beamer2html: beamer decks as offline HTML slide decks

version 1.0

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Abstract

beamer2html turns a beamer presentation into a self-contained HTML slide deck that runs offline in any modern browser, so animations, step-by-step reveals, interactive plots, videos and speaker notes work without depending on a particular PDF viewer. The same sources still give the PDF. It has two parts: the LaTeX package `beamer2html.sty` (title slides, title bar, footer, layout, tables, plots, animations, shapes, videos, flowcharts), used in the beamer source, and the program `beamer2html` (Python), which writes `slides.html` from that source.

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1 Introduction

A beamer deck is usually presented from its PDF. That works until the deck needs more than a PDF viewer offers everywhere: an animation (the animate package needs Adobe Reader or a recent Okular), a video, a plot whose values one wants to read off, or a presenter view with notes. beamer2html keeps the beamer source as the one source of the talk and adds an HTML version of it:

- `slides.html` with `html/` next to it: a 16:9 deck that runs in any modern browser, offline, from a local file;
- step-by-step reveals (`\pause`, overlay specifications) as in the PDF;
- animations from image sequences, with play/pause, a time bar and synchronised panels;
- interactive plots from data files (values under the pointer, zoom, hide lines), drawn by pgfplots in the PDF;
- videos that play when their slide comes up;
- a presenter view (notes, next slide, timer, slide grid; touch controls), a slide grid and fullscreen;
- one zip with exactly the files the deck uses, for the presenting computer (`--pack`), optionally with the images made smaller.

The program understands the LaTeX of decks written with `beamer2html.sty`: its own commands and environments, beamer frames and overlays, and common LaTeX (lists, figures, tables, math, citations). It does not understand LaTeX in general. Anything it does not know is kept as plain text and reported as a warning with the slide it is on, so nothing disappears silently.

2 Requirements and installation

- Python 3.8 or later. Nothing else is needed for the conversion itself.
- Poppler (`pdftocairo`, `pdftoppm`, `pdfimages`, `pdfinfo`) for PDF figures: browsers cannot show PDF images, so vector figures become SVG and figures with embedded bitmaps PNG.
- A TeX distribution (`pdflatex`, `pdfcrop`) and Ghostscript (`gs`) for TikZ pictures, which are drawn by LaTeX itself.
- Optional: Pillow (`pip install pillow`) for `--pack --compress`.
- For the PDF: beamer, tikz, pgfplots, animate, biblatex with `biber`, as usual.

From a TeX distribution. When beamer2html is installed by TeX Live or MiKTeX, `beamer2html.sty` is found by LaTeX, and the program is the command `beamer2html`.

From the CTAN package or the source repository. Unpack it anywhere. The program is the folder `scripts/beamer2html/` (in the repository: its top folder); run it with Python:

```
python3 path/to/beamer2html [main.tex] [options]
```

or through the launcher `beamer2html.py` in that folder, which can be linked into a directory on the `PATH`. The program finds `beamer2html.sty` next to itself (`latex/` in the repository, `tex/` in the CTAN package) or through `kpsewhich`, and copies it into each project it converts, so the PDF build finds it too; nothing has to be installed into the TeX tree.

3 Quick start

The folder `example/` (in the repository: `template/`) is a working deck that shows every element, one section each, with the options explained in comments. Copy it to start a talk:

```
cp -r path/to/example my-talk
cd my-talk
beamer2html              # -> slides.html (installs beamer2html.sty and html/)
latexmk -pdf main.tex    # -> main.pdf
```

Open `slides.html` in a browser. Fill in the `[placeholders]` in `main.tex`, write your sections (copy the frames you need from the tutorial ones), change the `\input` lines, and delete the tutorial sections and the sample figures.

4 The command line

```
beamer2html [main.tex] [-o slides.html] [--watch]
            [--pack [talk.zip] [--compress [PX]] [--slide-range RANGES]]
```

Run it in the folder of the main `.tex` file (default `main.tex`); all paths are relative to that folder.

Option	Meaning
`-o` *file*	the HTML file to write (default `slides.html`)
`-w`, `--watch`	keep running and rebuild whenever `main.tex`, an `\input` file, the `.bib`, an image or data file the slides use, or the tool's own files change. An open deck built this way reloads itself and stays on the same slide and step; a failed build leaves the last good deck in place. Ctrl+C stops it. Run `latexmk -pdf -pvc main.tex` alongside for the PDF.
`--pack` [*zip*]	also write a zip with the deck and exactly the images, animation frames, videos and `html/` files it uses (default name: the HTML file's name with `.zip`). It unpacks to one folder; open `slides.html` in it. Sources, the `.bib`, PDFs and unused figures are left out.
`--compress` [*PX*]	with `--pack`: raster images and animation frames (PNG, JPEG, TIFF, BMP) go into the zip as WebP, at most *PX* pixels wide and high (default 960). This often makes the zip 5–10 times smaller with no visible difference; your files are not changed. Copies are cached in `html/cache/webp-PX/`. Needs Pillow.
`--slide-range` *R*	with `--pack`: only these slides, e.g. `20:30,32:35`; `5` is one slide, `20:` from 20 to the end, `:10` up to 10. The numbers are those the HTML deck shows; the packed deck numbers its slides from 1.
`--version`	print the version

Each run also installs into the project: `beamer2html.sty` next to the main file; `html/deck.js`, `html/deck.css` and MathJax in `html/`; `html/references.js` from the `\addbibresource` file; and converted PDF figures and TikZ pictures in `html/cache/`. A copy of `beamer2html.sty` that was edited in the project is saved as `beamer2html.sty.bak` before it is replaced.

