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What is a sandbox?

A *sandbox* is a working copy of a project. A *project* is a collection of graphs, plans, and related files that have a close association with one another. A project is stored in a single directory tree in the EME Technical Repository. Projects are usually organized into hierarchies — projects can include other projects.

Projects use a standard set of subdirectories and parameters that are provided by the Ab Initio Environment. The Ab Initio Environment is the Co>Operating System's standard development environment, a hierarchical project and parameter structure that supports the collaborative development of Ab Initio applications.

Projects are checked out as sandboxes — that is, a sandbox is a copy of a project that you can modify and work on. The relationship between sandboxes and projects is as follows:

- A project is created by first creating a sandbox and then checking it in.
- The checked-in project is under source control in the technical repository. Other developers can check out the project and work with its files.
- Developers work with files by locking them in the sandbox. Locking a file ensures exclusive access. When a developer checks in a file, the lock is released.
- The original sandbox remains as an instance of the project from which it was checked out, like any other project sandbox.

Because sandboxes represent checked-out copies of projects, the terms "sandbox" and "project" are often used interchangeably.

NOTE: It is possible to use a sandbox without checking it in to a technical repository. In this case, the sandbox is simply a convenient way to organize a set of graphs, plans, and other artifacts without the benefits of source control.

The following sections provide more information about sandboxes:

- Sandbox directories
- Data files, data directories, and databases
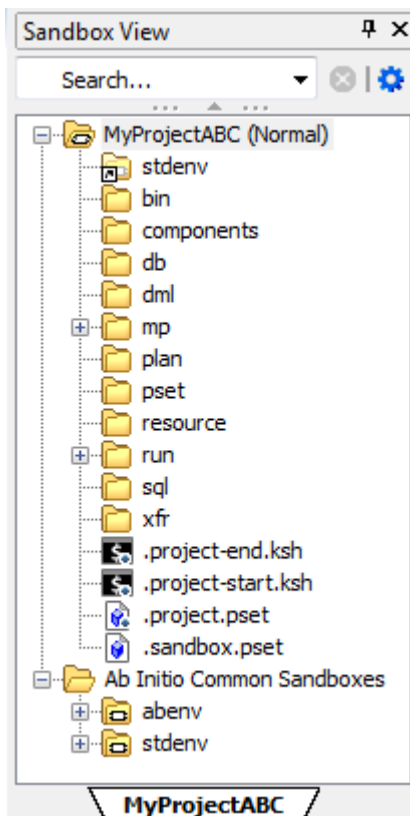- Common project sandboxes

Sandbox directories

The sandbox directory (folder) contains a standard set of subdirectories to contain the project *artifacts* — the project's graphs, plans, and related files. Project artifacts are sometimes called project *metadata*. Sandboxes should contain only metadata; the actual data sources and targets for the project are stored elsewhere.

The sandbox directory can have any name, but the subdirectories should not be renamed. However, you can create additional subdirectories as needed.

A set of parameters defines the sandbox's properties. Among other things, these parameters specify the names and locations of the standard sandbox subdirectories. For example, in a private sandbox there is a parameter called AI_DML, which is used to specify the location of record format files in the **dml** subdirectory. Similarly, the AI_XFR parameter specifies the location of transform files in the **xfr** subdirectory. In a common sandbox, the parameters are the same, except they use a unique prefix related to the project name rather than "AI_".

The following figure shows the GDE Sandbox View of a sandbox corresponding to a private project named **MyProjectABC**:

The standard set of subdirectories in a new sandbox includes the following:

- **bin** — Contains executable files

- **components** — Contains reusable (linked) subgraphs and custom components

- **db** — Contains database configuration (**.dbc**) files and other database-related files

- **dml** — Contains record format (**.dml**) files

- **mp** — Contains graph (**.mp**) files

- **plan** — Contains Conduct>It plan files

- **pset** — Contains input pset files

- **resource** — Contains Conduct>It resource pools

- **run** — Contains graphs deployed as scripts (**.ksh** files)

- **sql** — Contains SQL files

- **util** — (public project sandboxes only) Contains shared utility executables

- **xfr** — Contains transform files

Notice that **MyProjectABC** contains a folder called **Ab Initio Common Sandboxes**. This folder contains the **abenv** and **stdenv** sandboxes. Both of these are part of the Ab Initio Environment and are included in every project sandbox that uses the Ab Initio Environment. If the private sandbox contained any other common sandboxes, they would be grouped under a folder called **Common Sandboxes**.

Data files, data directories, and databases

Sandboxes are for organizing and storing project artifacts — metadata — but not for storing the data itself.

The Ab Initio Environment provides for a data area located *outside* the sandbox. Each project has a dedicated space for its serial files and multifiles, typically referred to as the project's *data directories*. (For more information, see "Project data directories reference" in the Co>Operating System *Administrator's Guide and Reference*.)

Typically, you use the project parameters $AI_SERIAL, $AI_MFS, or $AI_HDFS in your graph to refer to any data files used by your applications.

If your graphs interact with a database — using components such as INPUT TABLE, OUTPUT TABLE, and so on — you use database configuration files to store the connection information for the database. Database configuration (**.dbc**) files are stored in the **db** subdirectory of your sandbox.

Common project sandboxes

A *common* project is a project that is included in another project. When a project is included (common), all of its parameters are available to the including project, which means they can share record format files, transforms, reusable datasets, and so on. (The including project is sometimes referred to as a *client project*.) A common project can be included in multiple client projects, allowing all the clients to share the artifacts included in the common project. In this way, projects become hierarchies of reusable code artifacts.

Only projects that are created as *public projects* should become common projects. The parameters of a public (common) project follow certain conventions to ensure that they will not collide with parameters from any other project.

Common projects are the basic organizational building blocks of the Ab Initio Environment. For more information, see "Organizing applications".

Related topics

- Organizing applications
- Source control
- Sandbox View
- "Sandboxes" and "Sandboxes, projects, and metadata" in the *Graph Development Basics* training module

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