Integration and Extensibility

The OpenEdge Strategy

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Agenda

- Introduction
- Data, Data Everywhere
- The Tools Of The Trade
- Final Thoughts
- Questions
Data, Data, Everywhere

The goal is to turn data into information, and information into insight.

Carly Fiorina, Former CEO of HP
The Value Of Data

Data is the new oil. Like oil, the value in data lies in what you do with it. Unless it’s broken down and refined, data has no value.
“Every day an estimated 2.5 quintillion bytes of data are created. This leaves organizations continuing to face the challenge of aggregating, managing and creating value from data.”

IBM
Open Integration Is A Critical Capability For OpenEdge

No Application Is An Island

Integration: External Access

- SOAP Web Services
- File-based (e.g. CSV)
- RESTful Web Services
- Direct network programming (TCP/IP, Named Pipes, other)
- Dataservers
- Sonic
- Linked libraries (C, Unix shared libraries, DLLs)
- External Database
- JSDO or OData Services
- Other
- I don’t access external services or data

Integration: Service Exposure

- File-based (CSV, AI log files, etc...)
- SOAP Web Services
- RESTful Web Services
- Data Replica on (DB triggers, Pro2, OpenEdge Replica on)
- Sonic
- Other (please specify):
- JSDO or OData Services
- I don’t expose services or data to external sources
The Tools Of The Trade

If you torture the data long enough, it will confess.

Ronald Coase, Economist
## Connectivity Options

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JDBC/ODBC

- Commonly used to connect to relational databases.
- JDBC ver. 4.3. (Java Database Connectivity)
  - Java based data access technology.
  - Supports SQL to perform CRUD operations.
- ODBC ver. 3.8 (Open Database Connectivity)
  - Language agnostic.
  - Uses SQL to perform CRUD operations
- Underlying drivers for many third party tools and applications.
- JDBC-ODBC bridge to speak with ODBC compliant database.
- Under heavy load, JDBC is more performant.
- You can use SQL against an OpenEdge database!
DataDirect Drivers

- DCI brings powerful connectivity for data integration
  
  - ODBC/JDBC built on industry’s leading framework for relational connectors distributed by 8 of 9 MQ leaders in analytics and 5 of 6 MQ leaders in data integration tools.
  - OData extends data integration via REST API for popular OData consumers from Tableau, Microsoft, SAP or Salesforce
  - DataDirect OpenAccess SDK provides capabilities to bridge SQL to ABL to preserve native security and business logic
  - DataDirect Hybrid Connectivity Services provide patented and secure connectivity over SQL or REST for data integration to data residing behind firewalls. (Hybrid Data Pipeline or HDP)
  - These interfaces are popular with ISVs to expose OpenEdge data over standard SQL or REST for popular analytics and reporting tools.
SOAP

• Simple Object Access Protocol (SOAP)
• Used to integrate disparate software applications.
• Standardizes a web service interface.
• Sends an XML message to a service and receives an XML response.
• Can use different transports (HTTP, FTP, SMTP, etc.)
• Define WSDL, generate code, add business logic to generated code.
• Good when operation auditing is required.
• Transaction based services are relatively easy.
REST

- Representational State Transfer (REST).
- Resources are accessed using a URI. (Uniform Resource Identifier).
- Client/Server architecture using stateless connection. (HTTP).
- Client & Server exchange resource representation using a standardized interface and protocol.
- Resource manipulation done using 4 operations. PUT, GET, POST, DELETE.
- Content can be accessed in a variety of formats. (HTML, XML, JSON, text, etc.)
- Metadata of the resource is used to control caching, detect errors, perform authentication/access control, etc.
OData – ver. 4.0

