International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

P.1201.2

Amendment 2

(12/2013)

SERIES P: TERMINALS AND SUBJECTIVE AND OBJECTIVE ASSESSMENT METHODS

Models and tools for quality assessment of streamed media

Parametric non-intrusive assessment of audiovisual media streaming quality – Higher resolution application area

Amendment 2: New Appendix I – Use of ITU-T P.1201.2 internal model parameters for diagnostic purposes

Recommendation ITU-T P.1201.2 (2012) – Amendment 2

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Recommendation ITU-T P.1201.2

Parametric non-intrusive assessment of audiovisual media streaming quality – Higher resolution application area

Amendment 2

New Appendix I – Use of ITU-T P.1201.2 internal model parameters for diagnostic purposes

Summary

Amendment 2 to Recommendation ITU-T P.1201.2 (2012) introduces Appendix I.

History

Edition	Recommendation	Approval	Study Group	Unique ID[1]
1.0	ITU-T P.1201.2	2012-10-14	12	11.1002/1000/11729-en
1.1	ITU-T P.1201.2 (2012) Amd. 1	2013-05-14	12	11.1002/1000/11936-en
1.2	ITU-T P.1201.2 (2012) Amd. 2	2013-12-12	12	11.1002/1000/12111-en

[1] To access the Recommendation, type into the address line on the web browser the URL http://handle.itu.int/ followed by the unique ID, for example http://handle.itu.int/11.1002/1000/11830-en.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

Recommendation ITU-T P.1201.2

Parametric non-intrusive assessment of audiovisual media streaming quality – Higher resolution application area

Amendment 2

New Appendix I – Use of ITU-T P.1201.2 internal model parameters for diagnostic purposes

1) Appendix I

Introduce Appendix I at the end of the Recommendation as shown below.

Appendix I

Use of ITU-T P.1201.2 internal model parameters for diagnostic purposes

(This appendix does not form an integral part of this Recommendation.)

I.1 Introduction

The present appendix to ITU-T P.1201.2 presents a short description of which parameters of the model can be used for diagnostic purposes.

The appendix is centred on a table that indicates the parameters and the respective clauses in which these can be found. Further, it contains information about the level at which the parameter can be retrieved, and the respective model output to which it is related. Note that the highlighted parameters are at the highest level, that is, they should be used as the starting point for identifying why quality may be low.

Note also that the relationship between the parameters and quality only describe the internal relationship between the model internal parameters and quality when the output MOS of the models is low. They do not reflect the relationship between video encoding parameters in general and quality. For example, the encoding complexity is not a quality problem in itself, but can explain why the MOS score drops in certain circumstances.

