MediaConch

**Reporter / Fixer / Policy Checker
Implementation Checker**

2016-10-19 @dericed @MediaConch @archivematica

PREFORMA Challenge

Empower memory institutions to gain full control over the technical properties of digital content intended for long-term preservation.

LOC's Sustainability Factors

- Disclosure
- Adoption
- Transparency
- Self-documentation
- External dependencies
- Impact of patents
- Technical protection mechanisms

FFV1 - A lossless video encoding

- 2003: Created in Open Source project "FFmpeg"
- 2006: Bitstream frozen (version 1)
- 2009: Picked up for preservation
- 2010: Funding improvements
- 2012: Added 14bit RGB, Multithreading, SliceCRC
- 2013: Official release of "FFV1.3"
- 2014: PREFORMA Project
- 2016: Standardization in progress
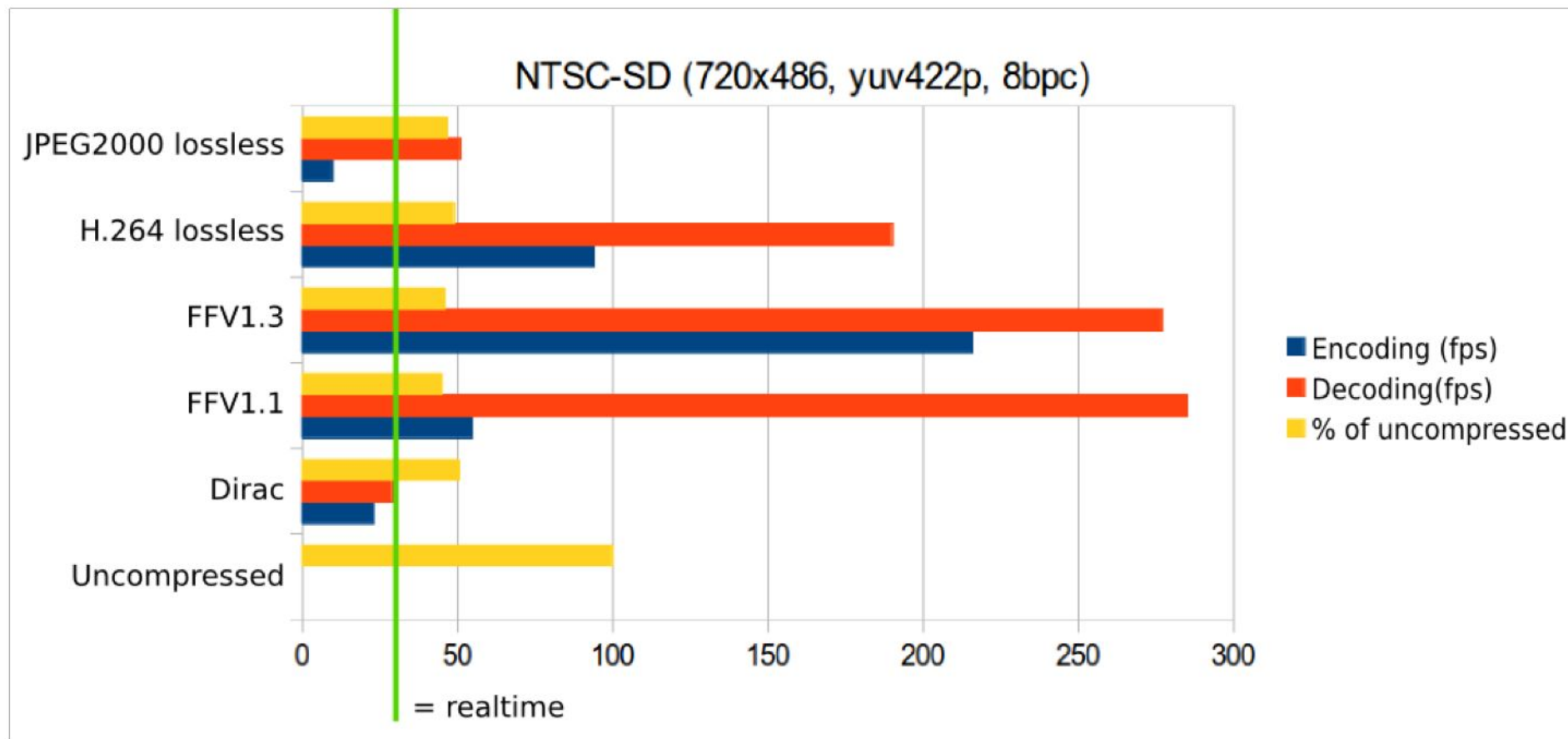- 2016: Added 16bit RGB

