

TRR

# Förbättra kvaliteten på din ABAP-kod med hjälp av öppen källkod-verktyg

Johan Wigert

# TRR öppnar dörrar till framtidens arbetsliv

- TRR är ett trygghetsråd som ägs av Svenskt Näringsliv och PTK.
- Vi drivs av resultat, inte av vinstintresse. TRR betalas av företagen som en försäkring.
- Erbjuder stöd till tjänstemän som varit anställda i ett anslutet företag i minst 12 månader och blir uppsagda på grund av arbetsbrist.
- Av de aktivt arbetssökande tjänstemännen som sökt stöd från TRR fick 90 procent nytt jobb.

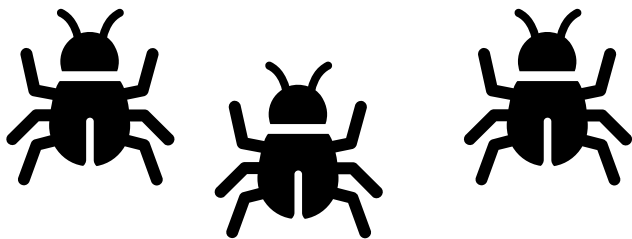


# Öppen källkod och ABAP

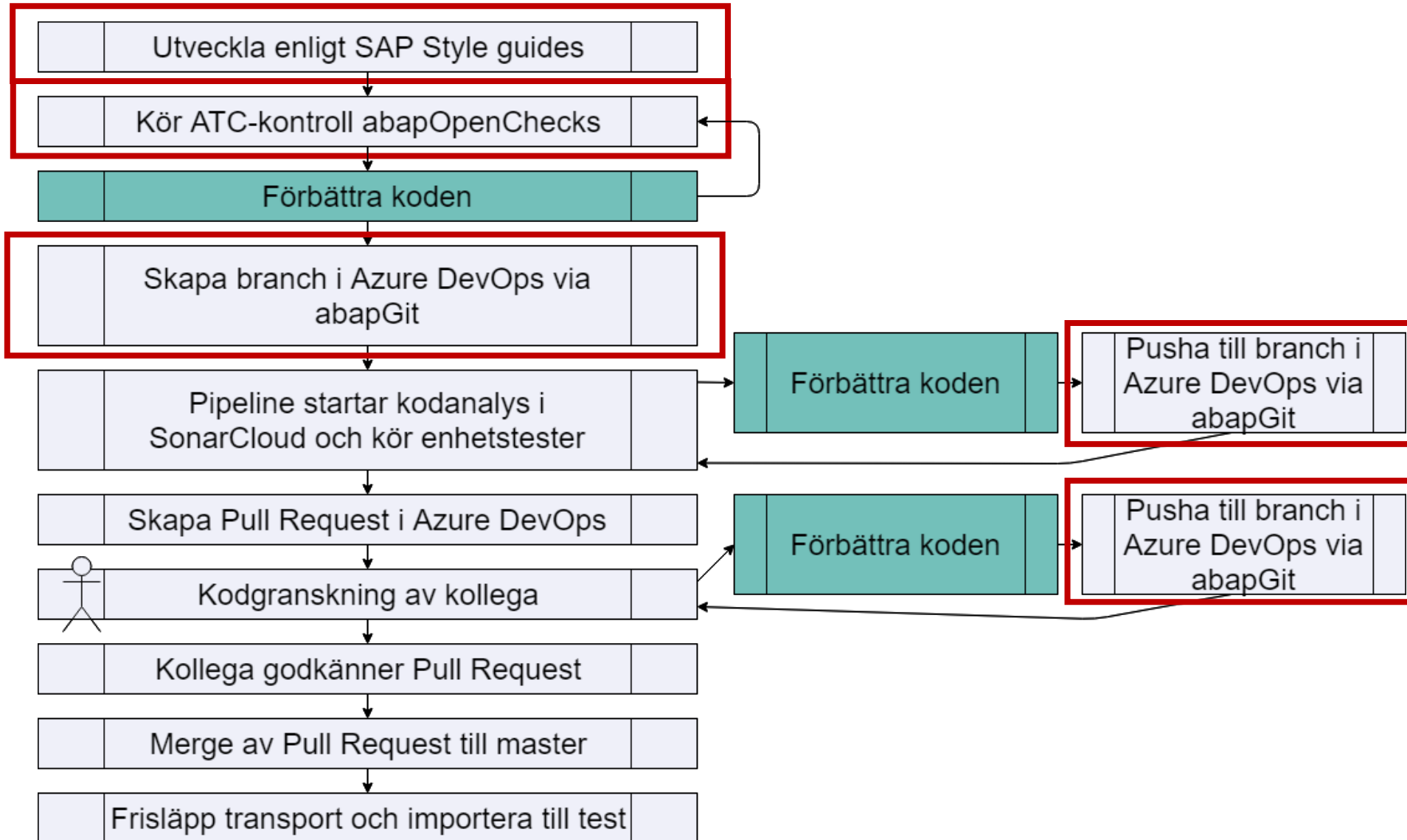
- Hur många här inne har ett GitHub-konto?
- Hur många har bidragit till ett öppen källkod-projekt?
- Hur många använder ett öppen källkod-projekt inom ABAP?
- Hur många har bidragit till ett öppen källkod-projekt inom ABAP?

# Att skapa en kritiskt bugg

- Prestandaproblem i en del av SAP CRM
- Onödig logik i event-hanteringen för affärspartner
- Byggde om och testade lösningen
- En extra refactoring där jag bröt ut ett kodblock till en ny metod precis innan transport till test
- Missade dock att flytta ett värde i den nya metoden från en lokal variabel till returparametern...



