

THE STATE
OF AGILE
SOFTWARE
DEVELOPMENT
BULGARIA
2013

STAVROS STAVRU



WHAT?

AGILE METHODS HAVE EMERGED AS AN ALTERNATIVE TO TRADITIONAL PLAN-DRIVEN SOFTWARE DEVELOPMENT METHODS MORE THAN A DECADE AGO. TODAY THEY ARE OFTEN CONSIDERED AS THE MAINSTREAM IN SOFTWARE ENGINEERING. THIS IS OFTEN EXPLAINED WITH THEIR POTENTIAL TO OVERCOME THE CHALLENGES OF MODERN SOFTWARE ORGANIZATIONS WHICH ARE EXPECTED TO OPERATE IN HIGHLY DYNAMIC AND COMPETITIVE ENVIRONMENTS. IN SUCH ENVIRONMENTS SPEED, QUALITY AND COST OF SOFTWARE DEVELOPMENT ARE CRUCIAL FOR ORGANIZATIONAL DEVELOPMENT AND SURVIVAL, AND AGILE METHODS SEEM TO BE SUCCESSFULLY DELIVERING ON ALL THREE FRONTS THROUGH THEIR CUSTOMER FOCUS, RESPONSIVENESS TO CHANGE, ITERATIVE AND INCREMENTAL DELIVERY OF WORKING SOFTWARE AND EMPHASIS ON INDIVIDUALS AND THEIR INTERACTIONS¹.

REALLY?

TO EXAMINE THE POPULARITY OF AGILE METHODS MANY INDUSTRIAL SURVEYS HAVE BEEN CARRIED OUT BOTH AT GLOBAL (AS THE ONE CONDUCTED BY VERSIONONE²) AND NATIONAL LEVEL (AS THE ONES BY XEBIA³ IN HOLLAND AND THOUGHTWORKS⁴ IN INDIA). THEIR REPORTS HAVE SHOWN THAT THE ADOPTION RATE OF AGILE METHODS IS CONSTANTLY GROWING AND THAT THE MAJORITY OF MODERN ORGANIZATIONS ARE EITHER USING THEM OR PLANNING TO DO SO IN THE NEAR FUTURE. FURTHERMORE THESE REPORTS HAVE PROVIDED VALUABLE INSIGHTS ON DIFFERENT ASPECTS OF AGILE METHODS DEPLOYMENT INCLUDING OBTAINED BENEFITS (AS INCREASED EFFICIENCY IN MANAGING CHANGING REQUIREMENTS, INCREASED PRODUCTIVITY, ETC.), BARRIERS TO AGILE ADOPTION (AS INAPPROPRIATE ORGANIZATIONAL CULTURE, RESISTANCE TO CHANGE, LACK OF MANAGEMENT SUPPORT, ETC.), ETC.

AS FOR BULGARIA, NO SUCH INDUSTRIAL SURVEYS HAVE BEEN CARRIED OUT UP UNTIL NOW. HOWEVER INTEREST IN AGILE SOFTWARE DEVELOPMENT IS NOT MISSING. THIS IS EVIDENT BY THE FORMATION OF PROFESSIONAL GROUPS AND ASSOCIATIONS (AS SCRUM BULGARIA⁵), THE ORGANIZATION OF VARIOUS TRAININGS AND SEMINARS (BY SCRUM ALLIANCE⁶, DAVID ANDERSON AND OTHERS), ETC. THEREFORE SUCH AN INDUSTRIAL SURVEY WOULD BENEFIT THESE COMMUNITIES. FURTHERMORE IT WOULD BENEFIT ALL BULGARIAN SOFTWARE ORGANIZATIONS BY PROVIDING THEM WITH INFORMATION ON THE CURRENT STATE OF AGILE SOFTWARE DEVELOPMENT IN BULGARIA AND BY GIVING THEM THE OPPORTUNITY TO COMPARE WITH THE REST OF THE INDUSTRY.

WHY?

Who?

