FINOS

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Foundation

FDC3

General Meeting

18th March 2025

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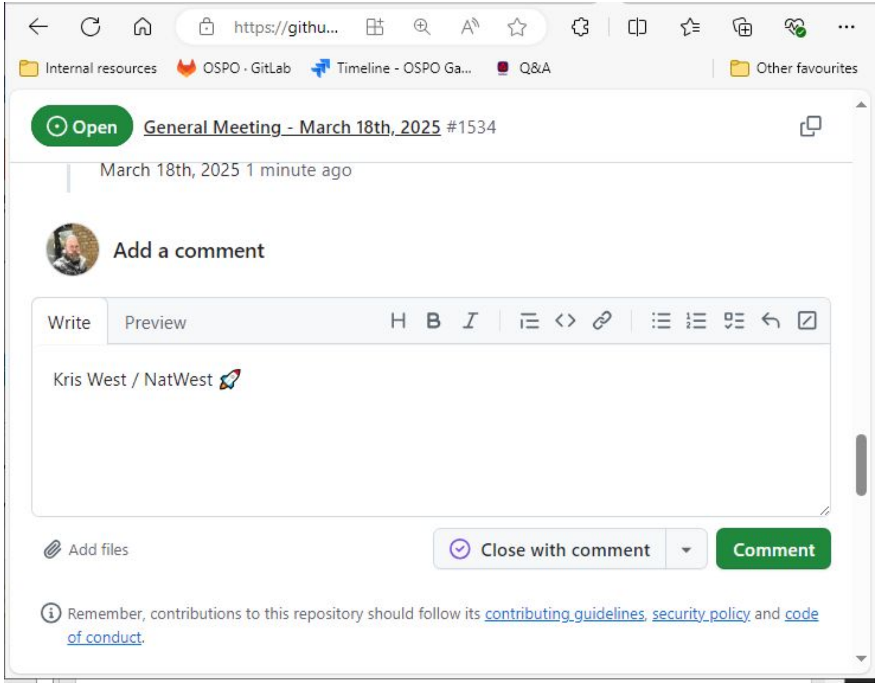
Please add your name and affiliation to agenda

Meeting agenda: https://github.com/finos/FDC3/issues/1534



General Meeting - March 18th, 2025 #1534

March 18th, 2025 1 minute ago

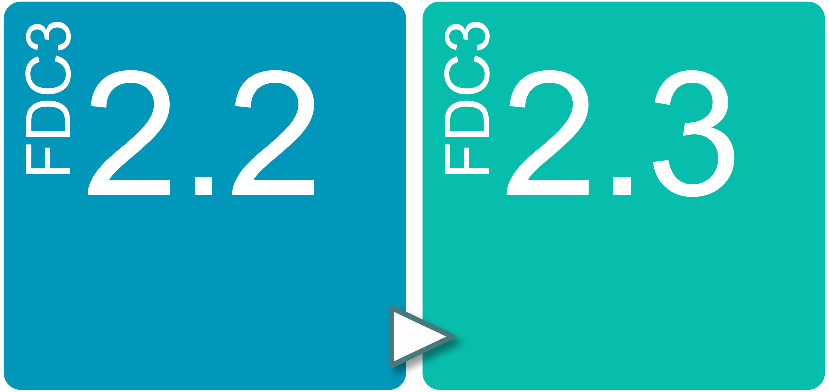
Add a comment

Kris West / NatWest 🚀

Remember, contributions to this repository should follow its contributing guidelines, security policy and code of conduct.

Today's Agenda

- Announcements (15 mins)
  - New maintainer & editor appointments
  - 2.2 Adoption vote and 2.2.0 release
  - OSFF London 2025
  - FDC3 Go Binding
- What's new in FDC3 2.2: (20 mins)
  - Updated FDC3 Charter
  - FDC3 .NET Binding
  - Intents & Contexts
  - Desktop Agent API changes: `addEventListener`
  - FDC3 for Web Browsers & mono repo (+ DEMOs!)
- Looking ahead: FDC3 2.3: (20 mins)
  - Identity and Security Strategic Initiative
  - Other open issues



Announcements

New Maintainer & Editor Appointments

FDC3 Editor

Derek Novavi

UI Framework Architect, S&P Global Market Intelligence

Key contributor to the FDC3 for Web discussion group and proposal, and participant in the Identity & Security group and Standards Working Group.

S&P Global
Market Intelligence

New Maintainer & Editor Appointments

FDC3 Maintainer

Lizaveta Kemereva

Software Engineer

Contributor to the Standards Working Group, FDC3 for Web and Identity& Security discussion groups and the FDC3 .NET binding.

Contributor of a GoLang binding for FDC3.

New Maintainer & Editor Appointments

FDC3 Maintainer

Julianna Langston

Senior Software Engineer, interop.io

Contributor to the Standards Working Group and FDC3 for Web discussion groups. Contributor to and reviewer of the FDC3 for Web implementation project, Docusaurus site and build system.

interop.io

FDC3 2.2 Adoption & 2.2.0 NPM Release

FDC3 2.2 is ready to be adopted!

