

AMEISE

ASSESSMENT REPORT

TARGET GROUP: TRAINEE
PROJECT NAME: AMEISE V5.0

Course #	160001
Course Name	TUKE
Round	2
Forename	TUKE
Surname	4tuke-02
Username	4tuke-02

Table of contents

Title	Page
REPORT SECTION 1: PROJECT'S OBJECTIVES	1
Goal achievement (TUKE 4tuke-02)	2
Performance (TUKE 4tuke-02)	3
Total costs (TUKE 4tuke-02)	5
REPORT SECTION 2: PROJECT MANAGEMENT PROCESS	5
Phases and milestones (TUKE 4tuke-02)	6
Test phases (TUKE 4tuke-02)	8
REPORT SECTION 3: PLANNING AND CONTROL	10
Monitoring (TUKE 4tuke-02)	11
Task assignment (TUKE 4tuke-02)	12
Task assignment - Tests (TUKE 4tuke-02)	14
REPORT SECTION 4: PEOPLE MANAGEMENT	15
Employee diagram (TUKE 4tuke-02)	16
Employees per phase (TUKE 4tuke-02)	17
Employees per review phase (TUKE 4tuke-02)	18
REPORT SECTION 5: PROJECT PHASES	19
Distribution of effort (TUKE 4tuke-02)	20
Specification and System Design (TUKE 4tuke-02)	22
System and Module Design (TUKE 4tuke-02)	25
Module design and Coding (TUKE 4tuke-02)	28
Coding and Testing (TUKE 4tuke-02)	31
Testing phases (TUKE 4tuke-02)	33
Manual preparation (TUKE 4tuke-02)	35
REPORT SECTION 6: REVIEWS, TESTS, AND CORRECTIONS	37
Review information (TUKE 4tuke-02)	38
AFPs lost in reviews (TUKE 4tuke-02)	39
Test information (TUKE 4tuke-02)	40
AFPs lost in tests (TUKE 4tuke-02)	41
Corrections of all documents I (TUKE 4tuke-02)	42
Corrections of all documents II (TUKE 4tuke-02)	43
REPORT SECTION 7: DOCUMENTS	44
Completeness of documents (TUKE 4tuke-02)	45
Errors in documents (TUKE 4tuke-02)	46
Number of Errors per AFP (TUKE 4tuke-02)	47
REPORT SECTION 8: CUSTOMER	48
Customer participation (TUKE 4tuke-02)	49

Table of contents

Title	Page
Customer feedback (TUKÉ 4tuke-02)	50
REPORT SECTION 9: SOFTWARE QUALITY	53
Errors remaining in documents (TUKÉ 4tuke-02)	54

REPORT SECTION 1
PROJECT'S OBJECTIVES

Goal achievement

GA	Duration	Costs	C(%)	#E/KLOC	Man(%)	#E/Page
Results	211.0	180860.0	92.76	23.77	93.61	0.51
Goals	270.0	225000.0	95.0	12.0	95.0	0.5

Legend:

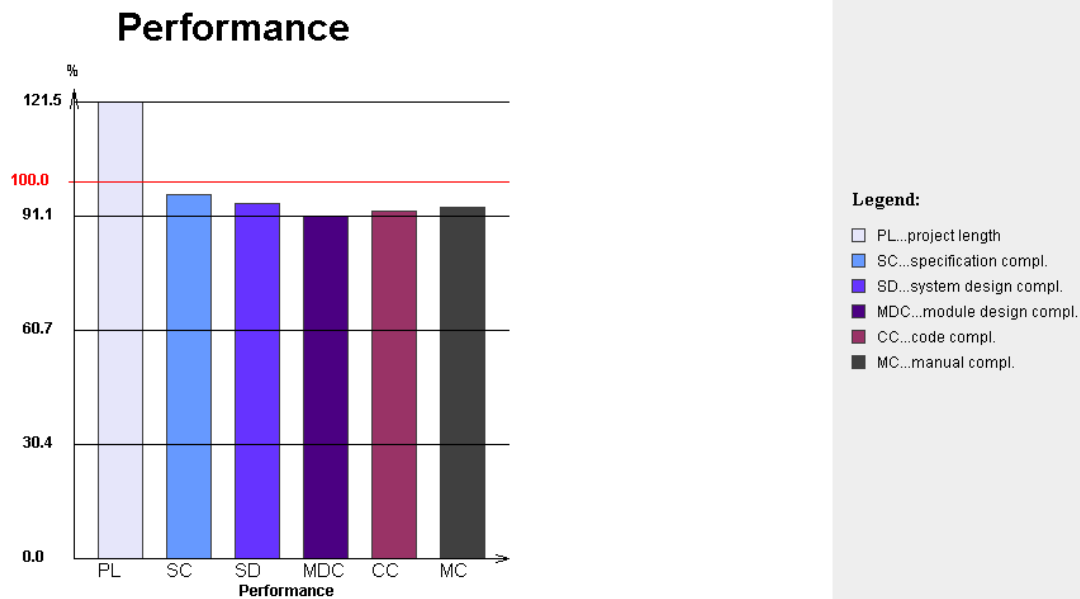
Duration ... length of project (in days), Costs ... project costs (in EUR), C(%) ... AFPs contained in the code (in percent), #E/KLOC ... number of errors (per 1000 lines of code), Man(%) ... AFPs contained in the user's documentation (in percent), #E/Page ... number of errors (per page in the user's documentation).

Description:

This table summarizes the goal achievement (GA) of the simulation run. The line 'Results' summarizes the actual results, the line 'Goals' summarizes the values as demanded by the customer.

Explanation/Recommendations:

Goal achievement is a must for every project manager. However, in some situations minor deviations might be acceptable by the customer. You should take a look at Section 8 where the customer's feedback tells you whether s/he accepts the final product or not.



Description:

This diagram summarizes the goal achievement (days and AFPs) in respect to the original project objectives. The 100 percent line represents the exact goals. The x-axis shows the project duration, the intermediate, and final documents. The y-axis prints the values relative to the project goals. Values higher than 100% indicate better performance, values lower than 100% indicate a loss in performance. (Values: project length 121.481, specification compl. 96.9266, system design compl. 94.618, module design compl. 91.3632, code compl. 92.7634, manual compl. 93.6078)

Explanation/Recommendations:

Typically the quality of documents decreases from document to document. Thus, the better the quality of the system specification, the easier it might be to keep the quality of the succeeding documents. An increase in quality between the module design document and the code indicates that a lot of effort has been spent on testing activities. The exact values of the AFPs can be found in Section 7 (Completeness of documents).

Total costs

Costs		
Total costs	Total effort	Costs per PM
180860.0	15.09	11985.7

Legend:

Total costs ... costs of the project (in EUR), Total effort ... working effort (in person months), Costs per PM ... average cost of one person month in the project (in EUR).

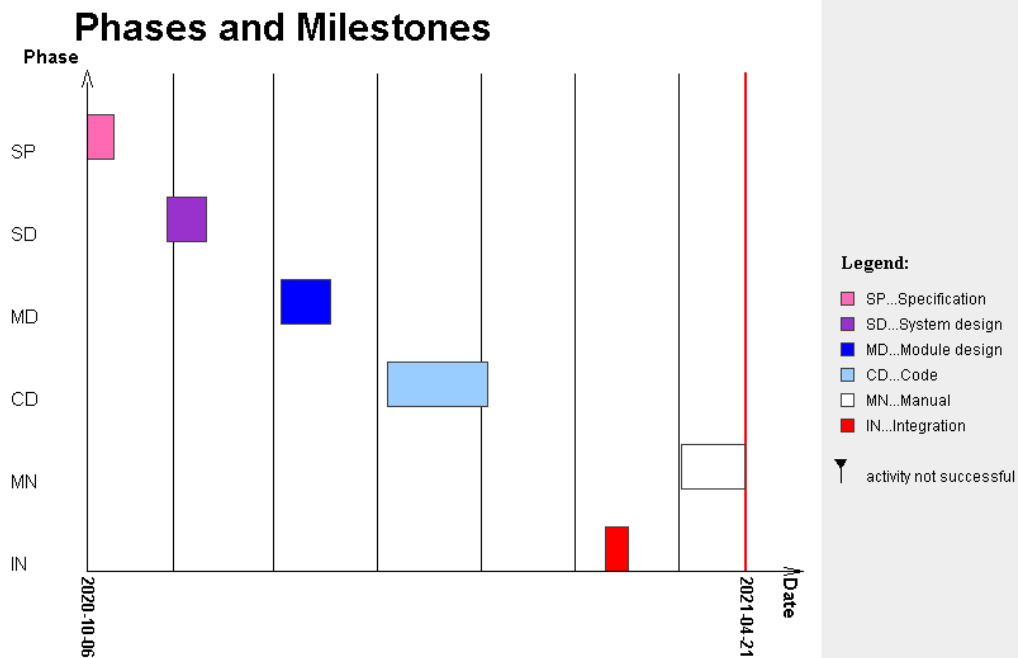
Description:

The average costs per person month are calculated by taking just the non-idle time into account (total effort). The total costs divided by the total effort then leads to the average value for the costs of one person month in the project.

Explanation/Recommendations:

For a small/medium sized project of this type values near to (or below) 10.000 EUR indicate a rather good use of working power. Values greater than 10.000 EUR indicate that there have been too much periods of idle-time. For a detailed analysis you should take a closer look at Section 4 (Deployment time).

REPORT SECTION 2
PROJECT MANAGEMENT PROCESS



Values:

Specification (2020-10-06 - 2020-10-14)
 System design (2020-10-30 - 2020-11-11)
 Module design (2020-12-03 - 2020-12-18)
 Code (2021-01-04 - 2021-02-03)
 Manual (2021-04-02 - 2021-04-21)
 Integration (2021-03-10 - 2021-03-17)

Legend:

SP ... specification phase (begin-end), SD ... system design phase (begin-end), MD ... module design phase (begin-end), CD ... coding phase (begin-end), MN ... manual and documentation preparation (begin-end), IN ... integration phase (begin-end).