THIS INDUSTRIAL SURVEY IS PART OF THE **RAPID** RESEARCH PROJECT JOINTLY SPONSORED BY THE NATIONAL RESEARCH FUND IN BULGARIA (UNDER CONTRACT No. **DMU 03-04**) AND **SOFIA UNIVERSITY ST. KLIMENT OHRIDSKI**. THE MAIN OBJECTIVE OF THE PROJECT IS TO PROVIDE VALUABLE INIGHTS ON THE CURRENT AGILE SOFTWARE DEVELOPMENT ADOPTION TRENDS AND CHALLENGES, AND EVALUATE THE APPROPRIATENESS OF AGILE METHODS TO THE BULGARIAN CONTEXT (TAKING INTO ACCOUNT THE HISTORY, TRADATION AND CULTURE OF THE BULGARIAN SOFTWARE INDUSTRY). MORE INFORMATION ABOUT THE PROJECT, ITS OBJECTIVES AND THE TEAM BEHIND IT, COULD BE FOUND ON THE PROJECT'S OFFICIAL WEBSITE AT WWW.RAPID-PROJECT.EU

How many?

THE POPULATION OF THE SURVEY WAS DEFINED AS ALL ORGANIZATIONS THAT WERE CURRENTLY DEVELOPING, MAINTAINING OR INTEGRATING SOFTWARE PRODUCTS AND SERVICES IN BULGARIA. TO THE EXTENT OF OUR KNOWLEDGE SUCH UP-TO-DATE GLOBAL LIST DOES NOT EXIST, SO WE LIMITED OUR TARGET POPULATION TO ORGANIZATIONS WHICH WERE EITHER: (1) MEMBERS OF BULGARIAN SOFTWARE AND ICT CLUSTERS, ASSOCIATIONS AND ALLIANCES INCLUDING BASSCOM⁷, BWA⁸, BAIT⁹, CMEES¹⁰, BCT¹¹ AND ICT CLUSTER VARNA¹²; OR (2) REGISTERED IN SOME OF THE MOST POPULAR BULGARIAN BUSINESS DIRECTORIES INCLUDING BULGARIAN GOLDEN PAGES¹³, INVEST BULGARIA¹⁴ AND BULGARIAN BUSINESS CATALOG¹⁵).

719
ORGANIZATIONS

How?

THE SURVEY STARTED ON 15.06.2012 WHEN PERSONALIZED COVER LETTERS WERE SENT TO ALL TARGET ORGANIZATIONS (USING THEIR OFFICIAL EMAIL ADDRESS). THE PARTICIPATION WAS VOLUNTARY (AND CONFIDENTIAL) AND INCLUDED THE COMPLETION OF AN ONLINE QUESTIONNAIRE (CONSISTING OF 13 QUESTIONS). THE SURVEY ENDED ON 15.11.2012. THE NUMBER OF RESPONSES RECEIVED WAS 95 WHICH WAS A RESPONSE RATE OF 13%. FROM THESE RESPONSES 82 WERE POSITIVE (ACCEPTING PARTICIPATION) AND 13 WERE NEGATIVE (REJECTING PARTICIPATION).

13%
RESPONSE RATE

13
REJECTED

82
ACCEPTED

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ORGANIZATIONAL CHARACTERISTICS

WHAT IS THE OWNERSHIP OF THE ORGANIZATION?

48%

29%

23%

BULGARIAN

MIXED

FOREIGN

HOW MANY PEOPLE ARE WORKING IN THE SOFTWARE DEPARTMENT OF THE ORGANIZATION?

41%

17%

12%

11%

10%

9%

<10
PEOPLE

11-25
PEOPLE

26-50
PEOPLE

>250
PEOPLE

100-
250
PEOPLE

51-
100
PEOPLE

HOW MANY YEARS IS THE ORGANIZATION OPERATING IN BULGARIA?

