

COEXISTENCE OF TEST EXECUTION EFFICIENCY AND TEST CASES ACCOUNTABILITY

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TENDENCY OF WRITTEN TEST CASES

Written test cases

- Written test cases are used to achieve specific testing objective.
- The test cases are also used for obtaining test steps to execute them.

→These test cases are required to be executed efficiently.

Tendency of Test Cases Template

- Written Test Cases are always described in specific test cases templates.
- These templates are used not only as lists that enable to confirm software system, but also as lists of execution test steps.

Tendency of Actual Written Test cases

- The test case templates assist to generate written test cases.
- These templates cause the test cases focused on a specific objective.

Example CPM Test Cases

We call these test cases as CPM test cases.

- Software specification documents are often simply copied, pasted and modified to generate this type of test cases.
- A CPM test cases often has only test cases description without test step.

Test Case	Test Steps
Confirm reservation of songs	
KARAOKE System can display reserved list of the songs when user puts menu button on and select "Reserved list".	-
User can change the order of the songs and delete song while multiple songs are reserved in KARAOKE System.	-
User can change the order of the songs and delete song by Remote Controller or Main Unit of KARAOKE System.	-
Confirm Playing Option	
User can add the playing option of reservation songs.	-
Following are playing options. 1. Key or the song, 2. Tempo of the Song 3. Setting of Guide Melody, 4. Setting of Guide Vocal 5. Sound Volume	-

Example

Execution Efficiency Focused Test Cases

- These test cases are especially focused on efficient test execution.
- A execution efficiency focused test cases usually has multiple test objectives.

Test Case	Test Steps
Confirm Playing Function of KARAOKE System	
Display Playing State	1. Reserve music 2. Start playing music
Control Playing Option	1. Control [Tempo of the Song] 2. Control [Sound Effect] 3. Control [Fast forward] 4. Control [Rewind] 5. Control [Jump to High Point of the Song] 6. Control [Pause the Song] 7. Control [Restart the Song] 8. Control [Use Guite Vocals]