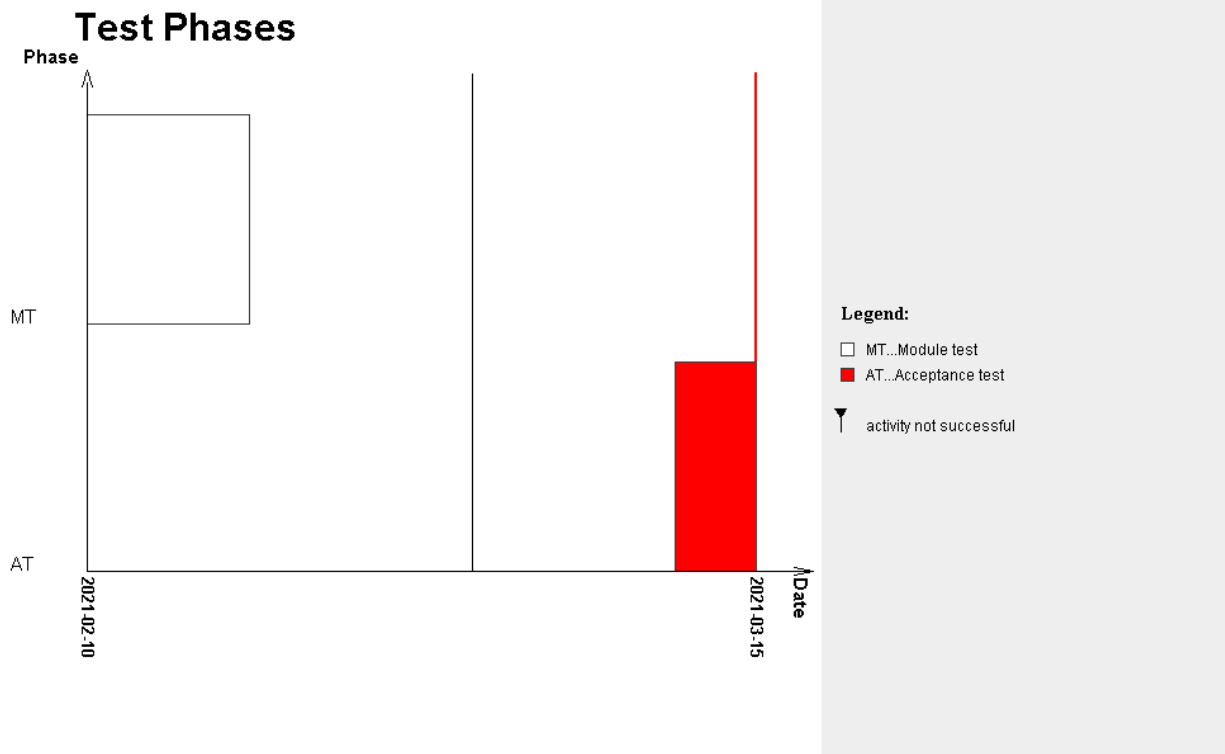
Project manager decisions and commands that led to zero activities are marked by a small black triangle.

Description:

This Gantt chart visualizes the sequence of main phases in the project. Please note that test and review activities are not listed in this diagram.

Explanation/Recommendations:

The more the project is following the Waterfall model, the more likely succeeding phases are based on tested and finalized artifacts of previous phases. However, in order to save time it is possible to overlap the phases, which then means that you need more effort to ensure consistency between the different artifacts.



Values:

Module test (2021-02-10 - 2021-02-18)

Acceptance test (2021-03-11 - 2021-03-15)

Legend:

MT... module test phase (begin-end), IT ... integration test phase (begin-end), ST ... system test phase (begin-end), AT ... acceptance test (begin-end).

Project manager decisions and commands that led to zero activities are marked by a small black triangle.

Description:

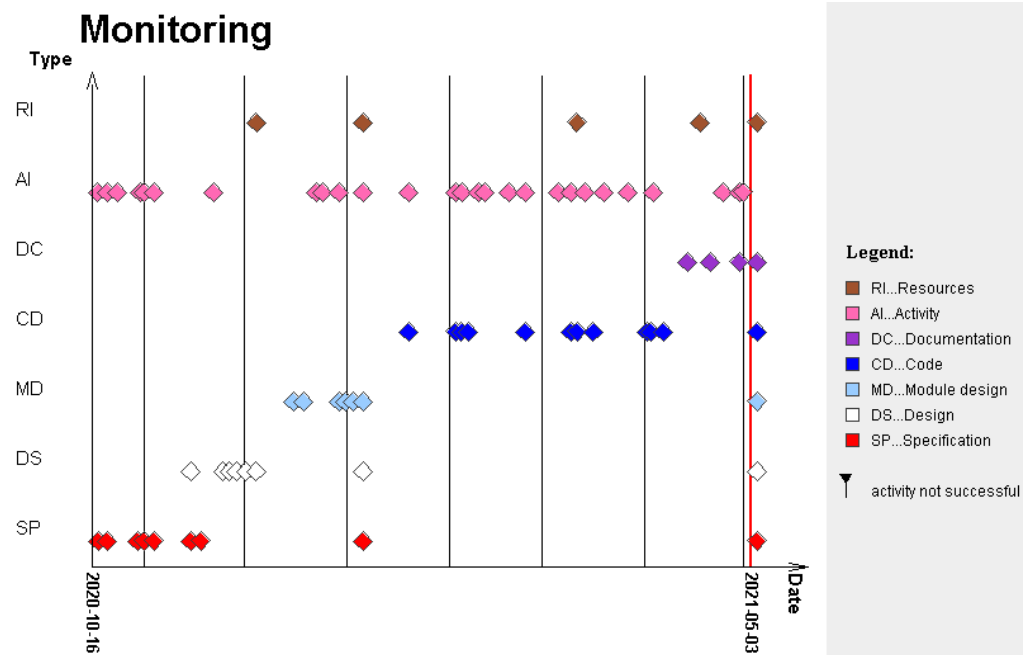
This Gantt chart visualizes the sequence of testing activities in the project.

Explanation/Recommendations:

Overlapping tests might indicate that tests are based on erroneous artifacts or that at least effort is needed to keep them consistent. Missing tests are the main reason for poor

quality of succeeding (and dependent) artifacts.

REPORT SECTION 3
PLANNING AND CONTROL



Legend:

AI ... monitoring activity (date). Project manager decisions and commands that led to no result are marked by a small black triangle.

Description:

This chart visualizes all monitoring activities during the project.

Explanation/Recommendations:

Monitoring activities are vital for good project management. However, too many monitoring activities might also be interpreted as a loss in control over the project.

Task assignment

Phase	Task assignment	
	Employees names	Number of employees
Specification	Christine Richard Thomas	3.0
Specification review	Christine Thomas	2.0
Specification corr.	Christine	1.0
Total (SP)	-	3.0
System design	Christine Richard Thomas	3.0
System design review	Christine Thomas	2.0
System design corr.	X	0.0
Total (SD)	-	3.0
Module design	Christine Richard Thomas	3.0
Module design review	Christine Thomas	2.0
Module design corr.	X	0.0
Total (MD)	-	3.0
Code	Christine Diana Thomas	3.0
Code review	Christine Diana Thomas	3.0
Code corr.	Christine Diana Thomas	3.0
Total (CD)	-	3.0
Manual	Bernd Christine Thomas	3.0
Manual review	Bernd Thomas	2.0
Manual corr.	X	0.0
Total (MN)	-	3.0

Legend:

Phase ... Major phases during the project, Employees names ... names of employees that are assigned to tasks related to the specific phase, Number of employees ... number of employees assigned to tasks related to the specific phase (total sum).

Description:

This table summarizes the employees (developers) assigned to specific phases in the project.

Task assignment - Tests

Phase	Tasks assignment - Test Phases	
	Employees names	Number of employees
Module test	Christine Diana Thomas	3.0
Module test corr.	Thomas Diana Christine	3.0
Total (MT)	-	3.0
System test	X	0.0
System test corr.	Thomas Diana Christine	3.0
Total (ST)	-	3.0
Integration test	X	0.0
Integration test corr.	Thomas Diana Christine	3.0
Total (IT)	-	3.0
Acceptance test	Customer	0.0
Acceptance test corr.	Christine Christine Thomas Diana Christine	3.0
Total (AT)	-	3.0

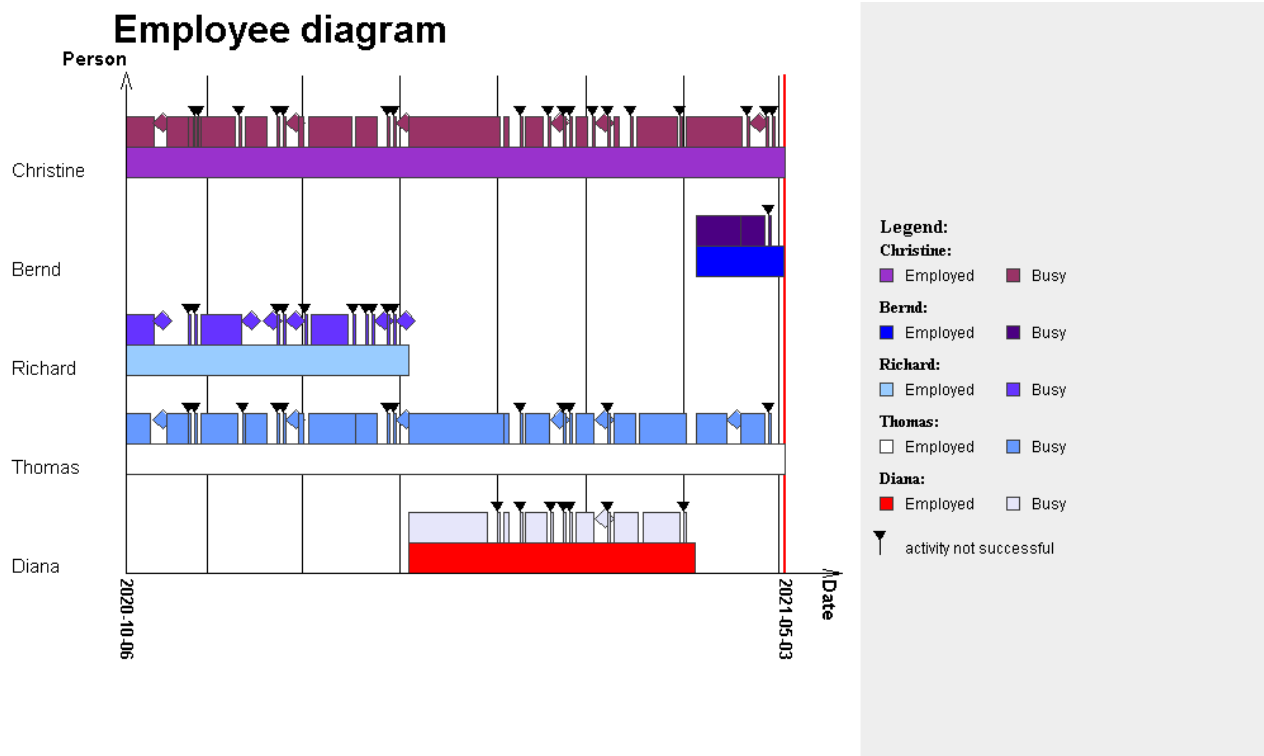
Legend:

Phase ... Major phases during the project, Employees names ... names of employees that are assigned to tasks related to the specific phase, Number of employees ... number of employees assigned to tasks related to the specific phase (total sum).

Description:

This table summarizes the employees (developers) assigned to specific testing phases in the project.

REPORT SECTION 4
PEOPLE MANAGEMENT



Legend:

Employed ... Time the employee is on the payroll of the project (begin-end), Busy ... Time the employee is working/contributing on/to the project (begin-end).

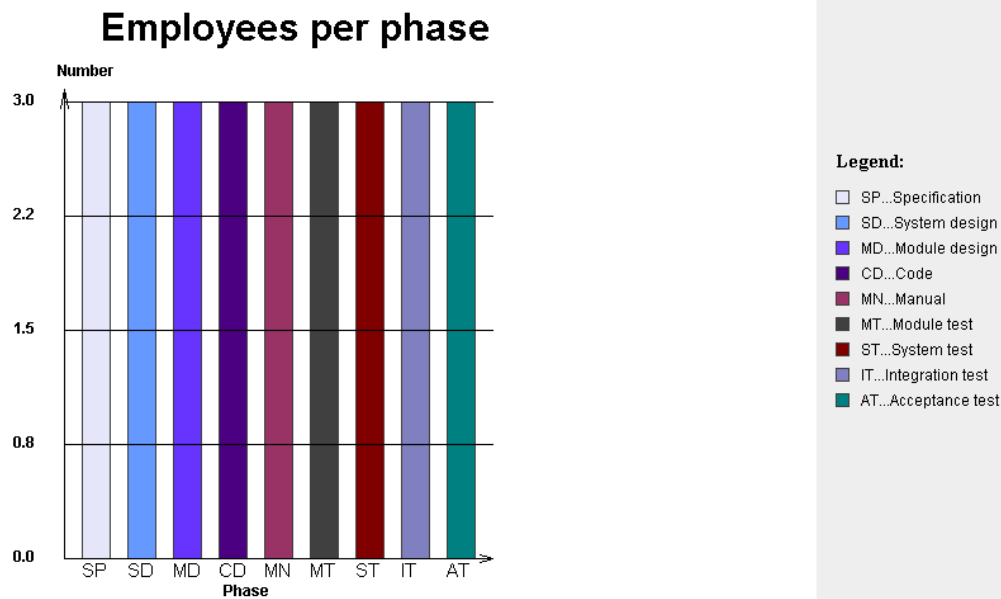
Project manager decisions and commands that led to zero activities are marked by a small black triangle.

