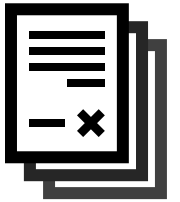


Standardizing a Generic Trust Anchor API for Industrial IoT Devices

January 2021 / Torsten Förder, Beckhoff Automation GmbH & Co. KG

Abstract on Standardizing a Generic Trust Anchor API (GTA API)

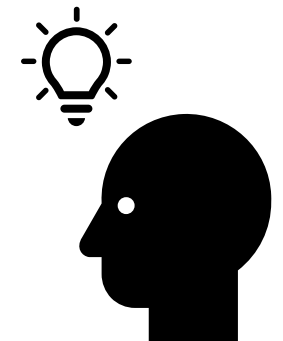
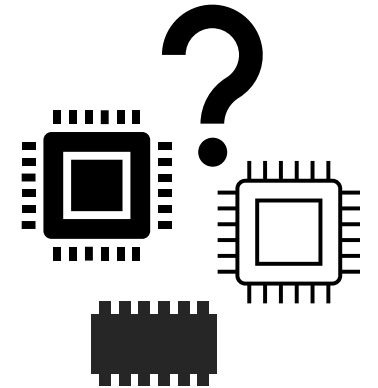
- A technical specification is being worked on.
 - Organized underneath ISO/IEC JC1/SC41 (Internet of Things and related technologies).
 - Work happens within national bodies of ISO/IEC – for example, at DIN in Germany.
 - Contributors are from the economy, science, and the public sector.
- Subject is
 - to standardize an Industrial IoT Security API,
 - which simplifies product integration of secure elements
 - for simple/low effort integration, market flexibility, support of long-term security.
- Envisioned API set:
 - Random numbers, key derivation (symmetric), integrity protection, signatures message authentication, encryption / decryption, unique ID support, PKI support, asymmetric keys, X.509 certificates, security life cycle support, ...



