ISTQB Advanced Technical Test Analyst

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Who I am

- **John Young**, Principal Trainer at TSG Training
- 30 years IT Experience, including 20 as a trainer;
- Member of ISTQB and accredited trainer of that scheme

Ably supported by

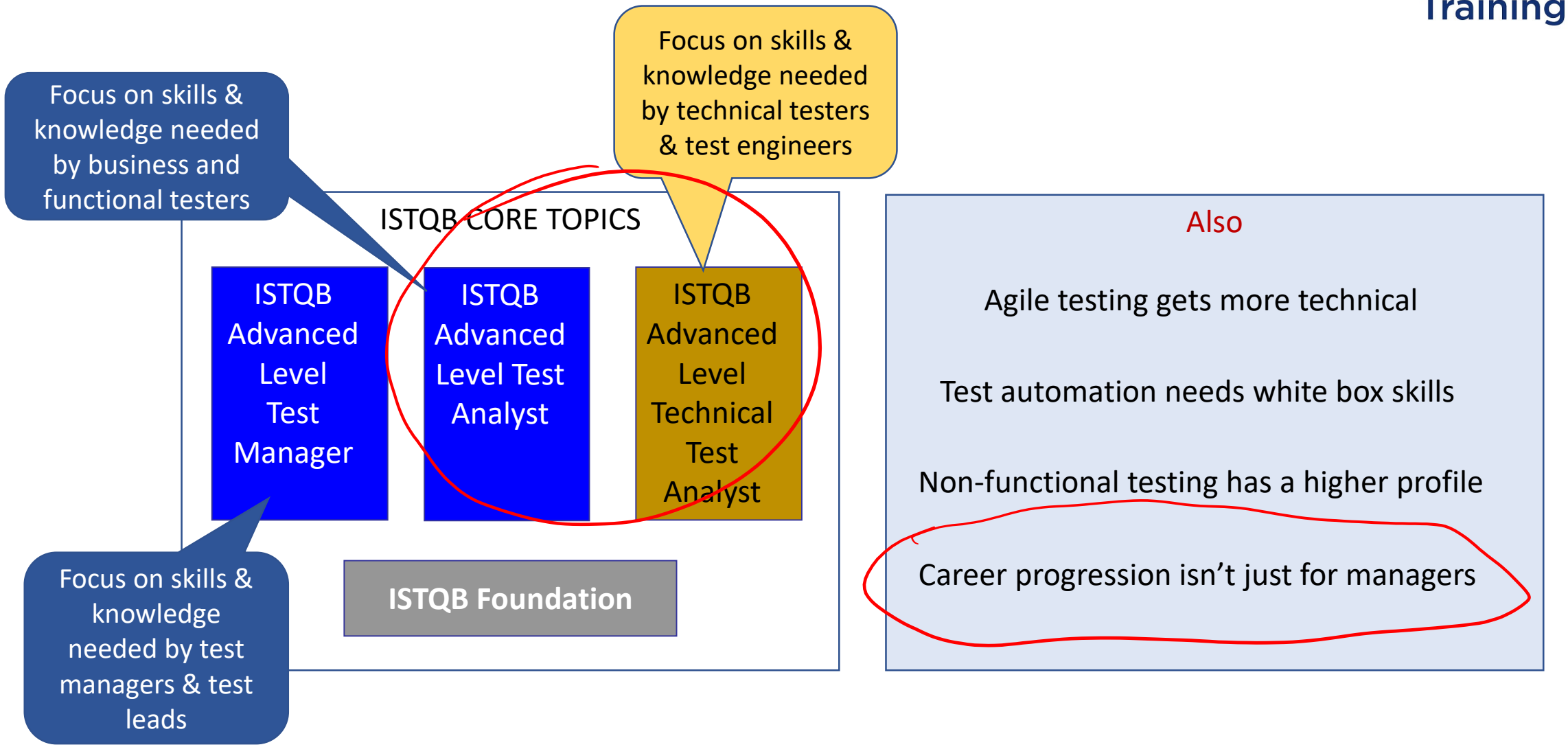
Bernard Melson, Managing Director and Owner of TSG Training

Want to know more?
Please contact us at: enquiries@tsg.training.co.uk or call Paula on 08000 199 337
Or see our website: www.tsg-training.co.uk
The next course is on January 30th

Agenda

- Why is the TTA course relevant
- What is a Technical Test Analyst
- The 3 key disciplines covered by the course
- White box testing – what makes it valuable
- Mini-lesson: Modified Condition Decision Testing
- Summary and questions

Why is the TTA course relevant?



What is a Technical Test Analyst?

