

Demonstration of the refenums package

This document demonstrates the [refenums](#) package with the development documents of a reference manager. The content is a simplified version of [JabRef's](#) requirements and decision records, written in [MADR](#).

Each section starts with an orange box setting up a kind of item; this produces no output. Each green box shows the $\text{\LaTeX}$ code producing the output right above it. Items are defined and referenced with shorthands such as `\defReq` and `\refReq`, which `\setupRefEnum{Req}` creates for `\defRefEnum{Req}` and `\refEnum{Req}`.

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1 Features

Features print only their short form (e.g., “Feature 1”) and each becomes a subsection.

```
72 \setupRefEnum[separator={ }, enclosing=subsection]{Feature}{ONLYSHORT}  
73 % With the default separator "-", this would print "Feature-1"
```

1.1 Feature 1: Save a library

As a researcher, I want to save my library to a .bib file, so that I can cite its entries in L^AT_EX.

```
77 \defFeature{Save a library}{save}  
78 As a researcher, I want to save my library to a \texttt{.bib} file, so  
    that I can cite its entries in \LaTeX{ }.
```

1.2 Feature 2: Autosave

As a researcher, I want every change to be saved automatically and a backup to be kept, so that I do not lose work after a crash.

```
82 \defFeature{Autosave}{autosave}  
83 As a researcher, I want every change to be saved automatically and a  
    backup to be kept, so that I do not lose work after a crash.
```

2 Risks

Risks use no separator (e.g., “Risk 1 (R1)”).

```
90 \setupRefEnum[separator={}] {R}{Risk}
91 % With the default separator "-", this would print "R-1"
```

Risk 1 (R1): *Concurrent modification*. Another process, e.g., a second JabRef instance on a network share, writes the library file while [Feature 1](#) is running.

```
95 \defR{Concurrent modification}{concurrent}
96 Another process, e.g., a second JabRef instance on a network share,
    writes the library file while \refFeature{save} is running.
```

Risk 2 (R2): *Incomplete backup*. A failure while writing a backup during [Feature 2](#) (“[Autosave](#)”) replaces a valid backup.

```
100 \defR{Incomplete backup}{backup}
101 A failure while writing a backup during \refFeatureFull{autosave}
    replaces a valid backup.
```

3 Requirements

Requirements use the default separator (e.g., “Requirement 1 (Req-1)”).

```
108 \setupRefEnum{Req}{Requirement}
109 % Titles are set in italics; titleformat={} would set them upright
```

Requirement 1 (Req-1): *Detect concurrent modification*. If the library file changed since the save started, the save is aborted with an error. Mitigates [R1](#) (“[Concurrent modification](#)”).

```

113 \defReq{Detect concurrent modification}{detect}
114 If the library file changed since the save started, the save is
    aborted with an error.
115 Mitigates \refRFull{concurrent}.

```

Requirement 2 (Req-2): *Keep valid backups*. A failure while writing a backup leaves the previous backup untouched. Mitigates R2 (“[Incomplete backup](#)”).

```

119 \defReq{Keep valid backups}{keep}
120 A failure while writing a backup leaves the previous backup untouched.
121 Mitigates \refRFull{backup}.

```

4 Decisions

Each decision record becomes a subsection. The options a record considers are defined inline, within the text. Both use the default separator.

```

128 \setupRefEnum[enclosing=subsection]{ADR}{Decision Record}
129 \setupRefEnum[inline]{Opt}{Option}
130 % Without inline, \defOpt would print "Option 1 (Opt-1): ...";
    \defOptInline prints the inline form for a single option

```

4.1 Decision Record 1 (ADR-1): Replace files atomically

Context and Problem Statement How do we write a file so that Req-1 (“[Detect concurrent modification](#)”) and Req-2 (“[Keep valid backups](#)”) hold?

Considered Options

- (*Opt-1*) *Overwrite in place*
- (*Opt-2*) *Write a temporary file and move it over the target*

Decision Outcome Chosen option: [Opt-2](#): “[Write a temporary file and move it over the target](#)”, because a failed write leaves the original file untouched and the target can be checked for changes right before the move.

```
134 \defADR{Replace files atomically}{atomic}
135
136 \paragraph{Context and Problem Statement}
137 How do we write a file so that \refReqFull{detect} and
    \refReqFull{keep} hold?
138
139 \paragraph{Considered Options}
140 \begin{itemize}
141 \item \defOpt{Overwrite in place}{inplace}
142 \item \defOpt{Write a temporary file and move it over the target}{tmp}
143 \end{itemize}
144
145 \paragraph{Decision Outcome}
146 Chosen option: \refOptFullColon{tmp}, because a failed write leaves
    the original file untouched and the target can be checked for
    changes right before the move.
```

