

ltx-talk – A class for typesetting presentations*

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Part I

ltx-talk – Overall set up

1 ltx-talk implementation

Start the DocStrip guards.

```
1 <*class>
    Identify the internal prefix.
2 <@@=talk>
```

1.1 Set up

Identify the package and give the over all version information.

```
3 \ProvidesExplClass {ltx-talk} {2026-02-02} {0.4.1}
4   {A class for typesetting presentations}
    Get the right type of message.
5 \prop_gput:Nnn \g_msg_module_name_prop { talk } { ltx-talk }
6 \prop_gput:Nnn \g_msg_module_type_prop { talk } { Class }
    Require the latest LATEX structures.
7 \IfFormatAtLeastF { 2025-11-01 }
8   {
9     \msg_new:nnnn { ltx-talk } { kernel-too-old }
10    { The~ltx-talk~class~requires~LaTeX~2025-11-01~or~later. }
11    {
12      You~have~tried~to~use~the~ltx-talk~class~with~a~LaTeX~kernel~release~
13      prior~to~2025-11-01;~the~required~functionality~is~missing.
14    }
15    \msg_fatal:nn { ltx-talk } { kernel-too-old }
16  }
17 \NeedsDocumentMetadata
    Warn if not an engine that is tested.
18 \bool_lazy_or:nnF
19   { \sys_if_engine luatex_p: }
20   { \sys_if_engine pdftex_p: }
21   {
22     \msg_new:nnn { ltx-talk } { unsupported-engine }
23     {
24       The~engine~"\c_sys_engine_str"~
25       is~not~supported~by~the~ltx-talk~class.
26     }
27     \msg_warning:nn { ltx-talk } { unsupported-engine }
28   }
```

1.2 Additions for expl3

Like `\vcoffin_set:Nnn`, so should be an easy enough addition.

```

29 \cs_gset_protected:Npn \vbox_set_to_wd:Nnn #1#2#3
30 {
31   \tex_setbox:D #1 \tex_vbox:D
32   {
33     \tex_hsize:D \__box_dim_eval:n {#2}
34     \color_group_begin: #3 \par \color_group_end:
35   }
36   \box_dp:N #1 \__box_dim_eval:n {#2}
37 }
38 \cs_gset_protected:Npn \vbox_set_to_wd:Nnw #1#2
39 {
40   \cs_set_protected:Npn \__box_set_to_wd:
41   { \box_wd:N #1 \__box_dim_eval:n {#2} }
42   \tex_setbox:D #1 \tex_vbox:D
43   \c_group_begin_token
44   \tex_hsize:D \__box_dim_eval:n {#2}
45   \group_insert_after:N \__box_set_to_wd:
46   \color_group_begin:
47 }
```

Some things from `xbox` that would be useful.

```

48 \cs_gset_protected:Npn \rule:nnn #1#2#3
49 {
50   \tex_vrule:D
51   height \dim_eval:n {#2} \exp_stop_f:
52   depth \dim_eval:n {#3} \exp_stop_f:
53   width \dim_eval:n {#1} \exp_stop_f:
54   \scan_stop:
55 }
```

Some extensions are needed to opacity support: this should only be here for a short period.

```

56 \cs_gset_protected:Npn \opacity_begin:n #1
57 { \__opacity_select:nN {#1} \__opacity_backend_begin:n }
58 \cs_gset_protected:Npn \opacity_end:
59 { \__opacity_backend_end: }
60 \AddToHook { begindocument }
61 {
62   \cs_gset_protected:Npe \__opacity_backend_begin:n #1
63   {
64     \bool_lazy_any:nTF
65     {
66       { \sys_if_engine_pdftex_p: }
67       { \sys_if_engine luatex_p: }
68       { \sys_if_engine_xetex_p: }
69     }
70     {
71       \tl_set:Nn \exp_not:N \l__opacity_backend_fill_tl {#1}
72       \tl_set:Nn \exp_not:N \l__opacity_backend_stroke_tl {#1}
73       \pdfmanagement_add:nnn { Page / Resources / ExtGState }
74       { opacity #1 }
75       { << /ca ~ #1 /CA ~ #1 >> }
```

```

76         \sys_if_engine_xetex:TF
77         { \__kernel_backend_literal_pdf:n }
78         {
79             \__kernel_color_backend_stack_push:nn
80             \exp_not:N \c__opacity_backend_stack_int
81         }
82         { /opacity #1 ~ gs }
83     }
84     {
85         \__opacity_backend:nnn {#1} { fill } { ca }
86         \__opacity_backend:nnn {#1} { stroke } { ca }
87     }
88 }
89 \cs_gset_protected:Npe \__opacity_backend_end:
90 {
91     \bool_lazy_any:nTF
92     {
93         { \sys_if_engine_pdftex_p: }
94         { \sys_if_engine luatex_p: }
95         { \sys_if_engine_xetex_p: }
96     }
97     { \__opacity_backend_reset: }
98     {
99         \__opacity_backend_reset_fill:
100         \__opacity_backend_reset_stroke:
101     }
102 }
103 }

```

1.3 Extra variants

```

104 \cs_generate_variant:Nn \clist_set:Nn { cv }
105 \cs_generate_variant:Nn \hook_gput_code:nnn { nne }
106 \exp_args_generate:n { nVv }
107 \cs_generate_variant:Nn \color_select:n { V }
108 \cs_generate_variant:Nn \dim_compare:nNnTF { v }
109 \cs_generate_variant:Nn \dim_compare_p:nNn { vNv }
110 \cs_generate_variant:Nn \dim_max:nn { v }
111 \cs_generate_variant:Nn \str_replace_all:Nnn { NnV }
112 \cs_generate_variant:Nn \text_purify:n { v }
113 \cs_generate_variant:Nn \vbox_to_ht:nn { v }

```

1.4 Scratch space

__talk_tmp:w For one-off processing.

```

114 \cs_new_protected:Npn \__talk_tmp:w { }

```

(End of definition for __talk_tmp:w.)

\l__talk_tmp_box

```

115 \box_new:N \l__talk_tmp_box

```

(End of definition for \l__talk_tmp_box.)

\l__talk_tmp_tl

116 \tl_new:N \l__talk_tmp_tl

(End of definition for \l__talk_tmp_tl.)

1.5 Option handling

\l__talk_aspect_ratio_str
\l__talk_fontsize_dim
\l__talk_frame_title_bool
\l__talk_mode_str

```
117 \keys_define:nn { talk }
118 {
119   aspect-ratio .str_set:N =
120     \l__talk_aspect_ratio_str ,
121   font-size .dim_set:N =
122     \l__talk_fontsize_dim ,
123   frame-title-arg .bool_set:N =
124     \l__talk_frame_title_bool ,
125   handout .code:n =
126     { \str_set:Nn \l__talk_mode_str { handout } } ,
127   handout .value_forbidden:n = true ,
128   mode .choices:nn =
129     { handout , projector }
130     { \str_set:NV \l__talk_mode_str \l_keys_choice_tl }
131 }
```

(End of definition for \l__talk_aspect_ratio_str and others.)

Scope for options.

```
132 \keys_define:nn { talk }
133 {
134   aspect-ratio .usage:n = load ,
135   font-size .usage:n = load ,
136   frame-title-arg .usage:n = load ,
137   mode .usage:n = load
138 }
```

Compatibility keys for classical font size setting.

```
139 \clist_map_inline:nn { 10pt , 11pt , 12pt }
140 {
141   \keys_define:nn { talk }
142   {
143     #1 .meta:n = { font-size = #1 } ,
144     #1 .value_forbidden:n = true ,
145     #1 .usage:n = load
146   }
147 }
```

Initial values.

```
148 \keys_set:nn { talk }
149 {
150   aspect-ratio = 16:9 ,
151   font-size = 11pt ,
152   frame-title-arg = false ,
153   mode = projector
154 }
155 \ProcessKeyOptions [ talk ]
```

1.6 Setting up

Load the font size setup if available, otherwise fall back on scaling.

```

156 \file_if_exist_input:nF { size \dim_to_decimal:n \l__talk_fontsize_dim .clo }
157 {
158   \file_input:n { size10.clo }
159   \RequirePackage { relsize }
160   \hook_gput_code:nne { begindocument } { talk }
161   { \exp_not:N \relsize { \fp_eval:n { \l__talk_fontsize_dim / 10pt } } } }
162 }

```

As geometry is being used to set the paper size with no previous value, we have to use the optional argument rather than waiting to apply `\geometry`.

```

163 \dim_const:Nn \c__talk_paper_height_dim { 100mm }
164 \use:e
165 {
166   \cs_set_protected:Npn \exp_not:N \__talk_tmp:w
167     #1 \tl_to_str:n { : } #2 \tl_to_str:n { : } #3 \exp_not:N \q_stop
168   {
169     \dim_const:Nn \exp_not:N \c__talk_paper_width_dim
170     {
171       \exp_not:N \fp_to_dim:n
172       { (#1 / #2) * \exp_not:N \c__talk_paper_height_dim }
173     }
174   }
175   \exp_not:N \__talk_tmp:w \l__talk_aspect_ratio_str
176   \tl_to_str:n { : } 100 \exp_not:N \q_stop
177 }
178 \use:e
179 {
180   \exp_not:N \RequirePackage
181   [
182     papersize =
183     {
184       \dim_use:N \c__talk_paper_width_dim ,
185       \dim_use:N \c__talk_paper_height_dim
186     } ,
187     tmargin    = 10mm ,
188     bmargin    = 8mm ,
189     lmargin    = 10mm ,
190     rmargin    = 10mm ,
191     headheight = 10mm ,
192     headsep    = 2mm ,
193     footskip   = 6mm
194   ]
195   { geometry }
196 }

```

(End of definition for `\c__talk_paper_height_dim` and `\c__talk_paper_width_dim`.)

Turn off justification

```

197 \raggedright

```


1.7 Math support

We always require `amsmath`: this is forced anyway by `unicode-math` for LuaTeX.

```
198 \RequirePackage { amsmath }
```

1.8 Font selection

The aim here is to minimize change from the standard font setup but at the same time provide a sans-serif default. Since `beamer` was released, better sans-serif math mode fonts have become available. For OpenType engines, requiring `(lua-)unicode-math` is the most sensible approach; we also load `mathtools` as that has to be before `unicode-math`. The New Computer Modern font provides a reasonable initial set of glyphs. It comes with a wrapper package, but that does various other things: if the user wants these, they can choose to load themselves. For 8-bit engines, switching the text font to be sans-serif is easy. For math mode, the `sansmathfonts` package does a good job: here, using the package rather than adjusting directly is the sensible option.

```
199 \sys_if_engine_opentype:TF
200 {
201   \RequirePackage { fontspec }
202   \RequirePackage { mathtools }
203   \sys_if_engine luatex:TF
204   {
205     \RequirePackage { lua-unicode-math }
206     \tagpdfsetup { math / mathml / luamml / load = true }
207   }
208   { \RequirePackage { unicode-math } }
209   \setmainfont { NewCMSans10-Regular.otf }
210   \setsansfont { NewCMSans10-Regular.otf }
211   \setmathfont { NewCMSansMath-Regular.otf }
212 }
213 {
214   \RequirePackage { sansmathfonts }
215   \RequirePackage [ nomath ] { lmodern }
216   \cs_set_eq:NN \rmdefault \sfdefault
217 }
```

To ensure that math mode fonts are always initialized, force loading at the start of the document. This is left as late as possible: just before typesetting starts. This is needed to set up math dimensions for vertical centering.

```
218 \AddToHook { begindocument / end } { \check@mathfonts }
```

1.9 Hyperlinks

`\thepage` We define `\thepage` here: this is checked for by `hyperref` so has to come early.

```
219 \cs_new:Npn \thepage { \@arabic \c@page }
```

(End of definition for `\thepage`. This variable is documented on page ??.)

A requirement.

```
220 \RequirePackage { hyperref }
```

```
221 \hypersetup { hidelinks }
```

1.10 Tagging

We need to extend the standard tagging model to work with slides and so on.

```
222 \tagpdfsetup
223 {
224   role / user-NS = ltx-talk      ,
225   role / new-tag = frame / Sect  ,
226   role / new-tag = frametitle / H4
227 }
228 \</class>
```

Part II

ltx-talk-color – Color definitions

1 ltx-talk-color implementation

Start the DocStrip guards.

```
1 < *class>
    Identify the internal prefix.
2 < @@=talk>
```

The aim here is to *test* how well l3color can support the range of color functions that are needed for a presentation. As such, this is very much experimental, but deliberately so. In particular, there is an important question about the need for global colors: used throughout beamer but otherwise not widely encountered. At the same time, there is a need to work with packages that expect color to be managed in a predictable way: pgf in particular makes use of xcolor internal as part of color management.

Currently, colors defined using xcolor will be passed on to l3color provided \DocumentMetadata is active. As that is a requirement in any case for ltx-talk, some of the setup is relatively easy to do.

1.1 Existing definitions

```
3 \RequirePackage { xcolor }

\stdcolor Save the document commands.
\stdmathcolor 4 \NewCommandCopy \stdcolor \color
\stdtextcolor 5 \NewCommandCopy \stdmathcolor \mathcolor
6 \NewCommandCopy \stdtextcolor \textcolor
```

(End of definition for \stdcolor, \stdmathcolor, and \stdtextcolor. These functions are documented on page ??.)

1.2 Document (and interface) commands

```
7 \cs_generate_variant:Nn \color_select:n { e }
8 \cs_generate_variant:Nn \color_select:nn { ne }
9 \cs_generate_variant:Nn \color_math:nn { e }
10 \cs_generate_variant:Nn \color_math:nnn { ne }

\color Add the overlay specification and use l3color.
\mathcolor
\textcolor
11 \RenewDocumentCommand \color { D <> { all } o m }
12 {
13     \__talk_if_overlay:nT {#1}
14     {
15         \IfNoValueTF {#2}
16         { \color_select:e {#3} }
17         { \color_select:ne {#2} {#3} }
18     }
19     \ignorespaces
20 }
21 \RenewDocumentCommand \mathcolor { D <> { all } o m +m }
22 {
```

```

23   \_talk_if_overlay:nT {#1}
24   {
25       \IfNoValueTF {#2}
26       { \color_math:en {#3} {#4} }
27       { \color_math:nen {#2} {#3} {#4} }
28   }
29 }
30 \RenewDocumentCommand \textcolor { D <> { all } o m +m }
31 {
32   \_talk_if_overlay:nT {#1}
33   {
34       \mode_leave_vertical:
35       \group_begin:
36       \IfNoValueTF {#2}
37       { \color_select:e {#3} }
38       { \color_select:ne {#2} {#3} }
39       #4
40       \group_end:
41   }
42 }

```

(End of definition for `\color`, `\mathcolor`, and `\textcolor`. These functions are documented on page ??.)

`\pagecolor` Here, the definition is different: we directly use the shipout hook.
`_talk_pagecolor:n`

```

43 \RenewDocumentCommand \pagecolor { D <> { all } o m }
44 {
45   \_talk_if_overlay:nT {#1}
46   {
47       \IfNoValueTF {#2}
48       { \_talk_pagecolor:n { {#3} } }
49       { \_talk_pagecolor:n { [ {#2} ] {#3} } }
50   }
51 }
52 \cs_new_protected:Npn \_talk_pagecolor:n #1
53 {
54   \AddToHook { shipout / background }
55   {
56       \color #1
57       \put ( 0cm, -\paperheight )
58       { \rule { \paperwidth } { \paperheight } }
59   }
60 }

```

(End of definition for `\pagecolor` and `_talk_pagecolor:n`. This function is documented on page ??.)

