Carnegie Mellon
Software Engineering Institute

Software Project Performance Benchmarking Survey

Thank you for participating in the Software Performance Benchmarking Survey organized by the Software Engineering Institute. The overall results from the survey will be used to assist the development of a model that will facilitate the comparison of software project performance benchmarks.

The survey contains 31 brief questions that will take you approximately 20 minutes to complete. Please answer all questions.

Your privacy will be safeguarded and your answers will not be linked to you or your company in any way.

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Section 1. About you and your organization

By "software organization" we mean an organization that develops or maintains software or software-intensive systems.

1. Do you work for or support a software organization as we have defined it above?

- ☐ Yes
- ☐ No

Note: We have designed the survey to include individuals that work for or support a software organization. Therefore, if your response to question #1 was "No", you do not need to complete the remainder of the questionnaire.

2. Please select the description that best describes the role you play in your organization. (Select a single response.)

- ☐ Chief executive officer (CEO)
- ☐ Chief information officer (CIO)
- ☐ Chief operating officer (COO)
- ☐ Financial controller
- ☐ Executive manager
- ☐ Program manager
- ☐ Project manager
- ☐ Other type of manager
- ☐ Engineer
- ☐ Programmer
- ☐ Quality assurance specialist
- ☐ Analyst
- ☐ Consultant
- ☐ Other (please specify)

3. How is your organization best described? (Select a single response.)

- ☐ Commercial shrink-wrap
- ☐ Custom software development
- ☐ "In-house" or proprietary development or maintenance
- ☐ Defense contractor
- ☐ Other government contractor
- ☐ Department of Defense or military organization
- ☐ Other government agency
- ☐ Other (please specify)

4. Please select the response that best describes your company. (Select a single response.)

- ☐ Global 5000
- ☐ Global 2000
- ☐ Global 1000
- ☐ Global 500
- ☐ Global 100
- ☐ Does not apply
- ☐ Other (please specify

_____

5. List the country that is the primary location of your organization.

_____

6. Indicate the number of full-time employees in your software organization.
(Select a single response.)

- ☐ 25 or fewer
- ☐ 26-50
- ☐ 51-75
- ☐ 76-100
- ☐ 101-200
- ☐ 201-300
- ☐ 301-500
- ☐ 501-1000
- ☐ 1001-2000
- ☐ more than 2000

Section 2. Factors that impact software project performance

In questions 7 to 28, you are presented with a factor followed by the definition of the factor. Please read the definition and then (a) select the response that indicates the level of impact that you believe this factor has on overall software project performance, (b) select the response that indicates if and how often your organization collects data about that factor.

Note: For each questionnaire item in this section, select a single response for part a and a single response for part b.

7. Management & Leadership

This factor refers to management and leadership skills such as the ability to

- establish or facilitate the development of a clear mission and shared vision
- set appropriate customer expectations
- motivate their people to perform at their peak potential
- plan and to manage the plan effectively

7a. Please indicate the impact that "management and leadership" has on software project performance.

☐ Very large impact
☐ Large impact
☐ Moderate impact
☐ Little impact
☐ Negligible or no impact
☐ Do not know
☐ N/A

7b. Please indicate how often your organization collects data on this factor.

☐ Always
☐ Frequently
☐ Occasionally
☐ Rarely
☐ Never
☐ Do not know
☐ N/A

8. Project Organization Environment

This factor refers the degree to which there exists

- supportive culture
- rewards consistent with objectives
- information-sharing including management feedback
- training available as needed
- technological and material resources
- a physical environment that balances coordination and privacy

8a. Please indicate the impact that "project organization environment" has on software project performance.

☐ Very large impact
☐ Large impact
☐ Moderate impact
☐ Little impact
☐ Negligible or no impact
☐ Do not know
☐ N/A

8b. Please indicate how often your organization collects data on this factor.

