

# Results of the SJTAG Survey of its Membership

Bradford G. Van Treuren  
Chairman, SJTAG Initiative



# Apologies

---

- I wish to formally apologize to all of you for the late release of this information.
- There were a few stragglers responding to the survey that begged to be include.
- The main reason for the delay was my lack of time to devote to SJTAG. As you know Lucent and Alcatel underwent a merger that is still stirring up some dust internally. To complicate this, Bob Lucky's Spectrum Sept. 2005 article, "Lab Sale", has finally come true. I have had to move out of my Holmdel, NJ office and lab. There have also been a lot of system test activities that have been taking up my time.

# Appreciation

---

- I wish to thank Gunnar Carlsson for keeping the momentum going in spite of my lack of response in many cases. He is a valuable Vice Chairman.
- I wish to thank Ben Bennetts for his keen wisdom and expertise on JTAG and IEEE affairs. Ben has been steadily plugging the need to keep the SJTAG momentum going if we all feel it is important or let it die gracefully. Ben is playing his role as Chairman, Emeritus quite well for one that does not know what an Emeritus usually does.

# My Thoughts

---

- I thank all who participated in this survey
- Demographics
  - 37 respondents to the survey representing a wide range of industry
    - ~30% represents the test tooling industry (largest)
    - ~22% represent the telecom industry (second largest)
    - Please see question #4 results for other KEY industry representation
  - I was disappointed that no one from the automotive industry participated. There is much to be learned from that industry since they have been dealing with really small coordinated embedded systems for a long time. Please invite any of your friends in that industry to join us.
  - I was pleased to see that multiple representation from companies did not skew the results. There were many times answers were quite different from the same company.

# My Thoughts

---

- I was disappointed that one of the original core group members did not respond to the survey
- I was pleasantly pleased to see the number of people embracing the idea of being review members and helping out at least part time knowing a core team effort was impossible.

# The Survey Results

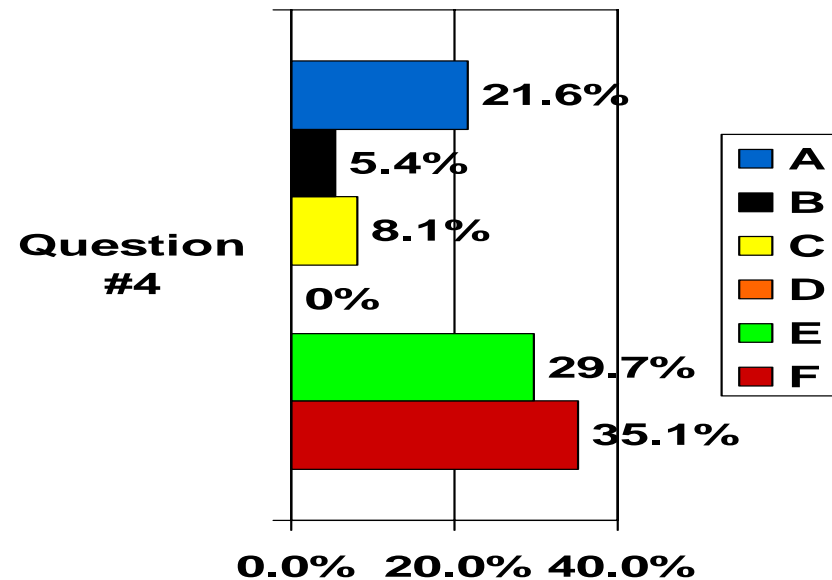
---

- The remainder of this presentation provide the results of the survey for your use in directing the SJTAG initiative further.



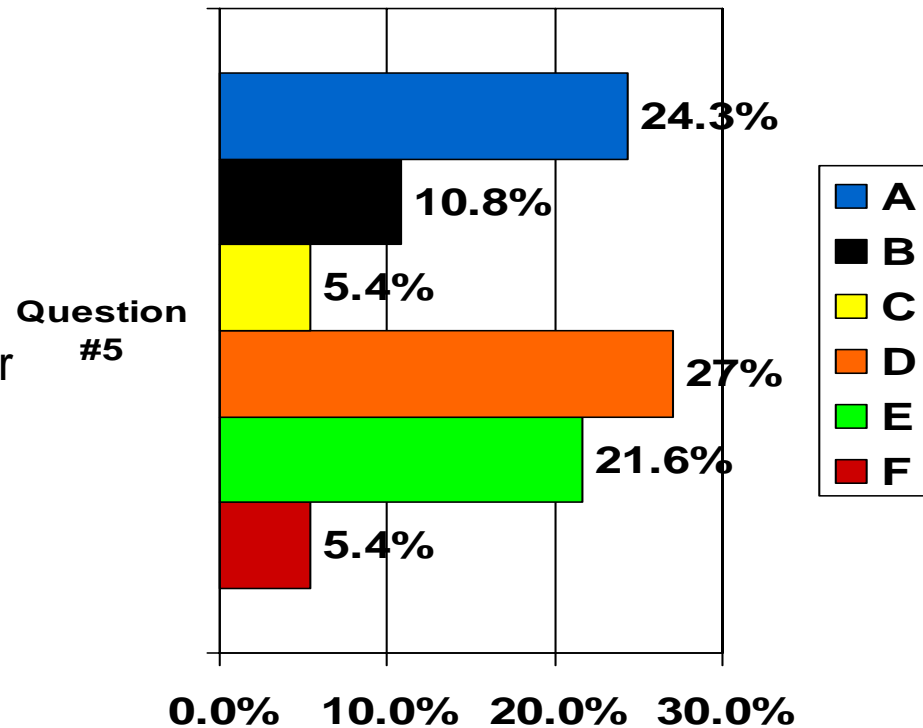
## Question #4

4. What sector of the business are you affiliated with?
- A. Telecom
  - B. Mass Storage/Servers
  - C. Aerospace/Military/Defense
  - D. Automotive
  - E. Tool Provider
  - F. Other (Please state sector)
    - Silicon Vendor (2)
    - Academia (2)
    - IC Vendor (1)
    - Consumer Products (1)
    - Network Equipment (2)
    - Consultants (2)



## Question #5

5. What is your role with the SJTAG initiative?
- A. Member of core group
  - B. Member of extended group
  - C. Would like to be a member of the core group because I feel I have significant skills needed by the core group and am willing to sign up for work
  - D. Would like to be a member of the review group
  - E. Would like to be a member of the extended group
  - F. Just visiting and not interested in joining a group



