Vector Operations and Co-ordinate systems for Placing MCAD Parts

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The Problem

Parts in MCAD Assembly must have same orientation and origin as ECAD parts

Downloaded parts rarely have the correct orientation and origin

Need means to correct the orientation as the part is placed into the MCAD assembly

Solution

- Place co-ordinate system into the part to define the orientation/offset

- Place parts, use co-ordinate system to "adjust" placement

- For export do the reverse

Vectors Revision

Identity matrix

Inverse

Multiply

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Placing Parts

Align Co-ord sys with xyz axes – have
   method for this

Move to Position – Matrix transform

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Export Part Data

No method for this

Could not determine Z vector

Found solution by engineering accident

Rotation – could only manage angles in 90 degree increments if bottom placed

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Visual Debug Technique

If I needed to see – apply the Xform to matrix of the part

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