

# Invenio Development Practices

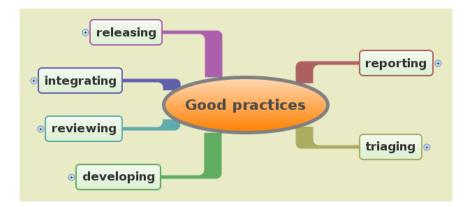
### How to Contribute

Tibor Šimko

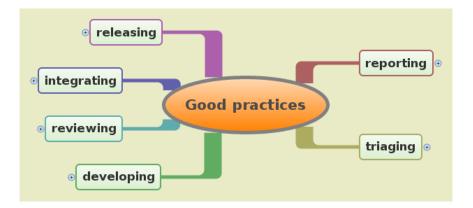
Invenio User Group Workshop 2015 Geneva, Switzerland, 12–15 October 2015

@tiborsimko

### Life cycle of a bug report



### Step 1 of 6: Reporting



### Step 1 of 6: Reporting

### An issue in the morning A feature request in the evening What else?

— after Ekon



### invenio-unapi

This repository Search		Pull requests Issues	Gist	🜲 +- TS -
inveniosoftware / i	nvenio-unapi		O Unwatch - 4	★ Star 1 <sup>%</sup> Fork 3
Invento module that impleme	ents UnAPI service hooks	— Edit		
T 13 commits	⊮ <b>1</b> branch	S₂ releases	😳 3 contributors	<> Code
**				(!) Issues 0
Branch: master - inv	/enio-unapi / +			11 Pull requests
jirikuncar Installation: post-	release version bump		Latest commit 9b469a 7 days ago	E Wiki
docs	global: initial package sep	aration	2 months ago	
invenio_unapl	Installation: post-release v	ersion bump	7 days ago	-4- Pulse
🖿 tests	Installation: fix for invenio	testing dependency	20 days ago	III Graphs
.dockerignore	global: initial package sep	aration	2 months ago	
.editorconfig	global: initial package sep	aration	2 months ago	Settings
.gitignore	global: initial package sep	aration	2 months ago	HTTPS clone URL
.travis.invenio.cfg	travis: environment creation	on fix	7 days ago	https://github.com/inv
.travis.yml	travis: environment creation	on fix	7 days ago	You can clone with HTTPS, SSH, or Subversion.
E AUTUODO			A 11	or subversion.

### invenio-records

inveniosoftware / invenio-records			O Unwatch ◄	10 ★ Star	1 % F	ork 16
Issues Pull requests Labels Milestones	Filters - Q Is:Issue Is	s:open		N	ew issue	$\langle \rangle$
□ ① 8 Open ✓ 3 Closed	Author 👻	Labels -	Milestones -	Assignee <del>-</del>	Sort -	0
Precord enhancers enhancement     #48 opened 2 hours ago by egabancho †* v0.4.0						n
api: creating record containing specific recid     way ago by kaplun *** v0.3.5	19					-4~  d1
<ul> <li>views: add check record status (exists, merged, #37 opened 27 days ago by hachreak <sup>ab</sup>/<sub>1</sub> v0.4.0</li> </ul>	deleted) help wanted					¢
end of the second	er session issues) bug			ন্থ	Ç 6	
end{tabular}     api: patch record not behaving as expected     #21 opened on 21 Aug by eamonnmag					Ç 1	
1 records: dealing with hidden fields question #13 opened on 21 Jul by kaplun					<b>Ģ</b> 4	

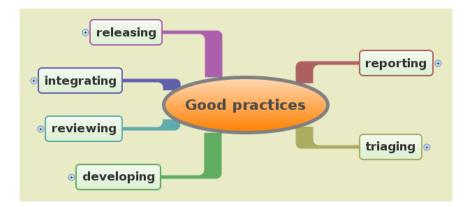
### Here is how to reproduce ...

