

WCAM IST-2003-507204

DELIVERABLE D6.4 – MULTIMEDIA TRIAL ASSESSMENT

PART 2 – SUBJECTIVE EVALUATION AT MIFA

1 Subjective evaluation at MIFA

1.1 Subjective evaluation short description

The WCAM subjective evaluation took place at MIFA in the screening room. The objective was to assess the MPEG-4 AVC/H.264 video quality respecting the movie screening conditions. The subjective evaluation conditions as described in Deliverable D2.3 were referring to ITU-R BT.500 conditions, but with a viewing distance corresponding to the movie screening activity and using the screening boxes. Evaluation have been done from 19.00, when the room will be available, after the movie screening activity, with volunteers recruited mainly from people met on the CITIA booth at MIFA. Room illumination was from 190 lx close to the windows down to 50 lx close to the video server location.

Evaluators were sitting at the viewing distance of 1 meter corresponding to a 3H distance, small regarding ITU-R BT.500 recommendation but corresponding to the normal screening activity.

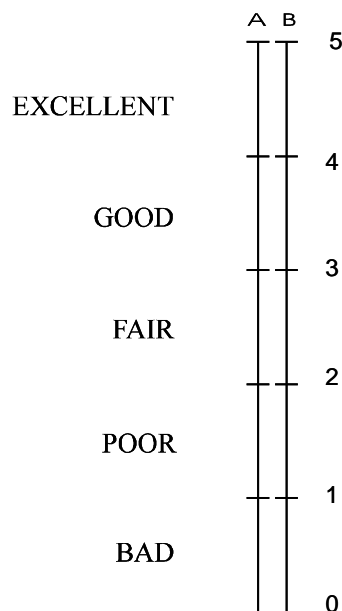
The video sequences were generated using a Matrox DigiSuite PC platform allowing the output of uncompressed video. The original video has been buffered to be connected to 18 video monitors (Sony PVM2130). The monitors were set-up using Pluge (see photo) and contrast patterns and a luminance meter. Colour was matched between monitors with a 75% colour bar pattern and a luminance meter.

Two sessions (two different days) have been made, with the following features:

- First session: comparison between original video and compressed using WCAM MPEG-4 AVC/H.264 encoder version 0.2. The evaluators number was 14 and the number of test sequences of 10s was 25.
- Second session: comparison between MPEG-4 AVC/H.264 reference software (JM9.4) error concealment and the EECMS error concealment developed in WCAM. The evaluators number was 17 and the number of test sequences of 10s was 25.

The video sequences that have been used were animated movies. As WCAM was targeting real-time streaming using PC/PDA platforms, the image size were CIF (352*288 4:2:0 25fps) upsampled to 720*576 25fps 4:2:2 using the mpeg4_filter tool developed in the framework of MPEG-4. The video monitors were connected to the buffers using a composite video connection, which despite the quality reduction is corresponding to the way the Amino IP Set Top boxes were connected to the monitors. Again the idea was to respect as closed as possible the movie screening activity conditions.

The MOS figure is compliant with the ITU-R BT.500 DSCQS method:



For more details about the subjective assessment description please refer to Deliverable D2.3.

1.2 Results summary

	MOS	MOS σ	95% interval
Original (CIF)	3.19	0.55	[2.90 , 3.48]
AVC 1Mb/s (WCAM v0.2)	2.29	0.54	[2.00 , 2.57]
AVC 1Mb/s (JM)	3.18	0.56	[2.91 , 3.45]

JM error concealment PER=2%	2.12	0.79	[1.75 , 2.50]
WCAM error concealment PER=4%	2.06	0.9	[1.63 , 2.48]
WCAM error concealment PER=2%	2.88	0.73	[2.53 , 3.23]

These results are raw results without any value renormalisation and any evaluator rejection. For more details about the results

These figures show the following mains results:

- 1) H.264 Encoding quality: The quality of the WCAM encoding technology needs to be improved at the rate allocation level. This was the first evaluation of the encoding technology and it clearly addresses one of the lack of our implementation that has been corrected in the following month after this evaluation. The performance of the WCAM MPEG-4 AVC encoder is now outperforming the JM reference software. The problem was mainly due to a computing error on the handling of chrominance information that has been discovered thanks to the trials.
- 2) Error concealment: The WCAM error concealment method (EECMS) has been assess subjectively, complementary to the PSNR results already available. The subjective evaluation shows the interest of the error concealment method toward the method implemented in the reference software. At a packet loss rate of 2%, the subjective quality is closed to the original material encoded with the JM9.4. In this evaluation we haven't included video material without error concealment, as at this packet error rate, errors are very annoying without concealment and should have conducted to strong rejection from the evaluators.

For more details about these results please refer to Annex 5.

1.3 Illustrated Report



Installing and connecting the distribution network for the evaluation



Setting of the TV parameters.



Evaluators during the test



TV, paper form and pencils, this was the tools of the evaluators






Initial Display announcing the subjective evaluation test.





2 Annex : Results of Subjective Evaluation







2.1 Session 1







The objective of this session was the assessment of the MPEG-4 AVC/H.264 encoding, using WCAM encoder. Video sequences have been encoded at 1Mb/s in CIF format (352*288). Original and compressed/decompressed sequences have been upsampled to 720*576 using mpeg4_filter tool.

