

# Report4PDF

A Smalltalk PDF Report Writer

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# Introduction

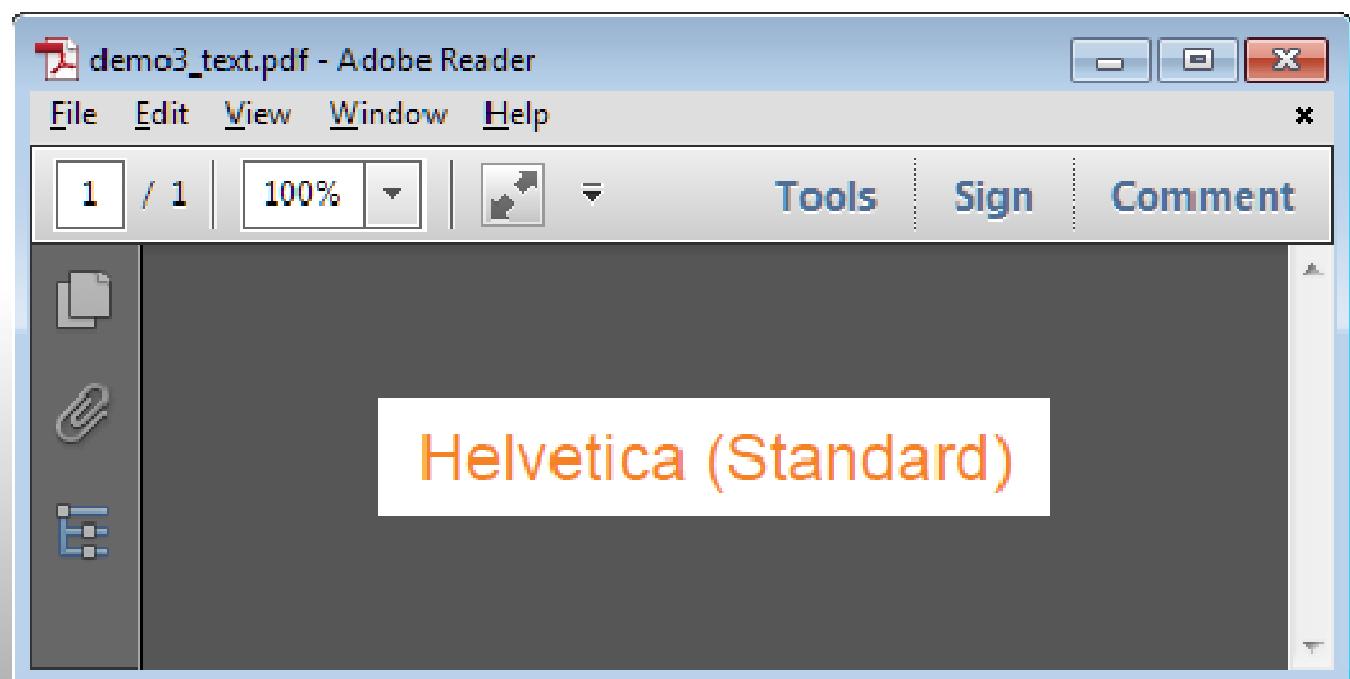
We need to support Seaside based reports.  
Our approach is to build a PDF document and serve it as a file.

PDF4Smalltalk provides a rich set of tools for building a PDF.  
Report4PDF uses these tools to build PDF reports.

# PDF4Smalltalk

Christian Haider's implementation of the PDF specification  
(ISO standard PDF 32000-1:2008) in VisualWorks Smalltalk.

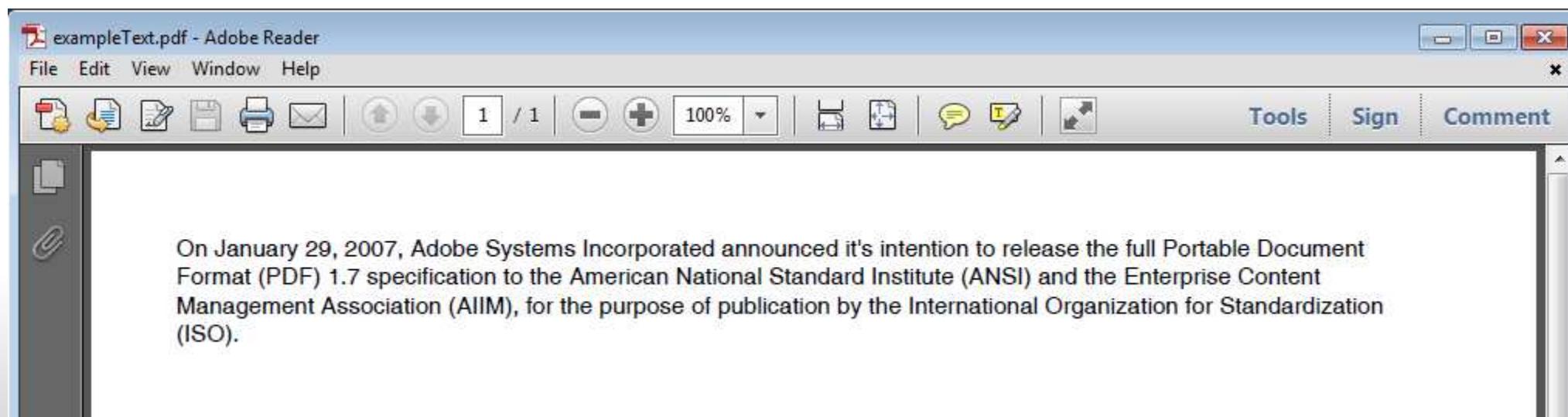
```
| page |
page := Page newInBounds: (0 @ 0 corner: 165 @ 30) colorspace: DeviceCMYK new render: [:renderer |
renderer textRenderingMode: 0.
renderer fillColor: (CmykColor cyan: 0 magenta: 0.6 yellow: 1 black: 0).
renderer textObjectDo: [
    renderer setFont: #Helvetica size: 16.
    renderer add: (TextPositioningOperator Td operands: #(10 10)).
    renderer showString: 'Helvetica (Standard)']].
page saveAndShowAs: 'demo3_text.pdf'
```



# Report4PDF

## Add a simple text layout layer to PDF4Smalltalk

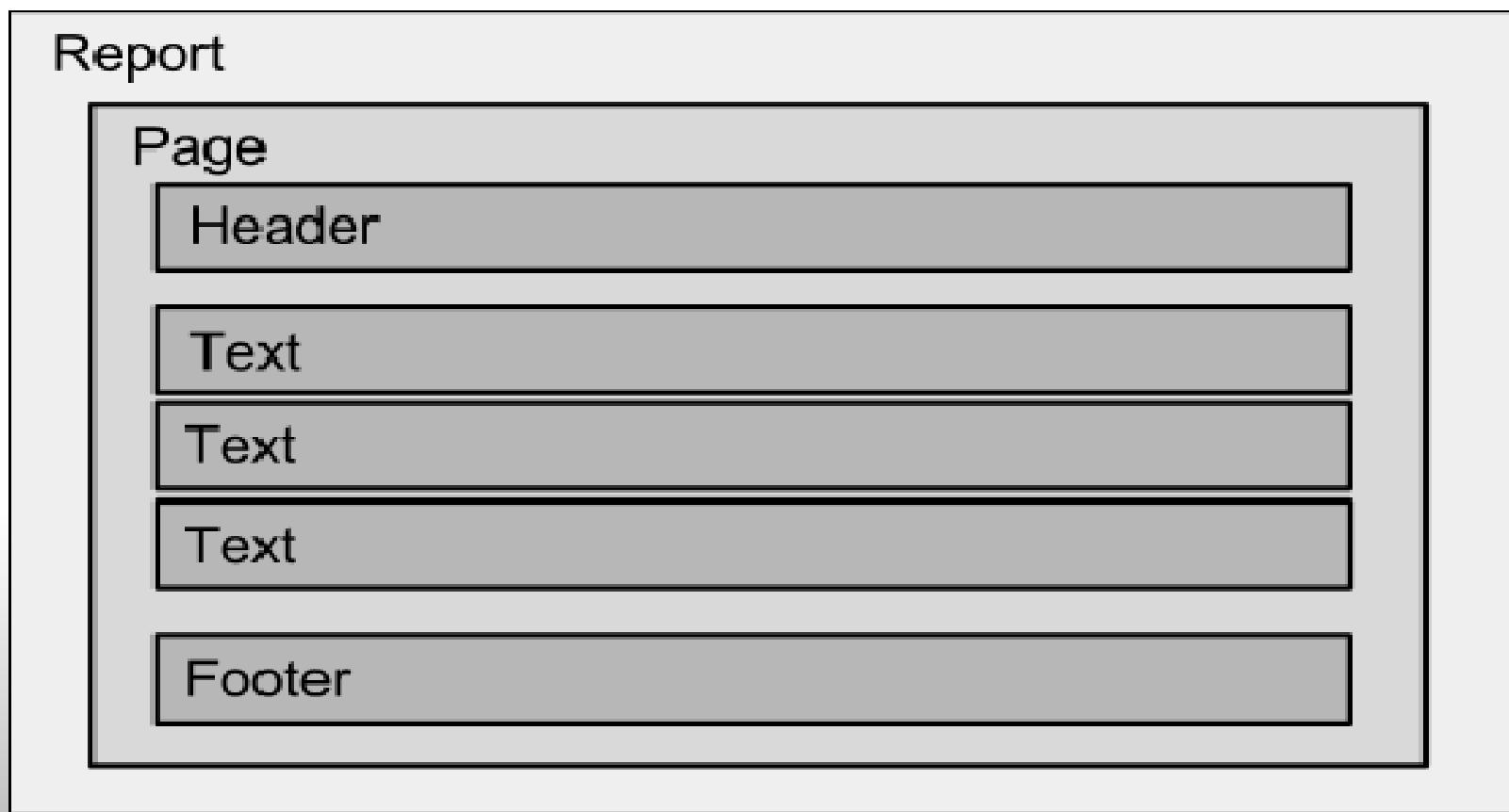
```
| report |
report := R4PReport new.
report portrait.
report page string: 'On January 29, 2007, Adobe Systems Incorporated announced it''s intention to release the full Portable Document Format (PDF) 1.7 specification to the American National Standard Institute (ANSI) and the Enterprise Content Management Association (AIIM), for the purpose of publication by the International Organization for Standardization (ISO).'.
report saveAndShowAs: 'exampleText.pdf'
```