- Adoption is via a vote of the FDC3 Participants (in the Standards Working Group)
- Vote by email to fdc3-participants@finos.org
- Vote open: 18th March – 1st April 2025

Scope Highlights:

- First release under Community Spec license
- Update FDC3 charter #1023
- FDC3 for Web browsers #896 (+ sub-issues)
- FDC3 .NET binding #931 / Multiple Language bindings #990
- FDC3 mono-repo #1297
- Intent & Context updates

Full issue list:

- https://github.com/finos/FDC3/milestone/11

View draft documentation

- https://fdc3.finos.org/docs/next/fdc3-standard

Release Preview:

- https://deploy-preview-1537--fdc3.netlify.app/

FDC3 Changelog:

- https://github.com/finos/FDC3/blob/main/CHANGELOG.md#unreleased

FDC3 NPM module beta releases

- https://www.npmjs.com/package/@finos/fdc3/v/2.2.0-beta.3
- https://www.npmjs.com/package/@finos/fdc3-commonjs
- https://www.npmjs.com/package/@finos/fdc3-get-agent
- https://www.npmjs.com/package/@finos/fdc3-standard
- https://www.npmjs.com/package/@finos/fdc3-schema

FINOS Open Source in Finance Forum

The countdown is on for OSFF London - Tues 24th June!

OPEN SOURCE
IN
FINANCE FORUM
London

LONDON, JUNE 24
@ Queen Elizabeth II Conference Centre,
Broad Sanctuary, London SW1P 3EE

REGISTER

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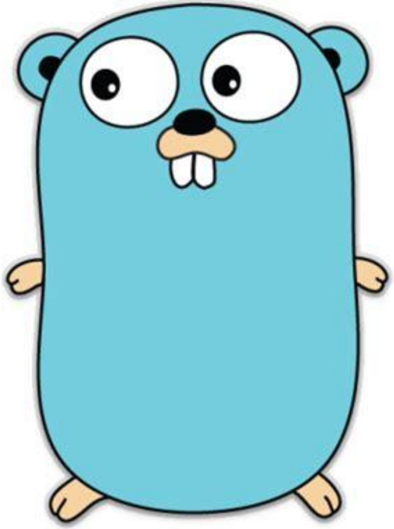
FDC3 Go Binding

Why Go?

- Fast (concurrency) and performant
- Simple to learn, easy to compile and test
- With microservice architecture in mind

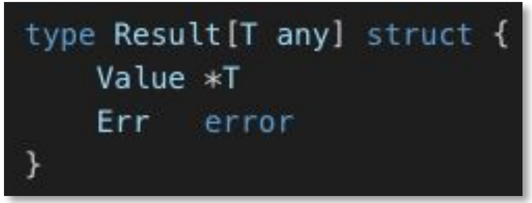
https://github.com/finos/FDC3/issues/1482
https://github.com/finos/FDC3/pull/1483



FDC3 Go Binding

Differences between Go and TS:

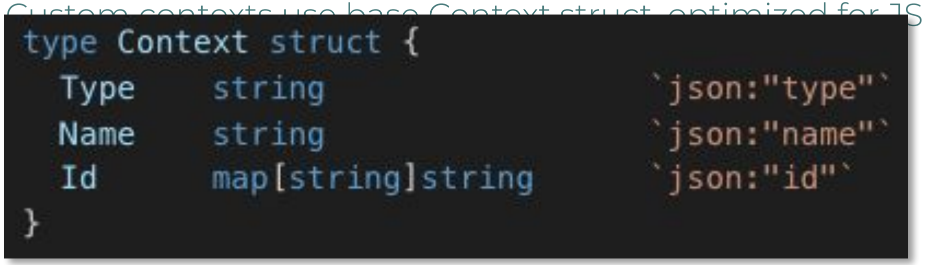
- **API Definition:** Golang channel instead of TS Promises
- **Error Handling:** Result struct:



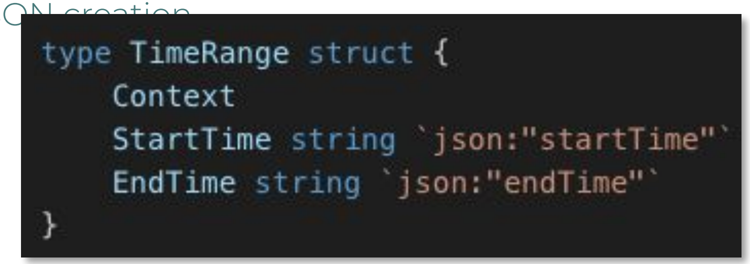
```
type Result[T any] struct {
    Value *T
    Err   error
}
```

- **Context Types Implementation:**

Custom contexts use base Context struct, optimized for JSON creation



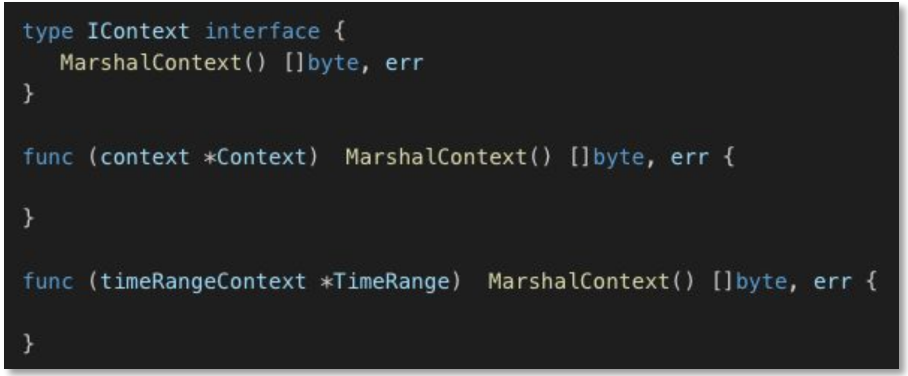
```
type Context struct {
  Type    string                `json:"type"`
  Name    string                `json:"name"`
  Id      map[string]string     `json:"id"`
}
```



```
type TimeRange struct {
    Context
    StartTime string `json:"startTime"`
    EndTime string `json:"endTime"`
}
```

