

CORETECHNOLOGIE : ÉCHANGE 3D AVEC DIMENSIONNEMENT ET TOLÉRANCEMENT

AP242 AFNET
26 MARS 2014
PARIS





CORETECHNOLOGIE ET STEP

- Membre du LOTAR : <http://www.lotar-international.org/>
- Membre actif du CAx-IF : <http://www.cax-if.org/>
- 3DEvolution : Second outil de validation pour l'archivage des données de l'A350XWB



PROCESSUS



.CATPart ••• .stp ••• .prt



- Dans 3DEvolution :
- Ouverture du fichier V5 avec PMI
 - Sauvegarde en STEP AP242
 - Ouverture du fichier STEP



Reconstruction dans NX avec PMI sémantique

Démo : AFNetSTEP.avi



DATUM

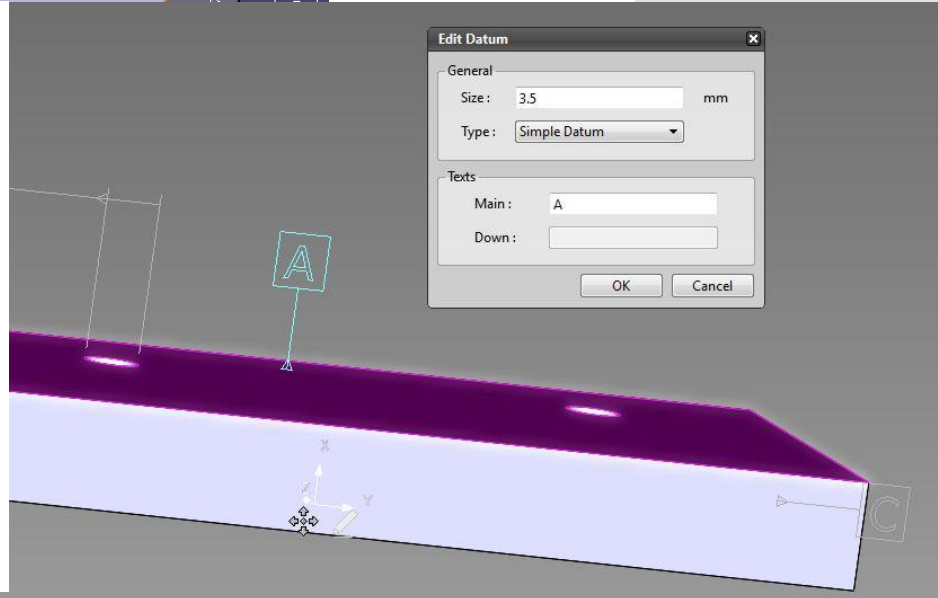
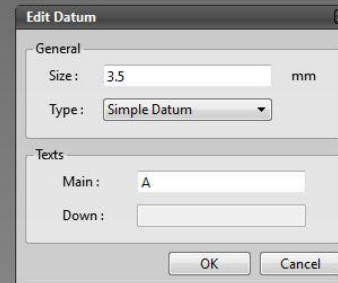
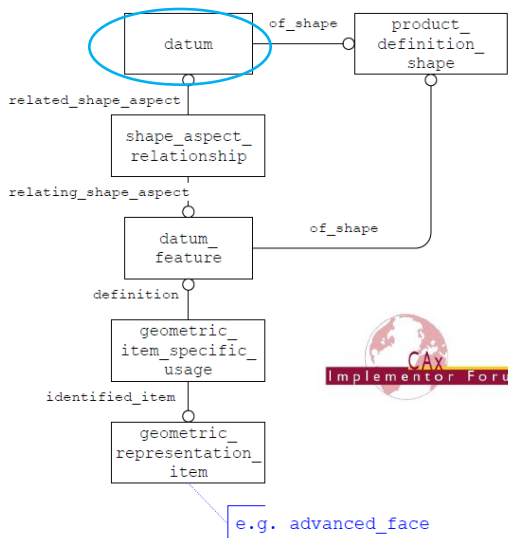
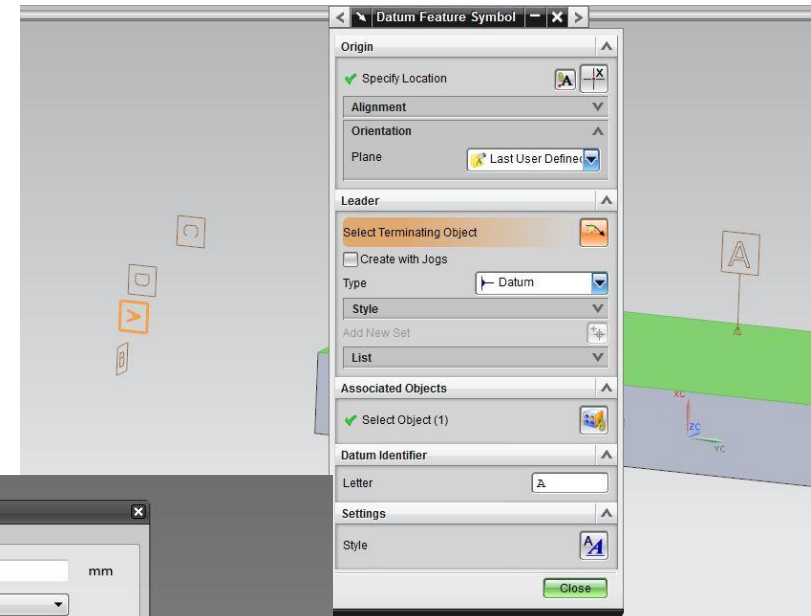
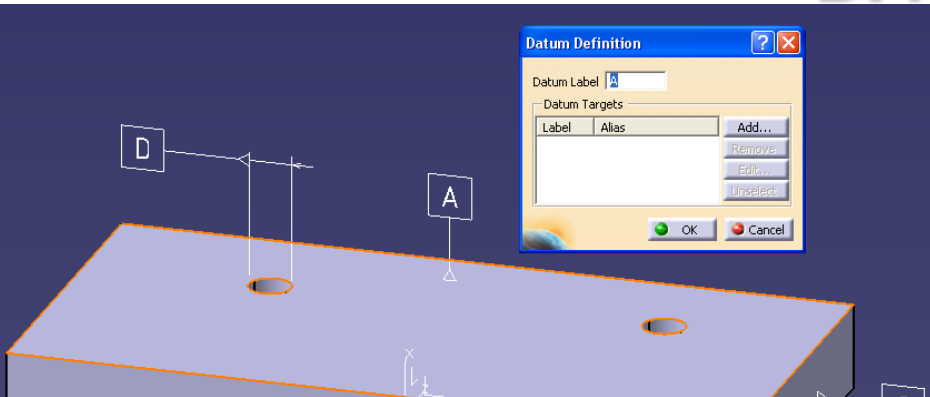


