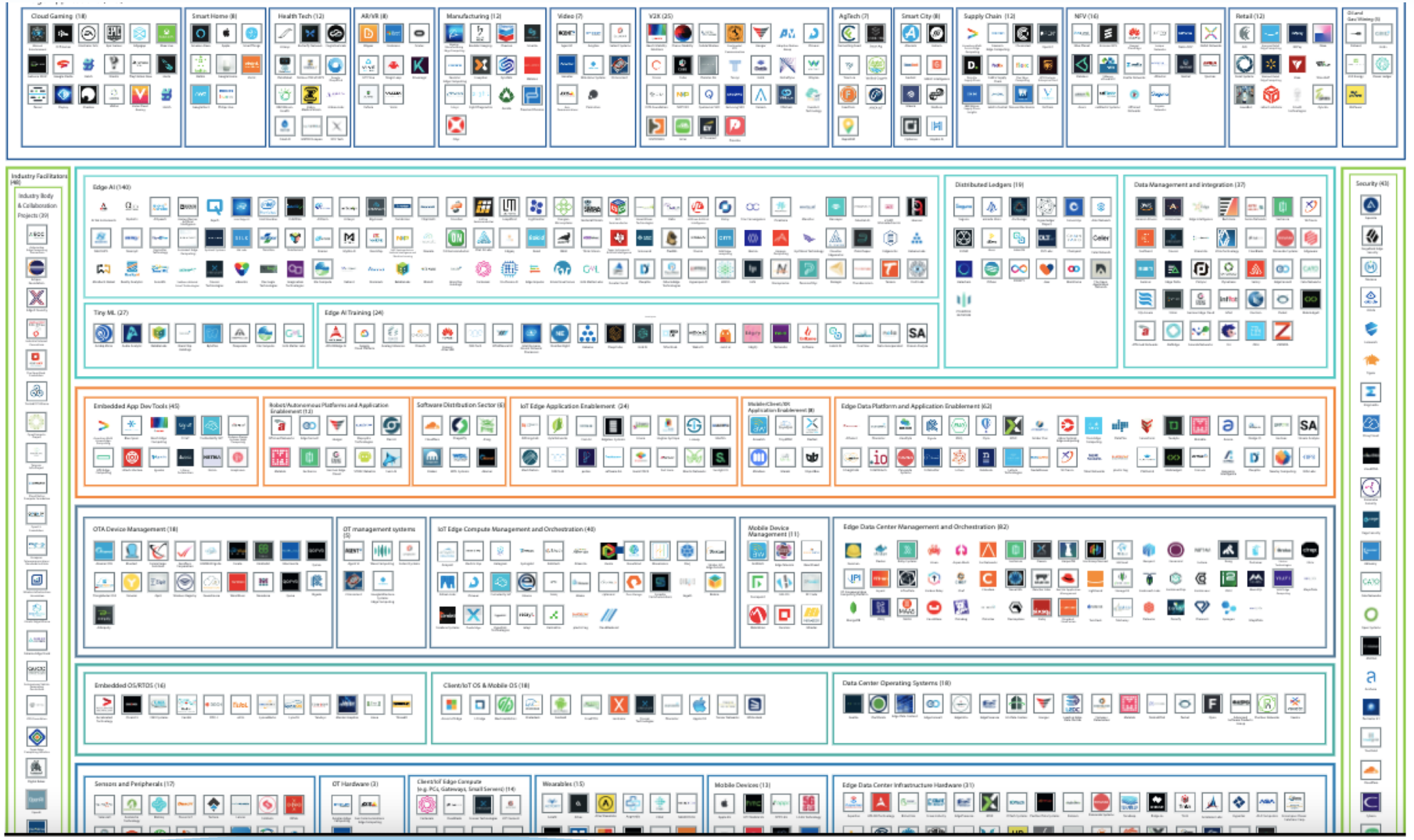
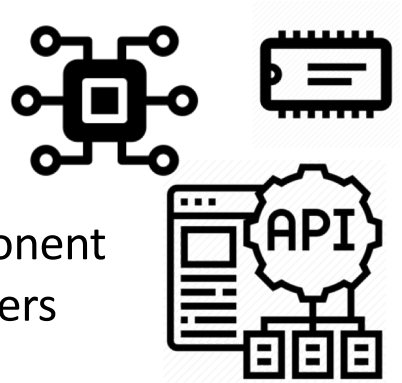
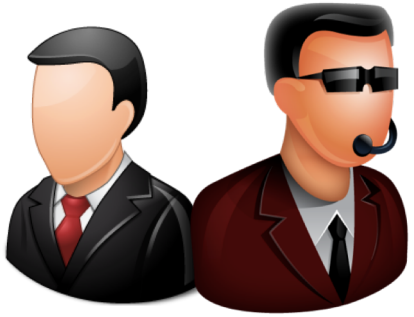
500+ Companies in the Current AR Ecosystem



