CIP3

Workflow from Prepress to Postpress – Advantages for the Integrated Production

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Overview

- Introduction
- What is CIP3 PPF?
- Workflow with CIP3 PPF
- What Advantages can be expected by using CIP3 PPF?
- Current Status & Outlook

Process Changes

- trend to small volume
- good color quality
- reasonable price

low volume printing is characterized by:

  – short machine runs, but same time for setup

  – more jobs per day required to become profitable

→ reduction of make-ready times

What is Needed?

- introduction of efficient workflow for all areas of print production
- derivation of setup values by using data of previous processing steps
- overcome obstacles against efficient data exchange
- unique, vendor- and platform-independent exchange format

CIP3 Consortium

CIP3 = International Cooperation for Integration of Prepress, Press, and Postpress

PPF = Print Production Format

- technical development by
  Fraunhofer Institute for Computer Graphics,
  Darmstadt, Germany

CIP3 PPF Goals

- apply concept of CIM to print production
- collection of data for presetting in order to reduce make-ready times
- use of information already known in previous processing steps
- abstraction from real machine (thereby vendor-independent)

CIP3 History

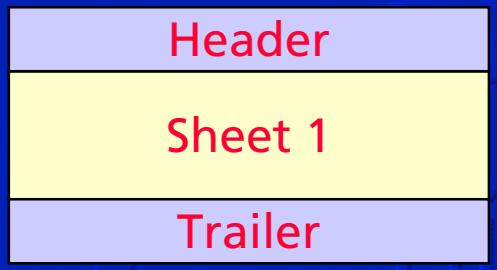
December	1993	idea
September	1994	1st internal draft specification
December	1994	1st functional prototype
February	1995	foundation of CIP3 group with 15 foundation members
May	1995	CIP3 presentation at DRUPA'95 version 1.0 of CIP3 PPF
August	1995	1st CIP3 PPF file created
August	1996	version 2.0 of CIP3 PPF
June	1997	version 2.1 of CIP3 PPF presentation at Imprinta '97
June	1998	version 3.0 of CIP3 PPF
October	1999	39 member companies

CIP3 PPF Overview

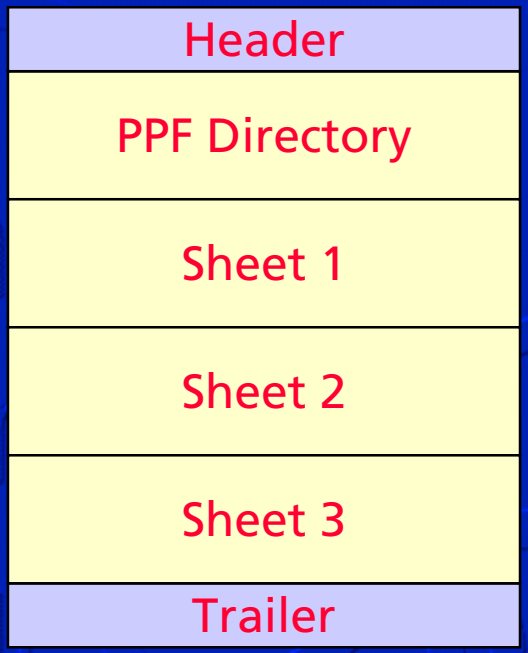
ideally: description of a complete product

- PPF directory
- product definition
- one or more sheet definitions

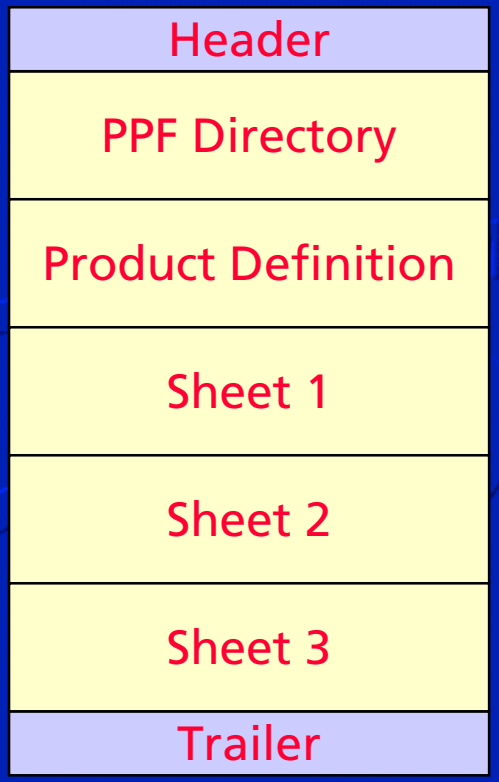
CIP3 PPF File



single-sheet file (since version 1.0)



multi-sheet file without product definition (since version 2.1)

