6G For Live AI

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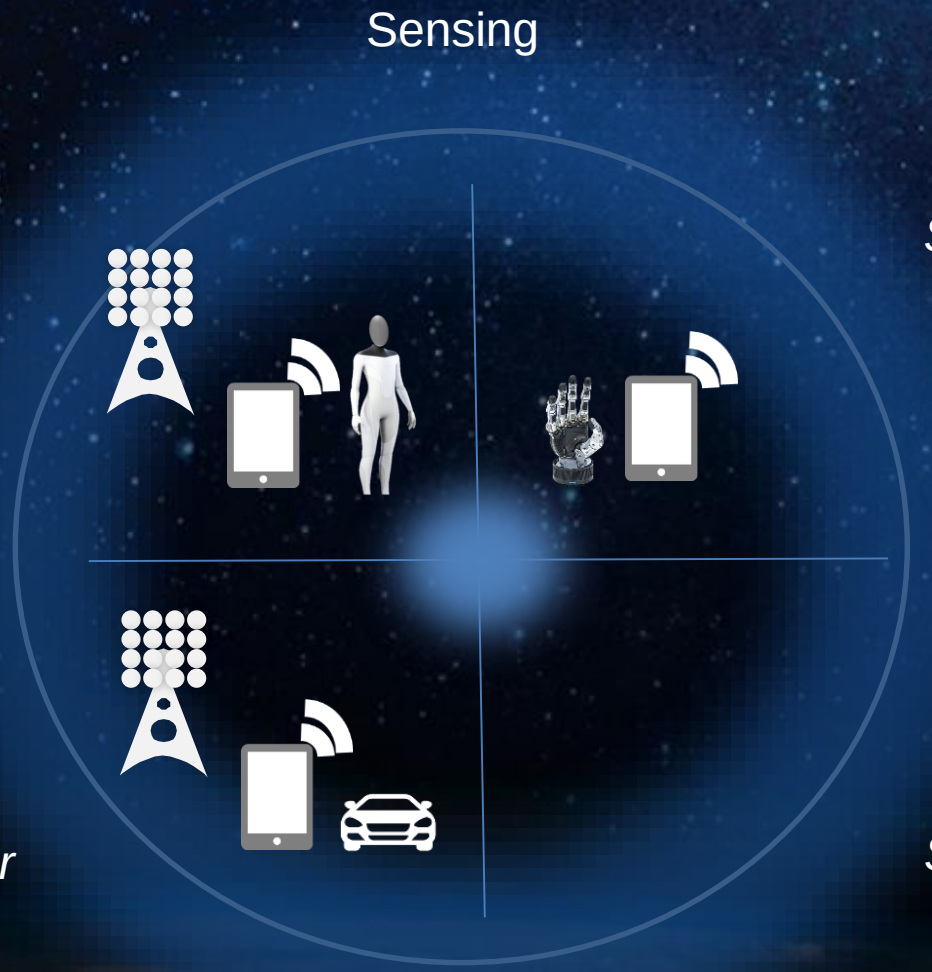
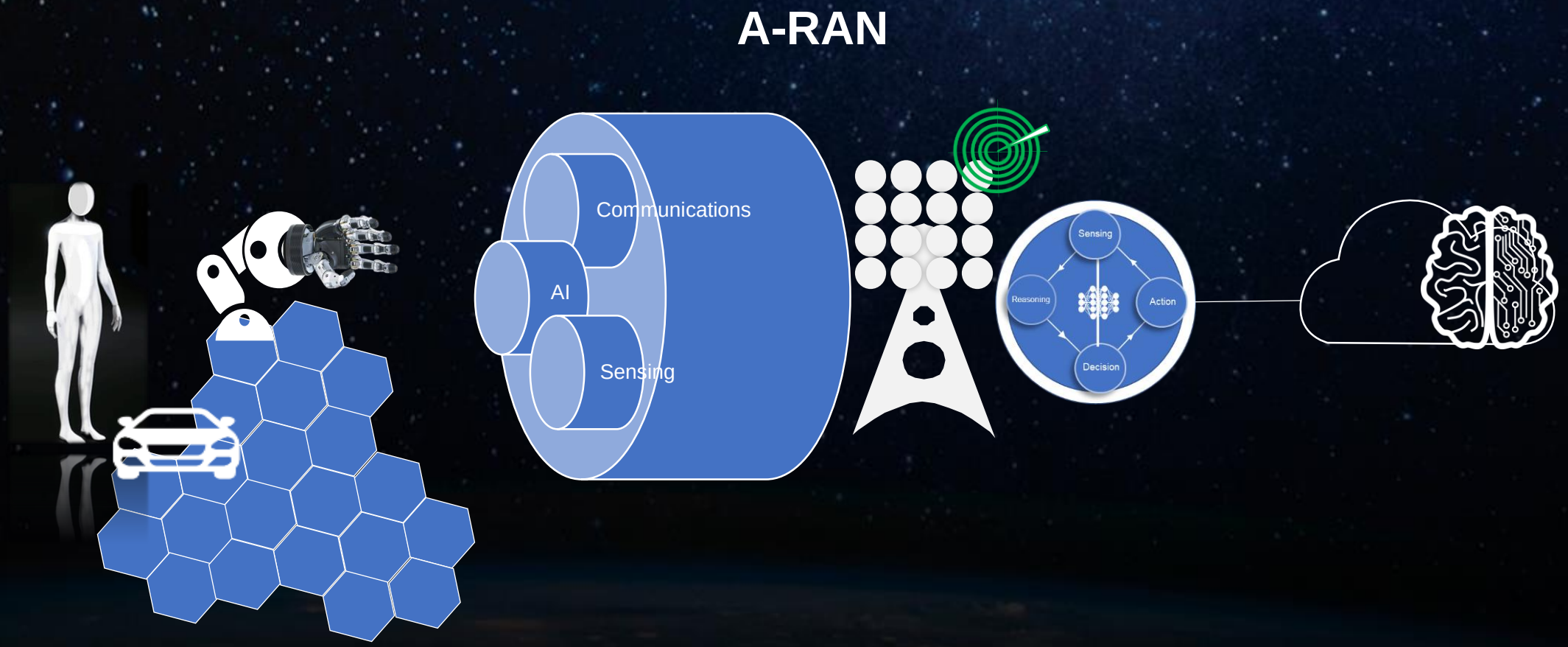
Preamble


