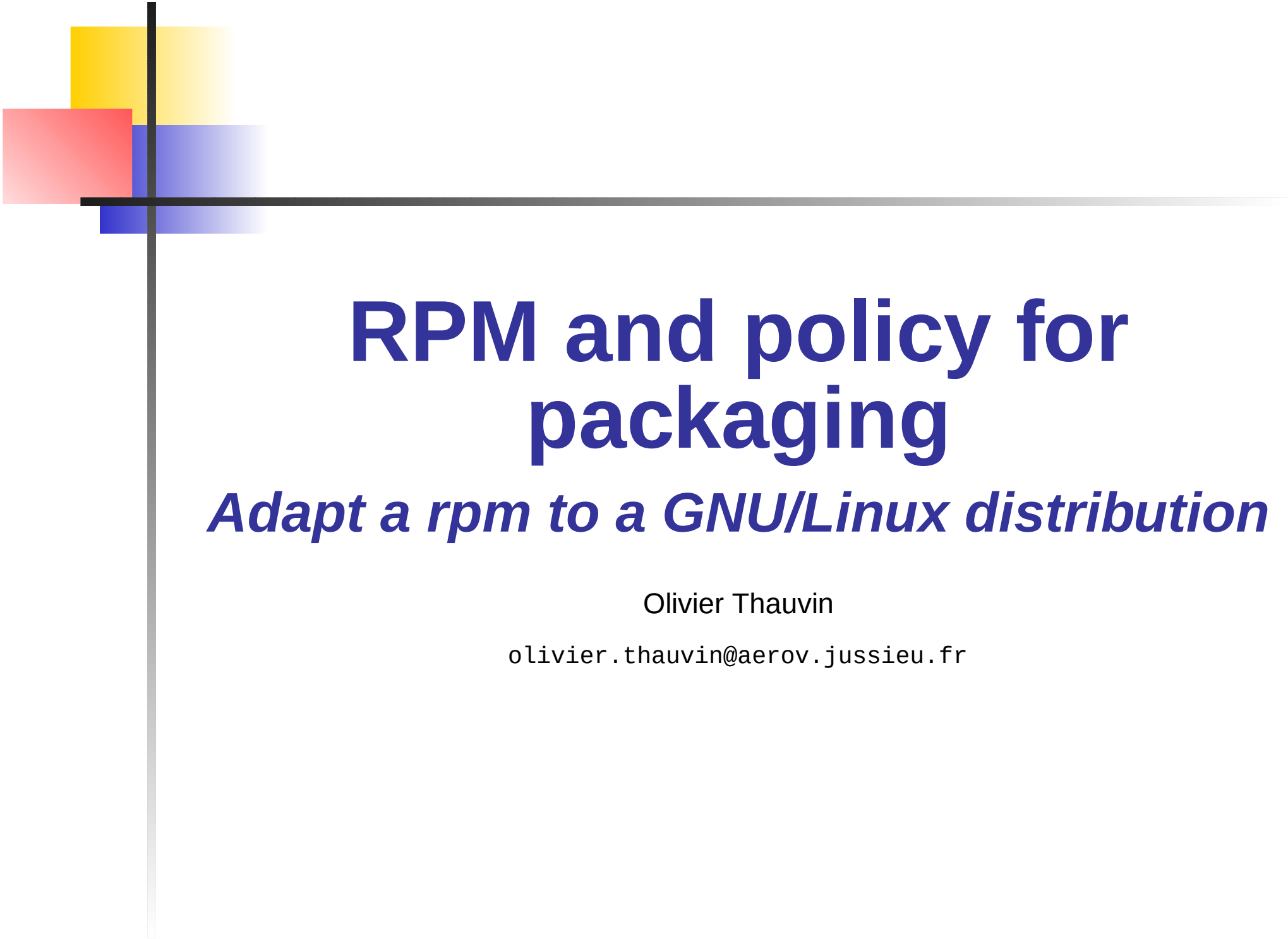

RPM and policy for packaging