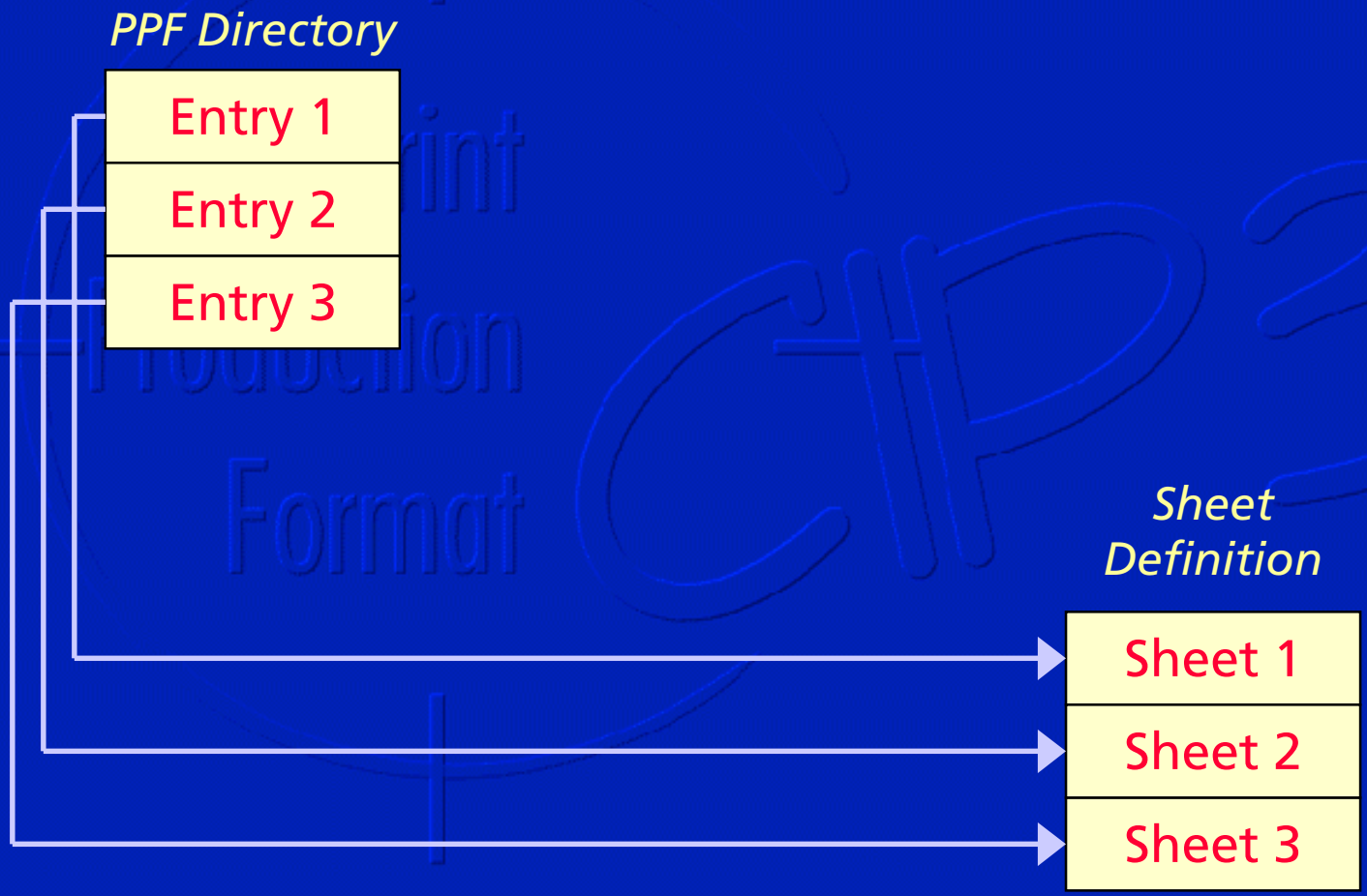


multi-sheet file with product definition (since version 3.0)

PPF Directory

- is the "directory" of the sheet definitions
  - position of sheet definition within file
  - length of sheet definition
  - sheet name
- empty directory entries possible

