

2018 Model Based Systems Engineering Survey Conducted December 2018

Dr. Robert Cloutier

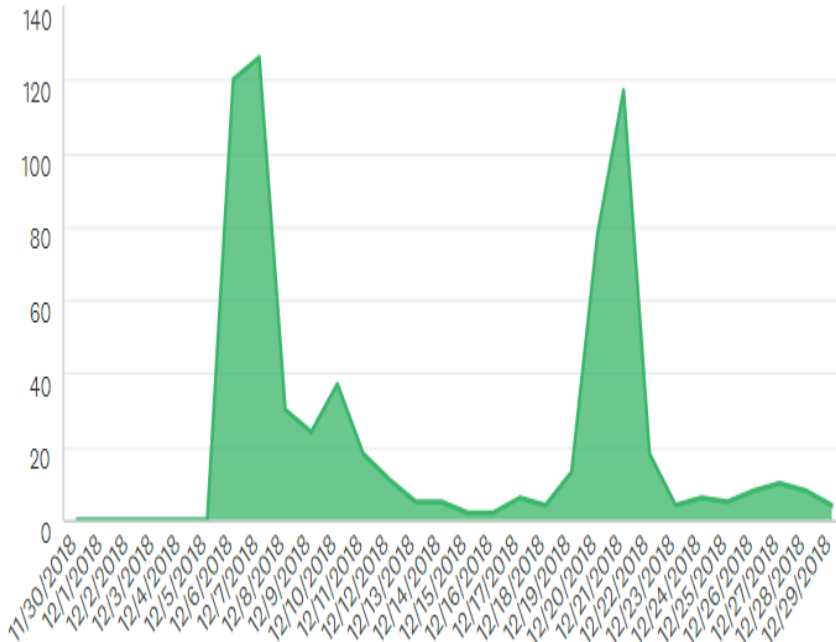
Professor & Systems Engineering Program Chair

University of South Alabama

January 2019

Overall Analytics

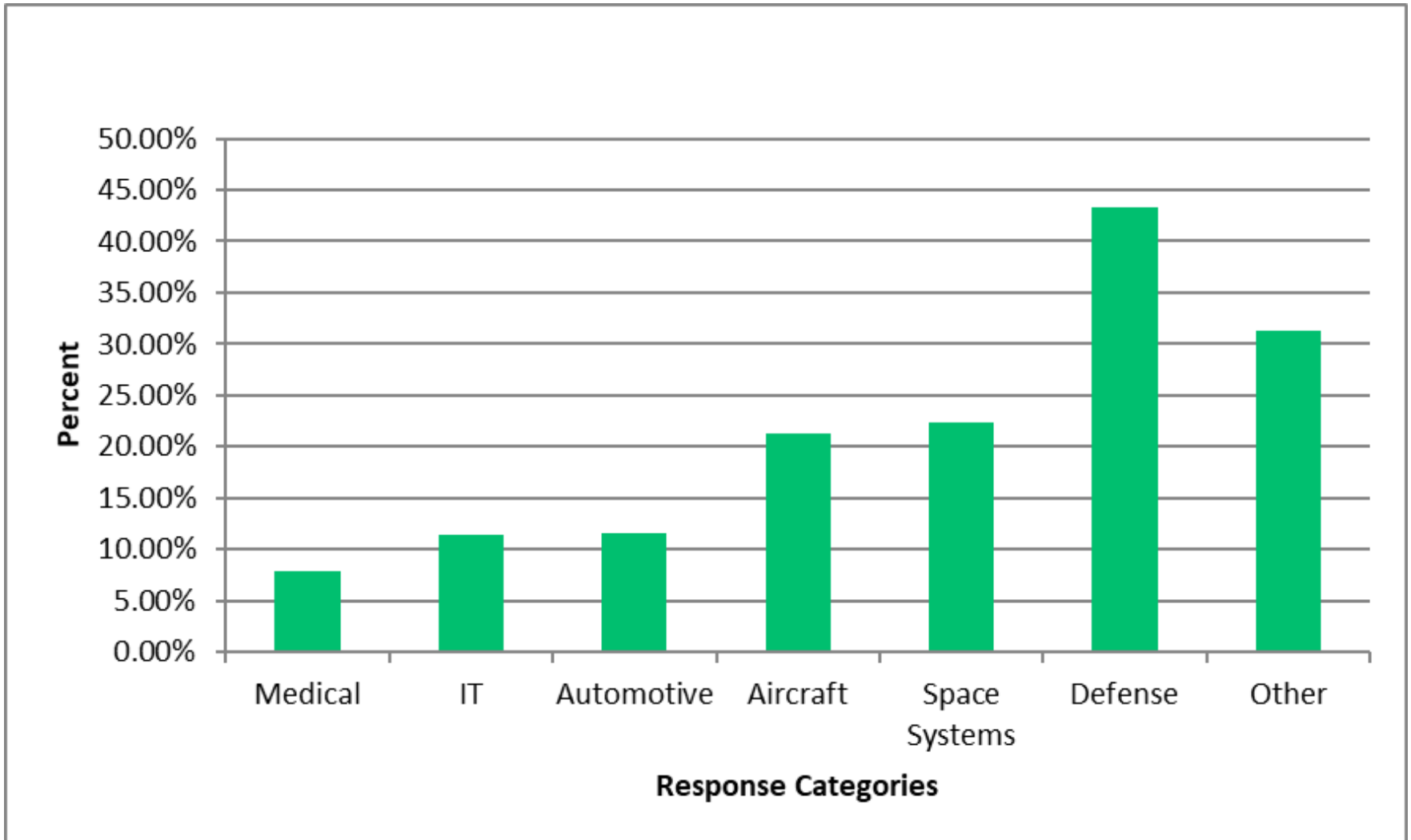
- Survey ran from Dec. 6 – Dec 29
- Total of 661 responses, with 100% completion rate
- 27 pages of raw comments in addition to data
- Average time to complete survey: 08m:07s



