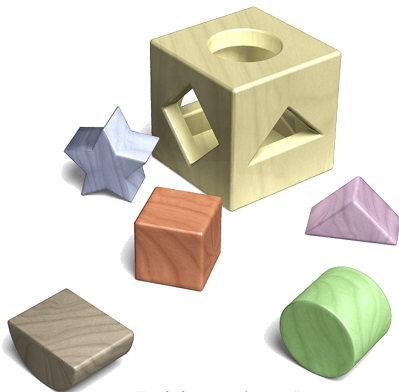


Howto: Introduction to Beamer

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Germany

- ▶ **What is BEAMER?**
- ▶ **How to produce a presentation?**
- ▶ **How to create overlays?**



"Logic is everywhere ..."



Introduction

What is BEAMER?

- ▶ BEAMER is a \LaTeX document class for producing slides created by Til Tantau at the Universität zu Lübeck

Why using BEAMER to produce a presentation?

1. \LaTeX based (all common \LaTeX commands can be used), thus reuse already written up material
2. can also be used to create reports from presentations
3. easy overlays
4. no external programs needed other than what you already use for \LaTeX



Structure of a BEAMER Document



Structure

1. The basic structure is the standard in \LaTeX . But:

```
\documentclass{beamer}  
\usetheme{Warsaw}  
% additional options here  
  
\begin{document}  
  
\section{Section 1}  
\begin{frame}  
\frametitle{title}  
  
% slide content in standard  $\text{\LaTeX}$   
  
\end{frame}  
  
\subsection{Subsection 1}  
  
\end{document}
```



Structure

1. The basic structure is the standard in \LaTeX . But:

- ▷ Indicate that this document is of the **BEAMER** class.

```
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here

\begin{document}

\section{Section 1}
\begin{frame}
\frametitle{title}

% slide content in standard  $\text{\LaTeX}$ 

\end{frame}

\subsection{Subsection 1}

\end{document}
```



Structure

1. The basic structure is the standard in \LaTeX . But:

- ▷ Indicate that this document is of the **BEAMER** class.
- ▷ **alternative themes: Frankfurt, Berlin, Bergen, Boadilla, Madrid, Ann Arbor, Pittsburgh, Rochester, Antibes, ...**

```
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here

\begin{document}

\section{Section 1}
\begin{frame}
\frametitle{title}

% slide content in standard  $\text{\LaTeX}$ 

\end{frame}

\subsection{Subsection 1}

\end{document}
```



Structure

1. The basic structure is the standard in \LaTeX . But:

- ▷ Indicate that this document is of the **BEAMER** class.
- ▷ alternative themes: Frankfurt, Berlin, Bergen, Boadilla, Madrid, Ann Arbor, Pittsburgh, Rochester, Antibes, ...
- ▷ Main document

```
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here
```

```
\begin{document}
```

```
\section{Section 1}
\begin{frame}
\frametitle{title}
```

```
% slide content in standard  $\text{\LaTeX}$ 
```

```
\end{frame}
```

```
\subsection{Subsection 1}
```

```
\end{document}
```



Structure

1. The basic structure is the standard in \LaTeX . But:

- ▷ Indicate that this document is of the **BEAMER** class.
- ▷ alternative themes: Frankfurt, Berlin, Bergen, Boadilla, Madrid, Ann Arbor, Pittsburgh, Rochester, Antibes, ...
- ▷ Main document
- ▷ Declare each slide (*frame*) you want to create.

```
\documentclass{beamer}
\usetheme{Warsaw}
% additional options here

\begin{document}

\section{Section 1}
\begin{frame}
\frametitle{title}

% slide content in standard  $\text{\LaTeX}$ 

\end{frame}

\subsection{Subsection 1}

\end{document}
```



Structure

1. The basic structure is the standard in \LaTeX . But:

- ▷ Indicate that this document is of the **BEAMER** class.
- ▷ alternative themes: Frankfurt, Berlin, Bergen, Boadilla, Madrid, Ann Arbor, Pittsburgh, Rochester, Antibes, ...
- ▷ Main document
- ▷ Declare each slide (*frame*) you want to create.
- ▷ Sections are used outside of the frame environment.

```

\documentclass{beamer}
\usetheme{Warsaw}
% additional options here

\begin{document}

\section{Section 1}
\begin{frame}
\frametitle{title}

% slide content in standard  $\text{\LaTeX}$ 

\end{frame}

\subsection{Subsection 1}

\end{document}

