COLLADA™

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COLLAborative **D**esign **A**ctivity

COLLADA defines an <u>XML</u> database schema that enables <u>3D</u> authoring applications to freely <u>exchange digital assets</u> without loss of information.

- Free, extensible data exchange standard from Khronos Group

- Supported by a number of products; https://collada.org/mediawiki/index.php/Portal:Products_directory

COLLADA workflow
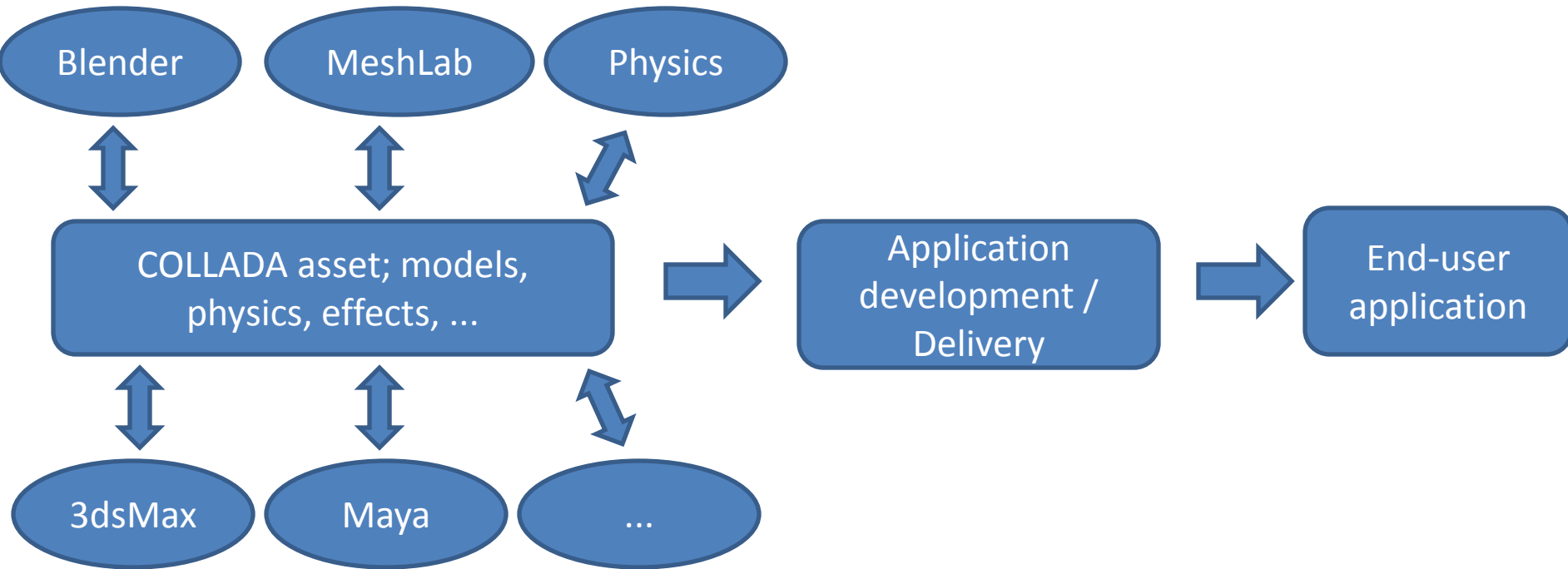
Technical overview

- .dae / .zae extension
- 1.4.x in July 2006
  - Mesh geometry, transform hierarchy, effects, shaders, materials, textures, lights, cameras, skinning, animation, physics, instantiation, techniques, multirepresentations, assets, user data
- 1.5.0 latest in October 2008
  - Kinematics, B-reps, geographic coverage, asset geolocation, math formulas, custom image initialization
- Specifications available from http://www.khronos.org/collada
- And cheatsheet from http://www.khronos.org/files/collada_reference_card_1_4.pdf

Web use

- Structurally compliant with WWW; based on XML, uses URIs
- WebGL shader support is limited
- Used as-is to show the models:
  - GLGE and sceneJS can use COLLADA with some effort
  - Delivery size; gzip compresses about 10x, dedicated algorithms even 200x
  - Delivery quality; model can be preprocessed in server to fit device characteristics
- Used as base for applications
  - Wrap to X3D and player

COLLADA and X3D

In principle, both describe 3D data in XML format.

- COLLADA is an intermediate format == stores your asset good
  - Targeted for cross-tool usage
- X3D is a delivery format == delivers your application good
  - Contains run-time model enabling application-specific behavior

Remember the COLLADA workflow!

http://www.khronos.org/collada/presentations/Developing_Web_Applications_with_COLLADA_and_X3D.pdf

Example: Seymourplane

- COLLADA in different softwares: Notepad, Blender, Meshlab

- Examples of COLLADA and WebGL
  - SceneJS: Seymourplane
    http://scenejs.org/dist/curr/extr/examples/seymour-plane/index.html
  - GLGE: Nexuiz level
    http://www.glge.org/demos/leveldemo/

COLLADA Evaluation

Generic (pro and con):

- Does not define run-time semantics

Pros:

- Designed for data exchange
- Separately edit physics, effects, etc in specialized tools
- Extensible as standard (XML) and with application-specific data (<extra> tags)
- No costs or license fees to use, conformance testing for $6K
- Supported by many tools; DOM parser available with MIT license
- 500-page spec AND a reference card

Cons:

- Content often needs to be repackaged for delivery
- Tool support varies; Meshlab crashed when exporting to .dae :'(

Summary

COLLADA defines data exchange format between different tools to help you in creating and managing your 3D asset.

Apply application-specific behavior, and you have application for the end-user.