

Beamer v3.0 Guide

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Why Beamer?

Pros:

- Both `dvi`/`ps`/`ps2pdf`¹ and `pdf \LaTeX` supports
- Rich `overlay` and `transition` effects
- Navigational bars and buttons
- Outputs: screen, transparency, handouts, and notes
- Emulation of other PDF presentation tools such as Prosper and Foil \TeX

Cons:

- Difficult to design a template

¹You need this route if you use `PSTricks`.

Basic Code I

- Beamer class loading with themes

```
\documentclass[slidestop,compress,mathserif]{beamer}  
\usepackage[bars]{beamerthemetree} % Beamer Theme v 2.2  
\usetheme{Antibes} % Beamer theme  
\usecolortheme{lily} % Beamer color theme
```

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```

- Cover title

```
\title{}  
\author{}  
\institute{}  
\begin{document}  
\begin{frame} % Cover slide  
 \titlepage  
\end{frame}  
% Instead, you can use \frame{\titlepage} (Beamer v 2.2 macro)
```

Basic Code II

- Main slide frame

```
\section{Introduction}           % Bookmark information
\subsection{History}           % Bookmark information
\begin{frame}[options]
  \frametitle{History}
  ... slide contents ...
\end{frame}
```

Five Themes

- The main difference between v 3.0 and v 2.2 is *Beamer themes*.
- Five theme categories:
 - Presentation Themes – *Slide template*
 - Color Themes – *Color scheme for slide template*
 - Font Themes
 - Inner Themes
 - Outer Themes
- Example

```
\documentclass[slidestop,compress,mathserif]{beamer}
%\usepackage[bars]{beamerthemetree} % Beamer Theme v 2.2
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```

- Go to [Themes](#) for more information.

Layout Options

- `[slidestop]` puts frame titles on the top left corner (default=`[slidescentered]`).
- `[compress]` makes all navigation bars as small as possible (default=`[uncompressed]`).
- `[red]` changes navigation bars and titles to reddish color.
 - `blue`: Default color scheme
 - `red`: Used in this presentation
 - `brown`
 - `blackandwhite`: Good for transparencies

Output Options

- Default: PDF screen (size 128mm × 96 mm)².
 - `[handout]` for PDF handouts.
 - `[trans]` for PDF transparency.
- ⇒ For handout and trans, you need some extra work to enlarge the size. Click [here](#) to see an example!
- `[notes=hide/show/only]` for notes. Hide notes (default), add notes to the PDF screen, or notes only PDF.

²Monitor's 4:3 aspect ratio.

Additional Beamer Options

- `[hyperref={bookmarks=false}]` removes bookmarks.
- `[cjk]` for CJK typesetting. ⇒ For hangul, use `hfont` package.
- `\usepackage[utf8]{inputenc}` for Unicode.

Frame Options

- `\frame[plain]\frametitle...` for plane frame style as used in this slide!
- `[containsverbatim]` for using `verbatim` environment and `\verb` command.
- `[allowframebreaks]` for automatic split of frames if the contents do not fit in a single slide.
- `[shrink]` for shrinking the contents to fit in a single slide.
- `[squeeze]` for squeezing vertical space.

Transparency Effects

- All overlaid stuffs are covered (default)
- `\beamertemplatetransparentcoveredhigh` makes all covered text highly transparent
- `\beamertemplatetransparentcovereddynamicmedium` makes all covered text quite transparent, but is a dynamic way. The range of dynamics is smaller.

Text and Math Fonts I

- Excellent support for selecting text and math fonts.
- Default text and math fonts: **CMSS**
- Beamer option **[sans]** for text font
 - `mathsans` is default.
 - Equivalent to `\usefonttheme{default}`
- Beamer option **[serif]** for text font
 - `mathserif` is default.
 - Equivalent to `\usefonttheme[options]{serif}`
- Beamer option **[mathsans/mathserif]** for math font

Text and Math Fonts II

- Beamer option `[professionalfonts]` to turn off Beamer's internal font rewriting (\Rightarrow Equivalent to `\usefonttheme{professionalfonts}`)
- Additional font theme macros
 - `\usefonttheme{structurebold}` for bold faced structures (titles, headlines, footlines, sidebars, ...)
 - `\usefonttheme{structureitalicserif}`
 - `\usefonttheme{structuresmallcapserif}`
- Font settings in this document:

```
\documentclass[mathserif]{beamer} %  
\usepackage{lucidaso}           % Lucida Bright (SO Version)  
\usepackage[small]{eulervm}    % Euler VM
```

Font Size

- Default font size: 11pt (At the full screen mode this font size corresponds to 22 pt.)
- Available font size options: 8pt, 9pt, 10pt, 11pt, 12pt, 14pt, 17pt, 20pt

Color Definition

- Beamer loads `xcolor` package by Uwe Kern, which also supports `color` and `pstcol`.
- 'xcolor' definition
 - `\xdefinecolor{lavendar}{rgb}{0.8,0.6,1}`
 - `\xdefinecolor{olive}{cmyk}{0.64,0,0.95,0.4}`
 - `\colorlet{structure}{green!60!black}` for color substitution
 - Predefined colors: red, green, blue, cyan, magenta, yellow, black, darkgray, gray, lightgray, orange, violet, purple, and brown
- If you want to use the options of 'color' package, pass `[color=option]` option to Beamer.
- If you want to use 'pstcol', pass `[xcolor=pst,dvips]` option to Beamer. Now you should use `'dvips/ps2pdf'`

More colors in 'xcolor' package

- Color mixing is very easy!

color	example	meaning
green!80!gray	text	80% green + 20% gray
green!60!gray	text	60% green + 40% gray
green!40!gray	text	40% green + 60% gray
-green	text	remove green from above

- You can use `animate` (in Beamer) or `multido` (with PSTricks) for fade-in and fade-out!

Highlighting Colors

- Beamer also has theme-specific highlighting colors:
 - `\alert{text}` ⇒ **text**
 - `\structure{text}` ⇒ **text**
- To change these colors:
 - `\usealerttemplate{\color{red}}{}` to change red.
 - `\usestructuretemplate{\color{blue}}{}` to change blue.

Background Colors

- To set **solid** background color,
`\beamersetaveragebackground{color}` or
`\beamertemplatesolidbackgroundcolor{color}`
- To set **gradient** background color,
`\beamertemplateshadingbackground{color1}{color2}`. ⇒ The colors in this slide is {blue!5}{yellow!10}.
- To set **grid** background,
`\beamertemplategridbackground[grid_space]`.

Color Example

- Color changes in
 - Navigational bars
 - Background
 - `structure{..}` color

Color Example

- Color changes in
 - Navigational bars
 - Background
 - `structure{..}` color
- Code:

```
\colorlet{mystruct}{structure} % Save current structure
\colorlet{structure}{magenta} % New structure
\usestructuretemplate{\color{structure}}{} % \structure{..}
\beamertemplateshadingbackground{yellow!50}{magenta!50} % New background
\frame{%
  ...
}%
% Back to the original "structure" and bg color schemes
\colorlet{structure}{mystruct}
\beamertemplateshadingbackground{blue!10}{yellow!10}
```

Verbatim w/o Overlays

- ‘\verb’ or ‘verbatim’ cannot be *directly* used in Beamer!
- If there is **no overlay**, use `\frame[containsverbatim]`

```
\frame[containsverbatim]{\frametitle{..}%  
  \begin{verbatim}  
    .. verbatim contents ..  
  \end{verbatim}  
}%
```

- Now in-line verbatim is possible with ‘\verb’.
- Color and size can be easily changed.

Inline Verbatim with Overlays

- My solution: `\path{..}` instead of `\verb.`
 - Color: `He11o`, `He11o`
 - Size: `He11o`, `He11o`, `He11o`

Inline Verbatim with Overlays

- My solution: `\path{..}` instead of `\verb`.
 - Color: `He11o`, `He11o`
 - Size: `He11o`, `He11o`, `He11o`
- Beamer solution: `\defverb\command|contents|` outside the frame.
 - Define `\defverb\myverb|Hello, World!|`
 - Then use `\myverb` ⇒ `Hello, World!`

Verbatim with Overlays

- Use *lstlisting* environment instead of *verbatim* environment.
- Define `\defverbatim[colored]\command{contents}` outside frame.
- 'contents' are the `listing` environment.

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- Define `\defverbatim[colored]\command{contents}` outside frame.
- ‘contents’ are the `listing` environment.
- Example:

```
\defverbatim[colored]\testcode{%  
  \begin{lstlisting}[frame=single, emph={ga}, emphstyle=\color{olive}]  
    ...  
  \end{lstlisting}}%  
\frame{%  
  \testcode  
}%
```

Figures Intro

- Standard \LaTeX `figure` environment can be used.
- Beamer also loads `pgf` package. So PGF command, `\pgfimage[]\{file\}`, is also possible.
- `\includegraphics`, `\pgfimage`, and `\pdfuseimage` understand `overlays`.

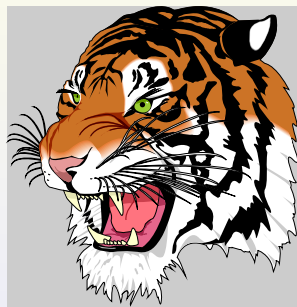


Figure: Tiger

PGF Macros



- **PSTricks** and **PGF** can be used for locating figures *exactly*.
- Grid size of slide: (LL \times UR) = (0cm,-7cm) \times (11cm,1cm)
- PGF macro for locating figures:

```
\pgfputat{\pgfxy(0,-6.5)}{\pgfbox[left,base]{\pgfimage[width=1cm]{tiger}}}
```

- If you use the same figure several times, use **\pgfdecalseimage** and **\pgfuseimage**. Or just use **\includegraphics**.



Figures inside Columns

- Figures inside 'columns' environment need exact position.

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- PGF macros (PDF, PNG, and JPEG with pdf_latex)

```
\begin{columns}
\begin{column}{0.65\textwidth}
  A\B
\end{column}
\begin{column}{0.35\textwidth}
  \pgfputat{\pgfxy(0,0)}{\pgfbox[left,top]{\includegraphics[width=\textwidth]{tig
\end{column}
\end{columns}
```

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```

\begin{columns}
\begin{column}{0.65\textwidth}
A\\B
\end{column}
\begin{column}{0.35\textwidth}
\pgfputat{\pgfxy(0,0)}{\pgfbox[left,top]{\includegraphics[width=\textwidth]{tiger}}
\end{column}
\end{columns}

