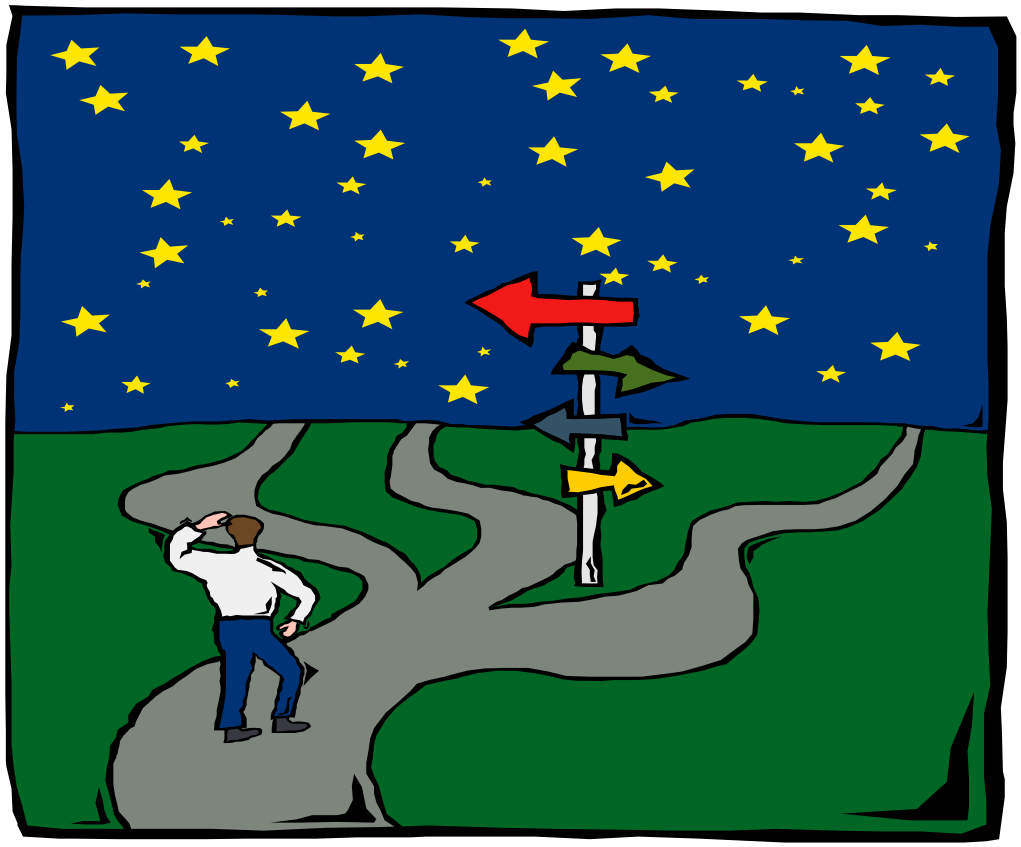
How to control your outsourced testing?



Subjects

Introduction

- Outsourcing?
- Structured Test Outsourcing

How to *control* your outsourced testing?

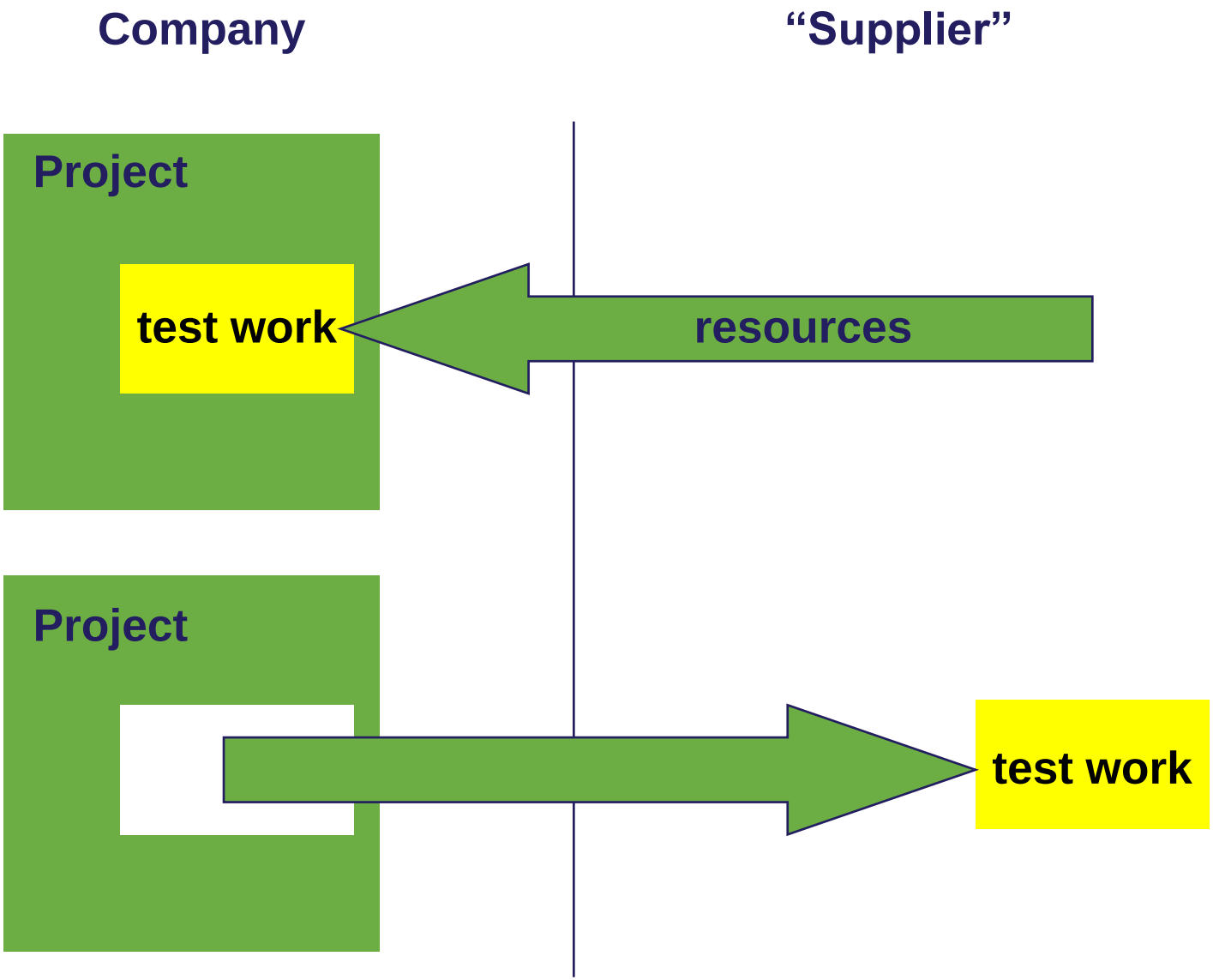
- Adequate Scoping
- Generic agreements (GMTP)
- Outsourcing
  - Management
  - Monitoring
    - Controls
    - Metrics
    - Health checks

Types of "*out*"-sourcing

- Outsourcing
- In-sourcing
- Co-sourcing
- *Selective outsourcing*
- *Off*-shoring
- Business Process Outsourcing (BPO)
- Right-sourcing
- Etc.

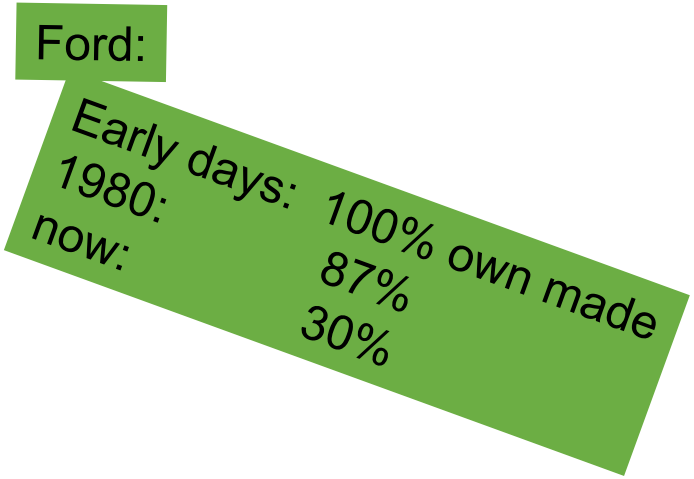
Back-sourcing?

Outsourcing and offshoring types



Is outsourcing new?

- Nature
- Construction
- Aviation
- Catering
- Health care
- ……



Outsourcing of Testing: some challenges

- Risk based testing and coverage
- Estimation
- Test maturity
- Final “gateway” to life
- “Agile” development
- Availability of business expertise
- Separation of functions
- Management and control
- Rigidity versus flexibility
- What remains?

Guidance required

Subjects

Introduction

- Outsourcing?
- Structured Test Outsourcing

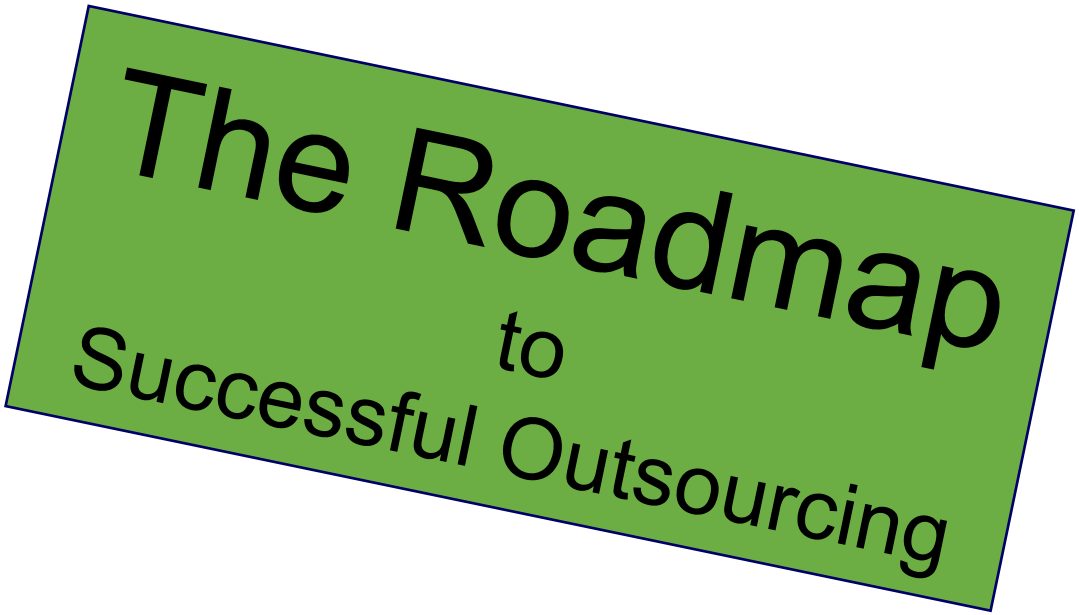
How to *control* your outsourced testing?

- Adequate Scoping
- Generic agreements (GMTP)
- Outsourcing
  - Management
  - Monitoring
    - Controls
    - Metrics
    - Health checks

Structured Test Outsourcing

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring

- Definition of strategy
- Selection of supplier
- Creation of contract
- Transition
- Management and Monitoring



polteq

Definition of strategy

- Objectives
  - Why?
    - Cost reduction
    - Lack of resources

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring

Definition of strategy

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring

- Objectives
  - Why?
- Scope
  - What? When?
    - Test execution
    - Test automation
    - Test levels/types
      - system testing
      - regression testing
      - load and performance testing
      - security testing
    - All testing
    - Development and testing
    - *Only (non-)strategic applications?*

TOGA scoping technique

Definition of strategy

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring

- Objectives
  - Why?
- Scope
  - What? When?
- Approach
  - How?
    - Type of (out-)sourcing
    - Order and planning
    - Functions, roles and tasks
    - People issues, unions
    - Test environments and tools
    - Transition time and budget

Selection of supplier

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring

- Profile of supplier
- Request for proposal?
- Analyze, discuss and “negotiate“ proposals
- Letter *(statement)* of intent

Creation of contract

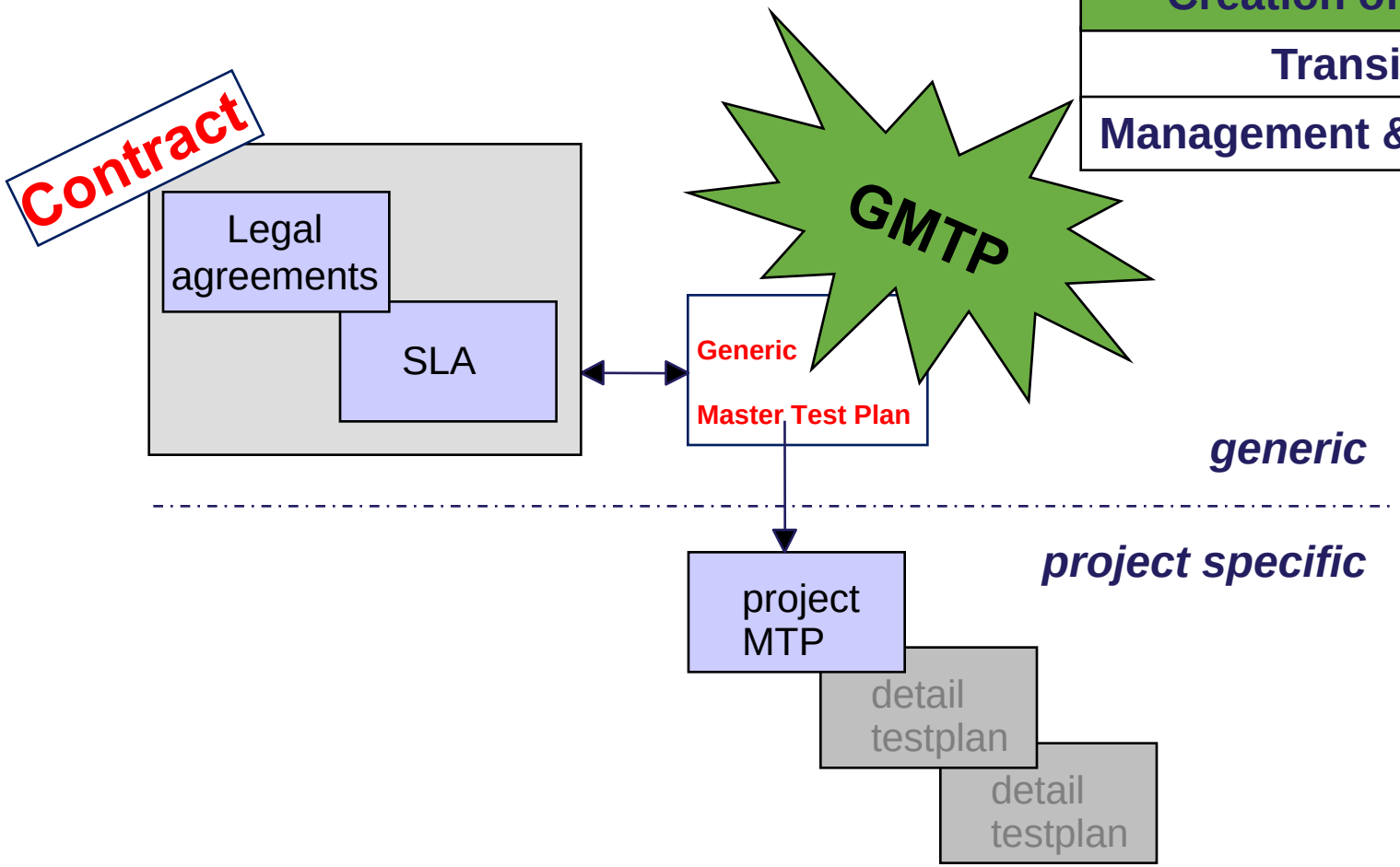
Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring

- Service levels
- Responsibilities
- Contingency
- Rights
- Escalation
- Change control
- Monitoring
- Compensation
- Termination, transition

Legal advisors are in charge of the contract process!