2.1.1 List of movies and characteristics:

Sequence Number	Thumbnail	Titles
1		anim2_1_ref.avi anim2_1_cif_Dec.avi
2		anim2_2_ref.avi anim2_2_cif_Dec.avi
3		anim2_3_cif_Dec.avi anim2_3_ref.avi
4		anim3_1_ref.avi anim3_1_cif_Dec.avi

<p>5</p>		<p>anim3_2_cif_Dec.avi anim3_2_ref.avi</p>
<p>6</p>		<p>anim4_2_cif_Dec.avi anim4_2_ref.avi</p>
<p>7</p>		<p>anim4_3_cif_Dec.avi anim4_3_ref.avi</p>
<p>8</p>		<p>anim5_2_ref.avi anim5_2_cif_Dec.avi</p>
<p>9</p>		<p>anim5_3_ref.avi anim5_3_cif_Dec.avi</p>
<p>10</p>		<p>anim6_1_ref.avi anim6_1_cif_Dec.avi</p>

<p>11</p>		<p>anim6_2_cif_Dec.avi anim6_2_ref.avi</p>
<p>12</p>		<p>anim6_3_cif_Dec.avi anim6_3_ref.avi</p>
<p>13</p>		<p>anim7_2_ref.avi anim7_2_cif_Dec.avi</p>
<p>14</p>		<p>anim8_1_cif_Dec.avi anim8_1_ref.avi</p>
<p>15</p>		<p>anim8_2_ref.avi anim8_2_cif_Dec.avi</p>
<p>16</p>		<p>anim8_3_cif_Dec.avi anim8_3_ref.avi</p>

<p>17</p>		<p>anim11_2_ref.avi anim11_2_cif_Dec.avi</p>
<p>18</p>		<p>anim13_1_ref.avi anim13_1_cif_Dec.avi</p>
<p>19</p>		<p>anim13_2_cif_Dec.avi anim13_2_ref.avi</p>
<p>20</p>		<p>gobelins2005_1_2_cif_ref.avi gobelins2005_1_2_cif_Dec.avi</p>
<p>21</p>		<p>gobelins2005_2_2_cif_Dec.avi gobelins2005_2_2_cif_ref.avi</p>
<p>22</p>		<p>gobelins2005_3_2_cif_ref.avi gobelins2005_3_2_cif_Dec.avi</p>

23		gobelins2005_4_2_cif_Dec.avi gobelins2005_4_2_cif_ref.avi
24		gobelins2005_5_2_cif_ref.avi gobelins2005_5_2_cif_Dec.avi
25		gobelins2005_6_2_cif_Dec.avi gobelins2005_6_2_cif_ref.avi