`\stdset@color`
`\stdreset@color`

```

61 \cs_set_eq:NN \stdset@color \set@color
62 \cs_set_eq:NN \stdreset@color \reset@color

```

(End of definition for `\stdset@color` and `\stdreset@color`. These functions are documented on page ??.)

`\set@color` Part of code-level interface for color: simply use the expl3 version of the same idea.
`\reset@color`

```

63 \cs_set_eq:NN \set@color \color_ensure_current:
64 \cs_set_eq:NN \reset@color \_color_backend_reset:

```

(End of definition for \set@color and \reset@color. These functions are documented on page ??.)

1.3 Color definition

\DeclareColor Provide a single interface here: as the data will be passed to l3color in any case, there is not too much to do.

```
65 \NewDocumentCommand \DeclareColor { m o m }  
66 {  
67   \IfNoValueTF {#2}  
68     { \colorlet {#1} {#3} }  
69     { \definecolor {#1} {#2} {#3} }  
70 }
```

(End of definition for \DeclareColor. This function is documented on page ??.)

1.4 Semantic colors

Pick up the standard colors from beamer.

```
71 \DeclareColor { alert } [ RGB ] { 200 , 0 , 0 }  
72 \DeclareColor { example } { green!50!black }  
73 \DeclareColor { structure } [ rgb ] { 0.2 , 0.2 , 0.7 }  
74 \</class>
```

Part III

ltx-talk-decode – Decoding overlay specs

1 ltx-talk-decode implementation

Start the DocStrip guards.

```
1 < *class >
    Identify the internal prefix.
2 < @@=talk >
```

`\l__talk_decode_overlays_bool` The result from decoding: are we on the current slide. This may well be better handled by moving to a TF signature: to be explored.

```
3 \bool_new:N \l__talk_decode_overlays_bool
```

(End of definition for \l__talk_decode_overlays_bool.)

`\g__talk_pauses_int` The automatically-incremented value for the relative overlay value.

```
\c@pauses 4 \int_new:N \g__talk_pauses_int
\thepauses 5 \cs_new_eq:NN \c@pauses \g__talk_pauses_int
6 \cs_new:Npn \thepauses { \@arabic \g__talk_pauses_int }
```

(End of definition for \g__talk_pauses_int, \c@pauses, and \thepauses. These variables are documented on page ??.)

`\l__talk_decode_pure_bool` Tracks whether only mode specifications were given.

```
7 \bool_new:N \l__talk_decode_pure_bool
```

(End of definition for \l__talk_decode_pure_bool.)

`\l__talk_decode_step_bool` Tracks whether to step `\g__talk_pauses_int`.

```
8 \bool_new:N \l__talk_decode_step_bool
```

(End of definition for \l__talk_decode_step_bool.)

`\l__talk_decode_arg_str` For error usage.

```
9 \str_new:N \l__talk_decode_arg_str
```

(End of definition for \l__talk_decode_arg_str.)

`\l__talk_decode_overlays_clist` The decoded overlay specification: will have only absolute slide numbers present, potentially along with ranges.

`\l__talk_decode_overlays_str`

```
10 \clist_new:N \l__talk_decode_overlays_clist
11 \str_new:N \l__talk_decode_overlays_str
```

(End of definition for \l__talk_decode_overlays_clist and \l__talk_decode_overlays_str.)

`\l__talk_decode_action_str` The action which is active, if any.

```
12 \str_new:N \l__talk_decode_action_str
```

(End of definition for \l__talk_decode_action_str.)

`\l__talk_decode_actions_bool` For the actions versions of overlay tracking.

`\l__talk_decode_actions_clist` 13 `\bool_new:N \l__talk_decode_actions_bool`

`\l__talk_decode_actions_str` 14 `\clist_new:N \l__talk_decode_actions_clist`

15 `\str_new:N \l__talk_decode_actions_str`

(End of definition for `\l__talk_decode_actions_bool`, `\l__talk_decode_actions_clist`, and `\l__talk_decode_actions_str`.)

`__talk_decode_parse:n` First a simple check for an entirely blank argument: if that's the case, there is no additional overlay to consider. Then deal with any category code issues before looping over blocks divided by `|` tokens.

`__talk_decode_parse_auxi:n`

`__talk_decode_parse_auxii:n`

`__talk_decode_parse:w`

```

16 \cs_new_protected:Npn \__talk_decode_parse:n #1
17 { \exp_args:Ne \__talk_decode_parse_auxi:n {#1} }
18 \cs_new_protected:Npn \__talk_decode_parse_auxi:n #1
19 {
20   \str_clear:N \l__talk_decode_action_str
21   \bool_lazy_or:nnTF
22     { \tl_if_blank_p:n {#1} }
23     { \str_if_eq_p:nn {#1} { all } }
24     { \bool_set_true:N \l__talk_decode_overlays_bool }
25     {
26       \str_set:Nn \l__talk_decode_arg_str {#1}
27       \bool_set_false:N \l__talk_decode_actions_bool
28       \bool_set_false:N \l__talk_decode_overlays_bool
29       \bool_set_true:N \l__talk_decode_pure_bool
30       \str_clear:N \l__talk_decode_overlays_str
31       \str_clear:N \l__talk_decode_actions_str
32       \exp_args:No \__talk_decode_parse_auxii:n { \l__talk_decode_arg_str }
33     }
34 }

```

Stepping the value assigned to `+` is done in the outer loop, as within one overlay expression it always takes the same value. If the `amsmath \ifmeasuring@` flag is on, the overlay counter is not advanced.

```

35 \cs_new_protected:Npn \__talk_decode_parse_auxii:n #1
36 {
37   \bool_set_false:N \l__talk_decode_step_bool
38   \__talk_decode_parse:w #1 | \q_recursion_tail | \q_recursion_stop
39   \bool_if:NT \l__talk_decode_step_bool
40   {
41     \legacy_if:nF { measuring@ }
42     { \int_gincr:N \g__talk_pauses_int }
43   }
44 }

```

The end-of-loop test here covers the case where the active mode is not mentioned at all in the specification.

```

45 \cs_new_protected:Npn \__talk_decode_parse:w #1 |
46 {
47   \quark_if_recursion_tail_stop_do:nn {#1}
48   {
49     \bool_lazy_and:nnT
50     { \str_if_empty_p:N \l__talk_decode_overlays_str }
51     { ! \l__talk_decode_pure_bool }

```

```

52         { \bool_set_true:N \l__talk_decode_overlays_bool }
53     }
54     \exp_args:Ne \__talk_decode_mode:n
55         { \tl_trim_spaces:n {#1} }
56     \__talk_decode_parse:w
57 }

```

(End of definition for __talk_decode_parse:n and others.)

\c__talk_modes_clist The possible modes: detokenized as that is applied up-front in decoding.

```

58 \clist_const:Ne \c__talk_modes_clist
59 {
60     \tl_to_str:n { handout } ,
61     \tl_to_str:n { projector }
62 }

```

(End of definition for \c__talk_modes_clist.)

__talk_decode_mode:n Check if the mode is known and current. If we find an action but have no overlay details, they are filled in with a *.

```

\__talk_decode_mode:w
\__talk_decode_mode_aux:n
63 \cs_new_protected:Npe \__talk_decode_mode:n #1
64 {
65     \clist_if_in:NnTF \exp_not:N \c__talk_modes_clist {#1}
66     {
67         \exp_not:N \str_if_eq:VnT
68         \exp_not:N \l__talk_mode_str {#1}
69         { \bool_set_true:N \exp_not:N \l__talk_decode_overlays_bool }
70     }
71     {
72         \exp_not:N \__talk_decode_mode:w #1 \tl_to_str:n { : : }
73         \exp_not:N \q_stop
74     }
75 }
76 \use:e
77 {
78     \cs_new_protected:Npe \exp_not:N \__talk_decode_mode:w
79     #1 \token_to_str:N :
80     #2 \token_to_str:N :
81     #3 \exp_not:N \q_stop
82 }
83 {
84     \exp_not:N \tl_if_blank:nTF {#2}
85     {
86         \exp_not:N \__talk_decode_mode:nn
87         { \tl_to_str:n { projector } } {#1}
88     }
89     { \exp_not:N \__talk_decode_mode:nn {#1} {#2} }
90 }
91 \cs_new_protected:Npn \__talk_decode_mode:nn #1#2
92 {
93     \str_if_eq:VnTF \l__talk_mode_str {#1}
94     {
95         \__talk_decode_action:n {#2}
96         \str_if_empty:NT \l__talk_decode_overlays_str

```



```

97         { \__talk_decode_overlays:nn { overlays } { * } }
98     }
99     {
100         \tl_if_blank:nF {#2}
101         { \bool_set_false:N \l__talk_decode_pure_bool }
102     }
103 }

```

(End of definition for __talk_decode_mode:n, __talk_decode_mode:w, and __talk_decode_mode-aux:n.)

__talk_decode_action:n Here, we have two valid possibilities: no action specification at all, or from the known list. If we don't find one of those outcomes, we can issue an error.

__talk_decode_action:w

```

104 \cs_new_protected:Npe \__talk_decode_action:n #1
105 {
106     \exp_not:N \__talk_decode_action:w
107     #1 \tl_to_str:n { @ @ } \exp_not:N \q_stop
108 }
109 \use:e
110 {
111     \cs_new_protected:Npn \exp_not:N \__talk_decode_action:w
112     #1 \tl_to_str:n { @ } #2 \tl_to_str:n { @ } #3 \exp_not:N \q_stop
113 }
114 {
115     \tl_if_blank:nTF {#2}
116     { \__talk_decode_overlays:nn { overlays } {#1} }
117     {
118         \cs_if_exist:cTF { __talk_action_ #1 :N }
119         {
120             \bool_set_false:N \l__talk_decode_pure_bool
121             \str_set:Nn \l__talk_decode_action_str {#1}
122             \tl_if_blank:nF {#2}
123             { \__talk_decode_overlays:nn { actions } {#2} }
124         }
125         {
126             \msg_error:nnV { talk } { bad-action-spec }
127             \l__talk_decode_arg_str
128         }
129     }
130 }

```

(End of definition for __talk_decode_action:n and __talk_decode_action:w.)

__talk_decode_overlays:nn

__talk_decode_overlays:nN

\@_decode_overlay_+:nw

__talk_decode_overlay_.:nw

__talk_decode_overlay_aux:nN

__talk_decode_overlay_offset:nNn

__talk_decode_overlay_offset:nNn

The loop here needs to replace all + and . characters by the current automatic value, allowing for any offsets. Stepping the value assigned here is done in the outer loop (see above).

```

131 \cs_new_protected:Npn \__talk_decode_overlays:nn #1#2
132 {
133     \__talk_decode_overlays:nN {#1} #2 \q_recursion_tail \q_recursion_stop
134     \__talk_decode_check:n {#1}
135 }
136 \cs_new_protected:Npn \__talk_decode_overlays:nN #1#2
137 {
138     \quark_if_recursion_tail_stop:N #2

```

```

139 \cs_if_exist_use:cF { __talk_decode_overlay_ #2 :nw }
140 {
141   \str_put_right:cn { l__talk_decode_ #1 _str } {#2}
142   \__talk_decode_overlays:nN
143 }
144 {#1}
145 }
146 \cs_new_protected:cpn { __talk_decode_overlay_+:nw } #1
147 {
148   \bool_set_true:N \l__talk_decode_step_bool
149   \__talk_decode_overlay_aux:nNN {#1} 1
150 }
151 \cs_new_protected:cpn { __talk_decode_overlay_.:nw } #1
152 { \__talk_decode_overlay_aux:nNN {#1} 0 }

```

The look-ahead for an offset to a relative specification. If the end-of-loop is reached, the value still needs to be inserted: to share auxiliaries, that is done by using the same function as elsewhere, so the end-of-loop markers are re-inserted. Otherwise, there is a check to see if the next token is a (.

```

153 \cs_new_protected:Npn \__talk_decode_overlay_aux:nNN #1#2#3
154 {
155   \quark_if_recursion_tail_stop_do:Nn #3
156   {
157     \__talk_decode_overlay_offset:nNn {#1} #2 { 0 }
158     \q_recursion_tail \q_recursion_stop
159   }
160   \token_if_eq_meaning:NNTF #3 ( % )
161   { \__talk_decode_overlay_offset:nNn {#1} #2 { } }
162   { \__talk_decode_overlay_offset:nNn {#1} #2 { 0 } #3 }
163 }

```

For the end of an offset, any valid overlay specification must have a closing), so this time the end-of-loop case is an error. Otherwise simply collect up tokens until the closing) is found.

```

164 \cs_new_protected:Npn \__talk_decode_overlay_offset:nNn #1#2#3#4
165 {
166   \quark_if_recursion_tail_stop_do:Nn #4
167   {
168     \msg_error:nnV { talk } { bad-action-spec }
169     \l__talk_decode_arg_str
170   } % (
171   \token_if_eq_meaning:NNTF #4 )
172   { \__talk_decode_overlay_offset:nNn {#1} #2 {#3} }
173   { \__talk_decode_overlay_offset:nNn {#1} #2 {#3#4} }
174 }

```

Overlay values can never be negative: this is enforced here.

```

175 \cs_new_protected:Npn \__talk_decode_overlay_offset:nNn #1#2#3
176 {
177   \str_put_right:ce { l__talk_decode_ #1 _str }
178   { \int_max:nn { 0 } { #3 + \g__talk_pauses_int + #2 } }
179   \__talk_decode_overlays:nN {#1}
180 }

```

(End of definition for __talk_decode_overlays:nN and others. This function is documented on page ??.)

```

\__talk_decode_check:n
\__talk_decode_check:nw
  \_talk_decode_check_single:nn
  \_talk_decode_check_range:nnn

```

At this stage we have a fully “written out” overlay specification, and need to work out if the current slide is included. We need to look at each entry in the comma-separated list to sort this out. First we filter out the case of a *, then it’s a question of working out whether each entry is a single number or a range, and if the latter, whether it’s open at either the start or the end.

```

181 \cs_new_protected:Npn \__talk_decode_check:n #1
182 {
183   \clist_set:cv { l__talk_decode_ #1 _clist } { l__talk_decode_ #1 _str }
184   \clist_if_in:cnTF { l__talk_decode_ #1 _clist } { * }
185   { \bool_set_true:c { l__talk_decode_ #1 _bool } }
186   {
187     \clist_map_inline:cn { l__talk_decode_ #1 _clist }
188     { \__talk_decode_check:nw {#1} 0 ##1 - - \q_stop }
189   }
190 }

```

If #4 is empty, both of the “filler” - tokens were consumed: we have a single value. Otherwise there is a range: the setup above ensures that there will be a starting value in all cases due to the leading 0, but there may not be an end one.

```

191 \cs_new_protected:Npn \__talk_decode_check:nw #1#2 - #3 - #4 \q_stop
192 {
193   \tl_if_empty:nTF {#4}
194   { \__talk_decode_check_single:nn {#1} {#2} }
195   {
196     \tl_if_blank:nTF {#3}
197     { \__talk_decode_check_range:nnn {#1} {#2} { \c_max_int } }
198     { \__talk_decode_check_range:nnn {#1} {#2} {#3} }
199   }
200 }
201 \cs_new_protected:Npn \__talk_decode_check_single:nn #1#2
202 {
203   \int_compare:nNnTF \g__talk_slide_int = {#2}
204   { \bool_set_true:c { l__talk_decode_ #1 _bool } }
205   {
206     \int_compare:nNnT {#2} > \g__talk_slide_int
207     { \bool_gset_true:N \g__talk_slide_continue_bool }
208   }
209 }

```

TODO: In the following we might want to add a check whether the range was given with #2 being smaller than #3, to be decided upon.

```

210 \cs_set_protected:Npn \__talk_decode_check_range:nnn #1#2#3
211 {
212   \int_compare:nNnF \g__talk_slide_int > {#3}
213   {
214     \int_compare:nNnTF \g__talk_slide_int < {#2}
215     { \bool_gset_true:N \g__talk_slide_continue_bool }
216     {
217       \bool_set_true:c { l__talk_decode_ #1 _bool }
218       \bool_lazy_and:nnT
219       { \int_compare_p:nNn \g__talk_slide_int < {#3} }
220       { \int_compare_p:nNn {#3} < \c_max_int }
221       { \bool_gset_true:N \g__talk_slide_continue_bool }
222     }
223   }

```

```

223         }
224     }
225 }

(End of definition for \_talk\_decode\_check:n and others.)

226 \msg_new:nnnn { talk } { bad-action-spec }
227 { Bad~overlay~specification~"#1". }
228 {
229     The~overlay~specification~given~doesn't~follow~the~pattern~described~in~
230     the~ltx-talk-manual:~it~has~been~ignored.
231 }
232 </class>

```

Part IV

ltx-talk-frame – The structure of frames

1 ltx-talk-frame implementation

Start the DocStrip guards.

```
1 <{*class}>
    Identify the internal prefix.
2 <{@@=talk}>
```

1.1 Slides in frames

Currently, each slide in a frame will produce a separate page in the output (unless the slide is suppressed entirely). Material is then hidden on some pages by using opacity. An alternative approach would be to use Optional Content Groups to have a similar effect on one page per frame. However, whilst that would be relatively clear for appear/disappear effects, it would be much less straight-forward for partial transparency, *etc.*, plus would depend more heavily on viewer support. At a future stage we may wish to revisit this.

