XFS4IoT SP-Dev Workgroup

7th November 2023

Confidential

XFS4IoT SP-Dev Workgroup agenda

- Recap from previous meeting
- XFS Standard Workgroup and CEN
- Support for 2023/2 in the SP-Dev framework
- Upcoming demos
- What's next?
- Next meeting

ATM Software

Recap from previous meeting

Recap from previous meeting

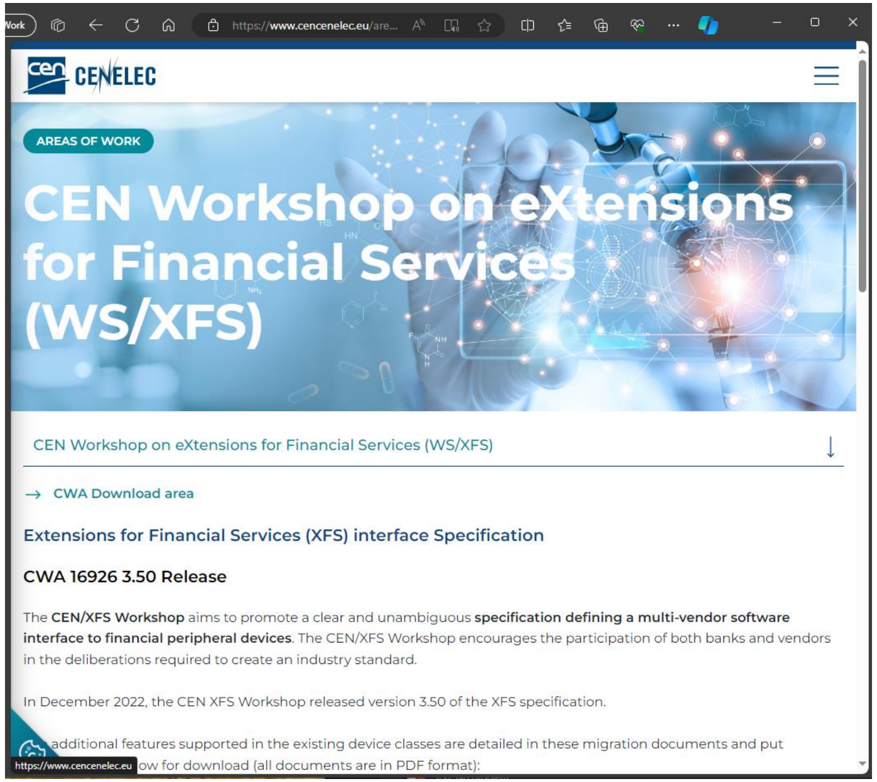
- CEN XFS Committee Update
- SP-Dev Framework Roadmap 2023/2024
- SP-Dev Framework Roadmap 2024

ATM Software

XFS Standard Workgroup and CEN

CEN XFS

- CEN - "European Committee for Standardization"
- XFS - "eXtensions for Financial Services"
- CEN has published CEN XFS since the mid-nineties
- For example, 3.50 release : https://www.cencenelec.eu/areas-of-work/xfs_cwa16926_350_release



CEN Workshop on eXtensions for Financial Services (WS/XFS)

CEN Workshop on eXtensions for Financial Services (WS/XFS) ↓

→ CWA Download area

Extensions for Financial Services (XFS) interface Specification

CWA 16926 3.50 Release

The **CEN/XFS Workshop** aims to promote a clear and unambiguous **specification defining a multi-vendor software interface to financial peripheral devices**. The CEN/XFS Workshop encourages the participation of both banks and vendors in the deliberations required to create an industry standard.

In December 2022, the CEN XFS Workshop released version 3.50 of the XFS specification.

additional features supported in the existing device classes are detailed in these migration documents and put

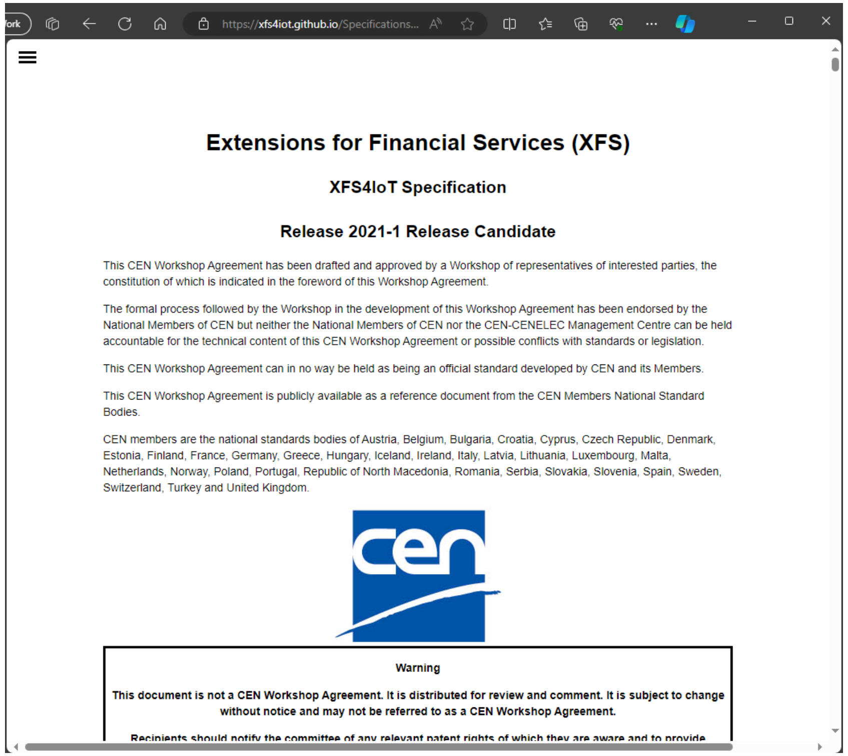
https://www.cencenelec.eu ow for download (all documents are in PDF format):