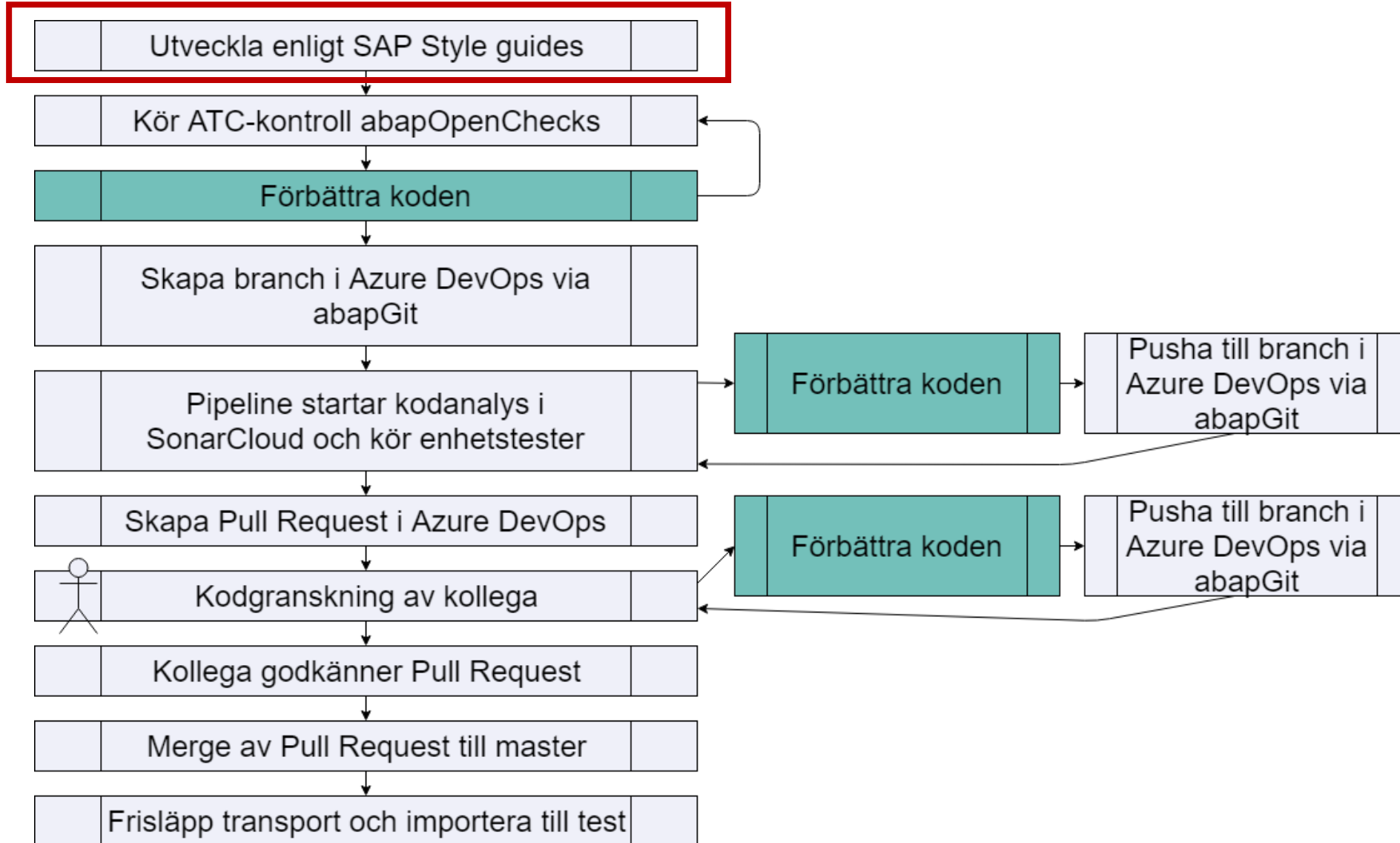
# Utvecklingsprocess



# SAP Style guides – Clean ABAP



# Utvecklingsprocess



***“... quality code is code that is easy to understand and easy to change to suit new requirements. It's easily and quickly tested by automated tests, which reduces the need for expensive manual testing. And it's loosely coupled to infrastructure concerns like databases or files.”***

Weekly Dev Tips podcast: 047 - Introducing SOLID Principles  
<https://www.weeklydevtips.com/episodes/047>



***“Writing clean code is what you must do in order to call yourself a professional. There is no reasonable excuse for doing anything less than your best.”***

*Robert C. Martin*

*Clean Code: A Handbook of Agile Software Craftsmanship*

# Och så den humoristiska definitionen...

- <https://www.osnews.com/story/19266/wtfsm/>

# SAP Style guides – Clean ABAP

- Riktlinjer för att skriva ren ABAP-kod.
- Målet är att koden ska vara:
  - Effektiv
  - Lätt att förstå
  - Robust
- <https://github.com/SAP/styleguides>
- Licens: CC BY 3.0

# SAP Style guides

- Riktlinjer och rekommendationer kring:
  - Namnsättning
  - Konstanter
  - Tabeller
  - Strängar
  - Booleans
  - Villkor
  - Best practices för objektorienterad ABAP
  - Felhantering
  - Testning
  - ...

# Exempel

## Use ABAP\_TRUE and ABAP\_FALSE for comparisons

[Clean ABAP](#) > [Content](#) > [Booleans](#) > [This section](#)

```
has_entries = abap_true.  
IF has_entries = abap_false.
```

Don't use the character equivalents 'X' and ' ' or space ; they make it hard to see that this is a Boolean expression:

```
" anti-pattern  
has_entries = 'X'.  
IF has_entries = space.
```

Avoid comparisons with INITIAL - it forces readers to recollect that abap\_bool 's default is abap\_false :