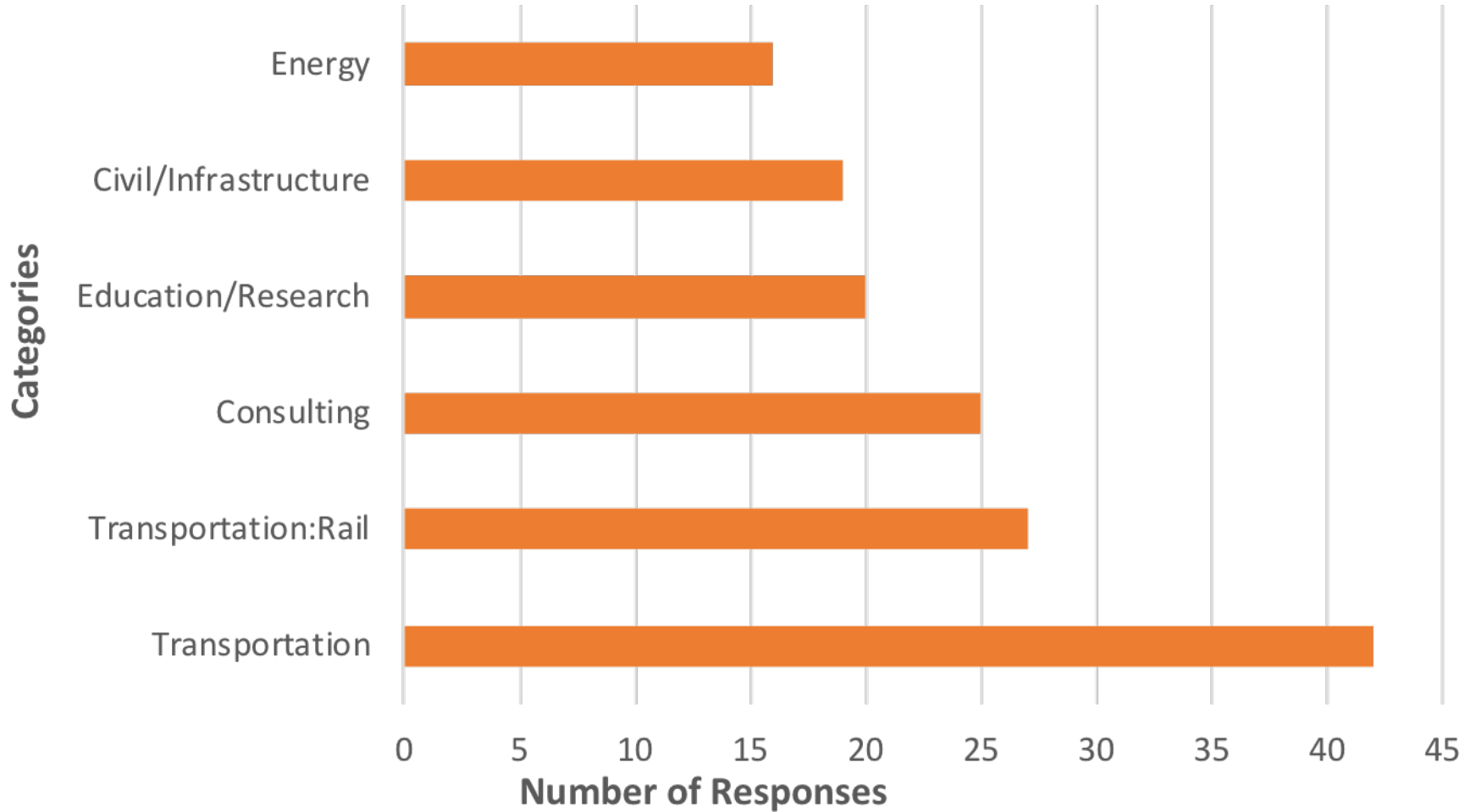
Responses by Country

USA	197	Israel	4
United Kingdom	52	Singapore	3
France	30	China	2
Germany	28	New Zealand	2
Australia	20	Poland	2
Netherlands	19	Russia	1
Japan	8	Romania	1
Canada	6	Turkey	1
Italy	6	Columbia	1
Sweden	6	Norway	1
South Africa	5	South Korea	1
Switzerland	4		
Brazil	4	United Arab Emirates	1
India	4	Belarus	1
		TOTAL RESPONSES	410 of 661

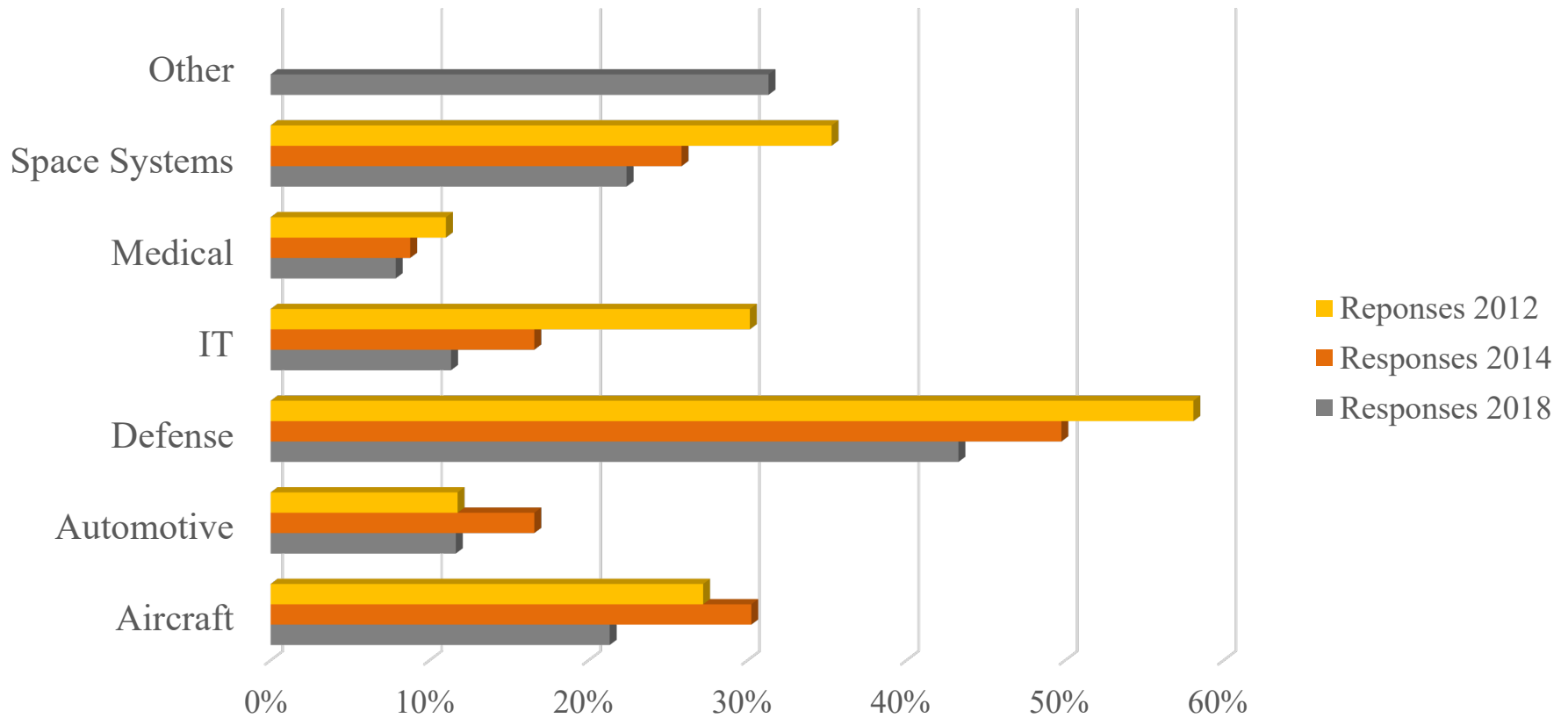
Represented Industries or Products



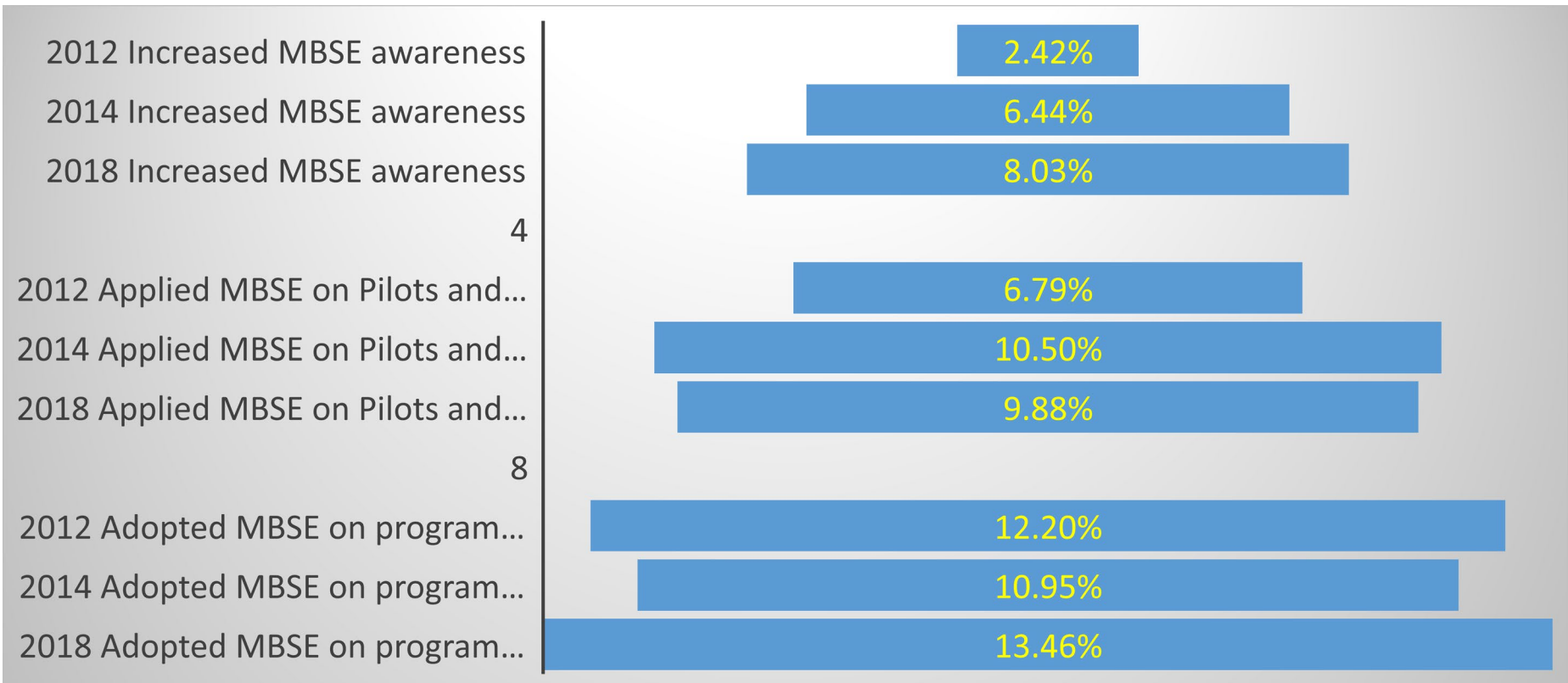
Most significant “Other” categories



What types of industry and/or products does your company represent?