Service levels for test

- Definition of strategy
- Selection of supplier
- **Creation of contract**
- Transition
- Management & Monitoring



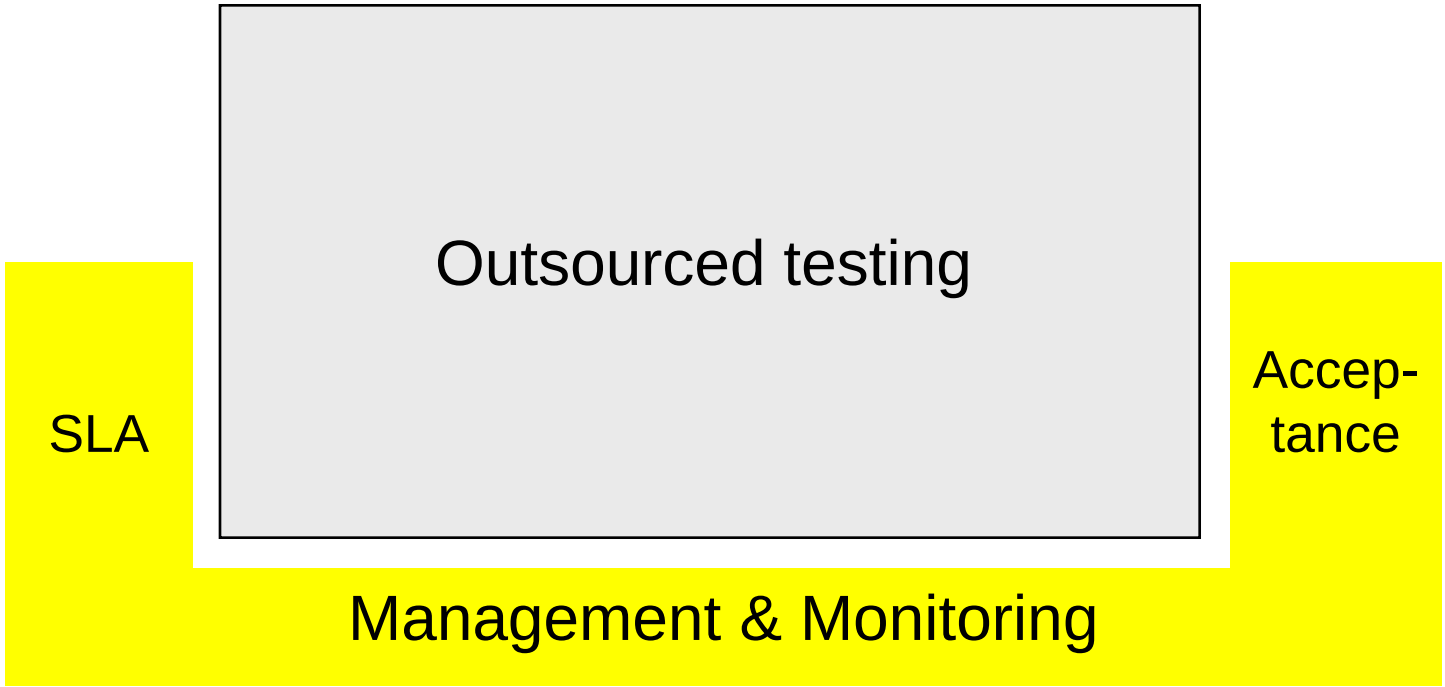
Transition

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring

- Definition of SLA
- Standards, procedures
- Organizational structure
- Test infrastructure, tools
- Knowledge transfer
- Required (extra) budget
- Communication
- Setup management and monitoring
- Remaining organization
- People issues

Management & Monitoring

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring



Subjects

Introduction

- Outsourcing?
- Structured Test Outsourcing

How to *control* your outsourced testing?

- Adequate Scoping
- Generic agreements (GMTP)
- Outsourcing
  - Management
  - Monitoring
    - Controls
    - Metrics
    - Health checks

Scoping

- What?
- When?

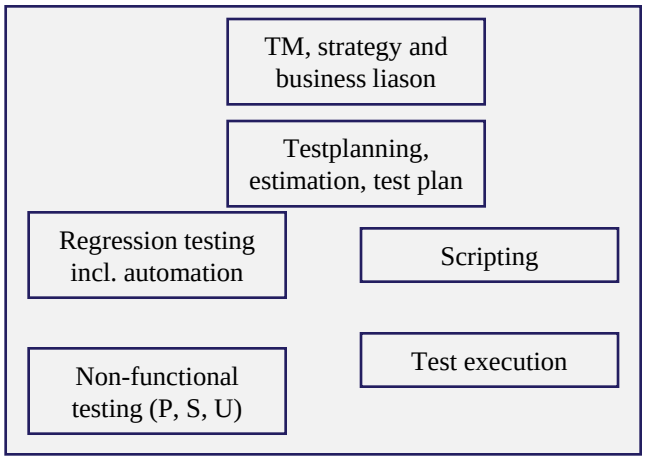
Scope score overview

Example

#		Objectives 1-10	Doability 1-10	Relative Benefit 1-10
1	Outsource everything (design, build and test), ***except*** rqms and final acceptance	6,3	3,7	10
2	Insource all system testing	4	5,1	5
3	Outsource ST, SIT, UAT, NFt, ***incl.*** TM, strategy and planning	5,6	3,2	8
4	Outsource ST, SIT, UAT, NFt, ***except*** TM, strategy and planning	6	5,6	6
5	Outsource ST, SIT, UAT, ***except*** NFt, TM, strategy and planning	6,3	5,8	5
6	Outsource ***only*** automated regression testing	7	6,9	4
7	Outsource ***only*** NFt	4,7	8	2

Scope option:

Outsource ST, SIT, UAT, NFt,
incl. TM, strategy and planning
except rqms & final acceptance



Example

Pros:

- Efficiency, simple
- Transfer of information
- Short communication lines
- Responsibility
- Verifiability
- Business knowledge

Cons:

- Risk analysis
- Separation of tasks
- Monopoly/dependency
- Informality
- Acceptance

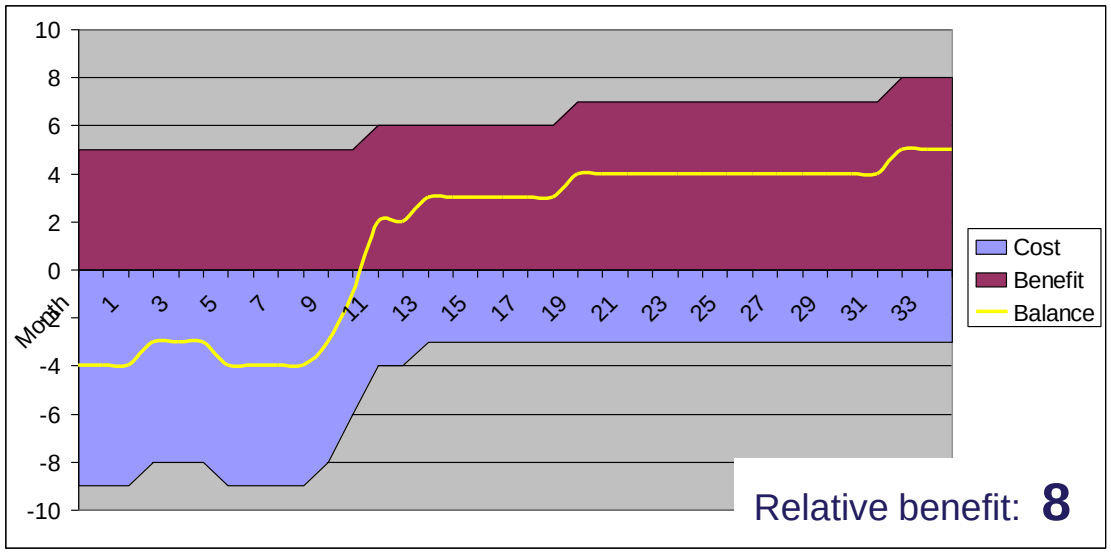
Sourcing options:

- Fully outsourced
- Full TOGA required

Objectives:

1-10 (10 = best)	Score	Weigt	
Quality	6	-	
Costs	7	-	
Flexibility	4	-	
Contribution			**5,6**

Time, costs, benefits and balance:



Relative benefit: **8**

Prerequisites:

1-10 (10 = best)	Ability	Weight	Score
Implementation	1	2	2
BAU	3	8	24
Organisation	5	5	25
Maturity	3	8	24
Doability			**3,2**

Next steps, Strategy

Example

#		Objectives 1-10	Doability 1-10	Benefit 1-10
1	Outsource everything (design, build and test), ***except*** rqms and final acceptance	6,3	3,7	10
2	Insource all system testing	4	5,1	5
3	Outsource ST, SIT, UAT, NFt, ***incl.*** TM, strategy and planning	5,6	3,2	8
4	Outsource ST, SIT, UAT, NFt, ***except*** TM, strategy and planning	6	5,6	6
5	Outsource ST, SIT, UAT, ***except*** NFt, TM, strategy and planning	6,3	5,8	5
6	Outsource ***only*** automated regression testing	7	6,9	4
7	Outsource ***only*** NFt	4,7	8	2

Rough recommendations

- Improve processes to “required” level
- Implement “TOGA”
- Implement option 6
- Continue with 5 and 4
- Continue towards 3
- Recruit accordingly

Subjects

Introduction

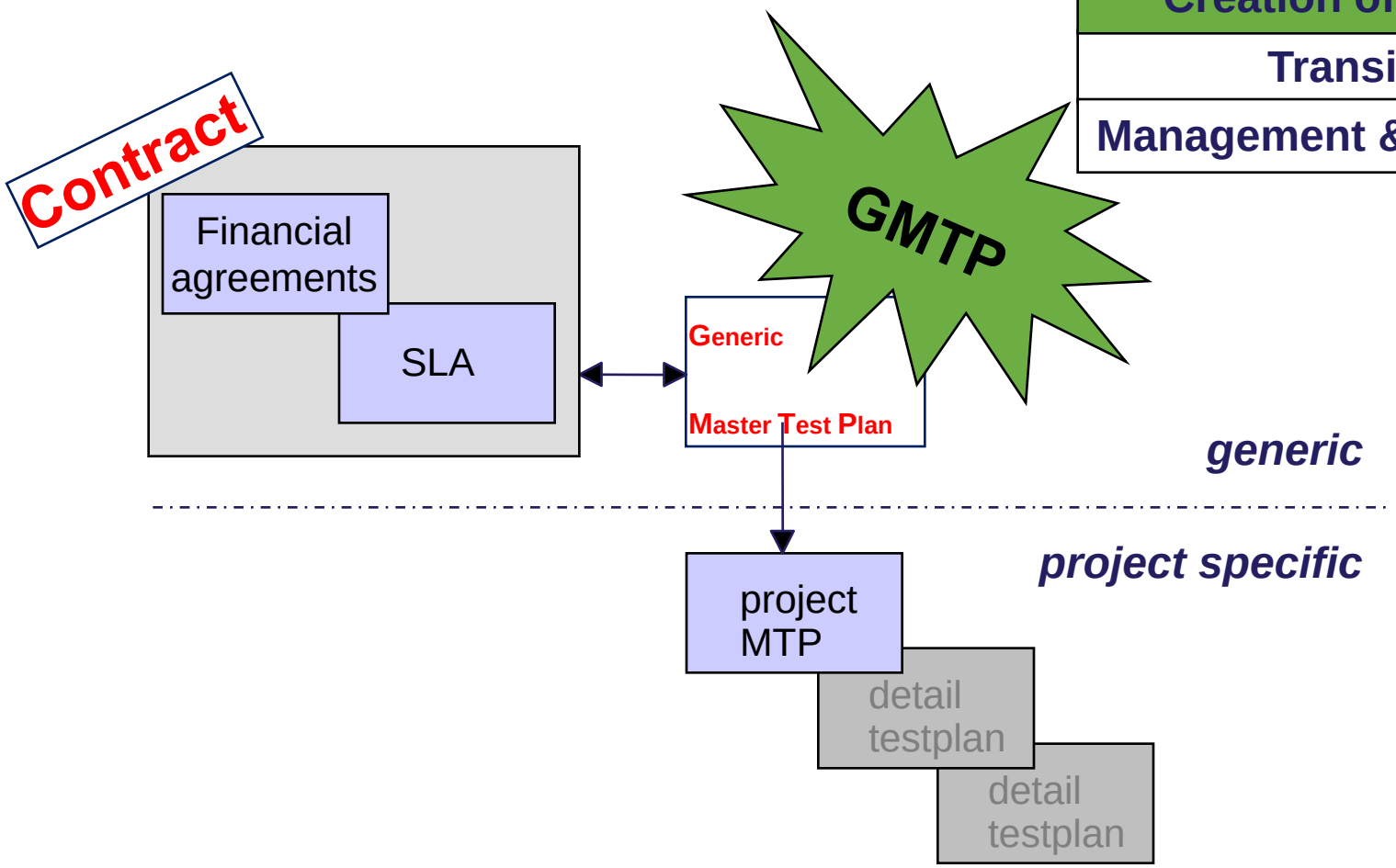
- Outsourcing?
- Structured Test Outsourcing

How to *control* your outsourced testing?

- Adequate Scoping
- Generic agreements (GMTP)
- Outsourcing
  - Management
  - Monitoring
    - Controls
    - Metrics
    - Health checks

Service levels for test

- Definition of strategy
- Selection of supplier
- **Creation of contract**
- Transition
- Management & Monitoring



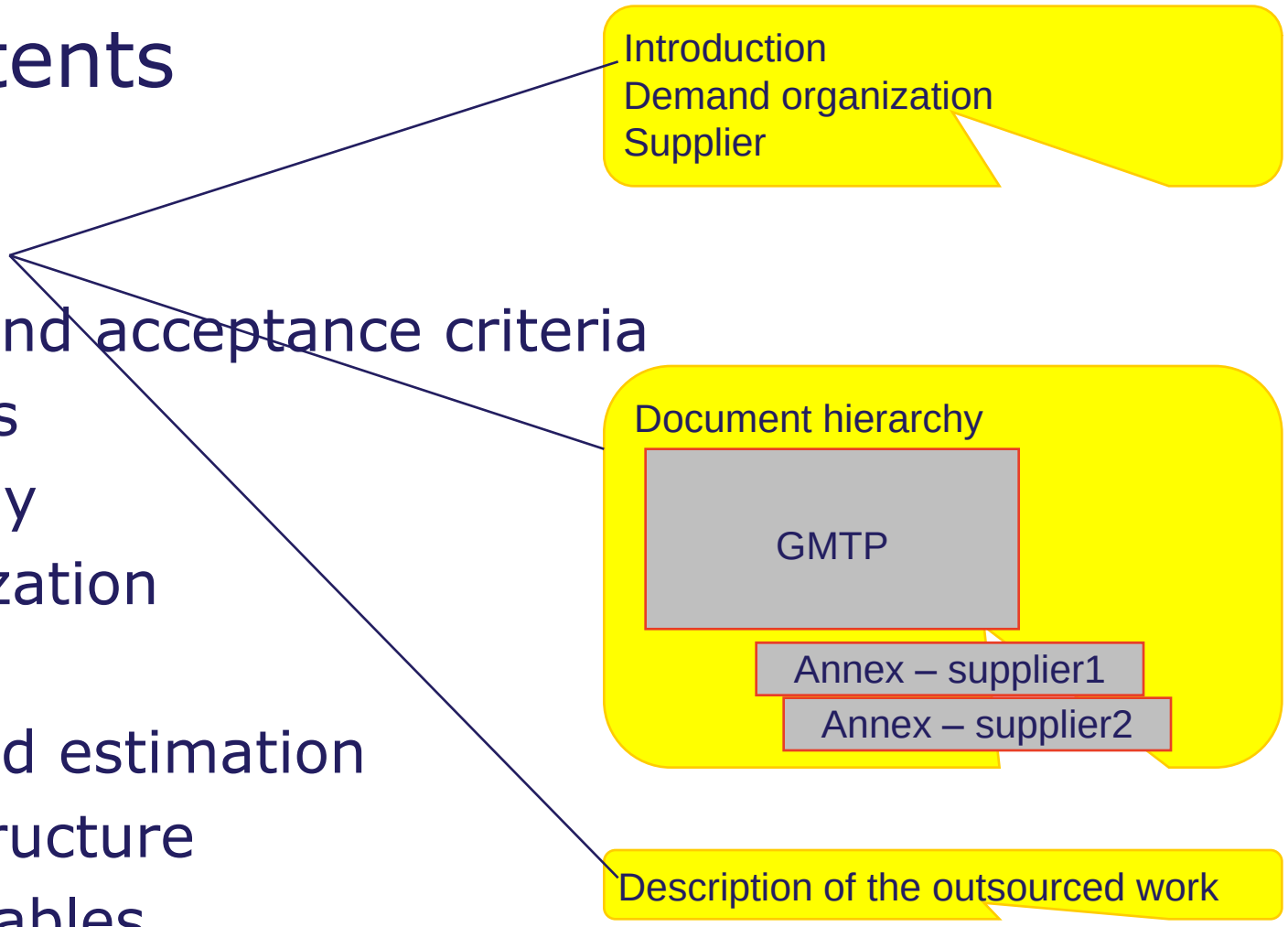
GMTP contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring

GMTP contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous



GMTP Contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous

Review test basis

Start criteria
Stop criteria
Acceptance criteria
– # remaining defects
– actual test coverage

Monitoring
- Controls on test deliverables
- Metrics
- Health checks (audits)

GMTP Contents

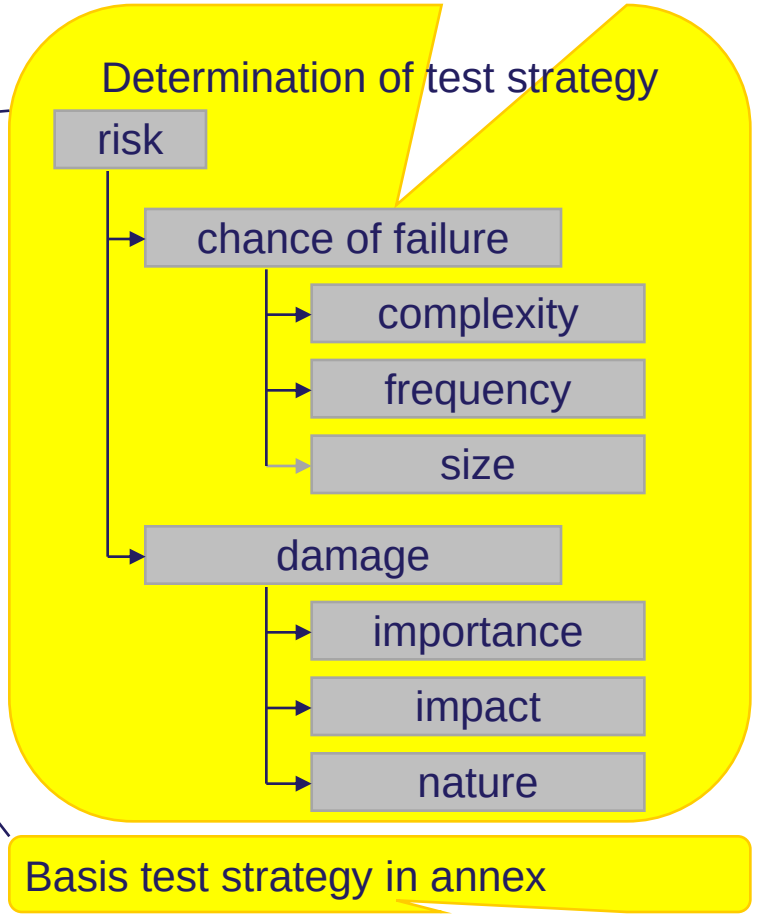
- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous

Reference to IEEE, TMap® or ?