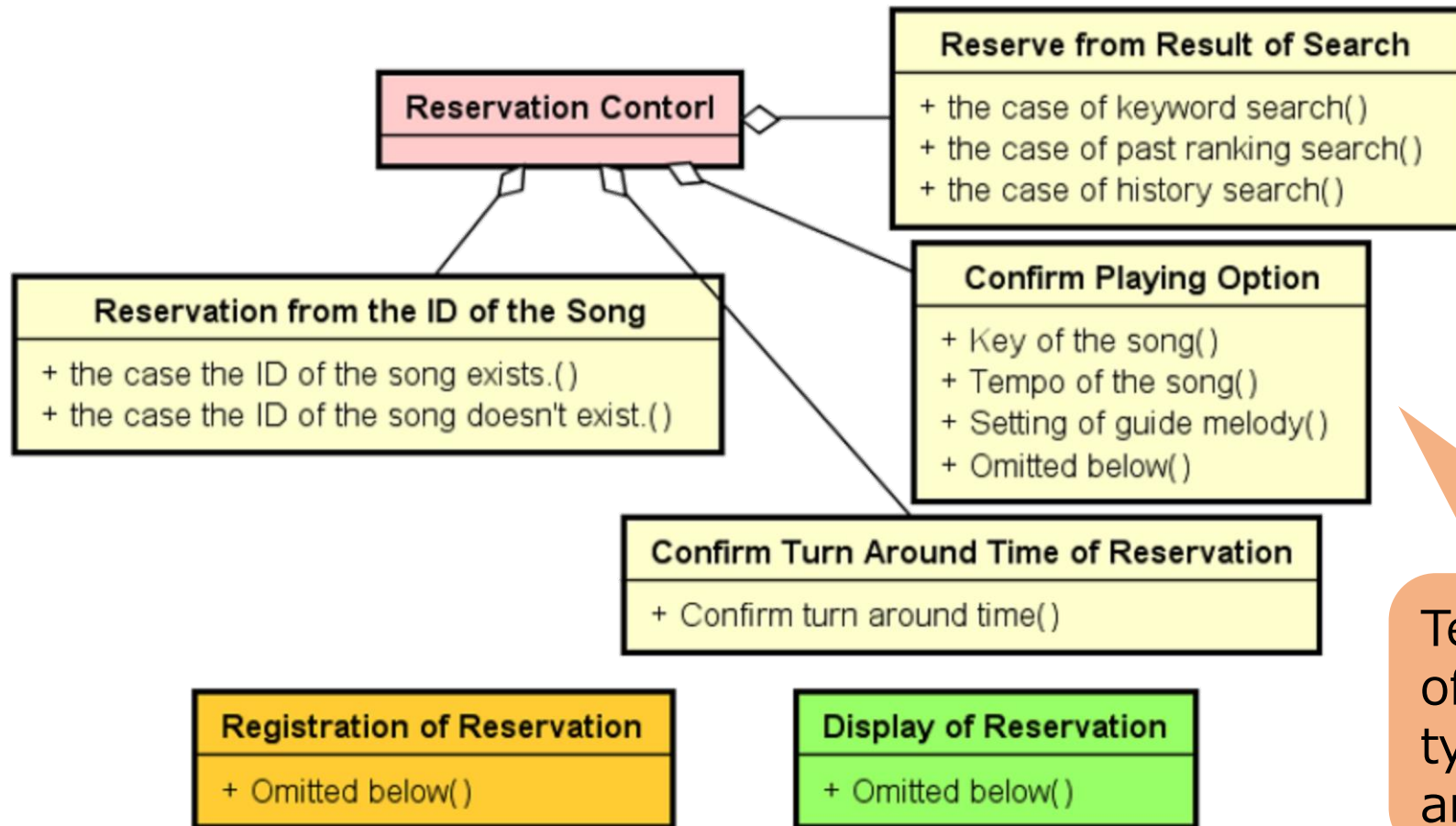
Example

Stepwise Designed Test Cases

- Test suite composed of stepwise designed test cases is usually structured and organized.

Test Case	Test Steps
Reservation Control	
Reserve from the ID of the Song	
the case the ID of the song exists.	- Start Karaoke System - Press "Menu" Button <Precondition: Menu State> 1. Press "Researve from the ID" 2. Input the ID of the Song 3. Press "Reserve" Button
the case the ID of the song doesn't exist.	The same as above
Reserve from Result of Search	
the case of keyword search using valid Keyword	- Start Karaoke System - Press "Menu" Button <Precondition: Menu State> 1. Press "Keyword Search" Button 2. Input the Keyword of the Song 3. Press "Search" Button 4. Select one of the song. 5. Press "Reserve" Button
the case of keyword search	The same as above

