Scrum Rules Implementation Results BINARY OUTPUT	XD 3152 issues 66 sprints	APSTUD 825 issues 34 sprints	TISTUD 2826 issues 59 sprints	MOBILE 3242 issues 23 sprints	MDL 63273 issues 269 sprints	DNN 1874 issues 103 sprints	MESOS 1365 issues 70 sprints	MULE 1278 issues 104 sprints	NEXUS 1037 issues 70 sprints	TIMOB 1853 issues 63 sprints	Final Sum / Total No of Projects %
R1: No more than five weeks should elapse for a single sprint.	N/A	N/A	N/A	0	0	N/A	N/A	0	N/A	N/A	0
R2: The number of the Scrum Team members per project should not be largely less or more than 10.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R3: There should be only three different roles employed within a Scrum Team.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R4: The duration of all sprints should follow similar pace.	N/A	N/A	N/A	0	0	N/A	N/A	0	N/A	N/A	0
R5: The next Sprint execution should begin only after the previous Sprint's resolution.	N/A	N/A	N/A	0	0	N/A	N/A	1	N/A	N/A	0.1
R6: There should be a project clarity identifier attached to each issue.	1	1	1	1	1	1	1	1	1	1	1
R7: No considerable amount of time should elapse between the finish of a sprint and the beginning of the new sprint.	N/A	N/A	N/A	0	0	N/A	N/A	0	N/A	N/A	0
R8: There should not be a considerable amount of time for a developer to volunteer and start a new issue after she/he has completed the previous one.	0	0	0	0	0	0	0	0	0	1	0.1
R9: Active members of the development teams should be included in additional activities, other than development.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R10: Daily Standups/Scrums should take no more than around 15 minutes.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R11: Per each Sprint, there should be a constant time and place when/where the daily standup-s take place.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R12: The Sprint Review event should take no more than around 4 hours for longer Sprints (one month), and even less for shorter Sprints.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R13: All Sprint iterations/increments should be over by the time the Sprint Review begins.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R14: All Scrum Events should be over by the time Sprint Retrospective begins.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R15: The Sprint Retrospective event should take no more than around 3 hours for longer Sprints (one month), and even less for shorter Sprints.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R16: There should be an agreed Definition of Done for each increment.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Requirement											Score
R17: Spring Backlog contains the Sprint Goal, PBIs and PBI implementation plan.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R18: There should be at least one Increment deriving from a sprint.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R19: The Product Backlog Items should fulfill the *Definition of Done* in order to be considered as an Increment.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R20: Scrum Team members and mostly developers should adhere to the organization-wide agreed DoD for the PBIs implementation.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R21: In case of more than one collaborative Scrum Teams, cross-team members should adhere to the mutually agreed DoD.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R22: An Increment may be delivered to stakeholders prior to the end of the Sprint.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R23: No more than one Product Owner should be employed in the Scrum Team.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R24: The backlog does not contain meaningless or empty issues. Product Backlog Items should be understandable, therefore should contain a clear description, name, priority, and be identified correctly.	1	1	0	1	0	1	1	1	0	0	0.6
R25: Product Owner and/or Scrum Master should contribute towards the Sprint Goal in order to be part of Daily Scrum meetings.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R26: In case of cancelled Sprints, Product Owner should be the only role within the Scrum Team that can do that.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R27: No more than 8 active developers should be involved in development tasks.	1	1	1	1	0	0	0	0	0	1	0.5
