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Section X

Physical Stability of Facial Features of Adults

35 **Purpose**

36 The purpose of this document is to describe the relative physical stability of facial features of
 37 adults when assessing the observed component characteristics within a single living subject as an
 38 aid to the facial comparison examiner. **This document is meant to be used in conjunction**
 39 **with FISWG Facial Image Comparison Feature List for Morphological Analysis and other**
 40 **documents related to imaging conditions (e.g., lighting, pose, resolution).**
 41

42 **Scope**

43 This document refers only to adult (post-pubescent) subjects and does not address the stability
 44 of features in children due to rapid developmental changes. This document does not cover the
 45 entire comparison process. Other FISWG documents will cover topics such as how imaging
 46 conditions affect feature appearance, comparison and evaluation strategies, and conclusion
 47 scales.

48 **Limitations**

49 The stability assessments provided in this document are based on scientific literature when
 50 possible or current FISWG participants' understanding of facial feature stability. FISWG welcomes
 51 additional input to support or refute these categorizations.

52 **Introduction**

53 Images of the same person can display dissimilarities in facial features which make it appear that
 54 different people are depicted, as the feature characteristics vary during a person's life span. The
 55 time scale over which changes occur can vary, with some changes being transient, while others
 56 are permanent. These changes must be considered by individuals conducting one-to-one
 57 comparison examinations. A failure to consider such changes may lead to incorrect conclusions.

58 **Factors Affecting Physical Stability of Facial Components**

59 The following factors affect the physical stability of facial features and their components on an
 60 individual face (regardless of imaging conditions): expression, aging (short and long term),
 61 significant weight change, change in health, and/or intentional alteration. Multiple factors can act
 62 concurrently on the same components. Not all factors will affect components at the same time or
 63 in the same way and some components may not be affected at all. The physical stability of
 64 features under each of these factors is presented below.

65 ***Expression***

66 This factor refers to any deviation from a neutral expression. A neutral expression is defined as a
 67 relaxed face with a closed mouth and eyes open naturally (refer to Figure 1 in [FISWG Capture](#)
 68 [and Equipment Assessment for Facial Recognition Systems](#)). If a single person is depicted in two
 69 images with no change in expression or any other factor, then all features should appear the
 70 same.

71 ***Time-related Changes***

72 This factor refers to the natural variations to the face that occur as a function of time. Aging and
73 exposure to the elements (e.g., sun, wind) are included as a part of this factor; likewise, age-
74 related dental changes. For the purposes of this document, time-related changes are discussed
75 in two categories:

- 76 ▶ **Short term** refers to periods of 5 years or less.
- 77 ▶ **Long term** refers to periods in excess of 5 years.

78 These values are somewhat arbitrary in that some individuals may exhibit changes more rapidly
79 than others. If a single person is depicted in two contemporaneous images with no other factors
80 changed, then all features should appear the same.

81 ***Significant Weight Change***

82 This factor refers to the variations to the face that occur as a function of observable weight loss
83 or gain. The specific details of these variations will differ from person to person. If a single
84 person is depicted in two images with no significant change in weight or other factors, then all
85 features should appear the same.

86 ***Changes in Health***

87 This factor refers to variations to the face that occur as a function of changes in health. A
88 comprehensive delineation of the effect of all potential health conditions is beyond the scope of
89 this document. If a single person is depicted in two images with no substantial change in health
90 or other factors, then all features should appear the same.

91
92 *Note on Trauma, Inflammation, and Tumors:* Trauma to the head, inflammation (e.g. due to
93 infection or allergic reaction), or tumors can alter any facial feature or portion of the face
94 temporarily or permanently. As a result, the stability of all facial features affected by trauma,
95 inflammation, or tumors is low and will not be delineated in the tables below.

96 ***Intentional Alteration***

97 This factor refers to variations to the face that occur as a function of deliberate modifications.
98 These variations can be temporary or permanent. Changes may result from visible modifications
99 to the skin surface such as facial hair, tattoos, piercings*, or cosmetics/makeup. Changes may
100 also result from modifications below the skin surface due to cosmetic, dental or reconstructive
101 procedures. Modifications due to cultural practices can also affect the appearance of facial
102 features. If a single person is depicted in two images with no intentional alterations or changes
103 in other factors, then all features should appear the same. Intentional alterations are component
104 characteristics whose stability must also be considered.