PPF Directory



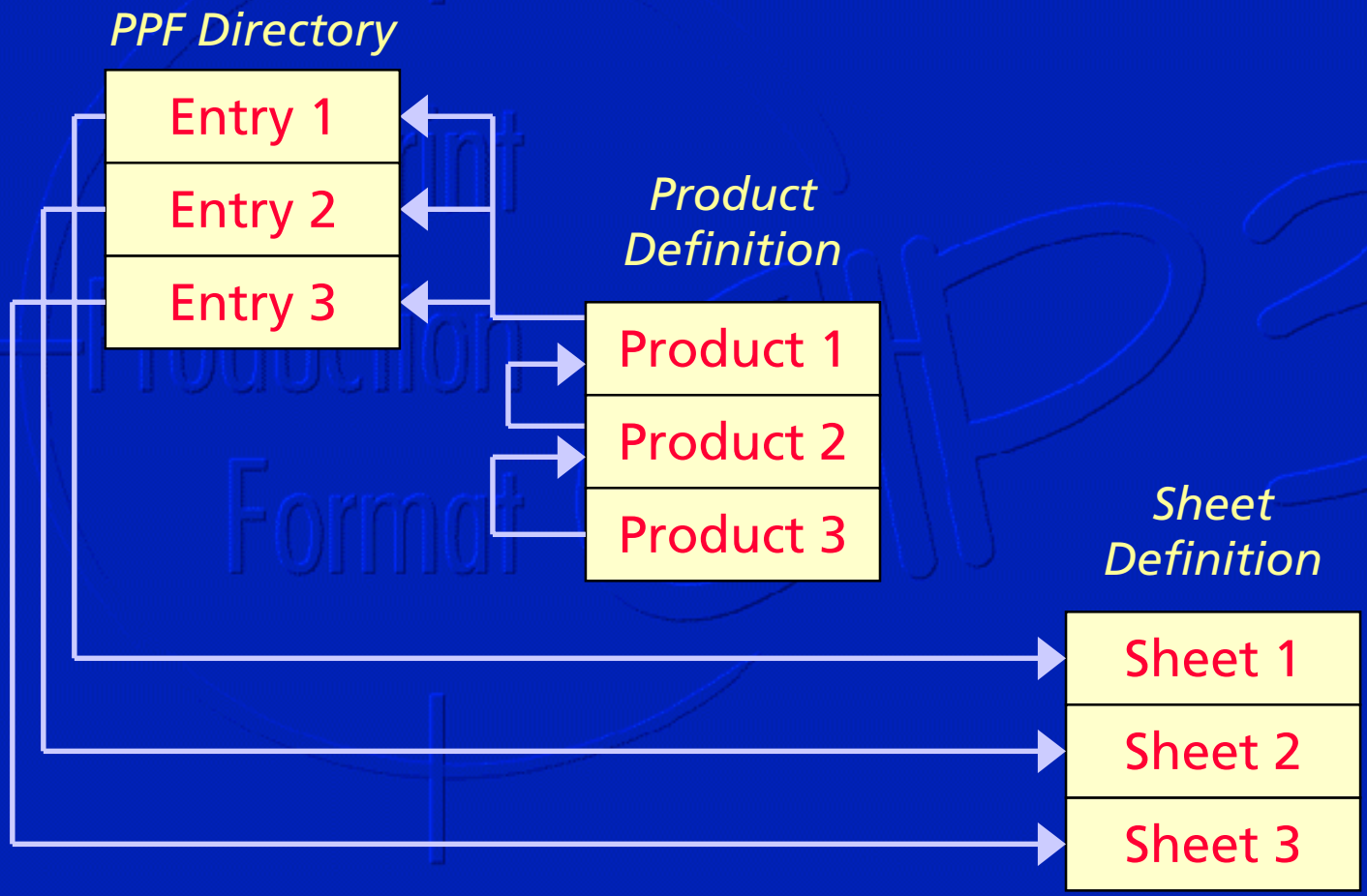
Product Definition

- step by step description of production process
- each single step includes
  - operation name (e.g. AdhesiveBinding)
  - list of input components:
    sheet, cut block, partial product, external product
  - operation specific parameters
- “FinalProducts“ are entry points

Product Definition

- collecting & gathering
- thread sewing & side sewing
- saddle stitching & stitching
- end sheet gluing
- adhesive binding
- gluing in
- trimming
- folding

PPF Directory



Product Definition "Adhesive Binding" Example

1) back preparation including milling and notching
2) gluing application on back side of book block
3) gluing application on front side of book block
4) gluing application on spine of book block
5) gluing of gaze strip onto spine
6) second gluing application on spine of book block
7) scoring and gluing in of soft cover