Reliability tester

Security tester

Many Roles

Performance tester

Component / integration tester

Operational acceptance tester

Technical Test Analyst vs. Test Manager

Technical Test Analyst	Test Manager
• Review architecture and code • Perform white box testing • Perform non-functional testing • Perform static analysis	• Define test strategy • Plan, schedule & track testing • Manage teams • Decide on risk mitigation

Technical Test Analyst vs. Test Analyst

Technical Test Analyst	Test Analyst
• How • White-box • Technical	• What • Black-box • Domain / Business

The 3 key disciplines covered by the course

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White-box

- Code reviews
- Control-flow & data-flow analysis
- Condition testing techniques
- Path testing
- API testing
- Selecting white-box techniques

Non-Functional

- Architecture reviews
- Performance testing & operational profiling
- Reliability testing
- Security testing
- Maintainability testing
- Portability testing
- Selecting non-functional techniques

Automation

- Tool & data integration
- Defining test automation projects
- Data & Keyword-driven approaches
- Creating Keywords from business processes
- Technical issues that compromise ROI

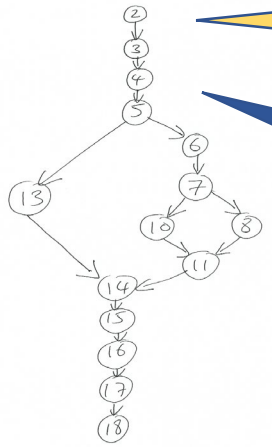
White box testing – what makes it valuable?

Code reviews can find defects and ensure standards and met

We can use tests to check if decision logic is correct

```
1.Declare A, B, C: integ
2.Read A
3.Read B
4.Read C
5.IF A > 10000 then
6.        B = 1
7.        IF A < 1000 then
8.                C = A * B
9.        ELSE
10.               C = A / B
11.       EndIF
12.ELSE
13.       B=100
14.EndIF
15.Kill A
16.Kill B
17.Kill C
18.Print A, B, C
```

We can look at a code listing



We can read or create control flow graphs

Control flow analysis makes code structures easier to understand & spot risks and design flaws

We can read or create data flow tables

	Definitions	Uses	Kills
1. Declare A, B, C: integer			
2. Read A	A		
3. Read B	B		
4. Read C	C		
5. IF A > 10000 then		A	
6. B=1	B		
7. IF A < 1000 then		A	
8. C = A * B	C	A, B	
9. ELSE			
10. C = A / B	C	A, B	
11. EndIF			
12. ELSE			
13. B=100	B		
14. EndIF			
15. Kill A			A
16. Kill B			B
17. Kill C			C
18. Print A, B, C		A, B, C	

data flow analysis finds data usage defects and can prevent potential non-functional defects

Mandatory where regulations demand it

We can often apply the same techniques to business processes & procedures

Also

Test automation code needs to be tested

Can improve maintainability & increase ROI

An essential aspect of security assurance

May be essential for legacy systems

Mini-lesson
Modified Condition Decision Testing - 1

```
12  GET (x);
13  While x>=0 loop
14     PUT_LINE ("ENTER LENGTH 1 AS AN INTEGER");
15     GET (y);
16     PUT_LINE ("ENTER LENGTH 3 AS AN INTEGER");
17     GET (z);
18     If (x>5 and y=10) or z=10 then
19        Flag :=TRUE;
```

2 tests

N = conditions

2^N 2^3 $2 \times 2 \times 2 = 8$

		1	2	3
18	If (x>5 and y=10) or z=10 then			

Mini-lesson
Modified Condition Decision Testing - 2

	1	2	3
18	If (x>5 and y=10) or z=10 then		

Condition testing (theoretical – never used in practice)

Decision/Condition testing (slightly more thorough than decision testing)

Multiple Condition testing (brute force – most thorough but most expensive)

Modified Condition Decision testing (pragmatic compromise)

2 tests

Usually 2 tests

$2^N = 8$ tests

N+1 2^N and N+1 6 + 4 tests

Mini-lesson
Modified Condition Decision Testing - 3

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	1	2	3
18	If (x>5 and y=10) or z=10 then		

2xN N+1
5 tests

Independtly

1 (T⑥ + T⑩) OR ⑪F = T
2 (F⑤ + T⑩) OR ⑪F = F

①

Independtly

3 (T + T) OR F = T → Duplicate
4 (T⑥ + ⑪F) OR F⑪ = F

②

Independtly

5 (F⑤ + F⑪) OR ⑪T = T
6 (F⑤ + F⑪) OR F⑪ = F

③

Summary

- “Technical” testers come in many varieties
- In practice, testers often combine both the test analyst and technical test analyst role
- Agile projects will require testers to get more involved in technical testing
- The core 3 disciplines that relate to technical testing are
  - White box testing
  - Non-functional testing
  - Test automation
- White-box testing concepts & techniques can often also be applied to business processes & procedures

Any Questions?

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What Else at ISTQB Advanced Level?

You may also be interested in:

ISTQB Advanced Test Automation Engineer

ISTQB Advanced Test Analyst

ISTQB Advanced Security Tester

ISTQB Advanced Test Manager

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