

Video Coding and Edge Computing AI for Situational Awareness (AISA)

 **ULTRA VIDEO GROUP**

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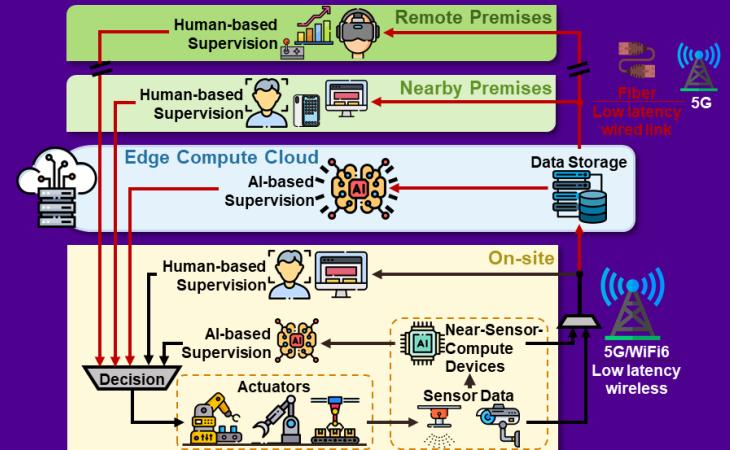


**CUSTOMIZED PARALLEL
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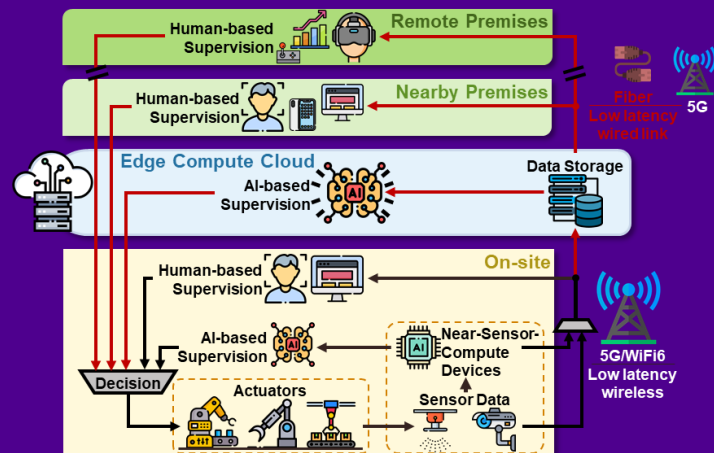


Content-Aware Video Coding

AI for Situational Awareness (AISA)



Assoc. Prof. Jarno Vanne





ULTRA VIDEO GROUP



#1 academic video group in Finland



20 video experts



20 years of expertise



Mission

Meet the needs of video-centric society

Ambition

Tailored video processing solutions
for various media applications
on wide range of platforms

Further Information



ultravideo.fi



github.com/ultravideo



Our Key Areas of Expertise

VIDEO CODING

MPEG H.265 HEVC High Efficiency Video Coding

8K ULTRAHD

4K HDR ULTRA HD

120 FPS

VVC

60 FPS

AI

Region of interest

Low latency

FIELD OF APPLICATIONS

ADAS



Driver monitoring



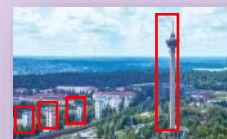
Remote piloting



Driving simulation



Environment perception



Video Communication



VIDEO PROCESSING/STREAMING

Stitching



View synthesis



RTP streaming



3D pose estimation



Sensor fusion



Visualization



Annotation



ness (AISA)