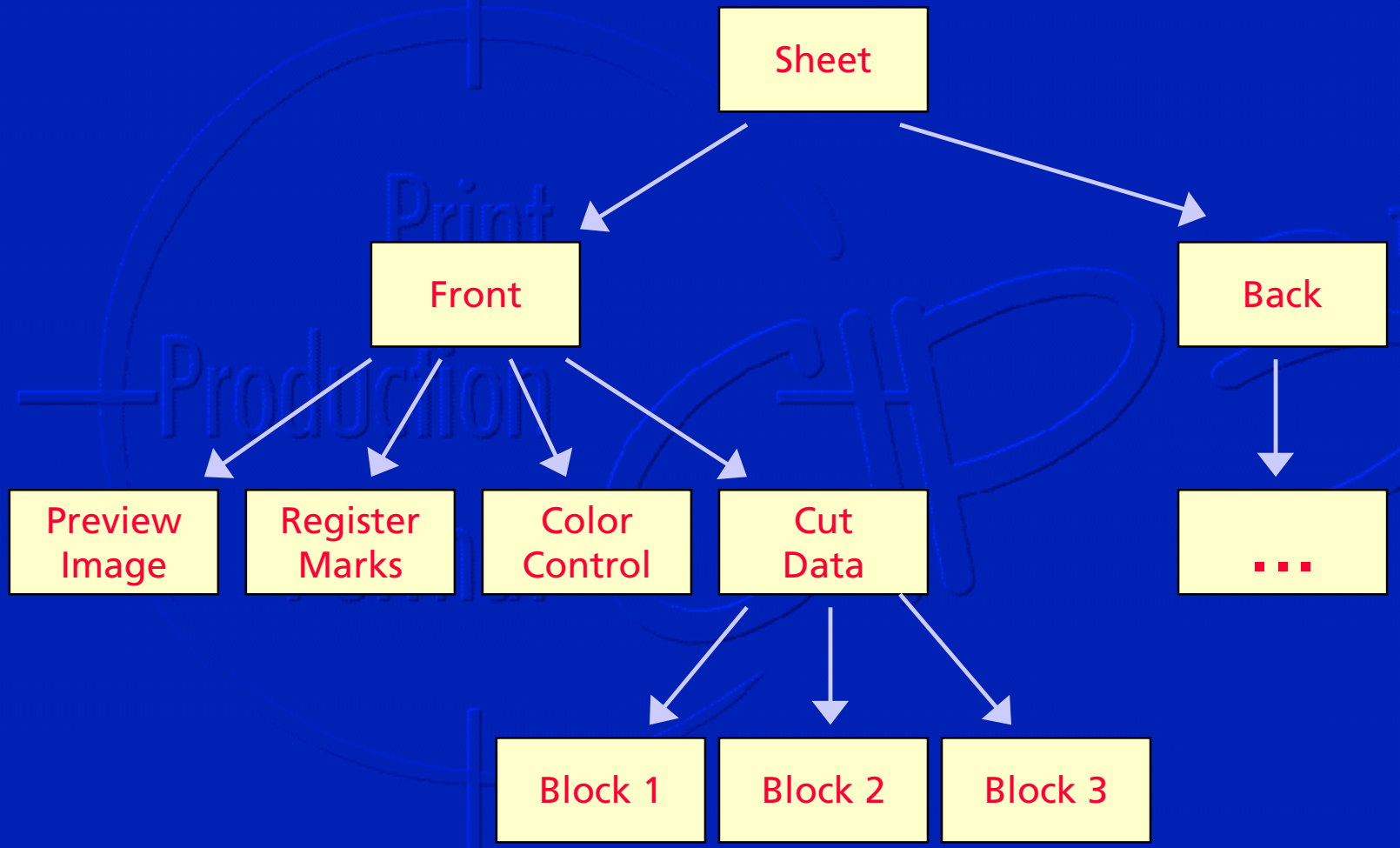
Sheet Definition

- administrative information
- special data for tools in web presses
- low-resolution preview images
- characteristic curves of transfer
- color and density measuring fields
- color control strips
- register marks
- cutting information
- folding information
- private data / private content

Sheet Definition

- structure nodes form a structure hierarchy
- attributes
  - administrative attributes, e.g. volume
  - specific attributes for web presses
- content
  e.g. preview images, register marks

Structure Hierarchy



Structure Hierarchy

- allows for efficient retrieval of information
- inheritance mechanism
- extensible by concept of "private data" structures

Attributes

- administrative information
- special web press information
- characteristic curves of transfer (for ink consumption calculation)
- cut block data
- folding data
- private data

Attributes

- data types
  - boolean — true, false
  - integer — -12, 0, 342
  - real — 0.53, -0.3, 14.5e32
  - name — jack, /Left
  - string — (customer address)
  - array — [1 (text) 5.0]
  - dictionary — << /Tolerance 5.0 /Light /D65 >>