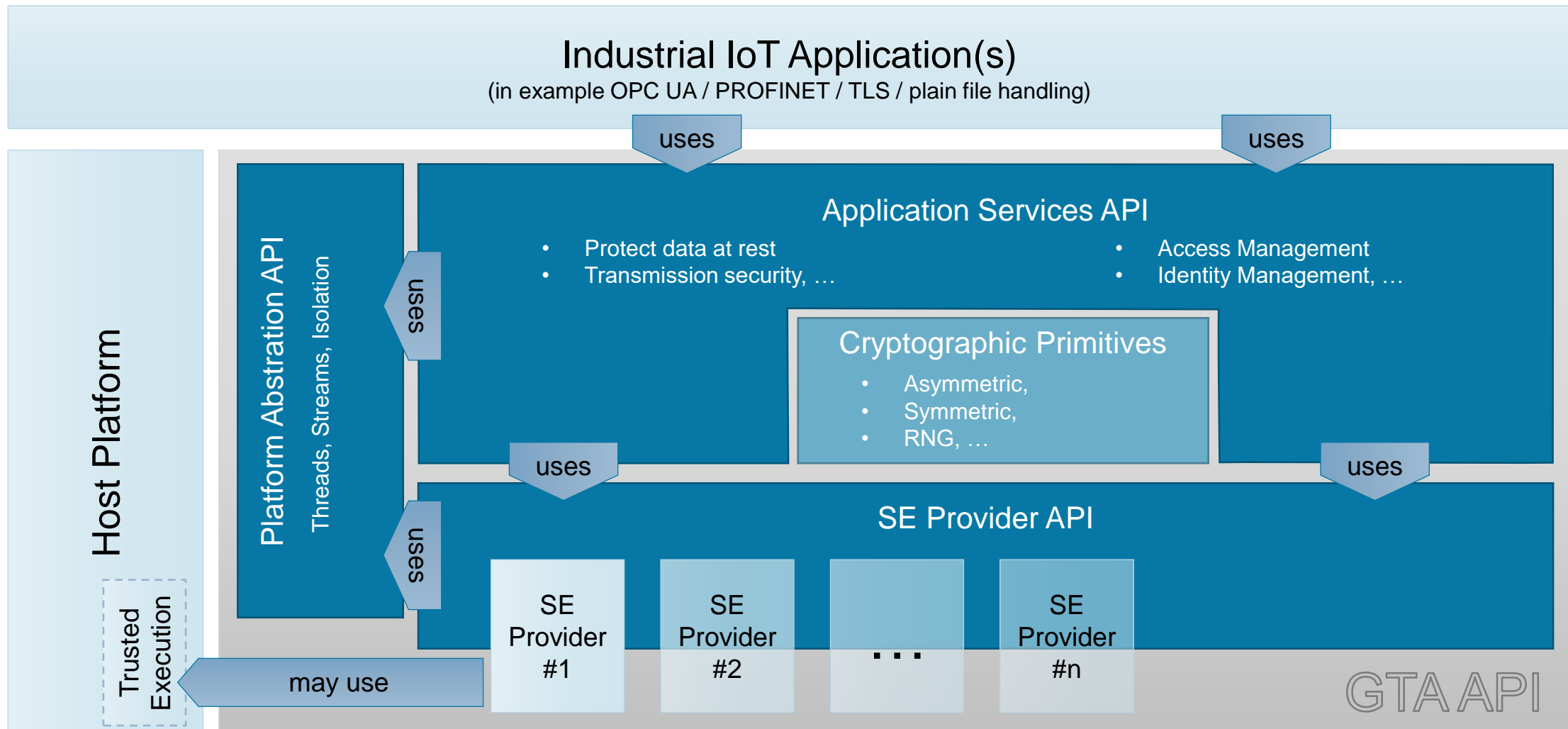
Background and motivation for GTA API

- A Secure Element (SE) is the basis.
 - It implements cryptographic security functions on industrial devices.
 - It guards secrets from being revealed to unauthorized parties.
 - It is a Trust Anchor.
 - SEs traditionally come in different form factors and with different APIs.