44%

23%

22%

10%

1%

>11
YEARS

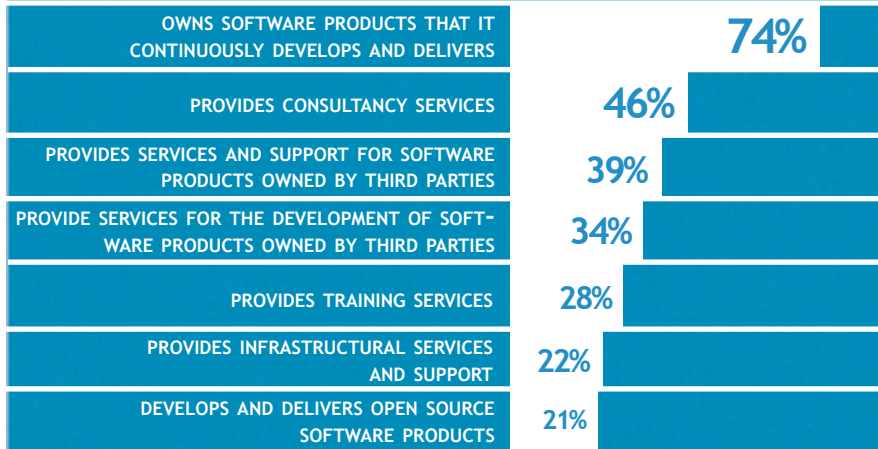
6-10
YEARS

3-5
YEARS

1-2
YEARS

<1

WHICH ARE THE BUSINESS DOMAINS OF THE ORGANIZATION?



WHICH ARE THE APPLICATION DOMAINS OF THE ORGANIZATION?

DATA-DOMINANT SOFTWARE - THE MAIN CONCERN OF THE SOFTWARE IS THE PROCESSING, MANUPULATION AND REPRESENTATION OF DATA AND INFORMATION

93%

CONTROL-DOMINANT SOFTWARE - THE MAIN CONCERN OF THE SOFTWARE IS THE CONTROLLING OF SYSTEMS FROM SMALL EMBEDDED SYSTEMS TO EXTREMELY LARGE OPERATIONS

23%

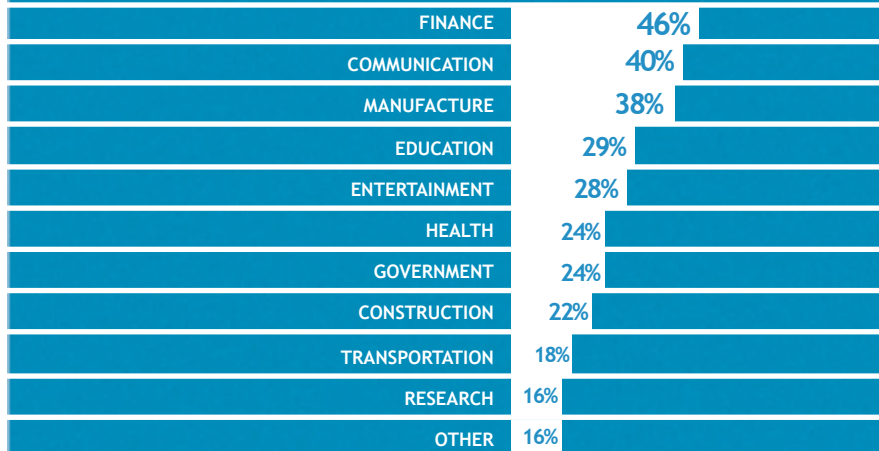
SYSTEMS SOFTWARE - THE MAIN CONCERN IS FROM LOW-LEVEL HARDWARE ABSTRACTION OF OPERATING SYSTEMS TO HIGH-LEVEL SOFTWARE FOR NETWORKING / COMMUNICATION, MANAGING DEVICES, ETC.

10%

COMPUTATION-DOMINANT SOFTWARE - THE MAIN CONCERN OF THE SOFTWARE IS COMPUTATION OF HARD PROBLEMS FROM PRACTICAL PROBLEMS AS SIMULATIONS TO MORE THEORETICAL AREAS AS AI.

6%

WHICH ARE THE INDUSTRIES OF THE PRODUCTS AND/OR SERVICES PROVIDED BY THE ORGANIZATION?



SUMMARY

ORGANIZATIONAL CHARACTERISTICS

- **73%** OF ALL PARTICIPATING ORGANIZATIONS HAD A **BULGARIAN** OWNERSHIP.
- THE MOST COMMON SIZE OF THE ORGANIZATIONS WAS UNDER FIFTY PEOPLE (**80%**) WITH **59%** OF THEM HAVING LESS THAN TEN PEOPLE DIRECTLY INVOLVED IN SOFTWARE DEVELOPMENT ACTIVITIES.
- THE AGE OF THE ORGANIZATIONS WAS RELATIVELY HIGH. **44%** OF THE ORGANIZATIONS WERE OPERATING IN **BULGARIA** MORE THAN TEN YEARS, WHILE THE ORGANIZATIONS OPERATING MORE THAN THREE YEARS WERE **89%**.
- THE MOST POPULAR BUSINESS DOMAINS WERE THE DEVELOPMENT AND DELIVERY OF IN-HOUSE SOFTWARE (**74%**) AND THE PROVISION OF CONSULTANCY SERVICES (**46%**). OUTSOURCING WAS PLAYING A SECONDARY ROLE (WITH **34%**). THE LEAST PREFERRED BUSINESS DOMAIN WAS THE PROVISION OF INFRASTRUCTURAL SERVICES AND SUPPORT.
- AN INTERESTING OBSERVATION WAS THAT **21%** OF ALL PARTICIPATING ORGANIZATIONS WERE DEVELOPING AND DELIVERING OPEN SOURCE SOFTWARE.
- THE MAIN APPLICATION DOMAIN OF THE SOFTWARE WAS THE PROCESSING, MANUPULATION

