



# Beyond Standard Slideware: Audience-Oriented Slide Preparation using L<sup>A</sup>T<sub>E</sub>X and Scripting Language<sup>\*</sup>

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**ABSTRACT** Many people start to prepare their slides before identifying their core messages which should be extracted from what they want to talk about. Thus the resulting presentations fail to attract much attention. To avoid this mistake, I apply the “Rule of Three” to all my slides, in each of which I place certain key phrases including my three core messages. These additional editing tasks are performed semi-automatically with the aid of the programming functions of L<sup>A</sup>T<sub>E</sub>X and scripting language. My motivation for developing this system is to acquire a sincere attitude towards my audience through *Kata*, an essential concept in the process by which traditional Japanese culture is passed on.

## 1 Introduction

There have been many warnings about the careless use of slides that results in the speaker’s intention becoming unfocused [5, 11]. One source of these warnings is “Presentation Zen” [6], a best selling book of 2008 that has been translated into 14 languages. The author advises us to get away from our computer and identify the core messages of the talk before preparing any slides.

I also spend a lot of time for clarifying my message but with a different approach, namely by applying the “Rule of Three” to all my slides. This approach requires me to determine the three main points of my talk in advance, and to insert related key phrases in every slide. I reduce the work needed for the latter task with the aid of the programming functions of L<sup>A</sup>T<sub>E</sub>X and scripting language.

FIGURE 1 shows an example consisting of slides translated from the original Japanese version of the talk I gave at the T<sub>E</sub>X Conference Japan 2009 [9]. Three brief summaries are listed in the last slide and also parts are shown in Slides 10 and 15. Explanations of other structures are given later, but this format helps the audience to follow the story with its attention well focused.

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<sup>\*</sup>A Japanese translation of this article is also available at the homepage of the Asian Journal of T<sub>E</sub>X, <http://ajt.ktug.kr>.

**Upgrade your slides**  
**with Rule of Three & L<sup>A</sup>T<sub>E</sub>X**  
 National Institute for Materials Science **S. Todoroki**

Slide 1

**Compile** Generation of a template & Makefile

```
$ head -1 'which seminit'
#!/usr/bin/ruby
$ seminit --help
usage: seminit [ --double ] [ --jp ]
$
```

- Ternary form: Simple or Complex (3×3)
- in English or Japanese
- Makefile that calls latexmk & self-made scripts

Slide 12

**OVERVIEW**

Upgrade slides w/ Rule of Three!

**Codes**  
 What are the necessary commands?

**Compile**  
 How do I reduce preparation work?

**Benefits**  
 What have I gained after putting this into practice?

Slide 5

**OVERVIEW**

Upgrade slides w/ Rule of Three!

**Codes**  
 Definition of strings, designation of colors & overlays

**Compile**  
 Auto-generated templates & Makefile by Ruby

**Benefits**  
 What have I gained after putting this into practice?

Slide 15

**Codes** Designation of overlays

```
% prosper.cts (details are omitted)
\overlays{3}{
  \begin{slide}{}
    ... \fbox{\TitleA} ...
  \fromSlide{2}{\fbox{\TitleB} ...}
  \fromSlide{3}{\fbox{\TitleC} ...}
}
\end{slide}
```

↑ Slide 5

Slide 8

**Benefits** Perspective preparation

Bird's eye & Ant's eye

Improve content

Easy to translate

Slide 16

**OVERVIEW**

Upgrade slides w/ Rule of Three!

**Codes**  
 Definition of strings, designation of colors & overlays

**Compile**  
 How do I reduce preparation work?

**Benefits**  
 What have I gained after putting this into practice?

Slide 10

**Conclusion** Upgrade your slides with Rule of Three & L<sup>A</sup>T<sub>E</sub>X

**Codes**  
 Definition of strings, designation of colors & overlays

**Compile**  
 Auto-generated templates & Makefile by Ruby

**Benefits**  
 Perspective preparation & handout earned reputation

Slide 19

FIGURE 1. Example of slides prepared using “Rule of Three”.



FIGURE 2. *Shu-Ha-Ri*—Fuhaku Kawakami (1719–1807), calligraphy by Hiroyuki Hijiya.

I learned the basic idea of this format at a presentation seminar in 1995 [3]. Since then, I have developed it using  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  and have been using it for my academic presentations.