Sensing
Indoor
Sensing Assisted AI
cmWave
Sub-THz
Outdoor
Sensing Assisted Communications
Communications

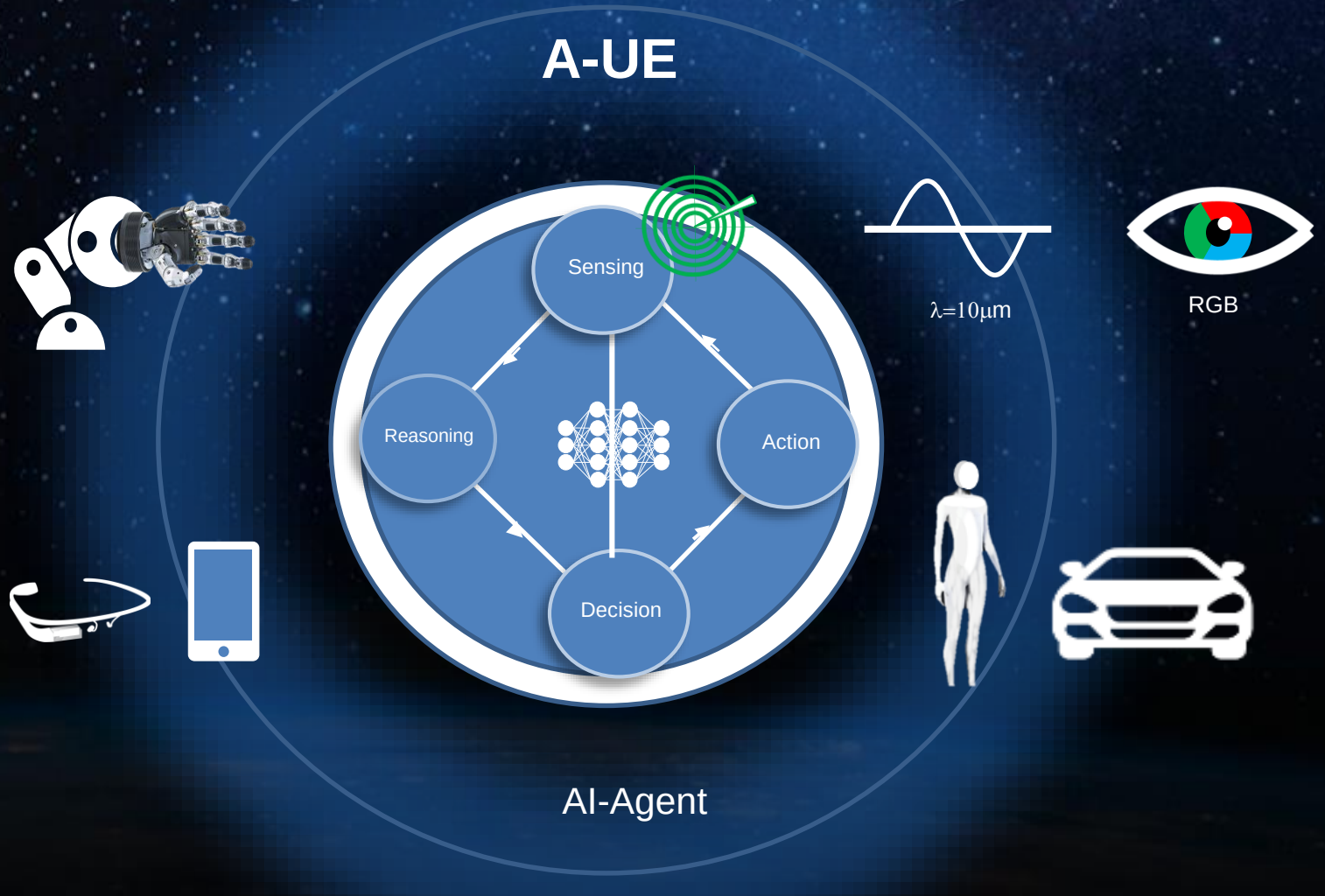
The Concept of A-RAN as the part of Physical-AI