Test levels e.g.:
- Unit test
- System and Acceptance test
- System integration test
- Demo
- Operational acceptance test

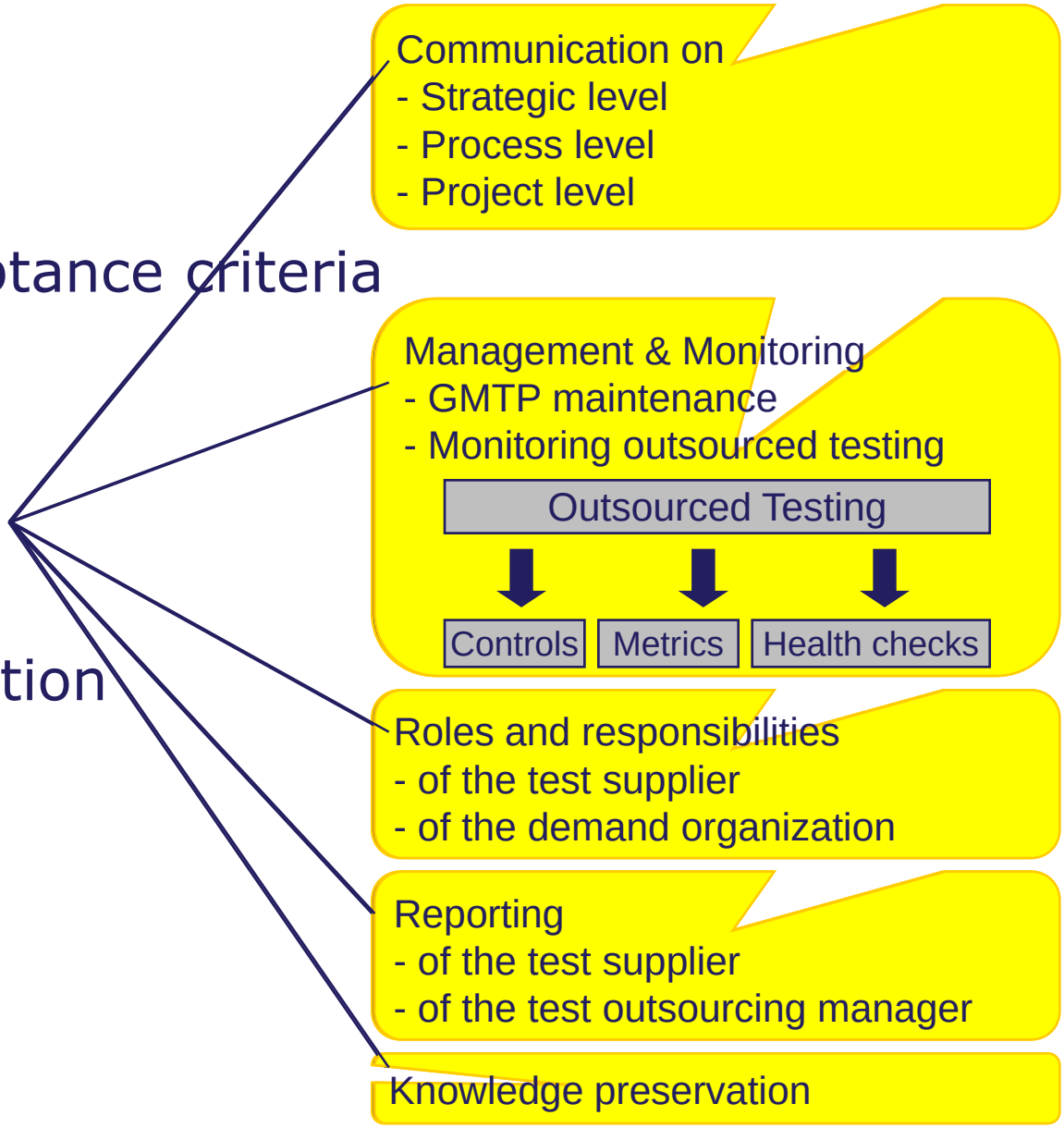
GMTP Contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous



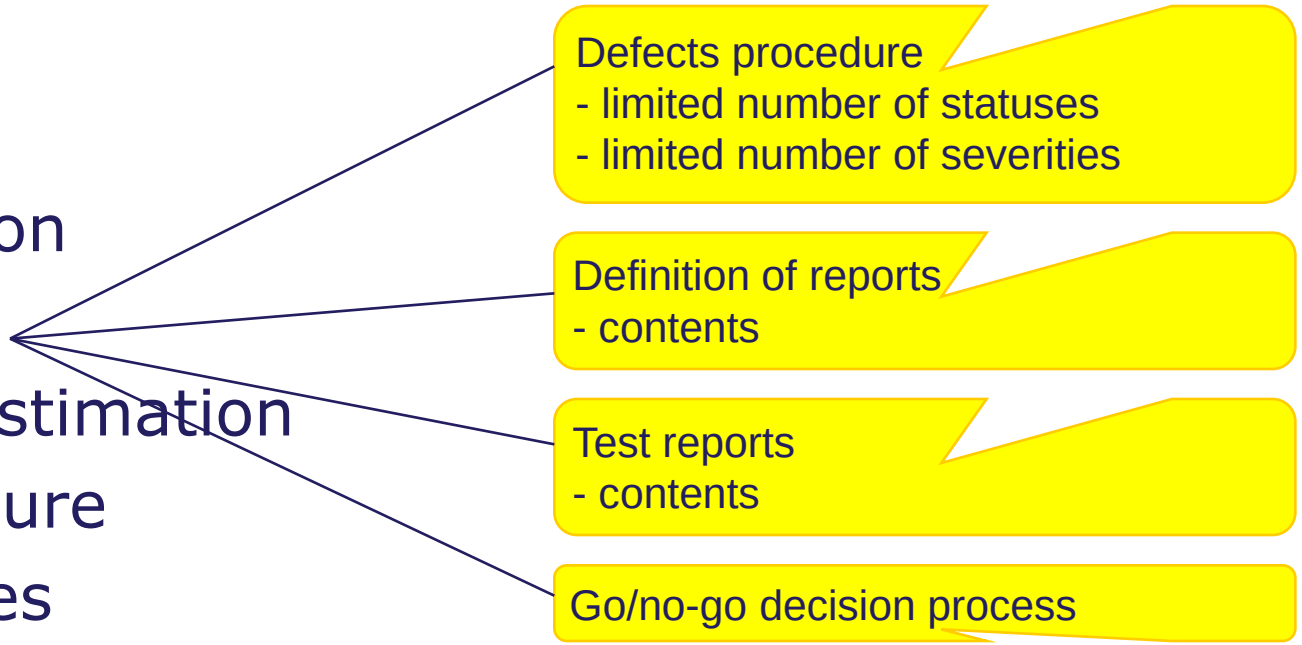
GMTP Contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous



GMTP Contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous



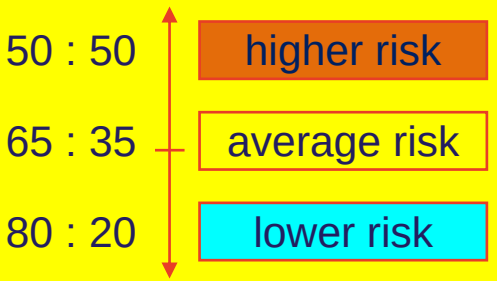
GMTP Contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous

Milestones
- test plan ready
- test specifications completed
- test execution completed
- test report completed

Industrial norms

FD,B : T

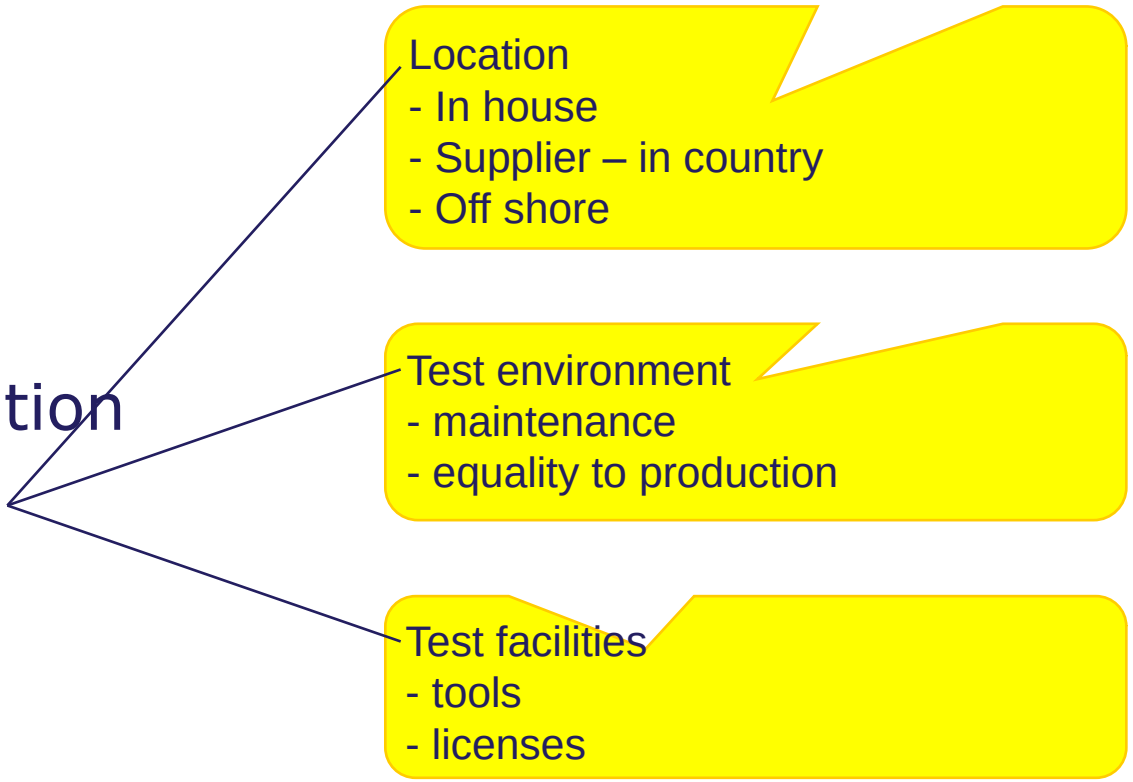


Scalability

Project size	required
A	Master & detail test plans
B	Master & detail combined
c	Test plan - light

GMTP Contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous



GMTP Contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous

Test deliverables
- logical test cases
- physical test cases
- test data

Test project deliverables
- master test plan
- detailed test plan
- progress reports
- defects reports
- test report

GMTP Contents

- General
- Test basis and acceptance criteria
- Test process
- Test strategy
- Test organization
- Procedures
- Planning and estimation
- Test infrastructure
- Test deliverables
- Miscellaneous

- list of abbreviations
- examples
- templates, check lists
- scalability model
- ….

Subjects

Introduction

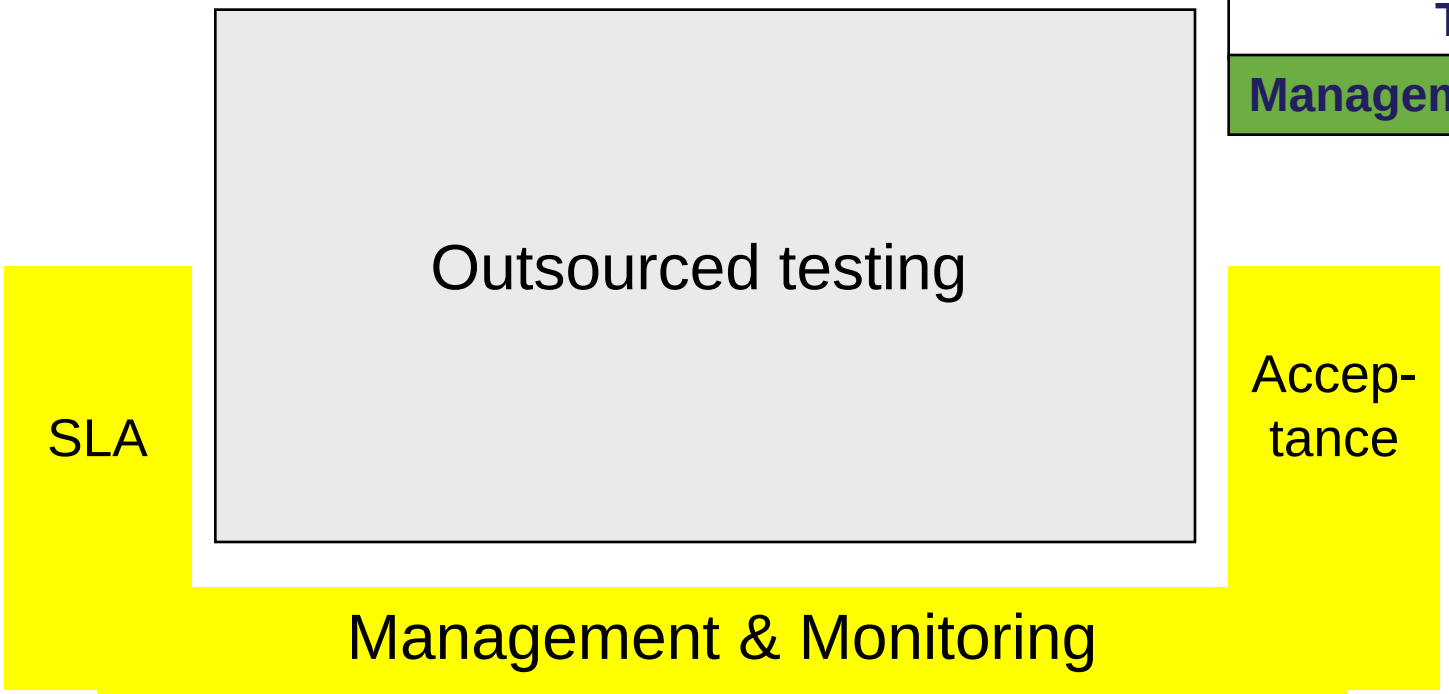
- Outsourcing?
- Structured Test Outsourcing

How to *control* your outsourced testing?