2.1.2 Results of Session1

	Raw quality values	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Average	Std Dev	Conf interv	
		T	B																
1	anim2_1_ref.avi	3.5	3.6	2.4	4.2	2.5	4.1	4.3	2.8	3.3	2.45	3.9	3.85	3.6	3.5	3.43	0.65	3.09	3.77
	anim2_1_cif_Dec.avi	2.5	1.8	1.5	3.8	1.2	2.4	3.2	1.6	3.1	1.6	2.55	2.8	1.55	3.3	2.35	0.82	1.92	2.78
2	anim2_2_ref.avi	3.5	3.2	2.4	4.8	3.2	4.1	4.3	3.4	3.1	2.6	4.1	4.1	3.5	4.25	3.61	0.69	3.25	3.97
	anim2_2_cif_Dec.avi	2.5	3.2	1.5	0.8	0.3	2.4	2.8	2.1	2.2	1.6	2.35	1.9	0.6	2.6	1.92	0.86	1.47	2.37
3	anim2_3_cif_Dec.avi	1.75	2.8	0.7	1.3	1.3	3.5	2.6	1.2	1.9	1.45	2.8	1.55	0.55	3.1	1.89	0.92	1.41	2.37
	anim2_3_ref.avi	3.8	2.8	1.6	1.9	2.9	3.9	4.3	2.2	2.75	2.5	3.8	4.2	3.55	4.2	3.17	0.91	2.70	3.65
4	anim3_1_ref.avi	1.75	3.5	1.5	1.8	3.1	3.9	4.3	2.2	3.35	2.5	3.65	2.7	3.65	3.1	2.93	0.87	2.47	3.39
	anim3_1_cif_Dec.avi	1.75	2.2	2.5	2.2	2.6	3.7	4.3	1.3	3.35	2.5	3.2	2.1	2.6	3.25	2.68	0.80	2.26	3.10
5	anim3_2_cif_Dec.avi	1.4	3.2	0.75	2.6	2.1	3.6	3.2	1.4	3.1	2.5	3.4	2.75	2.5	2.75	2.52	0.84	2.08	2.96
	anim3_2_ref.avi	3.75	2.8	0.75	3.9	3.2	3.9	4.3	1.4	3.75	3.6	3.85	3.2	4.35	4.4	3.37	1.08	2.80	3.93
6	anim4_2_cif_Dec.avi	1.75	3.6	2.5	3.5	3.1	3.5	3.4	3.4	2.1	3.4	3.8	1.1	2.65	3.1	2.92	0.80	2.50	3.34
	anim4_2_ref.avi	1.9	3.6	1.6	3.5	3.9	3.9	3.8	2.5	2.9	3.45	4.15	3.15	3.45	3.85	3.26	0.78	2.85	3.67
7	anim4_3_cif_Dec.avi	1.2	2.2	2.5	2.6	2.9	3.7	2.8	3.3	3.2	2.5	3.8	2.5	2.65	3.4	2.80	0.67	2.45	3.15
	anim4_3_ref.avi	1.3	3.5	3.3	3.6	2.7	3.7	3.2	2.5	3.05	2.5	4.2	2.5	2.65	3.4	3.01	0.72	2.63	3.38
8	anim5_2_ref.avi	0.5	2.7	1.6	3.9	2.6	3.7	4.4	3.35	3.1	3.5	3.35	2.3	3.65	4.3	3.07	1.07	2.51	3.63
	anim5_2_cif_Dec.avi	0.5	1.85	1.6	2.2	1.2	2.9	3.2	2.2	2.9	1.5	2.5	0.5	1.4	2.35	1.91	0.85	1.47	2.36
9	anim5_3_ref.avi	4.5	2.2	2.4	4.7	3.2	3.7	4.4	4.1	3.9	3.5	4.2	2.15	4.5	4.3	3.70	0.89	3.23	4.16
	anim5_2_cif_Dec.avi	1.4	1.3	1.5	2.1	0.9	2.8	3.2	2.2	1.9	1.6	3.2	1.15	2.15	2.35	1.98	0.73	1.60	2.36
10	anim6_1_ref.avi	1.6	1.8	3.4	2.5	2.9	3.6	3.8	2.3	2.9	2.5	4.2	3.8	3.5	3.35	3.01	0.79	2.60	3.42
	anim6_1_cif_Dec.avi	2.2	1.8	3.5	1.2	1.7	3.1	3.2	3.1	2.2	2.55	3.9	1.35	1.5	3.35	2.48	0.89	2.01	2.94
11	anim6_2_cif_Dec.avi	2.3	2.8	0.4	0.6	2.1	2.2	2.8	2.3	1.9	1.6	3.6	1.1	0.45	2.1	1.88	0.95	1.38	2.37
	anim6_2_ref.avi	1.8	3.5	1.3	2.1	4.3	3.6	3.75	3.1	2.4	1.55	4.3	2.65	3.35	4.35	3.00	1.05	2.46	3.55
12	anim6_3_cif_Dec.avi	1.75	1.8	2.3	1.6	3.75	3.2	2.7	1.5	1.8	1.65	3.8	1.65	1.5	2.5	2.25	0.82	1.82	2.68
	anim6_3_ref.avi	2.2	4.1	1.75	3.5	3.75	3.4	4.2	2.8	3.05	2.6	4.3	3.15	3.4	4.35	3.33	0.80	2.91	3.74
13	anim7_2_ref.avi	3.4	4.1	2.4	3.2	3.4	3.4	4.2	3.3	2.75	2.6	4.2	3.8	2.6		3.33	0.62	3.00	3.67
	anim7_2_cif_Dec.avi	3.4	2.5	2.75	1.5	3.8	3.2	3.2	3.3	2.1	2.55	3.9	1.9	2.25		2.80	0.74	2.39	3.20
14	anim8_1_cif_Dec.avi	3.4	1.8	3.75	1.3	3.8	3.7	3.6	1.6	1.8	1.5	3.85	1.2	2.15	4.1	2.68	1.13	2.09	3.28
	anim8_1_ref.avi	3.8	4.3	3.5	3.2	2.1	3.7	4.4	3.4	2.1	3.5	4.15	2.2	2.6	4.35	3.38	0.83	2.94	3.82
15	anim8_2_ref.avi	3.6	3.7	1.75	2.1	3.1	3.6	4.4	3.5	2.9	3.4	4.15	3.2	3.6	4.25	3.38	0.75	2.98	3.77
	anim8_2_cif_Dec.avi	4.2	1.6	0.75	0.2	0.4	2.5	2.75	0.8	1.9	1.4	2.35	0.35	1.5	1.7	1.60	1.11	1.02	2.18

