



Field Descriptions

ISBSG D&E Repository

Introduction

The ISBSG D&E Repository Data contains the following data fields (in this order) in an MS Excel spreadsheet to allow you to perform your own analysis, estimation, comparisons or benchmarking. The descriptions in this document cover all fields in the latest ISBSG Data. The data columns all have a comment box explaining the data content of that column.

Please remember that the terms of the licence to use this data prohibit it from being resold in any form or incorporated into any product for resale.

Field Descriptions (Project Extract worksheet):

Project ID

A primary key, for identifying projects. These identification numbers have been 'randomised' to remove any chance of identifying a company. In this data release you will find some rows have identical Project ID. This is where the project has been counted by more than one Functional Size Metric and a row is included per count.

Rating:

Data Quality Rating

This field contains an ISBSG rating code of A, B, C or D applied to the project data by the ISBSG quality reviewers to denote the following:

- A=** The data submitted was assessed as being sound with nothing being identified that might affect its integrity.
- B=** The submission appears fundamentally sound but there are some factors which could affect the integrity of the submitted data.
- C=** Due to significant data not being provided, it was not possible to assess the integrity of the submitted data.
- D=** Due to one factor or a combination of factors, little credibility should be given to the submitted data.

Unadjusted Function Point Rating

This field contains an ISBSG rating code of A, B, C or D applied to the Functional Size (Unadjusted Function Point count) data by the ISBSG quality reviewers to denote the following:

- A=** The unadjusted function point count was assessed as being sound with nothing being identified that might affect its integrity.
- B=** The unadjusted function point count appears sound, but integrity cannot be assured as a single figure was provided.
- C=** Due to unadjusted function point or count breakdown data not being provided, it was not possible to provide the unadjusted function point data.
- D=** Due to one factor or a combination of factors, little credibility should be given to the unadjusted function point data.

Software Age:

Year of Project

Year of Project, derived from implementation date (if known), or from other project dates such as:

- Project end date
- Project start date
- Estimated implementation date
- Data compilation date

If no project date is known, it is the year of data receipt by the ISBSG.

Major Grouping Attributes:

Industry Sector

This is a derived field that attempts to summarise Organisation Type of the project into a single value of a defined set.

Organisation Type

This identifies the type of organisation that submitted the project. (e.g.: Banking, Manufacturing, Retail).

Application Group

This is a derived field that groups Application Type of the project into a single value of a defined set:

- Business Application
- Real-Time Application
- Mathematically-Intensive Application
- Infrastructure Software

Application Type

This identifies the type of application being addressed by the project. (e.g.: information system, transaction/production system, process control.)

Development Type

This field describes whether the development was a new development, enhancement or re-development.

Development Platform

Defines the primary development platform, (as determined by the operating system used). Each project is classified as: PC, Mid Range, Main Frame or Multi platform.

Language Type

Defines the language type used for the project: e.g. 3GL, 4GL, Application Generator etc.

Primary Programming Language

The primary language used for the development: JAVA, C++, PL/1, Natural, Cobol etc.

Count Approach

A description of the technique used to size the project. For most projects in the ISBSG repository this is the Functional Size Measurement Method (FSM Method) used to measure the functional size (e.g. IFPUG, MARK II, NESMA, FiSMA, COSMIC-FFP etc.). For projects using FSM Methods the size data is in the subsequent Sizing section. For projects using Other Size Measures (e.g. LOC etc.) the size data is in the section Size Other than FSM. This helps you to compare apples with apples.

Projects using the IFPUG FSM method of version 4 or greater are indicated as 'IFPUG 4+', whereas projects sized using a version prior to version 4 are indicated as 'IFPUG old'.

Sizing:

Functional Size

The unadjusted function point count (before any adjustment by a Value Adjustment Factor if used). This may be reported in different units depending on the FSM Method.

Relative Size

For major FSMs, categories the Functional Size (or where blank, the Adjusted Function Points) by relative sizes as:

1. XXS	Extra-extra-small	=> 0 and <10
2. XS	Extra-small	=> 10 and <30
3. S	Small	=> 30 and <100
4. M1	Medium1	=> 100 and <300
5. M2	Medium2	=> 300 and <1000
6. L	Large	=> 1,000 and < 3,000
7. XL	Extra-large	=> 3,000 and < 9,000
8. XXL	Extra-extra-large	=> 9,000 and < 18,000
9. XXXL	Extra-extra-extra-large	=> 18,000.

Adjusted Function Points

For IFPUG, NESMA and MARK II counts this is the adjusted size (the functional size is adjusted by a Value Adjustment Factor). The resultant adjusted size is reported in adjusted function points (AFP). Where the Adjusted Size has not been supplied by the project then the Functional Size is used in the calculations that use AFP. For COSMIC & FiSMA counts the adjusted functional size is not applicable.

Value Adjustment Factor

The adjustment to the function points, applied by the project submitter, that takes into account various technical and quality characteristics e.g.: data communications, end user efficiency etc.