GitHub for the XFS4IoT Standard

- Standard is developed by a "Working Group" of many companies
- XFS3.x was developed with shared Word documents - a lot of manual editing
- XFS4IoT, developed in GitHub with 'Markdown' files and API description similar to the OpenAPI/Swagger format
- Documents are 'compiled' using custom tools to produce HTML or Word versions

Automatic preview versions

- For XFS4IoT, the committee started publishing 'preview' versions directly on GitHub
- For example: https://xfs4iot.github.io/Specifications-Preview.github.io
- Planning to automatically generate these for future changes, using 'GitHub actions'



Extensions for Financial Services (XFS)

XFS4IoT Specification

Release 2021-1 Release Candidate

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties, the constitution of which is indicated in the foreword of this Workshop Agreement.

The formal process followed by the Workshop in the development of this Workshop Agreement has been endorsed by the National Members of CEN but neither the National Members of CEN nor the CEN-CENELEC Management Centre can be held accountable for the technical content of this CEN Workshop Agreement or possible conflicts with standards or legislation.

This CEN Workshop Agreement can in no way be held as being an official standard developed by CEN and its Members.

This CEN Workshop Agreement is publicly available as a reference document from the CEN Members National Standard Bodies.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Warning

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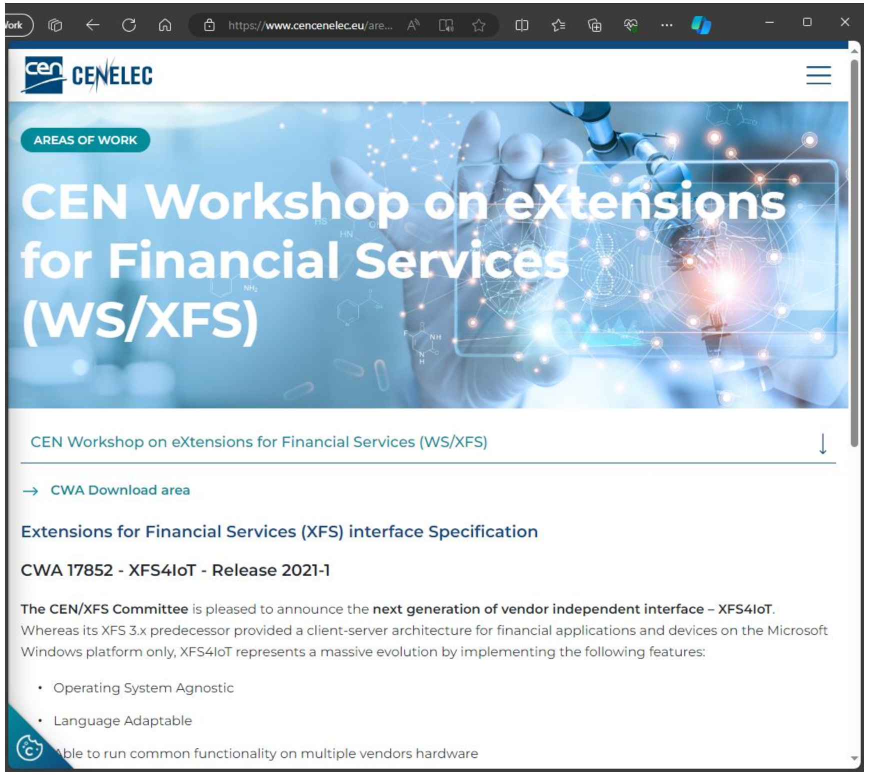
CEN release XFS4IoT

- Finally, CEN publishes the specification:
  - https://www.cencenelec.eu/areas-of-work/xfs_cwa17852_release2021-1
  - https://www.cencenelec.eu/media/CEN-CENELEC/AreasOfWork/CEN%20sectors/Digital%20Society/CWA%20Download%20Area/XFS/CWA17852/xfsgenerice2ereleasecandidate.pdf



CEN Workshop on eXtensions for Financial Services (WS/XFS)

CEN Workshop on eXtensions for Financial Services (WS/XFS)

→ CWA Download area

Extensions for Financial Services (XFS) interface Specification

CWA 17852 - XFS4IoT - Release 2021-1

The CEN/XFS Committee is pleased to announce the **next generation of vendor independent interface – XFS4IoT**. Whereas its XFS 3.x predecessor provided a client-server architecture for financial applications and devices on the Microsoft Windows platform only, XFS4IoT represents a massive evolution by implementing the following features:

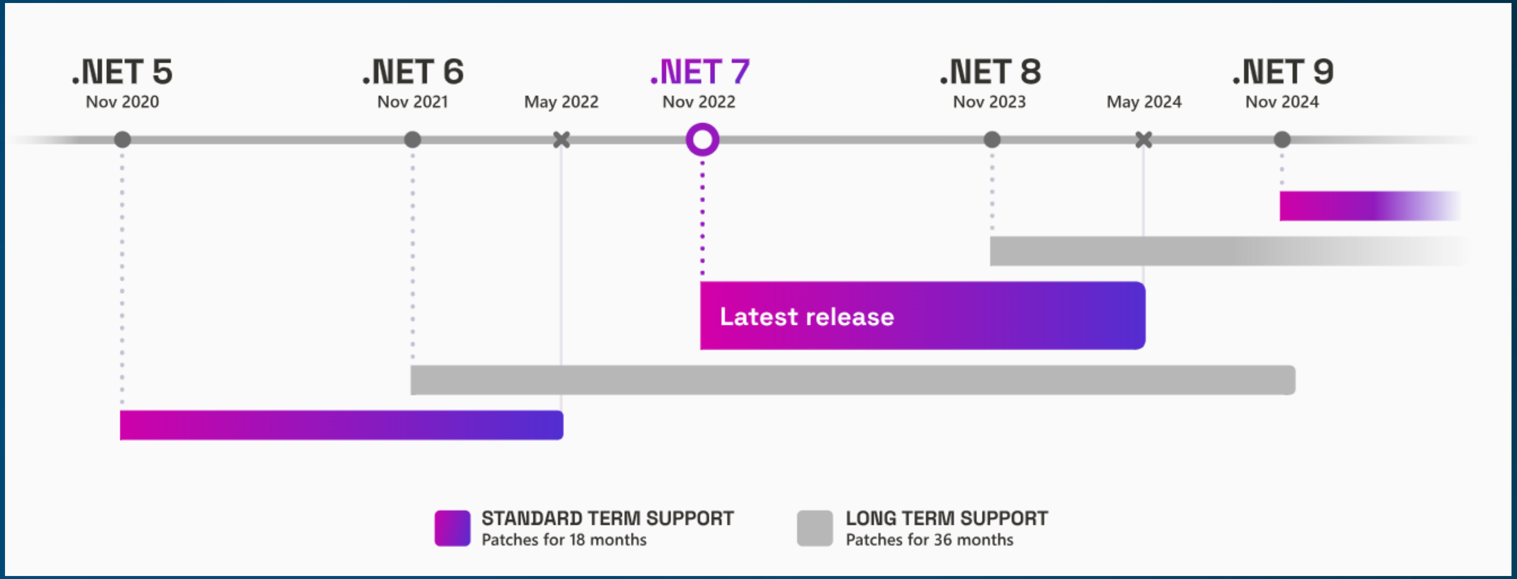
- Operating System Agnostic
- Language Adaptable
- Able to run common functionality on multiple vendors hardware

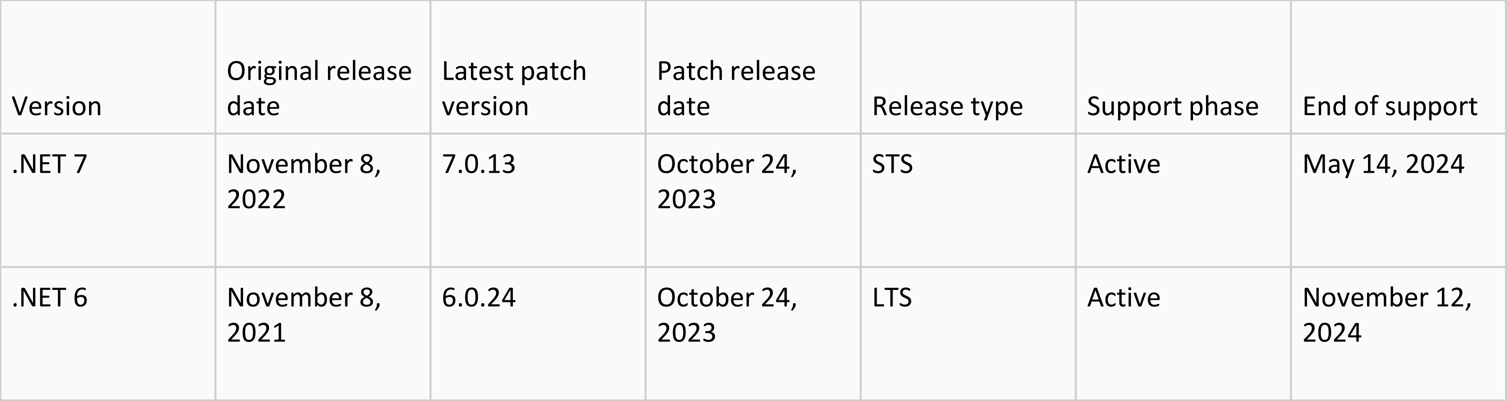
ATM Software

.Net Version update

.Net Version update

- .Net 8 release November 2023
- Support expected for 36 months
- LTS release





Version	Original release date	Latest patch version	Patch release date	Release type	Support phase	End of support
.NET 7	November 8, 2022	7.0.13	October 24, 2023	STS	Active	May 14, 2024
.NET 6	November 8, 2021	6.0.24	October 24, 2023	LTS	Active	November 12, 2024