`\g__talk_slide_continue_bool` Tracks whether the frame continues after the current slide.

```
3 \bool_new:N \g__talk_slide_continue_bool
```

(End of definition for `\g__talk_slide_continue_bool`.)

`\l__talk_slide_box`

```
4 \box_new:N \l__talk_slide_box
```

(End of definition for `\l__talk_slide_box`.)

`\g__talk_slide_int`

The slide number inside the current frame: needed to know which overlays are active.

`\c@slide`

We also provide L^AT_EX counter-style access.

`\theslide`

```
5 \int_new:N \g__talk_slide_int
6 \cs_new_eq:NN \c@slide \g__talk_slide_int
7 \cs_new:Npn \theslide { \@arabic \c@slide }
```

(End of definition for `\g__talk_slide_int`, `\c@slide`, and `\theslide`. These variables are documented on page ??.)

Required to know which is the last slide in a frame for tagging.

```
8 \property_new:nnnn { slides } { now } { 1 } { \int_use:N \g__talk_slide_int }
```

`__talk_slide:nn`
`__talk_slide_aux:n`

Each slide is parsed inside simple set up, the only complexity being if we are handling fragile frames. There, all `\obeyedline` in the grabbed tokens need to be turned back into `^M` before rescanning: this ensures that any verbatim grabbing in the frame still works. The strange business with setting the continuation boolean is needed as otherwise we get an infinite loop if there is an overlay specification for the frame itself. Tagging should not of itself force slide continuation, so the global boolean is reset for the tagged slide.

```
9 \cs_new_protected:Npn \__talk_slide:nn #1#2
10 {
```

```

11 \group_begin:
12   \tl_set:N\l__talk_tmp_tl
13   {
14     \property_ref:ee { frame . \int_use:N \g__talk_frame_int }
15     { slides }
16   }
17   \str_if_eq:VnTF \l__talk_frame_tagging_str { n }
18   { \str_set:NV \l__talk_frame_tagging_str \l__talk_tmp_tl }
19   {
20     \str_replace_all:NnV \l__talk_frame_tagging_str { ,n }
21     \l__talk_tmp_tl
22     \str_replace_all:NnV \l__talk_frame_tagging_str { ,~n }
23     \l__talk_tmp_tl
24   }
25   \int_gzero:N \g__talk_slide_int
26   \RenewCommandCopy \frame \__talk_latex_frame:n
27   \bool_do_while:Nn \g__talk_slide_continue_bool
28   {
29     \int_gincr:N \g__talk_slide_int
30     \bool_gset_false:N \g__talk_slide_continue_bool
31     \__talk_if_overlay:nT {#1}
32     {
33       \__talk_slide_begin:
34       \__talk_if_overlay:VTF \l__talk_frame_tagging_str
35       {
36         \bool_gset_false:N \g__talk_slide_continue_bool
37         \__talk_frame_tag:n
38       }
39       {
40         \bool_gset_false:N \g__talk_slide_continue_bool
41         \__talk_frame_notag:n
42       }
43       {
44         \bool_if:NTF \l__talk_frame_verb_bool
45         { \__talk_slide_aux:n }
46         { \use:n }
47         {#2}
48       }
49       \__talk_slide_end:
50     }
51   }
52   \property_record:ee { frame . \int_use:N \g__talk_frame_int }
53   { slides }
54 \group_end:
55 }
56 \cs_new_protected:Npn \__talk_slide_aux:n #1
57 {
58   \group_begin:
59   \cs_set:Npn \obeyedline { ^^J }
60   \use:e
61   {
62     \group_end:
63     \tl_retokenize:n {#1}
64   }

```

```
65 }
```

(End of definition for `__talk_slide:nn` and `__talk_slide_aux:n`.)

The very last frame will not be recorded by the above, so we have to add to the hook at the very end of the run.

```
66 \AddToHook { enddocument / afterlastpage }
67 {
68   \property_record:ee { frame . \int_use:N \g__talk_frame_int }
69   { slides }
70 }
```

`\g__talk_frame_struct_int`

The tagging structure number for the slide: needed by the content placed outside of the current box (for example the frame title).

```
71 \int_new:N \g__talk_frame_struct_int
```

(End of definition for `\g__talk_frame_struct_int`.)

`__talk_slide_begin:`

`__talk_slide_end:`

```
72 \cs_new_protected:Npn \__talk_slide_begin:
73 {
74   \int_gzero:N \g__talk_pauses_int
75   \tl_gclear:N \g__talk_frame_title_tl
76   \tl_gclear:N \g__talk_frame_subtitle_tl
77   \box_gclear:N \g__talk_footnote_box
78   \__talk_cnt_save:
79   \vbox_set:Nw \l__talk_slide_box
80   \tl_gclear:N \g__talk_onslide_tl
81 }
82 \cs_new_protected:Npn \__talk_slide_end:
83 {
84   \tl_use:N \g__talk_onslide_tl
85   \vbox_set_end:
86   \bool_if:NT \g__talk_slide_continue_bool
87   { \__talk_cnt_restore: }
88   \vbox_to_ht:nn { \textheight }
89   {
90     \use:c { __talk_slide_align_ \l__talk_frame_alignment_tl :n }
91     { \vbox_unpack_drop:N \l__talk_slide_box }
92     \vbox_unpack_drop:N \g__talk_footnote_box
93   }
94   \clearpage
95 }
```

(End of definition for `__talk_slide_begin:` and `__talk_slide_end:.`)

`__talk_slide_align_bottom:n`

`__talk_slide_align_center:n`

`__talk_slide_align_stretch:n`

`__talk_slide_align_top:n`

A pretty standard abstraction: we make sure there are always two skips.

```
96 \cs_new_protected:Npn \__talk_slide_align_bottom:n #1
97 {
98   \skip_vertical:n { Opt~plus~1fil }
99   #1
100   \skip_vertical:n { Opt }
101 }
102 \cs_new_protected:Npn \__talk_slide_align_center:n #1
103 {
```

```

104 \skip_vertical:n { Opt~plus~0.5fil }
105 #1
106 \skip_vertical:n { Opt~plus~0.5fil }
107 }
108 \cs_new_protected:Npn \__talk_slide_align_stretch:n #1
109 {
110 \skip_vertical:n { Opt }
111 #1
112 \skip_vertical:n { Opt }
113 }
114 \cs_new_protected:Npn \__talk_slide_align_top:n #1
115 {
116 \skip_vertical:n { Opt }
117 #1
118 \skip_vertical:n { Opt~plus~1fil }
119 }

```

(End of definition for __talk_slide_align_bottom:n and others.)

1.2 Counters

\l__talk_cnt_reset_seq As \stepcounter, etc., will increment at each overlay, there is a need to save and reset. The list will be finalized at the end of the preamble, so the data storage is created at that point. The starting point is counters created before the class is loaded (other than those for lists, which reset “naturally”). Other cases are handled by adding to \newcounter.

```

120 \seq_new:N \l__talk_cnt_reset_seq
121 \seq_set_from_clist:Nn \l__talk_cnt_reset_seq
122 {
123 equation ,
124 footnote ,
125 mpfootnote ,
126 parentequation
127 }
128 \seq_map_inline:Nn \l__talk_cnt_reset_seq
129 {
130 \int_new:c { g__talk_saved_ #1 _int }
131 \int_gset_eq:cc { g__talk_saved_ #1 _int } { c@ #1 }
132 }

```

(End of definition for \l__talk_cnt_reset_seq.)

__talk_cnt_save: A simple save-and-restore pair.

__talk_cnt_restore:

```

133 \cs_new_protected:Npn \__talk_cnt_save:
134 {
135 \seq_map_inline:Nn \l__talk_cnt_reset_seq
136 { \int_gset_eq:cc { g__talk_saved_ ##1 _int } { c@ ##1 } }
137 }
138 \cs_new_protected:Npn \__talk_cnt_restore:
139 {
140 \seq_map_inline:Nn \l__talk_cnt_reset_seq
141 { \int_gset_eq:cc { c@ ##1 } { g__talk_saved_ ##1 _int } }
142 }

```

(End of definition for __talk_cnt_save: and __talk_cnt_restore:.)


```

\@definecounter Track all counters for resetting.
\std@definecounter
143 \cs_new_eq:NN \std@definecounter \@definecounter
144 \cs_gset_protected:Npn \@definecounter #1
145 {
146   \std@definecounter {#1}
147   \int_new:c { g__talk_saved_ #1 _int }
148   \seq_gput_right:Nn \l__talk_cnt_reset_seq {#1}
149 }

```

(End of definition for \@definecounter and \std@definecounter. These functions are documented on page ??.)

1.3 Frame options

```

\l__talk_frame_alignment_tl
150 \tl_new:N \l__talk_frame_alignment_tl

(End of definition for \l__talk_frame_alignment_tl.)

```

```

\l__talk_action_spec_str
\l__talk_frame_tagging_str
151 \keys_define:nn { talk / frame }
152 {
153   action-spec .str_set:N
154     = \l__talk_action_spec_str ,
155   tag-slides .str_set:N
156     = \l__talk_frame_tagging_str ,
157   vertical-alignment .choices:nn =
158     { bottom , center , stretch , top }
159     {
160       \tl_set_eq:NN \l__talk_frame_alignment_tl
161       \l_keys_value_tl
162     }
163 }
164 \keys_set:nn { talk / frame }
165 {
166   action-spec = ,
167   tag-slides = n ,
168   vertical-alignment = center
169 }

(End of definition for \l__talk_action_spec_str and \l__talk_frame_tagging_str.)

```

1.4 Tagging for headers

```

\__talk_header_tag_begin:n Generalized control for inserting material into the header area (which is otherwise outside
\__talk_header_tag_begin:e of tagging).
\__talk_header_tag_end:
170 \cs_new_protected:Npn \__talk_header_tag_begin:n #1
171 {
172   \tag_resume:n { header }
173   \tag_mc_end:
174   \tag_struct_begin:n {#1}
175   \tag_mc_begin:n { }
176 }
177 \cs_generate_variant:Nn \__talk_header_tag_begin:n { e }

```

```

178 \cs_new_protected:Npn \__talk_header_tag_end:
179 {
180     \tag_mc_end:
181     \tag_struct_end:
182     \tag_mc_begin:n { artifact }
183     \tag_suspend:n { header }
184 }

```

(End of definition for __talk_header_tag_begin:n and __talk_header_tag_end:.)

1.5 Wallpaper

```

\l__talk_footelem_left_skip
\l__talk_footelem_right_skip
\l__talk_footelem_color_tl
\l__talk_footelem_font_tl
185 \NewTemplateType { footer-element } { 1 }
186 \DeclareTemplateInterface { footer-element } { talk } { 1 }
187 {
188     color          : tokenlist ,
189     font           : tokenlist = ,
190     left-hspace    : length = 0em ,
191     right-hspace   : length = 0em
192 }
193 \DeclareTemplateCode { footer-element } { talk } { 1 }
194 {
195     color          = \l__talk_footelem_color_tl ,
196     font           = \l__talk_footelem_font_tl ,
197     left-hspace    = \l__talk_footelem_left_skip ,
198     right-hspace   = \l__talk_footelem_right_skip
199 }
200 {
201     \tl_if_empty:nF {#1}
202     {
203         \hspace { \l__talk_footelem_left_skip }
204         \group_begin:
205             \tl_if_empty:NF \l__talk_footelem_color_tl
206             { \color_select:V \l__talk_footelem_color_tl }
207             \l__talk_footelem_font_tl
208             #1
209         \group_end:
210         \hspace { \l__talk_footelem_right_skip }
211     }
212 }
213 \DeclareInstance { footer-element } { date } { talk } { }
214 \DeclareInstance { footer-element } { author } { talk } { }
215 \DeclareInstance { footer-element } { title } { talk } { }
216 \DeclareInstance { footer-element } { subtitle } { talk } { }
217 \DeclareInstance { footer-element } { institute } { talk } { }
218 \DeclareInstance { footer-element } { framenumbers } { talk } { }
219 \DeclareInstance { footer-element } { totalframes } { talk } { }

```

(End of definition for \l__talk_footelem_left_skip and others.)

```

\l__talk_header_bg_tl
\l__talk_header_fg_tl
\l__talk_header_font_tl
\l__talk_header_ht_dim
\l__talk_header_left_skip
\l__talk_header_frametitle_bool
\l__talk_header_right_skip

```

Templates for the header area. The background always covers the full width, but the text area may be narrower. The setup here aims to avoid repeated kerns but also dealing with

complex conditionals, hence we always move to the edge of the paper first then adjust as required.

```

220 \NewTemplateType { header } { 0 }
221 \DeclareTemplateInterface { header } { talk } { 0 }
222 {
223     background-color : tokenlist,
224     color             : tokenlist = structure ,
225     font              : tokenlist = \normalfont ,
226     height            : length = \Gm@tmargin + \headsep ,
227     left-hspace       : skip = \Gm@lmargin ,
228     print-frame-title : boolean = true ,
229     right-hspace      : skip = \Gm@rmargin
230 }
231 \DeclareTemplateCode { header } { talk } { 0 }
232 {
233     background-color = \l__talk_header_bg_tl ,
234     color            = \l__talk_header_fg_tl ,
235     font             = \l__talk_header_font_tl ,
236     height           = \l__talk_header_ht_dim ,
237     left-hspace      = \l__talk_header_left_skip ,
238     print-frame-title = \l__talk_header_frametitle_bool ,
239     right-hspace     = \l__talk_header_right_skip
240 }
241 {
242     \noindent
243     \__talk_wallpaper_hruler:Nnn
244     \l__talk_header_bg_tl
245     { \l__talk_header_ht_dim - \headsep }
246     { \headsep }
247     \skip_horizontal:n { \l__talk_header_left_skip }
248     \group_begin:
249         \tl_if_empty:NF \l__talk_header_fg_tl
250         { \color_select:V \l__talk_header_fg_tl }
251         \l__talk_header_font_tl
252         \bool_if:NT \l__talk_header_frametitle_bool
253         {
254             \ExpandArgs { nnV }
255             \UseInstance { frametitle } { header }
256             \g__talk_frame_title_tl
257         }
258     \group_end:
259 }
260 \DeclareInstance { header } { std } { talk } { }
261 \AddToHook { begindocument }
262 {
263     \DeclareInstanceCopy { header } { wallpaper } { std }
264     \EditInstance { header } { wallpaper }
265     { print-frame-title = false }
266 }