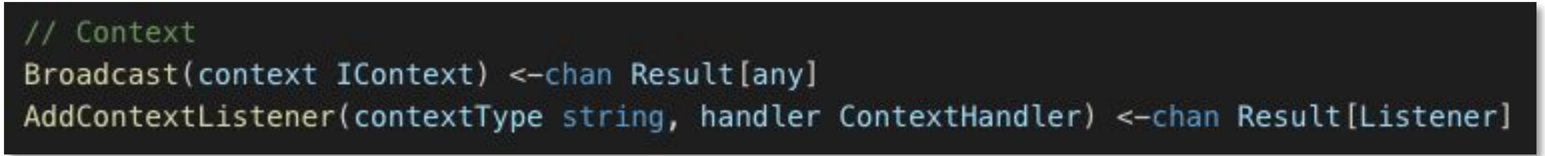
FDC3 Go Binding

Trade off: all contexts need to implement an interface, for example:

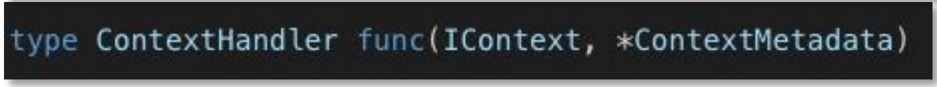


```
type IContext interface {
   MarshalContext() []byte, err
}

func (context *Context)  MarshalContext() []byte, err {

}

func (timeRangeContext *TimeRange)  MarshalContext() []byte, err {

}
```

This base interface, IContext, is used to define FDC3 functions:



```
// Context
Broadcast(context IContext) <-chan Result[any]
AddContextListener(contextType string, handler ContextHandler) <-chan Result[Listener]
```



```
type ContextHandler func(IContext, *ContextMetadata)
```

Whats new?

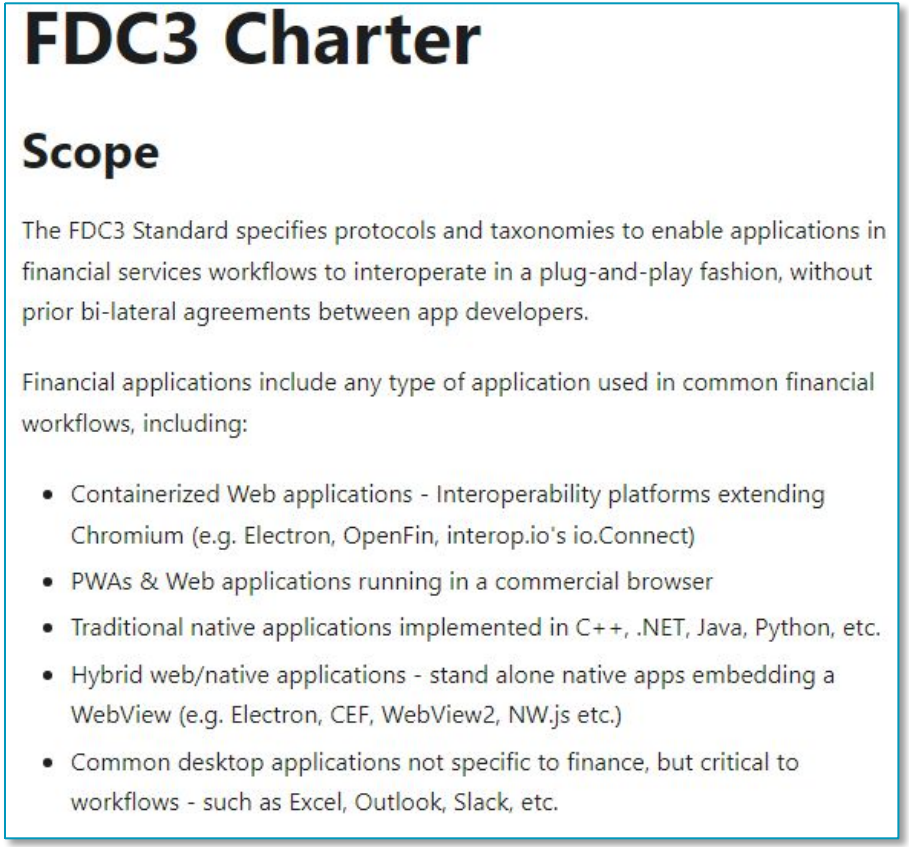
FDC3 2.2 &
FDC3 for the Web

The FDC3 Charter

Revised FDC3 charter to

- include well-known language from the FDC3 introduction,
- better describe FDC3's scope,
- focus on financial applications,
- update the application types we work on,
- etc.

#1079



FDC3 Charter

Scope

The FDC3 Standard specifies protocols and taxonomies to enable applications in financial services workflows to interoperate in a plug-and-play fashion, without prior bi-lateral agreements between app developers.

