Project Ocre

Project Proposal - Project Introduction:

Required Information	Responses (Please list N/A if not applicable)
Name of Project	Project Ocre
Project Description (what it does, why it is valuable, origin and history)	Ocre leverages WebAssembly and Zephyr to support OCI-type application containers in a footprint up to 2000x lighter than Linux-based container runtimes such as Docker. Seeded with code from Atym, the mission of the project will be to modernize the embedded space by making it as easy to develop and securely deploy apps for billions of microcontroller-powered edge devices as it is in the cloud.
Statement on alignment with Foundation Mission Statement	Project Ocre is well-aligned with the LF Edge Mission Statement in that it provides an open foundation to extend cloud-native development principles into the Constrained Device Edge.
High level assessment of project synergy with existing projects under LF Edge, including how the project compliments/overlaps with existing projects, and potential ways to harmonize over time. Responses may be included both here and/or in accompanying documentation.	Project Ocre is highly complimentary to existing LF Edge infrastructure projects such as Open Horizon and Project EVE in that it extends similar capabilities to devices that can't run Linux. Ocre can enable containerized apps on microcontroller-powered devices that have as little as 1MB of available memory.
Link to *current* Code of Conduct	We will adopt the LFE code of conduct
2 TAC Sponsors, if identified (Sponsors help mentor projects) - See full definition on Project Stages: Definitions and Expectations	Joe Pearson, Erik Nordmark
Project license	Apache 2.0
Source control (GitHub by default)	GitHub
Issue tracker (GitHub by default)	GitHub
External dependencies (including licenses)	Primary dependencies are: • Zephyr OS (link) - Apache 2.0 • Wasm Micro Runtime (link) - Apache 2.0
Release methodology and mechanics	Regular releases, likely monthly or quarterly. Releases will use semantic versioning.
Names of initial committers, if different from those submitting proposal	Stephen Berard
Current number of code contributors to proposed project	3
Current number of organizations contributing to proposed project	1
Briefly describe the project's leadership team and decision-making process	We will create a technical leadership committee (target 5 people total). No more than 2 representatives can come from the same organization/company. The leadership team will determine the overall decision making process.
List of project's official communication channels (slack, irc, mailing lists)	To be established upon project formation
Link to project's website	To be established upon project formation
Links to social media accounts	To be established upon project formation
Existing financial sponsorship	Yes, via Atym, also an LF Edge member
Infrastructure needs or requests (to include GitHub/Gerrit, CI /CD, Jenkins, Nexus, JIRA, other ...)	GitHub/GitHub Actions, website, email, wiki
Currently Supported Architecture	• Zephyr on Arm Cortex M (M33, M4, M7) • Linux on x86/x64

Planned Architecture Support	Additions: • ESP32 (XTensa) • RISC-V • MIPS
Project logo in svg format (see https://github.com/lf-edge/lfedge-landscape#logos for guidelines)	 Contact Atym for native file.
Trademark status	Not trademarked
Does the project have a Core Infrastructure Initiative security best practices badge? (See: https://bestpractices.coreinfrastructure.org)	Not at this time. We are largely compliant with the requirements and will work to obtain this badge in the near team. In addition to this badge, a defined Secure Development Process is currently being put in place.
Any additional information the TAC and Board should take into consideration when reviewing your proposal?	Project Ocre will provide LF Edge with a great story for the Constrained Device Edge which is currently underserved by the community despite growing in capability and increasingly AI-enabled.