Description:

This Gantt chart shows when developers were hired and laid off and when the employees were occupied.

Explanation/Recommendations:

The deployment of employees (developers) is crucial for the success of the project. A good project manager ensures that every employee has tasks to fulfill and that there are not too many idle-times. Small gaps (idle-times) are normal, but too many of them increase the average costs of a person month.



Legend:

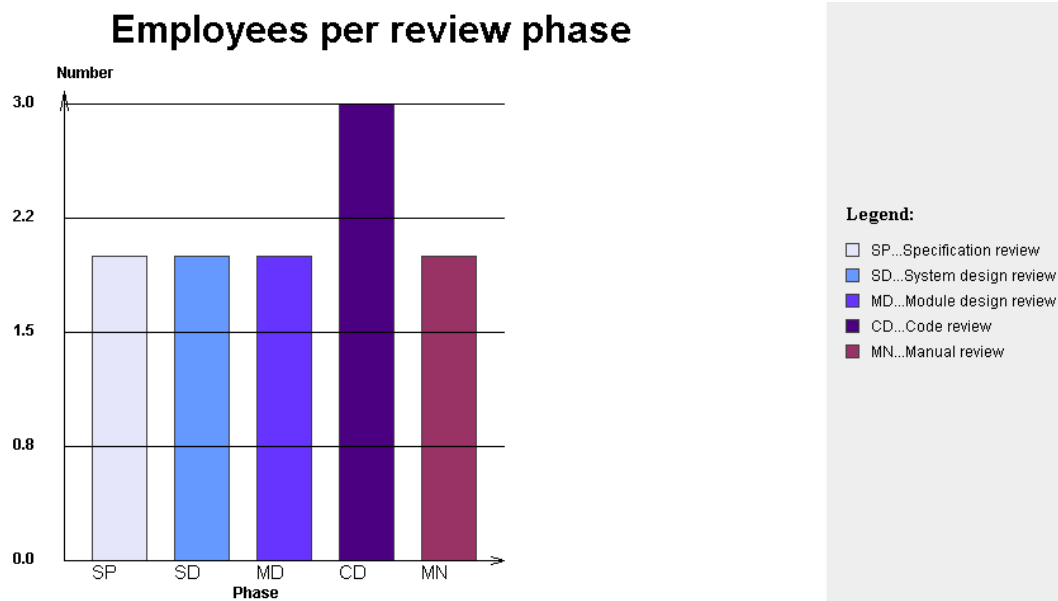
SP ... specification phase, SD ... system design phase, MD ... module design phase, CD ... coding phase, MN ... manual/documentation preparation, MT ... module test phase, ST ... system test phase, IT ... integration test phase, AT ... acceptance test.

Description:

This chart visualizes how many persons were involved in the related phases (excluding review activities).

Explanation/Recommendations:

For this type of project it is sufficient to start with 1-2 persons (due to the communication overhead) in the specification phase, and to deploy 2-3 employees during design and coding phases.



Legend:

SP ... specification review phase, SD ... system design review phase, MD ... module design review phase, CD ...coding review, MN ... manual/documentation review.

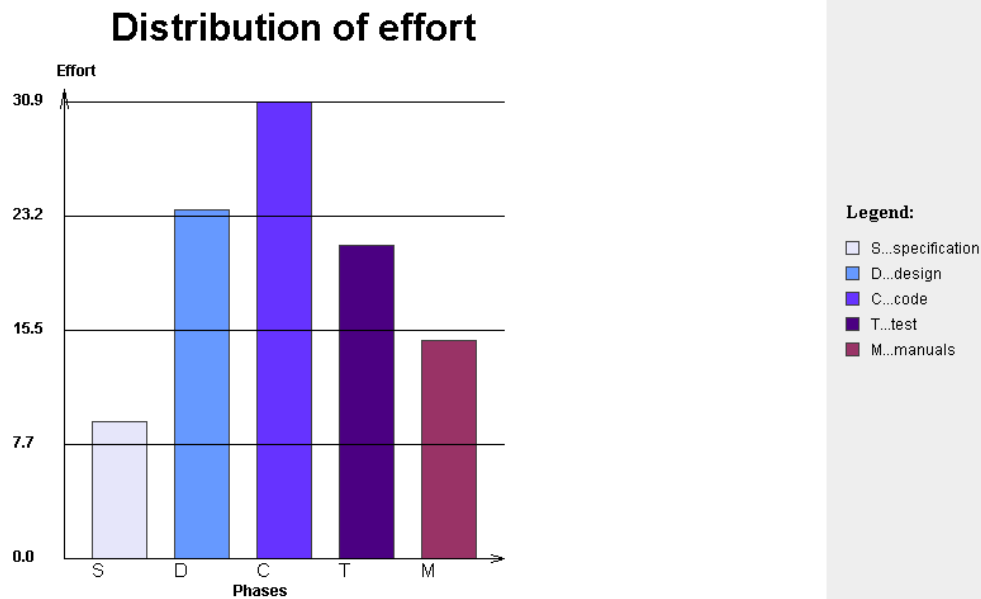
Description:

This chart visualizes how many persons were involved in the review of the specific documents (excluding the customer).

Explanation/Recommendations:

Typically, the author of a document should not be part of the review team.

REPORT SECTION 5
PROJECT PHASES



Values:

specification	9.3
design	23.64
code	30.94
test	21.29
manuals	14.83

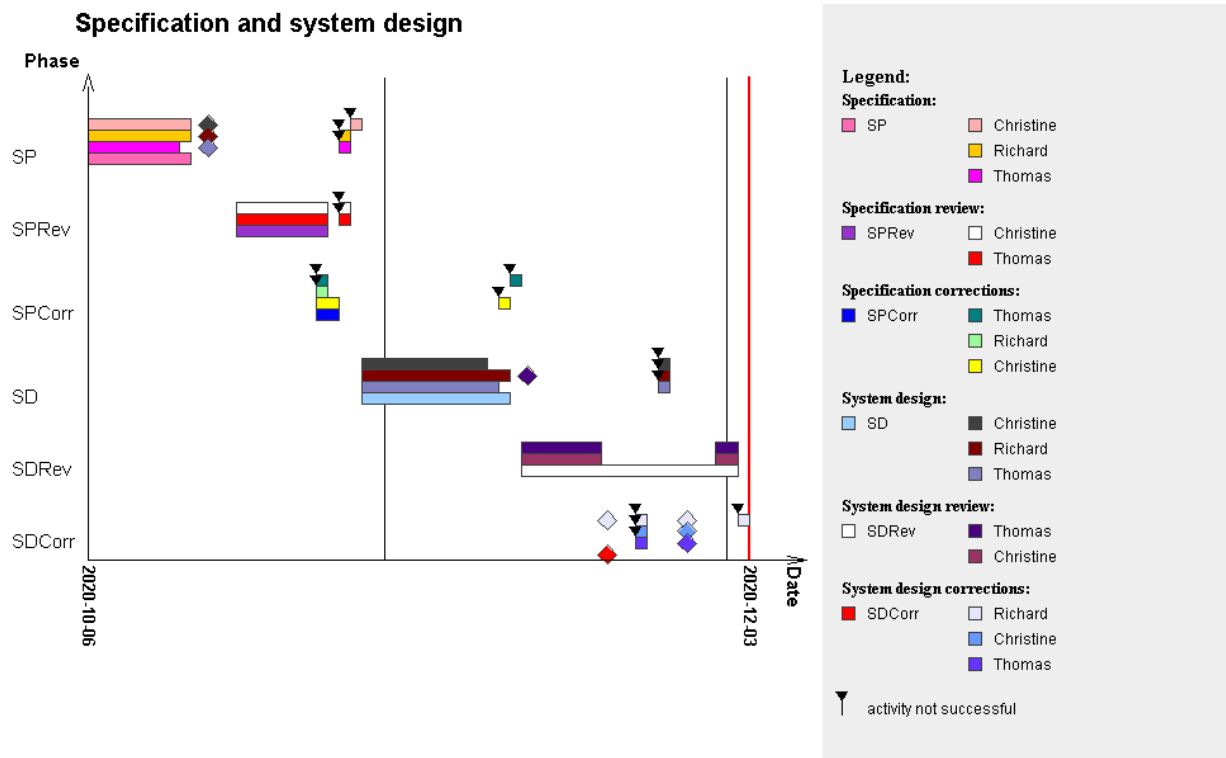
Description:

This diagram shows the distribution of the resources for several project phases. (Values: specification 9.30368, design 23.6393, code 30.9427, test 21.2869, manuals 14.8274).

Please note that the diagram can only be drawn after delivering the system.

Explanation/Recommendations:

If the effort for the specification is low, this would indicate that the specification was not a good reference document for the system design. Uncorrect reference documents result in uncorrect code, which could only be improved by testing. A high effort for testing indicates that the reference documents were incorrect and incomplete. A high effort in the specification and the design phase leads often to a low effort in testing.