AND REPRESENTATION OF DATA AND INFORMATION (92%).

- THE DEVELOPMENT AND DELIVERY OF COMPUTATION-DOMINANT SOFTWARE WAS SCARCE (6%).
- THE MOST TARGETED INDUSTRIES WERE FINANCE (46%), COMMUNICATION (40%) AND CONSTRUCTION (38%). THE LEAST POPULAR WERE TRANSPORTATION (18%) AND RESEARCH (16%).

USAGE RATE OF AGILE METHODS

IS THE ORGANIZATION CURRENTLY USING AGILE METHODS?

41%

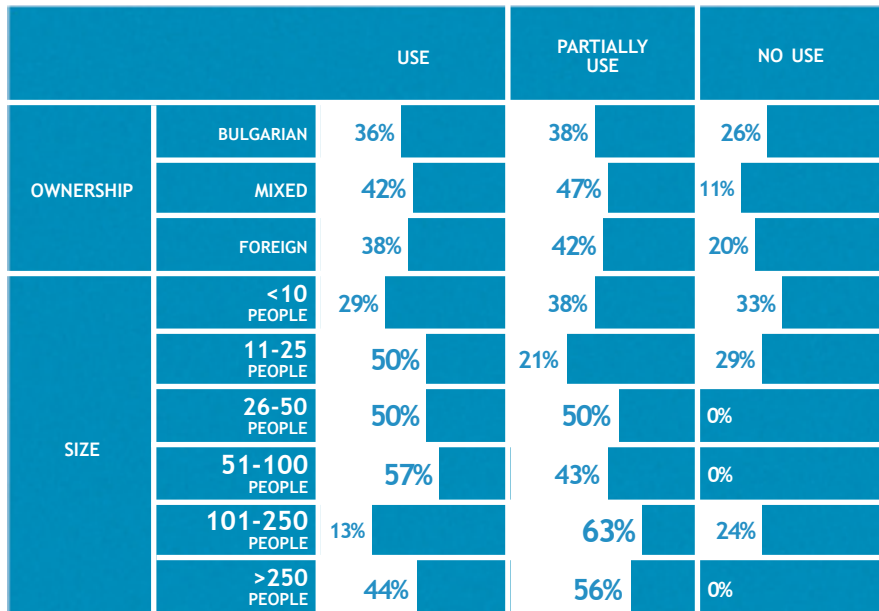
38%

21%

PARTIALLY (USING ONLY SPECIFIC AGILE TECHNIQUES, BUT NOT AN ENTIRE METHOD)

YES

NO



		USE	PARTIALLY USE	NO USE
AGE	<1 YEAR	100%	0%	0%
	1-2 YEARS	25%	75%	0%
	3-5 YEARS	61%	17%	22%
	6-10 YEARS	26%	42%	32%
	>10 YEARS	33%	47%	20%
BUSINESS DOMAIN	OWN PRODUCTS	39%	41%	20%
	OUTSOURCING	42%	43%	15%
	OPEN SOURCE	47%	35%	18%
	SUPPORT	34%	50%	16%
	INFRASTRUCTURE	44%	39%	17%
	CONSULTANCY	47%	34%	19%
	TRAININGS	48%	30%	22%

