

1
2

3
4
5
6

7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44



UN/CEFACT

**SIMPLE, TRANSPARENT AND EFFECTIVE PROCESSES
FOR GLOBAL BUSINESS**

Business Requirements Specification (BRS)

Business Domain: Contract Management

**Business Process: Project Schedule and Cost Performance
Management**

Document Identification:

**Title: Project Schedule and Cost Performance Management
International Standard**

Trade Facilitation and Business Working Group:

TBG6 – Architecture, Engineering and Construction Domain

Version: 0

Release: 1

Date: January 19, 2006

45 **Document History**
 46

| | |
|----------------------------|----------------------|
| Document Identifier | |
| Document Version | Version 0, Release 1 |
| Template Version | Version 1, Release 5 |
| Document Issue Date | January 19, 2006 |

47
 48
 49 **Document Summary**
 50

| | |
|-----------------------|--|
| Document Title | Project Schedule and Cost Performance Management International Standard |
| Owner | TBG6, PSCPM Working Group |
| Status | Draft This draft was prepared for the January 31, 2006 TBG6 interim working group meeting |

51
 52
 53 **Document Change History Log**
 54

| Date of Change | Version | Paragraph Changed | Summary of Changes |
|-----------------------|----------------|--------------------------|---------------------------|
| | | | |

55
 56
 57

Business Requirements Specification Table of Contents

| | | | |
|-----|----------|--|----|
| 58 | | | |
| 59 | | | |
| 60 | | | |
| 61 | 1. | PREAMBLE..... | 1 |
| 62 | 2. | REFERENCES..... | 1 |
| 63 | 3. | OBJECTIVE | 1 |
| 64 | 4. | SCOPE..... | 1 |
| 65 | 5. | BUSINESS REQUIREMENTS | 3 |
| 66 | 5.1. | BUSINESS PROCESS ELABORATION | 4 |
| 67 | 5.1.1. | The Actors | 4 |
| 68 | 5.1.2. | Project Initiation Business Use Case | 6 |
| 69 | 5.1.2.1. | Create Project | 6 |
| 70 | 5.1.3. | Project Reporting Business Use Cases | 8 |
| 71 | 5.1.3.1. | Report Project Performance..... | 8 |
| 72 | 5.1.3.2. | Provide Error Notice..... | 10 |
| 73 | 5.1.3.3. | Provide Update Notice | 11 |
| 74 | 5.1.4. | Project Modification Business Use Cases..... | 12 |
| 75 | 5.1.4.1. | Reset Project Baseline | 12 |
| 76 | 5.1.4.2. | Update Project Within Baseline..... | 14 |
| 77 | 5.1.5. | Project Close Out Business Use Cases..... | 15 |
| 78 | 5.1.5.1. | Cancel Project..... | 15 |
| 79 | 5.1.5.2. | Complete Project..... | 16 |
| 80 | 5.2. | BUSINESS INFORMATION FLOW DEFINITION | 18 |
| 81 | 5.2.1. | Provide Data..... | 18 |
| 82 | 5.2.2. | Provide Error Notice | 19 |
| 83 | 5.2.3. | Provide Update Notice | 20 |
| 84 | 5.3. | BUSINESS INFORMATION MODEL DEFINITION | 21 |
| 85 | 5.3.1. | List of Entities | 21 |
| 86 | 5.3.2. | Schedule Data..... | 25 |
| 87 | 5.3.3. | Cost Data..... | 26 |
| 88 | 5.3.3.1. | Reporting Structure | 27 |
| 89 | 5.3.3.2. | Control Account..... | 28 |
| 90 | 5.3.3.3. | Work Package | 29 |
| 91 | 5.3.4. | Contract and Project Summary Data | 30 |
| 92 | 5.3.5. | Funding Data..... | 31 |
| 93 | 5.3.6. | Auxiliary Data | 32 |
| 94 | 5.3.6.1. | Reporting Calendar | 32 |
| 95 | 5.3.6.2. | Schedule Calendar..... | 33 |
| 96 | 5.3.6.3. | Reporting Structure | 33 |
| 97 | 5.3.6.4. | Resources | 34 |
| 98 | 5.3.6.5. | Variance Thresholds | 34 |
| 99 | 5.4. | BUSINESS RULES..... | 35 |
| 100 | 5.5. | DEFINITION OF TERMS..... | 35 |
| 101 | | | |
| 102 | | | |
| 103 | | | |
| 104 | | | |
| 105 | | | |

106 **1. PREAMBLE**

107 The document authority is TBG6, Architecture, Engineering, and Construction Domain.

108

109 The document structure is based on the UN/CEFACT Business Requirements Specification
110 Documentation Template, Version 1, Release 5.

111

112 The document was created by the TBG6 Project Schedule and Cost Performance Management (PSCPM)
113 working group and will be approved by the full TBG6 working group in collaboration with TBG1, Supply
114 Chain Domain.

115 **2. REFERENCES**

- 116 • UN/CEFACT Modeling Methodology (CEFACT/TMWF/N090R10, November 2001)
- 117 • UN/CEFACT ebXML Core Components Technical Specification Version 2.01
- 118 • UN/CEFACT Business Requirements Specification Documentation Template, Version 1, Release
119 5
- 120 • UN/CEFACT TBG Library 2005_10_07
- 121 • UML Version 2.0
- 122 • EDIFACT PROTAP (Project Tasks Planning) and PROCST (Project Cost Reporting) messages
- 123 • ANSI X12 806 (Project Schedule Reporting) and 839 (Project Cost Reporting) transaction sets

124 **3. OBJECTIVE**

125 The objective is to enable the ability for the various entities involved in the execution of a project to
126 exchange relevant project management related schedule and cost data throughout the life of a project
127 using a standardized information exchange process and data content framework.

128 **4. SCOPE**

129 Project schedule and cost performance management is part of the contract management business
130 domain. Project schedule and cost performance management data exchange occurs once a contract for
131 a project has been approved, funded, and authorization to proceed has been given by a client. This data
132 exchange continues throughout the life of the project until the project naturally concludes or it is
133 cancelled.

134

135 The project schedule and cost performance management international standard focuses on exchanging
136 the relevant data for the four main purposes listed below.

137

- 138 1. Establishing the schedule and cost performance management baseline. The baseline is
139 established as quickly as possible after contract award. This baseline provides the basis for
140 measuring work performance over the life of the project.
141
- 142 2. Providing schedule progress and cost performance data on a periodic basis (such as weekly or
143 monthly) for the purpose of reporting the work progress in schedule and cost terms in comparison
144 to the schedule and cost performance measurement baseline. This periodic schedule and cost
145 information is used to determine if the project is ahead or behind schedule, or if the project is over
146 or under running the cost plan (the budget). It can also be used to identify high risk or problem
147 areas for the project and for planning future work based on project performance to date.
148
- 149 3. Providing a means to incorporate changes to the schedule and cost baseline (contract changes)
150 as well as other changes required to keep the current working schedule and future cost plan up to
151 date.
152
- 153 4. Capturing end of contract schedule and cost data. Historical project performance data can be
154 used as a basis for estimating the schedule and cost of future projects.
155

156 This project schedule and cost data exchange includes the many tiers of suppliers, prime contractors, and
157 the end client. Suppliers, prime contractors, and end clients may also be required to provide periodic
158 project performance data to internal entities for financial portfolio management purposes.
159

160 The focus of this data exchange is world wide across a number of industries including, but not limited to,
161 government functional entities (such as defense, energy, transportation, and social services), aerospace
162 and defense, engineering and construction, oil and gas, utility (such as energy, telecom, and municipal
163 services), scientific research and development, and information technology.
164

165 The data categories included in this exchange are summarized below and further defined in Section 5.3,
166 Business Information Model Definition.
167

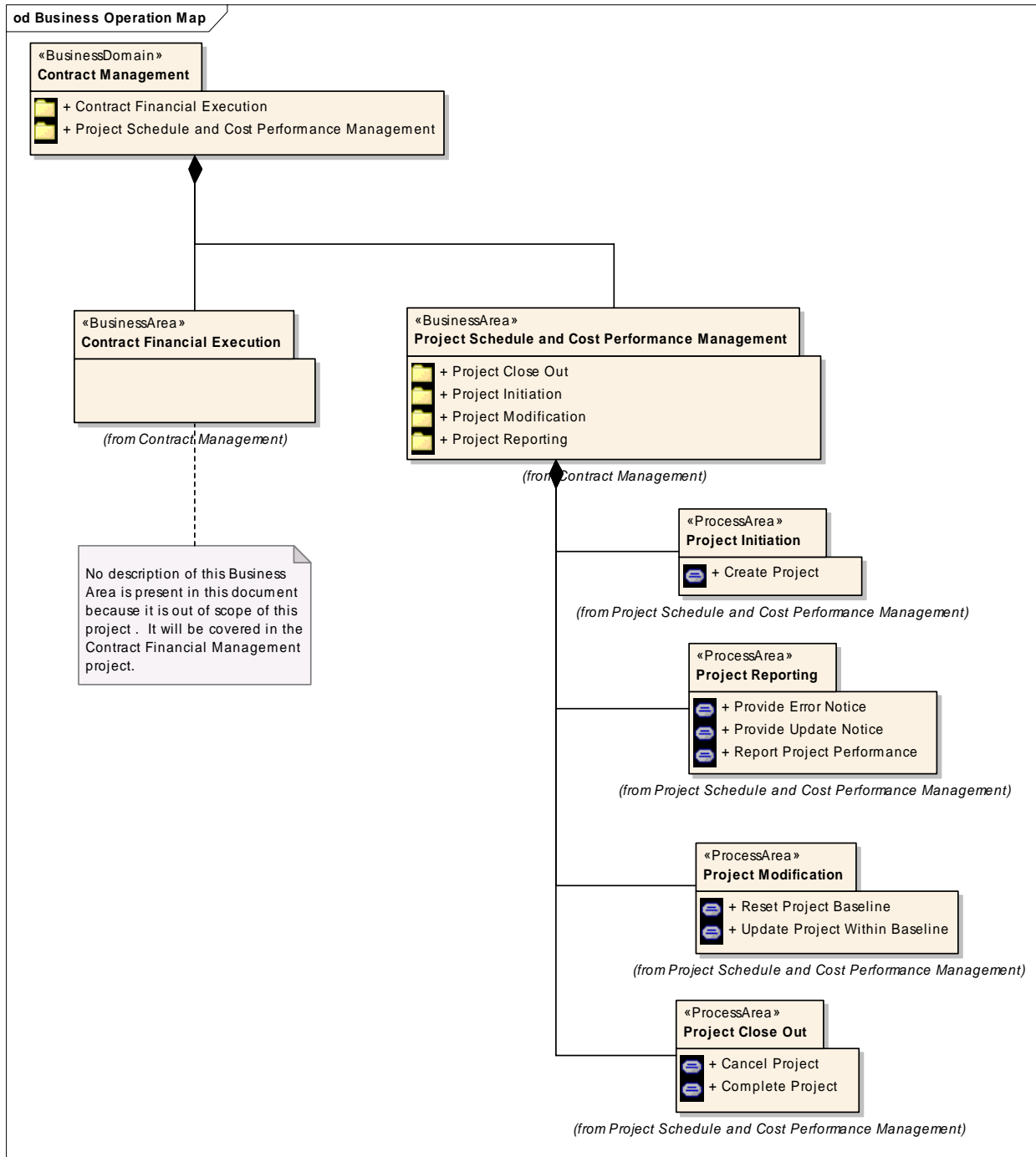
- 168 • Schedule data which includes work task activities, milestones, activity relationships, and activity
169 resource assignments.
170
- 171 • Cost data which includes time phased or summary budget costs, actual costs, earned value
172 costs, and estimate to complete costs and related value type details such as labor hours, material
173 units or lots, direct costs, indirect costs (overheads), and total costs.
174
- 175 • Contract and project summary data which includes details such as contract reference numbers,
176 type of contract, procuring entity, and summary cost values and schedule dates.
177
- 178 • Funding data which includes specifics about the source of funds (can be one or more entities)
179 and the amount of funds provided over time.
180
- 181 • Related auxiliary data that is used to code or organize the schedule and cost data for planning
182 and reporting purposes. Auxiliary data includes:
 - 183 ○ Accounting calendar fiscal periods for reporting cost details;
 - 184 ○ Schedule calendar (identifies work days for scheduling tasks);
 - 185 ○ Reporting structures (work breakdown structure, organization breakdown structure,
186 milestone hierarchy, resource breakdown structure);
 - 187 ○ Other single level reporting structures used to organize, sort, and select data such as
188 contract line item numbers, phase, location, supplier, and so forth;
 - 189 ○ Resources used for work task assignments (who or what is required to complete work on
190 the project);
 - 191 ○ Variance thresholds (used for exception reporting; when a cost or schedule variance
192 exceeds a cost or percent limitation, it means there is a problem on the project).
193

194 Note: Various US government agencies such as the Department of Defense (DOD), Department of
195 Energy (DOE), and NASA have paper forms, data item descriptions (DID), and other formal documents
196 that list the required data content for project performance management reporting such as the Contract
197 Performance Report (CPR), Contract Funds Status Report (CFSR), and Integrated Master Schedule
198 (IMS) data item descriptions. These are usually included in the contract data requirements list for the
199 contractor. In addition, US government agencies must submit yearly program/project business cases to
200 the Office of Management and Budget (OMB) (Exhibit 300 forms). This Business Requirements
201 Specification and related Requirements Mapping Specification include the business and data element
202 detail required to support the formal reporting requirements for US government agencies. Other
203 international ministries of defense such as the UK, Australia, and Canada use similar reporting
204 requirements.