6G-RAN is the neural system of Physical-AI



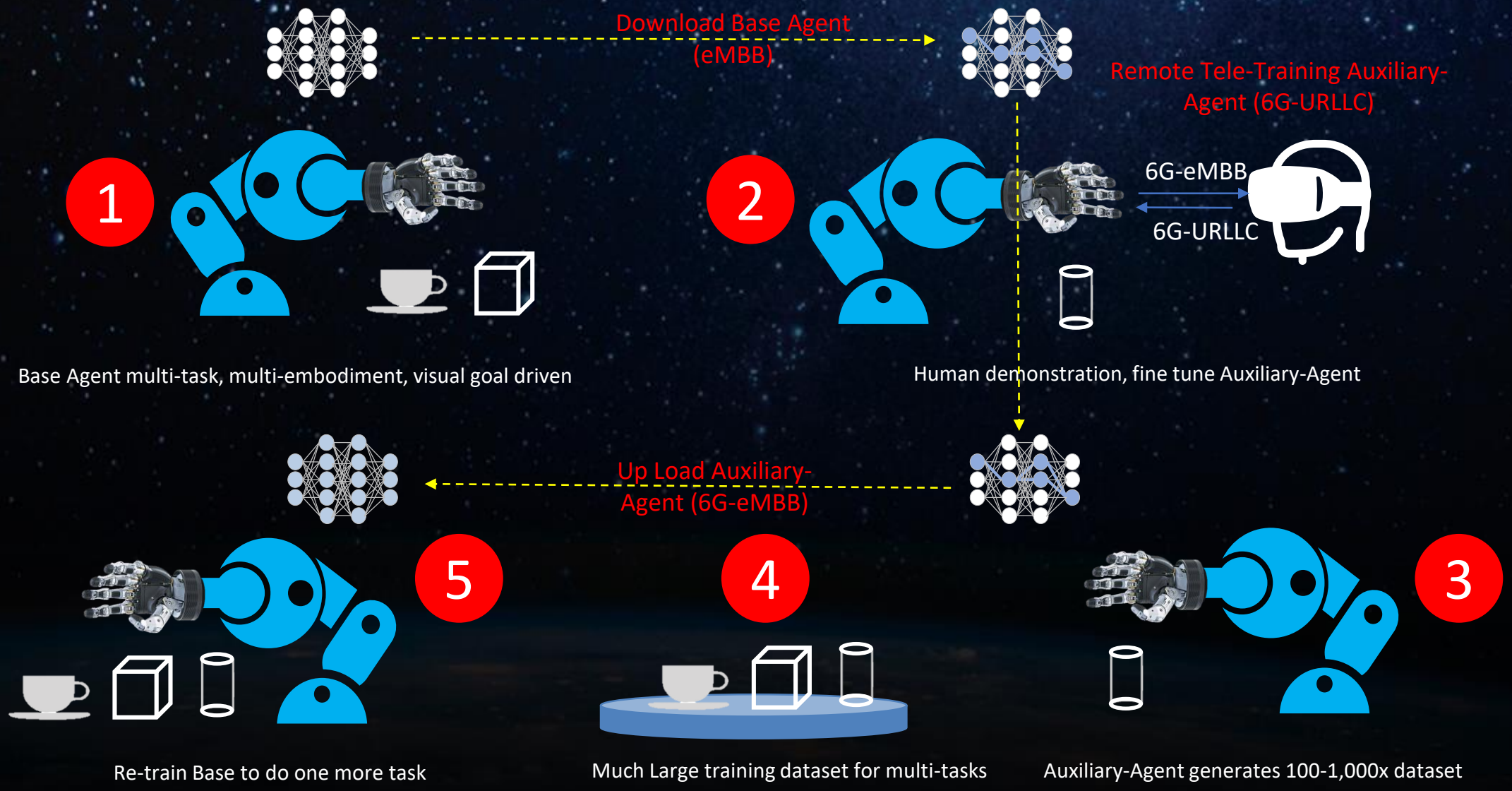
The Concept of A-UE as a Live-AI

6G-UE becomes Personal Agent and Digital Worker

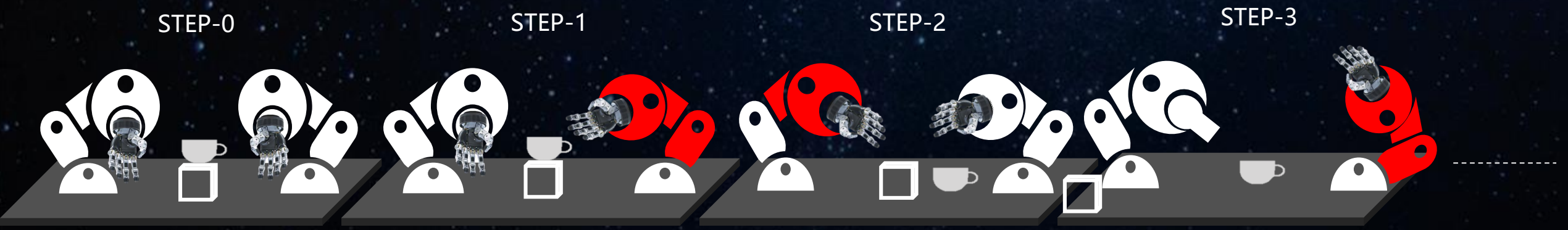


Challenge-1: Training of Base and Auxiliary Agents of Robot

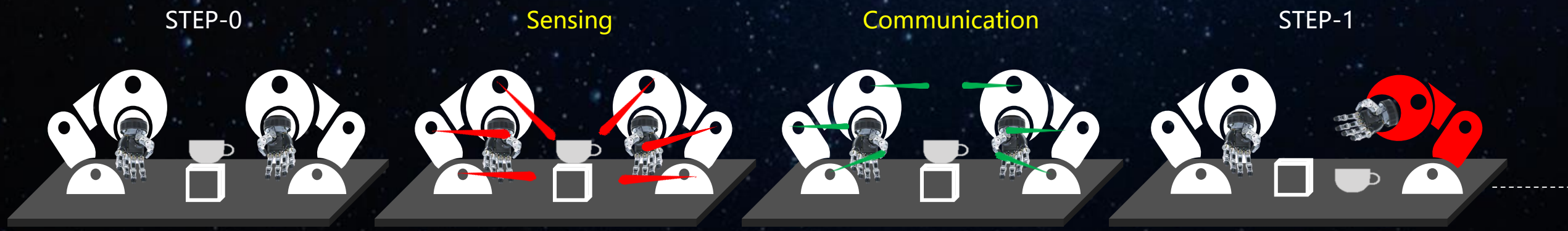
Conventional approach without sensing (human-in-the-loop to fine-tune for every specific site)