Adapt a rpm to a GNU/Linux distribution

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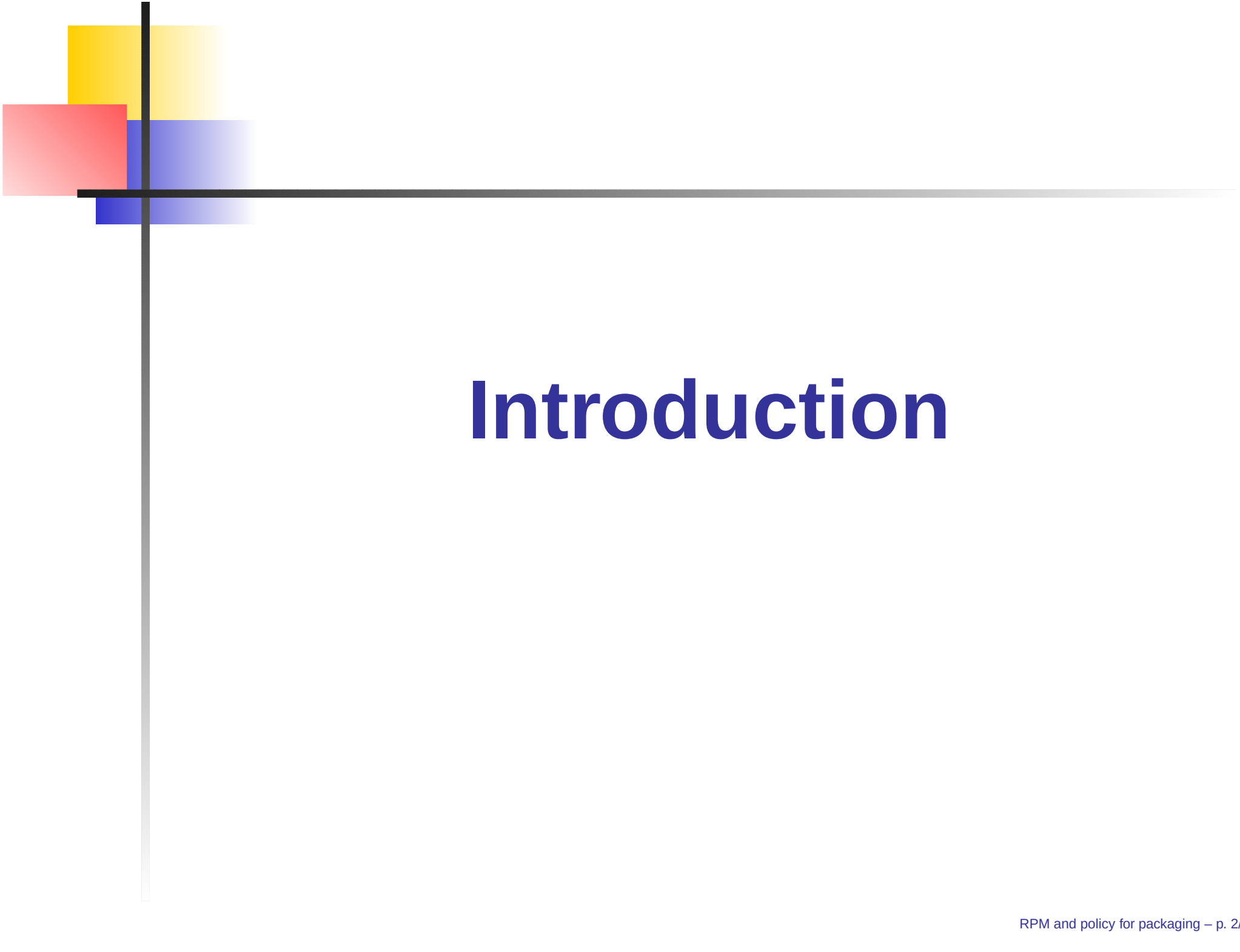
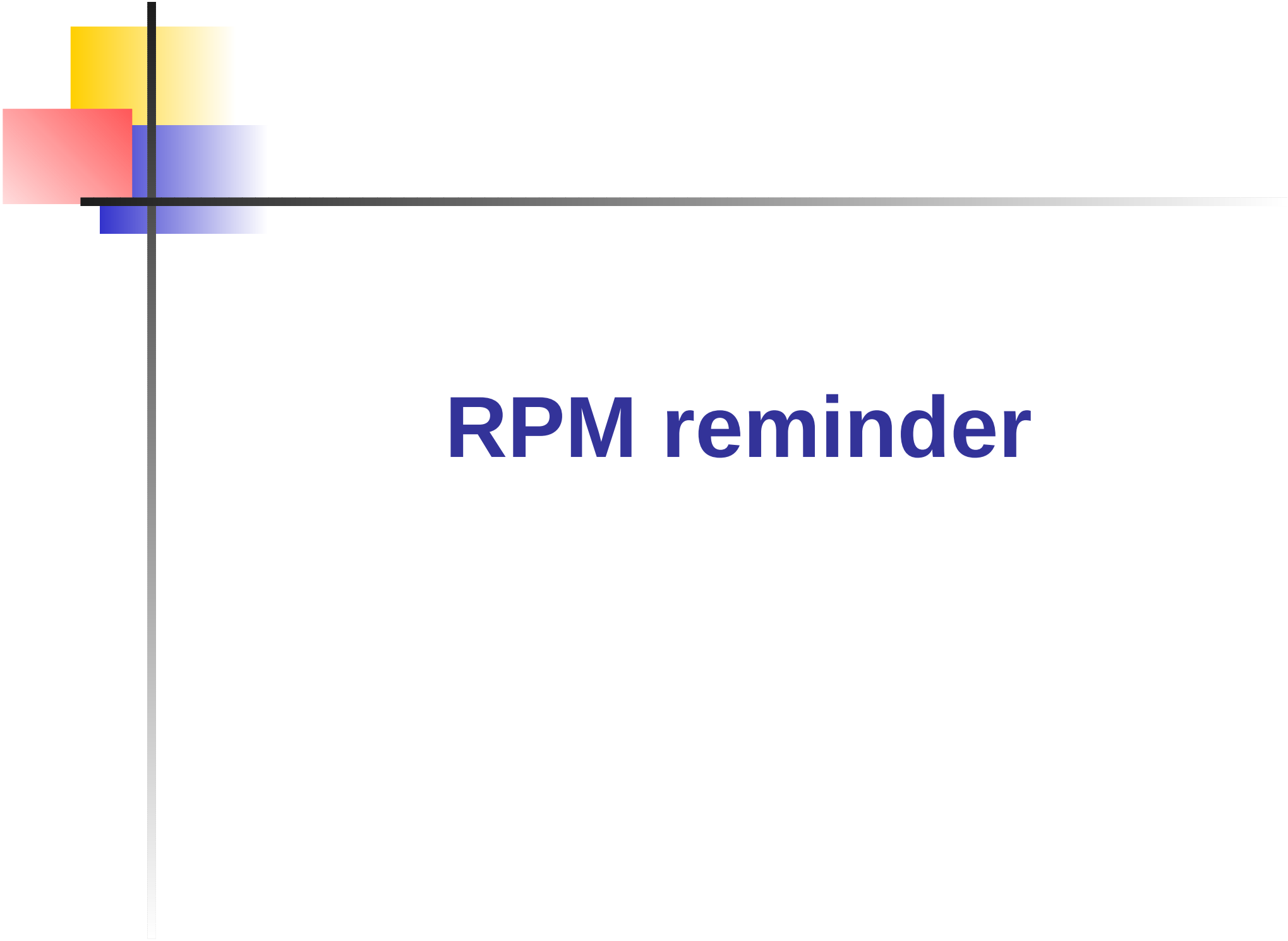