		USE	PARTIALLY USE	NO USE
APPLICATION DOMAIN	CONTROL-DOMINANT	37%	42%	22%
	COMPUT.-DOMINANT	20%	60%	20%
	SYSTEMS SOFTWARE	75%	25%	0%
	DATA-DOMINANT	42%	43%	15%
INDUSTRY	COMMUNICATION	45%	45%	10%
	CONSTRUCTION	50%	28%	22%
	TRANSPORTATION	40%	47%	13%
	EDUCATION	46%	33%	21%
	FINANCE	39%	42%	19%
	ENTERTAINMENT	39%	30%	31%
	RESEARCH	46%	31%	23%
	MANUFACTURE	42%	35%	23%
	HEALTH	50%	30%	20%
	GOVERNMENT	50%	35%	15%
	OTHER	46%	38%	15%

SUMMARY

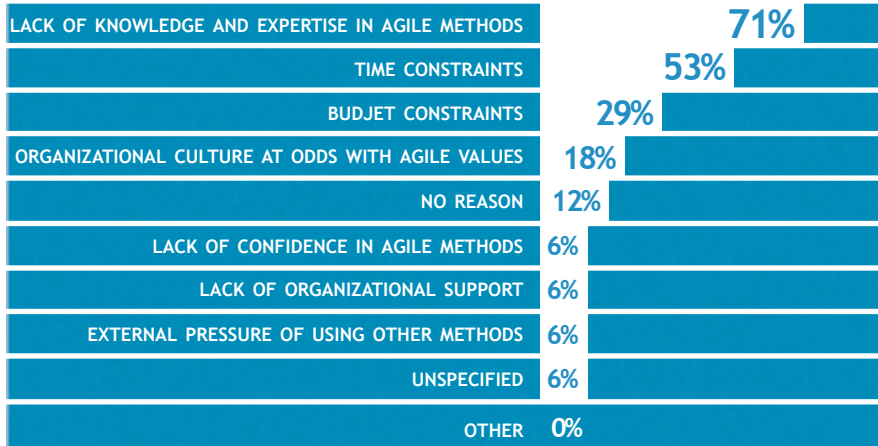
CURRENT RATE OF AGILE METHOD USAGE

- **AGILE METHODS WERE WIDELY USED BY THE PARTICIPATING ORGANIZATIONS (79%). 52% OF THESE ORGANIZATIONS WERE USING THEM PARTIALLY (APPLYING ONLY SPECIFIC AGILE TECHNIQUES, BUT NOT AN ENTIRE METHOD) AND 48% WERE USING THEM COMPLETELY (AND AS PRESCRIBED).**
- **THERE WAS NO BIG DIFFERENCE IN THE RATE OF AGILE METHOD USAGE IN TERMS OF ORGANIZATIONAL OWNERSHIP, ALTHOUGH THEY WERE MORE LIKELY FOR ORGANIZATIONS WITH MIXED OR NON-BULGARIAN OWNERSHIP.**
- **SMALL AND MEDIUM SIZED ORGANIZATIONS WERE USING AGILE METHODS MORE RIGOROUSLY.**
- **LARGE SIZED ORGANIZATIONS TENDED TO PREFER THE USE OF SPECIFIC AGILE TECHNIQUES RATHER THAN AN ENTIRE AGILE METHOD.**
- **AN INTERESTING OBSERVATION WAS THAT ALL ORGANIZATIONS WITH MORE THAN TWO-HUNDRED FIFTY PEOPLE WERE USING (PARTIALLY OR COMPLETELY) AGILE METHODS. THIS CONTRADICTS WITH THE COMMON ASSUMPTION THAT AGILE METHODS CANNOT BE SCALED TO LARGE SIZE ORGANIZATIONS.**

- YOUNGER ORGANIZATIONS HAD STRONG PREFERENCES TOWARDS AGILE METHODS WHILE OLDER ORGANIZATIONS WERE MORE CAUTIOUS AND USED A COMBINATION OF AGILE AND NON-AGILE METHODS.
- THERE WERE NO SIGNIFICANT DIFFERENCES IN THE USE OF AGILE METHODS IN TERMS OF BUSINESS DOMAINS AND INDUSTRIES.
- AGILE METHODS WERE WIDELY USED FOR THE DEVELOPMENT AND DELIVERY OF SYSTEMS SOFTWARE, CONTROL-DOMINANT AND COMPUTATION-DOMINANT SOFTWARE - SOFTWARE WHICH IS MOST OFTEN ASSOCIATED WITH TRADITIONAL PLAN-DRIVEN METHODS.

NON USAGE OF AGILE METHODS

WHICH ARE THE REASONS FOR NOT USING AGILE METHODS IN THE ORGANIZATION?