Figure 31: STEP entities for defining DATUMS

DATUM TARGET

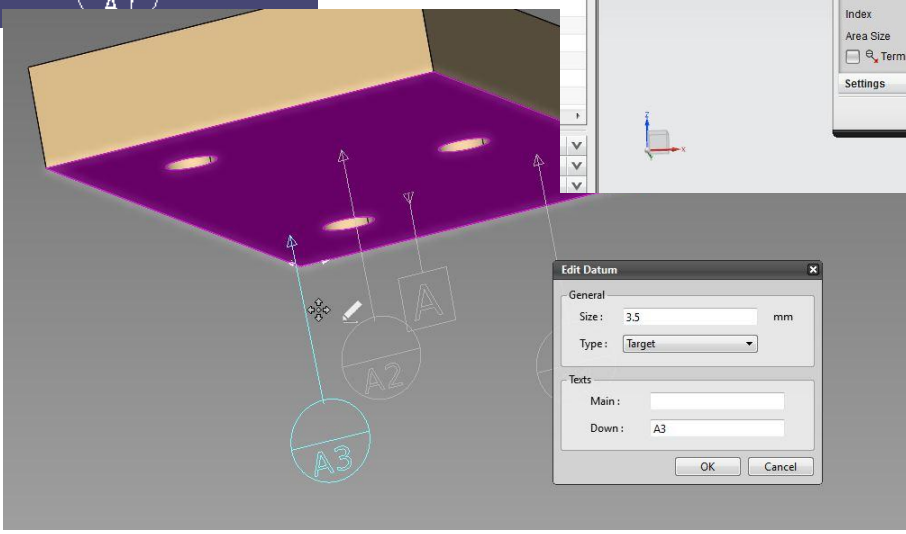
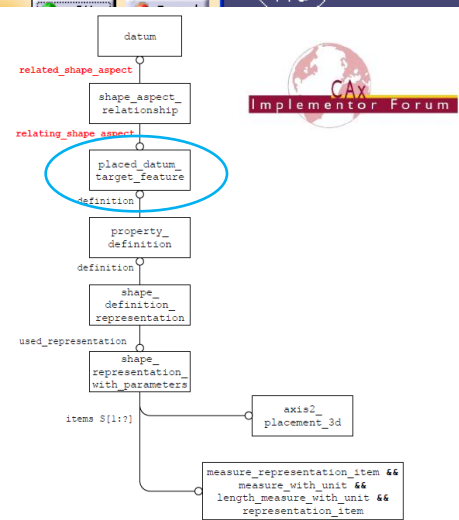
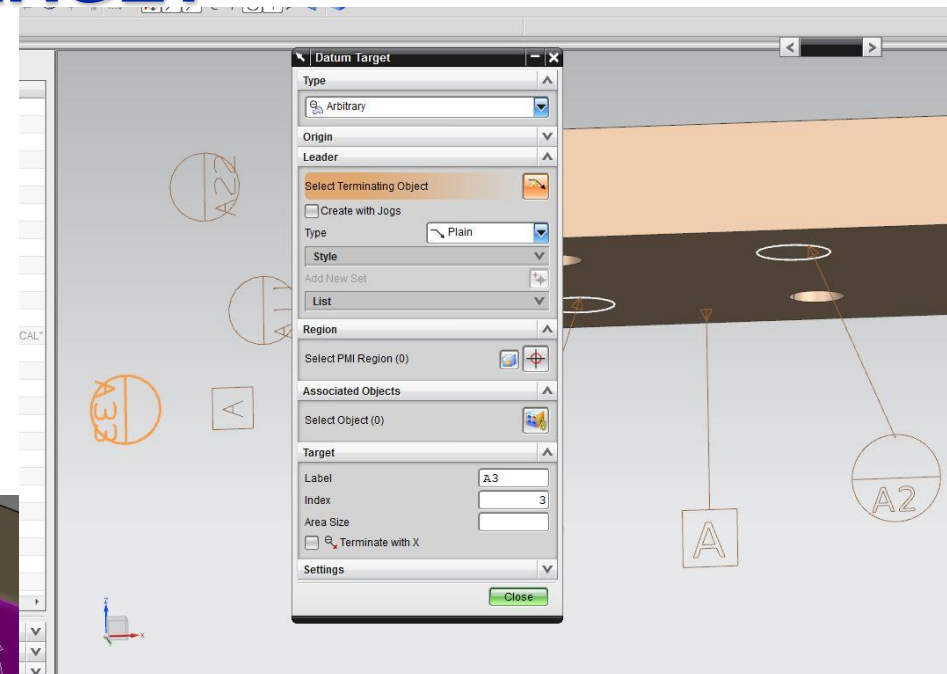
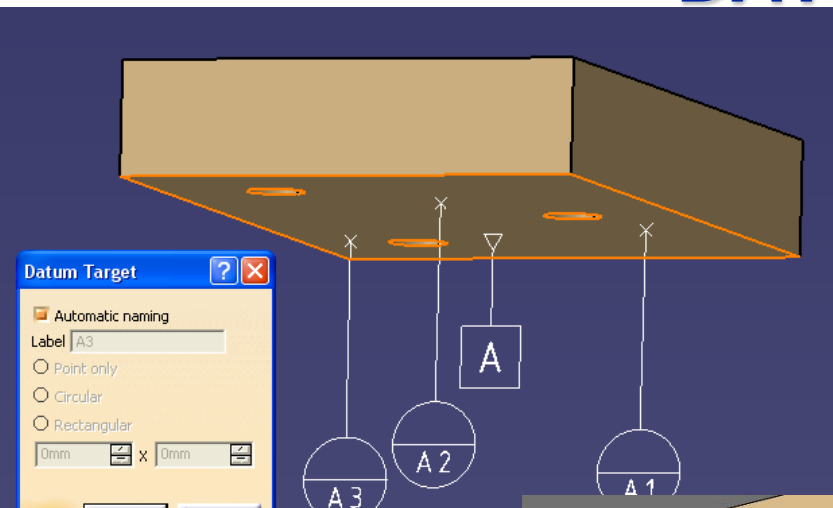
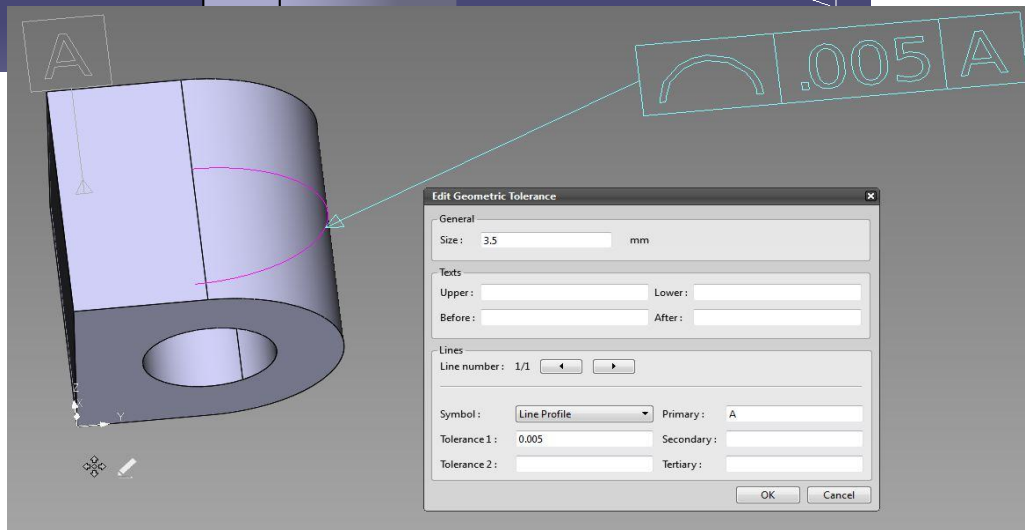
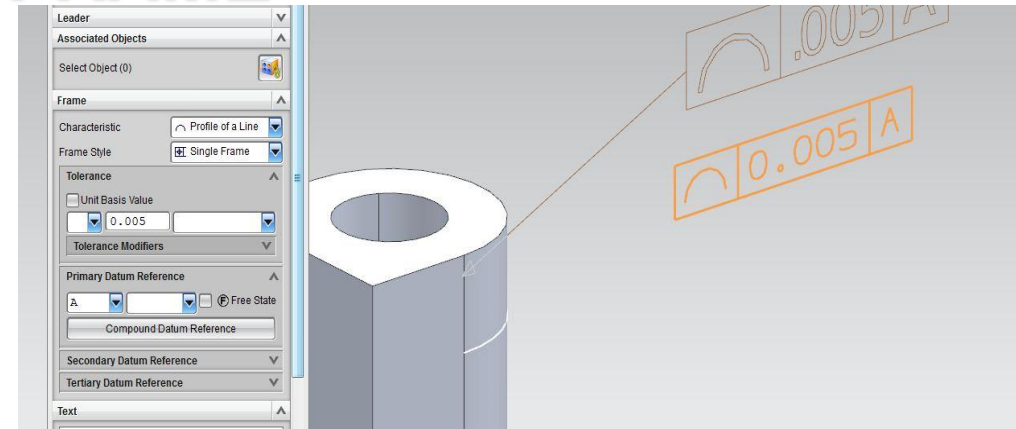
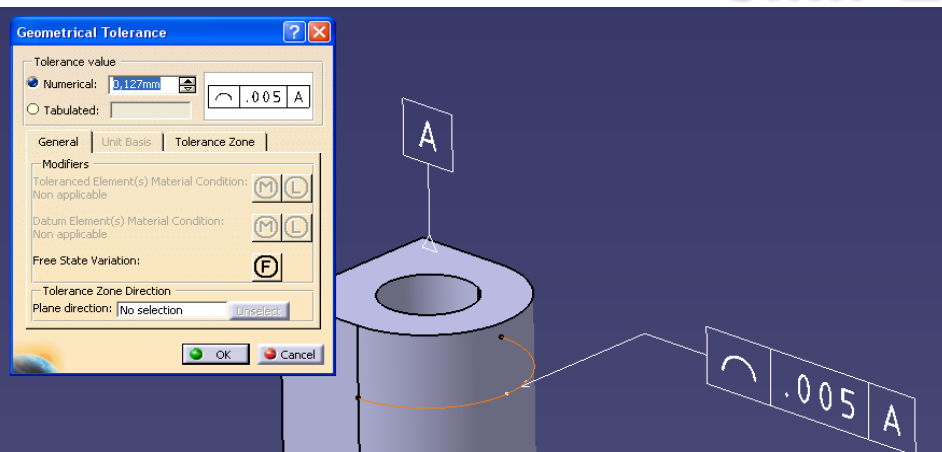