```



Titlepage

Howto: Introduction to Beamer

Emmanuelle Dietz

TU Dresden

May 14, 2012

```
1 \documentclass{beamer}
2 \usetheme{Montpellier}
3 \usepackage{array}
4 \usepackage{graphicx}
5
6 \title{Howto: Introduction to Beamer}
7 \author{Emmanuelle Dietz}
8 \institute{TU Dresden}
9 \date{May 14, 2012}
10
11 \begin{document}
12 \maketitle
13
14 \end{document}
```



Sections

Introduction

Structure

Titlepage

Sections

Alerts

Overlays

Pause

Lists

\only and \uncover

Example with Tikz

Further Information

References

...

```
\section{Introduction}
```

...

```
\section{Basics of Beamer}
```

...

```
\subsection{Basic Structure}
```

```
\subsection{Titlepage}
```



Alerts

We can emphasize portions of our slide using alerts.

```
\begin{itemize}  
\item \alert{important item}  
\item item  
\item item  
\end{itemize}
```

▶ **important item**

▶ **item**

▶ **item**



Overlays



Pause

`\pause` creates stopping points so one frame can be uncovered piecewise.

```
\begin{itemize}
\item This item first \pause
\item This item second \pause
\item This item third
\end{itemize}
```



Pause

`\pause` creates stopping points so one frame can be uncovered piecewise.

```
\begin{itemize}  
\item This item first \pause  
\item This item second \pause  
\item This item third  
\end{itemize}
```

► **This item first**



Pause

`\pause` creates stopping points so one frame can be uncovered piecewise.

```
\begin{itemize}  
\item This item first \pause  
\item This item second \pause  
\item This item third  
\end{itemize}
```

- ▶ **This item first**
- ▶ **This item second**



Pause

`\pause` creates stopping points so one frame can be uncovered piecewise.

```
\begin{itemize}  
\item This item first \pause  
\item This item second \pause  
\item This item third  
\end{itemize}
```

- ▶ **This item first**
- ▶ **This item second**
- ▶ **This item third**



Lists

```
\begin{itemize}  
\item<1-> This item first  
\item<3-> This item third  
\item<2-> This item second  
\end{itemize}
```



Lists

```
\begin{itemize}  
\item<1-> This item first  
\item<3-> This item third  
\item<2-> This item second  
\end{itemize}
```

► This item first



Lists

```
\begin{itemize}  
\item<1-> This item first  
\item<3-> This item third  
\item<2-> This item second  
\end{itemize}
```

▶ This item first

▶ This item second



Lists

```
\begin{itemize}  
\item<1-> This item first  
\item<3-> This item third  
\item<2-> This item second  
\end{itemize}
```

- ▶ **This item first**
- ▶ **This item third**
- ▶ **This item second**



Lists

```
\begin{itemize}  
\item<1-> This item first  
\item<3-> This item third  
\item<2-> This item second  
\end{itemize}
```

- ▶ **This item first**
- ▶ **This item third**
- ▶ **This item second**

Note that the order is given by

- ▶ Show <1> *only* on slide 1
- ▶ Show <1-> on slide 1 onwards
- ▶ Show <1-4,6-8> on every slide except 5



Emphasize Text

Parts of the slides can be emphasized using overlays with alerts or color specifications.

```
\begin{itemize}
\item \alert{important item}
\item item
\item item
\end{itemize}
```



Emphasize Text

Parts of the slides can be emphasized using overlays with alerts or color specifications.

```
\begin{itemize}  
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\item item  
\end{itemize}
```

- ▶ **important item**
- ▶ **item**
- ▶ **item**



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```
\begin{itemize}
\item \alert{important item}
\item item
\item item
\end{itemize}
```

- ▶ **important item**
- ▶ **item**
- ▶ **item**

```
\begin{itemize}
\item \alert<1>{first important item}
\item {\color<3>{blue}{third item}}
\item \alert<2>{second important item}
\end{itemize}
```



Emphasize Text

Parts of the slides can be emphasized using overlays with alerts or color specifications.