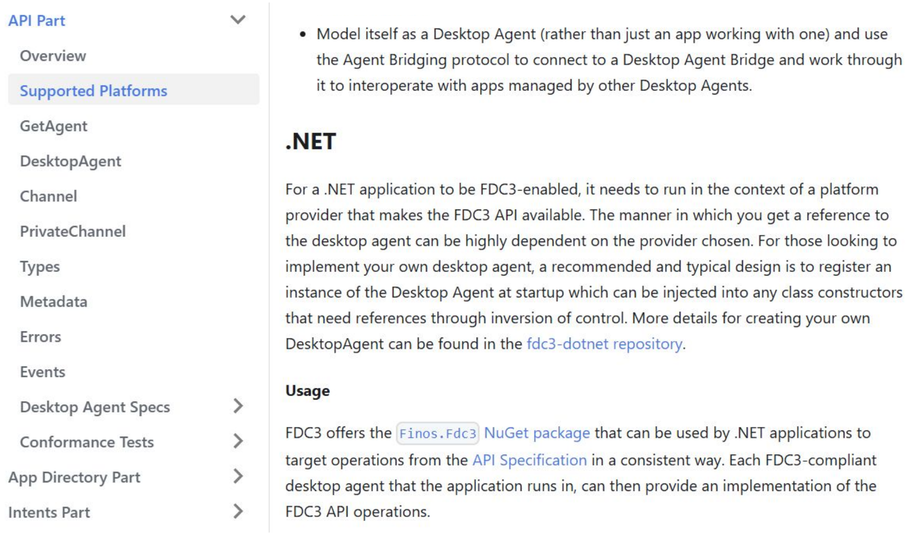
Financial applications include any type of application used in common financial workflows, including:

- Containerized Web applications - Interoperability platforms extending Chromium (e.g. Electron, OpenFin, interop.io's io.Connect)
- PWAs & Web applications running in a commercial browser
- Traditional native applications implemented in C++, .NET, Java, Python, etc.
- Hybrid web/native applications - stand alone native apps embedding a WebView (e.g. Electron, CEF, WebView2, NW.js etc.)
- Common desktop applications not specific to finance, but critical to workflows - such as Excel, Outlook, Slack, etc.

https://fdc3.finos.org/docs/fdc3-charter

FDC3 .NET Binding Documentation

- Updated API documentation on fdc3.finos.org to support expansion to other platforms including .NET



- API Part
  - Overview
  - Supported Platforms
  - GetAgent
  - DesktopAgent
  - Channel
  - PrivateChannel
  - Types
  - Metadata
  - Errors
  - Events
  - Desktop Agent Specs
  - Conformance Tests
- App Directory Part
- Intents Part

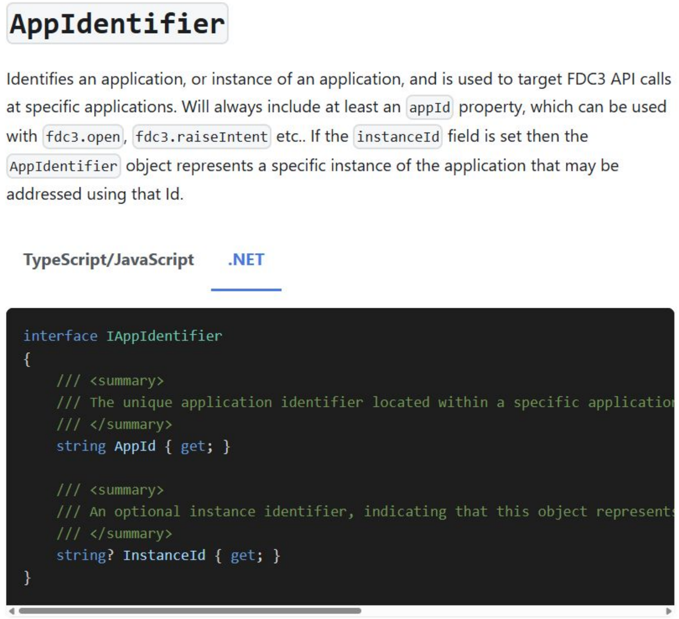
- Model itself as a Desktop Agent (rather than just an app working with one) and use the Agent Bridging protocol to connect to a Desktop Agent Bridge and work through it to interoperate with apps managed by other Desktop Agents.

.NET

For a .NET application to be FDC3-enabled, it needs to run in the context of a platform provider that makes the FDC3 API available. The manner in which you get a reference to the desktop agent can be highly dependent on the provider chosen. For those looking to implement your own desktop agent, a recommended and typical design is to register an instance of the Desktop Agent at startup which can be injected into any class constructors that need references through inversion of control. More details for creating your own DesktopAgent can be found in the fdc3-dotnet repository.

Usage

FDC3 offers the `Finos.Fdc3` NuGet package that can be used by .NET applications to target operations from the API Specification in a consistent way. Each FDC3-compliant desktop agent that the application runs in, can then provide an implementation of the FDC3 API operations.



`AppIdentifier`

Identifies an application, or instance of an application, and is used to target FDC3 API calls at specific applications. Will always include at least an `appId` property, which can be used with `fdc3.open`, `fdc3.raiseIntent` etc.. If the `instanceId` field is set then the `AppIdentifier` object represents a specific instance of the application that may be addressed using that Id.

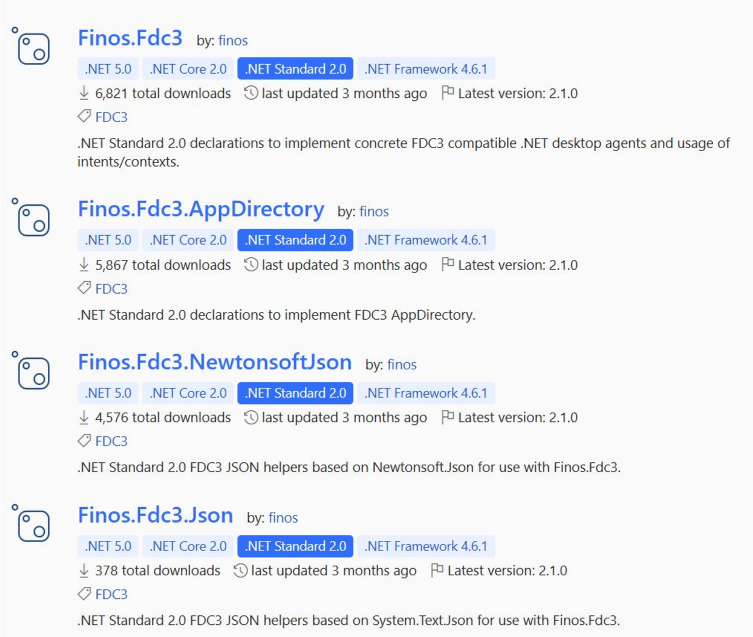
TypeScript/JavaScript | .NET

```
interface IAppIdentifier
{
    /// <summary>
    /// The unique application identifier located within a specific applicatio
    /// </summary>
    string AppId { get; }

    /// <summary>
    /// An optional instance identifier, indicating that this object represent
    /// </summary>
    string? InstanceId { get; }
}
```

