## <u>DMV004 An Incremental Homoiconic Documentation System for DMetashell</u>

Figure 1 shows the mechanisms of conventional social media platforms, taking in Users' data, which attract more users, and grow in revenues.

Figure 2 shows the differences between conventional social media platforms and homoiconic platforms, which take codes as User contributions, which modify the behaviours of the platform.

The Phoscript syntax shown in the following examples demonstrates homoiconism or homoinconicity, where code can be processed like data, being one of the cornerstone features of metaprogramming. This advantage is not just a technical or theoretical one, but also a practical and financial advantage, as illustrated in figures 2 and 3.

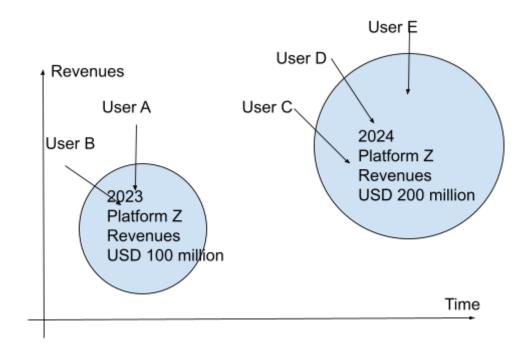
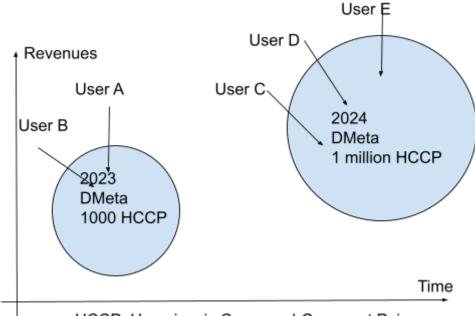


Figure 1: Conventional Social Media Platforms



HCCP: Homoiconic Command-Comment Pair

Figure 2

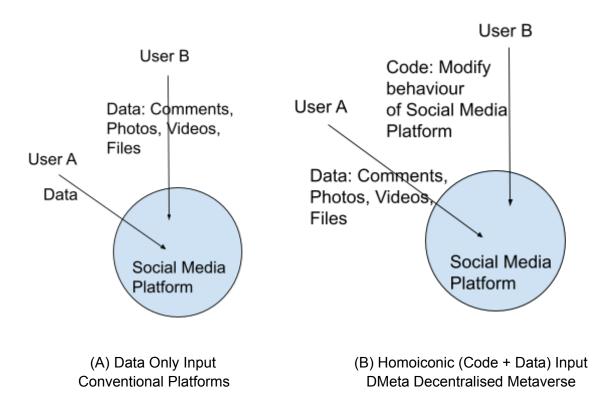


Figure 3: Conventional vs. Homoiconic Platforms

Figure 4B shows a browser console output screenshot of running DMetashell (figure 4A), hosted at a Virtualbox server, redirected via ngrok at:

- https://godmeta.github.io/dmeta/

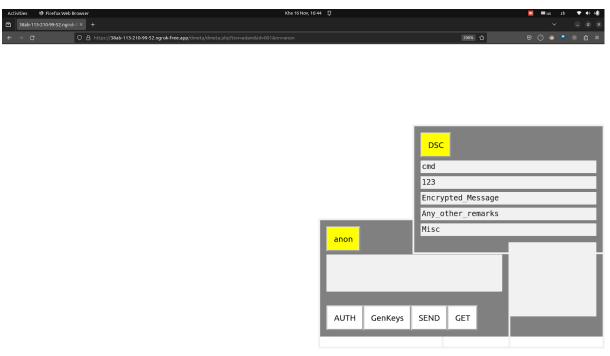


Figure 4A

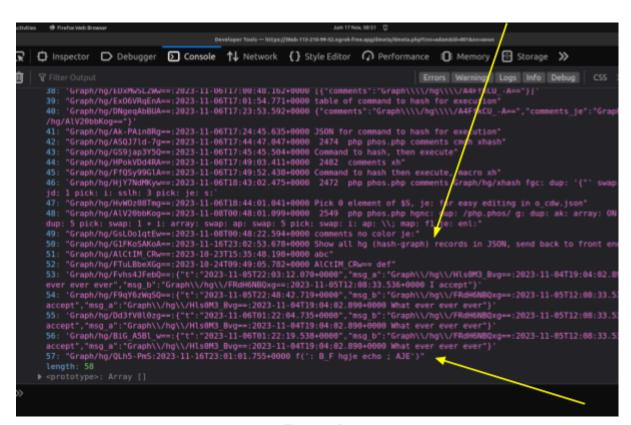


Figure 4B

1. command\_not\_found\_handle

command\_not\_found\_handle() is a special function in bash to which all exceptions (errors) are directed.

