

Report Concerning Space Data System Standards

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| [Document Title] |

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FOREWORD

[Foreword text specific to this document goes here. The text below is boilerplate.]

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CONTENTS

Section Page

# Introduction

## [INTRODUCTORY SUBSECTIONS] – Rod, Melanie, Country Jeremy, & Jennifer

[Insert introductory subsections such as PURPOSE, SCOPE, APPLICABILITY, RATIONALE, etc. See CCSDS A20.0-Y-2, *CCSDS Publications Manual* (Yellow Book, Issue 2, June 2005) for the contents of section 1.]

Latency is an issue to be noted.

## References

The following documents are referenced in this Report. At the time of publication, the editions indicated were valid. All documents are subject to revision, and users of this Report are encouraged to investigate the possibility of applying the most recent editions of the documents indicated below. The CCSDS Secretariat maintains a register of currently valid CCSDS documents.

[A list of documents referenced in the report goes here. See CCSDS A20.0-Y-2, *CCSDS Publications Manual* (Yellow Book, Issue 2, June 2005) for reference list format.]

# Use Cases

2.1 Reference Cases (Country Jeremy)

* Personal Video Conferencing (Restricted Imagery)
  + Personal Use (Low Quality)
    - Talking head with static background
  + Medical Conferencing (High Quality)
    - Showing Medical Instrument image or live camera (static and dynamic- treadmill)
* Engineering & Science (Involve JETI to determine reference scenes)
  + Analytical (Higher Quality)
    - High Spatial and Temporal
  + (Real-Time Decision Making)
  + Operational (Situational Awareness)
    - RPOD
    - Anomalies
    - EVA
    - Uncrewed Ops
* Public Affairs
  + Live (Low quality)Staged or scheduled event, real-time downlink
  + Buffered (recorded) (high quality)

2.2 No Reference Cases

3. Measurements

3.1 System Description and Measurement Points (City Jeremy)

* Transmission Issues (Jitter, packet loss, etc.)

3.2 Quality Dimensions (Falk)

* Fragmentation
* Discontinuity
* Blurriness
* Luminosity
* Noisiness

Covered in ITU P.918 - Dimension-based subjective quality evaluation for video content

[All sections and annexes should be separated by Word continuous section breaks.]

# Current State of the Art and Tools for Video Quality - Falk

* Example - MOS, SSIM, etc.

# Methods for measuring quality for space applications How to use the tools – Walt, Falk & Country Jeremy

1. Generation of a testfile database (representative scenes, reflecting the different use cases) as Reference.
2. Generation of a degradation database from the Reference Files (reflecting the possible video impairments for each use case)
3. Gathering of MeanOpinionScores (from subjective tests -> a baseline quality score)
4. Testing different existing, free available standardized Video Quality Methods and Models and compare them with the baseline scores, including subjective testing for final scoring.
5. Publish database and data sheet with quality scores for each use case!

Quality levels need to be correlated to video user. These are the examples from Adam’s presentation as examples:

**MS-SSIM on DMOS Scale**

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| --- | --- |
| 3.1 – 4.0 | **Very Low Quality** – Many highly annoying compression artifacts obscuring the picture elements |
| 2.6 – 3.0 | **Lower Quality** - Visible artifacts affecting picture quality on most screen sizes and viewing distances |
| 1.1 – 2.5 | **Good Quality** – Some artifacts may be noticeable but mostly imperceptible at correct viewing distances on all screen sizes |
| 0.5 – 1.0 | **High Quality** – Possibly from content with very low motion or complexity |
| 0.0 - 0.4 | **Best Quality** – No significant perceptual difference from the original content even at expert viewing distances |

# Example – Walt, JEremy, & Falk

1. [ANNEX TITLE]

[Annexes contain ancillary information. See CCSDS A20.0-Y-2, *CCSDS Publications Manual* (Yellow Book, Issue 2, June 2005) for discussion of the kinds of material contained in annexes.]