☐ Always
☐ Frequently
☐ Occasionally
☐ Rarely
☐ Never
☐ Do not know
☐ N/A

9. Analysts' Functional Knowledge

This factor refers to the analysts' functional knowledge applied to analysis, design and detailed design. It includes the analysts'

- ability
- efficiency
- thoroughness
- communication skills
- cooperation

9a. Please indicate the impact that "analysts' functional knowledge" has on software project performance.

☐ Very large impact
☐ Large impact
☐ Moderate impact
☐ Little impact
☐ Negligible or no impact
☐ Do not know
☐ N/A

9b. Please indicate how often your organization collects data on this factor.

☐ Always
☐ Frequently
☐ Occasionally
☐ Rarely
☐ Never
☐ Do not know
☐ N/A

10. Developer Skill Level

This factor refers to the programmers'

- ability
- efficiency
- thoroughness
- communication skills
- cooperation

10a. Please indicate the impact that "developer skill level" has on software project performance.

☐ Very large impact
☐ Large impact
☐ Moderate impact
☐ Little impact
☐ Negligible or no impact
☐ Do not know
☐ N/A

10b. Please indicate how often your organization collects data on this factor.

☐ Always
☐ Frequently
☐ Occasionally
☐ Rarely
☐ Never
☐ Do not know
☐ N/A

11. Process Maturity

This factor refers to the level of process maturity as defined by the Software Engineering Institute's Capability Maturity Model family of products (e.g., CMMI® or CMM® for Software). The level is measured by either overall maturity level or by compliance with defined process areas.

11a. Please indicate the impact that "process maturity" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

11b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

12. Team Dynamics

This factor refers to familiarity with effective team member behaviors that include effective ways to address

- appropriate team membership
- establishment of clear goals
- clearly defined roles
- explicit team ground rules
- group problem solving
- decision-making
- conflict management
- communication
- boundary management

12a. Please indicate the impact that "team dynamics" has on software project performance.

☐ Very large impact
☐ Large impact
☐ Moderate impact
☐ Little impact
☐ Negligible or no impact
☐ Do not know
☐ N/A

12b. Please indicate how often your organization collects data on this factor.

☐ Always
☐ Frequently
☐ Occasionally
☐ Rarely
☐ Never
☐ Do not know
☐ N/A

13. Team Size

This factor refers to the number of people on a software project team.

13a. Please indicate the impact that "team size" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

13b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

14. Volume of Staff Turnover

This factor refers to the degree to which people are leaving a project or being added to a project after it has already started.

14a. Please indicate the impact that "volume of staff turnover" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

14b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

15. External Customer Relationship

This factor refers to the degree of mutual cooperation between the developer and the customer.

15a. Please indicate the impact that "external customer relationship" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

15b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

16. External Integration Complexity

This factor refers to the degree to which a project must work within constraints set by interface requirements associated with third-party hardware or software applications.

16a. Please indicate the impact that "external integration complexity" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

16b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

17. Business Domain

This factor refers to the business that the user is in as exemplified by the products or services that the user provides.

17a. Please indicate the impact that "business domain" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

17b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

18. Project Types Development

This factor refers to whether the software is

- a new application
- an already existing application that is undergoing enhancement
- an application that is undergoing reengineering

18a. Please indicate the impact that "project types development" has on software project performance.

☐ Very large impact
☐ Large impact
☐ Moderate impact
☐ Little impact
☐ Negligible or no impact
☐ Do not know
☐ N/A

18b. Please indicate how often your organization collects data on this factor.

☐ Always
☐ Frequently
☐ Occasionally
☐ Rarely
☐ Never
☐ Do not know
☐ N/A

19. Application Domain

This factor refers to whether the software application is an IT application (e.g., financial or document production) vs. an engineering application such as 3-D modeling or simulation, vs. an embedded, real-time application.

19a. Please indicate the impact that "application domain" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

19b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

20. Technical Complexity

This factor refers to the number of complex algorithms and amount of control logic needed to address the software requirements.

20a. Please indicate the impact that "technical complexity" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

20b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

21. Use of Development Methodology

This factor refers to whether a documented methodology is used to guide development of the software application.