```

- PSTricks macros (EPS with dvips)

```

\begin{columns}
\begin{column}{0.65\textwidth}
A\\B
\end{column}
\begin{column}{0.35\textwidth}
\rput[lt](0,0){\includegraphics[clip=true,width=\textwidth]{tiger}}
\end{column}
\end{columns}

```

Zooming Figures

- Figures can be **zoomed**³ using `\framezoom<button overlay><zoomed overlay>(x,y)(w,h)`.
- (x, y) : Upper left coordinate point
 (w, h) : Width and height for zooming
- Example:

```
\frame{\frametitle{Zooming Figures -- Example}
\framezoom<1><2>[border](0.5cm,0.5cm)(2cm,1.5cm)
\framezoom<1><3>[border](1cm,3cm)(2cm,1.5cm)
\framezoom<1><4>[border](3cm,2cm)(2cm,2cm)

\pgfimage[height=6cm]{tiger}
%\includegraphics[height=6cm]{tiger} is working, too!
}%
```

³New in Version 2.20

Zooming Figures – Example

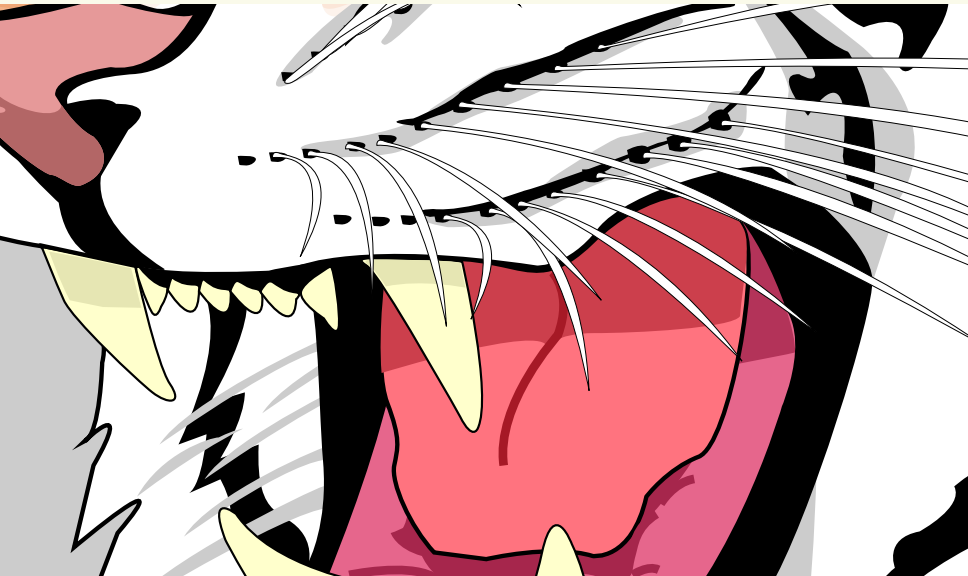


Click the border to zoom-in.

Zooming Figures – Example



Zooming Figures – Example



Zooming Figures – Example



Drawing Figures

- The most powerful and easiest-to-use package, *PSTricks*, does not work with pdf_latex due to fundamental differences in PS and PDF.

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Drawing Figures

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- *PGF* (portable graphics format) by the Beamer author.
 - Less powerful than *PSTricks*, but works fine.
 - Supports `dvips`, `dvipdfm`⁴, and `pdflatex`.

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 - Less powerful than PSTricks, but works fine.
 - Supports dvips, dvi \LaTeX ⁴, and pdf \LaTeX .
- *MetaPost*
 - Works with dvips/ps2pdf, dvi \LaTeX , and pdf \LaTeX

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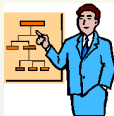
Drawing Figures

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 - Supports dvips, dvi \LaTeX ⁴, and pdf \LaTeX .
- *MetaPost*
 - Works with dvips/ps2pdf, dvi \LaTeX , and pdf \LaTeX
- I prefer *Beamer + PSTricks*.
⇒ See [beamer_pstricks.pdf](#) [1]

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Masking Figures

- Want to mask *white background* of your images?



+

=

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- Make a mask image in **256 Colors** and **JPEG Compression**⁵
- Use `\pgfdec1aremask` in pdf package. But only works with **pdf_latex!**

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Masking Figures

- Want to mask *white background* of your images?



- Make a mask image in **256 Colors** and **JPEG Compression**⁵
- Use `\pgfdeclaremask` in pdf package. But only works with **pdflatex**!
- Source code:

```
\pgfdeclaremask{mymask}{ppt.mask}           % Mask image: ppt.mask.jpg
\pgfimage[mask=mymask,interpolate=true]{ppt} % Masking ppt.png
```

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Fancy Bullets

- 1 `\beamertemplateballitem` in the preamble
- 2 `itemize` environment \Rightarrow Fancy ball
- 3 `enumerate` environment \Rightarrow Fancy numbered ball (used here).

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To use different enumerate templates,

```
\begin{enumerate}[minitemplate]  
  \item ...  
\end{enumerate}
```

where `minitemplate` can be 'A', 'a', 'i', 'I', '(A)', But the indentation may be changed (bug?)

