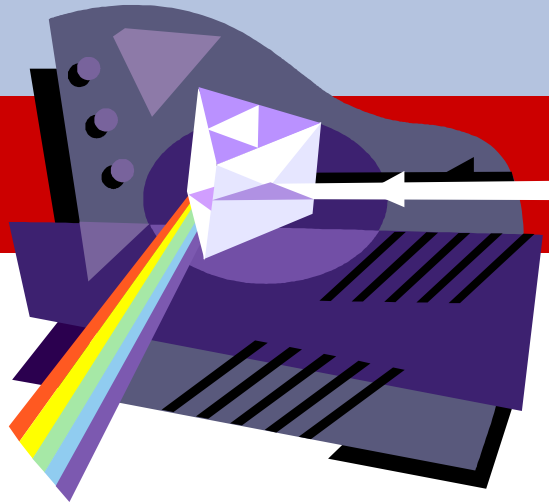


Risk-Based Testing In Practice



*Never speculate on
that which can be
known for “certain”*

Erik van Veenendaal

What is Risk?

- “A factor that could result in a *future negative* consequence; usually expressed as impact and likelihood” (ISTQB Glossary)
- Testers ‘only’ have the responsibility to identify the risks and provide information on their status
- “to dare to undertake”
 - management attitude and style.....



IMPROVE
Quality Services

Testing = Risk Management

- Objective: most *feasible* coverage
 - Effective usage of limited resources
- Resources
 - Staffing
 - Infrastructure
 - Time !
 - ..



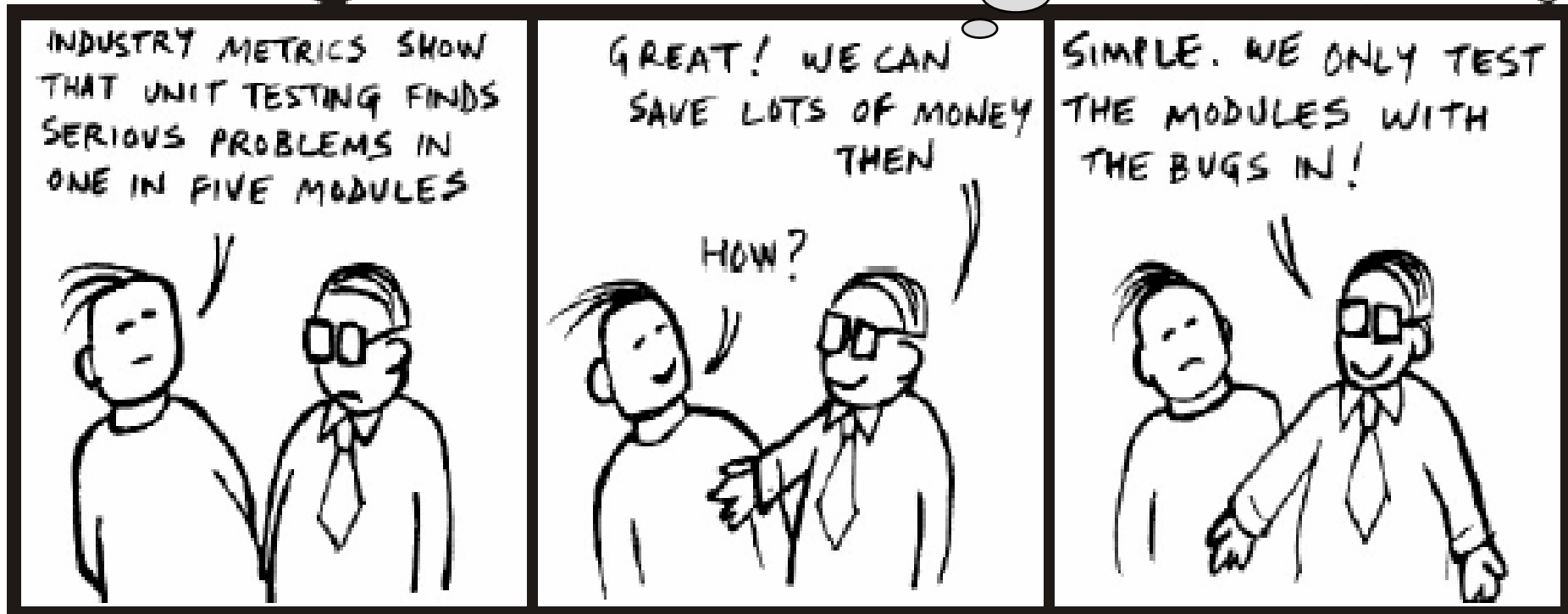
- the *right* level and type of coverage on the *right* parts at the *right* time

The challenge....

if only we knew !!

