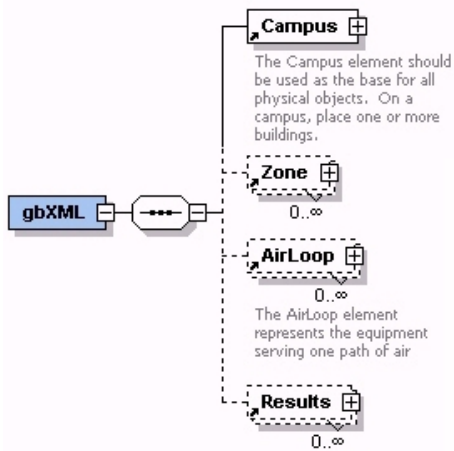


TRACE® 700 gbXML Integration

Green Building XML (gbXML – see www.gbxml.org) was developed to facilitate the transfer of building information stored in CAD models that is essential to designing resource efficient buildings. It is a subset of aecXML. GbXML describes the building with zones, spaces, building components, materials and mechanical as a complete model.

During a gbXML import, TRACE® 700 processes the data found in the gbXML file and extracts the dimensional and load information that is relevant to the creation of a TRACE® 700 file. TRACE® 700 only uses a subset of gbXML. This document covers this subset and defines the minimum requirements needed for TRACE® 700. Following is a breakdown of the elements and attributes that are currently used and where they are applied.

gbXML Element:



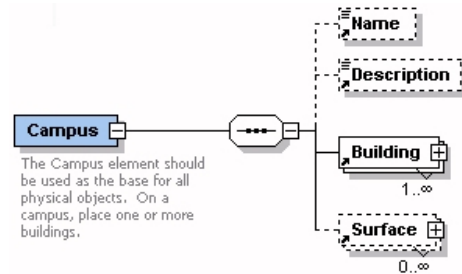
Elements used:

- **Campus** – (*required*) Spaces and Surfaces are connected to this element.
- **Zone** – Is used to complete the zoning of spaces. If this element is not entered, these assignments will have to be completed in TRACE® 700.
- **AirLoop** – Is used to complete room / zone / system assignments. If this element is not entered, these assignments will have to be completed in TRACE® 700.
- **Results** – TRACE® 700 exports program results to this element.

Attributes used:

- **temperatureUnit, areaUnit, lengthUnit, and volumeUnit** (*required by schema*) are used as global settings for their respective units.
- **useSIUnitsForResults** (*required by schema*) determines what units are used for exporting results to gbXML.

Campus Element:



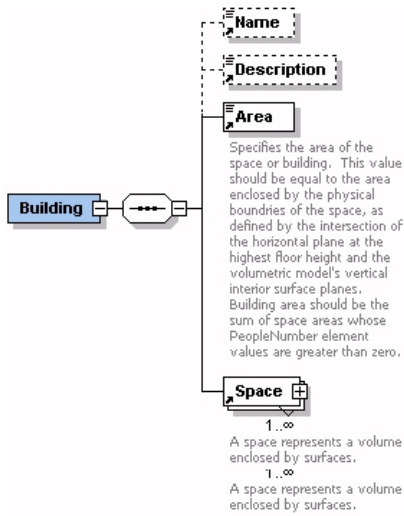
Elements used:

- **Building** – (*required*) Spaces are connected to this element.
- **Surface** – (*required for walls, roofs, etc.*) This element identifies roofs and walls created in TRACE® 700.

Attribute:

- **id** (*required by schema*) not used by TRACE

Building Element:



