

Archiving with windream and in the Cloud

A lecture in two parts

Bochum, November 20, 2019



Agenda

01

Digital Archiving

From suspension files to software archives

02

Cloud Archiving

03

Q and A

04



01

Digital Archiving

From suspension files to software archives

Electronic archiving is the database-supported, secure and unchangeable storage of electronic information objects that can be reproduced at any time.



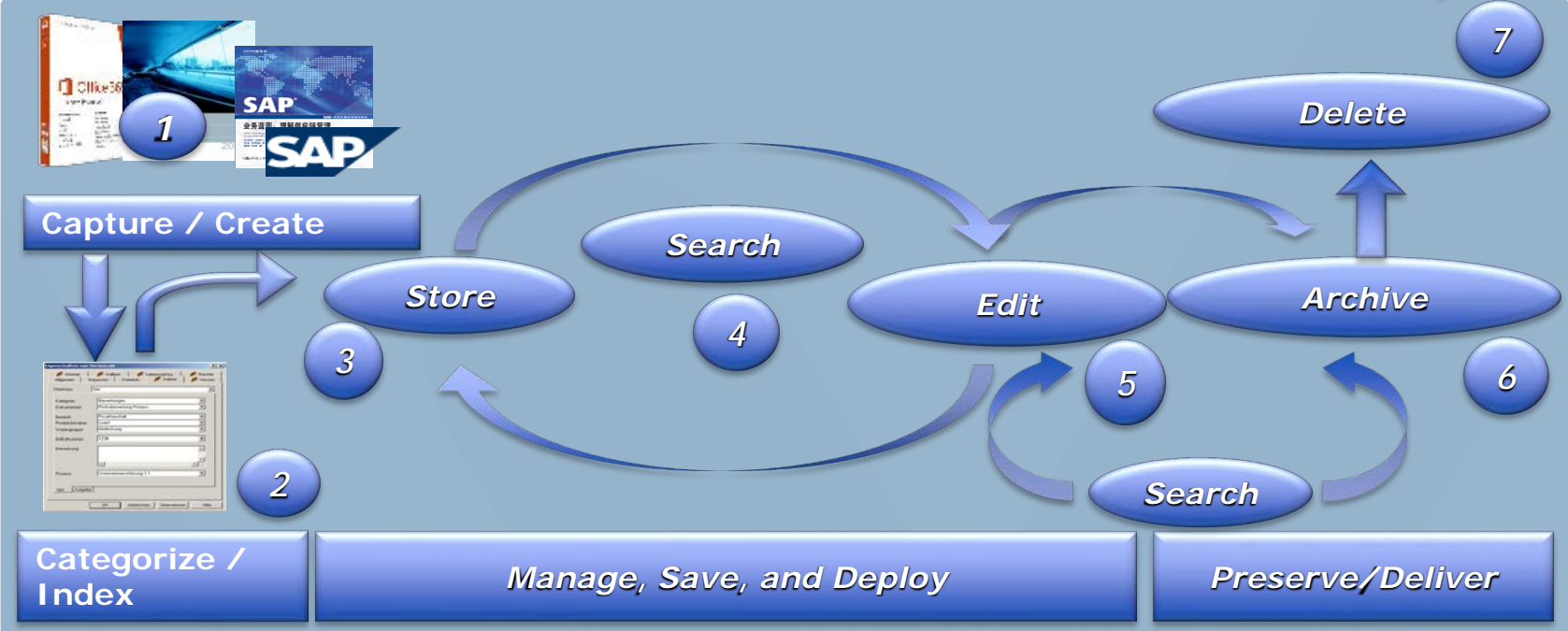
A blue-tinted photograph of a spotted frog on coral. The frog is light-colored with dark spots and is perched on a piece of coral. The background is a blurred coral reef.

What is an ECM/Archive?

- ✓ An application that enables the unchangeable storage of electronic documents
- ✓ Additional attributes (invoice with invoice number, ...)
- ✓ Document history, rights management
- ✓ Search for attributes and content
- ✓ Support of audit-proof hardware - e.g. windream archive, special storage solutions, cloud storage etc.