- Adequate Scoping
- Generic agreements (GMTP)
- Outsourcing
  - Management
  - Monitoring
    - Controls
    - Metrics
    - Health checks

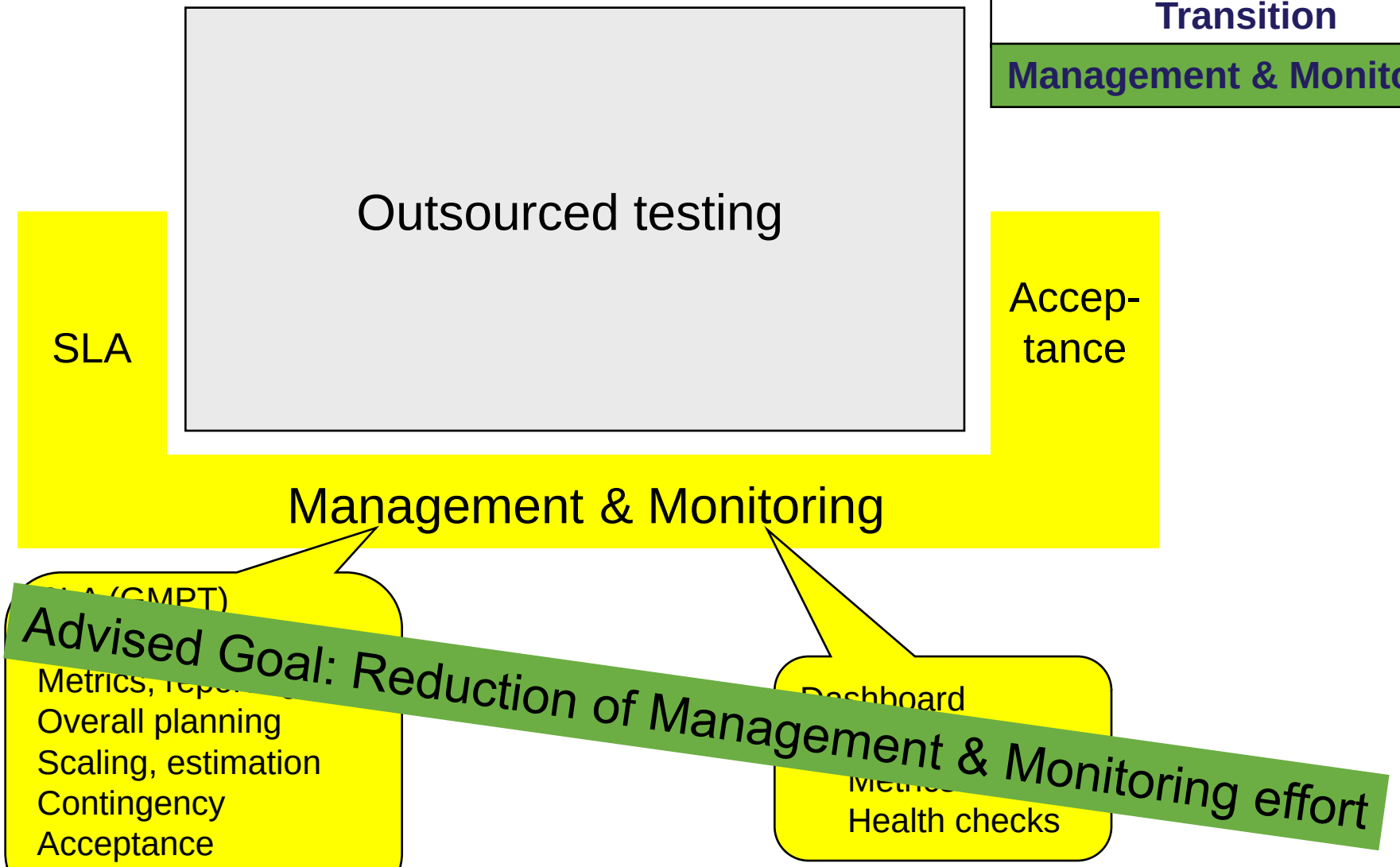
Management & Monitoring

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring



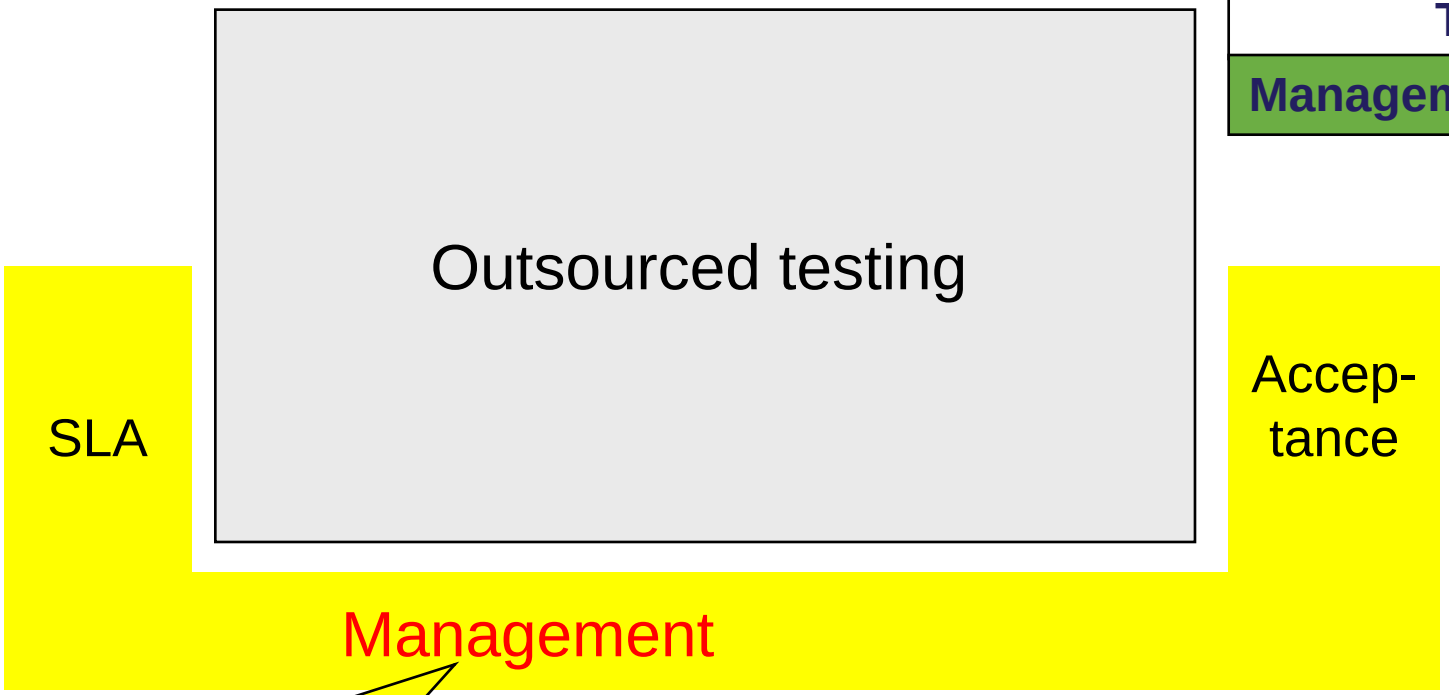
Outsourcing management & monitoring

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring



Outsourcing management & monitoring

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring



Outsourcing management *in practice*

- Supplier management
- GMTP Management
- Reporting and escalation
- Managing demand side
- Working with projects
- Remaining test activities
- Managing own task
- Any other management

Outsourcing management

- Supplier management
- GMTP Management
- Reporting and escalation
- Managing demand side
- Working with projects
- Remaining test activities
- Managing own task
- Any other management

GMTP compliancy
Proper use of risk analysis
Proper use of test techniques
Proper use of scalable approach
Proper use of templates
Reusable test ware
Innovation
Test automation
Supplier performance on test
Separation of test and build
# of re-releases due to defects
Shape of test environments

Innovation
Remove ineffective parts
Add new elements
Adjust to new trends like ‘off shore’
Yearly update
New suppliers

Outsourcing management

- Supplier management
- GMTP Management
- Reporting and escalation
- Managing demand side
- Working with projects
- Remaining test activities
- Managing own task
- Any other management

Reporting to senior management
Escalation in time
Proper balance between yes or no to escalate
Stay independently

Involvement in risk analysis
Role in test process
Role in functional specifications
Politics

Project leader/manager is in charge
When to escalate and bypass
Project evaluations
Instable specifications
Risk analysis

Outsourcing management

- Supplier management
- GMTP Management
- Reporting and escalation
- Managing demand side
- Working with projects
- Remaining testactivities
- Managing own task
- Any other management

Watch the remaining test activities
Production acceptance test
Security test/audit
Performance tests
E2E-Integration tests
Be aware of growing test centers again!

New opportunities
Innovations
Tooling
Own position in the hierarchy

'Spread the word' (GMTP buy in)
Detect problems in approach
Detect problems in transition
Not satisfied stakeholders
Coupling to audits, SOX
Quality of the project leaders

Subjects

Introduction

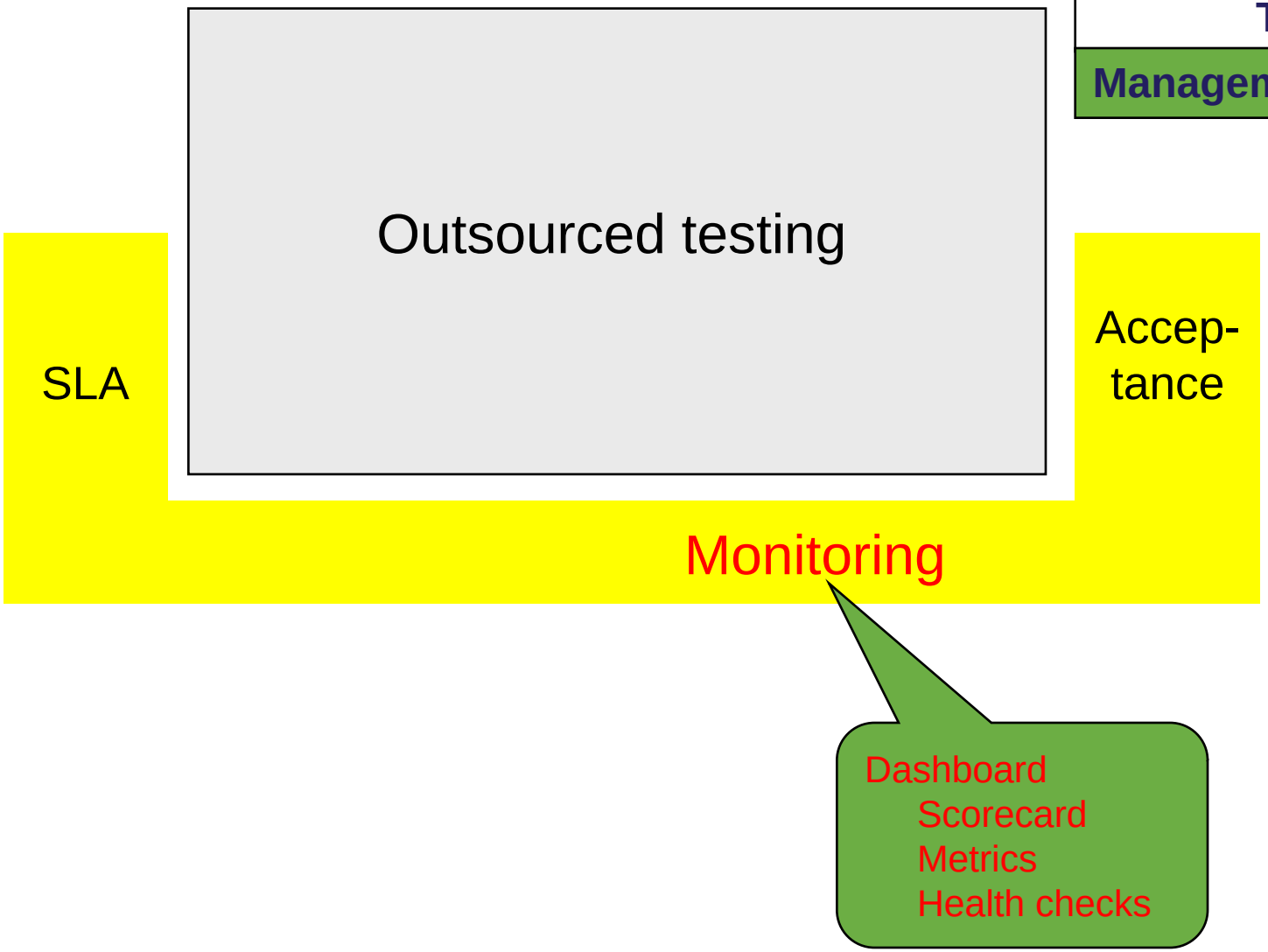
- Outsourcing?
- Structured Test Outsourcing

How to *control* your outsourced testing?

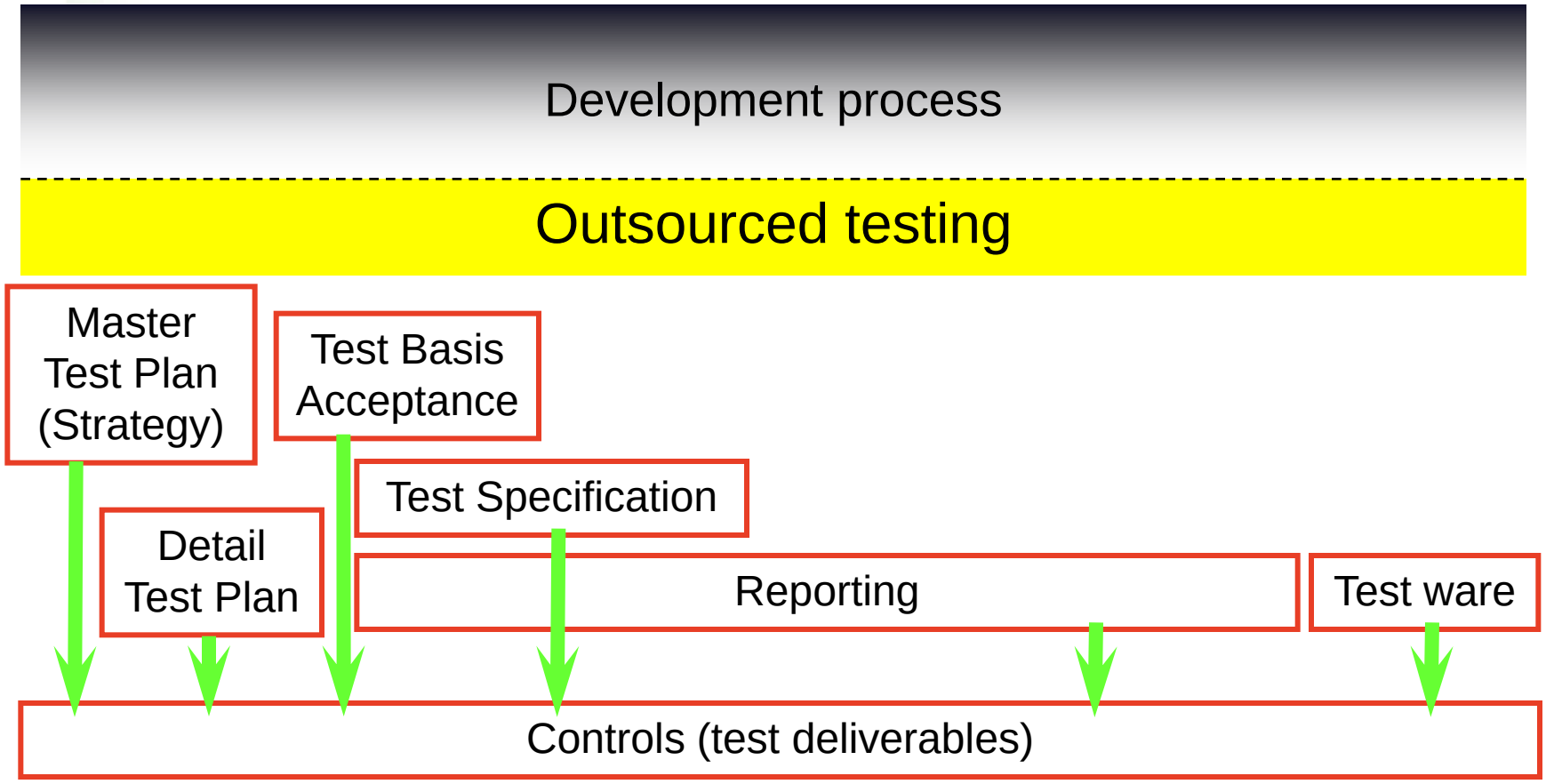
- Adequate Scoping
- Generic agreements (GMTP)
- Outsourcing
  - Management
  - Monitoring
    - Controls
    - Metrics
    - Health checks

Outsourcing management & monitoring

Definition of strategy
Selection of supplier
Creation of contract
Transition
Management & Monitoring