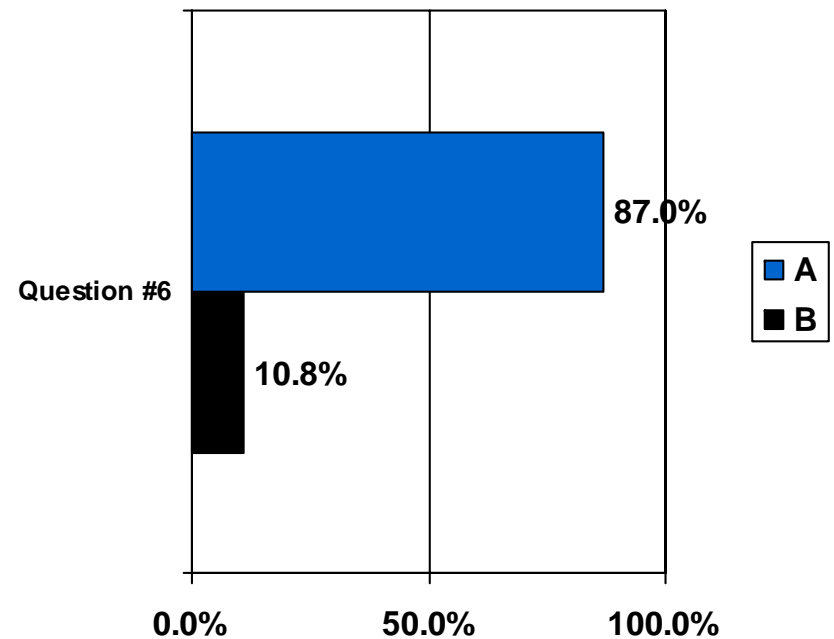


# Question #6

6. Have you read the SJTAG White Paper?

A. Yes

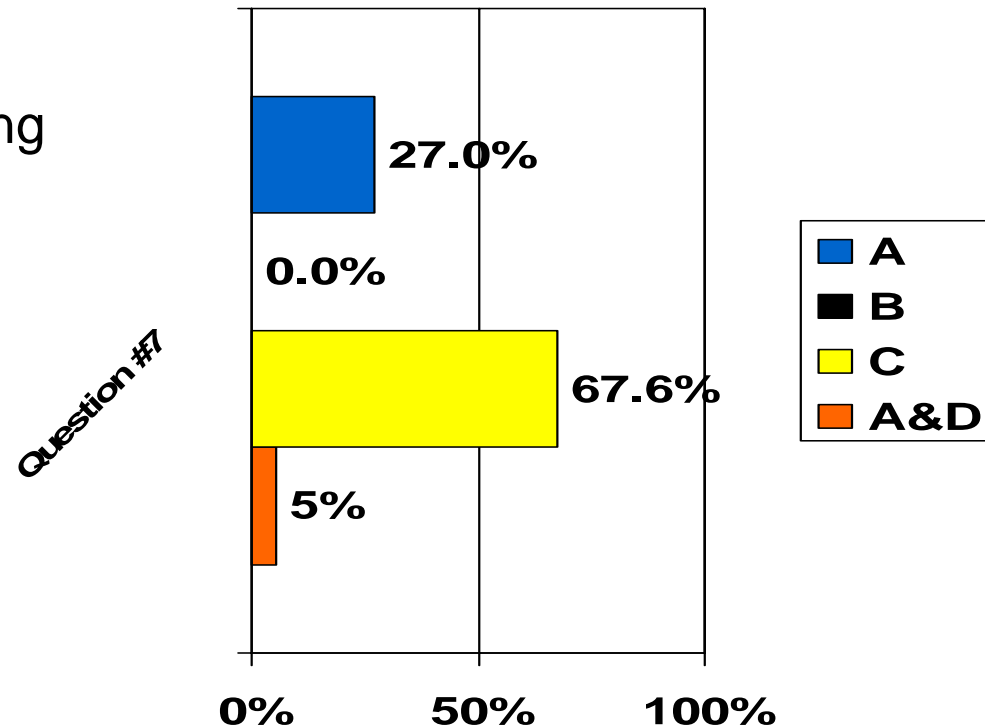
B. No



## Question #7

### 7. An SJTAG Test Manager is:

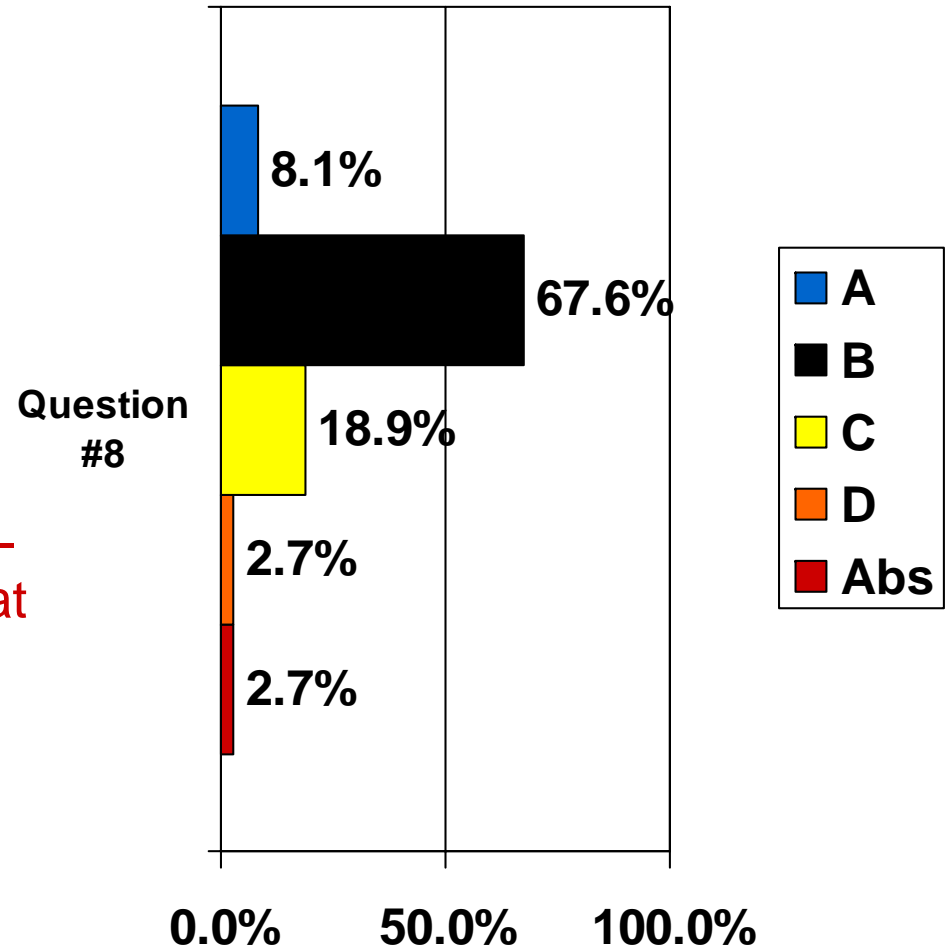
- A. An external system for generating and managing tests
- B. A hardware interface between the microprocessor and the boundary-scan infrastructure on the board
- C. Any combined hardware/software test control system
- D. None of the above



