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Data Model Documentation

Data Model Detail

Data Model

Type: **Package**
Package: SCIP
Detail: *Created on 4/26/2012. Last modified on 4/26/2012.*
Notes:

Data Model

Created By: ARNELM on 4/26/2012
Last Modified: 4/30/2012, *Version:*1.0

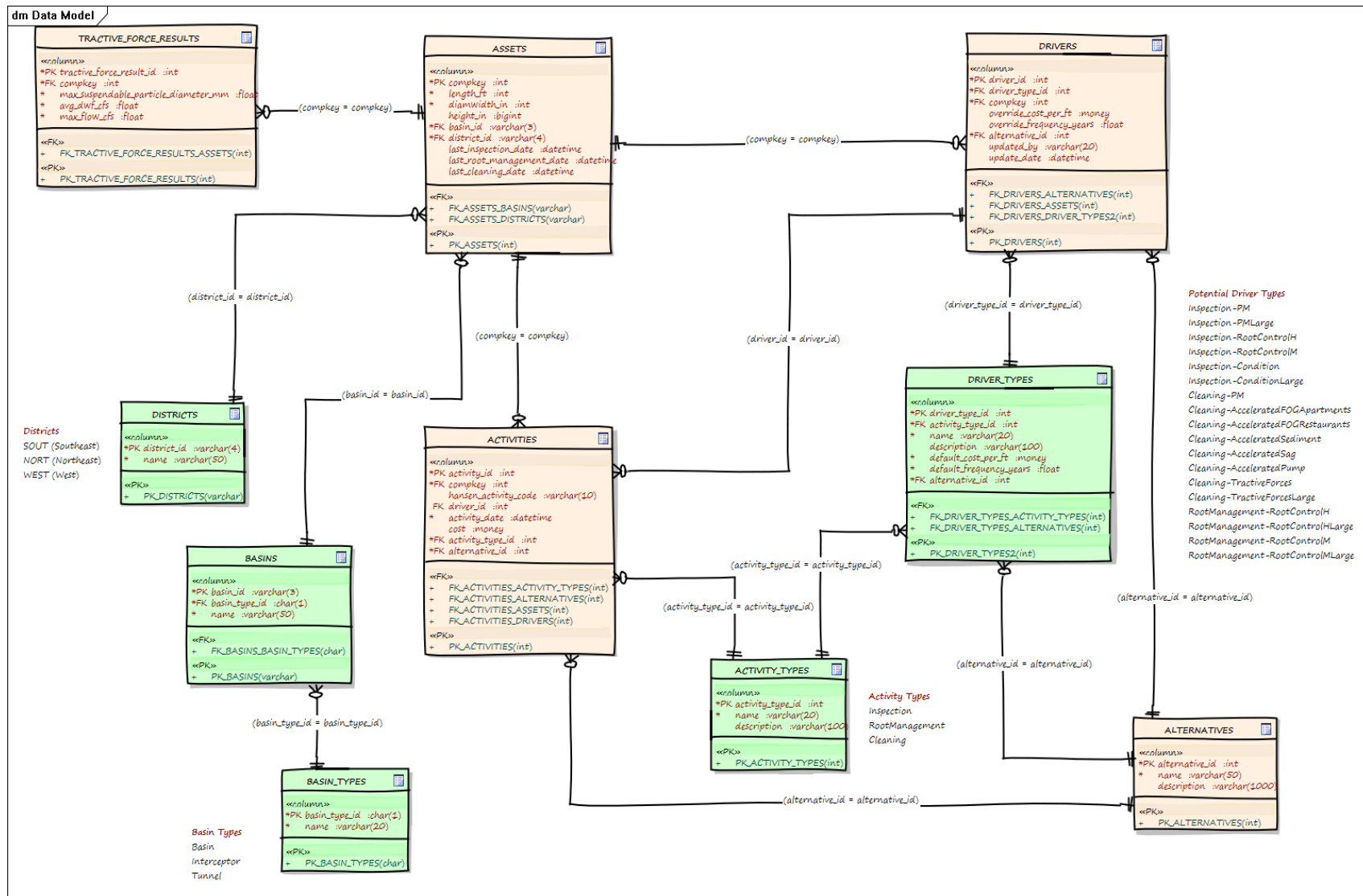


Figure: 1

ACTIVITIES

Database: SQL Server 2000, *Package:* Data Model

Detail: Created on 4/26/2012. Last modified on 4/30/2012.

