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**WORKSHOP**

**AGREEMENT**

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## Extensions for Financial Services (XFS) interface specification - Part 2: Service Classes Definition - Programmer's Interface

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.

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## Foreword

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This CWA is revision 2.0 of the XFS interface specification. Release 2.0 extends the scope of the XFS interface specification to include both the self service/ATM environment as well as the branch environment. The new specification now fully supports cameras, deposit units, identification cards, PIN pads, sensors and indicator units, text terminals, cash dispenser modules and a wide variety of printing mechanisms.

This specification was originally developed by the Banking Solutions Vendor Council (BSVC), and is endorsed by the CEN/ISSS Workshop on XFS. This Workshop gathers both suppliers (among others the BSVC members) as well as banks and other financial service companies. A list of companies participating in this Workshop and in support of this CWA is available from the CEN/ISSS Secretariat.

The specification is continuously reviewed and commented in the CEN/ISSS Workshop on XFS. It is therefore expected that an update of the specification will be published in due time as a CWA, superseding this revision 2.00.

This CWA is supplemented by a set of release notes, which are available from the CEN/ISSS Secretariat (an online version of these release notes is available from <http://www.cenorm.be/iss/Workshop/XFS/release-notes.htm>).

## 0. Introduction

This is part 2 of the multi-part CWA 13449, describing Release 2.0 of the XFS interface specification.

The full CWA 13449 "Extensions for Financial Services (XFS) interface specification" consists of the following parts:

**Part 1: Application Programming Interface (API) - Service Provider Interface (SPI); Programmer's Reference**

**Part 2: Service Classes Definition; Programmer's Reference**

**Part 3: Printer Device Class Interface - Programmer's Reference**

**Part 4: Identification Card Device Class Interface - Programmer's Reference**

**Part 5: Cash Dispenser Device Class Interface - Programmer's Reference**

**Part 6: PIN Keypad Device Class Interface - Programmer's Reference**

**Part 7: Check Reader/Scanner Device Class Interface - Programmer's Reference**

**Part 8: Depository Device Class Interface - Programmer's Reference**

**Part 9: Text Terminal Unit Device Class Interface - Programmer's Reference**

**Part 10: Sensors and Indicators Unit Device Class Interface - Programmer's Reference**

**Part 11: Vendor Dependent Mode Device Class Interface - Programmer's Reference**

**Part 12: Camera Device Class Interface - Programmer's Reference**

In addition to these Programmer's Reference specifications, the reader of this CWA is also referred to a complementary document, called Release Notes. The Release Notes contain clarifications and explanations on the CWA specifications, which are not requiring functional changes. The current version of the Release Notes is available from the CEN/ISSS Secretariat (contact [iss@cenorm.be](mailto:iss@cenorm.be) or download from <http://www.cenorm.be/iss/Workshop/XFS/release-notes.htm>).

The information in this document originally contributed by members of the Banking Solutions Vendor Council and endorsed by the CEN/ISSS Workshop on XFS, represents the Workshop's current views on the issues discussed as of the date of publication. It is furnished for informational purposes only and is subject to change without notice. CEN/ISSS makes no warranty, express or implied, with respect to this document.

The XFS specifications are now further developed in the CEN/ISSS Workshop on XFS. CEN/ISSS Workshops are open to all interested parties offering to contribute. Parties interested in participating should contact the CEN/ISSS Secretariat ([iss@cenorm.be](mailto:iss@cenorm.be)).

A Software Development Kit (SDK) which supplies the components and tools to allow the implementation of compliant applications and services is available from Microsoft<sup>1</sup>.

To the extent that date processing occurs, all XFS Workshop participants agree that the XFS specifications are Year 2000 compliant.

### Revision History:

1.0	May 24, 1993	Initial release of API and SPI specification
1.11	February 3, 1995	Separation of specification into separate documents for API/SPI and service class definitions, with updates
2.00	November 11, 1996 October 6, 1998	Updated release encompassing self-service environment. WOSA/XFS Release 2.00 as originally developed by the BSVC, has been formally accepted as a CEN Workshop Agreement by the CEN/ISSS XFS Workshop and the name WOSA/XFS has been changed into XFS. In spite of the name change, certain occurrences of WOSA/XFS however still appear in the documentation, for compatibility reasons

<sup>1</sup> Microsoft is a registered trademark, and Windows and Windows NT are trademarks of Microsoft Corporation

## 1. Background

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The Banking Solutions Vendor Council, an organisation of leading vendors of information technology to the financial services industry, was formally announced at the American Bankers Association National Operations and Automation Conference (NOAC) in Denver on May 18, 1992.