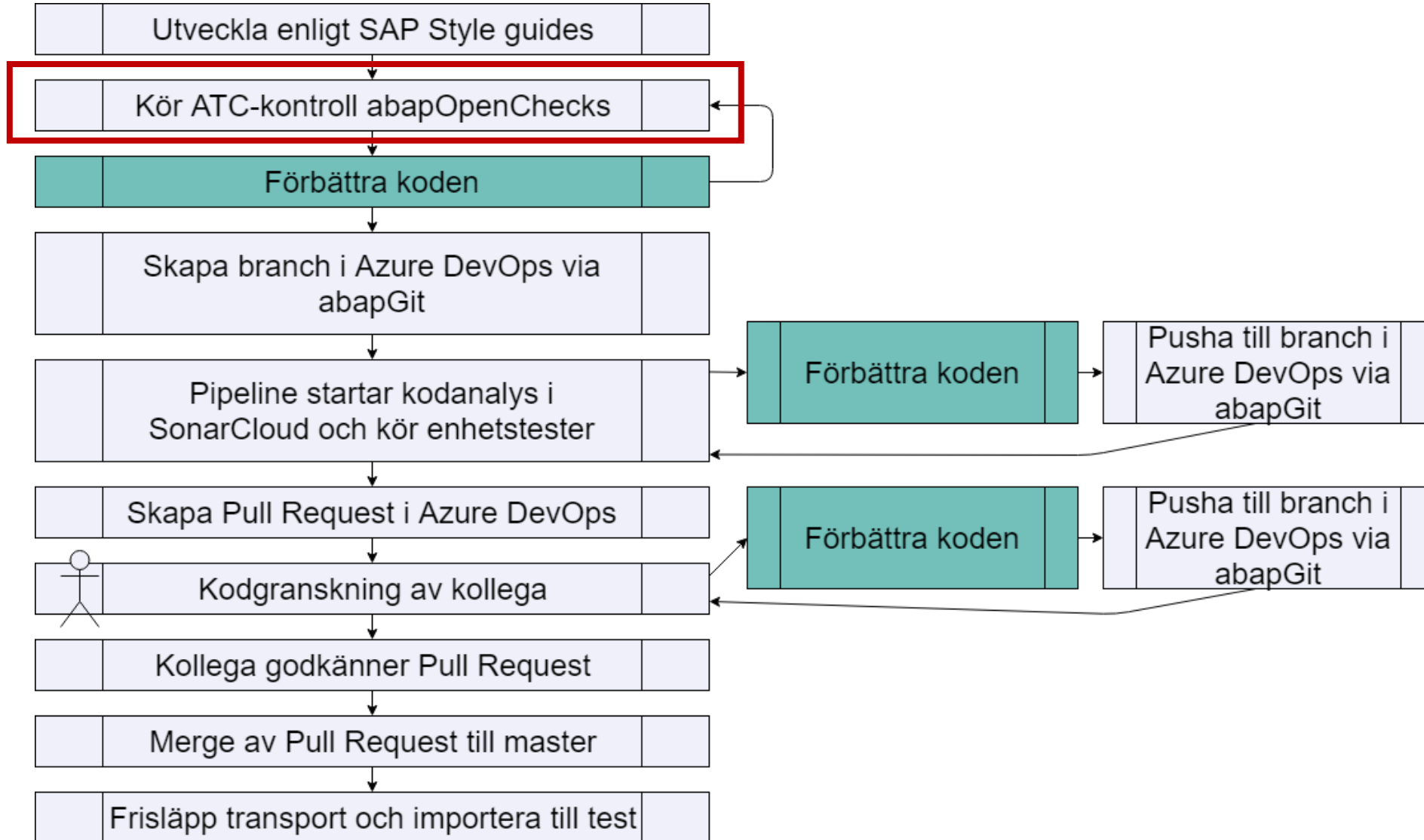
```
" anti-pattern  
IF has_entries IS NOT INITIAL.
```

ABAP may be the one single programming language that does not come with built-in "constants" for true and false. However, having them is imperative. This recommendation is based on the ABAP Programming Guidelines.

**abapOpenChecks**



# Utvecklingsprocess



# abapOpenChecks


- Kontroller till SAP Code Inspector / ABAP Test Cockpit (SCI/ATC) utöver de SAP levererar
- Täcker inte helt SAP Style guides, men till stor del
- Drygt 90 regler
- Reglerna är konfigurerbara
- Installeras via abapGit
- Licens: The MIT License (MIT)
- <https://github.com/larshp/abapOpenChecks>
- <https://docs.abapopenchecks.org/>



# Exempel: CHECK\_01 - IF in IF

## CHECK\_01 - IF in IF

 [Improve this page](#)

 RFC enabled

 [CODE](#)

```
IF condition1.  
  IF condition2.  
    ...  
  ENDIF.  
ENDIF.
```

Can be reduced to

```
IF ( condition1 ) AND ( condition2 ).  
  ...  
ENDIF.
```

or


```
ELSE.  
  IF condition.  
    ...  
  ENDIF.  
ENDIF.
```

Can be reduced to


```
ELSEIF condition.  
  ...  
ENDIF.
```

<https://github.com/SAP/styleguides/blob/master/clean-abap/CleanABAP.md#keep-the-nesting-depth-low>

### Configuration

 Options 

Error Type 

# Konfigurierung – Transaktion SCI

Code Inspector: Check Variant

Check Variant: **Z\_ABAP\_OPEN\_CHECKS**

Changed On: 2019-08-13 Last Changed By: IMPJW

Description: abapOpenChecks

☐ Transportable

Checks to Run

☐ In reference check system

☒ Locally available checks

Selection	D...	At...	Tests
<input checked="" type="checkbox"/>			abapOpenChecks
<input checked="" type="checkbox"/>			IF in IF
<input checked="" type="checkbox"/>			EXIT or CHECK outside of loop
<input checked="" type="checkbox"/>			Wrong use of TRY-CATCH
<input checked="" type="checkbox"/>			Line length
<input checked="" type="checkbox"/>			7 bit ASCII
<input checked="" type="checkbox"/>			Check pretty printer use
<input checked="" type="checkbox"/>			Functional writing style for CALL METHOD
<input checked="" type="checkbox"/>			Obsolete statement
<input checked="" type="checkbox"/>			Tab instead of spaces
<input checked="" type="checkbox"/>			Use icon_ constants
<input checked="" type="checkbox"/>			Max one statement per line
<input checked="" type="checkbox"/>			Specify SORT order
<input checked="" type="checkbox"/>			Sequential blank lines
<input checked="" type="checkbox"/>			Commented code