Content

- preview images
- register marks
- color and measuring fields
- color control strips
- cut marks
- comments and annotations
- private content

Preview Images

- several separations
  - 1 bit or 8 bit per pixel

or

- composite CMYK image
  - 32 bit per pixel
  - no special colors
  - no other sequence possible

Preview Images
Encoding & Compression

- encoding
  - binary — /Binary
  - hexadecimal — /ASCIIHexDecode
  - ASCII85 — /ASCII85Decode
- compression:
  - none — /None
  - run length — /RunLengthDecode
  - JPEG — /DCTDecode
  - fax group 3 + 4 — /CCITTFaxDecode

Requirements for Preview Images

- goal:
  total error for ink coverage calculation < 1%
- requirements
  - spatial resolution: at least 50.8 ppi
  - number of tonal values: at least 64 shades
- possible solution
  - ripping with ca. 400 ppi (without screening)
  - filtering with anti-aliasing by a factor of 8

Preview Images Code Example

```
...
CIP3BeginPreviewImage
CIP3BeginSeparation
(First separation of Front) CIP3Comment
/CIP3PreviewImageWidth 420 def
/CIP3PreviewImageHeight 593 def
/CIP3PreviewImageBitsPerComp 8 def
/CIP3PreviewImageComponents 1 def
/CIP3PreviewImageMatrix [420 0 0 593 0 0] def
/CIP3PreviewImageResolution [50.8 50.8] def
/CIP3PreviewImageEncoding /ASCIIHexDecode def
/CIP3PreviewImageCompression /None def
CIP3PreviewImage
 < ... hex encoded image data ... >
CIP3EndSeparation
...
```

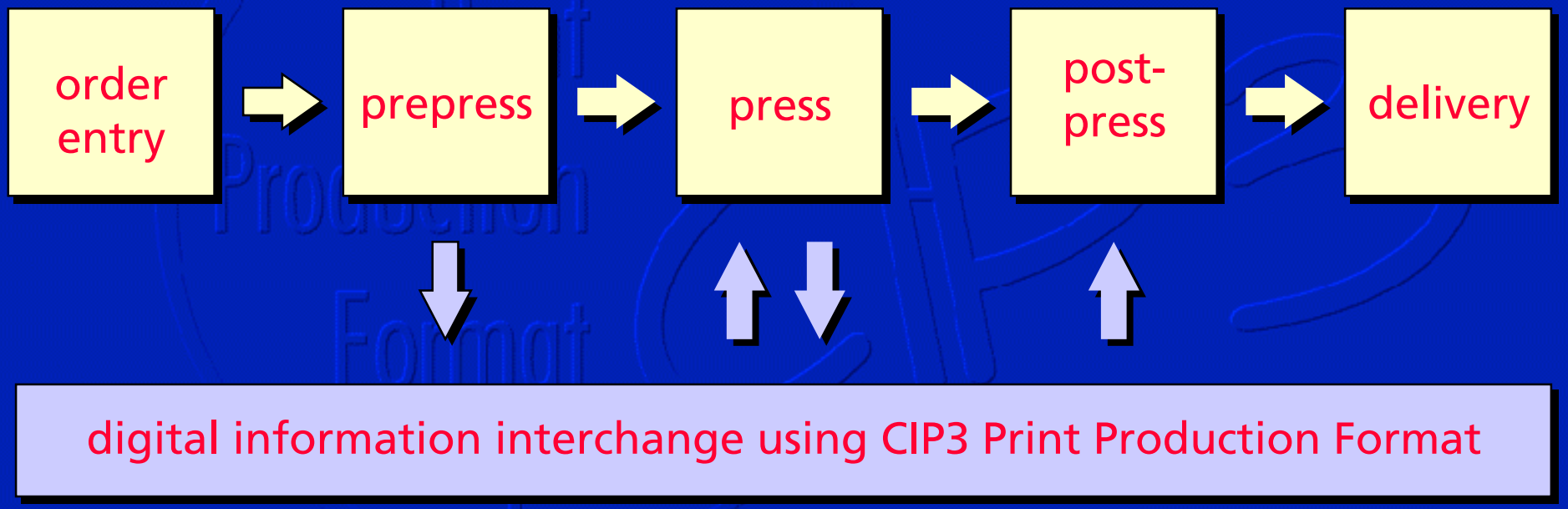
Typical Areas of Application

Prepress	imposition, ripping, plate making
Press	ink key presetting, register control, color quality control
Postpress	cutting, folding, collecting, binding, trimming, ...

