

# Saliency-Guided Video Coding in Smart Manufacturing

 **aisa** ARTIFICIAL INTELLIGENCE  
FOR SITUATIONAL AWARENESS

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# Smart Manufacturing Relies on Video Streaming

Remote machine control



Production line maintenance



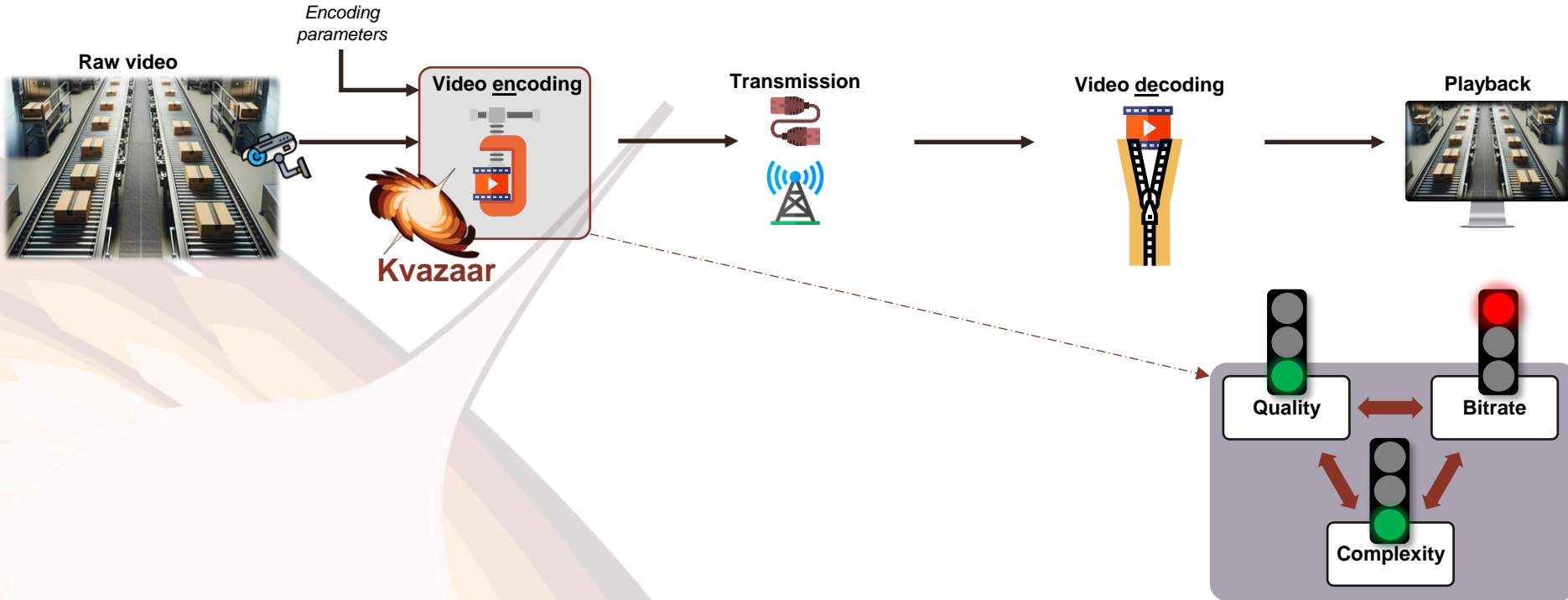
Quality monitoring



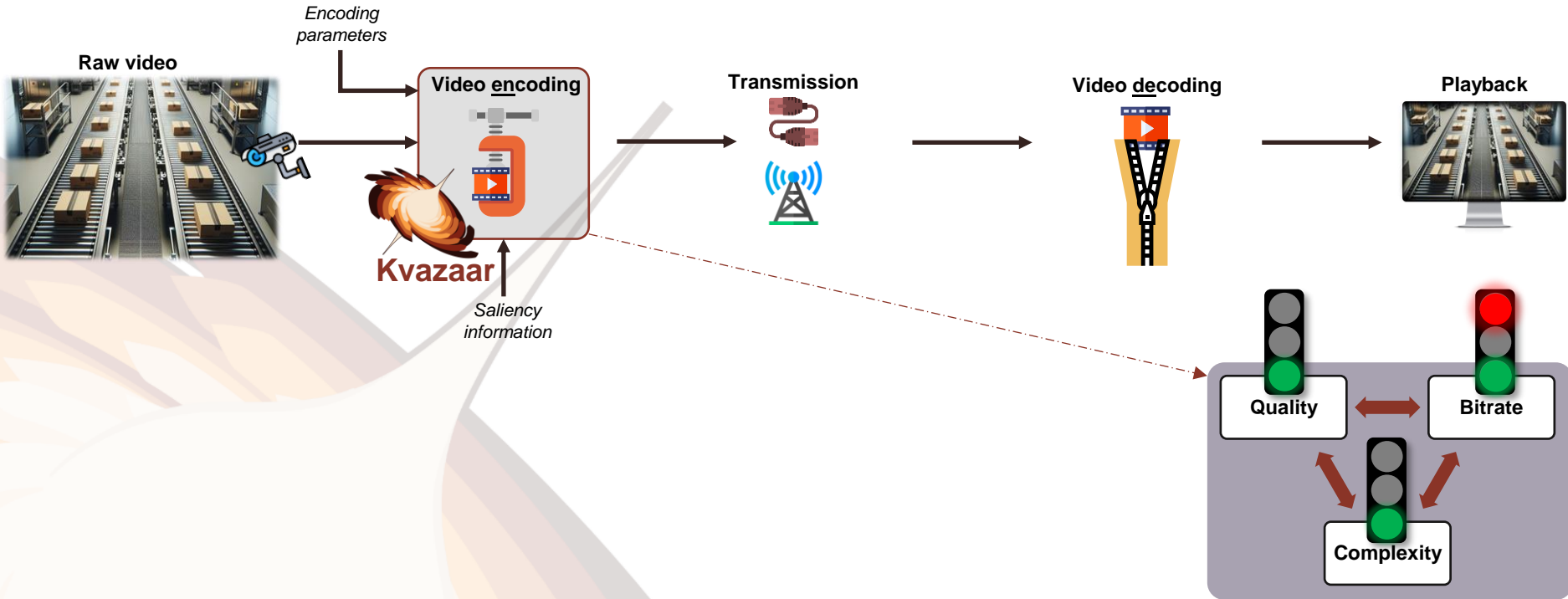