```

(End of definition for \l__talk_header_bg_tl and others.)

```

\l__talk_footer_bg_tl
\l__talk_footer_fg_tl
\l__talk_footer_font_tl
\l__talk_footer_order_clist
\l__talk_footer_sep_tl
\l__talk_footer_left_skip
\l__talk_footer_right_skip

```

Templates for the footer area. Again the margins are handled in stages: here we do have a box for the content so the right skip is used, and we avoid an overfull box by including

consideration of the right margin of the page layout.

```

267 \NewTemplateType { footer } { 0 }
268 \DeclareTemplateInterface { footer } { talk } { 0 }
269 {
270     background-color : tokenlist ,
271     color             : tokenlist ,
272     element-order     : commalist ,
273     font              : tokenlist = \tiny ,
274     left-hspace       : length = \Gm@lmargin ,
275     right-hspace      : length = \Gm@rmargin ,
276     separator         : tokenlist = \hfil
277 }
278 \DeclareTemplateCode { footer } { talk } { 0 }
279 {
280     background-color = \l__talk_footer_bg_tl ,
281     color            = \l__talk_footer_fg_tl ,
282     element-order    = \l__talk_footer_order_clist ,
283     font             = \l__talk_footer_font_tl ,
284     left-hspace      = \l__talk_footer_left_skip ,
285     right-hspace     = \l__talk_footer_right_skip ,
286     separator        = \l__talk_footer_sep_tl
287 }
288 {
289     \noindent
290     \__talk_wallpaper_hrule:Nnn
291     \l__talk_footer_bg_tl
292     { \footskip }
293     { \Gm@bmargin - \footskip }
294     \skip_horizontal:n { \l__talk_footer_left_skip }
295     \vbox_set_to_wd:Nnn \l__talk_tmp_box
296     {
297         \paperwidth
298         - \l__talk_footer_left_skip
299         - \l__talk_footer_right_skip
300     }
301     {
302         \tl_if_empty:NF \l__talk_footer_fg_tl
303         { \color_select:V \l__talk_footer_fg_tl }
304         \l__talk_footer_font_tl
305         \clist_pop:NNT \l__talk_footer_order_clist \l__talk_tmp_tl
306         {
307             \ExpandArgs { nVv } \UseInstance { footer-element } \l__talk_tmp_tl
308             { @ \__talk_metadata_name:n { \l__talk_tmp_tl } }
309             \clist_map_inline:Nn \l__talk_footer_order_clist
310             {
311                 \tl_if_empty:cF { @ \__talk_metadata_name:n { ##1 } }
312                 {
313                     \l__talk_footer_sep_tl
314                     \ExpandArgs { nnv }
315                     \UseInstance { footer-element } {##1}
316                     { @ \__talk_metadata_name:n { ##1 } }
317                 }
318             }
319         }
320     }

```

```

320     \hfil
321   }
322   \box_use_drop:N \l__talk_tmp_box
323   \skip_horizontal:n { \l__talk_footer_right_skip - \Gm@rmargin }
324 }
325 \DeclareInstance { footer } { std } { talk } { }
326 \AddToHook { begindocument }
327 {
328   \DeclareInstanceCopy { footer } { wallpaper } { std }
329   \EditInstance { footer } { wallpaper }
330     { element-order = }
331 }

```

(End of definition for `\l__talk_footer_bg_tl` and others.)

`__talk_metadata_name:n` A simple auxiliary to shorten metadata names if appropriate. Full expansion is applied as this avoids any issue with stored names.

```

332 \cs_new:Npn \__talk_metadata_name:n #1
333 {
334   \tl_if_exist:cTF { @ short #1 }
335     { short #1 }
336     {#1}
337 }

```

(End of definition for `__talk_metadata_name:n`.)

`__talk_wallpaper_hrrule:Nnn` A simple abstraction for the top and bottom rules on the page.

```

338 \cs_new_protected:Npn \__talk_wallpaper_hrrule:Nnn #1#2#3
339 {
340   \skip_horizontal:n { -\Gm@lmargin }
341   \tl_if_empty:NF #1
342   {
343     \group_begin:
344       \color_select:V #1
345       \rule:nnn { \paperwidth } {#2} {#3}
346       \skip_horizontal:n { -\paperwidth }
347     \group_end:
348   }
349 }

```

(End of definition for `__talk_wallpaper_hrrule:Nnn`.)

`\ps@plain` Install a standard header and footer template, and redefine the `plain` one as this will be used for frames without “wallpaper” which still need core links, *etc.* We also provide a `\ps@wallpaper` version that only shows the visual elements: this is deliberately using the same settings as the main templates.

```

350 \cs_set_nopar:Npn \ps@plain
351 {
352   \cs_set_nopar:Npn \@oddhead
353   {
354     \hfil
355   }
356   \cs_set_nopar:Npn \@oddfoot { }
357   \cs_set_eq:NN \@evenhead \@oddhead

```

```

358 \cs_set_eq:NN \@evenfoot \@oddfoot
359 }
360 \cs_set_nopar:Npn \ps@wallpaper
361 {
362   \cs_set_nopar:Npn \@oddhead
363   {
364     \UseInstance { header } { wallpaper }
365     \hfil
366   }
367   \cs_set_nopar:Npn \@oddfoot
368   {
369     \UseInstance { footer } { wallpaper }
370     \hfil
371   }
372   \cs_set_eq:NN \@evenhead \@oddhead
373   \cs_set_eq:NN \@evenfoot \@oddfoot
374 }
375 \cs_new_nopar:Npn \ps@talk
376 {
377   \cs_set_nopar:Npn \@oddhead
378   {
379     \UseInstance { header } { std }
380     \hfil
381   }
382   \cs_set_nopar:Npn \@oddfoot { \UseInstance { footer } { std } }
383   \cs_set_eq:NN \@evenhead \@oddhead
384   \cs_set_eq:NN \@evenfoot \@oddfoot
385 }
386 \pagestyle { talk }

```

(End of definition for \ps@plain, \ps@wallpaper, and \ps@talk. These functions are documented on page ??.)

1.6 The frame environment

```

\l__talk_frame_bool To track whether we are inside a frame or not.
387 \bool_new:N \l__talk_frame_bool
(End of definition for \l__talk_frame_bool.)

\g__talk_frame_tag_bool To track when a frame is being tagged: mainly needed for the header (and as a result
global).
388 \bool_new:N \g__talk_frame_tag_bool
(End of definition for \g__talk_frame_tag_bool.)

\l__talk_frame_verb_bool Indicates that material was collected verbatim (and thus needs rescanning).
389 \bool_new:N \l__talk_frame_verb_bool
(End of definition for \l__talk_frame_verb_bool.)

\g__talk_frame_int The overall frame number, including LATEX counter-like access.
\c@frame 390 \int_new:N \g__talk_frame_int
\theframe 391 \cs_new_eq:NN \c@frame \g__talk_frame_int
\@framenum 392 \cs_new:Npn \theframe { \@arabic \c@frame }
393 \cs_new:Npn \@framenum { \arabic { frame } }

```

(End of definition for \g__talk_frame_int and others. These variables are documented on page ??.)

`\@totalframes` The total frames can be handled using the kernel properties.

```

394 \property_new:nnnn { totalframes } { shipout } { -1 }
395   { \int_use:N \g__talk_frame_int }
396 \AddToHook { enddocument / afterlastpage }
397   { \property_record:nn { lastpage } { totalframes } }
398 \cs_new:Npn \@totalframes { \property_ref:nn { lastpage } { totalframes } }

```

(End of definition for \@totalframes. This variable is documented on page ??.)

`__talk_latex_frame:n` As we will need to re-define `\frame` but have it available inside frames, a copy is made here.

```

399 \NewCommandCopy \__talk_latex_frame:n \frame

```

(End of definition for __talk_latex_frame:n.)

`__talk_frame_process:nn` Here, the frame content is received as the argument.

```

400 \cs_new_protected:Npn \__talk_frame_process:nn #1#2
401   {
402     \int_gincr:N \g__talk_frame_int
403     \bool_set_true:N \l__talk_frame_bool
404     \__talk_slide:nn {#1} {#2}
405   }

```

(End of definition for __talk_frame_process:nn.)

`__talk_frame_tag:n` Wraps some content in tagging for a frame: we may have multiple of these in one logical frame, but that is non-standard.

```

406 \cs_new_protected:Npn \__talk_frame_tag:n #1
407   {
408     \tag_struct_begin:n { tag = frame }
409     \int_gset:Nn \g__talk_frame_struct_int { \tag_get:n { struct_num } }
410     \bool_gset_true:N \g__talk_frame_tag_bool
411     #1
412     \tag_struct_end:
413   }

```

(End of definition for __talk_frame_tag:n.)

`__talk_frame_notag:n` The alternative: turn off tagging and suppress the function that would tag the frame title.

```

414 \cs_new_protected:Npn \__talk_frame_notag:n #1
415   {
416     \tag_mc_begin:n { artifact }
417     \tag_suspend:n { frame }
418     \bool_gset_false:N \g__talk_frame_tag_bool
419     #1
420     \par
421     \tag_resume:n { frame }
422     \tag_mc_end:
423   }

```

(End of definition for __talk_frame_notag:n.)

frame The definition for the **frame** and **frame*** environments: the exact interface at both the document and code levels is still open.

```

424 \bool_if:NTF \l__talk_frame_title_bool
425 {
426   \RenewDocumentEnvironment { frame }
427     { D <> { all } = { action-spec } 0 { } +m +b }
428     {
429       \keys_set:nn { talk / frame } {#2}
430       \bool_set_false:N \l__talk_frame_verb_bool
431       \__talk_frame_process:nn {#1} { \frametitle {#3} #4 }
432     }
433   { }
434   \NewDocumentEnvironment { frame* }
435     { D <> { all } = { action-spec } 0 { } +m c }
436     {
437       \keys_set:nn { talk / frame } {#2}
438       \bool_set_true:N \l__talk_frame_verb_bool
439       \tl_gset:Nn \g__talk_frame_title_tl {#3}
440       \exp_args:Nne \__talk_frame_process:nn {#1}
441         { \tl_to_str:n { \frametitle } \exp_not:n { {#3} #4 } }
442     }
443   { }
444 }
445 {
446   \RenewDocumentEnvironment { frame }
447     { !D <> { all } = { action-spec } !0 { } +b }
448     {
449       \keys_set:nn { talk / frame } {#2}
450       \bool_set_false:N \l__talk_frame_verb_bool
451       \__talk_frame_process:nn {#1} {#3}
452     }
453   { }
454   \NewDocumentEnvironment { frame* }
455     { !D <> { all } = { action-spec } !0 { } c }
456     {
457       \keys_set:nn { talk / frame } {#2}
458       \bool_set_true:N \l__talk_frame_verb_bool
459       \__talk_frame_process:nn {#1} {#3}
460     }
461   { }
462 }

```

*(End of definition for **frame** and **frame***. These functions are documented on page ??.)*

```

463 </class>

```


Part V

ltx-talk-frame – The structure of frames

1 ltx-talk-frame-structure implementation

Start the DocStrip guards.

```
1 < *class >
    Identify the internal prefix.
2 < @@=talk >
```

1.1 Columns

```
3 \keys_define:nn { talk }
4   { columns .inherit:n = talk / column }
```

`\l__talk_columns_wd_tl` We store the requested width for columns in a `tl` as this means that the key value will make sense even if it depends on the current `\textwidth`.

```
5 \keys_define:nn { talk / columns }
6   { width .tl_set:N = \l__talk_columns_wd_tl }
7 \keys_set:nn { talk / columns }
8   { width = \textwidth }
```

(End of definition for `\l__talk_columns_wd_tl`.)

`columns (env.)` Columns are block-like environments so we start and end with a `\par` to ensure correct tagging.

```
9 \NewDocumentEnvironment { columns } { D <> { all } 0 { } }
10 {
11   \__talk_action_begin:n {#1}
12   \par
13   \keys_set:nn { talk / columns } {#2}
14   \hbox_set_to_wd:Nnw \l__talk_tmp_box { \l__talk_columns_wd_tl }
15   \dim_set:Nn \textwidth { \l__talk_columns_wd_tl }
16   \dim_set_eq:NN \columnwidth \textwidth
17   \hfil
18   \ignorespaces
19 }
20 {
21   \unskip
22   \hfil
23   \hbox_set_end:
24   \box_use_drop:N \l__talk_tmp_box
25   \par
26   \__talk_action_end:
27 }
```

`\l__talk_column_alignment_tl`

```

28 \keys_define:nn { talk / column }
29 {
30   b .meta:n =
31     { vertical-alignment = bottom } ,
32   b .value_forbidden:n = true ,
33   c .meta:n =
34     { vertical-alignment = center } ,
35   c .value_forbidden:n = true ,
36   t .meta:n =
37     { vertical-alignment = top } ,
38   t .value_forbidden:n = true ,
39   vertical-alignment .choices:nn =
40     { bottom , center , top }
41     {
42       \tl_set_eq:NN \l__talk_column_alignment_tl
43         \l_keys_value_tl
44     }
45 }
46 \keys_set:nn { talk / column }
47 {
48   vertical-alignment = center
49 }

```

(End of definition for \l__talk_column_alignment_tl.)

`__talk_column_align_bottom:n`
`__talk_column_align_center:n`
`__talk_column_align_top:n`

Based on ideas in the highly experimental `xbox`.

```

50 \cs_new_protected:Npn \__talk_column_align_bottom:n #1
51   { \vbox:n {#1} }
52 \cs_new_protected:Npn \__talk_column_align_center:n #1
53   {
54     \vbox:n
55     {
56       \hbox:n
57       {
58         \box_move_down:nn
59         {
60           0.5 \box_ht:N \l__talk_tmp_box
61           - \tex_fontdimen:D 22 ~ \tex_textfont:D 2 ~
62         }
63         { \vbox:n {#1} }
64       }
65     }
66   }
67 \cs_new_protected:Npn \__talk_column_align_top:n #1
68   { \vbox_top:n {#1} }

```

(End of definition for __talk_column_align_bottom:n, __talk_column_align_center:n, and __talk_column_align_top:n.)

`column (env.)` A cut-down version of a minipage: we want to be clear on the semantic meaning. the action is applied inside the box after starting horizontal mode to avoid spacing issues when switching whatsits in and out.

```

69 \NewDocumentEnvironment { column } { D <> { all } 0 { } m }

```

```

70 {
71   \par
72   \keys_set:nn { talk / column } {#2}
73   \vbox_set_to_wd:Nnw \l__talk_tmp_box {#3}
74   \dim_set:Nn \textwidth {#3}
75   \dim_set_eq:NN \columnwidth \textwidth
76   \@parboxrestore
77   \leavevmode
78   \raggedright
79   \__talk_action_begin:n {#1}
80   \ignorespaces
81 }

```

The `\@ignore` here means that any spaces after `\end{column}` are suppressed by a `\ignorespaces` inserted by the kernel. The `\par` before `__talk_action_end:` is needed as the group formed for actions would otherwise trap for example alignment changes.

```

82 {
83   \par
84   \__talk_action_end:
85   \vbox_set_end:
86   \use:c { __talk_column_align_ \l__talk_column_alignment_tl :n }
87   { \vbox_unpack_drop:N \l__talk_tmp_box }
88   \hfil
89   \par
90   \@ignoretrue
91 }

```

1.2 Floats

Well really “not floats at all” but the idea is clear.