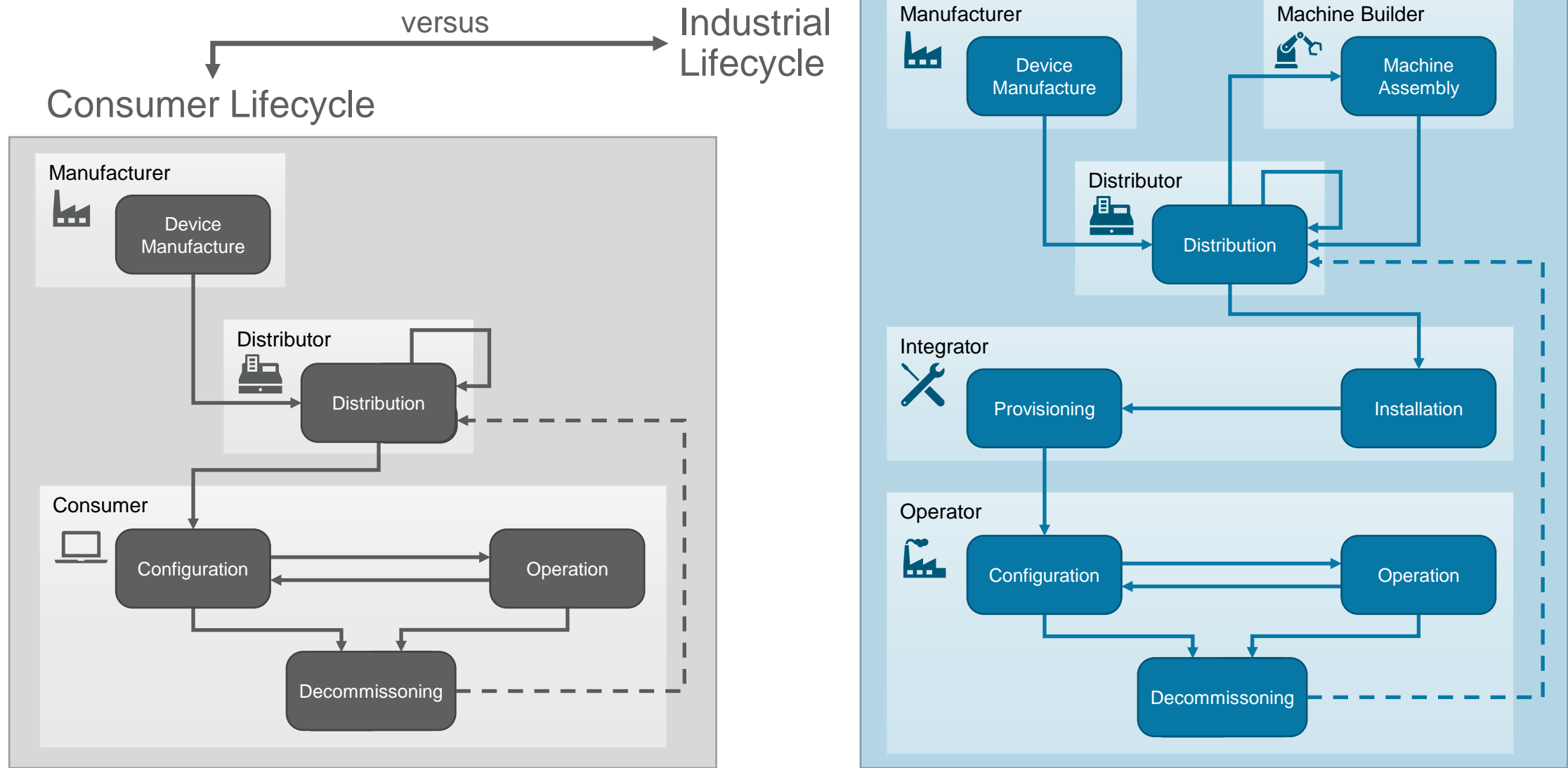
- The GTA-API
 - provides a standardized API on top of existing / future SE APIs,
 - supports the industrial application engineer by allowing
 - to integrate Trust Anchors correctly without deep security expertise,
 - to keep the application when re-designing for another SE, and
 - to select the appropriate the SE,
 - supports SE vendors to address the industry sector.



