The Road Ahead

Morten Kromberg, CTO, Dyalog Ltd.
Dyalog's Goals

Make it easier to …
- Discover and Acquire Dyalog APL
- Learn how to Create and Deploy solutions
- Develop Competitive Solutions in APL
- Integrate …
  - Solutions into other applications or frameworks
  - Dyalog APL into development processes
- Maintain …
  - Applications written in APL
  - The APL system itself
- Have Fun, Make Money
Dyalog's Goals

Make it easier to …

- Discover and Acquire Dyalog APL
- Learn how to Create and Deploy solutions
- Develop Competitive Solutions in APL
- Integrate
  - Solutions into other applications or frameworks
  - Dyalog APL into development processes
- Maintain
  - Applications written in APL
  - The APL system itself
Easier to Discover & Learn Dyalog APL

- Adam's "APL Orchard"
  - Already brought several new people into the community (we hired one: Nathan)
@Adám question: can @ change the shape of an array? E.g.: I want to transform the vector 0 1 2 3 into 0 1 1 3; can I make it work with something like 2p@2i-vector (this one gives me a length error)?

@J.Sallé no, but Adám's had ideas for how it could do so

@J.Sallé hm, thanks. I think I've found a way to work around that an interleave primitive/function would come in handy right about now :/

@J.Sallé Why not use replicate? (/)

@Adám 0 1 1 3

@Adám I don't think I can do that because I don't know what the mask (left arg) would be

@Adám this one might work though

@Adám 0 1 2 3

@Adám 0 1 2 3

@Adám 0 1 1 3
Easier to Discover & Learn Dyalog APL

- Adam's "APL Orchard"
  - Already brought several new people into the community (we hired one: Nathan)
- Open-Source APL Projects
  - Acre, Link, MiServer, JSONServer, RESTServer, many more to come
Easier to Discover & Learn Dyalog APL

- Adam's "APL Orchard"
  - Already brought several new people into the community (we hired one: Nathan)
- Open-Source APL Projects
  - Acre, Link, MiServer, JSONServer, RESTServer, many more to come
- Webinars and Webcasts
  - Richard Park driving production of new training and marketing materials
The Road Ahead

#dyalog19

Molecular Dynamics in Dyalog APL

```
phicutoff = -lncutoff*12.6
EL3shift = EL3 - phicutoff
plot ((EL3,r),(EL3shift,r))
```

Leaand-Jones potential
Easier to Discover & Learn Dyalog APL

- Adam's "APL Orchard"
  - Already brought several new people into the community (we hired one: Nathan)
- Open-Source APL Projects
  - Acre, Link, MiServer, JSONServer, RESTServer ...
- Webinars and Webcasts
  - Richard Park driving production of new training and marketing materials
- Talks outside the APL Community
  - Marshall, Aaron, Morten, Roger at LambdaConf (Boulder, Colorado) and FunctionalConf (Bangalore)
  - Guest lectures at Universities

Talks@Dyalog'19
- Tue 20:00 Richard Park
  Molecular Dynamics in APL
- Thu 09:30 Adam Brudzewsky
  APLcart: A Novel Approach to Finding Your Way in APL
- Thu 10:00 Richard Park
  Creating your first Dyalog Jupyter Notebook
Code Jugalbandi by Dhaval Dalal & Morten Kromberg at FnConf17
Array Oriented Functional Programming In APL

Speaker

Morten Kromberg

When

Tuesday, September 17, 2019  7:30 PM

Where

Marist College, Hancock Center (Building 14 on map). Room 2023. We thank Marist College for hosting the chapter’s meetings. Parking: 1) Lot north of Hancock Center. We are permitted to park there in spite of the signs. 2) Lot on south-east corner of Route 9 and Fulton Street. Take staircase at south-west corner of lot, and tunnel under Route 9.
Easier to Acquire Dyalog APL

- So you saw a presentation about APL... what next?
- From v17.1, Dyalog APL is available for experimentation without registration under W/L/M*
- Public Linux Docker Containers available
  - Just type `$ docker run dyalog/dyalog`
  - Containers with pre-installed application frameworks: `dyalog/jsonserver, /miserver, /jupyter, /restserver`
- Dyalog APL is NOT FREE SOFTWARE, unregistered versions are for non-commercial use only!

* W/L/M = Windows / Linux / macOS
Easier to Acquire Dyalog APL

- So you saw a presentation about APL... what next?

- From v17.1, Dyalog APL is available without registration under W/L/M*

- Public Linux Docker Containers available
  - Just type `$ docker run dyalog`
  - Containers with pre-installed application frameworks:
    - dyalog/jsonserver, /miserver, /jupyter, /restserver

- Dyalog APL is NOT FREE SOFTWARE, unregistered versions are for non-commercial use only!

* W/L/M = Windows / Linux / macOS
Easier to Acquire Dyalog APL

- So you saw a presentation about APL... what next?

- From v17.1, Dyalog APL is available without registration under W/L/M*

- Public Linux Docker Containers available
  - Just type `$ docker run dyalog`
  - Containers with pre-installed applications dyalog/jsonserver, /miserver, /jupyter

- Dyalog APL is NOT FREE SOFTWARE, unregistered versions are for non-commercial use only!

* W/L/M = Windows / Linux / macOS
Easier to Deploy Dyalog APL

v17.1:
- Public Docker Containers
- Support for "Headless" operations
- (RIDE for debugging headless processes)

v18.0:
- Cross-Platform Configuration Files
- Ability to launch APL directly from APL source files – no workspace required
Dyalog's Goals

Make it easier to ...