Raw quality values		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Average	Std Dev	Conf interv	
		T	B																
16	anim8_3_cif_Dec.avi	3.9	1.6	0.6	0.3	0.5	2.5	1.75	0.8	2.05	0.65	4.2	0.35	1.45	1.7	1.60	1.24	0.94	2.25
	anim8_3_ref.avi	3.9	4.2	1.8	2.2	3.1	3.6	4.3	3.2	3	2.5	2.75	4.5	3.4	4.25	3.34	0.84	2.90	3.77
17	anim11_2_ref.avi	3.6	4.2	2.3	2.8	3.1	3.6	4.1	2.5	3.5	2.55	4.15	3.3	3.4	4.25	3.38	0.66	3.04	3.73
	anim11_2_cif_Dec.avi	2.75	2.2	0.4	0.5	1.1	1.7	1.75	1.2	2.05	1.45	3.2	0.2	1.3	1.75	1.54	0.86	1.09	1.99
18	anim13_1_ref.avi	2.8	4.5	1.8	1.75	3.2	3.5	3.8	1.5	2.9	2.5	4.1	2.75	4.35	3.45	3.06	0.96	2.56	3.57
	anim13_1_cif_Dec.avi	2.3	3.9	3.5	1.5	3.3	3.3	3.8	2.5	2.3	1.5	3.85	2.15	3.55	3.45	2.92	0.85	2.47	3.37
19	anim13_2_cif_Dec.avi	1.5	4.2	2.5	2.5	3.2	3.4	3.8	3.3	2.5	2.45	3.85	2.3	4.3	3.45	3.09	0.82	2.66	3.52
	anim13_2_ref.avi	1.5	4.2	2.9	2.3	3.4	3.4	3.8	2.4	2.5	2.5	4.2	2.3	4.3	3.1	3.06	0.86	2.61	3.51
20	gobelins2005_1_2_cif_ref.avi	2.8	3.3	3.2	1.8	3.15	3.6	3.8	1.4	3.5	2.4	4.15	2.3	3.7	4.3	3.10	0.86	2.65	3.55
	gobelins2005_1_2_cif_Dec.avi	1.9	1.4	2.8	1.5	3.1	3.2	1.8	2.2	2.35	1.5	2.85	1.35	1.4	2.5	2.13	0.67	1.78	2.48
21	gobelins2005_2_2_cif_Dec.avi	1.8	1.8	1.5	1.4	3.5	3.4	3.75	1.8	2.4	1.65	3.3	2.95	3.35	1.55	2.44	0.89	1.98	2.90
	gobelins2005_2_2_cif_ref.avi	1.4	1.8	1.5	2.6	3.7	3.4	4.2	1.9	2.9	2.5	3.5	3.7	3.6	4.2	2.92	0.98	2.41	3.43
22	gobelins2005_3_2_cif_ref.avi	0.8	3.5	1.9	1.8	3.3	3.5	3.4	1.4	2.8	1.6	4.1	2.8	4	3.1	2.71	1.03	2.17	3.26
	gobelins2005_3_2_cif_Dec.avi	0.8	2.3	1.9	1.1	3.4	3.5	3.1	2.2	2.45	1.6	3.9	2.8	4	3.9	2.64	1.05	2.09	3.19
23	gobelins2005_4_2_cif_Dec.avi	1.6	3.5	1.6	1.5	1.4	3.3	1.5	2.8	1.95	1.45	2.85	1.35	3.6	1.15	2.11	0.89	1.64	2.58
	gobelins2005_4_2_cif_ref.avi	1.9	2.1	2.6	2.2	2.1	3.8	3.75	1.6	3.5	2.5	3.7	3.35	3.6	2.2	2.78	0.80	2.36	3.20
24	gobelins2005_5_2_cif_ref.avi	1.75	3.8	3.8	2.2	3.35	3.75	4.2	2.2	4.05	2.5	4.1	4.15	3.7	4.1	3.40	0.86	2.95	3.85
	gobelins2005_5_2_cif_Dec.avi	0.75	1.9	1.9	2.2	3.2	3.2	2.4	1.55	3.9	2.55	3.2	1.9	1.5	3.85	2.43	0.93	1.94	2.92
25	gobelins2005_6_2_cif_Dec.avi	1.6	1.6	1.4	1.5	1.6	3.05	1.75	1.6	3.4	1.35	1.8	0.65	1.6	1.9	1.77	0.68	1.41	2.13
	gobelins2005_6_2_cif_ref.avi	3.4	3.8	3.75	3.2	3.8	3.9	3.8	3.55	4.05	3.6	4.3	4.25	3.65	4.75	3.84	0.40	3.63	4.05
	Mean ref	2.4225	3.4450	2.4275	2.7575	3.2075	3.6175	3.9850	2.6250	3.0875	2.7125	4.0125	3.1150	3.5500	3.7100	3.19	0.55	2.90	3.48
	Mean Dec	2.0500	2.2825	1.9825	1.5400	2.3975	3.0675	2.8125	2.1825	2.3575	1.8200	3.3850	1.4400	2.2125	2.5075	2.29	0.54	2.00	2.57
	Std Dev ref	1.1462	0.8617	0.8221	0.8087	0.5561	0.1550	0.3449	0.8011	0.5231	0.5967	0.3930	0.7343	0.5189	0.6340	0.28			
	Std Dev Dec	1.0285	0.8659	1.0115	0.8198	1.1806	0.5100	0.6649	0.8286	0.5743	0.6327	0.6374	0.8202	1.0563	0.9069	0.49			
	Ref average targetted	3.5000	3.5000	3.5000	3.5000	3.5000	3.5000	3.5000	3.5000	3.5000	3.5000	3.5000	3.5000	3.5000	3.5000				
	Correction factor	1.4448	1.0160	1.4418	1.2693	1.0912	0.9675	0.8783	1.3333	1.1336	1.2903	1.0000	1.0000	1.0000	1.0000				

2.2 Session 2

The objective of this session was to assess the error concealment subjective performance of the JM MPEG-4 AVC/H.264 decoder (version 9.4) and of the EECMS equipped WCAM decoder. The video sequences employed were encoded at 1Mb/s in CIF format (352*288) at 25 frames per second. Original and compressed/decompressed sequences were upsampled to 720*576 using the mpeg4_filter tool.

