UGS CONNECTION

AMERICAS 2008

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Siemens PLM Software

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The CGM Perspective:

A look at the current status of the 2D "Computer Graphics Metafile" format

CGM – Computer Graphics Metafile

- Open – 2D Graphics Standard
- Internationally recognized
  - ANSI and ISO
- Vector, raster, text, external objects

Acceptance of CGM

- DOD (CALS)
- **Commercial airlines (ATA, AIA)**
- Auto and trucking (J2008, T2008)
- **European Aerospace (AECMA, S1000D)**
- Railroad Industry (EPES)
- Petroleum industry (POSC)

The archive 2D standard jungle

SVG

PICT

CCITT group 4

JPEG

GIF

PDF

WMF

IGES

TRIF

EDMICS

RFF

DXF

HPGL

MIF

CGM

EPS

VBIT

EMF

VDA

TIFF

CCITT group 3

BMP

Archive priority

- TIFF
- HPGL (PLT)
- PDF
- CGM
- SVG
- JPEG, BMP, EMF/WMF

The value of standards

- Reduce translation requirements
- Increase data stability
- Better data fidelity
- Reduce vendor dependency
- Improve reuse of data

CGM Version 1- 1987

- Basic vector picture exchange
- Many implementations
  - some good ones, some ?
- Rudimentary raster support
- Limited text control
- NIST Test Suites

CGM Version 3 - 1991

- Version 1 and 2 plus
- Excellent raster image capability
  - Tiled Cell Arrays/Compression
- Advanced text and font control features
- Amendment 1 added profiles
- Amendment 2 added application structures

CGM Version 4 - 1995

- Added “Intelligent graphics”
- Graphical navigation via hyperlinks
- Information retrieval
- Launch other applications

Intelligent Graphics Uses

- Electronic delivery of service information
- Electronic parts catalogs with links between illustrations and part name, part number, etc.
- “Just-in-time” graphics intensive information delivery
- Allows CGM to act as a peer to SGML/XML in compound electronic documents

So how do you chose a version?

- Visually all versions are much the same
- Version 3 files tend to be smaller
  - More efficient graphic primitives
  - CCITT Group 4 raster compression
- Version 4 adds intelligent objects
  - Hotspots and links – graphic to graphic, graphic to text, text to graphic

CGM Profiles

- Defines specific functionality tailored for the purposes of an application group
- Limits element variations, ie.
  - Line types, styles colors
  - Fonts
- Basis for conformance testing and certification
- CALS-1988, CALS a-1992, CALS b-1997, ATA-100, ATA-2100

Web CGM -- Extending the functionality

- Allow re-use of a single illustration
  - Different hotspots
  - Different tool tips
  - Different links
  - Selectively change color, thickness, fonts

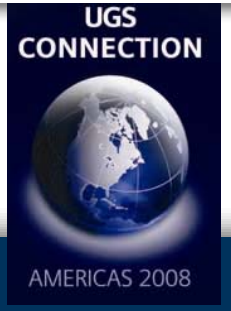
Current CGM Profile -- WebCGM 2.0

- The ATA CGM version 4 profile was the basis for WebCGM version 1.0 (2001)
  - Provided restructuring for more efficient use of CGM within web based applications
- Currently -- WebCGM version 2.0
  - DOM & XML companion file
  - Specified within S1000D

CGM From Within NX

- Available by
  - Direct CGM Export
  - ‘Plot to File’ out of BPS
- Produces CGM Version 3 – NX
- Produces CGM Version 1 -- IDEAS

Where to get more information



- The CGM Handbook
  - Lofton R. Henderson and Alice M. Mumford, Academic Press, 1993
- CGM Open on the Web
  - www.cgmopen.org
  - WebCGM Resources Pages
    - ‘Suggested Readings’ page

CGM Tool Suppliers

- Larson Software Technology
  - www.cgmlarson.com
- Siemens -- PLM Components – PLM Vis
  - www.plm.automation.siemens.com
- SDI – System Development, Inc.
  - www.sdicgm.com

CGM Support within Ancillary Applications

- BCT
- Cimmetry
- Enigma
- Informative Graphics
- Right Hemisphere

Summary

- CGM is an industrial strength graphics standard that can facilitate complex graphics interchange
- Government and industry acceptance and specification
- Has a very solid and ‘open’ controlled specification
- Growing importance of intelligent graphics within Technical Publications technology
- Easily utilized from within Siemens PLM and “Partner” products

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The CGM Perspective

Taking structured 2D graphics into the future.