The Document Lifecycle

document lifecycle



Storage process in windream

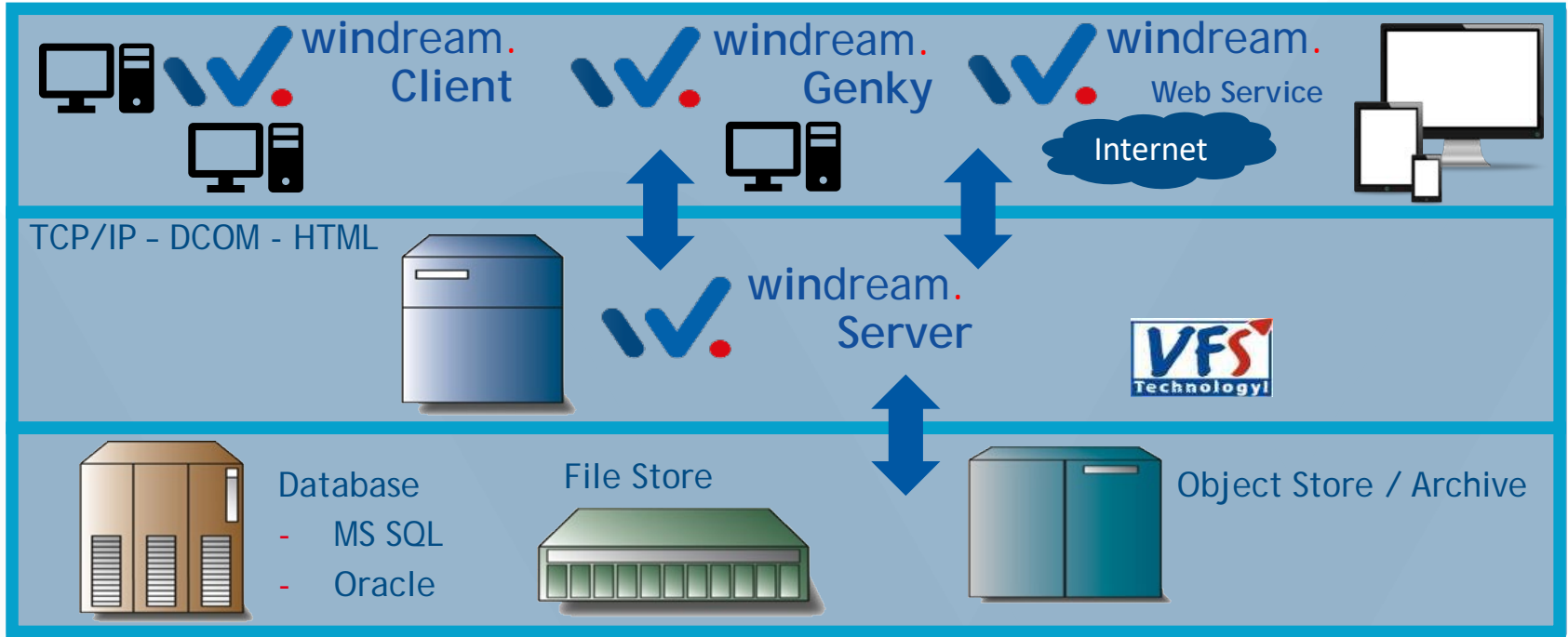
A document in windream basically consists of two parts



- ✓ The **binary** part of the document (the file) is stored in the file storage or archived in the object memory
- ✓ The **linked metadata** of the document is stored in the database

Architecture: Three-tiered model

Datenhaltung Anwendung Darstellung

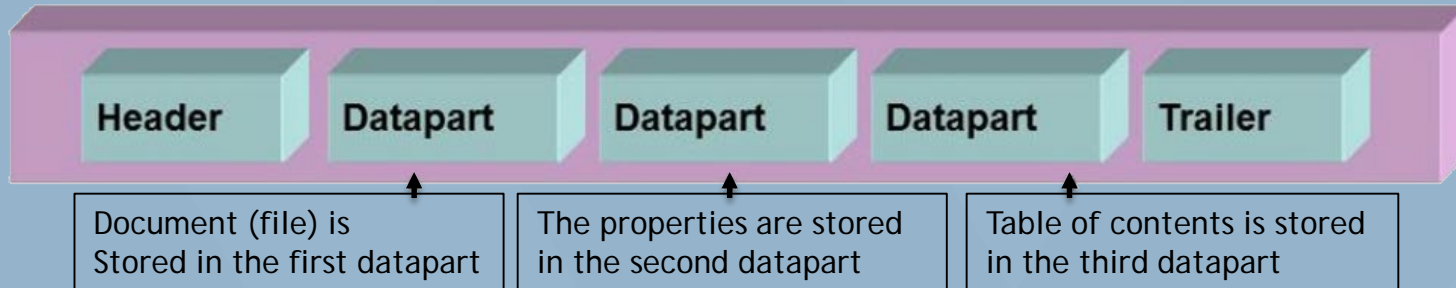


What is a blob?