`\l__talk_float_alignment_tl` We only worry about horizontal alignment here.

```

92 \tl_new:N \l__talk_float_alignment_tl

```

(End of definition for `\l__talk_float_alignment_tl`.)

A bit similar to the current approach to lists: we need a template at the start but a common function at the end. The `float-placement` key is at present just there to allow mopping up of any argument that is given by accident, hence maps to a temporary variable.

```

93 \NewTemplateType { floatenv } { 2 }
94 \DeclareTemplateInterface { floatenv } { talk } { 2 }
95 {
96   float-placement : tokenlist ,
97   horizontal-alignment : choice { left , center , right } = left
98 }
99 \DeclareTemplateCode { floatenv } { talk } { 2 }
100 {
101   float-placement = \l__talk_tmp_tl ,
102   horizontal-alignment =
103   {
104     left = \tl_set:Nn \l__talk_float_alignment_tl { flushleft } ,
105     center = \tl_set:Nn \l__talk_float_alignment_tl { center } ,
106     right = \tl_set:Nn \l__talk_float_alignment_tl { flushright }
107   }

```

```

108 }
109 {
110   \SetTemplateKeys { floatenv } { talk } {#1}
111   \begin { minipage } { \columnwidth }
112     \begin { \l__talk_float_alignment_tl }
113       \cs_set_nopar:Npn \@capttype {#2}
114     }
115   \DeclareInstance { floatenv } { std } { talk } { horizontal-alignment = left }
\endfloatenv And the common end function.
116 \cs_new_protected:Npn \endfloatenv
117 {
118   \end { \l__talk_float_alignment_tl }
119   \end { minipage }
120 }

```

(End of definition for `\endfloatenv`. This function is documented on page ??.)

figure (env.) Unlike beamer, we allow for overlays for the environments as a whole.

table (env.)

```

121 \clist_map_inline:nn { figure , table }
122 {
123   \NewDocumentEnvironment {#1} { D <> { all } = { float-placement } 0 { } }
124   {
125     \__talk_action_begin:n {##1}
126     \UseInstance { floatenv } { std } {##2} {#1}
127   }
128   {
129     \endfloatenv
130     \__talk_action_end:
131   }

```

\c@figure The standard variables needed to make captions work (nothing for list of floats, as at present those are not offered).

\thefigure

\c@table

\thetable

\figurename

\tablename

\fnum@figure

\fnum@table

```

132 \newcounter {#1}
133 \tl_new:c { #1 name }
134 \tl_set:ce { #1 name } { \text_titlecase_first:n {#1} }
135 \tl_new:c { fnum@ #1 }
136 \tl_set:ce { fnum@ #1 }
137 { \exp_not:c { #1 name } \exp_not:N \nobreakspace \exp_not:c { the #1 } }
138 }

```

(End of definition for `\c@figure` and others. These variables are documented on page ??.)

The spacing values needed for the standard function.

```

139 \newlength \abovecaptionskip
140 \newlength \belowcaptionskip
141 \setlength \abovecaptionskip { 7pt }
142 \setlength \belowcaptionskip { 7pt }

```

\@caption This is a copy of the kernel version of the function, but with writing to the list of whatever file removed. It is very likely this needs to be reworked as a template, but that will likely come from the kernel.

```

143 \cs_set_protected:Npn \@caption #1 [ #2 ] #3
144 {
145   \par

```

```

146 \begingroup
147 \parboxrestore
148 \if@minipage \setminipage \fi
149 \normalsize
150 \@makecaption { \csname fnum@ #1 \endcsname } { \ignorespaces #3 }
151 \par
152 \endgroup
153 }

```

(End of definition for \@caption. This function is documented on page ??.)

1.3 Footnotes

`\g__talk_footnote_box` Holds footnotes as they are constructed.

```

154 \box_new:N \g__talk_footnote_box

```

(End of definition for `\g__talk_footnote_box`.)

`\g__talk_footnote_overlay_seq` For tracking the overlays to apply.

```

155 \seq_new:N \g__talk_footnote_overlay_seq

```

(End of definition for `\g__talk_footnote_overlay_seq`.)

`\stdfootnote`

```

156 \NewCommandCopy \stdfootnote \footnote

```

(End of definition for `\stdfootnote`. This function is documented on page ??.)

`\footnote` Sort-of overlay aware!

```

157 \RenewDocumentCommand \footnote { D <> { all } o +m }
158 {
159 \seq_gpush:Nn \g__talk_footnote_overlay_seq {#1}
160 \IfNoValueTF {#2}
161 { \stdfootnote {#3} }
162 { \stdfootnote [ {#2} ] {#3} }
163 }

```

(End of definition for `\footnote`. This function is documented on page ??.)

A dedicated plug: likely the rule will need to move later.

```

164 \NewSocketPlug { fntext / make } { talk }
165 {
166 \vbox_gset:Nn \g__talk_footnote_box
167 {
168 \footnoterule
169 \vbox_unpack:N \g__talk_footnote_box
170 \@makefntext {#1}
171 }
172 }
173 \AssignSocketPlug { fntext / make } { talk }

```

`\@makefntext` Copy the tagging-aware footnote setup: this avoids a patching issue. Timed in this way
`__talk_fnote_makefntext:n` we avoid needing to delay anything to the start of the document.

```

174 \cs_new_eq:NN \__talk_fnote_makefntext:n \fnote_makefntext:n
175 \cs_gset_protected:Npn \fnote_makefntext:n #1
176 {
177   \seq_gpop_left:NN \g__talk_footnote_overlay_seq
178   \l__talk_tmp_tl
179   \exp_args:NV \__talk_decode_parse:n \l__talk_tmp_tl
180   \__talk_action_uncover:N \l__talk_decode_overlays_bool
181   \__talk_fnote_makefntext:n {#1}
182   \__talk_action_uncover_end:N \l__talk_decode_overlays_bool
183 }
184 \cs_new_eq:NN \@makefntext \fnote_makefntext:n

```

(End of definition for \@makefntext and __talk_fnote_makefntext:n. This function is documented on page ??.)

```

185 </class>

```

Part VI

ltx-talk-mode – Modes

1 ltx-talk-mode implementation

Start the DocStrip guards.

```
1 <*class>
    Identify the internal prefix.
2 <@@=talk>
```

`__talk_mode:nT` A simplified version of `\mode`: only deal with the argument form, only check the entire overlay spec as a string.

```
3 \prg_new_protected_conditional:Npnn \__talk_mode:n #1 { T }
4 {
5     \bool_lazy_or:nnTF
6     { \str_if_eq_p:nn {#1} { all } }
7     { \str_if_eq_p:Vn \l__talk_mode_str {#1} }
8     \prg_return_true:
9     \prg_return_false:
10 }
```

(End of definition for `__talk_mode:nT`.)

`\mode`

```
11 \NewDocumentCommand \mode { D <> { all } +m }
12 { \__talk_mode:nT {#1} {#2} }
```

(End of definition for `\mode`. This function is documented on page ??.)

```
13 </class>
```

Part VII

ltx-talk-overlay — Overlays

1 ltx-talk-overlay implementation

Start the DocStrip guards.

```
1 <{*class>
    Identify the internal prefix.
2 <{@=talk>
```

1.1 Utilities

```
__talk_if_overlay:nTF
__talk_if_overlay:VTF
__talk_overlay_arg:n
3 \prg_new_protected_conditional:Npnn __talk_if_overlay:n #1 { T , F , TF }
4 {
5   __talk_decode_parse:n {#1}
6   \bool_if:NTF \l__talk_decode_overlays_bool
7   \prg_return_true:
8   \prg_return_false:
9 }
10 \prg_generate_conditional_variant:Nnn __talk_if_overlay:n { V } { T , F , TF }
```

A macro processor variant of the check that always results in an N-type bool.

```
11 \cs_new_protected:Npn __talk_overlay_arg:n #1
12 {
13   __talk_if_overlay:nTF {#1}
14   { \cs_set:Npn \ProcessedArgument { \c_true_bool } }
15   { \cs_set:Npn \ProcessedArgument { \c_false_bool } }
16 }
```

(End of definition for __talk_if_overlay:nTF and __talk_overlay_arg:n.)

\l__talk_shuffle_skip For tracking.

```
17 \skip_new:N \l__talk_shuffle_skip
```

(End of definition for \l__talk_shuffle_skip.)

__talk_shuffle_skip:n As opacity uses whatsits at present, we need to make sure that any spaces come *after* them. This is done by “shuffling” the last skip past the opacity.

```
18 \cs_new_protected:Npn __talk_shuffle_skip:n #1
19 {
20   \skip_set_eq:NN \l__talk_shuffle_skip \tex_lastskip:D
21   \bool_lazy_and:nnTF
22   { ! \skip_if_eq_p:nn \l__talk_shuffle_skip { Opt } }
23   {
24     \bool_lazy_or_p:nn
25     { \mode_if_horizontal_p: }
26     { \mode_if_vertical_p: }
27   }
28   {
29     \tex_unskip:D
```



```

30         #1
31         \mode_if_horizontal:TF
32         { \skip_horizontal:n }
33         { \skip_vertical:n }
34         \l__talk_shuffle_skip
35     }
36     {#1}
37 }

```

(End of definition for __talk_shuffle_skip:n.)

1.2 Opacity utilities

Currently, opacity is applied using what sits at a low level. That means that to preserve spacing, we need to insert no-op versions in various places. To do that and get correct overlays, we need to track the current opacity. At present, this seems very ltx-talk-specific, so is handled here with a few auxiliaries.

```

\__talk_opacity_begin:n
\__talk_opacity_end:
38 \cs_new_protected:Npn \__talk_opacity_begin:n #1
39 { \__talk_shuffle_skip:n { \opacity_begin:n {#1} } }
40 \cs_new_protected:Npn \__talk_opacity_end:
41 { \__talk_shuffle_skip:n { \opacity_end: } }

```

(End of definition for __talk_opacity_begin:n and __talk_opacity_end:.)

1.3 Action commands and environments

Commands that can be used as actions all have a common form (with one exception). The common internal structure is used to enable them to be used as actions by looking for the name __talk_action_⟨name⟩:N.

```

\__talk_action_alert:N
42 \cs_new_protected:Npn \__talk_action_alert:N #1
43 {
44     \bool_if:NTF #1
45     { \color_select:n { alert } }
46     { \color_select:n { . } }
47 }

```

(End of definition for __talk_action_alert:N.)

```

\__talk_action_invisible:N
\__talk_action_invisible_end:N
\__talk_action_visible:N
\__talk_action_visible_end:N
48 \cs_new_protected:Npn \__talk_action_invisible:N #1
49 {
50     \bool_if:NTF #1
51     { \__talk_opacity_begin:n { 0 } }
52     { \__talk_opacity_begin:n { 1 } }
53 }
54 \cs_new_protected:Npn \__talk_action_invisible_end:N #1
55 { \__talk_opacity_end: }
56 \cs_new_protected:Npn \__talk_action_visible:N #1
57 {
58     \bool_if:NTF #1

```

```

59     { \_talk_opacity_begin:n { 1 } }
60     { \_talk_opacity_begin:n { 0 } }
61   }
62   \cs_new_protected:Npn \_talk_action_visible_end:N #1
63     { \_talk_opacity_end: }

```

(End of definition for _talk_action_invisible:N and others.)

_talk_action_only:N Here, we simply throw away the content we do not want: this is done by typesetting in
_talk_action_only_end:N a disposable box.

```

64   \cs_new_protected:Npn \_talk_action_only:N #1
65     {
66       \bool_if:NF #1
67       { \vbox_set:Nw \l__talk_tmp_box }
68     }
69   \cs_new_protected:Npn \_talk_action_only_end:N #1
70     {
71       \bool_if:NF #1
72       { \vbox_set_end: }
73     }

```

(End of definition for _talk_action_only:N and _talk_action_only_end:N.)

\l__talk_uncover_hidden_fp Currently just an on-off, but that will change.

```

74   \NewTemplateType { hidden } { 0 }
75   \DeclareTemplateInterface { hidden } { talk } { 0 }
76     { opacity : real = 0 }
77   \DeclareTemplateCode { hidden } { talk } { 0 }
78     { opacity = \l__talk_uncover_hidden_fp }
79     { \_talk_opacity_begin:n { \l__talk_uncover_hidden_fp } }
80   \DeclareInstance { hidden } { std } { talk } { }

```

(End of definition for \l__talk_uncover_hidden_fp.)

_talk_action_uncover:N Use the template: we may need to extend that to deal with the end-of-template case
_talk_action_uncover_end:N later.

```

81   \cs_new_protected:Npn \_talk_action_uncover:N #1
82     {
83       \bool_if:NTF #1
84       { \_talk_opacity_begin:n { 1 } }
85       { \UseInstance { hidden } { std } }
86     }
87   \cs_new_protected:Npn \_talk_action_uncover_end:N #1
88     { \_talk_opacity_end: }

```

(End of definition for _talk_action_uncover:N and _talk_action_uncover_end:N.)

\invisible All generated automatically using the above implementations.

```

\uncover
\visible
89   \clist_map_inline:nn { invisible , uncover , visible }
90     {
91       \ExpandArgs { cne } \NewDocumentCommand {#1}
92       { > { \_talk_overlay_arg:n } D <> { all } +m }
93       {
94         \exp_not:c { __talk_action_ #1 :N } ##1
95         ##2

```

```

96         \exp_not:c { __talk_action_ #1 _end:N } ##1
97     }

```

(End of definition for `\invisible`, `\uncover`, and `\visible`. These functions are documented on page ??.)

`invisibleenv (env.)` And the environment versions.

```

\uncoverenv (env.) 98     \ExpandArgs { nnee } \NewDocumentEnvironment { #1 env }
\visibleenv (env.) 99     { > { \__talk_overlay_arg:n } D <> { all } }
100     { \exp_not:c { __talk_action_ #1 :N } ##1 }
101     { \exp_not:c { __talk_action_ #1 _end:N } ##1 }
102 }

```

`\alert` The `\alert` command requires a group to contain color, so is done separately even though it still uses basically the same mechanism.

```

103 \NewDocumentCommand \alert { > { \__talk_overlay_arg:n } D <> { all } +m }
104 {
105     \group_begin:
106     \__talk_action_alert:N #1
107     #2
108     \group_end:
109 }

```

(End of definition for `\alert`. This function is documented on page ??.)

`alertenv (env.)` As does the environment.

```

110 \NewDocumentEnvironment { alertenv } { > { \__talk_overlay_arg:n } D <> { all } }
111 { \__talk_action_alert:N #1 }
112 { }

```

`\only` This code needs to be done manually as for the command version the content must be entirely discarded. That can't work for the environment version, which has to deal with for example single items in a list (and so cannot be collected up verbatim and must use a box).

```

113 \NewDocumentCommand \only { D <> { all } +m }
114 {
115     \__talk_if_overlay:nT {#1}
116     {#2}
117 }

```

(End of definition for `\only`. This function is documented on page ??.)

`onlyenv (env.)` The environment version could be done above, but it is clearer to keep this code entirely separate from the rest.

```

118 \NewDocumentEnvironment { onlyenv } { > { \__talk_overlay_arg:n } D <> { all } }
119 { \__talk_action_only:N #1 }
120 { \__talk_action_only_end:N #1 }

```

```

\l__talk_saved_overlays_bool
\l__talk_saved_action_str 121 \bool_new:N \l__talk_saved_overlays_bool
\l__talk_saved_actions_bool 122 \str_new:N \l__talk_saved_action_str
123 \bool_new:N \l__talk_saved_actions_bool

```

(End of definition for `\l__talk_saved_overlays_bool`, `\l__talk_saved_action_str`, and `\l__talk_saved_actions_bool`.)