105
106 **Note on Piercings:* The presence of piercings may have a widely variable impact on most
107 component characteristics.

108 ***Stability Tables***

109 In the tables below, FISWG defines component characteristics as having either “High”,
110 “Moderate” or “Low” stability in the same person under the factor in question. The potential for
111 change in the characteristic descriptors will determine this stability.

- 112
- 113 ▶ **High stability (H)** features exhibit little or no change.
- 114 ▶ **Moderate stability (M)** features can exhibit minor changes.
- 115 ▶ **Low stability (L)** features can exhibit significant changes.

116 Components and component characteristics listed herein are identified by numbers that
117 correspond to those in the feature list document.

118
119 **For each factor, stability is assessed for that factor taken in isolation. In other words,**
120 **under “Expression”, the stability is ONLY assessed as a function of changes in**
121 **expression.**

122
123 **Note: Each table is accompanied by text describing conditions under which each factor**
124 **affects the stability of the corresponding component characteristic.**
125

1 Skin						
Skin appearance is extremely variable. Skin appearance may be affected by emotion, hormone levels, temperature, fatigue, hydration, etc. Changes in health and intentional alterations (e.g. make-up, tanning, tattoos, skin bleaching, and other cosmetic procedures) may cause greater variation in skin appearance.						
Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
1.1 Overall Skin Appearance	M	M	L	M	L	L

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2 Face/Head Outline						
The shape of the cranial vault does not change significantly in adulthood under normal conditions, but weight fluctuation or subdermal implants may give the appearance of change.						
Changes in weight or expression affect the shape of the face with the latter dominated by movement of the lower jaw. The stability of the face shape over long periods of time may also be dependent upon tooth and related bone loss. Changes in health and intentional alterations (e.g. disease, maxillofacial surgery, orthodontic procedures, and cosmetic implants) may cause greater variation in the overall shape of the face.						
Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
2.1 Shape of Cranial Vault	H	H	H	M	H	M
2.2 Overall Shape of Face	L	H	M	L	L	L

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3 Face/Head Composition						
While the proportions of the features of the face are less stable, the position of the eyes, ears and nose relative to each other remains stable under most conditions.						
Expressions can affect the proportions of the facial features with the greatest effect occurring with movement of the lower jaw and mouth. The stability of the proportions/position of features over long periods of time may also be dependent upon tooth and related bone loss. Changes in health and intentional alterations (e.g. disease, maxillofacial surgery, orthodontic						

procedures, and cosmetic procedures) may cause greater variation in the proportions/position of features on the face.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
3.1 Proportions/ Position of Features on Face	L	H	M	M	L	L

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4 Hairline Baldness Pattern

Both women and men may exhibit hair loss or other changes to the hairline and baldness pattern.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
4.1 Forehead Hairline	H	L	L	H	L	L
4.2 Hairline Right Side	H	L	L	H	L	L
4.3 Hairline Left Side	H	L	L	H	L	L
4.4 Cranial baldness pattern	H	L	L	H	L	L

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5 Forehead

Both the forehead and the brow ridges are defined by the frontal bone. Forehead shape is not affected by hairline modifications, nor are brow ridges affected by eyebrow growth or recession. Brow ridge prominence can be altered in both men and women due to prolonged changes in hormone levels (e.g., menopause, human growth hormone) or surgical procedures.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
5.1 Forehead Shape	H	H	M	M	H	L
5.2 Brow Ridges	H	H	M	M	M	L

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6 Eyebrow

Eyebrows have many characteristic descriptors which can be highly variable under multiple factors. With the exception of expression, which can change the shape, position and asymmetry of the eyebrows, most variability is related to changes in the hair details or cosmetic alterations (e.g., grooming, tattoos). Some health conditions such as facial palsy (e.g., from stroke or viral condition) may create asymmetry to the appearance of the eyebrows.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations

6.1 Right Eyebrow 6.2 Left Eyebrow	L	H	L	H	L	L
6.3 Asymmetry between Right and Left Eyebrows	L	H	H	H	L	L

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7 Eyes						
Inter-eye distance does not change with the exception of trauma. Some component characteristics of the eye are affected by expression while others are not. Changes to the sclera can occur over short periods of time due to causes such as exposure to sun, wind, and other irritants. Time-related changes over the long term and significant weight change primarily affect the soft tissues. Examples include: eyelid drooping, orbital fat variations, corneal clouding. Changes in health can affect all other component characteristics of the eyes, and some conditions such as facial palsy (e.g., from stroke or viral condition) may create asymmetry to the appearance of the eyes. Intentional alterations to the eye include contact lenses, cosmetics, cosmetic surgery, tattoos, piercings, prostheses, etc.						
Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
7.1 Inter-Eye Distance	H	H	H	H	H	H
7.2 Inter Pupillary Distance (IPD)	M	H	H	H	M	L
7.3 Right Eye Fissure Opening (Outline) 7.4 Left Eye Fissure Opening (Outline)	L	H	M	M	L	M
7.5 Right Upper Eyelid (including lashes) 7.6 Left Upper Eyelid (including lashes)	L	H	M	M	L	L
7.7 Right Lower Eyelid (including lashes) 7.8 Left Lower Eyelid (including lashes)	L	H	L	M	L	L
7.9 Right Eyeball Prominence 7.10 Left Eyeball Prominence	H	H	H	M	L	M
7.11 Right Eye Sclera 7.12 Left Eye Sclera	H	M	M	H	L	L
7.13 Right Iris 7.14 Left Iris	L	H	M	H	L	L
7.15 Right Eye Medial Canthus 7.16 Left Eye Medial Canthus	H	H	H	H	L	M
7.17 Right Eye Lateral Canthus 7.18 Left Eye Lateral Canthus	H	H	H	H	L	M

7.19 Asymmetry Between Right and Left Eyes	H	H	H	H	L	M
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8 Cheeks

The apparent prominence of the cheekbones varies in relation to changes in weight, health (e.g., stroke, facial palsy, dental changes) and intentional alteration (e.g., cosmetics or implant procedures). In senescence the cheekbone may appear more prominent due to decreased soft tissue and muscle mass.

The cheek is a flexible soft tissue structure which can be affected by all of the stability factors. The buccal fat pad moves inferiorly down the cheek during middle-age and this creates a flatter cheek shape with less prominent cheekbones. Intentional alterations include cosmetics, surgical implants and fillers.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
8.1 Right Cheekbone 8.2 Left Cheekbone	H	H	M	L	L	L
8.3 Right Cheek Shape (soft tissue) 8.4 Left Cheek Shape (soft tissue)	L	M	L	L	L	L

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9 Nose

The nose is a stable feature over the short term under normal conditions. All component characteristics, except the nasal root, can change with expression, and all components can be changed with intentional alterations (e.g., piercings, surgery). Over the long term, the soft tissues (including the cartilage) of the nose change in length and shape. Under significant weight changes, only the root, body and columella remain stable, and under health changes, only the root and body remain stable. The other component characteristics of the nose can be affected by disease (e.g. leprosy, gout), lifestyle (e.g. long term alcohol consumption), viral conditions (e.g. colds, sinusitis), and growths (e.g. polyps). The attachment of the alae to the upper lip does not change with the exception of surgery, trauma, or tumor.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
9.1 Nasal Outline (Profile/Front view)	L	H	M	M	M	L
9.2 Nasal Root (bridge)	H	H	H	H	H	L
9.3 Nasal Body	M	H	H	H	H	L
9.4 Nasal Tip	L	H	L	M	M	L
9.5 Nasal Base	L	H	M	M	M	L
9.6 Nasal Base: Alae (Wings of nose)	L	H	M	M	M	L
9.7 Nasal Base: Nostrils (Nasal Openings)	L	H	M	M	M	L