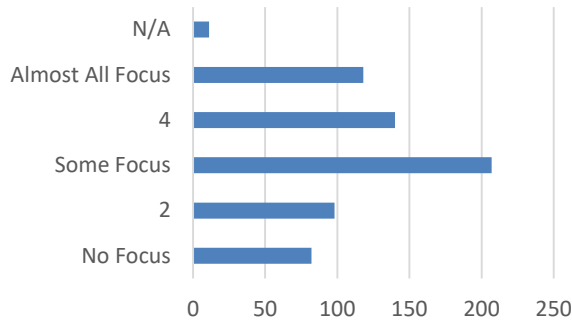


To what extent in the last 3 years has your company/organization?

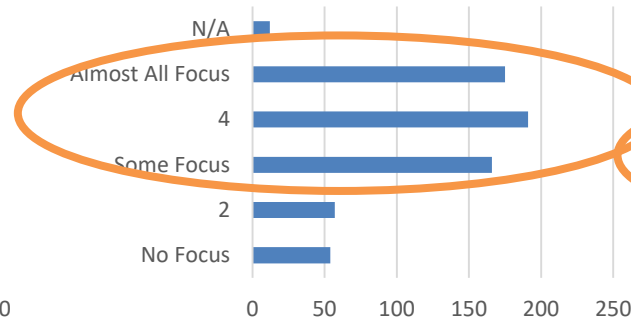


What is the relative focus of the MBSE effort in your organization to support each of the following?