<input checked="" type="checkbox"/>			/ bit ASCII
<input checked="" type="checkbox"/>			Check pretty printer use
<input checked="" type="checkbox"/>			Functional writing style for CALL METHOD
<input checked="" type="checkbox"/>			Obsolete statement
<input checked="" type="checkbox"/>			Tab instead of spaces
<input checked="" type="checkbox"/>			Use icon_ constants
<input checked="" type="checkbox"/>			Max one statement per line
<input checked="" type="checkbox"/>			Specify SORT order
<input checked="" type="checkbox"/>			Sequential blank lines
<input checked="" type="checkbox"/>			Commented code
<input checked="" type="checkbox"/>			Kernel CALL
<input checked="" type="checkbox"/>			Line contains only "." or ")."
<input checked="" type="checkbox"/>			Definitions in top of routine
<input checked="" type="checkbox"/>			Empty branch
<input checked="" type="checkbox"/>			Use LINE OF

TCU(2)/200 Options

Error Type

☒ Keywords upper case

☐ Keywords lower case

☐ Upper case

☐ Lower case

☒ Report one finding per include

☒ Check dynpro flow logic

☒ Skip global class definitions

# Integrerat i eclipse (ABAP Development Tools)

The screenshot displays the Eclipse IDE interface for ABAP Development Tools. The top editor shows the source code for the class `ZCL_ACTIVITY_APPT_DOM_SRV`, specifically the method `ZIF_ACTIVITY_DOMAIN_SERVICE~CHANGE_ACTIVITY`. The code includes conditional logic for handling activity status changes.

```
79
80 IF iv_commit_work = abap_true.
81   IF iv_status = zif_activity_constant=>status-status_canceled. " If status set to cancelled delete Outlook booking
82     delete_calendar_event( iv_activity_guid ).
83   ELSEIF rr_activity_aggregate IS BOUND.
84     update_calendar_event( rr_activity_aggregate ).
85   ENDIF.
86 ENDIF.
87 ENDMETHOD.
```

Below the editor, the 'Global Class' tab is active, showing the package hierarchy: `TCU_200_impjw_sv` > `ZTRR` > `Package: ZD_ACTIVITY_DOMAIN_SERVICE (Activity Domain Service)`.

The bottom section displays the results of a static analysis tool (ATC). The 'Findings' tab shows 8 warnings, with one warning selected: 'IF in IF, can easily be reduced'. The details of this finding are shown in the table below.

Description	Check	Package	Exemption
IF in IF, can easily be reduced	IF in IF	ZD_ACTIVITY_DOMAIN_SERVICE	
Identical code blocks, dbl click for details	Identical code blocks	ZD_ACTIVITY_DOMAIN_SERVICE	

On the right side, the 'Details' tab is active, showing the 'Details of Analysis' for the selected finding: 'IF in IF, can easily be reduced'.

# Vid frisläppning av transport (SE10)

Transport Organizer: Requests

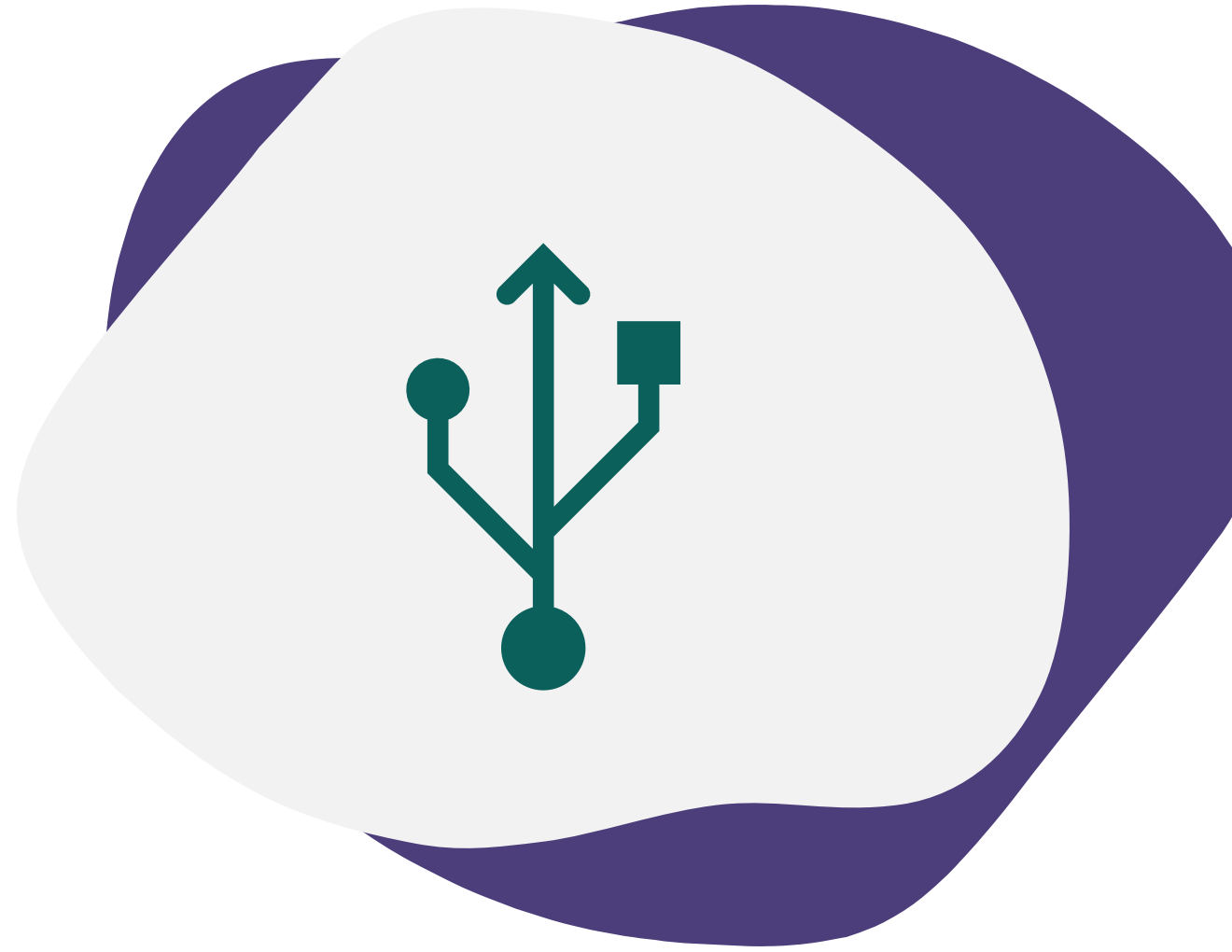
Change Requests Involving User IMPJW (Johan Wigert)