## Question #8

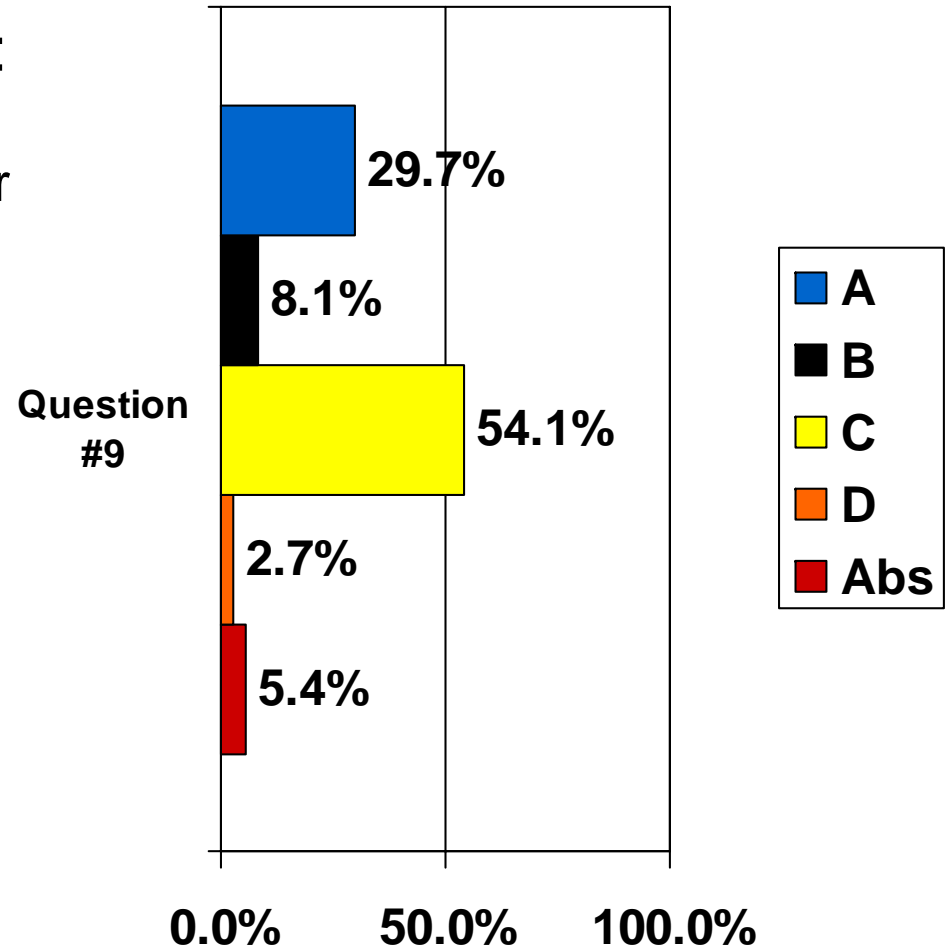
### 8. An SJTAG Test Controller is:

- A. A hardware interface between the microprocessor and the boundary-scan infrastructure on the board
- B. Some or all of the functionality of a runtime-control Test Manager that is built into the UUT
- C. Any combined hardware/software test control system
- D. None of the above



## Question #9

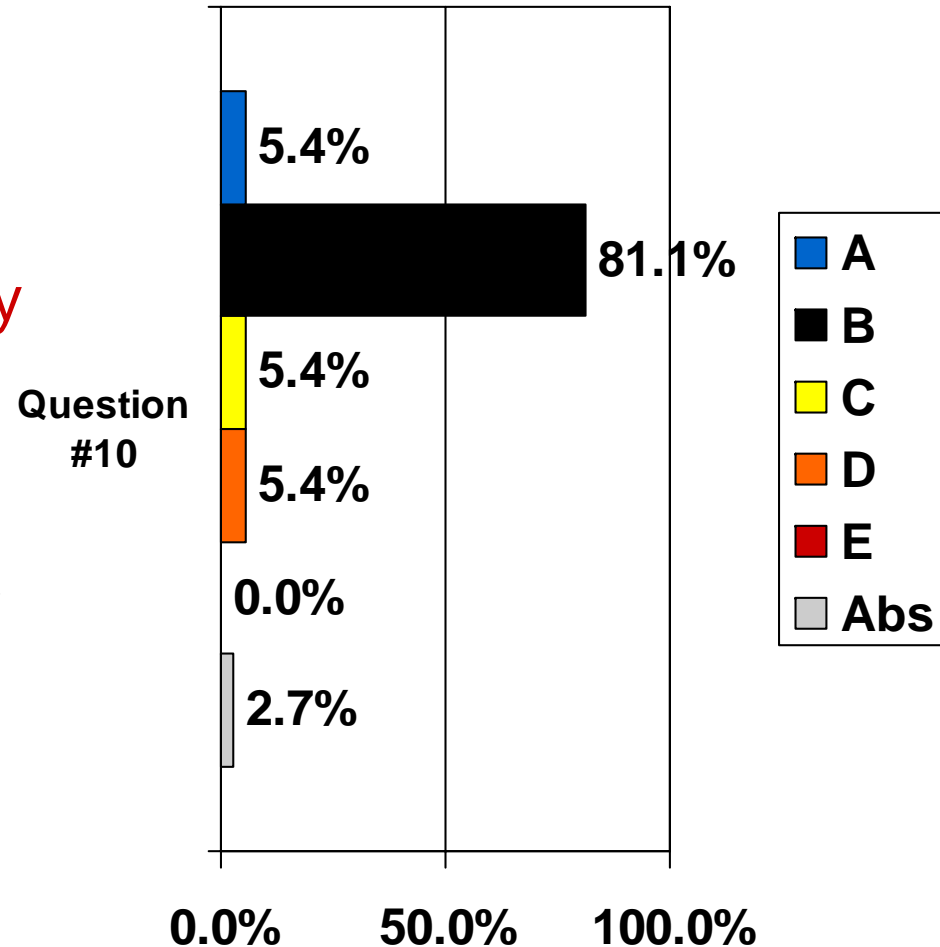
9. A JTAG Protocol Manager (JTAG-PM) is:
- A. Handshake protocol between a Test Manager and a Test Controller
  - B. Any combined hardware/software test control system
  - C. A hardware interface between the microprocessor and the boundary-scan infrastructure on the board
  - D. None of the above



# Question #10

10. The term EBST stands for:

- A. External Boundary Scan Test
- B. Embedded Boundary Scan Test
- C. Embedded Board Self Test
- D. Enhanced Boundary Scan Test
- E. None of the above



# My Thoughts

---

- Most people did well on the comprehension of reading quiz of questions 7 – 10.