Values:

Specification (2020-10-06 - 2020-10-15):

Christine: PRODUZIERT Spezifikation (2020-10-06 - 2020-10-15; 2020-10-16 - 2020-10-16 not successful; 2020-10-29 - 2020-10-30 not successful)

Richard: PRODUZIERT Spezifikation (2020-10-06 - 2020-10-15; 2020-10-16 - 2020-10-16 not successful; 2020-10-28 - 2020-10-29 not successful)

Thomas: PRODUZIERT Spezifikation (2020-10-06 - 2020-10-14; 2020-10-16 - 2020-10-16 not successful; 2020-10-28 - 2020-10-29 not successful)

Specification review (2020-10-19 - 2020-10-27):

Christine: BEGUTACHTET Specification (2020-10-19 - 2020-10-27; 2020-10-28 - 2020-10-29 not successful)

Thomas: BEGUTACHTET Specification (2020-10-19 - 2020-10-27; 2020-10-28 - 2020-10-29 not successful)

Specification corrections (2020-10-26 - 2020-10-28):

Thomas: KORRIGIERT Spezifikation (2020-10-26 - 2020-10-27 not successful; 2020-

11-12 - 2020-11-13 not successful)

Richard: KORRIGIERT Spezifikation (2020-10-26 - 2020-10-27 not successful)

Christine: KORRIGIERT Spezifikation (2020-10-26 - 2020-10-28; 2020-11-11 - 2020-11-12 not successful)

System design (2020-10-30 - 2020-11-12):

Christine: PRODUZIERT Systemdesign (2020-10-30 - 2020-11-10; 2020-11-25 - 2020-11-26 not successful)

Richard: PRODUZIERT Systemdesign (2020-10-30 - 2020-11-12; 2020-11-13 - 2020-11-13 not successful; 2020-11-25 - 2020-11-26 not successful)

Thomas: PRODUZIERT Systemdesign (2020-10-30 - 2020-11-11; 2020-11-25 - 2020-11-26 not successful)

System design review (2020-11-13 - 2020-12-02):

Thomas: BEGUTACHTET Systemdesign (2020-11-13 - 2020-11-20; 2020-11-30 - 2020-12-02)

Christine: BEGUTACHTET Systemdesign (2020-11-13 - 2020-11-20; 2020-11-30 - 2020-12-02)

System design corrections (2020/11/20/07:00):

Richard: KORRIGIERT Systemdesign (2020-11-20 - 2020-11-20 not successful; 2020-11-23 - 2020-11-24 not successful; 2020-11-27 - 2020-11-27 not successful; 2020-12-02 - 2020-12-03 not successful)

Christine: KORRIGIERT Systemdesign (2020-11-23 - 2020-11-24 not successful; 2020-11-27 - 2020-11-27 not successful)

Thomas: KORRIGIERT Systemdesign (2020-11-23 - 2020-11-24 not successful; 2020-11-27 - 2020-11-27 not successful)

Legend:

SP ... specification phase (begin-end, author(s)), SPRev ... specification review (begin-end, author(s)), SPCorr ... specification correction (begin-end, author(s)), SD ... system design (begin-end, author(s)), SDRev ... system design review (begin-end, author(s)), SDCorr ... system design correction (begin-end, author(s)).

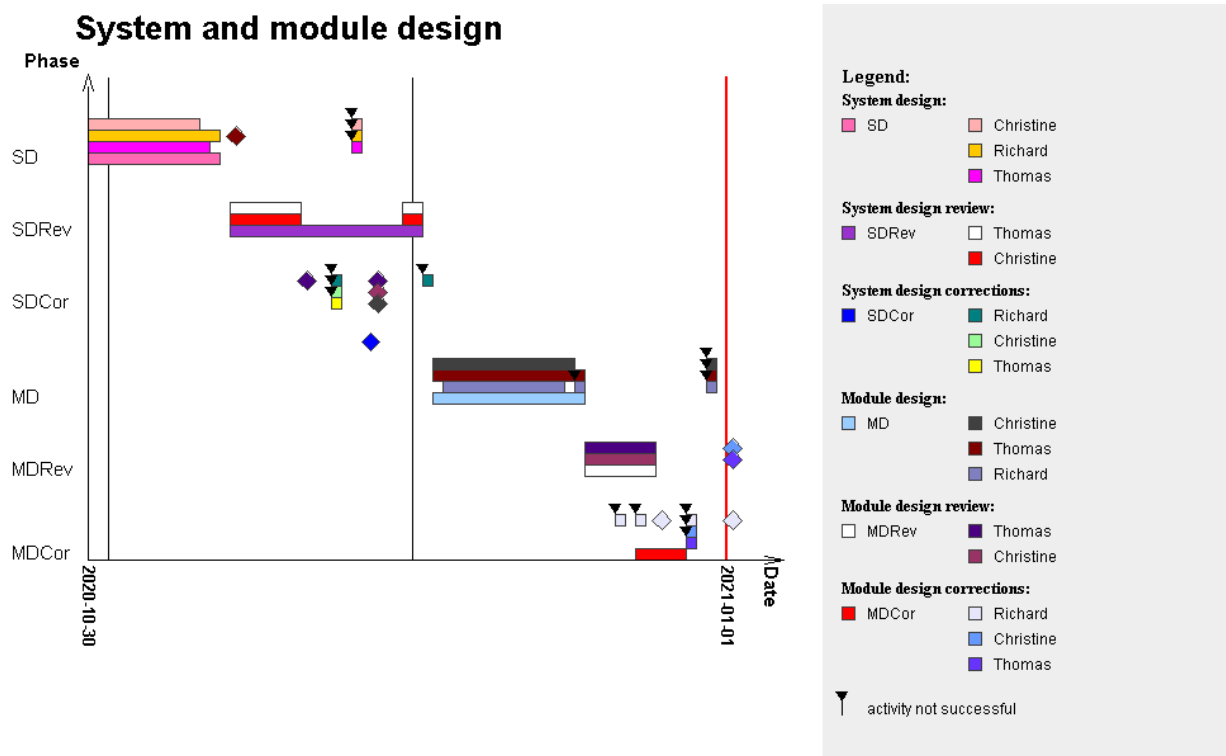
Project manager decisions and commands that led to zero activities are marked by a small black triangle.

Description:

This chart visualizes the author(s) of documents and the member(s) of the review/correction team(s) used in the specification and system design phase.

Explanation/Recommendation:

The more the project is following the Waterfall model, the more likely it is that succeeding phases are based on tested and finalized artifacts of previous phases. However, in order to save time it is possible to overlap the phases, which then means that one needs more effort to ensure consistency between the different artifacts.



Values:

System design (2020-10-30 - 2020-11-12):

Christine: PRODUZIERT Systemdesign (2020-10-30 - 2020-11-10; 2020-11-25 - 2020-11-26 not successful)

Richard: PRODUZIERT Systemdesign (2020-10-30 - 2020-11-12; 2020-11-13 - 2020-11-13 not successful; 2020-11-25 - 2020-11-26 not successful)

Thomas: PRODUZIERT Systemdesign (2020-10-30 - 2020-11-11; 2020-11-25 - 2020-11-26 not successful)

System design review (2020-11-13 - 2020-12-02):

Thomas: BEGUTACHTET Systemdesign (2020-11-13 - 2020-11-20; 2020-11-30 - 2020-12-02)

Christine: BEGUTACHTET Systemdesign (2020-11-13 - 2020-11-20; 2020-11-30 - 2020-12-02)

System design corrections (2020/11/20/07:00):

Richard: KORRIGIERT Systemdesign (2020-11-20 - 2020-11-20 not successful; 2020-

11-23 - 2020-11-24 not successful; 2020-11-27 - 2020-11-27 not successful; 2020-12-02 - 2020-12-03 not successful)

Christine: KORRIGIERT Systemdesign (2020-11-23 - 2020-11-24 not successful; 2020-11-27 - 2020-11-27 not successful)

Thomas: KORRIGIERT Systemdesign (2020-11-23 - 2020-11-24 not successful; 2020-11-27 - 2020-11-27 not successful)

Module design (2020-12-03 - 2020-12-18):

Christine: PRODUZIERT Moduldesign (2020-12-03 - 2020-12-17; 2020-12-30 - 2020-12-31 not successful)

Thomas: PRODUZIERT Moduldesign (2020-12-03 - 2020-12-18; 2020-12-30 - 2020-12-31 not successful)

Richard: PRODUZIERT Moduldesign (2020-12-04 - 2020-12-16; 2020-12-17 - 2020-12-18 not successful; 2020-12-30 - 2020-12-31 not successful)

Module design review (2020-12-18 - 2020-12-25):

Thomas: BEGUTACHTET Moduledesign (2020-12-18 - 2020-12-25; 2021-01-01 - 2021-01-01 not successful)

Christine: BEGUTACHTET Moduledesign (2020-12-18 - 2020-12-25; 2021-01-01 - 2021-01-01 not successful)

Module design corrections (2020-12-23 - 2020-12-28):

Richard: KORRIGIERT Moduldesign (2020-12-21 - 2020-12-22 not successful; 2020-12-23 - 2020-12-24 not successful; 2020-12-25 - 2020-12-25 not successful; 2020-12-28 - 2020-12-29 not successful; 2021-01-01 - 2021-01-01 not successful)

Christine: KORRIGIERT Moduldesign (2020-12-28 - 2020-12-29 not successful)

Thomas: KORRIGIERT Moduldesign (2020-12-28 - 2020-12-29 not successful)

Legend:

SD ... system design (begin-end, author(s)), SDRev ... system design review (begin-end, author(s)), SDCorr ... system design correction (begin-end, author(s)).

MD ... module design phase (begin-end, author(s)), MDRev ... module design review (begin-end, author(s)), MDCorr ... module design correction (begin-end, author(s)).

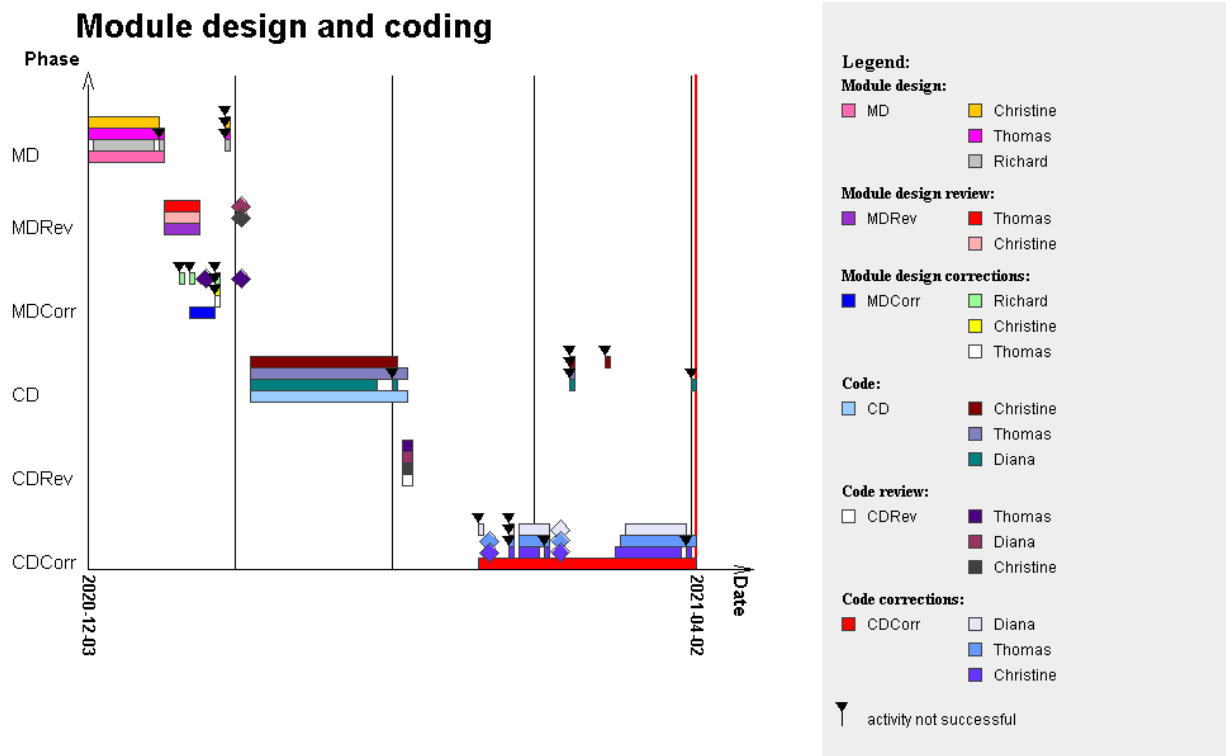
Project manager decisions and commands that led to zero activities are marked by a small black triangle.

Description:

This chart visualizes the author(s) of documents and the member(s) of the review/correction team(s) used in the system and module design phase.