Where available, the VAF is calculated from the 14 General System Characteristics ratings. Sometimes the 14 GSC ratings only are provided to the ISBSG (in which case the VAF is derived from these), sometimes the 14 GSC ratings and VAF are provided, and sometimes the VAF only is provided.

For most projects recently counted this data is not recorded, and the VAF is assumed equal to 1.

Effort:

Normalised Level 1 Work Effort

The development team full life-cycle effort. For projects covering less than a full development life-cycle, this value is an estimate of the full life-cycle effort for the development team only. For projects covering the full development life-cycle, and projects where life-cycle coverage is not known, this value is not normalised and is the same as reported work effort for the development team. For projects where the development team effort is not known this value is blank.

Normalised Work Effort

Full life-cycle effort for all teams reported. For projects covering less than a full development life-cycle, this value is an estimate of the full development life-cycle effort. For projects covering the full development life-cycle, and projects where development life-cycle coverage is not known, this value is the same as Summary Work Effort.

Summary Work Effort

Provides the total effort in hours recorded against the project.

Productivity:

Normalised Level 1 Productivity Delivery Rate (unadjusted function points)

Project productivity delivery rate in hours per functional size unit calculated from Normalised Level 1 Work Effort for the **development team only** divided by Functional Size (Unadjusted Function Points). This is the delivery rate currently recommended by the ISBSG. Use of normalised effort for the development team and unadjusted count should render the most comparable rates.

Normalised Productivity Delivery Rate (unadjusted function points)

Project productivity delivery rate in hours per functional size unit calculated from Normalised Work Effort divided by the Functional Size (Unadjusted Function Point count). This is the delivery rate for the project used and reported by the ISBSG since the year 2002. Use of normalised effort and unadjusted count should render more comparable rates than un-normalised effort and adjusted count.

Pre 2002 Productivity Delivery Rate

Project productivity delivery rate in hours per functional size unit calculated from Summary Work Effort divided by Function Point count. This is the delivery rate for the project that was used and reported by the ISBSG prior to the year 2002. Since that time the Normalised PDR has been used for analysis and reporting.

Other Metrics:

Defect Density

Defects per 1000 FP calculated as $\text{Total Defects Delivered} * 1000 / \text{Functional Size}$

Measures the quality of software in terms of defects delivered in unit size of software. It is defined as the number of Defects per 1000 Functional Size Units of delivered software, in the first month of use of the software. It is expressed as Defects per 1000 Functional Points.

Speed of Delivery

Functional Size Units per elapsed month calculated as $\text{Functional Size} / \text{Project Elapsed Time}$

Measures the speed achieved in delivering a quantity of software over a period of time. It is defined as the Functional Size of the delivered software (measured in functional size units), over the Project Elapsed Time (measured in months). It is expressed as Functional Points per elapsed month.

Manpower Delivery Rate

Functional Size Units per person per elapsed month calculated as Functional Size / Project Elapsed Time * Max Team Size

Measures the speed achieved by the project team in delivering a quantity of software over a period of time. It is defined as the Functional Size of the delivered software (measured in functional size units), over the Project Elapsed Time (measured in months) multiplied by the number of people in the project team. It is expressed as Functional Points per person per elapsed month.

The ISBSG previously called this metric speed of delivery. In comparing projects, speed of delivery will vary according to team size. In order to compare like with like the ISBSG normalise speed of delivery with the team size to compare projects by manpower delivery rate.

Schedule:

Project Elapsed Time

Total elapsed time for the project in calendar months.

Project Inactive Time

This is the number of calendar months in which no activity occurred, (e.g. awaiting client sign off, awaiting acceptance test data). This time, subtracted from Project Elapsed Time, derives actual time working on the project.

Implementation Date

Actual date of implementation, in format dd-mmm-yyyy. (Note: where the exact date is not known the date is shown in the data in date format mmm-yyyy). Where the project had multiple implementations, this is the date of the 1st or major implementation.

Project Activity Scope

This indicates what tasks were included in the project work effort data recorded. These are: Planning, Specify, Design, Build, Test and Implement.

Effort Breakdown

When provided in the submission, these fields contain the breakdown of the work effort reported by six categories: Plan, Specify, Design, Build, Test and Implement.

Effort Unrecorded

Where no activity breakdown is provided in the submission, this field contains the same value as the Summary Work Effort. Where an activity breakdown is provided in the submission, and the sum of that breakdown does not equal the Summary Work Effort, the difference is shown here.

Phase Dates:

Plan Start Date

Start date of the planning activity, in format dd-mmm-yyyy.

Plan End Date

End date of the planning activity, in format dd-mmm-yyyy.

Spec Start Date

Start date of the specification activity, in format dd-mmm-yyyy.

Spec End Date

End date of the specification activity, in format dd-mmm-yyyy.

Design Start Date

Start date of the design activity, in format dd-mmm-yyyy.

Design End Date

End date of the design activity, in format dd-mmm-yyyy.

