# Discussion from Jirimutu@Almas Inc. <br> (irmt@almas.co.jp) <br> July 7, 2015 updates 

1. $\mathrm{MVS}-\mathrm{Model}$

Here I am trying to provide our Almas solution on Apple AAT glyph mapping engine.
I would like understand the Model define rules. I got the model

$$
\begin{array}{rll}
\text { stem>>>>>>>>>>>>>>>> } & \text { MVS } & \text { A/E >>>>>>>>>>>>>>>>>> } \\
I & \\
I+X & \\
I+M+X & & \\
I+M 1+\ldots+M_{n}+X & +M V S & +\{U+1820-A \mid U+1821-E\} \\
I \text { ligature } & \\
I+X \text { ligature } & \\
I+M+X \text { ligature } & \\
I+M 1+\ldots . .+M n+X \text { ligature } &
\end{array}
$$

## NOTE:

I = Initial, M = Medial, X = Mongolian Character (Medial or Final)
MS Universal Shaping Engine (USE) applies <fina> feature to $X$
MS Universal Shaping Engine (USE) applies <init> feature to \{U+1820-A | U+1821-E \}
Harfbuzz - Same as MS - USE
Apple ?
Greg Eck's Response - Jul 72015
Clarification:
MS Universal Shaping Engine (USE) applies <isol> feature to $\{U+1820-A \mid$ U+1821-E\}. Baiti adds the OpenType substitutions to change the isolate glyph to the appropriate glyph - the left-swept orkhitz A/E.

Ok. I got it.
Almas Inc is developing AAT Mongolian fonts on Apple Mac OS X and iOS System.
For the string <MONG_INITIAL><MONG_MEDIAL>< MONG_LETTER ><MVS><U+1820| U+1821> where MONG is the range U+1820-U+18AA, Our fonts will tag the MONG_LETTER as <fina> if the <MONG_LETTER> is one of <U+1828-n>, <U+182C-n>, <U+182D-g>, <U+182E-m>, <U+182F-l>, $\langle U+1830-s\rangle,\langle U+1831-s h\rangle,\langle U+1835-j\rangle,\langle U+1836-\mathrm{y}\rangle,\langle U+1837-r\rangle,\langle U+1838-\mathrm{w}\rangle$ as well as <U+1823-o>, <U+1824-u>, <U+1825-oe>, <U+1826-ue>, which Is the Mongolian MVS requested characters.

## My comment for STANDARD MVS MONGOLIAN MODEL:

1. Let me make clear about the note "MS Universal Shaping Engine (USE) applies <init> feature to $\{U+1820-A \mid U+1821-E\}$ " is meaning that if $\{U+1820-A \mid U+1821-E\}$ followed after MVS will applies <init> feature to $\{U+1820-A \mid U+1821-E\}$ and, the proceeding characters will take <init> glyph even if followed by Mongolian characters. If the original meaning is same with what mentioned above, I agree this defination.

But currently, MB and MWc not act like this. For Example:


It should be get the word $\theta_{n T, ~} \sqrt{ } \sqrt{ }$ as my understanding of the note.
2. I have got understand the meaning of the model note "MS Universal Shaping Engine (USE) applies <isol> feature to $\{U+1820-A \mid U+1821-E\}$ ", according to Greg's response. I have embedded Greg's response above.

What I want to decide here is which feature will be applied to $\{U+1820-A \mid U+1821-E\}$ and to the Mongolian Character followed after $\{\mathrm{U}+1820-\mathrm{A} \mid \mathrm{U}+1821-\mathrm{E}\}$.

```
I + M1+...+Mn + X + MVS + {U+1820-A | U+1821-E} + {MONG-LETTER}
\begin{tabular}{rrr} 
I & apply & <init> \\
M1....Mn & apply & <medi> \\
X & apply & <fina>
\end{tabular}
    {U+1820 | U+1821} apply <isol> it is Ok for us.
    {MONG-LETTER} apply<init> or <medi> We need to clarify this
```