The following images show an example of the impairments caused by missing packets.

The image on the top was obtained using the JM error concealment and the image on the bottom using the WCAM error concealment, both acting on the same received video sequence (4% packet error rate).

EECMS is the spatiotemporal error concealment method developed within WCAM that incorporates enhanced temporal and spatial concealment elements the use of which is controlled by a mode selection algorithm well matched to the characteristics of the temporal concealment approach. The temporal concealment method uses the external boundary matching error (EBME) -defined as the sum of absolute differences between the multiple pixel boundary of MBs adjacent to the missing one in the current frame and the same boundary of MBs adjacent to the replacement MB in the reference frame - in order to test possible replacement motion vectors (MVs) from a list that includes those of spatially and temporally adjacent MBs as well as the zero MV. The initial estimation of a replacement MV is further refined through overlapped block motion compensation and in I frames through an additional search in the vicinity of the estimated replacement. The spatial concealment module conceals missing pixels through bilinear interpolation or directional interpolation along detected edges based on the outcome of a decision algorithm that uses the directional entropy of neighbouring edges for choosing between the two interpolation approaches. The mode selection algorithm switches between temporal and spatial concealment based on the motion compensated temporal activity levels in the neighbourhood of missing MBs. More information on EECMS can be found in deliverable D3.1.














JM decoder



WCAM decoder



2.2.1 List of movies and characteristics:

Sequence Number	Thumbnail	Titles
1		anim2_2_JM_0_02.avi anim2_2_cif_Dec.avi
2		anim8_1_cif_Dec.avi anim8_1_EECMS_0_02.avi
3		anim6_3_cif_Dec.avi anim6_3_JM_0_04.avi
4		anim9_1_EECMS_0_04.avi anim9_1_cif_Dec.avi
5		anim7_1_cif_Dec.avi anim7_1_EECMS_0_1.avi

<p>6</p>		<p>anim8_3_JM_0_1.avi anim8_3_cif_Dec.avi</p>
<p>7</p>		<p>anim13_2_cif_Dec.avi anim13_2_EECMS_0_1.avi</p>
<p>8</p>		<p>anim4_1_JM_0_1.avi anim4_1_cif_Dec.avi</p>
<p>9</p>		<p>anim6_1_EECMS_0_04.avi anim6_1_cif_Dec.avi</p>
<p>10</p>		<p>anim2_3_cif_Dec.avi anim2_3_JM_0_04.avi</p>
<p>11</p>		<p>anim8_2_cif_Dec.avi anim8_2_JM_0_04.avi</p>

<p>12</p>		<p>anim1_1_EECMS_0_02.avi anim1_1_cif_Dec.avi</p>
<p>13</p>		<p>anim5_2_cif_Dec.avi anim5_2_EECMS_0_02.avi</p>
<p>14</p>		<p>anim3_2_JM_0_02.avi anim3_2_cif_Dec.avi</p>
<p>15</p>		<p>anim6_2_JM_0_04.avi anim6_2_cif_Dec.avi</p>
<p>16</p>		<p>anim8_3_cif_Dec.avi anim8_3_EECMS_0_1.avi</p>
<p>17</p>		<p>anim13_2_cif_Dec.avi anim13_2_EECMS_0_1.avi</p>

<p>18</p>		<p>anim4_1_EECMS_0_1.avi anim4_1_cif_Dec.avi</p>
<p>19</p>		<p>anim6_1_cif_Dec.avi anim6_1_JM_0_04.avi</p>
<p>20</p>		<p>anim2_3_EECMS_0_04.avi anim2_3_cif_Dec.avi</p>
<p>21</p>		<p>anim8_2_EECMS_0_04.avi anim8_2_cif_Dec.avi</p>
<p>22</p>		<p>anim1_1_cif_Dec.avi anim1_1_JM_0_02.avi</p>
<p>23</p>		<p>anim5_2_cif_Dec.avi anim5_2_JM_0_02.avi</p>

24		anim3_2_EECMS_0_02.avi anim3_2_cif_Dec.avi
25		anim6_2_cif_Dec.avi anim6_2_EECMS_0_04.avi