# Report Layout

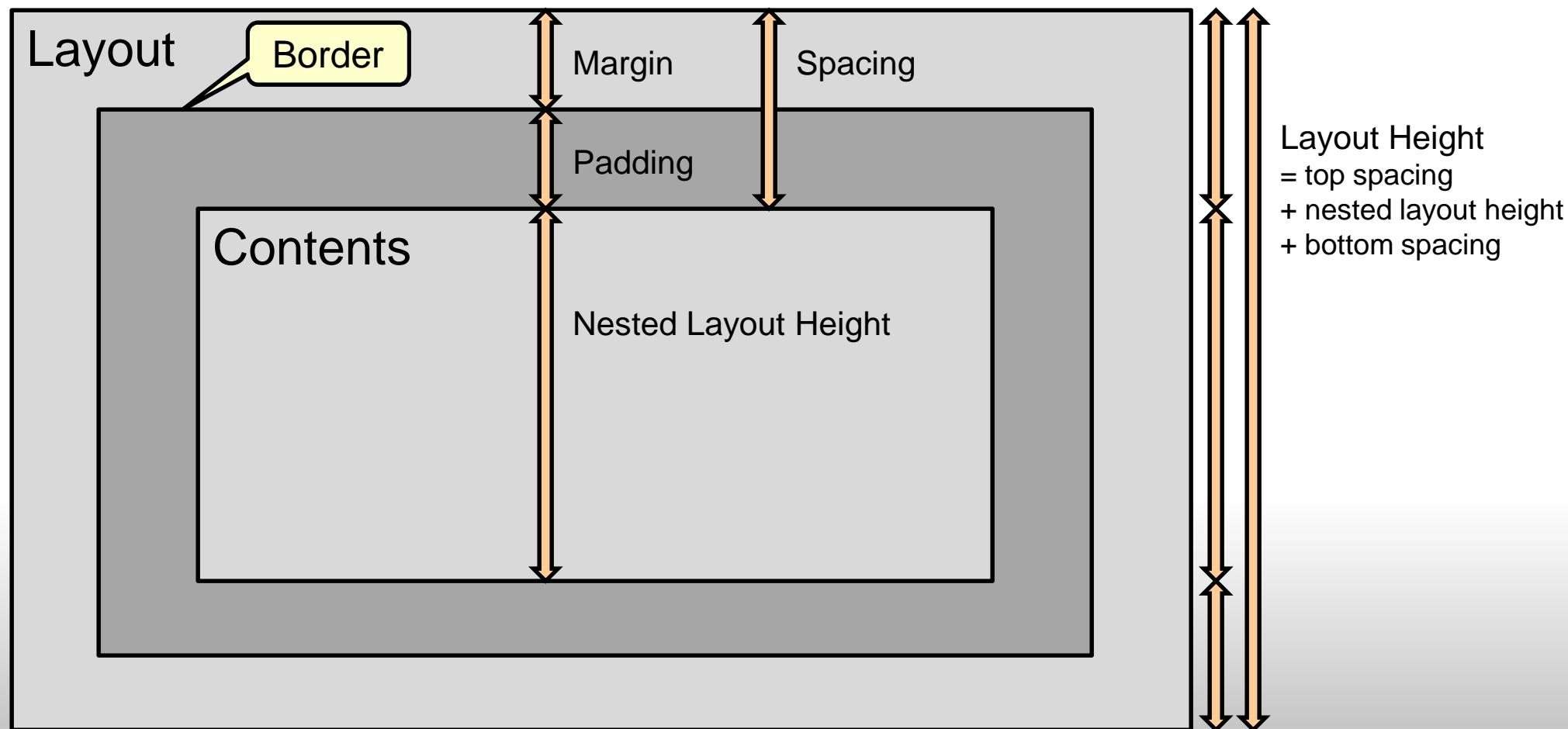
Build a report by adding pages to a report, and by adding layout sections to a page. Attributes (like font size, color) are inherited from parent layout sections.

Layout sections can placed in fixed locations, or are positioned by the size of previous and nested sections.



# Margin, Padding and Border

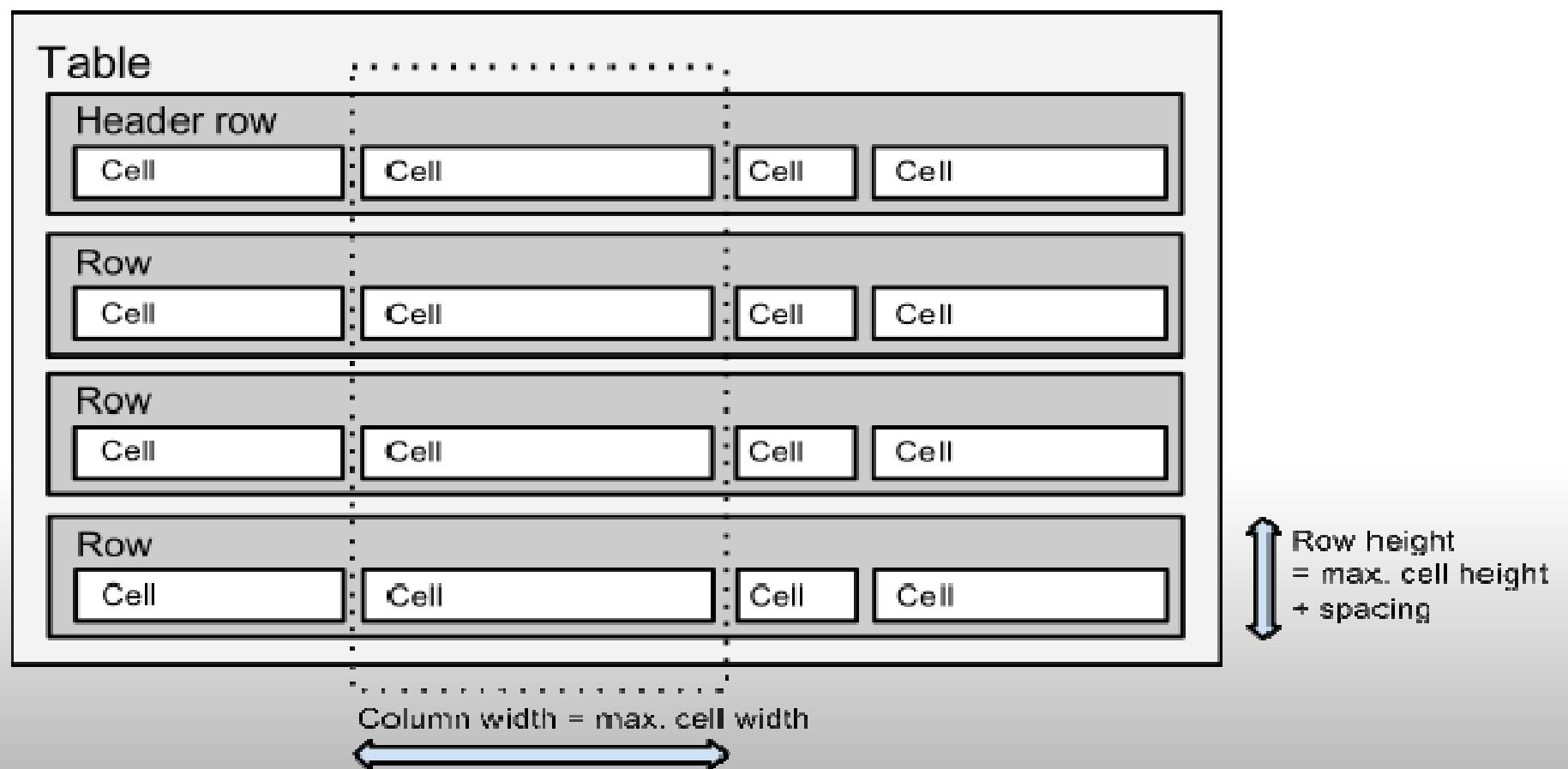
Each page and layout section support margins and padding.  
Parent sections define the layout boundary of nested sections.



