segments

a bit of sidetracking

context **2024** meeting

What is needed

- With digits we normally mean 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 0.

- When computers are discussed A, B, C, D, E and F are also kind of digits.

- When numbers are to be rendered we need a . and a -.

- The E can be used for exponents.

- On dedicated devices rendering with leds can be optimized.

- Ah, so for clocks we need a : then.

Note: This was an optional talk. On the 'math day' The other talks (Ton, Frits, Willi, Bruce) were way more fun anyway!

How does it look

Here we use a bolder version, so we get for all (regular) elements in a segmented glyph :

The colon is normally a dedicated segmented display and then there is no period, which otherwise is integrated.

What are the challenges

- In Unicode we actually have the digits so let's use them.

- But we need private slots for the hexadecimal digits and other symbols.

- The period is within the bounding box of the segment so we need kerning.

- Contrary to for instance Kaktovik and Riven numerals we don't need a converter.

- Instead we just use a dynamic feature.

How is is done

- We define the private slots by name so we can access then from anywhere.

- We define a MetaFun macro that renders the glyphs.

- We register the relevant replacement glyphs in MetaFun.

- We register some font features in Lua: substitution, kerning and a ligature.

- At the TeX end the replacement glyphs can be hooked into the current font.

- We use a highlight to (temporarily) enable the feature(s).

How is is used

```
1  \useMPlibrary[segments]
2
3  \definefontfeature
4     [default]
5     [default]
6     [metapost=segments]
7  % [metapost={category=segments,weight=2.0,offset=.2}]
```

Because dejavu is somewhat bold here we used the bold definition. You can also slant the shapes. The module defines a highlight:

```
1  \definehighlight
2     [Digits]
3     [style=\addfeature{segmentdigits}]
```

How does the code look

Here is the basic repertoire (the space is a regular one):

digits   1 2 3 4 5 6 7 8 9 0
letters   A B C D E F
others   ⬜ ▪ ⬚
extra   CONTEXT

Let's have a look at:

```
meta-imp-segments.mkxl
```