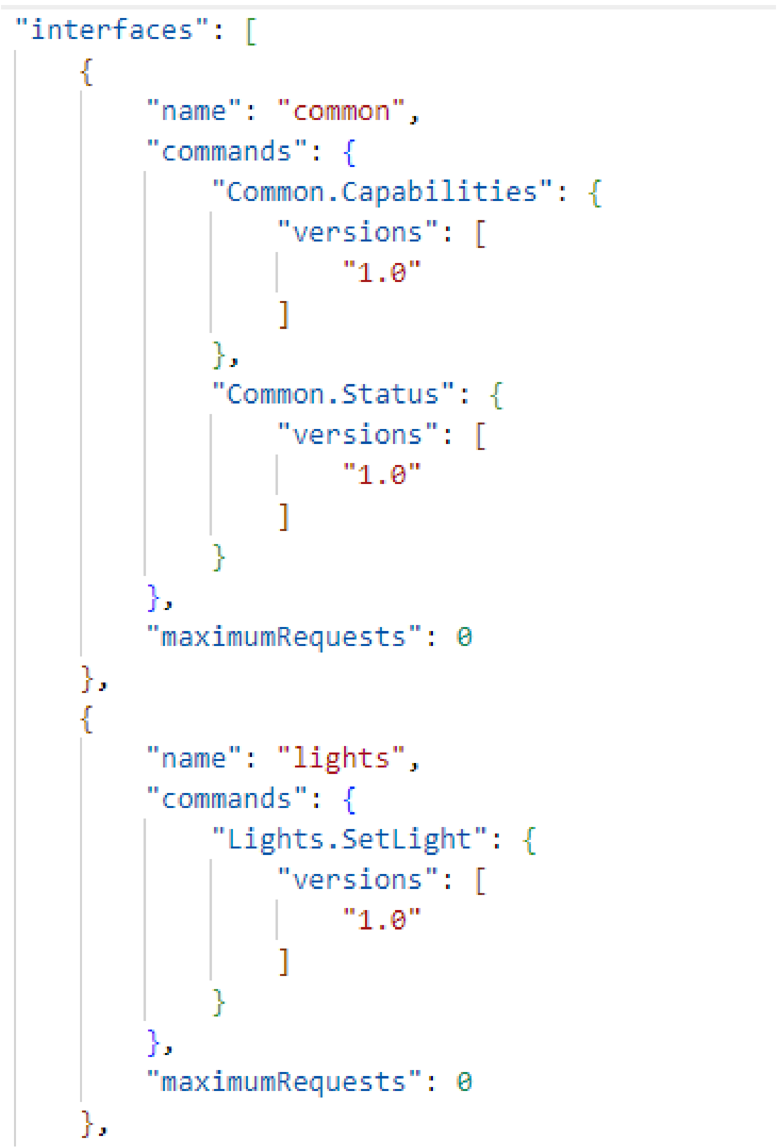
https://dotnet.microsoft.com/en-us/platform/support/policy/dotnet-core

KAL
ATM Software

Support for 2023/2 in the SP-Dev framework

Changes to support in SP-Dev

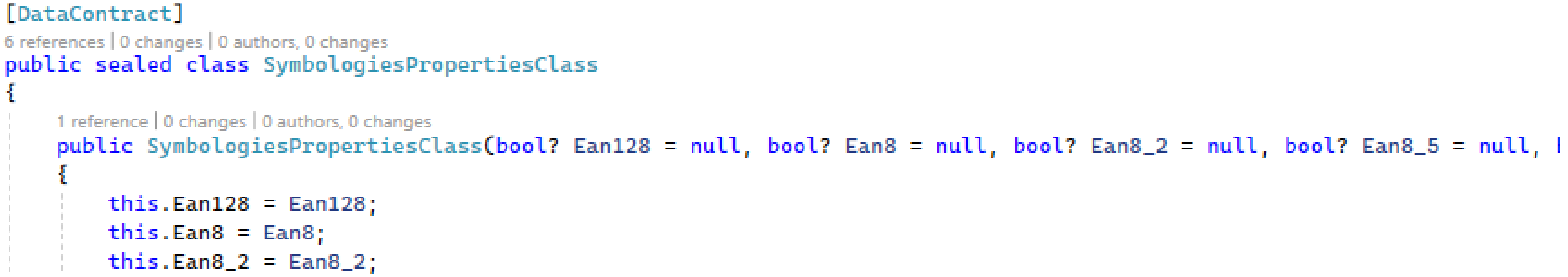
- Update Messages
  - Internal C# generator using the XFS4 specification
- Add new framework classes
  - Check, Mixed Media, Camera
- Support modifications or additions to existing service classes