Glimpse on GTA API in progress: modular architecture



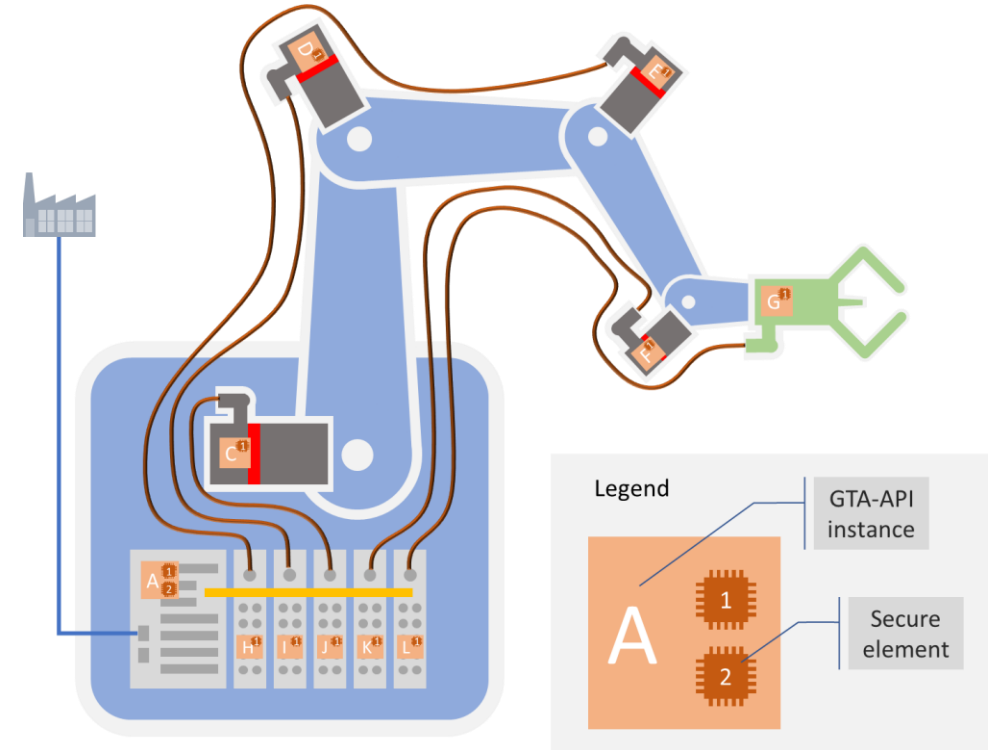
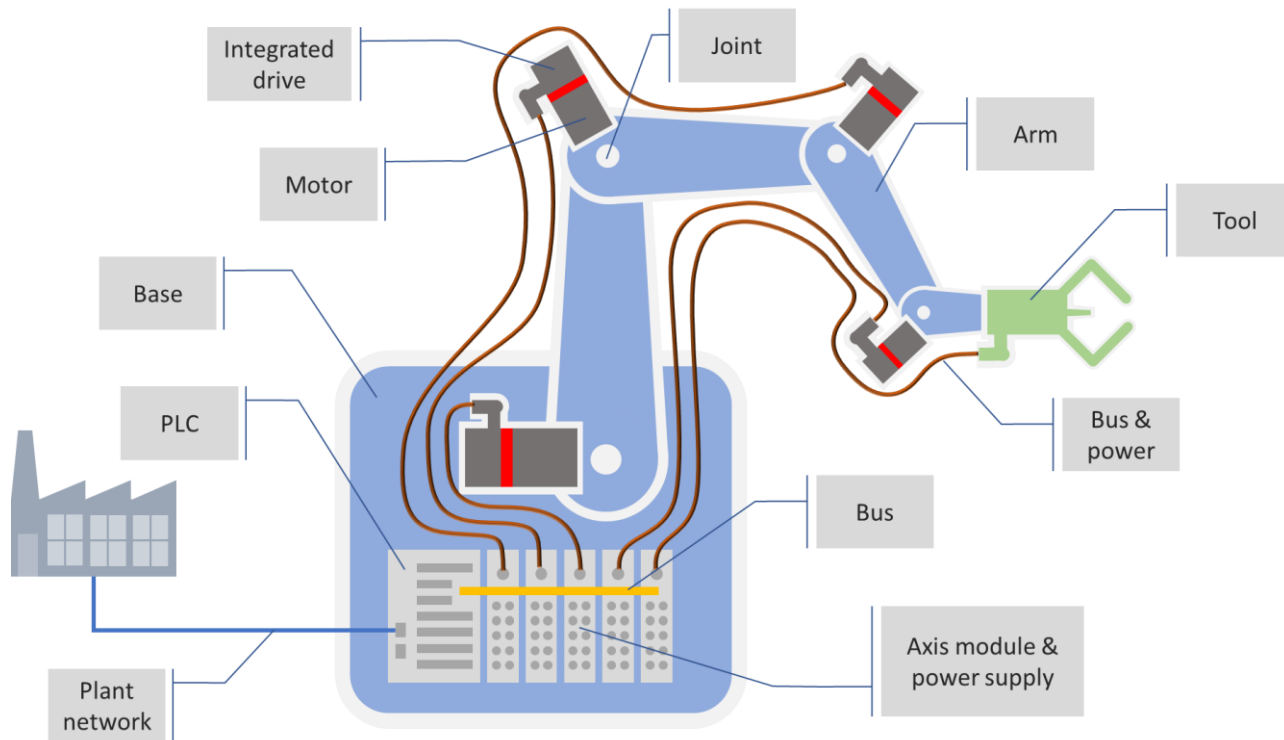
Glimpse on GTA API in progress: support for industrial lifecycle