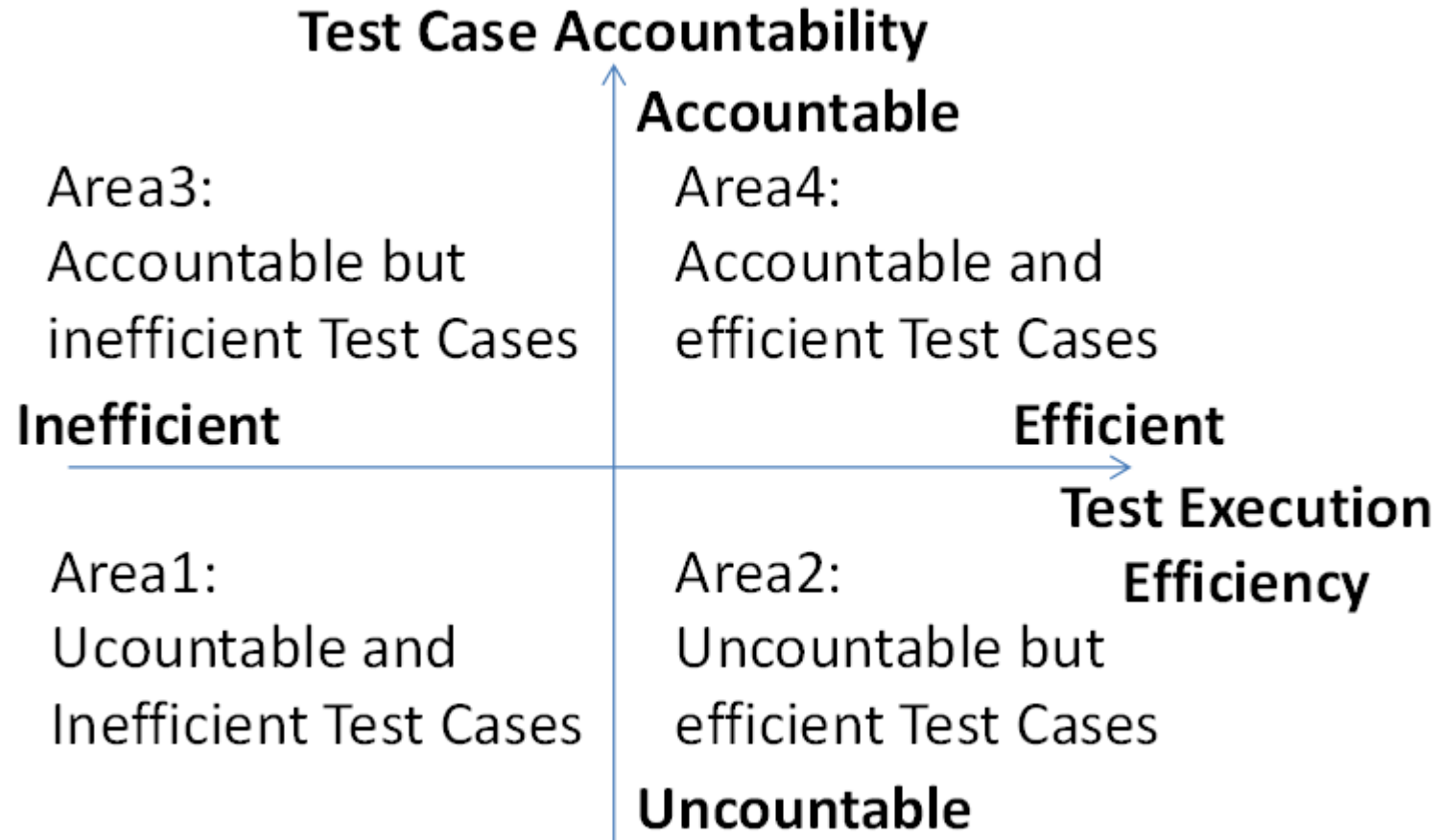
Example Stepwise Designed Test Cases



Test model like Fig is often used while this type of test cases are designed.

ANALYSIS OF WRITTEN TEST CASES

Classification of Two Axis



Written Test Cases Positioning Map

Vertical Axis : Test Cases Accountability

Unaccountability

- The test suite composed of unaccountable test cases is not structured.
- This characteristic often causes difficulty in describing overview.
- These unaccountable test cases are usually difficult to review.
- It is also hard to confirm traceability among test cases and software specification documents.

Accountability

- The test suite composed of accountable test cases is usually structured and stepwise designed.
- Abstract overview pictures assist to review the test cases.
- This type of test cases has relatively less omissions.
- Test objectives of these test cases are clarified.

Test cases accountability means that test objectives is easy for system owners and test operators.

Horizontal Axis : Test Execution Efficiency

Inefficient

- Each test cases has only a few test steps to confirm one or a few test objectives.
- Same test step is used many times in the test cases.