5 Milestones

Milestones combine print name and short name (e.g., “Milestone M1”).

```
153 \setupRefEnum[combined]{M}{Milestone}
154 % Without combined, this would print "Milestone 1 (M-1)"
```

Milestone M1: *Safe saving*. Reached when [Req-1](#) and [Req-2](#) are implemented as decided in [ADR-1](#) and covered by unit tests. This mitigates Risks [R1](#) and [R2](#).

```
158 \defM{Safe saving}{safe}
159 Reached when \refReq{detect} and \refReq{keep} are implemented as
    decided in \refADR{atomic} and covered by unit tests.
160 This mitigates \zcref{enum:R:concurrent,enum:R:backup}.
```

6 German requirements

The plural of the print name defaults to the print name with an “s” appended (e.g., “Requirements”). German needs its own plural. `\zcref` follows the language of the text, here set with `babel`.

```
167 \setupRefEnum[plural=Anforderungen]{Anf}{Anforderung}
168 % Without plural, \zcref would print "Anforderungs"
```

Anforderung 1 (Anf-1): *Bibliothek speichern*. Die Bibliothek wird als `.bib`-Datei gespeichert.

```
172 \selectlanguage{ngerman}
173 \defAnf{Bibliothek speichern}{speichern}
174 Die Bibliothek wird als \texttt{.bib}-Datei gespeichert.
```

Anforderung 2 (Anf-2): *Sicherung behalten*. Ein fehlgeschlagenes Schreiben lässt die vorherige Sicherung unverändert.

```
178 \defAnf{Sicherung behalten}{sicherung}
179 Ein fehlgeschlagenes Schreiben lässt die vorherige Sicherung
    unverändert.
```

Diese Version erfüllt Anforderungen [Anf-1](#) und [Anf-2](#).

```
183 Diese Version erfüllt \zcref{enum:Anf:speichern,enum:Anf:sicherung}.
184 \selectlanguage{english}
```

7 References

The package `refenums` offers several ways to reference an item. They differ in how much of the item they show: its kind, its identifier, its title, or a combination. The following table shows each of them for [Req-2](#) from [Section 3](#).

Aim	Command	Output
Identifier	<code>\refReq{keep}</code>	Req-2
Identifier (title)	<code>\refReqFull{keep}</code>	Req-2 (“ Keep valid backups ”)
Identifier: title	<code>\refReqFullColon{keep}</code>	Req-2 : “ Keep valid backups ”
Title	<code>\refReqTitle{keep}</code>	Keep valid backups
<i>With the kind of the item</i>		
Identifier	<code>\refReq*{keep}</code>	Requirement Req-2
Identifier (title)	<code>\refReqFull*{keep}</code>	Requirement Req-2 (“ Keep valid backups ”)
Identifier: title	<code>\refReqFullColon*{keep}</code>	Requirement Req-2 : “ Keep valid backups ”

Each shorthand has a long form, which takes the kind of the item as first argument. For instance, `\refReqFull{keep}` is short for `\refEnumFull{Req}{keep}`. The command `\refReq*{keep}` is also short for `\zcref{enum:Req:keep}` of [zref-clever](#), which also references several items at once, as in [Section 5](#).

The following list references every item of this document in the form “Identifier (title)”.

- Features: [Feature 1](#) (“[Save a library](#)”), [Feature 2](#) (“[Autosave](#)”)
- Risks: [R1](#) (“[Concurrent modification](#)”), [R2](#) (“[Incomplete backup](#)”)
- Requirements: [Req-1](#) (“[Detect concurrent modification](#)”), [Req-2](#) (“[Keep valid backups](#)”)
- Decision records: [ADR-1](#) (“[Replace files atomically](#)”)
- Options: [Opt-1](#) (“[Overwrite in place](#)”), [Opt-2](#) (“[Write a temporary file and move it over the target](#)”)
- Milestones: [M1](#) (“[Safe saving](#)”)

```

222 \begin{itemize}
223 \item Features: \refFeatureFull{save}, \refFeatureFull{autosave}
224 \item Risks: \refRFull{concurrent}, \refRFull{backup}
225 \item Requirements: \refReqFull{detect}, \refReqFull{keep}
226 \item Decision records: \refADRFull{atomic}
227 \item Options: \refOptFull{inplace}, \refOptFull{tmp}
228 \item Milestones: \refMFull{safe}
229 \end{itemize}

```