

Interface Exchange framework (IFEX)

– Quick introduction and “*why*”
(no details)

v2.0

July 2023

Context

Too many interface description languages and IPC/RPC technologies!

Create another “one to rule them all”? (yes it is ironic... "XKCD standards")

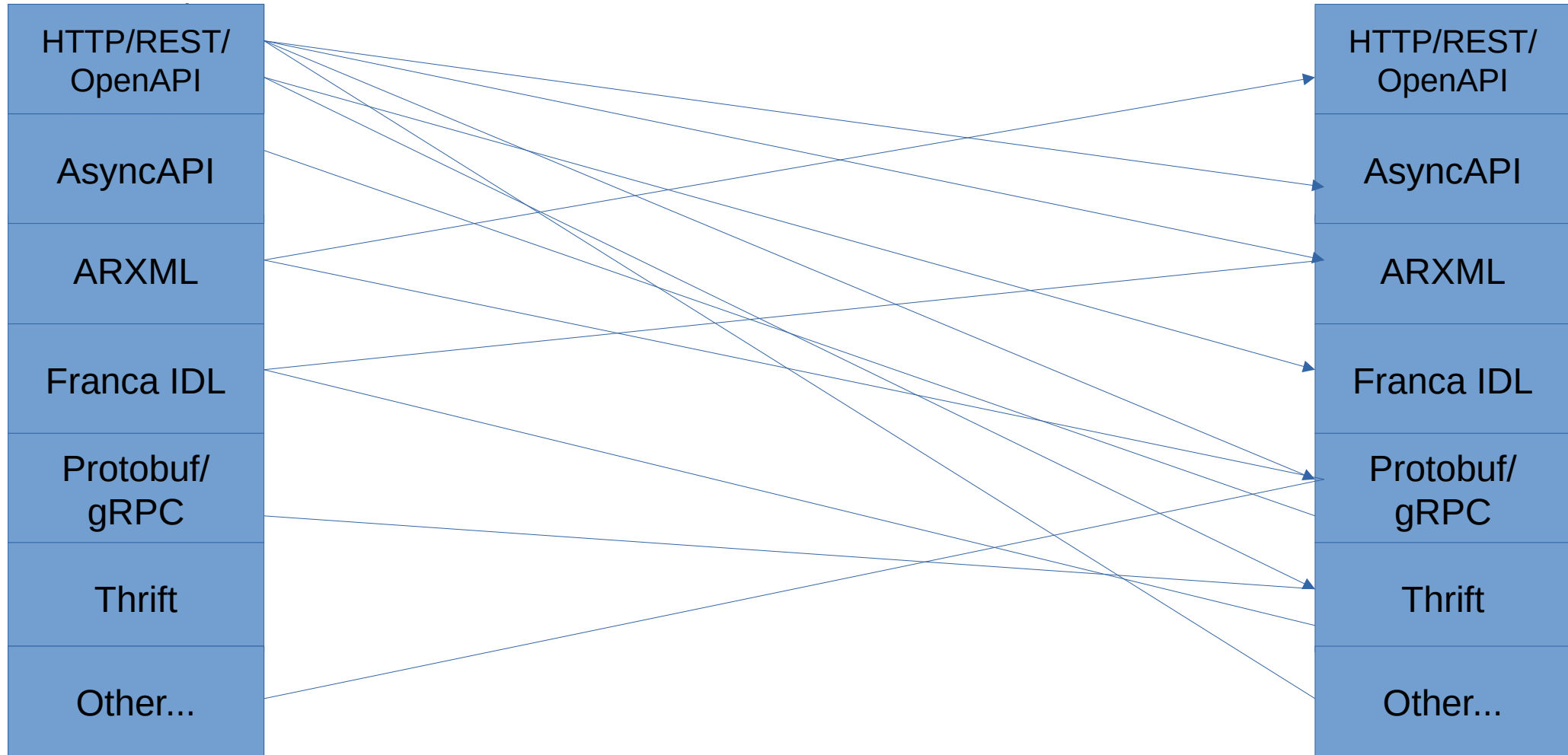
But! The main challenge is not creating *or avoiding* “a new IDL”
– it is determining the semantic equivalences and differences between existing technologies → (to efficiently connect them and swap one for another).