- 200 TCU Utveckling
  - Workbench Workbench request
    - > TCT System TCT
      - Modifiable
        - TCU(2)/200 Results

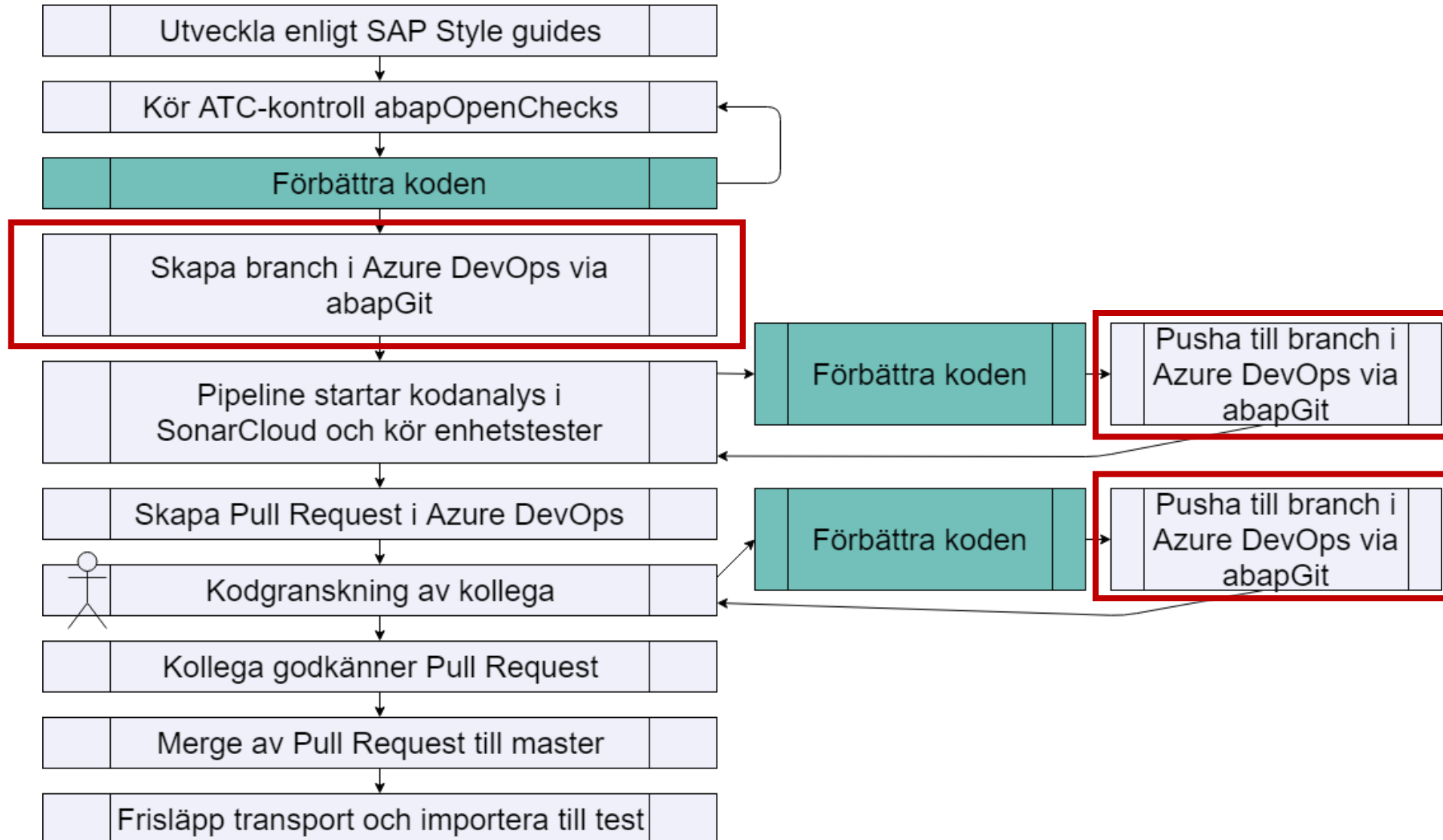
Check	Messages	Critical Errors
ATC Checks	8	0
Documentation check	0	0

Pri...	Check Title	Check Message	Object Name	Obj.	E...	Contact Person	Package
2	IF in IF	IF in IF, can easily be reduced	ZCL_ACTIVITY_APPT_DOM_SRV	CLAS		IMPJW	ZD_ACTIVITY_DOMAIN...
2	Identical code blocks	Identical code blocks, dbl click for details	ZCL_ACTIVITY_NOTE_DOM_SRV	CLAS		IMPJW	ZD_ACTIVITY_DOMAIN...
2	Identical code blocks	Identical code blocks, dbl click for details	ZCL_ACTIVITY_NOTE_DOM_SRV	CLAS		IMPJW	ZD_ACTIVITY_DOMAIN...
2	Identical code blocks	Identical code blocks, dbl click for details	ZCL_ACTIVITY_NOTE_DOM_SRV	CLAS		IMPJW	ZD_ACTIVITY_DOMAIN...
2	Identical code blocks	Identical code blocks, dbl click for details	ZCL_ACTIVITY_NOTE_DOM_SRV	CLAS		IMPJW	ZD_ACTIVITY_DOMAIN...
2	Identical code blocks	Identical code blocks, dbl click for details	ZCL_ACTIVITY_NOTE_DOM_SRV	CLAS		IMPJW	ZD_ACTIVITY_DOMAIN...
2	Identical code blocks	Identical code blocks, dbl click for details	ZCL_ACTIVITY_NOTE_DOM_SRV	CLAS		IMPJW	ZD_ACTIVITY_DOMAIN...
2	Identical code blocks	Identical code blocks, dbl click for details	ZCL_ACTIVITY_NOTE_DOM_SRV	CLAS		IMPJW	ZD_ACTIVITY_DOMAIN...