Whenever I prepare my slides in this manner, I am conscious of *Kata* [4, 7], an essential concept in the process of passing on traditional Japanese culture including performing arts and martial arts (see Slide 1 of FIGURE 1). *Kata* can be translated into English as “form”, but this word does not fully express the concept of *Kata*.

Most of Japanese traditional arts are transferred by copying *Kata* demonstrated by masters. *Kata* itself is not an art but it shows the way of mastering the art by demonstrating its functionality, rationality and beauty. This learning stage is called *Shu*, followed by *Ha* and *Ri* (see FIGURE 2). In the *Ha* stage, learners break with their masters’ *Kata* but have not yet totally achieved their own style. In the *Ri* stage, the learners create their own *Kata*.

In 1995, I recognized what I had learned in the presentation seminar as *Kata* for slide preparation, although the lecturers might not have had such an intention. In this paper, I describe my present *Kata* expressed by  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ , tips for managing its source code, and the benefit of this *Kata*-based approach to making slides.

## 2 *Kata* for applying “Rule of Three”

A presentation scheme based on the “Rule of Three” [2, 3] is shown in FIGURE 3. The slides shown in FIGURE 1 are prepared to realize this structure with two *Kata* in order to keep the audience’s attention during the talk.

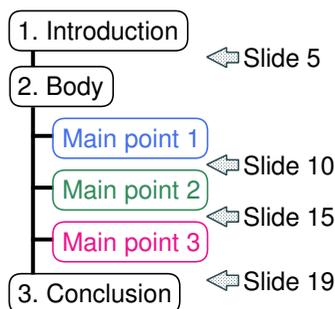


FIGURE 3. Structure of “Rule-of-Three”-based presentation. Slide numbers with arrows show the point where the corresponding slides in FIGURE 1 are placed.

TABLE 1. Macros defined for the slides shown in FIGURE 1. In slides indicated with \*, the corresponding phrase does not appear in FIGURE 1 due to the effect of the overlay (see FIGURE 4).

Definition of macros	Slides that call the macro in the left
<code>\def\TitleOne{Codes}</code>	5–10, 15, 19
<code>\def\IntroOne{What are the necessary commands?}</code>	5, 10*
<code>\def\SummaryOne{Definition of strings, designation of colors &amp; . . .}</code>	10, 15, 19
<code>\def\TitleTwo{Compile}</code>	5, 10–15, 19
<code>\def\IntroTwo{How do I reduce preparation work?}</code>	5, 10, 15*
<code>\def\SummaryTwo{Auto-generated templates &amp; Makefile by Ruby}</code>	15, 19
<code>\def\TitleThree{Benefits}</code>	5, 10, 15–19
<code>\def\IntroThree{What have I gained after putting this into practice?}</code>	5, 10, 15, 19*
<code>\def\SummaryThree{Perspective preparation &amp; handout earned . . .}</code>	19

The first *Kata* consists of inserting some slides providing a short summary before and after the three main points (see Slides 5, 10, 15 and 19). Here, I call them “bird’s eye slides”. Slide 5 poses three questions, whose answers are given in Slide 19, in order to attract the audience’s attention at the beginning of presentation. Slides 10 and 15 summarize the previous content by displaying the same sentence as that shown in Slide 19, and present the question for the next main point again.

The second *Kata* consists of placing a header in the top left of every slides except for the bird’s eye slides. I call these “ant’s eye slides”. The header includes a few words representing one of the three main points in a different color and it tells the audience which point is currently being discussed.

The expression of these two *Kata* requires us to place the same phrases in various slides. It is useful to use T<sub>E</sub>X’s macro definition to manage all the phrases in one place. TABLE 1 lists the macros defined in the L<sup>A</sup>T<sub>E</sub>X source code for the slides shown in FIGURE 1. We can complete these macro definitions only after identifying the core messages through a bird’s eye view of what we want to talk about.

In addition, each “bird’s eye slide” consists of some overlays in order to display the phrases in steps. FIGURE 4 shows the three step transition of the overlays used in Slide 10. The macros defined for these three slides are listed in the inserted table. This helps the audience to recall the structure of the speech and frees the speaker from having to memorize the sentences listed in Slide 5 and 19.

By the way, I have been using classical document classes, seminar [12] and prosper [1], for slide preparation. This is simply because the former package was the most attractive one for me when I started to use these *Kata* in 1995, and later I found that the latter was compatible with the former except a few commands. The prosper source code for controlling the overlay in Slides 10 is shown in FIGURE 8 in Appendix section.