Its current definition can be obtained by:

\$ type command\_not\_found\_handle

Figure 5

For DMetashell, all arguments are redirected to "php phos.php" which then executes them in Phoscript:

```
command_not_found_handle ()
{
     echo "It's my handle!";
     echo "Arguments: $@";
     php phos.php $@
}
```

2. ctmp

```
nn_sv":["array:","swap:","NN","apk:","AUTH","sv:",";"],
"nn_rsv":["AUTH","gsv:","NN","it:",";],
"nn_ur::["AUTH","gsv:","NN","it:",";],
"nn_ur::["AUTH","gsv:","NN","it:",";],
"nn_ur::["V," nn_r","3","mssx:","t:","r:","mkdir:","r:","uu_l2",";"],
"nn_ur::["V,","nn_r","3","mssx:","t:","swap:","2","mssx:","splice:","je:","0N","ECHO","bv:","ec:",";"],
"g_rg_0::["Graph\/*\/","swap:","2","mssx:","rglob:",";"],
"g_rg_0::["g_rg_","o","i:",";"],
"g_rg_0:["g_rg_","o","i:",";"],
"g_rg_0:["g_rg_","on,"r:","graph,"gc:","j],
"g_rhg_::["0N","ECHO","bv:","graph,"gc:","z","map:","enl:",";"],
"ctmp":["ctmp:","isodt:","Graph/hg/tmp","fgc:","2","msss:","dup:","h53:","b64:","path:","Graph/hg","swap:","2","msss:","wx:",";"],
"hf":["dup:","h53:","b64:","path:","Graph/hg","swap:","2","msss:","wx:",";"],
"hgne::["0N","ECHO","bv:',"hgnc:","array:","map:","enl:",";"],
"hgie::["0N","ECHO","bv:","hgnc:","array:","map:","enl:","je:","je:",";],
"khash':["fgc:","dup:","php","swap:","pos:","substr:","exec:","array:","oN","ECHO","bv:","map:","enl:",";"],
"khje::["Graph\/hg\/khash","fgc:","dup:","fos:","substr:","exec:","array:","oN","ECHO","bv:","map:","nop:","je:",";],
"khje::["fgc:","dup:","php","swap:","pos:","substr:","exec:","array:","oN","ECHO","bv:","map:","nop:","je:",";],
"khje::["mdh","khash",";"],
"hje::["mdh","khash",";"],
"hje::["mdh","khas
```

Figure 6

ctmp is defined in o\_cdw.json as shown in the highlighted line.

ctmp: is mapped to fgl\_ctmp() as shown below:

Figure 7

It simply save the texts entered by user to Graph/hg/tmp. The subsequent commands then generate a base64 53 bit hash string from the texts, and save the texts using the hash string as the filename.

This is equivalent to creating a temporary variable in metaprogramming.

3. The following texts are saved using ctmp (figure 8):

```
f(': B_F hgje echo ; AJE')
Show all hg (hash-graph) records in JSON, send back to front end.
```

Referring to figures 4A and 4B, the output can be obtained by entering the command f( .... ) as shown above.

These texts form a <u>homoiconic command-comment pair</u> (HCCP) in Graph/hg (hash-graph) subdirectory, which can be considered as a graph database. The texts just entered can be viewed by entering the same command in the browser console, and results shown in figure 9 (yellow arrows).