Conceptual design



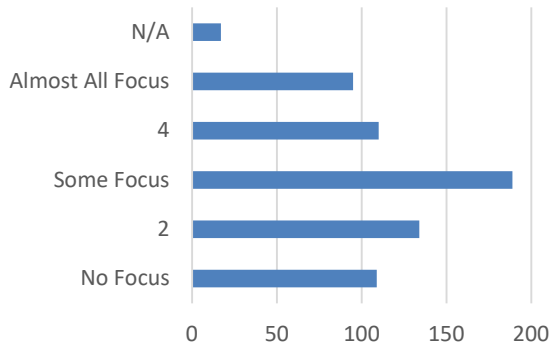
Architecture modeling



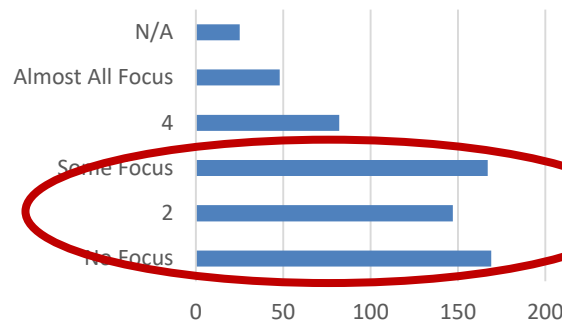
Requirements flowdown and traceability



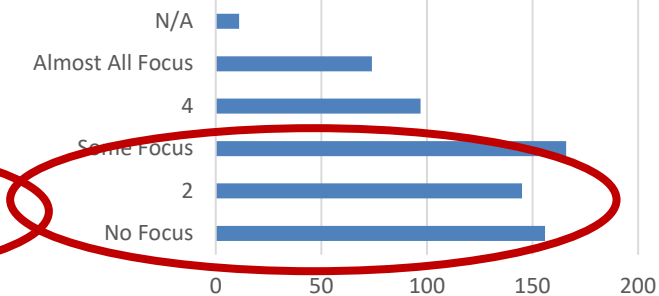
Detailed design and analysis



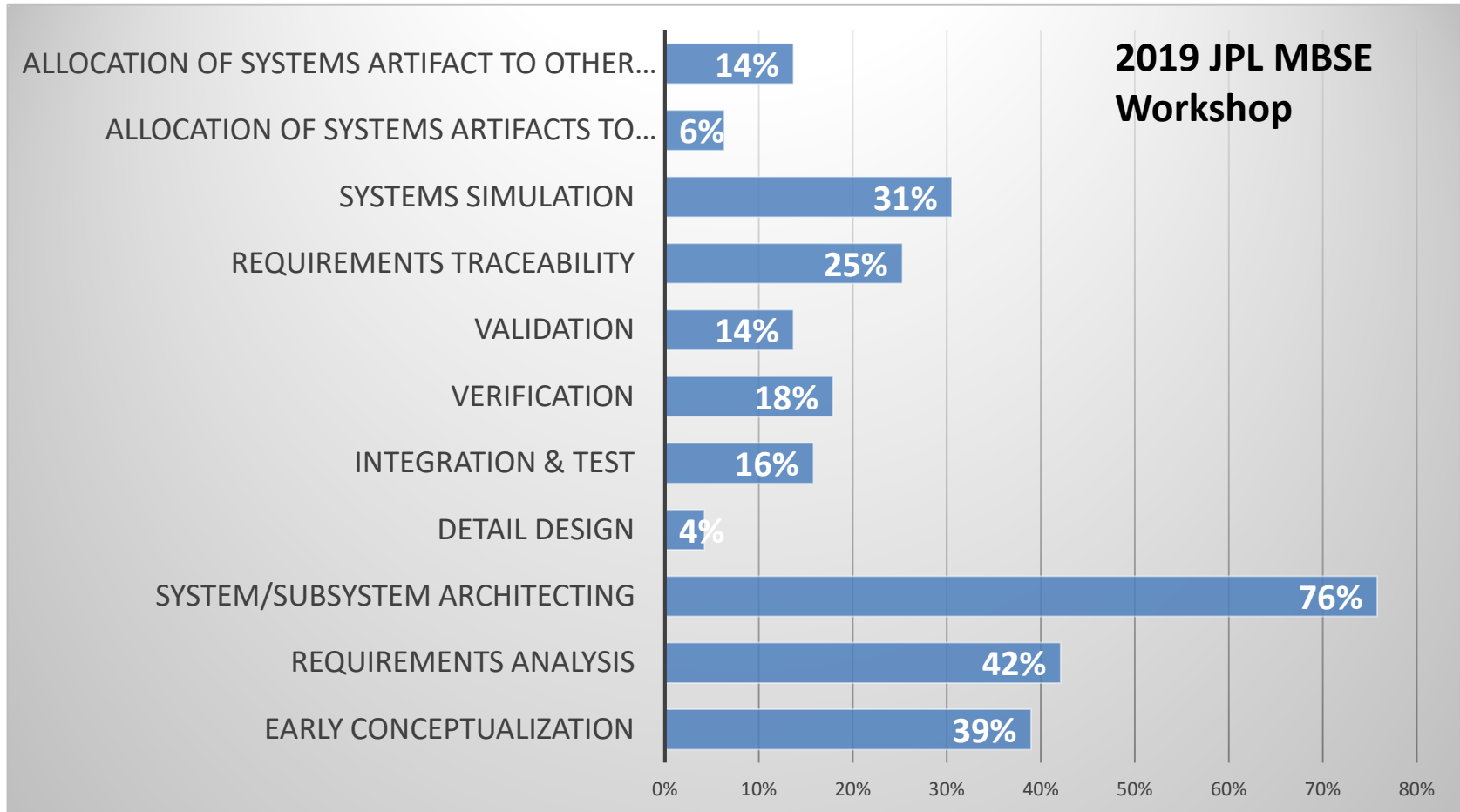
Trade studies



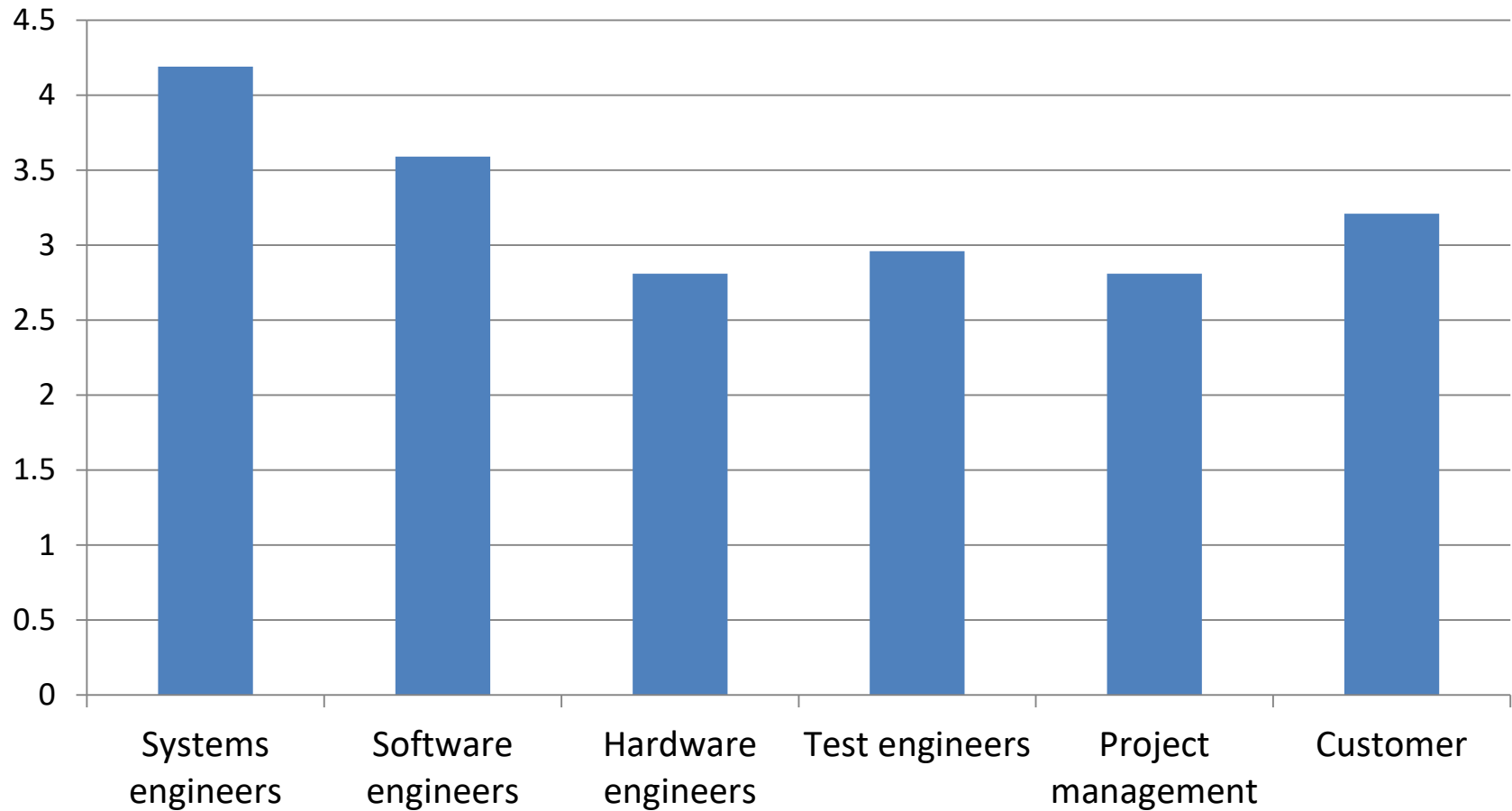
Verification planning and execution



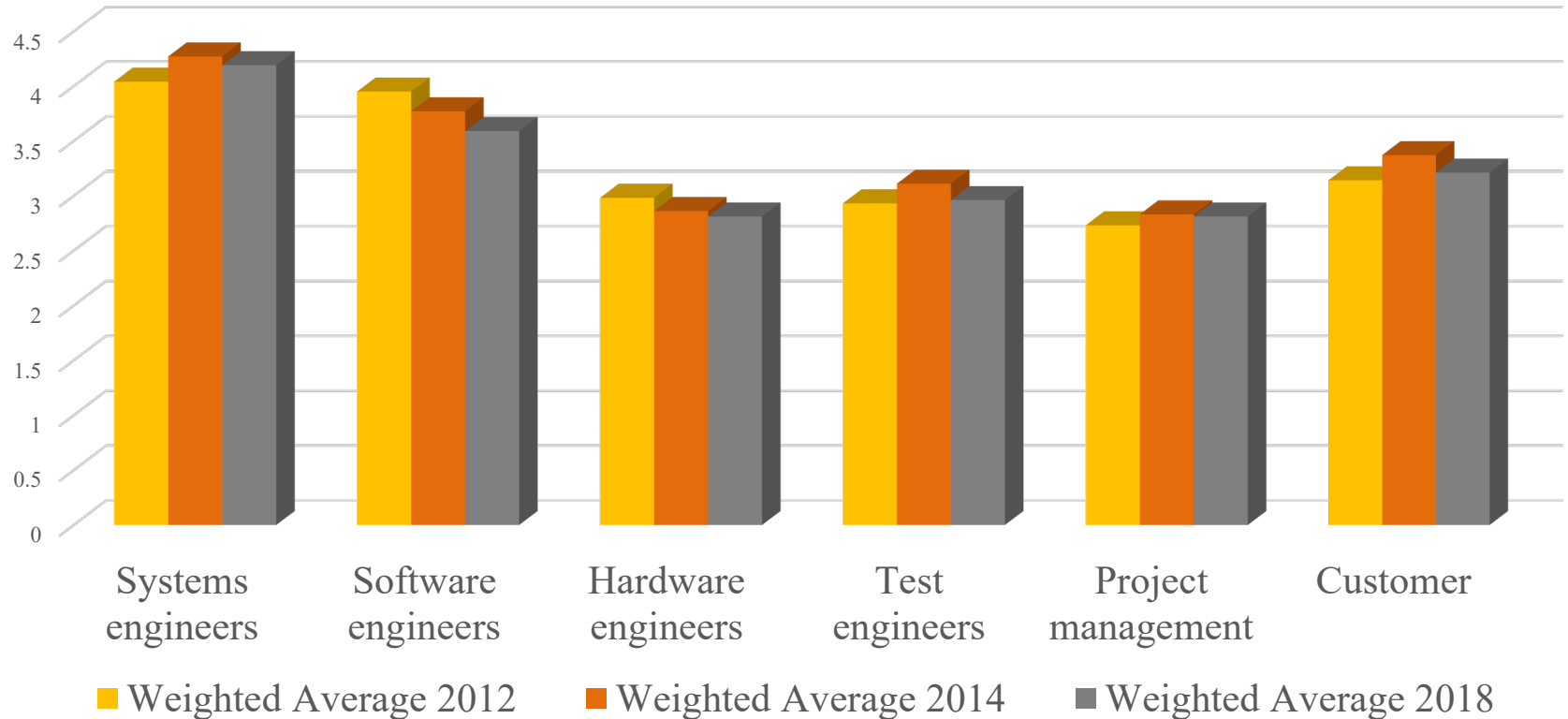
Where do we believe MBSE holds the most promise?



What is the perceived value of MBSE to...



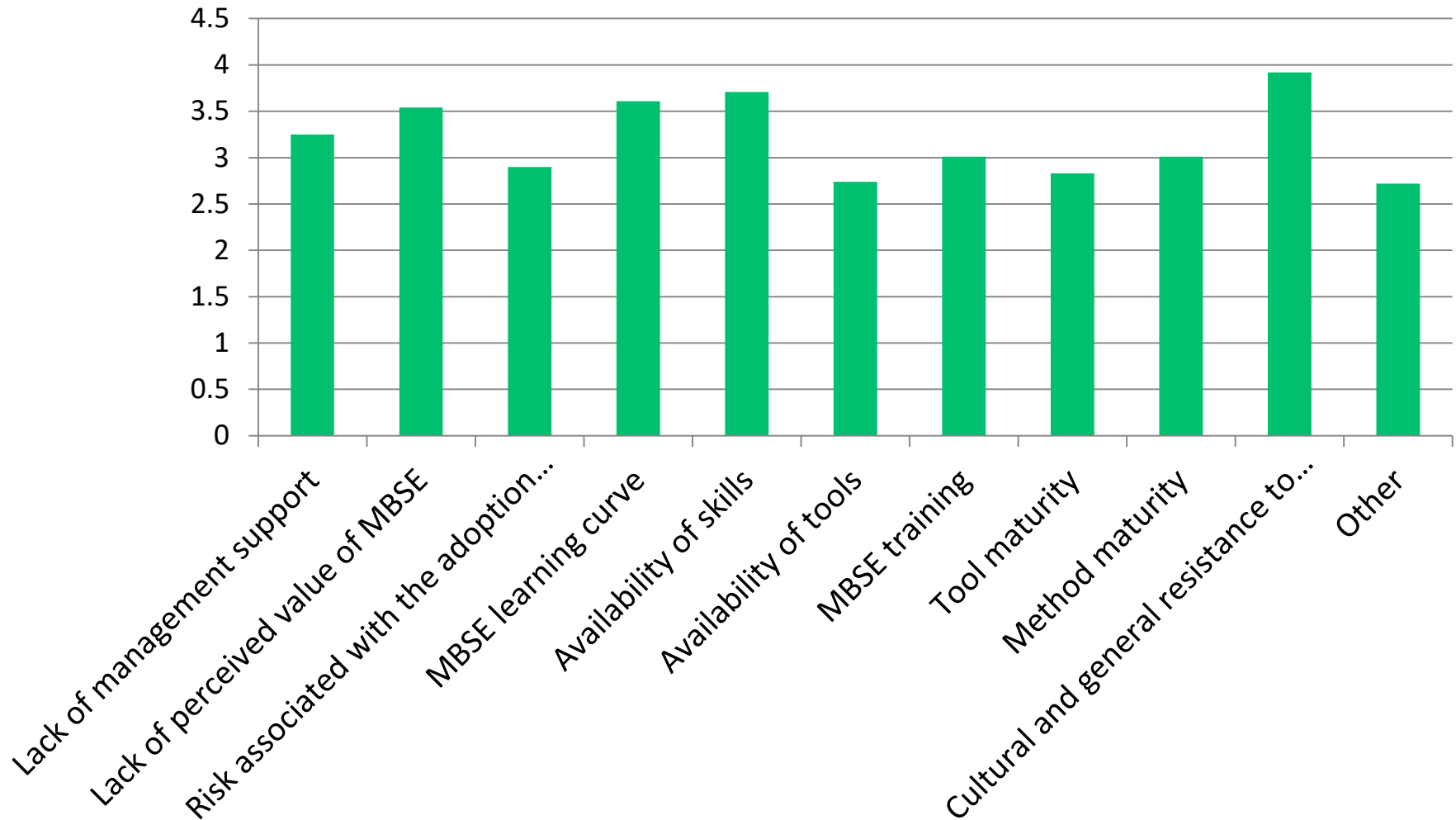
What is the perceived value of the modeling effort by each of the following?