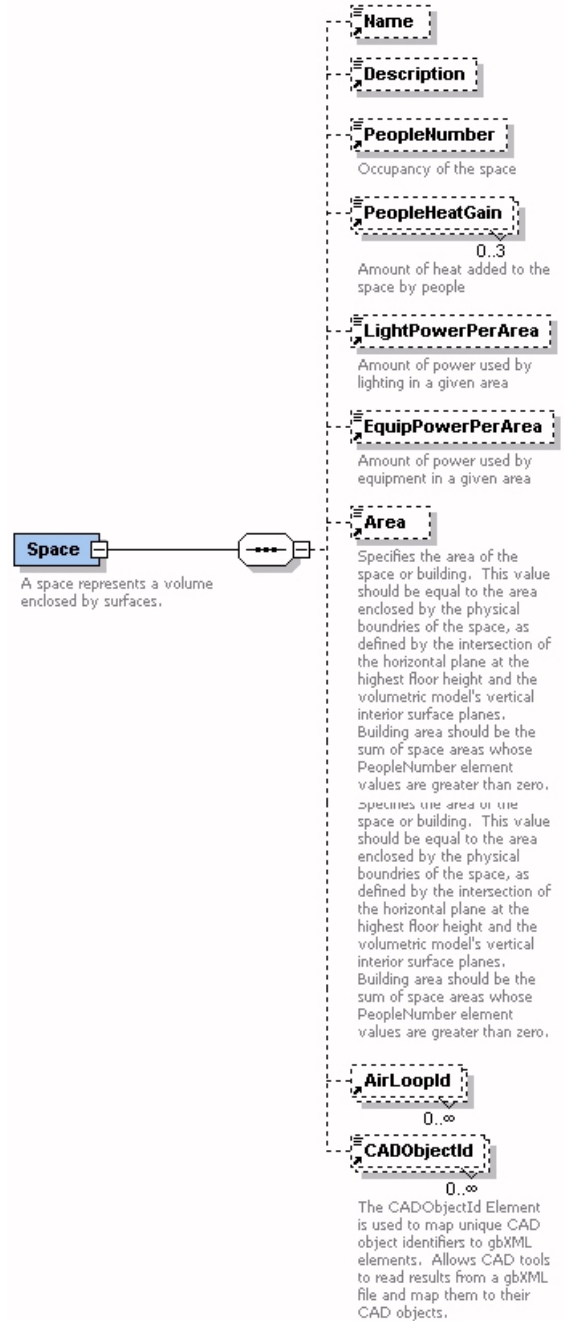
Elements used:

- **Space** – (*required*) The information from Spaces is used to create rooms in TRACE.
- **Area** – (*required by schema*) Not used by TRACE.

Attribute:

- **id** (*required by schema*) Not used by TRACE
- **buildingType** (*required by schema*) Not used by TRACE

Space Element:



Each space defined in gbXML becomes a room in TRACE® 700.

Elements used:

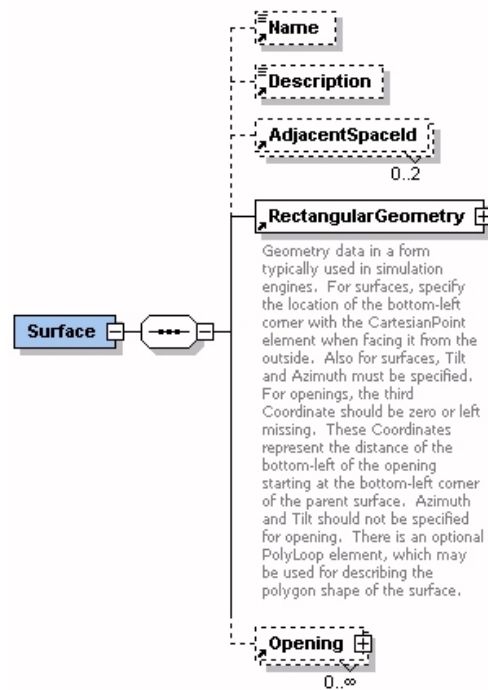
- **Name** – (*preferred*) Used for the room description.
- **Area** – (*required*) The area element is used as the room's floor area. The area unit can be specified using the *unit* attribute.

- **PeopleNumber** – Used to specify room occupancy. This occupancy can be entered in terms of “NumberOfPeople”, “SquareFtPerPerson”, or “SquareMPerPerson” by using the *unit* attribute.
- **LightPowerArea** – Specifies the lighting load for this room. The lighting load can be specified as “WattPerSquareMeter” or “WattPerSquareFoot” by using the *unit* attribute.
- **EquipPowerArea** – Specifies the miscellaneous loads for this room. This load can be specified as “WattPerSquareMeter” or “WattPerSquareFoot” by using the *unit* attribute.
- **CADObjectID** – Stored and exported with results to connect results with the space in CAD.

Attributes used:

- **id** – (*required by schema*) Used during room / zone / system assignments and exporting results.
- **zoneIdRef** – Used to assign room to zones.

Surface Element:



TRACE® 700 imports wall, roofs, partitions, and exposed floors from the surface element.