Cloud coding



Remote gaming



Volumetric Communication



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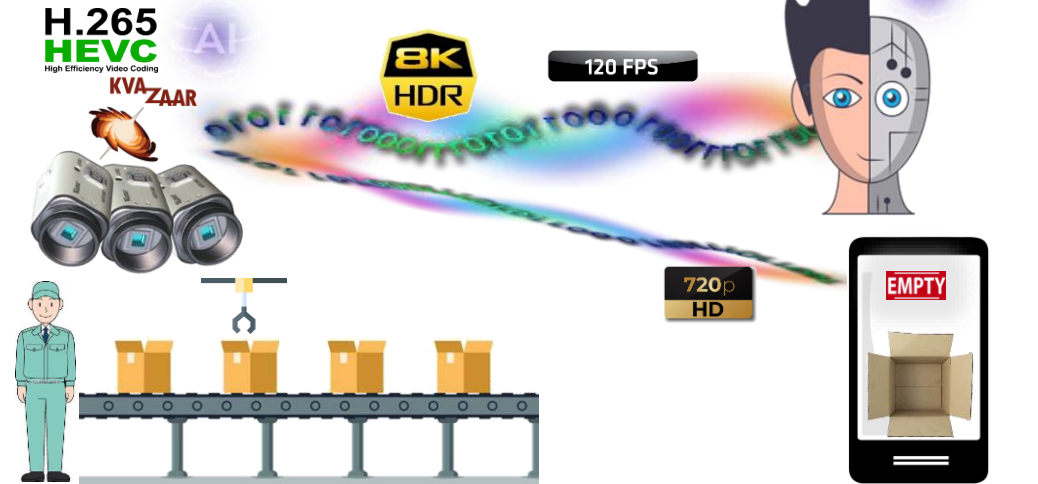
Our Main Objectives in AISA

Real-time vision pipeline

- For **humans** and **machines**
- **2D** and **360** video

Applications

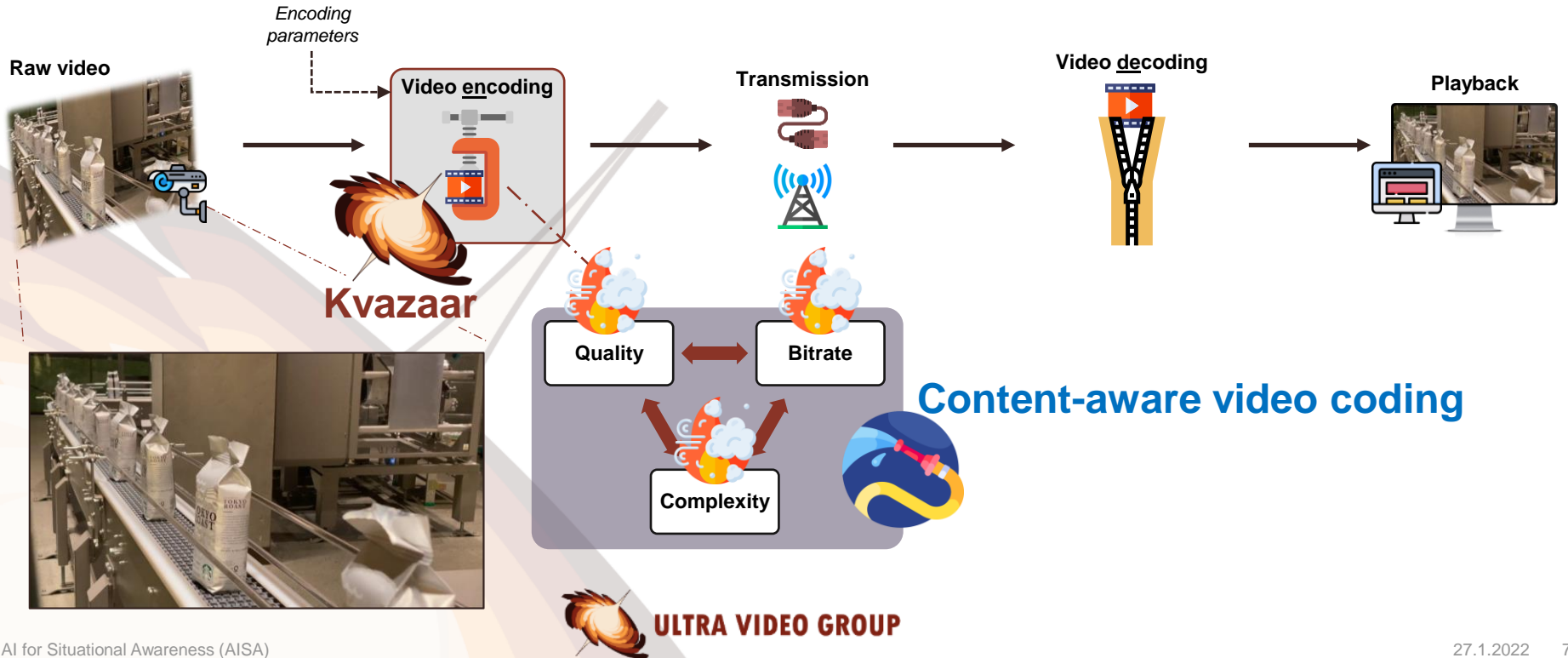
- Remote machine control
- Production line maintenance
- Product quality monitoring
- Worker guidance and safety
- Data collection for AI training