Notes: Each assets is assigned a set of drivers for an alternative. A driver in turn generates recurring activities for the asset.

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	activity_id	int	True	False					Primary key
False	compkey	int	True	False					Compkey of asset undergoing activity
False	hansen_activity_code	varchar	False	False	10				Hansen activity code
False	driver_id	int	False	False					ID of driver generating activity
False	activity_date	datetime	True	False					Date of activity
False	cost	money	False	False					Cost of activity (driver cost per foot multiplied by length of asset)
False	activity_type_id	int	True	False					Type of activity
False	alternative_id	int	True	False					ID of alternative associated with activity

Constraints

Name	Type	Columns	Initial Code	Notes
FK_ACTIVITIES_ACTIVITY_TYPES	«FK»	activity_type_id		
FK_ACTIVITIES_ALTERNATIVES	«FK»	alternative_id		
FK_ACTIVITIES_ASSETS	«FK»	compkey		
FK_ACTIVITIES_DRIVERS	«FK»	driver_id		
PK_ACTIVITIES	«PK»	activity_id		

Relationships

Columns	Association	Notes
(compkey = compkey)	0..* ACTIVITIES.FK_ACTIVITIES_ASSETS 1 ASSETS. PK_ASSETS	
(activity_type_id = activity_type_id)	0..* ACTIVITIES.FK_ACTIVITIES_ACTIVITY_TYPES 1 ACTIVITY_TYPES. PK_ACTIVITY_TYPES	
(driver_id = driver_id)	0..* ACTIVITIES.FK_ACTIVITIES_DRIVERS 1 DRIVERS. PK_DRIVERS	
(alternative_id = alternative_id)	0..* ACTIVITIES.FK_ACTIVITIES_ALTERNATIVES 1 ALTERNATIVES. PK_ALTERNATIVES	

ACTIVITY_TYPES

Database: SQL Server 2000, *Package:* Data Model

Detail: Created on 4/26/2012. Last modified on 4/30/2012.

Notes: A list of the activity types (inspection, cleaning, root management)

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	activity_type_id	int	True	False					Primary key
False	name	varchar	True	False	20				Name of activity
False	description	varchar	False	False	100				Description of activity

Constraints

Name	Type	Columns	Initial Code	Notes
PK_ACTIVITY_TYPES	«PK»	activity_type_id		

Relationships

Columns	Association	Notes
(activity_type_id = activity_type_id)	0..* ACTIVITIES.FK_ACTIVITIES_ACTIVITY_TYPES 1 ACTIVITY_TYPES. PK_ACTIVITY_TYPES	
(activity_type_id = activity_type_id)	0..* DRIVER_TYPES.FK_DRIVER_TYPES_ACTIVITY_TYPES 1 ACTIVITY_TYPES. PK_ACTIVITY_TYPES	

ALTERNATIVES

Database: SQL Server 2000, *Package:* Data Model

Detail: Created on 4/27/2012. Last modified on 4/30/2012.

Notes: The master list of alternatives

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	alternative_id	int	True	False					Primary key
False	name	varchar	True	False	50				Name of alternative
False	description	varchar	False	False	1000				Description of alternative

Constraints

Name	Type	Columns	Initial Code	Notes
PK_ALTERNATIVES	«PK»	alternative_id		

Relationships

Columns	Association	Notes
(alternative_id = alternative_id)	0..* DRIVER_TYPES.FK_DRIVER_TYPES_ALTERNATIVES 1 ALTERNATIVES. PK_ALTERNATIVES	
(alternative_id = alternative_id)	0..* DRIVERS.FK_DRIVERS_ALTERNATIVES 1 ALTERNATIVES. PK_ALTERNATIVES	
(alternative_id = alternative_id)	0..* ACTIVITIES.FK_ACTIVITIES_ALTERNATIVES 1 ALTERNATIVES. PK_ALTERNATIVES	

ASSETS

Database: SQL Server 2000, *Package:* Data Model
Detail: Created on 4/26/2012. Last modified on 4/30/2012.
Notes: List of assets to be used in model

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	compkey	int	True	False					Primary key
False	length_ft	int	True	False					Length of asset in feet
False	diamwidth_in	int	True	False					Diameter/width/maximum horizontal dimension of pipe in inches
False	height_in	bigint	False	False					Height/vertical dimension of pipe in inches
False	basin_id	varchar	True	False	3	0	0		ID of basin asset is associated with
False	district_id	varchar	True	False	4	0	0		ID of district asset belongs to
False	last_inspection_date	datetime	False	False					Date of last inspection (initializer for model)
False	last_root_managem ent_date	datetime	False	False					Date of last root management (initializer for model)
False	last_cleaning_date	datetime	False	False					Date of last cleanin (initializer for model)