Figure 34: Datum Target Instantiation

TOLERANCE SIMPLE FRAME

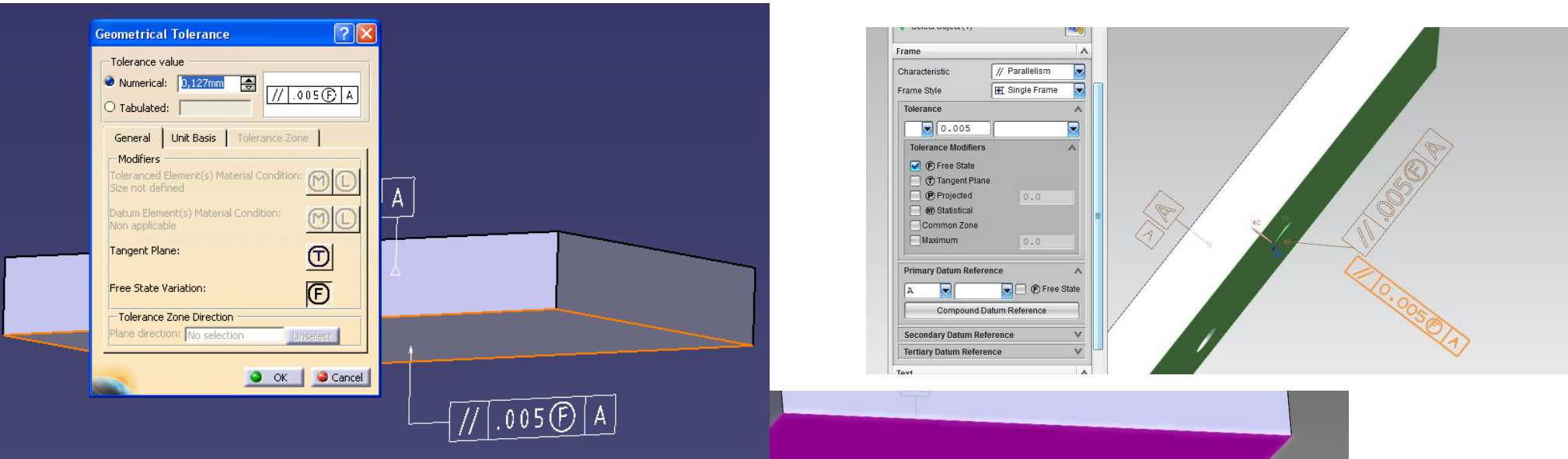


Tolerance type	STEP Entity	Datums
Angularity	angularity_tolerance	1, 2 or 3
Circular Runout	circular_runout_tolerance	1, 2 or 3
Circularity / Roundness	roundness_tolerance	None
Coaxiality	coaxiality_tolerance	1, 2 or 3
Concentricity	concentricity_tolerance	1, 2 or 3
Cylindricity	cylindricity_tolerance	None
Flatness	flatness_tolerance	None
Parallelism	parallelism_tolerance	1, 2 or 3
Perpendicularity	perpendicularity_tolerance	1, 2 or 3
Position	position_tolerance	None, 1, 2 or 3
Profile of a Line	line_profile_tolerance	None, 1, 2 or 3
Profile of a Surface	surface_profile_tolerance	None, 1, 2 or 3
Straightness	straightness_tolerance	None
Symmetry	symmetry_tolerance	1, 2 or 3
Total Runout	total_runout_tolerance	1, 2 or 3

Table 10: Supported Tolerance Types



TOLERANCE SIMPLE FRAME



- . BASIC .
- . TRANSLATION .
- . FREE_STATE .
- . MAXIMUM_MATERIAL_REQUIREMENT .
- . LEAST_MATERIAL_REQUIREMENT .
- etc...