Figure 1: Speed / size comparison chart

FFV1 Perks

- Losslessness
- Fixity
- Self-description
- Size

"[ffv1 @ 0x7f9855046e00] CRC mismatch FC686A4F! frame 215"

/Users/drice/Desktop/ffv1_tests/DBS00018-12.ffv1.3.g1.v0.fps71.fuzz.mov

EBML & Matroska

- Extensible Binary Meta Language (EBML is a Binary XML format)
- An EBML Schema defines an EBML Document like an XML Schema defines an XML Document
- Matroska and webm are EBML Document Type
- Storage is based on a structure of Element ID, Element Data Size, and Element Data
- Unlike XML, an EBML Document requires an EBML Schema to be interpreted semantically

EBML & Matroska

```
<EBML>
    <EBMLVersion>1</EBMLVersion>
    <EBMLReadVersion>1</EBMLReadVersion>
    <EBMLMaxIDLength>4</EBMLMaxIDLength>
    <EBMLMaxSizeLength>8</EBMLMaxSizeLength>
    <DocType>matroska</DocType>
    <DocTypeVersion>4</DocTypeVersion>
    <DocTypeReadVersion>2</DocTypeReadVersion>
</EBML>
<Segment>
    <Info>
        <CRC-32>54272a11</CRC-32>
        <TimecodeScale>1000000</TimecodeScale>
        <MuxingApp>Lavf57.50.100</MuxingApp>
        <WritingApp>Lavf57.50.100</WritingApp>
        <SegmentUID>efd46d3ed630381ef9021d1d4ed5a81a</SegmentUID>
        <Duration>40.0</Duration>
    </Info>
    <Tracks>
```
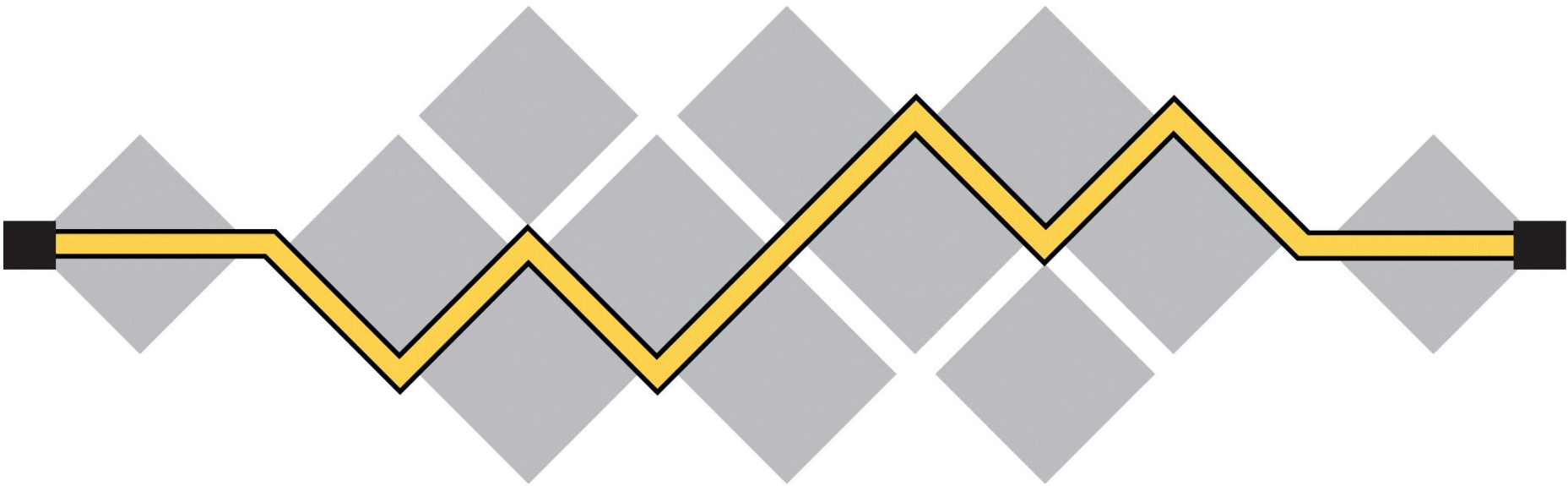
mission