Introduction

Plan

- RPM reminder
- Policy : introduction
- Matter of fact case : Mandriva



RPM reminder

RPM : Rpm Package Manager

What is it ?

- a set of tools
- an archive format (.rpm)
- files in rpm format

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Roles :

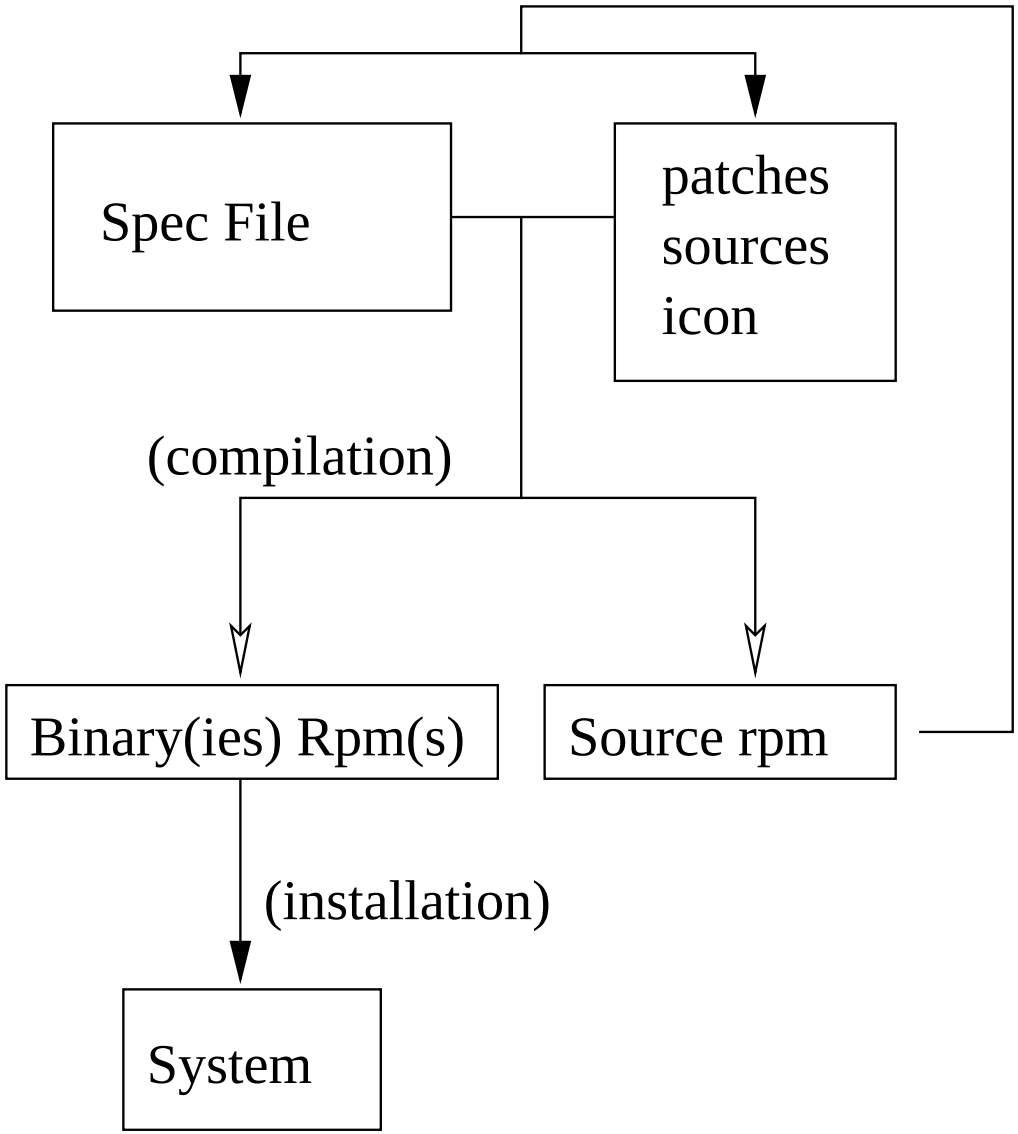
- install
- list
- control

The package

An .rpm file containing :

- entête informations about the rpm
  - practical informations about the software (name, version, url, . . .)
  - to make the rpm
  - a list of dependances
  - a list of files provided
  - history of the package (changelog)
- an archive containing the files

Making an rpm



The spec file

It describes :

- the rpm(s) produced(s)
- the compiling of the software

There are the following sections :

- header, %description
- %package
- %prep, %build, %install, %check
- %files
- %verify, %pre, %preun, %post, %postun, %posttrans, . . .
- %changelog

Specfile : example

```
Summary: A simple package
Name: simple
Version: 1
Release: 1
License: GPL
Group: MyGroup
%description
A simple package

$ rpm -ba simple.spec
Write: /home/users/olivier/RPM/SRPMS/simple-1
\o/
```