FDC3 .NET Binding

- Release of 2.1.0 NuGet packages late 2024
- Work is now underway on 2.2.0

- Contributions are always welcome!



Finos.Fdc3 by: finos

.NET 5.0 | .NET Core 2.0 | .NET Standard 2.0 | .NET Framework 4.6.1

↓ 6,821 total downloads 🕓 last updated 3 months ago ⚐ Latest version: 2.1.0

🏷 FDC3

.NET Standard 2.0 declarations to implement concrete FDC3 compatible .NET desktop agents and usage of intents/contexts.

Finos.Fdc3.AppDirectory by: finos

.NET 5.0 | .NET Core 2.0 | .NET Standard 2.0 | .NET Framework 4.6.1

↓ 5,867 total downloads 🕓 last updated 3 months ago ⚐ Latest version: 2.1.0

🏷 FDC3

.NET Standard 2.0 declarations to implement FDC3 AppDirectory.

Finos.Fdc3.NewtonsoftJson by: finos

.NET 5.0 | .NET Core 2.0 | .NET Standard 2.0 | .NET Framework 4.6.1

↓ 4,576 total downloads 🕓 last updated 3 months ago ⚐ Latest version: 2.1.0

🏷 FDC3

.NET Standard 2.0 FDC3 JSON helpers based on Newtonsoft.Json for use with Finos.Fdc3.

Finos.Fdc3.Json by: finos

.NET 5.0 | .NET Core 2.0 | .NET Standard 2.0 | .NET Framework 4.6.1

↓ 378 total downloads 🕓 last updated 3 months ago ⚐ Latest version: 2.1.0

🏷 FDC3

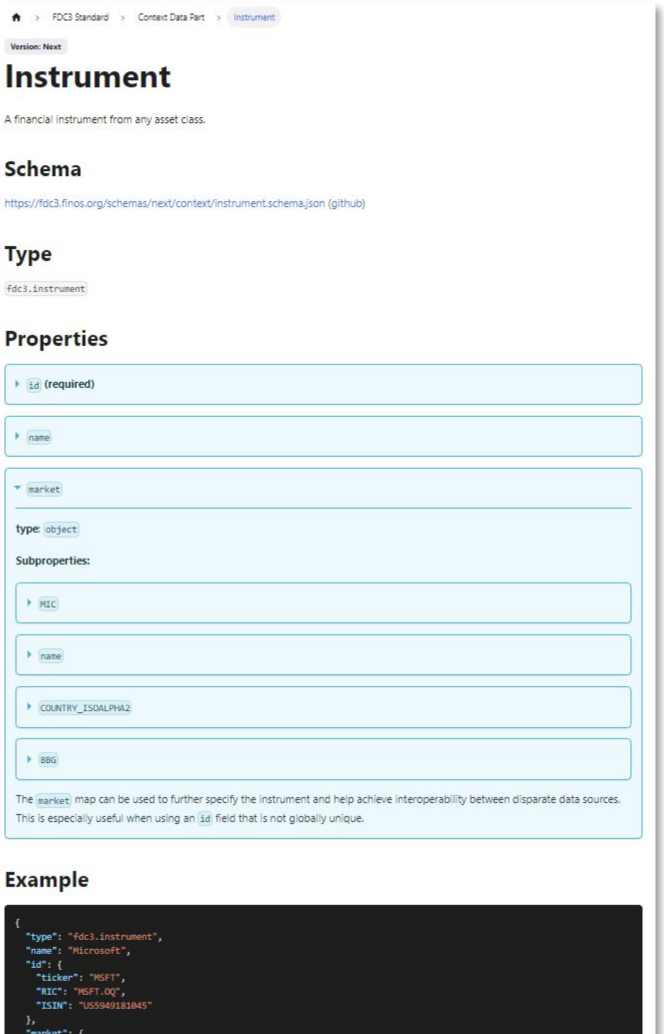
.NET Standard 2.0 FDC3 JSON helpers based on System.Text.Json for use with Finos.Fdc3.

Desktop Agent API

- **`fdc3.addEventListener`** #1136
  To support non-context events,e.g. letting an app know the User channel changed
- Inconsistent use of promises in Private Channels #1294
  `privateChannel.addEventListener` replaces PrivateChannel's synchronous `onAddContextListener`, `onUnsubscribe` and `onDisconnect` functions, which are deprecated
- Consistent async API #1300
  `Listener.unsubscribe(): Promise<void>`
- Conformance test definitions
  Are now part of FDC3 documentation #1077
  Have been updated for FDC3 2.2 #1415
- Moving to es6 + fdc3-commonJs #1351
  Use the new fdc3-commonjs package if you need commons support

Contexts

- fdc3.fileAttachment #1255
  Originally defined in the fdc3.message schema, but separated out into its own type
- Recognizing standard context types #1138: Several participants needed to be able to recognise standard context types
  - `isStandardContext(contextType: string)`
  - `StandardContextType` and `ExperimentalContextType` unions replace the deprecated `ContextTypes` enum
- Generated context documentation #940
  - Much easier to raise context proposals (schema only)



Version: Next

Instrument

A financial instrument from any asset class.