- i Item 1
- ii Item 2

Framed Text

- Example Code:

```
\begin{beamerboxesrounded}[scheme=alert,shadow=true]{Theorem}  
  $A = B$.  
\end{beamerboxesrounded}}
```

- Result:

Theorem
 $A = B$.

Columns

- Use \LaTeX `minipage` environment or
- Use Beamer `columns` environment

```
\begin{columns}
  \begin{column}[pos]{width}
    ... contents ...
  \end{column}
  \begin{column}[pos]{width}
    ... contents ...
  \end{column}
\end{columns}
```

Tables

- Standard \LaTeX `table` environment can be used.
- `\onslide` inside `'overprint'` environment for showing overlays in the right example.

Table Overlays:

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-------	-----	---------

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Table Overlays:

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step	by	
step.		Finished!

Transitions

- PDF supports **seven** transitions: Blinds, Box, Dissolve, Glitter, Replace, Split, Wipe.
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- Beamer transition commands understand **overlays**. Without overlays the transition is *global* to the current frame.

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- Overlaid transition examples:
 - Glitter at /Di 315 (default on this slide): `\transglitter[direction=315]`

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 - Boxout`\transboxout<3>`

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 -Boxin: `\transboxin<4>`

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 - Dissolve transition: `\transdissolve<5>`

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 - Boxout `\transboxout<3>`
 - `Boxin: \transboxin<4>`
 - Dissolve transition: `\transdissolve<5>`
 - Split vertical out: `\transsplitverticalout<6>`

Overlays - Overview

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- Beamer provides plenty of overlay commands.

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 - Replace
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Overlays - Overview

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- Beamer provides plenty of overlay commands.
- Key overlay functions are:
 - Stepwise viewing
 - Replace
 - Highlighting
- Various overlay counters: 'n', 'n-', '-n', 'n1-n2', '+-'

Pause for Stepwise Viewing

`pause` command⁶ for easy and simple overlays.

```
\begin{itemize}
\pause \item Every thing
\pause \item that has
\pause \item beginning
\pause \item has end.
\end{itemize}
```

⁶There is also `\unpause` command.

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<code>\begin{itemize}</code>	● Every thing
<code>\pause \item Every thing</code>	● that has
<code>\pause \item that has</code>	● beginning
<code>\pause \item beginning</code>	● has end.
<code>\pause \item has end.</code>	
<code>\end{itemize}</code>	

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<code>\pause \item that has</code>	● beginning
<code>\pause \item beginning</code>	● has end.
<code>\pause \item has end.</code>	
<code>\end{itemize}</code>	

Note that `pause` does not know `overlay counters`.

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Pause: Table Example

- Row increment in a table:

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Class	A	B	C	D
X	1	2	3	4

Pause: Table Example

- Row increment in a table:

Class	A	B	C	D
X	1	2	3	4
Y	3	4	5	6

Pause: Table Example

- Row increment in a table:

Class	A	B	C	D
X	1	2	3	4
Y	3	4	5	6
Z	5	6	7	8

Pause: Table Example

- Row increment in a table:

Class	A	B	C	D
X	1	2	3	4
Y	3	4	5	6
Z	5	6	7	8

- Source code:

```
\rowcolors[]{}{1}{blue!20}{blue!10}  
\begin{tabular}{!{\vrule}cccc}  
Class & A & B & C & D \\\hline  
X & 1 & 2 & 3 & 4 \pause \\  
Y & 3 & 4 & 5 & 6 \pause \\  
Z & 5 & 6 & 7 & 8  
\end{tabular}
```


Onslide for Stepwise Viewing

- `\onslide<n->stuff` shows stuff on the given slides.

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- Example: Column increment in a table:

Class	A	B	C	D
X	1	2	3	4
Y	3	4	5	6
Z	5	6	7	8

- Source code:

```
\rowcolors[] {1} {blue!20} {blue!10}
\begin{tabular}{l!{\vrule}c<\onslide<2->>c<\onslide<3->> %
               c<\onslide<4->>c<\onslide>c}
  Class & A & B & C & D \\
  X & 1 & 2 & 3 & 4 \\
  Y & 3 & 4 & 5 & 6 \\
  Z & 5 & 6 & 7 & 8
\end{tabular}
```

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

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\begin{itemize}
\item<2-> Every thing
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\item<4-> beginning
\item<5-> has end.
\end{itemize}
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```

```
\item<4-> beginning
```

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\item<5-> has end.
```

```
\end{itemize}
```

- Everything

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```
\begin{itemize}
```

```
\item<2-> Every thing
```

```
\item<3-> that has
```

```
\item<4-> beginning
```

```
\item<5-> has end.
```

```
\end{itemize}
```

- Everything

- that has

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

```
\begin{itemize}
```

```
\item<2-> Every thing
```

```
\item<3-> that has
```

```
\item<4-> beginning
```

```
\item<5-> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

```
\begin{itemize}
```

```
\item<2-> Every thing
```

```
\item<3-> that has
```

```
\item<4-> beginning
```

```
\item<5-> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

```
\begin{itemize}
```

```
\item<2-> Every thing
```

```
\item<3-> that has
```

```
\item<4-> beginning
```

```
\item<5-> has end.
```

```
\end{itemize}
```

- Everything

- that has

- beginning

- has end.

What if more items are *inserted*?