Revision 1.11 of the XFS specifications was released on February 3, 1995. It includes the programmer's reference specifications for the Application Programming Interface (API) and Service Provider Interface (SPI) and five service classes specifications: printers, magnetic stripe readers/writers, PIN pads, cash dispensers and check readers.

In October 1995, the BSVC established the self-service workgroup (SSWG) to define self-service specific enhancements to existing XFS service class specifications and to develop new self-service specific XFS service class specifications.

A new XFS service class needs to be defined with a unique name in the configuration information and with a unique service identifier in its header file(s).

Rather than updating the API/SPI specifications each time a new service class is defined, the SSWG established that a new document should be developed that aggregates the unique values needed to define a service class. This document serves that purpose.

All explicit references to device or service classes have then been expurgated from revision 2.00 of the API/SPI specifications and replaced with references to this document.

## 2. Service Classes

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The following classes of services have been defined for the second version of the Extensions for Financial Services specifications to include the data and methods needed for the support of self-service, unattended, operations:

- Printers
- Identification Card Units
- Cash Dispensers
- Personal Identification Number Keypads (PIN pads)
- Depository Units
- Text Terminal Units
- Sensors and Indicators Units
- Vendor Dependent Mode
- Cameras

The following sections detail for each of the service classes defined for this version of the Extensions for Financial Services:

- the standard values to be used as *class* attribute in the configuration information;
- the unique number assigned to each service class;
- the types of devices defined and supported by the service class specifications.

The table below summarises the unique attributes of each service class:

Service Class	Class Name	Class Identifier	Reference
Printers	PTR	1	CWA13449-3
Identification Card Units	IDC	2	CWA13449-4
Cash Dispensers	CDM	3	CWA13449-5
PIN pads	PIN	4	CWA13449-6
Check Readers and Scanners	CHK	5	CWA13449-7
Depository Units	DEP	6	CWA13449-8
Text Terminal Units	TTU	7	CWA13449-9
Sensors and Indicators Units	SIU	8	CWA13449-10
Vendor Dependent Mode	VDM	9	CWA13449-11
Cameras	CAM	10	CWA13449-12

### 2.1. Printers

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**Class Name** PTR

**Class Identifier** WFS\_SERVICE\_CLASS\_PTR = 1

The XFS printer service defines and supports four types of banking printers through a common interface:

- **Receipt Printer**  
The receipt printer is used to print cut sheet documents. It may or may not require insert or eject operations, and often includes an operator identification device, e.g., Teller A and Teller B lights, for shared operation.
- **Journal Printer**  
The journal is a continuous form device used to record a hardcopy audit trail of transactions, and for certain report printing requirements.
- **Passbook Printer**  
The passbook device is physically and functionally the most complex printer. The XFS definition supports automatic positioning of the book, as well as read/write capability for an optional integrated magnetic stripe. The implementation also manages the book geometry - i.e. the margins and centrefolds - presenting the simplest possible application interface while delivering the full range of functionality.
- **Document Printer**

Document printing is similar to receipt printing -- a set of fields are positioned on an inserted sheet of paper -- but the focus is on full-size forms. It should be noted that the XFS environment only implements the printing of text fields from the application. The electronic printing of the form image itself is not supported; but can be delivered as an added-value extension by the vendor.

Additional hardware components, like scanners, stripe readers, OCR readers, and stamps, normally attached directly to the printer are also controlled through this interface.

## 2.2. Identification Card Units

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**Class Name**      **IDC**

**Class Identifier** **WFS\_SERVICE\_CLASS\_IDC = 2**

The XFS Identification Card service allows for the operation of the following categories of units:

- motor driven card reader/writer
- pull through card reader (writing facilities only partially included)
- dip reader
- contactless chip card readers

The following tracks/chips and the corresponding international standards are taken into account:

Track 1	ISO 7811
Track 2	ISO 7811
Track 3	ISO 7811 / ISO 4909
Chip (contacted)	ISO 7816
Chip (contactless)	ISO 10536.

National standards like Transac for France or Watermark for Sweden are not considered, but can be easily included via a forms mechanism.

In addition to the pure reading of the tracks mentioned above, security boxes can be used via this service to check the data of writable tracks for manipulation. These boxes (such as CIM or MM) are sensor-equipped devices that are able to check some other information on the card and compare it with the track data.

## 2.3. Cash Dispensers

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**Class Name**      **CDM**

**Class Identifier** **WFS\_SERVICE\_CLASS\_CDM = 3**

The XFS Cash Dispenser service definition applies to both Automated Teller Safes (ATS) and Automated Teller Machines (ATM).

The components of an Automated Teller Safe are a cash (bills) dispenser, a transport unit, an output unit, and in some cases it also contains a coin dispenser and an alert unit.