Constraints

Name	Type	Columns	Initial Code	Notes
FK_ASSETS_BASINS	«FK»	basin_id		
FK_ASSETS_DISTRICTS	«FK»	district_id		
PK_ASSETS	«PK»	compkey		

Relationships

Columns	Association	Notes
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Columns	Association	Notes
(compkey = compkey)	0..* ACTIVITIES.FK_ACTIVITIES_ASSETS 1 ASSETS. PK_ASSETS	
(compkey = compkey)	0..* DRIVERS.FK_DRIVERS_ASSETS 1 ASSETS. PK_ASSETS	
(basin_id = basin_id)	0..* ASSETS.FK_ASSETS_BASINS 1 BASINS. PK_BASINS	
(district_id = district_id)	0..* ASSETS.FK_ASSETS_DISTRICTS 1 DISTRICTS. PK_DISTRICTS	
(compkey = compkey)	0..* TRACTIVE_FORCE_RESULTS.FK_TRACTIVE_FORCE_RESULTS_ASSETS 1 ASSETS. PK_ASSETS	

BASINS

Database: SQL Server 2000, *Package:* Data Model

Detail: Created on 4/27/2012. Last modified on 4/30/2012.

Notes: List of basins, interceptors, or tunnels assets can be assigned to

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	basin_id	varchar	True	False	3				Primary key
False	basin_type_id	char	True	False	1	0	0		Type of basin
False	name	varchar	True	False	50				Name of basin

Constraints

Name	Type	Columns	Initial Code	Notes
FK_BASINS_BASIN_TYPES	«FK»	basin_type_id		
PK_BASINS	«PK»	basin_id		

Relationships

Columns	Association	Notes
(basin_id = basin_id)	0..* ASSETS.FK_ASSETS_BASINS 1 BASINS. PK_BASINS	
(basin_type_id = basin_type_id)	0..* BASINS.FK_BASINS_BASIN_TYPES 1 BASIN_TYPES. PK_BASIN_TYPES	

BASIN_TYPES

Database: SQL Server 2000, *Package:* Data Model
Detail: Created on 4/27/2012. Last modified on 4/30/2012.
Notes: List of basin types

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	basin_type_id	char	True	False	1				Primary key
False	name	varchar	True	False	20				name of basin type

Constraints

Name	Type	Columns	Initial Code	Notes
PK_BASIN_TYPES	«PK»	basin_type_id		

Relationships

Columns	Association	Notes
(basin_type_id = basin_type_id)	0..* BASINS.FK_BASINS_BASIN_TYPES 1 BASIN_TYPES. PK_BASIN_TYPES	

DISTRICTS

Database: SQL Server 2000, *Package:* Data Model
Detail: Created on 4/27/2012. Last modified on 4/30/2012.
Notes: Lookup table for the districts an asset can be assigned to

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	district_id	varchar	True	False	4				Primary key
False	name	varchar	True	False	50				Name of district

Constraints

Name	Type	Columns	Initial Code	Notes
PK_DISTRICTS	«PK»	district_id		

Relationships

Columns	Association	Notes
(district_id = district_id)	0..* ASSETS.FK_ASSETS_DISTRICTS 1 DISTRICTS. PK_DISTRICTS	

DRIVERS

Database: SQL Server 2000, *Package:* Data Model

Detail: Created on 4/26/2012. Last modified on 4/30/2012.

Notes: For each alternative, there is a set of drivers that can be assigned to an asset. These drivers are automatically generated when the model is run. The user can override the cost and frequency of a generated driver.

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	driver_id	int	True	False					Primary key
False	driver_type_id	int	True	False	0	0	0		ID of driver type
False	compkey	int	True	False					ID of asset driver has been assigned to
False	override_cost_per_ft	money	False	False					User override of driver cost per foot
False	override_frequency_years	float	False	False					User override of frequency in years for driver
False	alternative_id	int	True	False	0	0	0		ID of alternative for driver
False	updated_by	varchar	False	False	20				Username of user last editing record
False	update_date	datetime	False	False					Date record was last updated