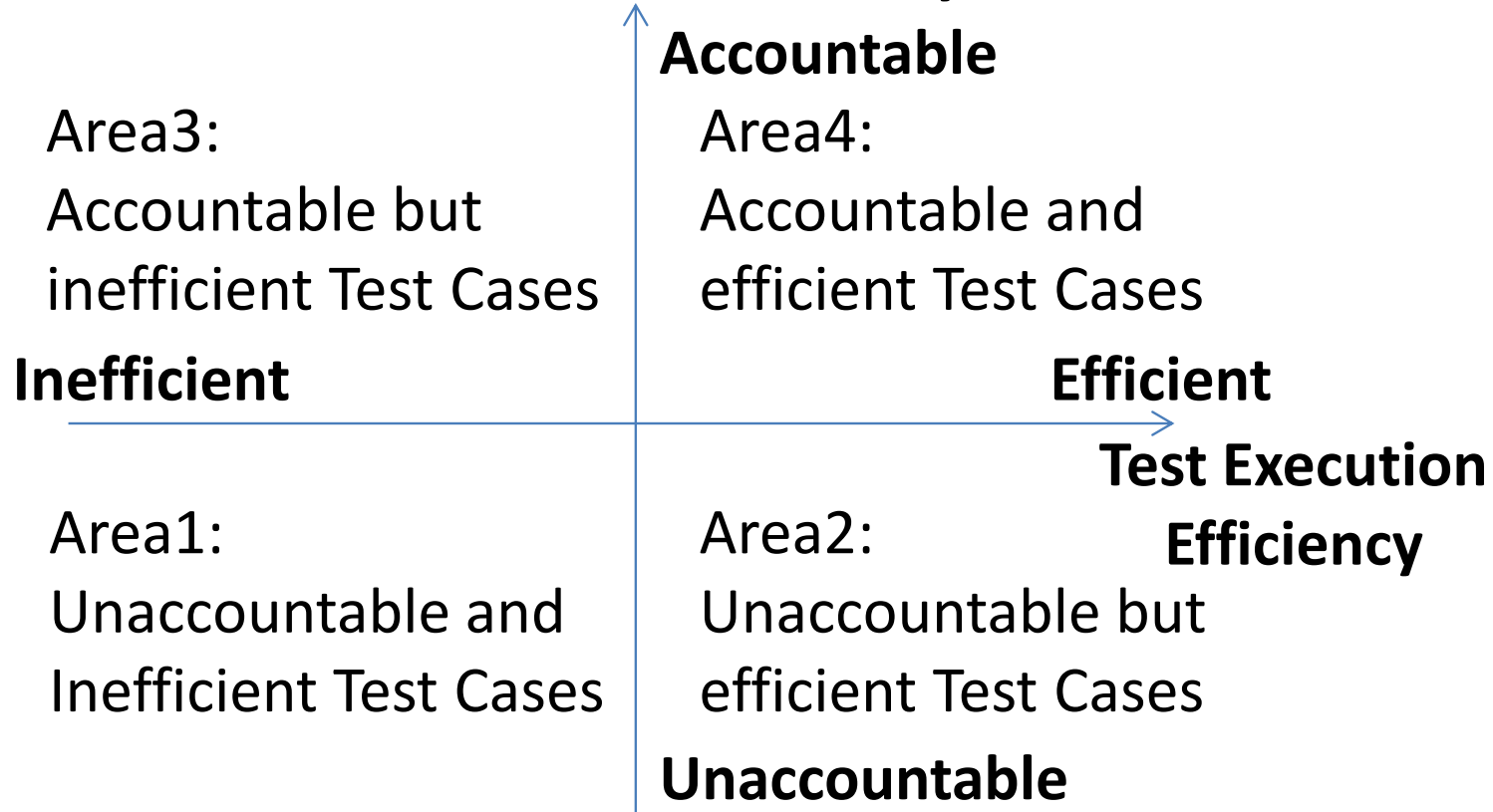
Efficient

- Test cases has several test steps for efficient test execution.

Characteristics of Test Cases in each area

Test Case Accountability

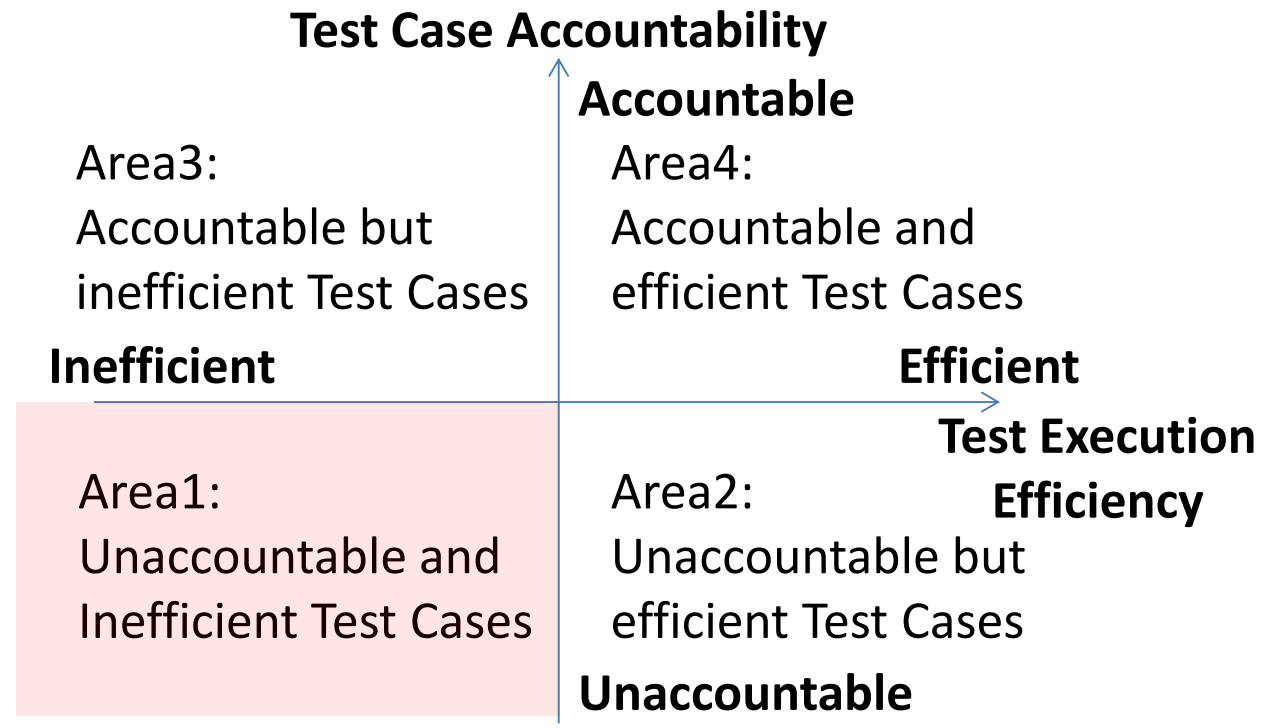
The written test cases positioning map has 4 areas.