# Table

Tables for tabular data, or to position other layout sections.

A table cell can contain any other layout section, including other tables.



# Column span Row span

Table

Header row

Cell

Cell

Cell

Cell

Row

Cell column span = 2

Cell

Cell

Row

Cell

Cell row span = 2

Cell

Cell

Row

Cell

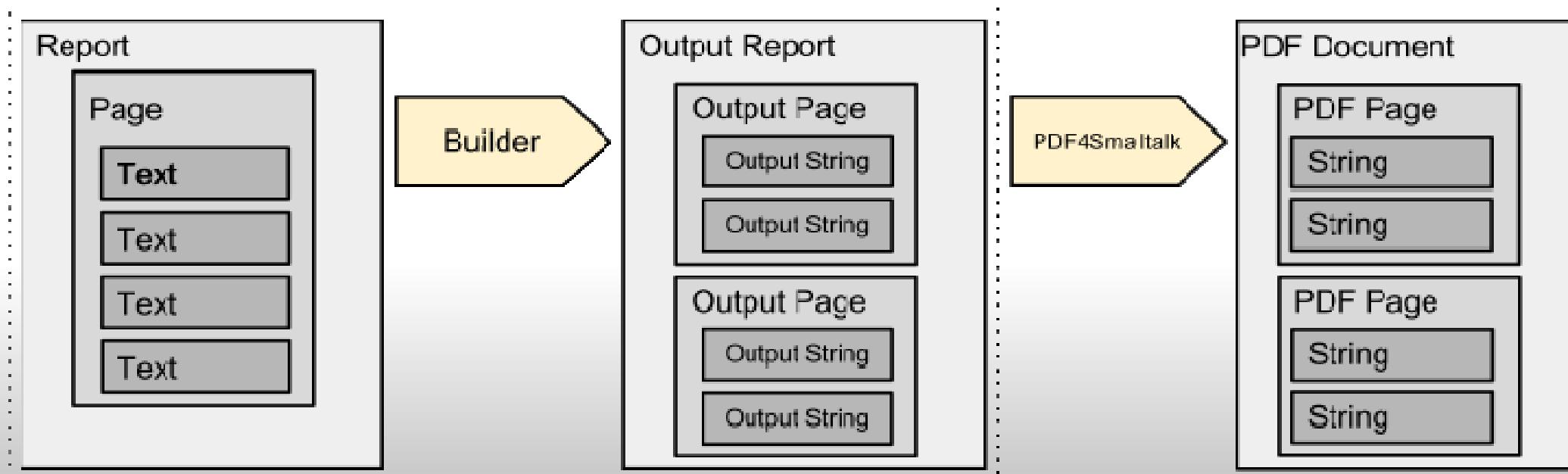
Cell

Cell

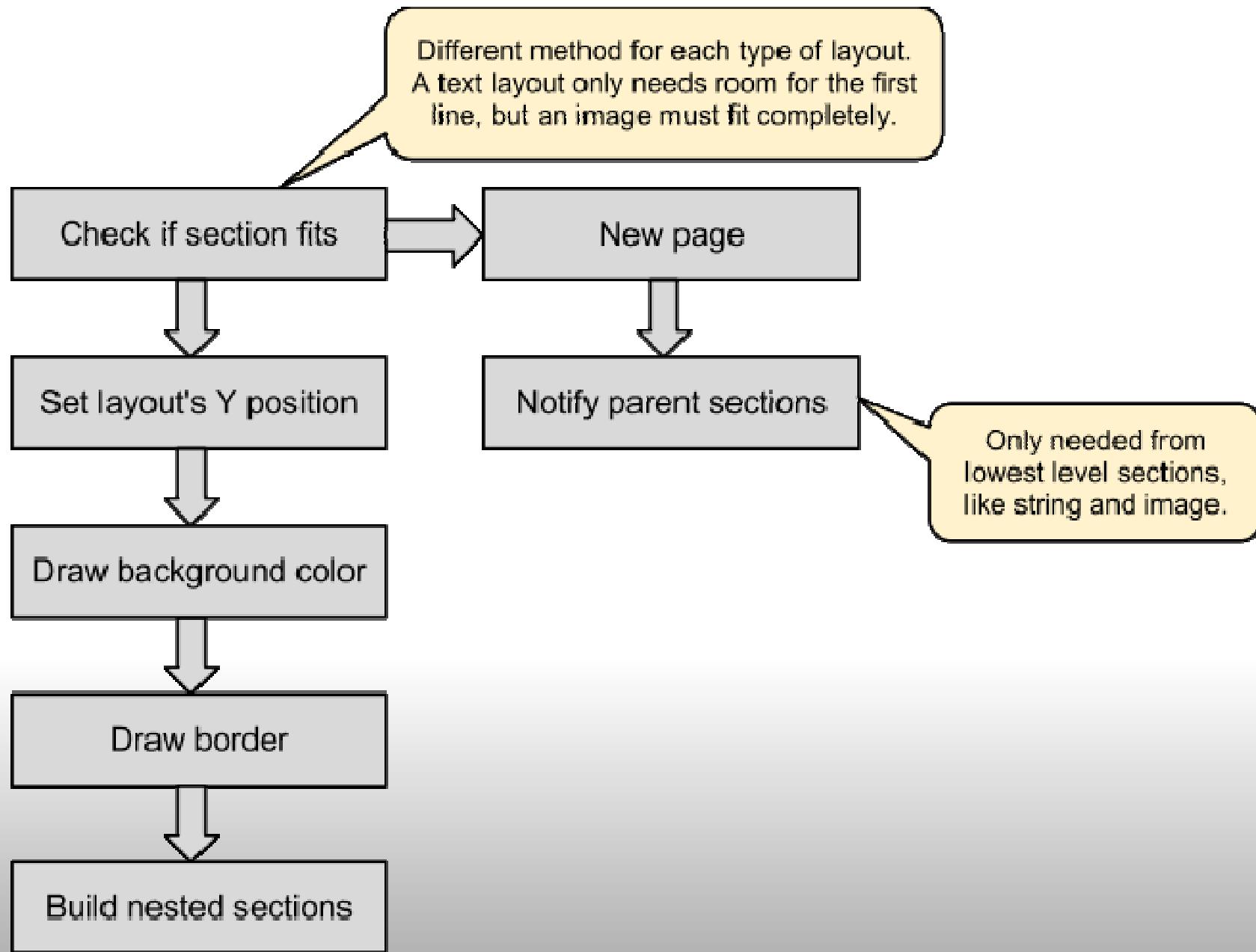
# Layout Sections and Output

Text and table cell section can contain nested layouts.