Testing Ted

Gilchrist & Downing



Risk-Based Testing



- Risk identification looks at ways of establishing what the risks are and where they are
- Risk analysis looks into the critical, complex and potential error prone areas
- Then we build tests to mitigate the risk
- Subsequently we monitor and report regarding the risks

Based on practical experiences

PHILIPS

SIEMENS VDO
A u t o m o t i v e



Nucletron

Assembleon

LEADERS IN ELECTRONIC MANUFACTURING TECHNOLOGY

Schiphol Group

Triodos Bank



ING



Risk Identification

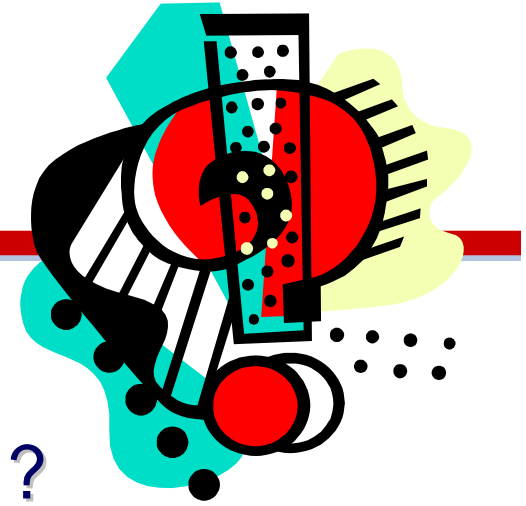


- Split up in functional and/or technical items
- Higher level test according to requirements
- Lower levels test according to architecture
- May also be based on a brainstorm session
- Maximum number of appr. 35 risk items

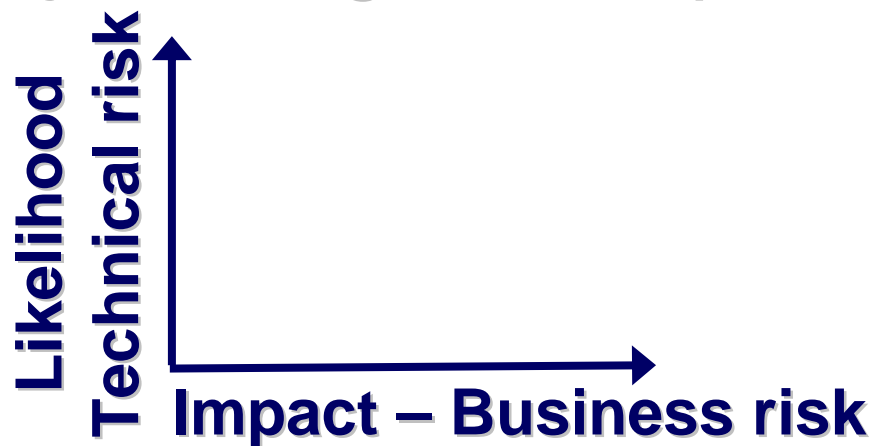
Risk item 1	Functionality
Risk item 2	Security
Risk item 3	Functionality
Risk item 4	Interoperability



Risk Analysis



- Risk = impact x likelihood
 - What is the impact for the business ?
 - What is the likelihood that there are defects ?
- Determine factors based on previous projects, e.g. defect patterns



You already know this !
Exercise: Risk Factors

Factors From Practice



defect patterns / history

▪ Likelihood

- complexity
- new development (level of re-uses)
- interrelationship (# interfaces)
- size
- technology
- geographical spread
- inexperience (of development team)



▪ Impact

- business importance (“selling item”)
- financial (or other) damage (e.g. safety)
- usage intensity
- external visibility
- cost of rework
- legal sanctions



**Customization
needed**

**Weightings
can be applied**

Stakeholder Analysis

- A stakeholder is anyone who is interested in the product (both internal and external)
 - Who is responsible?,
 - Who has a problem when things go wrong?
 - Who needs the system at their work?
- Document the knowledge areas of the stakeholders
 - e.g. factors, domain, requirements type
- Missing stakeholders means missing risks!!
- Assign factors to stakeholders

