Chapter 2.
Functions

Topic: Ignore

The function interface is a set of Application Procedural Interface (API) and Direct Interface (DI) functions that an application can invoke to interact with ACIS. API functions, which combine modeler functionality with application support features such as argument error checking and roll back, are the main interface between applications and ACIS. The DI functions provide access to modeler functionality, but do not provide the additional application support features, and, unlike APIs, are not guaranteed to remain consistent from release to release. Refer to the *3D ACIS Online Help User's Guide* for a description of the fields in the reference template.

api_check_face_clearance

Function: Object Relationships

Action: Evaluates the clearance between two faces.

Prototype:

```
outcome api_check_face_clearance (
    FACE* face1,             // first face to check
                             // clearance between
    FACE* face2,             // second face to check
                             // clearance between
    double min_clearance,    // minimum allowable
                             // clearance; see below
    double facet_resolution,// maximum departure of
                             // facet from face. 0
                             // causes default (>0) to
                             // be used
    SPAposition& p1,         // returned minimum
                             // distance first point
    SPAposition& p2,         // returned minimum
                             // distance second point
    double& min_dist,        // returned minimum
                             // distance between
                             // bodies
    AcisOptions* ao = NULL   // acis options
    );
```

Includes:

```
#include ”kernel/acis.hxx”
#include ”clear/api/clearapi.hxx”
#include ”kernel/kernapi/api/api.hxx”
#include ”kernel/kerndata/top/face.hxx”
#include ”baseutil/vector/position.hxx”
#include ”kernel/kernapi/api/acis_options.hxx”
```

Description: There are two modes of operation:

One mode is for min_clearance is set to 0. The minimum distance between the two bodies is found.

Another mode is for min_clearance is > 0. If a distance is found that is less than the min_clearance, the API returns early with two points at that distance that are not necessarily the minimum.

Facet resolution is usually the internal (nonzero) default that is obtained by setting that parameter to 0. Optional control of this value is supplied because it has a large effect on performance (larger tolerance, better performance).

Because faceted representations of the 3D B-spline surface approximations are used, and these facets have an accuracy of SPAresfit, a returned minimum distance less than SPAresfit is equivalent to zero.

Errors: The pointer to a face is NULL or does not point to a FACE.
The clearance or resolution is specified less than 0.

Limitations: None

Library: clear

Filename: clr/clear/api/clearapi.hxx

Effect: Read-only

api_check_solid_clearance

Function: Object Relationships

Action: Evaluates the clearance between two solid bodies.

Prototype:

```
outcome api_check_solid_clearance (
    BODY* user_body1,       // first body to check
                            // clearance between
    BODY* user_body2,       // second body to check
                            // clearance between
    double min_clearance,   // minimum allowable
                            // clearance
    double facet_resolution,// maximum departure of
                            // facet from face. 0
                            // causes default (>0) to
                            // be used
    SPAposition& p1,        // returned minimum
                            // distance first point
    SPAposition& p2,        // returned minimum
                            // distance second point
    double& min_dist,       // returned minimum
                            // distance between
                            // bodies
    AcisOptions* ao = NULL  // acis options
    );
```

Includes:

```
#include ”kernel/acis.hxx”
#include ”clear/api/clearapi.hxx”
#include ”kernel/kernapi/api/api.hxx”
#include ”kernel/kerndata/top/body.hxx”
#include ”baseutil/vector/position.hxx”
#include ”kernel/kernapi/api/acis_options.hxx”
```

Description: There are two modes of operation:

One mode is for min_clearance is set to 0. The minimum distance between the two bodies is found.

Another mode is for min_clearance is > 0. If a distance is found that is less than the min_clearance, the API returns early with two points at that distance that are not necessarily the minimum.

Facet resolution is usually the internal (nonzero) default that is obtained by setting that parameter to 0. Optional control of this value is supplied because it has a large effect on performance (larger tolerance, better performance).

Because faceted representations of the 3D B-spline surface approximations are used, and these facets have an accuracy of SPAresfit, a returned minimum distance less than SPAresfit is equivalent to zero.

Errors: The pointer to a body is NULL or does not point to a BODY.
The clearance or resolution specified is less than 0.

Limitations: None

Library: clear

Filename: clr/clear/api/clearapi.hxx

Effect: Read-only

api_initialize_clearance

Function: Modeler Control, Object Relationships

Action: Initializes the clearance library.

Prototype:

```
outcome api_initialize_clearance ();
```

Includes:

```
#include ”kernel/acis.hxx”
#include ”clear/api/clearapi.hxx”
#include ”kernel/kernapi/api/api.hxx”
```

Description: Refer to Action.

Errors: None

Limitations: None

Library: clear

Filename: clr/clear/api/clearapi.hxx

Effect: System routine

api_terminate_clearance

Function: Modeler Control, Object Relationships

Action: Terminates the clearance library.

Prototype:

```
outcome api_terminate_clearance ();
```

Includes:

```
#include ”kernel/acis.hxx”
#include ”clear/api/clearapi.hxx”
#include ”kernel/kernapi/api/api.hxx”
```

Description: Refer to Action.

Errors: None

Limitations:	None
Library:	clear
Filename:	clr/clear/api/clearapi.hxx
Effect:	System routine