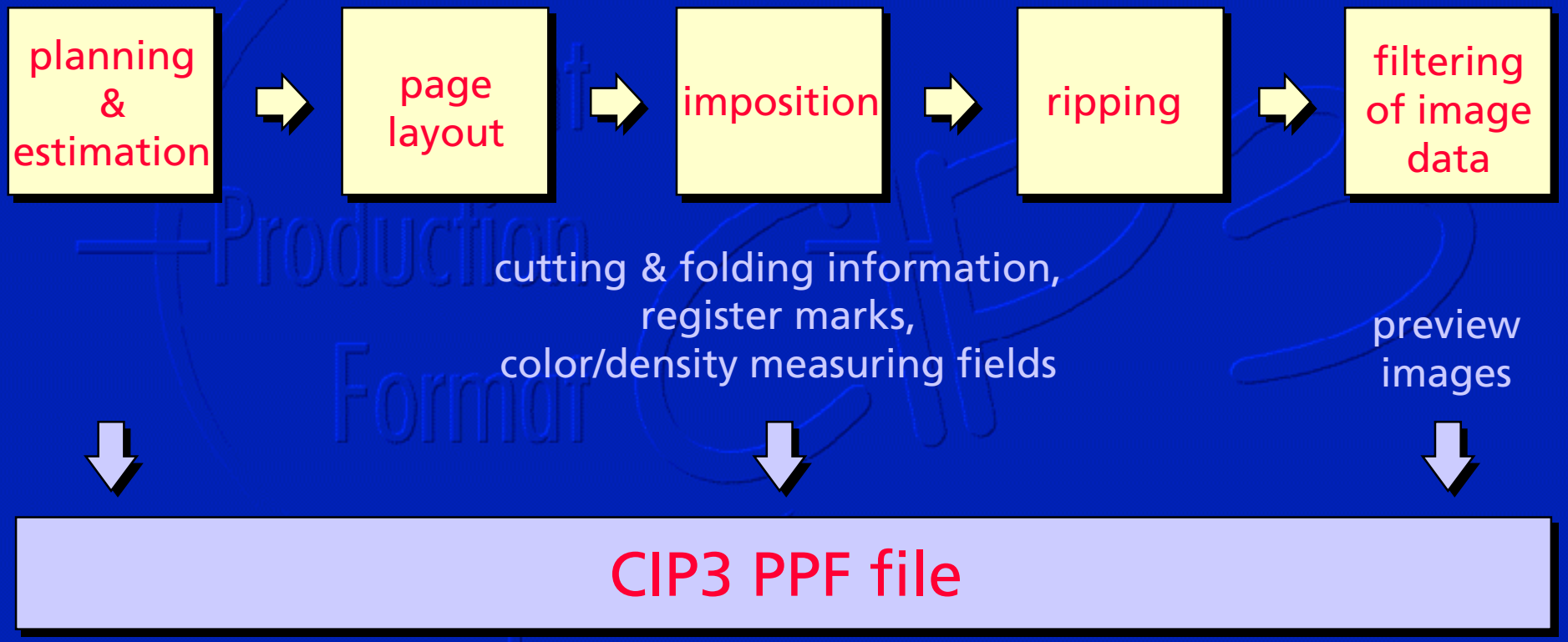
CIP3 PPF & Workflow

- is not a workflow system
- is one valuable piece within a workflow solution
- supports a digital workflow
- can be used for archiving
  (by using “private data” even the storage of final machine settings is possible)