Blob (Binary Large Object)

- ✓ Structure for storing a binary object (document) in the archive
- ✓ Consists of at least:
 - ✓ Header for internal administration information
 - ✓ 1-n Dataparts for document data (file), properties and table of contents
 - ✓ Trailer for internal administration information

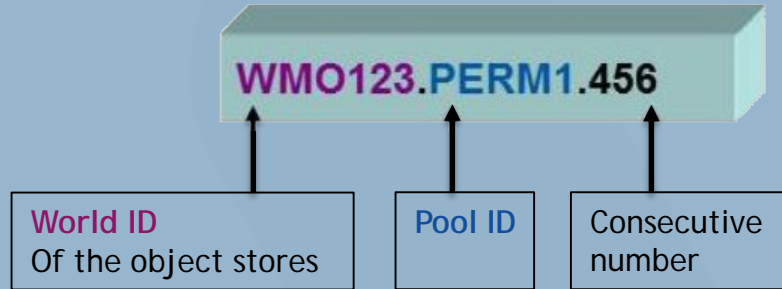
Structure of a blob, example of a windream document:



What is the Blob ID?

Blob ID

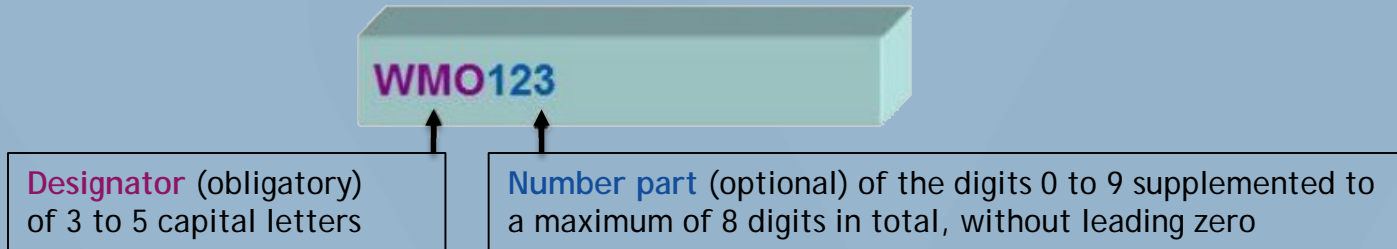
- ✓ Unique identifier of a blob (e.g. **WMO123**.**PERM1**.456)
- ✓ Assigned by the archive service
- ✓ Consists of:
 - <World ID> and <Pool ID> and a consecutive number



What is the World ID?

World ID

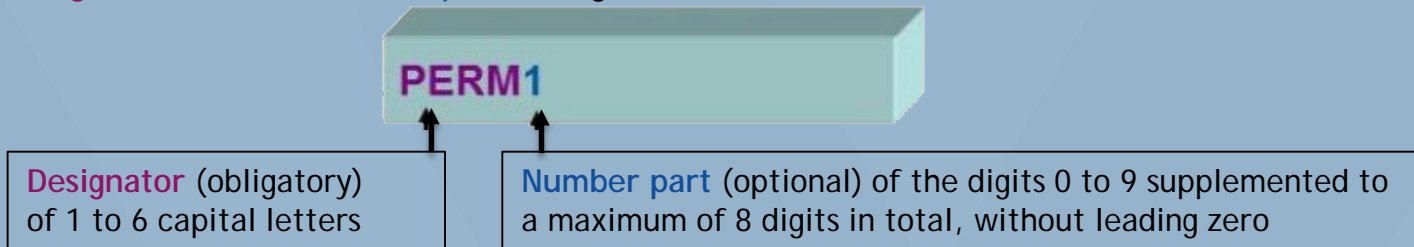
- ✓ Worldwide unique identifier of the object store (e.g. WMO123)
- ✓ Used to generate the Blob IDs, uses the names of the blob containers and the blob registers
- ✓ Consists of:
 - <Designator> and <number part> (e.g. AAA12345, ABCDE1 or ABC)



What is the Pool ID?

Pool ID

- ✓ Unique designator of an object storage pool(e.g. PERM1)
- ✓ Determined by the system administrator
- ✓ Used to generate the Blob IDs, uses the names of the blob containers and the blob registers
- ✓ Consists of:
 - <Designator> and <Number part> (e.g. A1234500, ABCDEF12 or AB)

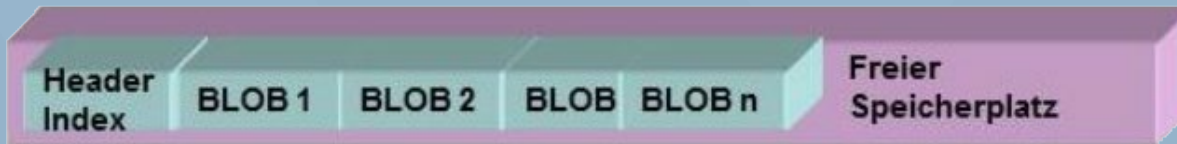
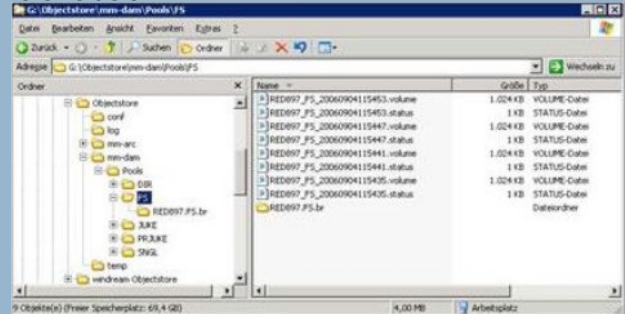


What is a filestream pool?