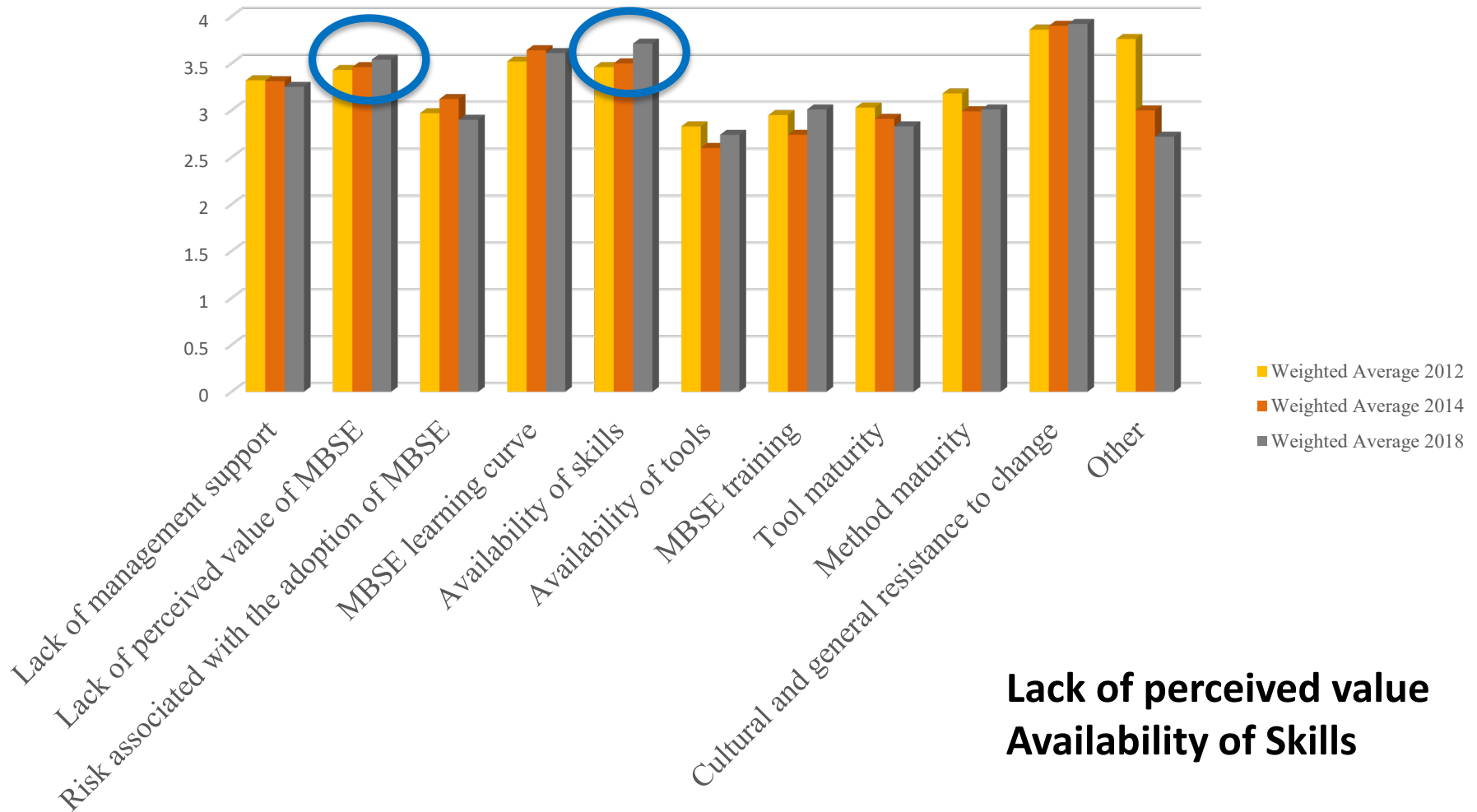
To what extent are the following modeling languages used for system architecture modeling

Number of Responses	Never	Almost Never	Sometimes	Almost Always	Always	N/A	Total
SysML	61	59	140	110	250	15	635
Modelica	275	63	69	17	12	66	502
UML	102	84	179	94	78	27	564
UPDM	290	38	52	38	23	63	504
OPM	331	34	30	10	10	71	486
IDEF0	290	66	83	21	16	50	526
FFBD	268	45	81	31	29	57	511
Simulink	154	79	134	78	79	41	565
AADL	330	40	27	8	3	76	484
EAST-ADL	349	30	15	3	1	81	479
Home grown tools	180	49	106	47	63	54	499
Other COTS tools	200	43	102	50	53	69	517
Other							102

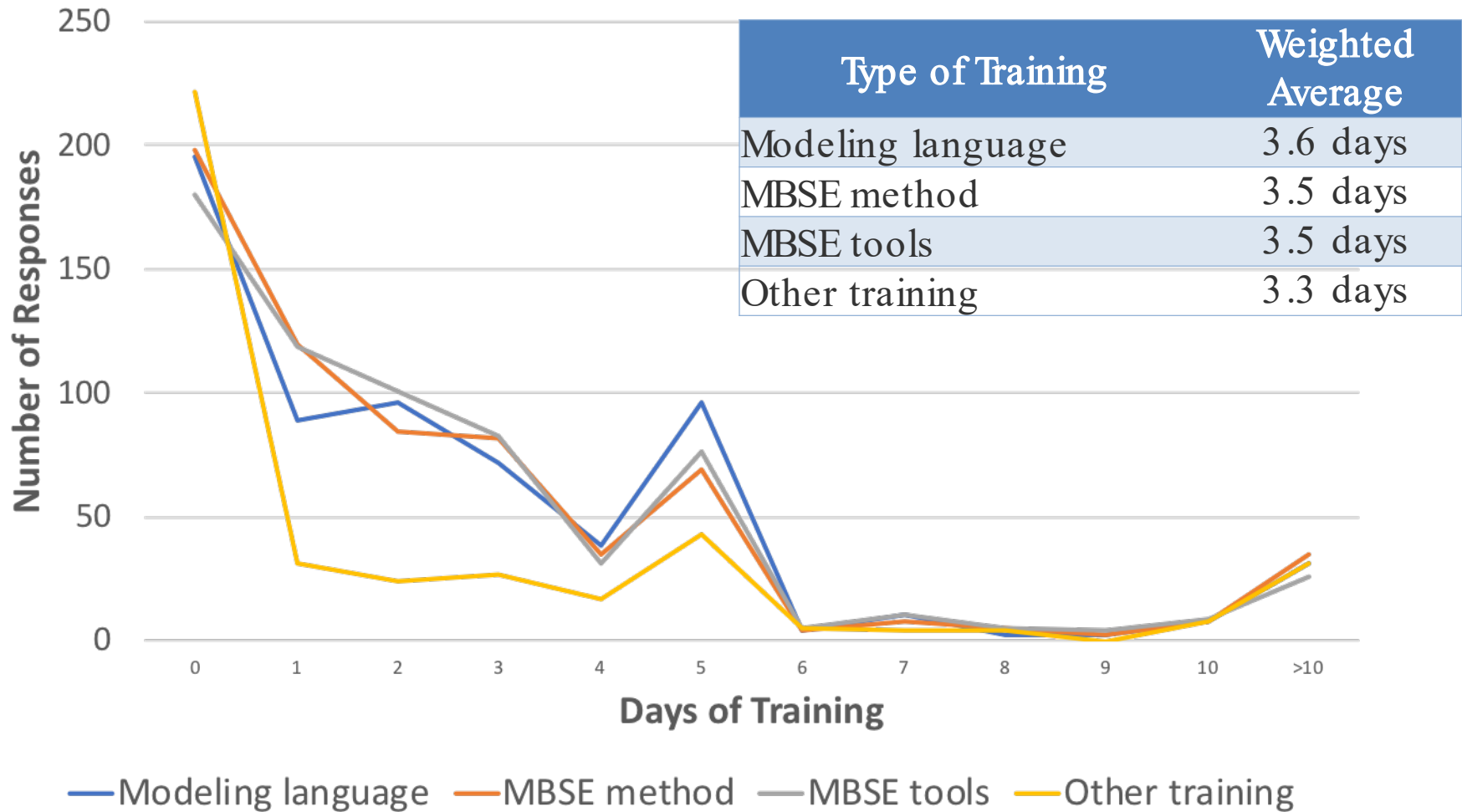
Inhibitors to successful adoption of MBSE in your organization