IFEX project is a place to do the difficult *semantic*-mapping work

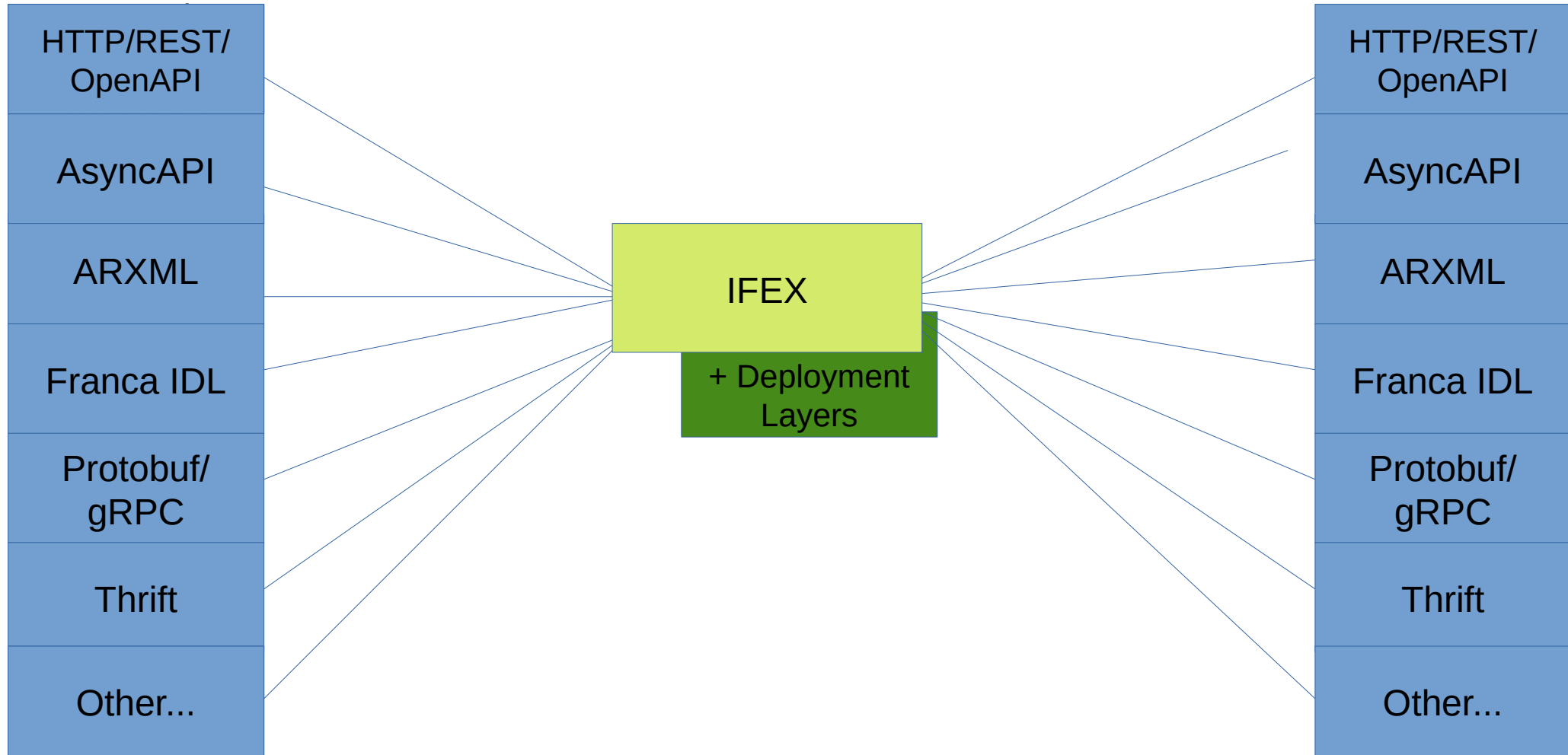
While doing so, it creates translating tools between formats