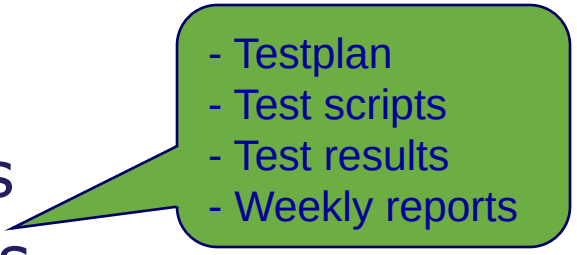


Monitoring outsourced testing

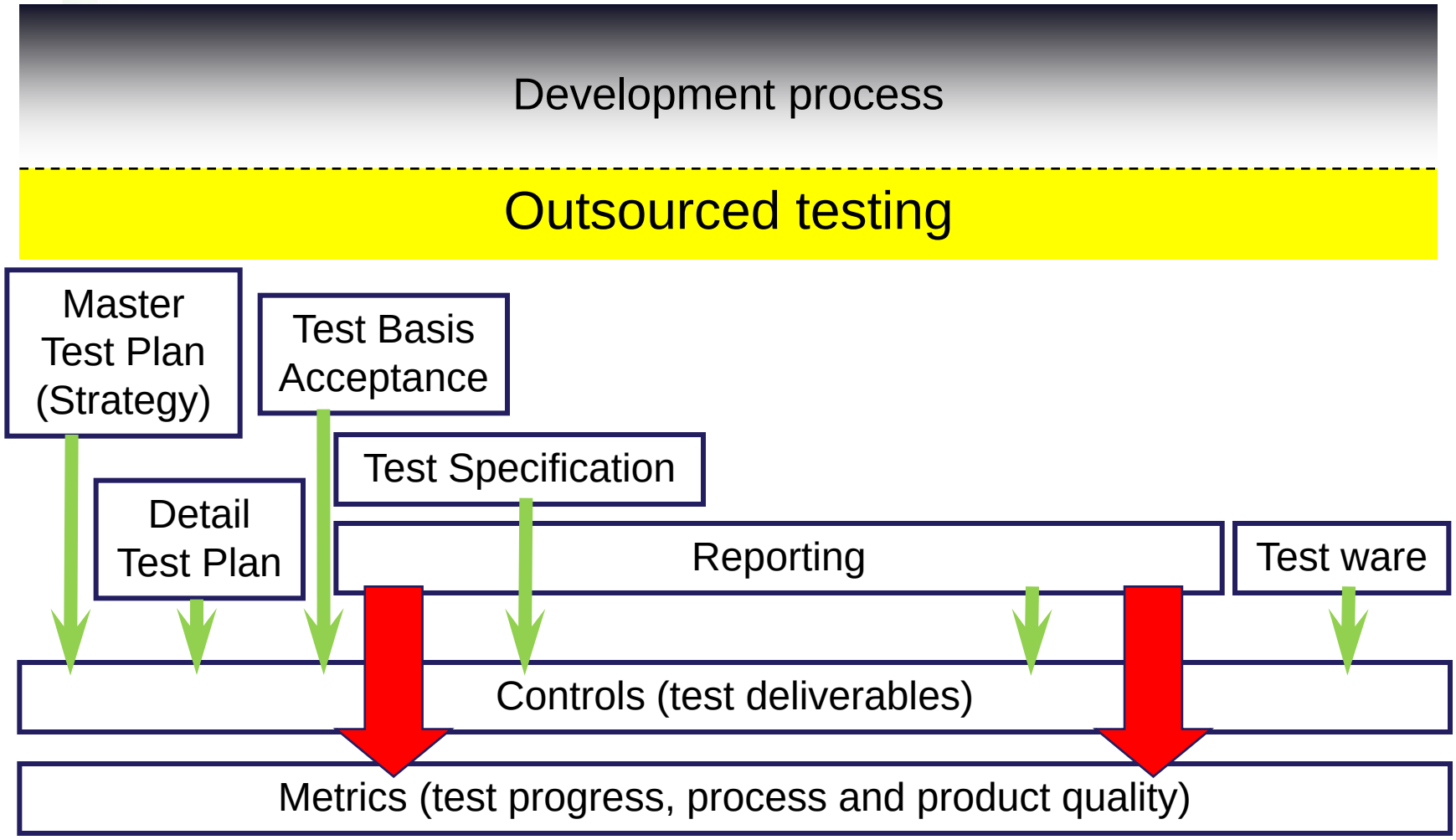


Controls

- Control on existence of test products
- Content check on those test products
- Using checklists (related to standard, *in fact GMTP*)
- Findings reported *to the project leader and supplier*
- Escalation of high risks to senior management



Monitoring outsourced testing



Objectives for test metrics

- Measure test progress
- Measure the quality of the test object
- Measure the quality of the test process
- Create a basis for test estimation
- Control the defects process
- Look for possible weak spots in development

Basic data:

- ***Test cases***
- ***Defects***
- ***Hours***

Metrics per project phase

- During the test execution phase
- Towards the end of test execution
- After test execution
- After project completion
- Advanced metrics

1. Test execution progress
2. Test execution success
3. Outstanding defects
4. Test hours burn rate

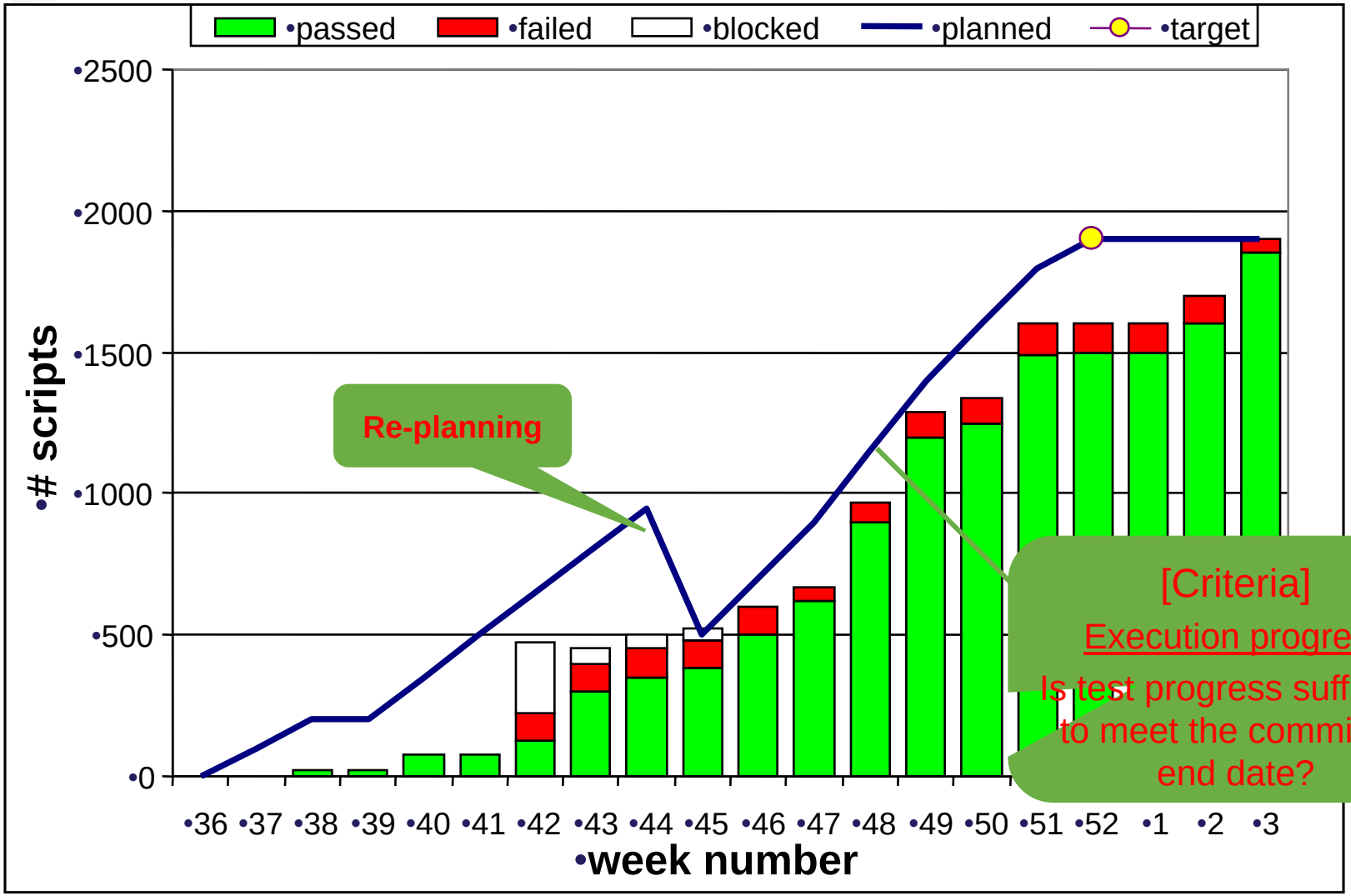
5. Test coverage
6. Q: % passed tests
7. Q: # remaining defects

8. Hours per test case
9. Hours per defect
10. Testing hours %

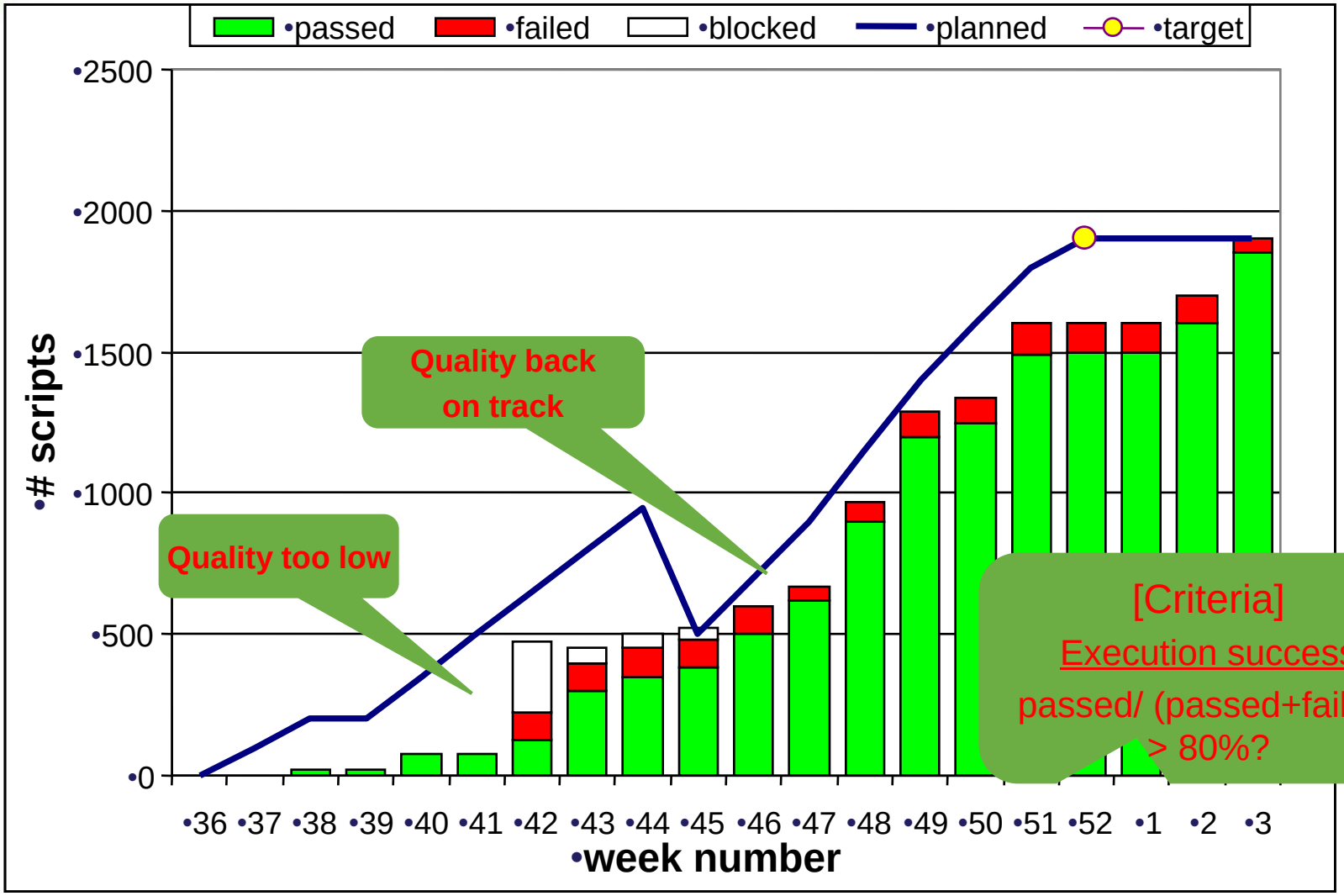
11. Defects in production

12. Test specification progress
13. Defects solution turn around time
14. Defects root cause

(1) Test execution progress

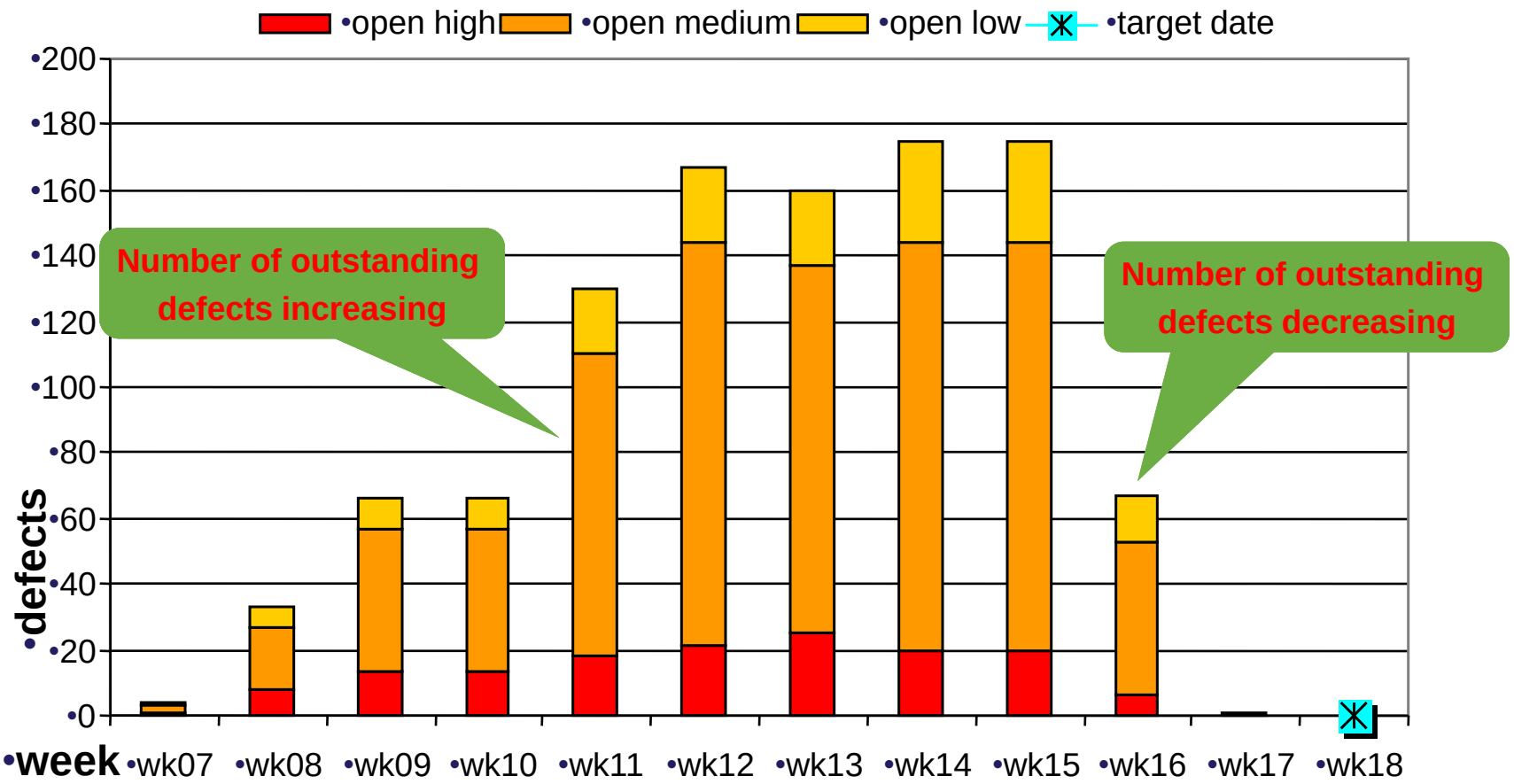


(2) Test execution success



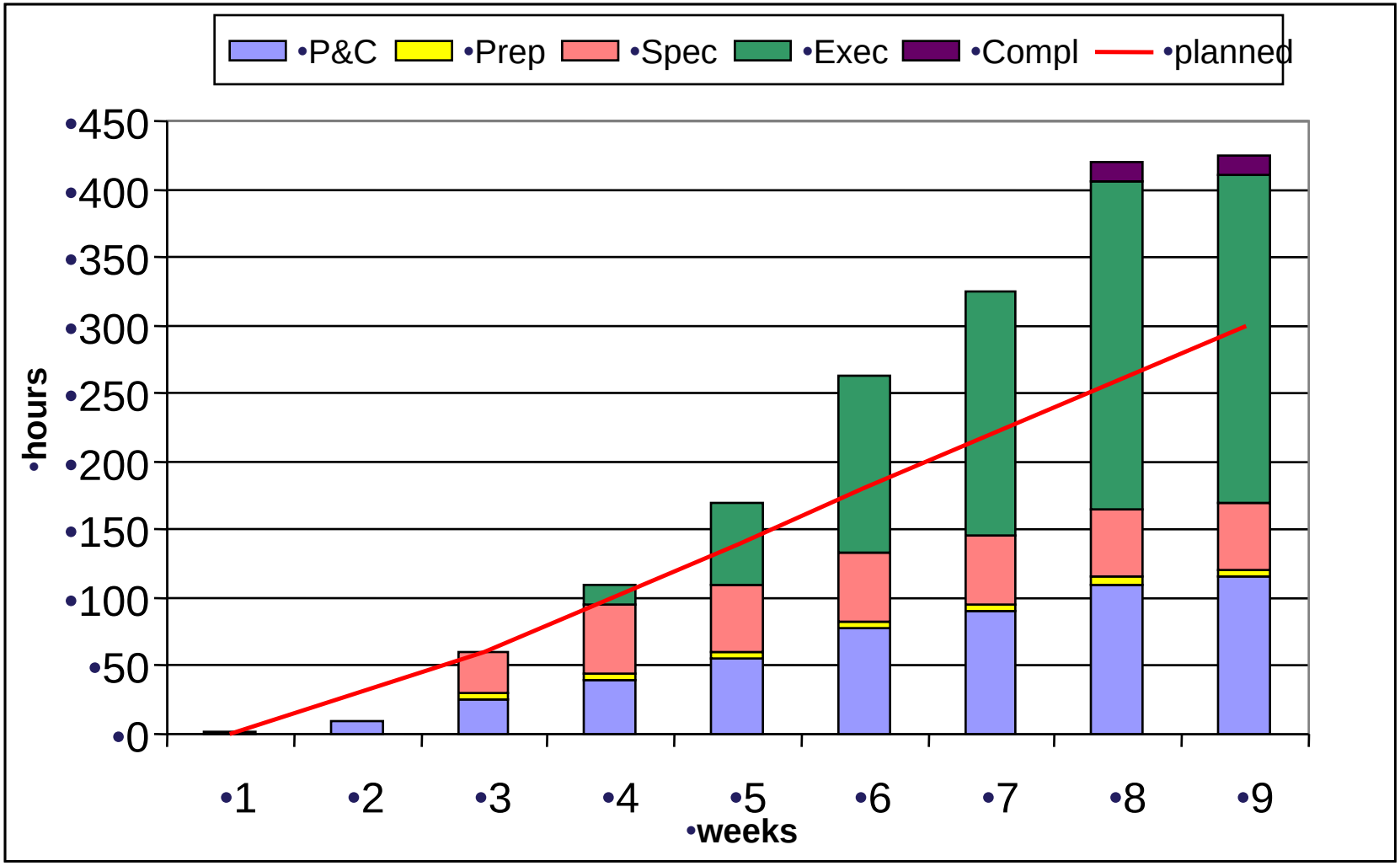
(3) Outstanding defects

[Criteria]
Outstanding defects
Trend towards the end date?