**abapGit**



# Utvecklingsprocess



# Vad är Git?

- Ett versionshanteringsprogram som skapades 2005 för att hantera källkoden till Linuxkärnan.
- Ett distribuerat versionshanteringssystem (inget centralt arkiv krävs och vem som helst kan skapa en egen kopia).
- Uppbyggt för att passa arbetsmetodiken i stora öppen-källkods-projekt.
- I grunden terminalbaserat (CLI).

# abapGit

- Funnits sedan 2014
- Git-klient för ABAP med grafiskt användargränssnitt skriven i ABAP
- Fungerar med t.ex. GitHub, GitLab, Assembla, Bitbucket, abapGitServer, SCP, AWS, TFS, Azure DevOps
- Licens: The MIT License (MIT)
- <https://github.com/larshp/abapGit>
- <https://docs.abapgit.org/>



# Användningsområden

- Enkel åtkomst till öppen källkod-projekt i ABAP
- Klona projekt
- Commita objekt till repository
- Kodgranskning
- Versionshistorik
- Pipeline (med automatisk kodanalys och enhetstester)

# abapGit - diffar

The screenshot shows the abapGit web interface. At the top, there's a navigation bar with 'HOME' and links for '+ Online', '+ Offline', 'Explore', 'Advanced', and 'Help'. Below this, the repository 'abapOpenChecks' is selected, with a link to 'SAP ZTRR'. The main content area shows the repository path 'https://github.com/larshp/abapOpenChecks.git' and the current branch 'master'. A 'Pull' button is visible. The file list shows several files, including 'ZCL\_AOC\_CHECK\_01', 'ZCL\_AOC\_CHECK\_04', 'ZCL\_AOC\_CHECK\_05', 'ZCL\_AOC\_CHECK\_06', and 'ZCL\_AOC\_CHECK\_09'. Each file has a 'view diff' button next to it. The diff view for 'ZCL\_AOC\_CHECK\_01' is shown, displaying the changes between the current state and the previous commit. The diff shows changes in the 'src/checks/zcl\_aoc\_check\_01.clas.abap' file, with lines added and removed. The diff view also shows changes in the 'src/checks/zcl\_aoc\_check\_01.clas.testclasses.abap' and 'src/checks/zcl\_aoc\_check\_01.clas.xml' files.

abapGit

abapGit HOME + Online + Offline Explore Advanced Help

★ abapOpenChecks SAP ZTRR

abapOpenChecks https://github.com/larshp/abapOpenChecks.git ★ master \$AOC

Pull Show diff Branch Tag Advanced Refresh

non-code and meta files		.abapgit.xml
CLAS	ZCL_AOC_CHECK_01	/src/checks/zcl_aoc_check_01.clas.abap /src/checks/zcl_aoc_check_01.clas.testclasses.abap /src/checks/zcl_aoc_check_01.clas.xml
CLAS	ZCL_AOC_CHECK_04	/src/checks/zcl_aoc_check_04.clas.abap /src/checks/zcl_aoc_check_04.clas.testclasses.abap /src/checks/zcl_aoc_check_04.clas.xml
CLAS	ZCL_AOC_CHECK_05	/src/checks/zcl_aoc_check_05.clas.abap /src/checks/zcl_aoc_check_05.clas.testclasses.abap /src/checks/zcl_aoc_check_05.clas.xml
CLAS	ZCL_AOC_CHECK_06	/src/checks/zcl_aoc_check_06.clas.abap /src/checks/zcl_aoc_check_06.clas.testclasses.abap /src/checks/zcl_aoc_check_06.clas.xml
CLAS	ZCL_AOC_CHECK_09	/src/checks/zcl_aoc_check_09.clas.abap /src/checks/zcl_aoc_check_09.clas.testclasses.abap /src/checks/zcl_aoc_check_09.clas.xml

# abapGit – specifik diff

Avgränsningar Bearbeta Gå till System Hjälp

abapGit

**abapGit** ▶ DIFF [Jump](#) [Split/Unified view](#)

+5 -19 ~3 /src/checks/zcl\_aoc\_check\_01.clas.abap M last change by: impjw

LOCAL	REMOTE
@@ 3 @@ CLASS zcl_aoc_check_01 DEFINITION	
3 INHERITING FROM zcl_aoc_super	3 INHERITING FROM zcl_aoc_super
4 CREATE PUBLIC.	4 CREATE PUBLIC.
5	5
6 PUBLIC SECTION.	6 PUBLIC SECTION.
7 METHODS constructor.	7 METHODS constructor.
8	8
9 METHODS check	9 METHODS check
10 REDEFINITION.	10 REDEFINITION.
11 ~ METHODS get_message_text	11 ~
12 - REDEFINITION.	
13 PROTECTED SECTION.	12 PROTECTED SECTION.
14 -	
15 METHODS contains_else	13 METHODS contains_else
16 IMPORTING	14 IMPORTING
17 !io_structure TYPE REF TO zcl_aoc_structure	15 !io_structure TYPE REF TO zcl_aoc_structure
18 RETURNING	16 RETURNING
19 ~ VALUE(rv_bool) TYPE abap_bool .	17 ~ VALUE(rv_bool) TYPE abap_bool.
20 METHODS run_check	18 METHODS run_check
21 IMPORTING	19 IMPORTING
22 !io_structure TYPE REF TO zcl_aoc_structure	20 !io_structure TYPE REF TO zcl_aoc_structure
23 ~ !io_scan TYPE REF TO zcl_aoc_scan .	21 ~ !io_scan TYPE REF TO zcl_aoc_scan.
24 PRIVATE SECTION.	22 +
25 ENDCLASS.	23 PRIVATE SECTION.
	24 ENDCLASS.