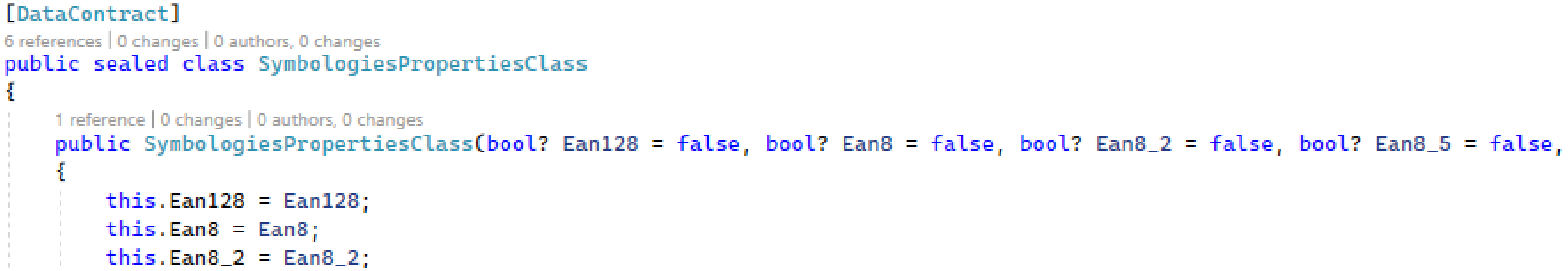
```
"interfaces": [
    {
        "name": "common",
        "commands": {
            "Common.Capabilities": {
                "versions": [
                    "1.0"
                ]
            },
            "Common.Status": {
                "versions": [
                    "1.0"
                ]
            }
        },
        "maximumRequests": 0
    },
    {
        "name": "lights",
        "commands": {
            "Lights.SetLight": {
                "versions": [
                    "1.0"
                ]
            }
        },
        "maximumRequests": 0
    },
```

Default values

- Default values in specification
- Most are Null, False or 0
- Defaults must be used if the value is not specified

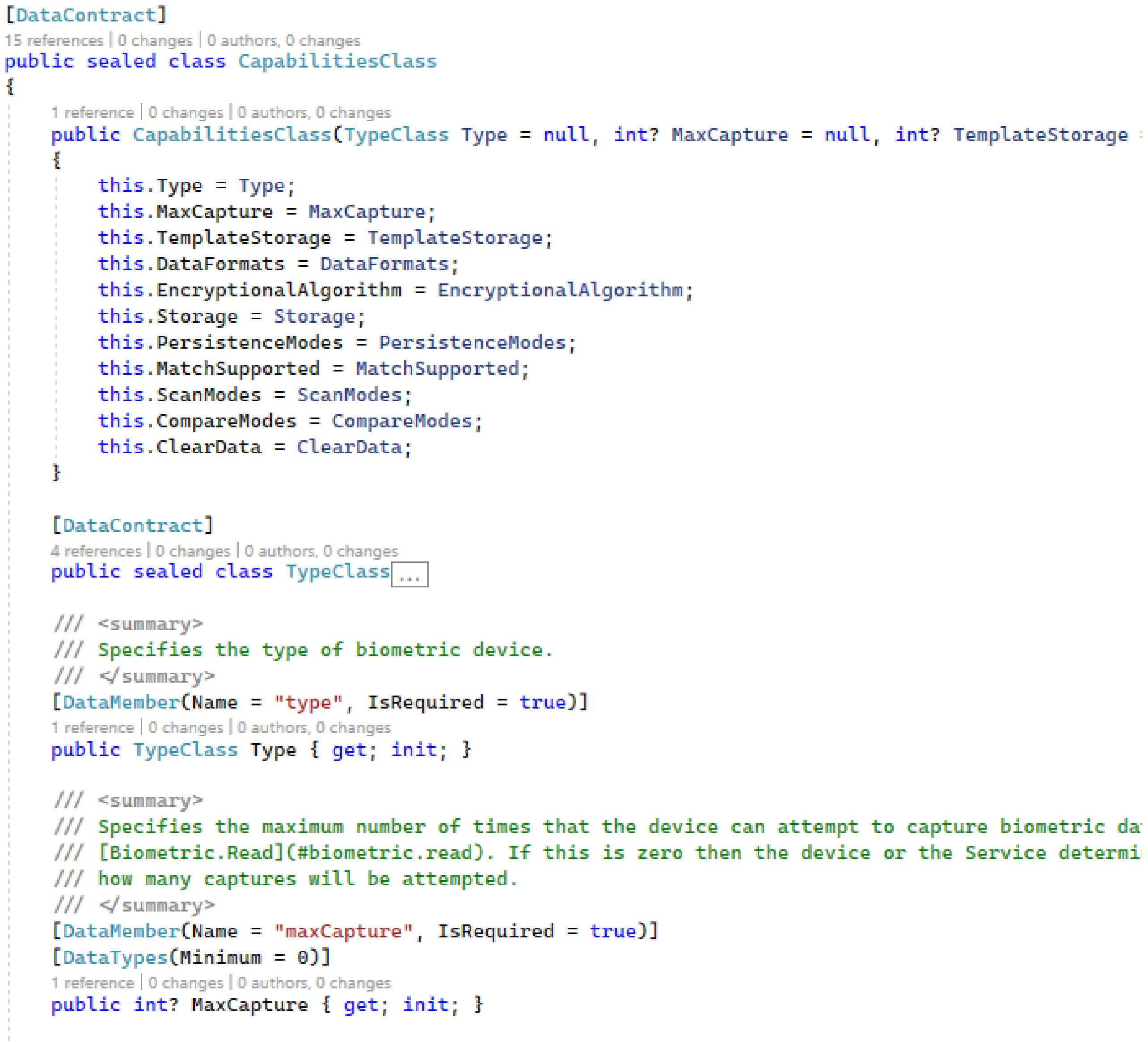


```
[DataContract]
6 references | 0 changes | 0 authors, 0 changes
public sealed class SymbologiesPropertiesClass
{
    1 reference | 0 changes | 0 authors, 0 changes
    public SymbologiesPropertiesClass(bool? Ean128 = null, bool? Ean8 = null, bool? Ean8_2 = null, bool? Ean8_5 = null, |
    {
        this.Ean128 = Ean128;
        this.Ean8 = Ean8;
        this.Ean8_2 = Ean8_2;
```



```
[DataContract]
6 references | 0 changes | 0 authors, 0 changes
public sealed class SymbologiesPropertiesClass
{
    1 reference | 0 changes | 0 authors, 0 changes
    public SymbologiesPropertiesClass(bool? Ean128 = false, bool? Ean8 = false, bool? Ean8_2 = false, bool? Ean8_5 = false,
    {
        this.Ean128 = Ean128;
        this.Ean8 = Ean8;
        this.Ean8_2 = Ean8_2;
```

