XP PLAYER INTERN PRESENTATION

# STREAMING SEGMENT PARSER

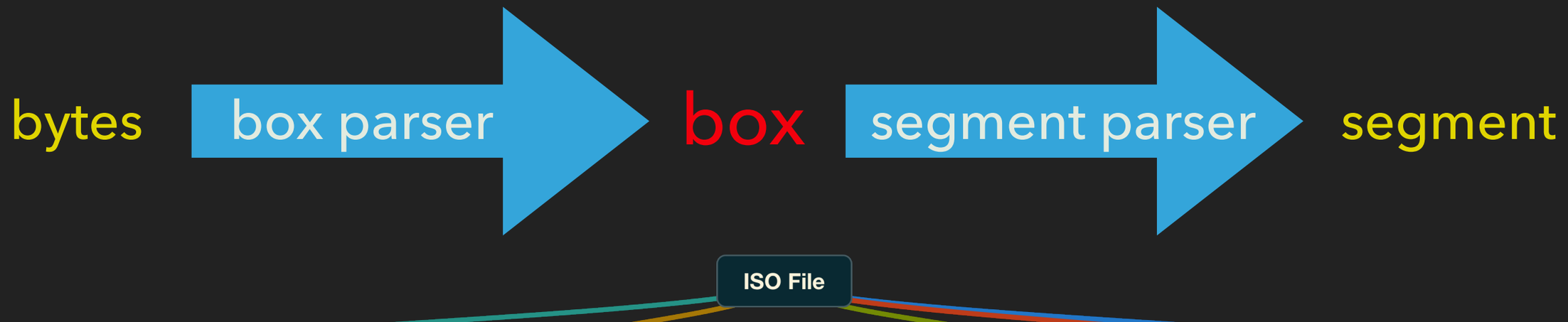
PRESENTED BY YIQI YAN

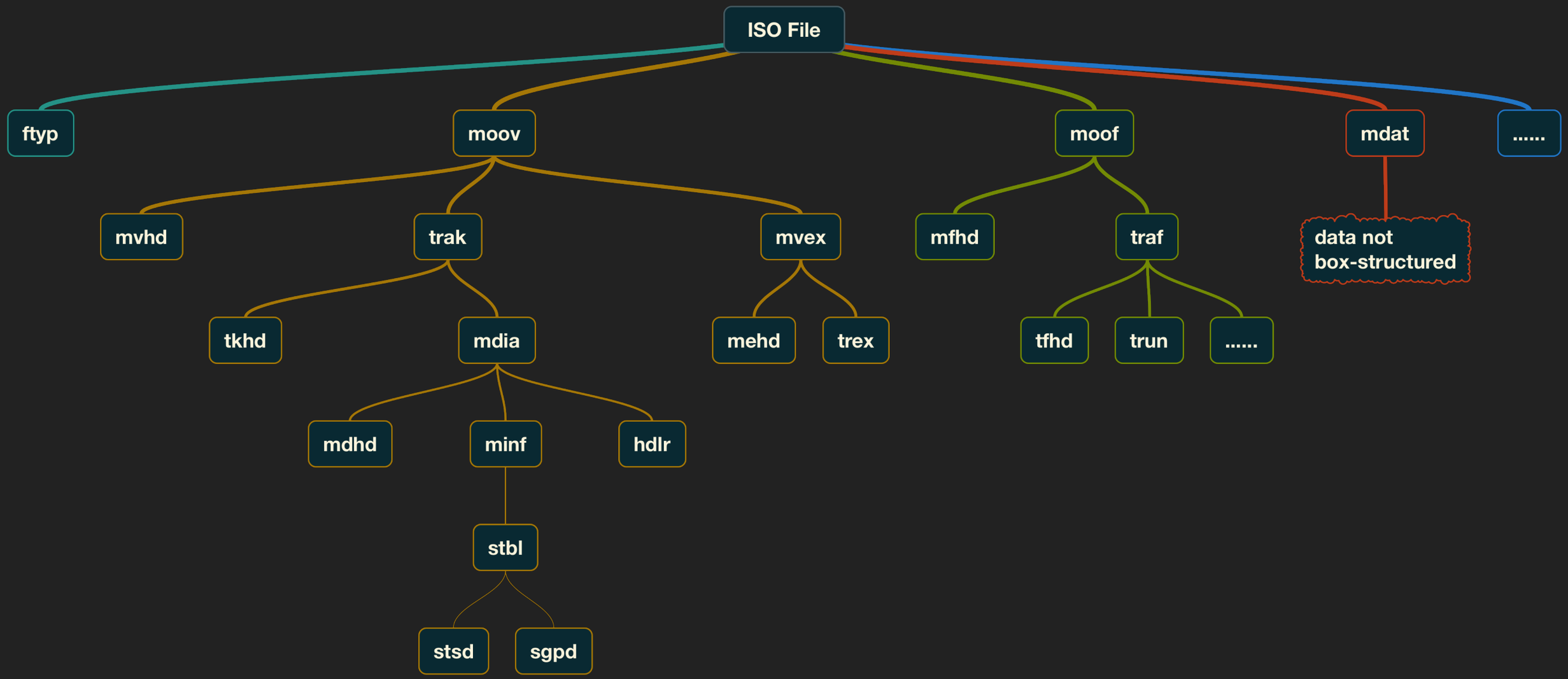
## CONTENTS

- ISO-BMFF Parser
- Current Design
- Proposed Design
- Implementation
- Demo & Analysis