AR Ecosystem Stakeholders



Component Providers



Customer/Managers

Integrators and Developers

Systems and Platform Providers

End Users

What is AR Interoperability?

AR interoperability is the ability for

AR components, systems and software applications to

communicate and exchange data and, as a result,

for users to be able to

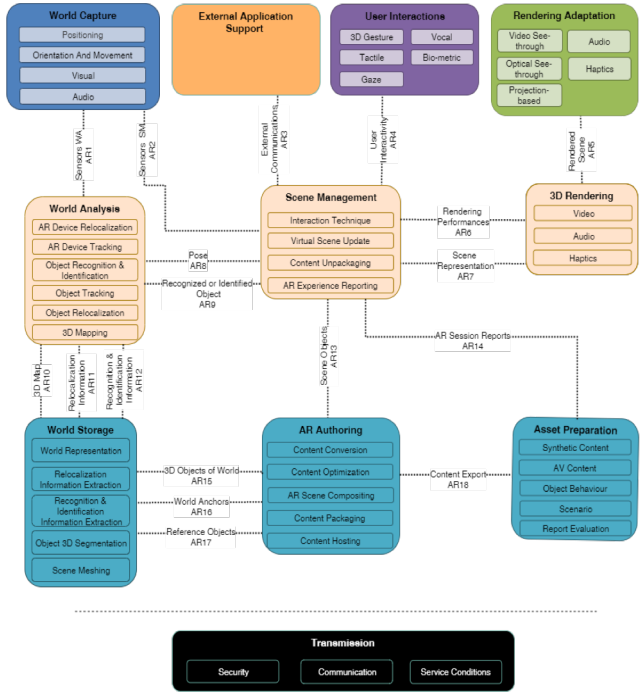
visualize in context the information

that has been exchanged between systems of

different providers

without translation, conversion or delays

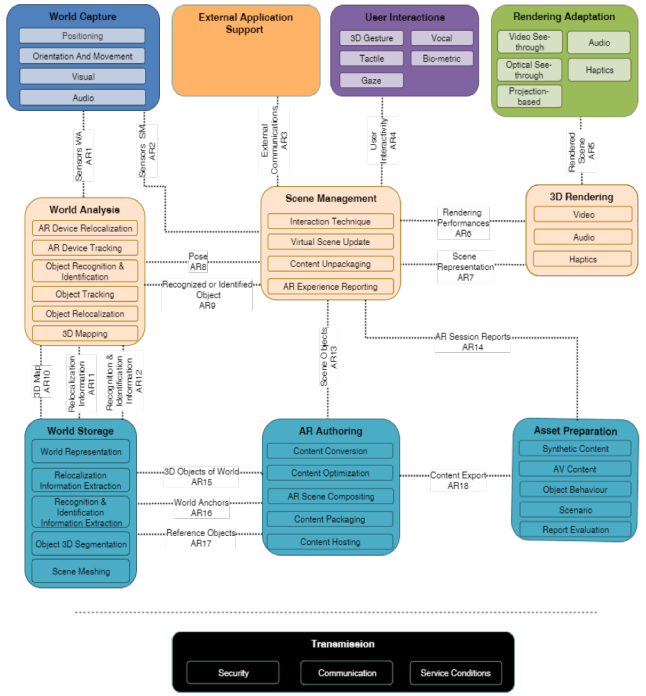
What is AR Interoperability?



AR Systems/Services

What is AR Interoperability?