Written Test Cases Positioning Map

Characteristics of the Area 1 Test Cases

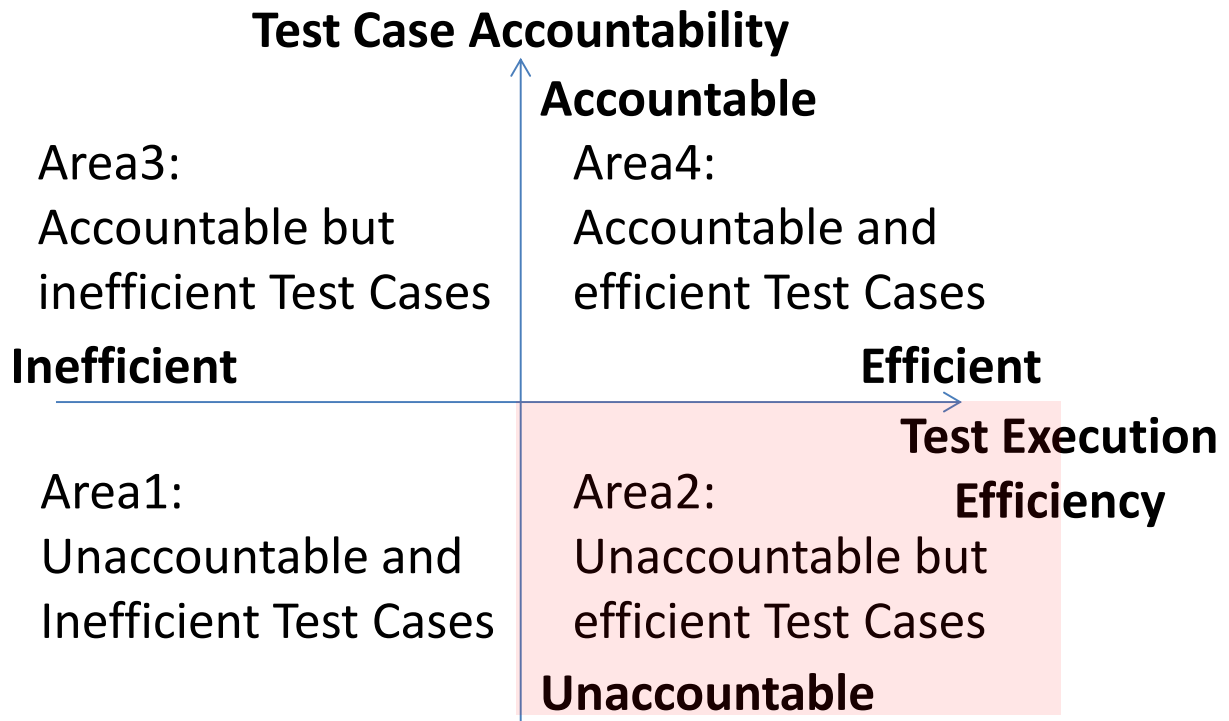
- Test Cases in this area are unaccountable and inefficient.
- The CPM test cases are representative of test cases in area1 of chapter.