Guidance & safety



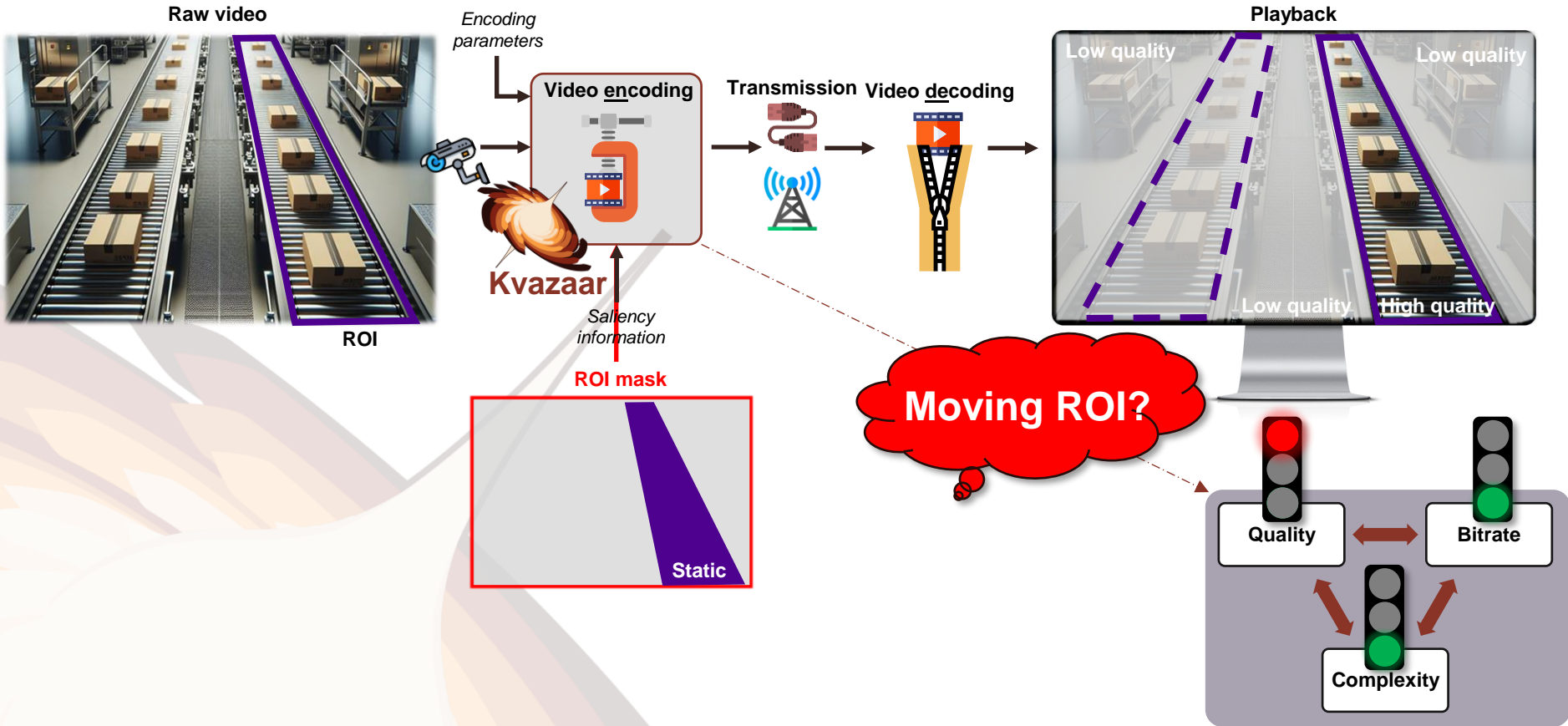
# Key Enabling Factor: Video Coding



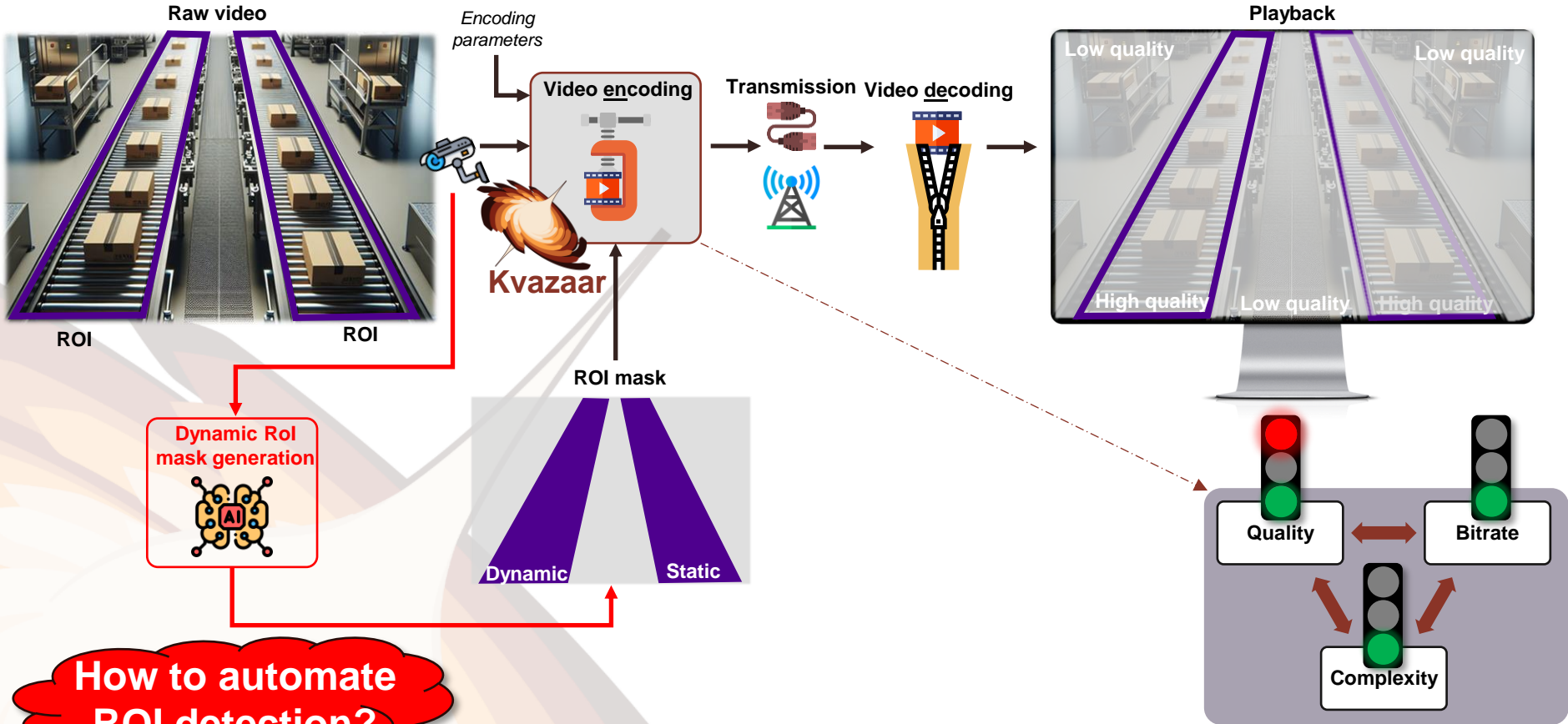
# From Traditional to Saliency-Guided Video Coding