Multi-vendor



AR Systems/Services

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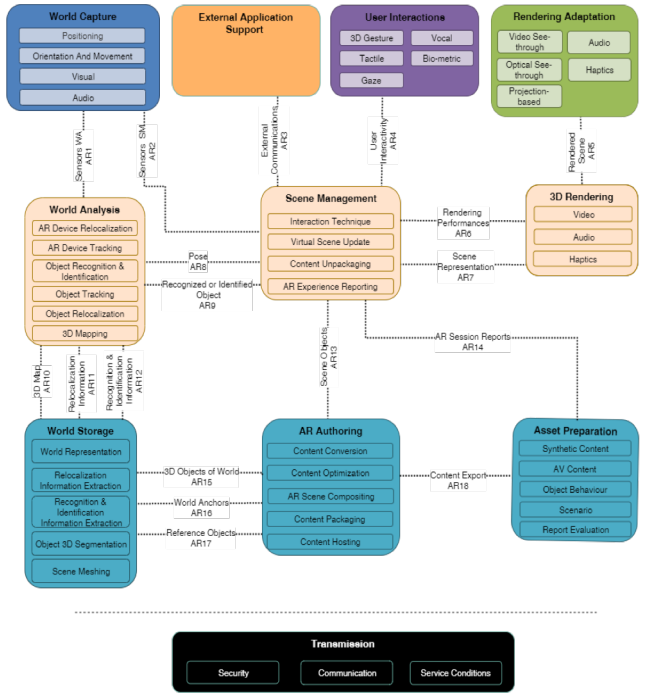


Wearable

Tablet

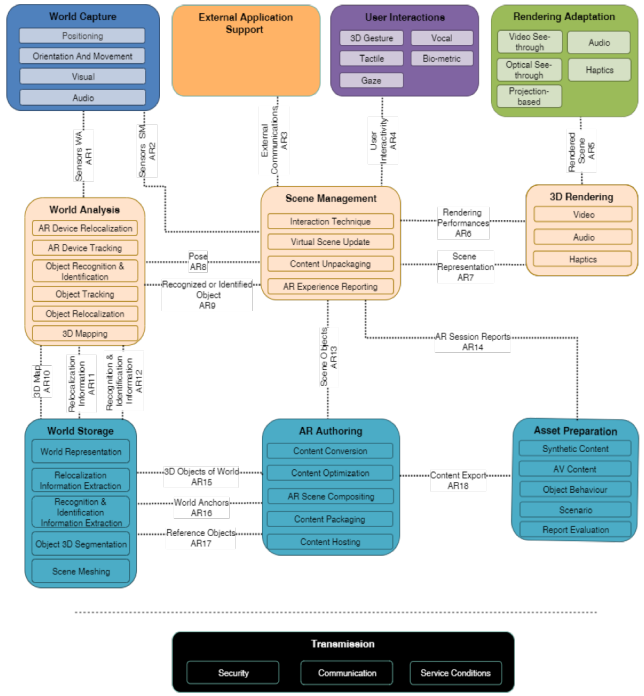
Projection

Many form factors to meet the needs of a wide variety of use cases

AR Systems/Services

What is AR Interoperability?