Schema

https://fdc3.finos.org/schemas/next/context/instrument.schema.json (github)

Type

`fdc3.instrument`

Properties

- `id` (required)
- `name`
- `market`

  type: `object`

  Subproperties:

  - `MIC`
  - `name`
  - `COUNTRY_ISOALPHA2`
  - `BBG`

  The `market` map can be used to further specify the instrument and help achieve interoperability between disparate data sources. This is especially useful when using an `id` field that is not globally unique.

Example

```
{
  "type": "fdc3.instrument",
  "name": "Microsoft",
  "id": {
    "ticker": "MSFT",
    "RIC": "MSFT.OQ",
    "ISIN": "US5949181045"
  },
  "market": {
```

Intents

- CreateOrUpdateProfile #591
  To be used when a user wants to create a new Contact or Organization in a system, or update the details of an existing Contact or Organization, using data from another system as the starting point.

- Recognizing standard intents: #1138
  Work conducted alongside the same issue for context types
  - `isStandardIntent(intent: string)`
  - Intent union type `StandardIntent` – replaces the `Intents` enum

FDC3 for Web Browsers

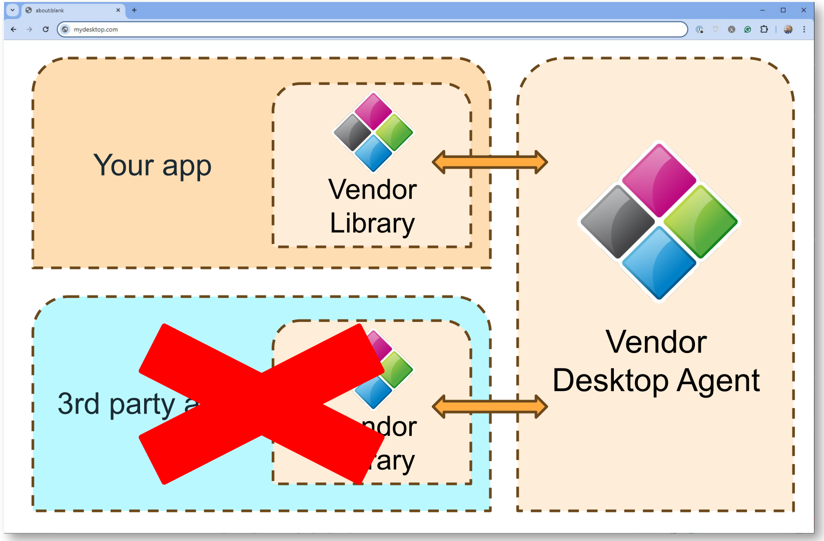
FDC3 for Web Browsers

- A number of vendor products already offer FDC3 and other interop APIs in Web Browsers

- But there's a catch…

- They can't inject the FDC3 API for an app to use – you have to import a library…
  - App implementations can only support specific Desktop Agent(s)
  - When Write Once Run Anywhere (WORA) is one of the main reasons for having an interop standard!

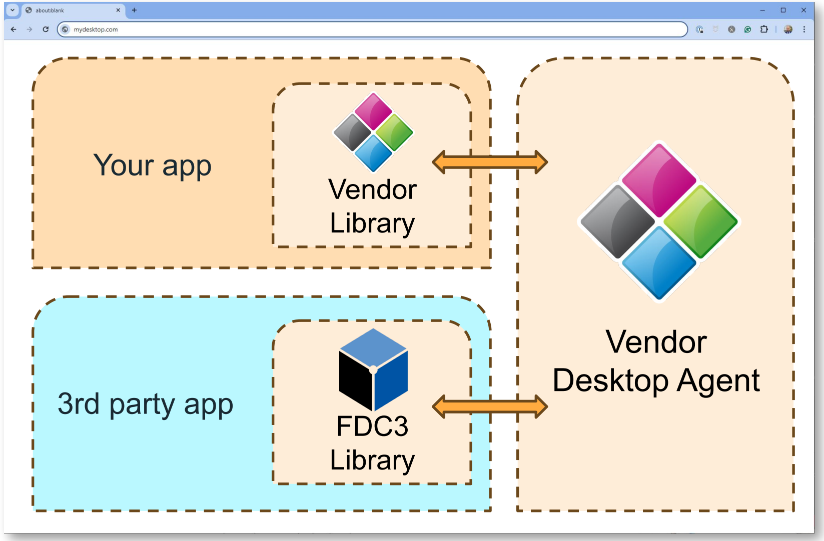
- Not a problem if you're building a platform… until you want to interoperate with 3rd party apps…



FDC3 for Web Browsers (2)

The solution: an Open Standard for an FDC3 wire protocol for use in a Web Browser

- Two parts:
  - **FDC3 Web Connection Protocol** to establish a connection to a DA
  - **FDC3 Communication Protocol** defining all interactions with the DA
- Implemented in the FDC3 NPM module via a new '`getAgent()`' function
- Connects to either a DA in a container or a DA running in the browser – non-breaking!
- When connecting in a browser it returns a 'Desktop Agent Proxy' that handles communication with the DA.
- Working in the browser requires:
  - Better app identity validation!
  - Handling for Intent Resolver and Channel selector UIs