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]  
\item Every thing  
\item that has  
\item beginning  
\item has end.  
\end{itemize}
```

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

- Everything

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

- Everything

- that has

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

- Everything

- that has

- beginning

- has end.

Note that `\item<+>` can be used instead of global setting of `\begin{itemize}[<+>]`.

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

```
\begin{itemize}
\item<1-> Every thing
\item<3-4> that has
\item<4> beginning
\item<2-5> has end.
\end{itemize}
```

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

```
\begin{itemize}
```

```
\item<1-> Every thing
```

```
\item<3-4> that has
```

```
\item<4> beginning
```

```
\item<2-5> has end.
```

```
\end{itemize}
```

- Everything

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

```
\begin{itemize}
```

```
\item<1-> Every thing
```

```
\item<3-4> that has
```

```
\item<4> beginning
```

```
\item<2-5> has end.
```

```
\end{itemize}
```

- Everything

- has end.

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

`\begin{itemize}`

`\item<1->` Every thing

`\item<3-4>` that has

`\item<4>` beginning

`\item<2-5>` has end.

`\end{itemize}`

● Everything

● that has

● has end.

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

```
\begin{itemize}
```

```
\item<1-> Every thing
```

```
\item<3-4> that has
```

```
\item<4> beginning
```

```
\item<2-5> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

```
\begin{itemize}
```

```
\item<1-> Every thing
```

```
\item<3-4> that has
```

```
\item<4> beginning
```

```
\item<2-5> has end.
```

```
\end{itemize}
```

- Everything

- has end.

Replace

- Successive `\only<n>{..}`.

(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` \Rightarrow GA

Slide 1

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.

(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` ⇒ **MOGA**

Slide 2

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.

(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` \Rightarrow pMOGA

Slide 3

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA} ⇒ pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5} ⇒`

Slide 4

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` \Rightarrow pMOGA
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5}` \Rightarrow I am 5

Slide 5

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA} ⇒ pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5} ⇒`

Slide 6

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` ⇒ `pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5}` ⇒
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8}` ⇒ `Invisible at 8`

Slide 7

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA} ⇒ pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5} ⇒`
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8} ⇒`

Slide 8

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` ⇒ `pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5}` ⇒
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8}` ⇒ `Invisible at 8`

Slide 9

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` ⇒ `pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5}` ⇒
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8}` ⇒ `Invisible at 8`
- `\alt<n>{at n}{not at n}` for two alternatives.
(Ex) `\alt<11>{I am 11}{I am not 11}` ⇒ `I am not 11`

Slide 10

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` ⇒ `pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5}` ⇒
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8}` ⇒ `Invisible at 8`
- `\alt<n>{at n}{not at n}` for two alternatives.
(Ex) `\alt<11>{I am 11}{I am not 11}` ⇒ `I am 11`

Slide 11

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` ⇒ `pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5}` ⇒
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8}` ⇒ `Invisible at 8`
- `\alt<n>{at n}{not at n}` for two alternatives.
(Ex) `\alt<11>{I am 11}{I am not 11}` ⇒ `I am not 11`

Slide 12

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA} ⇒ pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5} ⇒`
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8} ⇒ Invisible at 8`
- `\alt<n>{at n}{not at n}` for two alternatives.
(Ex) `\alt<11>{I am 11}{I am not 11} ⇒ I am not 11`
- `\temporal<n>{before}{at n}{after}` for three alternatives.⁷
(Ex) `\temporal<14>{I am 13}{I am 14}{I am 15} ⇒ I am 13`

Slide 13

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA} ⇒ pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5} ⇒`
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8} ⇒ Invisible at 8`
- `\alt<n>{at n}{not at n}` for two alternatives.
(Ex) `\alt<11>{I am 11}{I am not 11} ⇒ I am not 11`
- `\temporal<n>{before}{at n}{after}` for three alternatives.⁷
(Ex) `\temporal<14>{I am 13}{I am 14}{I am 15} ⇒ I am 14`

Slide 14

⁷See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` ⇒ `pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5}` ⇒
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8}` ⇒ `Invisible at 8`
- `\alt<n>{at n}{not at n}` for two alternatives.
(Ex) `\alt<11>{I am 11}{I am not 11}` ⇒ `I am not 11`
- `\temporal<n>{before}{at n}{after}` for three alternatives.⁷
(Ex) `\temporal<14>{I am 13}{I am 14}{I am 15}` ⇒ `I am 15`

Slide 15

⁷See also highlighting section.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

- `\only<n>` in `overlayarea` environment:
The development of pMSGa is based on NSGA-II and PGAPack.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

- `\only<n>` in `overlayarea` environment:
The main difference is sharing again and new density function.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

- `\only<n>` in `overlayarea` environment:
The main difference is sharing again and new density function.
- `\onslide<n>` in `overprint` environment:
This is a first line.
This is a second, long line.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

- `\only<n>` in `overlayarea` environment:
The main difference is sharing again and new density function.
- `\onslide<n>` in `overprint` environment:
The previous two lines are replaced by this one.

