



3D Digital  
Textbooks

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Kwan-Hee Yoo

Chungbuk National University, Korea

# Two Approaches for Adopting 3D contents into a Digital Book

- ❑ **Embedding 3D Components into a Digital book Format such as ePub by IDPF, iBook by Apple, and HTML5 based on X3DOM**
  - Adv.: Simple
  - Disadv.: Not natural, do not support transformation such as translation, rotation, scaling
- ❑ **Making Pure 3D Digital Books by using X3D**

# ePub

- **IDPF(International Digital Publishing Fourm)**
- **250 company: Adobe, Apple, DAISY, DaiNippon, Google,...**
- **History**
  - **2005 IDPF**
  - **2007: ePub**
  - **2009: ePub 2.0.1**
  - **2011 August: ePub 3.0**
  - **Will be submitted to SC34 as eBook standards in 2012 Dec.**

# ePub 3.0

- **The interchange & delivery format for digital publications based on XML and Web standards**
- **ePub 3.0: Rich Media & Interactivity Enhancements**
  - **Video & audio support**
  - **Audio can be synchronized with text**
  - **Embedded font support**
  - **Improved SVG support**
  - **JavaScript Support**
  - **Core content based on XHTML5 + CSS2/CSS3**

# ePub 3.0

- EPUB Publications 3.0 [\[Publications30\]](#)
  - ✓ defines publication-level semantics and overarching conformance requirements for [EPUB Publications](#).
- EPUB Content Documents 3.0 [\[ContentDocs30\]](#),
  - ✓ defines profiles of XHTML, SVG and CSS for use in the context of [EPUB Publications](#).

# ePub 3.0

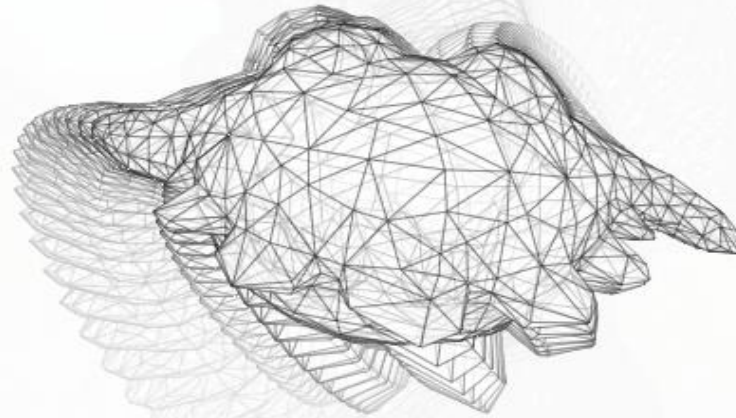
- EPUB Open Container Format (OCF) 3.0 [\[OCF3\]](#)
  - ✓ which defines a file format and processing model for encapsulating a set of related resources into a single-file (ZIP) [EPUB Container](#).
- EPUB Media Overlays 3.0 [\[MediaOverlays30\]](#)
  - ✓ which defines a format and a processing model for synchronization of text and audio.

# An Example of ePub 3.0

## 3D 콘텐츠

HTML5의 canvas 를 이용한 3D 콘텐츠 요소 표현으로 보다 실감나는 디지털 교과서 콘텐츠를 포함할 수 있다.

모델:  | 색조정키: R - V - G - W - B  
투명도 설정 키: 0~9 | 불선명도 효과: M





# **MOU Between Web3D Consortium and IMS Global Consortium**



# iBook

iBooks Author provides a variety of widgets that make it easy to add interactive objects to your book. Widget types include:

- **Gallery:** Add a sequence of images your readers can swipe through, each with its own custom caption.
- **Media:** Add a movie or audio file readers can play.
- **Review:** Add a sequence of interactive multiple-choice or drag-to-target questions.
- **Keynote:** Add a Keynote presentation (exported as HTML).
- **Interactive image:** Use labels (sometimes called callouts), panning, and zooming to provide detailed information about specific parts of a graphic.
- **3D:** Add a 3D COLLADA (.dae) file readers can rotate.
- **HTML:** Add a Dashboard widget (.wdgt) file.



## iBooks Author: Best practices for using 3D models

### Summary

With iBooks Author you can add COLLADA (.dae) files using the 3D widget; learn the best practices for creating these files for use with iBooks Author.

### Products Affected

iBooks Author

# Full 3D Digital Book

- **Adv.**
  - **Transformation, visualize them naturally**
- **Main Functions (supported in X3D)**
  - Displaying texts or images
  - Viewing by page unit(single or double page)
  - Zooming in and out
  - Fitting the page to the screen
  - Page scrolling
  - Fitting to width and/or to height of a page
  - Indicating page thickness, page numbering, and text hiding

# Full 3D Digital Book

- **Main Functions (supported in X3D)**

- Multimedia (Viewing pictures, 3D motion graphics, animations, audiovisuals or visual reality, Opening multimedia objects in new window)
- Interactive multimedia (Viewing interactive multimedia, Opening interactive multimedia objects in new window)

# Full 3D Digital Book



- **3D Book Examples using X3D**
  - **Example1**
  - **Example2**

# Full 3D Digital Book



- **Additional Functions (not in X3D 3.0)**
  - Annotation Functions for user interaction
  - Move Functions
  - Search Functions
  - Print Functions
  - Learning Support Functions

# Full 3D Digital Book

- **Annotation Functions**

- Writing (Stylus writing, Save/Delete writing)
- Memo (Entering/Saving/Editing/Opening/Viewing/Deleting memo, Selecting memo pen color, Creation a table of memo contents, Assigning the location of a memo window, Moving/Resizing memo window)
- Writing notes on a page (Entering/Saving/Editing/Opening/Viewing/Deleting notes, Indicating the date and time of notes, Saving notes as an image, Saving notes as a text file, Resizing a note window)

## ■ **Annotation Functions(Cont.)**

- Underlining(Selecting a color/shape/thickness of the line, Saving/Editing/Deleting an underline)
- Highlighting(Indicating highlighting, Selecting a color/shape/thickness for highlight, Saving/Editing/Deleting highlight)
- Textbox input(Creating a textbox, Saving/Editing/Deleting a textbox, Viewing the content of a textbox hyperlink)

# Effort of Web3D Consortium

- **3D Component(X3D)**
  - **ePub (IDPF), Learning Content(IMS), iBook (Apple)**
- **Full 3D Book (Digital Textbook)**
  - **Make X3D based Platform for pure 3D book**
  - **Make templates for supporting convenient functions such as turn over a page**
  - **Annotation functions**



# VR Education System



- **VR based 3D Online Education System**

# Items for eLearning in Web3D consortium

- **Embedding 3D components into eBook or eLearning content**
  - HTML5 + X3D
- **Pure Full 3D Book**
  - 3D Slide Set (Presentation)
  - Add new functions for annotation, learning supporting functions
- **VR based 3D Online Education System**

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충북대학교  
CHUNGBUK NATIONAL UNIVERSITY



# -Thank You

[khyoo@chungbuk.ac.kr](mailto:khyoo@chungbuk.ac.kr)