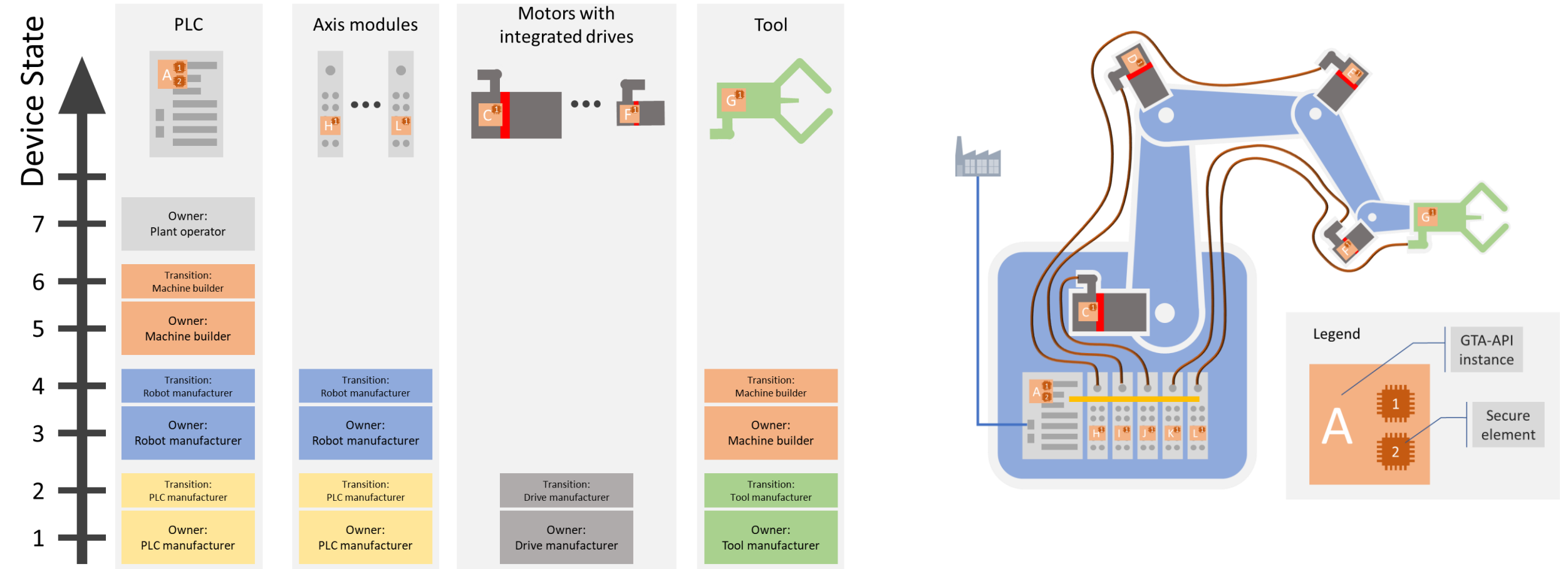
Glimpse on GTA API in progress: complex example with instances

A robot as example for a composite machine:

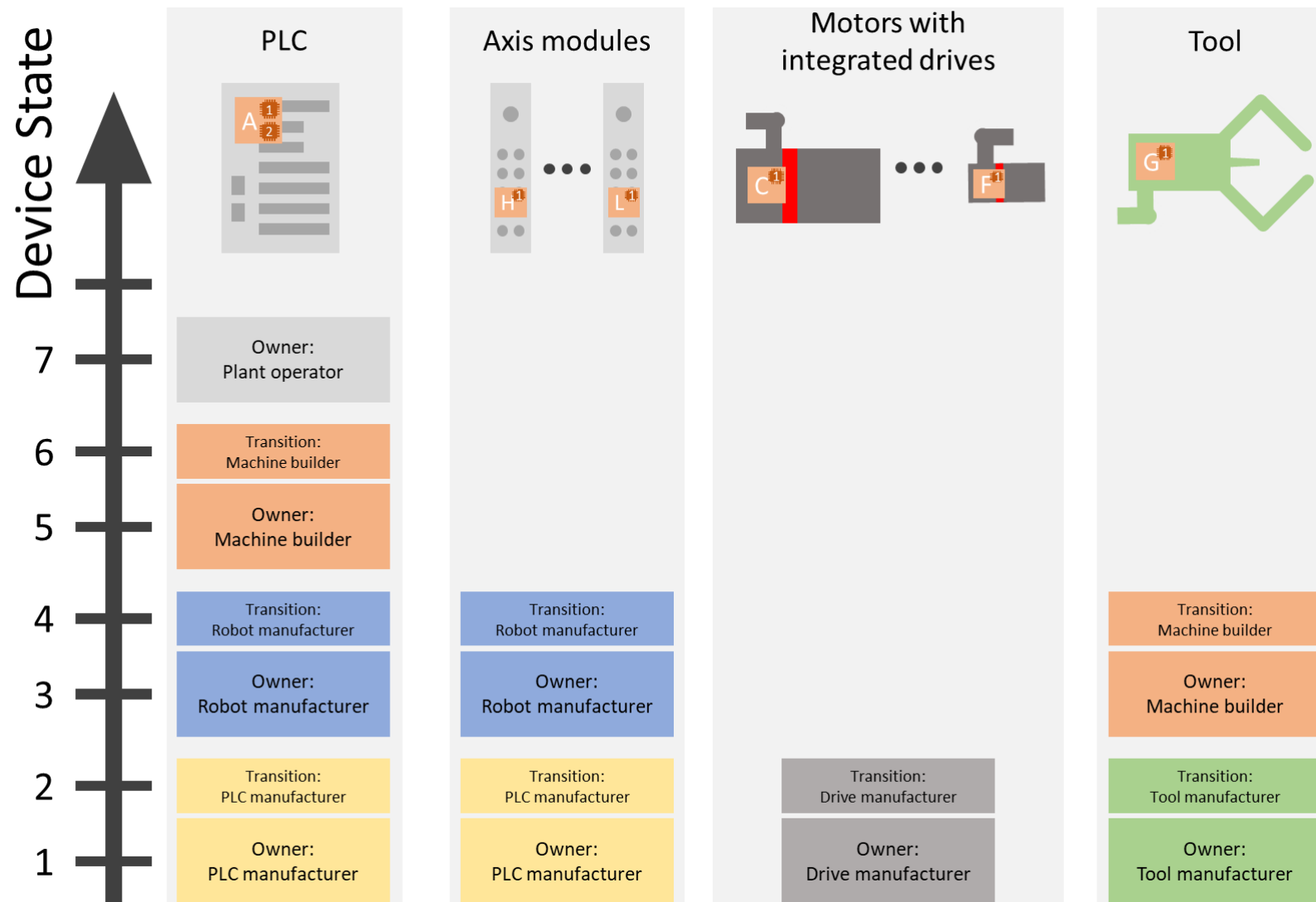
Where could the GTA API instances sit there?