Challenge-2: Pre-Programed Robots

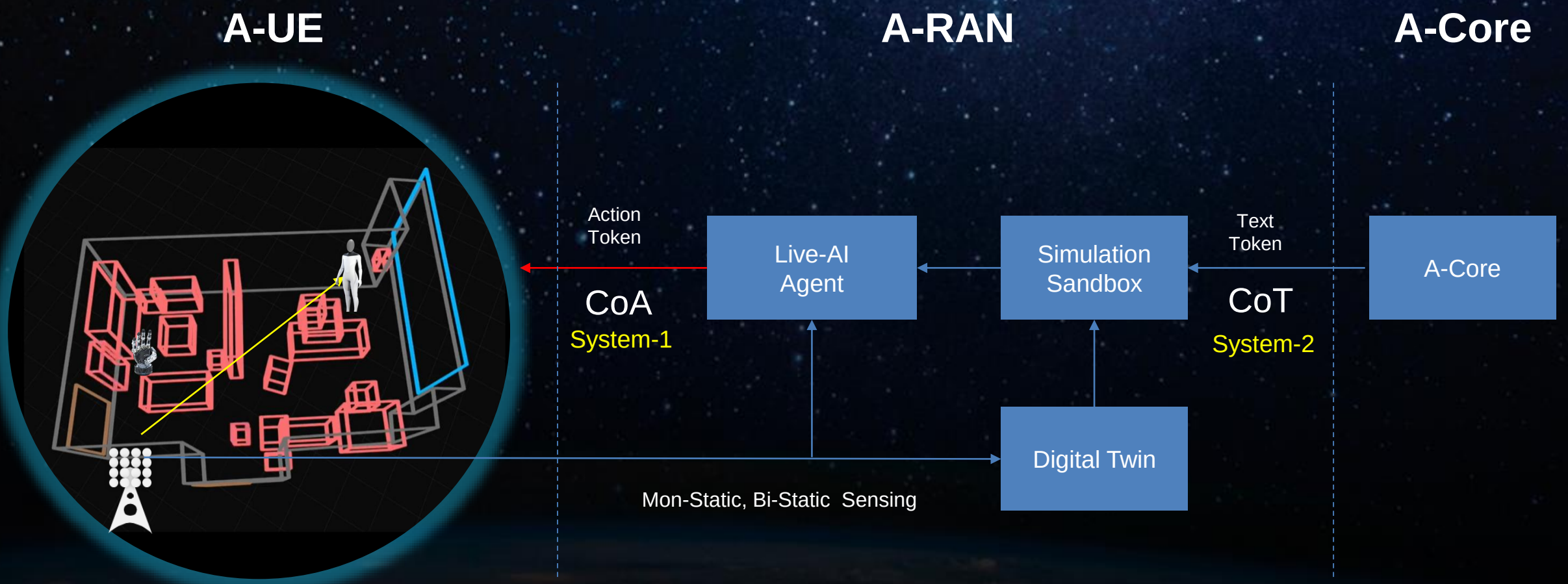


The Concept of ISAC-Robot



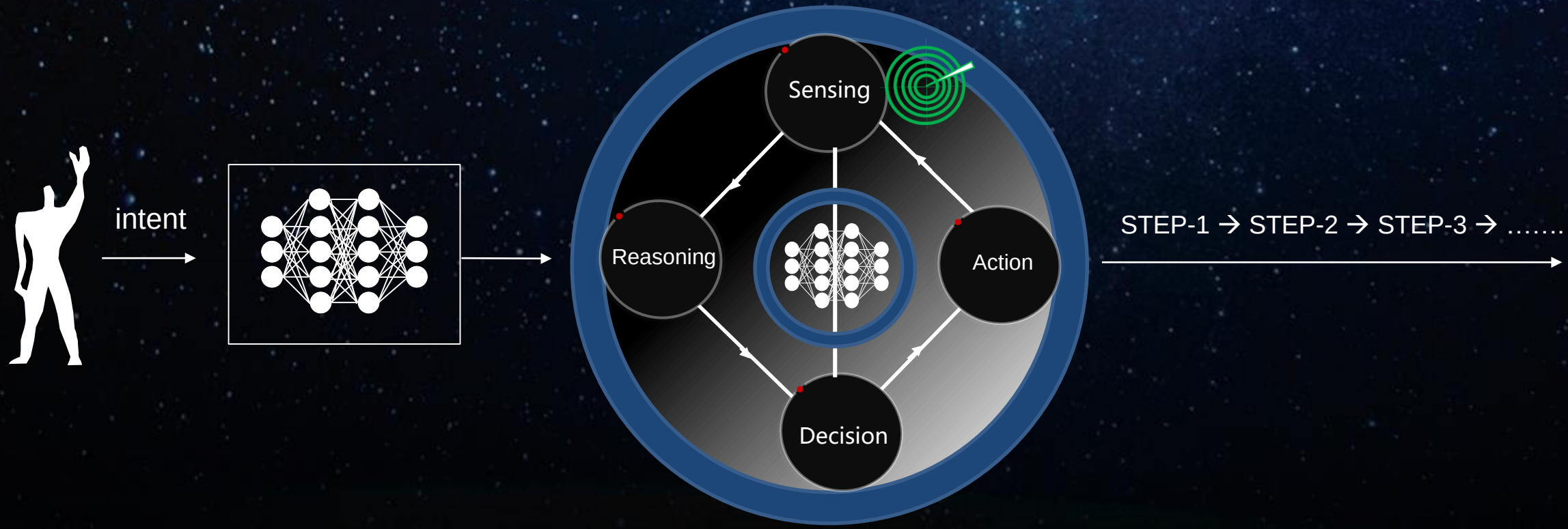
A-RAN: Physical-AI Architecture

C+S+A Fusion Layer



ISAC-Based Live-AI Paradigm (1)