Project Proposal - Mapping Criteria and Data:

Stage 1: At Large Projects (formerly 'Sandbox')

Criteria	**Data**
2 TAC Sponsors, if identified (Sponsors help mentor projects) - See full definition on Project Stages: Definitions and Expectations	
A presentation at an upcoming meeting of the TAC, in accordance with the project proposal requirements	
The typical IP Policy for Projects under the LF Edge Foundation is Apache 2.0 for Code Contributions, Developer Certificate of Origin (DCO) for new inbound contributions, and Creative Commons Attribution 4.0 International License for Documentation. Projects under outside licenses may still submit for consideration, subject to review/approval of the TAC and Board.	
Upon acceptance, At Large projects must list their status prominently on website/readme	

*** For existing Projects requesting Stage 2 or Stage 3 consideration, please update the above with the Stage 2 or Stage 3 Mapping criteria, available at Project Stages Mapping: Criteria and Data

Project Proposal - Taxonomy Data:

Functions (Provide, Consume, Facilitate, or N/A; Add context as needed)

Functions	**(Provide, Consume, Facilitate, or N/A; Add context as needed)**
APIs	Provide
Cloud Connectivity	Facilitate
Container Runtime & Orchestration	Provide
Data Governance	N/A
Data Models	N/A
Device Connectivity	Facilitate

Filters/Pre-processing	N/A
Logging	Provide (device health)
Management UI	Facilitate (via Ocre agent API)
Messaging & Events	Provide (device health)
Notifications & Alerts	Provide (device health)
Security	Provide (root of trust, isolated containers, memory partitioning)
Storage	Facilitate

Deployment & Industry Verticals (Support, Possible, N/A; Add context as needed)

Deployment Type	**(Support, Possible, N/A; Add context as needed)**
Customer Devices (Edge Nodes)	Support
Customer Premises (DC and Edge Gateways)	Possible - while Ocre is optimized for highly-constrained devices that can't run Linux (e.g. MCUs), it can also support containers on more capable devices.
Telco Network Edge (MEC and Far-MEC)	" "
Telco CO & Regional	“ “
Cloud Edge & CDNs	“ “
Public Cloud	“ “
Private Cloud	“ “

Deployment & Industry Verticals (or X; Add context as needed)

Directly applicable Industry/Verticals use cases	**(or X; Add context as needed)**
Automotive / Connected Car	
Chemicals	
Facilities / Building automation	
Consumer	
Manufacturing	
Metal & Mining	
Oil & Gas	
Pharma	
Health Care	
Power & Utilities	
Pulp & Paper	
Telco Operators	
Telco/Communications Service Provider (Network Equipment Provider)	
Transportation (asset tracking)	
Supply Chain	
Preventative Maintenance	
Water Utilities	
Security / Surveillance	
Retail / Commerce (physical point of sale with customers)	

Other - Please add if not listed above (please notify TAC-subgroup@lists.lfedge.org when you add one)	

Deployments (static v dynamic, connectivity, physical placement) - (or X; Add context as needed)

Use Cases	**(or X; Add context as needed)**
Gateways (to Cloud, to other placements)	- highly-constrained smart sensors/cameras and some lightweight gateway devices
NFV Infrastructure	X
Stationary during their entire usable life / Fixed placement edge constellations / Assume you always have connectivity and you don't need to store & forward.	X
Stationary during active periods, but nomadic between activations (e.g., fixed access) / Not always assumed to have connectivity. Don't expect to store & forward.	
Mobile within a constrained and well-defined space (e.g., in a factory) / Expect to have intermittent connectivity and store & forward.	
Fully mobile (To include: Wearables and Connected Vehicles) / Bursts of connectivity and always store & forward.	

Compute Stack Layers (architecture classification) - (Provide, Require, or N/A; Add context as needed)

Compute Stack Layers	**(Provide, Require, or N/A; Add context as needed)**
APIs	Provide
Applications	Require
Firmware	Provide
Hardware	Require
Orchestration	Provide
OS	Provide
VM/Containers	Provide

Cloud Stack Layers (architecture classification) - (Provide, Require, or N/A; Add context as needed)

Cloud Stack Layers	**(Provide, Require, or N/A; Add context as needed)**
Applications	Require
Configuration (drive)	Provide (via runtime APIs)
Content (management system)	Require
IaaS	Require
PaaS	Require
Physical Infrastructure	Require
SaaS	Require