HAS THE ORGANIZATION ANY PAST EXPERIENCE IN USING AGILE METHODS?

59%

29%

12%

NO

UNSPECIFIED

YES

IS THE ORGANIZATION PLANNING TO USE
AGILE METHODS IN THE NEXT ONE YEAR?

59%

35%

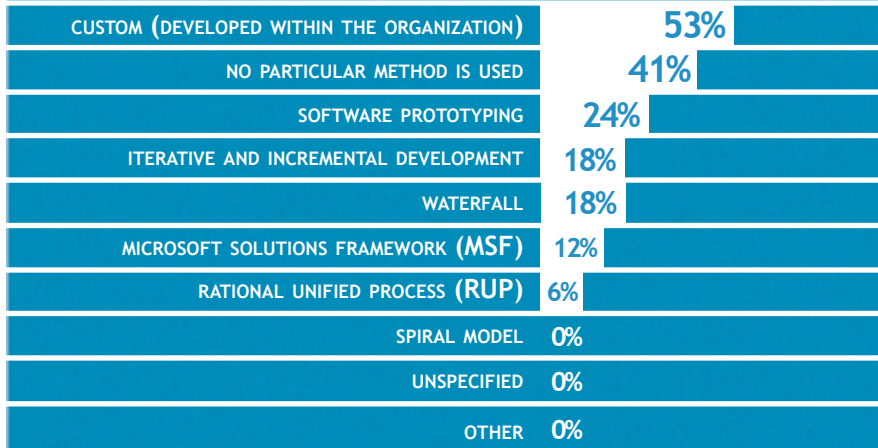
6%

UNSPECIFIED

NO

YES

WHICH DEVELOPMENT METHODS AND FRAMEWORKS ARE CURRENTLY USED BY THE ORGANIZATION?



SUMMARY

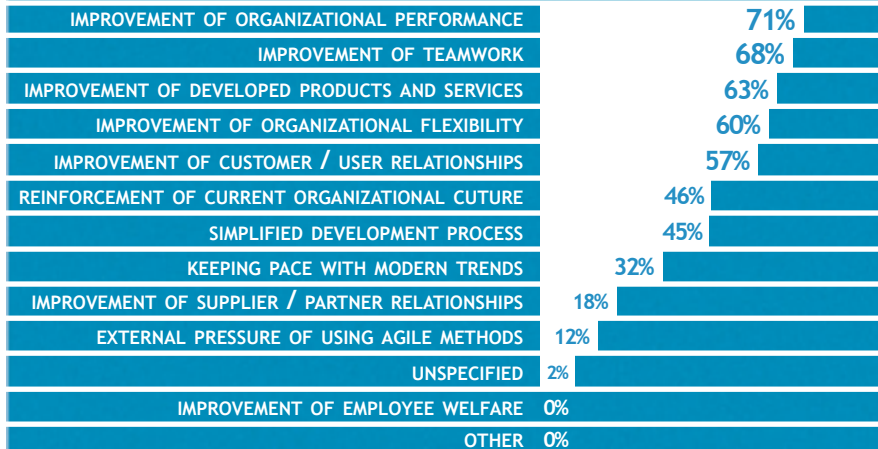
NON USAGE OF AGILE METHODS

- THE MOST COMMON REASON FOR NOT USING AGILE METHODS WAS THE LACK OF KNOWLEDGE AND EXPERTISE IN THESE METHODS (71%).
- OTHER POPULAR REASONS WERE TIME CONSTRAINTS (53%), BUDGET CONSTRAINTS (29%) AND POSSIBLE CONFLICT WITH ORGANIZATIONAL PHILOSOPHY AND CULTURE (18%).
- MOST OF THE ORGANIZATIONS HAD NO PAST EXPERIENCE WITH AGILE METHODS (59%).
- 12% WERE THE ORGANIZATIONS WHICH HAD PREVIOUSLY USED BUT CONSEQUENTLY ABANDONED AGILE METHODS.
- 6% OF THE ORGANIZATIONS WERE PLANNING TO INCORPORATE AGILE METHODS IN THE NEXT ONE YEAR. 35% HAD NO SUCH INTENTIONS.
- TRADITIONAL METHODS WERE NOT COMPETING WITH AGILE METHODS. THE MAJORITY OF ORGANIZATIONS WERE EITHER FOLLOWING A CUSTOM (IN-HOUSE) DEVELOPMENT METHOD (53%) OR WERE NOT FOLLOWING ANY FORMAL METHOD AT ALL (41%).