Individual stakeholders scoring

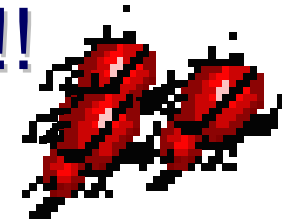
9 : Critical
5 : High
3 : Moderate
1 : Low
0 : None

they shall
make
choices

	Business importance	Usage intensity	Sa
Item 1	5	●	
Item 2	4	●	
Item 3	5	●	
Item 4	2	●	
Item 5	4	●	

“Consensus” Meeting

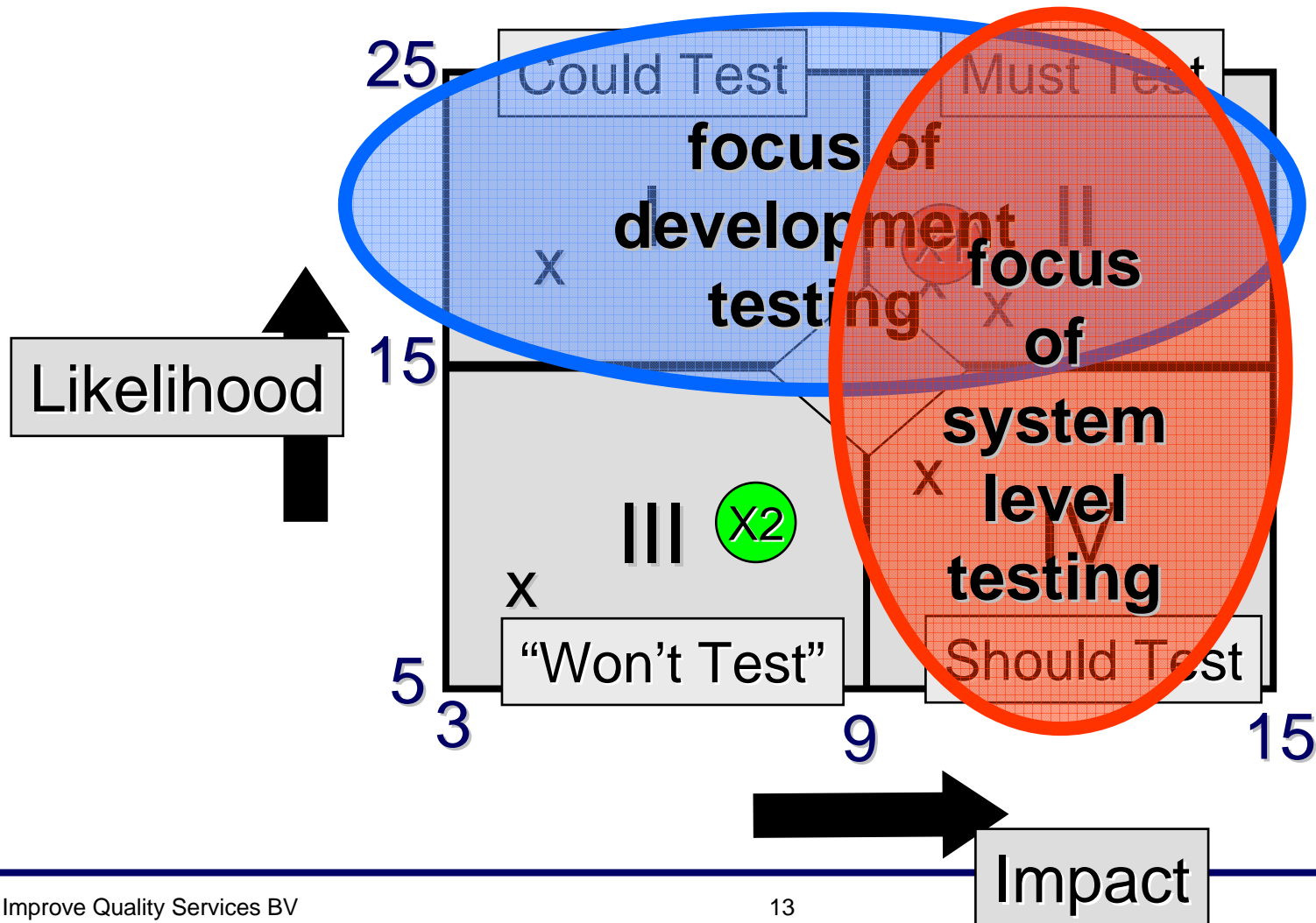
- Discuss issue list - first defects found !!
- Result could influence development



