

Akraino Blueprints Release 4

# IEC Type 4 AR/VR & Connected Vehicle

tuckerwang@tencent.com  
bartdong@tencent.com



# Contents

- ▶ **IEC Type 4 AR/VR Blueprint Release 4**
- ▶ **Connected Vehicle Blueprint Release 4**

# IEC Type 4 AR/VR Blueprint Release 4

Link: <https://wiki.akraino.org/display/AK/Release+4+Documentation>

# Overview

IEC Type 4 focuses on AR VR applications running on edge. In general, the architecture consists of three layers: IaaS(IEC), PaaS(Tars), SaaS(AR/VR Application).

# Use Cases

There are multiple use cases for AR VR itemized below. For Release 4, we focus on building the infrastructure and virtual classroom application (Highlighted).

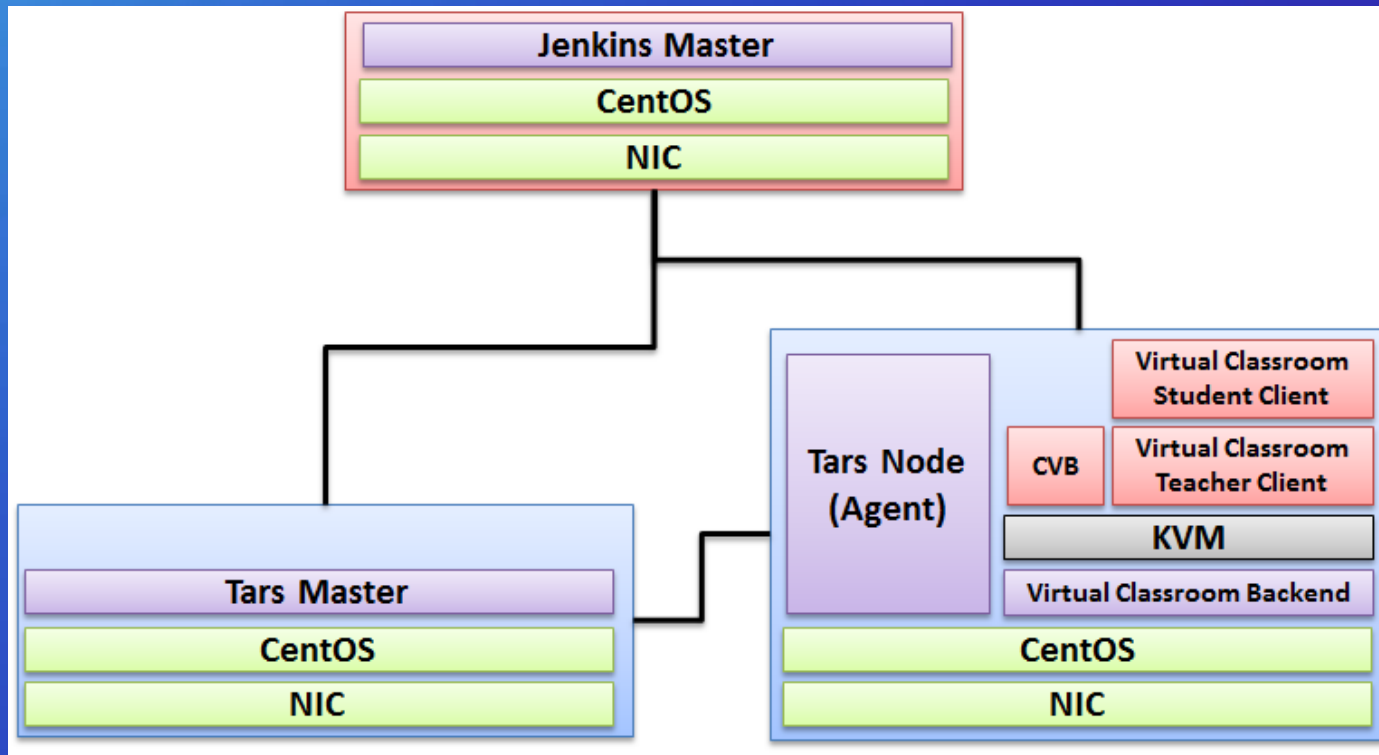
<b>Use Cases</b>	<b>Value Proposition</b>
Operation Guidance	Predict the next step for the operations (like assembling Lego blocks, cooking sandwiches, etc) and help people to achieve a goal.
Virtual Classroom	Simulating a virtual classroom, which improves online education experiences for the teachers and students.
Sports Live	Augment and simulate the sports live, which gives the audiences an amazing immersive watching experience.
Gaming	Augment and simulate the game scenario, let players enjoy an immersive game world.