BibUpload: investigate non-indexing of a record with 005 Edit New issue #2693							
Closed tiborsimko opened this issue on 21 Jan · 3 comments		()					
		n					
TS tiborsimko commented on 21 Jan Owner	Labels 🔅						
There seems to be a bug leading to non-indexing of some records. Here is how to reproduce the	c_BlbIndex						
problem.	c_BibUpload	4					
Let us recreate demo site and index any pending OAI repository jobs:	legacy p_critical	<u>lılı</u>					
<pre>\$ invenio-recreate-demo-siteyes-i-know \$ sudo -u www-data /opt/invenio/bin/bibindex -u admin -v9 \$ sudo -u www-data /opt/invenio/bibindex 10 \$ sudo -u www-data /opt/invenio/bibindex -u admin -v9 \$ sudo -u www-data /opt/invenio/bibindex 11</pre>	s_TIND t_bug Milestone	0					
Let's Insert new record looking like record ID 1: (note missing 001 but keeping 005)	v1.2.0 Assignee	-					
<pre>\$ wget -0 /tmp/z.xml http://pcuds86.cern.ch/record/1/export/xm \$ grep -v ''001"' /tmp/z.xml &gt; /tmp/zz.xml \$ colordiff -u /tmp/z.xml /tmp/zz.xml  /tmp/z.xml 2015-01-21 14/08/47.772553827 +0100</pre>	TS tiborsimko						

## **Reporting tips**

- If it ain't on GitHub, it does not exist.
- 2 Watch notifications in interested repositories.
- 3 Check existing issues before submitting.
- 4 Describe concrete steps how to reproduce a problem.
  - what you did
  - what was the outcome
  - what you expected instead
- 5 Submit a test case. Submit a use case.
- 6 Get involved! Comment and advise on other issues.
- 7 Join Invenio chat room.

### Step 2 of 6: Triaging



### Step 2 of 6: Triaging

No milestone No assignee A lonely feeling

- after Yosa Buson (1716-1784)



### Issues, milestones, labels, humans

inveniosoftware / invenio	Star 79 8 F	Fork 146
Issues         Pull requests         Labels         Milestones           Filters ~         Clear current search query, filters, and sorts	New issue	↔ ①
O 81 Open 🗸 183 Closed     Author - Labels - Milestones - Assig	gnee 👻 Sort 👻	n
O Allow CrossRef search in BibEdit with FREE "Query Services account" e_BibEdit legacy p_minor t_enhanceme #1277 opened on 30 Apr 2014 by sbujam = v1.3.0	ent 🗕 🖵 4	11
WebAlert: The user should be able to deactivate alerts without deleting them     webAlert legacy p_minor tenhancement #1227 opened on 30 Apr 2014 by Invenic-developers      * v1.3.0	SS 🖵 4	*- 1.11
BatchUpload: add -n option to interface c_BibEdit legacy p_major [_enhancement #1202 opened on 30 Apr 2014 by jmaritinm ** v1.3.0	🐻 🖵 3	¢
BibHarvest OAI-PMH server performance improvement <u></u>	Г З	
BibEdit: fast split of content into a new field <u>e_BibEdit</u> legacy <u>p_minor</u> <u>e_INSPIRE</u> <u>1_enhancement</u> #1134 opened on 30 Apr 2014 by jmaritim <sup>+</sup> v1.3.0	👿 🖓 I	
①         BibEdit: possibility to merge fields         c_BibEdit         tegacy         p_major         s_INSPIRE         1_enhancement           #1133 opened on 30 Apr 2014 by jmaritinm         ↑ v1.3.0 </td <td>🖉 🖓 I</td> <td></td>	🖉 🖓 I	

## **Triage process**

### who?

- 9 persons reachable at @inveniosoftware/triagers
- distributed triage team representing "technology" and "services"
- community presence and volunteering

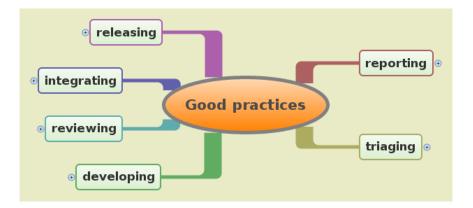
### when?