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
\item <+ - | alert@+> Every thing
\item <+ - | alert@+> that has
\item <+ - | alert@+> beginning
\item <+ - | alert@+> has end.
\end{itemize}
```

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+ - | alert@+> Every thing
```

```
\item <+ - | alert@+> that has
```

```
\item <+ - | alert@+> beginning
```

```
\item <+ - | alert@+> has end.
```

```
\end{itemize}
```

● Everything

Simple Highlighting

`\item <+-| alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+-| alert@+> Every thing
```

```
\item <+-| alert@+> that has
```

```
\item <+-| alert@+> beginning
```

```
\item <+-| alert@+> has end.
```

```
\end{itemize}
```

- Everything

- that has

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+ - | alert@+> Every thing
```

```
\item <+ - | alert@+> that has
```

```
\item <+ - | alert@+> beginning
```

```
\item <+ - | alert@+> has end.
```

```
\end{itemize}
```

- Everything
- that has
- **beginning**

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+ - | alert@+> Every thing
```

```
\item <+ - | alert@+> that has
```

```
\item <+ - | alert@+> beginning
```

```
\item <+ - | alert@+> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+ - | alert@+> Every thing
```

```
\item <+ - | alert@+> that has
```

```
\item <+ - | alert@+> beginning
```

```
\item <+ - | alert@+> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

Simple Highlighting

`\item <+-| alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+-| alert@+> Every thing
```

```
\item <+-| alert@+> that has
```

```
\item <+-| alert@+> beginning
```

```
\item <+-| alert@+> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

- You can also use `\begin{itemize}[<+-|alert@+>]` instead of individual `'\item <+-| alert@+>'`.

Simple Highlighting

`\item <+-| alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+-| alert@+> Every thing
```

```
\item <+-| alert@+> that has
```

```
\item <+-| alert@+> beginning
```

```
\item <+-| alert@+> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

- You can also use `\begin{itemize}[<+-|alert@+>]` instead of individual `'\item <+-| alert@+>'`.
- You can also use `structure` instead of `alert`.

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

```
\begin{itemize}
\item<2->\alert<2> Every thing
\item<2->\alert<3> that has
\item<2->\alert<4> beginning
\item<2->\alert<5> has end.
\end{itemize}
```

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

```
\begin{itemize}
```

```
\item<2->\alert<2> Every thing
```

```
\item<2->\alert<3> that has
```

```
\item<2->\alert<4> beginning
```

```
\item<2->\alert<5> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

```
\begin{itemize}
```

```
\item<2->\alert<2> Every thing
```

```
\item<2->\alert<3> that has
```

```
\item<2->\alert<4> beginning
```

```
\item<2->\alert<5> has end.
```

```
\end{itemize}
```

- Everything
- **that has**
- beginning
- has end.

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

```
\begin{itemize}
```

```
\item<2->\alert<2> Every thing
```

```
\item<2->\alert<3> that has
```

```
\item<2->\alert<4> beginning
```

```
\item<2->\alert<5> has end.
```

```
\end{itemize}
```

- Everything
- that has
- **beginning**
- has end.

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

```
\begin{itemize}
```

```
\item<2->\alert<2> Every thing
```

```
\item<2->\alert<3> that has
```

```
\item<2->\alert<4> beginning
```

```
\item<2->\alert<5> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- **has end.**

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

```
\begin{itemize}
\item<2->\alert<2> Every thing
\item<2->\alert<3> that has
\item<2->\alert<4> beginning
\item<2->\alert<5> has end.
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

Note that `\item<2->\alert<2>` is same to `\item<2- | alert@2>`.

Alternative for Highlighting

- `\alt<n>{\color{col1}..}\color{col2}..}` for active/inactive highlighting

Alternative for Highlighting

- `\alt<n>{\color{col1}..}\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - that has
 - beginning
 - has end.

Alternative for Highlighting

- `\alt<n>{\color{col1}..}\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - **that has**
 - beginning
 - has end.

Alternative for Highlighting

- `\alt<n>{\color{col1}..}\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - that has
 - beginning
 - has end.

Alternative for Highlighting

- `\alt<n>{\color{col1}..}\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - that has
 - beginning
 - **has end.**

Alternative for Highlighting

- `\alt<n>{\color{col1}..}{\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - that has
 - beginning
 - has end.
- Source code:

```
\begin{itemize}
  \item<2-> \alt<2>{\color{blue} Everything}{\color{gray} Everything}
  \item<2-> \alt<3>{\color{blue} that has}{\color{gray} that has}
  \item<2-> \alt<4>{\color{blue} beginning}{\color{gray} beginning}
  \item<2-> \alt<5>{\color{blue} has end.}{\color{gray} has end.}
\end{itemize}
```


Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.
- Source code:

```
\def\hilite<#1>{%  
  \temporal<#1>{\color{gray}}{\color{blue}}%  
    {\color{blue!25}}}  
  