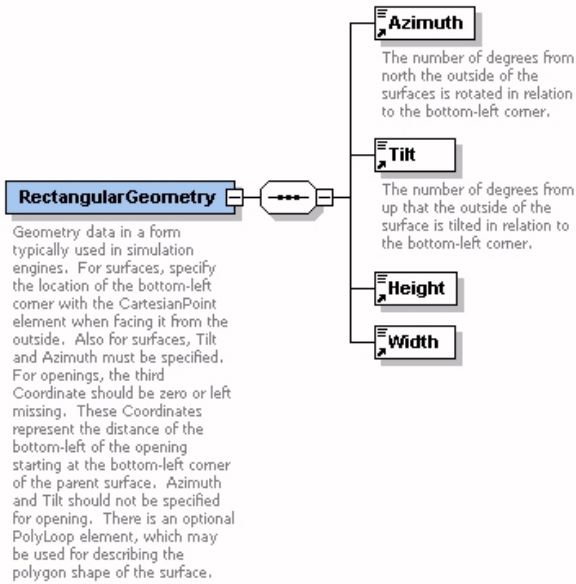
Elements used:

- **Name** – (*preferred*) Used for wall / roof description.
- **AdjacentSpaceId** – (*required*) This is used to connect the surface to a room.
- **RectangularGeometry** – (*required*) This element contains the dimensional data for the surface.
- **Opening** – (*required for windows*) Use the Opening element if the surface has a window to define.

Attributes used:

- **id** – (*required by schema*)
- **surfaceType** – (*required*) This is used to determine what elements should be processed. Type “ExteriorWall” becomes a wall, “InteriorWall” becomes a partition, “Roof” becomes a roof and “SlabOnGrade” becomes an exposed floor.

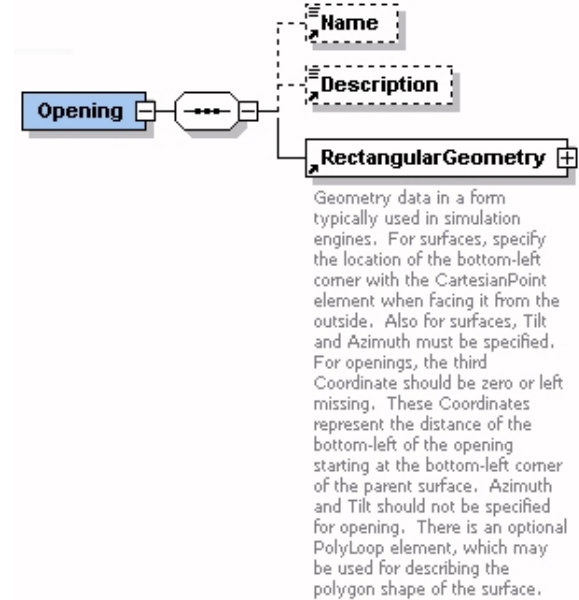
RectangularGeometry Element:



Elements used:

- **Height** – (*required*) Used for either wall/glass height or roof length.
- **Width** – (*required*) Used for wall or roof/glass width.
- **Azimuth** – Specifies wall or roof angle.
- **Tilt** – Specifies wall or roof tilt.

Opening Element:



This element is used by TRACE® 700 to define glass areas within a wall or roof surface.

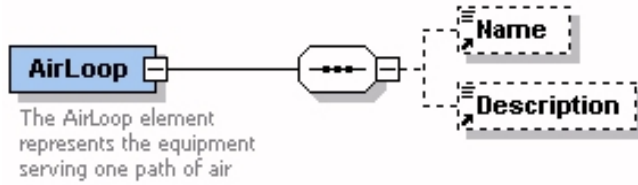
Elements used:

- **RectangularGeometry** – (*required*) This element contains the dimensional data for the opening.

Attributes used:

- **id** – (*required by schema*) Not used by TRACE.
- **openingType** – (*required*) Four glass types are imported: “FixedWindow”, “OperableWindow”, “FixedSkylight”, and “OperableSkylight”.