R28: The status of issues should always follow the agreed workflow, depending on the project and development team.	1	0	0	0	N/A	0	1	0	1	0	0.30
R29: There should not be any unexpected or random person involved at a rather strange point/part of the Scrum activities, phases or events.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R30: No previously resolved issue should reappear in a future sprint.	1	1	1	1	N/A	1	1	1	1	1	0.9
R31: There should be a unique identifier/name associated with each Sprint.	1	1	1	1	1	1	1	0	1	1	0.9
R32: There should be a type, such as bug, improvement or task, associated to each issue.	1	1	1	1	1	1	1	1	1	1	1
R33: There should be a sprint identifier attached to each issue.	0	0	0	0	0	0	0	0	0	0	0
R34: There should be a unique identifier associated with each issue.	1	1	1	1	0	1	1	1	1	1	0.9

	XD	APSTUD	TISTUD	MOBILE	MDL	DNN	MESOS	MULE	NEXUS	TIMOB	
R35: There should be timestamp indicating the sprints kick-off.	N/A	N/A	N/A	1	1	N/A	N/A	1	N/A	N/A	**0.3**
R36: There should be timestamp indicating the sprints completion.	N/A	N/A	N/A	1	1	N/A	N/A	0	N/A	N/A	**0.2**
R37: There should be a minimum of one issue, representing a Sprint Backlog Item, per each Sprint.	1	1	1	1	1	1	1	1	1	1	**1**
R38: There should be timestamp indicating the issue development kick-off.	1	1	1	1	1	1	1	1	1	1	**1**
R39: There should be timestamp indicating the issue development completion.	0	0	0	0	0	0	0	0	0	0	**0**
Final Result %	**0.53**	**0.47**	**0.42**	**0.58**	**0.37**	**0.42**	**0.47**	**0.47**	**0.42**	**0.47**	

Scrum Rules Implementation Results Sprint/Issue Unit Output (pass/fail)	XD 3152 issues 66 sprints	APSTUD 825 issues 34 sprints	TISTUD 2826 issues 59 sprints	MOBILE 3242 issues 23 sprints	MDL 63273 issues 269 sprints	DNN 1874 issues 103 sprints	MESOS 1365 issues 70 sprints	MULE 1278 issues 104 sprints	NEXUS 1037 issues 70 sprints	TIMOB 1853 issues 63 sprints	**Unit of Measurement**
R1: No more than five weeks should elapse for a single sprint.	N/A	N/A	N/A	6/22 16/22	120/126 6/126	N/A	N/A	102/103 1/103	N/A	N/A	sprints
R2: The number of the Scrum Team members per project should not be largely less or more than 10.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R3: There should be only three different roles employed within a Scrum Team.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R4: The duration of all sprints should follow similar pace.	N/A	N/A	N/A	8/22 14/22	62/126 64/126	N/A	N/A	20/103 83/103	N/A	N/A	
R5: The next Sprint execution should begin only after the previous Sprint's resolution.	N/A	N/A	N/A	21/22 1/22	38/126 43/126	N/A	N/A	103/103	N/A	N/A	sprints
R6: There should be a project clarity identifier attached to each issue.	66/66	34/34	59/59	23/23	269/269	103/103	70/70	103/104	70/70	63/63	sprints
R7: No considerable amount of time should elapse between the finish of a sprint and the beginning of the new sprint.	N/A	N/A	N/A	6/22 16/22	24/126 60/126	N/A	N/A	28/103 75/103	N/A	N/A	
R8: There should not be a considerable amount of time for a developer to volunteer and start a new issue after she/he has completed the previous one.	40/66 26/66	29/34 5/34	30/59 29/59	13/23 10/23	248/269 21/269	84/103 19/103	55/70 15/70	68/104 36/104	68/70 2/70	63/63	for issues within sprints
R9: Active members of the development teams should be included in additional activities, other than development.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R10: Daily Standups/Scrums should take no more than around 15 minutes.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
R11: Per each Sprint, there should be a constant time and place when/where the daily standup-s take place.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Rule												