# IEC Type 4 AR/VR Release 4 Status

- ✓ IEC Type4 AR/VR Architecture Documents:  
<https://wiki.akraino.org/display/AK/Release+4+Architecture+Document>
- ✓ IEC Type4 AR/VR Installation Documents:  
<https://wiki.akraino.org/display/AK/Release+4+Installation+Document>
- ✓ IEC Type4 AR/VR Release Note:  
<https://wiki.akraino.org/display/AK/Release+4+Release+Note-IEC+Type4>
- ✓ IEC Type4 AR/VR Test Documents:  
<https://wiki.akraino.org/display/AK/Release+4+Test+Doc-Type+4>
- ✓ IEC Type4 AR/VR Release 4 datasheet:  
<https://wiki.akraino.org/download/attachments/28970342/IEC-Type4%20Release%204%20datasheet.docx>

# Overall Architecture of IEC Type 4 AR/VR

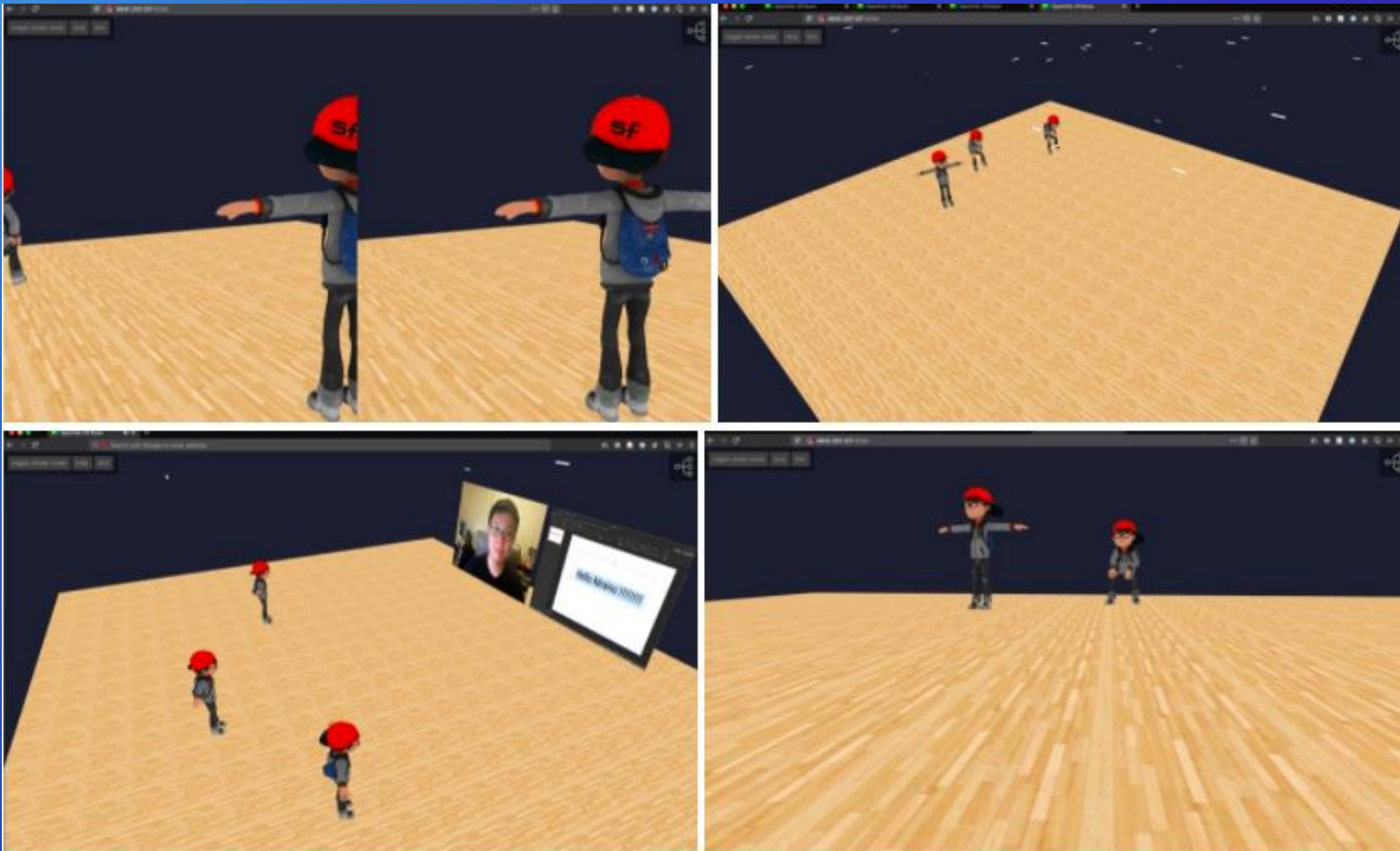
The whole architecture, shown below, consists of three nodes: Jenkins Master, Tars Master, and Tars Agent with AR/VR BP and CVB.