205 **5. BUSINESS REQUIREMENTS**

206 The overall business requirements for this data exchange are illustrated in the business operation map
 207 below and further discussed in Section 5.1, Business Process Elaboration.

208
 209 There is a relationship between Project Schedule and Cost Performance Management and Contract
 210 Financial Execution within the Contract Management business domain. A typical example of this
 211 relationship is progress payments for items completed or delivered. The type of contract will determine
 212 how the contractor is paid for their effort, but there is typically some relationship between project
 213 performance (completing contracted work) and payment for that effort.
 214



215

216 **5.1. Business Process Elaboration**

217 **5.1.1. The Actors**

218 The roles of the various parties involved in the execution of project are described and illustrated below.
219 These actors are the initiators or participants in the use cases that follow.

220
221 **Data Consumers**

222 The data consumers are the entities that are responsible for managing a project and/or have the authority
223 to obligate funds (issue a contract) to a contractor or supplier to perform work. They are responsible for
224 collecting the project status and performance data (they receive the data) for analysis on a periodic basis
225 (weekly or monthly). These data consumers can include entities such as:

- 226
227
228 • Public or private client. This can be any commercial entity that has the authority to commit public
229 or private money for one or more contractors to perform a service or to produce a product.
- 230
231 • Government Agency. This can be any government agency that has the authority to commit
232 government money for one or more contractors to perform a service or to produce a product.
- 233
234 • Contractor. This is any commercial entity responsible for doing the work as defined in a client's
235 project statement of work. A public or private client or government agency contracts with this
236 entity to perform a service or to produce a product.
- 237
238 • Program or Project Manager. This can be a person or program management office internal to a
239 public or private client, government agency, or contractor with the responsibility and authority to
240 manage a program or project. They can also be an external entity hired for the specific purpose
241 of managing a project for a given client.
- 242
243 • Internal Management. This is any internal management entity that wants to review the status or
244 performance of a given project. For a government agency, it could be the head of the agency or
245 other oversight entities such as the US Office of Management and Budget (OMB) that have
246 funding authority. For a corporation, this is upper level management or financial management
247 that is responsible for assessing the performance of a project (project portfolio analysis).

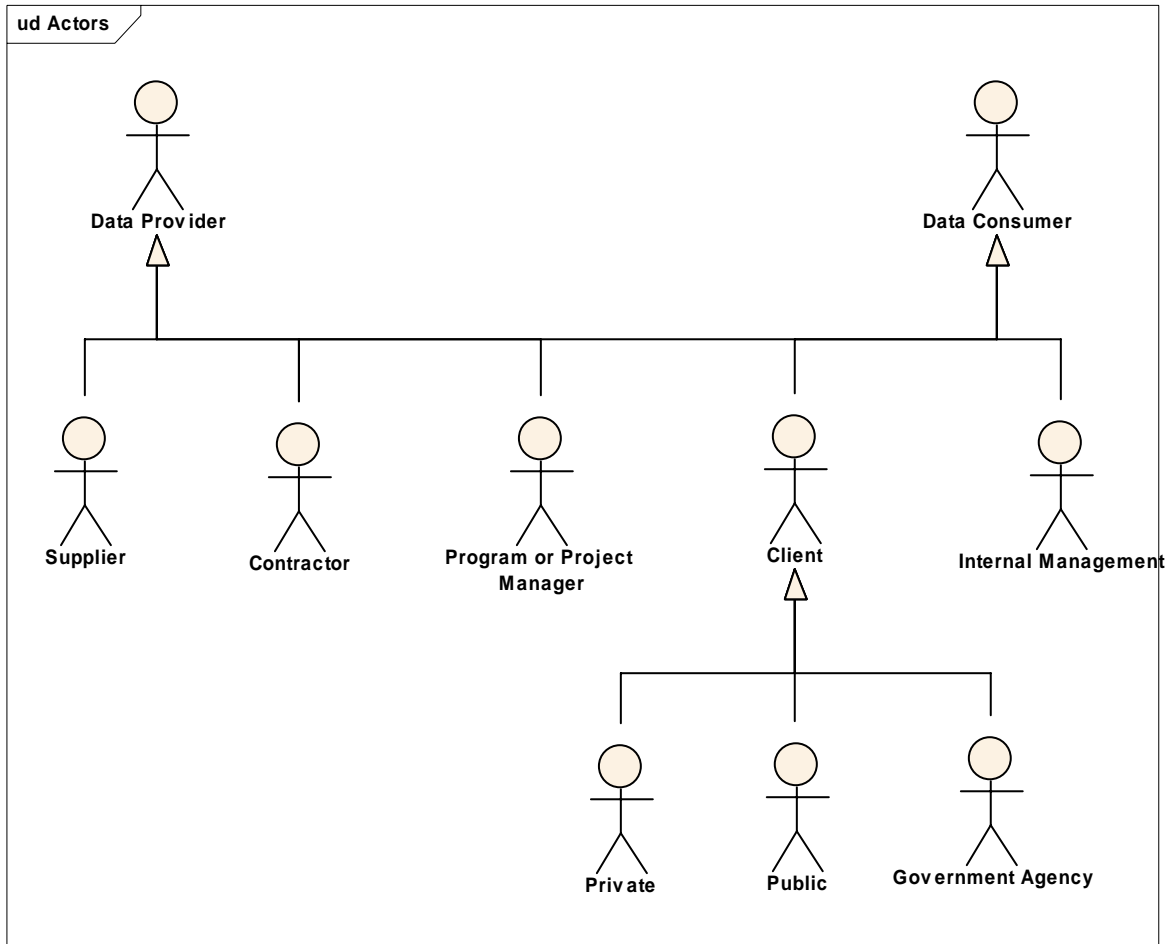
248
249 **Data Providers**

250 Data providers are the entities that are responsible for doing the work or aggregating the project data for
251 an end client. The data providers can include entities such as:

- 252
253
254 • Supplier. This is any commercial entity or independent contractor (a person) responsible for
255 providing a service or producing a product for a contractor (the data consumer). There can be
256 many tiers of suppliers and contractors. For the purposes of this document, teaming partners
257 (two or more companies bid on a contract as a joint team), are grouped into the supplier category
258 because one contractor in the teaming relationship functions as the lead contractor. Teaming
259 partners must provide their data to the lead contractor much like a supplier though their schedule
260 and cost data are likely to be more integrated with the lead contractor's than supplier's data would
261 be.
- 262
263 • Contractor. This is any commercial entity responsible for doing the work as defined in a client's
264 project statement of work. They have the role of aggregating their project data with supplier data
265 to produce the required status and performance data to another higher level contractor, public or
266 private client, government agency, or internal management.
- 267
268 • Program or Project Manager. This is the internal or external entity (person or office) responsible
269 for managing the program/project for a public entity, private corporation, or a government agency.

270 They have the role of aggregating program data to produce required status and performance data
271 for internal management including any higher level funding authority or financial manager, or for a
272 public or private client.
273

274 The various actors involved in the project schedule and cost performance data exchange are illustrated
275 below. Note that an actor can function as a data provider as well as a data consumer. For example, a
276 contractor is a data consumer when they pull in supplier schedule and cost performance data for use in
277 their project management control system. They are also a data provider when they convey consolidated
278 schedule and cost performance data to their end client or to internal management who is the data
279 consumer.
280



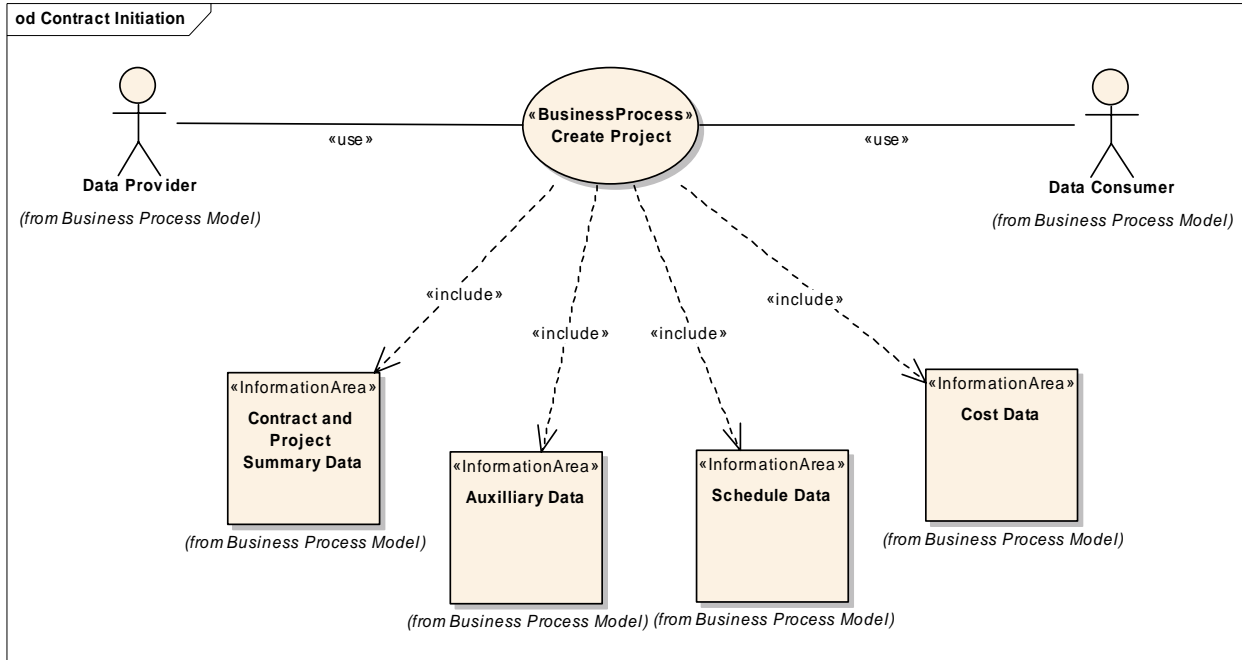
281
282
283

284 **5.1.2. Project Initiation Business Use Case**

285 This use case applies once a contract has been awarded and authorization to proceed as been given by
 286 the end client.