# Serialiserad kod i .abap-filer



zcl\_kontaktperson\_dom\_srv.clas.abap

+7 -3

/src/zdomain/zd\_kontaktperson/zd\_kontaktperson\_domain\_servic/zcl\_kontaktperson\_dom\_srv.clas.abap

```
...
58
59
60 METHOD zif_kontaktperson_dom_srv~change_kontaktperson.
  //
61
62 - DATA: lr_kontaktperson_entity TYPE REF TO zcl_kontaktperson_entity.
63 -
64 TRY.
65   " Kontaktperson entitet
66   .. .. .. .. ..
...
120   .. .. .. .. ..
121   DATA(lv_bp_guid) = lr_kontaktperson_entity->get_bp_guid( ).
122   DATA(lr_kontakt_address) = lr_kontaktperson_repos->get_kontaktp_addr_by
  //
123 IF ir_supplied_par->is_parameter_supplied( gc_method_par_epost ).
124   lr_kontakt_address->set_epost( iv_epost ).
125 ENDIF.
```

```
...
58
59
60 METHOD zif_kontaktperson_dom_srv~change_kontaktperson.
61 + DATA lr_kontaktperson_entity TYPE REF TO zcl_kontaktperson_entity.
62 + DATA ls_kontakt_addr TYPE zcds_kontakt_addr.
63
  //
64 TRY.
65   " Kontaktperson entitet
66   .. .. .. .. ..
...
120   .. .. .. .. ..
121   DATA(lv_bp_guid) = lr_kontaktperson_entity->get_bp_guid( ).
122   DATA(lr_kontakt_address) = lr_kontaktperson_repos->get_kontaktp_addr_by
123 + IF lr_kontakt_address IS INITIAL.
124 +   lr_kontakt_address = zcl_kontaktperson_factory=>create_kontaktperson_
125 +   is_kontakt_addr = ls_kontakt_addr ).
126 + ENDIF.
127 IF ir_supplied_par->is_parameter_supplied( gc_method_par_epost ).
128   lr_kontakt_address->set_epost( iv_epost ).
129 ENDIF.
```

# Serialiserad metadata i .xml-filer

</> zcrm\_trr\_ssp\_ec.fugr.lzcrm\_trr\_ssp\_ectop.xml -2  
/src/z\_tr\_legacy\_old/z\_bt\_objects/zssp/zcrm\_trr\_ssp\_ec.fugr.lzcrm\_trr\_ssp\_ectop.xml

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <abapGit version="v1.0.0">
3   <asx:abap xmlns:asx="http://www.sap.com/abapxml" version="1.0">
4     <asx:values>
5       <PROGDIR>
6         <NAME>LZCRM_TRR_SSP_ECTOP</NAME>
7         <STATE>A</STATE>
8         <VARCL>X</VARCL>
9         <DBAPL>S</DBAPL>
10        <DBNA>D$</DBNA>
11        <SUBC>I</SUBC>
12        <APPL>S</APPL>
13        <FIXPT>X</FIXPT>
14        <LDBNAME>D$S</LDBNAME>
15        <UCCHECK>X</UCCHECK>
16      </PROGDIR>
17    </asx:values>
18  </asx:abap>
19 </abapGit>
20
```

Side-by-side diff | f5049a1e ↔ ab1d061e

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <abapGit version="v1.0.0">
3   <asx:abap xmlns:asx="http://www.sap.com/abapxml" version="1.0">
4     <asx:values>
5       <PROGDIR>
6         <NAME>LZCRM_TRR_SSP_ECTOP</NAME>
7         <DBAPL>S</DBAPL>
8         <DBNA>D$</DBNA>
9         <SUBC>I</SUBC>
10        <APPL>S</APPL>
11        <FIXPT>X</FIXPT>
12        <LDBNAME>D$S</LDBNAME>
13        <UCCHECK>X</UCCHECK>
14      </PROGDIR>
15    </asx:values>
16  </asx:abap>
17 </abapGit>
18
```

# Commit-historik inklusive kommentarer

trygghetsradet / Trr / Repos / Commits / SAP ZTRR

Search

master SAP ZTRR / Type to find a file or folder...

Simple history (...) Author From date To date Clear Filters

Source explorer

Graph	Commit	Message	Author	Authored Date	Pull Request	Status
	ab1d061e	Merged PR 1065: AGE - #3872: Avbrott Studieersättning - MK	MK	23 hours ago	1065	✓
	867b2f74	Ändrat efter kodgranskning	MK	23 hours ago	1065	✓
	44117942	Ändrat branch	MK	2019-09-11 08:37	1065	✓
	c5f270a2	AGE - #3872: Avbrott Studieersättning - MK		2019-09-11 08:20	1065	✓
	f5049a1e	Merged PR 1054: #3077 Skapa, ändra, ta bort kontaktperson	JW	2019-09-10 10:36	1054	✓
	a7dc47af	#3077 Skapa, ändra, ta bort kontaktperson		2019-09-10 08:40	1054	✓
	9c5d7474	Merged PR 1026: RDG #5645 Teknisk uppsättning av kontor /PB	PB	2019-09-09 14:26	1026	✓
	ea9c958b	Namnjustering inparametrar	PB	2019-09-09 12:22	1026	✓
	d6a0adf7	Uppdatering ZD_OFFICE-objekt efter kodgr.	PB	2019-09-09 11:21	1026	✓
	a6e34189	RDG #5645 Teknisk uppsättning av kontor /PB		2019-09-06 14:25	1026	✓
	89a6f112	Merged PR 1051: #6218 Performanceförbättring event-hantering kontakt...	JW	2019-09-09 13:55	1051	✓
	3c3a7d2b	Code smell	JW	2019-09-09 13:44	1051	✓