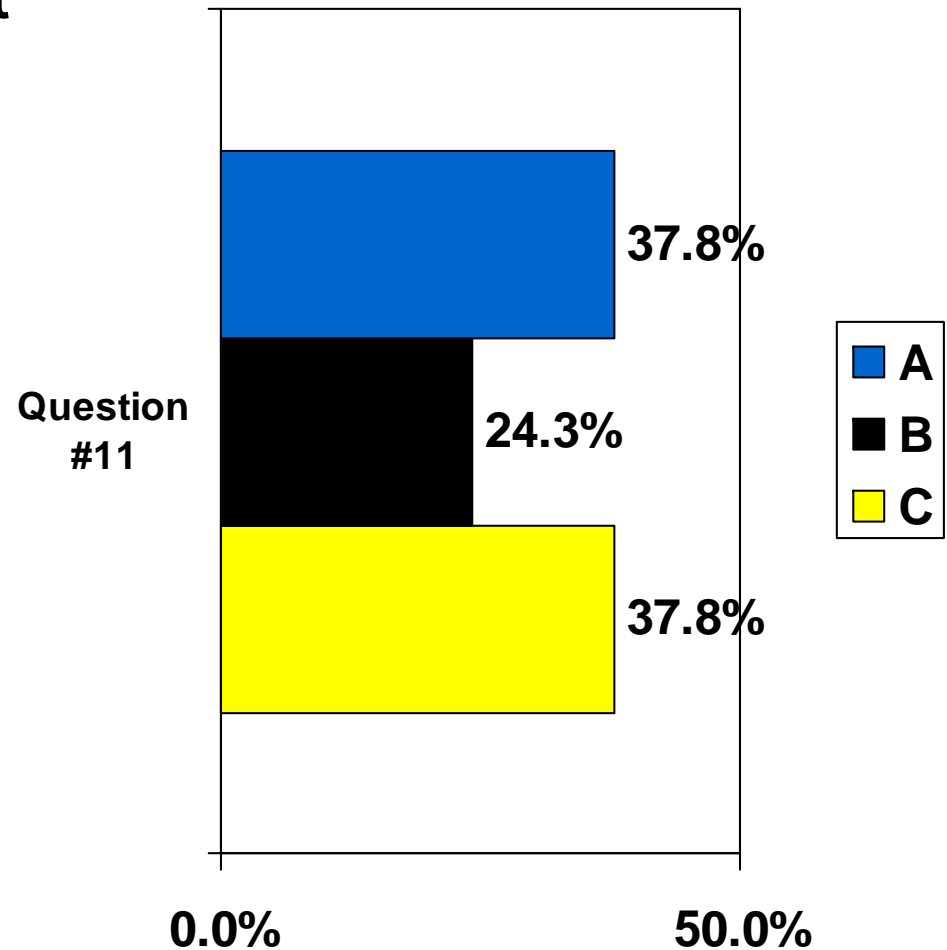
## Question #11

11. Do you implement Boundary-Scan as a test process for your system-level test now?

A. Yes

B. No

C. N/A



# My Thoughts

---

- According to the question 11 results, there is truly a need for SJTAG given the percentage of respondents that are already using boundary scan as part of system test.