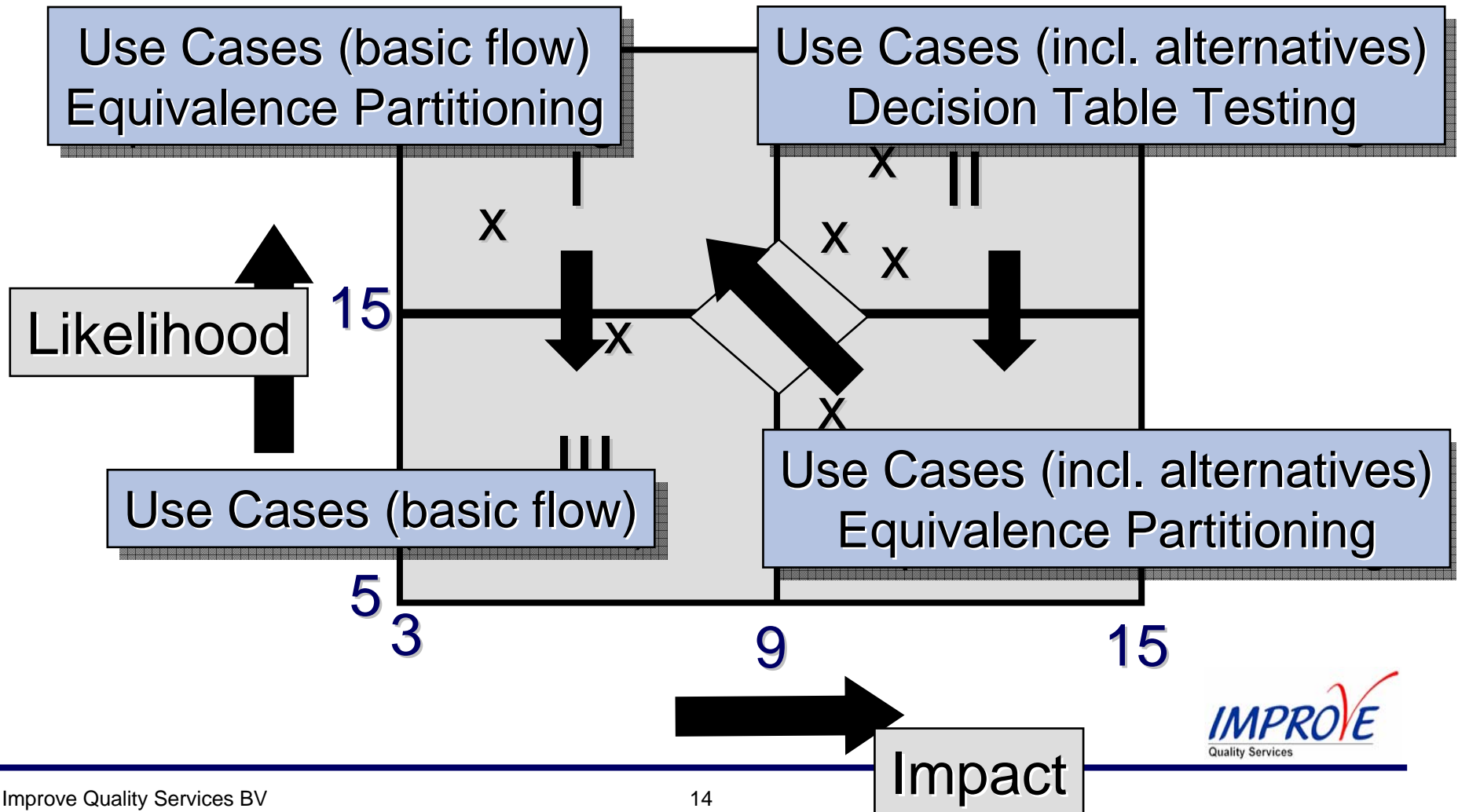
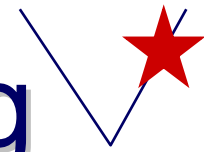
	Likelihood						Impact			
	Complexity	New development	Interfacing	Technology	Experience level		Business import.	Usage intensity	Safety	
Item 1	5	3	2	1	5	16	5	4	1	10
Item 2	2	1	2	1	2	8	3	3	1	7
Item n										