\l__talk_overlay_all_bool

124 \bool_new:N \l__talk_overlay_all_bool

(End of definition for \l__talk_overlay_all_bool.)

actionenv

As we need data on not just overlays but also actions at the end of the environment, this has to be done manually. To allow working with environments but also items, the code needs to save data for the end function. The group is needed for cases where we are not in a L^AT_EX environment group. When an \onslide/\pause is active, it takes priority: sorted by applying up-front. Actions can be skipped entirely if the overlay spec is simply all, as there will never be any spacing issues, *etc.*

__talk_action_begin:n

__talk_action_begin_aux:n

__talk_action_end:

125 \NewDocumentCommand \action { D <> { all } +m }

126 {

127 \group_begin:

128 __talk_action_begin:n {#1}

129 #2

130 __talk_action_end:

131 \group_end:

132 }

133 \NewDocumentEnvironment { actionenv } { D <> { all } }

134 { __talk_action_begin:n {#1} }

135 { __talk_action_end: }

136 \cs_new_protected:Npn __talk_action_begin:n #1

137 {

138 \group_begin:

139 \str_if_eq:nnTF {#1} { all }

140 { \bool_set_true:N \l__talk_overlay_all_bool }

141 {

142 \bool_set_false:N \l__talk_overlay_all_bool

143 __talk_action_begin_aux:n {#1}

144 }

145 }

146 \cs_new_protected:Npn __talk_action_begin_aux:n #1

147 {

148 __talk_decode_parse:n {#1}

149 \bool_set_eq:NN \l__talk_saved_overlays_bool

150 \l__talk_decode_overlays_bool

151 \str_set_eq:NN \l__talk_saved_action_str

152 \l__talk_decode_action_str

153 \bool_set_eq:NN \l__talk_saved_actions_bool

154 \l__talk_decode_actions_bool

155 \tl_if_empty:NTF \g__talk_onslide_tl

156 {

157 \bool_if:NTF \l__talk_decode_overlays_bool

158 {

159 \cs_if_exist_use:cF

160 { __talk_action_ \l__talk_decode_action_str :N }

161 { \use_none:n }

162 \l__talk_decode_actions_bool

163 }

164 { \UseInstance { hidden } { std } }

165 }

166 { __talk_action_invisible:N \c_true_bool }

167 }

```

168 \cs_new_protected:Npn \__talk_action_end:
169 {
170     \bool_if:NF \l__talk_overlay_all_bool
171     {
172         \bool_if:NTF \l__talk_saved_overlays_bool
173         {
174             \cs_if_exist_use:cF
175             { __talk_action_ \l__talk_saved_action_str _end:N }
176             { \use_none:n }
177             \l__talk_saved_actions_bool
178         }
179         { \__talk_opacity_end: }
180     }
181     \group_end:
182 }

```

(End of definition for \action and others. This function is documented on page ??.)

1.4 Non-action commands and environments

This section contains commands and environments that do *not* need to be made available as actions.

\alt Simple wrappers around the internal switch.

```

183 \NewDocumentCommand \alt { D <> { all } +m +m }
184 {
185     \__talk_if_overlay:nTF {#1}
186     {#2}
187     {#3}
188 }

```

(End of definition for \alt. This function is documented on page ??.)

\onslide Simply make transparent: this is done without grouping so we can work for example in tabular cells.

```

\__talk_onslide:n
189 \NewDocumentCommand \onslide { D <> { all } }
190 {
191     \__talk_onslide:n {#1}
192     \ignorespaces
193 }
194 \cs_new_protected:Npn \__talk_onslide:n #1
195 {
196     \tl_use:N \g__talk_onslide_tl
197     \tl_gclear:N \g__talk_onslide_tl
198     \__talk_if_overlay:nF {#1}
199     {
200         \__talk_opacity_begin:n { 0 }
201         \tl_gput_right:Nn \g__talk_onslide_tl
202         { \__talk_opacity_end: }
203     }
204 }

```

(End of definition for \onslide and __talk_onslide:n. This function is documented on page ??.)

`\g__talk_onslide_tl`

205 `\tl_new:N \g__talk_onslide_tl`

(End of definition for `\g__talk_onslide_tl`.)

`\temporal` A tricky one: to separate the not-on-current-slide cases, the flag to continue is used.

```
206 \NewDocumentCommand \temporal { D <> { all } +m +m +m }
207 {
208   \__talk_if_overlay:nTF {#1}
209     {#3}
210     {
211       \bool_if:NTF \g__talk_slide_continue_bool
212         {#4}
213         {#2}
214     }
215 }
```

(End of definition for `\temporal`. This function is documented on page ??.)

`\pause` A thin wrapper.

```
216 \NewDocumentCommand \pause { o }
217 {
218   \legacy_if:nF { measuring@ }
219   {
220     \IfNoValueTF {#1}
221       { \int_gincr:N \g__talk_pauses_int }
222       { \int_gset:Nn \g__talk_pauses_int {#1} }
223     \exp_args:Ne \__talk_onslide:n { \int_eval:n { \g__talk_pauses_int + 1 } - }
224   }
225 }
```

(End of definition for `\pause`. This function is documented on page ??.)

1.5 Fixed-size areas

`__talk_overprint_begin:n` A common auxiliary for overprinting, which starts off much the same for both `overlayarea` and `overprint`.

```
226 \cs_new_protected:Npn \__talk_overprint_begin:n #1
227 {
228   \par
229   \vbox_set_to_wd:Nnw \l__talk_tmp_box {#1}
230   \raggedright
231   \ignorespaces
232 }
```

(End of definition for `__talk_overprint_begin:n`.)

`overlayarea (env.)` An initial approach: quite similar to a column.

```
233 \NewDocumentEnvironment { overlayarea } { m m }
234 { \__talk_overprint_begin:n {#1} }
235 {
236   \vbox_set_end:
237   \vbox_to_ht:nn {#2}
238   {
```

```

239         \box_use_drop:N \l__talk_tmp_box
240         \vfil
241     }
242     \par
243 }

```

`\l__talk_overprint_int` Track the overprints on a slide: as the slide forms a group, we do not need to worry about resetting.

```

244 \int_new:N \l__talk_overprint_int

```

(End of definition for `\l__talk_overprint_int`.)

`__talk_frame_overprint:` To refer to the current overprint environment within the document: needed in the `.aux` so avoids using non-letters.

```

245 \cs_new:Npn \__talk_frame_overprint:
246 {
247     \int_to_Roman:n \g__talk_frame_int
248     \int_to_roman:n \l__talk_overprint_int
249 }

```

(End of definition for `__talk_frame_overprint:.`)

`__talk_overprint_int:env` For overprinting, in contrast to `beamer` we use a two-pass approach to save the size at the end of the run: this means you can use `\only` for example in overprinting.

`__talk_overprint_check_ht:n`

```

250 \NewDocumentEnvironment { overprint } { 0 { \textwidth } }
251 { \__talk_overprint_begin:n {#1} }
252 {
253     \vbox_set_end:
254     \int_incr:N \l__talk_overprint_int
255     \__talk_overprint_save_ht:
256     \cs_if_exist:cTF
257     { overprint@ \__talk_frame_overprint: }
258     {
259         \dim_compare:vNnTF
260         { overprint@ \__talk_frame_overprint: }
261         > { \box_ht:N \l__talk_tmp_box }
262         {
263             \vbox_to_ht:vn
264             { overprint@ \__talk_frame_overprint: }
265             {
266                 \box_use_drop:N \l__talk_tmp_box
267                 \vfil
268             }
269         }
270         { \box_use_drop:N \l__talk_tmp_box }
271     }
272     { \box_use_drop:N \l__talk_tmp_box }
273     \par
274 }

```

As there is no clear end-point for overprinting, we need to be careful to keep the current width separate from the saved one. The rest is then about saving to the `.aux` file and helping out the user.

```

275 \cs_new_protected:Npn \__talk_overprint_save_ht:

```

```

276 {
277   \tl_if_exist:cF { g__talk_overprint_ \__talk_frame_overprint: _tl }
278   {
279     \tl_new:c { g__talk_overprint_ \__talk_frame_overprint: _tl }
280     \tl_gset:cn { g__talk_overprint_ \__talk_frame_overprint: _tl }
281     { 0pt }
282   }
283   \tl_gset:ce { g__talk_overprint_ \__talk_frame_overprint: _tl }
284   {
285     \dim_max:vn { g__talk_overprint_ \__talk_frame_overprint: _tl }
286     { \box_ht:N \l__talk_tmp_box }
287   }
288   \legacy_if:nT { @files }
289   {
290     \iow_now:Ne \@auxout
291     {
292       \gdef \exp_not:c { overprint@ \__talk_frame_overprint: }
293       {
294         \exp_not:v { g__talk_overprint_ \__talk_frame_overprint: _tl }
295       }
296     }
297   }
298   \hook_gput_code:nne { enddocument / afterlastpage } { talk }
299   { \__talk_overprint_check_ht:n { \__talk_frame_overprint: } }
300 }
301 \cs_new_protected:Npn \__talk_overprint_check_ht:n #1
302 {
303   \bool_lazy_and:nnF
304   { \exp_not:N \cs_if_exist_p:c { overprint@ #1 } }
305   {
306     \dim_compare_p:vNv { overprint@ #1 } = { g__talk_overprint_ #1 _tl }
307   }
308   {
309     \msg_warning:nn { talk } { overprint-ht }
310     \cs_gset_protected:Npn \__talk_overprint_check_ht:n ##1 { }
311   }
312 }
313 \msg_new:nnn { talk } { overprint-ht }
314 {
315   Overprint~area~height~has~changed:\\
316   rerun~LaTeX.
317 }

```

(End of definition for __talk_overprint_save_ht: and __talk_overprint_check_ht:n.)

1.6 Adding overlays to existing commands

\textbf Make the standard text commands overlay-aware. To keep the spacing unchanged when the command is not active, we use the same approach as the kernel does for inserting the right grouping.

\textit

\textmd

\textnormal 318 \tl_map_inline:nn

\textrm 319 {

\textsc 320 \textbf

\textsf 321 \textit

\textsl

\texttt

\textup

\emph

\stdtextbf

\stdtextit

\stdtextmd

\stdtextnormal

\stdtextrm

\stdtextsc


```

322 \textmd
323 \textnormal
324 \textrm
325 \textsc
326 \textsf
327 \textsl
328 \texttt
329 \textup
330 \emph
331 }
332 {
333 \ExpandArgs { c } \NewCommandCopy { std \cs_to_str:N #1 } #1
334 \ExpandArgs { Nne } \RenewDocumentCommand #1
335 { D <> { all } +m }
336 {
337 \exp_not:N \__talk_if_overlay:nTF {##1}
338 { \exp_not:c { std \cs_to_str:N #1 } }
339 { \exp_not:N \__talk_textcmd_equiv:n }
340 {##2}
341 }
342 }
343 \cs_new_protected:Npn \__talk_textcmd_equiv:n #1
344 {
345 \mode_if_math:TF
346 { { \mbox {#1} } }
347 {
348 \mode_leave_vertical:
349 {#1}
350 }
351 }

```

(End of definition for `\textbf` and others. These functions are documented on page ??.)

`\includegraphics` Just wrap up the args and forward if appropriate. The star is #1 here as that matches
`\stdincludegraphics` the documented behavior of starred commands generally.

```

352 \RequirePackage { graphicx }
353 \NewCommandCopy \stdincludegraphics \includegraphics
354 \RenewDocumentCommand \includegraphics { s D <> { all } o o m }
355 {
356 \__talk_if_overlay:nT {#2}
357 {
358 \use:e
359 {
360 \exp_not:N \stdincludegraphics
361 \IfBooleanT #1 { * }
362 \IfNoValueF {#3} { [ \exp_not:n { {#3} } ] }
363 \IfNoValueF {#4} { [ \exp_not:n { {#4} } ] }
364 }
365 {#5}
366 }
367 }

```

(End of definition for `\includegraphics` and `\stdincludegraphics`. These functions are documented on page ??.)

`\label` Here, we can't wrap the existing command up as we need the space hack, so it has to be declared from scratch. There is also a non-standard overlay default. At present, no special tricks as seen in `beamer`.

```

368 \RenewDocumentCommand \label { D <> { 1 } m }
369 {
370   \@bsphack
371   \__talk_if_overlay:nT {#1}
372   { \__talk_label:n {#2} }
373   \@esphack
374 }
375 \cs_new_protected:Npn \__talk_label:n #1
376 {
377   \begingroup
378     \UseHookWithArguments { label } { 1 } {#1}
379     \protected@write \@auxout { }
380     {
381       \string \newlabel {#1}
382       {
383         { \@currentlabel }
384         { \thepage }
385         { \@currentlabelname }
386         { \@currentHref }
387         { \@kernel@reserved@label@data }
388       }
389     }
390   \endgroup
391 }

```

(End of definition for `\label` and `__talk_label:n`. This function is documented on page ??.)

```

392 </class>

```

Part VIII

ltx-talk-required – “Required” definitions

1 ltx-talk-required implementation

Start the DocStrip guards.

```
1 <*class>
    Identify the internal prefix.
2 <@@=talk>
```

Here we collect up things that are more-or-less required to create a useful class but are not defined by the L^AT_EX kernel for historical reasons. They are therefore largely copies from `article.cls` and contain “classical” definitions so that they follow the expectations of third-party code.

`\today` This is the definition as done in the standard classes.

```
3 \cs_new_nopar:Npn \today
4 {
5     \ifcase \month \or
6         January \or
7         February \or
8         March \or
9         April \or
10        May \or
11        June \or
12        July \or
13        August \or
14        September \or
15        October \or
16        November \or
17        December
18    \fi
19    \space
20    \number \day ,
21    \space
22    \number \year
23 }
```

(End of definition for \today. This function is documented on page ??.)