Filestream-Pool

- ✓ Blobs are stored one after the other in so-called blob containers
- ✓ Individual binary files in these pools can no longer be deleted
- ✓ The size of the pool depends on the number of
 - ✓ of the available blob containers
(the number of Blob container per pool is arbitrary)
- ✓ Use as storage

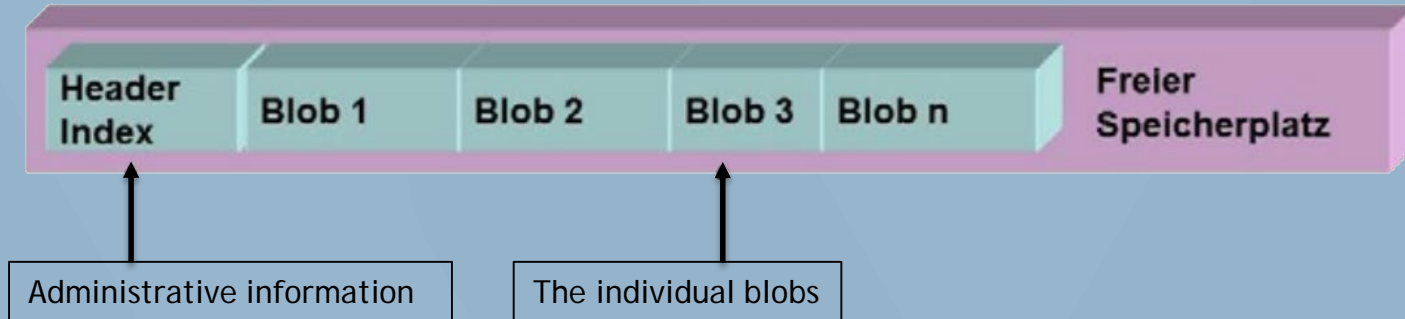
Example: WMO123_PERM1_2019010341021.volume



What is a BLOB container?

Blob-Container (Volume)

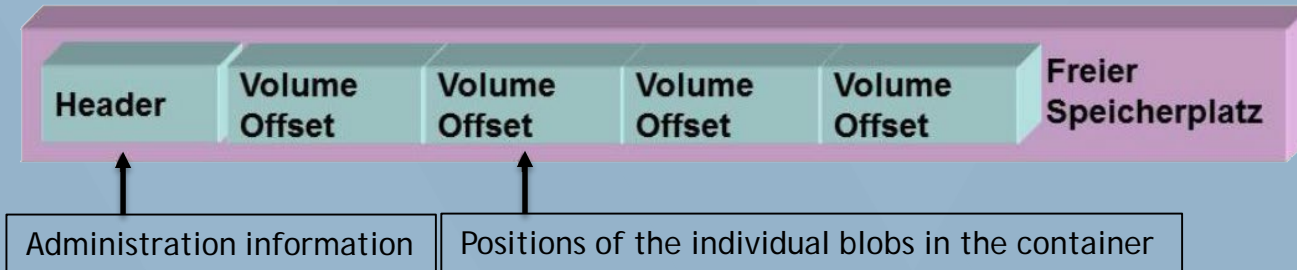
- ✓ Are in a file (e.g. WMO123_PERM1_2019010341021.volume)
- ✓ Blobs are written to the blob container one after the other



What is the blob register?

Blob-Register

- ✓ One or several files per pool (e.g. WMO123.PERM1.br)
- ✓ Contains the position of the blobs in a pool
- ✓ Non hierarchical:
for administering up to 32 million blobs per pool
- ✓ Hierarchical:
for administering up to 2^{40} blobs per pool



The advantages



Independent of hardware

Pools can be on any medium



Compliance

Comply with legal requirements



Paperless

Meet compliance requirements and accelerate data delivery

Legal opinion Compliance

The image shows the cover of a legal opinion report. The background is white with a large, faint, light blue graphic of a stylized 'S' or 'Z' shape. At the top right is the windream logo, which consists of a stylized eye with a red and blue iris and the word 'windream.' in blue. Below the logo, the title 'Rechtsgutachten windream Archivsystem' is written in blue. In the center, the subtitle 'Revisionsicherheit des windream Archivs bei Einsatz veränderbarer und unveränderbarer Medien' is written in blue. Below the subtitle, the text 'Deutschland Österreich' is written in blue. At the bottom left, the authors 'Prof. Dr. Wolfgang Hackenberg' and 'Dr. Ivo Geis' are listed in blue. At the bottom right, the contact information for windream GmbH is provided in blue. At the very bottom, there is a dark blue horizontal bar with the text 'Managing Documents' on the left and 'www.windream.com' on the right.

windream.