Build Start Date

Start date of the build activity, in format dd-mmm-yyyy.

Build End Date

End date of the build activity, in format dd-mmm-yyyy.

Test Start Date

Start date of the test activity, in format dd-mmm-yyyy.

Test End Date

End date of the test activity, in format dd-mmm-yyyy.

Impl Start Date

Start date of the implementation activity, in format dd-mmm-yyyy.

Impl End Date

End date of the implementation activity, in format dd-mmm-yyyy.

Effort Attributes:**Recording Method**

The method used to obtain work effort data:

- **Staff Hours (Recorded)** – The WORK EFFORT reported comes from a “daily” record of all the WORK EFFORT expended by each person on project related tasks.
- **Staff Hours (Derived)** – The WORK EFFORT reported is derived from time records that indicate, for example, the assignment of people to the project. This might entail estimating that, for example, only 75% of the assigned time was actually applied to the project; the rest is for holidays, education, etc.
- **Productive Time Only** – The WORK EFFORT reported is only for the “productive time” spent by each person on the project. This often amounts to only 5-6 hours per day.
- **Combination** – A combination of recorded and derived methods was used to obtain the WORK EFFORT.
- **No timesheets recorded by development team** – No timesheets were recorded by the development team.
- **Recorded total hours each day or week** – Only the total hours worked each day or week was recorded as WORK EFFORT.
- **Recorded hours on each project/day/week** – The WORK EFFORT was recorded as hours worked on each project for each day/week.
- **Recorded work on project tasks each day** – The WORK EFFORT was recorded for each project task for each day.

Resource Level

Data is collected about the people whose time is included in the work effort data reported. Four levels are identified in the ISBSG data repository.

- 1 = development team effort (e.g., project team, project management, project administration)
- 2 = development team support (e.g., database administration, data administration, quality assurance, data security, standards support, audit & control, technical support)
- 3 = computer operations involvement (e.g., software support, hardware support, information centre support, computer operators, network administration)
- 4 = end users or clients (e.g., user liaisons, user training time, application users and/or clients)

The number in this field indicates that all effort at this and preceding levels is included in the effort fields. For example, a “3” in this field for a project means that the work effort for the development team, development team support and computer operations is included in the work effort number.

Team Size Group

Categories Max Team Size by into groups to increase number of projects selected, as:

1	=> 1.55
2	= 1.55 to <2.5
3-4	= 2.5 to <4.5
5-8	= 4.5 to <8.5
9-14	= 8.5 to <14.5

15-20	= 14.5 to <20.5
21-30	= 20.5 to <30.5
31-40	= 30.5 to <40.5
41-50	= 40.5 to <50.5
51-60	= 50.5 to <60.5
61-70	= 60.5 to <70.5
71-80	= 70.5 to <80.5
81-90	= 80.5 to <90.5
91-100	= 90.5 to <100.5
100 +	=> 100

Max Team Size

The maximum number of people that worked at any time on the project (peak team size). This number is given for the Development Team (level 1) only.

Average Team Size

The average number of people that worked on the project (calculated where available from the team sizes per activity). This number is given for the Development Team (level 1) only.

Ratio of Project Work Effort to Non-Project Activity

The ratio of Project Work Effort to Non-Project Activities.

Percentage of Uncollected Work Effort

The percentage of Work Effort not reflected in the reported data. i.e. an estimate of the work effort time not collected by the method used. The report typically is stated in the following terms:

- less than 5% of that recorded,
- between 5% and 10% of that recorded,
- ___ % over that recorded, and
- unable to estimate.

Project Attributes:

CASE Tool Used

Whether the project used any CASE tool. The full repository holds a breakdown of CASE usage for those projects that reported using a CASE tool:

- Upper CASE tool
- Lower CASE tool with code generator
- Lower CASE tool without code generator
- Integrated CASE tool

Used Methodology

States whether a development methodology was used by the development team to build the software.

How Methodology Acquired

Describes whether the development methodology was purchased or developed in-house, or a combination of these.

1st Hardware

Where known, this is the primary technology hardware platform used to build or enhance the software (i.e. that used for most of the build effort).

1st Language

Where known, this is the primary technology programming language used to build or enhance the software (i.e. that used for most of the build effort).

1st Operating System

Where known, this is the primary technology operating system used to build or enhance the software (i.e. that used for most of the build effort).

Integrated Development Environment

Where known, this is the primary Integrated Development Environment, a development environment integrating a range of tools to aid the processes of designing, constructing and testing the software; typically, incorporating graphical and component based development techniques.

1st Debugging Tool

Where known, this is the primary technology debugging tool used to build or enhance the software (i.e. that used for most of the build effort), otherwise (if known) it is whether the project used a debugging tool.

1st Data Base System

Where known, this is the primary technology database used to build or enhance the software (i.e. that used for most of the build effort), otherwise (if known) it is whether the project used a DBMS.

1st Component Server

Where known, this is the primary technology object/component server used to build or enhance the software (i.e. that used for most of the build effort); otherwise (if known) it is whether the project used an object/component server.