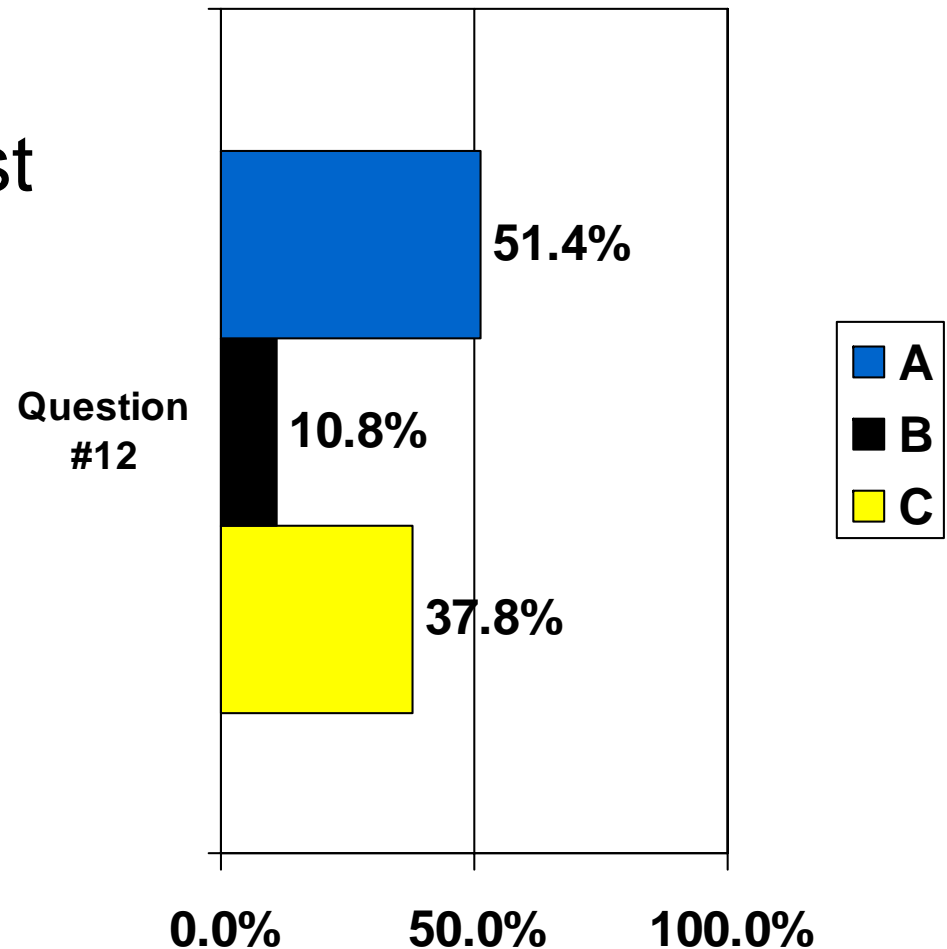
## Question #12

12. Do you anticipate the use of Boundary-Scan test at the system-level in the future for your systems?

A. Yes

B. No

C. N/A



# My Thoughts

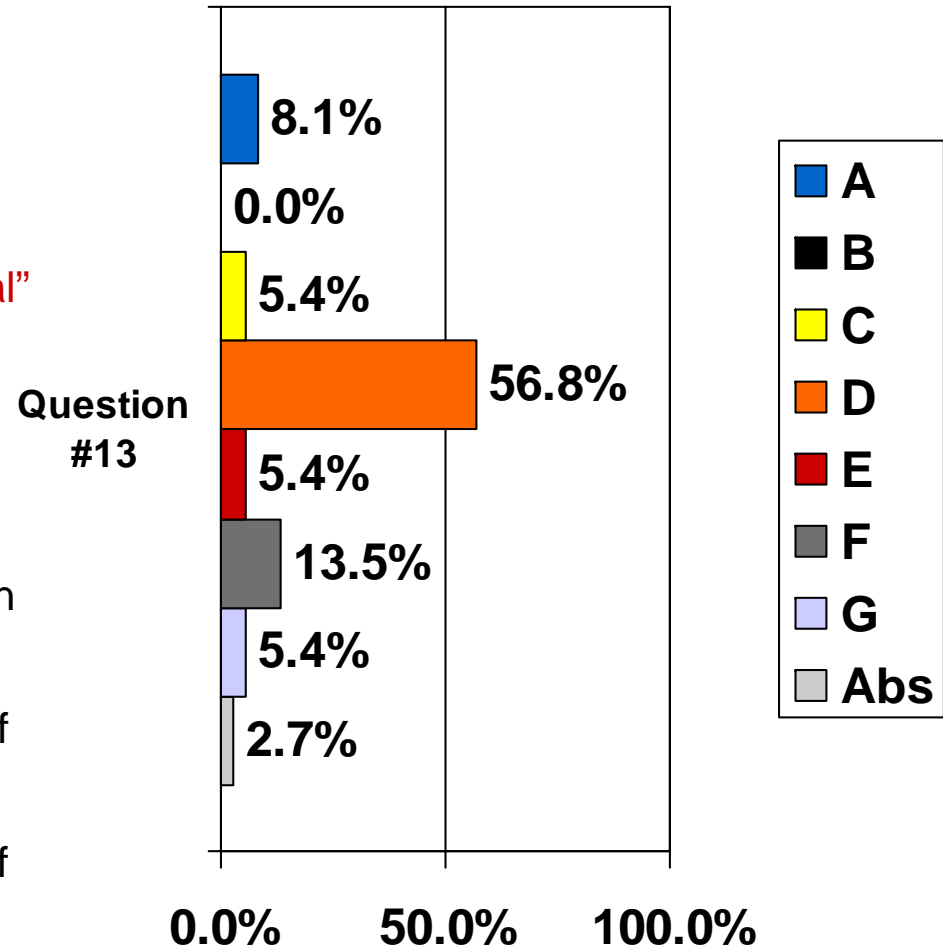
---

- Question #12 clearly shows that the use of JTAG in a system is going to be relied on more in the future. So we better be ready for that.

# Question #13

13. I feel SJTAG is:

- A. Predominantly a “Software” issue and is NOT a Hardware and Architectural one.
- B. Predominantly a “Hardware” issue and is NOT a Software and Architectural one.
- C. Predominantly an “Architectural” issue and is NOT a Hardware and Software one.
- D. An even mix of Software, Hardware, and Architectural issues.
- E. A even mix of Software and Hardware issues and less of an Architectural issue.
- F. An even mix of Software and Architectural issues and less of a Hardware issue.
- G. An even mix of Hardware and Architectural issues and less of a Software issue.



# My Thoughts

---

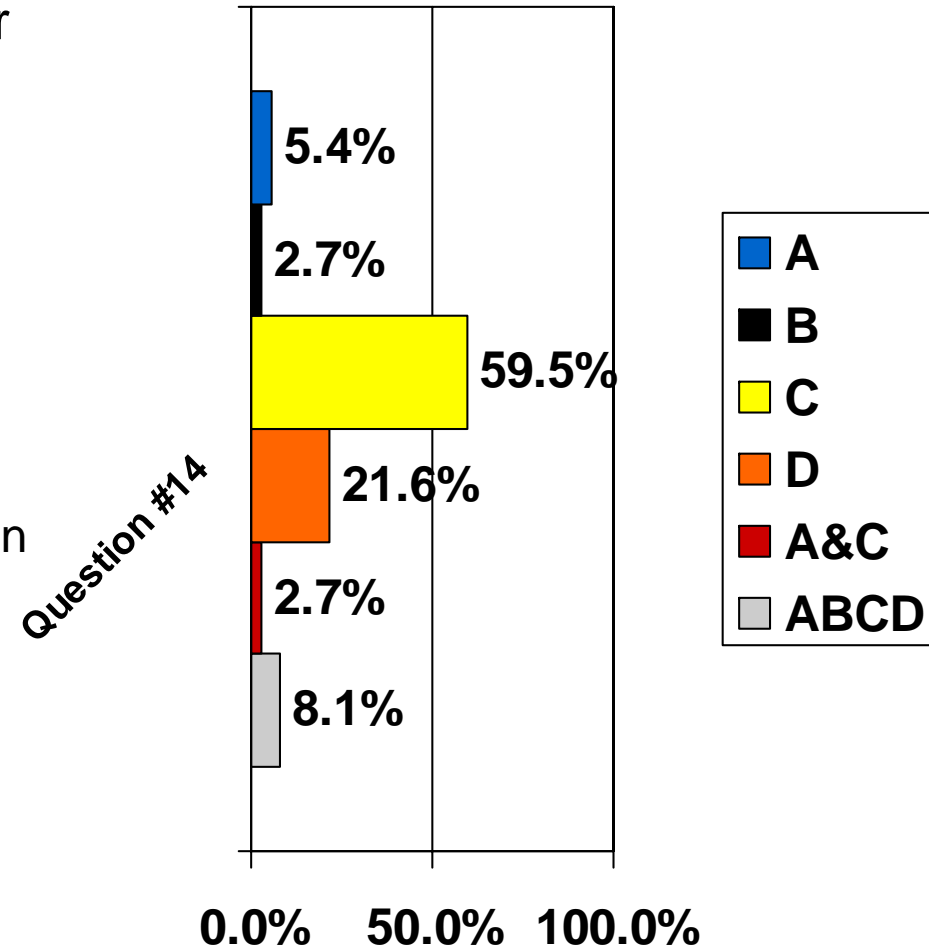
- Question #13 surprised me the most. I answered the question very differently from the majority. I hope to come to an understanding of everyone's thinking on this question this year. Clearly, this could be a religious war if we are not careful.

# Question #14

14. I feel that tests need to be managed (e.g. Test Manager role)

- A. Entirely within my system
- B. Entirely from an external system
- C. Primarily from within my system with provisions to add additional tests on request
- D. Primarily from an external system with provisions to run stand-alone within my system

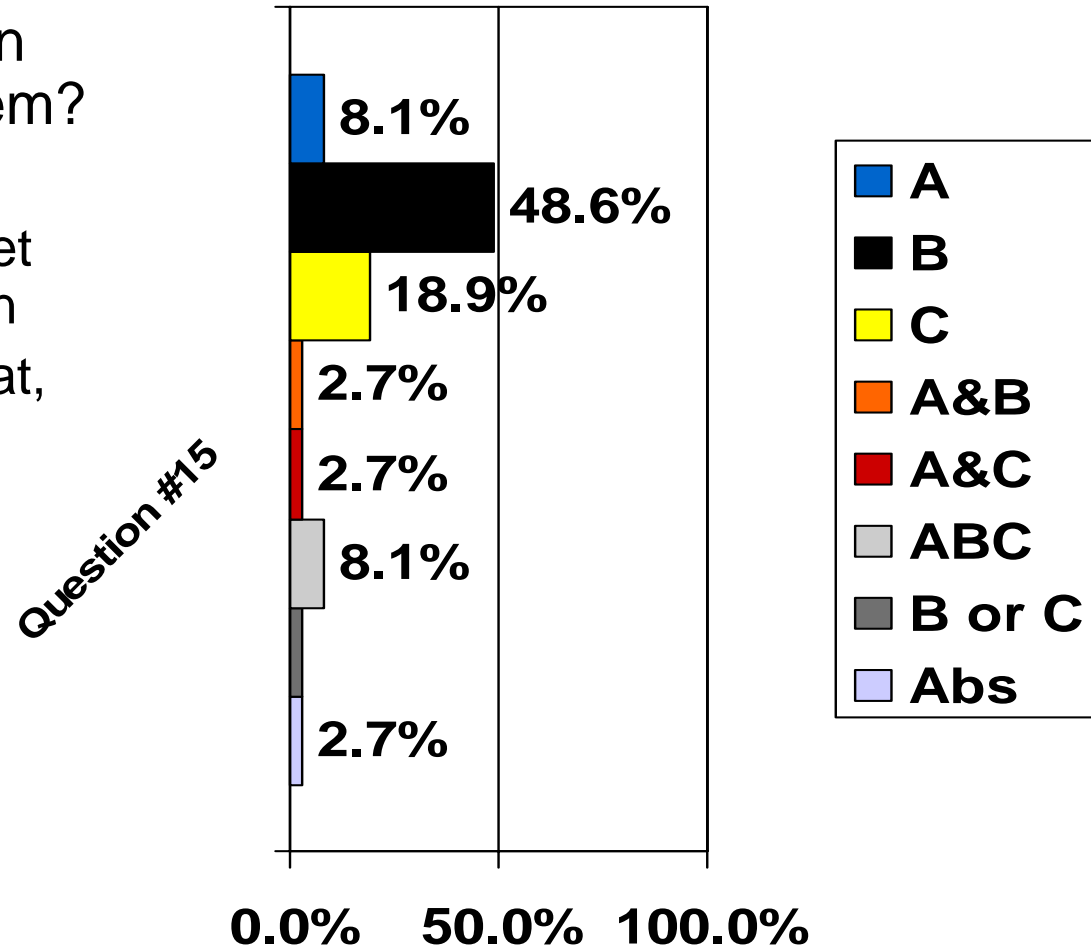
- Tool suppliers: Please indicate what you feel your tools need to support