- ongoing triage of incoming issues
- once-a-week live triage brainstorms
- how?
  - github labels, milestones, assigness
  - priorities and roadmaps

## **Triaging tips**

- 1 Every issue should have an assignee.
- 2 Every issue should have a milestone.
- 3 Use additional type and priority labels.
- 4 Use additional service labels to provide overview.
- 5 Silent since a month? Ping responsible.
- 6 Nobody in sight to work on this? Discuss and triage.
- 7 No time to realistically tackle this? "Someday" or close.
- **8** No reply? Ping @inveniosoftware/triagers.

### Step 3 of 6: Developing



### Step 3 of 6: Developing

Mutable defaults The Master Is full of regrets

- after Yosa Buson (1716-1784)



### **Contributing documentation**



8.4. Forum

8.5. Twitter

Docs » 8. Community » 8.3. Chat rooms

C Edit on GitHub

#### 8.3. Chat rooms

#### 8.3.1. Gitter

We mostly use Gitter these days for both personal and group chat. You can access our chat room here:

https://gitter.im/inveniosoftware/invenio

#### 8.3.2. Google Hangouts

We are using "Invenio Developers" named hangout as well. Please contact info@invenio-software.org | if you would like to be added.

The Hangouts room is joinable by invitation only. It broadcasts messages to all developers, even those not currently logged in. Hence please use it sparely for chit chat or getting targeted help; it is more useful for broadcasting messages of wider general interest. Also, unlike mailing list, the topics are inter-mixed. For wider discussions, you may want to send an email to the mailing list and additionally alert people about it via hangouts.

### http://invenio.readthedocs.org/

### **Contributing translations**

#: modules/bibauthorid/lib/bibauthorid\_templates.py:2246
msgid "most recent documents:"
msgstr "Neueste Dokumente:"

#: modules/bibauthorid/lib/bibauthorid\_templates.py:2255 msgid "Sorry, there are no documents known for this person" msgstr "Sorry, es gibt keine Dokumente für dieser Person gekennzeichnet"

#: modules/bibauthorid/lib/bibauthorid\_templates.py:2325 msgid "The following profile is the one you were viewing before logging in: " msgstr "" "Das folgende Profil ist dasjenige, die Sie sahen, bevor Sie sich anmeldeten: "

● % 614k de.po PO unix | 2102: 0 16% Sorry, es gibt keine Dokumente für dieser Person gekennzeichnet<

❷ \* 64 \*de.po\* Text 🔘

unix | 1:21 All

## **Contributing code**

```
from invenio_ext.sqlalchemy import db
from invenio utils.datastructures import SmartDict
from .models import RecordMetadata
from .registry import functions
from .signals import (after record insert, after record update,
                      before_record_insert, before_record_update)
•class Record(SmartDict):
    0property
    def __key_aliases__(self):
        return cfal'RECORD KEY ALIASES']
    def __getitem__(self, key):
        tru:
            return super(Record, self).__getitem__(key)
        except KeuError:
            if key in self.__key_aliases__:
                if callable(self.__key_aliases__[key]):
● - 3.9k api.py Python •13 ⑤ ⑨ ⑨ ⑧ ⑥ ⑥ Git-master
                                                                     unix | 36: 0 26%
```

### The Zen of Python / Tim Peters

>>> import this The Zen of Python, by Tim Peters Beautiful is better than ugly. Explicit is better than implicit. Simple is better than complex. Complex is better than complicated. Flat is better than nested. Sparse is better than dense. Readability counts. Special cases aren't special enough to break the rules. Although practicality beats purity. Errors should never pass silently. Unless explicitly silenced. In the face of ambiguity, refuse the temptation to guess. There should be one -- and preferably only one --obvious way to do it. Although that way may not be obvious at first unless you're Dutch. Now is better than never. Although never is often better than \*right\* now. If the implementation is hard to explain, it's a bad idea. If the implementation is easy to explain, it may be a good idea. Namespaces are one honking great idea -- let's do more of those!

### **Python Anti-Patterns**

#### **Python Anti-Patterns**

#### Search docs

✓ Correctness

i Maintainability

#### Readability

Asking for permission instead of forgiveness

Comparing things to None the wrong way

Comparing things to *True* the wrong way

#### Using type() to compare types

Not using dict comprehensions

Not using dict keys when formatting strings

Not using itens() to iterate over a dictionary

Not using named tuples when returning more than one value from a function Documentation » @ Readability » Using type() to compare types

View page source

O Check now, If your code contains this pattern. Learn more ...