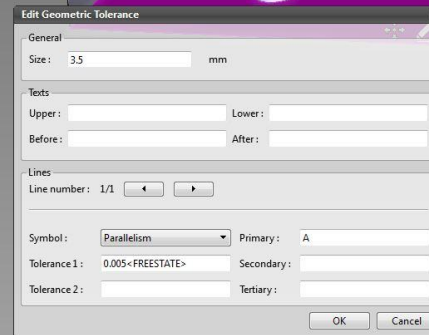
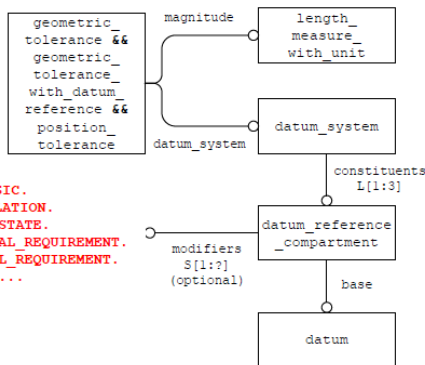
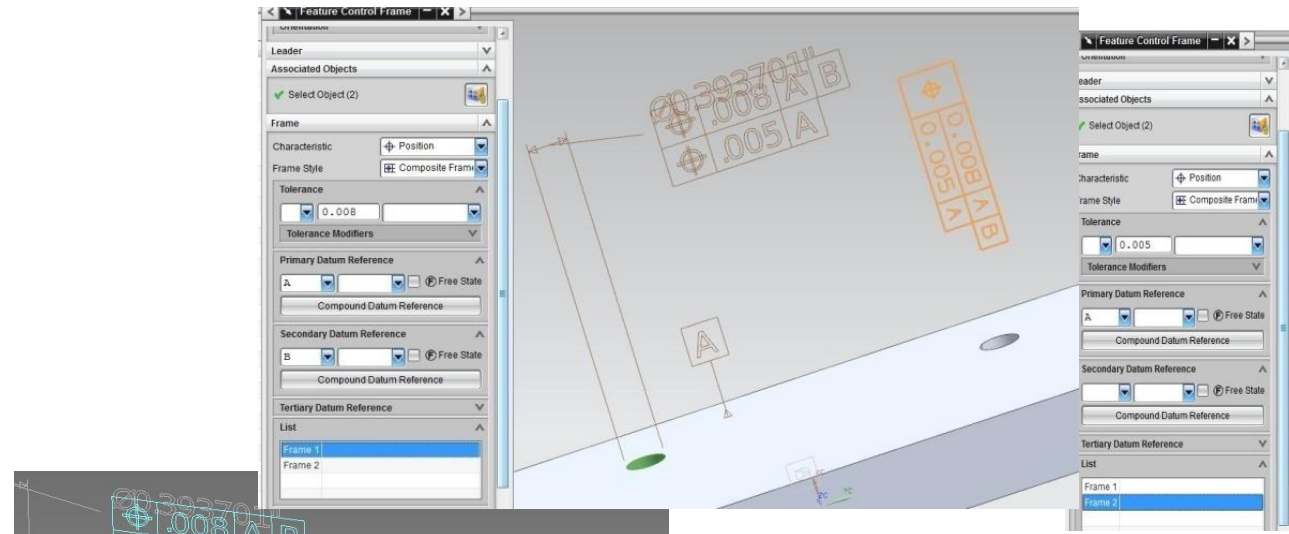
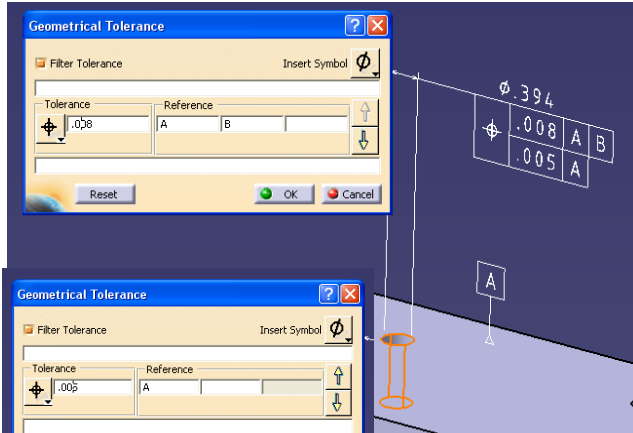


Figure 54: Tolerance with Datum Reference

TOLERANCE MULTIPLE FRAME



Link with tolerated feature

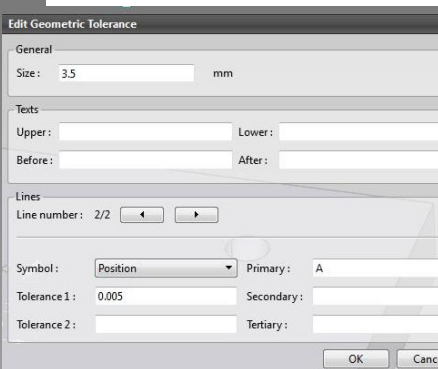
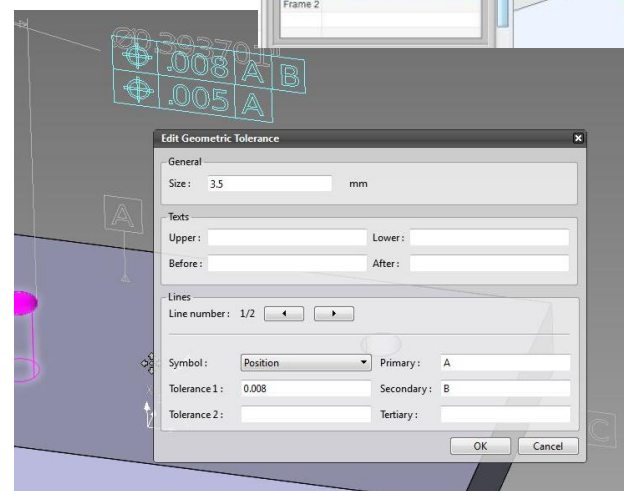
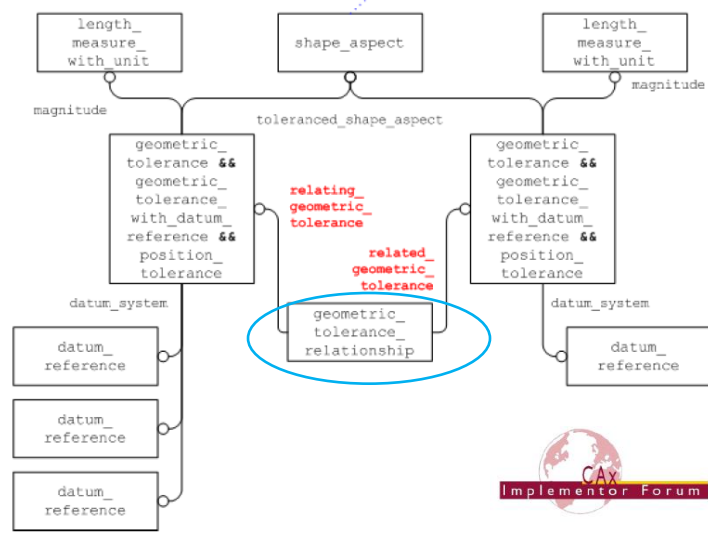
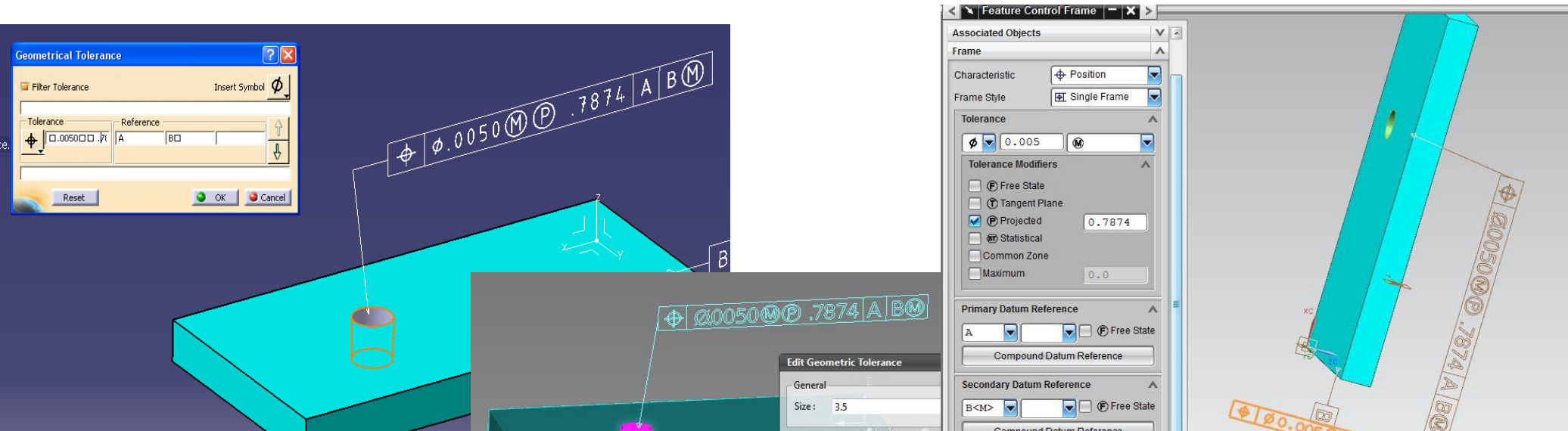


