

FDO Data Access Technology at a Glance

Work seamlessly with your geospatial data whatever the format¹

The Challenge

The growing need for openness and interoperability between traditional geographic information system (GIS) applications and mainstream operational information technology (IT) systems, as well as integration with public or private web mapping services, calls for seamless data access in native formats and platforms. Without it, users face the inefficiency and inaccuracies of having to translate various data sources into the format supported by their GIS application to provide a collective “single view” of the data.

In recent years this problem has become even more challenging. Today’s GIS users have access to geospatial data in a variety of relational databases and file formats and via an increasing number of web-based map services.

Introducing FDO Data Access Technology

The Autodesk Feature Data Objects (FDO) Data Access Technology provides the solution. Incorporated into Autodesk® Geospatial products, and also available as a stand-alone, open source technology for developers, FDO helps increase productivity and save time by enabling users to work seamlessly on a variety of spatial and nonspatial databases and file formats natively, without the need for translation and risk of data loss.

Benefits

- **Consistent Access to Rich Geospatial Feature Data:** Frees users from having to understand differences in underlying data stores. FDO uses a logical, feature-based model that hides the physical details of the data storage.
- **Platform and Technology Neutrality:** Supports Microsoft® Windows® and Linux® operating systems.

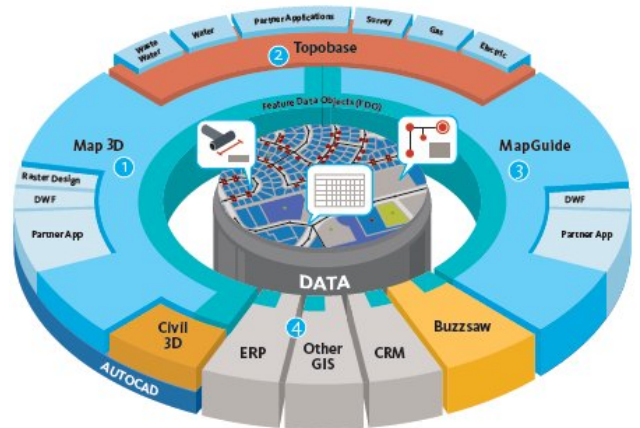
¹ See table of supported data sources.

FDO DATA ACCESS TECHNOLOGY AT A GLANCE

- **Ability to Embrace and Extend OpenGIS Standards:** FDO conforms wherever possible to the evolving Open Geospatial Consortium (OGC) standards, specifically the Simple Features and WMS/WFS specifications.
- **Ability to Focus on Solving the Business Problem:** Frees resources from developing proprietary data store access functions to developing specific business functionality.
- **Simplicity:** Easy to install, use, maintain, and deploy.
- **Extensibility:** Through Autodesk's Open Source initiative, developers can extend FDO Data Access Technology with new FDO Providers for data stores not currently supported.

Technology

- *FDO Data Access Technology* is used for defining, querying, and manipulating geospatial information (see table of Functional Services on next page). FDO Data Access Technology includes the API (application programming interface) and the FDO Providers for several data sources. It enables Autodesk and third-party developers to produce applications that are data store agnostic and that facilitate information exchange.
- *FDO Provider* is the technology for connecting to and working with spatial and attribute data in a specific data source. For example, the FDO Provider for Oracle® or Microsoft® SQL Server lets applications work directly with geometry and attributes stored in a relational database management system (RDBMS). All of these FDO Providers access data stored in data tables using standard database concepts. Where spatial extensions are not available in the native data source, such as Microsoft SQL Server, the FDO Data Access Technology provides a full spatial implementation.
- *FDO Feature Source* is a collection of related feature classes contained in a single data-storage location. In Autodesk products, an FDO Feature Source is any source of feature data that has been accessed using an FDO Provider. An FDO Feature Source can be a file, such as a SHP or SDF file; a relational database, such as Microsoft SQL Server, Oracle, or MySQL; or middleware, such as ArcSDE® software. These data sources may contain a single feature type, such as a parcel or street centerline, or a complex data model with multiple features and attribute tables.