287 **5.1.2.1. Create Project**

288



289
290

| Business Process Use Case | |
|----------------------------|---|
| Name | Create Project |
| Use Case ID Number | PSCPM-PI-1 |
| Description | <p>The participants in a new contract award exchange applicable data (all parties can send and receive data) once authorization to proceed on a new project has been given.</p> <p>This is a data transmission of selected data subsets during the project start up phase before the schedule and cost baselines are set (a short time frame right after contract award).</p> <p>The purpose is to exchange the data components needed to begin developing the schedule and cost baselines in a collaborative type of environment. There are no set timetables for the data exchange, they occur when data updates need to be shared between the various parties.</p> |
| Initiating Actor | The data provider |
| Participating Actor | The data consumer |
| Event Flow | <p><u>Main Scenario</u></p> <ol style="list-style-type: none"> 1. Data provider sends desired data subset to participating party. 2. Party receiving the data acknowledges receipt of the data subset submission. 3. Party receiving the data validates the content of the data submission. <p>Example 1: The client sends the contract work breakdown structure</p> |

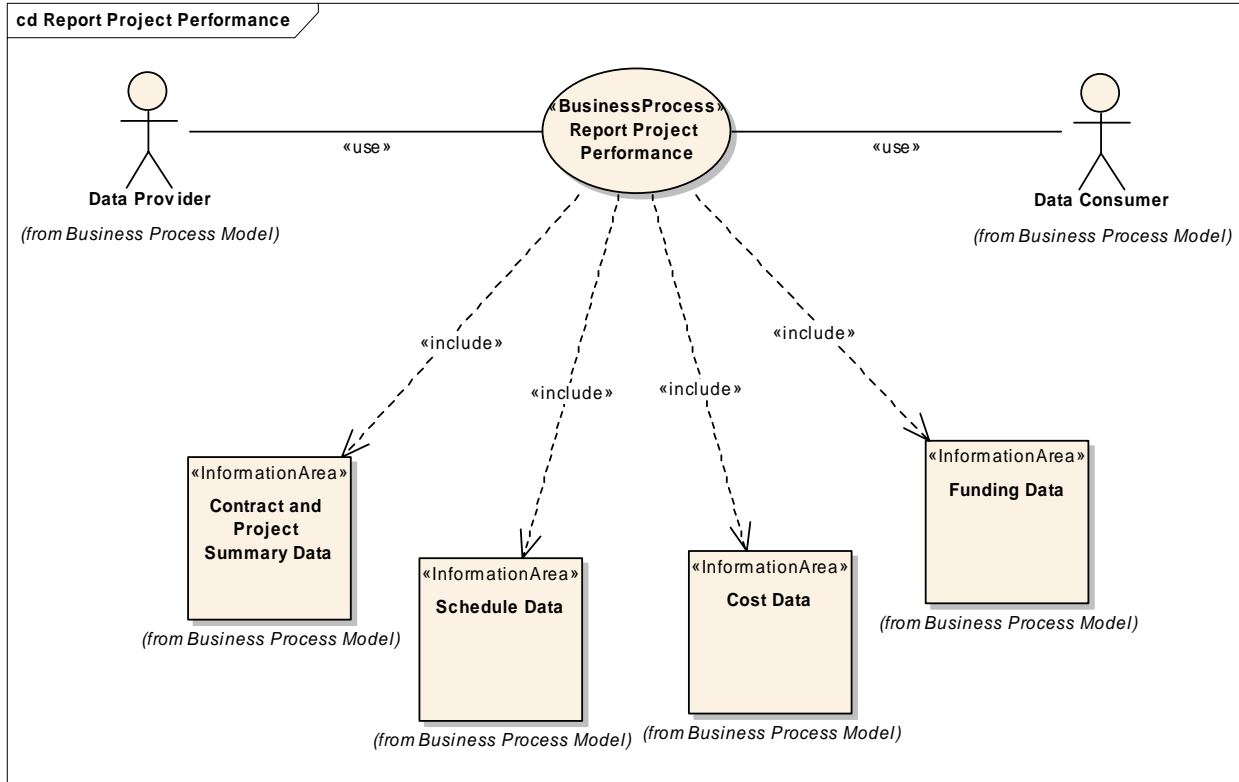
| | |
|---|---|
| | <p>and contractual milestones with dates to the contractor.</p> <p>Example 2: Contractor sends a preliminary project work breakdown structure or contractual milestones with dates to a supplier for initial project planning and scheduling.</p> <p>Example 3: Supplier sends preliminary schedule data or time phased budget data to the contractor for incorporation into their environment.</p> |
| Expected Outcome | The party receiving the data processes the data for use in their environment. |
| Exception | Data content exceptions are handled with a Provide Error Notice (PSCPM-PR-2). |
| Business Process Data Categories | <ul style="list-style-type: none"> • Summary contract data • Auxiliary data <ul style="list-style-type: none"> ○ Reporting structure data (work breakdown structure, milestone hierarchy) ○ Single level reporting structures used for selecting and sorting data ○ Calendars (cost reporting and schedule) ○ Variance thresholds • Network schedule data (work tasks, milestones, relationships) • Network schedule data with resource assignments (resource amounts assigned to activities) • Period based cost data (budget) |

292 **5.1.3. Project Reporting Business Use Cases**

293 These use cases apply once work begins on the project and the entity performing the work periodically
 294 assesses their work progress over the life of the project. The intent is to provide management visibility to
 295 all project stakeholders into what is currently going on with the project and how well the project is
 296 performing to the original schedule and cost plan (the baseline).

297 **5.1.3.1. Report Project Performance**

298 This is the most typical data exchange that occurs throughout the life of the project – collecting and
 299 providing current reporting period schedule status and cost performance data to another project
 300 stakeholder.
 301



302
303

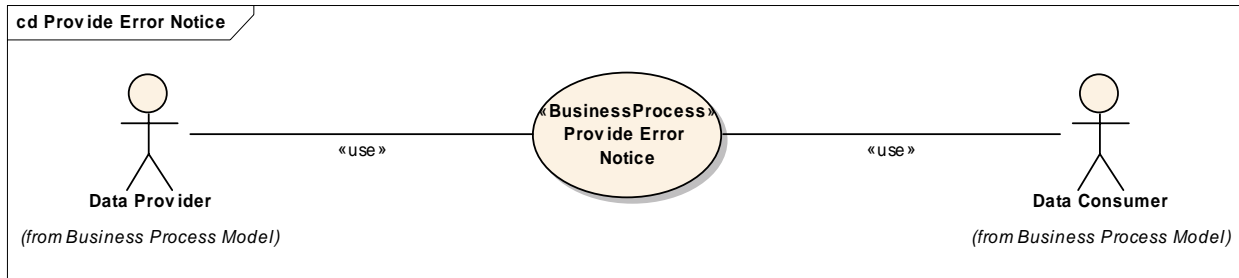
| Business Process Use Case | |
|---------------------------|---|
| Name | Report Project Performance |
| Use Case ID Number | PSCPM-PR-1 |
| Description | <p>A supplier, contractor, or program manager sends current reporting period project schedule status and cost performance data or funding data to an external client on a periodic basis. Or, a contractor, program manager, or government agency sends current reporting period project schedule status and cost performance data to internal management on a periodic basis.</p> <p>This is a data transmission of a complete report set or subsets for the current reporting period.</p> <p>The purpose is to provide current project status and performance data on a regular, periodic basis to an external or internal data consumer on a set timetable such as monthly. Contractual documents or internal management define what schedule status and cost performance data</p> |

| | |
|---|---|
| | must be made available. |
| Initiating Actor | The data provider |
| Participating Actor | The data consumer |
| Event Flow | <p><u>Main Scenario</u></p> <ol style="list-style-type: none"> 1. Data provider collects status and performance data. 2. Data provider sends data to the data consumer. 3. Data consumer acknowledges receipt of data submission. 4. Data consumer validates the content of the data submission. <p>Example 1: Supplier sends current reporting period actual costs and earned value costs along with milestone status dates to the contractor.</p> <p>Example 2: Contractor incorporates supplier updates into their environment. Contractor sends cumulative to date and at complete costs (budget, actual, earned value, estimate at complete) and future staffing estimates to their client along with milestone status dates.</p> <p><u>Alternate Scenario</u></p> <ol style="list-style-type: none"> 1. Data provider collects status/performance data subset. 2. Data provider sends data subset to the data consumer. 3. Data consumer acknowledges receipt of data submission. 4. Optional. Data consumer validates the content of the data submission. 5. Steps 1 to 3 are repeated until a complete data set has been sent. A data set is considered complete when: <ol style="list-style-type: none"> a. All required parts have been received, or b. A prearranged deadline has passed, or c. An explicit completion notice has been received by the data consumer. 6. Data consumer validates the content of the complete data submission. <p>Example: In this scenario, the data provider sends the schedule status or cost performance data in chunks. When all the data chunks are received, or when a deadline occurs, the receiving party processes the data they have received.</p> |
| Expected Outcome | <ol style="list-style-type: none"> a. Contractor receives supplier data for use in their environment. b. End client receives data for use in their environment. c. Internal data consumer receives data for use in their environment. |
| Exception | Data content exceptions are handled with a Provide Error Notice (PSCPM-PR-2). |
| Business Process Data Categories | <ul style="list-style-type: none"> • Summary contract data as applicable (include updates as a result of any change orders since the last performance report) • Network schedule data (work tasks, milestones, relationships) • Current reporting period summary cost data (current period, cumulative to date, at complete budget, earned value, actual, estimate to/at complete) • Period based cost data where applicable <ul style="list-style-type: none"> ○ Budget (contractor baseline changes) ○ Estimate (contractor equivalent heads - staffing) ○ Actual (supplier – as an alternative to cum/at complete data) ○ Earned value (supplier – as an alternative to cum/at complete data) • Funding data |

304

5.1.3.2. Provide Error Notice

306



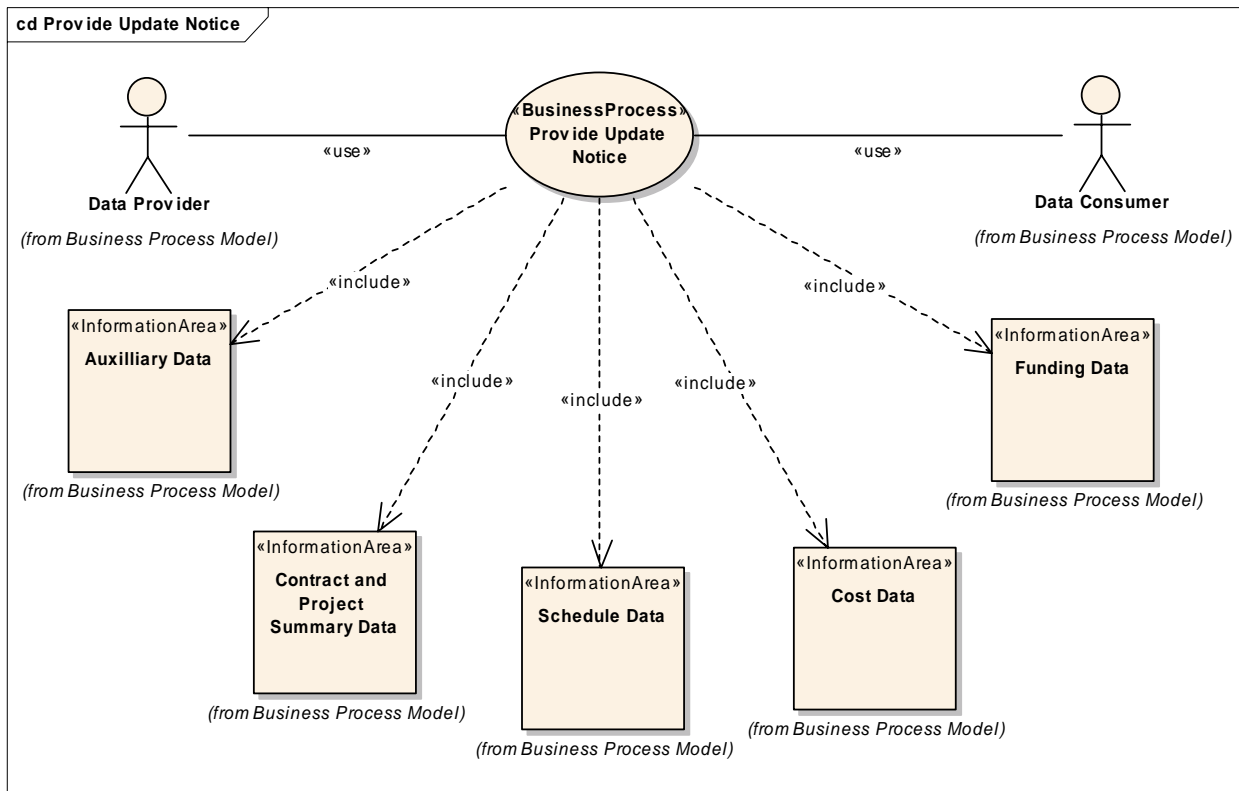
307
308

| Business Process Use Case | |
|---|---|
| Name | Provide Error Notice |
| Use Case ID Number | PSCPM-PR-2 |
| Description | <p>The data consumer discovers an error in the data sent by a data provider. The data consumer sends an error notice to the data provider identifying the data in error.</p> <p>This is a data transmission that identifies what data is in error from a previous transmission.</p> <p>The purpose is to initiate a correction transmission from the data provider.</p> |
| Initiating Actor | The data consumer |
| Participating Actor | The data provider |
| Event Flow | <p><u>Main Scenario</u></p> <ol style="list-style-type: none"> 1. Data consumer process rejects data content. 2. Data consumer identifies the data content causing the error. 3. Data consumer sends an error notice identifying items in error to the data provider. 4. Data provider acknowledges receipt of error notice. <p>Example: Contractor notices a supplier is using incorrect milestone hierarchy codes for a given set of milestones. Contractor sends an error notice identifying the items in error. Supplier replies with a Provide Update Notice (PSCPM-PR-3) to correct the items in error.</p> |
| Expected Outcome | Data provider responds with a Provide Update Notice (PSCPM-PR-3) to the data consumer to correct the items in error. |
| Exception | N/A |
| Business Process Data Categories | Can be any category of data. |