2.2.2 Results of Session 2

	Raw quality values	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Average	Std Dev	onf interv	
	B																					
1	anim2_2_JM_0_02.avi	2.1	3.5	4.2	0.6	2.5	1.8	2.2	2.75	2.35	0.6	1.1	2.75	1.75	1.35	1.85	0.4	2.5	2.02	1.02	1.53	2.50
	anim2_2_cif_Dec.avi	4.1	3.4	4.3	2.4	2.5	2.8	3.1	4.25	3.1	3.6	3.1	3.2	3.9	3.9	3.35	3.9	3.5	3.44	0.57	3.16	3.71
2	anim8_1_cif_Dec.avi	4.1	3.3	4.4	2.6	2.3	2.75	2.85	4.65	3.45	4.6	3.9	3.8	3.85	3.85	2.3	4.25	3.8	3.57	0.77	3.21	3.94
	anim8_1_EECMS_0_02.avi	3.5	3.2	4.5	2.6	2.8	2.1	2.25	4.35	4.1	2.25	3.9	2.75	1.8	3.85	1.55	1.6	3.45	2.97	0.97	2.51	3.43
3	anim6_3_cif_Dec.avi	4.1	2.3	4.5	1.5	1.6	2.25	3.75	3.25	2.8	3.5	3.9	2.8	1.75	4.5	2.7	3.1	3.25	3.03	0.95	2.58	3.48
	anim6_3_JM_0_04.avi	0.85	2.75	2.5	0.5	0.2	1.75	1.3	2.2	1.75	0.6	1.1	1.15	0.8	0.9	1.2	0.1	1.5	1.24	0.76	0.88	1.60
4	anim9_1_EECMS_0_04.avi	4.1	1.35	4.6	1.25	0.2	1.6	2.25	1.85	1.2	2.35	0.1	2.8	0.3	2.1	1.15	0.2	1.85	1.72	1.28	1.11	2.33
	anim9_1_cif_Dec.avi	4.1	1.6	4.6	1.85	2.2	2.8	3.9	3.85	2.15	3.65	1.1	2.2	2.2	3.6	1.8	2.85	2.8	2.78	1.01	2.30	3.26
5	anim7_1_cif_Dec.avi	4.1	1.8	4.3	2.25	1.85	2.35	3.6	4.65	2.6	3.3	2.1	2.2	2.55	4.3	3.45	2.85	2.1	2.96	0.95	2.51	3.41
	anim7_1_EECMS_0_1.avi	3.75	1.8	4.35	0.4	0.2	2.2	2.4	3.75	1.8	1.8	0.15	2.75	0.85	2.6	2.2	2.1	1.1	2.01	1.23	1.43	2.60
6	anim8_3_JM_0_1.avi	0.5	1.75	1.2	0.05	0.1	0.35	0.55	1.2	0.7	0.1	0.05	1.2	0.85	0.15	0.2	0	0.2	0.54	0.53	0.29	0.79
	anim8_3_cif_Dec.avi	4.3	1.8	3.6	1.4	0.8	2.25	3.9	4.85	4.25	2.65	2.35	3.2	2.55	2.85	2.2	3.1	1.1	2.77	1.16	2.22	3.32
7	anim13_2_cif_Dec.avi	4.2	2.2	2	3.5	2.2	2.65	3.8	2.5	3.75	3.6	2.2	3.8	2.9	2.8	2.25	3.6	3.35	3.02	0.72	2.68	3.36
	anim13_2_EECMS_0_1.avi	3.2	2.2	2	2.1	2.2	2.25	2.55	2.5	1.65	2.7	1.05	3.75	0.8	2.25	1.75	2.75	3.4	2.30	0.76	1.94	2.66
8	anim4_1_JM_0_1.avi	0.4	1.6	1.75	0.75	0.2	0.35	0.8	1.2	0.75	0.25	0.1	2.25	0.15	1.35	0.2	0	0.55	0.74	0.66	0.43	1.06
	anim4_1_cif_Dec.avi	4.2	1.6	3.3	3.5	2.25	2.3	4.25	3.8	3.5	3.6	3.1	4.15	3.15	3.8	3.85	4.2	3.75	3.43	0.76	3.07	3.79
9	anim6_1_EECMS_0_04.avi	3.75	2.6	3.8	0.75	0.15	1.75	2.6	2.2	1.6	2.1	0.05	1.2	2.1	2.75	1.4	1.15	2.3	1.90	1.07	1.39	2.41
	anim6_1_cif_Dec.avi	4.3	2.6	4.2	2.45	2.3	2.5	2.8	3.75	2.15	4.2	3.15	3.6	0.15	3.4	2.15	4.55	3.7	3.06	1.10	2.53	3.58
10	anim2_3_cif_Dec.avi	3.8	2.3	3.8	3.1	2.25	3.1	3.9	4.25	2.2	3.85	3.15	2.15	2.75	1.85	3.4	3.8	3.4	3.12	0.75	2.77	3.48
	anim2_3_JM_0_04.avi	1.75	2.3	1.4	0.75	0.2	1.35	1.1	3.65	1.55	1.5	0.9	1.8	0	4.3	0.8	0.15	2.8	1.55	1.18	0.99	2.11
11	anim8_2_cif_Dec.avi	4.4	2.3	2.6	1.55	1.35	3.2	3.7	4.8	3.55	2.9	3.1	3.2	2.75	3.35	2.45	3.1	2.1	2.96	0.90	2.54	3.39
	anim8_2_JM_0_04.avi	0.8	2.3	0.5	0.55	0.15	1.1	0.9	1.8	1.1	0.25	0.1	0.4	2.55	0.9	0.35	0	0.85	0.86	0.74	0.51	1.21
12	anim1_1_EECMS_0_02.avi	3.6	3.3	4.5	1.5	2.5	2.3	3.1	2.8	2.8	2.35	3.05	4.15	2.5	3.9	2.3	3.2	3.5	3.02	0.76	2.66	3.38
	anim1_1_cif_Dec.avi	3.9	3.6	3.5	1.5	2.55	3.5	4.1	2.8	3.4	3.8	2.8	4.15	1	4.2	3.35	4.1	3.9	3.30	0.92	2.87	3.74
13	anim5_2_cif_Dec.avi	4.2	2.75	3	2.3	2.5	3.05	4.55	3.45	3.55	3.3	3.1	2.2	1.4	4.2	1.6	4.35	3.75	3.13	0.93	2.69	3.58
	anim5_2_EECMS_0_02.avi	3.6	2.8	3	1.75	1.2	1.8	1.9	2.8	2.8	2.2	0.15	1.3	2.55	2.15	1.1	0.9	2.75	2.04	0.90	1.61	2.47
14	anim3_2_JM_0_02.avi	2.9	3.3	3	2.5	0.75	1.9	2.2	3.75	2.2	1.9	2.1	2.8	0.75	4.2	0.8	2.75	3.4	2.42	1.01	1.94	2.91
	anim3_2_cif_Dec.avi	3.75	3.3	2.8	3.5	2.2	2.7	4.4	4.2	3.3	2.4	3.1	3.25	1.2	2.1	2.55	2.9	3.9	3.03	0.82	2.64	3.42
15	anim6_2_JM_0_04.avi	2.2	2.5	2.1	0.6	0.25	1.55	1.1	2.8	1.7	1.8	1.85	1.75	3.85	2.05	1.15	0.8	1.2	1.72	0.87	1.31	2.13
	anim6_2_cif_Dec.avi	3.75	2.6	4.2	2.5	1.2	3.15	3.5	3.25	4.2	3.4	3.8	2.45	0.75	3.85	1.65	3.9	3.15	3.02	1.03	2.53	3.51