(4) Test hours burn rate

[Criteria]
Test hours
Burn rate too high?



Metrics per project phase

- During the test execution phase
- Towards the end of test execution
- After test execution
- After project completion
- Advanced metrics

1. Test execution progress
2. Test execution success
3. Outstanding defects
4. Test hours burn rate

5. Test coverage
6. Q: % passed tests
7. Q: # remaining defects

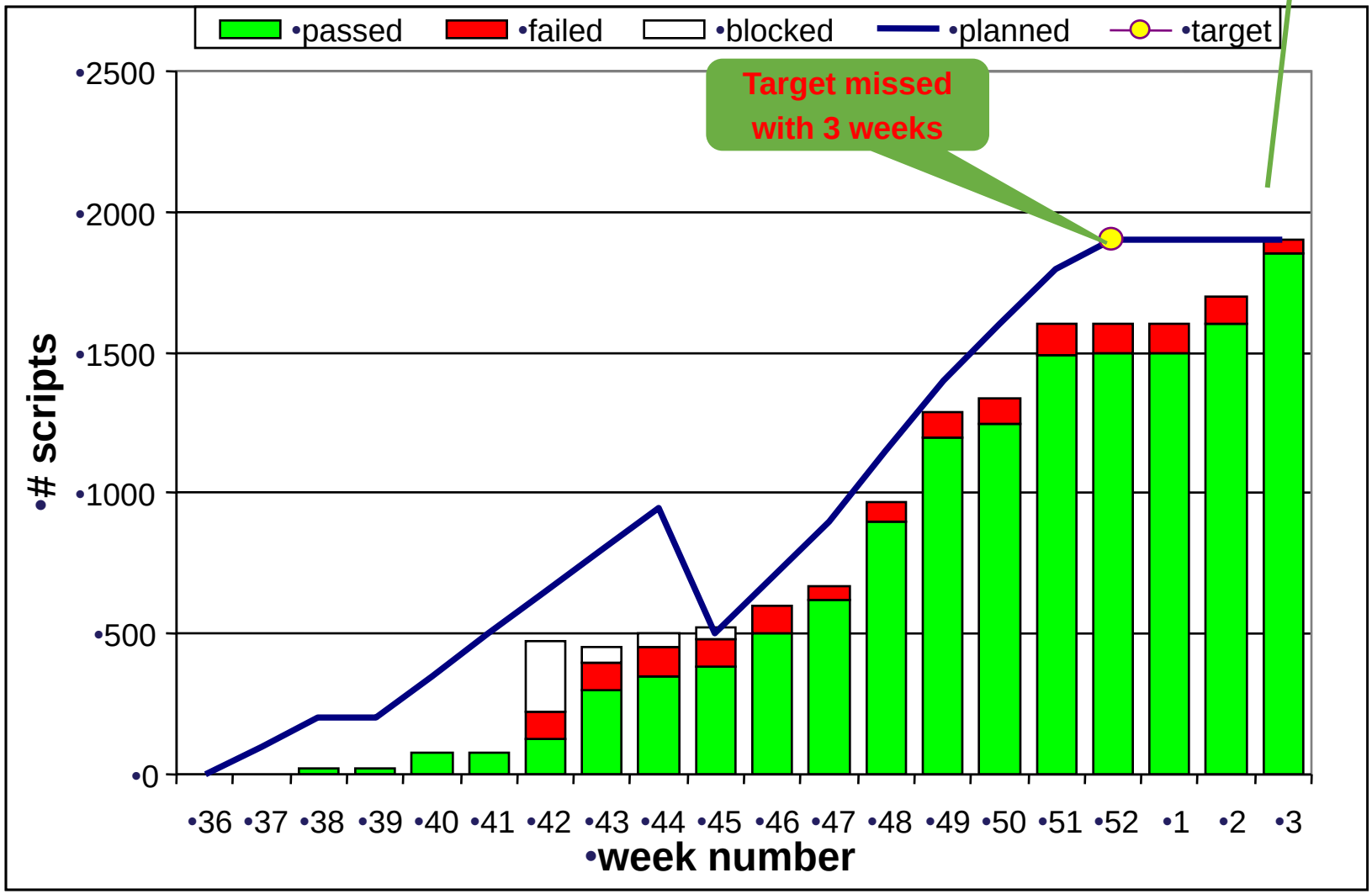
8. Hours per test case
9. Hours per defect
10. Testing hours %

11. Defects in production

12. Test specification progress
13. Defects solution turn around time
14. Defects root cause

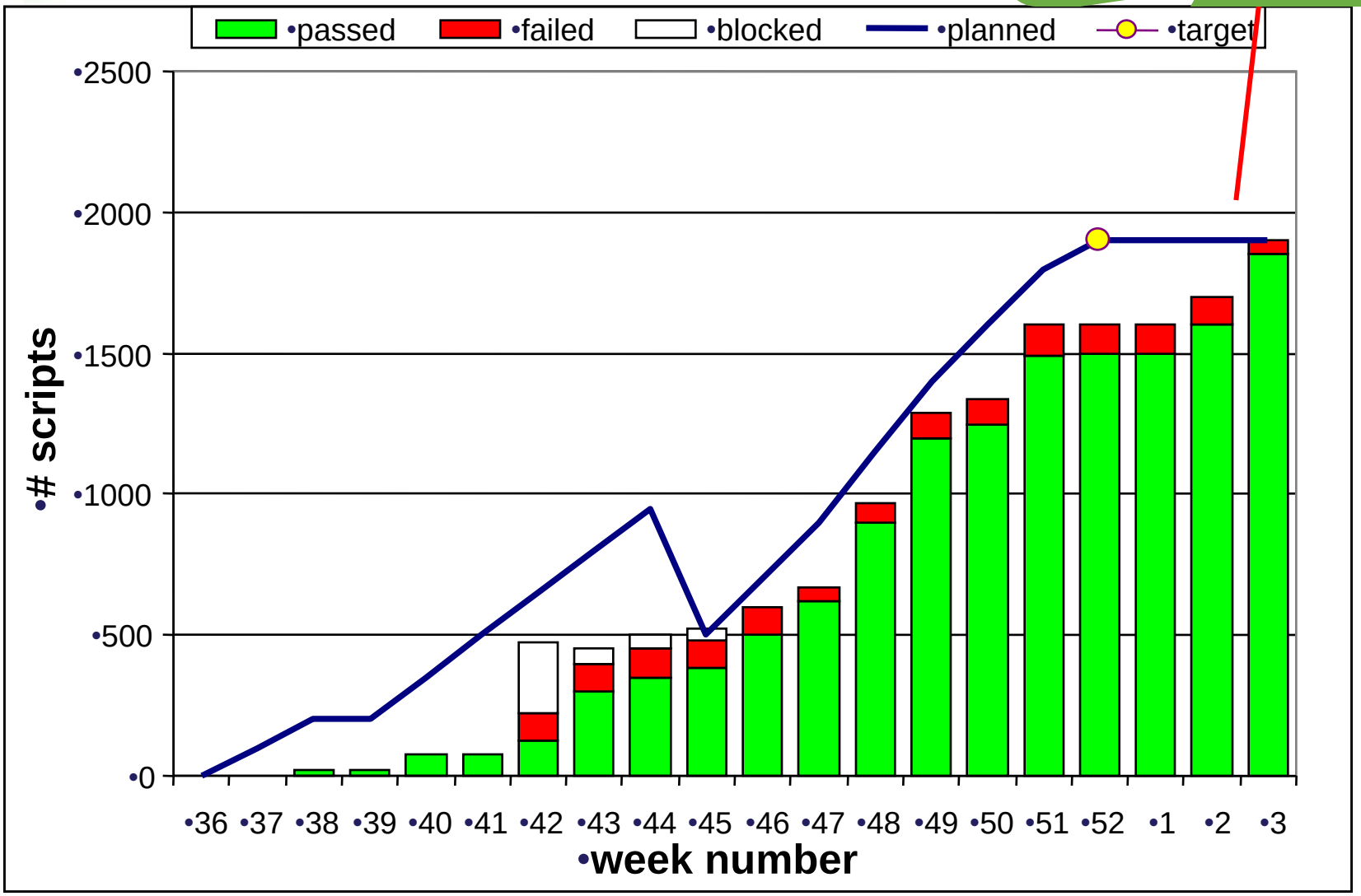
(5) Test coverage

[Criteria]
Test coverage
(p+f)/planned > 98%



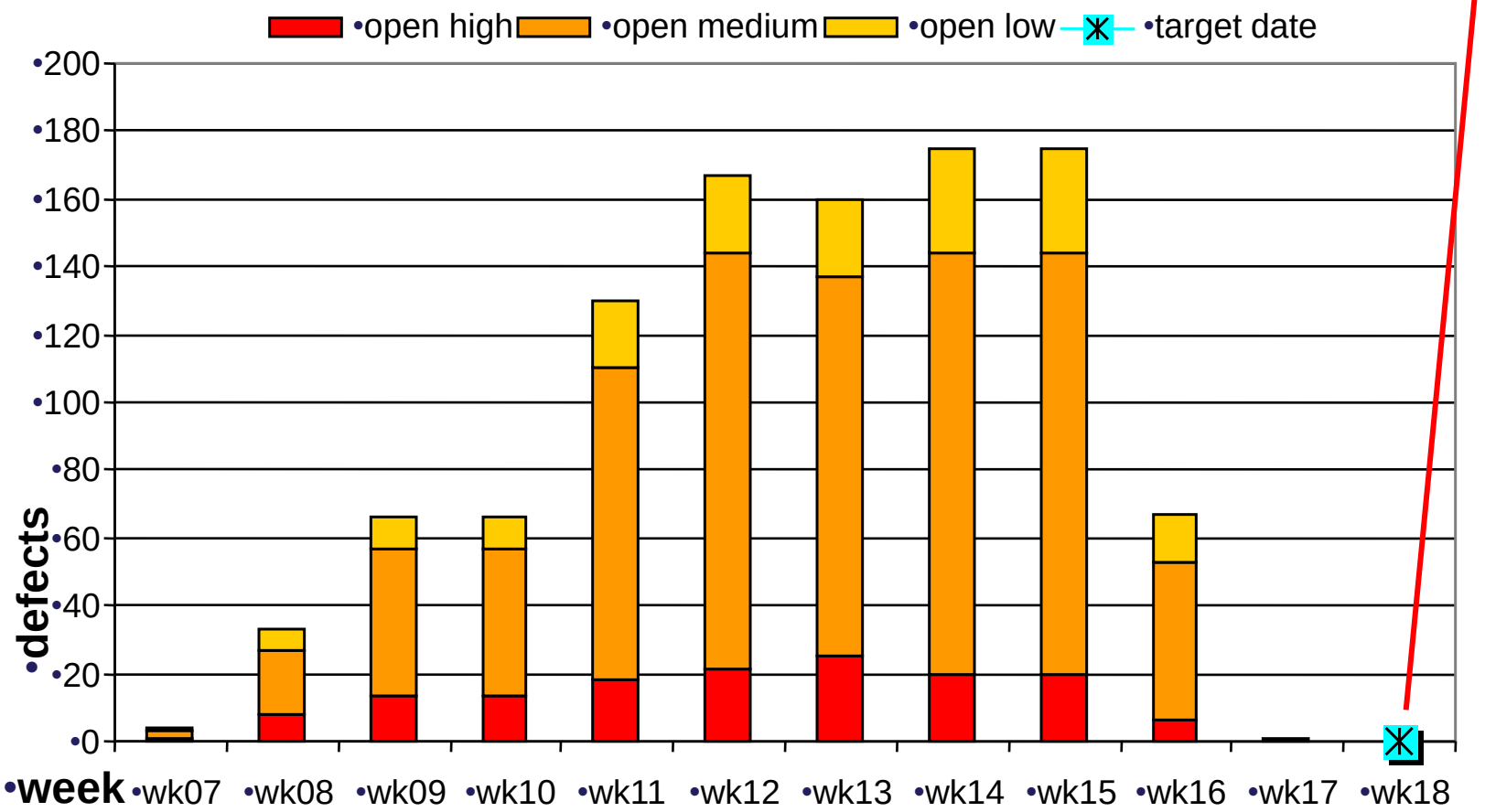
(6) Quality % passed tests

[Criteria]
Quality
p/(p+f) > 95%



(7) Quality # remaining defects

[Criteria]
Quality
High=0
Medium<5
Low<20



Metrics per project phase

- During the test execution phase
- Towards the end of test execution
- After test execution
- After project completion
- Advanced metrics

1. Test execution progress
2. Test execution success
3. Outstanding defects
4. Test hours burn rate

5. Test coverage
6. Q: % passed tests
7. Q: # remaining defects

8. Hours per test case
9. Hours per defect
10. Testing hours %

11. Defects in production

12. Test specification progress
13. Defects solution turn around time
14. Defects root cause

(8) Hours per test case

[Criteria]
Hours per test case
compare

Failed test case costs more than passed test case
947 hours / 624 passed = 1.5 hours/test case
188 hours / 78 failed = 2.4 hours/test case

		hours distribution					testcases						defects						
1																			
2	projecten	P&C 10-17 (15)	P 4-12 (8)	S 22-40 (32)	E 35-65 (40)	C 2-8 (5)	total	passed	failed	% passed	% executed	hours per test case	open	solved	deferred	cancelled	total	% cancelled < 15	hours per defect < 5
3	AannAVR modoff	12	3	8	77	0	142	137	5	96	100	4,11	19	82	0	13	114	11	5,8
5	Aanname MO 5.2	5	6	18	67	5	235	20	0	100	8,5	5,3	1	0	0	0	1	0	106,0
6	Aanname MO 5.3	5	3	16	71	5	169	169	0	100	100	0,26	0	2	0	0	2	0	22,0
7	Aanname MO 5.4	16	0	17	66	0	277	277	0	100	10	0,52	0	12	0	0	12	0	12,1
8	Aanname MO 5.5	13	11	17	60	0	307	307	0	100	00	0,21	0	7	0	1	8	13	9,3
17	BD (EMN)	18	6	40	29	7	189	172	8		95	0.34	26	111	0	8	145	6	0.5

metric changed

(9) Hours per defect

[Criteria]
Hours per defect
compare

		hours distribution					testcases						defects						
1																			
2	projecten	P&C 10-17 (15)	P 4-12 (8)	S 22-40 (32)	E 35-65 (40)	C 2-8 (5)	total	passed	failed	% passed	% executed	hours per test case	open	solved	deferred	cancelled	total	% cancelled < 15	hours per defect < 5
3	AannAVR modoff	12	3	8	77	0	142	137	5	96	100	4,11	19	82	0	13	114	11	5,8
5	Aanname MO 5.2	5	6	18	67	5	235	20	0	100	8,5	5,3	1	0	0	0	1	0	106,0
6	Aanname MO 5.3	5	3	16	71	5	169	169	0	100	100	0,26	0	2	0	0	2	0	22,0
7	Aanname MO 5.4	16	0	17	66	0	277	277	0	100	100	0,52	0	12	0	0	1	0	12,1
8	Aanname MO 5.5	13	11	17	60	0	307	307	0	100	100	0,21	0	7	0	1	8	13	9,3
17	BD (EMN)	18	6	40	29	7	189	172	8	96	95	0.34	26	111	0		145	6	0.5