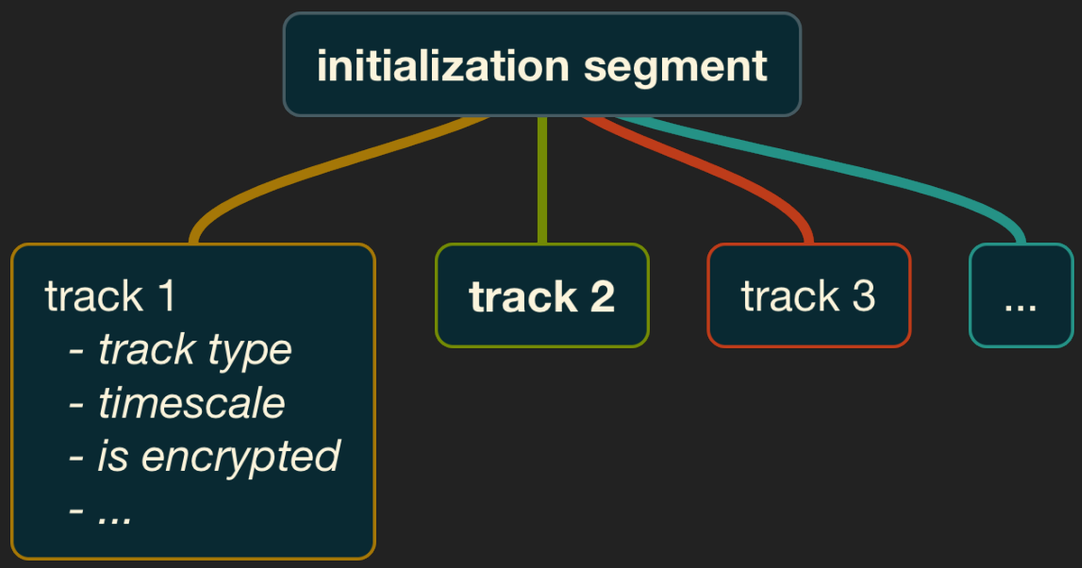
# ISO-BMFF PARSER

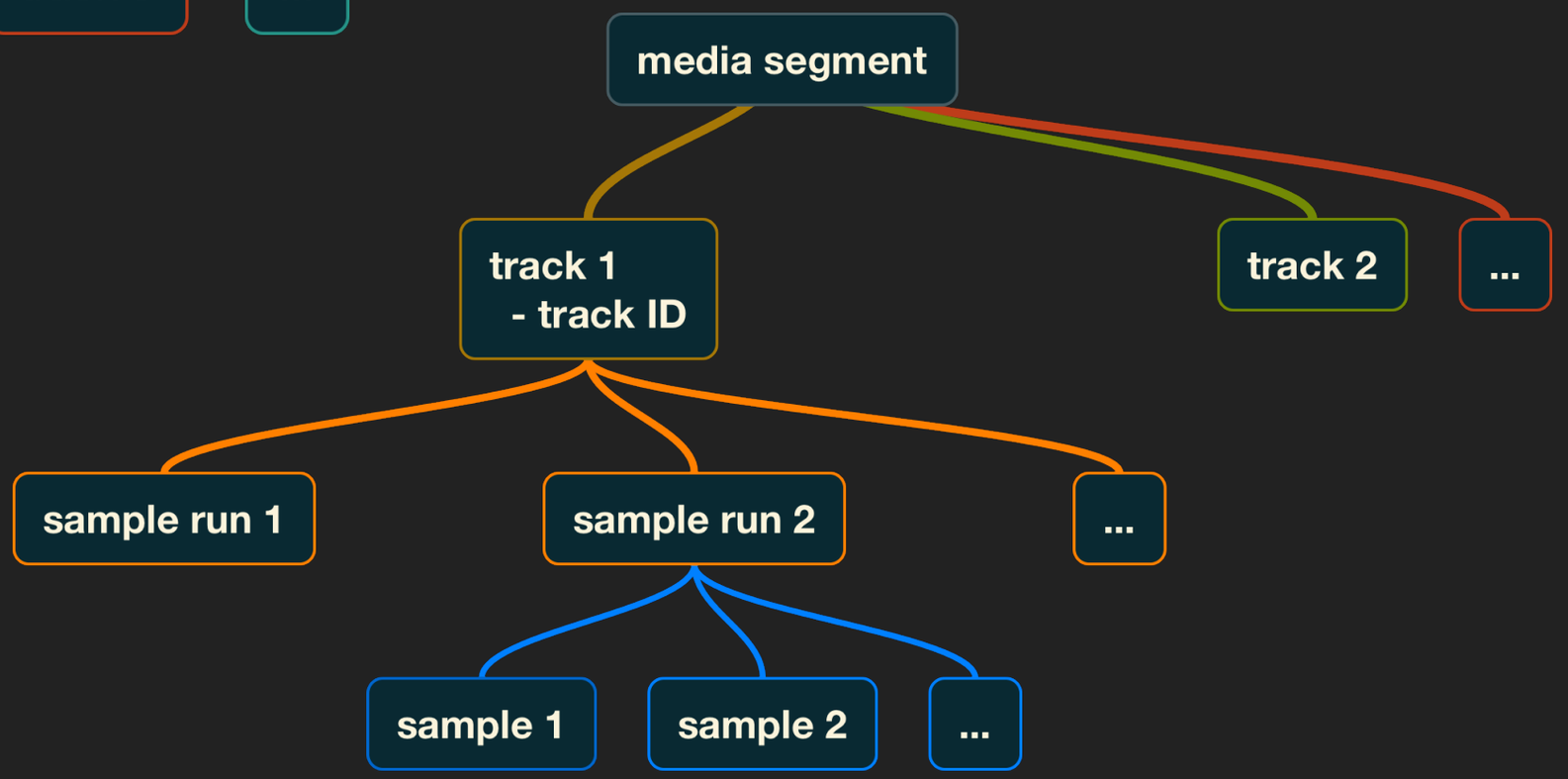
# ISO-BMFF PARSER



# ISO-BMFF PARSER

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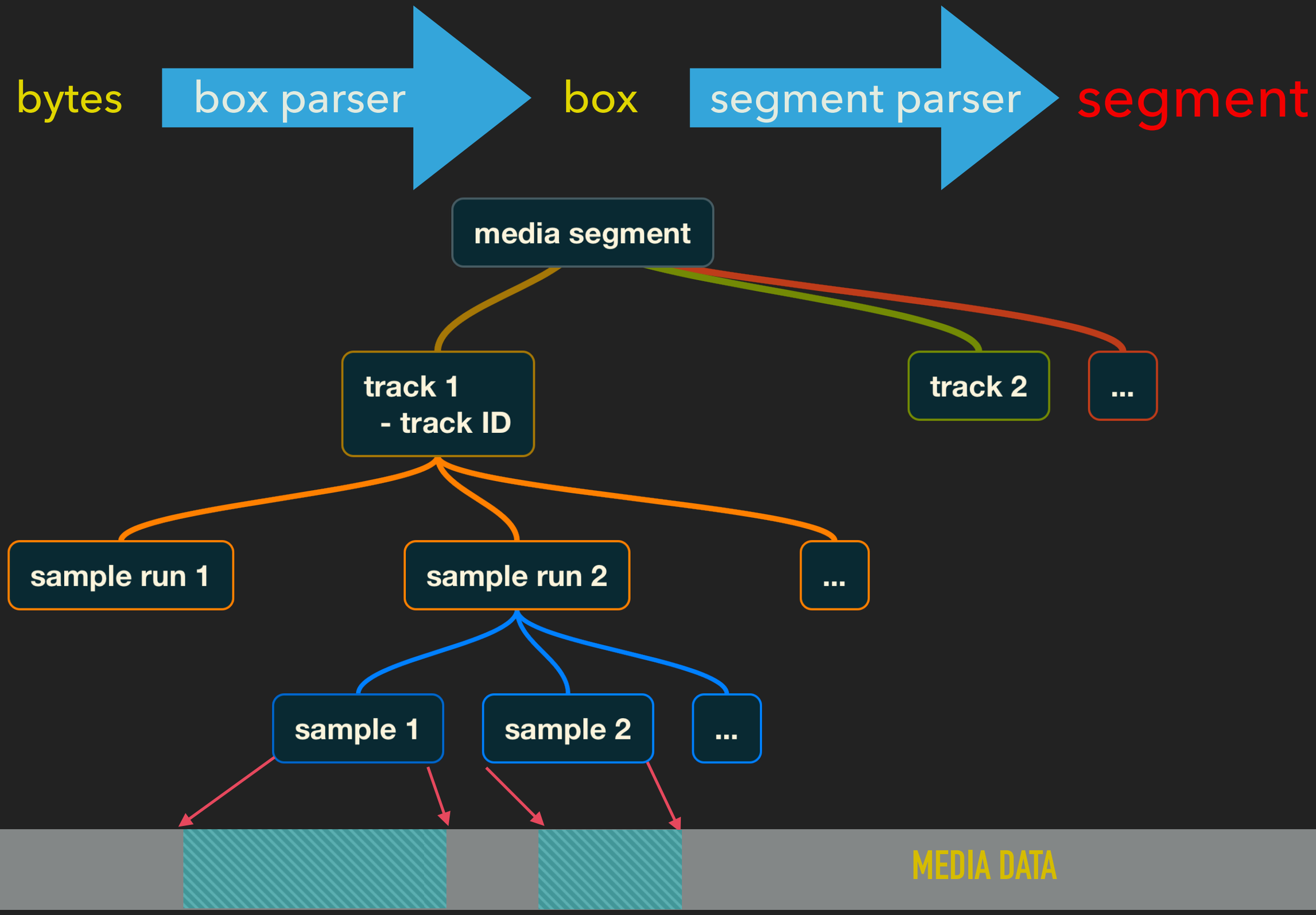
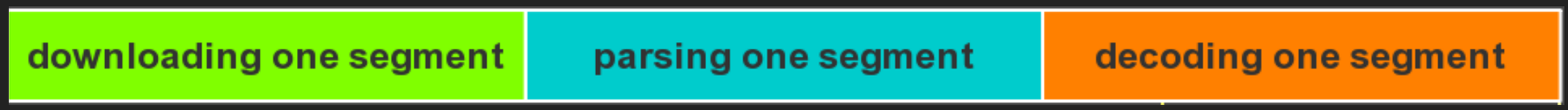
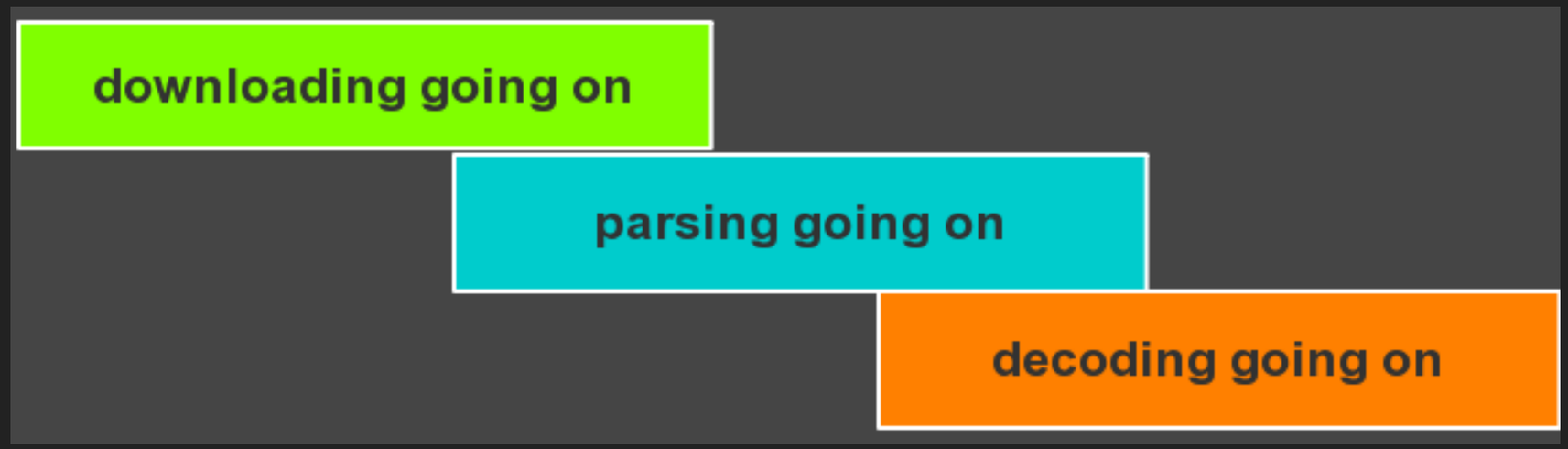


# CURRENT DESIGN




- Fully synchronous process
- Unnecessary latency
- Each stage relies on the completeness of the previous one
- The decoder has to wait for the entire segment while it is able to perform on separate media samples

# PROPOSED DESIGN




- Asynchronous process

- Whenever some data is downloaded, pass it to the parser.

- Whenever some media sample is available, send it to the decoder.