Figure 60: Composite Tolerance Structure

TOLERANCE PROJECTED TOLERANCE ZONE



Geometrical Tolerance

Filter Tolerance: Insert Symbol: ϕ

Tolerance: $\phi 0.0050$ Reference: A B

Feature Control Frame

Associated Objects: [List of objects]

Frame: [List of frames]

Characteristic: Position

Frame Style: Single Frame

Tolerance: $\phi 0.005$ (M)

Tolerance Modifiers:

- Free State
- Tangent Plane
- Projected: 0.7874
- Statistical
- Common Zone
- Maximum: 0.0

Primary Datum Reference: A

Secondary Datum Reference: B <M>

Tertiary Datum Reference: [None]

Text: [None]

Edit Geometric Tolerance

General: Size: 3.5

Texts: Upper: [None] Before: [None]

Lines: Line number: 1/1

Symbol: Position Primary: A

Tolerance 1: $|AL| < PROJ TOL ZONE > 0.7874$ Secondary: B < MAX MATERIAL >

Tolerance 2: [None] Tertiary: [None]

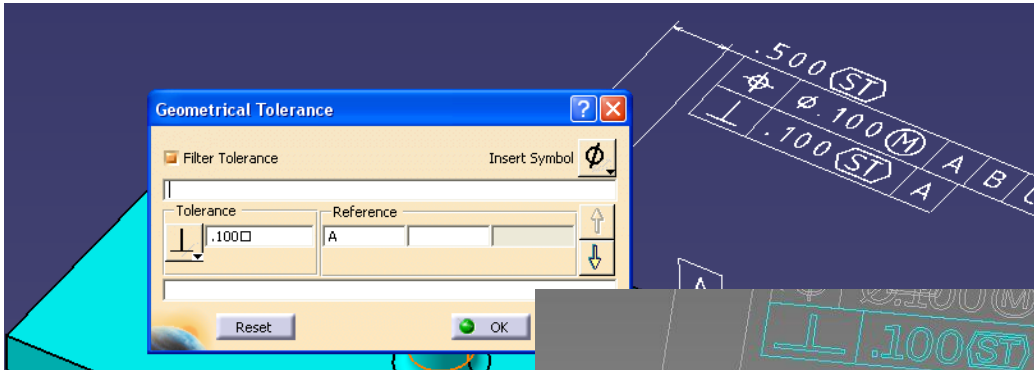
OK Cancel

```

graph TD
    SA1[shape_aspect] -- toleranced_shape_aspect --> PT[position_tolerance]
    PT -- magnitude --> LM1[length_measure_with_unit]
    PT -- defining_tolerance --> TZ[tolerance_zone]
    TZ -- form --> TZF[tolerance_zone_form]
    TZ -- zone --> PZD[projected_zone_definition]
    PZD -- projection_end --> SA2[shape_aspect]
    PZD -- projected_length --> LM2[length_measure_with_unit]
    
```

Figure 47: Projected Tolerance Zone

TOLERANCE MODIFICATEURS



- .COMMON_ZONE.
- .EACH_RADIAL_ELEMENT.
- .FREE_STATE.
- .LEAST_MATERIAL_REQUIREMENT.
- .LINE_ELEMENT.
- .MAJOR_DIAMETER.
- .MAXIMUM_MATERIAL_REQUIREMENT.
- .MINOR_DIAMETER.
- .NOT_CONVEX.
- .PITCH_DIAMETER.
- .RECIPROCITY_REQUIREMENT.
- .SEPARATE_REQUIREMENT.
- .STATISTICAL_TOLERANCE.
- .TANGENT_PLANE.