- THE MOST POPULAR TRADITIONAL METHODS WERE SOFTWARE PROTOTYPING (24%), ITERATIVE AND INCREMENTAL DEVELOPMENT(18) AND THE WATERFALL (18%).

USAGE OF AGILE METHODS

WHICH ARE THE REASONS FOR CURRENTLY USING AGILE METHODS IN THE ORGANIZATION?



FOR HOW LONG IS THE ORGANIZATION USING AGILE METHODS?

45%

2-5
YEARS

20%

1-2
YEARS

18%

>5
YEARS

11%

6-12
MONTHS

6%

<6
MON.

ON WHICH PROJECTS IS THE ORGANIZATION
USING AGILE METHODS?

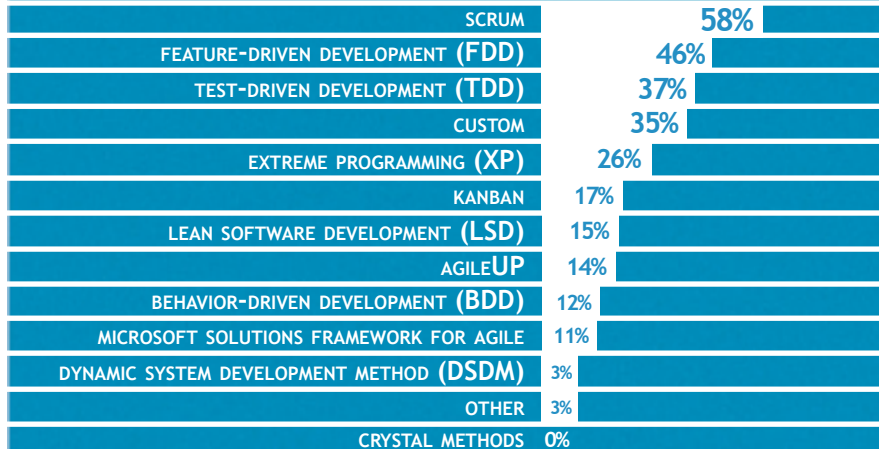
55%

SOME
PROJECTS

45%

ALL
PROJECTS

WHICH AGILE METHODS ARE CURRENTLY USED BY THE ORGANIZATION?



IS THE ORGANIZATION USING MULTIPLE
AGILE METHODS?

80%

20%

YES

NO

SUMMARY

USAGE OF AGILE METHODS

- THE MOST COMMON REASON FOR USING AGILE METHODS WAS THE IMPROVEMENT OF ORGANIZATIONAL PERFORMANCE (71%).
- OTHER COMMON REASONS WERE IMPROVING TEAMWORK (68%), ENSURING HIGH QUALITY OF DEVELOPED / DELIVERED SOFTWARE (63%), INCREASING ORGANIZATIONAL FLEXIBILITY (60%) AND BUILDING STRONG CUSTOMER RELATIONSHIPS (57%).
- MOST OF THE ORGANIZATIONS WERE USING AGILE METHODS OVER LONG PERIOD OF TIME. ALMOST HALF OF THE ORGANIZATIONS WERE USING THEM FROM TWO TO FIVE YEARS AND ONE-FIFTH OVER FIVE YEARS.
- THE MAJORITY OF ORGANIZATIONS WERE USING AGILE METHODS IN SOME OF THEIR PROJECTS (55%).
- THE MOST USED AGILE METHOD WAS SCRUM (58%).
- EXTREME PROGRAMMING (XP) WAS MUCH LESS POPULAR (26%).
- KANBAN IS STILL GROWING IN POPULARITY AND WAS USED BY ONLY 17% OF THE

ORGANIZATIONS.

- **80%** OF THE ORGANIZATIONS WERE USING MULTIPLE AGILE METHODS.

RESPONDENT CHARACTERISTICS

TO WHAT EXTENT DO YOU FEEL CONFIDENT ABOUT YOUR RESPONSES?

55%

CONFIDENT

35%

VERY
CONFIDENT

7%

SOMEWHAT
CONFIDENT

2%

NOT SO
CONFIDENT

FROM WHAT POSITION ARE YOU REPRESENTING YOUR ORGANIZATION?