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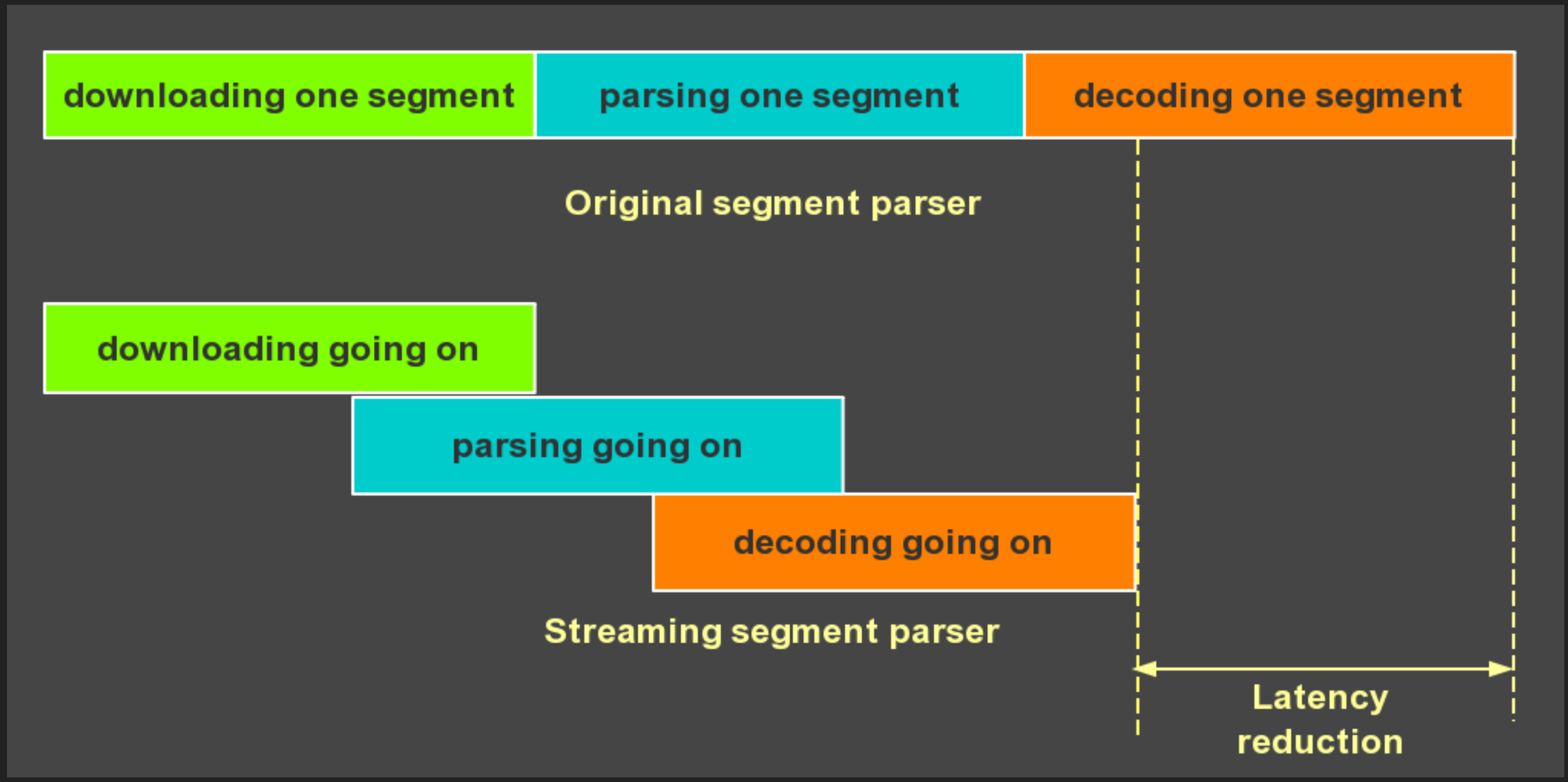

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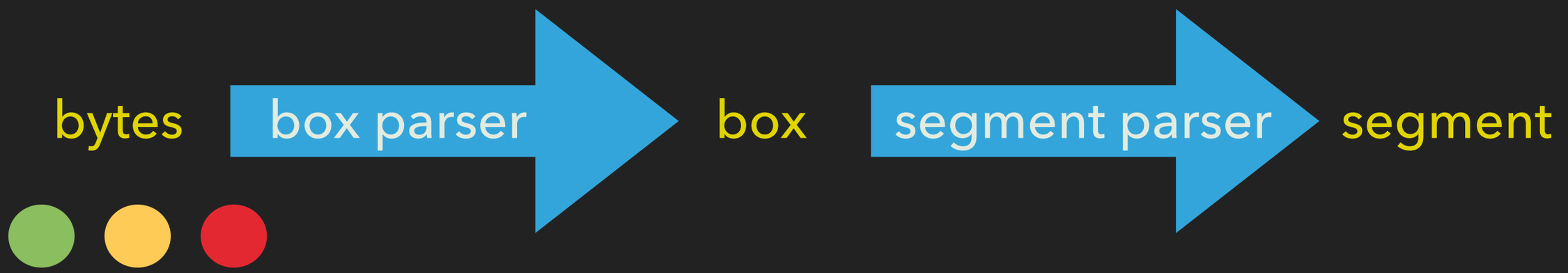

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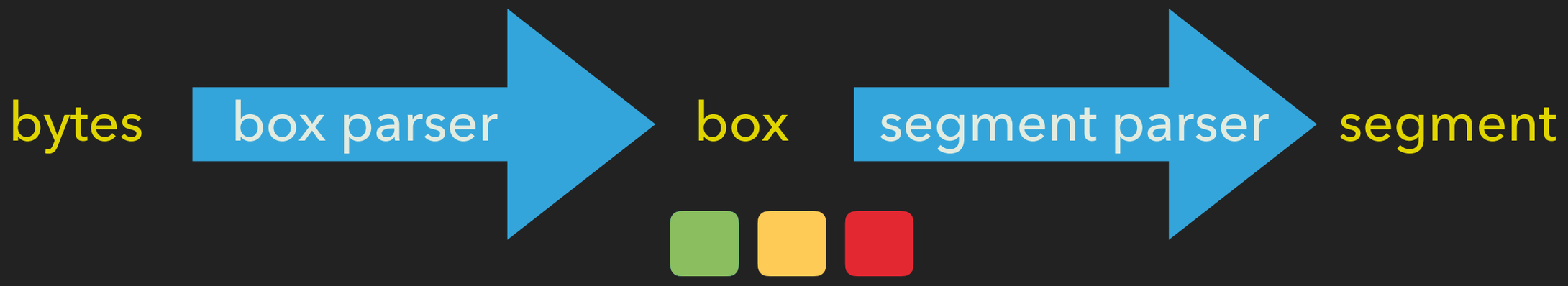