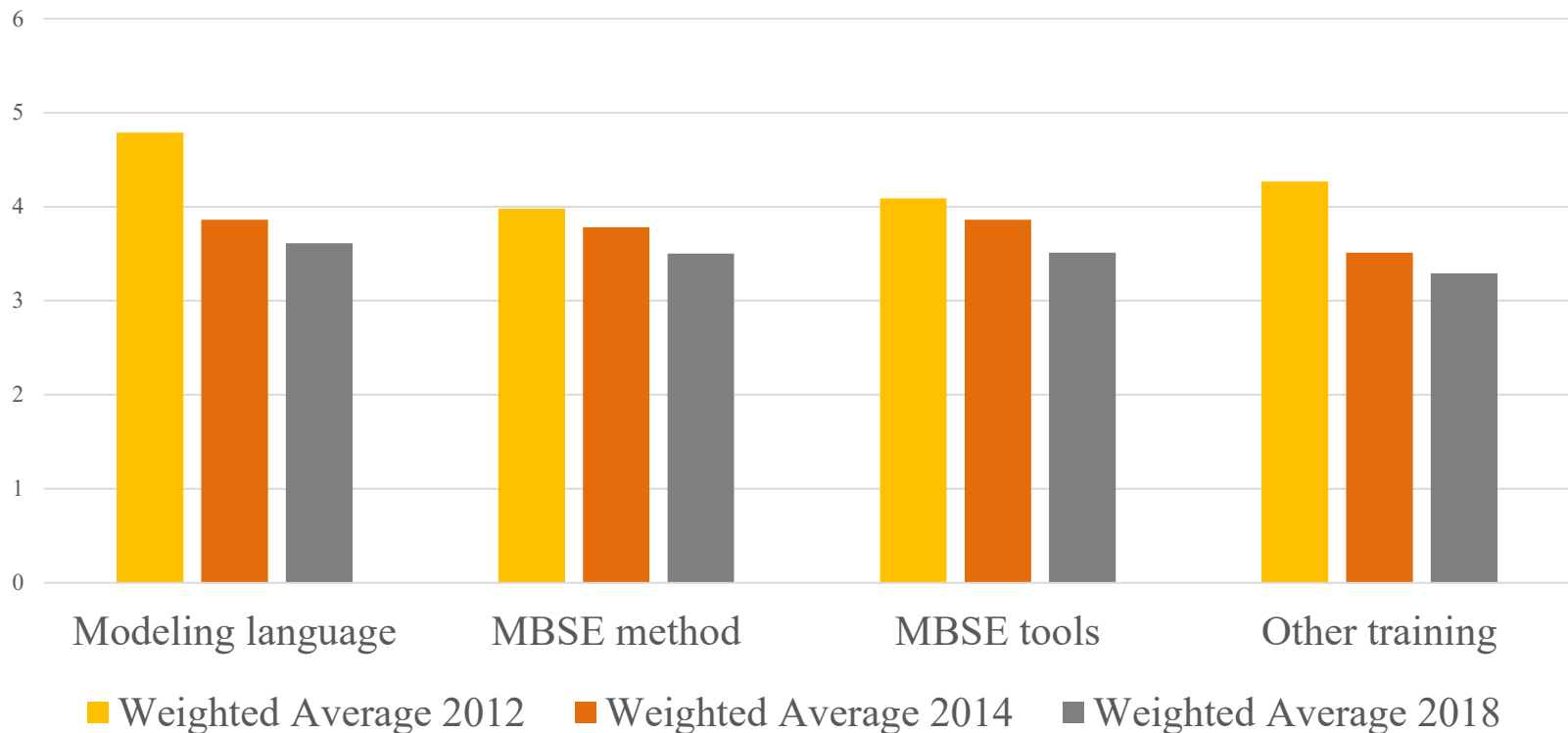
What currently inhibits successful adoption of the MBSE within your organization/company.