Written Test Cases Positioning Map

Characteristics of the Area 2 Test Cases

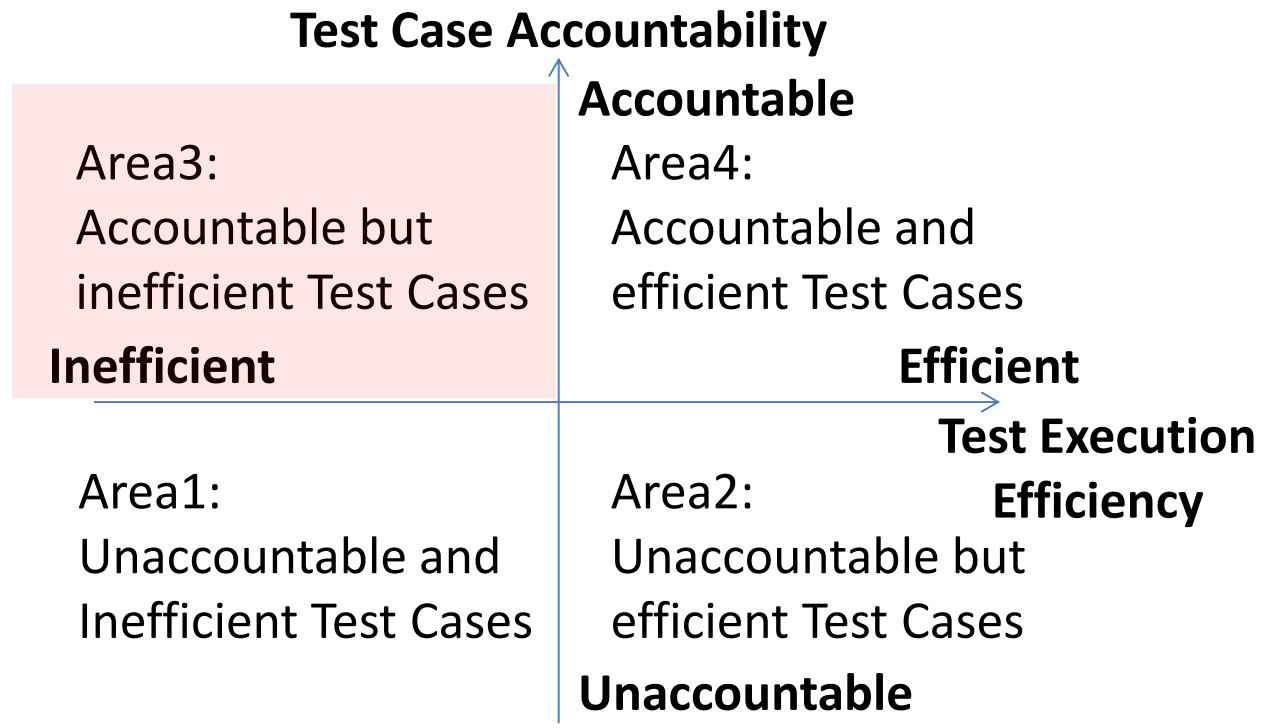
- Test cases are efficient at test execution.
- A test cases in area 2 can be integrated from several test cases in area 1 or area 3.
- Multiple test objective are mixed in a test cases.



Written Test Cases Positioning Map

Characteristics of the Area 3 Test Cases

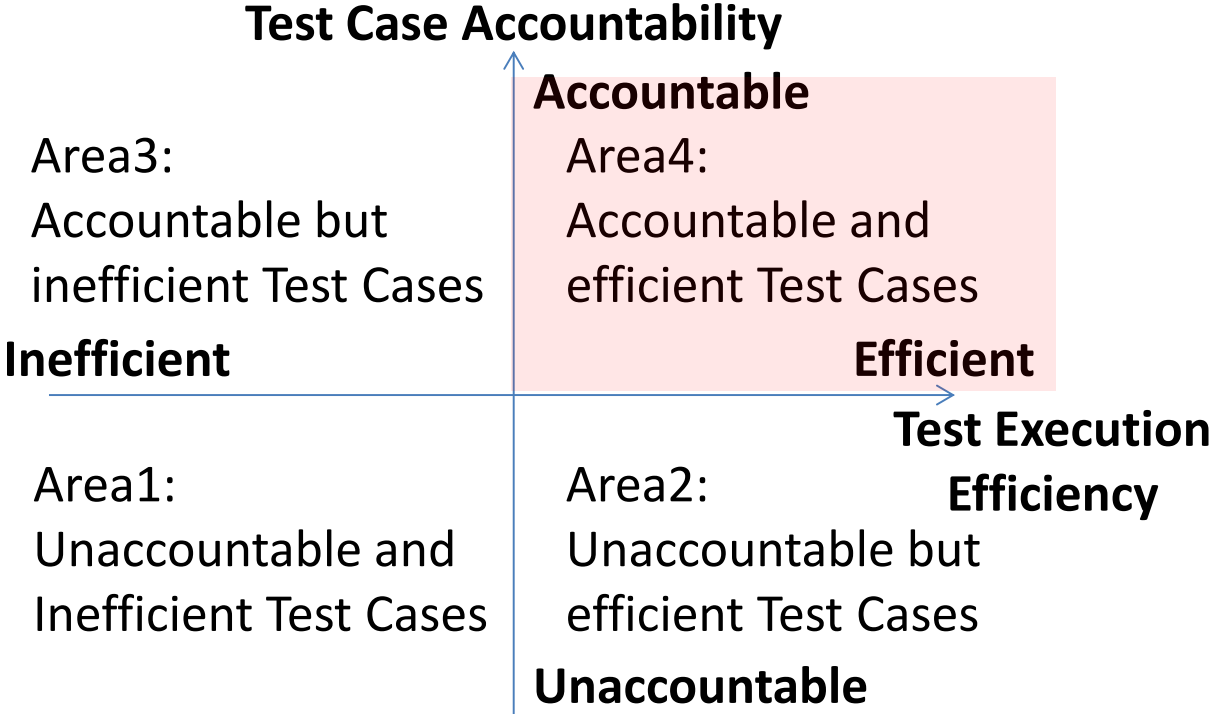
- Test cases in this area have characteristics of accountable test cases.
- The stepwise designed test cases are mapped in this area 3.