1st Web Server

Where known, this is the primary technology HTML/Web server used to build or enhance the software (i.e. that used for most of the build effort); otherwise (if known) it is whether the project used an HTML/Web server.

1st Message Server

Where known, this is the primary technology E-Mail or message server used to build or enhance the software (i.e. that used for most of the build effort), otherwise (if known) it is whether the project used an E-Mail or message server.

1st Other Platform

Where known, this is any other component of the primary technology used to build or enhance the software (i.e. that used for most of the build effort).

Documents & Techniques:

Development Methodologies

Methodologies used during development. (e.g.: Agile, JAD, Waterfall etc.). These methods have not been recorded as being specific to a particular project activity and therefore may apply to any part of the development lifecycle. For ISBSG purposes a methodology applies to the whole project development process. This is distinct from techniques, which apply to activities within the development process.

Development Techniques

Techniques used during development. (e.g.: Data Modelling, OO Analysis etc.). These techniques have not been recorded as being specific to a particular project activity and therefore may apply to any part of the development lifecycle. For ISBSG purposes a technique applies to individual activities within the development process. This is distinct from methodologies, which apply to the whole project development process.

JAD Method Used

Whether the project used any JAD method. The repository holds fields of methods used in the project. This column indicates if any Joint Application Development methods were reported.

Agile Method Used

Whether the project used an Agile Method. The repository holds fields of methods used in the project and specifically in specification or design. This column indicates if any Agile method was reported.

Number of sprints / iterations

For Agile projects, this is the number of sprints or iterations.

Sprints / iteration length

For Agile projects, this is the length in days of sprints or iterations.

Sprints / iterations size

For Agile projects, this is the size in Story Points of sprints or iterations (if given).

Prototyping Used

Whether the project used any Prototyping. The repository holds fields of techniques used in the project. This column indicates if any Prototyping techniques were reported.

Planning Documents

The documents or other work products produced during the planning activity.

Specification Documents

The documents or other work products produced during the specification activity.

Specification Techniques

The techniques used during the specification of the software.

Design Documents

The documents or other work products produced during the design activity.

Design Techniques

The techniques used during the design of the software.

Build Products

The items that were produced or modified during the build activity.

Build Activity

The detailed activities that occurred during the build of the software.

Test Documents

The documents or other work products produced during the planning or performance of testing.

Test Activity

The detailed activities that occurred during the testing of the software.

Implementation Documents

The documents or other work products produced during preparation for, or performance of, the implementation activity.

Implementation Activity

The detailed activities that occurred during the implementation of the software.

Functional Sizing Technique

The technology used to support the functional sizing process. Certain technologies used in function point counting can impact on the count's potential accuracy.

FP Standard (Function Size Metric Used)

The functional size metric used to record the size of the project, (e.g.. IFPUG3, IFPUG4 [version 4 series = 4.0,4.1, 4.1.1, 4.2 etc], in-house etc.). Where more than 1 standard has been recorded for the project, this has been rationalised.

FP Standards All

All functional size metrics used to record the size of the project. This column shows all standards recorded for the project, (e.g. IFPUG3;IFPUG4;in-house).

Reference Table Approach

This describes the approach used to assess tables of code or reference data (a comment field), for their contribution to functional size.

Architecture:**Architecture**

A derived attribute for the project to indicate if the application is Stand alone, Multi-tier, Client server, or Multi-tier with web public interface.

Client Server?

Indicator of whether the application or product requires more than one computer to operate different components or parts of it. (Yes, No or Don't Know).

Client Roles

The roles performed by the computers that provide interface to the software's external users.

Server Roles

The services provided by the host/server computer(s) to the software application or product.

Type of Server

A description of the server to the software application or product. This data comes from a previous version of the questionnaire.

Client/Server description

A description of the architecture of the client/server software application or product. This data comes from a previous version of the questionnaire.

Web Development

A derived indicator of whether the project data includes any comment that it is a web-development.

Tool data:**DBMS Used**

Whether the project used a DBMS. Either in primary or secondary platforms.

Upper CASE Used

Whether the project used an upper CASE tool.

Lower CASE Used (with code gen)

Whether the project used lower CASE tool with code generator. This data is only available from early versions of the ISBSG questionnaire.

Lower CASE Used (no code gen)

Whether the project used lower CASE tool without code generator. This data is only available from early versions of the ISBSG questionnaire.

Integrated CASE Used

Whether the project used an integrated CASE tool. This data is only available from early versions of the ISBSG questionnaire.

Other CASE tools?

Computer-Aided Software Engineering of some other type. These were specified in the data submission as either "Other CASE" or as "Lower CASE" but with out specifying with or without code generation.

Other CASE tool names

The names of any other CASE technology. These were specified in the data submission as either "Other CASE" or as "Lower CASE" but with out specifying with or without code generation..

Staged development?

A project is 'staged' when a decision was made during project planning to develop and implement the project as discrete functional units. This data is only available from early versions of the ISBSG questionnaire.