Network generates a work-flow driven by the human intent



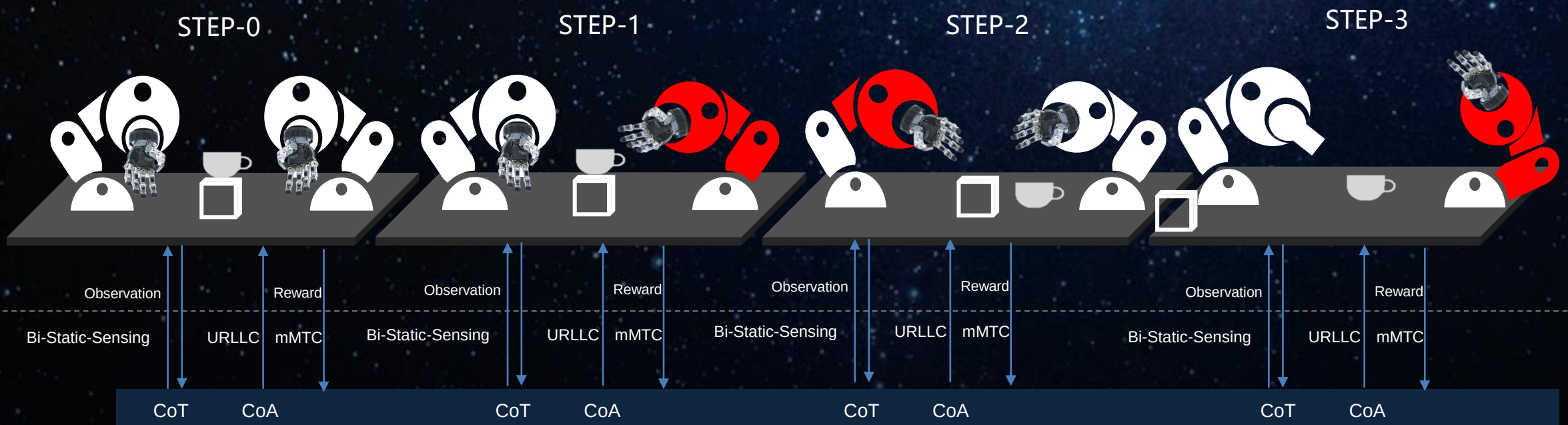
1 LRM
Large Reasoning Model

2 AI-Agent

3 CoT+CoA
Chain of Thought and Chain of Action

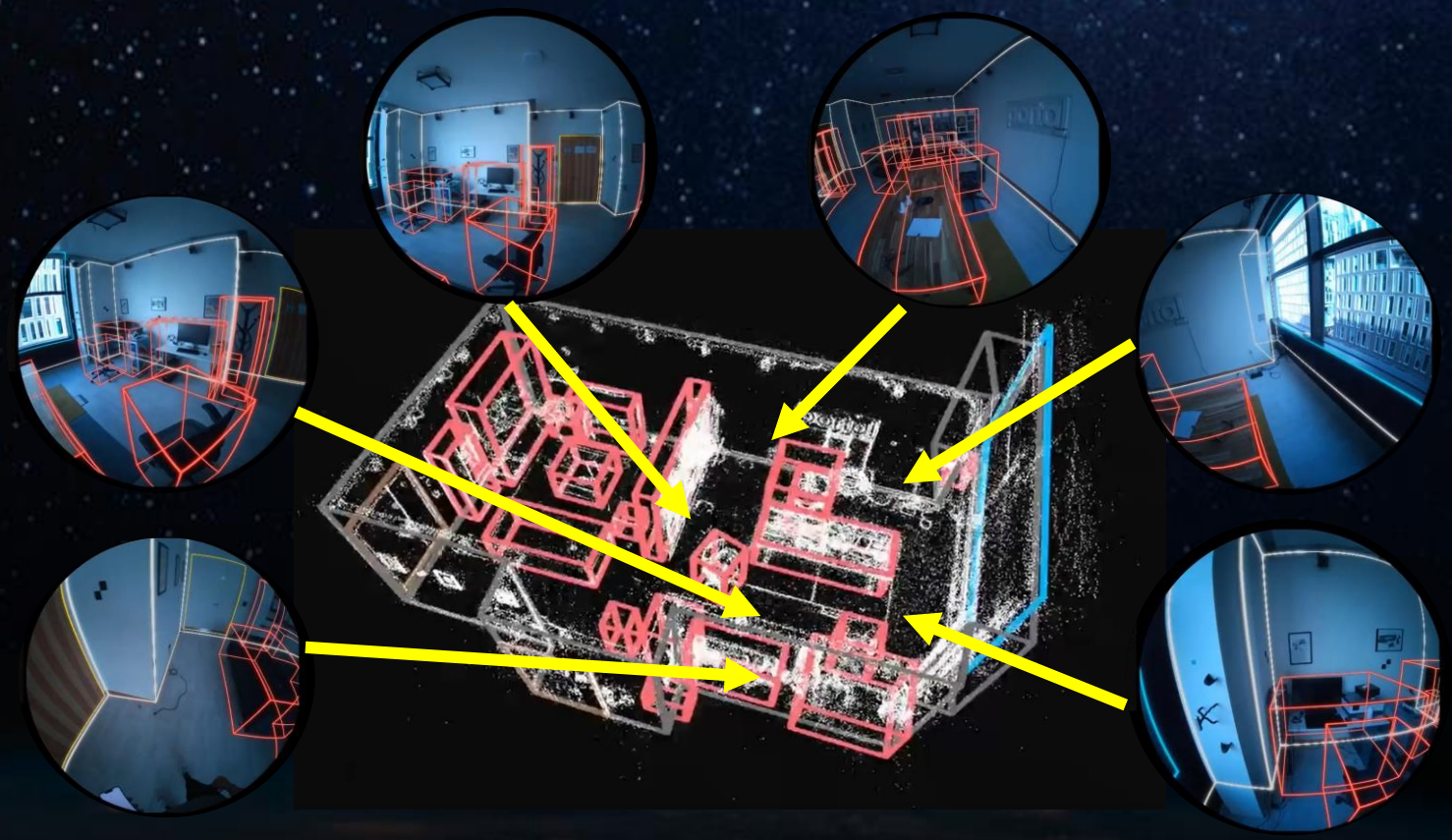
ISAC-Based Live-AI Paradigm (2)