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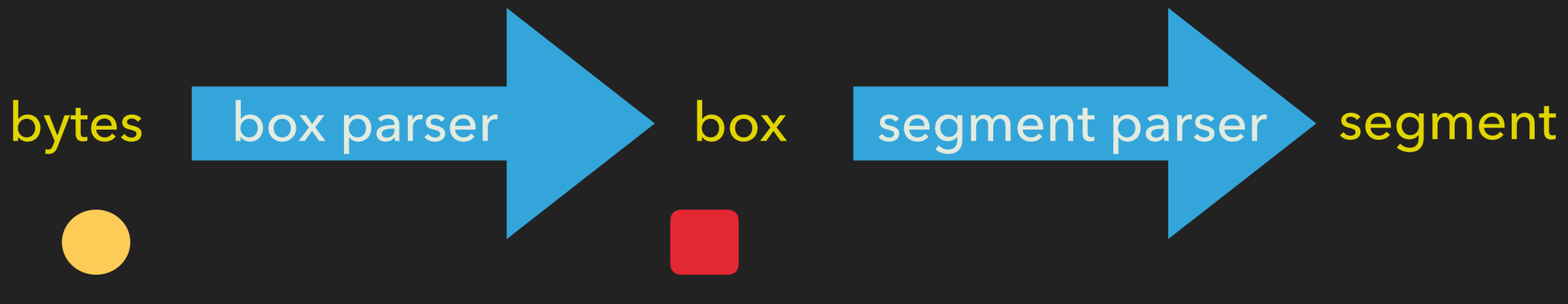

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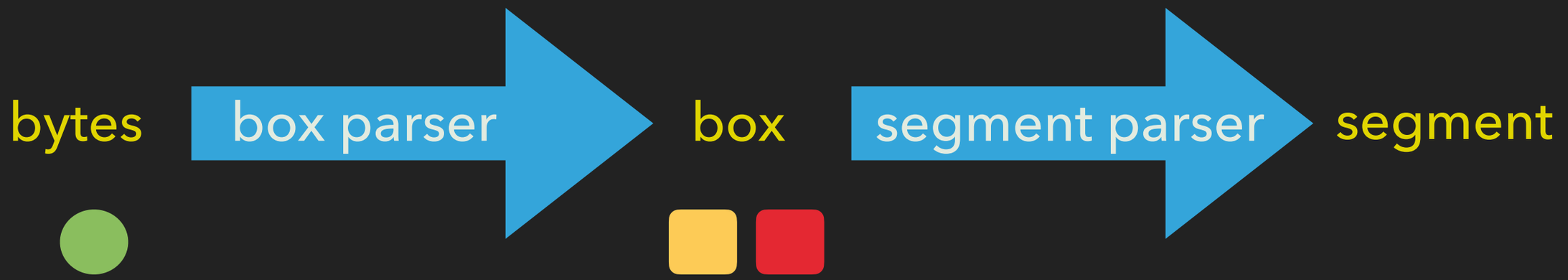

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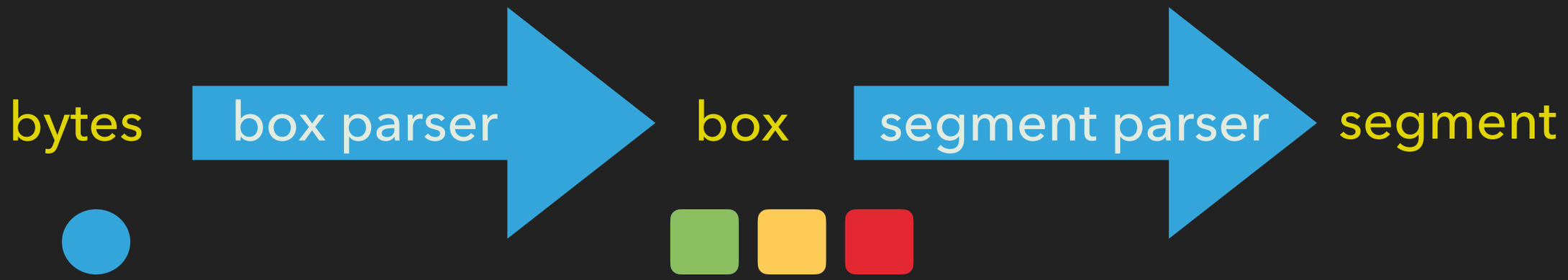

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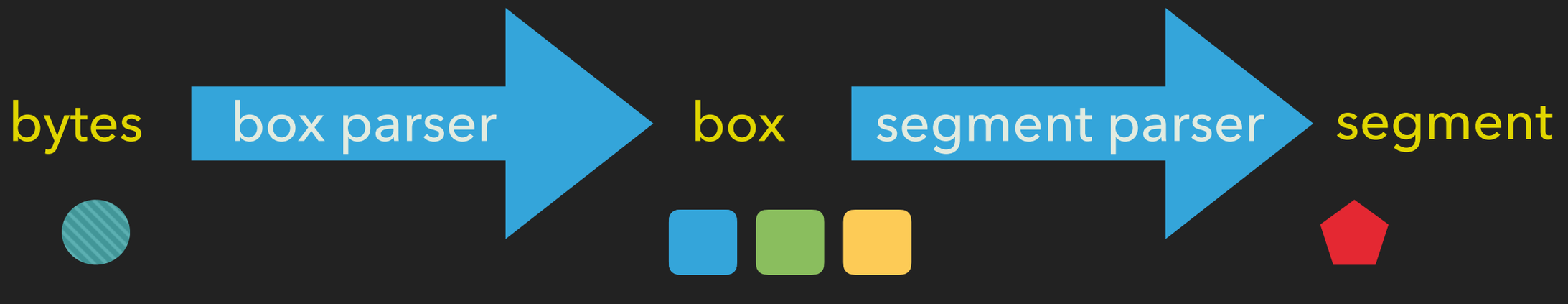