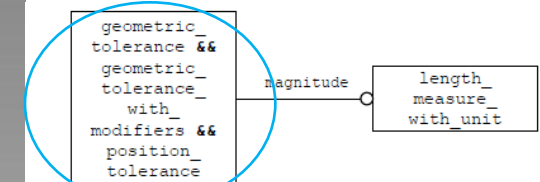
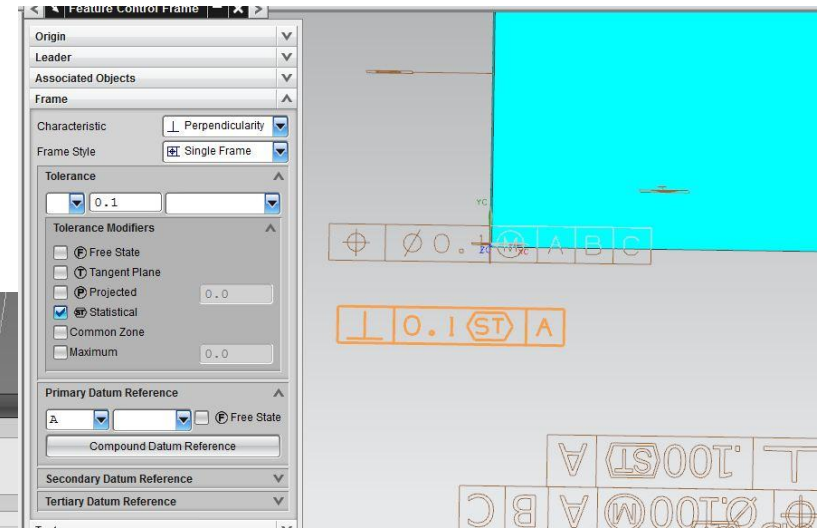
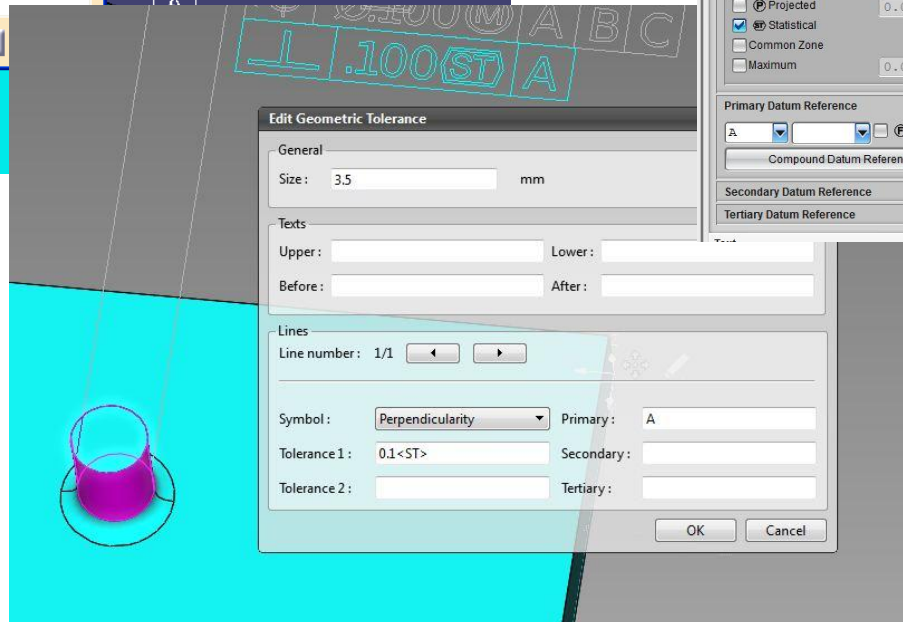
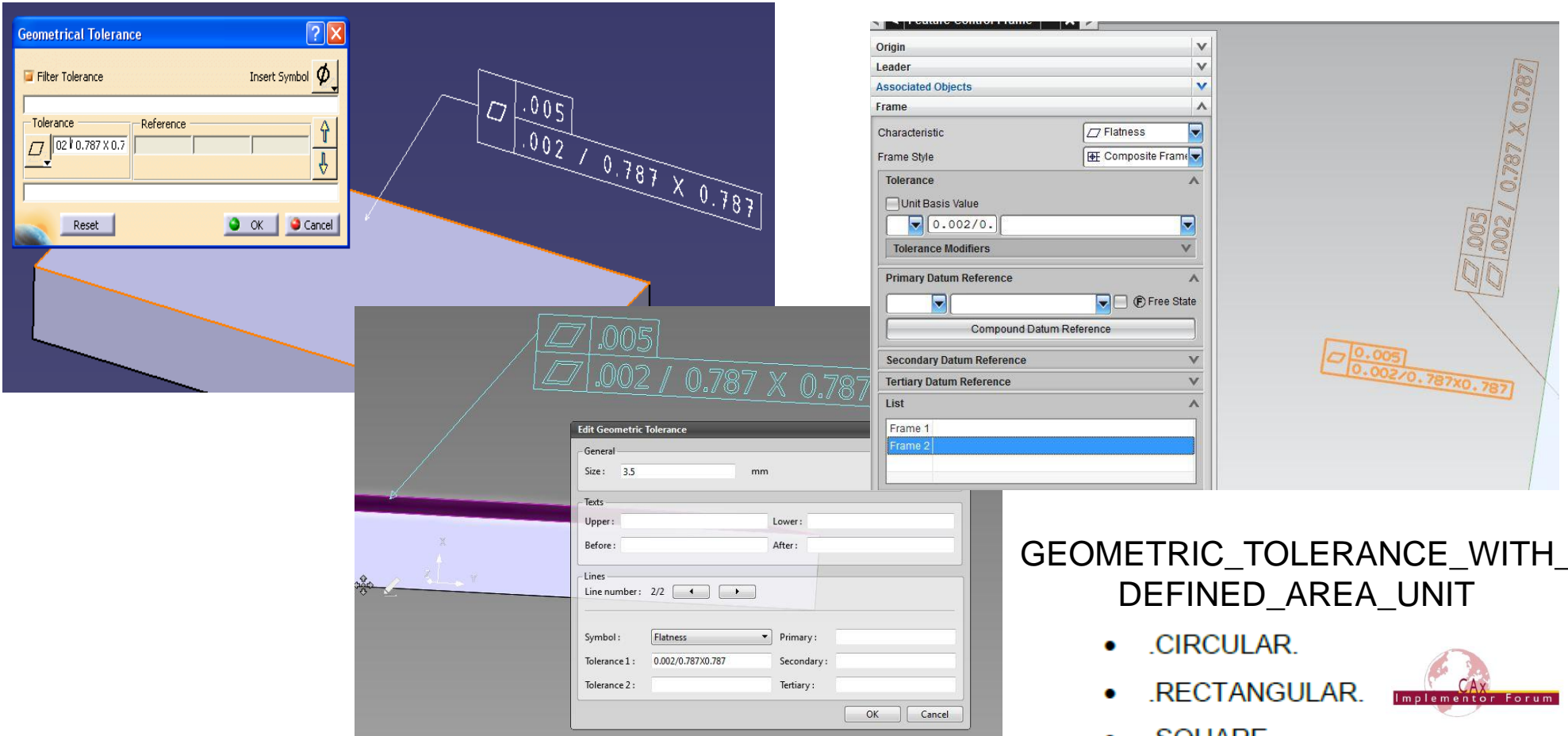


Figure 49: Geometric Tolerance with Modifiers



TOLERANCE UNIT BASIS VALUE



Geometrical Tolerance

Filter Tolerance Insert Symbol ϕ

Tolerance: $0.002 / 0.787 \times 0.7$ Reference: 0.787×0.787

Reset OK Cancel

Edit Geometric Tolerance

General
Size: 3.5 mm

Texts
Upper: Lower:
Before: After:

Lines
Line number: 2/2

Symbol: Flatness Primary:
Tolerance 1: 0.002/0.787X0.787 Secondary:
Tolerance 2: Tertiary:

OK Cancel

Feature Control Frame

Origin
Leader
Associated Objects
Frame

Characteristic: Flatness
Frame Style: Composite Frame

Tolerance
 Unit Basis Value
0.002/0.