#### Using type() to compare types

The function <u>isinstance</u> is the best-equipped to handle type checking because it supports inheritance (e.g. an instance of a derived class is an instance of a base class, too). Therefore <u>isinstance</u> should be used whenever type comparison is required.

#### Anti-pattern

The if statement below uses the pattern if type(OBJECT) is types.TYPE to compare a <u>Rectangle</u> object to a bull-in type (<u>ListType</u> In this example). This is not the preferred pattern for comparing types.

import types

class Rectangle: def \_\_init\_\_ (self, width, height): self.width = width

http://docs.quantifiedcode.com/python-anti-patterns/

## Code with style

```
from ...api import Record
logger = get_task_logger(__name__)
@celeru.task
•def create record(json, force=False):
    from invenio_ext.sqlalchemy import db
    tru:
        return Record.create(json).get('recid')
    except exc.IntegrityError:
        if force:
            current_app.logger.warning(
                                        (Q)" format(icc
● - 1.4k api.py Python •1 •3 ⑤ ⑦ ⑨ ⑧ ⑥ ⑥ Git-master
                                                              unix | 34:30 67%
 Line Col Level
                         Message (Checker)
        1 warning 1001 found unsorted imports... (puthon-flake8)
    Я
       1 warning D100
                         Missing docstring in public module... (puthon-flake8)
    1
      1 warning D103
   34
                         Missing docstring in public function... (puthon-flake8)
   40
      13 error F821
                         undefined name 'current app'... (puthon-flake8)
 ② % 304 *Flycheck errors* for buffer api.py Flycheck errors utf-8 | 3: 0 All
```

pep8 · pep257 · flake8 · isort

### **Sensible commit history**

Jiri Kuncar 2015-06-24 16:04 global: preparatio	n for new data model
Esteban J. G. Gabancho 2014-06-04 18:03 JsonAlchemy: ini merged_recid = None	tial release
Jiri Kuncar 2015-06-24 16:04 global: preparatio	n for new data model
<pre># FIXME for val in get_record(recid).get("978d", []):</pre>	
Esteban J. G. Gabancho 2014-06-04 18:03 JsonAlchemy: ini	tial release
<b>try:</b> merged recid = int(val)	
break	
except ValueError:	
pass	
● % 4.8k models.py Python •4 Blame ⑤ ⑨ ⑨ ⑧ ⑥	Git-master unix   80:12 51
Commits in master	
	Jiri Kuncar 4 months
	Jiri Kuncar 4 months
aldc8al * installation: disabled Invenio dependency	Jiri Kuncar 4 months
e59d151 * global: preparat <mark>i</mark> on for new data model	Jiri Kuncar 4 months
a685b1d * global: initial package separation	Jiri Kuncar 4 months Jiri Kuncar 4 months Jiri Kuncar 4 months
% 13k *magit-log: invenio-records Magit Log	utf-8   76:26 29%

### Local kwalitee check 1 of 2

<kwalitee> (M\_34310) "/private/src/invenio-records> kwalitee check message master..upstream/pr/31
commit 2c5dfd523e60d2a29711fd56668361270843ac1e

global: simplification of access right check

 BETTER Uses cache containing permitted restricted collections for given user and cached list of restricted collections to perform access right check.

Signed-off-by: Jiri Kuncar <jiri.kuncar@cern.ch>

Everything is OK.

<kwalitee> (M=34310) ~/private/src/invenio-records>

🕽 \* 505 **\*ansi-term\*** Term 🔘 : char run

utf-8 | 14:53 All

#### \$ kwalitee check message <sha1a..sha1b>

### Local kwalitee check 2 of 3

<pre><kwalitee> (M=34310)</kwalitee></pre>	kwalitee	check	files	master	upstream	/pr/31
commit 2c5dfd523e60d2a29711fd56668361270843ac1e						
global: simplification of access right check						

 BETTER Uses cache containing permitted restricted collections for given user and cached list of restricted collections to perform access right check.