# Static Region of Interest (ROI)

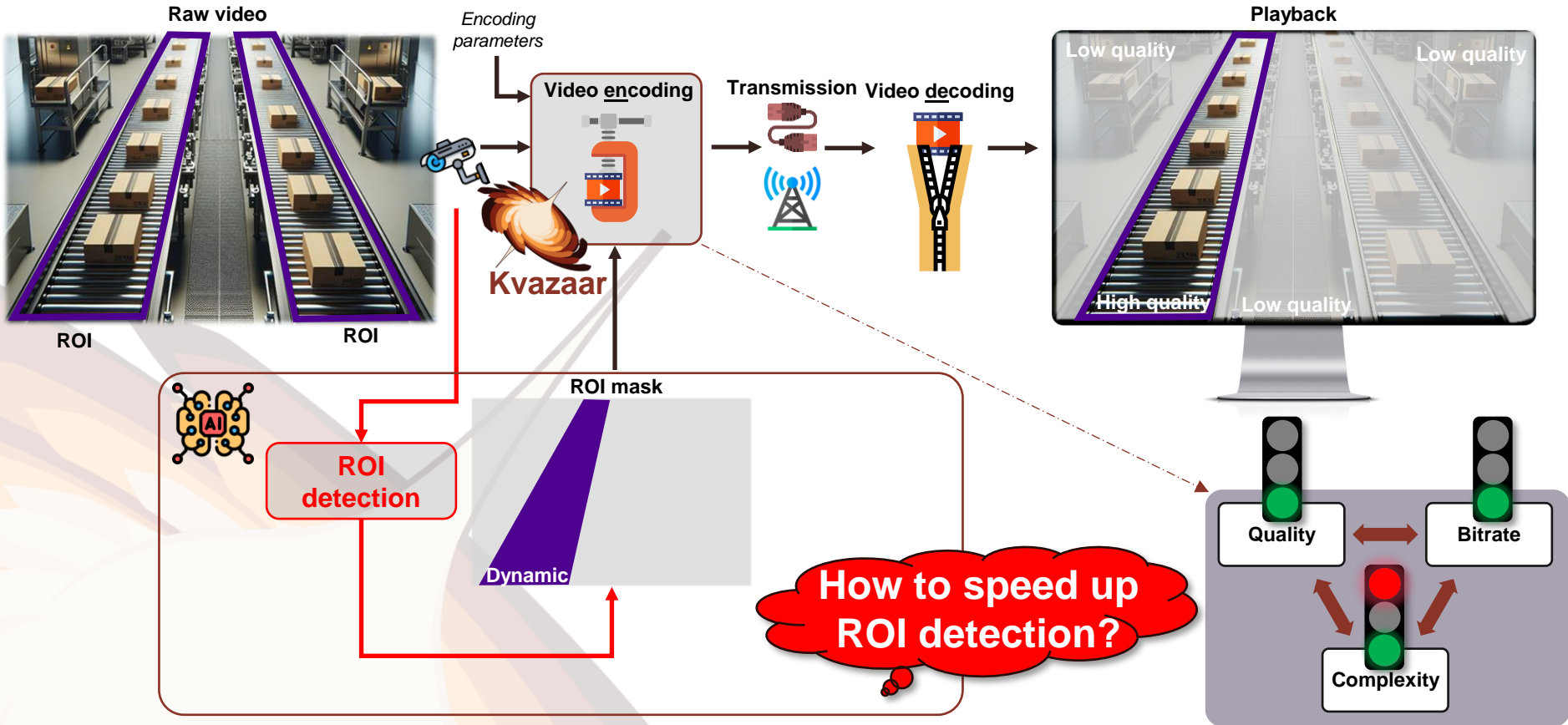


# Dynamic Region