Extreme number

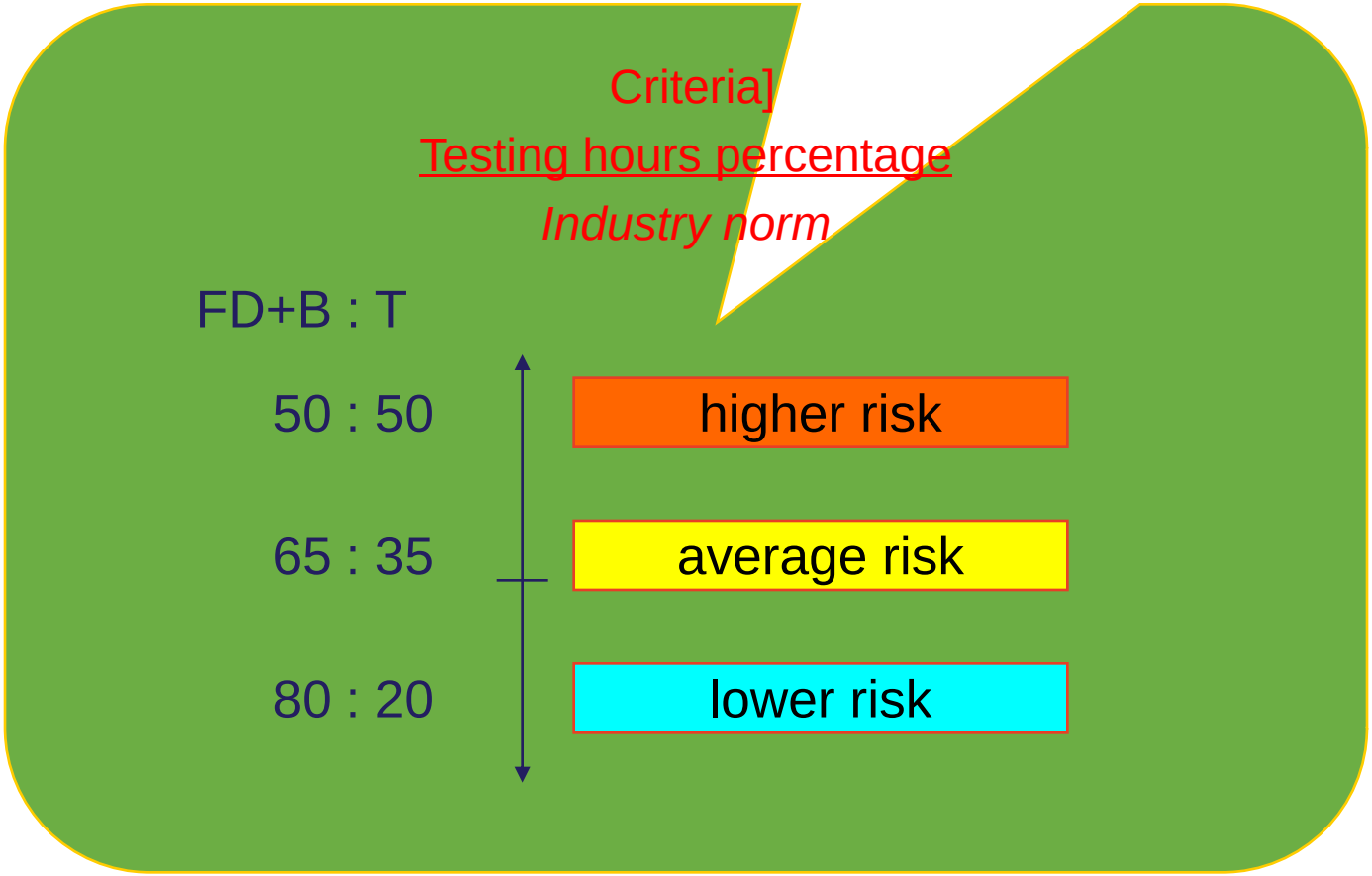
(10a) Testing hours per phase

[Criteria]
Hours per phase
Industry standards
Planning&Control: 15 %
Preparation: 8%
Specification: 32%
Execution: 40%
Completion: 5%

		hours distribution					testcases						defects						
1																			
2	projecten	P&C 10-17 (15)	P 4-12 (8)	S 22-40 (32)	E 35-65 (40)	C 2-8 (5)	total	passed	failed	% passed	% executed	hours per test case	open	solved	deferred	cancelled	total	% cancelled < 15	hours per defect < 5
3	AannAVR modoff	12	3	8	77	0	142	137	5	96	100	4,11	19	82	0	13	114	11	5,8
5	Aanname MO 5.2	5	6	18	67	5	235	20	0	100	8,5	5,3	1	0	0	0	1	0	106,0
6	Aanname MO 5.3	5	3	16	71	5	169	169	0	100	100	0,26	0	2	0	0	2	0	22,0
7	Aanname MO 5.4	16	0	17	66	0	277	277	0	100	100	0,52	0	12	0	0	12	0	12,1
8	Aanname MO 5.5	13	11	7	60	0	307	307	0	100	100	0,21	0	7	0	1	8	13	9,3
17	BD (EMN)	18	6		29	7	189	172	8	96	95	0.34	26	111	0	8	145	6	0.5

(example)
Small % specification

(10b) Testing hours %



Metrics per project phase

- During the test execution phase
- Towards the end of test execution
- After test execution
- After project completion
- Advanced metrics

1. Test execution progress
2. Test execution success
3. Outstanding defects
4. Test hours burn rate

5. Test coverage
6. Q: % passed tests
7. Q: # remaining defects

8. Hours per test case
9. Hours per defect
10. Testing hours %

11. Defects in production

12. Test specification progress
13. Defects solution turn around time
14. Defects root cause

(11) Defects after implementation

- Count the defects in production during warranty period
- Is a measure for the final software quality
- Could indicate insufficient testing

- Possible calculation method:

$$\text{Defect removal efficiency} = \frac{\text{\# of defects found in testing}}{\text{\# of defects found in production + \# defects found in testing}}$$

Metrics per project phase

- During the test execution phase
- Towards the end of test execution
- After test execution
- After project completion
- Advanced metrics

1. Test execution progress
2. Test execution success
3. Outstanding defects
4. Test hours burn rate

5. Test coverage
6. Q: % passed tests
7. Q: # remaining defects

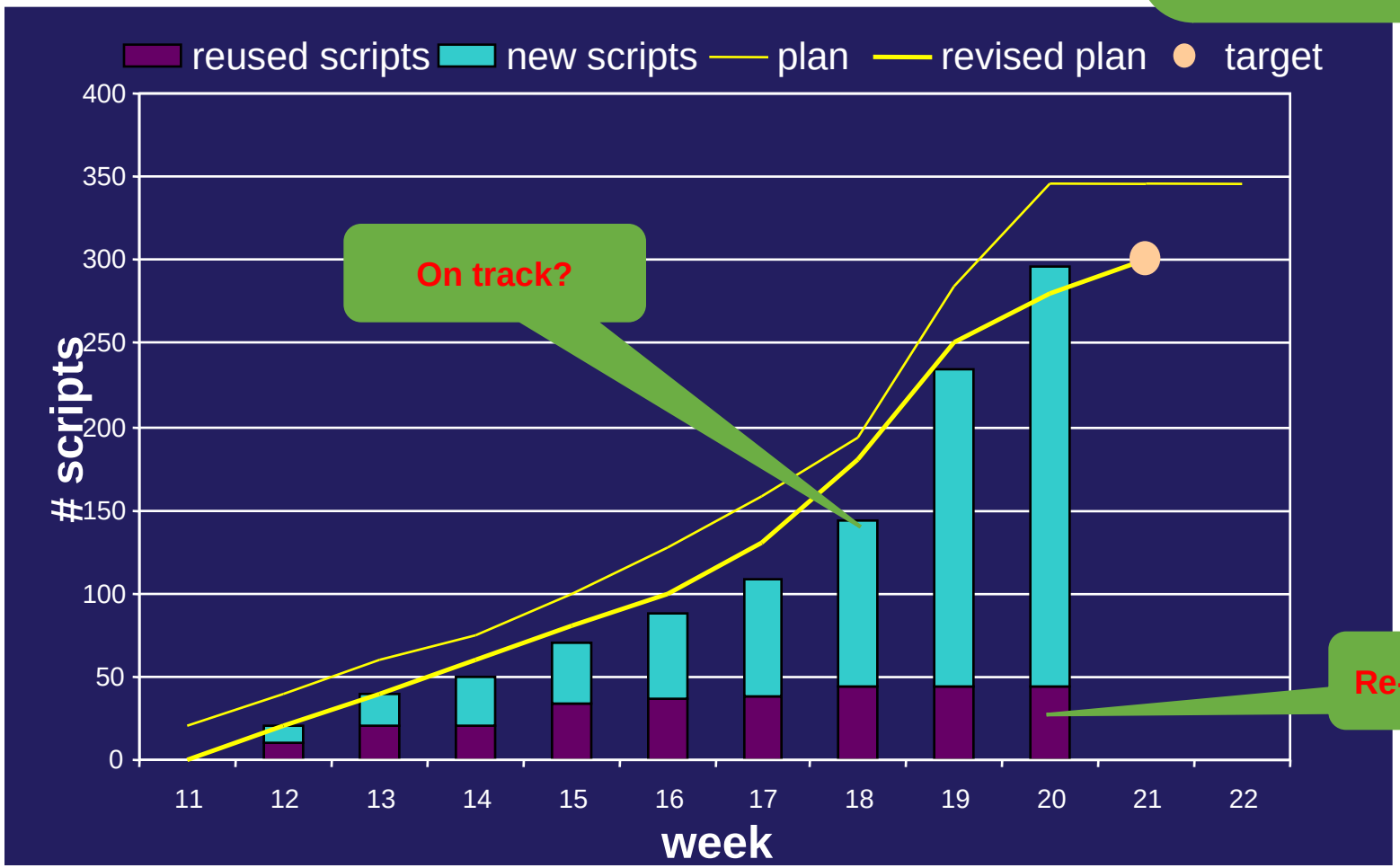
8. Hours per test case
9. Hours per defect
10. Testing hours %

11. Defects in production

12. Test specification progress
13. Defects solution turn around time
14. Defects root cause

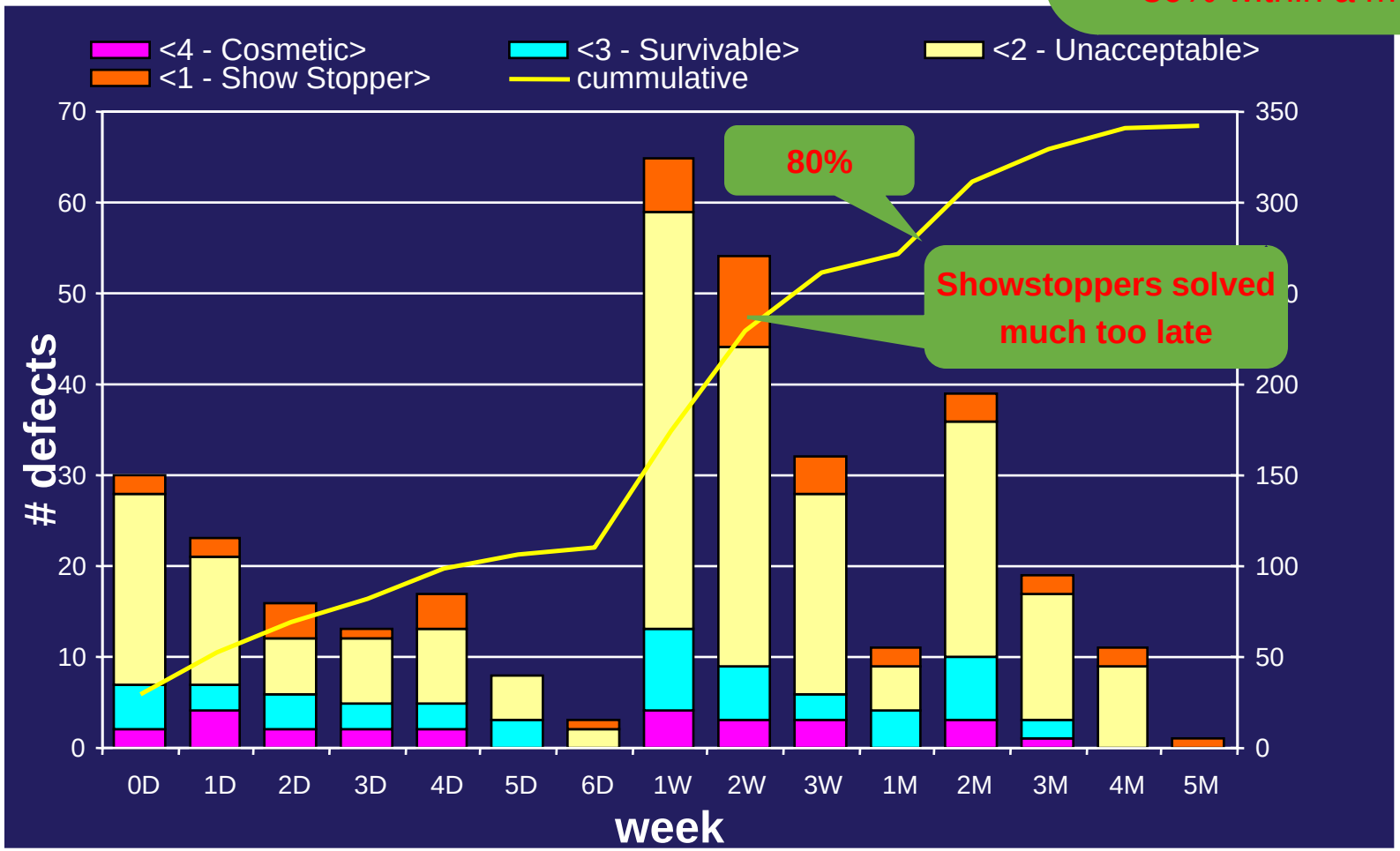
(12) Test specification progress

[Criteria]
Test specification metrics
On track?
Target for re-use?



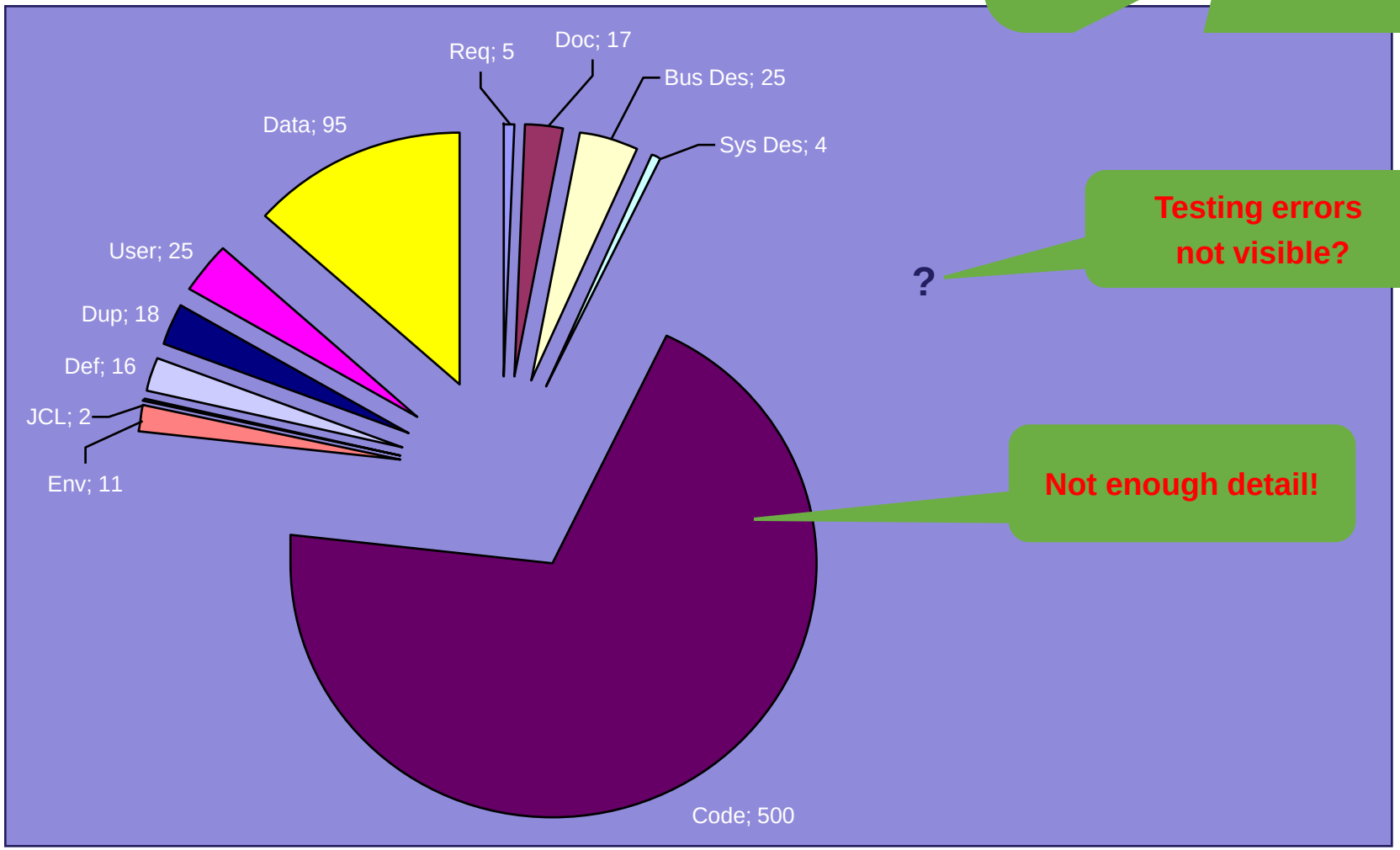
(13) Defects turn around time

[Criteria]
Defects turn around time
Relation to project lead time
All <1> within a week?
80% within a month?