Explanation/Recommendation:

The more the project is following the Waterfall model, the more likely it is that succeeding phases are based on tested and finalized artifacts of previous phases. However, in order to save time it is possible to overlap the phases, which then means that one needs more effort to ensure consistency between the different artifacts.



Values:

Module design (2020-12-03 - 2020-12-18):

Christine: PRODUZIERT Moduldesign (2020-12-03 - 2020-12-17; 2020-12-30 - 2020-12-31 not successful)

Thomas: PRODUZIERT Moduldesign (2020-12-03 - 2020-12-18; 2020-12-30 - 2020-12-31 not successful)

Richard: PRODUZIERT Moduldesign (2020-12-04 - 2020-12-16; 2020-12-17 - 2020-12-18 not successful; 2020-12-30 - 2020-12-31 not successful)

Module design review (2020-12-18 - 2020-12-25):

Thomas: BEGUTACHTET Moduledesign (2020-12-18 - 2020-12-25; 2021-01-01 - 2021-01-01 not successful)

Christine: BEGUTACHTET Moduledesign (2020-12-18 - 2020-12-25; 2021-01-01 - 2021-01-01 not successful)

Module design corrections (2020-12-23 - 2020-12-28):

Richard: KORRIGIERT Moduldesign (2020-12-21 - 2020-12-22 not successful; 2020-

12-23 - 2020-12-24 not successful; 2020-12-25 - 2020-12-25 not successful; 2020-12-28 - 2020-12-29 not successful; 2021-01-01 - 2021-01-01 not successful)

Christine: KORRIGIERT Moduldesign (2020-12-28 - 2020-12-29 not successful)

Thomas: KORRIGIERT Moduldesign (2020-12-28 - 2020-12-29 not successful)

Code (2021-01-04 - 2021-02-04):

Christine: PRODUZIERT Code (2021-01-04 - 2021-02-02; 2021-03-08 - 2021-03-09 not successful; 2021-03-15 - 2021-03-16 not successful)

Thomas: PRODUZIERT Code (2021-01-04 - 2021-02-04; 2021-03-08 - 2021-03-09 not successful)

Diana: PRODUZIERT Code (2021-01-04 - 2021-01-29; 2021-02-01 - 2021-02-02 not successful; 2021-03-08 - 2021-03-09 not successful; 2021-04-01 - 2021-04-02 not successful)

Code review (2021-02-03 - 2021-02-05):

Thomas: BEGUTACHTET Code (2021-02-03 - 2021-02-05)

Diana: BEGUTACHTET Code (2021-02-03 - 2021-02-05)

Christine: BEGUTACHTET Code (2021-02-03 - 2021-02-05)

Code corrections (2021-02-18 - 2021-04-02):

Diana: KORRIGIERT Code (2021-02-18 - 2021-02-19 not successful; 2021-02-24 - 2021-02-25 not successful; 2021-02-26 - 2021-03-04; 2021-03-05 - 2021-03-05 not successful; 2021-03-19 - 2021-03-31)

Thomas: KORRIGIERT Code (2021-02-19 - 2021-02-19 not successful; 2021-02-24 - 2021-02-25 not successful; 2021-02-26 - 2021-03-04; 2021-03-05 - 2021-03-05 not successful; 2021-03-18 - 2021-04-02)

Christine: KORRIGIERT Code (2021-02-19 - 2021-02-19 not successful; 2021-02-24 - 2021-02-25 not successful; 2021-02-26 - 2021-03-02; 2021-03-03 - 2021-03-04 not successful; 2021-03-05 - 2021-03-05 not successful; 2021-03-17 - 2021-03-30; 2021-03-31 - 2021-04-01 not successful)

Legend:

MD ... module design (begin-end, author(s)), MDRev ... module design review (begin-end, author(s)), MDCorr ... module design correction (begin-end, author(s)).

CD ... coding (begin-end, author(s)), CDRev ... code review (begin-end,author(s)),

CDCorr ... code correction (begin-end, author(s)).

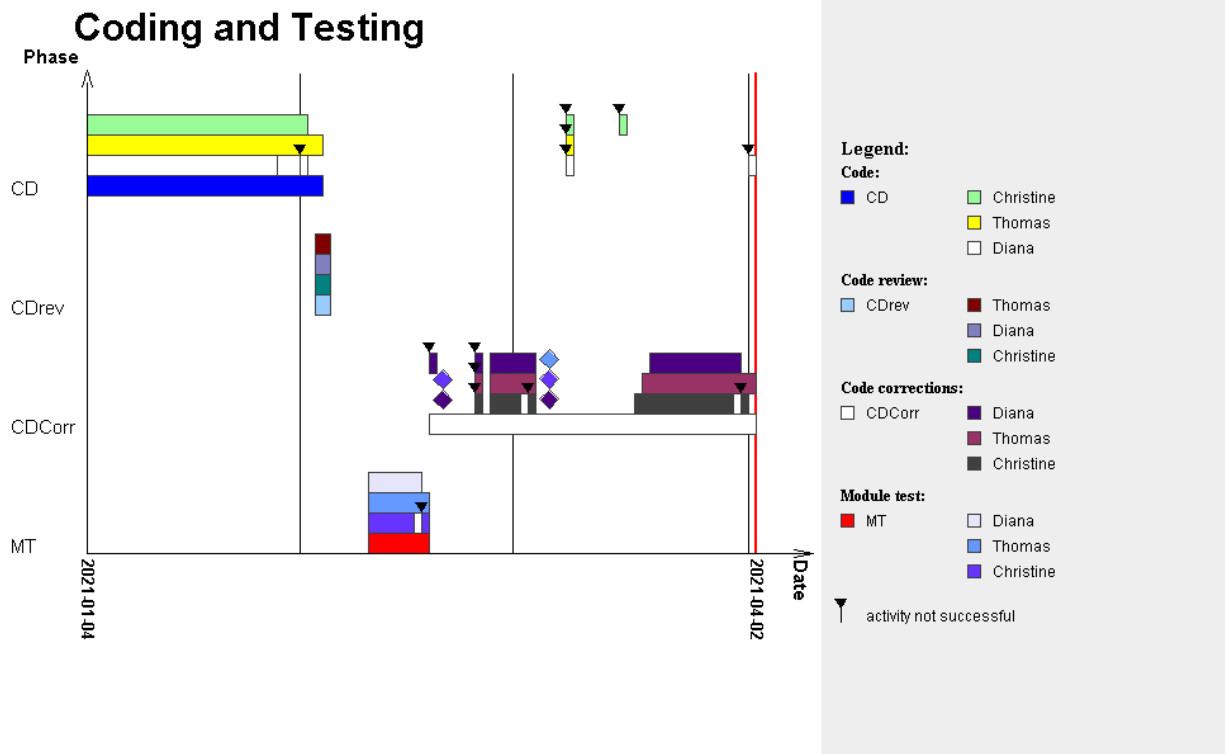
Project manager decisions and commands that led to zero activities are marked by a small black triangle.

Description:

This chart visualizes the author(s) of documents and the member(s) of the module design/coding team(s).

Explanation/Recommendation:

The more the project is following the Waterfall model, the more likely it is that succeeding phases are based on tested and finalized artifacts of previous phases. However, in order to save time it is possible to overlap the phases, which then means that one needs more effort to ensure consistency between the different artifacts.



Values:

Code (2021-01-04 - 2021-02-04):

Christine: PRODUZIERT Code (2021-01-04 - 2021-02-02; 2021-03-08 - 2021-03-09 not successful; 2021-03-15 - 2021-03-16 not successful)

Thomas: PRODUZIERT Code (2021-01-04 - 2021-02-04; 2021-03-08 - 2021-03-09 not successful)

Diana: PRODUZIERT Code (2021-01-04 - 2021-01-29; 2021-02-01 - 2021-02-02 not successful; 2021-03-08 - 2021-03-09 not successful; 2021-04-01 - 2021-04-02 not successful)

Code review (2021-02-03 - 2021-02-05):

Thomas: BEGUTACHTET Code (2021-02-03 - 2021-02-05)

Diana: BEGUTACHTET Code (2021-02-03 - 2021-02-05)

Christine: BEGUTACHTET Code (2021-02-03 - 2021-02-05)

Code corrections (2021-02-18 - 2021-04-02):

Diana: KORRIGIERT Code (2021-02-18 - 2021-02-19 not successful; 2021-02-24 -

2021-02-25 not successful; 2021-02-26 - 2021-03-04; 2021-03-05 - 2021-03-05 not successful; 2021-03-19 - 2021-03-31)

Thomas: KORRIGIERT Code (2021-02-19 - 2021-02-19 not successful; 2021-02-24 - 2021-02-25 not successful; 2021-02-26 - 2021-03-04; 2021-03-05 - 2021-03-05 not successful; 2021-03-18 - 2021-04-02)

Christine: KORRIGIERT Code (2021-02-19 - 2021-02-19 not successful; 2021-02-24 - 2021-02-25 not successful; 2021-02-26 - 2021-03-02; 2021-03-03 - 2021-03-04 not successful; 2021-03-05 - 2021-03-05 not successful; 2021-03-17 - 2021-03-30; 2021-03-31 - 2021-04-01 not successful)

Module test (2021-02-10 - 2021-02-18):

Diana: TESTET_MODULE Code (2021-02-10 - 2021-02-17)

Thomas: TESTET_MODULE Code (2021-02-10 - 2021-02-18)

Christine: TESTET_MODULE Code (2021-02-10 - 2021-02-16; 2021-02-17 - 2021-02-18 not successful)

Legend:

CD ... coding (begin-end, author(s)), CDRev ... code review (begin-end, author(s)),

CDCorr ... code correction (begin-end, author(s)).

MT ... module test (begin-end, author(s)), MTCorr ... corrections (begin-end, author(s)).

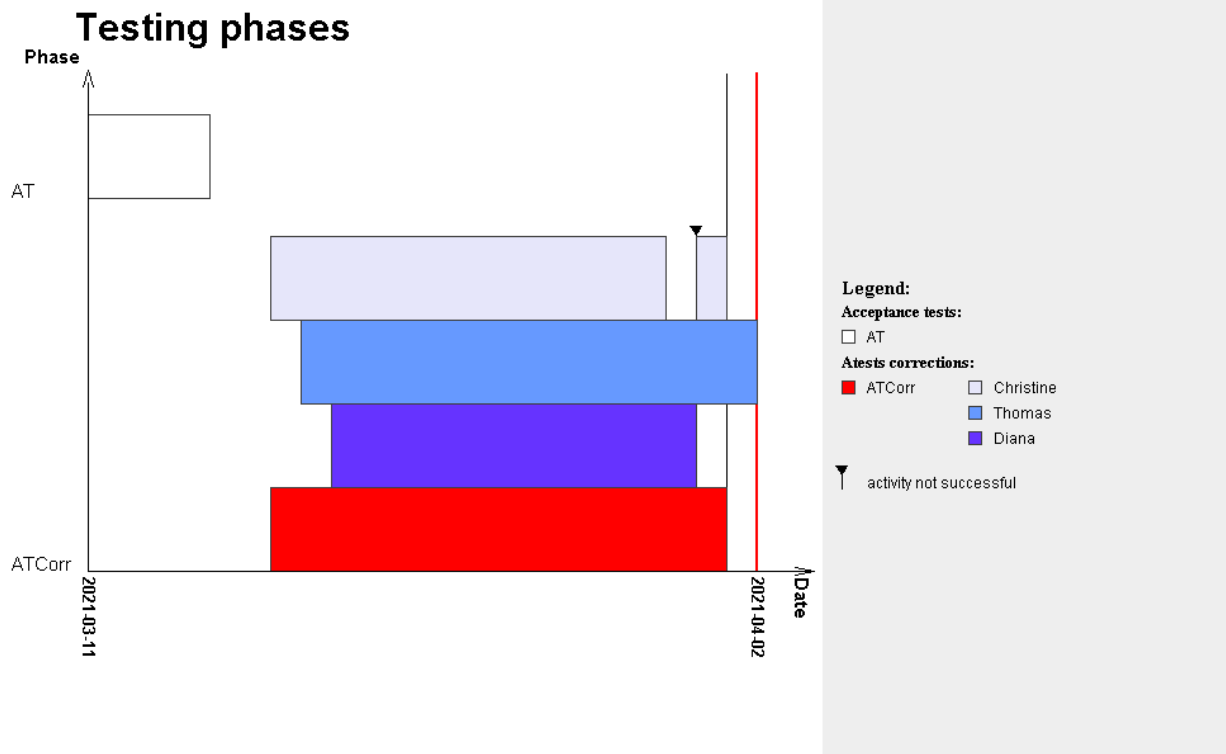
Project manager decisions and commands that led to zero activities are marked by a small black triangle.