# Question #15

15. What level of diagnostics do you need from an SJTAG based system?

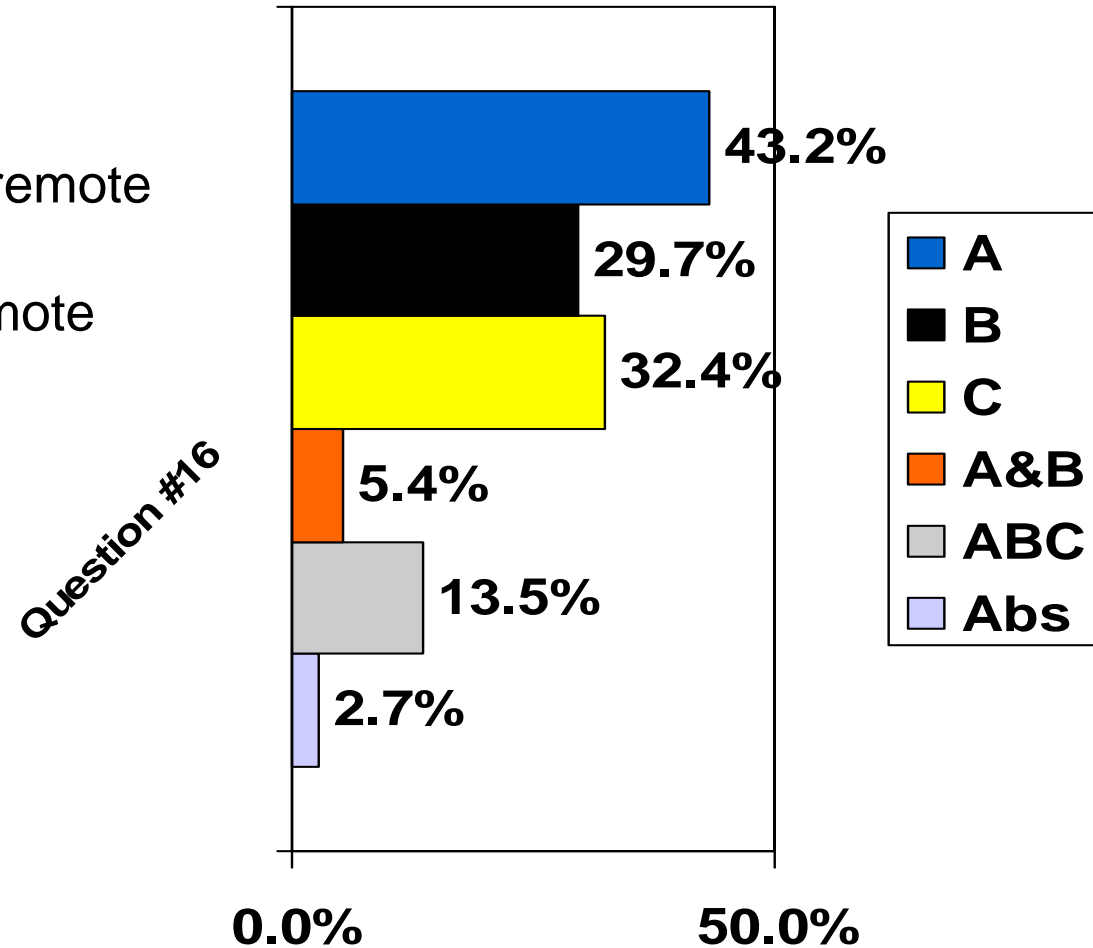
- A. GO/NO-GO
- B. Device Pin and Net Failure information
- C. Pin Faults (stuck-at, shorts, opens)



# Question #16

16. Diagnostic analysis needs to be performed:

- A. In the system.
- B. Real-time from a remote computer.
- C. Off-line from a remote computer.



# My Thoughts

---

- Question #16 is what I think could be called a wakeup call to the tool providers that the majority of the respondents feel diagnostic analysis should be performed in the system and not on a remote system as was presented to the SJTAG group during EBTW2005 by some of the tool vendors.