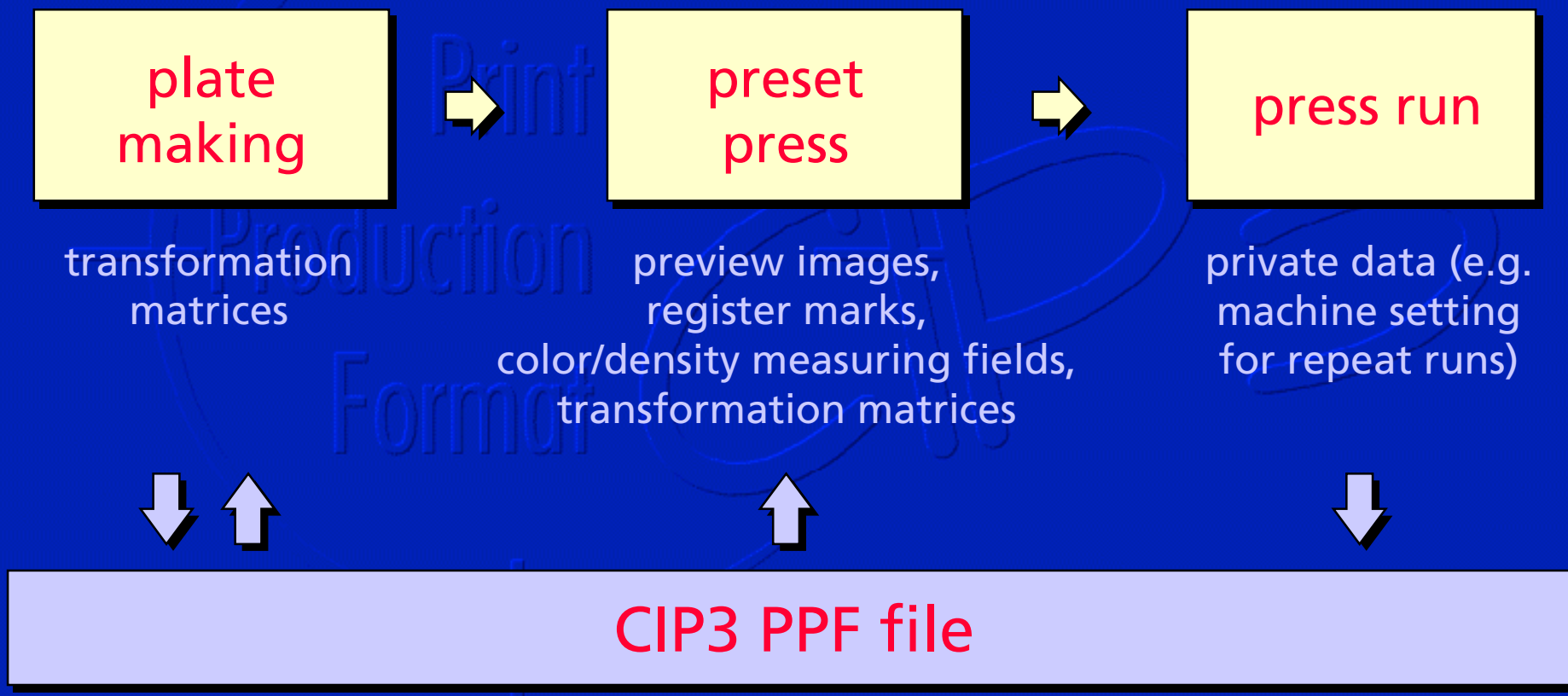
CIP3 PPF & Workflow



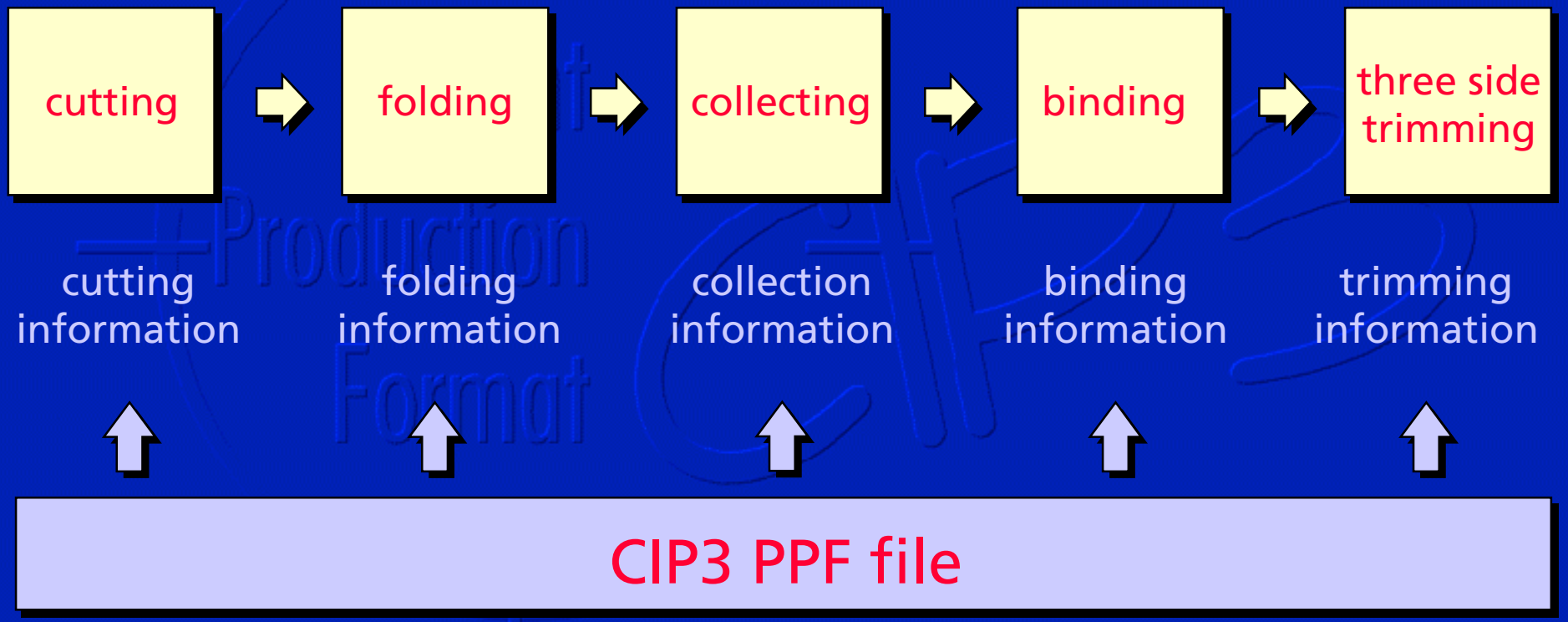
Prepress Workflow



Press Workflow



Postpress Workflow



Advantages of CIP3 PPF

- only one acquisition of the same data
- support of computer-to-plate and thereby avoiding film chemistry
- faster machine setup
- shorter production cycles
- better quality control
- less error-prone through automation
- less garbage

→ improved productivity and reduction of costs

Status

- version 3.0 of CIP3 PPF specification available since June 1998
- current products:
  - products generating CIP3 PPF (layout and imposition software, RIP's)
  - products for ink key presetting at press
  - product for presetting of cutting machines
- future plans:
  - development of PJTF-based encoding

Prerequisites for the Use of CIP3 PPF

- software generating CIP3 PPF files
  - e.g. imposition and ripping software
- software consuming CIP3 PPF files, i.e. software able to