An Automated Teller Machine contains the modules for cash dispensing plus additional modules such as magnetic card reader/writer, PIN pad, terminal, etc. The modules used for cash dispensing are essentially the same as those contained in the ATS: a bill/coupon/document dispenser, a transport module, an output module, and a coin dispenser, if available. Therefore, the cash dispensing functionality of the ATS and of the ATM is included in a single service class definition, referred to in XFS specifications as "CDM" (cash dispenser module).

The implementation of the individual commands is device dependent (ATS or ATM). This is described in the documentation of each function.

## 2.4. Personal Identification Number Keypads (PIN Pads)

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**Class Name** PIN

**Class Identifier** WFS\_SERVICE\_CLASS\_PIN = 4

The XFS PIN pad service defines the general interface for the following functions:

- Administration of encryption devices
- Loading of encryption keys
- Encryption / decryption
- Entering Personal Identification Numbers (PINs)
- PIN verification
- PIN block generation (encrypted PIN)
- Clear text data handling
- Function key handling
- PIN presentation to chip card

If the PIN Pad device has local display capability, display handling should be handled using the Text Terminal Unit (TTU) interface.

The current revision of the service class specification does not claim to adhere to any security standards, any security standards supported will be vendor dependent.

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**Important Notes:**

- The current revision of the service class specification does not define key management procedures; key management is vendor-specific.
  - Key space management is customer-specific, and is therefore handled by vendor-specific mechanisms.
  - Only numeric PIN pads are handled in the current revision of the service class specifications.
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## 2.5. Check Readers and Scanners

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**Class Name** CHK

**Class Identifier** WFS\_SERVICE\_CLASS\_CHK = 5

This service class is currently defined only for attended branch service.

The XFS check reader service defines the general interface for the following functions:

- Reading encoded fields on a check, using Magnetic Ink Character Recognition (MICR) or Optical Character Recognition (OCR), or both;
- Encoding fields on a check, using MICR or OCR fonts, or both;
- Endorsing checks on either side, or both sides;
- Acquiring an image of either side of the check, or both sides;
- Sorting a check into one of several pockets.

This allows handling of devices with a range of features, from small hand-held read-only devices through which checks are manually swiped one at a time, to much larger tabletop devices which automatically feed checks by the batch past a reader, an encoder, an endorser, an optional image scanner, to be sorted into one of several pockets. The high end device of this class usually found in bank branches share many capabilities with the still larger devices usually found only in a bank's central data processing, known as high-speed reader/sorters, but the latter are not specifically addressed in the current revision of the specifications.

Typical fields found encoded on a check include the bank ID number and the account number. Part of the processing done by the bank is to also encode the amount on the check, usually done by having an operator enter the hand-written or typewritten face amount on a numeric keypad, or by courtesy amount readers.

## 2.6. Depository Unit

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**Class Name**      **DEP**

**Class Identifier** **WFS\_SERVICE\_CLASS\_DEP = 6**

The XFS depository service defines and supports two types of depository modules through a common interface:

- **Envelope** depository for the deposit of media in envelopes;
- **Night Safe** depository for the deposit of bags containing bulk media.

An envelope depository accepts media, prints on the media and deposits the media into a holding container or bin. Some envelope depositories offer the capability to dispense an envelope to the customer at the start of a transaction. The customer takes this envelope, fills in the deposit media, possibly inscribes it and puts it into the deposit slot. The envelope is then accepted, printed and transported into a deposit container.

The envelope dispense mechanism may be part of the envelope depository device mechanism with the same entry/exit slot or it may be a separate mechanism with separate entry/exit slot.

Envelopes dispensed and not taken by the customer can be retracted back into the device. When the dispenser is a separate mechanism the envelope is retracted back into the dispenser container. When the dispenser is a common mechanism the envelope is retracted into the depository container.

A night safe depository normally only logs the deposit of a bag and does not print on the media.

## 2.7. Text Terminal Unit

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**Class Name**      **TTU**

**Class Identifier** **WFS\_SERVICE\_CLASS\_TTU = 7**

The XFS Text Terminal service defines the functions provided by a generic Text Terminal Unit (TTU).

A Text Terminal Unit is a text i/o device, which applies both to ATM operator panels and to displays incorporated in devices such as PIN pads and printers. This service allows for the following categories of functions:

- Forms oriented input and output
- Direct display output
- Keyboard input
- LED settings and control

## 2.8. Sensors and Indicators Units

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**Class Name**      **SIU**

**Class Identifier** **WFS\_SERVICE\_CLASS\_SIU = 8**

The XFS sensors and indicators service allows for the operation of the following categories of ports:

- Door sensors, such as cabinet, safe or vandal shield doors;
- Alarm sensors, such as tamper, seismic or heat sensors;
- Generic sensors, such as proximity or ambient light sensors;
- Key switch sensors, such as the ATM operator switch;
- Lamp/sign indicators, such as fascia light or audio indicators;
- Auxiliary indicators.