TL;DR: Using existing work done by the development communities of Matroska, FFV1, and FLAC, the Working Group will formalize specifications for these open and lossless formats.

Codec Encoding for LossLess Archiving and Realtime transmission (cellar)

Documents | Charter | Meetings | History | Photos | Email expansions | List archive | Tools »

WG	**Name**	Codec Encoding for LossLess Archiving and Realtime transmission
	Acronym	cellar
	Area	Applications and Real-Time Area (art)
	State	Active
	Charter	charter-ietf-cellar-01 [Approved]
	Dependencies	Document dependency graph (SVG)
Personnel	**Chairs**	✉ Tessa Fallon
		✉ Tim Terriberry
	Area Director	✉ Ben Campbell
Mailing list	**Address**	cellar@ietf.org
	To subscribe	https://www.ietf.org/mailman/listinfo/cellar
	Archive	https://mailarchive.ietf.org/arch/browse/cellar/
Jabber chat	**Room address**	xmpp:cellar@jabber.ietf.org?join
	Logs	https://jabber.ietf.org/logs/cellar/

Charter for Working Group

The preservation of audiovisual materials faces challenges from technological obsolescence, analog media deterioration, and the use of proprietary formats that lack formal open standards. While obsolescence and material degradation are widely addressed, the standardization of open, transparent, self-descriptive, lossless formats remains an important mission to be undertaken by the open source community.

FFV1 is a lossless video codec and Matroska is an extensible media container based on EBML (Extensible Binary Meta Language), a binary XML format. There are open source implementations of both formats, and an increasing interest in and support for use of FFV1 and Matroska. However, there are concerns about the sustainability and credibility of existing specifications for the long-term use of these formats. These existing specifications require broader review and formalization in order to encourage widespread adoption.

There is also a need for a lossless audio format to complement the lossless video codec and container format. FLAC is a lossless audio codec that has seen widespread adoption in a number of different applications including archival applications. While there are open source implementations of the codec, no formal standards for either the codec itself or its use in container formats currently exist. Review and formalization of the FLAC codec standard and its use in Matroska container formats is needed for wider adoption.

Using existing work done by the development communities of Matroska, FFV1, and FLAC, the Working Group will formalize specifications for these open and lossless formats. In order to provide authoritative, standardized specifications for users and developers, the Working Group will seek consensus throughout the process of refining and formalizing these standards. Initial specifications can be accessed here:

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Document		Date		Status		IPR		AD / Shepherd	
Active Internet-Draft									
draft-ietf-cellar-ebml-00		2016-09-23		I-D Exists					
Extensible Binary Meta Language		27 pages **New**		WG Document					

Document		Date		Status		IPR		AD / Shepherd	
Related Internet-Drafts									
draft-lhomme-cellar-ebml-00		2016-07-06		I-D Exists					
Extensible Binary Meta Language		27 pages							
draft-lhomme-cellar-matroska-00		2016-07-08		I-D Exists					
Matroska		220 pages							
draft-niedermayer-cellar-ffv1-00		2016-07-06		I-D Exists					
FF Video Codec 1		28 pages							

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