CGM versus SVG

Free Informational Webinar
Larson Software Technology

Introduced by Don Larson – CEO
Agenda

• Welcome
  • Don Larson – CEO – Larson Software Technology
• Webinar Housekeeping
• Introduction
  • Guest Presenter – David Manock
  • President – Vizualsite LLC
• Main Presentation
  • Opportunity to input Questions or Comments
  • Interactive Polls
• Webinar Summary
Webinar Housekeeping

- All participants audio will be on mute
- Please ask questions or comments using panel highlighted in red
  - Answers will probably provided post webinar depending on volume received
- Please vote in the interactive Poll, it is easy and private
  - The results will be live!
Guest Presenter

• David Manock – Vizualsite LLC
  • Short Biography
    • Started working life in the UK as a technical illustrator
    • Worked for the exclusive UK Reseller of IsoDraw, selling and training on systems
    • Moved jobs to an Arbortext Reseller, learned about the textual side of the technical documentation process
    • Another career move, this time to BAE Systems, selling the IETM (Interactive Electronic Technical Manual) software trilogi
      • During this employment period moved to the USA 6 years ago
    • Founded company, Vizualsite LLC based in Orlando FL, opened for business 1\textsuperscript{st} September 2014
      • More details \url{www.vizualsite.com}
        \url{dmanock@vizualsite.com}
CGM v SVG

- **CGM**: Computer Graphics Metafile
- **SVG**: Scalable Vector Graphics
  - a modularized language for describing two-dimensional vector and mixed vector/raster graphics in XML.

Technical Graphics?

Creative Graphics?
Webinar Objectives

• **Inform**
  - Clear and concise information
  - Minimize jargon
  - Myths explained

• **Engage**
  - Interactive polls
  - Short Demo of the file formats
  - Questions and Comments recorded and a response sent

• **Enable**
  - Informed decisions
  - Best practice
  - Graphics Production Analysis
Webinar Content

• Background information on the two graphics formats
  • Governance and Development
  • Where they are being used, industries?
  • How are they being used, origination, delivery?
• Advantages and Limitations of the formats
• Business benefits of using open formats
  • Interoperability
  • Non-Proprietary
• Interactive Polls
  • During the webinar we will ask for your feedback?
  • All information submitted is private
Interactive Polls

• At appropriate times during the webinar we will conduct an interactive Poll
• The results will immediately follow the vote!
• Questions:
  1. What file formats does your organization currently use in the graphics production process?
  2. How long will your graphics require maintaining?
  3. Do your graphics require interactivity when delivered electronically?

Engage
Inform
Brief

- **CGM** – A 2D graphics format with a long history of publishing quality graphics in different environments
  - The WebCGM profile was developed to deliver Vector Graphics for the Web
- **SVG** - Objective to deliver high quality vector graphics for the Web
  - The development of SVG was influenced by other submissions to the W3C (World Wide Web Consortium)
    - VML - Vector Markup Language (Microsoft)
    - PGML - Precision Graphics Markup Language (Postcript)
  - The final decision was to base SVG on XML
  - More information on the origins:
    - [Secret Origin of SVG](#)

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Cgm Introduction

• Computer Graphics Metafile (CGM)
• 2D Open Graphics format
  • Not owned, non-proprietary
• Managed by the CGM Open Foundation
  • www.cgmopen.org
• The CGM format first appeared in the 1980’s
  • The format was widely supported many graphics based applications
• WebCGM profile developed specifically for web delivery and adopted by the S1000D Specification www.s1000d.org
  • Requires plug-in technology in a web browser to view CGM files
  • W3C - http://www.w3.org/Graphics/WebCGM/
SVG Introduction

- Scalable Vector Graphic (SVG)
  - XML encoded format
- W3C Standard
  - http://www.w3.org/Graphics/SVG/
- Managed by SVG Working Group
  - http://www.w3.org/Graphics/SVG/WG/wiki/Main_Page
- Native support in all popular web browsers
  - No plug-in technology required (HTML5 Native)
CGM & SVG file size comparison

CGM 26KB

SVG 212KB

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Poll #1

What file formats does your organization currently use in the graphics production process?