...  
\begin{itemize}  
  \hilite<3> \item Everything  
  \hilite<4> \item that has  
  \hilite<5> \item beginning  
  \hilite<6> \item has end.  
\end{itemize}
```

Other Highlightings

- `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, and `\color` also understand overlays.

Other Highlightings

- `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, and `\color` also understand overlays.
- Example

Other Highlightings

- `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, and `\color` also understand overlays.
- Example
 - **Everything** (`\color<3-4>{olive}{Everything}`)

Other Highlightings

- `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, and `\color` also understand overlays.
- Example
 - **Everything** (`\color<3-4>{olive}{Everything}`)
 - that has

Other Highlightings

- `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, and `\color` also understand overlays.
- Example
 - Everything (`\color<3-4>{olive}{Everything}`)
 - that has
 - **beginning** (`\color<5>[rgb]{.9,.5,.5}beginning`)

Other Highlightings

- `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, and `\color` also understand overlays.
- Example
 - Everything (`\color<3-4>{olive}{Everything}`)
 - that has
 - beginning (`\color<5>[rgb]{.9,.5,.5}beginning`)
 - has end.

Animation

- For dynamic presentation Beamer supports *transition*, *overlay*, and *animation*.
- Animation depends on your imagination and \LaTeX skill.

Animation

- For dynamic presentation Beamer supports *transition*, *overlay*, and *animation*.
- Animation depends on your imagination and \LaTeX skill.
- Supported animation types
 - Animate + Overlay
 - Animatevalue
 - Timed overlays (auto advancing)

Animation

- For dynamic presentation Beamer supports *transition*, *overlay*, and *animation*.
- Animation depends on your imagination and \LaTeX skill.
- Supported animation types
 - Animate + Overlay
 - Animatevalue
 - Timed overlays (auto advancing)
- Use with caution as animation needs *lots* of slides

Animate + Overlay

- `\animate<n>`⁸ for automatic stepwise viewing

⁸Remember that n can be n1-n2, n1-, or etc.

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- Ready?

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 - Everything

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- Ready?
 - Everything
 - that has

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Animate + Overlay

- `\animate<n>`⁸ for automatic stepwise viewing
- Ready?
 - Everything
 - that has
 - beginning

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Animate + Overlay

- `\animate<n>`⁸ for automatic stepwise viewing
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

⁸Remember that n can be n1-n2, n1-, or etc.

Animate + Overlay

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- Ready?
 - Everything
 - that has
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Animate + Overlay

- `\animate<n>`⁸ for automatic stepwise viewing
- Ready?
 - Everything
 - that has
 - beginning
 - has end.
- Source code:

```
\frame{\animate<3-6>\frametitle{Animate + Overlay}%  
...  
\begin{itemize}[<+>]  
  \item Everything  
  \item that has  
  \item beginning  
  \item has end.  
\end{itemize}
```

⁸Remember that n can be n1-n2, n1-, or etc.

Animatevalue

- `\animate<n>` to animate 'n' slides
- `\animatevalue<n>{name}{start}{end}` for specifying animation effects
 - name: counter or dimension
 - start and end values of the value

Flying Animation

- `\animate` and `\animatevalue` are used.
- This animation consumes 31 pages!
- Ready to explore?

Flying in from right!

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left!

Flying Animation

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*Flying in from **right!***

m left!

Flying Animation

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*Flying in from **right!***

from left!

Flying Animation

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*Flying in from **right!***

*in from **left!***

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Flying Animation - Source

```
\newcount\opaqueness
\newdimen\offset
\frame{\frametitle{Flying Animation}%
\animate<2-15,17-30>          % Actual animation values. Try <1-31>
\begin{itemize}
  \item[]
  \animatevalue<1-15>{\opaqueness}{0}{100}%
  \animatevalue<1-15>{\offset}{6cm}{0cm}%
  \begin{colormixin}{\the\opaqueness!averagebackgroundcolor}
    \hspace{\offset} Flying in from {\color{olive} right}!
  \end{colormixin}

  \item[]
  \animatevalue<17-31>{\opaqueness}{0}{100} % Starts at 17, not 16, to give
  \animatevalue<17-31>{\offset}{-5cm}{0cm} % one pause!
  \begin{colormixin}{\the\opaqueness!averagebackgroundcolor}
    \hspace{\offset} Flying in from {\color{olive} left}!
  \end{colormixin}
\end{itemize}
```

Timed Overlays

- Adobe Reader supports *timed overlays*, often called *auto advancing*.
- Two approaches
 - `\hypersetup{pdfpageduration=time}` from *hyperref* package + overlay macros
 - `\transduration<n>{time}` from *beamer* package + overlay macros
- See [beamer_pstricks.pdf](#) to see a fancy example.
- Try to do the same thing using PGF. Easy or not?

Presentation Themes

- `\usetheme[option]{name}`: Named to `beamertheme<name>.sty`.
- Old themes: bars, boxes, classic, default, lined, plain, shadow, sidebar, sidebardark, sidebardarktab, sidebar, split, tree, **treebars**
- New themes (v3.0)
 - W/o navigation bar: default, boxes, Bergen, Madrid, Pittsburgh, Rochester
 - With a tree-like navigation bar: Antibes, JuanLesPins, Montpellier.
 - With a TOC sidebar: Berkeley, PaloAlto, Goettingen, Marburg, Hannover
 - With a mini frame navigation: Berlin, Ilmenau, Dresden, Darmstadt, Frankfurt, Singapore, Szeged
 - With section and subsection titles: Copenhagen, Luebeck, Malmoe, Warsaw

Color Themes

- `\usecolortheme[option]{name}`: Named to `beamercolortheme<name>.sty`.
- Default and special-purpose themes: default, structure (e.g., `\usecolortheme[named=SeaGreen]{structure}`).
- Complete color themes: albatross, beetle, crane, dove, fly, seagull
- Inner color themes: lily, orchid
- Outer color themes: whale, seahorse


[Return](#)

Font Themes

- `\usecolortheme[option]{name}`: Named to `beamerfonttheme<name>.sty`.
- New themes (v3.0): `default`, `professionalfonts`, `serif`, `structurebold`, `structureitalicserif`, `structuresmallcapserif`

[Return](#)

Hyperlinks and Buttons

- Beamer provides additional options for hyperlinks and buttons.
- `\hyperlink{targetname}{\beamerbutton{text}}` to create link.
- `\hypertarget{targetname}{text}` to create target.
- Some useful buttons are `\beamerbutton`, `\beamerbutton`, and `\beamerreturnbutton`.
- To go to the last slide, click .

Notes

- To add notes to PDF screen, `\documentclass[notes]{beamer}`.
- To make only notes, `\documentclass[notesonly]{beamer}`.

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- This slide has notes. Want to see them?

- To add notes to PDF screen, `\documentclass[notes](beamer)`.
- To make only notes, `\documentclass[notesonly](beamer)`.
- Notes addition by adding `\note[options]{...}` after `\frame{...}`.
- This slide has notes. Want to see them?

- Can you see me?
- Two note options for note are `itemize` and `enumerate`.
- `\beamertemplatenoteplain` for plain note page!

Merge for "trans" Output

- Beamer screen size = 128mm x 96mm
- Merge transparency output on letter paper for printing!