In self-service devices, the sensors and indicators unit is capable of dealing with external sensors, such as door switches, locks, alarms and proximity sensors, as well as external indicators, such as turning on lamps or heating.

## 2.9. Vendor Dependent Mode

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**Class Name**      **VDM**

**Class Identifier** **WFS\_SERVICE\_CLASS\_VDM = 9**

In all device classes there needs to be some method of going into a vendor specific mode to allow for capabilities which go beyond the scope of the current XFS specifications. A typical usage of such a mode might be to handle some configuration or diagnostic type of function or perhaps perform some 'off-line' testing of the device. These functions are normally available on self-service devices in a mode traditionally referred to as Maintenance Mode or Supervisor Mode and usually require operator intervention. It is those vendor-specific functions not covered by (and not required to be covered by) XFS Service Providers that will be available once the device is in Vendor-Dependent mode.

The Vendor Dependent Mode service provides the mechanism for switching to and from Vendor Dependent Mode. The VDM Service Provider can be seen as the central point through which all Enter and Exit VDM requests are synchronised.

Entry into, or exit from, Vendor Dependent Mode can be initiated either by an application or by the VDM Service Provider itself. If initiated by an application, then this application needs to issue the appropriate command to request entry or exit. If initiated by the VDM Service Provider i.e. some vendor dependent switch, then these request commands are in-appropriate and not issued.

Once the entry request has been made, all registered applications will be notified of the entry request by an event message. These applications must attempt to close all open sessions with XFS Service Providers as soon as possible and then issue an acknowledgement command to the VDM Service Provider when ready. Once all applications have acknowledged, the VDM Service Provider will issue event messages to these applications to indicate that the System is in Vendor Dependent Mode.

Similarly, once the exit request has been made all registered applications will be notified of the exit request by an event message. These applications must then issue an acknowledgement command to the VDM Service Provider immediately. Once all applications have acknowledged, the VDM Service Provider will issue event messages to these applications to indicate that the System has exited from Vendor Dependent Mode.

Thus, XFS compliant applications that do not need the system to be in Vendor Dependent Mode, must comply with the following:

- Every XFS application should open a session with the VDM ServiceProvider passing a valid ApplId and then register for all VDM entry and exit notices.
- Before opening any session with any other XFS Service Provider, check the status of the VDM Service Provider. If Vendor Dependent Mode is not "Inactive", do not open a session.
- When getting a VDM entry notice, close all open sessions with all other XFS Service Providers as soon as possible and issue an acknowledgement for the entry to VDM.
- When getting a VDM exit notice, acknowledge at once.
- When getting a VDM exited notice, re-open any required sessions with other XFS Service Providers.

## 2.10. Cameras

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**Class Name**      **CAM**

**Class Identifier** **WFS\_SERVICE\_CLASS\_CAM = 10**

The XFS camera service defines the functions provided by banking camera systems.

Banking camera systems usually consist of a recorder, a video mixer and one or more cameras. If there are several cameras, each camera focuses a special place within the self-service area (e.g. the room, the customer or

the cash tray). If there is only one camera that can switch to take photos from different positions, it is presented by the service providers as a set of cameras, one for each of its possible positions. By using the video mixer it can be decided, which of the cameras should take the next photo. Furthermore data can be given to be inserted in the photo (e.g. date, time or bankcode).

### **3. Planned Enhancements and Extensions**

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This section describes functions and facilities that are not fully defined in this version of the Extensions for Financial Services specification; modifications and complete definitions will be supplied in later versions. Vendor and user input is encouraged on these functions and facilities, as well as suggestions as to additional functionality.

Currently only specifications for access to the key classes of financial peripherals are included, as listed above. These existing specifications will be extended and enhanced based on vendor and user experience with them. The following classes of devices or services, and others that customers and vendors request, may be evaluated for inclusion in future versions of this specification:

- Cash acceptance devices (bills and coins)
- Card embossing devices
- Hologram readers
- Point-to-point audio/video-conferencing
- Biometrics authentication hardware, e.g. signature capture devices, fingerprint capture devices, ...
- Dispensers for various items, including traveller checks, chequebooks, ...

Also to be considered for future versions of XFS are other types of services, such as financial transaction messaging and management, as well as related services for financial networks such as network and systems management and security.

Please submit comments and questions on the Extensions for Financial Services to:

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Updated versions of this specification will be released as CWA.