9.8 Nasal Base: Columella (Soft tissue between Nostrils)	M	H	M	H	M	L
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10 Ears						
The ear is a very stable feature. Ear position alone can change with expression but the ear configuration remains stable. Over the long term, the ear changes in proportions, although lengthening of the lobule dominates these changes. Significant weight changes can affect the prominence and protrusion of the ear, as well as the fat content of the lobe. Other than trauma, inflammation and tumors, health changes rarely affect the component characteristics of the ears, except in cases of unusual disease (e.g., leprosy or cysts).						
Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
10.1 Asymmetry Between Left and Right Ears	M	H	H	H	H	L
10.2 Right Ear Protrusion 10.3 Left Ear Protrusion	M	H	L	L	H	L
10.4 Overall Right Ear 10.5 Overall Left Ear	M	H	M	M	H	L
10.6 Right Ear Helix-Superior, Inferior (tail) 10.7 Left Ear Helix-Superior, Inferior (tail)	H	H	H	H	H	L
10.8 Right Ear Tubercles (Auricular Tubercle) 10.9 Left Ear Tubercles (Auricular Tubercle)	H	H	H	H	H	L
10.10 Right Ear Antihelix 10.11 Left Ear Antihelix	H	H	H	H	H	L
10.12 Right Ear Crura of Antihelix (Superior, Inferior) 10.13 Left Ear Crura of Antihelix (Superior, Inferior)	H	H	H	H	H	M
10.14 Right Ear Triangular fossa 10.15 Left Ear Triangular fossa	H	H	H	H	H	M
10.16 Right Ear Crus of Helix 10.17 Left Ear Crus of Helix	H	H	H	H	H	M

10.18 Right Ear Scaphoid Fossa 10.19 Left Ear Scaphoid Fossa	H	H	H	H	H	M
10.20 Right Ear Concha (Superior, Inferior) 10.21 Left Ear Concha (Superior, Inferior)	H	H	H	H	H	M
10.22 Right Ear Tragus 10.23 Left Ear Tragus	H	H	H	H	H	L
10.24 Right Ear Antitragus 10.25 Left Ear Antitragus	H	H	H	H	H	L
10.26 Right Ear Intertragic/ Intertragal Notch 10.27 Left Ear Intertragic/ Intertragal Notch	H	H	H	H	H	M
10.28 Right Ear Anterior Knob 10.29 Left Ear Anterior Knob	H	H	H	H	H	L
10.30 Right Ear Anterior Notch 10.31 Left Ear Anterior Notch	H	H	H	H	H	M
10.32 Right Ear Posterior Auricular Furrow 10.33 Left Ear Posterior Auricular Furrow	H	H	H	H	H	M
10.34 Right Ear Lobule (Lobe) 10.35 Left Ear Lobule (Lobe)	H	H	M	M	H	L
10.36 Ear Abnormalities	H	H	M	H	H	L

146

11 Mouth

The mouth is the facial feature that changes the most under expression. Over a short period of time, the component characteristics of the mouth are stable, with the exception of tooth loss and tooth color (e.g., coffee stains). Over the long term the lips become thinner and the position of the mouth fissure may change due to this and any dental changes. Health changes will affect the component characteristics of the mouth in a variety of ways, such as lip shape (e.g. herpes simplex virus), asymmetry (e.g. stroke and palsy), lip creases (e.g. dehydration) or lip tone (e.g. focal dystonia). Intentional alterations include tattoos, piercings, fillers and cosmetics. Mouth abnormalities, such as cleft lip and palate, are frequently corrected through plastic surgery, which results in a different appearance.

Component Characteristic	Expression	Time-related Changes	Time-related Changes	Significant Weight Change	Changes in Health	Intentional Alterations
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		(Short Term)	(Long Term)			
11.1 Philtrum	L	H	L	M	H	L
11.2 Overall Mouth	L	H	L	M	H	L
11.3 Upper Lip	L	H	L	M	H	L
11.4 Lower Lip	L	H	L	M	H	L
11.5 Lip Fissure (Opening between lips)	L	H	L	M	H	L
11.6 Mouth Asymmetry	L	H	H	H	H	L
11.7 Overall Dental Occlusion (Contact between Upper and Lower Teeth)	L	M	M	H	M	L
11.8 Gnathism (apparent convexity or concavity of the mouth complex, related to the relative projection of the upper and/or lower teeth)	H	H	H	M	M	L
11.9 Characteristic Detail of Teeth	H	H	M	H	H	L
11.10 Mouth Abnormalities	H	H	H	H	H	L