Signed-off-by: Jiri Kuncar <jiri.kuncar@cern.ch>

```
invenio_records/access.py
22:1: F401 'warnings' imported but unused
34: D103 Missing docstring in public function
142: D202 No blank lines allowed after function docstring (found 1)
```

1 <kwalitee> (M=34310) **~/private/src/invenio-records>** 

🕽 \* 669 **\*ansi-term\*** Term 🛞 : char run

utf-8 | 16: 0 All

#### \$ kwalitee check files <sha1a..sha1b>

### Local kwalitee check 3 of 3

<kwalitee> (M\_34310) "/private/src/invenio-records> kwalitee prepare release ..upstream/pr/31 Improved features

 Uses cache containing permitted restricted collections for given user and cached list of restricted collections to perform access right check.

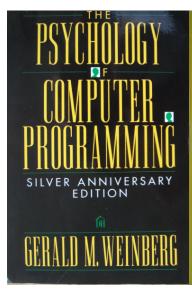
<kwalitee> (M=34310) "/private/src/invenio-records>

🛛 \* 335 **\*ansi-term\*** Term 🔘 : char run

utf-8 | 9:53 All

#### \$ kwalitee prepare release <sha1a..sha1b>

### **TPoCP / Gerald Weinberg**



#### 

#### ABOUT THE BOOK

IN THIS SILVER ANNIVERSARY EDITION. Gerald M. Weinberg updates his landmark 1921 classic with a new Preface, chapter-by-chapter commentary, and straight-framtheheart observations on topics that affect the professional life of programmers.

Providing a characteristically finish perspective on his original insights. Weakeng atoms to bajos han an skinktys relevant to body's listes in programming, and highlights the similarities and differences between now and hum. Selected Contens include: Programming on Social Achity + YANObajosi Internament - Sightes Togramming the social Achity - Montanto, Traning, and Experience + Some Principles for Programming and specific principles for the programming the social achieves and the social achieves and the social achieves the social headers Social Achieves - Yanobajos and the social achieves and the social headers Social Achieves - Yanobajos and the social achieves and the social headers Social achieves and the social achieves and the social achieves and the social headers achieves and the social achieves and the social achieves and the social achieves and the social headers achieves achieves achieves a social achieves achieves a social achieves achieves achieves a social achieves a social achieves achi

Regarded as one of the first back to pioner a people oriented approach to compuing. The hydrology of Computer Programming andures as a penetrating approximation of the instilligence, skill, wormwork, and problem solving power of the computer programme. Dozna House Ability is provid to make this important test vanisable to the ware generation, of Weinberg fans – and to encourage readers of the first edition to return to its valuable learns.

#### ABOUT THE AUTHOR

CREAD An WHERE'S Degan his corese in programming some fortyproves ago, co a tail member of BM and later as manager of data processing, among other positions, and ca manager of supervisory programming for Program Manager Manager and a single bacano and the bask Assess names in adhesen engineering and a internationally member for his invariant and where any another manager and single states and the single section of the single section manager in more than to a danar publications are The Sector of Consuling, Seconing a licensia (leader, and the Caulty Schwarz Managerint series (la divelable from Court House Publishing).



DORSET HOUSE PUBLISHING 3143 Broadway, Suite 2B

www.donathouse.com



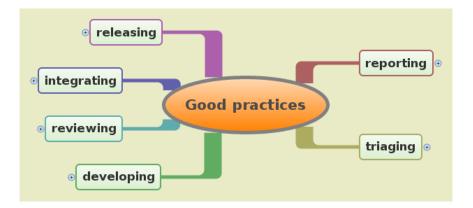
## **Egoless Programming**

- 1 Understand and accept that you will make mistakes.
- 2 You are not your code.
- 3 No matter how much "karate" you know, someone else will always know more.
- 4 Don't rewrite code without consultation.
- 5 Treat people who know less than you with respect, deference, and patience.
- 6 The only constant in the world is change.
- 7 The only true authority stems from knowledge, not from position.
- 8 Fight for what you believe, but gracefully accept defeat.
- 9 Don't be "the guy in the room".
- 10 Critique code instead of people.