**Rechtsgutachten
windream Archivsystem**

**Revisionsicherheit
des windream Archivs
bei Einsatz veränderbarer
und unveränderbarer Medien**

**Deutschland
Österreich**

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**Managing
Documents**

www.windream.com



02

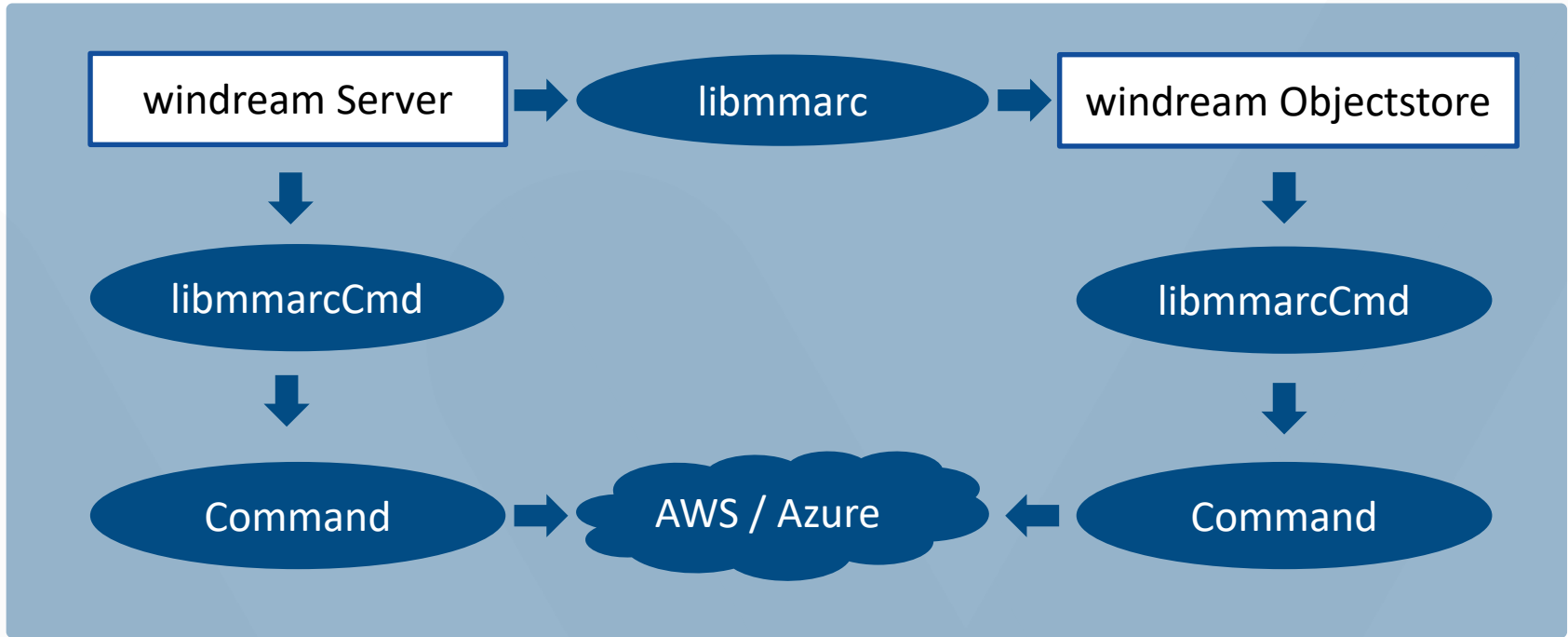
Cloud Archiving



Why Archiving in Cloud Storage?

- ✓ Frequent demand
- ✓ Cost-effective
- ✓ Secure storage guaranteed by Microsoft/AWS
- ✓ Possibility of georedundancy
- ✓ Ideal for Cloud Deployment
- ✓ Many S3 compatible storage systems available (e.g. ECS)

Cloud - Store



Cloud storage without Objectstore

Properties of windream-aws-test1 .

General Rights

windream Storage Edit

Name: windream-aws-test1

Comment

HSM storage Duplicate check

View offline attribute Global Duplicate check

Write directly to disk Archive on error

File Storage ./

Path:

Folder Depth: 0 Browse...