```
\documentclass{article} %  
\usepackage{pdfpages}  
\begin{document}  
\includepdf[nup=2x2,landscape,delta=5mm 5mm,  
scale=0.95,pages={1-18}]{trans.pdf}  
\end{document}
```

- To return, click [◀ here](#).

Movie

- Beamer provides `multimedia` package.⁹
- `\movie[options]{poster}{file_name}`
 - `poster`: Poster for the movie (empty, text, or image).
 - `file_name`: AVI or MPG.
 - Works with `pdflatex` and `dvips/ps2pdf` routes.
- Some useful options
 - `autostart`, `loop`, `repeat`, `palindrome`
 - `borderwidth`, `showcontrols`, `externalviewer`

- Example: `clock.avi`

⁹New in Version 2.2. Can be used **independently**.

Sound

- Beamer provides `multimedia` package.
- `\sound[options]{poster}{file_name}`
 - Cannot be used with `dvips/ps2pdf` route.
 - File types depend on Acrobat Reader versions
- Some useful options
 - `autostart`, `automute`, `loop`, `repeat`.
 - `inlinesound` to embed sound files to PDF.
 - `channels` (1), `samplingrate` (44100), `bitspersample` (16), `encoding` (μ law) are important!
- **Example:** `\sound[autostart,samplingrate=705000,bitspersample=16,channels=2]{Example}{notify.wav}`

Footer Design

- To add logo, `\logo{stuff}` in the preamble.
 - The logo will place in the right bottom corner.
 - How to change it? – See below!
- To redesign the footer, apply the following code:

```
\usefoottemplate{\vbox{%  
  \tinycolouredline{structure!25}%  
  {\color{white}\textbf{\insertshortauthor\hfill}  
  \insertshortinstitute}}%  
\tinycolouredline{structure}%  
  {\color{white}\textbf{\insertshorttitle}\hfill}}%  
}}
```

Emulations of Other Packages

- You can use **FoilT_EX**, **(HA)Prosper**, **Seminar**, or **T_EXPower** slides **within** Beamer.
- Not perfect, but you can *easily* import your slides written from the above four classes.
- Prosper example:

```
\usepackage{beamerprosper}           % Required
...
\overlays{8}{%
\begin{slide}{Prosper Emulation Example}
\begin{itemize}
\item Backward writing is easy and simple:
\fromSlide{8}{{\color{green} P}}%
\fromSlide{7}{{\color{blue} R}}%
\fromSlide{6}{{\color{magenta} O}}%
\fromSlide{5}{{\color{cyan} S}}%
\fromSlide{4}{{\color{yellow} P}}%
\fromSlide{3}{{\color{olive} E}}%
\fromSlide{2}{{{\color{red} R}}}}
\end{itemize}
\end{slide} }%
```

Prosper Result

- This slide is written with **Prosper syntax!**
- Backward writing is easy and simple:

Prosper Result

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R

Prosper Result

- This slide is written with **Prosper syntax!**
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OSPER

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ROSPER

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- Backward writing is easy and simple:

PROSPER

Hangul

- If you installed $\text{H}\text{T}\text{E}\text{X}$, load `\usepackage{hfont}`.
 - `\textgls{...}` ⇒ 아름다운 한글 그리고 金杞朱
 - Click  to return.
- Note: Hangul bookmarks and Hangul search in PDF are only supported by `dvi pdfm(x)`. But Beamer does not support `dvi pdfm(x)`.
- Beamer option `[cjk]` is supported.
- `\usepackage[utf8]{inputenc}` is supported.

Other Macros

- To remove navigation symbols,
`\usenavigationssymbolstemplate{}`.

Last Slide

- This page is directed from the button you clicked.
- To go back, click [◀ here](#).

Reference



Ki-Joo Kim, *Ki-Joo's L^AT_EX Documents*
(<http://www.geocities.com/kijoo2000/>).



Michael Wiedmann, *Screen Presentation Tools* (<http://www.miwie.org/presentations/presentations.html>).