Tolerance Modifiers

Primary Datum Reference
Free State

Compound Datum Reference

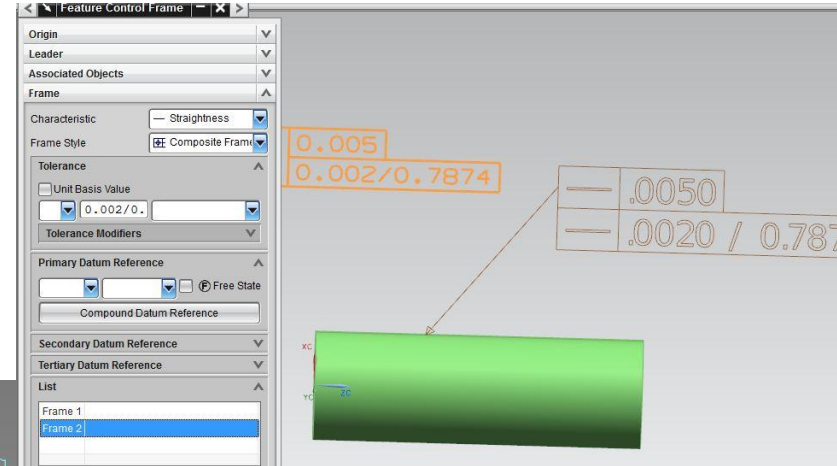
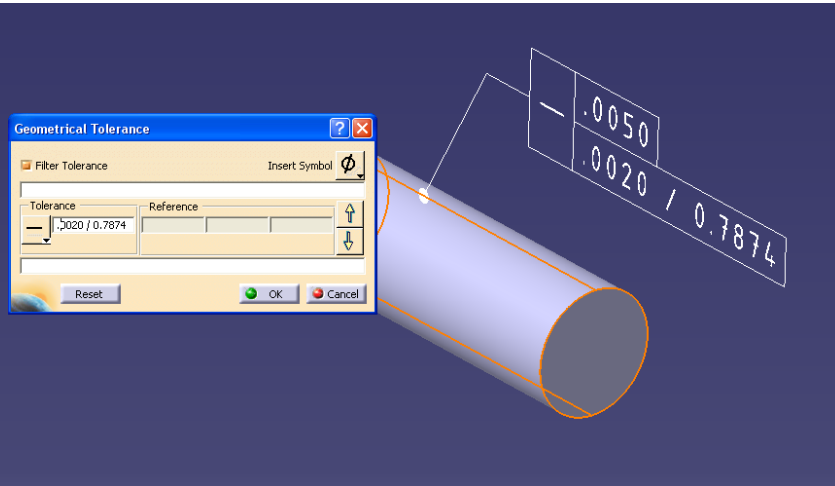
Secondary Datum Reference
Tertiary Datum Reference

List
Frame 1
Frame 2

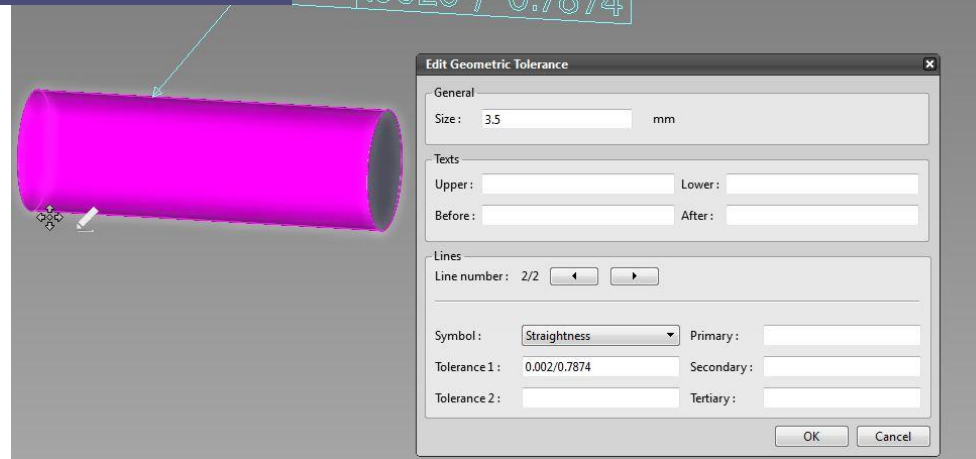
GEOMETRIC_TOLERANCE_WITH_DEFINED_AREA_UNIT

- .CIRCULAR.
- .RECTANGULAR.
- .SQUARE.