Required properties



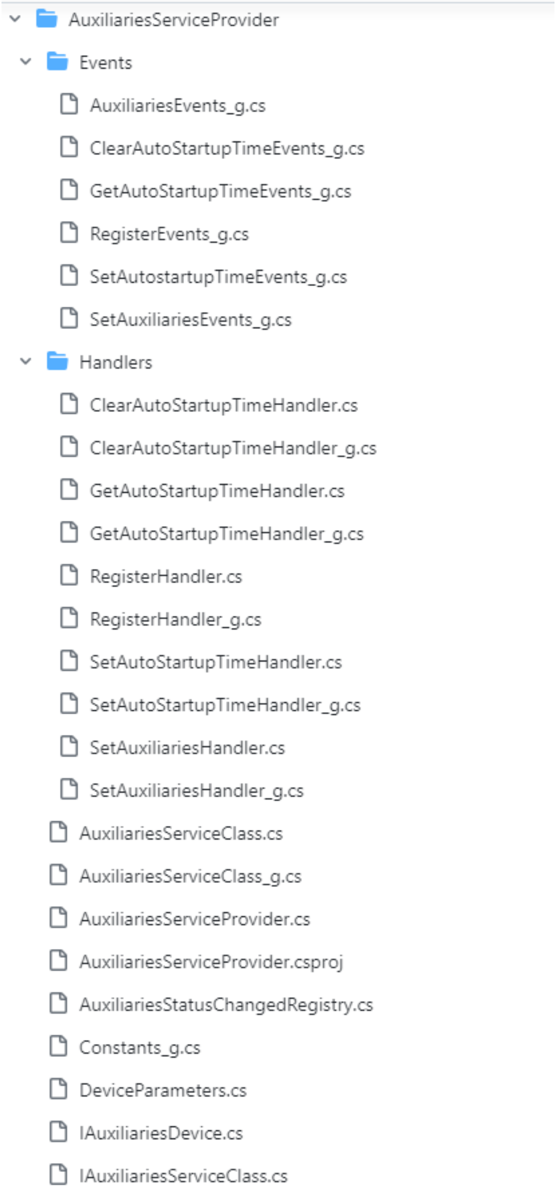
```
[DataContract]
15 references | 0 changes | 0 authors, 0 changes
public sealed class CapabilitiesClass
{
    1 reference | 0 changes | 0 authors, 0 changes
    public CapabilitiesClass(TypeClass Type = null, int? MaxCapture = null, int? TemplateStorage 
    {
        this.Type = Type;
        this.MaxCapture = MaxCapture;
        this.TemplateStorage = TemplateStorage;
        this.DataFormats = DataFormats;
        this.EncryptionalAlgorithm = EncryptionalAlgorithm;
        this.Storage = Storage;
        this.PersistenceModes = PersistenceModes;
        this.MatchSupported = MatchSupported;
        this.ScanModes = ScanModes;
        this.CompareModes = CompareModes;
        this.ClearData = ClearData;
    }

    [DataContract]
    4 references | 0 changes | 0 authors, 0 changes
    public sealed class TypeClass...

    /// <summary>
    /// Specifies the type of biometric device.
    /// </summary>
    [DataMember(Name = "type", IsRequired = true)]
    1 reference | 0 changes | 0 authors, 0 changes
    public TypeClass Type { get; init; }

    /// <summary>
    /// Specifies the maximum number of times that the device can attempt to capture biometric da
    /// [Biometric.Read](#biometric.read). If this is zero then the device or the Service determi
    /// how many captures will be attempted.
    /// </summary>
    [DataMember(Name = "maxCapture", IsRequired = true)]
    [DataTypes(Minimum = 0)]
    1 reference | 0 changes | 0 authors, 0 changes
    public int? MaxCapture { get; init; }
```