Greg Eck’s Response - Jul 72015
Response:
... $<\mathrm{MVS}><\mathrm{U}+1820-\mathrm{A}>$ is defined by the model.
... $<\mathrm{MVS}><\mathrm{U}+1821-\mathrm{E}>$ is defined by the model.
... $<\mathrm{MVS}><\mathrm{U}+1820-\mathrm{A}><\mathrm{MONG}$ _LETTER $>$ is not defined by the model and therefore subject to the decision of the font developer.
$\ldots<\mathrm{MVS}><\mathrm{U}+1821-\mathrm{E}><\mathrm{MONG}$ _LETTER $>$ is not defined by the model and therefore subject to the decision of the font developer.

If $\{\mathrm{U}+1820 \mid \mathrm{U}+1821\}$ is applied <isol> tag, the <MONG_LETTER> should be tagged as <init>. I prefer this solution.
Otherwise, $\{\mathrm{U}+1820 \mid \mathrm{U}+1821\}$ will be applied <init> tag and the
$<\mathrm{MONG}$ _LETTER $>$ should be tagged as <medi>. This is current solution now.

Comment for MONGOLIAN MVS-CONNECTED SEQUENCE document.

```
ZWNJ+1828+MVS+1820
                                ?% undefined
ZWJ+1828+MVS+1820
ZWNJ+1828+MVS+1821
ZWJ+1828+MVS+1821
```


## $\checkmark$

 ? $\checkmark$,1. Actually, the undefined shapes like $\mathrm{ZWNJ}+1828+M V S+1820$ are not the correct Mongolian script itself and unreadable to Mongolian people. I would like to ask linguistic professionals to decide if it is ok or not to allow this kind of existence in Mongolian text.
Currently, it is exist on most of the fonts which is listed in the Notes. I am Ok to either of them.

Greg Eck's Response - Jul 72015
Response:
Yes, I agree that "ZWNJ+1828+MVS+1820" is a nonsense string. I just want to show a contrast between the
<MONG_INIT><MVS><U+1820>
AND
$<\mathrm{MONG}_{-}$FINA $><\mathrm{MVS}><\mathrm{U}+1820>$.
I can leave out the undefined strings if this is confusing.
No problem, it is helpful to developers to understand how to handle the irregular sequence. Just leave it in the Notes.
2. We should clearly define following case for MVS model to fit the irregular sequence.
1). How to handle the unnecessary MVS. For example
$\{I+M+1832-T+M V S+1820\},\{I+M+182 A-T+M V S+1820\}$ etc.

Greg Eck's Response - Jul 72015
Response:
2.1 Response:

This is undefined and should be left up to the individual font designer - my feeling anyway.

There several different solution for this.
Show it - it is for show the MVS marks in a rectangle border. Do we need this?
Hide it - just create on Zero width glyph - maybe the best solution
Filter it - filter it in the processing - currently most of the font acts like this?
2). How to handle the FVS1, FVS2, FVS3 before MVS?

Greg Eck’s Response - Jul 72015
Response:
2.2 Response:

OpenType rulings make appropriate substitutions given
$<\mathrm{MONG}_{-}$FINAL ><FVSx>.
OpenType rulings follow־on to make appropriate substitutions given
<POTENTIALLY_TRANSFORMED_MONG_FINAL+FVSx><MVS>.
Please see DS04 display of
ZWJ+1830+FVS1+MVS+1820/1821 which successfully handles the
$<$ MONG_FINAL $><$ FVS1 $><$ IVS $><$ AlE $>$ context.
$\mathrm{Ok}, \mathrm{I}$ understand it.
$182 \mathrm{~A}+1822+1828+\mathrm{FVS} 1+\mathrm{MVS}+1820$ get
3). How to handle MVS coming to HEAD of the word?

Greg Eck's Response - Jul 72015
Response:
2.3 Response:

This is undefined and should be left up to the individual font designer - my feeling anyway.

Ok, got it. It can be same with 2.1 anyway