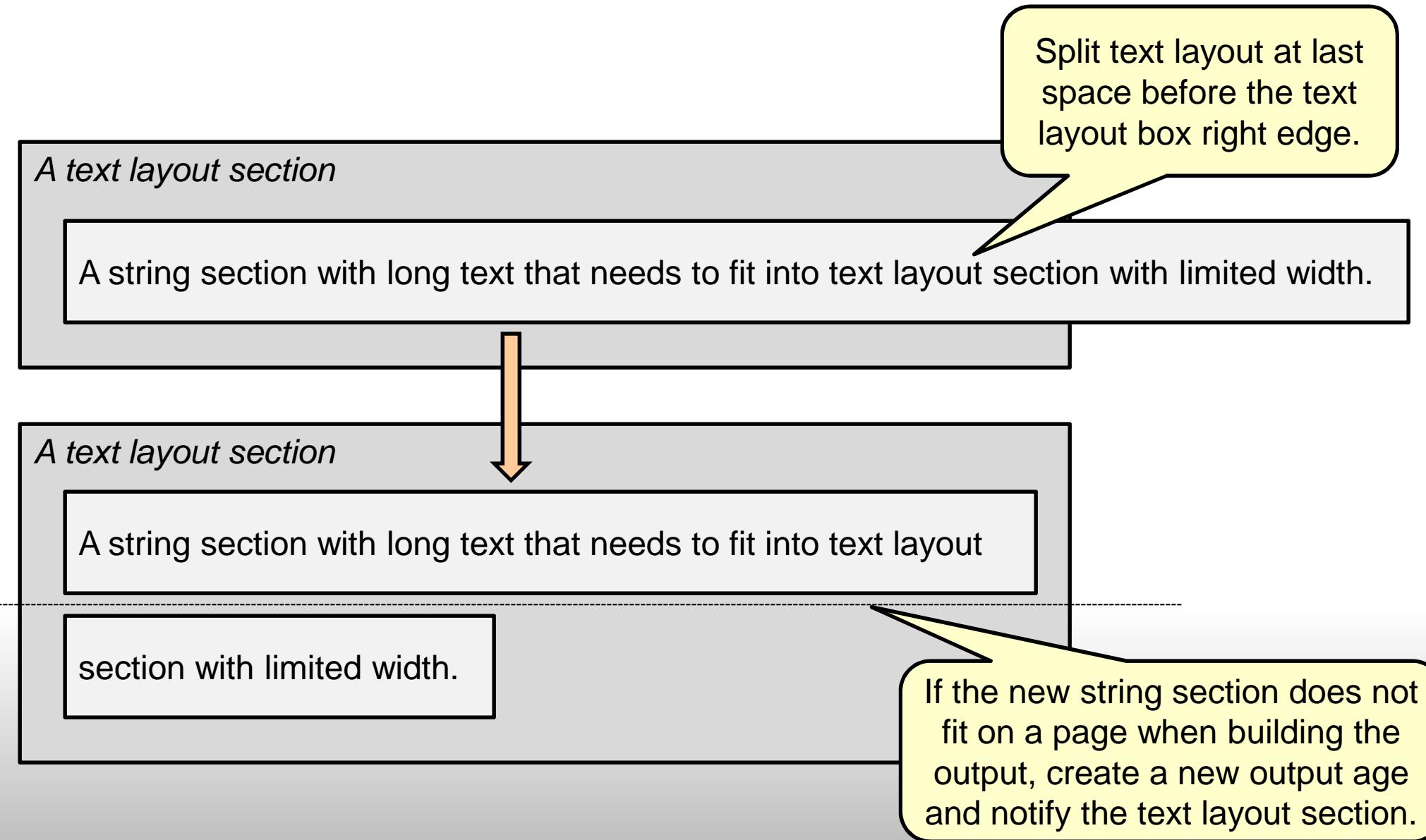
Layout parameters, like margin, alignment, font, padding, etc. are inherited from parent layouts, with defaults at the report object.



# Build Layout



# Build Text



# Code pattern

Add a layout section to either the page or other layout section.  
Use a block convenience method if adding multiple sections.

Report build methods are influenced by Seaside canvas pattern.

```
report page text string: 'Hello'.
```

Adds a second text  
section on the page.

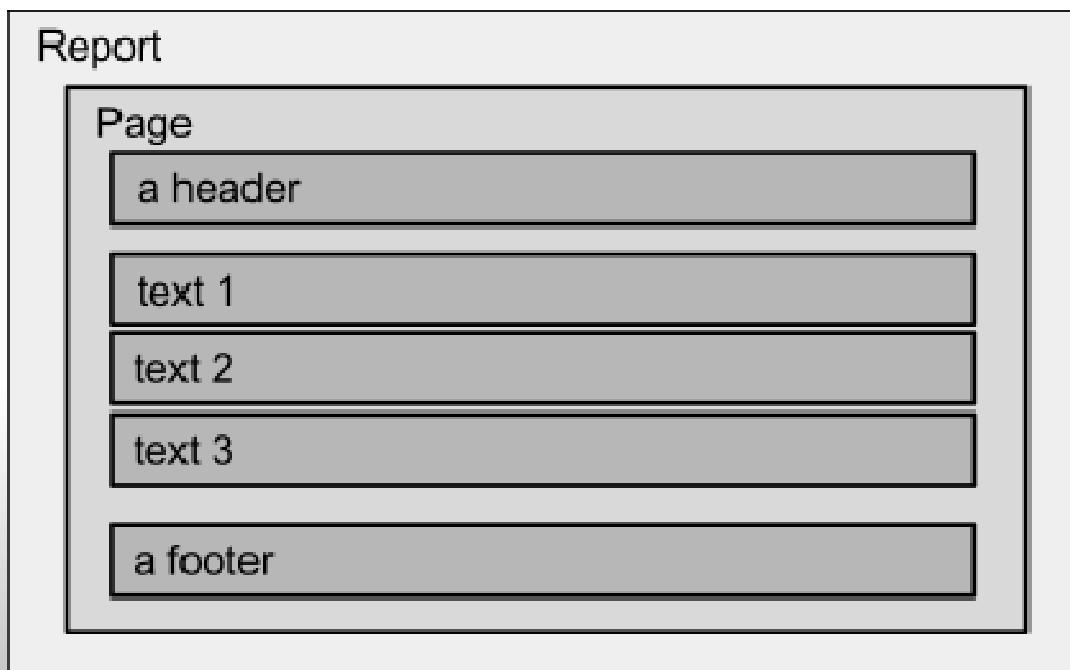
```
report page string: 'Hello'; string: 'Goodbye'.
```

```
report page: [:page |  
    page text big; bold; courier; string: 'Hello'.  
    page text left small timesRoman string: 'Goodbye'].
```

# Add header, text sections & footer

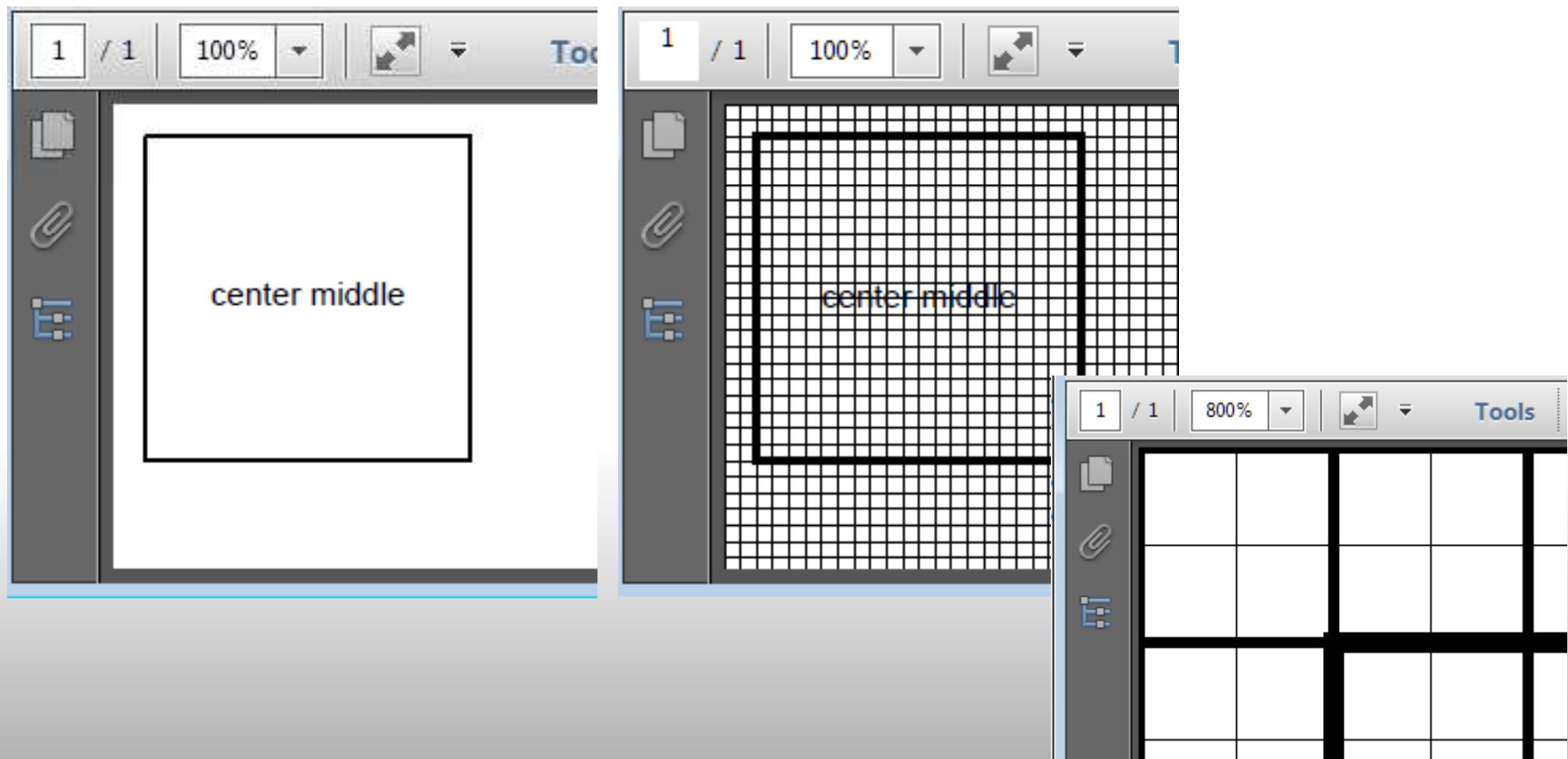
```
report page: [:page |  
    page header string: 'a header'.  
    page text: [:text | text string: 'text 1'].  
    page text string: 'text 2'.  
    page string: 'text 3'.  
    page footer string: 'a footer']
```

All three code sections add one text section with one string.