- Required properties must be included in the messages

- SP-Dev Framework will check for required properties

New interfaces

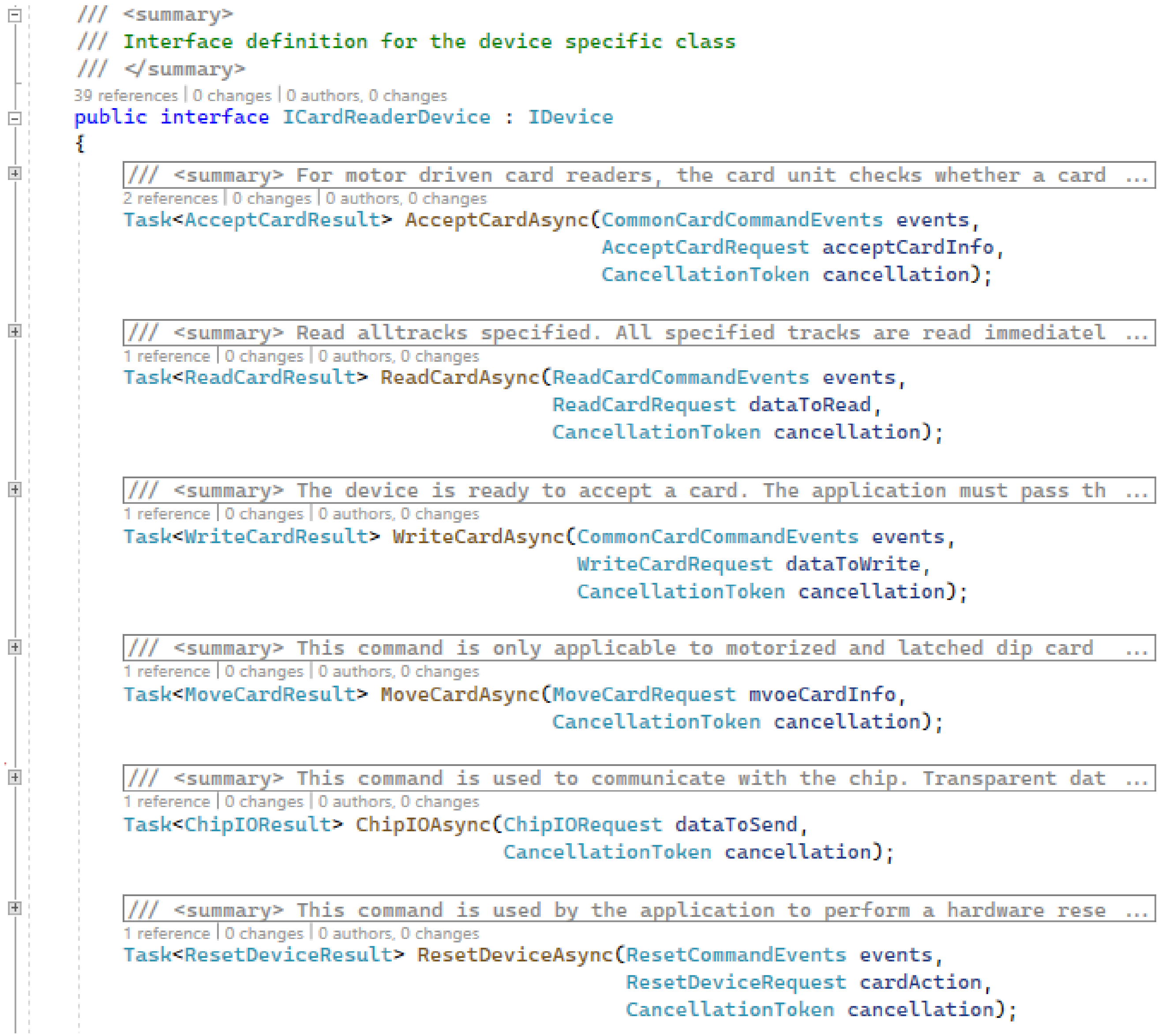
- Generate command handlers from specification
- Create IDevice interface
- Implement command handler functionality
- Create combined ServiceProvider class



```
AuxiliariesServiceProvider
  Events
    AuxiliariesEvents_g.cs
    ClearAutoStartupTimeEvents_g.cs
    GetAutoStartupTimeEvents_g.cs
    RegisterEvents_g.cs
    SetAutostartupTimeEvents_g.cs
    SetAuxiliariesEvents_g.cs
  Handlers
    ClearAutoStartupTimeHandler.cs
    ClearAutoStartupTimeHandler_g.cs
    GetAutoStartupTimeHandler.cs
    GetAutoStartupTimeHandler_g.cs
    RegisterHandler.cs
    RegisterHandler_g.cs
    SetAutoStartupTimeHandler.cs
    SetAutoStartupTimeHandler_g.cs
    SetAuxiliariesHandler.cs
    SetAuxiliariesHandler_g.cs
  AuxiliariesServiceClass.cs
  AuxiliariesServiceClass_g.cs
  AuxiliariesServiceProvider.cs
  AuxiliariesServiceProvider.csproj
  AuxiliariesStatusChangedRegistry.cs
  Constants_g.cs
  DeviceParameters.cs
  IAuxiliariesDevice.cs
  IAuxiliariesServiceClass.cs
```