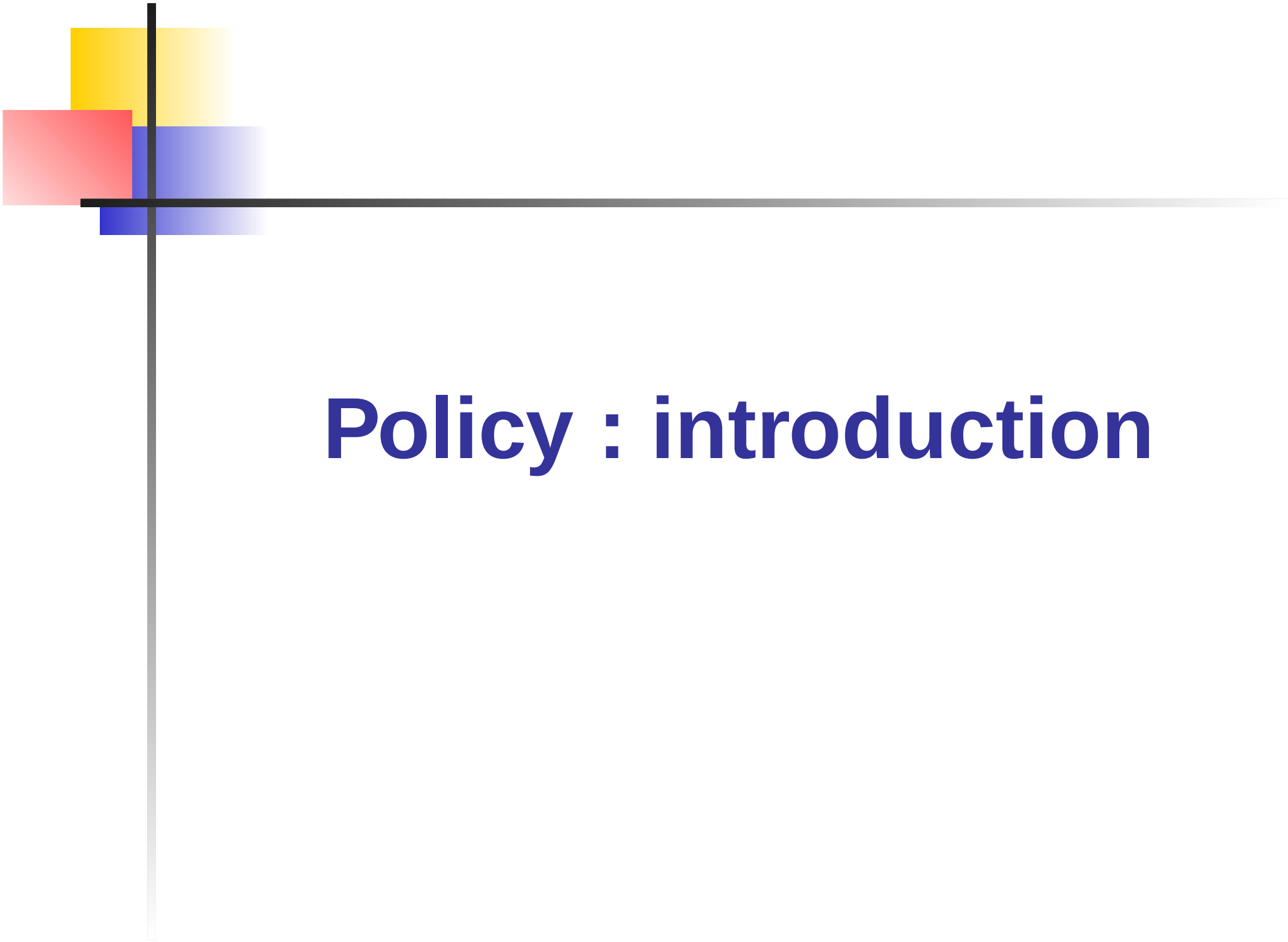
Macros

RPM specific variables.

Origine :

where	provider
system macros files	rpm
system macros files	distribution
`~/.rpmmacros`	user
spec file	packager

They provide values or functions.



Policy : introduction

What is a policy

To define rules.

What is a policy

To define rules.

Goal :

- homogeneity
- work factorisation
- quality
- ease the work

In brief, that’s good (tm)

Root is evil

Do not build as root,
Do not build as root,
And do not build as root.