Constraints

Name	Type	Columns	Initial Code	Notes
FK_DRIVERS_ALTERNATIVES	«FK»	alternative_id		
FK_DRIVERS_ASSETS	«FK»	compkey		
FK_DRIVERS_DRIVER_TYPES2	«FK»	driver_type_id		
PK_DRIVERS	«PK»	driver_id		

Relationships

Columns	Association	Notes
(compkey = compkey)	0..* DRIVERS.FK_DRIVERS_ASSETS 1 ASSETS. PK_ASSETS	
(driver_type_id = driver_type_id)	0..* DRIVERS.FK_DRIVERS_DRIVER_TYPES2 1 DRIVER_TYPES. PK_DRIVER_TYPES2	
(driver_id = driver_id)	0..* ACTIVITIES.FK_ACTIVITIES_DRIVERS 1 DRIVERS. PK_DRIVERS	
(alternative_id = alternative_id)	0..* DRIVERS.FK_DRIVERS_ALTERNATIVES 1 ALTERNATIVES. PK_ALTERNATIVES	

DRIVER_TYPES

Database: SQL Server 2000, *Package:* Data Model

Detail: Created on 4/27/2012. Last modified on 4/30/2012.

Notes: A list of all the driver types

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	driver_type_id	int	True	False					Primary key
False	activity_type_id	int	True	False					Type of activity associated with driver type
False	name	varchar	True	False	20				Name of driver type
False	description	varchar	False	False	100				Description of driver type
False	default_cost_per_ft	money	True	False					Default cost per ft for drivers generated of this type
False	default_frequency_years	float	True	False					Default frequency in years of all drivers generated by this type
False	alternative_id	int	True	False					ID of alternative for driver type

Constraints

Name	Type	Columns	Initial Code	Notes
FK_DRIVER_TYPES_ACTIVITY_TYPES	«FK»	activity_type_id		
FK_DRIVER_TYPES_ALTERNATIVES	«FK»	alternative_id		
PK_DRIVER_TYPES2	«PK»	driver_type_id		

Relationships

Columns	Association	Notes
(driver_type_id = driver_type_id)	0..* DRIVERS.FK_DRIVERS_DRIVER_TYPES2 1 DRIVER_TYPES. PK_DRIVER_TYPES2	
(activity_type_id = activity_type_id)	0..* DRIVER_TYPES.FK_DRIVER_TYPES_ACTIVITY_TYPES 1 ACTIVITY_TYPES. PK_ACTIVITY_TYPES	
(alternative_id = alternative_id)	0..* DRIVER_TYPES.FK_DRIVER_TYPES_ALTERNATIVES 1 ALTERNATIVES. PK_ALTERNATIVES	

TRACTIVE_FORCE_RESULTS

Database: SQL Server 2000, *Package:* Data Model
Detail: Created on 4/27/2012. Last modified on 4/30/2012.
Notes: Results from tractive force model used to generate cleaning activities

Columns

PK	Name	Type	Not Null	Unique	Len	Prec	Scale	Init	Notes
True	tractive_force_result_id	int	True	False					Primary key
False	compkey	int	True	False					Compkey of asset associated with tractive force results
False	max_suspendable_particle_diameter_mm	float	True	False					Diameter of maximum particle size in mm that can be suspended in normal dry weather flow
False	avg_dwf_cfs	float	True	False					Average dry weather flow in cfs
False	max_flow_cfs	float	True	False					Maximum dry weather flow in cfs

Constraints

Name	Type	Columns	Initial Code	Notes
FK_TRACTIVE_FORCE_RESULTS_ASSETS	«FK»	compkey		
PK_TRACTIVE_FORCE_RESULTS	«PK»	tractive_force_result_id		

Relationships

Columns	Association	Notes
(compkey = compkey)	0..* TRACTIVE_FORCE_RESULTS.FK_TRACTIVE_FORCE_RESULTS_ASSETS 1 ASSETS. PK_ASSETS	

Data Flow

Type: **Package**
Package: Data Model
Detail: Created on 4/27/2012. Last modified on 4/27/2012.
Notes:

Data Flow

Created By: ARNELM on 4/27/2012
Last Modified: 4/27/2012, *Version:* 1.0

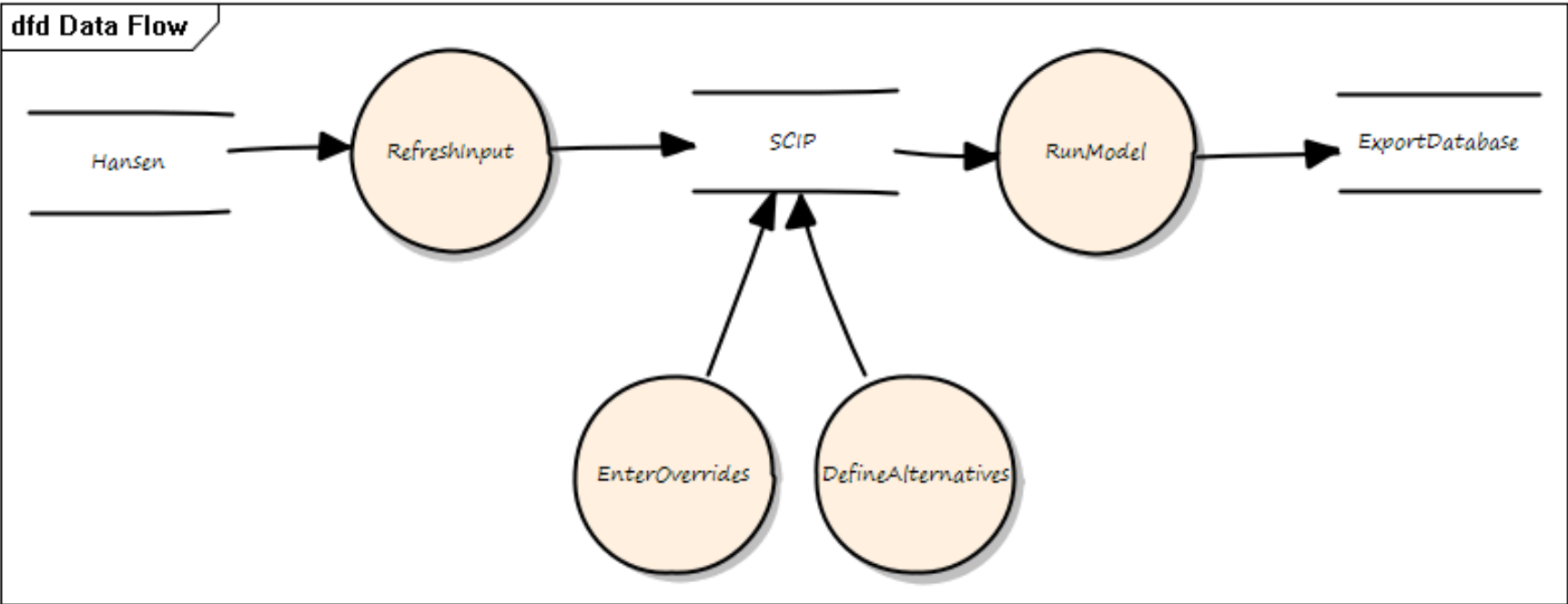


Figure: 2

ExportDatabase

Database: C#, Package: Data Flow
Detail: Created on 4/27/2012. Last modified on 4/27/2012.
Notes:

Relationships

Columns	Association	Notes
	RunModel. ExportDatabase.	

Hansen

Database: C#, Package: Data Flow
Detail: Created on 4/27/2012. Last modified on 4/27/2012.

Notes:

Relationships

Columns	Association	Notes
	Hansen. RefreshInput.	

SCIP

Database: C#, Package: Data Flow
Detail: Created on 4/27/2012. Last modified on 4/27/2012.
Notes:

Relationships

Columns	Association	Notes
	RefreshInput. SCIP.	
	DefineAlternatives. SCIP.	
	EnterOverrides. SCIP.	
	SCIP. RunModel.	

DefineAlternatives

Database: <none>, Package: Data Flow
Detail: Created on 4/27/2012. Last modified on 4/27/2012.
Notes:

Relationships

Columns	Association	Notes
	DefineAlternatives. SCIP.	

EnterOverrides

Database: <none>, Package: Data Flow

Detail: Created on 4/27/2012. Last modified on 4/27/2012.
Notes:

Relationships

Columns	Association	Notes
	EnterOverrides. SCIP.	

RefreshInput

Database: <none>, *Package:* Data Flow
Detail: Created on 4/27/2012. Last modified on 4/27/2012.
Notes:

Relationships

Columns	Association	Notes
	Hansen. RefreshInput.	
	RefreshInput. SCIP.	

RunModel

Database: <none>, *Package:* Data Flow
Detail: Created on 4/27/2012. Last modified on 4/27/2012.
Notes:

Relationships

Columns	Association	Notes
	SCIP. RunModel.	
	RunModel. ExportDatabase.	