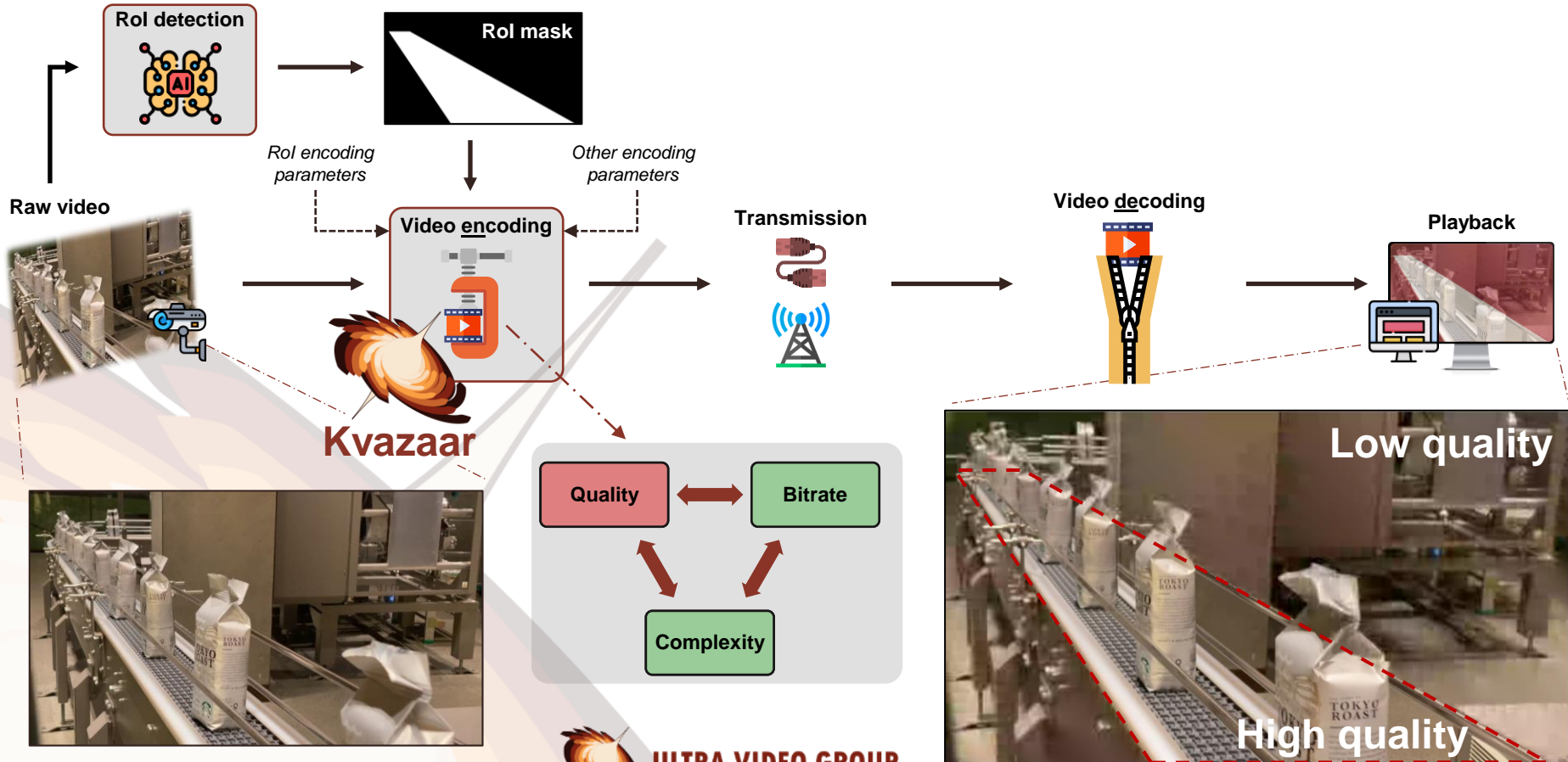
Content-aware video coding

- Video bandwidth optimization for **economic transmission and storage**
- Run-time adaption of **video streaming** to diversified **QoS** requirements
- Real-time **human-machine vision** cooperation