# Slutord



# Styrkan i öppen källkod

- Uppskattningsvis en miljon ABAP-utvecklare i världen (1)
- Antal personer som bidragit: (2019-10-16)
  - abapGit: 78
  - SAP styleguides: 16
  - abapOpenChecks: 16
- SAP använder abapGit i SAP Cloud Platform ABAP Environment
- SAP Style guide är den officiella style guiden för SAP S/4HANA. (2)
- Snabb support och möjlighet att rätta buggarna själv

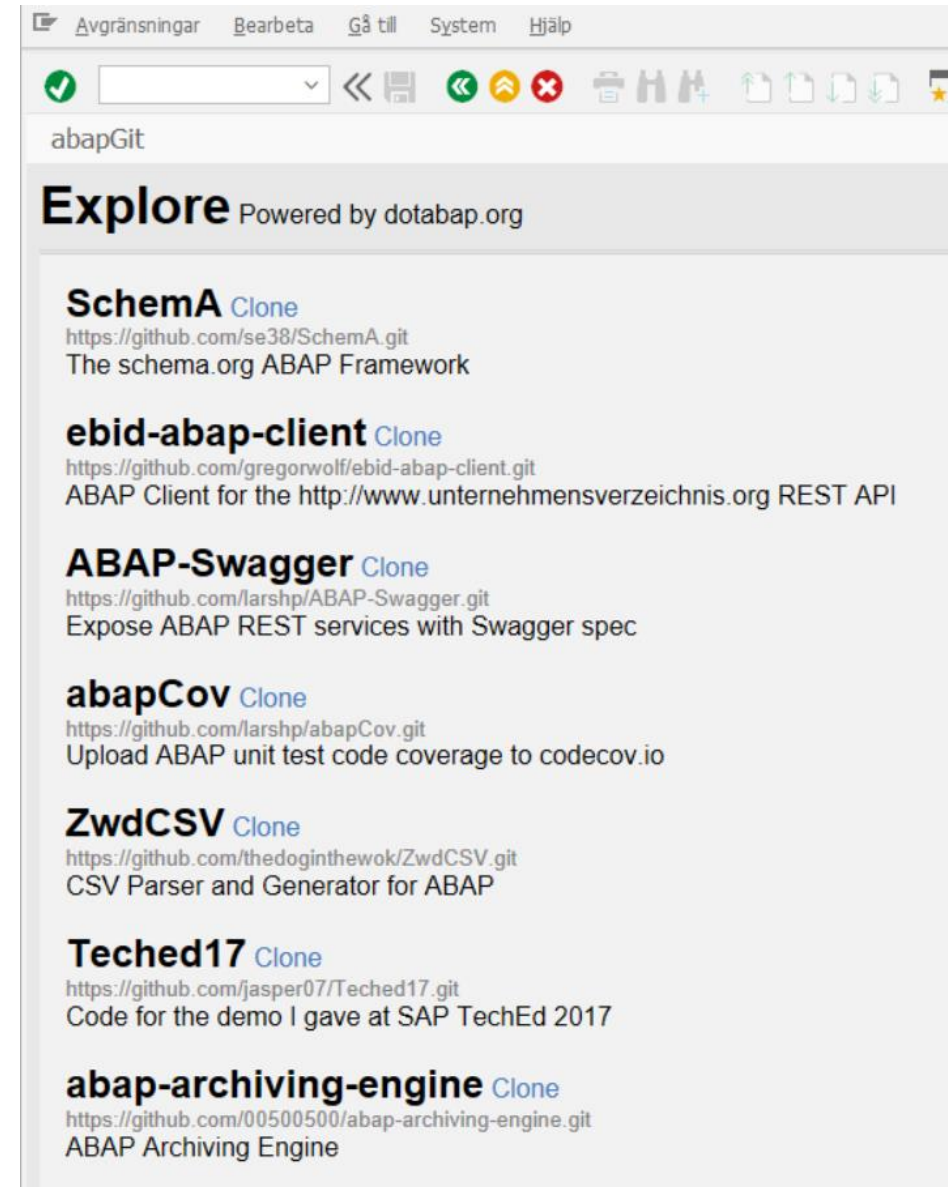
(1) Winfried Schwarzmann - Test-Driven Development with ABAP Objects (SAP Press 2019)

(2) <https://github.com/SAP/styleguides/issues/104>



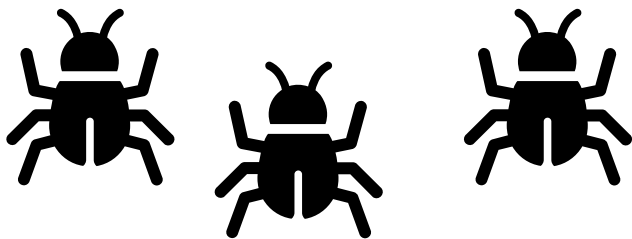
# Hitta andra öppen källkod-projekt för ABAP

- Explore i abapGit
- <https://dotabap.org/> (121 project)
- <https://blogs.sap.com/2015/11/27/abap-open-source-projects/>
- <https://blogs.sap.com/2017/11/19/getting-started-open-sourcing-abap-code/>



# Hur hittades den kritiska buggen?

- Tack till min kollega Mats med de skarpa kodgranskarögonen!
- Buggen hittades vid kodgranskning redan i utvecklingssystemet.
- Verktögen kan inte hitta alla buggar, men ge oss bättre förutsättningar.
- När verktygen får bort de enkla felen kan människorna fokusera på de svåra.



**Tack för ert  
intresse för  
öppen  
källkod i  
ABAP-världen**

Telefon 010-470 92 32

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[www.linkedin.com/in/johan-wigert/](http://www.linkedin.com/in/johan-wigert/)

<https://github.com/jwigert>