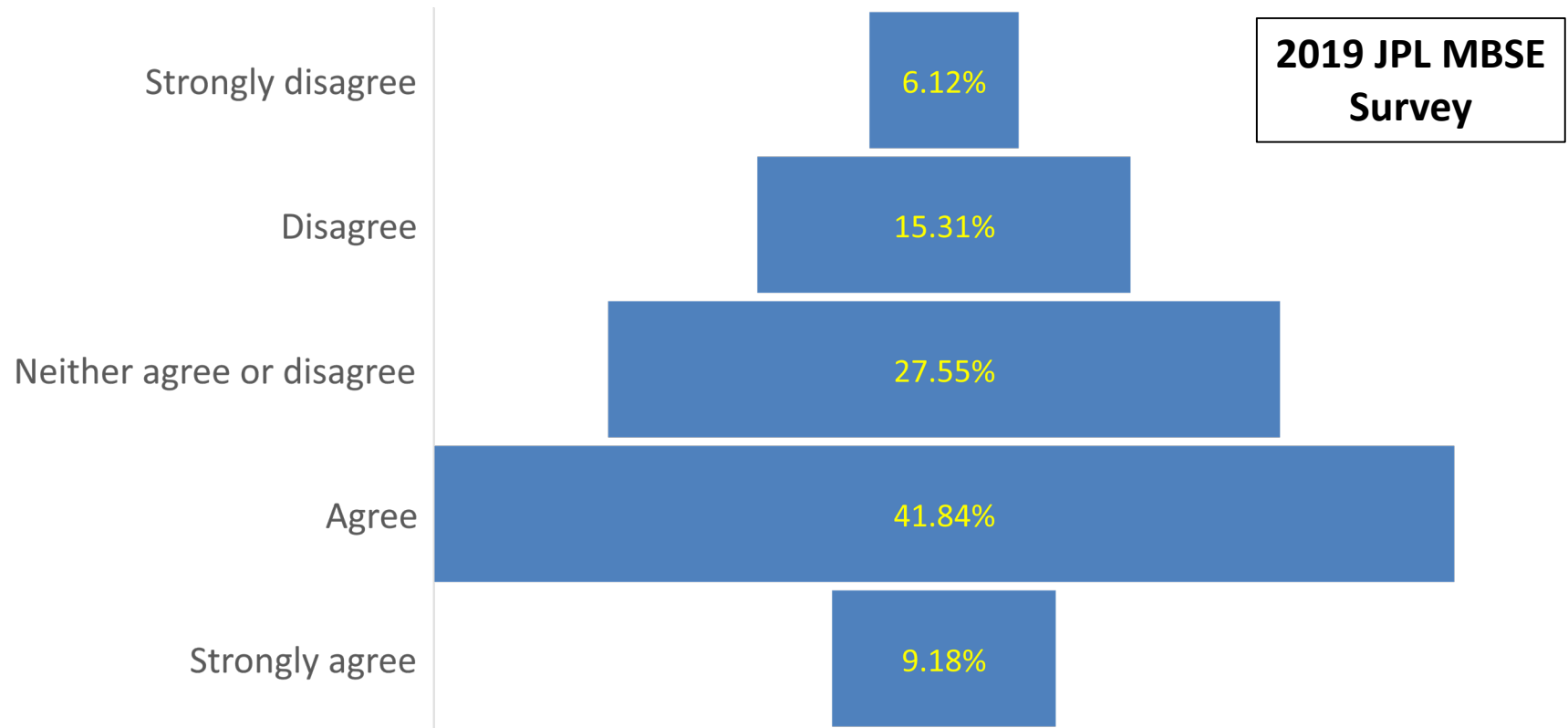
Formal Training Days Provided



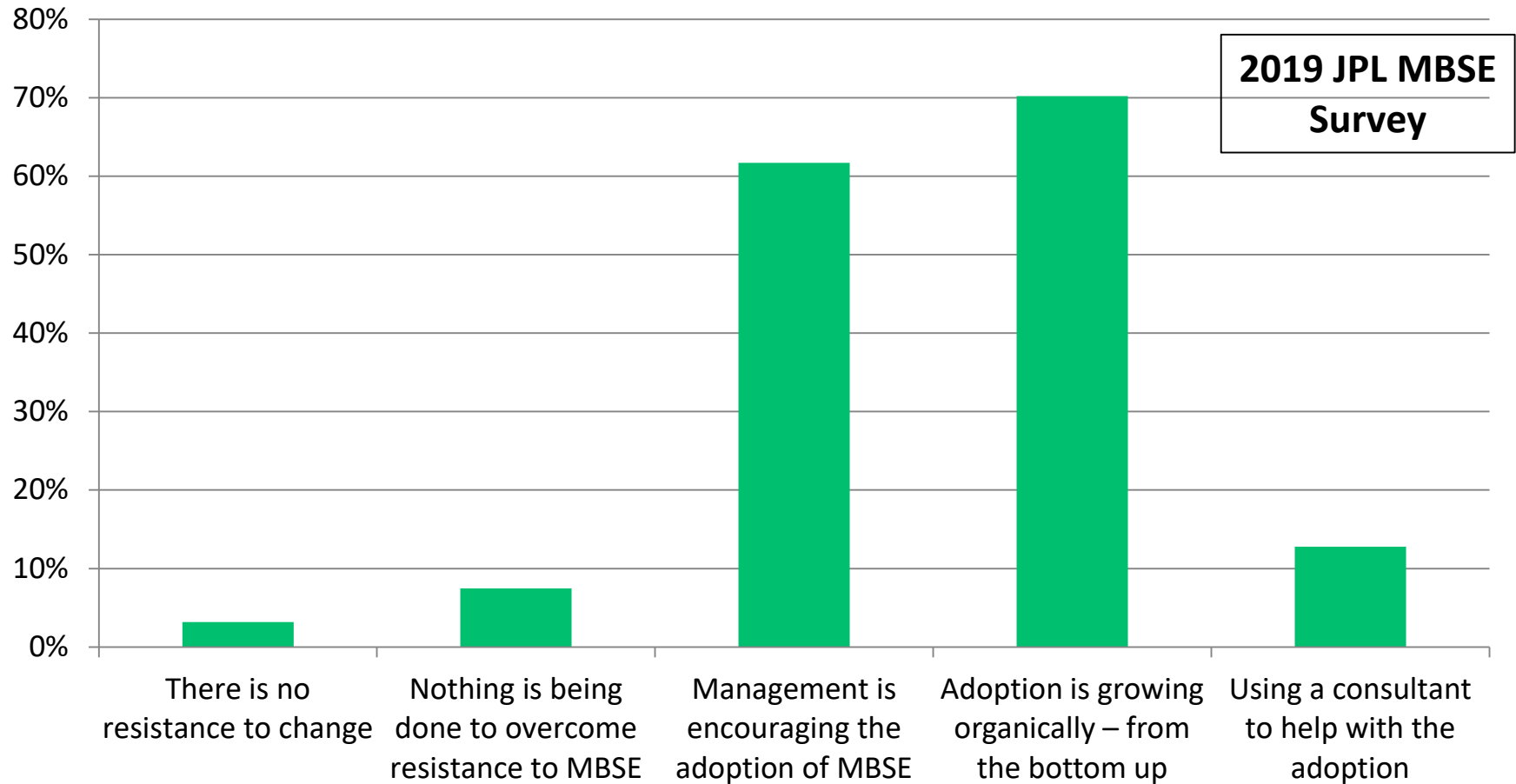
How much formal training is typically offered, in number of days, to the team members involved in the modeling effort?



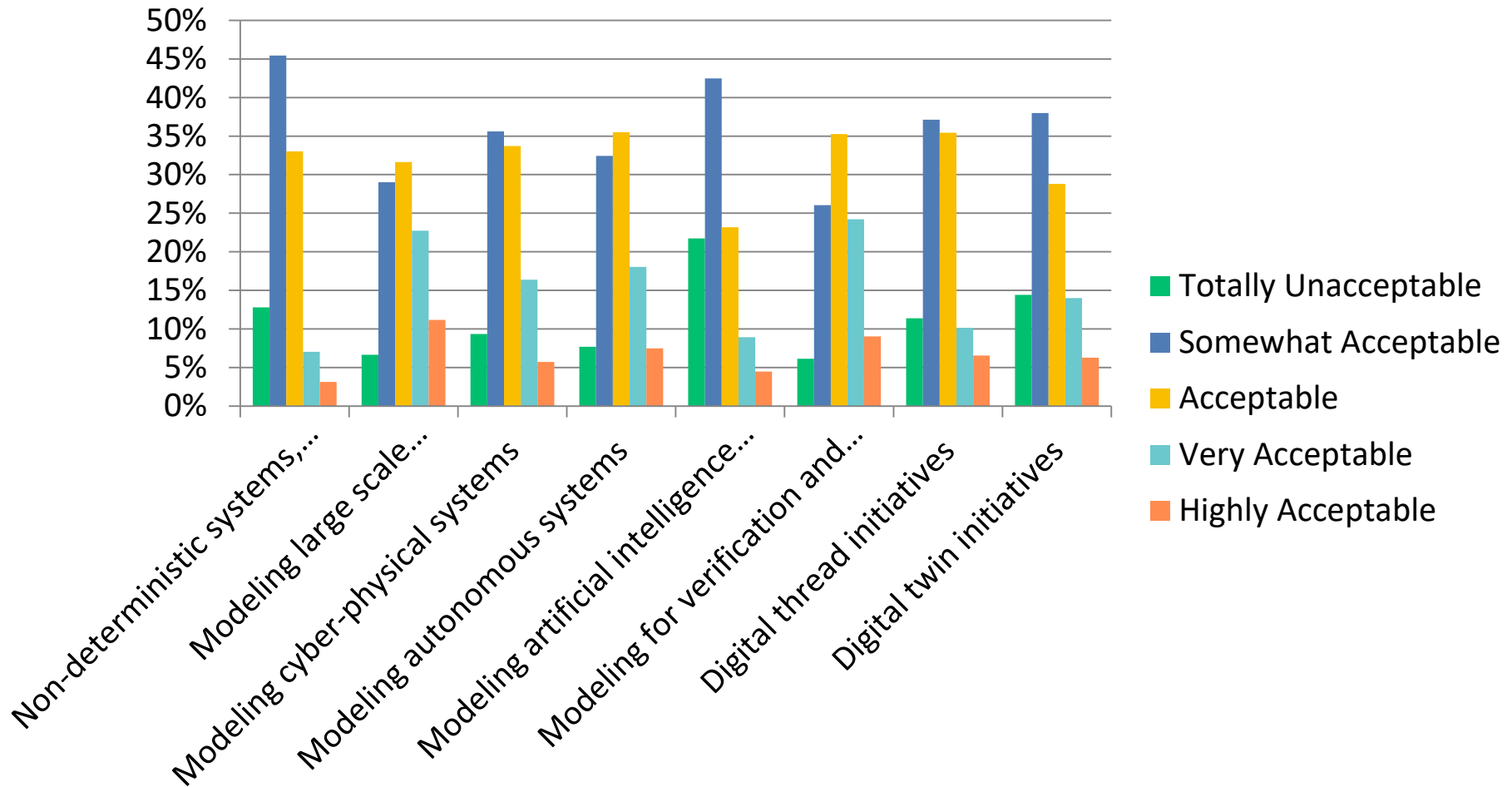
Systems modeling experience is recognized as a valued skill supporting career growth of systems engineers in my organization