- Discover and Acquire Dyalog APL
- Learn how to Create and Deploy solutions
- Develop Competitive Solutions in APL
- Integrate
  - Solutions into other applications or frameworks
  - Dyalog APL into development processes
- Maintain
  - Applications written in APL
  - The APL system itself
Competitive Solutions in APL

v17.1:
- Portable UI: HTMLRenderer for Windows, macOS, Linux

v18.0
- A significant "performance release"
Competitive Solutions

v17.1:
- Portable UI: HTMLRenderer for Windows, macOS, Linux

v18.0
- A significant "performance release"
Competitive Solutions in APL

v17.1:
- Portable UI: HTMLRenderer for Windows, macOS, Linux

v18.0
- A significant "performance release"
- Date/Time conversion tools
- Case mapping and folding
- APL2XL Project
Dyalog's Goals

Make it easier to ...

- Discover and Acquire Dyalog APL
- Learn how to Create and Deploy solutions
- Develop Competitive Solutions in APL
- Integrate
  - Solutions into other applications or frameworks
  - ... and into development processes
- Maintain
  - Applications written in APL
  - The APL system itself
Integrate with Apps and Frameworks

v17.1

- Tools to wrap APL code as a Shared Library on any platform
- Easy inter-operation no longer limited to Microsoft COM/OLE or .NET
- JSON_APL.dll (or .JSON_APL.so)
  - Provides a Foreign Function Interface to any APL application using JSON-encoded arguments and results.
Integrate with ... .NET

- The **Microsoft .NET Framework** v1.0 was released in February 2002 for Windows XP
  - Supported by Dyalog APL v9.5 in September 2002
  - Current .NET Framework version numbers are v4.x

- The **Microsoft .NET Core** v1.0 was released in 2016 as an open source replacement targeting mobile devices, for W/L/M (Windows, Linux, macOS)
  - v3.0 is appearing now.

- **Microsoft .NET 5.0** (NB no "Core" or "Framework") will replace both of the above.
Integrate with ... .NET

- Dyalog v18.0 will support .NET Core 3.0 and the future .NET 5.0 under W/L/M.
  - Perhaps Xamarin/Mono on Android
  - Not sure about IBM POWER Linux
- This will make a HUGE collection of libraries available for APL application development.
Integrate with Dev[Ops] Processes

APL needs to integrate with tools for

- Source Code Management (SCM)
- Building, Testing and Deploying

v17.1:

- Link replaces SALT as the recommended interface to SCM (also available for 17.0)

Next:

- Packaging the APL interpreter itself for "Continuous Integration" pipelines
  - Linux Apt-get, Windows NuGet(?)
Integrate with Dev[Ops]: Link

- Dyalog is expecting widespread adoption of Link and the use of text files for APL source

Next Steps
- APL Package Repository
- Dependency Management
- [Unit] Test Framework

- Dyalog aims to participate in and co-fund collaborative open source projects

Talks@Dyalog'19
Mon 13:15 Adam + Morten
Link
Mon 13:45 Paul Mansour
A Git Workflow for Dyalog APL
Also expect more Webinars!
Dyalog's Goals

Make it easier to ...

- Discover and Acquire Dyalog APL
- Learn how to Create and Deploy solutions
- Develop Competitive Solutions in APL
- Integrate
  - Solutions into other applications or frameworks
  - ... and into development processes
- Maintain
  - Applications written in APL
  - The APL system itself
Easier to Maintain APL Applications

- RIDE vs Windows ODE
- Integration with VS Code and other popular development tools
Easier to Maintain APL Applications

- RIDE vs Windows ODE
- Integration with VS Code and other popular development tools
The Road Ahead

#dyalog19

Easier to Maintain APL Applications

RIDE vs Windows ODE

Integration with VS Code and other popular development tools
Easier to Maintain The APL System

- Updates to Dyalog v17.1 for Windows will be MSP files.
  - Can update all files in a Windows installation
  - Old "patch" workspace available for a year or two
- Dyalog for macOS: Install & Update using .pkg files
- Linux: .deb & .rpm installers
- Raspberry Pi + Coming on Intel Linux
  - `apt-get install|update dyalog`

Easier to Verify Installation

- All executables are signed under Microsoft Windows
- Hashes / signatures available for executables on all other platforms
Summary

Version 17.1 is easier to
- Get hold of – download and install – no registration required
- Verify, and maintain once installed
- Integrate into other applications and into development processes

Version 18.0 will bring
- Significant performance enhancements
- A cross-platform .NET bridge
- Cross-platform, cascading configuration files
- Easy launching of Dyalog APL solely from text source
- System Functions for Dates & Timestamps, and Text Case-ing
Critical Focus Areas

Dyalog

- SCM: APL Packages, Dependency Management
- Invest in tools and interfaces for cloud computing (ODATA, OAUTH)
- Understand whether .NET 5.0 really will achieve widespread adoption
- Performance

You (if I may be so bold)

- Get your source code into text files!
  - Everything else gets so much easier...
- Think about how you will add encryption and security to your application to make it cloud ready
- Take apprentices!
New Faces at Dyalog

Documentation, Samples, Webinars:
- Richard Park joined us late last year
New Faces at Dyalog

Documentation, Samples, Webinars:

- Richard Park joined us late last year
- United States Consulting Team
- Josh David
- Nathan Rogers
New Faces at Dyalog

Documentation, Samples, Webinars:

- Richard Park joined us late last year
- Josh David
- Nathan Rogers

Interpreter Development

- We expect to have a new C developer on board before the end of 2019
And Finally, a World Premiere...
The Dyalog Jingle

Keynote: major
The Dyalog Jingle

Original Composition by Stefano Lanzavecchia