Multi-vendor



Wearable

Tablet

Projection

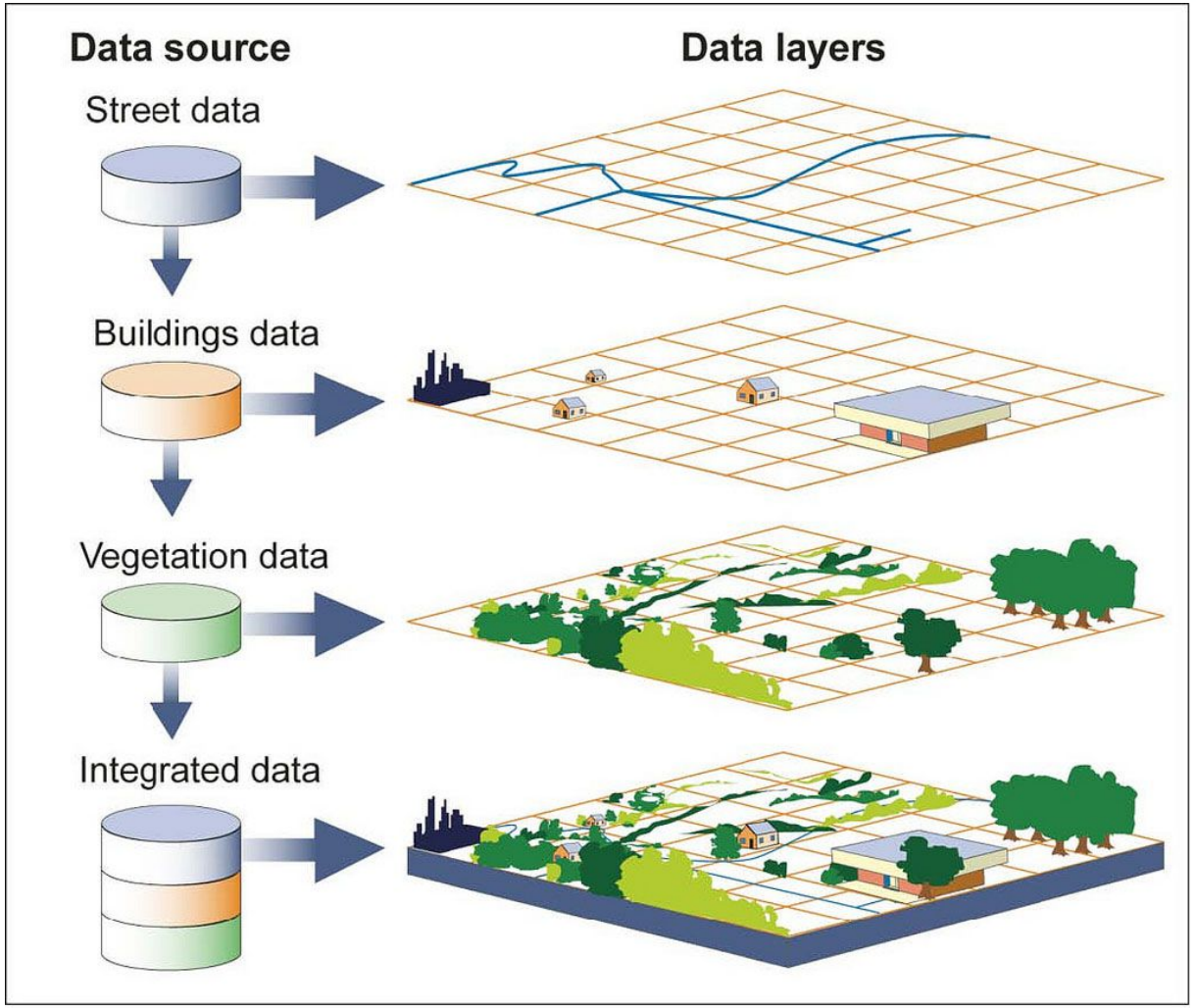
Wide variety of venues: Home, Work, Shopping, Museum

These venues have other users and technologies in them

AR Systems/Services

Data must play nicely together

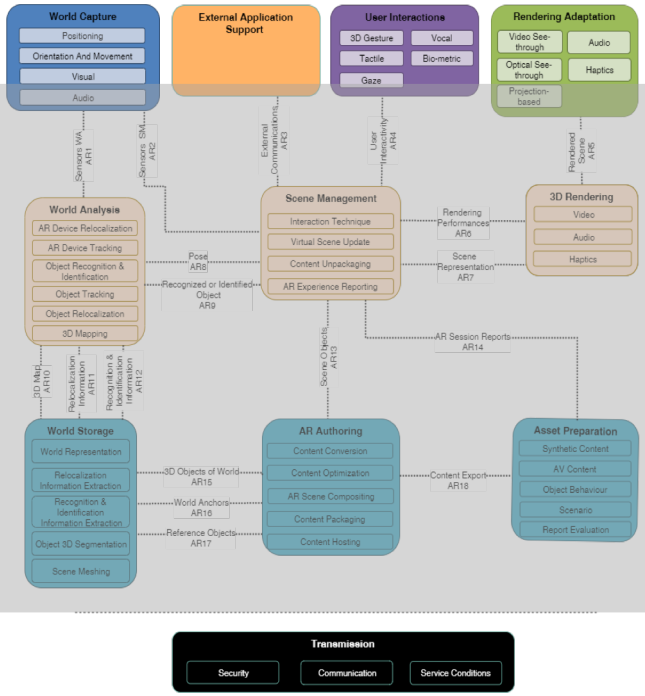
- Data layers should all align and be provided to the user, as needed
- Some expectation about how the data behave must be met
  - For example, a query to a street address should return a location on a map



Source: GAO.

What AR Interoperability?