Description:

This chart visualizes the author(s) of the code and the member(s) of the review/correction team(s) used in the coding and testing phase.

Explanation/Recommendation:

The more the project is following the Waterfall model, the more likely it is that succeeding phases are based on tested and finalized artifacts of previous phases. However, in order to save time it is possible to overlap the phases, which then means that one needs more effort to ensure consistency between the different artifacts.



Values:

Acceptance tests (2021-03-11 - 2021-03-15)

Atests corrections (2021-03-17 - 2021-04-01):

Christine: KORRIGIERT Code (2021-03-17 - 2021-03-30; 2021-03-31 - 2021-04-01 not successful)

Thomas: KORRIGIERT Code (2021-03-18 - 2021-04-02)

Diana: KORRIGIERT Code (2021-03-19 - 2021-03-31)

Legend:

ST ... system test phase (begin-end, author(s)), STCorr ... correction (begin-end, author(s)), AT ... acceptance test (begin-end, author(s)), ATCorr ... corrections (begin-end, author(s)).

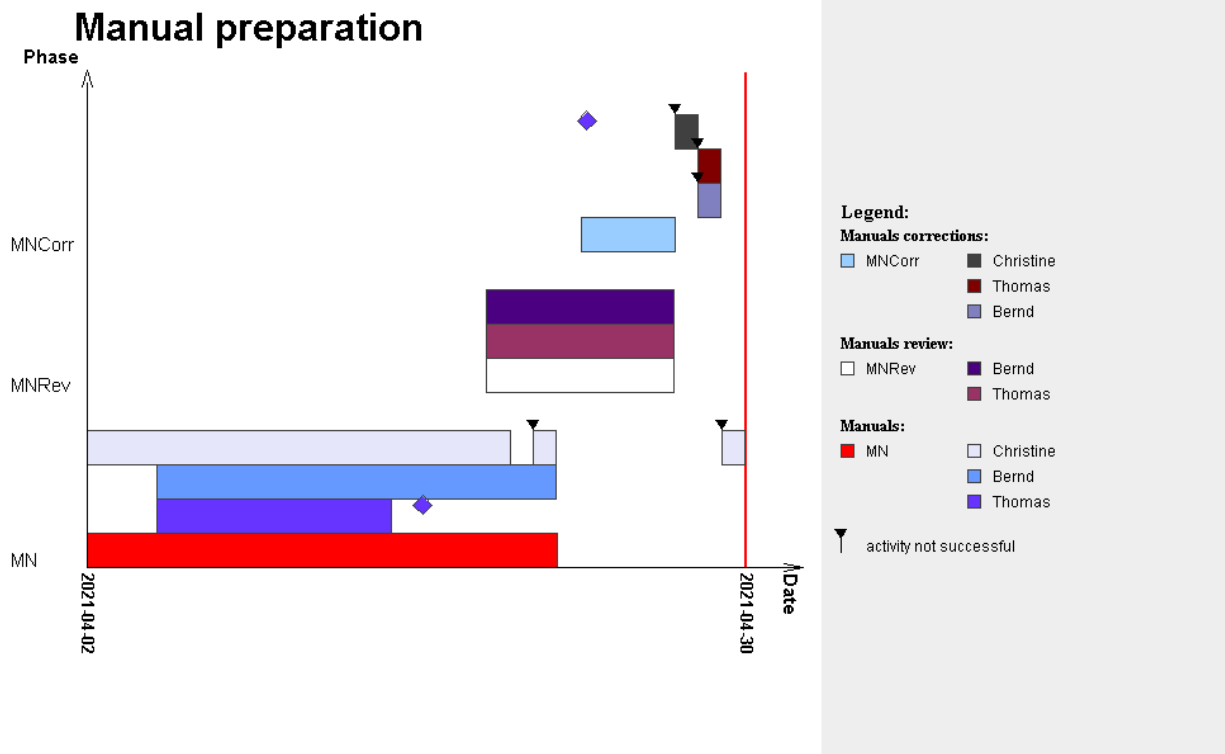
Project manager decisions and commands that led to zero activities are marked by a small black triangle.

Description:

This chart visualizes the member(s) of the review/correction team(s) used in the test and correction phase.

Explanation/Recommendation:

The more the project is following the Waterfall model, the more likely it is that succeeding phases are based on tested and finalized artifacts of previous phases. However, in order to save time it is possible to overlap the phases, which then means that one needs more effort to ensure consistency between the different artifacts.



Values:

Manuals corrections (2021-04-23 - 2021-04-27):

Christine: KORRIGIERT Manual (2021-04-23 - 2021-04-23 not successful; 2021-04-27 - 2021-04-28 not successful)

Thomas: KORRIGIERT Manual (2021-04-28 - 2021-04-29 not successful)

Bernd: KORRIGIERT Manual (2021-04-28 - 2021-04-29 not successful)

Manuals review (2021-04-19 - 2021-04-27):

Bernd: BEGUTACHTET Manuals (2021-04-19 - 2021-04-27)

Thomas: BEGUTACHTET Manuals (2021-04-19 - 2021-04-27)

Manuals (2021-04-02 - 2021-04-22):

Christine: PRODUZIERT Manual (2021-04-02 - 2021-04-20; 2021-04-21 - 2021-04-22 not successful; 2021-04-29 - 2021-04-30 not successful)

Bernd: PRODUZIERT Manual (2021-04-05 - 2021-04-22)

Thomas: PRODUZIERT Manual (2021-04-05 - 2021-04-15; 2021-04-16 - 2021-04-16 not successful)

Legend:

MN ... manual/documentation creation (begin-end, author(s)), MNRev ... review of manuals (begin-end, author(s)), MNCorr ... corrections of manuals (begin-end, author(s)). Project manager decisions and commands that led to zero activities are marked by a small black triangle.

Description:

This chart visualizes the author(s) of manuals and the member(s) of the review/correction team(s).

Explanation/Recommendation:

The more the project is following the Waterfall model, the more likely it is that succeeding phases are based on tested and finalized artifacts of previous phases. However, in order to save time it is possible to overlap the phases, which then means that one needs more effort to ensure consistency between the different artifacts.

REPORT SECTION 6
REVIEWS, TESTS, AND CORRECTIONS

Review information

	Review information				
	Spec.	Sys.Design	Mod.Design	Code	Manual
Length (d)	8.0	12.0	15.0	30.0	19.0
Effort (h)	9.31	12.45	10.41	0.33	15.34
Corr. (h)	6.02	3.69	4.68	0.46	6.99
Det. errors	26.18	15.89	13.46	0.0	37.97
Err. in docs	97.0	128.0	184.0	217.0	128.0
Reviews	0.0	0.0	0.0	0.0	0.0
Corr.total	1.0	0.0	0.0	4.0	0.0

Legend:

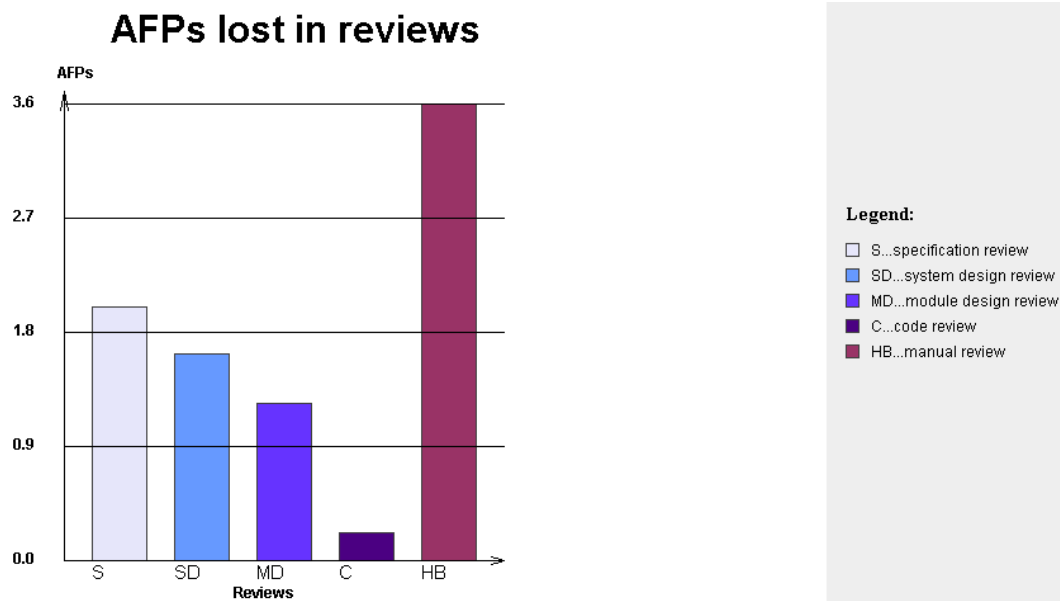
Length ... duration for activity (in days), Effort ... effort for activity (in hours), Corr ... effort to correct (in hours), Det. errors ... number of errors detected (total), Err. in docs ... remaining errors in documents, Reviews ... number of reviews of the document (total), Corr.total number ... number of correction activities (total).

Description:

This table summarizes the effort spent on the review activities for several documents.

Explanation/Recommendation:

Reviews are essential for preserving the quality of the documents. The more time one invests in the quality of the basic documents (specification, design) the better the quality of the succeeding documents.



Description:

This diagram shows the number of AFPs lost in reviews. The smaller the number of AFPs, the better the review process. (Values: specification review 1.99486, system design review 1.62917, module design review 1.24515, code review 0.224666, manual review 3.58891)

Explanation/Recommendation:

Loosing only a few AFPs is acceptable. Focus on those reviews that lead to a higher number of losses and improve the review process by taking care of the team members and consistency between the documents. Especially in the very early phases and for the review of the manuals/documentation the customer should be part of the review team.