```
\begin{itemize}  
\item \alert{important item}  
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\item item  
\end{itemize}
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- ▶ **important item**
- ▶ **item**
- ▶ **item**

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\begin{itemize}  
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\item {\color<3>{blue}{third item}}  
\item \alert<2>{second important item}  
\end{itemize}
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- ▶ **first important item**
- ▶ **third item**
- ▶ **second important item**



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\item item
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- ▶ **important item**
- ▶ **item**
- ▶ **item**

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\begin{itemize}
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\item \alert<2>{second important item}
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- ▶ **first important item**
- ▶ **third item**
- ▶ **second important item**



Emphasize Text

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- ▶ **important item**
- ▶ **item**
- ▶ **item**

```
\begin{itemize}  
\item \alert<1>{first important item}  
\item {\color<3>{blue}{third item}}  
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\end{itemize}
```

- ▶ **first important item**
- ▶ **third item**
- ▶ **second important item**



Emphasize Text

Parts of the slides can be emphasized using overlays with alerts or color specifications.

```
\begin{itemize}
\item \alert{important item}
\item item
\item item
\end{itemize}
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- ▶ **important item**
- ▶ **item**
- ▶ **item**

```
\begin{itemize}
\item \alert<1>{first important item}
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\item \alert<2>{second important item}
\end{itemize}
```

- ▶ **first important item**
- ▶ **third item**
- ▶ **second important item**



Overlays for Non-Lists



Non-Lists

For non-lists there are several alternatives:

- ▶ `\onslide`
- ▶ `\only`
- ▶ `\visible`
- ▶ `\uncover`



Overlays for Non-Lists

`\only`

`\only<1>{Initial text.}`

`\only<2>{Replaced by this on second slide.}`

`\only<3>{Replaced again by this on third slide.}`



Overlays for Non-Lists

`\only`

`\only<1>{Initial text.}`

`\only<2>{Replaced by this on second slide.}`

`\only<3>{Replaced again by this on third slide.}`

Initial text.



Overlays for Non-Lists

`\only`

`\only<1>{Initial text.}`

`\only<2>{Replaced by this on second slide.}`

`\only<3>{Replaced again by this on third slide.}`

Replaced by this on second slide.



Overlays for Non-Lists

`\only`

`\only<1>{Initial text.}`

`\only<2>{Replaced by this on second slide.}`

`\only<3>{Replaced again by this on third slide.}`

Replaced again by this on third slide.



Overlays for Non-Lists

`\only`

`\only<1>{Initial text.}`

`\only<2>{Replaced by this on second slide.}`

`\only<3>{Replaced again by this on third slide.}`

`\uncover`

`\uncover<1>{Text shown on slide 1.}`

`\uncover<2>{Text shown on slide 2.}`

`\uncover<3>{Text shown on slide 3.}`



Overlays for Non-Lists

`\only`

`\only<1>{Initial text.}`

`\only<2>{Replaced by this on second slide.}`

`\only<3>{Replaced again by this on third slide.}`

`\uncover`

`\uncover<1>{Text shown on slide 1.}`

`\uncover<2>{Text shown on slide 2.}`

`\uncover<3>{Text shown on slide 3.}`

Text shown on slide 1.



Overlays for Non-Lists

`\only`

`\only<1>{Initial text.}`

`\only<2>{Replaced by this on second slide.}`

`\only<3>{Replaced again by this on third slide.}`

`\uncover`

`\uncover<1>{Text shown on slide 1.}`

`\uncover<2>{Text shown on slide 2.}`

`\uncover<3>{Text shown on slide 3.}`

Text shown on slide 2.



Overlays for Non-Lists

`\only`

`\only<1>{Initial text.}`

`\only<2>{Replaced by this on second slide.}`

`\only<3>{Replaced again by this on third slide.}`

`\uncover`

`\uncover<1>{Text shown on slide 1.}`

`\uncover<2>{Text shown on slide 2.}`

`\uncover<3>{Text shown on slide 3.}`

Text shown on slide 3.



Overlays with Tikz

```

\begin{tikzpicture}
\node (l1) [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
\end{tikzpicture}

```



Overlays with Tikz