147

12 Chin/Jawline

The chin, jawline and gonial angle are stable features and do not change over the short term. Long term changes relate to tooth and related bone loss, sagging due to loss of skin elasticity and changes in subcutaneous fat distribution with age. Significant weight change will alter the appearance of these features due to subcutaneous fat changes and the effects of gravity on the soft tissues. Health changes, such as hormone levels (e.g. menopause or steroid treatment), behavior (e.g. tooth grinding), disease (e.g. sialosis) and viral conditions (e.g. mumps, mononucleosis) can also affect them. Intentional alterations can include maxillofacial surgery, orthodontic treatment, cosmetic surgery and facial hair.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
12.1 Chin (Profile and Frontal view)	M	H	M	L	M	L
12.2 Jawline (from Chin to Gonial Angle)	H	H	M	L	M	L
12.3 Gonial Angle (Angle of the jaw)	H	H	M	L	M	L
12.4 Submandibular Region (below the jaw)	L	M	L	L	L	L

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13 Neck

The neck is a stable feature in the short term. Long term there may be changes in muscle mass associated with aging, exercise and hormone levels, and positional changes related to posture. The neck will change shape in relation to expression and significant weight change.

Health changes may affect the neck in relation to asymmetry (e.g. torticollis), width (e.g. goiter) and position (e.g. arthritis). Intentional alterations include body building, spinal surgery and postural alteration.

The laryngeal prominence is a stable feature under normal conditions. The laryngeal prominence will change position in relation to expression and posture, and significant weight change will affect the apparent prominence. Health changes may affect the laryngeal prominence (e.g. goiter, mononucleosis) and intentional alterations include hormonal treatment, facial hair and cosmetic surgery.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
13.1 Neck (Overall)	M	H	L	L	L	L
13.2 Laryngeal Prominence (Adam's Apple)	M	H	H	L	M	L

149

14 Facial Hair

Following post-pubescent growth, the distribution, symmetry and density of facial hair remain stable in all areas of the face in the short term, however the other characteristic descriptors are highly variable. Long term (e.g. aging, hormone levels) and health changes (e.g. disease, stress) are exhibited for all characteristic descriptors. Expression will change apparent facial hair position at the upper and lower lip, but remain stable on the sides and neck. Significant weight change will affect the apparent position of facial hair. Intentional alterations include grooming, cosmetic treatment, hormonal treatment and prostheses.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
14.1 Facial Hair Above Upper Lip 14.2 Facial Hair Below Lower Lip	L	L	L	M	L	L
14.3 Facial Hair on Right Side 14.4 Facial Hair on Left Side	M	L	L	M	L	L
14.5 Facial Hair on Neck, below Chin/Jawline	H	L	L	M	L	L

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15 Facial Lines

All facial creases become more defined over time and the number of wrinkles will increase over time. Wrinkles are a skin aging response in relation to muscle action and decreased skin elasticity, and will align perpendicular to the muscle fiber action. Some creases are related to anatomical structure, such as a bifid nasal tip, cleft chin and nasolabial folds. Creases and wrinkles are stable under normal conditions, although their prominence can be changed by some factors. Expression will make most facial lines more defined and may change their appearance and relative position, although some structural creases (e.g. bifid nasal tip and cleft chin) are unaffected by expression. Long term changes are related to intrinsic aging, lifestyle (e.g. smoking, drug use, alcohol consumption), stress, sun exposure and dehydration. Significant weight change will affect the position, definition and shape of crease patterns. Health changes (e.g. stroke, palsy) will affect creases and wrinkles in relation to asymmetry, definition, shape and number, and some conditions will obscure crease patterns (e.g. leprosy,

goiter, dermatological conditions). Intentional alterations include cosmetic procedures, surgery and cosmetics.						
Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
15.1 Frontal Lines (Forehead Wrinkles)	L	H	M	M	L	L
15.2 Vertical Glabellar Line(s)	L	M	M	M	L	L
15.3 Nasion Creases	L	H	M	M	L	L
15.4 Right Lateral Nasal Lines 15.5 Left Lateral Nasal Lines	L	H	M	H	M	L
15.6 Bifid Nose Crease	H	H	H	M	M	L
15.7 Periorbital Lines Right Eye (Crow's Feet/wrinkles) 15.8 Periorbital Lines Left Eye (Crow's Feet/wrinkles)	L	M	M	M	L	L
15.9 Right Superior Palpebral Crease 15.10 Left Superior Palpebral Crease (Crease between the Upper Eyelid and the Top of the Bony Orbit)	L	H	M	M	L	L
15.11 Right Inferior Palpebral Crease 15.12 Left Inferior Palpebral Crease (Crease between the Lower Eyelid and the Bottom of the Bony Orbit)	L	H	M	M	L	L
15.13 Right Infraorbital Creases 15.14 Left Infraorbital Creases (Creases below the eyes)	L	H	M	M	L	L
15.15 Upper Circumoral Striae (Lip Creases) 15.16 Lower Circumoral Striae (Lip Creases)	L	H	M	M	L	L
15.17 Mentolabial sulcus (Horizontal Crease or Fold between Lower Lip and Chin)	L	H	M	M	L	L