	Raw quality values	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		Average	Std Dev	Conf interv	
		B																					
16	anim8_3_cif_Dec.avi	3.8	2.9	3.5	1.8	1.25	2.6	3.8	4.4	3.85	4.45	3.35	3.3	3.8	3.8	2.5	4.1	2.8		3.29	0.88	2.87	3.71
	anim8_3_EECMS_0_1.avi	1.6	2.3	1.5	0.65	0.15	0.65	0.9	3.85	1.4	1.2	0.8	1.25	0.65	1.6	0.3	0.1	1.2		1.18	0.90	0.75	1.61
17	anim13_2_cif_Dec.avi	4.1	3.1	2.6	3.5	2.5	2.9	3.85	2.8	4.2	3.8	2.9	3.6	3.8	3.8	3.35	3.1	3.5		3.38	0.52	3.13	3.62
	anim13_2_EECMS_0_1.avi	3.75	3.1	2.95	1.35	1.15	0.9	2.2	2.15	2.15	2.4	2.85	3.15	1.75	2.75	1.75	2.75	2.1		2.31	0.77	1.94	2.67
18	anim4_1_EECMS_0_1.avi	2.75	1.8	1.8	0.6	1.25	1.3	1.3	3.7	1.8	0.8	0.7	1.8	1.8	2.1	0.9		1.1		1.59	0.80	1.20	1.99
	anim4_1_cif_Dec.avi	4.1	1.8	3.55	2.2	2.2	2.8	4.1	3.8	2.2	3.1	3.1	3.2	3.15	4.15	3.6		3.9		3.18	0.77	2.81	3.56
19	anim6_1_cif_Dec.avi	4.1	2.2	4.55	1.9	3.2	2.9	2.9	4.75	4.1	2.9	3.1	3.2	2.9	3.9	1.85	4.1	3.9		3.32	0.88	2.90	3.74
	anim6_1_JM_0_04.avi	1.1	2.2	1.05	0.4	0.7	0.9	1.15	3.75	1.6	0.45	0.2	1.8	0.8	1.3	0.7	0.2	0.85		1.13	0.87	0.71	1.54
20	anim2_3_EECMS_0_04.avi	2.2	2.5	3.55	2.3	1.35	1.95	1.9	2.25	2.6	2.1	0.15	2.7	0.8	3.65	1.3	0.75	1.8		1.99	0.93	1.55	2.43
	anim2_3_cif_Dec.avi	3.8	1.8	3.6	2.3	2.45	3.2	3.55	3.8	4.55	3.15	1.1	2.7	2.1	2.7	3.35	3.75	3.7		3.04	0.88	2.62	3.45
21	anim8_2_EECMS_0_04.avi	3.2	2.25	2.4	0.45	0.6	1.45	0.9	3.35	2.8	2.5	0.1	2.8	0.8	3.15	0.85	0.2	2.8		1.80	1.17	1.25	2.35
	anim8_2_cif_Dec.avi	4.2	2.5	3.6	3.4	1.75	2.6	3.8	4.2	4.65	3.35	1.05	3.25	1.9	4.15	2.15	3.8	2.8		3.13	1.01	2.65	3.61
22	anim1_1_cif_Dec.avi	3.8	4.3	4.2	2.35	2.8	3.3	4.3	3.75	2.45	3.4	2.75	3.75	1.85	3.6	2.25	3.75	3.4		3.29	0.76	2.93	3.65
	anim1_1_JM_0_02.avi	3.1	4.3	3.4	1.75	2.2	2.1	0.9	2.75	2.15	2.45	2.05	3.75	0.7	2.55	1.15	2.45	2.2		2.35	0.95	1.90	2.80
23	anim5_2_cif_Dec.avi	4.3	3.5	3.6	3.6	2.65	2.75	4.3	3.3	4.2	3.9	3.5	3.15	1.8	4.1	2.8	4.1	3.5		3.47	0.68	3.15	3.80
	anim5_2_JM_0_02.avi	1.1	3.3	2.5	0.6	0.45	1.05	1.2	2.45	1.75	1.35	0.15	1.95	0.65	2.45	0.5	0.1	1.1		1.33	0.93	0.89	1.78
24	anim3_2_EECMS_0_02.avi	3.3	4.6	3.6	3.4	2.2	2.05	2.2	4.4	3.7	2.1	3.9	3.9	1.8	3.9	0.9	2.15	3.9		3.06	1.07	2.55	3.57
	anim3_2_cif_Dec.avi	3.8	4.7	3.6	3.4	2.2	2.9	3.9	4.4	3.9	3.4	3.85	3.9	2.3	3.85	1.8	3.1	3.85		3.46	0.78	3.09	3.83