# Text centered & middle

```
report := R4PReport new.  
report businessCard.  
report page: [:page |  
    page grid section  
        origin: 10 @ 10; width: 100; height: 100; border: 1; center; middle;  
        string: 'center middle'].
```



# Page with header

```
report := PRwReport new.  
report portrait.  
report page: [:page |  
    page header text fontSize: 20; string: 'This is a header'.  
    page header text fontSize: 10; string: 'This is a second header section with smaller font'.  
    page text string: self sampleText1; margin: 10.  
    ...
```

The screenshot shows a window titled 'Page with header' with a toolbar at the top containing icons for file operations like Open, Save, Print, and Email, along with zoom controls (125%), orientation (Portrait/Landscape), and other document-related functions. The main content area displays the following text:

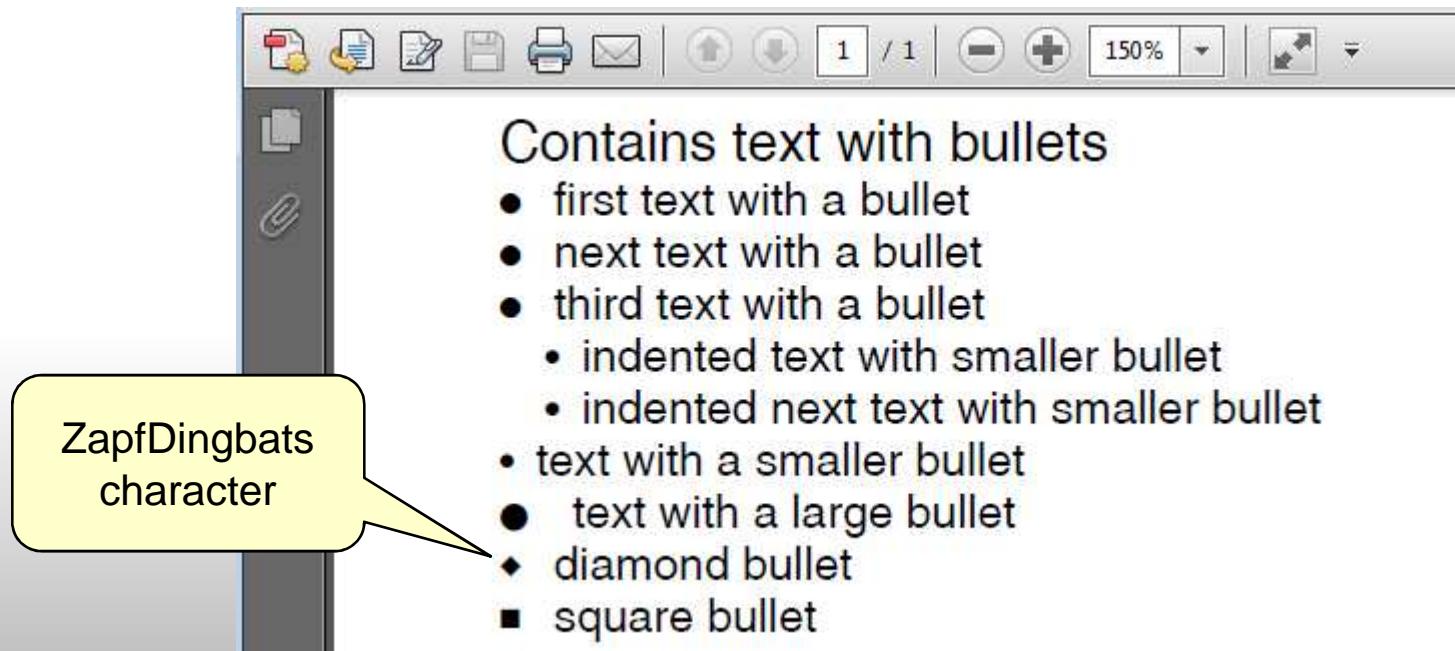
**This is a header**

This is a second header section with smaller font

On January 29, 2007, Adobe Systems Incorporated announced its intention to release the full PDF 1.7 specification to the American National Standard Institute (ANSI) and the International Organization for Standardization (ISO).

# Bullets

```
report page: [:page |  
    page header fontSize: 12; string: 'Contains text with bullets'.  
    page bullet string: 'first text with a bullet'.  
    page bullet string: 'next text with a bullet'.  
    page bullet string: 'third text with a bullet'.  
    page bullet small indent: 10; string: 'indented text with smaller bullet'.  
    page bullet small indent: 10; string: 'indented next text with smaller bullet'.  
    page bullet small; string: 'text with a smaller bullet'.  
    page bullet large; string: 'text with a large bullet'.  
    page bullet diamond; string: 'diamond bullet'.  
    page bullet square; string: 'square bullet'.  
    ...
```



# Loaded Fonts

```
report page: [:page |  
    page header text fontSize: 20; string: 'Graphics.Fnts.Font loadedFonts'.  
    page section: [:section |  
        section margin: 10; fontSize: 12.  
        Graphics.Fnts.Font loadedFonts keys asSortedCollection do: [:each |  
            section text font: each; string: each; marginTop: 5]]].  
    ...
```

The screenshot shows a software application window with a toolbar at the top containing various icons for file operations like saving, printing, and zooming. Below the toolbar is a sidebar with three icons: a folder, a paperclip, and a grid. The main content area displays the title "Graphics.Fnts.Font loadedFonts" followed by a list of font names: Courier, CourierBold, CourierBoldOblique, CourierOblique, Helvetica, HelveticaBold, HelveticaBoldOblique, and HelveticaOblique.

Graphics.Fnts.Font loadedFonts

Courier  
CourierBold  
CourierBoldOblique  
CourierOblique  
Helvetica  
HelveticaBold  
HelveticaBoldOblique  
HelveticaOblique

# Mixed Font in Text

```
page header text: [:text |  
    text fontSize: 10; string: 'Text in header (normal), '.  
    text string bold; string: 'followed by bold text.'].
```

```
(page text string: 'Copyright ') copyright.
```

```
(page text string: 'Trademark ') trademark.
```

```
page text: [:text |  
    text string: 'Normal text. '  
    text string bold; string: 'followed by bold, '.  
    text string italic; string: 'followed by italic, '.  
    text string boldItalic; string: 'followed by bold italic.'.].
```

```
page horizontalLine.
```

```
page text: [:text |  
    text large.  
    text string: 'Helvetica (Hgjpyx) '.  
    text string courier; string: 'Courier (Hgjpyx) '.  
    text string timesRoman string: 'Times Roman (Hgjpyx) '].
```

...

The screenshot shows a software application window. At the top is a toolbar with various icons: file, copy, paste, cut, save, print, and email. To the right of the toolbar are buttons for page number (1), total pages (1), zoom (100%), and orientation. The word "Tools" is also visible. On the left, there is a vertical sidebar with icons for file, clipboard, and other document-related functions. The main content area displays five lines of text:  
1. "Text in header (normal), followed by bold text."  
2. "Copyright ©"  
3. "Trademark ®"  
4. "Normal text, followed by bold, followed by italic, followed by bold italic."  
5. "Helvetica (Hgjpyx) Courier (Hgjpyx) Times Roman (Hgjpyx)"  
6. "Large text. Medium text. Small text"

'bold' changes the  
font from Helvetica  
to HelveticaBold

# Background color

```
page table: [:table |  
    table cellPadding: 6.  
        #(gray1 gray2 gray3 gray4 gray5 gray6 gray7 gray8 gray9 gray  
            lightGray darkGray lightRed red darkRed)  
        do: [:eachColor |  
            table row cell  
                background: eachColor;  
                width: 300;  
                string: eachColor].  
        ...
```

The screenshot shows a software interface with two main panes. The left pane is titled "Background color" and lists nine items: gray1, gray2, gray3, gray4, gray5, gray6, gray7, gray8, and gray9. Each item is associated with a small colored square and a corresponding hex code. The right pane displays a series of horizontal bars, each representing a different color, with its hex code listed below it. A callout bubble points from the "lightRed" entry in the left list to the "FF0000" bar in the right pane. Another callout bubble points from the "#(0.4 0.1 0.9)" entry in the left list to the "#FF00FF" bar in the right pane. A third callout bubble points from the "#(0.4 0.1 0.9)" entry in the left list to a yellow box containing a list of color definitions.