15.18 Right Nasolabial Crease/Folds						
15.19 Left Nasolabial Crease/Folds (Creases or Folds extending from Nose to Corners of Mouth)	L	H	M	M	L	M
15.20 Right Marionette Lines	L	H	M	M	L	L
15.21 Left Marionette Lines						
15.22 Cleft Chin	H	H	H	M	M	L
15.23 Right Buccal Creases/folds						
15.24 Left Buccal Creases/folds (cheek to chin)	L	H	M	M	L	L
15.25 Wrinkles on Neck	M	H	L	M	L	L
15.26 Other Creases	See below*					

*The stability of other creases depends on their location and orientation as such the stability of a specific crease cannot be generalized in this document.

16 Scars

Over time scars may change in relation to visibility, but are unaltered by significant weight change or health changes. Expression may change a scar in relation to apparent position and shape. Intentional alterations to conceal scars include cosmetics, facial hair, and tattoos.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
16.1 Scars	M	M*	M	H	H	L

*Scars are extremely unstable during the scar maturation phase which can last up to one year once the wound has healed. Following that they are relatively stable features in the short term, under normal conditions.

17 Facial Marks

Facial marks are features that may be transient or permanent. Transient marks (e.g. acne or blemishes) are unstable, but other marks (e.g. moles or skin tags) may be stable both short and long term. Expression may change a facial mark in relation to apparent position and shape, depending on its original position, and marks on the lower face (e.g. mouth and lower jaw) will be affected more than those on the upper face (e.g. forehead and nose) by expression. Marks on the ear are unaffected by expression. Health changes (e.g. dermatological conditions, high blood pressure, sun damage) will affect the distribution, number, definition and position of some skin marks, such as freckles, blemishes, or warts. Intentional alteration includes cosmetics, surgery, facial hair, and tattoos.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
17.1 Skin Marks	M	L	L	M	L	L

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18 Alterations

This section refers to the stability of each existing intentional alteration in isolation.

Piercings are unstable over time due to healing and stretching, but the location relative to the pierced feature remains stable even with expression. Weight change may affect the size and length of a piercing. Intentional alterations of piercings include surgery, cosmetics, stretching and additional piercings.

Make-up is transient and therefore unstable short and long term.

Tattoos are stable in the short term, but may fade or become blurred over time. Expression may alter the tattoo shape due to skin movement and significant weight change may stretch or crease a tattoo. Health changes may affect tattoos in relation to skin changes (e.g. dermatological conditions). Intentional alterations or concealment of tattoos include laser removal, cosmetics, additional tattooing or facial hair.

Other alterations include but are not limited to surgery, implants, and fillers.

Component Characteristic	Expression	Time-related Changes (Short Term)	Time-related Changes (Long Term)	Significant Weight Change	Changes in Health	Intentional Alterations
18.1 Piercing	H	M	L	M	M	L
18.2 Makeup	N/A	L	L	N/A	N/A	N/A
18.3 Tattoo	M	M	M	M	M	L
18.4 Other	See below*					

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*The stability of other alterations depends on their location, type, and orientation as such the stability of a specific alteration cannot be generalized in this document.

165 Conclusion

166 Individuals conducting one-to-one comparison examinations must consider the stability of the
167 facial features. Failure to consider the stability of facial features may lead to incorrect
168 conclusions. Future documents will discuss the significance of this information during the
169 evaluation process for conclusion determination.

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Section 3	Guidelines and Recommendations for Facial Comparison Training to Competency
Section 4	Guidelines for Specifications, Procurement, Deployment, and Operations of Facial Recognition Systems
Section 5	Capture and Equipment Assessment for Facial Recognition Systems
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