The Product Risk Matrix

MoSCoW priorities

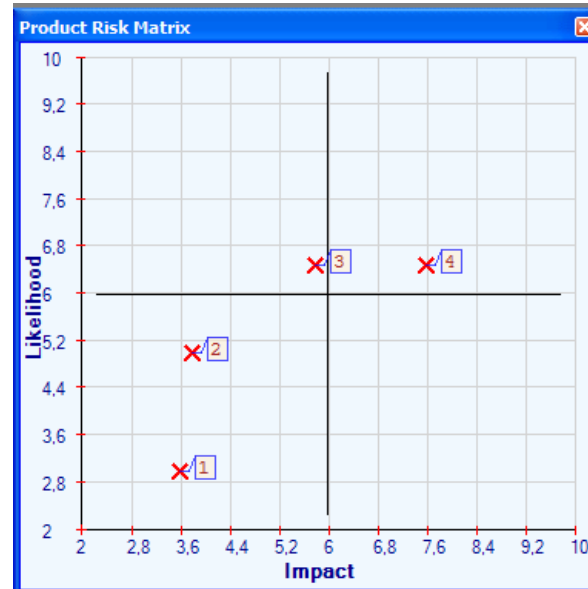


Example System Level Testing



Different

- Reviews & i
- Test design meetings
- Reviews of
- Level of detail cases
- Exit criteria
- Level of inde



Must Test

..... Test Approach

Should test

..... Test Approach

Could Test

..... Test Approach

Would Test

..... Test Approach

h !!



ffort
ced

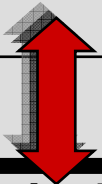
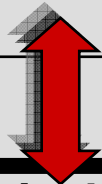
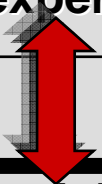
sting



management
ch sense !!

Practical Guideline

Shall be company specific

Test level	Quality Attribute	Low Risk	Medium Risk	High risk
Acceptance test	Functionality	Isolation re-test Basic flow UC Testers	Isolation re-test Use cases Testers	Full re-test Use cases Domain experts
	Security			
System test	Functionality	Equivalence Partitioning No testware reviews	Equivalence Partitioning Internal Review TDs	Decision Table testing External Review TDs
			

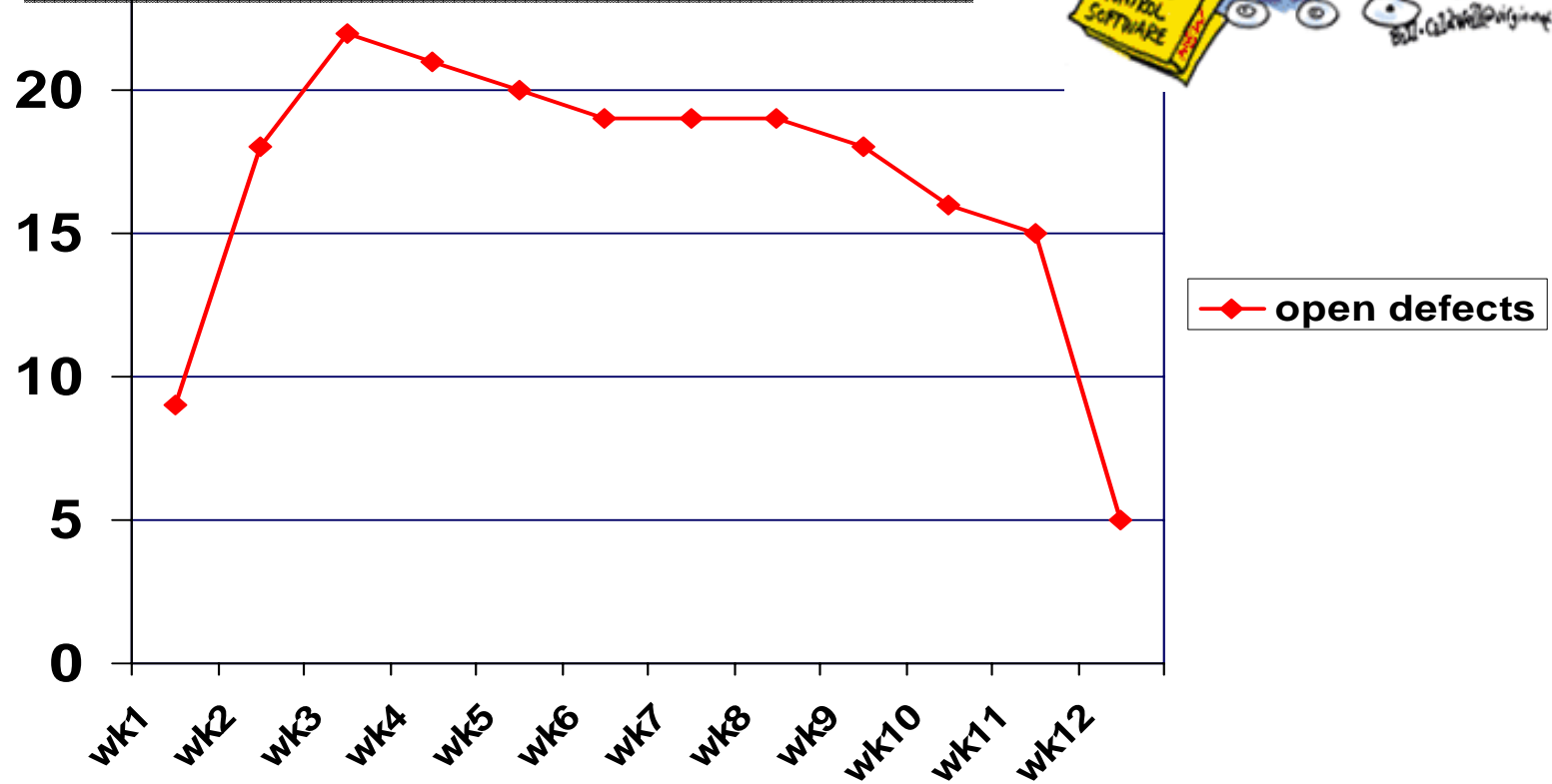
Recognize this ?