### 3 Source code management

It requires a tremendous amount of work to write a L<sup>A</sup>T<sub>E</sub>X source code with *Kata* expressions every time from scratch. Thus, it is convenient to use a template containing the required macro definitions and commands. However, the number of templates

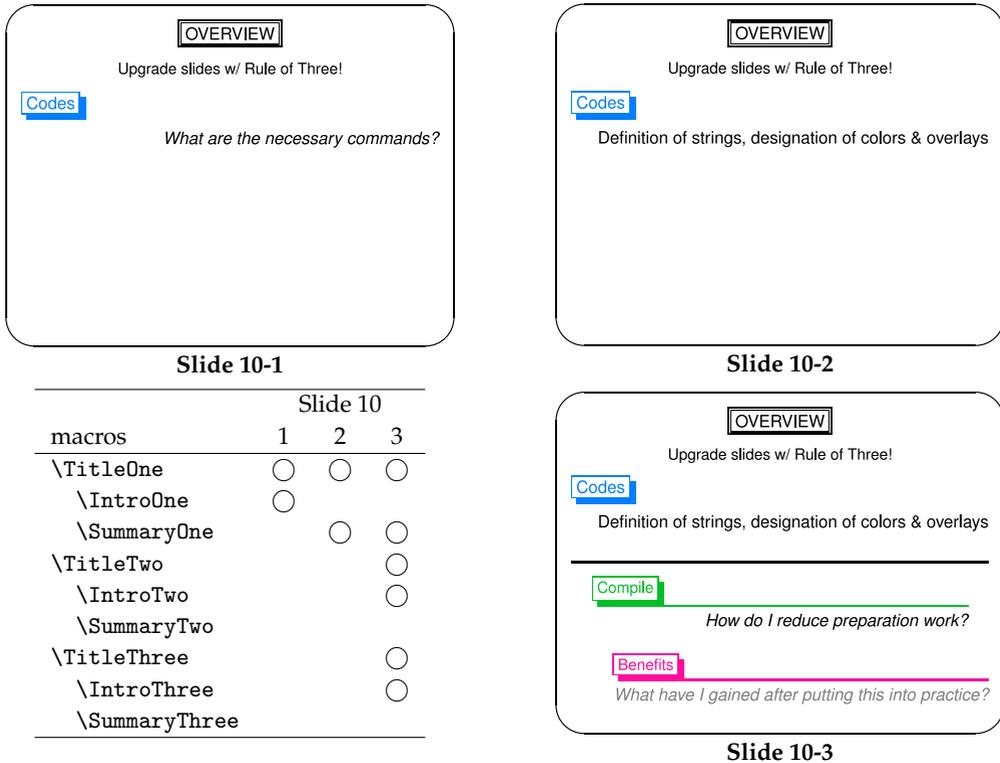


FIGURE 4. Transition of overlays in Slide 10 (see TABLE 1).

increases if we need to prepare slides in a different language and/or for a different length of talk. For example, I prepare slides for a talk of more than 30 minutes in a complex ternary form (3 parts × 3 main points, see the slides of [8]). For the collective management of various templates, I wrote a Ruby script to generate a template for the specified conditions (see Slide 12 in FIGURE 1). A detailed description is given in Appendix section including how to prepare prosper-based slides and seminar-based handout from a single source code.

#### 4 The benefits

Here I describe three merits of my *Kata*-based slides that I have discovered through my fourteen years of experience.

Firstly, I obtained a wider perspective than before. Since I cannot prepare “ant’s eye slides” before finishing the “bird’s eye slides”, I acquired a habit of switching these two viewpoints during slide preparation (see Slide 16 in FIGURE 1). It is a very common occurrence with scientific presentations that additional experiments are performed before the presentation.<sup>1</sup> Therefore, we sometimes have to modify the contents. In such cases, the task is minimized if we manage the key phrases in one place as in TABLE 1.

1. I think this is the main reason why many researchers begin to prepare their slides just before the presentations and forget to identify their core messages due to shortage of time.

This collective management also facilitates slide translation.<sup>2</sup> The translated slides are useful for any members of the audience who cannot understand the speaker's language. The presenter can project the slides on a separate screen or provide a printed version beforehand.

Secondly, the *Kata* also makes the printed slides easier to understand if groups of 4 or 6 slides are arrayed in a paper, that is, the *Kata* provides the reader with a bird's eye view. In principle, we should not distribute the printed slides as a handout before the talk because it draws the audience's attention away from the speaker [6]. However, sometimes this is necessary due to circumstances beyond our control. No matter when the handout is distributed, it should be well-focused. Otherwise, it will be thrown away.