Color Name	Hex Code
gray1	gray1
gray2	gray2
gray3	gray3
gray4	gray4
gray5	gray5
gray6	gray6
gray7	lightRed
gray8	red
gray9	darkRed

Callout bubbles point to:

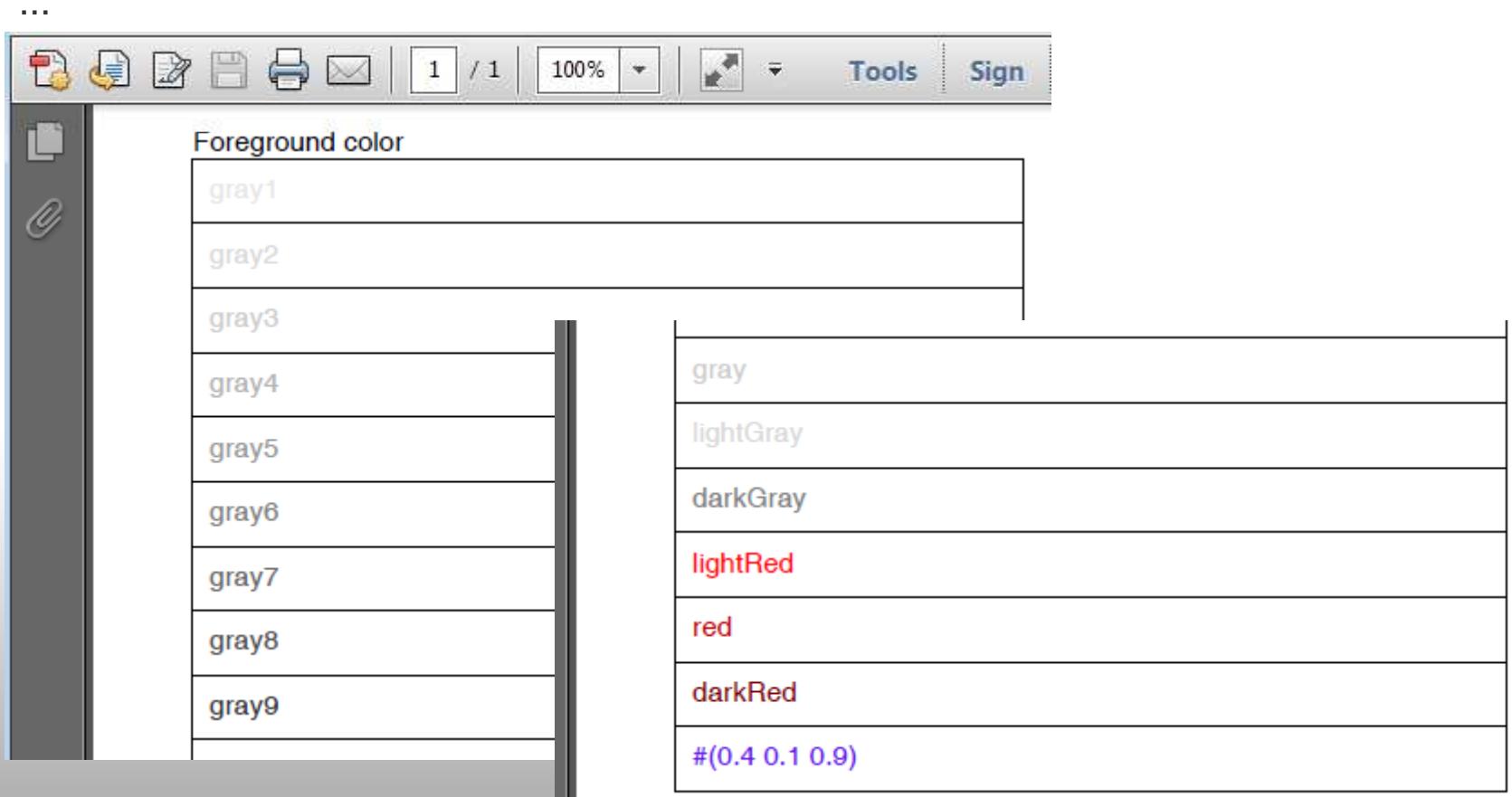
- Background color: lightRed → Hex: FF0000
- Background color: red → Hex: #FF00FF
- Background color: #(0.4 0.1 0.9) → Hex: #FF0000 (from w3schools.com)

Yellow box (top right):

```
^#(  
    ( gray1 ( 0.9 0.9 0.9 ) )  
    ( gray2 ( 0.85 0.85 0.85 ) )  
    ...  
    ( red ( 0.75 0 0 ) )  
    ( lightred ( 1 0 0 ) )  
    ( darkred ( 0.5 0 0 ) ))
```

# Foreground color

```
page table: [:table |  
    table cellPadding: 6; cellBorder: 0.1 .  
    #(gray1 gray2 gray3 gray4 gray5 gray6 gray7 gray8 gray9 gray  
        lightGray darkGray lightRed red darkRed)  
    do: [:eachColor |  
        table row cell  
            foreground: eachColor;  
            width: 300;  
            string: eachColor].
```



# Table

```
page table: [:table |  
    table marginTop: 10; cellPadding: 2.  
    table header: [:row |  
        row fontSize: 12.  
        row cell string: 'Table Header 1 pjyg'; border: 0.1 .  
        row cell text string: 'Table Header 2'.  
        row cell string: 'Table Header 3'].  
    ...
```

The screenshot shows a report editor interface with a toolbar at the top and a main content area below. The toolbar includes icons for file operations (New, Open, Save, Print, Email), navigation (Up, Down, First, Last, Previous, Next), zoom (97%), and other settings. The main content area displays a table with the following structure:

Table Header 1 pjyg	Table Header 2	Table Header 3
data row 1 column 1	data row 1 column 2 pjyg	data row 1 column 3
data row 2 column 1	data row 2 column 2	data row 2 column 3 pjyg
data row 3 column 1	data row 3 column 2	data row 3 column 3

A vertical toolbar on the left side contains icons for file operations, a search function, and a table icon.

# Table with column span

```
table row: [:row |
    row cell gray; columnSpan: 2; string: 'data row 2 column 1 >> span 2 cells' .
    row cell string: 'data row 2 column 3'].
table row: [:row |
    row cell string: 'data row 3 column 1'.
    row cell gray; columnSpan: 2; string: 'data row 3 column 2 >> span 2 cells'].
table row: [:row |
    row cell gray columnSpan: 3; string: 'data row 3 column 1 >> span 3 cells']]
```

...

The screenshot shows a word processor interface with a toolbar at the top containing various icons for file operations, document navigation, and zoom. Below the toolbar is a vertical toolbar on the left with icons for document, clipboard, and table. A table is displayed in the main workspace, consisting of five rows and three columns. The first row contains three header cells labeled "Table Header 1", "Table Header 2", and "Table Header 3". The second row has three data cells: "data row 1 column 1", "data row 1 column 2", and "data row 1 column 3". The third row contains two cells: "data row 2 column 1 >> span 2 cells" (which spans columns 1 and 2) and "data row 2 column 3". The fourth row has two cells: "data row 3 column 1" and "data row 3 column 2 >> span 2 cells" (which spans columns 1 and 2). The fifth row is a single long cell spanning all three columns.

Table Header 1	Table Header 2	Table Header 3
data row 1 column 1	data row 1 column 2	data row 1 column 3
data row 2 column 1 >> span 2 cells		data row 2 column 3
data row 3 column 1	data row 3 column 2 >> span 2 cells	
data row 3 column 1 >> span 3 cells		

# Table with row span

```
table row: [:row |  
    row cell gray; rowSpan: 3; string: 'data row 2 column 1, row span 3' .  
    row cell string: 'data row 2 column 2'.  
    row cell string: 'data row 2 column 3'].  
    ...
```

Table Header 1	Table Header 2	Table Header 3
data row 1 column 1	data row 1 column 2	data row 1 column 3
data row 2 column 1, row span 3	data row 2 column 2	data row 2 column 3
	data row 3 column 2	data row 3 column 3
	data row 4 column 2	data row 4 column 3

A cell with row pan is truncated if there is not enough vertical space, as defined by neighboring rows.