- After months of testing the system finally goes live and Fails
- Test manager says: 'we already knew this would happen'
- Who is at fault?
- Risk based testing = Risk based reporting

**The major Management
Test Deliverable Information!!**

Defect Reporting example

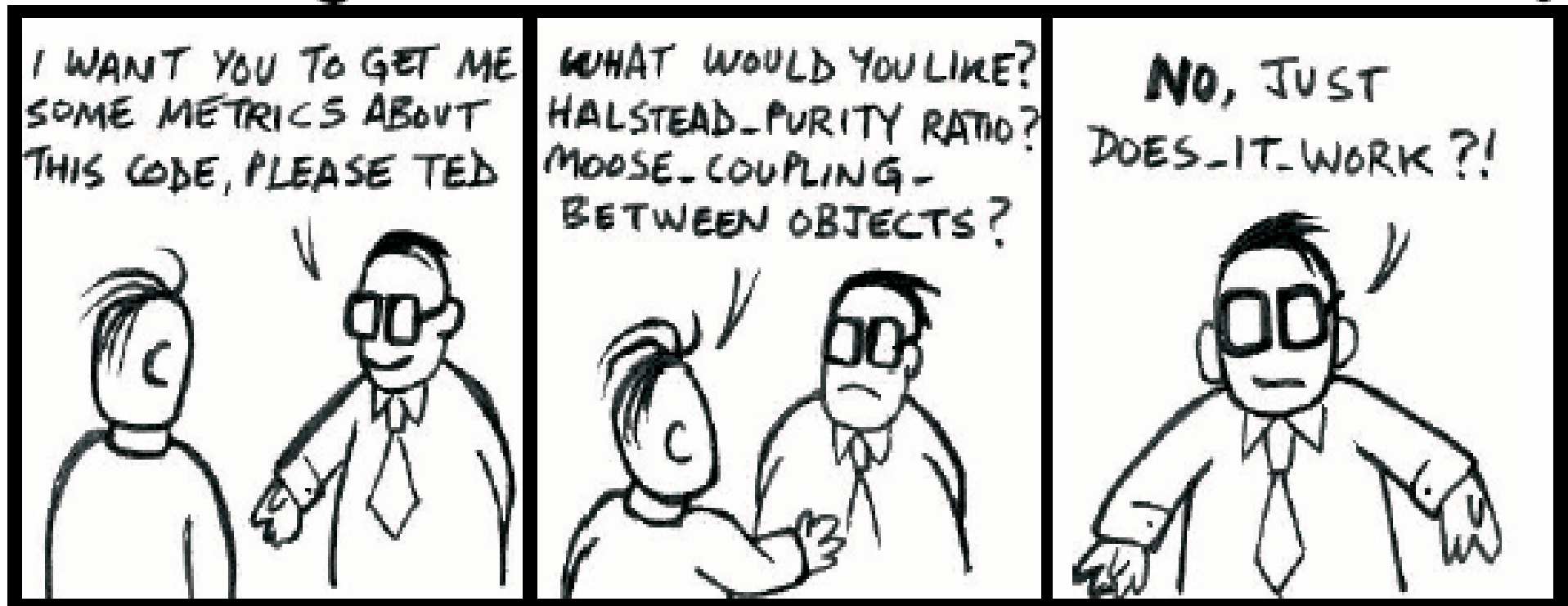
Does this support management to make the release decision?