Multi-vendor



AR Systems/Services

Wearable

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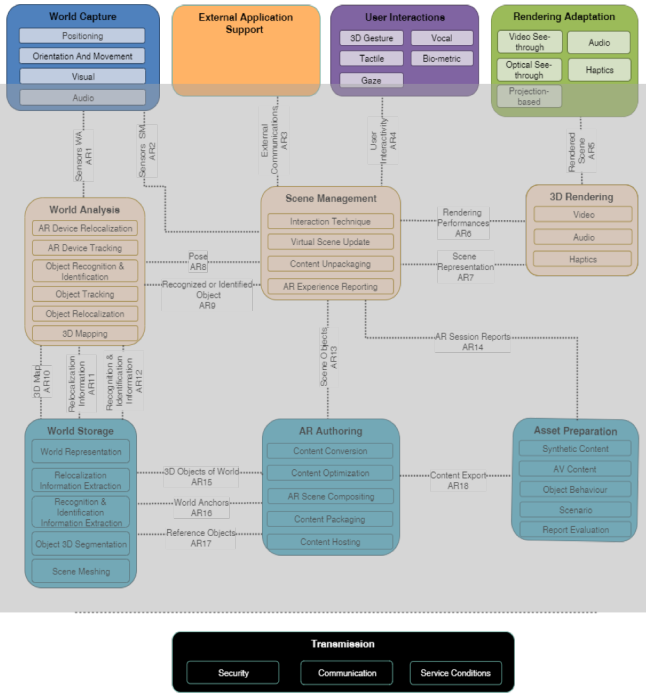
Projection

Integration with

Existing (Diverse) Infrastructure

What is AR Interoperability?