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Risks :

- pollute your system
- skip errors unwillingly
- compromission, corruption of your system
- cannot be done on the compile-server
- it gives buttons

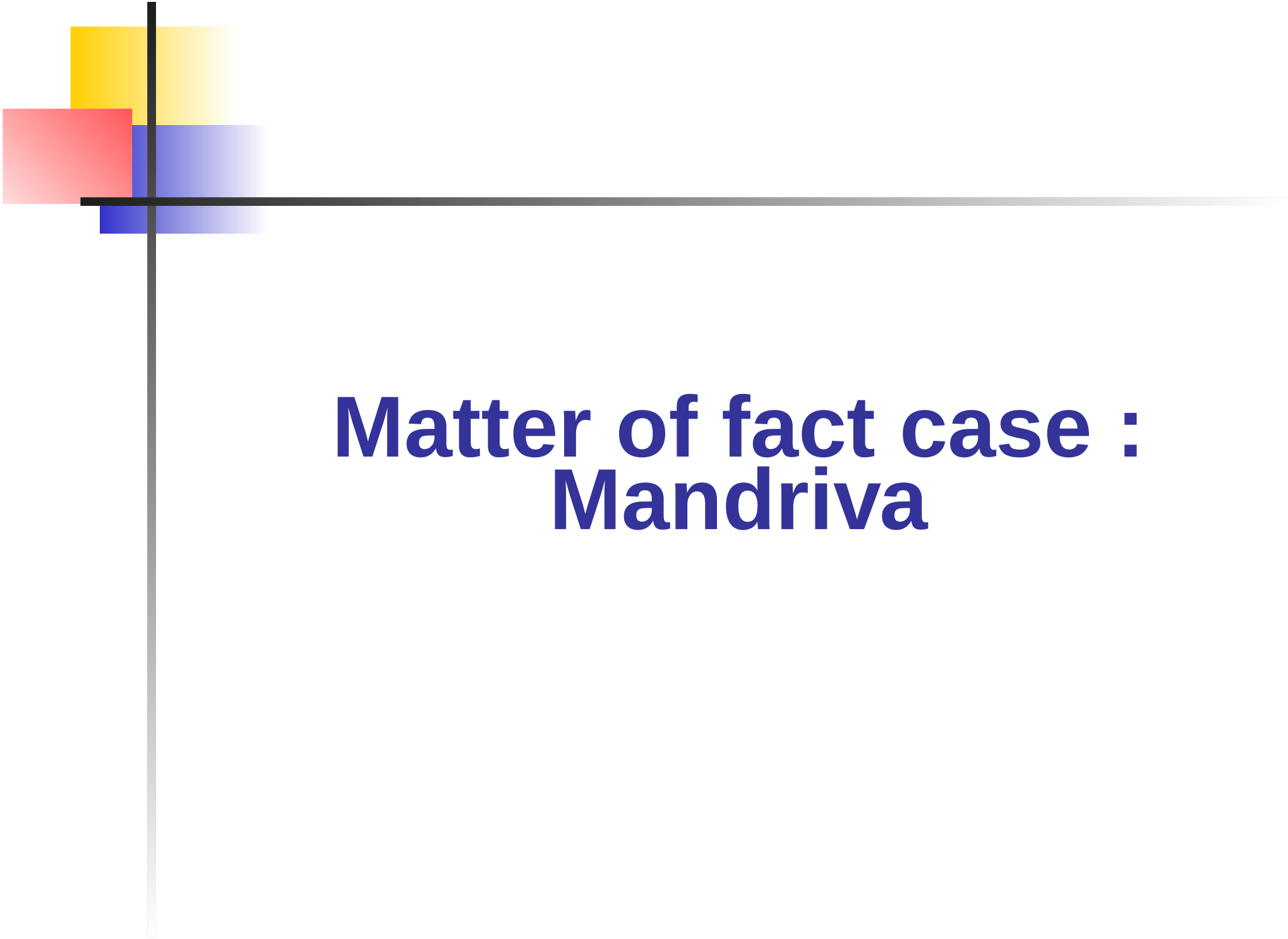
Do not change the config

The environment provided with rpm adapts the rpms one to each other.
You notably find :

- default paths
- dependances generation
- post-installation

Summary of basic rules

- document yourself
- ask people used to making packages for their distribution
- understand rather than work-around
- a package well done for a distribution often becomes uncompatible with others
- get your package integrated to the distribution (it’s worth doing for other things than rpm)