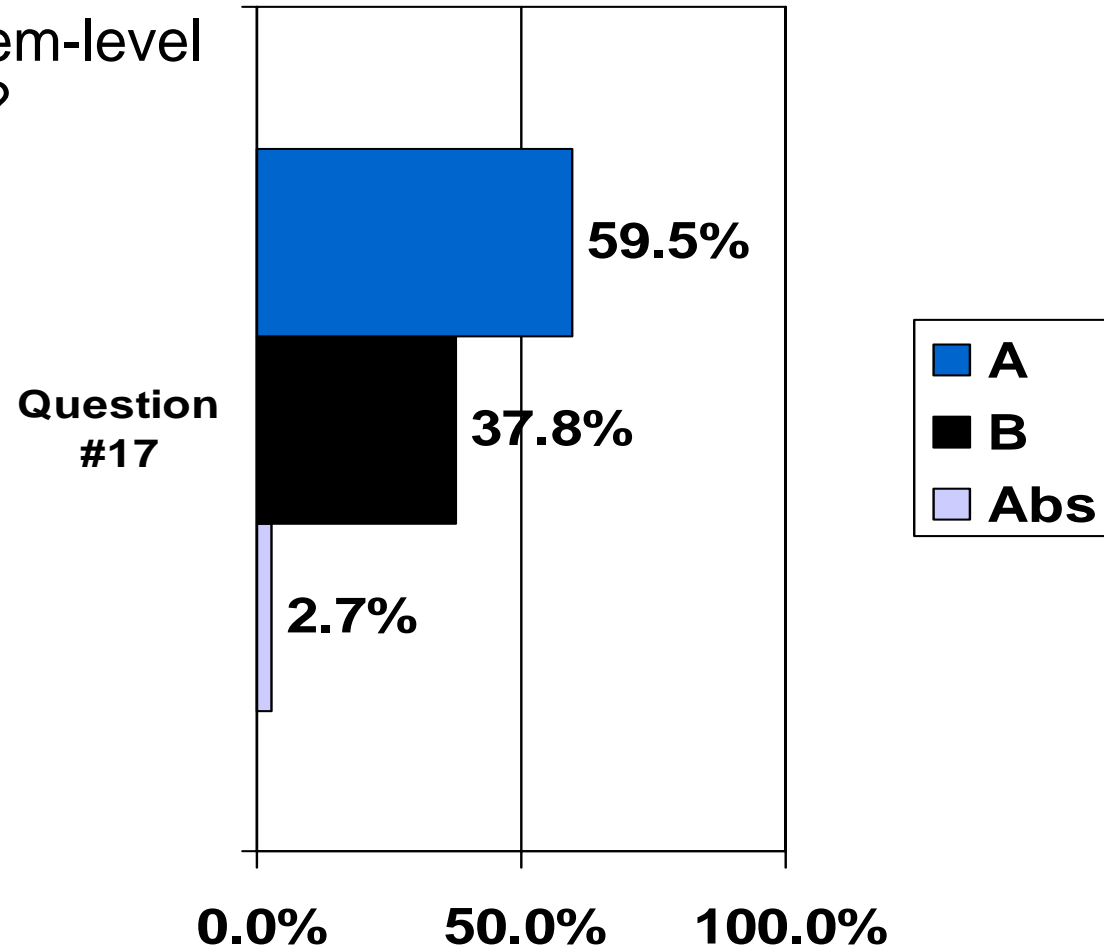


# Question #17

17. Do you feel emulation support at the system-level is important to you?

A. Yes

B. No



# My Thoughts

---

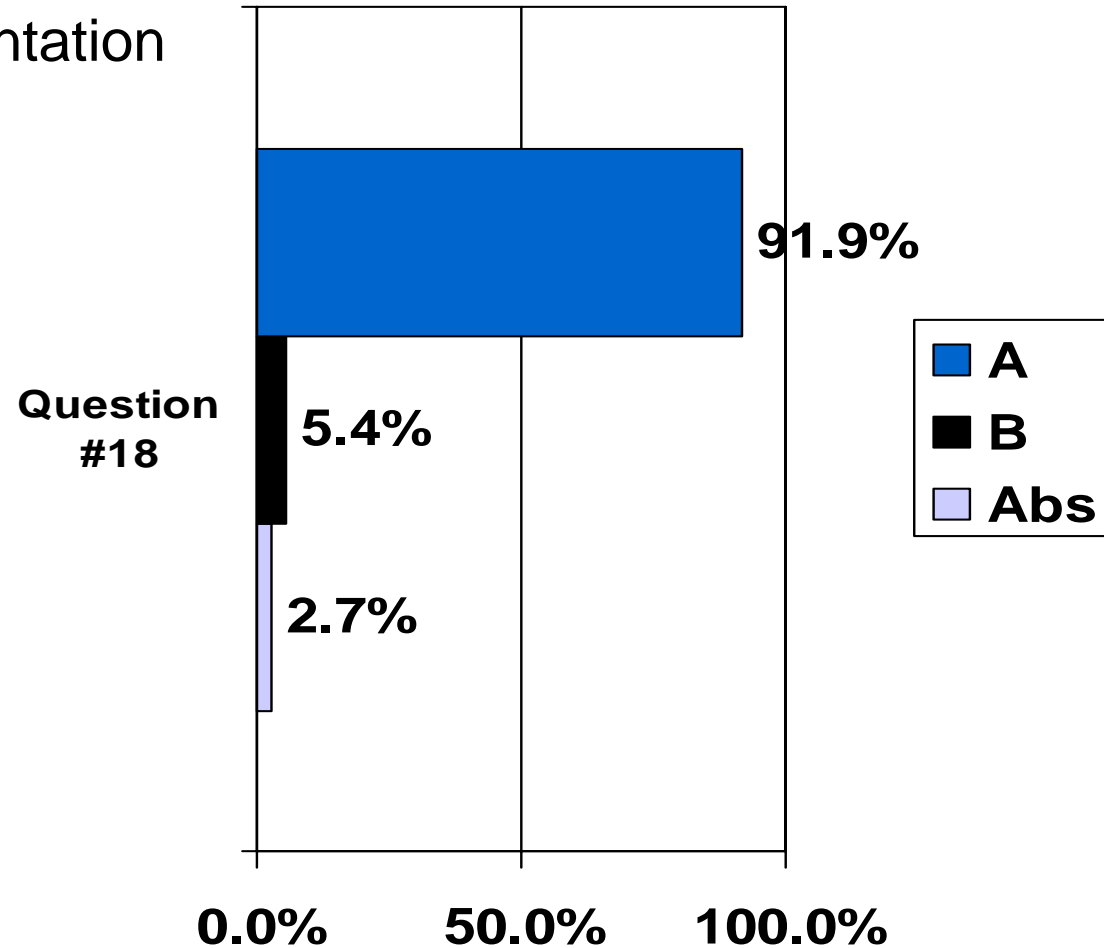
- I was surprised at the number of respondents to Question #17 desiring emulation support within a system..