... and it results in a simple but powerful interface description format
(because it is forced to include “all” features of the other alternatives)
(more importantly because it uses Layers, to separate individual concerns)

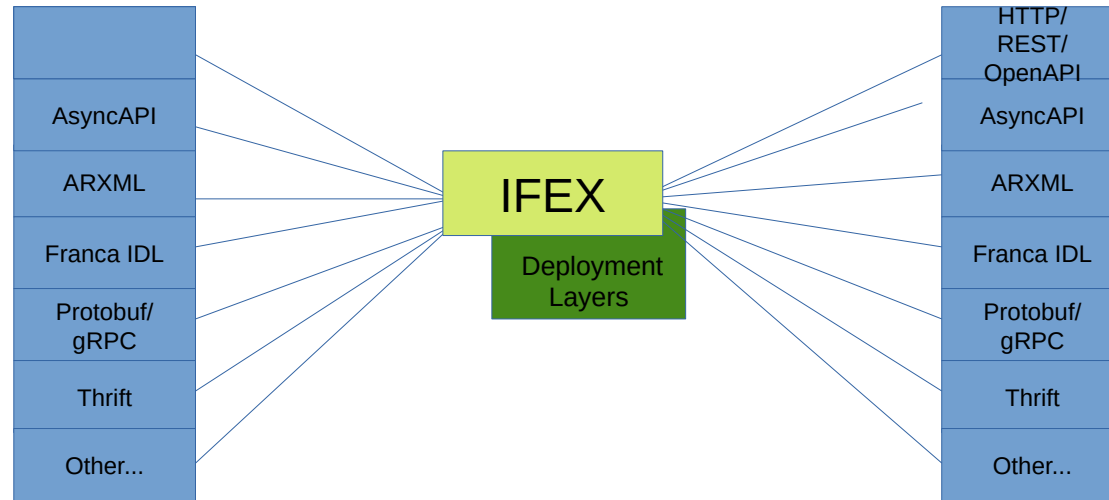
N-to-N



N-1-N



Bigger view



Not just an IDL. A common interface-description-model.
A project to investigate, connect and unify
interface/communication technologies.

Details and F-A-Q

Q: Why not just select an existing IDL and put that in the middle of N-1-N?

A: None of them have ALL the features of the others

A: Few care about overall picture, compatibility with other choices

A: None (**except Franca*) have a strongly layered approach required to manage complexity and IDL scope-creep.

- IFEX adopts this important concept and extends it
- Avoid deployment details and related meta-data to pollute the core IDL. Put those details in composable layers
- => keeps the fundamental “interface-description” reusable

Details and F-A-Q

Q: Isn't it a lot of work to create code generators for the IFEX IDL?

A: Some work for sure. We only write new what is necessary.

A: Reuse: Translating to an existing IDL means we can often use "*their*" code generators. IFEX source → <IDL A> → [reuse existing tools for IDL A]!
In some areas, it is more a *requirement* (approved AUTOSAR tools need ARXML)

Status July 2023 (1)

You might know it as “VSC” -> we now call the technology **IFEX**

IFEX is a collaborative Open-Source development
(*AUTOSAR parts not yet(?) published)

Core IDL/model specification (“v 1.0” status) is complete/comprehensive and mostly stable

→ Only minor updates expected from now on

(Note: “Layers” definition is continuous, as support for translations grow)

Layers can be extended to many concepts:

- Variability in deployment
- Access control rules, security implementations, etc.

Status July 2023 (2)

Implementations and principles for IFEX tooling exists.

Python implementations – lightweight and easy to get into.

New tools can be developed following the existing patterns.

Existing support:

Translation into formats like DTDL, SDS-BAMM, Protobuf (gRPC), AUTOSAR XML (early stage) exists

Thrift and D-Bus coming

Translation *from* formats ongoing. Can be a bit more challenging. Prioritized on a need basis.

Find out more

This presentation does *not* cover many details about IFEX

The project has been active for a few years so many of *your concerns* are known – but please ask and we will clarify and discuss

Read [the specification](#) of the IFEX Core IDL

Ask IFEX developers for deeper discussions