R12: The Sprint Review event should take no more than around 4 hours for longer Sprints (one month), and even less for shorter Sprints.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R13: All Sprint iterations/increments should be over by the time the Sprint Review begins.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R14: All Scrum Events should be over by the time Sprint Retrospective begins.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R15: The Sprint Retrospective event should take no more than around 3 hours for longer Sprints (one month), and even less for shorter Sprints.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R16: There should be an agreed Definition of Done for each increment.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R17: Spring Backlog contains the Sprint Goal, PBIs and PBI implementation plan.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R18: There should be at least one Increment deriving from a sprint.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R19: The Product Backlog Items should fulfill the *Definition of Done* in order to be considered as an Increment.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R20: Scrum Team members and mostly developers should adhere to the organization-wide agreed DoD for the PBIs implementation.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R21: In case of more than one collaborative Scrum Teams, cross-team members should adhere to the mutually agreed DoD.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R22: An Increment may be delivered to stakeholders prior to the end of the Sprint.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R23: No more than one Product Owner should be employed in the Scrum Team.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R24: The backlog does not contain meaningless or empty issues. Product Backlog Items should be understandable, therefore should contain a clear description, name, priority, and be identified correctly.	3152/3152	825/825	2819/2826 7/2826	3242/3242	63271/63273 2/63273	1874/1874	1365/1365	1278/1278	1034/1037 3/1037	1852/1853 1/1853	issues	
R25: Product Owner and/or Scrum Master should contribute towards the Sprint Goal in order to be part of Daily Scrum meetings.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R26: In case of cancelled Sprints, Product Owner should be the only role within the Scrum Team that can do that.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R27: No more than 8 active developers should be involved in development tasks.	66/66	34/34	59/59	23/23	139/165 26/165	91/100 9/100	56/65 8/65	84/94 10/94	61/69 8/69	36/36	sprints	
R28: The status of issues should always follow the agreed workflow, depending on the project and development team.	574/574	234/237 3/237	174/198 24/198	280/359 79/359	N/A	94/104 10/104	277/277	74/78 4/78	42/42	158/174 16/174	issues	
R29: There should not be any unexpected or random person involved at a rather strange point/part of the Scrum activities, phases or events.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
R30: No previously resolved issue should reappear in a future sprint.	192/192	364/364	1150/1150	4/4	N/A	359/359	225/225	350/350	34/34	334/334	issues	
R31: There should be a unique identifier/name associated with each Sprint.	66/66	34/34	59/59	23/23	N/A	103/103	70/70	104/104	70/70	63/63	sprints	

R32: There should be a type, such as bug, improvement or task, associated to each issue.	3152/3152	825/825	2826/2826	3242/3242	63273/63273	1874/1874	1365/1365	1278/1278	1037/1037	1853/1853	issues	
R33: There should be a sprint identifier attached to each issue.	1826/3152 1326/3152	415/825 410/825	1737/2826 1089/2826	1210/3242 2032/3242	2734/63273 60539/63273	1628/1874 246/1874	1079/1365 286/1365	1167/1287 131/1287	633/1037 404/1037	279/185 1574/1853	issues	
R34: There should be a unique identifier associated with each issue.	3152/3152	825/825	2826/2826	3242/3242	63272/63273 1/63273	1874/1874	1365/1365	1278/1278	1037/1037	1853/1853	issues	
R35: There should be timestamp indicating the sprints kick-off.	N/A	N/A	N/A	23/23	269/269	N/A	N/A	104/104	N/A	N/A		
R36: There should be timestamp indicating the sprints completion.	N/A	N/A	N/A	23/23	269/269	N/A	N/A	N/A	N/A	N/A		