- For the Jenkins Master, we deploy a Jenkins Master for our private lab for testing
- For the Tars Master, we deploy a Tars Platform for serverless use case integration
- For the Tars agent, we deploy the Virtual Classroom backend on this node and two front end client as Virtual Classroom teacher and student on KVM.

# Use case: Virtual Classroom

Virtual Classroom is a basic app that allows you to live a virtual reality experience simulating a classroom with teachers and students.



- In Teacher mode
  - ✧ You will see the classroom as a teacher's view.
  - ✧ You can see some students are in the classroom and are listening to your presentation.
- In Student mode
  - ✧ you will see the classroom as a student's view.
  - ✧ You can see the teacher and other students on the remote side.

# Summary of IEC Type 4 AR/VR Release 4

- Focus on building the infrastructure and virtual classroom application.
- Deploy in Parserlabs.
- Use Jenkins to make CI/CD available.
- Update TARS to the version 2.4.13 which supports multiple new features
- Pass the security check and the validation lab check.
  - ✧ Lynis log :  
<https://nexus.akraino.org/content/sites/logs/parserlabs/r4/jobs/iec-type4/lynis.log>
  - ✧ Vuls log :  
<https://nexus.akraino.org/content/sites/logs/parserlabs/r4/jobs/iec-type4/vuls.log>



# Connected Vehicle Blueprint Release 4

Link: <https://wiki.akraino.org/display/AK/CVB+Release+4+Documents>

# CVB Release 4 Status

✓ CVB Architecture Documents:

<https://wiki.akraino.org/display/AK/CVB+Release+4+Architecture+Doc>

✓ CVB Installation Documents:

<https://wiki.akraino.org/display/AK/CVB+Release+4+Installation+Doc>

✓ CVB Release Note:

<https://wiki.akraino.org/display/AK/CVB+Release+4+Release+Note>

✓ CVB Test Documents:

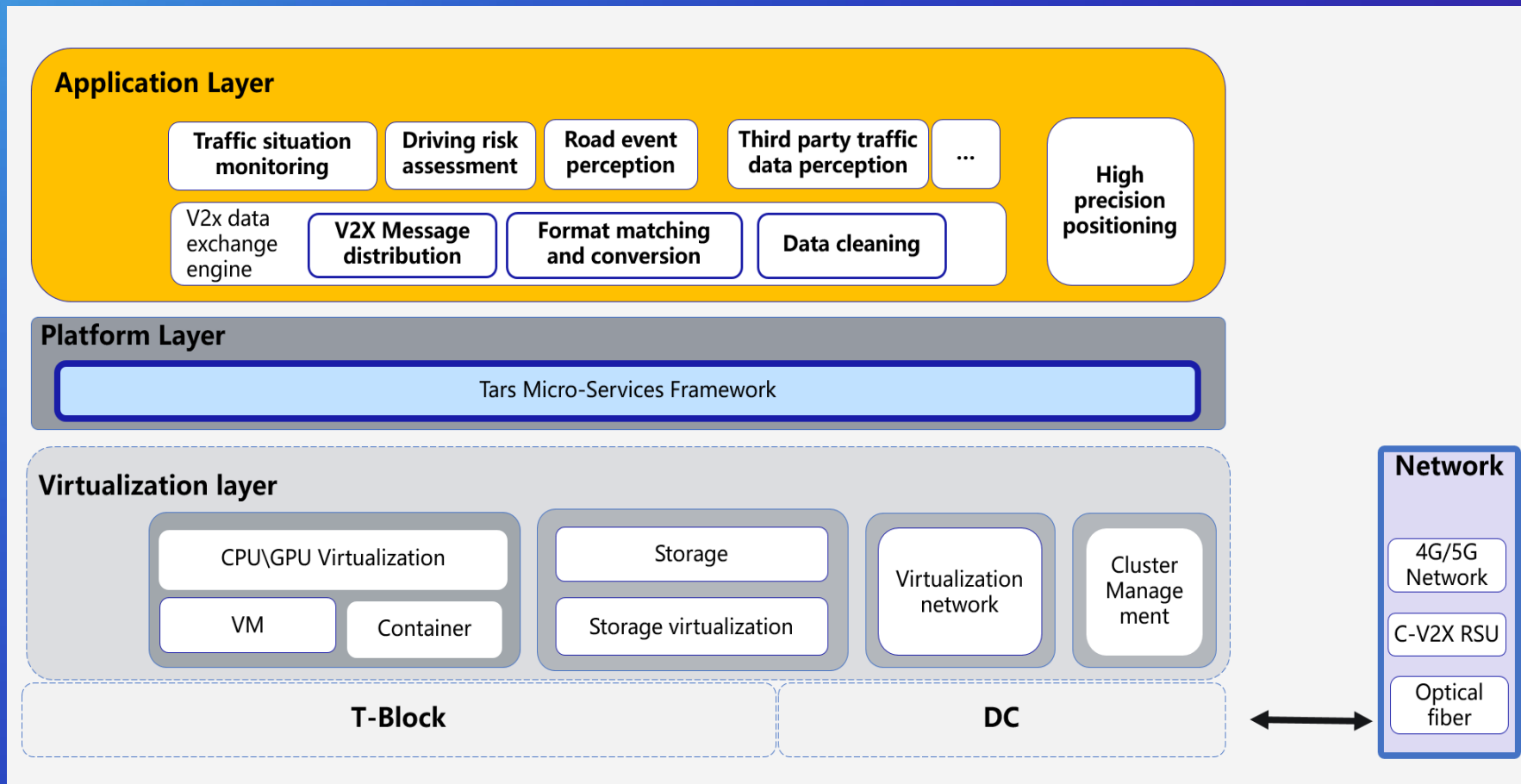
<https://wiki.akraino.org/display/AK/CVB+Release+4+Test+Doc>

✓ CVB Release 4 datasheet:

<https://wiki.akraino.org/display/AK/Release+4+Planning?preview=/28970342/28975300/CVB%20Release4%20datasheet.docx>

# CVB application architecture

The Connected Vehicle Blueprint (CVB) focuses on establishing an open source MEC platform, which is the backbone for V2X application.



The application architecture of the CVB consists of the following key components:

- ✓ Commodity Hardware, Arm/X86 Physical Server.
- ✓ Virtualization Layer.
- ✓ Tars Microservice Platform layer.
- ✓ Connected Vehicle Applications layer.