1.1 Standard design settings

```
24 \setcounter { tocdepth } { 3 }
25 \setlength \arraycolsep { 5pt }
26 \setlength \tabcolsep { 6pt }
27 \setlength \arrayrulewidth { 0.4pt }
28 \setlength \doublerulesep { 2pt }
29 \setlength \tabbingsep { \labelsep }
30 \skip \@mpfootins = \skip \footins
```

```

31 \setlength \fboxsep { 3pt }
32 \setlength \fboxrule { 0.4pt }

```

1.2 List support

```

33 \setlength \labelsep { 0.5em }
34 \cs_new:Npn \labelenumi { \theenumi . }
35 \cs_new:Npn \labelenumii { ( \theenumii ) }
36 \cs_new:Npn \labelenumiii { \theenumiii . }
37 \cs_new:Npn \labelenumiv { \theenumiv . }
38 \cs_new:Npn \labelitemi { \labelitemfont \textbullet }
39 \cs_new:Npn \labelitemii { \labelitemfont \bfseries \textendash }
40 \cs_new:Npn \labelitemiii { \labelitemfont \textasteriskcentered }
41 \cs_new:Npn \labelitemiv { \labelitemfont \textperiodcentered }
42 \cs_new:Npn \labelitemfont { \normalfont }

43 \setlength \leftmargini { 2em }
44 \setlength \leftmarginii { 2em }
45 \setlength \leftmarginiii { 2em }
46 \setlength \labelsep { 0.5em }
47 \setlength \labelwidth { \leftmargini }
48 \addtolength \labelwidth { -\labelsep }
49 \cs_gset_nopar:Npn \@listi
50 {
51   \leftmargin \leftmargini
52   \topsep 3pt plus 2pt minus 2.5pt
53   \parsep 0pt
54   \itemsep 3pt plus 2pt minus 3pt
55 }
56 \cs_gset_eq:NN \@listI \@listi
57 \cs_gset_nopar:Npn \@listii
58 {
59   \leftmargin \leftmarginii
60   \topsep 2pt plus 1pt minus 2pt
61   \parsep 0pt plus 1pt
62   \itemsep \parsep
63 }
64 \cs_gset_nopar:Npn \@listiii
65 {
66   \leftmargin \leftmarginiii
67   \topsep 2pt plus 1pt minus 2pt
68   \parsep 0pt plus 1pt
69   \itemsep \parsep
70 }
71 \setlength \partopsep { 0pt }
72 \endclass

```

Part IX

ltx-talk-structure – Structural commands

1 ltx-talk-structure implementation

Start the DocStrip guards.

```
1 <*class>
    Identify the internal prefix.
2 <@@=talk>
```

1.1 Frame title

```
\g__talk_frame_title_tl
\g__talk_frame_subtitle_tl
3 \tl_new:N \g__talk_frame_title_tl
4 \tl_new:N \g__talk_frame_subtitle_tl

(End of definition for \g__talk_frame_title_tl and \g__talk_frame_subtitle_tl.)
```

```
\frametitle Just data storage: at the present no use of the optional argument.
5 \NewDocumentCommand \frametitle { D <> { all } 0 {#3} m }
6 {
7   \__talk_if_overlay:nT {#1}
8   { \tl_gset:Nn \g__talk_frame_title_tl {#3} }
9 }
10 \NewDocumentCommand \framesubtitle { D <> { all } 0 {#3} m }
11 {
12   \__talk_if_overlay:nT {#1}
13   { \tl_gset:Nn \g__talk_frame_subtitle_tl {#3} }
14 }
```

(End of definition for \frametitle. This function is documented on page ??.)

```
\__talk_frame_title:n Inserting the frame title requires we deal with tagging as well as appearance: if there is
\__talk_frame_title_tagged:n a title, we need to tag just this part of the header.
```

```
15 \NewTemplateType { frametitle } { 1 }
16 \DeclareTemplateInterface { frametitle } { talk } { 1 }
17 {
18   after-vspace : skip = \bigskipamount ,
19   before-vspace : skip = 0em ,
20   color : tokenlist = ,
21   font : tokenlist = \Large \bfseries
22 }
23 \DeclareTemplateCode { frametitle } { talk } { 1 }
24 {
25   after-vspace = \l__talk_frametitle_after_skip ,
26   before-vspace = \l__talk_frametitle_before_skip ,
27   color = \l__talk_frametitle_color_tl ,
28   font = \l__talk_frametitle_font_tl
29 }
```

```

30 {
31   \noindent
32   \vspace { \l__talk_frametitle_before_skip }
33   \group_begin:
34     \tl_if_empty:NF \l__talk_frametitle_color_tl
35     { \color_select:V \l__talk_frametitle_color_tl }
36     \l__talk_frametitle_font_tl
37     \tl_if_blank:nF {#1}
38     { \__talk_frame_title:n {#1} }
39     \par
40   \group_end:
41   \vspace { \l__talk_frametitle_after_skip }
42 }
43 \DeclareInstance { frametitle } { header } { talk } { }
44 \cs_new_protected:Npn \__talk_frame_title:n #1
45 {
46   \bool_if:NTF \g__talk_frame_tag_bool
47   { \__talk_frame_title_tagged:n }
48   { \use:n }
49   {#1}
50 }
51 \cs_new_protected:Npn \__talk_frame_title_tagged:n #1
52 {
53   \__talk_header_tag_begin:e
54   {
55     firstkid = true ,
56     parent   = \int_use:N \g__talk_frame_struct_int ,
57     tag      = frametitle ,
58     title    = { \text_purify:n { \g__talk_frame_title_tl } } ,
59   }
60   \group_begin:
61     \tagpdfparaOff
62     #1
63   \group_end:
64   \__talk_header_tag_end:
65 }

```

(End of definition for `__talk_frame_title:n` and `__talk_frame_title_tagged:n`.)

1.2 Sectioning

```

\l__talk_section_tl  Two versions of the data store: one set locally (but at the top level) for general use, one
\g__talk_section_tl  set (and more importantly cleared) globally to allow insertion in the header area just
\l__talk_subsection_tl once per name.
\g__talk_subsection_tl
\l__talk_subsubsection_tl 66 \tl_new:N \l__talk_section_tl
\g__talk_subsubsection_tl 67 \tl_new:N \g__talk_section_tl
\l__talk_subsubsection_tl 68 \tl_new:N \l__talk_subsection_tl
\g__talk_subsubsection_tl 69 \tl_new:N \g__talk_subsubsection_tl
\l__talk_subsubsection_tl 70 \tl_new:N \l__talk_subsubsection_tl
\g__talk_subsubsection_tl 71 \tl_new:N \g__talk_subsubsection_tl

```

(End of definition for `\l__talk_section_tl` and others.)

<pre> \section \subsection \subsubsection \thesection \thesubsection \thesubsubsection </pre>	<p>Here, we need full L^AT_EX counters, so create them using the appropriate mechanism: that also means we can sort out counter dependency and the appearance (using the same setup</p>
---	---

as in article). As (subsub)section numbers never increment inside frames, we remove these counters from the general tracker.

```

72 \newcounter { section }
73 \newcounter { subsection } [ section ]
74 \newcounter { subsubsection } [ subsection ]
75 \seq_gremove_all:Nn \l__talk_cnt_reset_seq { section }
76 \seq_gremove_all:Nn \l__talk_cnt_reset_seq { subsection }
77 \seq_gremove_all:Nn \l__talk_cnt_reset_seq { subsubsection }
78 \cs_gset:Npn \thesection { \@arabic \c@section }
79 \cs_gset:Npn \thesubsection { \thesection . \@arabic \c@subsection }
80 \cs_gset:Npn \thesubsubsection { \thesubsection . \@arabic \c@subsubsection }

```

(End of definition for \section and others. These functions are documented on page ??.)

\section \subsection \subsubsection \insertsection \insertsubsection \insertsubsubsection	The sectioning commands all have essentially the same form: we therefore create using a generator with the necessary conditionals in place. As we do not typeset sections at this stage, the code is quite different from article. This also means that the bookmark links need to point forward to the next slide: if that doesn't appear, the bookmarks will be out. Using the general scratch sequence here should be OK: it really is a one-off setting. We need a sequence to allow indexed mapping to avoid any extra setup for the depth value.
--	--

```

81 \seq_set_from_clist:Nn \l_tmpa_seq
82   { section , subsection , subsubsection }
83 \seq_map_indexed_inline:Nn \l_tmpa_seq
84   {
85     \use:e
86     {
87       \NewDocumentCommand \exp_not:c { insert #2 } { { }
88         {
89           \exp_not:N \tl_use:N
90           \exp_not:c { l__talk_ #2 _tl }
91         }
92       \NewDocumentCommand \exp_not:c {#2}
93       { s D <> { all } 0 {##4} m }
94       {
95         \exp_not:N \refstepcounter {#2}
96         \UseTaggingSocket { sec / end } { \use:c { toplevel@ #2 } }
97         \UseTaggingSocket { sec / begin }
98         {
99           { \use:c { toplevel@ #2 } }
100          {
101            tag =
102            \exp_not:N \UseStructureName
103            { sec / \use:c { toplevel@ #2 } }
104          }
105        }
106        \tl_set:Nn \exp_not:c { l__talk_ #2 _tl } {##4}
107        \UseTaggingSocket { talk / sec / title } {#2}
108        \str_if_eq:nnT {#2} { section }
109          { \tl_clear:N \exp_not:N \l__talk_subsection_tl }
110        \str_if_eq:nnF {#2} { subsubsection }
111          { \tl_clear:N \exp_not:N \l__talk_subsubsection_tl }
112        \exp_not:N \addcontentsline { toc } {#2}

```

```

113         {
114             \exp_not:N \int_compare:nNf {#1} >
115             { \exp_not:N \value { secnumdepth } }
116             {
117                 \exp_not:N \protect \exp_not:N \numberline
118                 { \exp_not:c { the #2 } }
119             }
120             ##4
121         }
122         \hook_use:n { #2 / begin }
123     }
124     \hook_new:n { #2 / begin }
125 }
126 }

```

(End of definition for `\section` and others. These functions are documented on page ??.)

```

talk/sec/title The argument is one of section, subsection or subsubsection.
__talk_sect_tag:nn
127 \NewTaggingSocket { talk / sec / title } { 1 }
128 \NewTaggingSocketPlug { talk / sec / title } { default }
129 { \exp_args:Ne __talk_sect_tag:nn { \text_purify:v { l__talk_ #1 _ t1 } } {#1} }
130 \cs_new_protected:Npn __talk_sect_tag:nn #1#2
131 {
132     \tag_struct_begin:e
133     {
134         tag =
135         \UseStructureName { sec / \use:c { toplevel@ #2 } / title } ,
136         title = {#1} ,
137         actualtext = {#1} ,
138     }
139     \tag_struct_end:
140 }
141 \AssignTaggingSocketPlug { talk / sec / title } { default }

```

(End of definition for `talk/sec/title` and `__talk_sect_tag:nn`. This function is documented on page ??.)

1.3 Table of contents

`\@starttoc` The standard kernel implementation here deliberately overwrites the file as soon as it's read. That's no good for us as the table of contents can be read multiple times. So we modify the code: we start from the tagging-aware version (this may need to be revisited). We retain the L^AT_EX 2_ε code as much as possible.

```

142 \cs_gset_protected:Npn \@starttoc #1
143 {
144     \begingroup
145     \makeatletter
146     \UseTaggingSocket { toc / starttoc / before } {#1}
147     \@input { \jobname .#1 }
148     \UseTaggingSocket { toc / starttoc / after } {#1}
149     \legacy_if:nT { @filesw }
150     {
151         \AddToHook { enddocument / afterlastpage }
152         {

```



```

153             \expandafter \newwrite \csname tf@ #1 \endcsname
154             \immediate \openout \csname tf@ #1 \endcsname \jobname .#1 \relax
155         }
156     }
157     \@nobreakfalse
158 \endgroup
159 }

```

(End of definition for \@starttoc. This function is documented on page ??.)

\tableofcontents For the present simply print the output.

```

160 \NewDocumentCommand \tableofcontents { 0 { } }
161 {
162     \group_begin:
163     \@starttoc { toc }
164     \group_end:
165 }

```

(End of definition for \tableofcontents. This function is documented on page ??.)

\l@section Initial hard-coded versions to be templated once we have some other effects also working.

\l@subsection We may need to look at this “higher up” as we will need to know the section numbers.

```

\l@subsection
166 \cs_new_protected:Npn \l@section #1#2
167 { \__talk_toc_aux:nnnn { 1 } { \bfseries \color { structure } } {#1} {#2} }
168 \cs_new_protected:Npn \l@subsection #1#2
169 {
170     \__talk_toc_aux:nnnn
171     { 2 }
172     {
173         \skip_set:Nn \leftskip { 2em }
174         \color_ensure_current:
175     }
176     {#1} {#2}
177 }
178 \cs_new_protected:Npn \l@subsubsection #1#2
179 {
180     \__talk_toc_aux:nnnn
181     { 3 }
182     {
183         \skip_set:Nn \leftskip { 4em }
184         \color_ensure_current:
185         \footnotesize
186     }
187     {#1} {#2}
188 }
189 \cs_new_protected:Npn \__talk_toc_aux:nnnn #1#2#3#4
190 {
191     \int_compare:nNnTF { \value { section } } < 1
192     { \use:n }
193     { \__talk_toc_dest:n }
194     { \__talk_toc_level:nnnn {#1} {#2} {#3} {#4} }
195 }

```

We can extract the details for the TOC levels from \@contentsline@destination. At present, that is quite simple-minded: if we are in the current section, show fully, else make semi-opaque. Needs a rounded-out interface but the basic idea will be the same.

```

196 \cs_new_protected:Npn \__talk_toc_dest:n
197 {
198   \exp_after:wN \__talk_toc_dest:w \@contentsline@destination
199   . 0 . 0 . 0 . \q_stop
200 }
201 \cs_new_protected:Npn \__talk_toc_dest:w #1 . #2 . #3 . #4 . #5 \q_stop #6
202 {
203   \int_compare:nNnTF { \value { section } } = {#2}
204   {#6}
205   {
206     \opacity_begin:n { 0.2 }
207     #6
208     \opacity_end:
209   }
210 }
211 \cs_new_protected:Npn \__talk_toc_level:nnnn #1#2#3#4
212 {
213   \int_compare:nNnF {#1} > { \value { tocdepth } }
214   {
215     \group_begin:
216     \noindent
217     #2
218     \UseHookWithArguments { contentsline / text / before } { 4 }
219     {#1} {#3} {#4} { \@contentsline@destination }
220     #3
221     \UseHookWithArguments { contentsline / text / after } { 4 }
222     {#1} {#3} {#4} { \@contentsline@destination }
223     \UseHookWithArguments { contentsline / page / before } { 4 }
224     {#1} {#3} {#4}
225     { \@contentsline@destination }
226     \UseHookWithArguments { contentsline / page / after } { 4 }
227     {#1} {#3} {#4}
228     { \@contentsline@destination }
229     \par
230     \group_end:
231     \vfil
232   }
233 }

```

(End of definition for \l@section and others. These functions are documented on page ??.)

```

234 \setcounter { tocdepth } { 2 }

```

1.4 Block environments

description (env.)	Stub logical environments: needed as the tagging setup expects these to exist.
quote (env.)	235 \NewDocumentEnvironment { description } { } { } { }
quotation (env.)	236 \NewDocumentEnvironment { quote } { } { } { }
verse (env.)	237 \NewDocumentEnvironment { quotation } { } { } { }
stdquote (env.)	238 \NewDocumentEnvironment { verse } { } { } { }
stdquotation (env.)	239 \AddToHook { begindocument / before }
stdverse (env.)	

```

240 {
241   \clist_map_inline:nn { quote , quotation , verse }
242   {
243     \NewEnvironmentCopy { std #1 } {#1}
244     \RenewDocumentEnvironment {#1} { D <> { all } !O { } }
245     {
246       \__talk_action_begin:n {##1}
247       \begin { std #1 } [ {##2} ]
248       \ignorespaces
249     }
250     {
251       \end { std #1 }
252       \__talk_action_end:
253     }
254   }
255 }

```

`block (env.)`

```

256 \NewDocumentEnvironment { block } { D <> { all } m }
257 {
258   \__talk_action_begin:n {#1}
259   \par
260   \vbox_set:Nw \l__talk_tmp_box
261   \group_begin:
262     \medskip
263     \leavevmode
264     \normalfont \large \bfseries
265     \color { structure }
266     #2
267     \par
268     \medskip
269   \group_end:
270 }
271 {
272   \vbox_set_end:
273   \box_use:N \l__talk_tmp_box
274   \par
275   \__talk_action_end:
276 }

```

1.5 Lists

`\item` Again, add the additional argument: here, we have to do a little gymnastics. The test for an overlay has to come after the standard item definition: in a list, items have to *close* the structure before them first, so if we test too early, we'd end up covering then uncovering straight away!

```

277 \AddToHook { begindocument / before }
278 {
279   \NewCommandCopy \stditem \item
280   \RenewDocumentCommand \item { d <> o }
281   {
282     \IfNoValueTF {#2}
283     { \stditem }

```

```

284         { \stditem [ {#2} ] }
285     \IfNoValueTF {#1}
286     {
287         \exp_after:wN \__talk_item_parse_spec:w
288         \l__talk_action_spec_str < all > \q_stop
289     }
290     { \__talk_item_parse_spec:n {#1} }
291 }
292 }

```

Parsing the spec is a separate function here as there are a couple of routes to get here. At present we only have a `false` branch, but for spacing we likely will need to add something to the `true` branch too. The odd stuff with `\currentgrouplevel` here is needed so we only close the item at the correct nesting, allowing for the group that gets added.

```

293 \cs_new_protected:Npn \__talk_item_parse_spec:w #1 < #2 > #3 \q_stop
294 { \__talk_item_parse_spec:n {#2} }
295 \cs_new_protected:Npn \__talk_item_parse_spec:n #1
296 {
297     \bool_lazy_or:nnF
298     { \tl_if_blank_p:n {#1} }
299     { \str_if_eq_p:nn {#1} { all } }
300     {
301         \tl_set:Nx \l__talk_list_end_tl
302         {
303             \exp_not:N \int_compare:nNnT \tex_currentgrouplevel:D =
304             { \int_use:N \tex_currentgrouplevel:D + 1 }
305             {
306                 \__talk_action_end:
307                 \tl_clear:N \exp_not:N \l__talk_list_end_tl
308             }
309         }
310         \__talk_action_begin:n {#1}
311     }
312 }

```

(End of definition for `\item`, `__talk_item_parse_spec:w`, and `__talk_item_parse_spec:n`. This function is documented on page ??.)