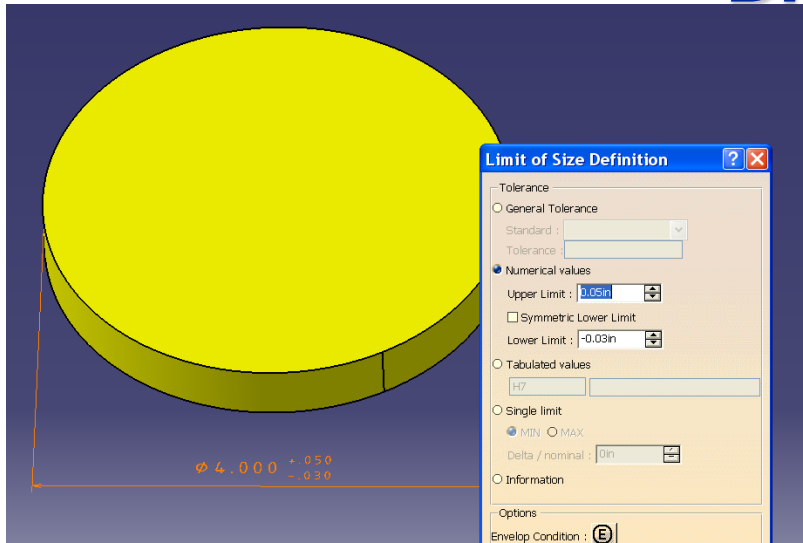
TOLERANCE UNIT BASIS VALUE



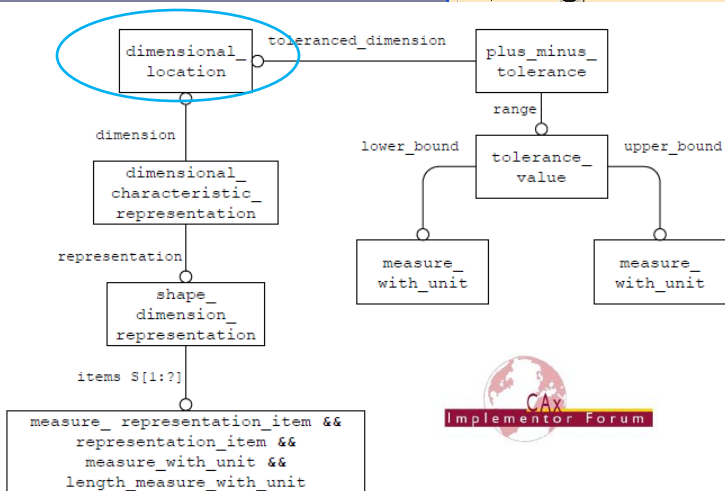
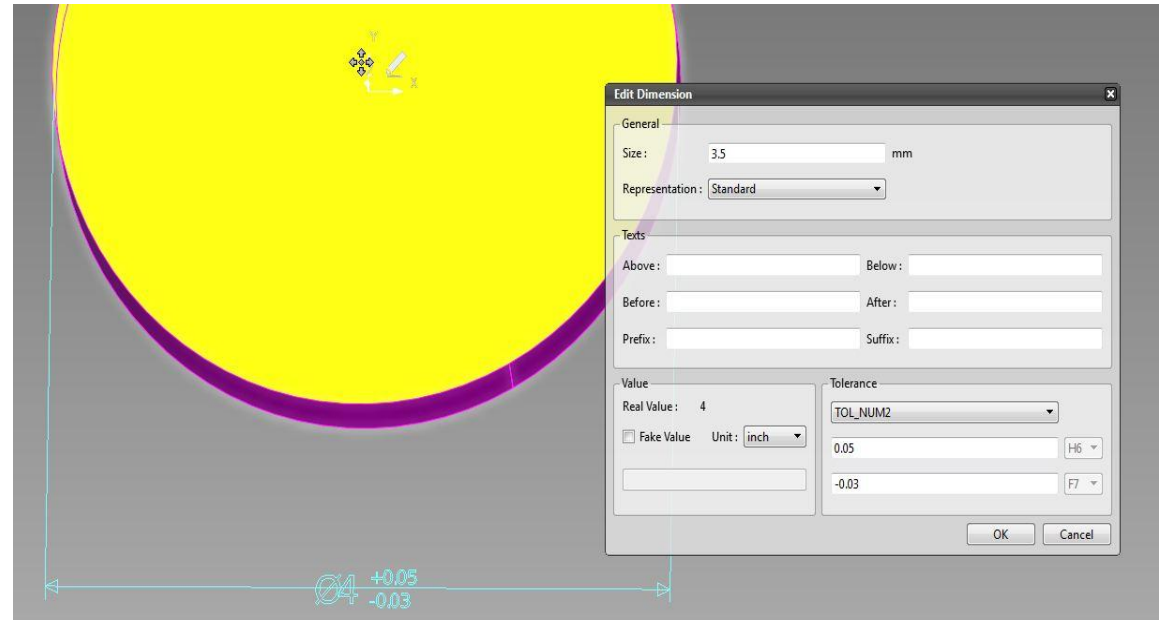
GEOMETRIC_TOLERANCE_
WITH_DEFINED_UNIT



DIMENSION

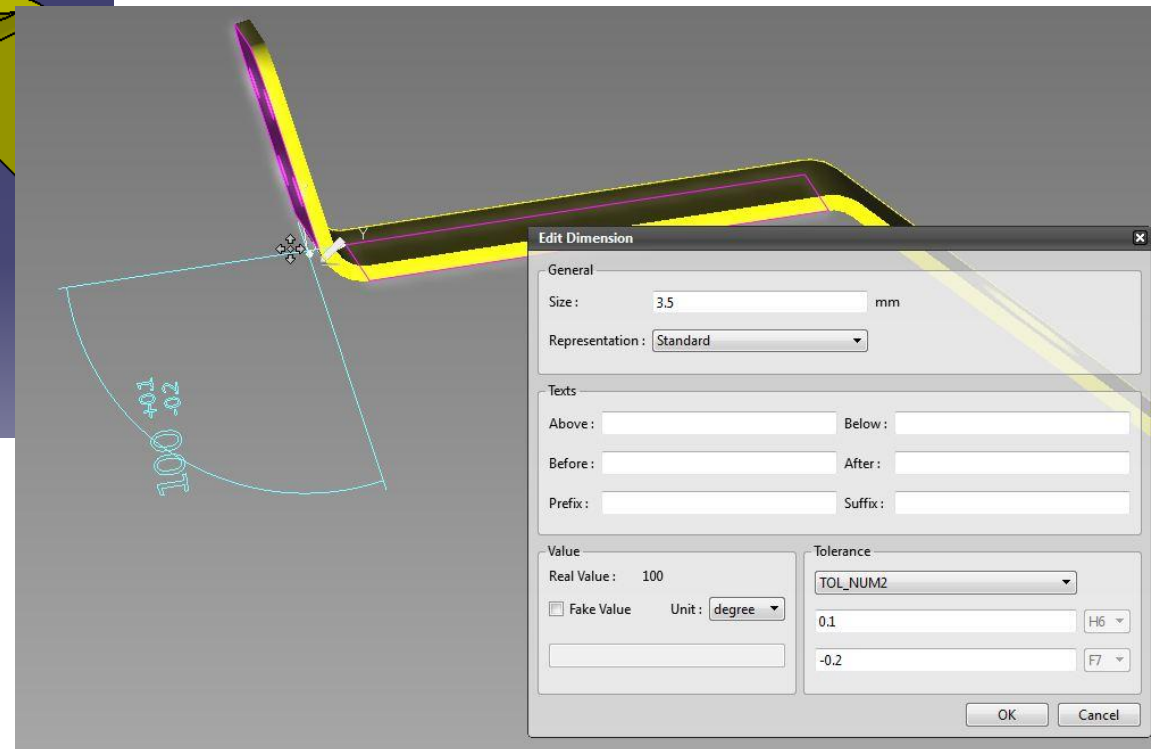
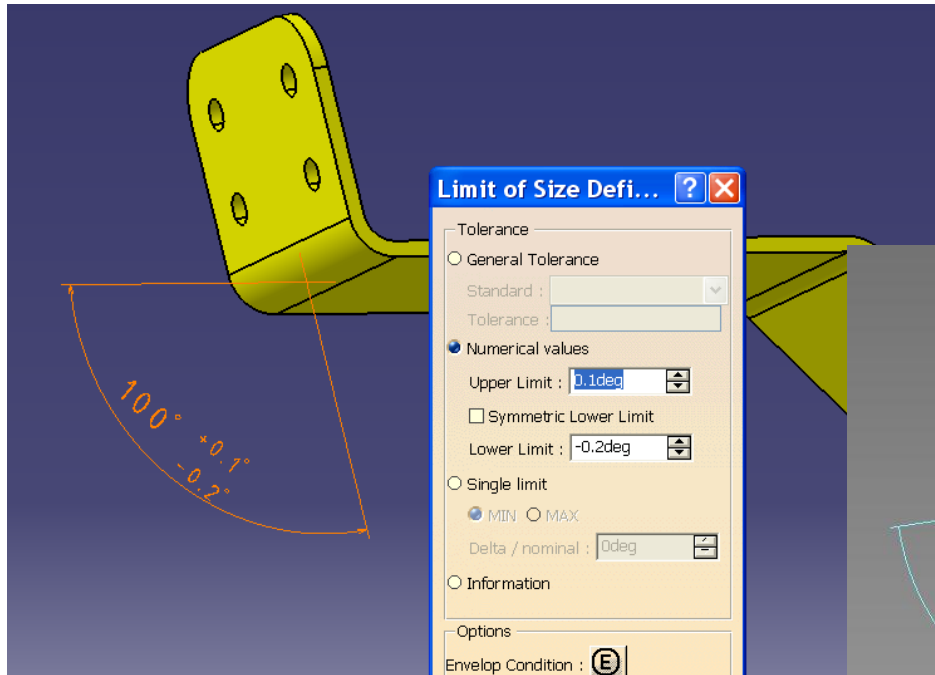


Pas de reconstruction dans NX dû au manque d'information sémantique dans STEP (origine et point d'ancrage)



DIMENSION

Pas de reconstruction dans NX dû au manque d'information sémantique dans STEP (origine et point d'ancrage)





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