Table Header 1	Table Header 2	Table Header 3
data row 1 column 1	data row 1 column 2	data row 1 column 3
data row 2 column 1, row span 2	data row 2 column 2	data row 2 column 3
	data row 3 column 2	data row 3 column 3
	data row 4 column 2	data row 4 column 3

# Table with nested table

```
cell widthPercent: 40; border: 0.5.
```

```
cell table: [:nestedTable |
```

```
    nestedTable cellPadding: 2; cellBorder: 0.1 .
```

```
    nestedTable row: [:nestedRow |
```

```
        nestedRow cell string: 'nested row 1 column 1'.
```

```
        nestedRow cell string: 'nested row 1 column 2'].
```

```
...
```

A cell is just another layout section.  
It can contain text, tables or images.

The screenshot shows a desktop application window. At the top is a toolbar with various icons for file operations like Open, Save, Print, and Mail, followed by zoom controls (1 / 1, -, +, 97%), and other application-specific tools. To the left is a vertical sidebar with icons for a folder, a document, and a clipboard. The main content area contains the following text and a table:

Show a nested table

data row 1 column 1 data row 1 column 2 data row 1 column 3

data row 2 column 1 data row 2 column 2

nested row 1 column 1	nested row 1 column 2
nested row 2 column 1	nested row 2 column 2

data row 3 column 1 data row 3 column 2 data row 3 column 3

# Image

```
report page: [:page |  
    page string: 'Show large JPG image, with border'.  
    imageStream := ReadStream on: self smalltalkJpg.  
    page image: [:image |  
        image  
        image: (JPEGImageReader new from: imageStream) image;  
        border: 1; padding: 1]].
```



# Scaled Image

report businessCard.

```
...
page image: [:image |
  image image: (JPEGImageReader new from: imageStream) image; border: 1;
...
```

The image displays two side-by-side screenshots of a document editor interface, likely from the iText PDF library. Both screenshots show a toolbar at the top with buttons for page number (1 / 1), zoom (100%), orientation, and tools, along with 'Sign' and 'Comment' buttons.

**Screenshot 1 (Left):** This screenshot shows a large image of a business card. The image contains the 'Cincom GEMSTONE instantiations' logo. Below the image, the text 'this is text added to the image' is visible. The image is scaled to fit its container, which has a border.

```
page image
  image: ...;
  fixedBox: #(20 120 135 10);
  "top, right, bottom, left"
  border: 1.
...
```

**Screenshot 2 (Right):** This screenshot shows a different layout. On the left, there is a smaller image of the same business card. To its right is a complex diagram consisting of several black-outlined squares and diamonds connected by lines, forming a network-like structure. The text 'Show JPG and GIF image using fixed layouts' is displayed above the diagram.

```
Show large JPG image scaled to fit, with border
Show JPG and GIF image using fixed layouts
```

# Lines

```
report page: [:page |  
    page header fontSize: 20; string: 'This is a header'.  
    page horizontalLine.  
    page text string: self sampleText1; margin: 10.  
    page horizontalLine.  
    ...
```

The screenshot shows a PDF editor interface with a toolbar at the top and a document view below. The toolbar includes icons for file operations (New, Open, Save, Print, Email), navigation (Up, Down, First, Last, Previous, Next), zoom (100%, +, -), and other tools (Hand, Text, Selection). The main document area displays the following content:

**This is a header**

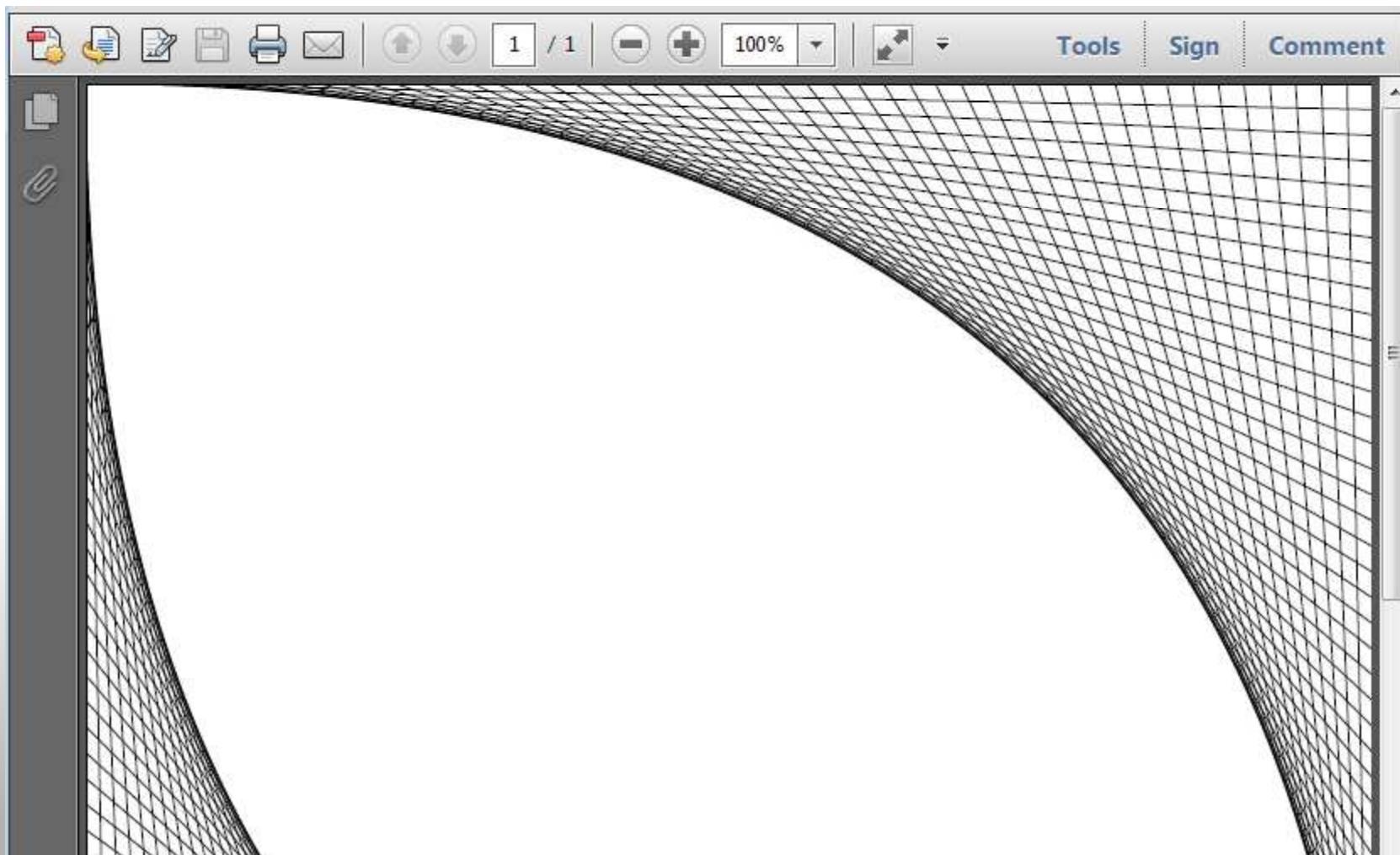
---

On January 29, 2007, Adobe Systems Incorporated announced its intention to release the full Portable Document Format (PDF) to the American National Standard Institute (ANSI) and the Enterprise Content Management Association (AIIM), for the purpose of proposing it to the International Organization for Standardization (ISO).

---

# Fixed Lines

```
report page: [:page |  
  0 to: 500 by: 10 do: [:index |  
    page line: [:line | line fixedTop: 0; fixedRight: 500; fixedBottom: index;  
               fixedLeft: index; lineWidth: 0.1]].  
  0 to: 500 by: 10 do: [:index |  
    page line: [:line | line fixedTop: index; fixedRight: index; fixedBottom: 500;  
               fixedLeft: 0; lineWidth: 0.1]]].  
...  
...
```



# Seaside Output

A table report from a Seaside issue tracking system.