FDO Functional Services	Schema creation and management	Persistent locking and optimistic concurrency
	Query using complex filters and expressions vector and raster data	Long transaction versioning
	Edit data: create, delete, update attributes and geometry	SQL pass-through
	Transaction control for multiuser concurrency	API to advertise specific capabilities of individual providers

Finding FDO Data Access Technology

Autodesk Products

FDO Data Access Technology enables Autodesk’s geospatial applications, such as Autodesk Map® 3D 2007, Autodesk MapGuide® Enterprise, and Autodesk® Topobase™ software, to seamlessly share spatial and nonspatial information with minimal effort. For more information, including documentation and product details, see www.autodesk.com/geospatial.

Open Source

To help make it easier for developers to extend capabilities of the FDO Data Access Technology, Autodesk has released FDO Data Access Technology as an open source project under the Open Source Geospatial Foundation™ (OSGeo™). This initiative enables developers all over the world to tap into powerful web mapping and geospatial data access technology and provides the following benefits:

- Faster innovation of web mapping solutions
- More frequent software releases
- Lower cost of entry and ownership

The open source version of FDO Data Access Technology can be downloaded from <https://fdo.osgeo.org>.

Independent Software Vendors and Solution Providers

By using FDO Data Access Technology, Autodesk and third-party developers can broaden their existing markets by selling client software that creates, captures, and maintains data in a variety of formats without altering the client application. In addition, as more FDO Providers become available for competitive data formats, Autodesk and its partners will be able to overcome the existing barriers to entry associated with switching costs and address markets that cannot currently be served.

Supported Data Sources

The following table lists data sources supported as of August 2006.

Data Provider	Capabilities	Access	Autodesk	OSGeo
ESRI® ArcSDE®	Access via ArcSDE to an underlying Oracle or SQL Server database. Supports describing schema, and inserting, selecting, updating, and deleting feature data in existing schemas; does not support creating or deleting schemas.	Read / Write	Yes	Yes
MySQL	Supports spatial data types and spatial query operations. API can gather information, transmit exceptions, list data stores, and create connection objects. MySQL architecture supports various storage engines, characteristics, and capabilities.	Read / Write	Yes	Yes
Autodesk® SDF	Autodesk's geospatial file format, SDF supports multiple features and attributes, provides high performance for large data sets, and is interoperable with other Autodesk products. Supports spatial indexing and is a valid alternative to database storage.	Read / Write	Yes	Yes
ESRI® SHP	ESRI SHP-based data store consists of separate shape files for geometry, index, and attributes. Each SHP file and its associated DBF file is treated as a feature class with a single geometry property. Does not support locking.	Read / Write	Yes	Yes
ODBC	Supports XYZ feature objects and can define feature classes for any relational database table with X, Y, and, optionally, Z columns; does not support creating or deleting schema. Object locations are stored in separate properties in the object definition.	Read / Write	Yes	Yes
Web Mapping Services (OGC WFS)	Supports a client/server environment and retrieves geospatial data encoded in GML from one or more Web Feature Services sites. Client/server communication is encoded in XML with the exception of feature geometries, which are encoded in GML. Note that there is no public API documentation for this provider; all WFS functionality is accessible through the base ProductName API.	Read Only	Yes	Yes
Web Feature Services (OGC WMS)	Web Map Service (WMS) produces maps of spatially referenced data dynamically from geographic information, which are generally rendered in PNG, GIF, or JPEG format, or as vector-based Scalable Vector Graphics (SVG) or Web Computer Graphics Metafile (WebCGM) formats.	Read Only	Yes	Yes

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Data Provider	Capabilities	Access	Autodesk	OSGeo
Oracle® Spatial	Supports spatial indexing, long transactions, and persistent locking. API can gather provider information, transmit client services exceptions, list data stores, and create connection objects.	Read / Write	Yes	No
Microsoft® SQL Server	API supports schema read/write access and geospatial and nongeospatial data read/write access.	Read / Write	Yes	No
Raster Files	Supports various image and GIS data formats (for example, JPEG, PNG, MrSID®, and others). Supports georeferenced file-based raster images and file-based grid coverages.	Read Only	Yes	GD AL only
OGR	A generic vector data provider supporting many GIS data sources.	Read Only	No	Yes

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