

# Technical Road Map: Under the Covers

DYALOG

Elsinore 2017

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# Technical Road Map: Under the Covers

- What's in Version 16.0?
- What might be in Version 17.0?
- What else are we doing?



## Version 16.0 features

- New primitives: @  $\boxtimes$   $\subseteq$  l
- New system functions:  $\square$ JSON  $\square$ CSV
- New functionality: :Implements Trigger \*
- System commands options: )save -force
- Cross-platform HTML renderer



# Version 16.0: new primitives

```
'*' @ 2 4 ⌈ 'Hello'
```

```
H*l*o
```

```
10 × @ {0=2|ω} 3 3ρι9
```

```
1 20 3
```

```
40 5 60
```

```
7 80 9
```

D17: Prefix Agreement: A Proposal for an Extension to the @ Operator (Scholes)



# Version 16.0: new primitives

{cω}⊠3 3 † 3 5ρ□A

AB FG	ABC FGH	BCD GHI	CDE HIJ	DE IJ
AB FG	ABC FGH	BCD GHI	CDE HIJ	DE IJ
FG KL	FGH KLM	GHI LMN	HIJ MNO	IJ NO
FG KL	FGH KLM	GHI LMN	HIJ MNO	IJ NO



# Version 16.0: new primitives

`≡ ⊆ 'foo' 'bar' ⍝ Nest (aka Enclose if Simple)`

2

`≡ ⊆ 'foo'`

2

`1 1 0 2 4 4 ⊆ 'Dyalog' ⍝ APL2 Partition`

Dy	l	og
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## Version 16.0: new primitives

	<u>1</u>	0	1	0	1	1
2	4	5				
	0	1	2	3	4	5
0	$-\infty \dots$	A...D	E...H	I...N	O...T	U... $\infty$
	'AEIOU'	<u>1</u>				'DIALOG'
1	5	1	3	4	2	



## Version 16.0: new system functions

□JSON '[1,2,3,"abc"]'

1	2	3	abc
---	---	---	-----

□JSON □NS''000

[{},{},{}]





# Version 16.0: new system functions

```
Mat ← CSV ('1, Richard' '2, "Foad, Jay"') ''
```

1	Richard
2	Foad, Jay

```
Mat CSV ''
```

```
1, Richard  
2, "Foad, Jay"
```



## Version 16.0: new trigger functionality

▽ func args

:Implements Trigger \*

□←args.Name '←' (⊥args.Name)

▽

D14: Uncle Andy's Fireside Chat v4 (Shiers)



## Version 16.0: system command options

```
)save foo.dws
```

Not saved, this ws is CLEAR WS. Use `-force` to overwrite

```
)save foo.dws -force
```

```
foo.dws saved Mon Sep  4 15:41:40 2017
```

D14: Uncle Andy's Fireside Chat v4 (Shiers)



# Version 16.0: cross-platform HTML renderer

```
hr←NEW 'HTMLRenderer' ( , c 'URL' 'www.dyalog.com' )
```

On Windows, macOS and (soon) Linux

D09: Cross-Platform User Interfaces using the  
HTML Renderer (Becker)



# Version 17.0 features (maybe!)

- Scripting
- Language
- Performance
- Interfaces
- Packaging



## Version 17.0: scripting

- Locals declared after line 0
- Control structures in the session
- Multi-line session input
- Line continuation character
- Dependencies and package management

D05: APL Source Code in Text Files (Kromberg)

D11: Literal Notation for Arrays and Namespaces (Brudzewsky)



## Version 17.0: language

- More portable file functions  
D13: `□NMOVE` and Other Predictions for Dyalog Version 17.0 (Smith)
- D15: TAO – Total Array Ordering (Hui, Scholes)
- Run-time warnings for obsolescent features
- Under and Obverse (and Over?)
- Date formatting function
- `:Try ... :Finally`



## Version 17.0: performance

- DECF format change
- SSE2, AVX2 (Intel)  
Altivec/VSX (POWER)  
Neon (ARM)
- PQA revamp





## Version 17.0: interfaces

- Jupyter notebooks
- Interfaces (lightweight bridges) to Python, Julia, MATLAB, Haskell, ...
- D06: Py 'n' APL (Oosters)
- Embeddable interpreter



## Version 17.0: packaging

- MSI update packages (farewell, patch workspace)
- Authenticated APT repositories for Linux
- Signed packages



# What else are we doing?

- U02: RIDE 4.0 and 4.1 (Athoraya, Floume)
- GPUs (and Xeon Phi):  
U05: Co-dfns Report 2017: Ease of Use, Reliability and Features (Hsu)
- Portability, Android:  
TP4: Mobile Development Discussion (Daintree)
- The Cloud:  
TP2: Cloud Deployment (Shiers, Kromberg)
- Code coverage, shuffle testing, PQA



# CTO Goals

More:

- Interns!
- GPUs!
- Bridges!
- Performance!
- Rock-solid cloud deployment!