- CGM (Computer Graphics Metafile)
- SVG (Scalable Vector Graphics)
- EPS (Encapsulated Postscript File)
- AI (Adobe Illustrator)
- Other

Engage
CGM
OVERVIEW
CJM Properties

- **Maintenance**: CGM is accomplished at maintaining complex technical graphics and outputting to multiple publishing formats.
- **Technology**: The ability to create and retain a CGM files consistent structure and format.
- **Reliable**: CGM provides an interoperable format for seamless Data Exchange.
- **Deploy**: CGM enables interactive graphics, hotspots can enhance the user experience, and also provides consistent print output.
- **Advanced**: CGM industry profiles provide the ability to comply and validate files. The WebCGM DOM (Document Object Model) provides the mechanism to manipulate files, animate!
Maintenance

• Graphical Attributes
  • Graphics with long life cycles require the ability to retain the structure of graphical objects including ellipses, circles, bezier curves to be preserved
  • Graphics have to communicate a technical message, usually in black and white

• Text Attributes
  • The text requirements are typically low for technical graphics
    • Typefaces are usually are not diverse, predominantly Helvetica
    • The ability to constrain text size and formatting is important

• Metadata (inside the file)
  • Requirements are low, hotspot region and ID information
  • XML companion files can contain additional information
CGM Properties

Technology

• The software tools to enable generation and revision of graphics is a key production requirement
• The tools require ease of use and compliance to CGM profiles
• Generation & Revision
  • Auto-Trol TI
  • CorelDraw Technical Suite X6
  • PTC Arbortext IsoDraw (CGM Mode)
  • VizEx Edit (Native CGM)
  • Cortona2d Editor Pro
C#M Properties

Reliable

• Interoperability
  • Good graphics data interchange capabilities are fundamental when mitigating risks on S1000D and ATA iSpec 2200 projects
  • Program costs can significantly increase if the data is not interoperable

• Usability and Reusability
  • Files have to be easy to edit and reuse

• Longevity
  • Many technical graphics have a long life span
  • Aircraft are a great example,
    • A multitude of graphics are created and maintained for many years

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CGM Properties

Deploy

- Deployment of CGM files on the web currently relies on plug-in technology
- The publishing of CGM files in IETM’s (Interactive Electronic Technical Manuals) is therefore dependent on a viewer
- Technology
  - MetaWeb
  - PTC Arbortext IsoView
  - VizEx View
  - Cortona2D Viewer
CGM Properties

Deploy Part 2

• The publishing of CGM files as part of a printed manual is dependent on various technologies
  • Print of individual CGM files is also possible from the illustration and text editing solutions

• Technology
  • ADG Binder
  • Corena Page
  • Inmedius S1000D publisher
  • LibroPlanta S1000D Publisher
  • PTC Arbortext Publishing Engine
  • Raytheon – Eagle Publishing System
  • SDL XPP

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CGM Properties

**Advanced**

- CGM Profiles provide the mechanism for complying to specific industry specifications, S1000D, ATA iSpec 2200, PIP
  - Profiles can be thought of as rules the graphic is measured against
  - [http://www.w3.org/Graphics/WebCGM/](http://www.w3.org/Graphics/WebCGM/)
- Profiles can also cascade providing multiple levels of validity
  - e.g. in the scenario below S1000D

```
ISO/IEC 8632-1 (1999-12-15) CGM
Model Profile Edition 2
WebCGM Profile Edition 2.1
S1000D Profile
```
Advanced (Part 2)

- Software tools are also available to check the validity of CGM files
  - Antea
    - LeoValidate
  - CGM Technology Software
    - CGM MetaCheck
- WebCGM DOM (Document Object Model)
  - Inspired by XML DOM specification
  - Interfaces for accessing and manipulating WebCGM documents, Animation!
  - Designed to provide access to XML metadata found in XML Companion Files
  - Example: CGM Animation
CGM – Additional Resources

- **NIST**
  - National Institute of Standards and Technology
- **ISO/IEC 8632-1:1999**
  - ISO (International Organization for Standardization)
- **W3C**
  - WebCGM Profile
  - WebCGM DOM
- **Linkedin**
  - CGM Open
  - S1000D Users
Poll #2

• How long will your graphics require maintaining?

- Less than a year
- 2-5 years
- 6-10 years
- 10+ years

Engage
SVG Properties

• **Maintenance**: SVG is XML encoded, and is capable of high quality display and print output of **creative graphics**

• **Technology**: The ability to create compelling graphics for web distribution

• **Reliable**: SVG’s creative capabilities include fine color control and typographical effects, filters can be applied to raster images including transparency, interactive animated graphics

• **Deploy**: Native HTML5

• **Advanced**: DOM (Document Object Model) and Document Type Definition (DTD)
  - [http://www.w3.org/TR/SVG/svgdom.html](http://www.w3.org/TR/SVG/svgdom.html)
  - [http://www.w3.org/TR/SVG/svgedt.html](http://www.w3.org/TR/SVG/svgedt.html)
SVG Properties

Maintenance

• Graphical Attributes
  • Easy to maintain while in original proprietary or SVG format
  • Excellent control over graphical objects