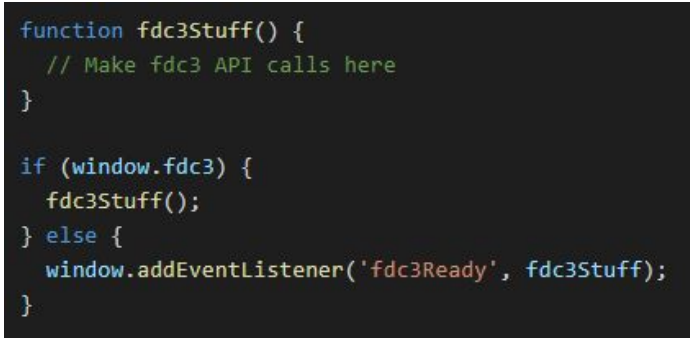


getAgent()

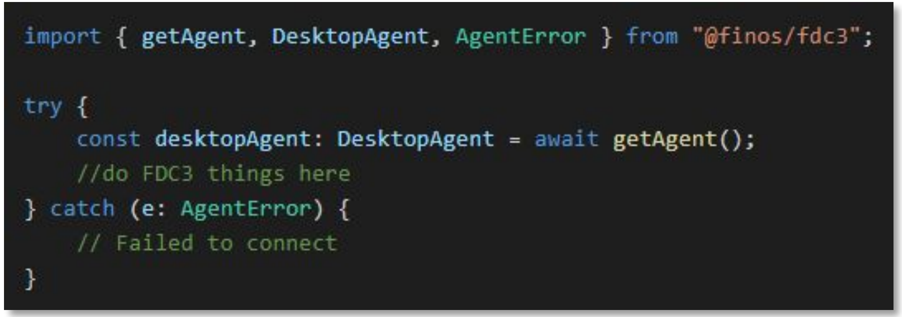
Two interfaces to FDC3 APIs for Web apps:

- `window.fdc3`
- Desktop Agent in a parent window & postMessage

- New, vendor-agnostic way to access FDC3 API implementations that supports both interfaces (WORA):



```
function fdc3Stuff() {
  // Make fdc3 API calls here
}

if (window.fdc3) {
  fdc3Stuff();
} else {
  window.addEventListener('fdc3Ready', fdc3Stuff);
}
```



```
import { getAgent, DesktopAgent, AgentError } from "@finos/fdc3";

try {
    const desktopAgent: DesktopAgent = await getAgent();
    //do FDC3 things here
} catch (e: AgentError) {
    // Failed to connect
}
```

FDC3 Mono repo & NPM modules & Tests

The FDC3 repo has grown over the years and has multiple uses:

- Standards governance
- Standard website
- TypeScript API definitions
- Schema definitions for appD, context and bridging
- Toolbox: FDC3 utility apps

It was time to restructure it as a formal mono-repo*

** a mono-repo is a software-development strategy in which the code for several projects is stored in the same repository.*

FDC3 packages/NPM modules

- @finos/fdc3-standard (50 tests)
  API standard definitions
- @finos/fdc3-agent-proxy
  (81 tests + 85 test in fdc3-web-impl)
  Desktop Agent Comms Protocol implementation
- @finos/fdc3-get-agent (36 tests)
  getAgent function from Web Connection Protocol
- @finos/fdc3-schema
  AppD, Bridging and FDC3 for Web message schemas
- @finos/fdc3-context
  Context schemas
- @finos/fdc3
  roll-up of the above packages
- @finos/fdc3-commonjs
  CommonJS build

FDC3 for Web

Demos!

Looking Ahead

FDC 2.3

FDC3 2.3 scope

- Identity & Security features
  - App identity
  - Signed messages
  - Encrypted channels
  - User identities
- Web: Multiple apps per page
- API: Context Clearing
- API: Context Metadata & traceability
- API: Rationalizing conformance tests
- API: GoLang binding

Github: 2.3 candidates Milestone

Raise issues for anything you want to discuss or change in FDC3 2.3: https://github.com/finos/FDC3/issues/new/choose

Identity & Security

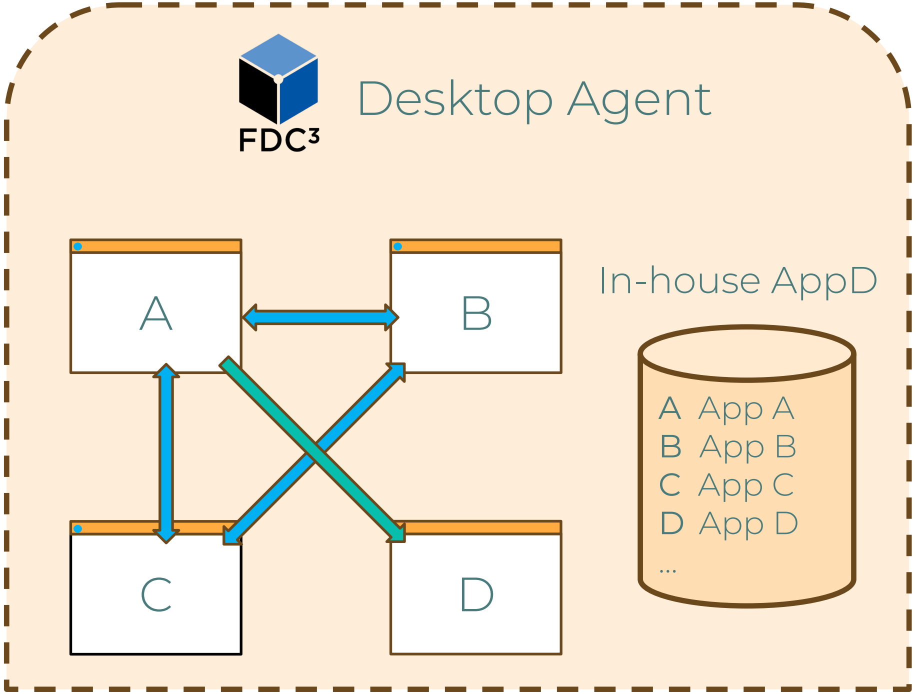
Enabling transactional use cases

FDC3 Identity and Security

identity-security

FDC3 was founded on the idea of 'open' interop, in a container

- App identities provided in the user's AppD
- Sharing context with unknown participants
- Advertising functionality that can be invoked & loose coupling with intents