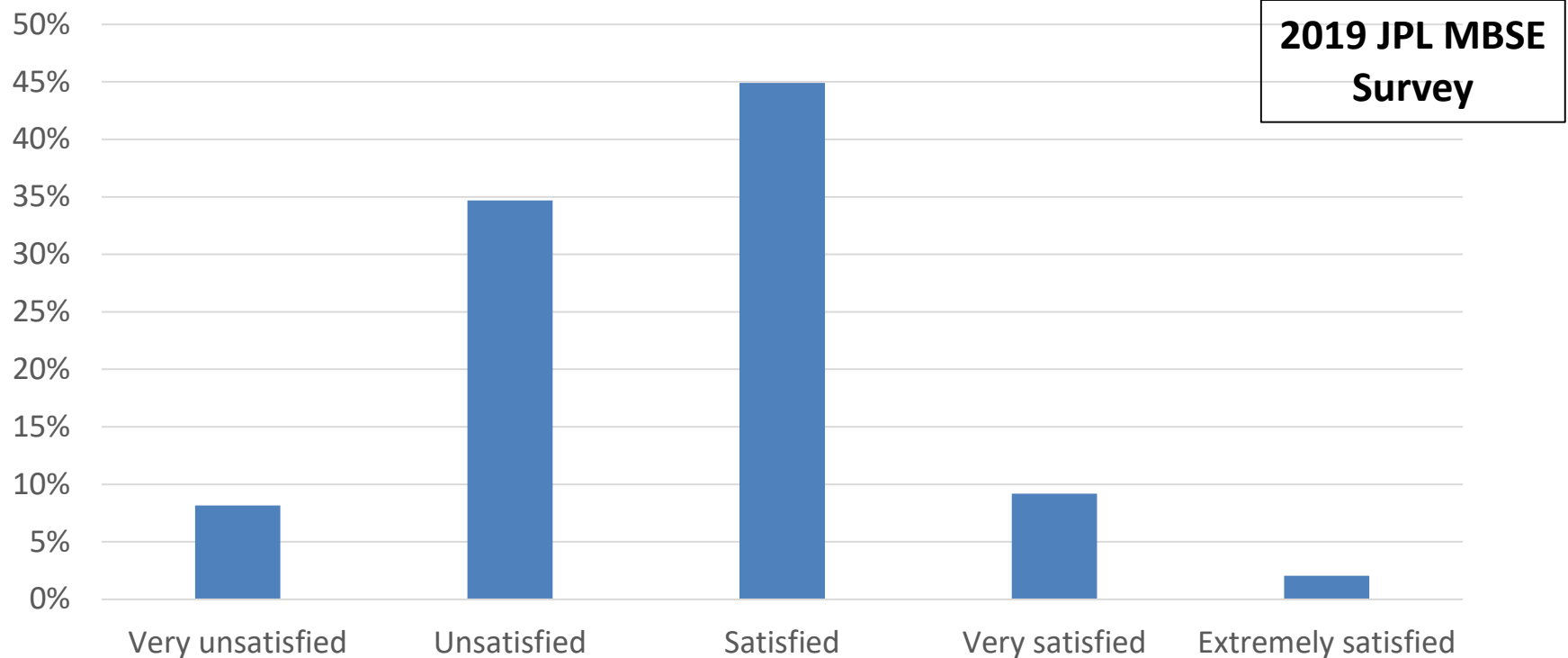
If you perceive a resistance to change in adopting MBSE, what methods are being employed to overcome that resistance?



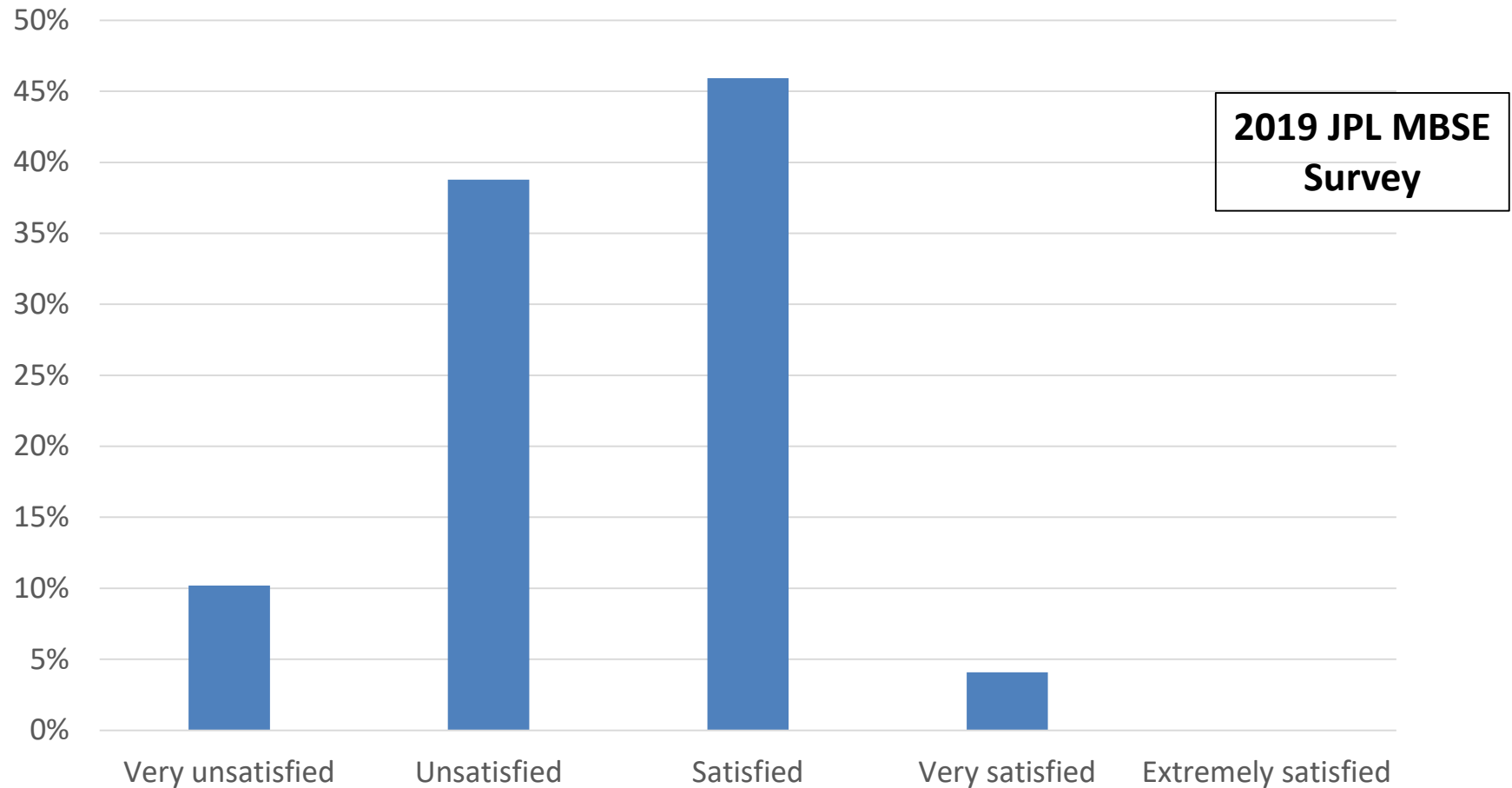
How capable do you find current MBSE methods and tooling to address the following



To what extent are you satisfied with the **FUNCTIONALITY** of MBSE tools adopted by your organization?

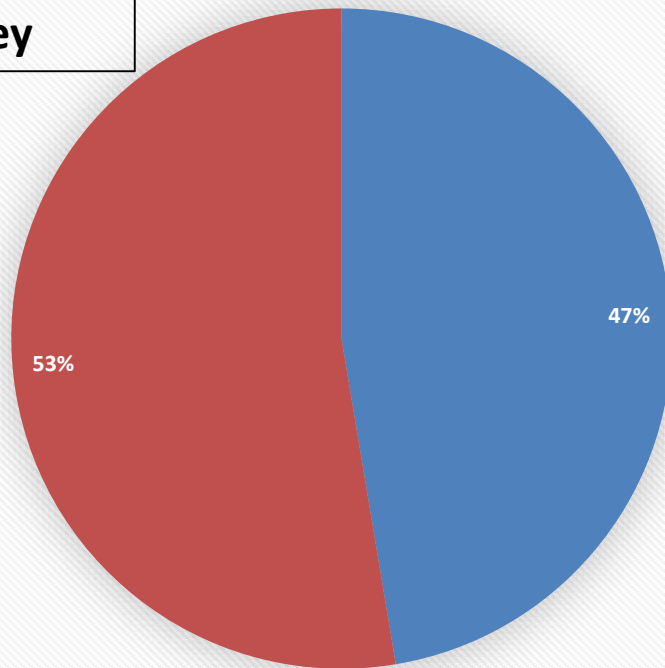


To what extent are you satisfied with the **USABILITY** of MBSE tools adopted by your organization



Has your organization created a role that might be called “Tool Master” to manage installation, configuration, management, etc. of your MBSE toolset?

2019 JPL MBSE
Survey



Comments all over the place...

- That notion is totally out-moded
- Two tool masters. Differentiated by SE-analytic vs infrastructure and SE generic
- I think it may be me?
- If they do exist, they're well hidden.
- It varies by sector/group, but these tool masters exist in maybe 30-50% of the cases.
- A dedicated Tools Branch
- We desperately need it, but don't yet have it

Significant Conclusions

- MBSE is spreading beyond traditional Defense and Space domains
- At this point in time, MBSE efforts seem to favor the left side of the Vee
- There continues to be a skills shortage, yet companies/organizations are providing less training to improve MBSE skills
- Our customers are seeing value from MBSE
- Tool functionality and usability have a long ways to go
- Too much data to present today
- Will be writing an INSIGHT article with a more thorough analysis