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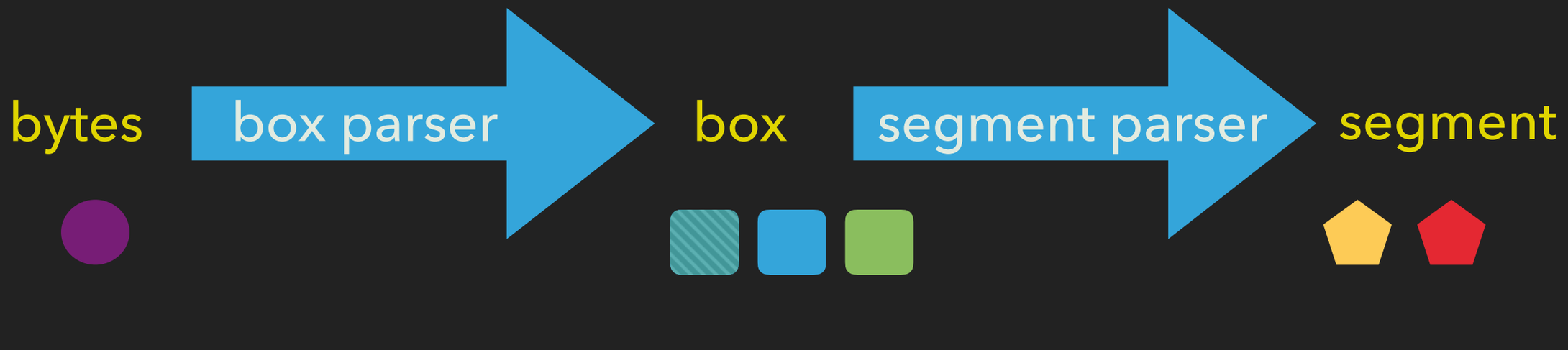
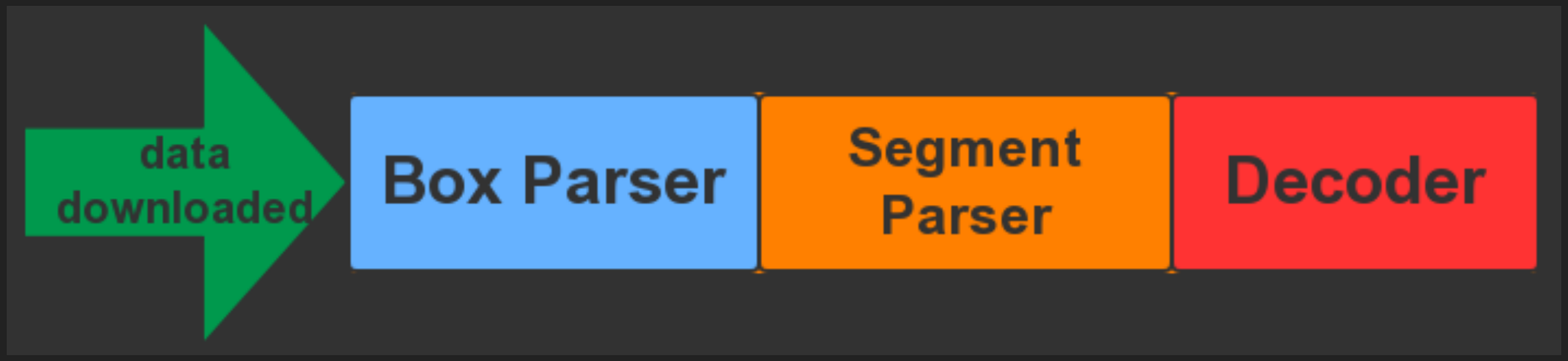