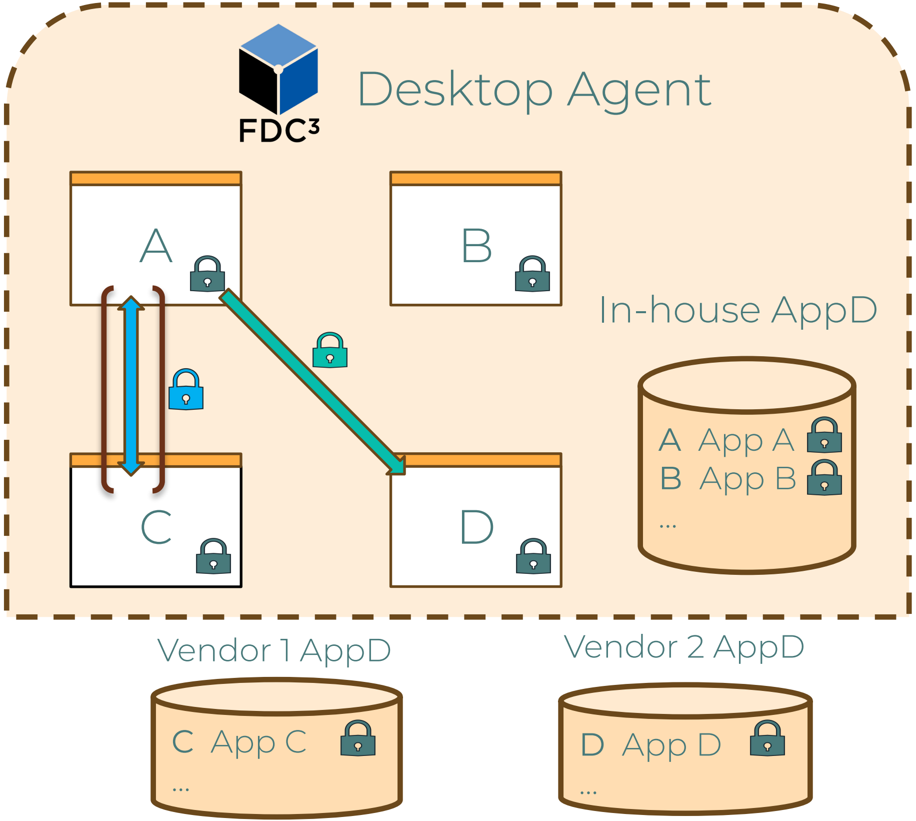


FDC3 Identity and Security

identity-security

But deeper / transactional integrations (e.g. Buy-side / Sell-side collab) need stronger identity and security solutions

- Vendor owned app directories with secure app identity
- Identity validation procedures
  - On connection / navigation
  - Signed messages
- Encrypted communication
  - Facilitated by, but protected from the Desktop Agent



FDC3 Identity and Security

identity-security

”Application Identity” stream has concluded – the concepts of **signed intents** and **encrypted channels** will be submitted for inclusion in a future version of the standard

The next question is “User Identity” – how can a user leverage the fact that they are signed into a “identity provider” application to certify their identity for other applications that are “identity consumers”?

Getting Involved

Recruitment

Upcoming Meetings

OSFF London 2025

FDC3 Participants, Editors & Maintainers

- FDC3 receives lots of support from FINOS
- But like most Open-Source projects, it is run by volunteers:
  - **Participants**: Raise issues, participate in meetings, Raise PRs
  - **Editors**: Review PRs for quality and to ensure they match the decisions of the Standards Working Group
  - **Maintainers**: Organizing activities (e.g. Chairing meetings, Governance) and maintain FDC3's project infrastructure, code and documentation
- We're keen to recruit for all roles!
  - Contact fdc3-maintainers@finos.org to nominate yourself or a colleague for an FDC3 role, and see the FDC3 Readme on Github for more details: https://github.com/finos/FDC3#what-it-means-to-be-an-fdc3-participant-editor-or-maintainer

Upcoming FDC3 meetings

- Thurs 20th March @ 11am EDT / 3pm GMT

  FDC3 for the Web

- Thurs 27th March @ 10am EDT / 2pm GMT

  Standard WG Meeting

- Thurs 3rd April @ 9am EDT / 2pm BST

  Use cases

- Thurs 10th April @ 11am EDT / 4pm BST

  identity-security

- Thurs 17th April @ 11am EDT / 4pm BST

  FDC3 for the Web

- For all meeting details see the FINOS Community Calendar or email help@finos.org to be added to future meeting invites

Identity and
Security
Discussion Group

Web Browsers
Discussion Group

Desktop Agent
Bridging
Discussion Group

Use Cases &
Workflows
Discussion Group

FDC3 Standard
Working
Group

FINOS Open Source in Finance Forum

The countdown is on for OSFF London - Tues 24th June!

OPEN SOURCE IN FINANCE FORUM London

LONDON, JUNE 24
@ Queen Elizabeth II Conference Centre,
Broad Sanctuary, London SW1P 3EE

REGISTER

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Q&A

(not recorded)

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FDC3

Thank you!

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