`\l__talk_list_end_tl`

```

313 \tl_new:N \l__talk_list_end_tl

```

(End of definition for `\l__talk_list_end_tl`.)

`__block_inter_item:` There are currently no hooks for insertion at the end of list items, so we have to do it manually. We cannot target `__block_list_item_end:/__block_list_end:` as these change definition if tagging is suspended.

```

314 \cs_gset_protected:Npn \__block_inter_item:
315 {
316     \legacy_if:nT { @inlabel }
317     { \indent \par }
318     \mode_if_horizontal:T
319     {
320         \__block_skip_remove_last:
321         \__block_skip_remove_last:
322         \par

```

```

323     }
324     \l__talk_list_end_tl
325     \__kernel_list_item_end:
326     \__kernel_list_item_begin:
327     \addpenalty \@itempenalty
328     \addvspace \itemsep
329 }

```

A rather long block done by expansion to avoid duplication in a patch.

```

330 \IfFormatAtLeastTF { 2026-06-01 }
331 { \cs_gset_protected:Npe \BlockEnvEnd }
332 { \cs_gset:Npe \endblockenv }
333 {
334   \exp_not:n
335   { \__block_debug_typeout:n { blockenv~common~ending \on@line } }
336   \cs_if_exist:NTF \l__block_transparent_level_bool
337   {
338     \exp_not:N \bool_if:NF
339     \exp_not:N \l__block_transparent_level_bool
340   }
341   {
342     \exp_not:N \bool_if:NT
343     \exp_not:N \l__block_level_incr_bool
344   }
345   { \int_gdecr:N \exp_not:N \g_block_nesting_depth_int }
346   \exp_not:n
347   {
348     \legacy_if:nT { @inlabel }
349     {
350       \mode_leave_vertical:
351       \legacy_if_gset_false:n { @inlabel }
352     }
353     \__block_if_list:T
354     { \legacy_if:nT { @newlist } { \@noitemerr } }
355     \mode_if_horizontal:TF
356     {
357       \__block_skip_remove_last:
358       \__block_skip_remove_last:
359       \par
360     }
361     { \@inmatherr { \end { \@currenvir } } }
362     \l__talk_list_end_tl
363     \__kernel_displayblock_end:
364     \__block_if_list:T { \legacy_if_gset_false:n { @newlist } }
365     \legacy_if_gset_false:n { @nobreak }
366     \legacy_if:nF { @nolist }
367     {
368       \__block_skip_set_to_last:N \l_tmpa_skip
369       \dim_compare:nNnT \l_tmpa_skip > \c_zero_dim
370       {
371         \skip_vertical:n { - \l_tmpa_skip }
372         \skip_vertical:n { \l_tmpa_skip + \parskip - \@outerparskip }
373       }
374       \addpenalty \@endparpenalty
375       \addvspace \l__block_topsepadd_skip

```

```

376     }
377     \socket_use:n { block / endpe }
378   }
379 }

```

(End of definition for `_block_inter_item:`, `\BlockEnvEnd`, and `\endblockenv`. These functions are documented on page ??.)

`itemize (env.)` Allow for the classical beamer syntax: currently two versions but that will only last until
`enumerate (env.)` the 2026-06-01 release of L^AT_EX is out.
`description (env.)`

```

380 \AddToHook { begindocument / before }
381 {
382   \clist_map_inline:nn { itemize , enumerate , description }
383   {
384     \IfFormatAtLeastTF { 2026-06-01 }
385     {
386       \RenewDocumentEnvironment {#1} { = { action-spec } !O { } }
387       { \SimpleBlockEnv {#1} {##1} }
388       { \BlockEnvEnd }
389     }
390     {
391       \RenewDocumentEnvironment {#1} { = { action-spec } !o }
392       {
393         \IfNoValueTF {##1}
394         { \UseInstance { blockenv } {#1} { } }
395         { \UseInstance { blockenv } {#1} {##1} }
396       }
397       { \endblockenv }
398     }
399   }
400 }

```

And add the structural color to item labels.

```

401 \AddToHook { begindocument / before }
402 {
403   \EditInstance { item } { basic }
404   { label-format = \color { structure } #1 }
405   \EditInstance { item } { description }
406   { label-format = \normalfont \bfseries \color { structure } #1 }
407 }

```

`\l__talk_action_spec_str` Add an overlay key to the block template. Placed here, it applies *before* the `\item` starts, so we do not have to redefine the latter to do actions up-front. This also means it can apply to whatever we want it to within a block. Currently two versions but that will only last until the 2026-06-01 release of L^AT_EX is out.

```

408 \IfFormatAtLeastTF { 2026-06-01 }
409 {
410   \keys_define:nn { template / block / std }
411   { action-spec .str_set:N = \l__talk_action_spec_str }
412 }
413 {
414   \keys_define:nn { template / block / display }
415   { action-spec .str_set:N = \l__talk_action_spec_str }
416 }

```

(End of definition for `\l__talk_action_spec_str`.)

1.6 Theorems, *etc.*

`\newtheorem` We need to extend the creation of theorems in two ways: add the overlay argument, and
`\stdnewtheorem` add the counter to the list of those reset during overlay creation.

```

417 \NewCommandCopy \stdnewtheorem \newtheorem
418 \RenewDocumentCommand \newtheorem { m O {#1} m o }
419 {
420   \IfNoValueTF {#4}
421     { \stdnewtheorem {#1} [ {#2} ] {#3} }
422     { \stdnewtheorem {#1} [ {#2} ] {#3} [ {#4} ] }
423   \NewEnvironmentCopy { std #1 } {#1}
424   \RenewDocumentEnvironment {#1} { D <> { all } o }
425   {
426     \_talk_action_begin:n {##1}
427     \IfNoValueTF {##2}
428       { \begin { std #1 } }
429       { \begin { std #1 } [ {##2} ] }
430     \ignorespaces
431   }
432   {
433     \end { std #1 }
434     \_talk_action_end:
435   }
436 }

```

(End of definition for `\newtheorem` and `\stdnewtheorem`. These functions are documented on page ??.)

```

437 </class>

```

Part X

ltx-talk-title – Title pages

1 ltx-talk-title implementation

Start the DocStrip guards.

```
1 <{*class>
    Identify the internal prefix.
2 <{@@=talk>
```

```
\@author We create a set of keys and variables in one go. Following the classical kernel approach,
\@date    all of the underlying storage is global. The short values will always be set in the following
\@institute code so can be used automatically anywhere we might want them.
\@subtitle 3 \clist_map_inline:nn
\@title    4 { author , date , institute , subtitle , title }
\@shortauthor 5 {
\@shortdate 6 \keys_define:nn { talk / metadata }
\@shortinstitute 7 {
\@shortsubtitle 8 #1 .tl_gset:c = @ #1 ,
\@shorttitle 9 short- #1 .tl_gset:c = @short #1
10 }
11 }
```

Allow empty values for author and title.

```
12 \tl_gclear:N \@author
13 \tl_gclear:N \@title
```

As the date has a standard value, that has to be propagated.

```
14 \tl_gset_eq:NN \@shortdate \@date
```

(End of definition for \@author and others. These variables are documented on page ??.)

```
\author Slightly repetitive but as we need to handle the tagging aspects, this is easier than using
\date    a loop. The main aim is to add the short metadata concept. Notice that keys are set
\title   before the main data storage in case someone set the value as a key as well as a mandatory
argument.
```

```
15 \RenewDocumentCommand \author { = { short-author } 0 { {#2} } m }
16 {
17   \keys_set:nn { talk / metadata } {#1}
18   \tl_gset:Nn \@author {#2}
19   \tl_gset_eq:NN \g__tag_title_author_tl \@author
20   \keys_set_known:nn { hyp } {#1}
21 }
22 \RenewDocumentCommand \date { = { short-date } 0 { {#2} } m }
23 {
24   \keys_set:nn { talk / metadata } {#1}
25   \tl_gset:Nn \@date {#2}
26 }
27 \RenewDocumentCommand \title { = { short-title } 0 { {#2} } m }
28 {
29   \keys_set:nn { talk / metadata } {#1}
```



```

30 \tl_gset:Nn \@title {#2}
31 \tl_gset_eq:NN \g__tag_title_title_tl \@title
32 \keys_set_known:nn { hyp } {#1}
33 }

```

(End of definition for \author, \date, and \title. These functions are documented on page ??.)

\institute Simple storage at present: unlike some of the kernel data, there is not a lot to do here.

```

\subtitle
34 \NewDocumentCommand \institute { = { short-institute } 0 { {#2} } m }
35 {
36 \keys_set:nn { talk / metadata } {#1}
37 \tl_gset:Nn \@institute {#2}
38 }
39 \NewDocumentCommand \subtitle { = { short-subtitle } 0 { {#2} } m }
40 {
41 \keys_set:nn { talk / metadata } {#1}
42 \tl_gset:Nn \@subtitle {#2}
43 }

```

(End of definition for \institute and \subtitle. These functions are documented on page ??.)

\l__talk_titlelem_after_skip \l__talk_titlelem_before_skip \l__talk_titlelem_color_tl \l__talk_titlelem_font_tl \l__talk_titlelem_tag_begin_tl \l__talk_titlelem_tag_end_tl As the various elements of the titlepage share certain characteristics, we use a single template and split them as instances.

```

44 \NewTemplateType { titlepage-element } { 1 }
45 \DeclareTemplateInterface { titlepage-element } { talk } { 1 }
46 {
47 after-skip : length = 0em ,
48 before-skip : length = 0em ,
49 color : tokenlist = . ,
50 font : tokenlist = \normalfont ,
51 tag-begin : tokenlist = ,
52 tag-end : tokenlist =
53 }
54 \DeclareTemplateCode { titlepage-element } { talk } { 1 }
55 {
56 after-skip = \l__talk_titlelem_after_skip ,
57 before-skip = \l__talk_titlelem_before_skip ,
58 color = \l__talk_titlelem_color_tl ,
59 font = \l__talk_titlelem_font_tl ,
60 tag-begin = \l__talk_titlelem_tag_begin_tl ,
61 tag-end = \l__talk_titlelem_tag_end_tl
62 }
63 {
64 \tl_if_empty:nF {#1}
65 {
66 \vspace { \l__talk_titlelem_before_skip }
67 \group_begin:
68 \tl_if_empty:NF \l__talk_titlelem_color_tl
69 { \color_select:V \l__talk_titlelem_color_tl }
70 \l__talk_titlelem_font_tl
71 \l__talk_titlelem_tag_begin_tl
72 #1
73 \par
74 \l__talk_titlelem_tag_end_tl

```

```

75         \group_end:
76         \vspace { \l__talk_titlelem_after_skip }
77     }
78 }

```

Standard settings are taken from beamer with minor adjustments.

```

79 \DeclareInstance { titlepage-element } { author } { talk }
80 { before-skip = 1em }
81 \DeclareInstance { titlepage-element } { date } { talk }
82 { after-skip = 0.5em }
83 \DeclareInstance { titlepage-element } { institute } { talk }
84 { font = \scriptsize }
85 \DeclareInstance { titlepage-element } { subtitle } { talk }
86 { before-skip = 0.25em , color = structure }
87 \DeclareInstance { titlepage-element } { title } { talk }
88 {
89     color = structure ,
90     font = \Large ,
91     tag-begin = \tag_struct_begin:n { tag = Title } ,
92     tag-end = \tag_struct_end:
93 }

```

(End of definition for \l__talk_titlelem_after_skip and others.)

Here, we deal with the overall style: notice that frame vertical alignment actually applies elsewhere, which is why it doesn't show up in the template code part. As a result, we have a slightly repetitive key interface.

```

\l__talk_titlepage_order_clist
\l__talk_titlepage_alignment_tl
\l__talk_titlepage_framestyle_tl
\l__talk_frame_alignment_tl
94 \NewTemplateType { titlepage } { 0 }
95 \DeclareTemplateInterface { titlepage } { talk } { 0 }
96 {
97     element-order : commalist =
98     {
99         title      ,
100        subtitle   ,
101        author     ,
102        institute  ,
103        date
104    } ,
105    framestyle : tokenlist = talk ,
106    horizontal-alignment : choice { left , center , right } = center ,
107    vertical-alignment : choice { bottom , center , stretch , top } = center
108 }
109 \DeclareTemplateCode { titlepage } { talk } { 0 }
110 {
111     element-order = \l__talk_titlepage_order_clist ,
112     framestyle = \l__talk_titlepage_framestyle_tl ,
113     horizontal-alignment =
114     {
115         left = \tl_set:Nn \l__talk_titlepage_alignment_tl { flushleft } ,
116         center = \tl_set:Nn \l__talk_titlepage_alignment_tl { center } ,
117         right = \tl_set:Nn \l__talk_titlepage_alignment_tl { flushright }
118     } ,
119     vertical-alignment =
120     {
121         bottom = \tl_set:Nn \l__talk_frame_alignment_tl { bottom } ,

```

```

122     center = \tl_set:Nn \l__talk_frame_alignment_tl { center } ,
123     stretch = \tl_set:Nn \l__talk_frame_alignment_tl { stretch } ,
124     top = \tl_set:Nn \l__talk_frame_alignment_tl { top }
125   }
126 }
127 {
128   \tl_if_empty:NF \l__talk_titlepage_framestyle_tl
129   { \exp_args:NV \thispagestyle \l__talk_titlepage_framestyle_tl }
130   \begin { \l__talk_titlepage_alignment_tl }
131     \cs_set_protected:Npn \and { \quad }
132     \clist_map_inline:Nn \l__talk_titlepage_order_clist
133     {
134       \ExpandArgs { nnv } \UseInstance { titlepage-element }
135       {##1} { @ ##1 }
136     }
137   \end { \l__talk_titlepage_alignment_tl }
138 }

```

(End of definition for \l__talk_titlepage_order_clist and others.)

\maketitle A very simple setup.

```

139 \NewDocumentCommand \maketitle { 0 {} }
140 {
141   \bool_if:NTF \l__talk_frame_bool
142   { \UseTemplate { titlepage } { talk } {##1} }
143   {
144     \begin { frame }
145       \UseTemplate { titlepage } { talk } {##1}
146     \end { frame }
147   }
148 }

```

(End of definition for \maketitle. This function is documented on page ??.)

```

149 </class>

```

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