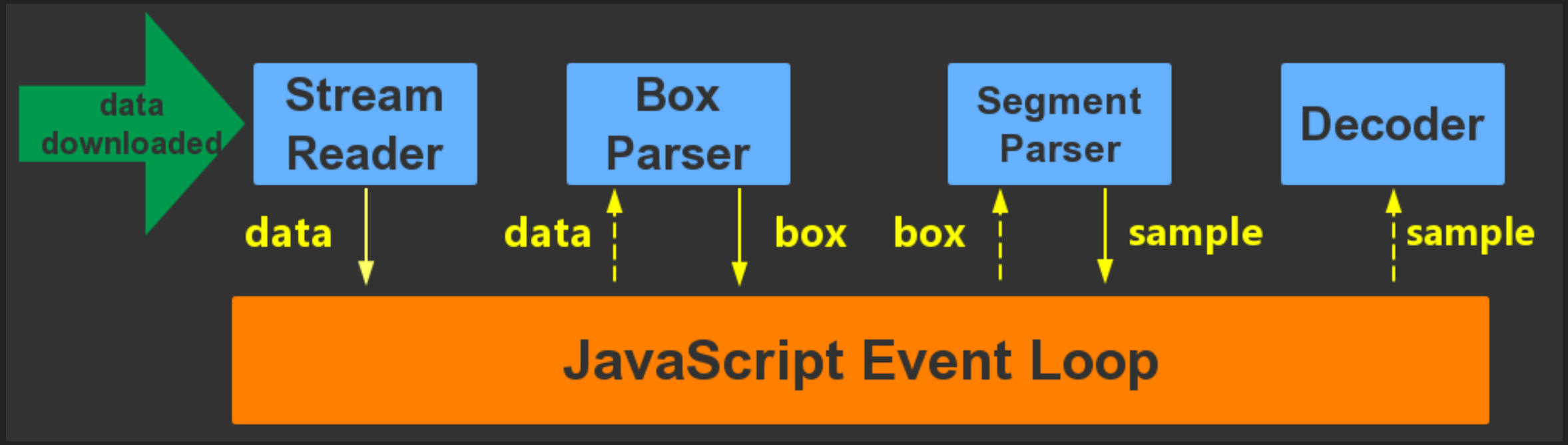
# PROPOSED DESIGN

# STREAM-BASED IMPLEMENTATION



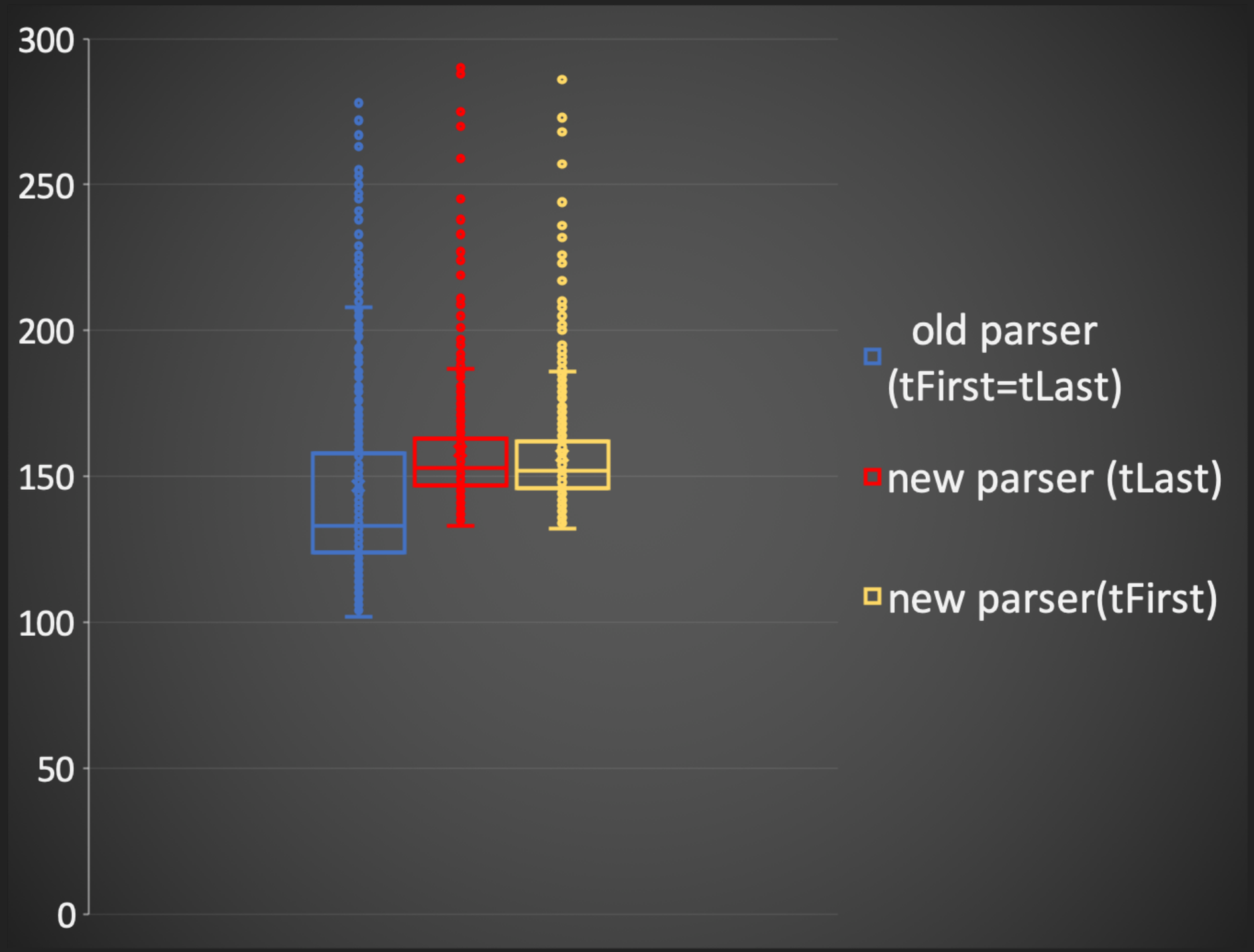

- Third-party stream processing library
  - Doesn’t have control of  implementation details - potential performance problem
  - Relies on primitive Node modules - not supported on Roku