The IDevice interface

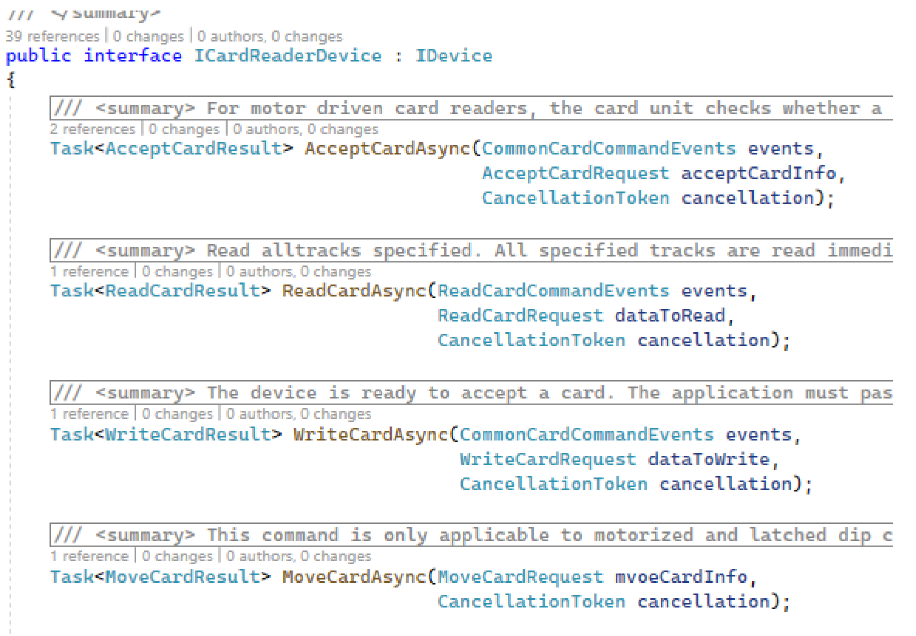
- Implemented by the SP Developer
- Used by the SP-Dev command handlers
- Minimal changes between SP-Dev releases



```
/// <summary>
/// Interface definition for the device specific class
/// </summary>
39 references | 0 changes | 0 authors, 0 changes
public interface ICardReaderDevice : IDevice
{
    /// <summary> For motor driven card readers, the card unit checks whether a card ...
    2 references | 0 changes | 0 authors, 0 changes
    Task<AcceptCardResult> AcceptCardAsync(CommonCardCommandEvents events,
                                           AcceptCardRequest acceptCardInfo,
                                           CancellationToken cancellation);

    /// <summary> Read alltracks specified. All specified tracks are read immediatel ...
    1 reference | 0 changes | 0 authors, 0 changes
    Task<ReadCardResult> ReadCardAsync(ReadCardCommandEvents events,
                                       ReadCardRequest dataToRead,
                                       CancellationToken cancellation);

    /// <summary> The device is ready to accept a card. The application must pass th ...
    1 reference | 0 changes | 0 authors, 0 changes
    Task<WriteCardResult> WriteCardAsync(CommonCardCommandEvents events,
                                         WriteCardRequest dataToWrite,
                                         CancellationToken cancellation);

    /// <summary> This command is only applicable to motorized and latched dip card ...
    1 reference | 0 changes | 0 authors, 0 changes
    Task<MoveCardResult> MoveCardAsync(MoveCardRequest mvoeCardInfo,
                                       CancellationToken cancellation);

    /// <summary> This command is used to communicate with the chip. Transparent dat ...
    1 reference | 0 changes | 0 authors, 0 changes
    Task<ChipIOResult> ChipIOAsync(ChipIORequest dataToSend,
                                   CancellationToken cancellation);

    /// <summary> This command is used by the application to perform a hardware rese ...
    1 reference | 0 changes | 0 authors, 0 changes
    Task<ResetDeviceResult> ResetDeviceAsync(ResetCommandEvents events,
                                             ResetDeviceRequest cardAction,
                                             CancellationToken cancellation);
```

Command payload updates

- Updates to existing command/completion/event messages
- New commands or functionality to existing service classes
- Report version information for supported commands and events



```
/// </summary>
39 references | 0 changes | 0 authors, 0 changes
public interface ICardReaderDevice : IDevice
{
    /// <summary> For motor driven card readers, the card unit checks whether a
    2 references | 0 changes | 0 authors, 0 changes
    Task<AcceptCardResult> AcceptCardAsync(CommonCardCommandEvents events,
                                           AcceptCardRequest acceptCardInfo,
                                           CancellationToken cancellation);

    /// <summary> Read alltracks specified. All specified tracks are read immedi
    1 reference | 0 changes | 0 authors, 0 changes
    Task<ReadCardResult> ReadCardAsync(ReadCardCommandEvents events,
                                       ReadCardRequest dataToRead,
                                       CancellationToken cancellation);

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    Task<WriteCardResult> WriteCardAsync(CommonCardCommandEvents events,
                                         WriteCardRequest dataToWrite,
                                         CancellationToken cancellation);

    /// <summary> This command is only applicable to motorized and latched dip c
    1 reference | 0 changes | 0 authors, 0 changes
    Task<MoveCardResult> MoveCardAsync(MoveCardRequest mvoeCardInfo,
                                       CancellationToken cancellation);
```

ATM Software

Upcoming demos

Upcoming demos

- Update process for existing SPs
- Cheque and mixed media deposit devices
- Camera

Any other suggestions?

ATM Software

What's next?

Demos, POCs and guest speakers

- XFS Specification release update
- Framework roadmap
- POCs and demos
- Guest speakers

Next call

Zoom

- First Tuesday of each month at 1300 UK time for 30 mins

Next call: 5th December 2023
1300 UK, 0800 US EST, 2200 Tokyo time

Calls are 30 mins long

We will continue to use Zoom

(Interpretation in Japanese, Chinese and Spanish is available using Zoom's interpretation feature)