

## New X3D Profile: Common Capabilities and Requirements for 3D Printing, 3D Scanning and CAD

Needed X3D Capabilities	3D PRINTING	3D SCANNING	CAD	notes
Point Cloud (unordered, overlapping)	?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
“Point Mesh”? (ordered, distinct)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	superposition
“Polygon Mesh”? (ordered, well defined)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	for comparison
<ul style="list-style-type: none"> <li>PointProperties node</li> </ul>				
<ul style="list-style-type: none"> <li>closed solid (watertight) attribute</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Identify tools of interest
<ul style="list-style-type: none"> <li>closed solid, except for bottom?</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> <li>Informational (post-tool) or directive?</li> </ul>				
<ul style="list-style-type: none"> <li>wall thickness</li> </ul>	likely		?	STEP practice?
<ul style="list-style-type: none"> <li>Normals used for curved triangles (as defined in AMF)</li> </ul>	<input checked="" type="checkbox"/>			Demonstrate correspondence
LineSet, IndexedLineSet	Support struts?	Scan Boundaries?	Help guides and callouts	
<ul style="list-style-type: none"> <li>LineProperties</li> </ul>			<input checked="" type="checkbox"/>	
Physically based materials, lighting	<input checked="" type="checkbox"/> Varying use	<input checked="" type="checkbox"/> Scan properties	<input checked="" type="checkbox"/> Bill of materials	SRC/gITF work, also metadata
Non-Uniform Rational B-Splines (NURBS)				
Volumetric data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Correspondences to .nrrd?
Metadata standards for <ul style="list-style-type: none"> <li>Creation pedigree (materials, etc.)</li> <li>IPR and usage rights</li> <li>Addition of supports, etc.</li> </ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Applying other specs, practices, e.g. Creative Commons etc.
Metadata display and callouts: draft X3D Annotation Component <ul style="list-style-type: none"> <li>Identifying shared features</li> <li>Correlating scans with models</li> </ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Aligning with other specs (e.g. ISO STEP)
Progressive mesh streaming (SRC)			<input checked="" type="checkbox"/>	Status of SRC?
Geometric Compression (SRC)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Status of SRC?
Data Compression (EXI)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ready to apply
Digital Signature for Authentication	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ready to apply
Encryption for Privacy, Access Control	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ready to apply
Layer or plating of physical material (e.g. paint or coating)				External surface

Status: continue reviewing/refining “X3D version 4.0 Development:Candidate capabilities” list at

[http://www.web3d.org/wiki/index.php/X3D\\_version\\_4.0\\_Development#Candidate\\_capabilities](http://www.web3d.org/wiki/index.php/X3D_version_4.0_Development#Candidate_capabilities)