40%

28%

26%

6%

TOP LEVEL
MANAGEMENT

FUNCTIONAL
STAFF

LOW LEVEL
MANAGEMENT

MIDDLE
LEVEL
MNG.

SUMMARY

RESPONDENT CHARACTERISTICS

- 98% OF THE RESPONDENTS WERE CONFIDENT ABOUT THEIR RESPONSES.
- THE MAJORITY OF ORGANIZATIONS WERE REPRESENTED BY THEIR TOP LEVEL (40%) AND MIDDLE/LOW LEVEL MANAGEMENT (34%).
- THE HIGH LEVEL OF CONFIDENCE AND REPRESENTATIVENESS OF THE RESPONDENTS GUARANTEED TO SOME EXTENT THAT THE OBTAINED RESULTS REFLECT THE ACTUAL STATE OF PARTICIPATING ORGANIZATIONS.
- DUE TO THE LIMITED NUMBER OF PARTICIPATING ORGANIZATIONS (13%), THE OBTAINED RESULTS COULD NOT BE GENERALIZED TO THE ENTIRE POPULATION. HOWEVER THEY STILL HAVE AN INDICATIVE VALUE.

THIS REPORT SHOWS THAT AGILE METHODS WERE WIDELY USED BY THE SURVEYED ORGANIZATIONS AND FURTHER SUPPORTS THE CURRENT TREND^{2,3,4} TOWARDS INCREASED POPULARITY OF AGILE SOFTWARE DEVELOPMENT (IN THE CASE OF BULGARIA).

APPENDIX

1. AGILE MANIFESTO, [HTTP://WWW.AGILEMANIFESTO.ORG/](http://www.agilemanifesto.org/)
2. VERSIONONE, ANNUAL STATE OF AGILE DEVELOPMENT SURVEY 2013, [HTTP://WWW.VERSIONONE.COM/STATE-OF-AGILE-SURVEY-RESULTS/](http://www.versionone.com/state-of-agile-survey-results/)
3. XEBIA, THIRD DUTCH AGILE SURVEY 2013, [HTTP://TRAINING.XEBIA.COM/NEWS/RESULTS-AGILE-SURVEY-2012/](http://training.xebia.com/news/results-agile-survey-2012/)
4. THOUGHTWORKS, AGILE ADOPTION IN INDIA 2011, [HTTP://WWW.THUGHTWORKS.COM/AGILE-ADOPTION-INDIA-SURVEY-REPORT-2011/](http://www.thoughtworks.com/agile-adoption-india-survey-report-2011/)
5. SCRUM BULGARIA, [HTTP://WWW.SCRUMBULGARIA.ORG/](http://www.scrumbulgaria.org/)
6. SCRUM ALLIANCE, [HTTP://WWW.SCRUMALLIANCE.ORG/](http://www.scrumalliance.org/)
7. BULGARIAN ASSOCIATION OF SOFTWARE COMPANIES, [HTTP://WWW.BASSCOM.ORG/](http://www.basscom.org/)
8. BULGARIAN WEB ASSOCIATION, [HTTP://WWW.BWA.BG/](http://www.bwa.bg/)
9. BULGARIAN ASSOCIATION OF INFORMATION TECHNOLOGIES, [HTTP://WWW.BAIT.BG/](http://www.bait.bg/)
10. CLUSTER MICROELECTRONICS AND EMBEDDED SYSTEMS, [HTTP://WWW.CMEES.ORG/](http://www.cmees.org/)
11. BULGARIAN CLUSTER TELECOMMUNICATIONS, [HTTP://WWW.BTCLUSTER.ORG/](http://www.btcluster.org/)
12. ICT CLUSTER VARNA, [HTTP://WWW.ICT-CLUSTER-VARNA.EU/](http://www.ict-cluster-varna.eu/)
13. BULGARIAN GOLDEN PAGES, [HTTP://WWW.GOLDENPAGES.BG/](http://www.goldenpages.bg/)
14. INVEST BULGARIA, [HTTP://WWW.INVESTBULGARIA.COM/](http://www.investbulgaria.com/)
15. BULGARIAN BUSINESS CATALOG, [HTTP://WWW.CATALOG.BG/](http://www.catalog.bg/)

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