Revised 21 July 2016

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| New X3D Capabilities | 3D PRINTING | 3D SCANNING | CAD | notes |
|  Point Cloud (unordered, overlapping) | ? | 🗹 | 🞎 |  |
|  “Point Mesh”? (ordered, distinct) | 🗹 | 🗹 | 🗹 | superposition |
| “Polygon Mesh”? (ordered, well defined) | 🗹 | 🗹 | 🗹 |  for comparison |
| * PointProperties node
 |  |  |  |  |
| * closed solid (watertight) attribute
* closed solid, except for bottom?
* Informational (post-tool) or directive?
 | 🗹🞎 | 🞎🞎 | 🗹🞎 |  |
| * wall thickness
 | likely |  | ? |  |
| * Normals used for curved triangles

(as defined in AMF) | 🗹 |  |  | Are they identical? |
| LineSet, IndexedLineSet | Support struts? | Scan Boundaries? | Help guides and callouts |  |
| * LineProperties
 |  |  | 🗹 |  |
| Advanced materials, lighting | 🗹Varying use | 🗹Scan properties | 🗹Bill of materials | Possibly solved with metadata |
| Non-Uniform Rational B-Splines (NURBS) |  |  |  |  |
| Volumetric data | 🗹 | 🗹 |  |  |
| Metadata standards for * Creation pedigree (materials, etc.)
* IPR and usage rights
* Addition of supports, etc.
 | 🗹 | 🗹 | 🗹 | Allow external standards |
| Metadata display and callouts: draft X3D Annotation Component | 🗹 | 🗹 | 🗹 |  |
| Progressive mesh streaming (SRC) |  |  | 🗹 |  |
| Geometric Compression (SRC) | 🗹 | 🗹 | 🗹 |  |
|  Data Compression (EXI) | 🗹 | 🗹 | 🗹 |  |
| Digital Signature for Authentication | 🗹 | 🗹 | 🗹 |  |
| Encryption for Privacy, Access Control | 🗹 | 🗹 | 🗹 |  |
| Layer or plating of physical material(e.g. paint or coating) |  |  |  | External surface  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

TODO: 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>