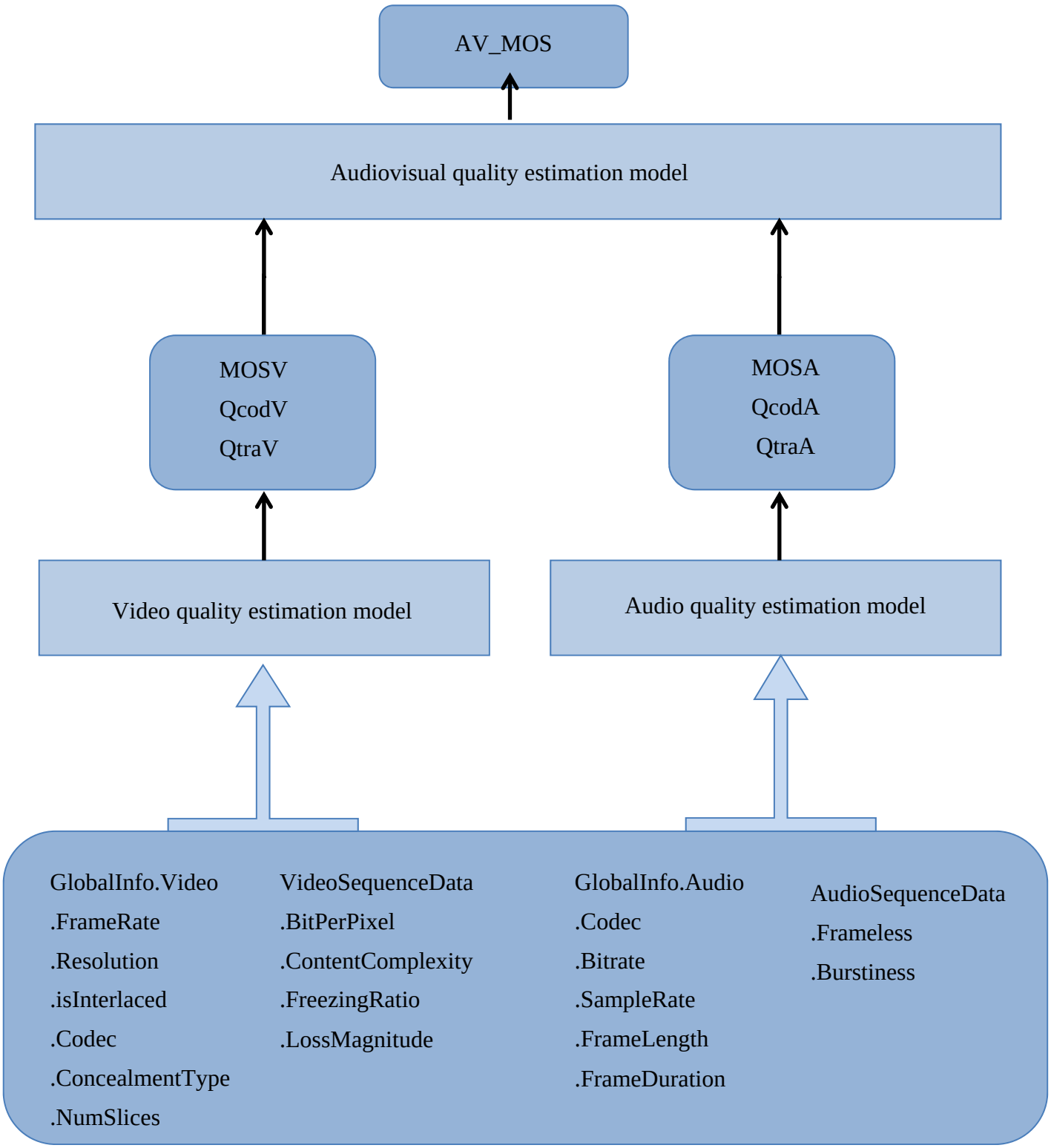
I.2 Diagnostic use of model parameters

Parameter	Provided information	Clause in ITU-T P.1201.2	Values that might be cause for problems	Module dependent on this parameter
GlobalInfo.Video. FrameRate	Video frame rate	6.1	Lower means worse quality	Video
GlobalInfo.Video. Resolution	Video resolution	6.1		Video
GlobalInfo.Video. isInterlaced	0: progressive, 1: interlaced	6.1		Video

Parameter	Provided information	Clause in ITU-T P.1201.2	Values that might be cause for problems	Module dependent on this parameter
GlobalInfo.Video. Codec	Video codec	6.1		Video
GlobalInfo.Video. ConcealmentType	Slicing or freezing packet loss concealment type	6.1		Video
GlobalInfo.Video. NumSlices	Number of slices per frame	6.1		Video
VideoSequenceData. BitPerPixel	Number of encoded bits per pixel	6.3	Lower means worse quality	Video
VideoSequenceData. ContentComplexity	Content encoding complexity	6.3	Higher means worse quality	Video
VideoSequenceData. FreezingRatio	Ratio of frozen video frames to total number of video frames	6.3	Higher means worse quality	Video
VideoSequenceData. LossMagnitude	Impact of losses due to slicing packet loss concealment	6.3	Higher means worse quality	Video
QcodV	**Estimated video quality due to video compression artefacts**	**6.4.2**	**Higher means worse quality. Range: 0 to 100**	**Audiovisual**
QtraV	**Estimated video quality due to video transmission degradations**	**6.4.2**	**Higher means worse quality. Range: 0 to 100**	**Audiovisual**
MOSV	**Estimated Video MOS score**	**6.4.2**	**Lower means worse quality. Range: 1 to 5**	**Audiovisual**
GlobalInfo.Audio. Codec	Audio codec	6.1		Audio
GlobalInfo.Audio. Bitrate	Encoded audio bitrate	6.1	Lower means worse quality (see ITU-T P.1201.2 for codec-specific ranges)	Audio
GlobalInfo.Audio. SampleRate	Audio sample rate	6.1	Lower means worse quality	Audio
GlobalInfo.Audio. FrameLength	Audio frame length in samples	6.1		Audio
GlobalInfo.Audio. FrameDuration	Audio frame duration (in sec.)	6.1		Audio
AudioSequenceData. Frameloss	Audio frame loss amount	6.3.2	Higher means worse quality	Audio
AudioSequenceData. Burstiness	Distribution of lost audio frames	6.3.2	Higher means worse quality	Audio

Parameter	Provided information	Clause in ITU-T P.1201.2	Values that might be cause for problems	Module dependent on this parameter
QcodA	**Estimated audio quality for audio compression artefacts**	**6.4.1**	**Higher means worse quality**	**Audiovisual**
QtraA	**Estimated audio quality due to audio transmission artefacts**	**6.4.1**	**Higher means worse quality**	**Audiovisual**
MOSA	**Estimated Audio MOS score**	**6.4.1**	**Lower means worse quality**	**Audiovisual**
MOS-AV	**Estimated Audiovisual MOS score**	**6.4.3**	**Lower means worse quality**	**Audiovisual**

The flowchart below represents the information flow for the parameters used to calculate the audiovisual MOS estimate. This can be used to do fault localization by following the arrows in the opposite direction, for example; the MOS-AV score is dependent on outputs from the video quality estimation model and from the audio quality estimation model. By going back one step from the audiovisual quality estimation model, the cause for bad audiovisual quality can be understood. In particular, it can be analysed whether the bad quality is due to bad video compression quality, audio compression quality, video transmission quality or audio transmission quality. If, for example, the video quality MOSV is high but the audio quality MOSA is low, it is sufficient to follow the flow chart down to the parameters that the audio quality estimation model is using and investigate those separately. On the other hand, if MOSV is low, but MOSA is high, there might be no reason to include the audio parameters in the analysis.


AV_MOS
Audiovisual quality estimation model
MOSV
QcodV
QtraV
MOSA
QcodA
QtraA
Video quality estimation model
Audio quality estimation model
GlobalInfo.Video
.FrameRate
.Resolution
.isInterlaced
.Codec
.ConcealmentType
.NumSlices
VideoSequenceData
.BitPerPixel
.ContentComplexity
.FreezingRatio
.LossMagnitude
GlobalInfo.Audio
.Codec
.Bitrate
.SampleRate
.FrameLength
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AudioSequenceData
.Frameless
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