of Interest (ROI)

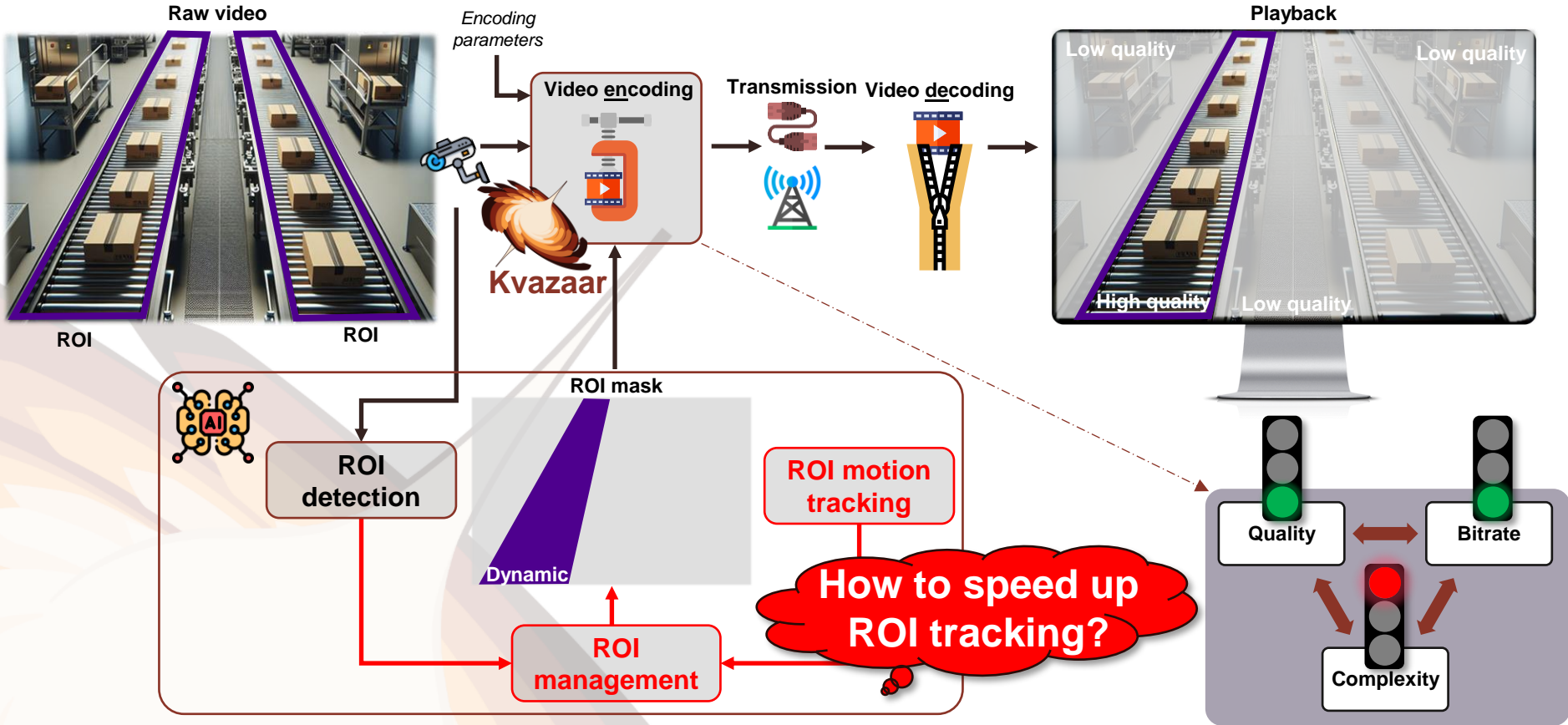


How to automate ROI detection?