### **Re-read CONTRIBUTING.rst**

- 1 Before starting any wider-impact changes, submit a ticket and use a discussion channel.
- 2 Publish your code under GNU General Public License.
- 3 Choose good starting point to build your topical branch upon.
- 4 Make things easily configurable and reusable by others.
- 5 Create logically separate commits for logically separate things.
- 6 Use sensible commit messages and stamp them with QA and ticket directives.
- 7 Include test cases with the code.
- 8 Include documentation with the code.
- 9 Check the overall code kwalitee.
- 10 Send the code for review and integration.
- Help improving overall development, deployment, and operational bandwidth.
- 2 Share thoughts, needs, requirements, solutions, "howto" recipes with others.

### Step 4 of 6: Reviewing



### Step 4 of 6: Reviewing

Ecce pull request! Undocumented features Still shivering

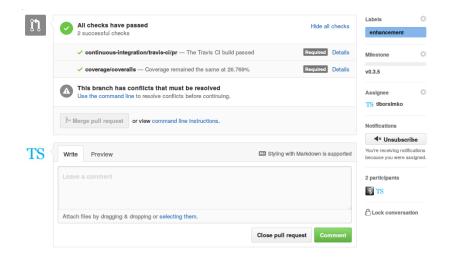
— after Akutagawa Ryunosuke (1892-1927)



### **Code reviews**

tibor	<b>simko</b> c	ommented on the diff 23 days ago		
			c_Bibindex	
nodule	s/miscu	til/lib/inveniccfg.py View full changes	In_review	
Σ <mark>†</mark>	ż	@@ -879,21 +885,25 @@ def cli_cmd_load_demo_records(conf):	legacy	
879	885	"%s/bin/bibupload 1" % CFG_PREFIX,	p_major	
880	886	"%s/bin/bibdocfiletextifywith-ocrrecid 97" % CFG_PR	s INSPIRE	
881	887	"%s/bin/bibdocfiletextifyall" % CFG_PREFIX,	•	
882		- "%s/bin/bibindex -u admin" % CFG_PREFIX,		
	888	+ "%s/bin/bibindex -u admin -w collection" % CFG_PREFIX,	Milestone	4
15 ut	oorsimk	o added a note 23 days ago Owner J X	Assignee	-
lf a ch	ange is	<ul> <li>added a note 23 days ago</li> <li>Owner</li> <li>Image: Comparison of the same time</li> </ul>	Assignee	ł
lf a ch docun	nange is nentatio	required in index scheduling, then I guess we should update HOWTO Run and other in at the same time	, in the second s	4
lf a ch docun	nange is nentatio	required in index scheduling, then I guess we should update HOWTO Run and other	kaplun	
If a ch docun	nange is nentatio aplun ac	required in index scheduling, then I guess we should update HOWTO Run and other in at the same time	kaplun Notifications	ribe ficatior
If a ch docun	nange is nentatio aplun ac	required in Index scheduling, then I guess we should update HOWTO Run and other in at the same time ded a note 23 days ago Collaborator × like It was just an Intended speed-up during Installation.	kaplun Notifications	ribe fication

### **Code coverage**



### **Thinking forward**

Travis Cl Blog Status Help	Tibor Simko
inveniosoftware / invenio-records 🔾 🚥	failing
Current Branches Build History Pull Requests > Build #169	🇱 Settings 👻
<ul> <li>master installation: mock&gt;=1.0.1</li> <li>Signed-off-by: Jiri Kuncar <jiri.kuncar@cern.ch></jiri.kuncar@cern.ch></li> <li>Jiri Kuncar authored and committed</li> </ul>	# 169 passed       Image: Commit 34310a1         Image: Compare 41bce4434310a1       Image: Compare 41bce4434310a1         Image: Compare 41bce4434310a1       Image: Compare 41bce4434310a1     <