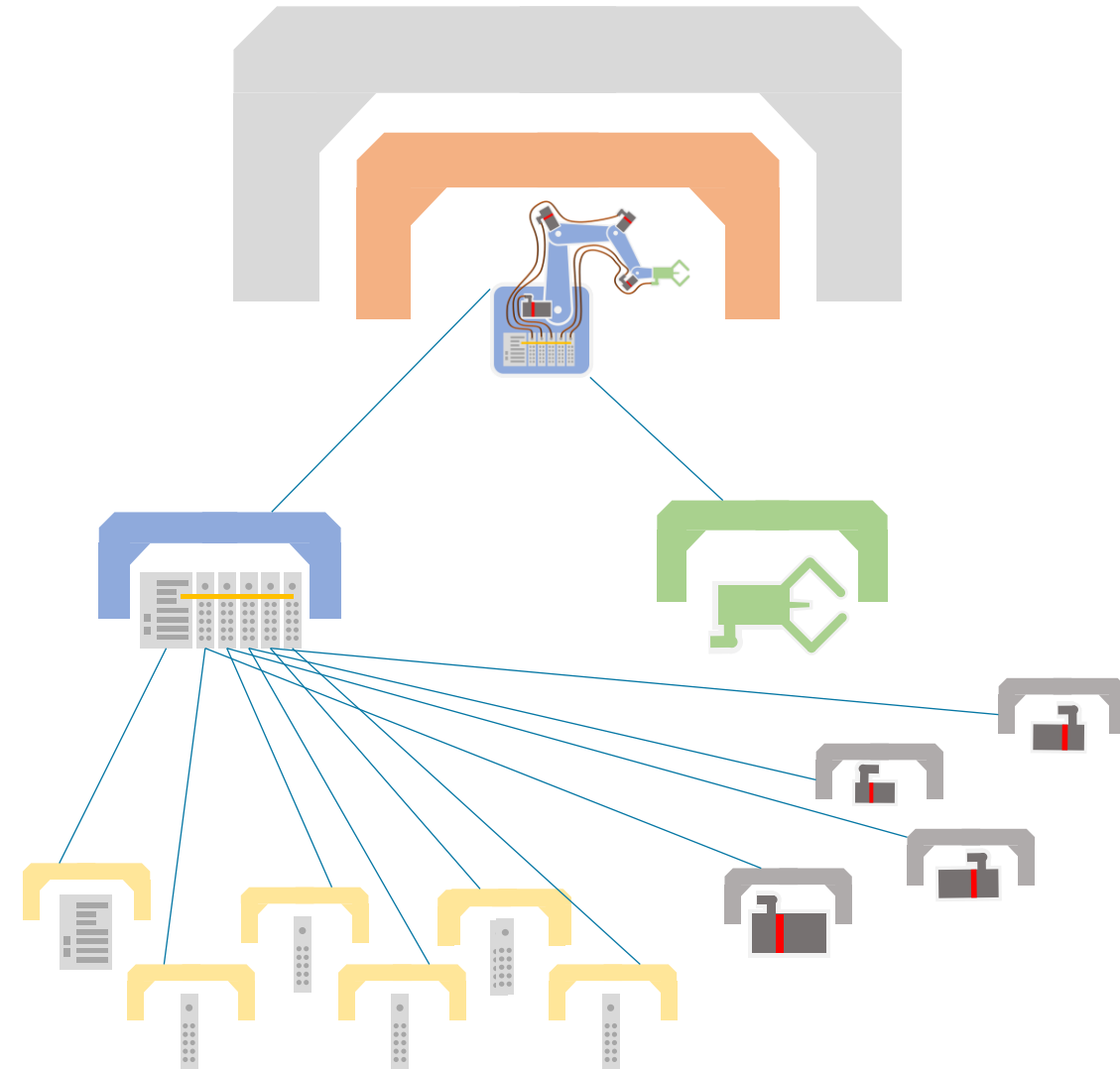
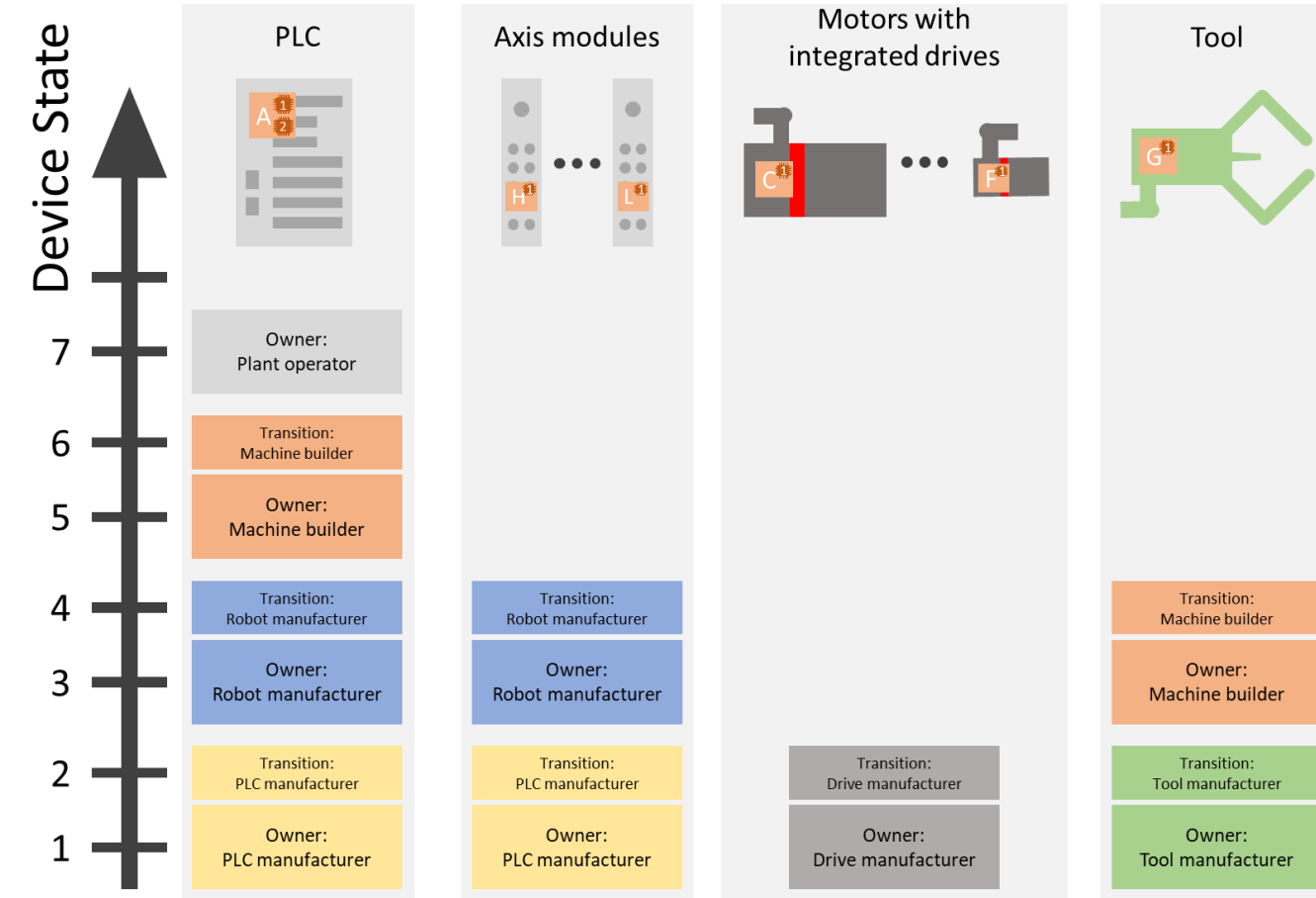
Glimpse on GTA API in progress: example with stacked secure identities



Glimpse on GTA API in progress: example with stacked secure identities



A link to the asset administration shell.



**Thank you for
your attention!**



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