```

\begin{tikzpicture}
\node (l1) [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
\end{tikzpicture}

```



Overlays with Tikz

```
\node (l1) [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

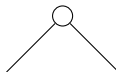
\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
```



Overlays with Tikz

```
\node (l1) [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

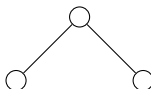
\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
```



Overlays with Tikz

```
\node (l1) [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

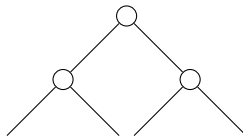
\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
```



Overlays with Tikz

```

\begin{tikzpicture}
\node (l1) [circle, draw];

\uncover<3->{
\node (t2) [left=6mm of l1] ;
\node (l2) [circle,draw,below=3mm of t2];

\node (t3) [right=12mm of l1] ;
\node (l3) [circle,draw,below=3mm of t3];}

\uncover<5->{
\node (t4) [left=6mm of l2] ;
\node (l4) [circle,draw,below=3mm of t4];

\node (t5) [right=6mm of l2] ;
\node (l5) [circle,draw,below=3mm of t5];

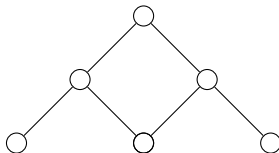
\node (t6) [left=6mm of l3];
\node (l6) [circle,draw,below=3mm of t6];
\node (t7) [right=6mm of l3];
\node (l7) [circle,draw,below=3mm of t7];}

\uncover<2->{
\draw (l1) -- (l2); \draw (l1) --(l3);}

\uncover<4->{
\draw (l2) -- (l4); \draw (l2) -- (l5);

\draw (l3) -- (l6); \draw (l3) -- (l7);}
\end{tikzpicture}

```



Overlays with Verbatim

Semiverbatim allows using verbatim with overlays. This requires the option [fragile]:

```
\begin{frame}[fragile]
```



Overlays with Verbatim

Semiverbatim allows using verbatim with overlays. This requires the option [fragile]:

```
\begin{frame}[fragile]
```

Example

```
\begin{semiverbatim}  
\alert<3>{\ \alert<2>{important item}}  
\end{semiverbatim}
```

```
\alert<2>{important item}
```



Overlays with Verbatim

Semiverbatim allows using verbatim with overlays. This requires the option [fragile]:

```
\begin{frame}[fragile]
```

Example

```
\begin{semiverbatim}  
\alert<3>{\ \alert<2>{important item}}  
\end{semiverbatim}
```

```
\alert<2>{important item}
```



Other Stuff

- ▶ **Suppress navigation symbols**

```
\setbeamertemplate{navigation symbols}{}
```

- ▶ **Suppress the headlines, footlines, and sidebars**

```
\begin{frame}[plain]
```

- ▶ **Add “handout” parameter for slides without overlays (e.g. for printout)**

```
\documentclass[... , handout]{beamer}
```

- ▶ **Include blank black slide**

```
\bgroup  
\setbeamercolor{background canvas}{bg=black}  
\begin{frame}[plain]{}  
\end{frame}  
\egroup
```



Further Information

- ▶ **Till Tantau, Joseph Wright, Vedran Miletić: The BEAMER class**
<http://www.ctan.org/tex-archive/macros/latex/contrib/beamer/doc/beameruserguide.pdf>
- ▶ **Charles T. Batts: A Beamer Tutorial in Beamer**
<http://www.scribd.com/doc/47716986/Charles-Batts-Beamer-Tutorial>



References

- ▶ **Charles T. Batts: A Beamer Tutorial in Beamer**
<http://www.scribd.com/doc/47716986/Charles-Batts-Beamer-Tutorial>
- ▶ **Matthias Gerdts: Introduction to Beamer**
<http://www.unibw.de/lrt1/gerdts/lehre/zusatzmaterial-und-links/beamer-intro.pdf>
- ▶ **Gonzalo Rivero: Presentations in \LaTeX , Introduction to the BEAMER class**
www.nyu.edu/projects/politicsdatalab/latex/beamer_nyu.pdf
- ▶ **Till Tantau, Vedran Miletić, Joseph Wright: Creating Overlays**
<http://get-software.net/macros/latex/contrib/beamer/doc/beamerug-overlays.tex>