A-RAN and A-UE Alignment of Spatial-Physical action based on ISAC



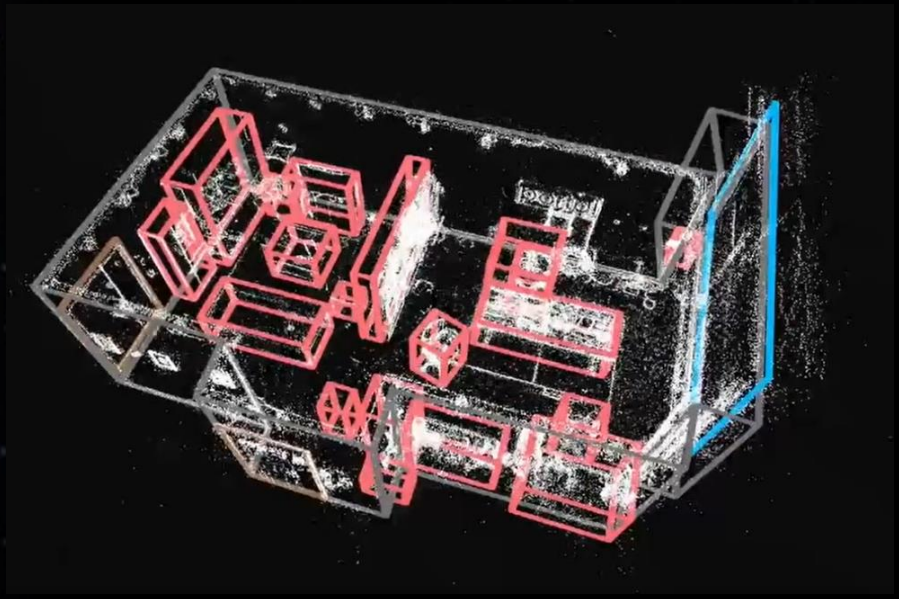
ISAC-Based Live-AI Paradigm (3)

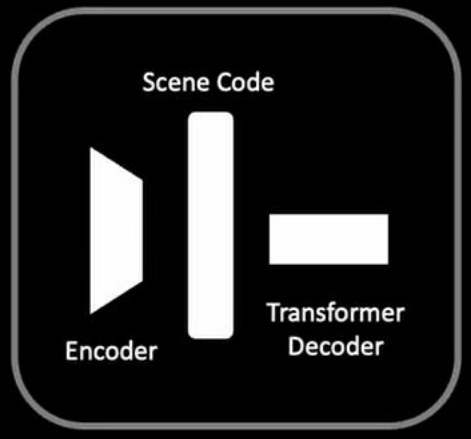
A-RAN and A-UE to jointly construct the Physical World model with point-cloud



ISAC-Based Live-AI Paradigm (4)

A-RAN and A-UE to jointly construct the site-specific model with point-cloud



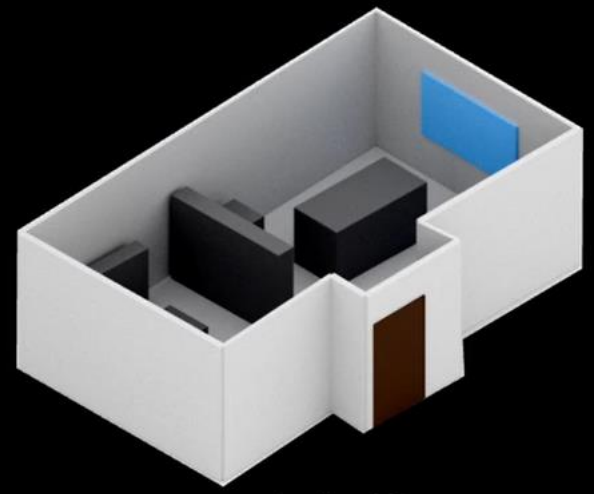


SceneScript CODEC Network

Output

```
- make_wall:
    a_x: 1.03
    a_y: -2.83
    a_z: -1.62
    b_x: 2.98
    b_y: -5.78
    b_z: -1.62
    height: 2.96
...
- make_door:
    wall_id: 8.0
    position_x: -1.12
    position_y: 2.17
    position_z: -0.52
    width: 1.46
    height: 2.1
...
- make_window:
    wall_id: 3
    position_x: 6.68
    position_y: -4.38
    position_z: 0.43
    width: 5.3
    height: 2.7
...
```