  - read and interpret CIP3 PPF files
  - convert the retrieved data into machine-specific data
  - provide a data link to the machine (e.g. via storage medium or via network)

Further Information about CIP3 Print Production Format

available on CIP3 WWW Server:

http://www.cip3.org

Activities
Applications
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Sitemap
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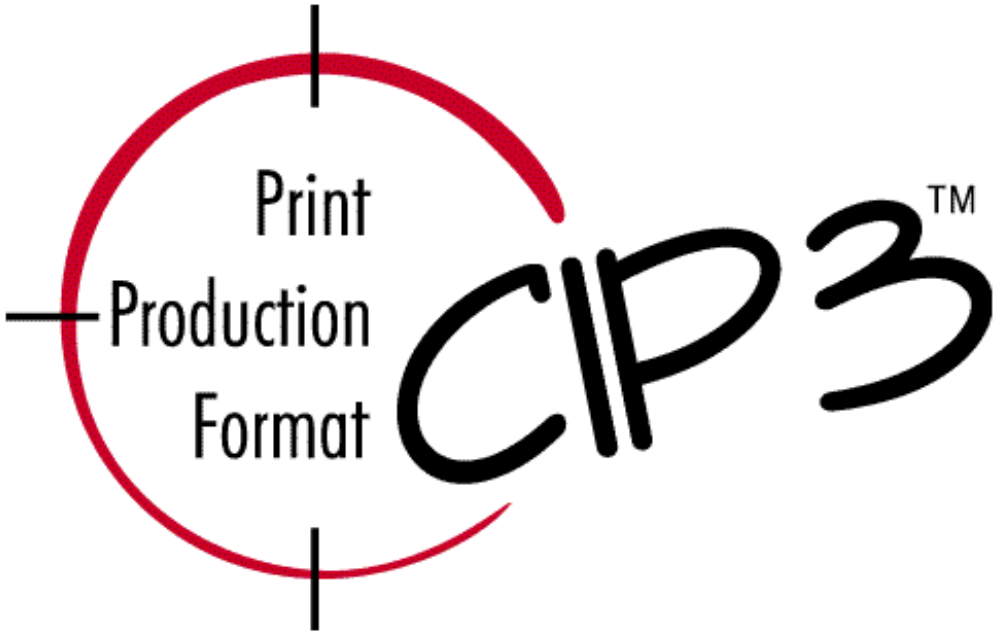
What's New

Welcome to the CIP3 WWW site



Fraunhofer IGD Institut Graphische Datenverarbeitung

This website is maintained by
the department Document Imaging
of the Fraunhofer Institute for Computer Graphics
in Darmstadt, Germany.

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Ewert Ahrensburg Electronic
Fujifilm Electronic Imaging
Gallus Ferd. Rüesch AG
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Hagen Systems
Hamada Printing Press Co.
Harlequin
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