# Question #18

18. Do you feel board-level access to instrumentation inside devices is important?

A. Yes

B. No



# My Thoughts

---

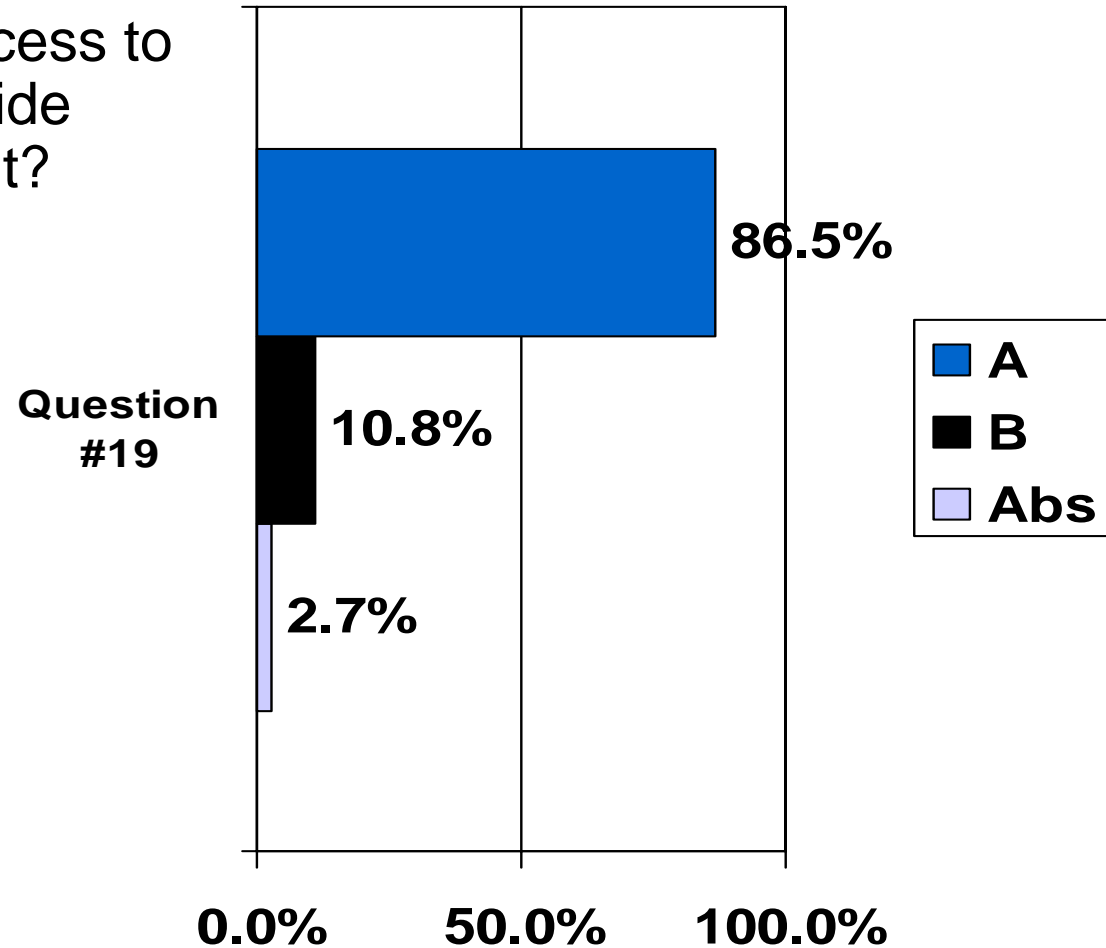
- Question #18 shows there is a strong need for SJTAG to keep closely aligned and abreast of the activities in IEEE P1687 IJTAG. Gunnar Carlsson is our official representative to that working group.

# Question #19

19. Do you feel system-level (multiple board) access to instrumentation inside devices is important?

A. Yes

B. No



# My Thoughts

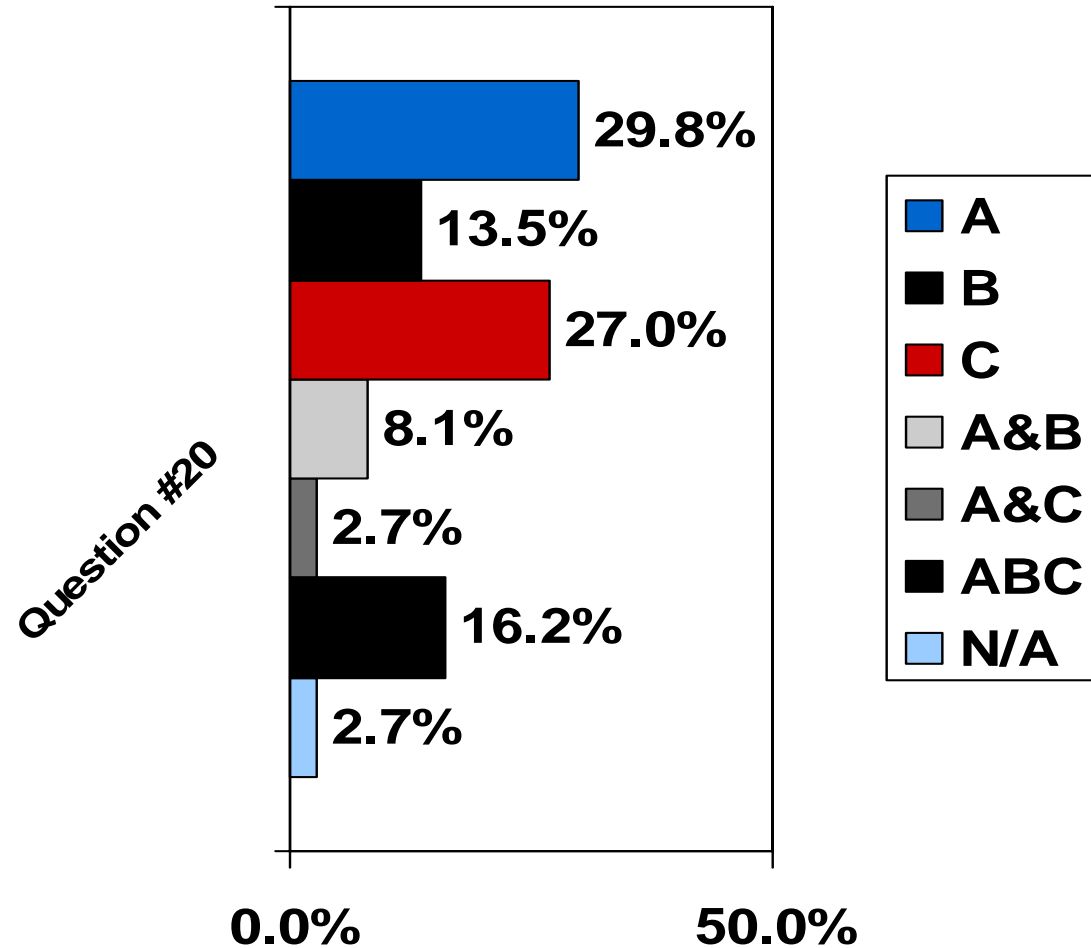
---

- Question #19 surprised me with the large number of respondents that feel instrument access at the system level is equally important as it is at the board level.

## Question #20

20. The test language I primarily use for Boundary-Scan test application is:

- A. SVF
- B. STAPL
- C. Other (Please state what language that is)



## Question #20 – Other Languages Specified

---

20. Other Languages Stated (ordered alphabetically)
- A. ASSET InterTech Macro
  - B. C/C++ API
  - C. C# API
  - D. Goepel CASLAN
  - E. Homebrew Languages (TFCL™, Specialty Languages, non-std pseudo languages)
  - F. IEEE 1532
  - G. JTAG Technologies EBST
  - H. Proprietary Binary SVF (SBSF, EVF, BSV, etc.)
  - I. STIL
  - J. Verilog
  - K. VHDL



# My Thoughts

---

- Responses for Question #20 were not as religiously divided as I expected them to be
  - After hearing so many people push for STAPL as the suggested language of choice for SJTAG, I was surprised that SVF was the top language of choice for embedded platforms. Some of the C answers were binary versions of SVF as well. Perhaps it is only because SVF was out there longer?
  - The amount of homebrew/”spin your own” solutions (answer C) shows people are going to use the technology at what ever the cost because the need for it is there.
  - If I group the combination answers together, this shows me that 27% of the respondents feel there isn’t a single solution to their problems. (no silver bullet!)

# Next Steps

---

- The officers will get together to identify preliminary directions and select group areas to refine SJTAG direction and clarify issues prior to PAR formulation
- Select group topics advertised to core and review team members for sign-up/membership list
- SJTAG officers select moderators for initial group meetings based on sign-up list
- Select groups identify leader to represent group's findings to officers and organize publication of results on SJTAG web site
- PAR preparation core group (group working closest to the officers) identified based on current work needs and interest
- PAR formulation based on refinements of direction from the select groups