# Frame-by-Frame ROI Detection

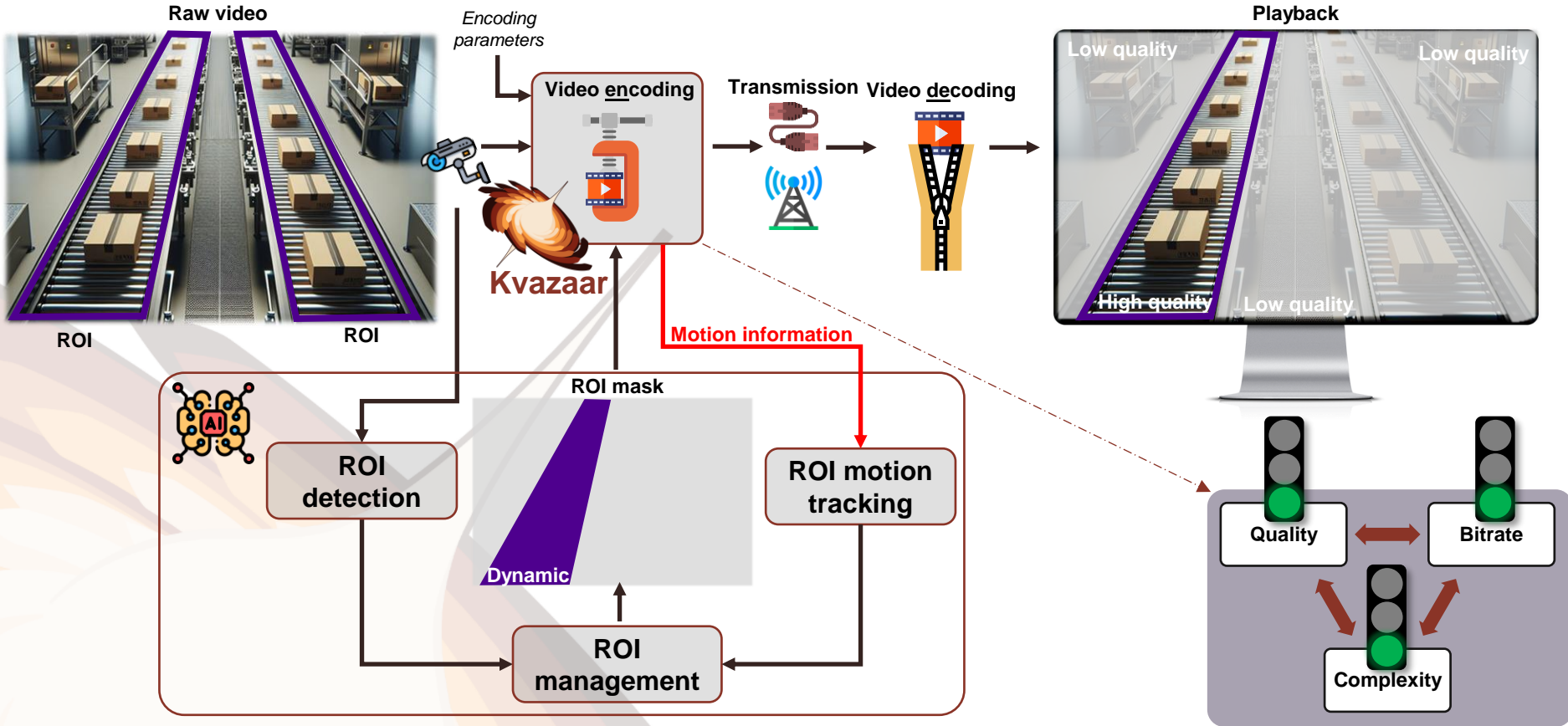


# ROI Tracking + Detection

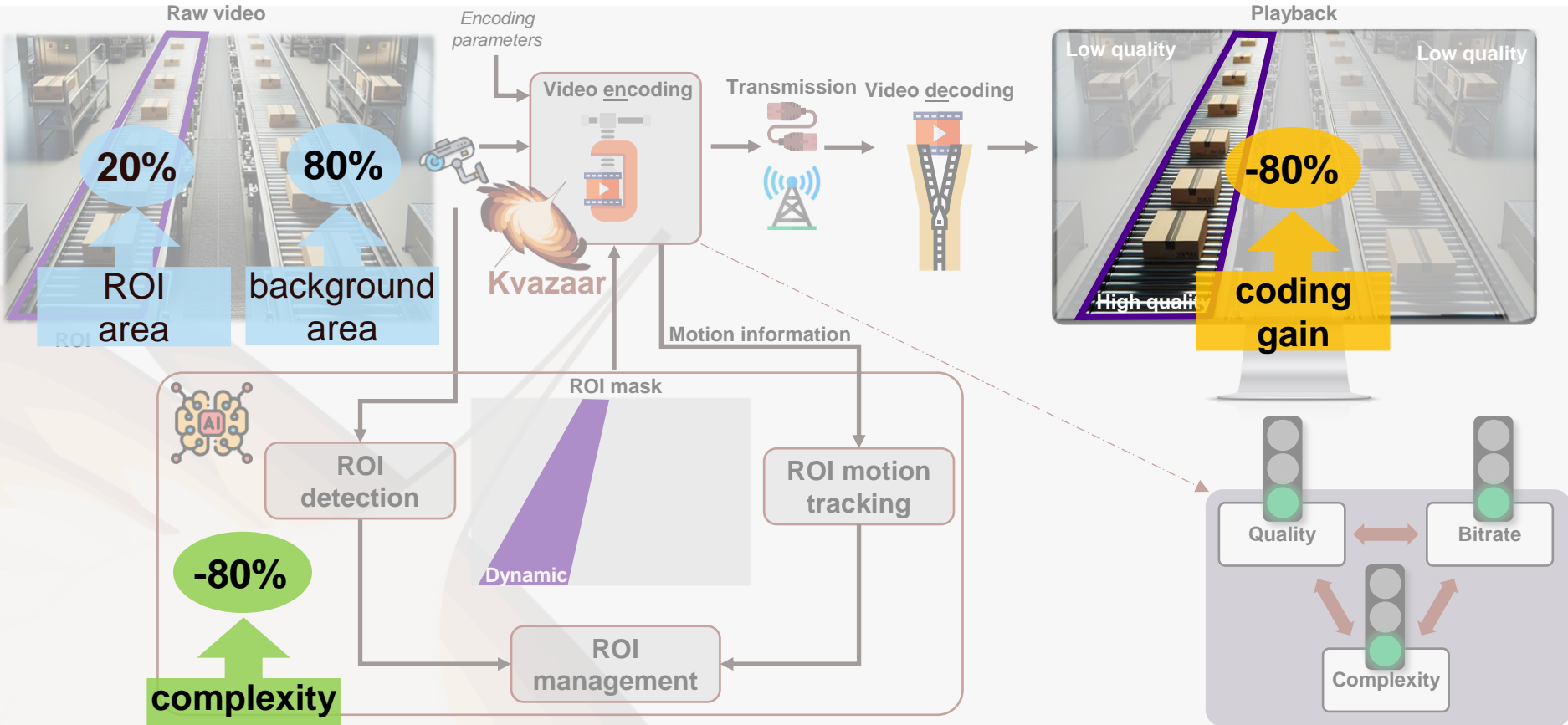




# ROI Tracking + Detection



# Performance



# Bottom Line

<b>Need</b>	Smart connected manufacturing calls for efficient video streaming Key enabling factor: real-time video coding
<b>Approach</b>	Standard-compatible saliency-based video coding Tightly coupled machine vision and video encoding
<b>Benefits</b>	80% coding gain for equal ROI quality (when ROI takes 20% of video) 80% complexity and energy savings over frame-by-frame detection
<b>Competition</b>	First real-time open-source solution
<b>Applications</b>	Remote machine control Production line maintenance Product quality monitoring Worker guidance and safety



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 [github.com/ultravideo](https://github.com/ultravideo)