309

310
311

5.1.3.3. Provide Update Notice



312
313

| Business Process Use Case | |
|----------------------------|--|
| Name | Provide Update Notice |
| Use Case ID Number | PSCPM-PR-3 |
| Description | <p>The data provider sends an update to a data consumer to modify data previously sent. The data sent can identify data to be added, data to be replaced (change), or data to be deleted. This update can be in response to an error notice from the data consumer to correct data in error; or it can be updates that the data provider deems necessary to complete or update any previous exchange of data.</p> <p>This is a data transmission of selected data. It may be a data subset or a smaller (identifiable) chunk of data.</p> |
| Initiating Actor | The data provider |
| Participating Actor | The data consumer |
| Event Flow | <p><u>Main Scenario</u></p> <ol style="list-style-type: none"> 1. Data provider identifies data subset to be updated. 2. Data provider sends updated data subset to data consumer. 3. Data consumer acknowledges receipt of data subset. 4. Data consumer validates the content of the data submission. <p>Example 1: Supplier sends corrected data based on an error notice previously sent from their client. The new data replaces the data in error.</p> <p>Example 2: Contactor notices that they included the wrong set of cost data for small subset of the work breakdown structure cost</p> |

| | |
|---|--|
| | <p>performance report they provided to their client. They send an update notice to the client that replaces the incorrect data with the correct data.</p> <p>Example 3: Contractor notices they forgot to delete a planning package activity that they replaced with detailed activities. They send an update notice to the client that deletes the planning package activity and updates the applicable activity relationships.</p> |
| Expected Outcome | Data consumer receives updated data for use in their environment. |
| Exception | Data content exceptions are handled with a Provide Error Notice (PSCPM-PR-2). |
| Business Process Data Categories | Can be any category of data. |

314

315 5.1.4. Project Modification Business Use Cases

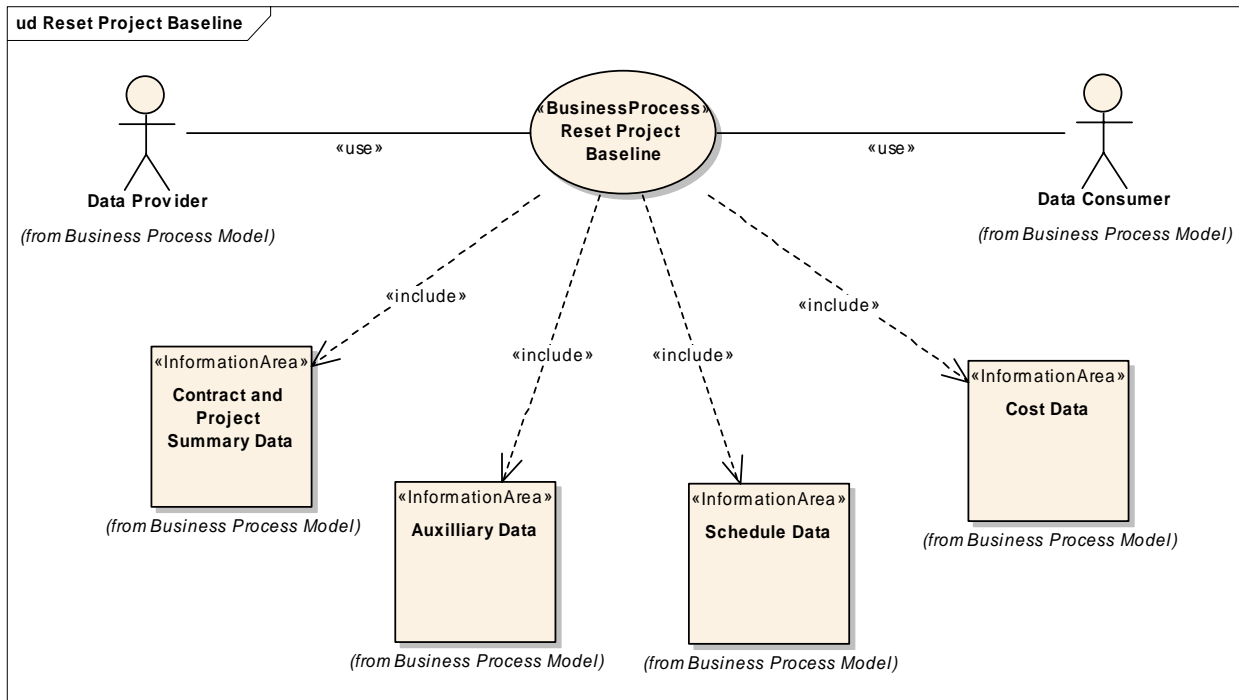
316 These use cases apply when schedule or cost plan changes need to be exchanged between the various
 317 project stakeholders.

318
 319 These can be extensive changes as a result of a contract change. These types of changes require client
 320 approval and require creating a revised schedule and cost baseline. Typical examples include a change
 321 in the scope of work or an unrecoverable schedule or cost condition that requires replanning the
 322 remaining work.

323
 324 Project modification can be also be more routine changes that have no impact on the baseline plan; the
 325 project participants simply need to exchange updated schedule and cost plan details for the remaining
 326 work on the project.

327 5.1.4.1. Reset Project Baseline

328

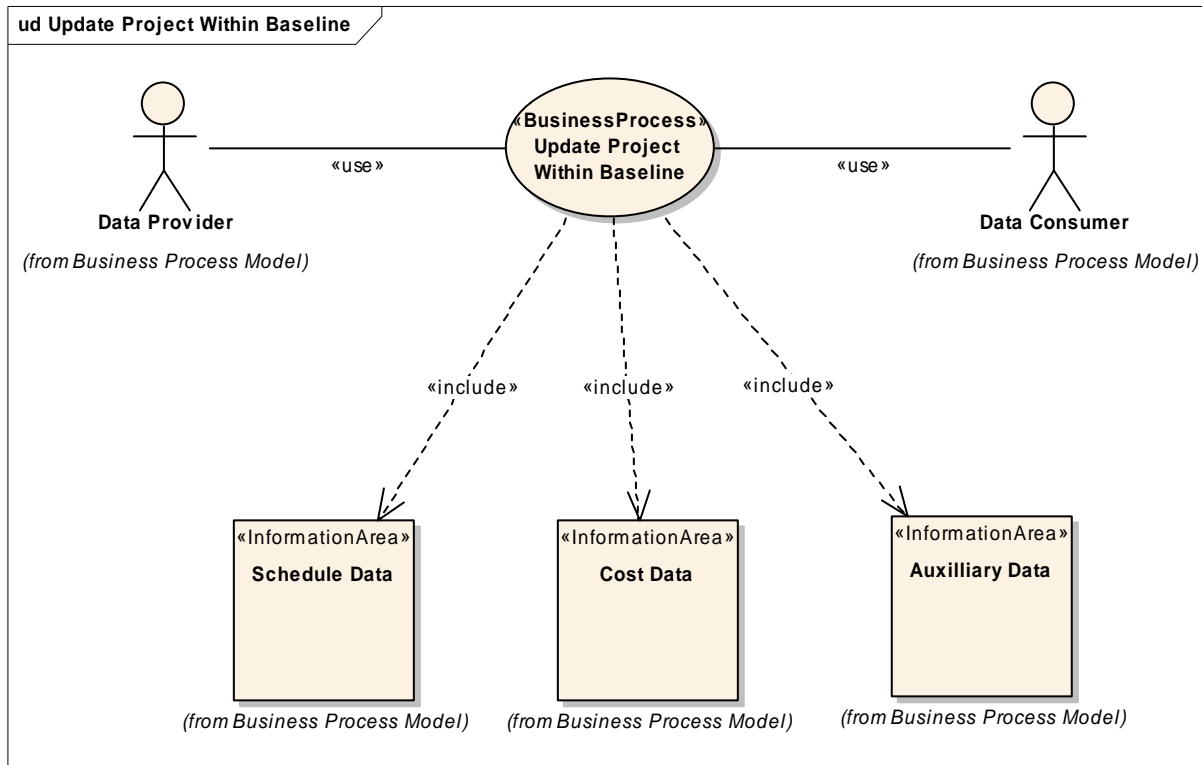


329
 330

| Business Process Use Case | |
|---|--|
| Name | Reset Project Baseline |
| Use Case ID Number | PSCPM-PM-1 |
| Description | <p>The participants in a change order action exchange applicable data (all parties can send and receive data) when authorization to reset a project schedule and cost baseline has been given by the client.</p> <p>This is a data transmission of selected data subsets required to reset the project baseline. This reset action may be required as a result of a client directed change (scope of work or funding changed) or because the project has an unrecoverable schedule or cost condition.</p> <p>The purpose is to exchange the data components needed to reset the baseline in a collaborative type of environment. There are no set timetables for the data exchange, they occur when data updates need to be shared between contracting parties. This is similar to the Create Project (PSCPM-PI-1) use case.</p> |
| Initiating Actor | The data provider |
| Participating Actor | The data consumer |
| Event Flow | <p><u>Main Scenario</u></p> <ol style="list-style-type: none"> 1. Data provider sends desired data subset to participating party. 2. Party receiving the data acknowledges receipt of data subset submission. 3. Party receiving the data validates the content of the data submission. <p>Example 1: The program office sends change order specifics (such as summary contract cost data) to the contractor.</p> <p>Example 2: Contractor sends updated contractual milestone dates to a supplier based on a revised baseline plan.</p> <p>Example 3: Supplier sends updated schedule data or time phased budget data to the contractor for incorporation into their environment.</p> |
| Expected Outcome | The party receiving the data processes the data for use in their environment. |
| Exception | Data content exceptions are handled with a Provide Error Notice (PSCPM-PR-2). |
| Business Process Data Categories | <ul style="list-style-type: none"> • Summary contract data including change order data • Auxiliary data <ul style="list-style-type: none"> ○ Reporting structure data (work breakdown structure, milestone hierarchy) • Network schedule data (work tasks, milestones, relationships) • Network schedule data with resource assignments (resource amounts assigned to activities) • Period based cost data (budget, estimate to complete) |

332
333

5.1.4.2. Update Project Within Baseline



334
335

| Business Process Use Case | |
|----------------------------|--|
| Name | Update Project Within Baseline |
| Use Case ID Number | PSCPM-PM-2 |
| Description | <p>The participants in a project exchange applicable data (all parties can send and exchange data) when minor changes and updates need to be incorporated into the current working schedule or cost estimate to complete data. These updates incorporate normal maintenance or other minor changes that do not impact the schedule and cost baselines. An example would be replacing a planning package with detailed work package tasks (and related cost details).</p> <p>This is a data transmission of selected data subsets during the execution phase of a project.</p> <p>The purpose is to exchange the data components needed to keep the current working schedule (the future work plan) or estimate to complete data up to date based on what has occurred to date on the project. There are no set timetables for the data exchange, they occur when data updates need to be shared between contracting parties.</p> |
| Initiating Actor | The data provider |
| Participating Actor | The data consumer |
| Event Flow | <p><u>Main Scenario</u></p> <ol style="list-style-type: none"> 1. Data provider sends desired data subset to participating party. 2. Party receiving the data acknowledges receipt of data subset submission. 3. Party receiving the data validates the content of the data submission. |

| | |
|---|--|
| | <p>Example 1: Contractor sends updated product delivery dates (schedule milestones) to a supplier.</p> <p>Example 2: Supplier sends updated estimate to complete cost data to the contractor for incorporation into their environment.</p> |
| Expected Outcome | The party receiving the data processes the data for use in their environment. |
| Exception | Data content exceptions are handled with a Provide Error Notice (PSCPM-PR-2). |
| Business Process Data Categories | <ul style="list-style-type: none"> • Network schedule data (work tasks, milestones, relationships) • Network schedule data with resource assignments (resource amounts assigned to activities) • Period based cost data (typically estimate to complete, but may include rolling wave budget updates where planning packages are replaced) • Auxiliary data <ul style="list-style-type: none"> ○ Variance Thresholds |

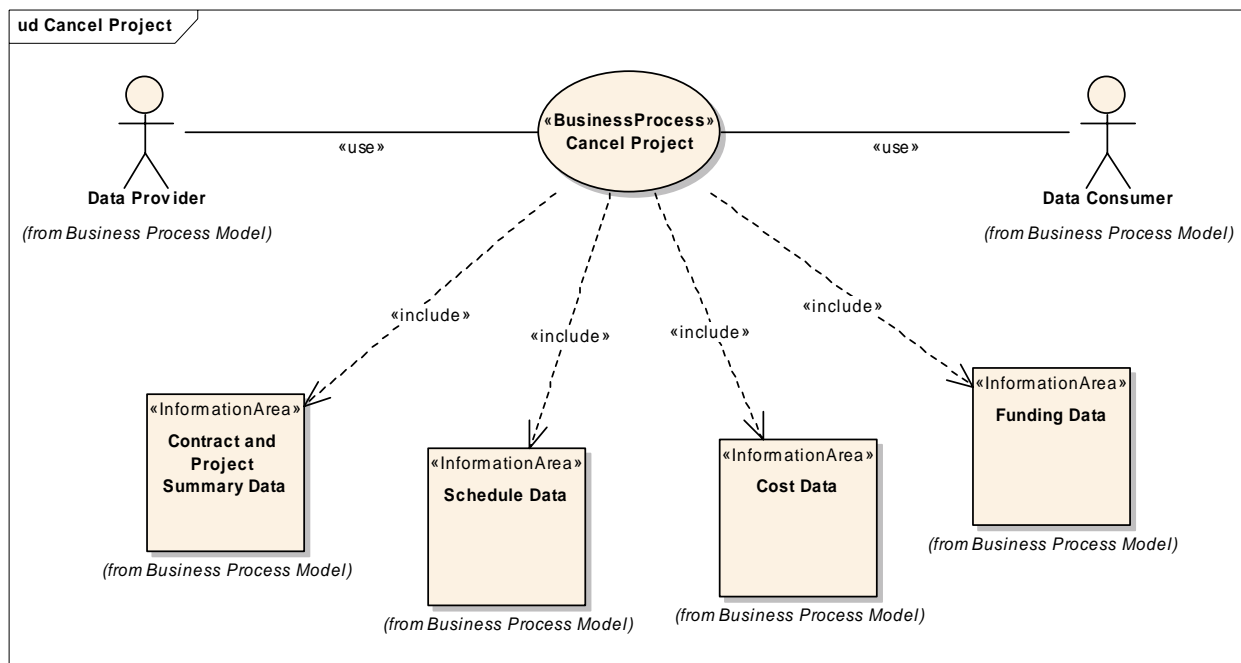
336

337 5.1.5. Project Close Out Business Use Cases

338 These use cases apply when the project has come to an end (i.e., all contract objectives have been met),
339 either naturally or because the end client has cancelled the contract.