In addition, this arrayed format should not be used as a poster because it attracts less attention from a standing audience than better-designed posters.<sup>3</sup>

Lastly, I gained a good reputation as regards my educational activities directed at improving presentation skills. In 2000, I started to write articles and give lectures introducing *Kata*-based slide preparation without describing L<sup>A</sup>T<sub>E</sub>X know-how (see Slide 18 of [9]). The most interesting feedback came from a science university where I presented an 80-minute lecture once a year to sophomores. Since I delivered the lecture using my *Kata*-based slides, they learned the concept aurally and visually at the same time. After the first trainees had been assigned to research laboratories, I heard that there was an increase in the number of prize winners for excellent presentations awarded by academic societies. This seems to be a good example of the *Shu*-stage of learning.

## 5 Conclusion

With the aid of L<sup>A</sup>T<sub>E</sub>X and a scripting language, audience-oriented slides are prepared by applying the "Rule of Three" to all the slides using two *Kata* that I proposed in the text. The policy forces the author to identify his/her core messages before slide preparation and thus both the author and the audience are given a bird's eye view through the *Kata* expression. I hope other standard slideware will afford a function for easy preparation of *Kata*-based slides.

## Acknowledgements

Here I express my sincere thanks to Mr. Charles LeBeau and Mr. Michael Strother who gave me the basic idea of my *Kata*, and Dr. Hiroyuki Hijiya who kindly provided me the calligraphy.

## Appendix

A minimum set of source codes for producing the "Rule-of-Three"-based slides is distributed at my homepage.<sup>4</sup> It includes two Ruby scripts, two style files, and one T<sub>E</sub>X

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2. Slides written in two languages should be avoided because they look busy and may be unreadable.

3. I tried to apply my *Kata* to poster preparation (see [10]).

4. [http://www.geocities.jp/tokyo\\_1406/slides4ajt.html](http://www.geocities.jp/tokyo_1406/slides4ajt.html)

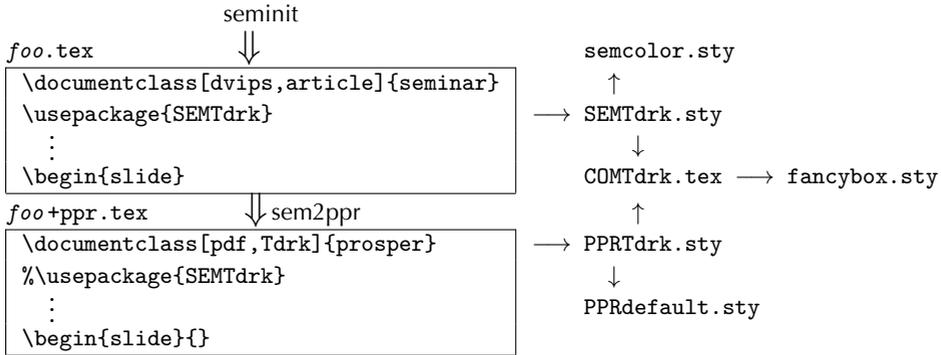


FIGURE 5. Source code conversion by `sem2ppr` (left) and loading sequence of related style files (right).

file and is tested under my Debian GNU/Linux 5.0.3 (lenny) environment. This section briefly describes the functions of these files.

### A.1 `seminit` and `SEMTdrk.sty`

`seminit` is the start-up command to generate a template file and `Makefile`. The following six commands are used for slide preparation.

- `mkdir foo`
- `cd foo`
- `seminit` # generate template and `Makefile`
- `make edit` # edit template
- `make` # make PDF file for slides
- `make sem4view` # make PDF file for handout

In this case, `seminit` generates a template file named `foo.tex` using `seminar` class (see upper box in FIGURE 5). `seminit` accepts two command line options to select one of the ternary forms (simple and complex) and/or the languages (English and Japanese, see Slide 12 in FIGURE 1). In this file, you can place prosper-specific commands but these are cancelled because of the corresponding null definitions written in `SEMTdrk.sty` (see FIGURE 6).

In this stage, the slides are formatted by `seminar` class with `article` option. This output is used to make a handout by the command `'make sem4view'` which calls `psnup` to reduce the size.