5 Presenting

Key	Action
→ ↓ Space PgDn	next step or slide
← ↑ PgUp	previous step or slide
Home, End; *number* Enter	first, last slide; go to a slide
F	fullscreen
P	play / pause the animations and videos on the slide
G	slide grid: every slide as a thumbnail; click one to go there
S	presenter view in a second window
H	help
swipe, tap	on a touch screen: swipe left / right, or tap the right two thirds / left third

The presenter view shows the current slide, the next step or slide, the notes (`\note`), a clock and a timer. Put it on the laptop screen and the slides on the projector; either window navigates. On a touch screen it has buttons for back, play/pause, next and a slide grid that opens in the presenter window only, so a slide can be picked while the audience keeps seeing the current one; a swipe or a tap on the next-slide preview also moves on. Printing (Ctrl+P, Save as PDF) gives a static copy, one page per slide.

On a phone or tablet, browsers do not load the files next to a local HTML file. The companion viewer (`https://arunperiyal.github.io/tex2html-viewer/`, also an Android app) opens a `--pack` zip and presents it full screen, offline.

6 The `beamer2html` package

Load it after beamer, together with the packages it works with:

```
\documentclass[aspectratio=169,11pt]{beamer}
\usepackage{beamer2html}
\usepackage{animate}          % for the animation environment
\usepackage[backend=biber]{biblatex}  % for \ReferencesFrame and citations
```

The class font size option (8pt to 20pt) scales all text, in the PDF and the HTML. The example deck shows every command below with its options in comments; this section is an overview.

6.1 Title slides and fields

Set the fields in the preamble, then use a title slide:

```
\SetTitle{...}  \SetSeminar{...}  \SetDegree{...}  \SetPresenter{...}
\SetRollNo{...} \SetSupervisor{...} \SetDepartment{...} \SetInstitute{...}
\SetLogo{figures/logo}          % without extension; a placeholder until it exists
\SetAuthorOne{...} \SetAuthorTwo{...} \SetConference{...}
\SetShortTitle{...} \SetFootAuthor{...}   % footer of content slides
```

`\SeminarTitleFrame` (thesis or seminar talk), `\ConferenceTitleFrame` (two authors), `\OverviewFrame` (the `\section` names), `\ReferencesFrame` (the bibliography; a long list continues on "References (cont.)" slides) and `\ThankYouFrame` make whole slides.

6.2 Content slides

Ordinary `\begin{frame}{Title}{Subtitle}` frames get a title bar and a footer. These switches work in the preamble and between frames: `\TitleBarOn`/`\TitleBarOff`, `\SetTitleHeight{len}`, `\SectionNameOn`/`\SectionNameOff`, `\FooterOn`, `\FooterNumberOnly`, `\FooterOff`, `\SetTextMargins{left}{` (the slide body; beamer's `\setbeamersize{text margin left=...}` is read too), `\SetBarMargin{len}` (title bar and footer), `\SetCaptionSize{\footnotesize}`, and `\showdividers`/`\hidedividers`, an editing aid that outlines rows and columns.

6.3 Layout and tables

The `rows` environment with `\begin{row}{0.35}` (a share of the slide height) holds beamer `columns`, giving a grid. `slidetable` is a table in one of four styles, `plain`, `lines`, `header` and `striped`; its first row is the header, and `p{3cm}`, `m{..}`, `b{..}` column widths carry over to the HTML (`\slidetablestretch` sets the row spacing). `progress` with `\task` lines is a timeline, `publications` with `\pub`, `\pubtext` and `\pubsection` a list with status badges, and `litreview` with `\study`, `\studytext` a literature table. `\FigurePlaceholder` keeps the space of a figure that is not made yet.

6.4 Shapes

`\begin{annotate}[grid] ... \end{annotate}` around an image or table, with `\shape<spec>[options]{kind` lines, draws over it; coordinates are fractions of the element, from the bottom left. `\slideshape` uses fractions of the slide, and `\slidegrid` shows a grid for reading them off. Kinds: `rect`, `ellipse`/`circle`, `line`, `arrow`, `text` (`{x,y}{text}`) and `axes` (a coordinate indicator). Options: `color`, `width`, `fill`, `opacity`, `dashed`, `rounded`, `label`, `labelpos`, `textsize`, `border`. Shapes never change the layout.