ID	System	Client	Title	Status	Status Text
2605	Issue Library	CS	New comment lost in issue being updated by two people	closed	
2622	Issue Library	CS	Show linked images in-line when selected	closed	
2627	Issue Library	CS	Allow for duplicate image filenames for comments	closed	
2631	Issue Library	CS	Log if loaded issue file was different than the one in memory	closed	
2634	Issue Library	CS	Issue: The banner appears on the 'Add' screen, but doesn't seem to be on the enquiry/change view	closed	
2635	Issue Library	CS	Move attributes to upper right side of issue display	closed	
2642	Issue Library	CS	Fix change conflict: hold updates in component prior to save / cancel	closed	
2643	Issue Library	CS	Add 'waiting' stage indicating that a notify is pending	closed	
2685	Issue Library	CS	Add ability to search by (Client) Contact	closed	
2688	Issue Library	CS	Bug in patch manager to issue manager link	closed	
2691	Issue Library	CS	Do not update the user tag for comments	closed	
2694	Issue Library	CS	Add all links to comments	closed	
2695	Issue Library	CS	Send email from issue, filled with title, description and comments	closed	
2706	Issue Library	CS	issue library: show estimate on report/export	closed	
2726	Issue Library	CS	Comment text lost after viewing image in issue	closed	testing with new comm
2747	Issue Library	CS	Issues: when one adds a file to an issue (not via comment), it can't be retrieved	closed	code corrected

Using row span to show comments in each issue

ID	System	Client	Title	Status	Status Text
2605	Issue Library	CS	New comment lost in issue being updated by two people	closed	
Bob N. 2011-02-03 14:22:34					
			Fixed by saving the issue each time a comment is added or removed. Similar to what happens now with new links.		
2622	Issue Library	CS	Show linked images in-line when selected	closed	
2627	Issue Library	CS	Allow for duplicate image filenames for comments	closed	
Bob N. 2011-02-04 11:22:56					
			Internal filename now includes the image index. Two files with the same name (1.png) are attached to this comment.		
2631	Issue Library	CS	Log if loaded issue file was different than the one in memory	closed	
2634	Issue Library	CS	Issue: The banner appears on the 'Add' screen, but doesn't seem to be on the enquiry/change view	closed	
Bob N. 2011-02-04 16:02:45					
			To add a banner to an issue that does not already have one, press the 'Banner' button next to 'Copy'. This add a banner with value 'x'. The 'Banner' button is not rendered if a banner is defined.		

# Seaside Output

A single issue report from a Seaside issue tracking system, using nested tables for layout.

## 6262 Add PDF report option to report output

Allow for either a printer friendly formatted output, or for a generated PDF.

Good real world test of the PDF Report framework.

To use CSD-PDF load the PDF package from Cincom.

The issue report option window has a new button to generate a PDF.

A two cell table  
row for description  
and attributes.

Nested two  
column table for  
attributes.

Status	closed
Priority	4
Assigned	Bob N.
Type	Modification
Estimate	4.0 0
Fee	0
System	Issue Library
Database	<none>
Version	<none>
Client	CS
Contact	<none>
Project	<none>
Task	<none>
Created	2011-12-15
Due	...
Tags	<none>

check PDF output

Link file: 1.png

The dialog box contains the following options:

- Left column:
  - Age
  - Assigned
  - Banner
  - Cause
  - Client
  - Contact
  - Database
  - Changed
  - Created
- Right column:
  - Description
  - Comments (all)
  - Client Comments

---

- Show header
- Show lines

---

PDF Font Size

6 7 8 9 10  
11 12 13 14

# Form

Paper form scanned, imported into Visio and recreated with Report4PDF

STATEMENT OF DEATH			
NAME OF DECEASED	1. Surname of deceased (print or type)	SEX	S.I.N. or Old Age Security (If available) 
	Given name  Hebrew Name	Middle Name	AKA  PRINT
DATE OF DEATH	3. Month (by name), day, year of death		
	4. Name of hospital or institution where deceased died	S.I.N. or A	
PLACE OF DEATH	Borough, city, town, village, township (by name)	AKA	
	5. Month (by name), day, year of birth	AKA	
BIRTH DATE	7. City or place of birth	AKA	
	8. Sex: Male / Female	AKA	
BIRTH PLACE	9. Province or Country of birth	AKA	
	10. Sex: Male / Female	AKA	
STATEMENT OF DEATH			
NAME OF DECEASED	1. Surname of deceased	SEX	AKA
	Given name	Middle Name	AKA
DATE OF DEATH	3. Month (by name), day, year of death	AKA	
	4. Name of hospital or institution (otherwise give exact location where death occurred)	AKA	
PLACE OF DEATH	Borough, city, town, village, township (by name)	Region	
	5. Month (by name), day, year of birth	6. Age (years)	If under 1 year
BIRTH DATE	7. City or place of birth	Province (or Country)	
	8. Sex: Male / Female	Province (or Country)	

# User Guide

The user guide is created with Report4PDF, using a formatting character at the start of each line.

! heading

\* bullet

: bold

+ big and bold

@ code

- line

> image

See R4PReport class>>buildUserGuide

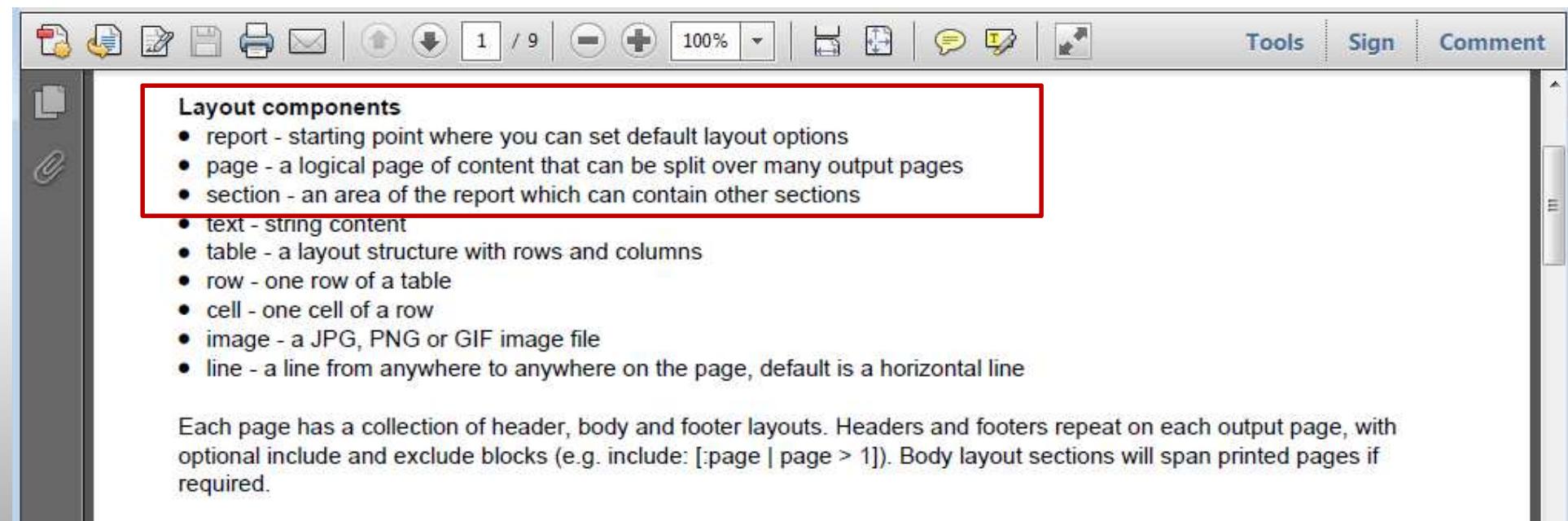
:Layout components

\*report - starting point where you can set default layout options

\*page - a logical page of content that can be split over many output pages

\*section - an area of the report which can contain other sections

...



The screenshot shows the Report4PDF application window. At the top is a toolbar with various icons for file operations like Open, Save, Print, and Insert. Below the toolbar is a menu bar with 'Tools', 'Sign', and 'Comment'. On the left side, there's a vertical toolbar with icons for selection, text, tables, and images. The main workspace contains a red box highlighting the 'Layout components' section. This section lists the following items:

- report - starting point where you can set default layout options
- page - a logical page of content that can be split over many output pages
- section - an area of the report which can contain other sections
- text - string content
- table - a layout structure with rows and columns
- row - one row of a table
- cell - one cell of a row
- image - a JPG, PNG or GIF image file
- line - a line from anywhere to anywhere on the page, default is a horizontal line

Below this list, another red box highlights a paragraph about page layout:

Each page has a collection of header, body and footer layouts. Headers and footers repeat on each output page, with optional include and exclude blocks (e.g. include: [:page | page > 1]). Body layout sections will span printed pages if required.

# Next...

- More formatting options, like paragraphs to group text sections.
- Links within documents.
- Generated table of contents.
- Color images.
- Port to VA, GS, Pharo, Squeak (easy for Report4PDF, harder for Smalltalk4PDF)

VW version available on Cincom public Store as 'PDF Report' under an MIT license.  
See R4PReportTest for examples.

Please use the forum at <[pending](#)> for support of both Report4PDF and PDF4Smalltalk.