### A.2 `sem2ppr` and `PPRTdrk.sty`

`sem2ppr` is executed when you type `'make'` in order to see the effect of prosper-specific commands through a PDF previewer. `sem2ppr` modifies three kinds of commands in the way shown in FIGURE 5 to save a prosper-based code named `foo+ppr.tex`. The resulted code calls `PPRTdrk.sty` instead of `SEMTdrk.sty`, and contains slide environments with an empty argument (see lower box in FIGURE 5). In `PPRTdrk.sty`, `PPRdefault.sty` is loaded and some re-definitions of macros are made in order to adjust the layout difference between these two classes.

```

1  \newcommand{\overlays}[2]{#2}
2
3  \long\def\fromSlide{%
4    \ifstar\fromSlide@E\fromSlide@NE}
5  \long\def\fromSlide@NE#1#2{#2}
6  \long\def\fromSlide@E#1#2{}
7
8  \long\def\onlySlide{%
9    \ifstar\onlySlide@E\onlySlide@NE}
10 \long\def\onlySlide@NE#1#2{#2}
11 \long\def\onlySlide@E#1#2{}
12
13 \long\def\untilSlide{%
14   \ifstar\untilSlide@E\untilSlide@NE}
15 \long\def\untilSlide@NE#1#2{#2}
16 \long\def\untilSlide@E#1#2{}
17
18 \newenvironment{itemstep}{\begin{itemize}}{\end{itemize}}

```

FIGURE 6. Deactivation of prosper-specific commands defined in SEMTdrk.sty.

### A.3 COMTdrk.tex

This file is included by the two style files and contains the definition of `\pagetop` (see FIGURE 7) that is used for placing a header and a slide title, instead of using the argument of slide environment in prosper class.

```

1  \usepackage{fancybox}
2
3  \newcommand{\myframe}[1]{%
4    \shadowbox{\small #1}\hfill\llap{\rule{0.95\textwidth}{1pt}}}
5  \newcommand{\pagetop}[3]{%
6    \textcolor{#1}{\myframe{#2}}\llap{\raisebox{1ex}{\large #3}}%
7    \par\vspace{-0.5\slideparskip}}

```

FIGURE 7. Definition of `\pagetop` in COMTdrk.tex.

### A.4 “Bird’s eye slides” and “Ant’s eye slides”

FIGURE 8 and 9 show typical examples of the source code for “bird’s eye slides” and “ant’s eye slides”, respectively, using overlays.

## References

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11. Edward Tufte, *PowerPoint is evil*, *Wired Magazine*, September 2003. <http://www.wired.com/wired/archive/11.09/ppt2.html>
12. Timothy Van Zandt, *seminar*. `CTAN:macros/latex/contrib/seminar/`

```

1 \overlays{3}{
2 \begin{slide}%{<--Not needed because it is added by sem2ppr!
3 \begin{center}\doublebox{OVERVIEW}\end{center}
4 {\small\begin{center}Upgrade slides w/ Rule of Three!\end{center}}
5
6 \textcolor{blue}{\shadowbox{\TitleOne}}
7 \newline\hfill
8 \onlySlide*{1}{\slshape\IntroOne}
9 \fromSlide{2}{\SummaryOne}
10
11 \onlySlide{3}{
12 \par\smallskip\rule{\textwidth}{1pt}\par\smallskip\hfil\hfil
13 \begin{minipage}{0.9\textwidth}
14 \pagetop{green}{\TitleTwo}{\hfill{\slshape\IntroTwo}
15 \end{minipage}\par\bigskip
16 \hfill
17 \begin{minipage}{0.9\textwidth}
18 \pagetop{red}{\TitleThree}{\hfill
19 \textcolor{gray}{\slshape\IntroThree}
20 \end{minipage}\par\bigskip
21 }
22 \end{slide}
23 }

```

FIGURE 8. Source code for Slide 10, one of the “bird’s eye slides” shown in FIG. 4. `\pagetop` appears at the 14th and 18th lines (see FIGURE 7).

```

1 \overlays{2}{
2 \begin{slide}%{<--Not needed because it is added by sem2ppr!
3 \pagetop{red}{\TitleThree}{Perspective preparation}
4 \includegraphics[width=\textwidth]{schedule}\par\medskip
5 \fromSlide{2}{
6 \quad\shortstack[l]{Bird's eye\\\& Ant's eye}
7 \includegraphics[width=0.4\textwidth]{bird-ant}\hfill
8 Easy to translate
9 }
10 \end{slide}
11 }

```

FIGURE 9. Source code for Slide 16, one of the “ant’s eye slides” shown in FIGURE 1.