Project management tools?

Indicator if any project management tools were used that are not listed elsewhere.

Project management tool name

Name of any other project management tools used that are not listed elsewhere.

Debugging tools?

Indicator if any debugging tools were used for most of the build effort.

Debugging tool name

Where known, this is the primary technology debugging tool used to build or enhance the software (i.e. that used for most of the build effort).

Testing tools?

Indicator if any information is known about tools used in the test activity.

Testing tool name

Name of any testing tools used.

Performance monitoring tools?

Indicator if any performance monitoring tools were used.

Performance tool name

Name or description of any tools used in project performance monitoring.

Other tools?

Indicator if any other tools were used that are not listed elsewhere.

Other tools name

Name of any other tools used that are not listed elsewhere.

Size Attributes:

Function Point Categories

Input count / Output count / Enquiry count / File count / Interface count

When provided in the submission, the following five fields that breakdown the Functional Size are provided (note that all values are unadjusted):

- Inputs For IFPUG & NESMA = function points (UFP) of External Input
For MARK II = function points (UFP) of Input
- Outputs For IFPUG & NESMA = function points (UFP) of External Output
For MARK II = function points (UFP) of Output
- Enquiries For IFPUG & NESMA = function points (UFP) of External Enquiry
- Files For IFPUG & NESMA = function points (UFP) of Internal Logical Files
For MARK II = function points (UFP) of Entity Reference
- Interfaces For IFPUG & NESMA = function points (UFP) of External Interface

Added count / Changed count / Deleted count

When provided in the submission, the following three fields that breakdown the Functional Size are provided (note that all values are unadjusted):

- Additions For IFPUG & NESMA = function points (UFP) of New or Added Functions
For MARK II = function points (UFP) of New or Added Functions
For COSMIC = function points (CFP) of New or Added Functions
- Changes For IFPUG, NESMA & MARK II = function points (UFP) of Changed Functions
For COSMIC = function points (CFP) of Changed Functions
- Deletions For IFPUG, NESMA & MARK II = function points (UFP) of Deleted Functions
For COSMIC = function points (CFP) of Deleted Functions

COSMIC Entry / COSMIC Exit / COSMIC Read / COSMIC Write

When provided in the submission, the following four fields that breakdown the Functional Size are provided:

- Entries For COSMIC = function points (CFP) of number of entries
- Exits For COSMIC = function points (CFP) of number of exits
- Reads For COSMIC = function points (CFP) of number of reads
- Writes For COSMIC = function points (CFP) of number of writes

Additional data:

Portability requirements

This identifies the subset within the organisation being addressed by the project. It may be different to the organisation type or the same. (e.g.: Manufacturing, Personnel, Finance).

Metrics Program

Specifies whether the organisation has implemented a metrics program. In early versions of the ISBSG data collection questionnaire this was asked as part of the count validation questions. The data in this and the next column were then linked. In recent versions of the ISBSG data collection questionnaire this is asked as part of the project principle characteristics, in which the single question asks "Is the development team part of a software metrics program?"

Metrics Program duration

Duration of the organisation's metrics program (in years) where the organisation has implemented a metrics program. This data comes from an earlier version of the ISBSG data collection questionnaire. The data in this and the previous column were then linked.

FP training

Details of the functional sizing training received by the counter(s). For example, a training course on IFPUG function points that IFPUG has certified.

FP counter experience

Number of years experience in function point counting the counter had prior to this functional size measurement (accurate function point counting requires experience).

FP count frequency

Frequency of performing a count by the function point counter (accuracy of a function point count is influenced by how often the function point counter performs a count).

FP counter certification

This indicates if the function point counter has any functional sizing certifications (a function point counter with certification can be expected to be more accurate than one without).

FP counter membership

This indicates if the function point counter was a member of a local metrics group (e.g. NESMA, ASMA, IFPUG etc), or working within a group of counters, hence how much support the function point counter may have to resolve issues and keep skills up to date.

Count Tool

Name of any functional sizing tools used. This data comes from an earlier version of the ISBSG data collection questionnaire.

Grouping Attributes:

Business Area Type

This identifies the subset within the organisation being addressed by the project. It may be different to the organisation type or the same. (e.g.: Manufacturing, Personnel, Finance).

Software Process CMM

Software standards typically define a series of actions and documentation structures and contents required to deliver quality software and software processes. Software standards are maintained by international organisations. Software developers are typically required to be formally and externally assessed in order to achieve certification to these

standards. This column indicates if the project was performed under CMM processes. Where available, details such as the level or version, and year of certification are included.

Software Process CMMI

This column indicates if the project was performed under CMMI processes. Where available, details such as the level or version, and year of certification are included.

Software Process SPICE

This column indicates if the project was performed under SPICE processes. Where available, details such as the level or version, and year of certification are included.

Software Process ISO

This column indicates if the project was performed under ISO processes. Where available, details such as the version, and year of certification are included.