R37: There should be a minimum of one issue, representing a Sprint Backlog Item, per each Sprint.	66/66	34/34	59/59	23/23	269/269	103/103	70/70	104/104	70/70	63/63	sprints	
R38: There should be timestamp indicating the issue development kick-off.	3152/3152	825/825	2826/2826	3242/3242	63273/63273	1874/1874	1365/1365	1278/1278	1037/1037	1853/1853	issues	
R39: There should be timestamp indicating the issue development completion.	2578/3152 574/3152	588/825 237/825	2628/2826 198/2826	2883/3242 359/3242	52988/63273 10285/63273	1770/1874 104/1874	1088/1365 277/1365	1209/1287 78/1287	995/1037 42/1037	1679/1835 174/1853	issues	

Scrum Rules Implementation Results . . PERCENTAGE OUTPUT (only for passing amounts of rules)	XD 3152 issues 66 sprints	APSTUD 825 issues 34 sprints	TISTUD 2826 issues 59 sprints	MOBILE 3242 issues 23 sprints	MDL 63273 issues 269 sprints	DNN 1874 issues 103 sprints	MESOS 1365 issues 70 sprints	MULE 1278 issues 104 sprints	NEXUS 1037 issues 70 sprints	TIMOB 1853 issues 63 sprints	Final Sum / Total No of Projects %	Unit of Measurement
R1: No more than five weeks should elapse for a single sprint.	N/A	N/A	N/A	27%	95%	N/A	N/A	99%	N/A	N/A	0.22	sprints
R4: The duration of all sprints should follow similar pace.	N/A	N/A	N/A	36%	49%	N/A	N/A	19%	N/A	N/A	0.10	sprints
R5: The next Sprint execution should begin only after the previous Sprint's resolution.	N/A	N/A	N/A	95%	30%	N/A	N/A	100%	N/A	N/A	0.23	sprints
R6: There should be a project clarity identifier attached to each issue.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1.00	sprints
R7: No considerable amount of time should elapse between the finish of a sprint and the beginning of the new sprint.	N/A	N/A	N/A	27%	19%	N/A	N/A	27%	N/A	N/A	0.07	sprints
R8: There should not be a considerable amount of time for a developer to volunteer and start a new issue after she/he has completed the previous one.	60%	85%	51%	56%	92%	82%	78.50%	65%	97%	100%	0.77	**for issues within sprints** e.g. in Mule: for 78.5% of sprints, this rule passed
R24: The backlog does not contain meaningless or empty issues. Product Backlog Items should be understandable, therefore should contain a clear description, name, priority, and be identified correctly.	100%	100%	99.70%	100%	99.90%	100%	100%	100%	99.70%	99%	1.00	issues
R27: No more than 8 active developers should be involved in development tasks.	100%	100%	100%	100%	84%	91%	86%	89%	88%	100%	0.94	sprints

Rule											Result	Category
R28: The status of issues should always follow the agreed workflow, depending on the project and development team.	100%	98%	87.80%	77.90%	N/A	90%	100%	94.80%	100%	90.80%	**0.84**	issues
R30: No previously resolved issue should reappear in a future sprint.	100%	100%	100%	100%	N/A	100%	100%	100%	100%	100%	**0.90**	issues
R31: There should be a unique identifier/name associated with each Sprint.	100%	100%	100%	100%	100%	100%	100%	99%	100%	100%	**1.00**	sprints
R32: There should be a type, such as bug, improvement or task, associated to each issue.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	**1.00**	issues
R33: There should be a sprint identifier attached to each issue.	58%	50%	61%	37%	4.00%	87%	79%	90%	61%	15%	**0.54**	issues
R34: There should be a unique identifier associated with each issue.	100%	100%	100%	100%	99.90%	100%	100%	100%	100%	100%	**1.00**	issues
R35: There should be timestamp indicating the sprints kick-off.	N/A	N/A	N/A	100%	100%	N/A	N/A	100%	N/A	N/A	**0.30**	sprints
R36: There should be timestamp indicating the sprints completion.	N/A	N/A	N/A	100%	100%	N/A	N/A	N/A	N/A	N/A	**0.20**	sprints
R37: There should be a minimum of one issue, representing a Sprint Backlog Item, per each Sprint.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	**1.00**	sprints
R38: There should be timestamp indicating the issue development kick-off.	100%	100%	100%	100%	84%	100%	100%	100%	100%	100%	**0.98**	issues
R39: There should be timestamp indicating the issue development completion.	82%	71%	93%	89%	84%	94%	80%	94%	96%	91%	**0.87**	issues
Final Result % *Number of Passing Rules per Project / Number of Total Verifiable Rules*	**0.63**	**0.63**	**0.63**	**0.81**	**0.71**	**0.65**	**0.64**	**0.83**	**0.65**	**0.63**		