(14) Defects root cause

[Criteria]
Defects root causes
Weak spots?
Consitent with test strategy?



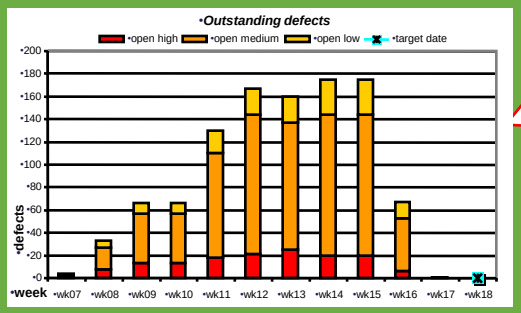
?

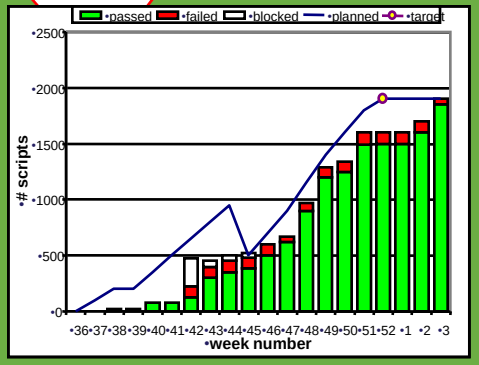
Testing errors not visible?

Not enough detail!

Conclusion: minimum set for outsourced test

- Measure test progress
- Measure the quality of the test object
- Measure the quality of the test process
- Create a basis for test estimation
- Control the defects process
- Look for possible weak spots in development

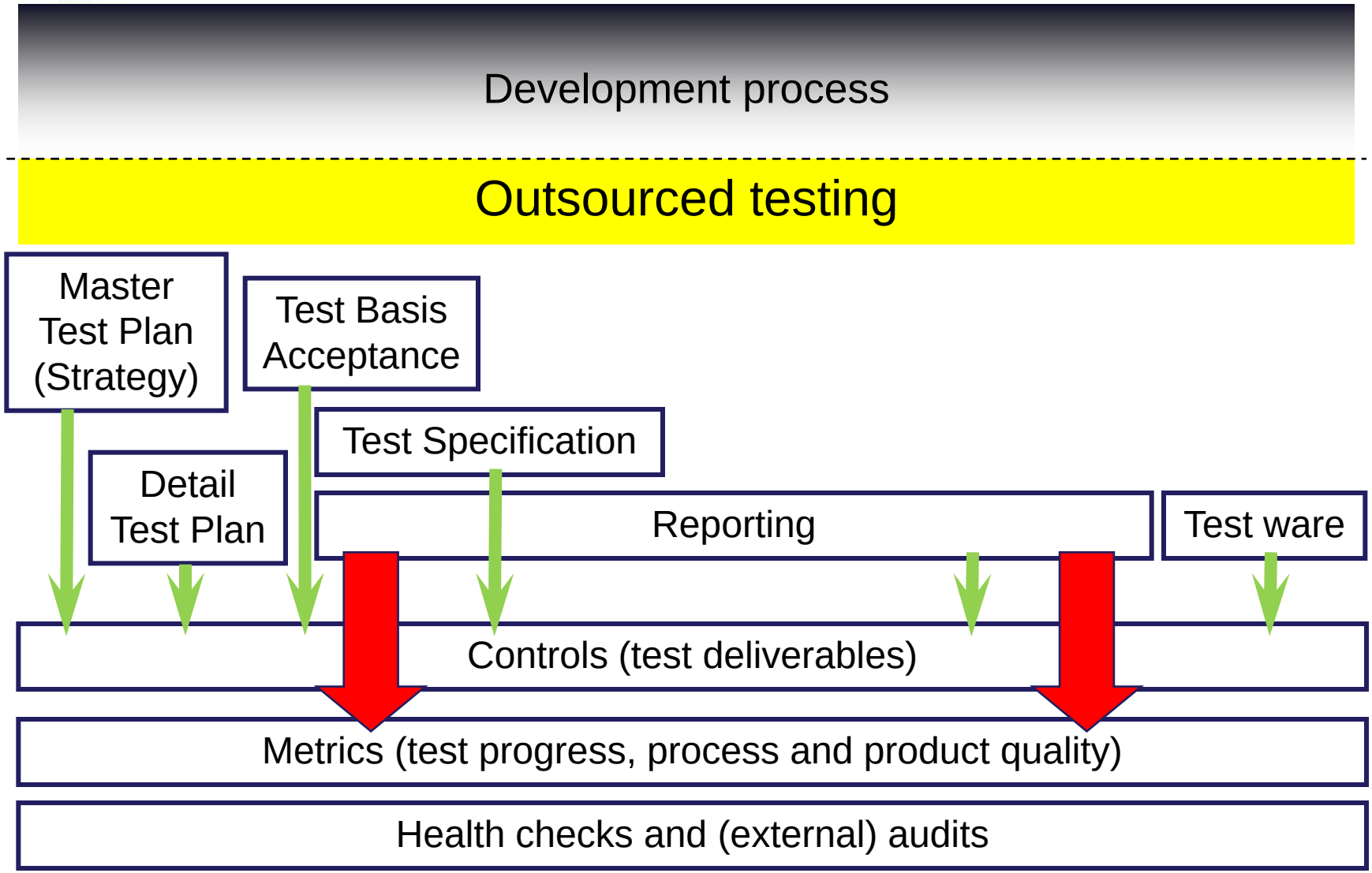




Toga® Test Outsourcing Governance Approach

polteq

Monitoring outsourced testing



Health check

- Snapshot test process/test project
- Executed by
  - Manager Test Outsourcing
    or
  - Third party
- Discussion of project incidents
- Discuss process incidents with supplier
- Escalation of high risks to senior management
- Report trends to senior management

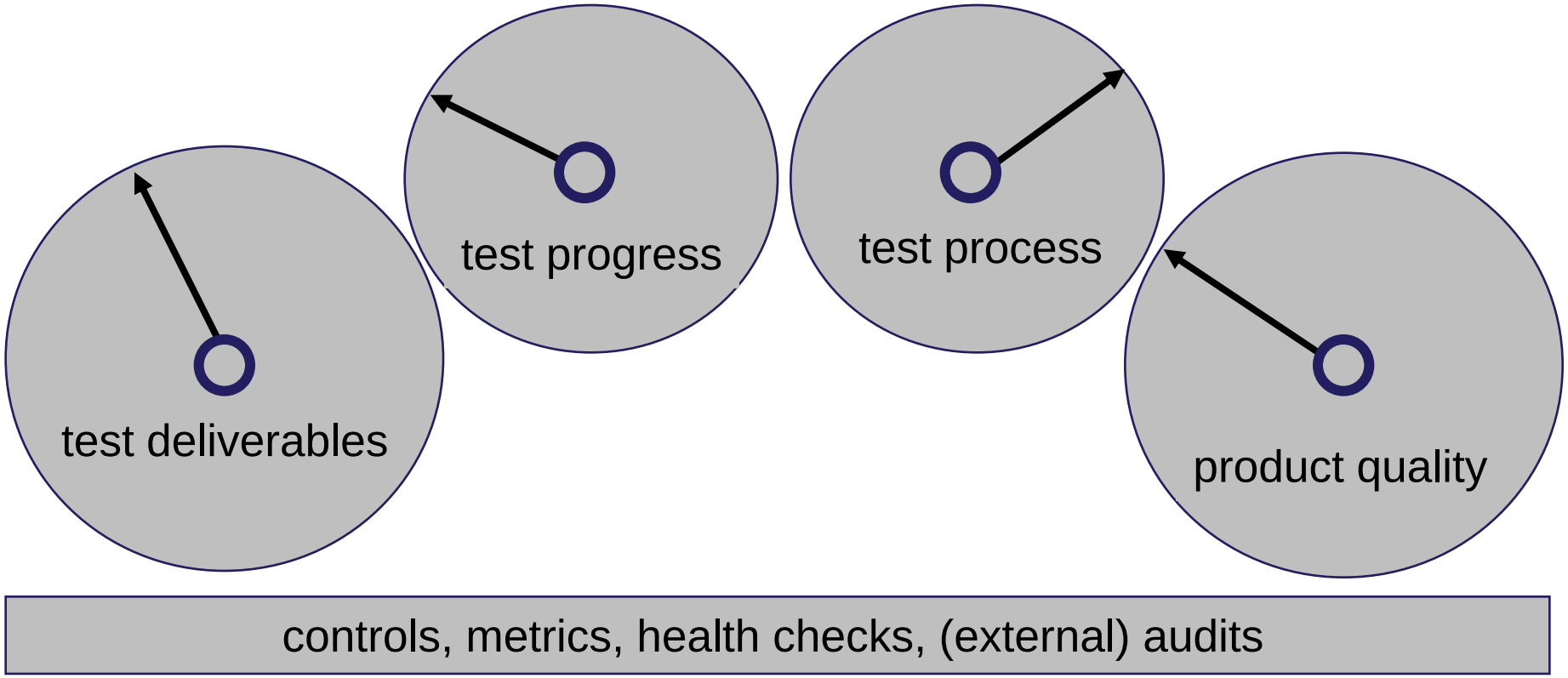
Example health check areas

Health check		Check	Reference/remarks	N.A.	Absent	Insufficient	Sufficient
Preconditions and starting points	**101**	Are the preconditions still applicable or are there any changes					
	102	Have the starting points been met					
Scalability and test approach	**103**	Has the project size been taken into account in defining and executing the test activities					
	104	Is the coverage of the unit test clearly described					
Risks and countermeasures	**105**	Are the countermeasures indicated indeed being executed					
Detail Intake Testbasis	**106**	Has an intake on the testbasis been done					
	107	Has a checklist been used during the intake of the testbasis					
Entry and exit criteria	**108**	Have the entry criteria been checked before staring the test					
	109	Have the exit criteria been checked before stopping the test					
Acceptance criteria	**110**	Is ther a check on the acceptance criteria during and at the end of the project					
Teststrategy	**111**	Has a test strategy meeting been held					
	112	Have test techniques been used for development of the testcases					
Testorganisation	**113**	Is a regular project meeting taking place					
	114	Is the reporting to the project manager running as expected					
	115	Are all tasks and responsibilities clear					
	116	Is there sufficient knowledge of the application in the testteam					
	117	Does the testteam have sufficient test experience					
Reports and procedures	**118**	Are the defects processed accoring to the agreed procedure					
	119	Are all GMTP aspects listed in the weekly progress report					
Planning and estimation	**120**	Is the test execution on schedule, as estimated in the testplan					
	121	Are the hours spent on testing still within the budget					
Infrastructure	**122**	Does the test environment meet the requirements					
	123	Is the availablity of the test environment sufficient					
Products	**124**	Are the agreed testproducts available and have they been delivered					
	125	Is there maintenance on the test products and are they being conserved					
	126	Are the testproject products being conserved					

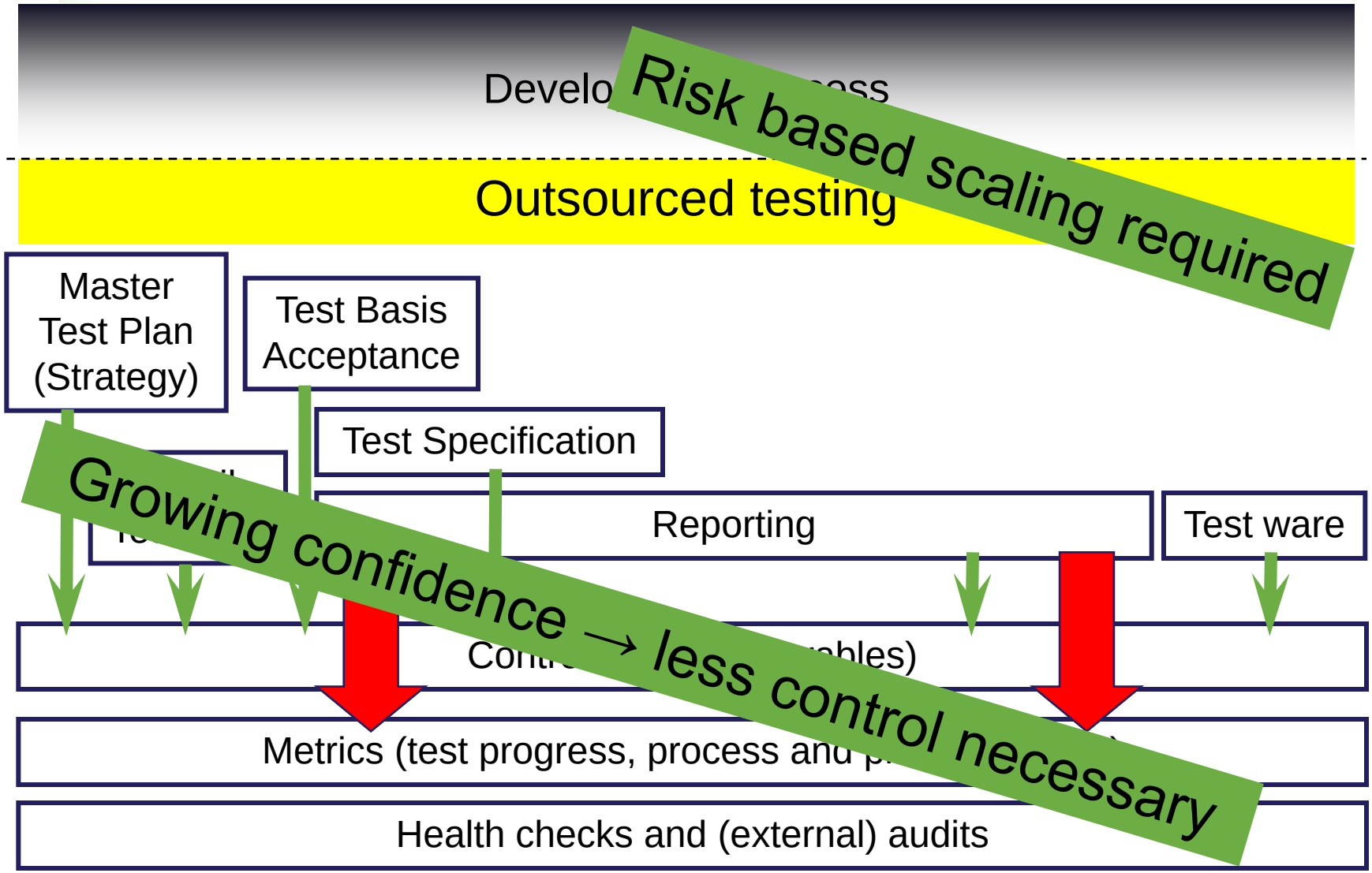
Example health check areas

area	check point	Check?
Test strategy	risk based, one test level	x
	more then one test level	x
	also including unit test	x
	alle test levels and evaluation	x
Life cycle model	planning& control, specification and execution	
	also preparation and completion	
Moment of involvement	after establishment of the test basis	
	at the start of establishing of the test basis	
	Requirements definition	
	start of the project	
Estimating and planning	estimation and planning	
	based on statistical data	
Test specification techniques	informal	
	formal	
Static test techniques	Detail intake	
	Checklists	
Metrics	Project (product)	
	Project (proces)	
	System	
	Organization (>1 system)	
Test tools	Tools are used	
	Controlled automation	
	Optimal automation	
Test environment	Controlled	
	Most suitable environment	

Test outsourcing dashboard



Monitoring outsourced testing



谢谢!