Read Only

Objectstore c:\temp\s3aws.xml:6011:windream-aws-test1

Archive compressed

Archive provider lib: libmarmacmd.dll

Server: c:\temp\s3aws.xml Port: 6011 Pool: windream-aws-test1

Update

This windream Storage is already in use !

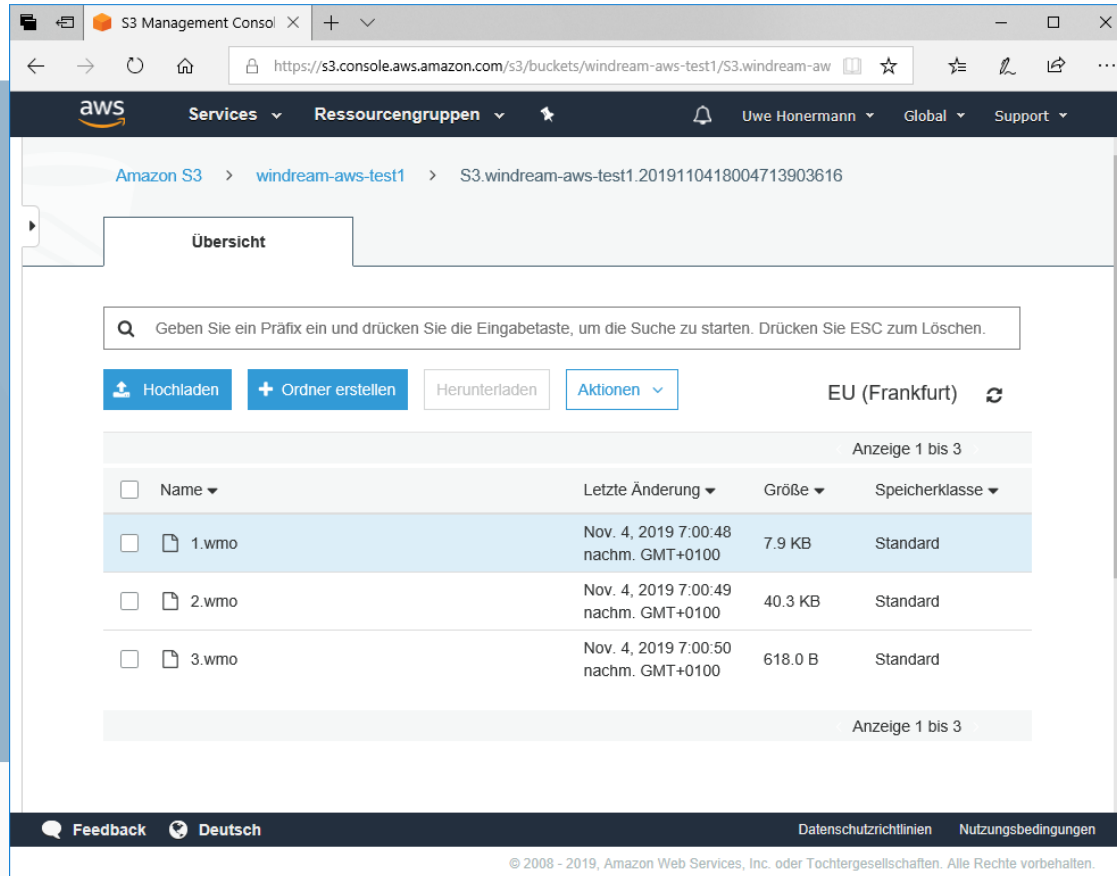
OK Cancel Apply Help

s3aws.xml - Notepad

```
File Edit Format View Help
<libmarmacmd>
  <Mode>
    standard
  </Mode>
  <Command>
    C:\Program Files\windream GmbH\windream\WMArcCmdS3.exe
  </Command>
  <pools>
    <pool>windream-aws-test1</pool>
  </pools>
  <worldid>
    S3
  </worldid>
  <WMArcCmdS3>
    <EndPoint url="https://s3.eu-central-1.amazonaws.com" />
    <Credentials accessKey="XXXX" secretKey="YYYY" />
    <Parameters timeout="20" readWriteTimeout="100" MaxErrorRetry="2" ForcePath:
  </WMArcCmdS3>
</libmarmacmd>
```

Windows (CRLF) Ln 17, Col 48 100%

Structure of the data (here Amazon S3)