# EVENT-BASED IMPLEMENTATION

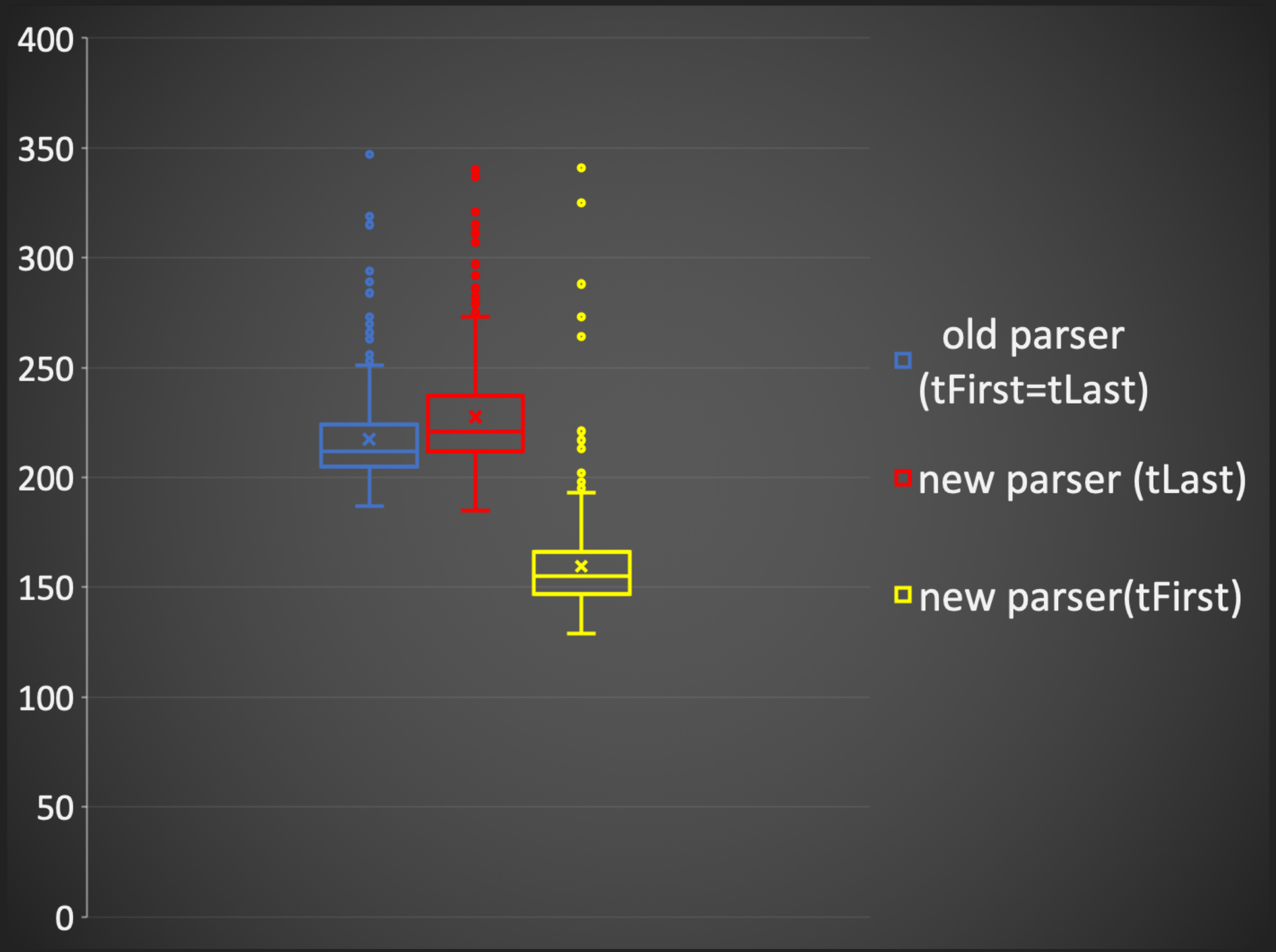


| | Audio Segment | Video Segment (encrypted) | Trailer Segment (non-encrypted) |
|---|---|---|---|
| number of media samples | 47 | 109 | 69 |
| size of segment (kB) | ~17 | ~744 | ~1485 |
| metrics | ▸ time to first sample (tFirst, ms)<br>▸ time to last sample (tLast, ms) | | |
| environment | ▸ 2.5GHz Intel i7 processor<br>▸ 16GB memory (2133 MHz LPDDR3)<br>▸ macOS Mojave<br>▸ node.js 10 | | |

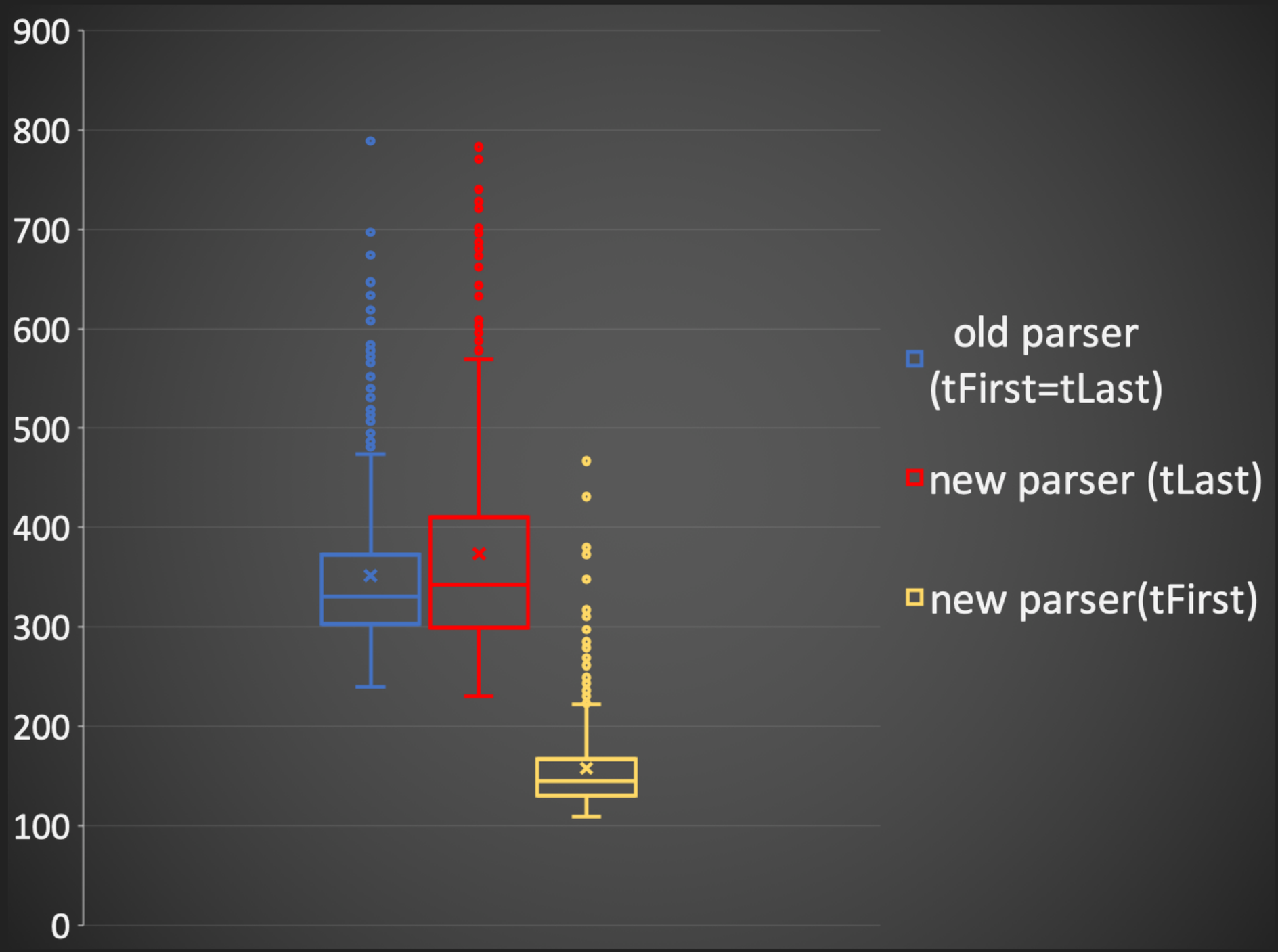
# AUDIO SEGMENT (500 RUNS)



## VIDEO SEGMENT (ENCRYPTED, 500 RUNS)



## TRAILER SEGMENT (NON-ENCRYPTED, 500 RUNS)



## TO DO

- Integration to XP player framework
  - Event-based decoder
  - Error handling
- Performance measurement in real case
  - With pre-buffer
  - Counting decoding time

# Q & A