Test information

	Test information			
	Mod. tests	Sys. tests	Int. tests	Acc. tests
Length	7.0	0.0	0.0	4.0
Effort	102.96	0.0	0.0	26.01
Corr. effort	68.55	0.0	0.0	219.08
Det. errors	116.99	0.0	0.0	66.16
Tests	1.0	0.0	0.0	2.0

Legend:

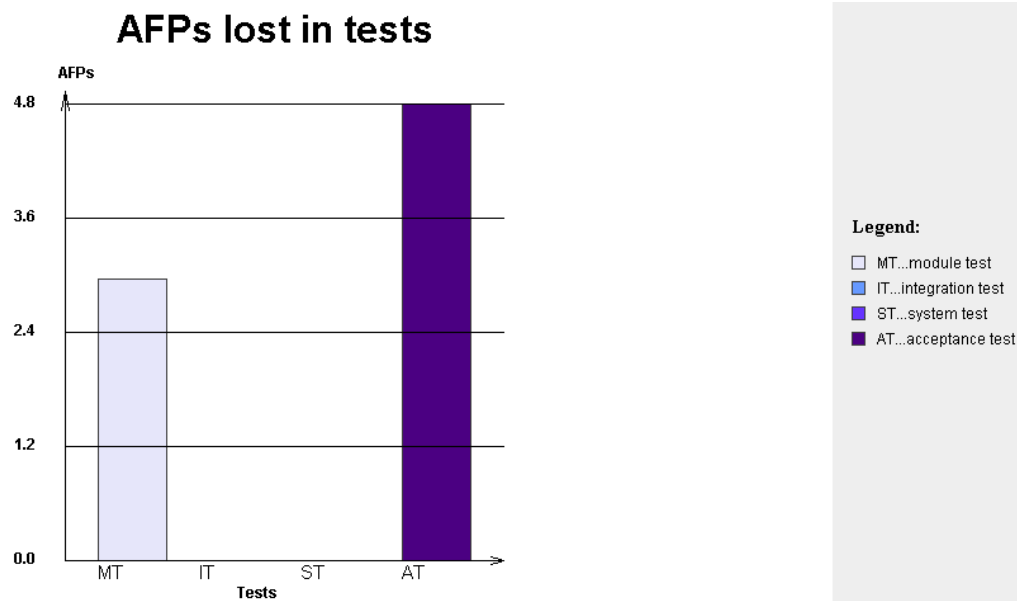
Length ... duration of activity (in days), Effort ... effort of activity (in hours), Corr ... effort of correction (in hours), Det. errors ... number of errors detected (total), Err. in docs ... remaining errors in documents, Reviews ... number of reviews of the document (total), Test ... number of test activities (total).

Description:

This table summarizes the effort spent on testing activities.

Explanation/Recommendation:

Tests are essential for preserving the quality of the product. Be sure that all four type of tests were conducted.

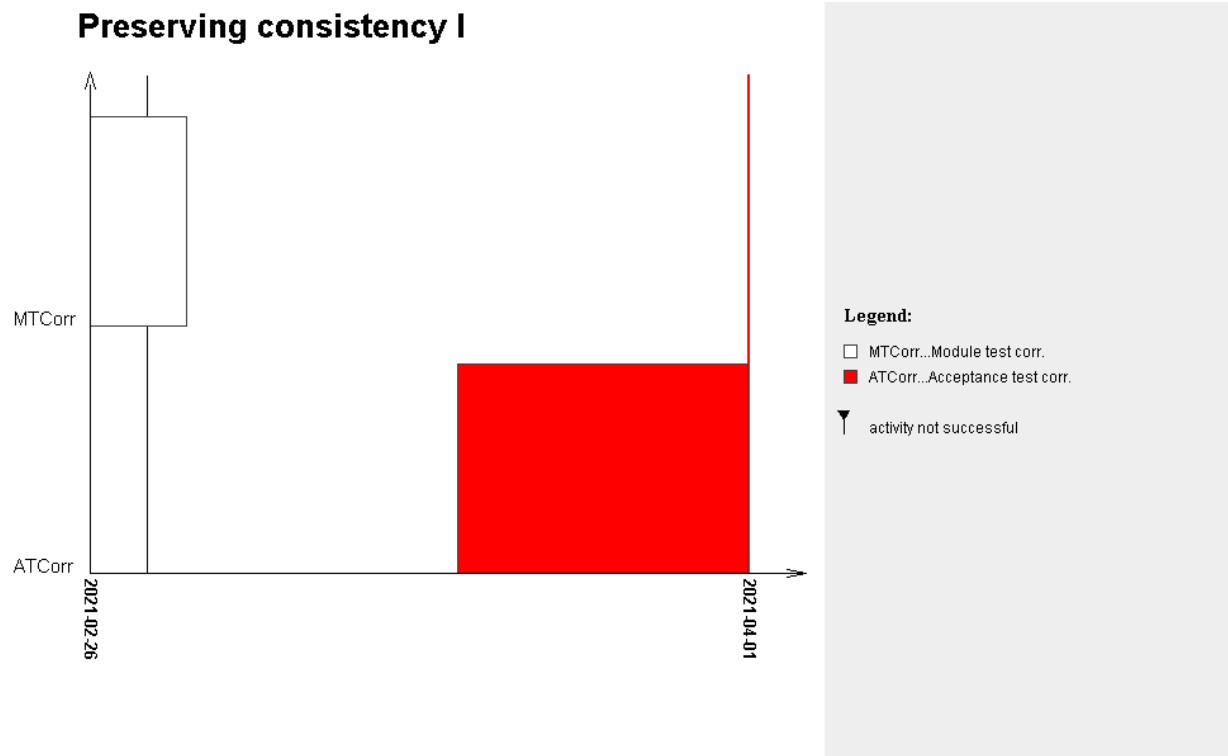


Description:

This diagram visualizes the loss of AFPs during the test activities. The smaller the number of AFPs, the better the test and correction process. (Values: module test 2.9839, integration test 0.0, system test 0.0, acceptance test 4.83812)

Explanation/Recommendations:

Loosing only a few AFPs is acceptable. Focus on those tests that lead to a higher number of losses and improve the test and correction process by checking the qualification of the testing team.



Values:

Module test corr. (2021-02-26 - 2021-03-03)

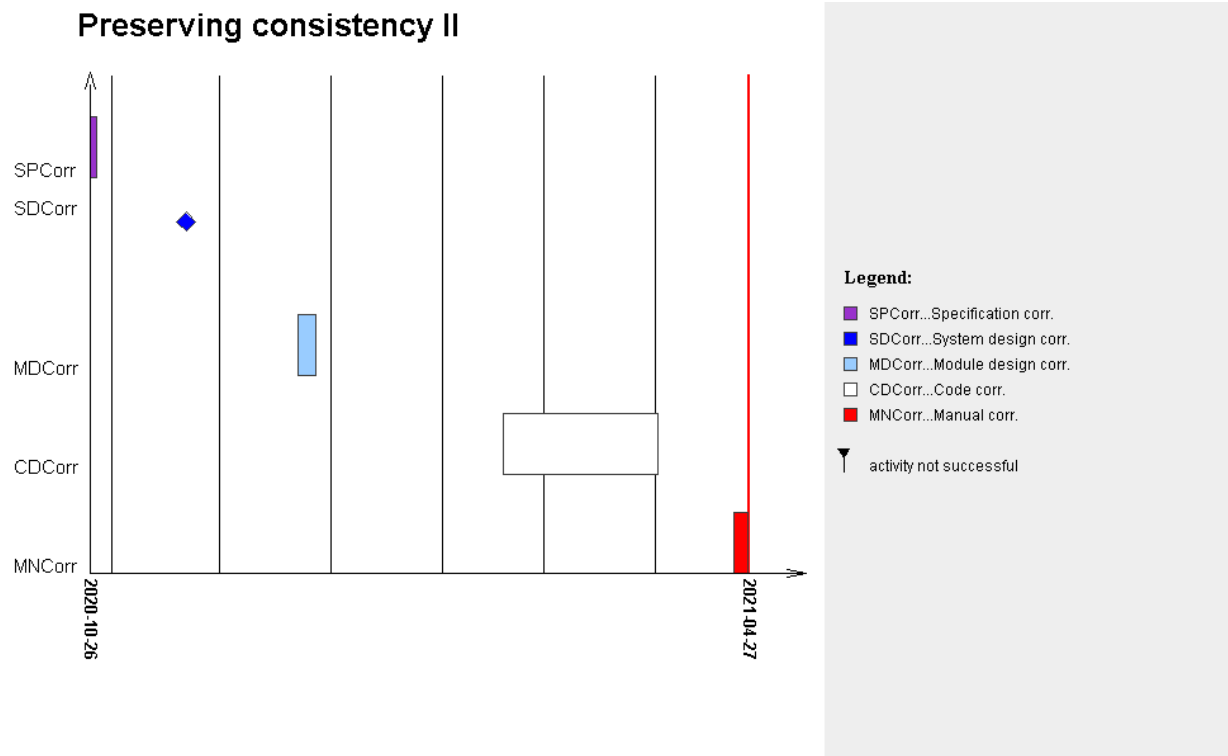
Acceptance test corr. (2021-03-17 - 2021-04-01)

Description:

This chart vizualizes all correction activities related to the documents in the project. Activities containing the suffix all are activities that also correct all preceeding documents.

Explanation/Recommendations:

Every time errors are identified and changes are made to documents, all preceeding documents have to be corrected, too.



Values:

Specification corr. (2020-10-26 - 2020-10-28)

System design corr. (2020/11/20/07:00)

Module design corr. (2020-12-23 - 2020-12-28)

Code corr. (2021-02-18 - 2021-04-02)

Manual corr. (2021-04-23 - 2021-04-27)

Description:

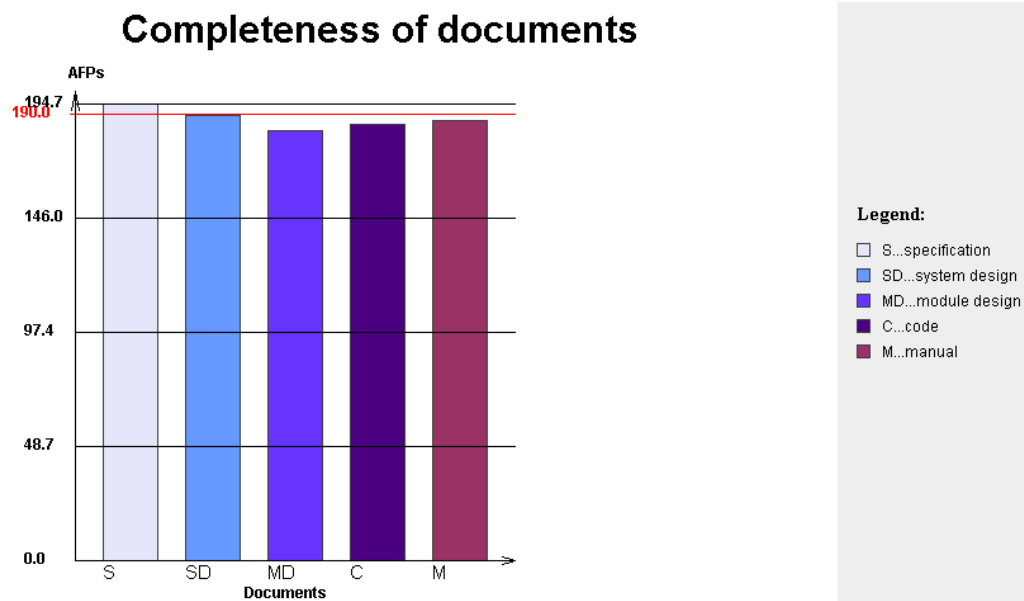
This chart vizualizes all correction activities related to the documents in the project.

Activities containing the suffix all are activities that also correct all preceeding documents.