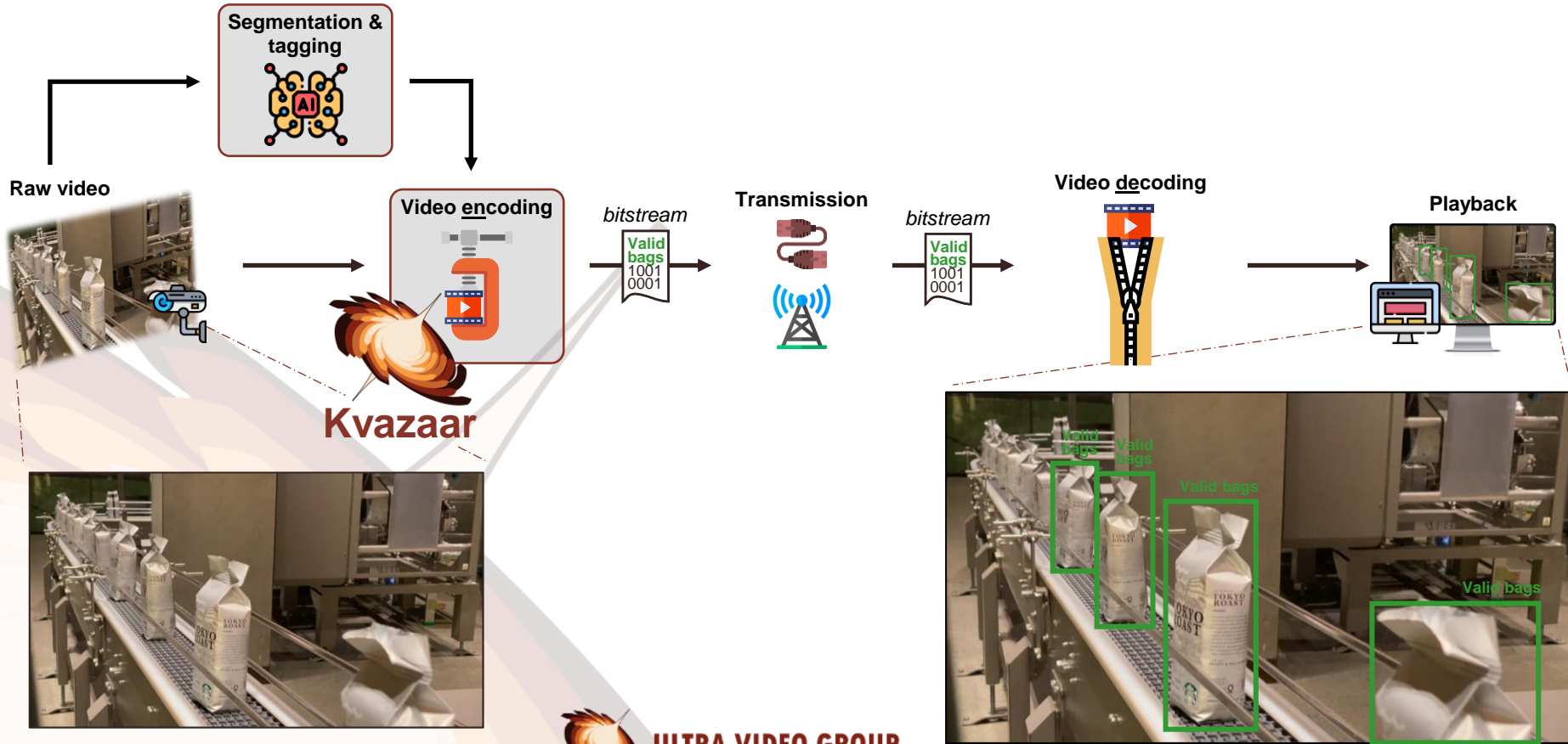
Conventional Video Coding



Region of Interest (RoI) Video Coding



Video Coding with Content Tagging



Our Content-Aware AISA Solutions

ROI video coding



➔ Economic transmission and storage

➔ Run-time adaption to QoS requirements

Video coding + tagging



➔ Real-time human-machine vision cooperation



Contact Information



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