Multi-vendor



Wearable

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Projection

AR Systems/Services

Integration with

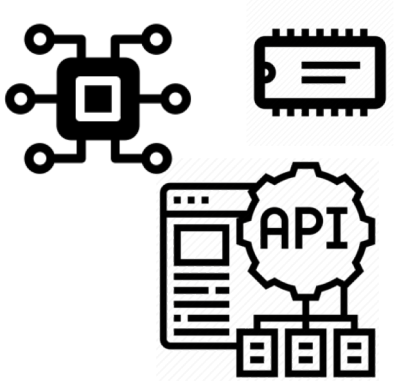
Data

Control

Existing (Diverse) Infrastructure

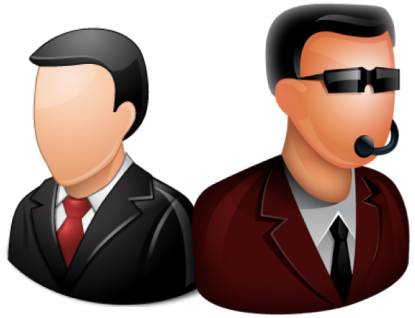
Information/ Instructions

Interoperability Addresses Four Core Ecosystem Goals



Growing Markets

By reducing customer confusion and increasing capabilities and usability



Accelerating Time to Market

With well-proven functionality, testing and interoperability

Enabling Innovation

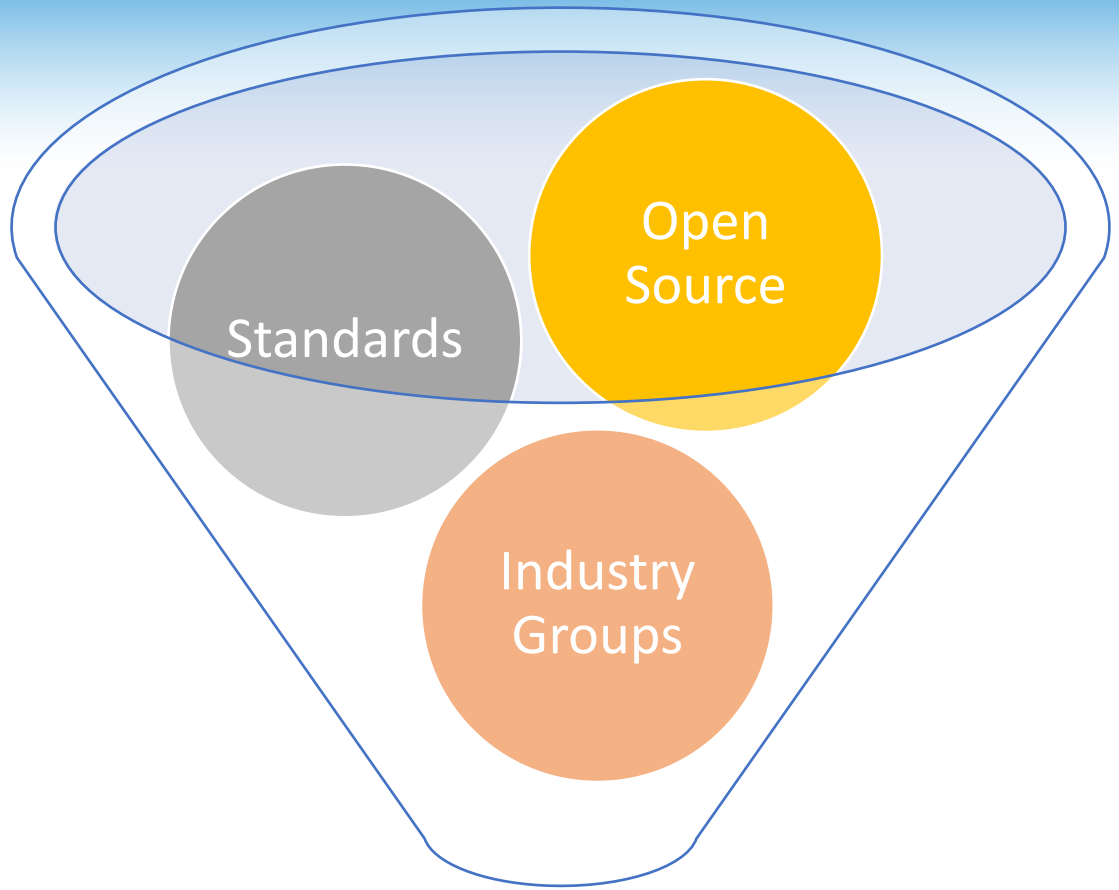
Customers can assemble unique solutions addressing their challenges

Providers can compete on implementation quality, performance, power etc. etc.

Reducing Costs

By sharing development between many companies and driving volume

Tools for AR Interoperability



Interoperability within and between AR and other IT systems

Why are there so Many Options?

- Different SDOs, industry groups and communities have different expertise and participation levels
- Different groups have different IP protection and work styles
- Risks
  - Duplication of work
  - Standards from different standards organization do not interoperate
- Reducing risks
  - Mutual members
  - Liaison agreements
  - Sharing of information
  - Participation

SDOs Differ in How They Work

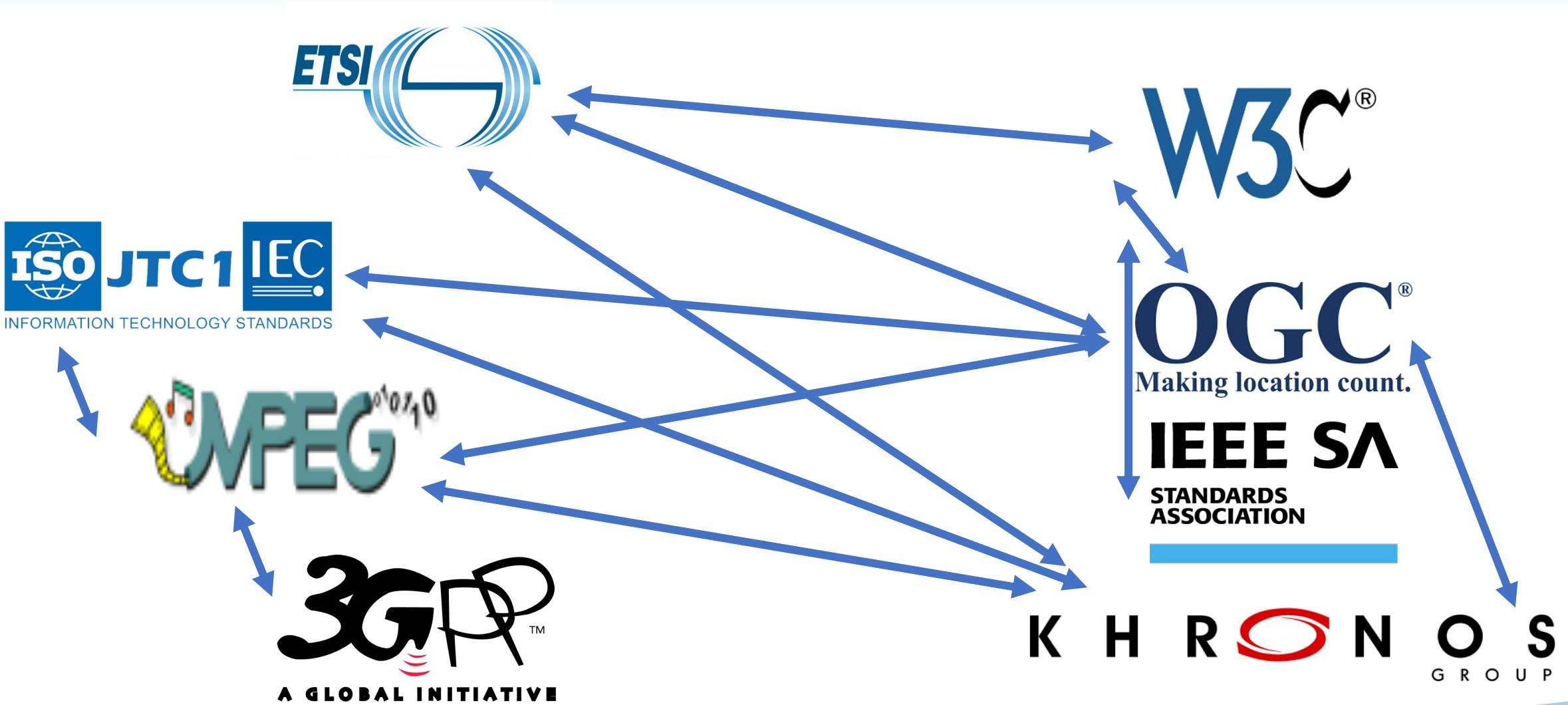
Closed
Involves inputs from only select group (members)