340 5.1.5.1. Cancel Project

341



342
343

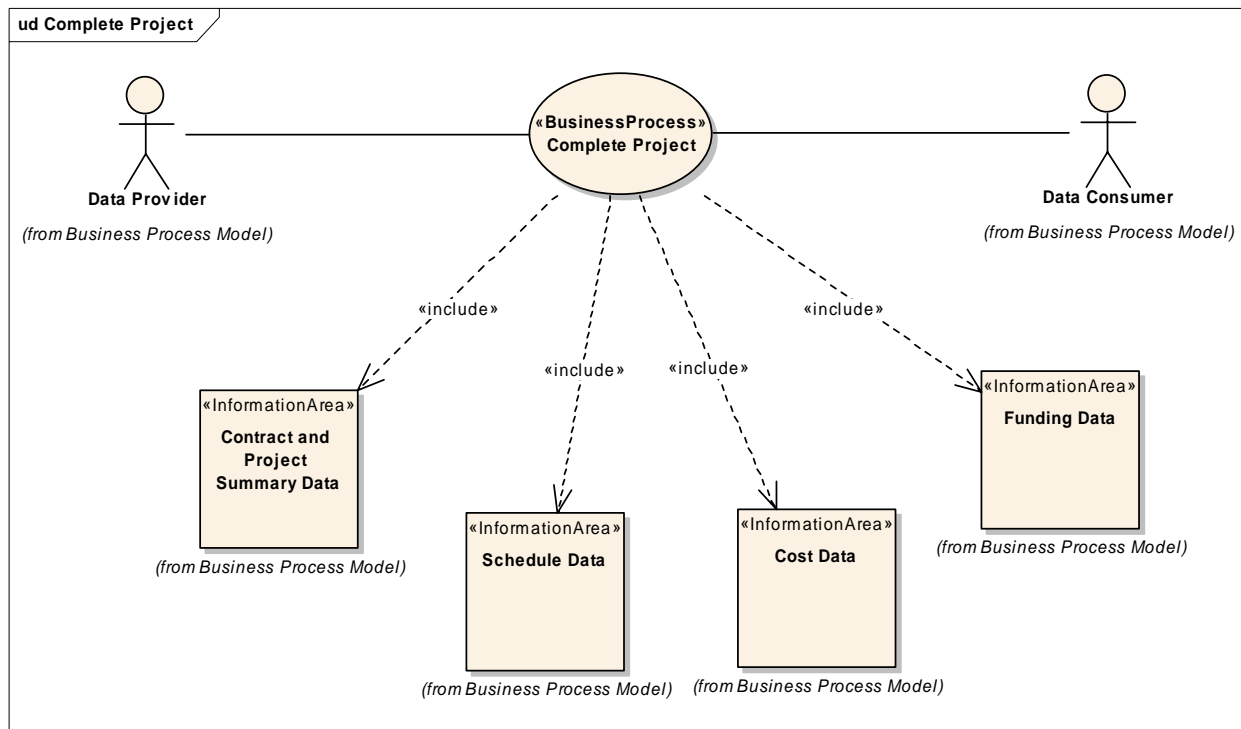
| Business Process Use Case | |
|---------------------------|---|
| Name | Cancel Project |
| Use Case ID Number | PSCPM-PC-1 |
| Description | The participants in a project exchange data once a cancellation notice has been given to stop work. |

| | |
|---|---|
| | <p>This is a data transmission of selected data subsets.</p> <p>The purpose is to capture schedule status, actual costs, and remaining obligation data related to the cancellation of the project. There may be a set timetable for the end client to receive all applicable data.</p> |
| Initiating Actor | The data consumer |
| Participating Actor | The data provider |
| Event Flow | <p><u>Main Scenario</u></p> <ol style="list-style-type: none"> 1. Data provider sends required data subset to data consumer. 2. Data consumer acknowledges receipt of data subset submission. 3. Data consumer validates the content of the data submission. |
| Expected Outcome | Data consumer receives data for use in their environment. |
| Exception | Data content exceptions are handled with a Provide Error Notice (PSCPM-PR-2). |
| Business Process Data Categories | <ul style="list-style-type: none"> • Summary contract data • Network schedule data (final deliverables) • Final period based cost data (actual) • Funding data (required for contract close out to determine what funds have been expended so far and amount of cancellation obligations) |

344

345 5.1.5.2. Complete Project

346



347

348

| Business Process Use Case | |
|---------------------------|------------------|
| Name | Complete Project |
| Use Case ID Number | PSCPM-PC-2 |

| | |
|---|---|
| Description | <p>The participants in a project exchange data when a project has been completed (all final deliverables have been received and accepted by the end client).</p> <p>This is a data transmission of selected data subsets.</p> <p>The purpose is to capture final schedule and actual cost data at the end of the project (can be used for estimating the cost of similar projects). There may be a set timetable for the end client to receive all applicable data.</p> |
| Initiating Actor | The data consumer |
| Participating Actor | The data provider |
| Event Flow | <p><u>Main Scenario</u></p> <ol style="list-style-type: none"> 1. Data provider sends required data subset to data consumer. 2. Data consumer acknowledges receipt of data subset submission. 3. Data consumer validates the content of the data submission. |
| Expected Outcome | Data consumer receives data for use their environment. |
| Exception | Data content exceptions are handled with a Provide Error Notice (PSCPM-PR-2). |
| Business Process Data Categories | <ul style="list-style-type: none"> • Summary contract data • Final network schedule data (work tasks, milestones, relationships) • Final period based cost data (actual) • Funding data |

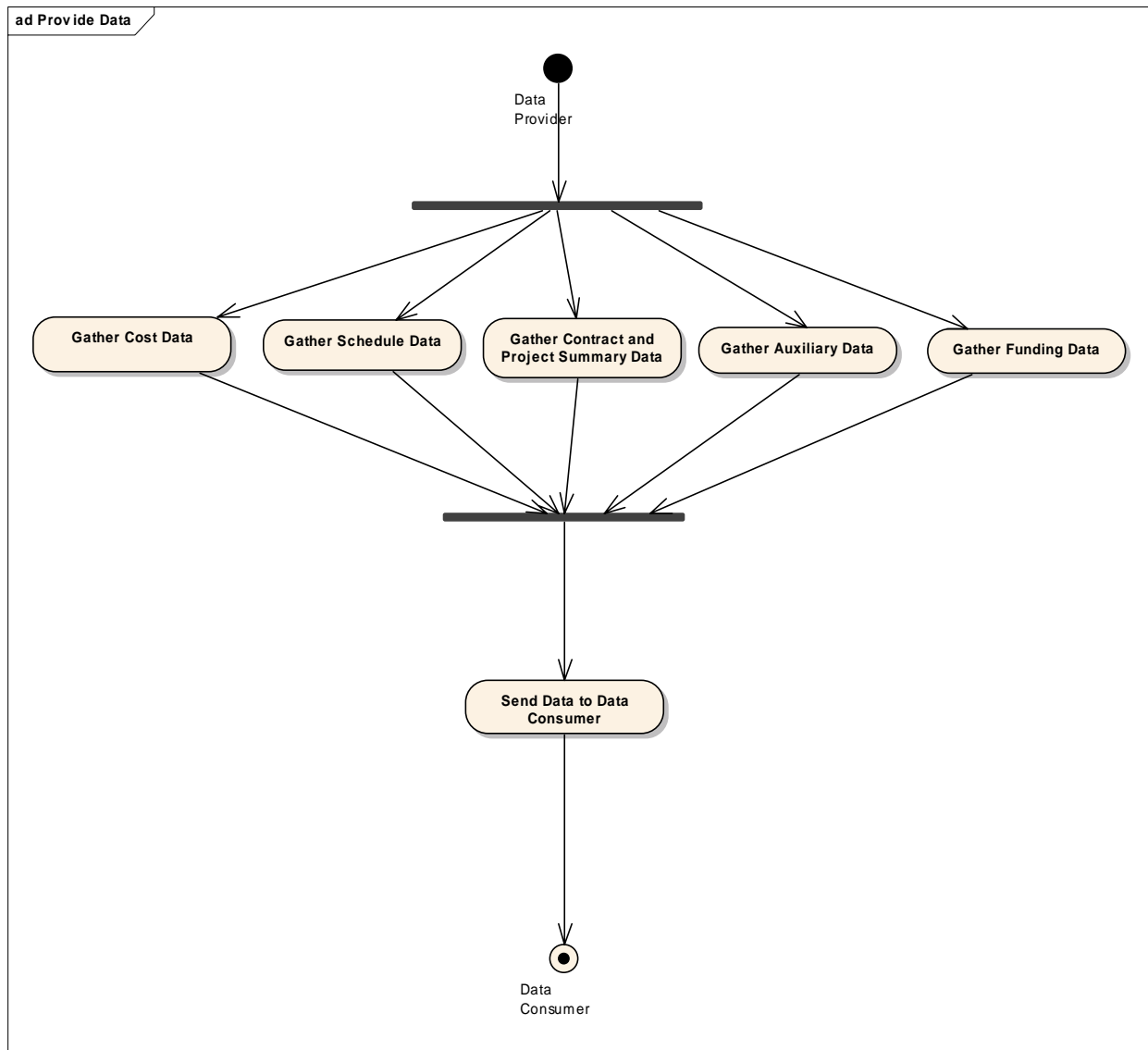
349

350 **5.2. Business Information Flow Definition**

351 The activity diagrams that follow further illustrate the data flow that occurs between a data provider and a
352 data consumer. These are very simple data flows where one party is sending the relevant project
353 management data to another party.