Written Test Cases Positioning Map

Characteristics of the Area 4 Test Cases

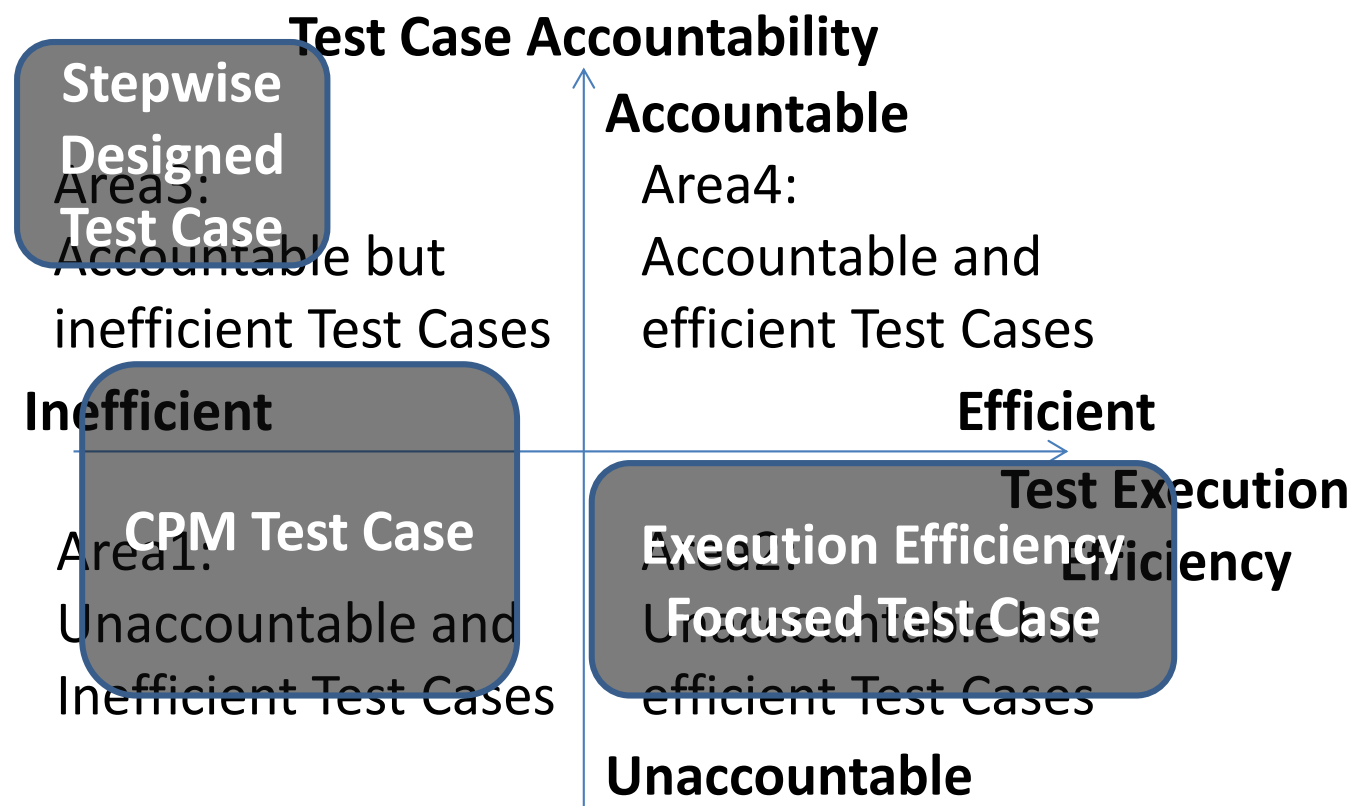
- Test cases in this area are accountable and efficient.