Software Process TICKIT

This column indicates if the project was performed under TICKIT processes. Where available, details such as the version, and year of certification are included.

Software Process Other

This column indicates if the project was performed under processes other than one of the following: CMM, CMMI, SPICE, ISO or TICKIT. Where available, details such as the version, and year of certification are included.

Package Customisation

This indicates whether the project was a package customisation. (Yes, No or Don't Know).

Degree of Customisation

If the project was based on an existing package, this field provides comments on how much customisation was involved.

Quality:

Defects Delivered (3 columns)

Defects reported in the first month of use of the software. Three columns in the data covering the number of Minor, Major and Extreme defects reported.

Total Defects Delivered

Total number of defects reported in the first month of use of the software. This column shows the total of defects reported (Minor, Major and Extreme). Where no breakdown is available, the single value is shown here.

Process:

Process improvement program?

A process improvement program comprises a planned series of actions to improve how the software development team does its work. This column indicates if the development team were involved in a process improvement program.

Decision making process

The processes and roles that were in place so that the client/users could make decisions regarding the project.

Product Attributes:

The user base attributes in this section contain numeric values and text representing number range or approximate value. The data has been collected in different forms dependent on the version of the questionnaire used or the precision of the submitter's data. Interpretation of these values is at the discretion of the user.

User Base - Business Units

Number of business units (or project business stakeholders) serviced by the software application. Where the application covers multiple sets of users, a Business Unit is where a distinct set of business rules applies to a distinct set of application users.

User Base - Locations

The number of physical locations being serviced/supported by the installed software application. A 'distinct installation' is an individual installation of the complete software system.

User Base - Distinct Users

The total number of end users that can invoke the application.

User Base - Concurrent Users

The total number of end users using the system concurrently. The term concurrent end users applies to a single distinct installation.

Intended Market

This field describes the relationship between the project's customer, end users and development team.

Target Platform

The implementation platform of the software product i.e. the platform that the software was implemented into. The implementation platform may be different from that on which the software was developed, or may be the only platform known for the project. A Multi platform environment would include aspects of more than one of the categories Mainframe, Midrange, or PC.

Device Embedded

For mobile or device embedded software, this specifies the generic device into which the software is implemented.

Estimates:**Size estimate**

Estimate of the functional size (ie. IFPUG Function Points, COSMIC Function Points) made during the Planning activity for the project.

Size estimate approach

Functional size approach used for the size estimate.

Size estimate method

Method used to estimate the functional size.

Effort estimate

Estimate of the effort for the project (in hours) made during the planning activity.

Effort estimate method

Method used to estimate the effort.

Delivery date estimate

Estimate of the delivery date for the project made during the planning activity, in format dd-mmm-yyyy or mmm-yyyy.

Delivery date estimate method

Method used to estimate the delivery date..

Cost estimate

Estimate of the cost for the project made during the planning activity.

Cost estimate currency

Currency used to express the cost estimate.

Cost estimate method

Method used to estimate the cost.

Estimating tool

Name or description of any tools used in calculating project estimates. This data comes from an earlier version of the ISBSG data collection questionnaire.

Estimating comments

Any comments on the project planning or estimates..

Estimate compilation date

Date of compilation of the estimate data, in format dd-mmm-yyyy or mmm-yyyy. This data comes from an earlier version of the ISBSG data collection questionnaire.

Primary project goals:**Project objective A all functionality**

The Deliver all the functionality that users/customer needed. Values 1-4 where 1 is most important.

Project objective B minimum defects

Deliver functionality with minimum possible defects. Values 1-4 where 1 is most important.

Project objective C minimum cost

Deliver acceptable functionality at minimum cost. Values 1-4 where 1 is most important.

Project objective D shortest time

Deliver acceptable functionality in shortest time. Values 1-4 where 1 is most important.

Project team:**Project user involvement**

Indicator of whether business users assigned to the project.

BA team experience <1 yr

Number of team members with < 1 years business area experience.

BA team experience 1 to 3 yr

Number of team members with 1 to 3 years business area experience.

BA team experience >3 yr

Number of team members with > 3 years business area experience.

IT experience

There are two groups of three IT experience fields:

Group 1:	Group 2:
IT experience <1 yr	IT experience <3 yr
IT experience 1 to 3 y	IT experience 3 to 9 yr
IT experience >3 yr	IT experience >9 yr

Group 1 is from an earlier version of the ISBSG questionnaire. Since the two sets of IT experience data are not directly compatible, both are included in this data. You will notice that each project has data in only one set (if at all). For your purposes you may wish to combine them in some way.

IT experience <1 yr

Number of team members with < 1 year software development experience.

IT experience 1 to 3 yr

Number of team members with 1 to 3 years software development experience.

IT experience >3 yr

Number of team members with > 3 years software development experience.

IT experience <3 yr

Number of team members with < 3 years software development experience.

IT experience 3 to 9 yr

Number of team members with 3 to 9 years software development experience.

IT experience >9 yr

Number of team members with > 9 years software development experience.