354 **5.2.1. Provide Data**

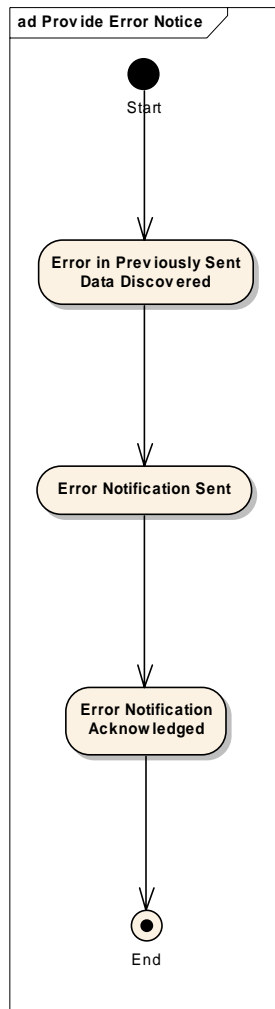
355 This activity diagram illustrates the data flow for the Create Project, Report Project Performance, Reset
356 Project Baseline, Update Project Within Baseline, Cancel Project, and Complete Project use cases. In
357 these instances, the data provider gathers and then sends the applicable data they need to provide to the
358 data consumer.
359



360
361

362 **5.2.2. Provide Error Notice**

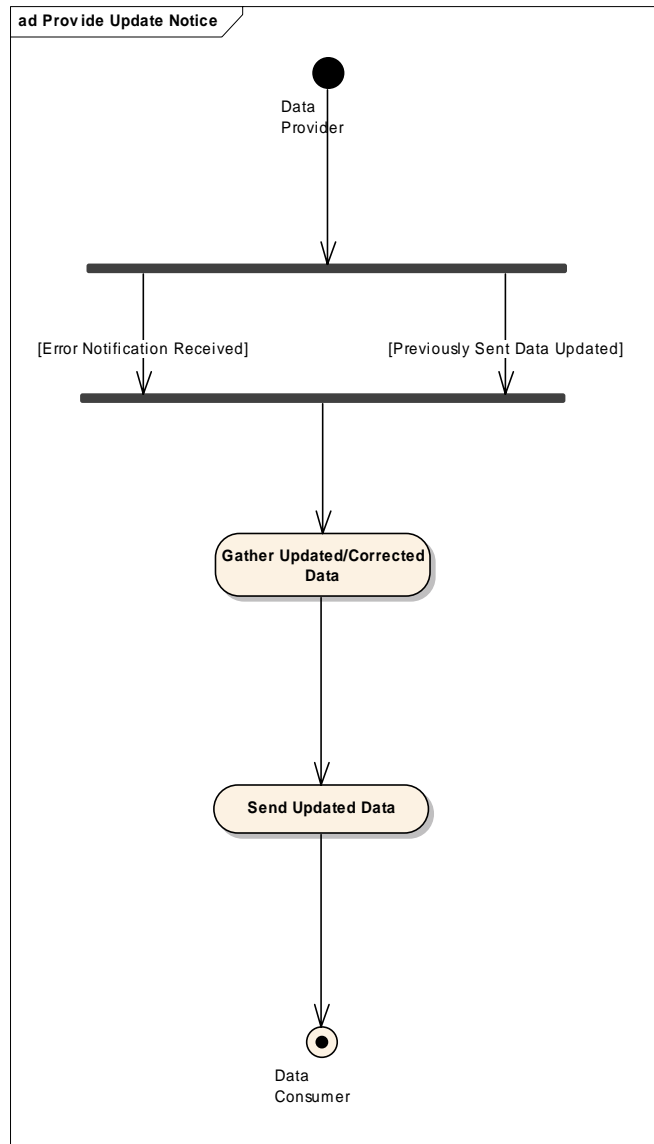
363 This activity diagram illustrates the data flow for the Provide Error Notice use case. This is the process
364 that occurs when a data consumer identifies an error in data sent by a data provider.
365



366
367

368 **5.2.3. Provide Update Notice**

369 This activity diagram illustrates the data flow for the Provide Update Notice use case. This is the process
370 that occurs when a data provider provides updated data in response to an error notice from a data
371 consumer. This process can also occur when a data provider needs to update data previously sent such
372 as for the Report Project Performance use case where the data provider is sending project status
373 information on a periodic basis to the data consumer.
374



375
376

377 **5.3. Business Information Model Definition**

378 Section 5.3.1 lists the entities used for the five main information areas identified in the use cases
 379 described in Section 5.1. The five main information areas include:

- 380
- 381 • Schedule Data (Section 5.3.2);
- 382
- 383 • Cost Data (Section 5.3.3);
- 384
- 385 • Contract and Project Summary Data (Section 5.3.4);
- 386
- 387 • Funding Data (Section 5.3.5);
- 388
- 389 • Auxiliary Data (Section 5.3.6).
- 390

391 Where applicable for each information area, targeted data exchanges are identified. The intent is to allow
 392 the ability to exchange specific, selected data for a given purpose. Example use case scenarios are
 393 included to further illustrate how the targeted data exchanges can be used. Note that a given data
 394 exchange can also combine data from the five information areas as needed.

395 **5.3.1. List of Entities**

396 The following is an alphabetical list and business use description of the proposed entities that the five
 397 main information areas will use to exchange the project management schedule and cost data.

398

399 These entities are further described in the related Requirements Mapping Specification (RMS) which
 400 provides the data element details. The purpose of the following list is to provide a general description of
 401 the entities.

402

403 The majority of the entities are new items. Existing entities used as is from TBG17 are noted with an “*”.
 404 Modified existing entities are noted with a “#”.

405

| Entity Name | Description |
|------------------------------------|---|
| EV_ Change Order. Details | Purpose is to capture changes made to the contract after the contract has been initiated. It includes both negotiated and non-negotiated (preliminary) changes. Includes identifier, name, description, cost amounts, dates, and status indicator. |
| EV_ Contract. Details [#] | Purpose is to provide details about the contract such as name, type of contract, funding limits, total cost value, planned complete date, deliverable quantities, and the like. This information is needed when a contract is first awarded to a contractor. A contract identifier along with a project name provides the needed reference for other project related data such as reporting structures, network schedule details, and cost details exchanged throughout the life of the project. Note that this entity automatically includes a number of subordinate entities such as party and postal address. |
| EV_ Control Account. Details | Purpose is to provide details about control accounts defined for a project. Control accounts are an intermediate level of cost and schedule detail. They represent an intersection of what must be done (the work breakdown reporting structure) and who is responsible for the work (the organization breakdown reporting structure). They are a natural management control point for a project. Control account details are broken down into work |

| Entity Name | Description |
|--|---|
| | packages which group the control account work into functional responsibility areas or type of work (labor, material). These groupings are then further broken down into network schedule tasks. Control accounts can have time phased cost details associated with them as well as start and finish dates (a summary of the underlying work tasks). |
| EV_ Cost. Details | The purpose is to provide the means to identify the various cost types such as budget, actual, earned value, and estimate details as well as the ability to identify the various value types such as direct costs, indirect costs, total costs, as well as quantities such as hours, equivalent heads, and units or lots for a given resource. These cost values can be time phased using accounting calendar or other reporting periods. |
| EV_ Period. Details* | <p>The purpose is to provide information about the various pairs of dates for reporting calendar periods, control accounts, work packages, work tasks, and other entities. Typical date pairs include:</p> <ul style="list-style-type: none"> • Early start and finish dates • Late start and finish dates • Actual start and finish dates • Baseline start and finish dates • Estimated start and finish dates • Reporting period start and end dates • Contract start and end dates • Project start and end dates <p>It can also be used to provide information about various duration details such as an original duration for a work task.</p> <p>Note that milestones do include the same set of dates, but because milestones by definition do not have a duration, the start and finish dates reflect the same date.</p> |
| EV_ Project. Details [#] | Purpose is to provide high level information about the project such as name and description along with summary dates and cost values. Projects have a direct association with a contract. A contract identifier along with a project identifier provides the needed reference for other project related data such as reporting structures, network schedule details, and cost details exchanged throughout the life of the project. |
| EV_ Program. Details | Purpose is to provide high level information about a program such a name, description, and the program sponsor (party who defines the scope of work, controls the money, and lets contracts). A program may have multiple contracts awarded to various contractors. |
| EV_ Remark. Details | Purpose is to provide a means to capture general text information at the contract level. |
| EV_ Reporting Calendar. Details EV_ Reporting Period. Details | The purpose of these entities is to identify and define the calendars and calendar periods used for reporting cost details on a project. There can be multiple reporting calendars used on a project. For example, one calendar can be used to describe the accounting calendar reporting periods for distributing budget, actual, earned value, or estimate cost details over time (could be monthly or weekly time frames). Another calendar could be used to provide summary time frames for a given reporting period such as current |

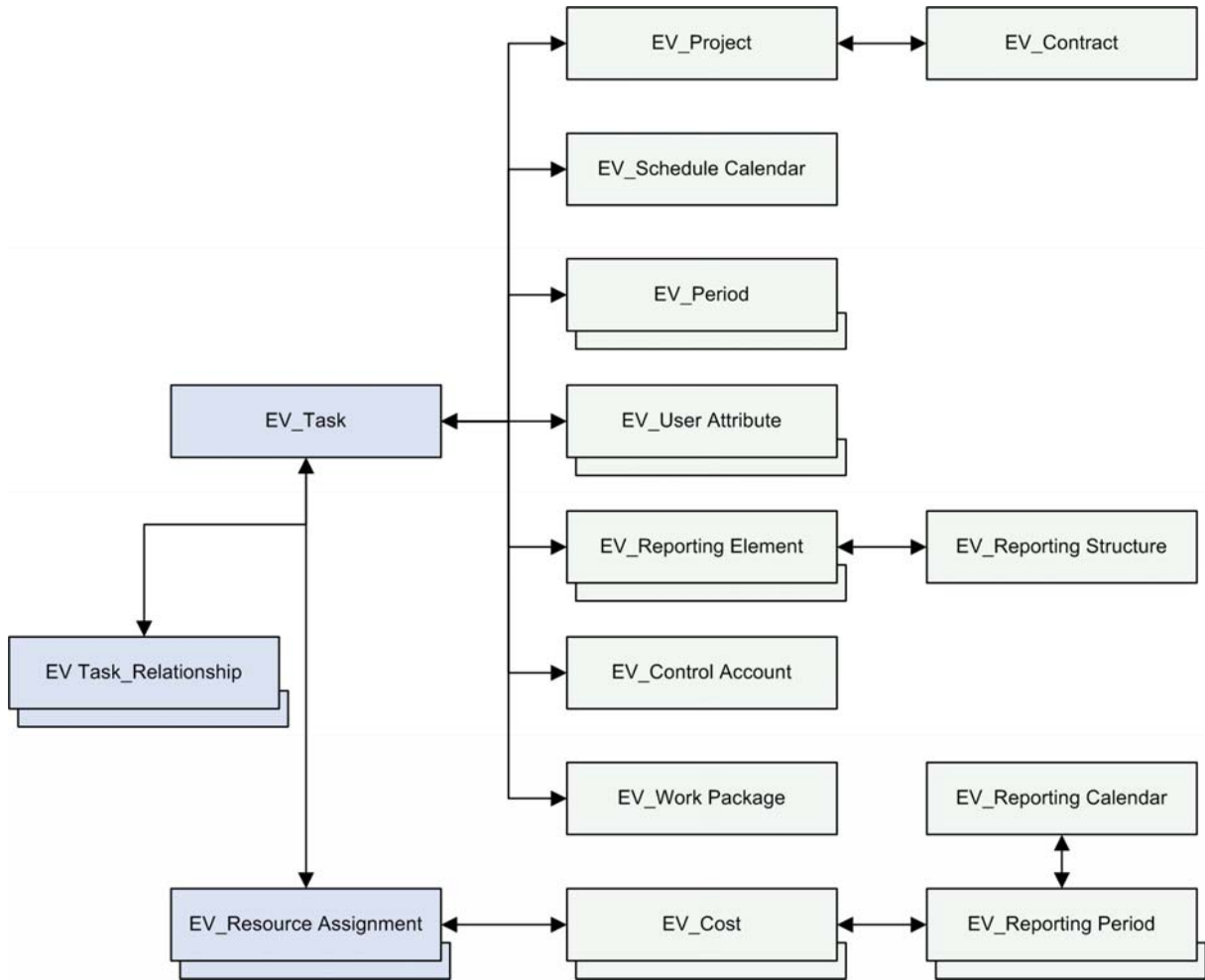
| Entity Name | Description |
|---|--|
| | period, cumulative to date, and at complete based on the project current reporting period setting. |
| EV_ Reporting Element. Details | The purpose is to identify reporting element details for a given reporting structure such as work breakdown structure or organization breakdown structure. This entity is related to the Reporting Structure entity that is used to identify the applicable reporting structure. Reporting elements are used to summarize detail cost and schedule data as needed for reporting purposes. The summarized data may or may not be time phased. |
| EV_ Reporting Structure. Details | The purpose is to identify the various reporting structures used to organize the work and to summarize the cost and schedule data. A project can use many reporting structures for a variety of purposes. Typical reporting structures include the work breakdown structure (what), organization breakdown structure (when), milestone hierarchy (sequence of deliverables), and resource breakdown structure (used to group resources into summary cost categories such as labor, material, and other direct costs). |
| EV_ Resource Assignment. Details | The purpose is to identify the work task resource assignments. This information provides the means to identify what resources are required to complete the work. Combined with the work task start and finish dates, the resource assignment details provide the basis for creating the time phased budget (or estimate to complete) cost for the work scheduled. The resource assignments are based on the available resources defined for the project (the resource details). |
| EV_ Resource. Details | The purpose is to identify the available resources that can be assigned to a project task. This includes details such as the value type (hours, units, or direct cost), rate per unit, and resource category (such as labor, material, and other direct costs). |
| EV_ Schedule Calendar. Details EV_ Work Shift. Details | The purpose is to describe the schedule calendar associated with the work tasks. It identifies the working days, non working days such as holidays, and work shift details needed to schedule work tasks over time. |
| EV_ Task. Details | <p>The purpose is to provide details related to work tasks and milestones in a schedule. One or more work tasks can relate to a given work package (which can be summarized to a control account).</p> <p>Work tasks provide details about the work that must be performed to meet project objectives. This includes details such as the work task name or description, duration of the task, and status information.</p> <p>Milestones are used to identify project events (no duration). They are useful for measuring completed work (a deliverable is complete), establishing completion dates for a series of tasks (that result in an end item deliverable), or for work management purposes (manage to short term objectives used to measure work accomplishments).</p> |
| EV Task_ Relationship. Details | The purpose is to provide work task relationship or interdependency details. This information is needed to identify the sequence of work (what work task must be completed before the next one can start). This is required for a networked schedule of work tasks and milestones. Network schedules are the basis for |