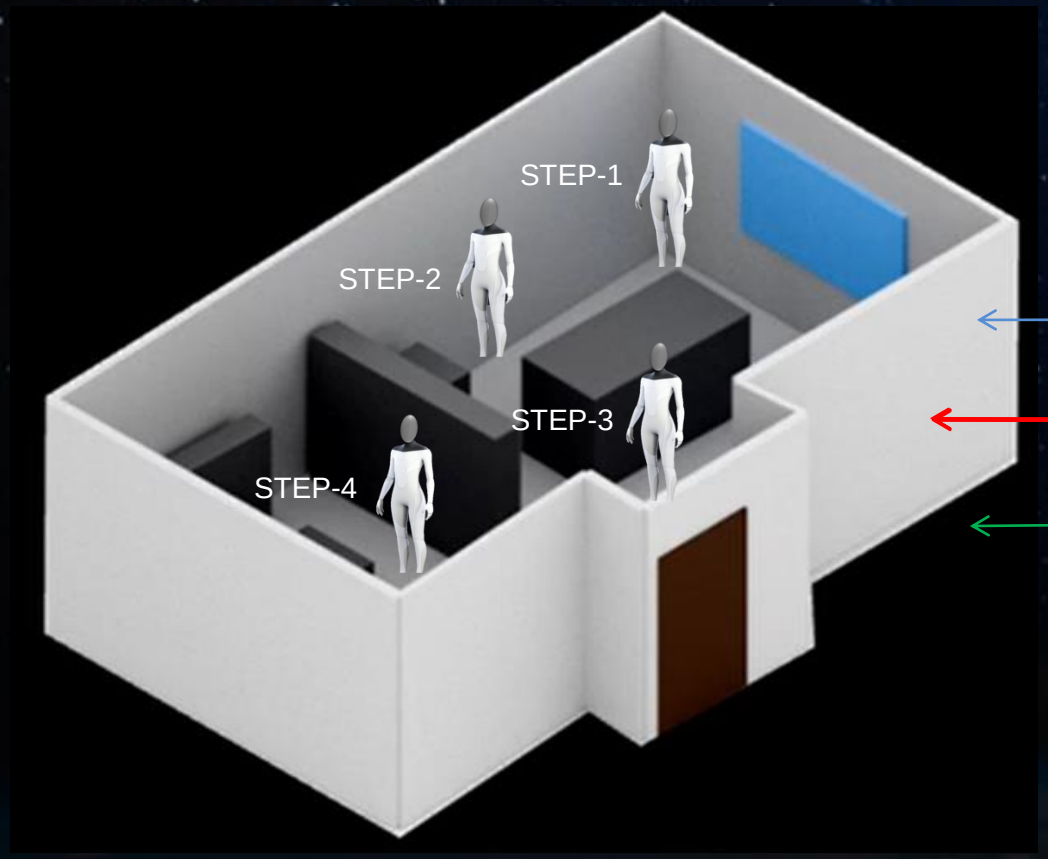
SceneScript: Auto regressive scene description



Rendered 3D *SceneScript* Layout

ISAC-Based Live-AI Paradigm (5)

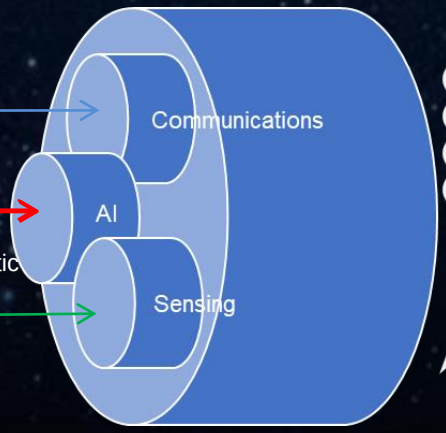
A-RAN and A-UE to enable real time Live-AI