Project manage experience

Number of past projects (IT and non-IT) for which the project manager has been responsible. This is an indication of the past experience of the project manager.

Project manage changes

Number of changes in the project manager that occurred during the project.

Personnel changes

Number of people who were abnormally replaced during the project for such reasons as illness, resignation, transfer, maternity leave, project non-performance.

Survey data:**User satisfaction survey**

Indicator that a user satisfaction survey was performed.

Survey questions (8 columns)

The following questions are rated on a scale of 1-4 where:

- 1 = Poorly met, or not at all
- 2 = Largely met
- 3 = Fully met
- 4 = Exceeded expectations

- Meet stated objectives - User satisfaction with the ability of system to meet stated objectives.
- Meet business requirements - User satisfaction with the ability of system to meet business requirements.
- Quality of functionality - User satisfaction with the quality of the functionality provided.
- Quality of documentation - User satisfaction with the quality of the documentation provided.
- Ease of use - User satisfaction with the ease of use. User satisfaction with the ease of use.
- Training given - User satisfaction with the training given.
- Speed of defining solution - User satisfaction with the speed of defining solution.
- Speed of providing solution - User satisfaction with the speed of providing solution

Survey respondent role

The project role of the person(s) who completed the user satisfaction survey.

User survey comments

Any comments on the user satisfaction survey. This data comes from an earlier version of the ISBSG data collection questionnaire.

Date user survey

Date the user satisfaction survey performed, in format dd-mmm-yyyy or mmm-yyyy.

Size Other than FSM:**Lines of Code**

The number of the source lines of code (SLOC) produced by the project. This is only available for some projects.

Lines of Code not Statements

The % of the source lines of code (SLOC) that are not program statements. In some cases this is a general comment on the counting of lines of code.

Other Size Units

The count of software size in units of software, where the count approach is other than a Functional Size Measure (FSM) or Source Lines of Code (SLOC). Where a value is given in this column the units of software are given in the column "Count approach".

Reuse:

Software reuse?

Indicates if this project made no reuse of previous software development work. Promoters of reuse claim that it improves development productivity.

Software reuse

If this project made any reuse of software development work products created prior to the project, this is the form of this reuse. If the project is an enhancement, the concept of reuse excludes the existing software that the project is enhancing.

- Purchased components: Collection of source code/objects (or compiled objects) purchased separately from the programming languages used.
- In-house components / libraries: Collection of source code/objects formed and maintained by the development organisation itself.
- Purchased framework/foundation: Extensive set of software classes designed to be the foundation of a product and purchased separately from the programming language.

Reuse FP count

Where known, this is the secondary or other technology operating system used to build or enhance the software (i.e. that used for remainder of the build effort).

Reuse FP approach

Where known, this is the secondary or other technology database used to build or enhance the software (i.e. that used for remainder of the build effort), otherwise (if known) it is whether the project used a secondary DBMS.

Costs:

Total project cost

Total cost of the project (to the nearest whole currency unit).

Cost currency

Currency used to express the project costs.

Currency multiple

Some currencies are usually expressed in multiples (e.g. Lira or Yen). The values in Total project cost column and any cost breakdowns have been adjusted by the multiple used in submission where indicated in this column with a 'Yes'. The data in project cost columns are therefore comparable for a given Cost currency

Plan total cost

Total costs accumulated for the Planning activity. This data comes from an earlier version of the ISBSG data collection questionnaire

Specify total cost

Total costs accumulated for the Requirements/Functional Specification activity. This data comes from an earlier version of the ISBSG data collection questionnaire.

Design total cost

Total costs accumulated for the Design activity. This data comes from an earlier version of the ISBSG data collection questionnaire.

Build total cost

Total costs accumulated for the Programming activities. This data comes from an earlier version of the ISBSG data collection questionnaire.

Test total cost

Total costs accumulated for the Testing activities. This data comes from an earlier version of the ISBSG data collection questionnaire.

Impl total cost

Total costs accumulated for the Implementation activities. This data comes from an earlier version of the ISBSG data collection questionnaire.

Overheads included

Indicator of whether overheads such as office space, telephone, annual leave and superannuation included in the people cost. This data comes from an earlier version of the ISBSG data collection questionnaire.

Cost recording method

Describes how the cost data was recorded and/or calculated for the project.

All cost included

Indicator of whether it is known or suspected that there are project costs that are not recorded in the supplied data.

Unreported costs

If all the costs have not been included, this is a percentage estimate of the uncollected cost.

Estimate unreported costs

If the unreported costs are greater than 10% of the reported costs, this is an estimate of that percentage.

Cost method description

If the costs were not specifically recorded, this describes how costs were calculated.

Cost Confidence Level

Degree of confidence in the accuracy of the cost data (the following levels apply):

- 1 = Poor/not confident
- 2 = Adequate/slightly confident
- 3 = Good/confident
- 4 = Excellent/very confident

This data comes from an earlier version of the ISBSG data collection questionnaire.