“in the Open”
Non-members allowed to observe/comment

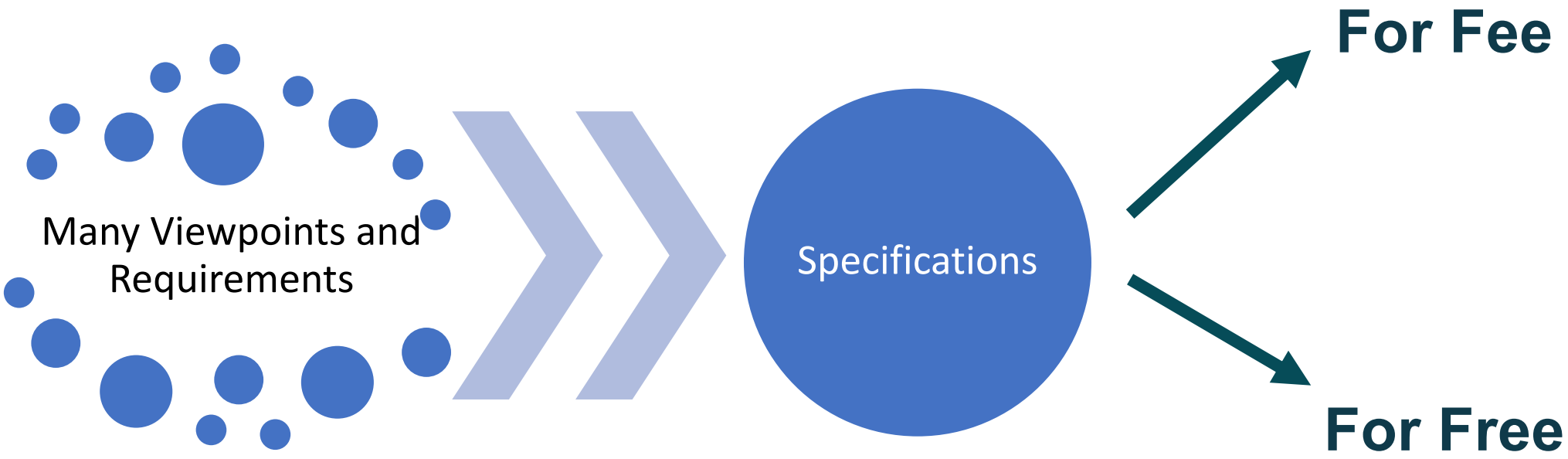
Limited Participation
Invited experts can participate

Completely Public
Non-members who agree to SDO terms allowed to contribute

Liaisons are Key to Lowering Risks



Consensus is Key



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