GWG Specifications and the Future of PDFs for Packaging

David L. Zwang
Chairman-GWG
What is the Ghent Workgroup?

- For over 10 years - assembly of industry experts representing industry associations, vendors and users
- With hands-on experience and responsibilities
  - Commitment to do testing, reviewing and documenting
  - Regular meetings and on-line discussions
  - Educate the industry
## Association Members (18)

<table>
<thead>
<tr>
<th>Association</th>
<th>Country</th>
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<tbody>
<tr>
<td>BPIF</td>
<td>United Kingdom</td>
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<tr>
<td>CMBO</td>
<td>The Netherlands</td>
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<tr>
<td>DDPFF</td>
<td>Denmark</td>
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<tr>
<td>ERA</td>
<td>Europe</td>
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<td>Febelgra</td>
<td>Belgium</td>
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<tr>
<td>FESPA</td>
<td>United Kingdom</td>
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<td>FTA</td>
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<td>IdeAlliance</td>
<td>USA</td>
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<td>IDP Group</td>
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<td>Medibel+</td>
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<td>PDFX-ready</td>
<td>Switzerland</td>
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<td>Printing Industries of America</td>
<td>USA</td>
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<td>Rotasion.no</td>
<td>Norway</td>
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<td>Taga Italia</td>
<td>Italy</td>
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<td>UNIC</td>
<td>France</td>
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<tr>
<td>VIGC</td>
<td>Belgium</td>
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<tr>
<td>VSD</td>
<td>Switzerland</td>
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</tbody>
</table>
Vendor Members (12)

- Adobe Systems Incorporated
- Adstream
- Agfa
- Callas Software
- Dalim Software
- EFI
- Enfocus Software
- EskoArtwork
- GMG Color
- Remote Director
- Kodak
- Quark
## Industry Members (5)

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Litografía Rosés</td>
<td>Spain</td>
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<tr>
<td>Phototype</td>
<td>USA</td>
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<tr>
<td>Sanoma Belgium</td>
<td>Belgium</td>
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<tr>
<td>Pragmeta</td>
<td>Belgium</td>
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<tr>
<td>Square</td>
<td>France</td>
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</table>
# Educational Members (3)

<table>
<thead>
<tr>
<th>Institution</th>
<th>Country</th>
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<tbody>
<tr>
<td>Médiagraf</td>
<td>France</td>
</tr>
<tr>
<td>Ryerson University</td>
<td>Canada</td>
</tr>
<tr>
<td>University of Wuppertal</td>
<td>Germany</td>
</tr>
</tbody>
</table>
Why do we need it?

- Globalized Business Increasing
- Multiple requirements
  - Users are confused
  - Vendors are stretched
- Blind Exchange
- Too much time spent preflighting and fixing
- Too much duplication of efforts
- We need a common set of best practice guidelines
Subcommittees

- Color Management
- Compliancy Testing
- Cross Media
- Marketing & Education
- Variable Data
- Packaging
- Process Control
- Specifications
- Job Ticketing
Built on Standards

- Work done sits on top of standards
- Work with other standards bodies
- If none, we create from scratch
- Create best applicable best practices
PDF/X Plus Specifications

- Newsprint printing (coldset)
- Web offset printing (heatset) and Gravure
- Sheet offset and digital printing
- Silk Screen
- Wide Format
- Office Documents
- Packaging
Job Tickets

- Published Tickets
  - GWG/IDEAlliance Ad Ticket Specification 2.0
    - Based on the ADsML ticket
  - GWG Soft Proofing ticket
  - Universal Proof of Preflight *
- Other GWG Job Tickets in discussion
  - Commercial Print
  - Packaging
  - Etc.
Deliverables:

• Best Practices for different market segments & output processes
• Guidelines and setting files for the creation of conforming PDF files with the correct print settings in applications such as InDesign, MS Office, QuarkXPress and others.
• Guidelines and setting files for the creation of conforming PDF files using the correct settings for PDF creation tool like Adobe Acrobat and many workflow systems, etc.
• Test Suites to test workflows and solutions
• Standardized Job Tickets based on market application
• Education, White Papers, etc...

ALL FREE!!!
GWG Packaging Activities
Why PDF for Packaging?

• It’s all about expectations
• Standards and best practices help!
• Supply chain becomes easier
• Automation becomes possible
• Quality improves
• No surprises
GWG has been at this for a while

- Having been at best practice print specifications for a long time we saw the need for a Packaging solution
- GWG Packaging SC started in 2003
- Released preliminary setting files 2004
- Released first PDF specification in 2006
- Released ~PDF/X specification in 2008
While we were waiting...

- Really needed PDF/X-4 specification that supported the full requirements of packaging
- Required ISO standard changes
- Also
  - Color Spaces
  - Intelligent Layers
- So we continued to work
Problem

- Current Color Spaces don’t allow for
  - Good special color definitions
  - Good special color ramps
  - Certain unique effects
    - Metallics
    - Display of certain types of color data on display devices

- Why? Because we don’t use a ‘native space’
Visual ID of problem

4 inks same substrate

All using different ingredients. Using Lab and DE all are within 2.0,

Packages do not match in multiple lighting conditions. ie: the store
Basic Color Theory

• It’s all about Waves
Current State of PDF Color

- CMYK, RGB, LAB, ‘Named Space’
- Presently a device’s color characteristics are defined at a given state (usually calibrated)
  - Ink/Colorant
  - Substrate
  - Marking - dots, dithers, pixels, etc.
- Characterization information is stored and communicated in a profile
Best way to define color

Color really varies based on the wavelength
Solution: Add Spectral

- No limits, only device
- Purest form of color identification
- Need a way to carry Spectral Data in PDF
- CxF
- More waiting
  - Licensing
  - ISO approvals
Why CXF

• Developed to carry all types of color information, including: Spectral
• ‘Current’ ICC profile structure doesn’t support depth of information needed
• GWG is also working with ICC on future options
How?