Cost Confidence Reason

Reason for the assessment of confidence in the cost data. This data comes from an earlier version of the ISBSG data collection questionnaire.

Cost Other Comment

Any other comments on the cost data. This data comes from an earlier version of the ISBSG data collection questionnaire.

Project Quality:**Plan Defects**

Defects reported in the Planning activity. This column is the total number of defects reported for the activity.

Specification Defects

Defects reported in the Specification activity. This column is the total number of defects reported for the activity.

Design Defects

Defects reported in the Design activity. This column is the total number of defects reported for the activity.

Minor Build Defects

Minor defects reported in the Build activity. This column is the number of Minor defects reported for the activity.

Major Build Defects

Major defects reported in the Build activity. This column is the number of Major defects reported for the activity.

Extreme Build Defects

Extreme defects reported in the Build activity. This column is the number of Extreme defects reported for the activity.

Total Build Defects

Total number of defects reported in the Build activity. This column shows the total of defects reported (Minor, Major and Extreme) **or** where no breakdown is available, the single value is shown here (if known).

Minor Test Defects

Minor defects reported in the Test activity. This column is the number of Minor defects reported for the activity.

Major Test Defects

Major defects reported in the Test activity. This column is the number of Major defects reported for the activity.

Extreme Test Defects

Extreme defects reported in the Test activity. This column is the number of Extreme defects reported for the activity.

Total Test Defects

Total number of defects reported in the Test activity. This column shows the total of defects reported (Minor, Major and Extreme) **or** where no breakdown is available, the single value is shown here (if known).

Minor Implementation Defects

Minor defects reported in the Implementation activity. This column is the number of Minor defects reported for the activity.

Major Implementation Defects

Major defects reported in the Implementation activity. This column is the number of Major defects reported for the activity.

Extreme Implementation Defects

Extreme defects reported in the Implementation activity. This column is the number of Extreme defects reported for the activity.

Total Implementation Defects

Total number of defects reported in the Implementation activity. This column shows the total of defects reported (Minor, Major and Extreme) **or** where no breakdown is available, the single value is shown here (if known).

Project Attributes:**2nd Hardware**

Where known, this is the secondary or other technology hardware platform used to build or enhance the software (i.e. that used for remainder of the build effort).

2nd Language

Where known, this is the secondary or other technology programming language used to build or enhance the software (i.e. that used for remainder of the build effort).

2nd Operating System

Where known, this is the secondary or other technology operating system used to build or enhance the software (i.e. that used for remainder of the build effort).

2nd Data Base System

Where known, this is the secondary or other technology database used to build or enhance the software (i.e. that used for remainder of the build effort), otherwise (if known) it is whether the project used a secondary DBMS.

2nd Component Server

Where known, this is the secondary or other technology object/component server used to build or enhance the software (i.e. that used for remainder of the build effort), otherwise (if known) it is whether the project used a secondary object/component server.

2nd Web Server

Where known, this is the secondary or other technology HTML/Web server used to build or enhance the software (i.e. that used for remainder of the build effort), otherwise (if known) it is whether the project used a secondary HTML/Web server.

2nd Message Server

Where known, this is the secondary or other technology E-Mail or message server used to build or enhance the software (i.e. that used for remainder of the build effort), otherwise (if known) it is whether the project used a secondary E-Mail or message server.

2nd Other Platform

Where known, this is any other component of the secondary or other technology used to build or enhance the software (i.e. that used for remainder of the build effort).

Hours per Role:

Project Manager Effort

This field contains the breakdown of Project Team Effort reported for Project Manager when provided in the submission.

Business Analyst Effort

This field contains the breakdown of Project Team Effort reported for Business Analyst when provided in the submission.

Software Architect Effort

This field contains the breakdown of Project Team Effort reported for Software Architect when provided in the submission.

User-Interface Effort

This field contains the breakdown of Project Team Effort reported for User-Interface when provided in the submission.

Graphic Artist Effort

This field contains the breakdown of Project Team Effort reported for Graphic Artist when provided in the submission.

Developer Effort

This field contains the breakdown of Project Team Effort reported for Developer/Programmer when provided in the submission.

QA/Tester Effort

This field contains the breakdown of Project Team Effort reported for QA/Tester when provided in the submission.

Training & Documentation Effort

This field contains the breakdown of Project Team Effort reported for Training & Documentation when provided in the submission.

Database Administrator Effort

This field contains the breakdown of Project Team Effort reported for Database Administrator when provided in the submission.

IT System Administrator Effort

This field contains the breakdown of Project Team Effort reported for IT System Administrator when provided in the submission.

Other Role (1)

This field contains a description for Other Role (1) when provided in the submission.

Other Role (1) Effort

This field contains the breakdown of Project Team Effort reported for Other Role (1) when provided in the submission.

Other Role (2)

This field contains a description for Other Role (2) when provided in the submission.

Other Role (2) Effort

This field contains the breakdown of Project Team Effort reported for Other Role (2) when provided in the submission.