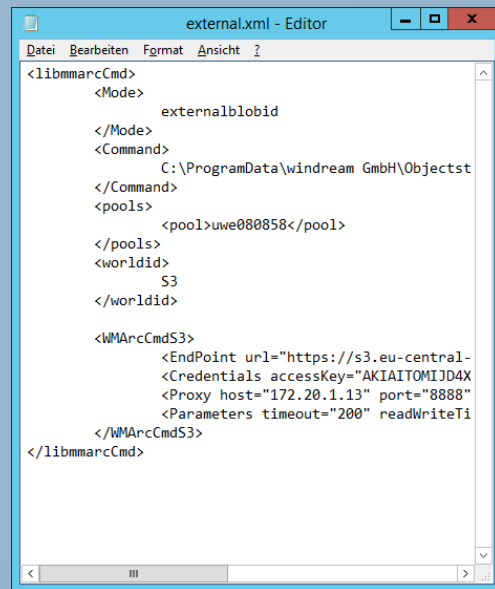
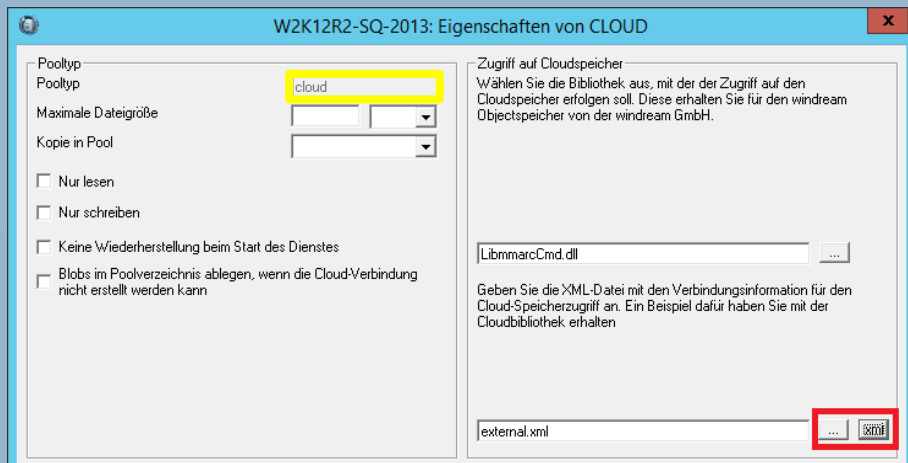
The screenshot displays the Amazon S3 Management Console interface. The breadcrumb navigation shows the path: Amazon S3 > windream-aws-test1 > S3.windream-aws-test1.2019110418004713903616. The main content area is titled "Übersicht" (Overview) and features a search bar with the placeholder text "Geben Sie ein Präfix ein und drücken Sie die Eingabetaste, um die Suche zu starten. Drücken Sie ESC zum Löschen." Below the search bar are action buttons: "Hochladen" (Upload), "Ordner erstellen" (Create Folder), "Herunterladen" (Download), and "Aktionen" (Actions). The region is set to "EU (Frankfurt)". A table lists three files:

<input type="checkbox"/>	Name ▾	Letzte Änderung ▾	Größe ▾	Speicherklasse ▾
<input type="checkbox"/>	1.wmo	Nov. 4, 2019 7:00:48 nachm. GMT+0100	7.9 KB	Standard
<input type="checkbox"/>	2.wmo	Nov. 4, 2019 7:00:49 nachm. GMT+0100	40.3 KB	Standard
<input type="checkbox"/>	3.wmo	Nov. 4, 2019 7:00:50 nachm. GMT+0100	618.0 B	Standard