- PDF as ‘named color space’ and point to CXF
  - Embedded in PDF file
  - Information can be extracted and is available for proofing, ink mixing, etc.

- Not to be confused with PantoneLive
  - You can not embed the color information in a PDF nor can you download the color details to any current proofing device.
Future State of PDF Color

• Presently a devices color characteristics are defined at a given state (usually calibrated)
  – Ink/Colorant
  – Substrate
  – Marking dots, dithers, pixels, etc.

• Characterization information is stored and communicated in a profile
Treasted as other color spaces

• All available attributes
  – Overprints
  – Transparency
  – Etc.

• Currently no Adobe support for display of values

• Third parties should/could support
GWG Overview of “Intelligent Layers”

Steven Carter
Co-chair GWG Packaging subcommittee
Objectives Standardized: Non Printing Contours in PDF Files

- Create one digital master that can be exchanged and used by all parties without the need to create additional PDF files based on use case.
- Provide the ability to have specific views based on the participants defined roles.
Non Printing Contours in PDF Files: Recent Standard Published:

• It is common practice in the packaging industry to add additional contour data (objects) in a PDF file that will not be used for printing the final product such as spot colors used as reference i.e. varnish, emboss, or die line.

• At this point in time there is not a standardized method used to store this information in the PDF.
Non Printing Contours in PDF Files

The dilemma

- In 1 PDF file the die line can be stored in a layer called “CAD” using a contour with strokes in a spot color while in another PDF file the die line is stored in the same layer as the graphics and is represented as a contour with a stroke in spot color “die.”
- There is not a common method used to store this information in the PDF.
Examples of Non-printing Contour Data

- Structural data (CAD)
- Braille
- Legend (shirttail)
- Dimensions
- Panel positions / Print Areas
- Special Print Conditions
  - Emboss
  - Foil Stamp
Examples of Non-printing Contour Data
Why Include Non-printing Contour Data in a PDF?

- One PDF contains all needed information
- Correct placement of graphical data
- QC / Print Feasibility
- Finishing details
  - Folding
  - Cutting
- Tooling
- Digital Finishing

Embossing/Tool Making
embossing ON
everything else OFF
OCG – What?

- **OCD**: Obsessive Compulsive Disorder
- **OCG**: Optional Content Group
- **OCCD**: Optional Content Configuration Dictionary
- **OCMD**: Optional Content Membership Dictionary
- **OMG**: Oh My God!
How To Store Non Printing Contours in a PDF?

- Use of Layers, better known as Optional Content Groups (OCG).
- Create Parent/Children Hierarchy
- Define Dictionary.
  - Key defines the purpose of this OCG.
OCG Identification

- **OCG Organization**
  - **Names: not standardized.** Chosen by the writer to be suitable for presentation in a viewer application’s user interface. Most likely localized to the country or graphics provider.
  - **Optional Content Group Dictionary.** Definition of the purpose of the OCG was not present.
  - **Layer (OCG) Content: not consistent.** The content of each OCG tends to be different in most use cases.
OCG Dictionary

• Intent of Dictionary
  – **Standardized Meta Data.** Use simple value pairs that are already defined for nonhuman usage.
  – **Standardized Values.** Defines the names that will be used for each OCG.
    • Structural
    • Dimensions
    • Braille
    • Legend
    • Positions
  – Allows for custom OCG applications
OCG Use in Real Life

• Applications
  – Manage objects based on Category.
    • No limit to the number of OCG
    • OCG can be displayed individually or in groups
  – Create OCG Values based on Special Need.
    • Varnish
    • White Plates
    • Embossing Art
    • Foil Stamps
    • Positions

Individual OCGs

OCGs in groups
OCG Use in Real Life

Applications (continued)

- Allows for custom OCG applications.
  - Languages
  - Country or Region Specific
  - Custom Print Applications
Use Cases in Real Life

• One PDF File Used for Many Users
  – Allows for Default OCG viewing based on need.
  • Languages can be turned on and off as needed
  • Technical OCGs can be turned off for the non-technical user
  • Multiple OCGs can be viewed on or off based on user profiles

Same file used for two regions by using Multiple OCGs
Use Cases in Real Life

• **Allows for Custom Viewer Profiles**
  – Compliant PDF Viewing software can be configured based on the standard OCG

• **Allows for easier Automation**
  – No need to make special PDF files for each workflow need.
  – Maintains single source of the truth.
Opportunities

- Currently no Applications can easily Author PDF files with Standardized OCG
- Aim is to create the need so vendors see an opportunity to add to their respective PDF tools.
Goal

• Establish
  – Common nomenclature throughout the world
  – Standard OCGs
  – Universal OCMD access and usage

• Educate
  – Vendor Base on specification
  – User Base on use cases and benefits
  – Associations/Educational institutions
Measurements / Benefits

- **Time savings to:**
  - Package design cycle
  - CPC design management teams

- **Effectiveness to:**
  - Workflow process
  - Only one file to manage

- **Ease of use to:**
  - Agency
  - Studio
  - Separator
  - Printer
Implementation Needs

• Up to Vendors to Create Intelligent Applications to Implement/Utilize the GTS_Metadata Dictionary When Creating PDF files for the Intended Use Cases
• Up to Vendors to Create Intelligent Viewers for PDF files using OCG
Questions?
Thank You!