| Entity Name | Description |
|--------------------------------|---|
| | critical path analysis, a method used to identify and assess schedule priorities. |
| EV_ Threshold. Details | The purpose is to identify cost and schedule variance thresholds for a given reporting structure (like a work breakdown structure) element. These are used for reporting by exception. Variance thresholds identify the parameters (a value or percent) that triggers the need to determine what is causing a schedule or cost variance (ahead or behind schedule, or cost is over or under running the budget plan) or at complete variance (estimate at complete exceeds the budget at complete). |
| EV_ User Attribute. Details | The purpose is to provide a means to use a name and value pair used to select or sort schedule and cost data for reporting or identification purposes. A project will typically have a variety of reporting requirements for internal management or end client reporting needs. This provides the means for a project to define them and include them with the schedule and cost data. |
| EV_ Variance Analysis. Details | The purpose is to provide text information about schedule and cost variances that exceed a variance threshold limit. Typical uses include describing the source of the problem (a variance) and the action being taken to correct the problem. |
| EV_ Work Package. Details | Purpose is to provide details about work packages defined for a project. Work packages are a lower level of cost and schedule detail below a control account. One or more work tasks (schedule detail) can relate to a given work package. The work package is generally the lowest level where actual costs are accumulated and earned value costs are calculated. Work packages have time phased cost details associated with them (budget, actual, earned value, estimate) as well as start and finish dates (a summary of the underlying work tasks). |

406

407 **5.3.2. Schedule Data**

408 Schedule data includes information specific to work tasks, milestones, the relationships or
 409 interdependencies between work tasks and milestones, and assigning resources to work tasks.
 410



411 The core of the network schedule data exchange is the work task and milestone details (EV_Task). The
 412 relationships between tasks and milestones (EV_Task_Relationship) provide information about the
 413 interdependencies; this is used to determine the sequence of work. The resource assignment provides
 414 information about which resource is doing the work or is required to do the work (EV_Resource
 415 Assignment) and an amount (EV_Cost) such as number of labor hours, a direct cost, or number of
 416 material units which can be distributed over time (EV_Reporting_Period).
 417
 418
 419

420 Relationship and resource assignment details may or may not be included based on the needs of a given
 421 project or the intent of a given data exchange.
 422

423 Information related to the task details include:

- 424
- 425 • A single project reference (an identifier) which relates to a single contract reference (an
 426 identifier);
- 427
- 428 • A single schedule calendar reference;
- 429
- 430 • Start and finish dates as well as duration details (EV_Period);

- 431
- 432
- 433
- 434
- 435
- 436
- 437
- 438
- User attributes;
 - Reporting element (can be one or many) which relates to a named reporting structure;
 - A single control account reference;
 - A single work package reference.

439

440 **Use Case Scenarios**

441

442 Example 1. Create Project or Reset Project Baseline use case. Contractor sends contractual milestones

443 with target complete dates to a supplier. This data exchange includes EV_Task detail (the milestones)

444 and applicable dates (EV_Period).

445

446 Example 2. Create Project or Reset Project Baseline use case. Supplier sends their preliminary network

447 schedule to their customer. This data exchange includes EV_Task information (work tasks and milestone

448 information) and EV_Task_Relationship information.

449

450 Example 3. Create Project or Reset Project Baseline use case. Contractor sends their complete

451 baseline network schedule to their customer. This data exchange includes EV_Task information (work

452 tasks and milestone information), EV_Task_Relationship information, and EV_Resource Assignment

453 information.

454

455 Example 4. Report Project Performance or Update Project Within Baseline use case. Supplier or

456 contractor sends milestone status information to their customer. This data exchange includes EV_Task

457 detail (the milestones) and applicable dates (EV_Period).

458

459 **5.3.3. Cost Data**

460 Cost data includes the cost information for the project whether at the detail level (work package),

461 intermediate level (control account), or summarized using one or more reporting structure such as the

462 work breakdown structure. This cost data can be time phased by accounting calendar reporting periods

463 or summarized for the current reporting period (current period, cumulative to date, and at complete).

464

465 The named targeted data exchanges include:

466

- Reporting structure cost details;
- Control account cost details as well as control account attributes;
- Work package cost details as well as work package attributes.

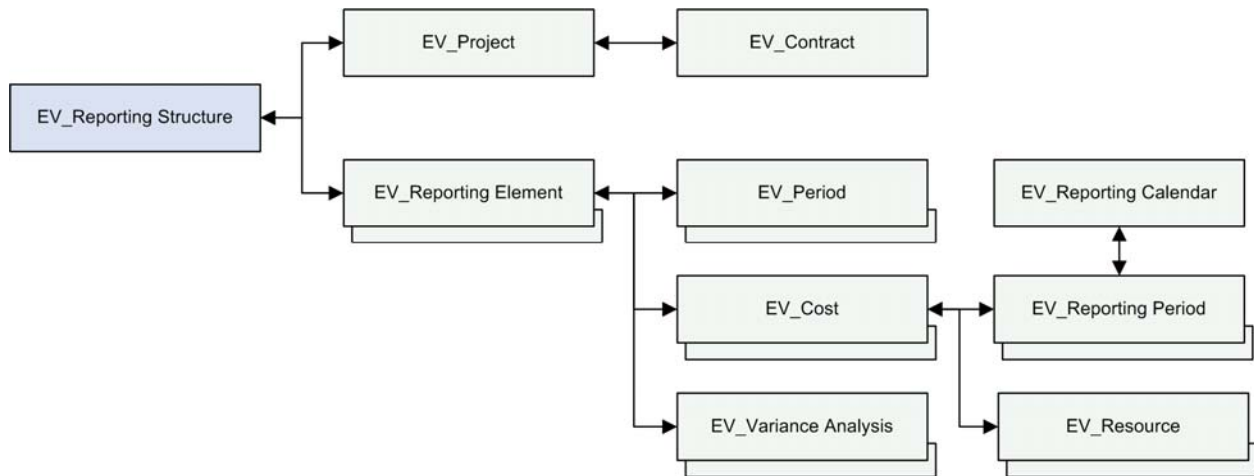
470

471

472

473 **5.3.3.1. Reporting Structure**

474



475
476

477 This cost data exchange is based on a given reporting structure such as a work breakdown structure
478 (EV_Reporting Structure). This data exchange includes:

479

- 480 • A single project reference (an identifier) which relates to a single contract reference (an identifier).
- 481
- 482 • The various reporting elements associated with the reporting structure. These reporting elements
483 can be at a single level within the reporting structure hierarchy or many levels. For each reporting
484 element, related information includes:
 - 485 ○ Start and finish dates where applicable (EV_Period);
 - 486 ○ Cost details (CV_Cost) by cost type (budget, actual, earned value, estimate) and value
487 type (hours, direct cost, equivalent heads, units, indirect costs, total cost) by reporting
488 period (EV_Reporting Period) with or without resource detail (EV_Resource);
 - 489
 - 490
 - 491
 - 492 ○ Variance analysis narrative.
- 493

494 **Use Case Scenarios**

495

496 Example 1. Report Project Performance use case. Contractor sends current reporting period cost
497 performance information at level 3 of the project work breakdown structure. Information includes the
498 reporting structure element and cost details (budget, actual, earned value, and estimate total costs)
499 based on summary reporting calendar time frames (current period, cumulative to date, at complete). As
500 an option, the contractor includes contract and project summary data (see Section 5.3.4) as a courtesy to
501 their customer.

502

503 Example 2. Report Project Performance use case. Contractor sends current reporting period cost
504 variance analysis information at level 3 of the project work breakdown structure. Information includes
505 selected reporting structure elements that exceeded the variance threshold parameters along with
506 narrative variance analysis text (describes the source of the problem, impact of the problem, and how the
507 problem is being resolved).

508

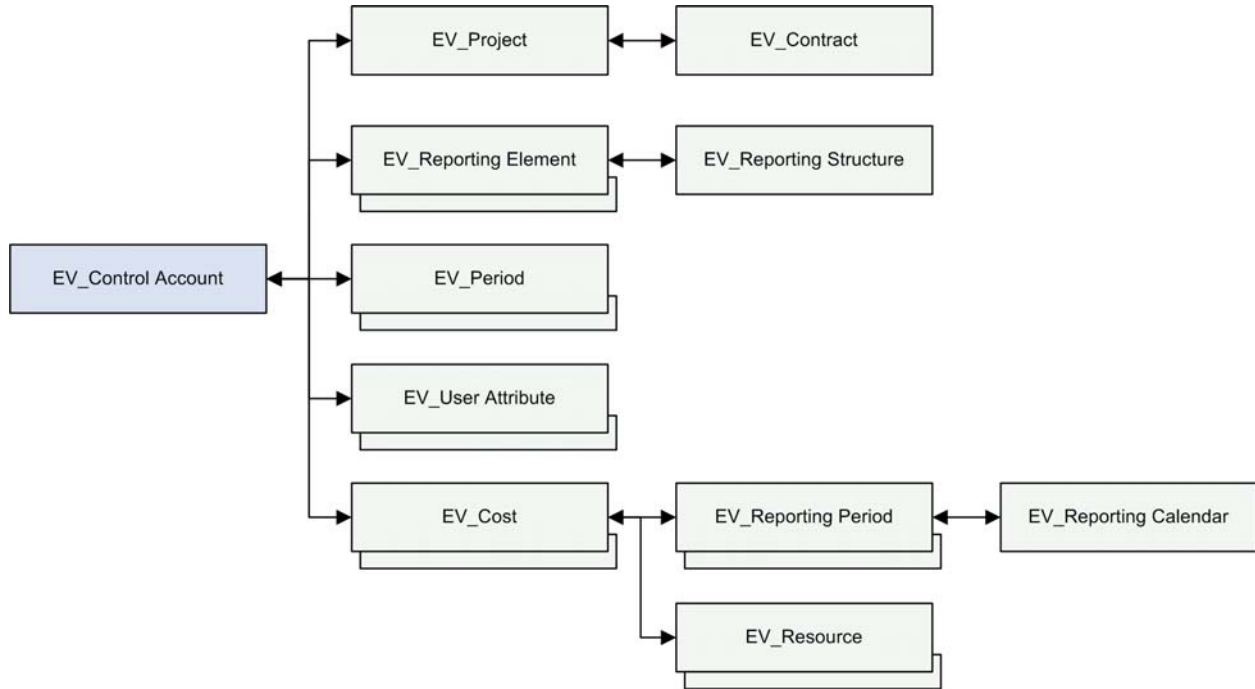
509 Example 3. Report Project Performance use case. Supplier sends current reporting period cost
510 performance information at level 4 of the project work breakdown structure. Information includes the
511 reporting structure element and cost resource details (resource specific actual and earned value hours
512 and direct costs) based on an accounting calendar reporting period (week or month reference).

513

514 Example 4. Create Project or Update Project Within Baseline use case. Supplier sends time phased
 515 budget or estimate cost information at level 4 of the project work breakdown structure. Information
 516 includes the reporting structure element and cost resource details (resource specific budget or estimate
 517 hours and direct costs) based on accounting calendar reporting periods (weeks or months).
 518

519 **5.3.3.2. Control Account**

520



521
522

523 This cost data exchange is similar to the reporting structure data exchange except it is specific to control
 524 accounts. Related information includes the:

525
526
527
528
529
530
531
532
533

- Reporting element assignments (work breakdown structure and organization breakdown structure) used to identify who is responsible for what work elements;
- Control account start and finish date details (EV_Period);
- Control account specific user attributes;
- Cost details by reporting period.

534
535
536
537

Note that this data exchange could also be used to send control account information (control account reference and description, reporting element assignments, dates, and user attributes) without any associated cost details.