AirLoop Element:



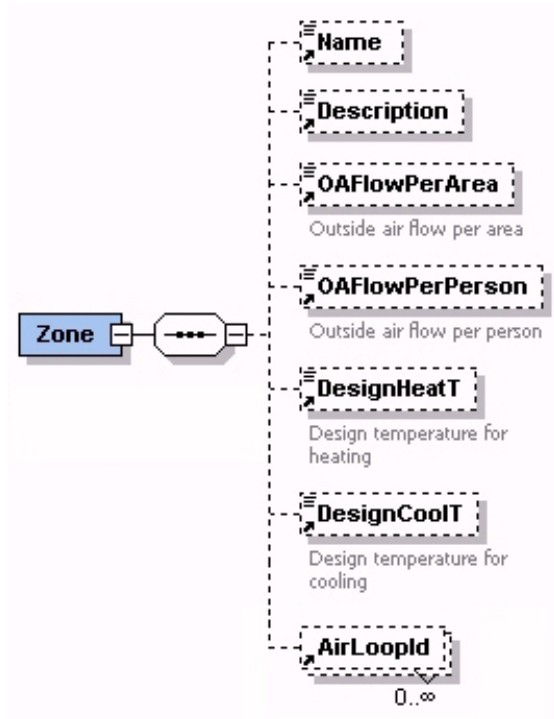
Elements used:

- **Name** – (*preferred*) Used for system description.

Attributes used:

- **id** – (*required*) Used during room / zone / system assignments.
- **systemType** – (*required*) During import an attempt is made to match this type up with system types available in TRACE® 700.

Zone Element:



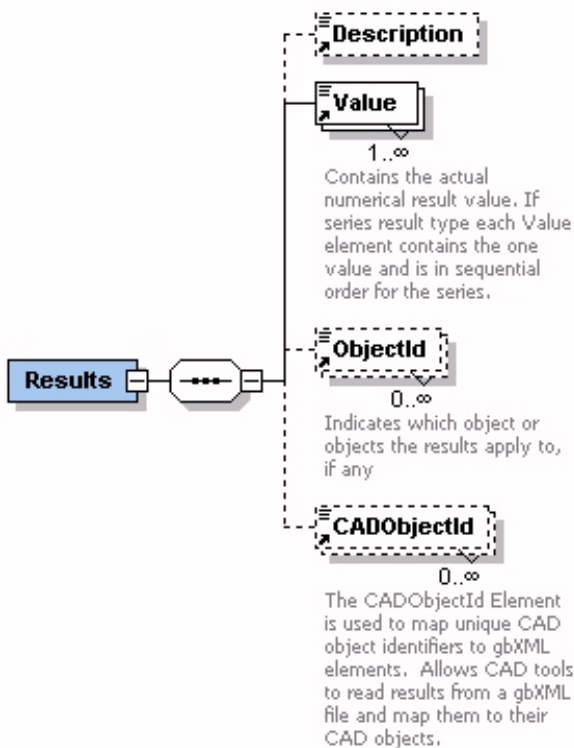
Elements used:

- **Name** – (*preferred*) Used for zone description.
- **AirLoopId** – (*required*) Matched with an entered AirLoop element for zone / system assignments.
- **OAFlowPerArea** – Used to set the cooling ventilation airflow for each room connected to this zone. The unit attribute must also be entered as either “CFMPerSuareFoot” or “LperSecPerSquareM”. If both OAFlowPerArea and OAFlowPerPerson are found OAFlowPerPerson will be used to set the ventilation airflow.
- **OAFlowPerPerson** – Used to set the cooling ventilation airflow for each room connected to this zone. The unit attribute must also be entered as either “Cfm” or “LperSec”. If both OAFlowPerArea and OAFlowPerPerson are found, OAFlowPerPerson will be used to set the ventilation airflow.
- **DesignCoolT** – Used to set the cooling design temperature for each room connected this zone. The unit attribute may be entered as either “F” or “C” (will default to global setting if not entered).
- **DesignHeatT** – Used to set the heating design temperature for each room connected this zone. The unit attribute may be entered as either “F” or “C” (will default to global setting if not entered).

Attributes used:

- **id** – (*required*) This will be used as the zone description. Used during room / zone / system assignments.

Results Element:



Elements used:

- **Description** – This is a description of the calculated result being exported.
- **Value** – This is a calculated value.
- **Objectid** – This matches the id of the space for which this result was calculated.
- **CADObjectid** – This matches the CADObjectid (a reference within a CAD drawing) passed in for the space.

Attributes used:

- **id** – This matches the id of the space for which this result was calculated.
- **resultType** - For each space, three result elements are exported: cooling load (CoolingLoad), heating load (HeatLoad) , and cooling airflow (Flow).
- **unit** – The unit used for the calculated value.
- **objectIdRef** – This matches the id of the space for which this result was calculated.