6.5 Videos

`\slidevideo[options]{file}` (MP4, WebM) with `width`, `height`, `poster`, `autoplay` (when its slide or step comes up), `loop`, `muted`, `controls`, `start` and `end` in seconds; `\slidevideo<2->` for a step. In the PDF it is the poster (or a box with the file name) linking to the video, or with `\usepackage{multimedia}` a `\movie`.

6.6 Plots

```
\begin{slideplot}[xlabel={$t$}, ylabel={$y/D$}, height=5cm]
  \plotline[x=time, y=disp, label={$U_r = 4$}]{data/U4.csv}
  \plotline<2->[x=time, y=disp, label={$U_r = 6$}, style=dashed]{data/U6.csv}
\end{slideplot}
```

draws lines from data files (CSV or space-separated columns, optional header row; columns by name or by number from 1). The PDF uses pgfplots; the HTML plot is interactive. Options of `slideplot`: `width`, `height`, `xlabel`, `ylabel`, `xmin`, `xmax`, `ymin`, `ymax`, `grid`, `legend` (`north east`, `north west`, `south east`, `south west`, `outer east`, `outer north`, `none`), `rows`, `columns`, `share`. Per line: `x`, `y`, `label`, `color`, `style` (`solid`, `dashed`, `dotted`), `xscale`, `yscale` (multiply the values), `offset` (added to x, after `xscale`), `sep`, `pdfevery=N` (the PDF plots every N-th point). Lines with the same label share one colour and one legend entry.

`\plotpanel[title=..., xlabel=..., ylabel=...]` starts a panel; the lines after it are drawn in it. `rows`/`columns` lay the panels out, `share` (`x`, `y`, `both`, `none`) links axes, and a panel's own `xmin`, `xmax`, `ymin`, `ymax` apply to an axis it does not share. There is one legend for all panels.

6.7 Animations

```
\begin{animation}[frames=0:22:2, fps=3, controls=hover, dt=0.1, timebar]
  \animpanel{Case 1}{figures/anim/case1_\N}
  \animpanel{Case 2}{figures/anim/case2_\N}
\end{animation}
```

plays image sequences in synchronised panels (`\N` is the frame number). Options: `frames=first:last:step`, `fps`, `width`, `controls` (including `hover`), `autoplay`, `loop`, `subcaptions`, `dt` with `timelabel`, `timedigits`, `timeunit`, `time=false`, `timebar`, `columns=N`; a panel can have its own `\animpanel[frames=a:b:s`. In the PDF it is an animate animation. animate's own `animateinline` with `\multiframe` is understood too.

6.8 Diagrams

`tikzpicture` and `\tikz` are drawn by LaTeX itself: each picture is compiled on its own with the deck's preamble, cropped and turned into one SVG per overlay step, so the HTML matches the PDF; overlays (`\node<2->`, `visible on=<2->`, `\pause` inside the picture) work as in beamer. The package has flowchart styles in the deck's colours: `flow` on the picture, nodes `flowbox`, `flowstart`, `flowdecision`, `flowio`, and `flowarrow`/`flowlabel`.

7 What the conversion understands

- beamer: frames (`[t]`, `[plain]`, `\frametitle`), `\section`, `\pause`, overlay specifications (`\item<2->`, `[<+->]`, `\only`, `\uncover`, `\visible`, `\invisible`, `\alt`, `\onslide`, environments with `<...>`), `columns`, `block`, `\note`, the class font size option;
- LaTeX: `figure` and `table` with `\caption` (numbered through the deck), `\label` and `\ref`, lists, `minipage`, `center`, `tabular`, math (MathJax 4, in a Times font when the preamble loads newtxmath, mathptmx, txfonts or times, else New Computer Modern), `\includegraphics`, font sizes and styles, `\color`, `\cite`, `\textcite`, `\citet`, `\citeauthor`, `\href`, `\def` and `\newcommand` without arguments;
- everything in `beamer2html.sty` described above.

Not supported: commands with arguments defined in the document, `\alert<...>`.

8 Decks from before the rename

beamer2html was called tex2html, and its package titletemplates. A deck that loads `\usepackage{titletemplates` keeps working: its `titletemplates.sty` is updated together with `beamer2html.sty`. To move it over, change the line to `\usepackage{beamer2html}`.

9 License

Copyright © 2026 Arun Periyal. This work (the program, `deck.js`, `deck.css`, `beamer2html.sty`, the example deck and this manual) may be distributed and/or modified under the conditions of the LaTeX Project Public License, either version 1.3c of this license or (at your option) any later version. It has the LPPL maintenance status "maintained"; the Current Maintainer is Arun Periyal.

Bundled third-party files keep their own licenses: MathJax and its fonts (Apache License 2.0) and a subset of TeX Gyre Termes as WOFF2 (GUST Font License), both in the program's `assets/vendor/` folder with their license files.

10 Changes

1.0 (2026-11-12) First release on CTAN, as beamer2html (formerly tex2html with titletemplates.sty).