21a. Please indicate the impact that "use of development methodology" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

21b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

22. Product Architecture

This factor refers to

- the percent of development schedule devoted to establishing architecture, given general product objectives
- the percent of required top software architects available to the project
- tool support available for developing and verifying architectural specifications
- the level of uncertainty in key architecture drivers (e.g., mission, user interface, COTS, hardware, technology, and performance)

22a. Please indicate the impact that "product architecture" has on software project performance.

☐ Very large impact
☐ Large impact
☐ Moderate impact
☐ Little impact
☐ Negligible or no impact
☐ Do not know
☐ N/A

22b. Please indicate how often your organization collects data on this factor.

☐ Always
☐ Frequently
☐ Occasionally
☐ Rarely
☐ Never
☐ Do not know
☐ N/A

23. Project Risk Management

This factor refers to

- existence of a risk management plan
- whether all critical risk items are identified and whether milestones have been established for mitigating risks by product design review
- whether schedule, budget, and internal milestones are compatible with the risk management plan
- tool support available for resolving risk items
- number and criticality of risk items

23a. Please indicate the impact that "project risks" has on software project performance.

☐ Very large impact
☐ Large impact
☐ Moderate impact
☐ Little impact
☐ Negligible or no impact
☐ Do not know
☐ N/A

23b. Please indicate how often your organization collects data on this factor.

☐ Always
☐ Frequently
☐ Occasionally
☐ Rarely
☐ Never
☐ Do not know
☐ N/A

24. Project Technology – Language & Tool Effectiveness

This factor refers to the sophistication of the programming environment and other software tools that are available to the project. For example, for the following sophistication levels:

Low: edit, code, debug capability

High: strong, mature, proactive life cycle tools that are integrated into the process and methods used for development and reuse.

24a. Please indicate the impact that "project technology – language & tool effectiveness" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

24b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

25. Newness of Development Platform

This factor refers to the learning curve required to learn and use more powerful platforms, including those with more graphic, user interface, database, networking, and distributed middleware capabilities.

25a. Please indicate the impact that "newness of development platform" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

25b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

26. Platform Volatility

This factor refers to uncertainty in the delivery or target platform configuration and the amount of difference between development and delivery platforms.

“Platform” is used here to mean the complex of hardware and software (OS, DBMS, etc.) the software product calls on to perform its tasks. The platform includes any compilers or assemblers supporting the development of the software.

26a. Please indicate the impact that "platform volatility" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

26b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

27. Project Technology – Familiarity With

This factor refers to the level of programming language and software tool experience of the project team developing the software system or subsystem.

27a. Please indicate the impact that "project technology – familiarity with" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

27b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

28. Size

This factor refers to the size of the software as measured either in lines of code (LOC) or by function point.

28a. Please indicate the impact that "size" has on software project performance.

- ☐ Very large impact
- ☐ Large impact
- ☐ Moderate impact
- ☐ Little impact
- ☐ Negligible or no impact
- ☐ Do not know
- ☐ N/A

28b. Please indicate how often your organization collects data on this factor.

- ☐ Always
- ☐ Frequently
- ☐ Occasionally
- ☐ Rarely
- ☐ Never
- ☐ Do not know
- ☐ N/A

Section 3. Sharing performance data

The Software Engineering Institute is initiating an effort on software project performance benchmarking. In this section, we ask you several questions about your interest in benchmarking and your ability and willingness to share performance data.

29. Please indicate the extent to which your organization performs software project performance benchmarking.

- ☐ To A Great Extent
- ☐ Somewhat
- ☐ Very Little
- ☐ Not At All
- ☐ Other (please describe)

30. Please indicate the value of software project performance benchmarks to you and your organization.

- ☐ A great deal
- ☐ Much
- ☐ Somewhat
- ☐ Little
- ☐ None
- ☐ Other (please describe)

31. Please select the statement that describes your ability to authorize sharing of your organization's performance data within an SEI-administered repository.

- ☐ I have sufficient authority.
- ☐ I am part of a team of people who would jointly decide whether to authorize.
- ☐ I do not have sufficient authority.
- ☐ Other (please describe

Thank You