Communication Levels ...

Testing Ted

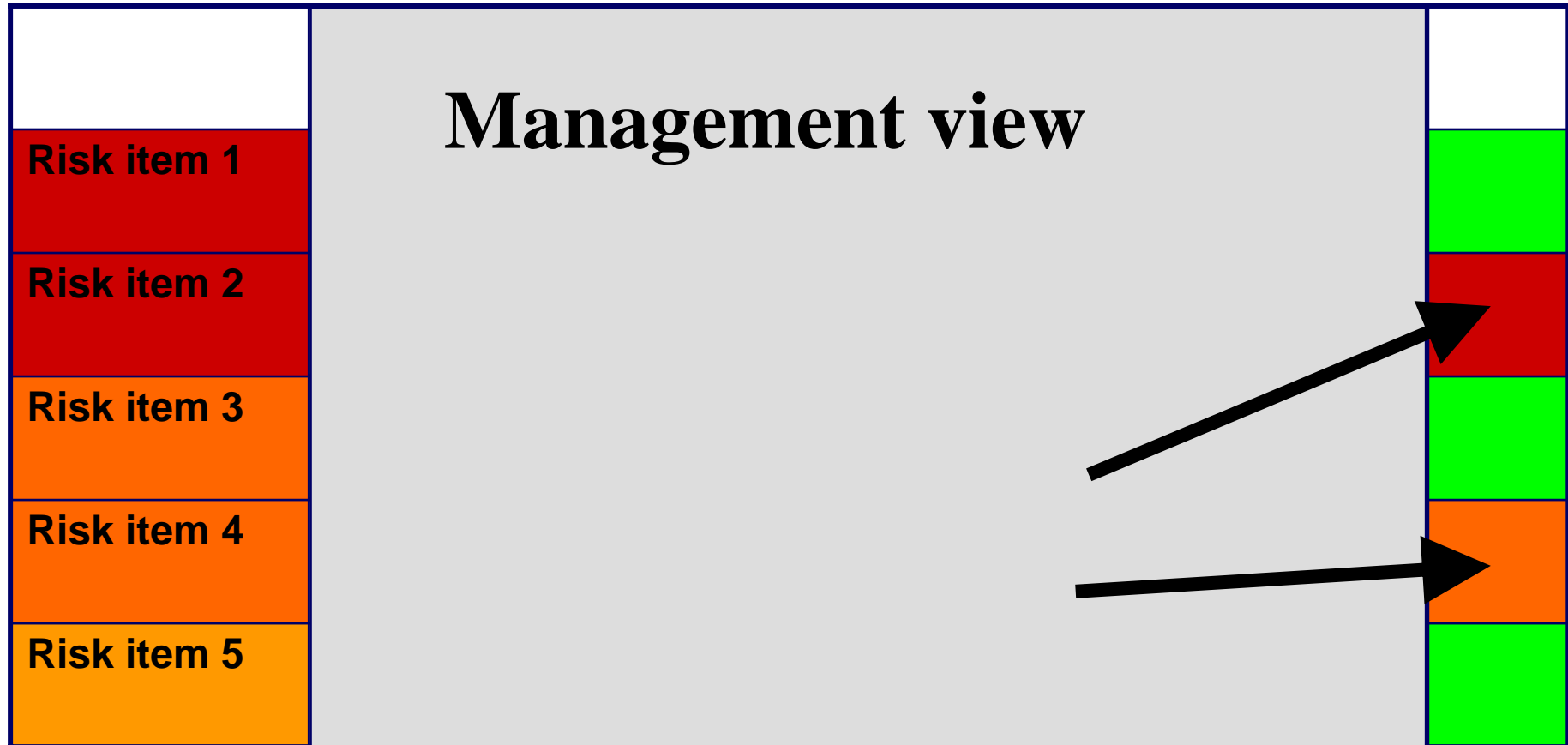
Gilchrist & Downing



Risk Based Reporting (1)

	TS1	TS2	TS3	TS4	TS5	TS6	TS7	TS8	
Risk item 1	X	X	X						Red
Risk item 2	X			X	X		X		Red
Risk item 3	X		X						Orange
Risk item 4					X	X	X		Orange
Risk item 5								X	Yellow

Can we release the product?