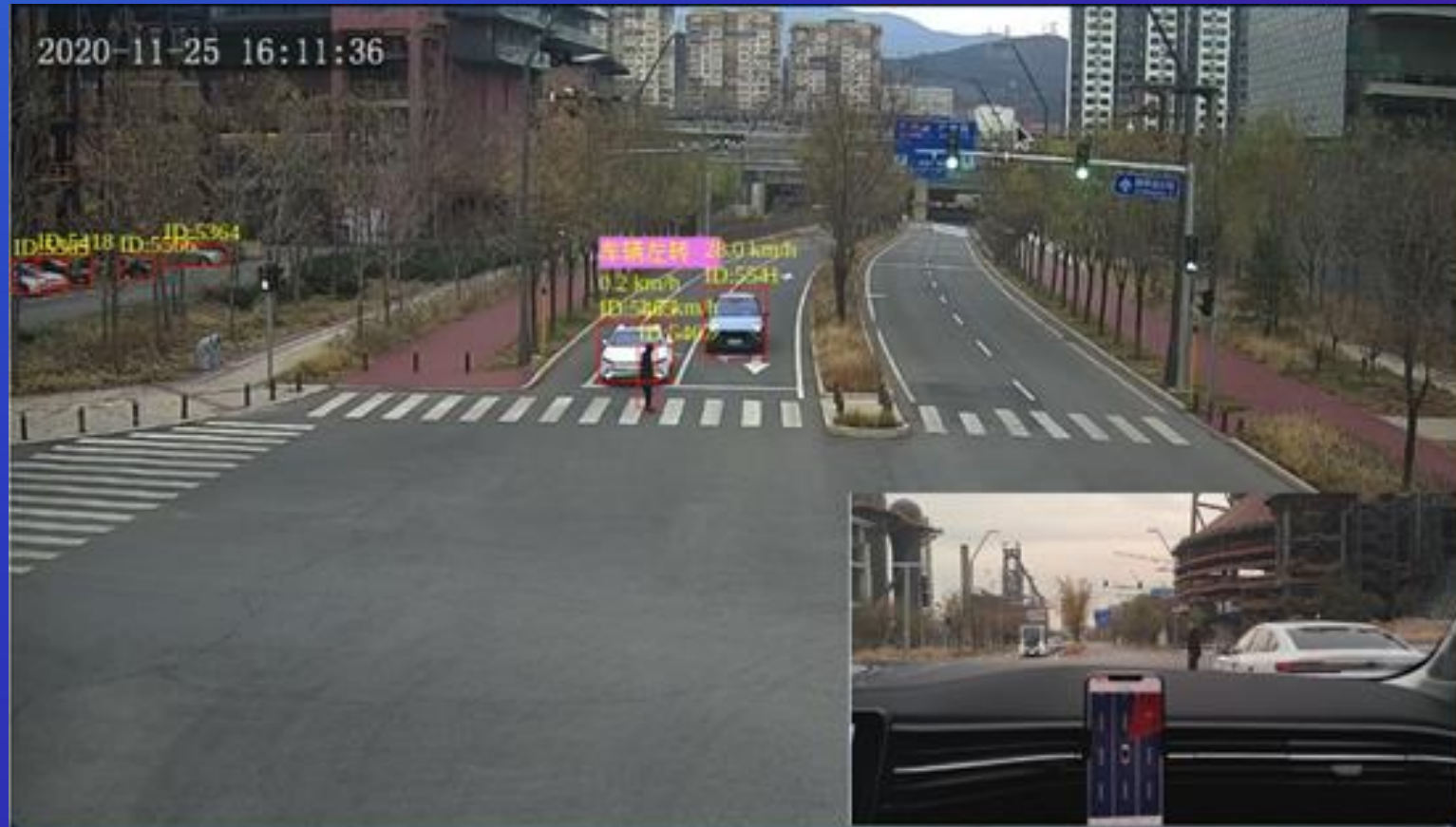
# Use Cases in CVB ( 1 )

The following use cases have been tested within the community, with additional use cases to come:

- Transportation efficiency improvement:
  - Real-time traffic information updates;
  - figures out the most efficient route for drivers
- Safe Drive Improvement:
  - Figures out potential risks which cannot be seen by the driver.
- Reduces traffic violations:
  - Conveys traffic rules of some specific area.
  - For instance
    - change the lane prior to a narrow street
    - avoid opposite way driving on a one-way road
    - avoiding the carpool lane when single driver, etc

# Use Cases in CVB ( 2 )

- Cooperative vehicle and infrastructure system :
  - ✧ Roadside sensing system obtains and computes real-time traffic objects status ;
  - ✧ Based on the roadside sensing data, the host vehicle obtains the traffic warning and driving assistance information which threatens itself.



# Summary of CVB R4

- Tars based micro-service platform is established as the MEC platform to deploy the Connected vichele application
  - ✓ High Performance RPC Call
  - ✓ Service Governance
  - ✓ Web Config/Monitor Platform
  - ✓ Multi Program Languages
  - ✓ Orchestration between Edge Nodes
- BluVal Testing and Lynis Testing are done to consolidate the software environment.
  - ✓ <https://nexus.akraino.org/content/sites/logs/parserlabs/r4/jobs/cvb/>



**Thanks and Welcome to Join Akraino!**