• Standards definition for building and consuming RESTful APIs.
• Eliminates developer need to worry about request/response headers, status codes, payload formats, query options, HTTP methods, URL conventions, etc.
• Provides guidance on change tracking, sending asynchronous/batch requests, and function definition for reusable procedures.
• Creates metadata for the API data model.
• Libraries are available to leverage OData in an application.
• Database is the most common use case, but can also be used to access file system, CMS, website data, etc.
OpenAPI (Swagger)

• Set of API development tools that span the entire API lifecycle. (Design, development, documentation, testing, and deployment.)
• Follows the OpenAPI Specification (OAS)
• Language agnostic.
• Can be used with protocols beyond HTTP.
• Clients consume services without knowledge of/access to the server code.
• OpenSource tools are available and has the worlds largest API community.
  • 5000+ GitHub repositories.
  • 2500+ contributors.
  • 25+ programming languages.
  • 10M+ downloads.
JSDO – ver. 4.4.1

- JavaScript Data Object.
- OpenSource JavaScript implementation of the Cloud Data Object (CDO) specification.
- Maintained by Progress and leveraged in tools such as KUIB.
- Used in web, mobile, and hybrid apps.
- Uses a Progress Data Object Service Catalog to access business logic and data in an OpenEdge database.
- Manages CRUD operations so Developer can focus on the User Interface.
- Transaction management including multi-record and multi-operation type.
- Access to custom, backend functionality and business logic.
DataServer

• DataServer for SQL Server.
• DataServer for Oracle.
• Access SQL or Oracle database using ABL code.
• Used in Pro2.
• Accessible by multiple users.
• Can be configured on remote servers.
CDC (Change Data Capture)

- Released in OpenEdge 11.7.
- Tracks record activity. (Create/Update/Delete).
- Policies determine the level of tracking to be used.
- Can be used for auditing or data extraction purposes.
- Leveraged in Pro2.
- Works with ABL and SQL.
EDI

• EDI. Electronic Data Interchange.

• Many EDI standards based on industry or region. (I.e. X12, EDIFACT, ODETTE, HL7, etc.)

• Automate traditionally manual processes using a standard format.
Pro2 – ver. 5.02

- Data replication product created by Progress.
- Pro2Pro. Pro2SQL. Pro2Oracle.
- Can replicate a subset of data.
- Target DB structure does not need to match source structure.
- Used most frequently for BI and reporting purposes.
ETL Tools

- Many tools available. (i.e. Informatica, Talend, Pentaho Data Integration, CloverETL, Ab Initio, etc.)
- Most have a drag & drop, GUI interface.
- Support many source and target technologies including big data.
- Perform complex data transformations.
- Error handling and notification processes.
- Multi-threaded, parallel processing.
- Still require connection such as ODBC/JDBC, but driver may be included with the product.
Data Exports

- Common method of transferring data.
- Flat files such as CSV, XML, JSON, text, etc.
- Fast (easy) way to extract and share data.
- Difficult to detect missing data. (Error handling/data reconciliation)
- Can be resource intensive.
- File movement performed by FTP, simple copy, Email, thumb drive, etc.
- Not secure. May violate data protection regulations. (I.e. GDPR)
Sonic

- Enterprise Service Bus. (ESB) used to support SOA.
- Provides connectivity between services.
- Carries messages and responses from one service to another.
- Guaranteed, single-delivery of message.
- Progress is a reseller.
- Renamed CX Messenger.
Microservices

• Break monolithic applications into small components.
• Scalable, especially to support multiple platforms and devices.
• Service communication is often done using HTTP/REST and JSON.
• Does create more complexity than traditional application architectures.
In Closing

_Facts do not cease to exist because they are ignored._

Aldous Huxley, Author
Where Are We Going?

- Sonic
- SOAP
- Exports

- REST
- JSDO

- DataServer
- DataDirect
- CDC
- OData/OpenAPI
- DataServer
Final Thoughts

- A lot of choices available.
- Think about your application and long term plans.
- Research and try it out.
- Consult with Progress.
- But DO SOMETHING!
THANK YOU!

QUESTIONS?