Written Test Cases Positioning Map

Mapping of each Type of Test Cases

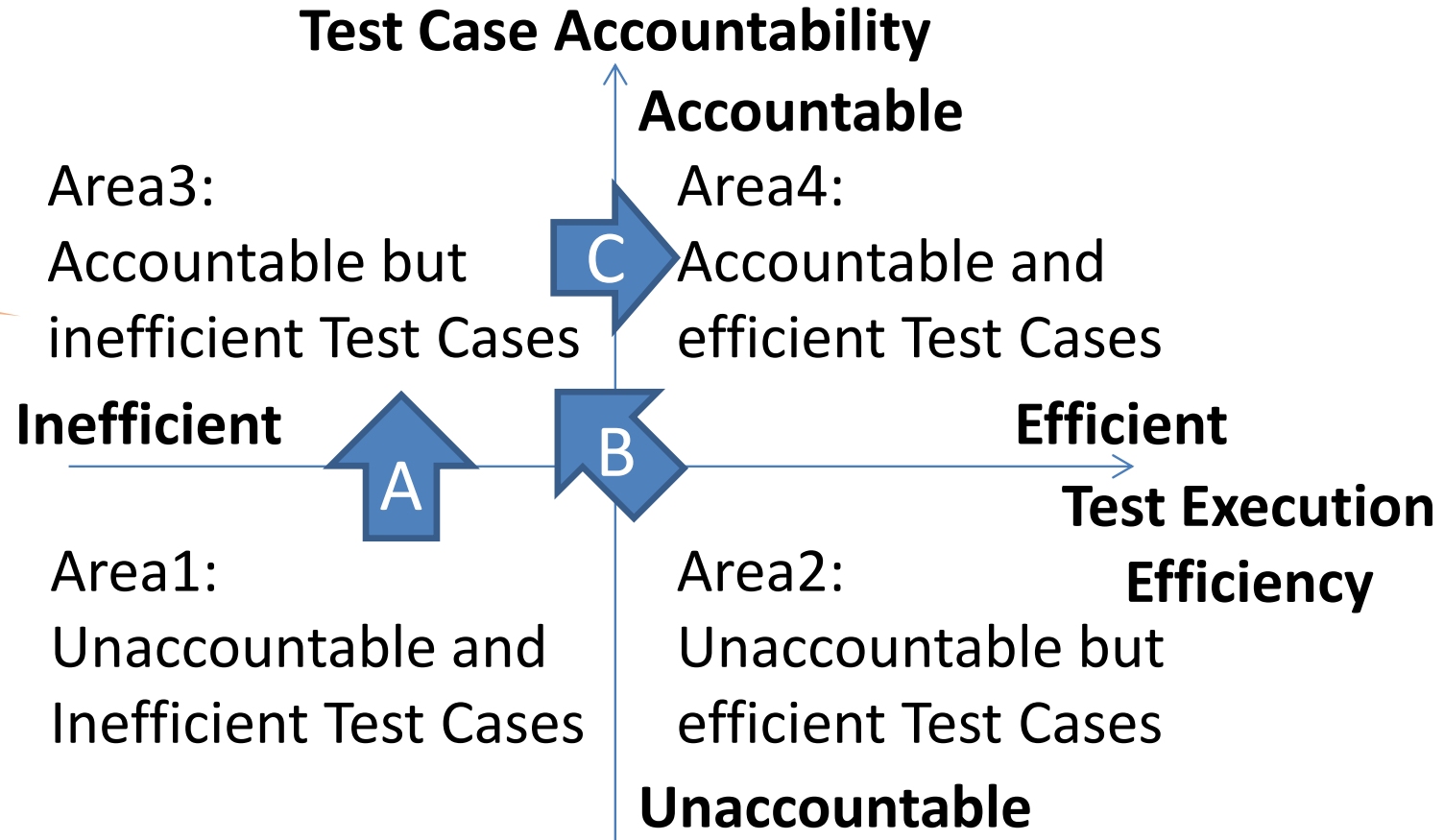
Fig shows each type of test cases in mapped on the written test cases positioning map.



Written Test Cases Positioning Map

3 categories of improvement

We summarize 3 categories of improvement.



Written Test Cases Positioning Map

To Achieve BETTER TEST CASES

- We consider coexistence of test execution efficiency and test suite accountability is ideal.
- Solutions for improvement from area 1 or area 2 test cases to area 3 test cases have been already proposed to achieve better test cases.
- In the situation that test resource is sufficient, the area 3 test cases are also effective.

Special Thanks

specified nonprofit corporation
ASTER

Aster has been tolerant and supportive ...

ASTER:Association of Software Test EngineeRing

What is TEF-Do?

- Testing Engineer's Forum
 - Hokkaido software test study meeting
 - Also known as “**TEF-Do**”
- It is formed by people who have relationship in Hokkaido.
- **Activity**
 - Study group
 - Interaction with other study group
 - Gathering