(Monty Python Disclaimer) Fans of DMeta Metasophia series might have smelled something about the HCCP acronym LOL.

```
Q = - m
 ,"msg_b":"Graph\/hg\/FRdH6NBQxg==:2
                                                                                                                     cept"}
 , msg_b . Graph(\ng\/rathonbokgyg=-.2023-1
Graph/hg/FalXjFqs7w==:{"msg_b":"Graph\/hg\/FRdH6NBQxg==:2023-11-05T12:08:33.536+0000 I accept"}
Graph/hg/BFqu3qwBJA==:{"msg_b":"Graph\/hg\/FRdH6NBQxg==:2023-11-05T12:08:33.536+0000 I accept","msg_a":"G
raph\/hg\/Hls0M3_Bvg==:2023-11-04T19:04:02.890+0000 What ever ever ever"}
Graph/hg/D70U8kYEDA==:{"msg_b":"Graph\/hg\/Hls0M3_Bvg==:2023-11-04T19:04:02.890+0000 What ever ever"
                                                                                                        3-11-05T12:08:33.536+0000 I accept","msg_a":"G
  raph/hg/Fvhs4JFebQ==:{"t":"<mark>2023</mark>-11-05T22:03:12.070+0000","msg_a":<sup>"</sup>Graph\/hg\/Hls0M3_Bvg==:2<mark>023</mark>-11-04T19:
04:02.890+0000 What ever ever ever","msg_b":"Graph\/hg\/FRdH6NBQxg==:2023-11-05T12:08:33.536+0000 I accep
Graph/hg/F9qY6zWqSQ==:{"t":"<mark>2023</mark>-11-05T22:48:42.719+0000","msg_b":"Graph\/hg\/FRdH6NBQxg==:<mark>2023</mark>-11-05T12:
08:33.536+0000 I accept","msg_a":"Graph\/hg\/Hls0M3_Bvg==:<mark>2023</mark>-11-04T19:04:02.890+0000 What ever ever eve
۲"}
Graph/hg/Dd3fV0l0zg==:{"t":"<mark>2023</mark>-11-06T01:22:04.735+0000","msg_b":"Graph\/hg\/FRdH6NBQxg==:<mark>2023</mark>-11-05T12: 08:33.536+0000 I accept","msg_a":"Graph\/hg\/Hls0M3_Bvg==:<mark>2023</mark>-11-04T19:04:02.890+0000 What ever ever ever
Graph/hg/BiG_A5Bl_w==:{"t":"<mark>2023</mark>-11-06T01:22:19.538+0000","msg_b":"Graph\/hg\/FRdH6NBQxg==:<mark>2023</mark>-11-05T12:
08:33.536+0000 I accept","msg_a":"Graph\/hg\/Hls0M3_Bvg==:<mark>2023</mark>-11-04T19:04:02.890+0000 What ever ever eve
 hongwu@hongwu-Latitude-5480:~/devel/2023/02/dmeta/auth$ ctmp
It's my handle!
Arguments: ctmp
f(': B_F hgje echo ; AJE')
 hongwu@hongwu-Latitude-5480:~/devel/2023/02/dmeta/auth$ ctmp
It's my handle!
Arguments: ctmp
Show all hg (hash-graph) records in JSON, send back to front end.
 ongwu@hongwu-Latitude-5480:~/devel/
```

Figure 8

```
### Consider the provided History | Storage |
```

Figure 9

Here is where things get interesting. In figure 10A and 10B, the definitions for *hgje* and *hgje*: are given, which executes the following in line 56 (figure 10B):

```
grep -r 2023 Graph/hg | sort -k1.30
```

This command sorts the lines at column 30. However, the filename for the input command happens to be shorter than others:

```
Graph/hg/QLh5-PmS:2023-11-16T23:01:01.755+0000 f(': B_F hgje echo ; AJE')
```

As a result, the output is wrong.

To rectify the mistakes, 2 new commands are added, whose outputs are shown in figures 11A and 11B. (See explanations on figures 4A and 4B for methods of entering the commands.)

```
f(': B_F hgst xh ; AJE')
f(': B_F hgsd xh ; AJE')
```

The mappings to hash-graph file for *hgst* and *hgsd* are given in figure 11C, whose full definitions are given in figure 11A, lines 58 and 60.

hgst and hgsd first splits the output of "grep -r" on the pattern ":2023-", hence making it independent of the length of filename, then sorts the results in ascending order (hgst) and descending order (hgsd).

Figure 10A

```
| Autotable | State Color | State | St
```

Figure 10B

Figure 11A

Figure 11B

Figure 11C

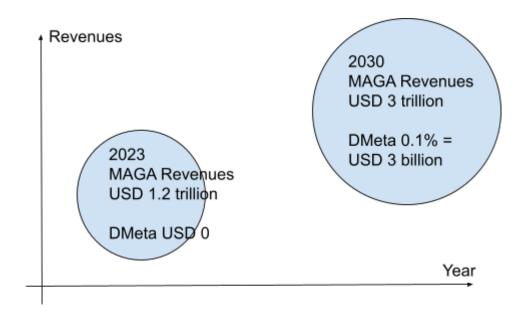


Figure 12: Projection of Revenues

Figure 12 shows how DMeta Decentralised Metaverse, a homoiconic social media platform, may grow into a billion dollar business by 2030, assuming the users and free software programmers on DMeta platforms work on cloning conventional social media functions, and make 0.1% of MAGA revenues.