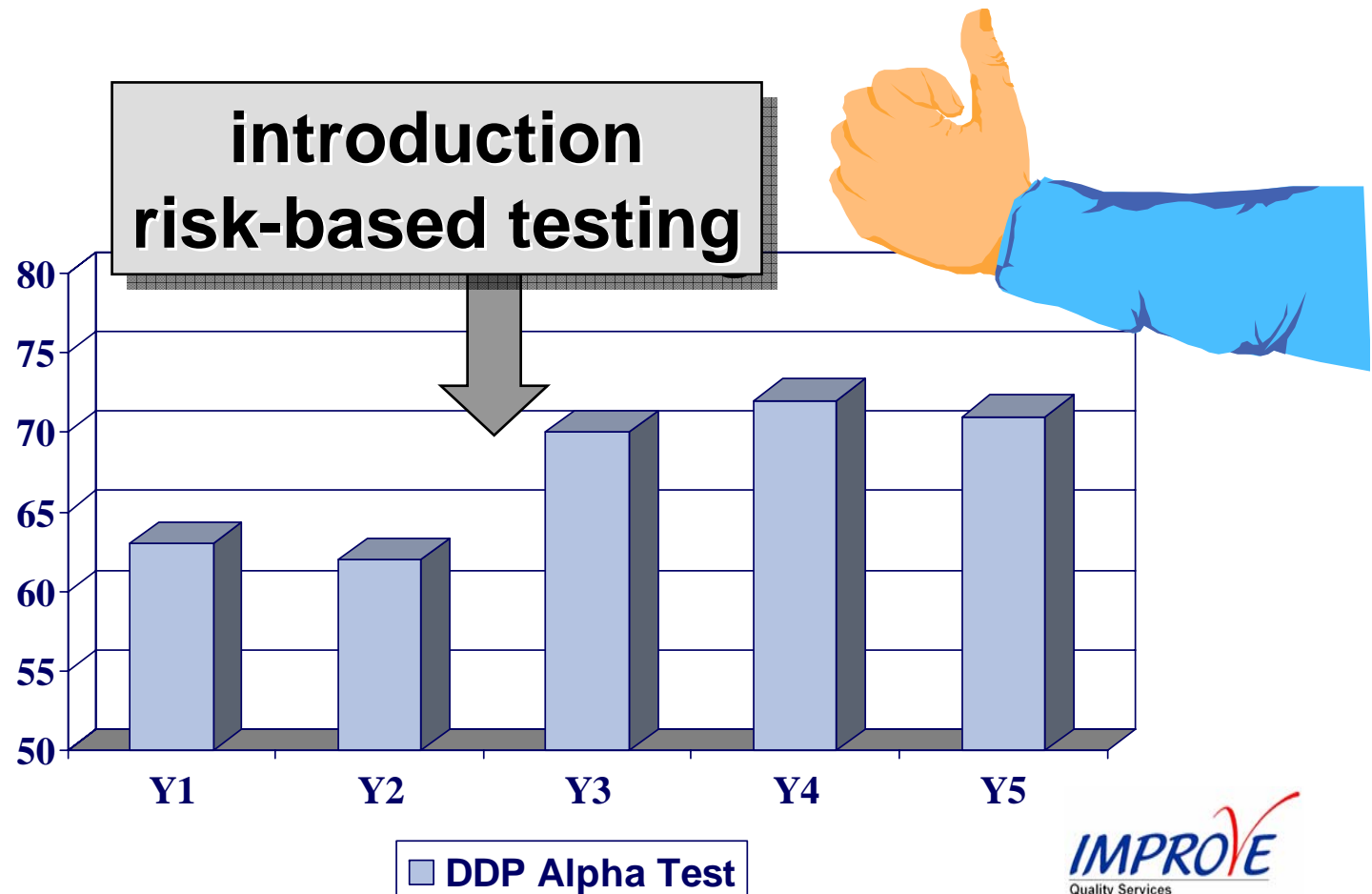
Survey Results

	average	median	
• Ease-of-use	6,5	7	(large σ)
"it's simple but not easy"			
• Usefulness	7,6	8	
• Efficiency	7,4	7	
• Effectiveness	7,2	7	



Benefits: Defect Detection Perc.

in addition to lead time reduction ...



Key learning points



- A structured and **practical approach** for risk based testing is **available**
- **Re-discuss** the risk assessment on a regular basis
- Define a risk based **differentiated test approach**
- Provide risk-based **management reporting**
- ... it doesn't stop at the planning stage





Thank You !!



Full PRISMA white paper available
at www.improveqs.nl