Explanation/Recommendations:

Every time errors are identified and changes are made to documents, all preceeding documents have to be corrected, too.

REPORT SECTION 7
DOCUMENTS

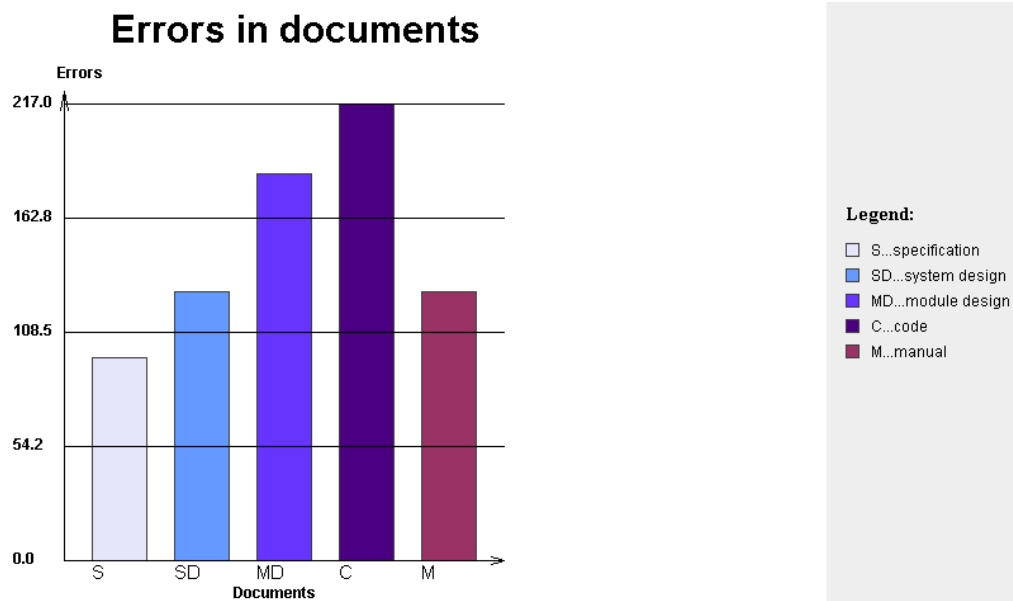


Description:

The diagram shows the Completeness of the project documents. (Values: specification 194.706, system design 190.069, module design 183.53, code 186.343, manual 188.039)

Explanation/Recommendations:

Quality slightly decreases from document to document. However, the better the quality (in terms of number of AFPs realized) of the specification, the easier it is to maintain the quality of the succeeding documents. By putting additional effort on the testing phase, the quality of the code can be increased, too.

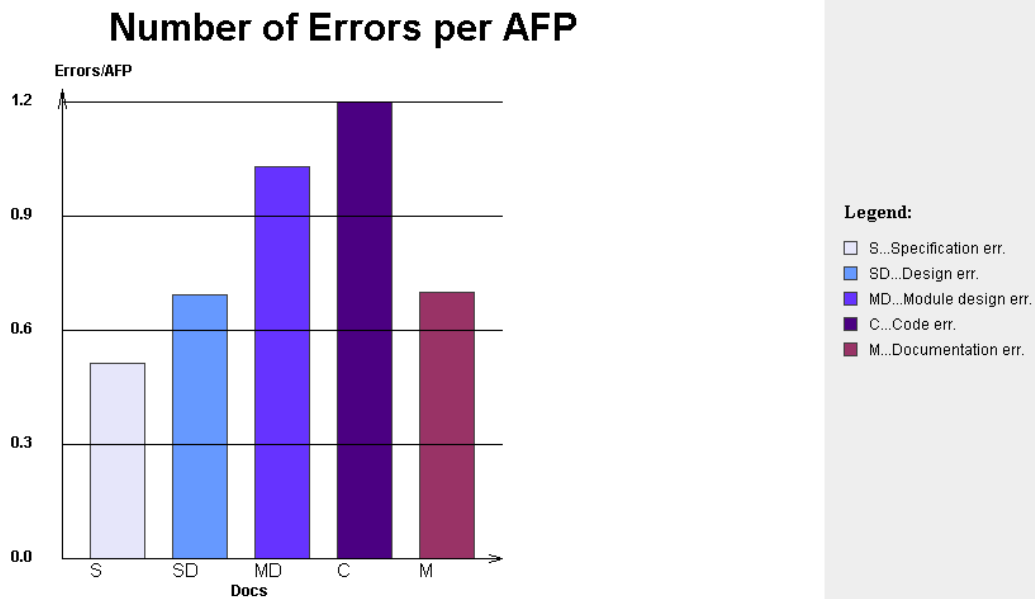


Description:

This diagram shows the remaining errors in the documents. (Values: specification 97.0, system design 128.0, module design 184.0, code 217.0, manual 128.0)

Explanation/Recommendations:

If the specification contains more than 30 errors, then you did not review this document thoroughly. In later phases the correction of documents is more costly and timeexpensive, as the number of errors increases during the project. Already at early stages of the project you should try to produce documents that are correct and complete.



Legend:

S ... errors in the specification (per AFP), SD ... errors in the system design (per AFP), MD ... errors in the module design (per AFP), C ... errors in the code (per AFP), M ... errors in the manuals/documentation (per AFP).

Description:

This diagram summarizes the remaining errors relative to the AFPs in the document.
(Values: Specification err. 0.498187, Design err. 0.673441, Module design err. 1.00256, Code err. 1.16452, Documentation err. 0.680709)

Explanation/Recommendations:

Not available.

REPORT SECTION 8
CUSTOMER

Customer participation

	Customer participation	
	Took place?	Number
Analysis	false	0.0
Spec. rev.	true	2.0
Doc. rev.	true	1.0
Acc. test	true	2.0

Legend:

Analysis ... Employee visits the customer and talks about analysis document (yes/no, number of times), Spec. rev. ... customer participates in specification review (yes/no, number of times), Doc. rev. ... customer participates in review of documentation/manuals (yes/no, number of times), Acc. rev. ... customer conducts an acceptance test (yes/no, number of times).

Description:

This table summarizes the involvement and the activities of the customer during the project.

Explanation/Recommendations:

Especially at early phases the customer can provide valid feedback. It is a good idea to involve him/her in review activities.

Customer feedback

2021/05/05/08:00:

The customer has tested the system carefully. Paul Koenig gives you a final statement about the project and the quality of the software produced.

Delivery of the system was planned for 2021/07/02/08:00. The actual delivery was at 2021/05/05/08:00. This is a deviation of -58 days.

The customer is very satisfied with the delivery date. You delivered the system 58 days earlier than required. This was extremely good.

The actual costs for developing the system amounts to 180860.0 EUR. The planned costs amounted to 225000.0 EUR. This is a deviation of -44140.0 EUR.

The customer is pleased: "You spent 44140.0 EUR less than planned in your budget. You must have a very efficient development process."

The functionality requested by the customer amounted to 200.88 Adjusted Function Points. The customer has found 185.02 Adjusted Function Points in the system. The code contains 9131 lines of code.

The customer is not completely satisfied with the system you delivered. The code only contains 92.1068 percent of the functionality required by the customer.

The customers requirements for the system were that it does not contain more than 12.0 errors per thousand lines of code. The actual delivered system contains 23.77 errors per thousand lines of code.

The correctness of the system is very bad. It contains 23.77 per KLOC (1000 Lines of code). These are 11.77 (!) more errors per KLOC than specified by the customer. Think carefully about your software development process. It has to be improved significantly.

The customer has also asked for user documentation. The user manual comprises 249 pages. The user manual should cover 200.88 Adjusted Function Points, in fact, it describes a functionality that equals 188.04 Adjusted Function Points.

The completeness of the user manual is acceptable. 93.6078 of the required functionality is described in the manual.

The correctness of the user manual required by the customer is 0.5 errors per page. The customer has found 0.51 errors per page.

The correctness of the user manual is acceptable. The manual contains 0.51 per page. These are 0.00999999 errors per page more than originally specified by the customer.

The customer could not believe that you only came up with a software full of errors. He declines to accept the product.

The project was stopped after 212 development days. The total effort for the system development reached 15.09 man months. The amount of the costs thereby incurred is 180860.0 EUR.

The document Specification consists of 86 pages. It contains 194.71 AFP. Thereby 96.93 percent of the customer requirements are covered. The Specification still contains 97 errors. This is an average of 1.13 errors per page.

The document Systemdesign consists of 84 pages. It contains 190.07 AFP. Thereby 94.62 percent of the customer requirements are covered. The Systemdesign still contains 128 errors. This is an average of 1.52 errors per page.

The document Moduledesign consists of 122 pages. It contains 183.53 AFP. Thereby 91.36 percent of the customer requirements are covered. The Moduledesign still contains 184 errors. This is an average of 1.51 errors per page.

The delivered code consists of 9131 lines of code. It contains 186.34 AFP. This means 92.76 percent of the system requirements are fulfilled. The code still contains 74 errors resulting from analysis, 24 errors resulting from system design, 35 errors resulting from module design and 84 errors resulting from implementation. This means 23.77 errors per

1000 lines of code.

The document Manuals consists of 249 pages. It contains 188.04 AFP. Thereby 93.61 percent of the customer requirements are covered. The Manuals still contains 128 errors. This is an average of 0.51 errors per page.

The effort distribution among the particular phases of the software development process is as follows: analysis and specification required 1.4 man months, for system design there were 3.57 man months needed, the implementation required 4.67 man months, the test 3.21 man months and the system documentation 2.24 man months.

The reviews required an effort of 0.34 man months, the tests required 0.91 man months, the correction after review required 0.48 man months and the correction after test 2.3 man months.

To develop the system you invested a total effort of 15.09 MM. In total you spent 11985.7 EUR per MM.

The effort was distributed among the different development phases as follows: specification phase: 9.3 percent, design phase: 23.6 percent, coding phase: 30.9 percent, testing phase: 21.3 percent and documentation phase: 14.8 percent of total effort.

Given the objectives as 100 percent and positive deviations (i.e. in case you performed better than required) with values greater than 100 and negative deviations with values less 100, respectively, compared to the customers's objectives you performed as follows: achievement of budget: 119.62 percent, achievement of deadline: 121.48 percent, achievement of functionality (compared to the objectives): 98.09 percent, achievement of functionality (compared to total functionality): 93.86 percent, achievement of quality (correctness): 49.57 percent.

The customer has applied his scoring system to evaluate software systems delivered by external software houses. You have got 536 points for your project. You can reach a maximum of 1200 points.

REPORT SECTION 9
SOFTWARE QUALITY

Errors remaining in documents

Document	Type of errors					
	Analysis	Sys.Des.	Mod.Des.	Code	Manual	Total
Spec.	97.0	-	-	-	-	97.0
Sys.Des.	91.0	37.0	-	-	-	128.0
Mod.Des.	88.0	35.0	61.0	-	-	184.0
Code	74.0	24.0	35.0	84.0	-	217.0
Manual	82.0	-	-	-	50.0	128.0

Legend:

Document ... contains the different types of errors for the specification, system and module design document, code, and the manual.

Description:

This table summarizes the different types of errors for all documents. The specification contains only analysis errors, the system design document contains errors from analysis AND system design errors, and so on.

Explanation/Recommendations:

Errors propagate in the life cycle of documents. Every time a new document is created new errors turn up. As reviews identify different types of errors, not only the reviewed document should be corrected, but also the preceeding documents.