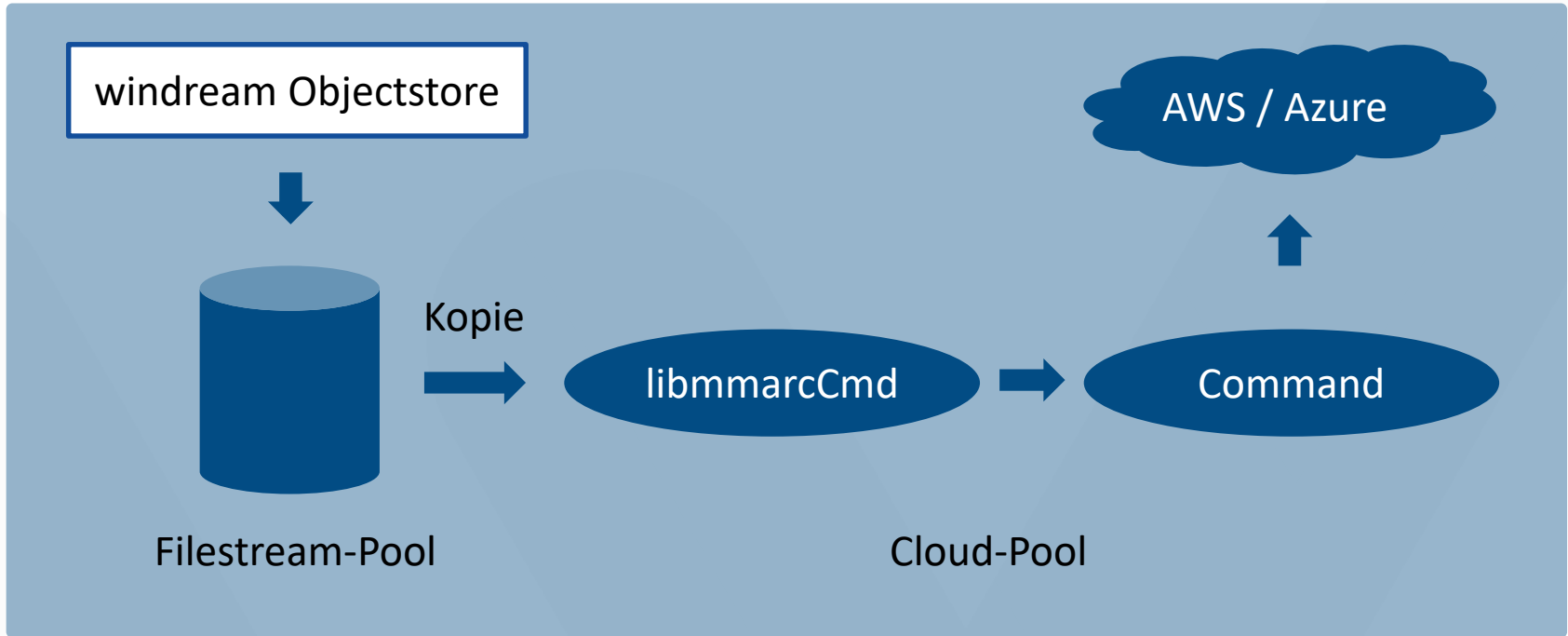
At the bottom of the console, there are links for "Feedback", "Deutsch", "Datenschutzrichtlinien", and "Nutzungsbedingungen". The footer text reads: "© 2008 - 2019, Amazon Web Services, Inc. oder Tochtergesellschaften. Alle Rechte vorbehalten."



Cloud pool via Objectstore



On-Premises Filestream-Pool + Cloud-Copy-Pool



Structure of the data (here Amazon S3)

The screenshot displays the Amazon S3 Management Console interface. The breadcrumb navigation shows the path: Amazon S3 > windream-aws-test1 > AIS105.AWS1.1. The main content area is titled "Übersicht" (Overview). Below the title is a search bar with the placeholder text: "Geben Sie ein Präfix ein und drücken Sie die Eingabetaste, um die Suche zu starten. Drücken Sie ESC zum Löschen." Below the search bar are several action buttons: "Hochladen" (Upload), "+ Ordner erstellen" (Create Folder), "Herunterladen" (Download), and "Aktionen" (Actions). To the right of these buttons, the region "EU (Frankfurt)" is displayed with a refresh icon. Below the buttons is a table header with columns: "Name", "Letzte Änderung" (Last Modified), "Größe" (Size), and "Speicherklasse" (Storage Class). The table contains one row of data for the object "1.wmo".

<input type="checkbox"/>	Name ▾	Letzte Änderung ▾	Größe ▾	Speicherklasse ▾
<input type="checkbox"/>	1.wmo	Nov. 4, 2019 7:11:20 nachm. GMT+0100	47.3 KB	Standard

At the bottom of the console, there is a footer with "Feedback" and "Deutsch" links, and a copyright notice: "© 2008 - 2019, Amazon Web Services, Inc. oder Tochtergesellschaften. Alle Rechte vorbehalten."



A blue-tinted photograph of a spotted frog on coral. The frog is light-colored with dark spots and is perched on a piece of coral. The background is a blurred coral reef.

Control of libmmarcCmd via XML file

General part

- ✓ Mode: externalBlobId or standard
- ✓ Command: Call external application with parameter
- ✓ ProgID: Use COM object In-Process/Out-of-Process
- ✓ Pools: List of pools (simulated)
- ✓ WorldId: simulated WorldId

A blue-tinted photograph of a spotted frog, likely a tree frog, perched on coral. The frog has a light-colored body with numerous dark spots. The background is a dense, textured coral reef.

Control of libmmarcCmd via XML file

Specific part

- ✓ Completely dependent on the Command/ProgID used
- ✓ Contains all necessary parameters for the access
- ✓ E.g.: EndPoint, Credentials, Timeouts, etc.
- ✓ XML file is passed as parameter
- ✓ Thus arbitrarily expandable



Currently available connections

- ✓ Azure BLOB Storage Command
- ✓ Amazon S3 Command
- ✓ Amazon S3 COM-Modul
 - Especially for on-premises or pure AWS solution



Noch Fragen?