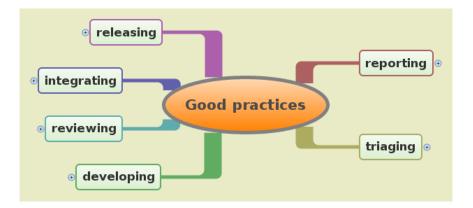
#### Build Jobs

1	# 169.1	. ▲	REQUIREMENTS=lowest REXTRAS=docs,tests	(S) 9 min 20 sec
	# 169.2	A  > Python: 2.7	TREQUIREMENTS=release REXTRAS=docs,tests	(§) 4 min 45 sec
1	# 169.3		REQUIREMENTS=devel REXTRAS=docs,tests	🕲 8 min 27 sec

## **Reviewing tips**

- Every PR should preserve or increase code coverage.
   If it ain't green, it ain't finished.
- Check it as a black box. Input, magic, output.If it ain't documented, it ain't finished.
- Check it as a white box. Implementation details.If it ain't styled, it ain't finished.
- Check it as a release news. Messages only.
   If it does not announce anything, it may not be finished.

### Step 5 of 6: Integrating



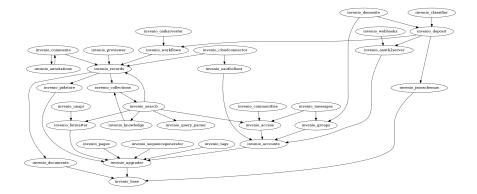
## Step 5 of 6: Integrating

Covered with tests Instantly I'd like to merge In this dream of ours!

- after Ochi Etsujin (1656?-1739?)



### Inter-module relations



### **Inter-service relations**

INSPIRE





theicane to <u>province</u>, the high theory, thypics information system. Hease direct questions, conservation or concerning to function determination or



@tiborsimko

## Integrating tips

- Check the signature karma.
   If it ain't signed, it ain't finished.
- 2 Check the counter-signature karma. If it ain't counter-signed, it ain't finished.
  - Reviewed-by
  - :shipit:
  - cross-team signatures
- 3 Check it from the helicopter.

If it ain't green, it ain't finished.

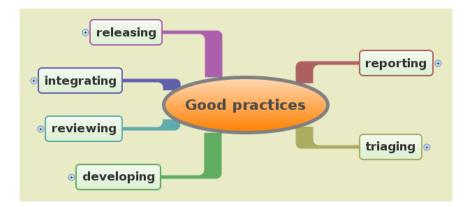
If it ain't understandable, it ain't documented.

4 Check its neighbourhoods.

If it changes pre-existing tests, beware of compatibility.

If it removes API-like functions, check outside usage.

### Step 6 of 6: Releasing



### Step 6 of 6: Releasing

The old repository A tag jumps in Plop

- after Matsuo Basho (1644-1694)



### **Structured release notes**

### Invenio v1.2.1 is released

Invenio v1.2.1 was released on May 21, 2015.

#### About

Invenio is a digital library framework enabling you to build your own digital library or document repository on the web.

This stable release update is recommended to all Invenio sites using v1.2.0 or previous releases.

#### **Security fixes**

- BlbAuthorID:
  - Improves URL redirecting by properly quoting all URL parts, in order to better protect against possible XSS attacks.
- WebStyle:
  - Adds back the HttpOnly cookle attribute in order to better protect against potential XSS vulnerabilities. (#3064)

### **Structured release notes**

### commit label

### release notes section

SECURITY INCOMPATIBLE NEW BETTER FIX NOTE (AMENDS) (missing)

Security fixes Incompatible changes New features Improved features Bug fixes Notes (amending past messages) (developers only)

### **Releasing tips**

- 1 Cross-check CI green lights.
- 2 Cross-check Read The Docs documentation builds.
- 3 Cross-check demo site builds.
- 4 check-manifest
- 5 Check author list. Add newcomers.
- 6 Update I18N message catalogs.
- 7 Update version number. Generate release notes.
- 8 Push a pre-release to testpypi. Try a test install from there.
- Tag it. Push it. Bump it.
- 10 Add release notes on GitHub. Tweet it. Post it.

### Community



#IUGW2012

If you want to go fast, go alone. If you want to go far, go together. (after projecthydra.org)



### Thanks for flying Invenio Happy hacking

inveniosoftware.org