Matter of fact case : Mandriva

User configuration

- define your rpm environment
- define the packager tag

User configuration

- define your rpm environment
- define the packager tag

.rpmmacros :

```
1   %_topdir      /home/users/olivier/RPM
    %_tmppath     /home/users/olivier/RPM/tmp/
    %packager     Olivier Thauvin <nanardon@zar
    %distribution Mandriva
5
    %_signature   gpg
    %_gpg_name    Olivier Thauvin
    %_gpg_path    ~/.gnupg
```

Package naming policy

- package name are lowercase (there are some exceptions)
- package name should match software name
- language modules have package name prefixed by language name

Example :

- perl
- rpm
- perl-POE

%mkrel

Problems with backport :

	cooker		stable
without	1mdv	==	1mdv
with	1mdk	>	0.1.20060mdk
	1mdv2007.0	>	1mdv2006.0

%mkrel

Problems with backport :

	cooker		stable
without	1mdv	==	1mdv
with	1mdk	>	0.1.20060mdk
	1mdv2007.0	>	1mdv2006.0

Release : 1mdk
becomes :
Release : %mkrel 1

Path for files

- Prefix has a specific meaning, do not use it
- respect the standard paths
- prefer macros
- /usr/local is reserved for softwares installed without rpm

Standard path

path	macro	usage
/usr	%_prefix	general path
/etc	%_sysconfdir	configuration
/usr/bin	%_bindir	application
/usr/sbin	%_sbindir	app. for root
/usr/lib /usr/lib64	%_libdir	libraries
/usr/share	%_datadir	data
/usr/share/man	%_mandir	man pages

Compilation and installation

Compiling a software :

- use the appropriate options (%optflags)
- take care to paths
- install files in %buildroot

Simple case with autotools

```
%build
%configure
%make

%install
%makeinstall_std
```

Spec extracts

Example of a complicated case :

```
export CFLAGS="%optflags"
./configure \
    --prefix %_prefix \
    --bindir %_bindir \
    --libdir %_libdir
# parallel make do not work
make

%install
make install DEST=%buildroot

#install one file:
cat > %buildroot%_sysconfdir/%name.cfg <<EOF
blabla
EOF
```

Include the files in the package

- all files must be listed

Include the files in the package

- all files must be listed
- use macros

Include the files in the package

- all files must be listed
- use macros
- software-specific directories must be included

Include the files in the package

- configuration files must not be replaced

  %config(noreplace) %_sysconfdir/foo

Include the files in the package

- configuration files must not be replaced

  %config(noreplace) %_sysconfdir/foo

- documentations are included with %doc %doc README . . .

Include the files in the package

- configuration files must not be replaced

  %config(noreplace) %_sysconfdir/foo

- documentations are included with %doc %doc

  README . . .

- use %find_lang for translations

  %install

  %find_lang %name

  . . .

  %files -f %name.lang

Dependances

For binary packages : usually, nothing to do

For sources :

- identical for all architectures
- suficient to build the packages
- no redundancy

Example :

```
BuildRequires: libfoo-devel
```

Libidification

Goal :

- have many versions of a library
  Name packages using major number
- have many architectures
  Name package including a prefix