- eMBB
- URLLC
- mMTC

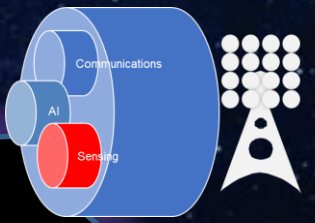
- CoT
- CoA

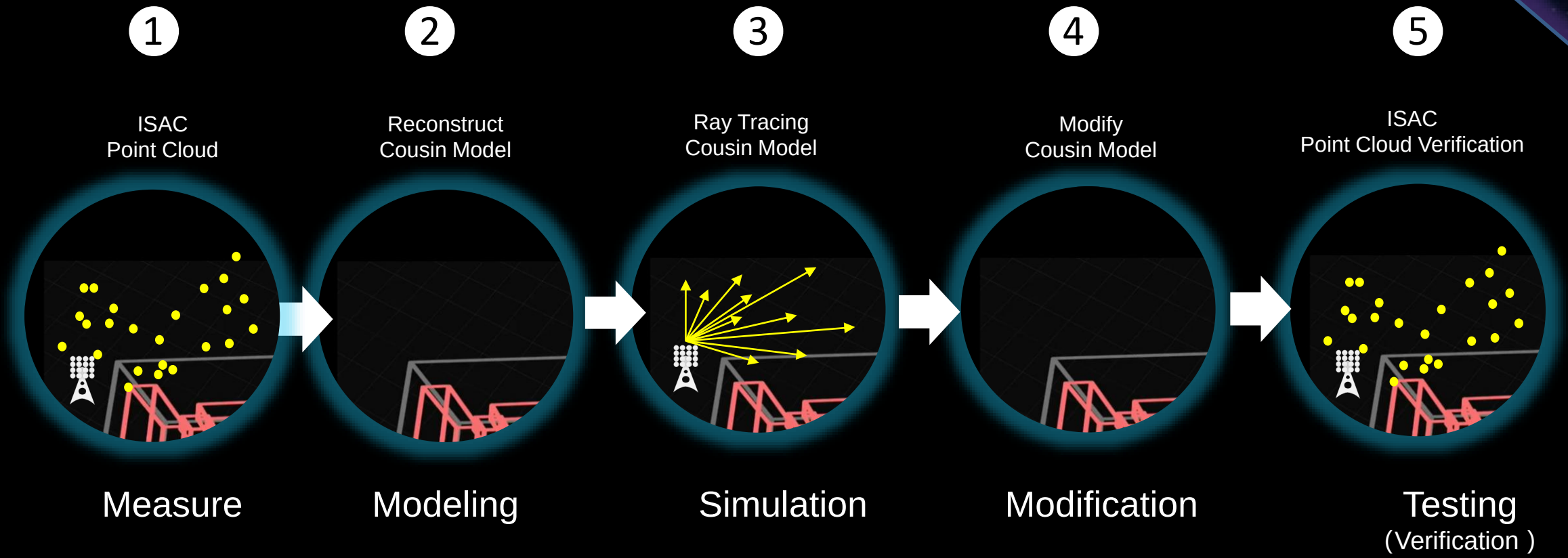
- Moan-Static
- Bi-Static



A-RAN: Sensing Layer

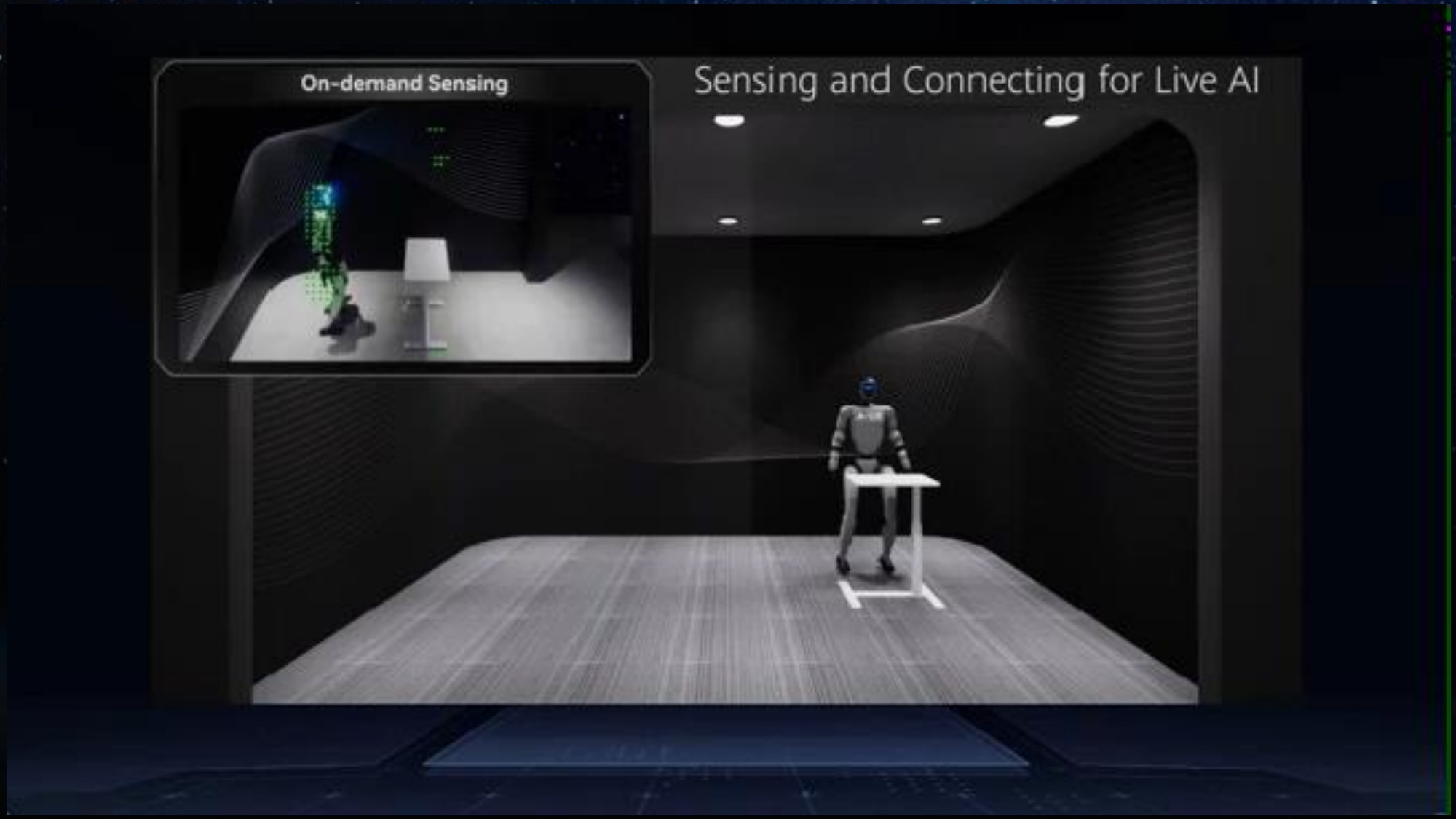
6G ISAC Generative RF Cousin with Point Cloud





NB Sensing Assisted Live-AI

The NB Sensing to identify the Robot Action and to use URLLC to control the Robot



Thank You.

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