25	anim6_2_cif_Dec.avi	4.2	4.1	3.2	3.5	3.3	3.35	3.9	3.2	2.25	4.3	2.45	2.75	2.3	3.9	1.9	3.15	3.6		3.26	0.72	2.91	3.60
	anim6_2_EECMS_0_04.avi	3.5	4.2	2.8	2.6	3.3	1.7	1.9	2.75	2.15	3.4	0.2	2.4	0.8	2.25	1.4	2.85	3.15		2.43	1.02	1.95	2.92
	Mean Dec ref	4.0500	2.7975	3.4500	2.6625	2.1950	2.8850	3.8650	3.8025	3.5100	3.4725	2.8500	3.2475	2.2250	3.5175	2.5500	3.5275	3.3525		3.18	0.56	2.91	3.45
	Mean JM 0.1	0.4500	1.6750	1.4750	0.4000	0.1500	0.3500	0.6750	1.2000	0.7250	0.1750	0.0750	1.7250	0.5000	0.7500	0.2000	0.0000	0.3750		0.74	0.55	0.47	1.00
	Mean EECMS 0.1	3.0100	2.2400	2.5200	1.0200	0.9900	1.4600	1.8700	3.1900	1.7600	1.7800	1.1100	2.5400	1.1700	2.2600	1.3800	1.5400	1.7800		1.92	0.68	1.60	2.24
	Mean JM 0.04	1.4000	2.4625	1.6250	0.6000	0.2000	1.4375	1.1000	2.6125	1.5250	1.0375	0.9875	1.2750	1.8000	2.0375	0.8750	0.2625	1.5875		1.44	0.67	1.12	1.76
	Mean EECMS 0.04	3.3500	2.5800	3.4300	1.4700	1.1200	1.6900	1.9100	2.4800	2.0700	2.4900	0.1200	2.3800	0.9600	2.7800	1.2200	1.0300	2.3800		2.06	0.90	1.63	2.49
	Mean JM 0.02	2.3000	3.6000	3.2750	1.3625	1.4750	1.7125	1.6250	2.9250	2.1125	1.5750	1.3500	2.8125	0.9625	2.6375	1.0750	1.4250	2.3000		2.12	0.79	1.75	2.50
	Mean EECMS 0.02	3.5000	3.4750	3.9000	2.3125	2.1750	2.0625	2.3625	3.5875	3.3500	2.2250	2.7500	3.0250	2.1625	3.4500	1.4625	1.9625	3.4000		2.88	0.73	2.53	3.23
	Std Dev Dec ref	0.2230	0.8844	0.6243	0.7887	0.6464	0.3464	0.4434	0.6874	0.8298	0.5394	0.7356	0.5789	0.9843	0.6993	0.7004	0.4994	0.7037		0.64			
	Std dev JM 0.1	0.0707	0.1061	0.3889	0.4950	0.0707	0.0000	0.1768	0.0000	0.0354	0.1061	0.0354	0.7425	0.4950	0.8485	0.0000	0.0000	0.2475		0.26			
	Std Dev EECMS 0.1	0.8926	0.5320	1.1579	0.7023	0.8496	0.7360	0.7277	0.8011	0.2725	0.7950	1.0268	1.0114	0.5574	0.4519	0.7653	1.2547	0.9985		0.75			
	Std Dev JM 0.04	0.6892	0.2136	0.8770	0.1080	0.0408	0.2780	0.1633	0.8045	0.2958	0.7319	0.7192	0.6538	1.7325	1.6028	0.3926	0.3637	0.8509		0.64			
	Std Dev EECMS 0.04	0.7228	1.0311	0.8628	0.9451	1.3099	0.1851	0.6348	0.5827	0.6704	0.5367	0.0570	0.6797	0.6731	0.6399	0.2308	1.0935	0.5901		0.68			
	Std Dev JM 0.02	0.9092	0.4761	0.7182	0.9322	1.0251	0.4589	0.6752	0.5679	0.2562	0.7900	0.9229	0.7364	0.5266	1.1750	0.5809	1.3678	0.9487		0.73			
	Std Dev EECMS 0.02	0.1414	0.7805	0.7348	0.8645	0.6946	0.2056	0.5154	0.9096	0.6557	0.1041	1.7790	1.3016	0.4191	0.8670	0.6210	0.9707	0.4778		0.71			