• Text Attributes
  • Typefaces in SVG can be controlled by Cascading Stylesheets (CSS)
  • The control of all text attributes is possible

• Metadata
  • The support of Metadata in SVG is flexible and open
  • Users are encouraged to follow existing metadata standards
Technology

• SVG is supported by all major all vendors of graphics software
  • Support is usually provided as an export as opposed to native support
  • The interoperability of SVG is an issue because of the lack of an industry profile

• Native SVG Editors
  • Inkscape – Desktop Application
  • SVG-Edit – Cloud based

• Graphics Software
  • Adobe Illustrator
  • CorelDraw Graphics Suite X7
  • VizEx Edit
SVG Properties

Technology (Part 2)

• SVG Animation
  • Adobe Edge Animate – Desktop Application
  • Animatron – Cloud based

• SVG Javascript Libraries
  • Snap.svg
  • Raphaël
  • svidget.js

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SVG Properties

**Reliable**

- Interoperability
  - This is a weakness of SVG almost impossible to interchange data without losses

- Usability and Reusability
  - The structure and integrity of files can be lost
  - Revisions best performed in CGM or original propriety format and re-exported

- Longevity
  - Suitable for short term requirements only
  - Not suitable for graphics archives
SVG Properties

**Deploy**

- The deployment to web of SVG files is very convenient
  - HTML5 Native
    - No plug-in required
  - Support in all major browsers
  - High quality vector graphics
  - Animation of graphical objects

- Limitations
  - Viewer, none or very little control of the graphic
  - The control of the graphic will need to be added by the creator
Advanced

• Document Object Model (DOM)
  • SVG supports a fully-functioned event model
  • Every attribute, style sheet and animation setting is accessible

• Document Type Definition (DTD)
  • Determine if a document or document fragment is conforming

• Cascading Stylesheets (CSS)
  • The ability to style graphics with CSS

• Animation
  • Define motion paths, fade-in or fade-out effects, and objects that grow, shrink, spin or change color
  • [http://www.w3.org/TR/SVG/animate.html](http://www.w3.org/TR/SVG/animate.html)
SVG – Additional Resources

• Adobe SVG Developer Center

• Webplatform.org
  • The latest information on how to use the technology that runs the web — HTML, CSS, JavaScript and more

• LinkedIn
  • SVG Group
Poll #3

• Do your graphics require interactivity when delivered electronically?

- Hotspots
- Animation
- None Required
Enable
Decisions
Graphics Production Analysis

• Analyze current graphic archive
  • What file formats are your graphics currently held in?
    • Proprietary or Non-Proprietary
    • Raster
    • Vector
  • **Decision Point:** Do you need to look at an alternative open format?

• Storage and Display
  • File size?
  • **Decision Point:** Can the file sizes be optimized?

• Management
  • File system
  • Database
  • **Decision Point:** Can we manage our graphics more effectively?
Graphics Production Analysis 2

• Compliance
  • Do our graphics need to comply to technical graphics specifications?
  • **Decision Point:** Do we need to validate our graphics?

• Quality Control
  • Do our graphics have to follow project or customer business rules
  • **Decision Point:** Do we need to validate our graphics?

• Open Graphics Format
  • Do we need to consider migrating graphics to an open standard?
    • Research open formats
    • Make informed decision
  • **Decision Point:** Will we need to migrate our graphics?
Graphics Production Analysis 3

- **Migration Strategy - Open Format**
  - Business Case
    - Benefits?
    - Cost?
    - ROI? (Return on Investment)
  - Conversion Process
    - Ad-Hoc?
    - Complete - Batch Process?
  - What software tools are required to perform task?
Take Away: Both graphic formats can be used effectively, the dependency is the use case

- **CGM**
  - Technical Graphics:
    - Long life-cycle requirement, format stability provides this benefit – ISO
    - Production requires rules to enable interoperability – INDUSTRY PROFILES
    - Graphics interchange requires no loss of information - INTEGRITY

- **SVG**
  - Creative Graphics:
    - Easy deployment, especially to the web – HTML5 & CSS
    - Production requires flexibility and creativity
    - Be careful when interchanging SVG files, graphical data losses can occur
Thank you for attending

- The slide pack will be sent to all attendees
- A recording of the webinar will be available
- Questions and Comments have been noted and you will receive a response
- This has been a Larson Informational Webinar more to follow, the next information based event will be in May
- The next Larson Webinar will be in April?
  - Product demonstration, focused on the new version of VizEx Edit

- Please contact Don Larson with any questions you may have
  - don.larson@cgmlarson.com