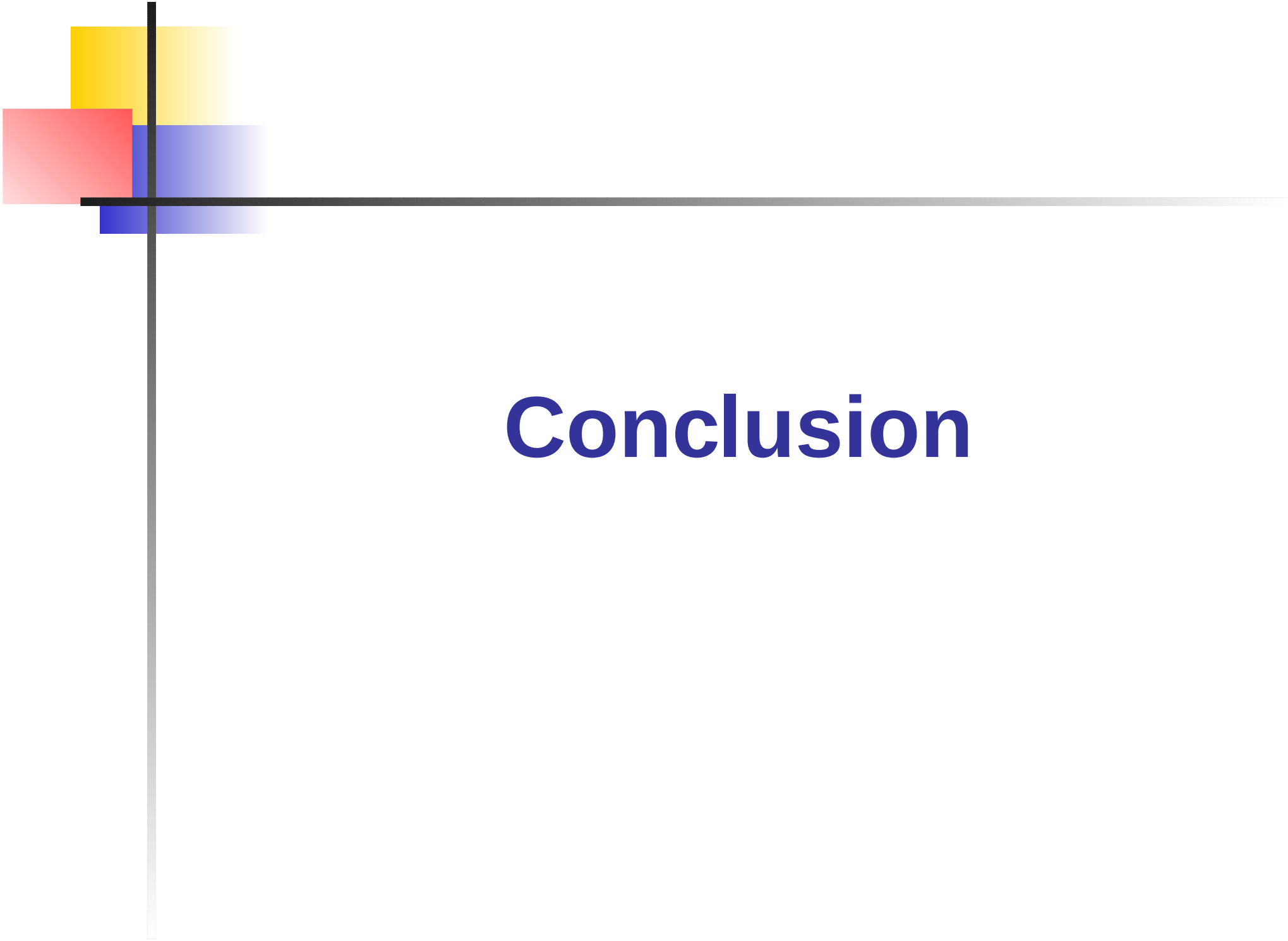
majeur :	0	1
32bits	libfoo0 lib/foo.so.0	libfoo1 lib/foo.so.1
64bits	lib64foo0 lib64/foo.so.0	lib64foo1 lib64/foo.so.1

Libidification : use case

```
%define major 0
#similar to %_lib%name%major
%define libname %name %major

...
%package -n %libname
Provide: lib%name = %version-%release

...
%files -n %libname
%defattr(-, root, root, -)
%_libdir/*.so.*
```



Conclusion

rpmlint

Tool to check packages complies to the policy

- maintained by the wonderful Michaël Scherer
- available at `http://rpmlint.zarb.org/`

```
$ rpmlint -i rpm-mandriva-setup-1.24-1mdv2007.0.i586.rpm
E: rpm-mandriva-setup no-binary
The package should be of the noarch architecture because it
doesn't contain any binaries.

E: rpm-mandriva-setup only-non-binary-in-usr-lib
There are only non binary files in /usr/lib so they should
be in /usr/share.
```

The End

This document is there :

`http://forge.ipsl.jussieu.fr/docipsl/`.

Mandriva's rpmhowto :

`http://qa.mandriva.com/twiki/bin/view/Main/RpmHowTo`.

Thanks :

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Questions ?