538
539

Use Case Scenarios

540

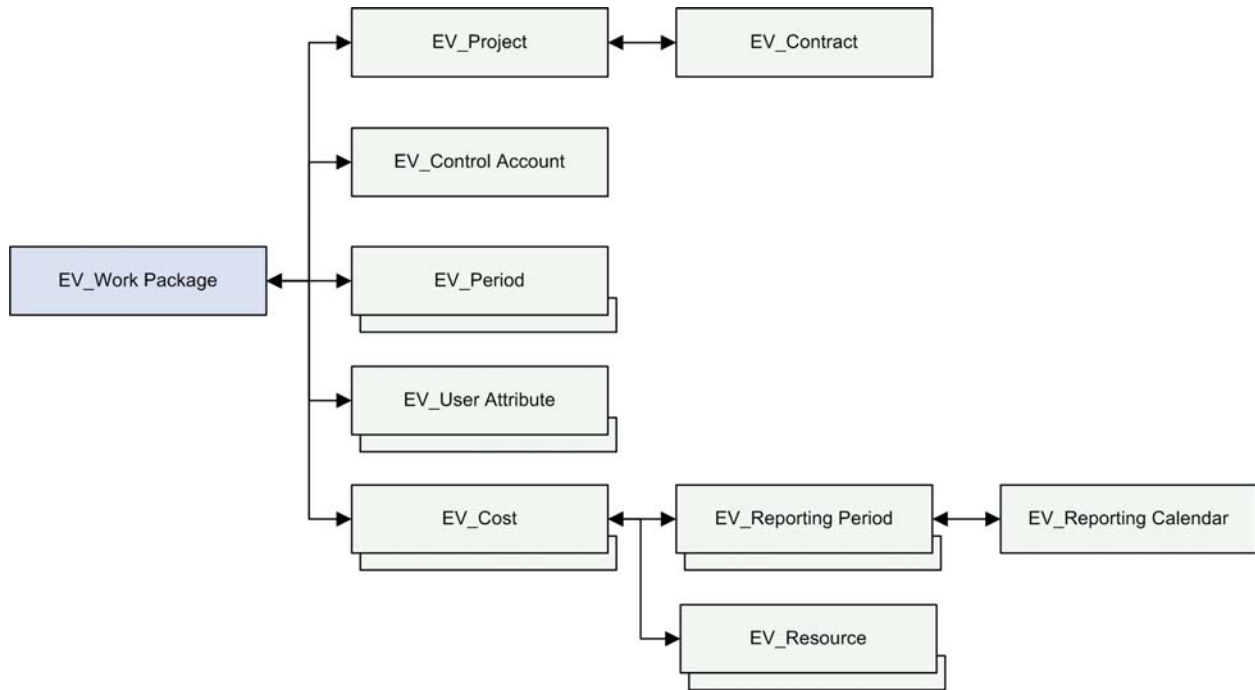
541 Example 1. Create Project, Reset the Project Baseline, or Update Project Within Baseline use case.
 542 Contractor sends a supplier a list of the control accounts assigned to them. Information would include the
 543 control account summary details such as the identifier, description, and assigned reporting structure
 544 elements (work breakdown structure and organization breakdown structure references).
 545

546 Example 2. Report Project Performance use case. Supplier sends current reporting period cost
547 performance information at the control account level. Information includes the control account identifier
548 and cost resource details (resource specific actual and earned value hours and direct costs) based on an
549 accounting calendar reporting period (week or month reference).
550

551 Example 3. Create Project or Update Project Within Baseline use case. Supplier sends time phased
552 budget or estimate cost information at the control account level. Information includes the control account
553 identifier and cost resource details (resource specific budget or estimate hours and direct costs) based on
554 accounting calendar reporting periods (weeks or months).
555

556 5.3.3.3. Work Package

557



558

559

560 This cost data exchange is similar to the reporting structure and control account data exchange except it
561 is specific to work packages. Related information includes the:

562

563 • Control account assignment;

564

565 • Work package start and finish date details (EV_Period);

566

567 • Work package specific user attributes;

568

569 • Cost details by reporting period.

570

571 As for the control account data exchange, this data exchange could also be used to send work package
572 information (work package reference and description, control account assignment, dates, and user
573 attributes) without any associated cost details.

574

575 Use Case Scenarios

576

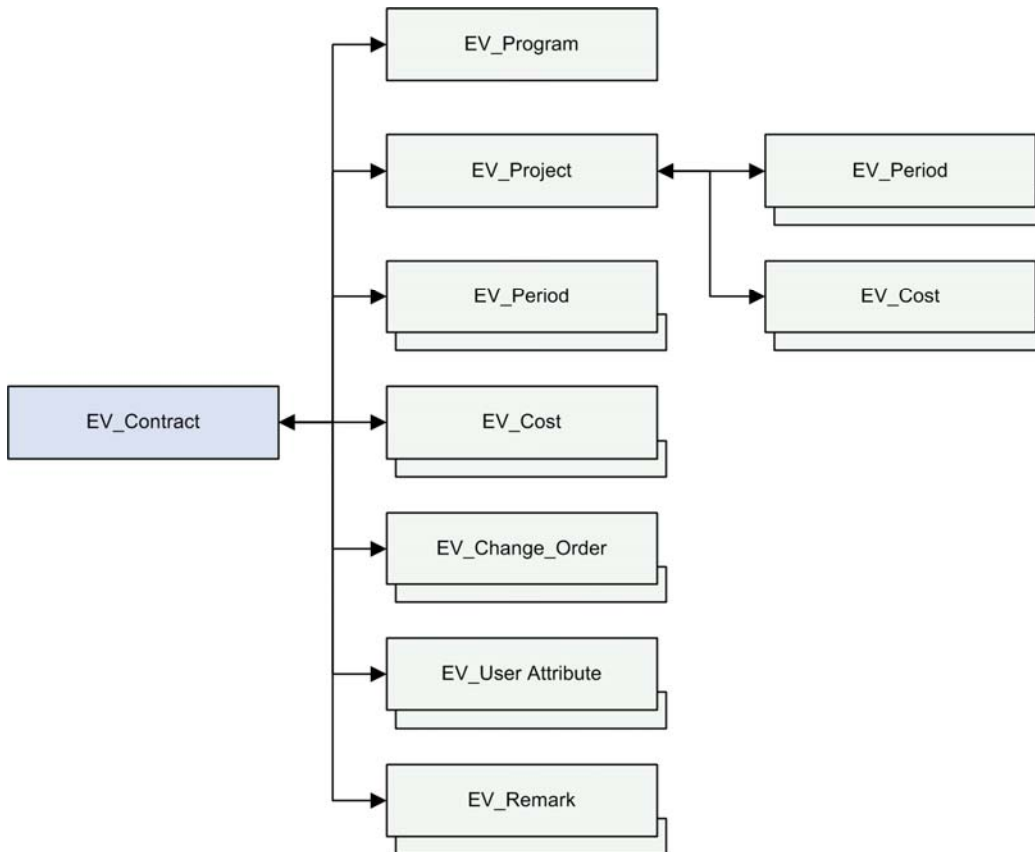
577 Example 1. Create Project, Reset the Project Baseline, or Update Project Within Baseline use case.
 578 Contractor sends a supplier a list of the work packages assigned to them. Information would include the
 579 work package summary details such as the identifier, description, and assigned control account.
 580

581 Example 2. Report Project Performance use case. Supplier sends current reporting period cost
 582 performance information at the work package level. Information includes the work package identifier and
 583 cost resource details (resource specific actual and earned value hours and direct costs) based on an
 584 accounting calendar reporting period (week or month reference).
 585

586 Example 3. Create Project or Update Project Within Baseline use case. Supplier sends time phased
 587 budget or estimate cost information at the work package level. Information includes the work package
 588 identifier, earned value method assignment, and cost resource details (resource specific budget or
 589 estimate hours and direct costs) based on accounting calendar reporting periods (weeks or months).
 590

591 **5.3.4. Contract and Project Summary Data**

592 Provides the means to exchange summary contract and project data useful for a new project or when
 593 there are contract changes. The data can also be combined with other information areas as needed
 594 when a complete set of contract and project summary data is required by the customer (in addition to the
 595 simple reference identifier used for exchanging other information area details).
 596



597 This data exchange focuses on the high level descriptive, date, and cost information specific to a contract
 598 and related project. It identifies overall contract and related high level project parameters that are
 599 exchanged between contracting parties on contract award or in the event there are change orders that
 600 must be incorporated.
 601
 602
 603

604 Information related to the contract includes:

- 605
- 606 • A single program reference (there can be multiple contracts awarded for a given program);
- 607
- 608 • A single project reference which includes high level descriptive, date (start and finish), and cost
- 609 (such as a total budget amount) details;
- 610
- 611 • Associated dates (EV_Period);
- 612
- 613 • Associated summary cost details (EV_Cost);
- 614
- 615 • Applicable user attributes specific to the contract;
- 616
- 617 • Narrative text as needed.

618 **Use Case Scenarios**

619 Example 1. Create Project use case. Government agency program manager sends contract summary

620 information to the contractor to establish the high level contract and project parameters. Or, contractor

621 program manager sends contract summary information to their suppliers to establish high level contract

622 and project parameters.

623 Example 2. Reset Project Baseline use case. Government agency program manager sends approved

624 change order details to the contractor. Or, contractor program manager sends approved change order

625 details to a supplier.

626 Example 3. Report Project Performance use case. Contractor sends contract summary information

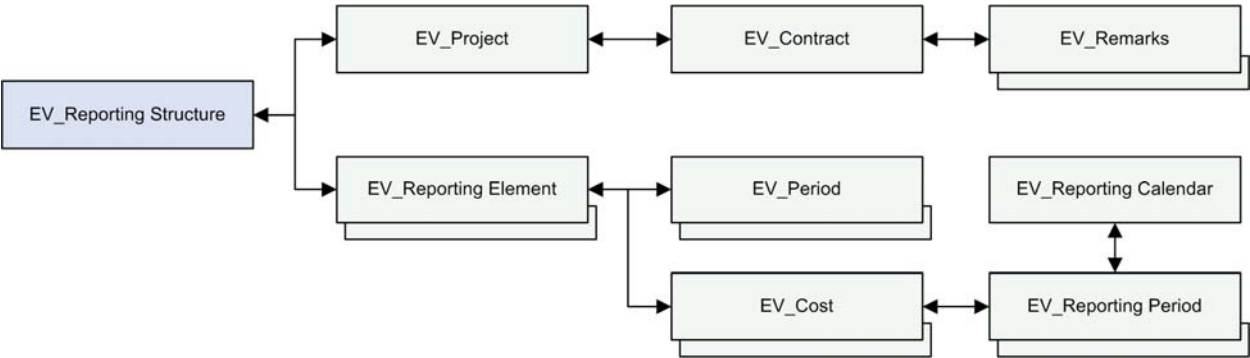
627 along with the reporting structure cost data for the current reporting period to their customer. The

628 contract summary details are included to reflect recent changes as the result of a change order.

629

630 **5.3.5. Funding Data**

631 This targeted data exchange provides the means to exchange funding details about the contract.



632 This data exchange is based on a given reporting structure similar to the cost data reporting structure

633 data exchange except the cost data contents are focused on details specific to project funding such as:

- 637 • Funding authorized to date;
- 638
- 639 • Accrued expenditures;
- 640
- 641 • Open commitments;
- 642
- 643
- 644
- 645
- 646
- 647

- 648 • Actual costs to date;
- 649
- 650 • Forecast of billings.
- 651

652 Additional contract information is included (EV_Contract) to identify the funding source (a project can be
 653 funded by multiple entities) and allows the ability to include remarks.

654 **Use Case Scenario**

655
 656
 657 Example. Report Project Performance use case. Contractor sends current reporting period funding
 658 information at level 3 of the project work breakdown structure. Information includes the reporting
 659 structure element and funding details based on reporting calendar time frames (cumulative to date and
 660 future monthly/quarterly or other time frames agreed to with the customer).
 661

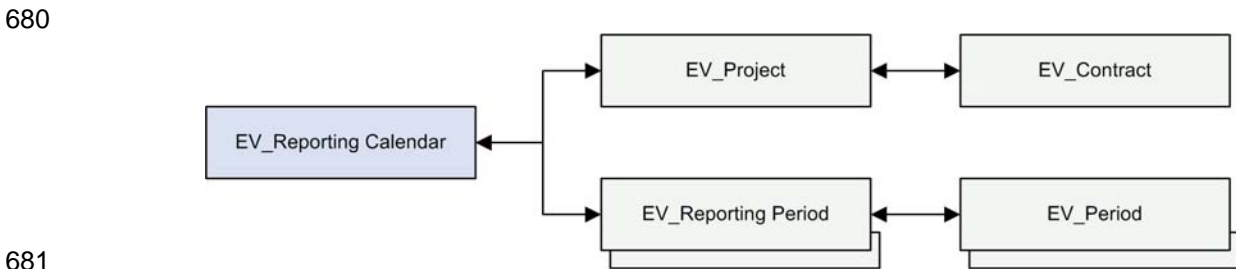
662 **5.3.6. Auxiliary Data**

663 Auxiliary data includes related calendars, structures, and other details needed to organize the work as
 664 well as to sort, select, and summarize the data for reporting purposes. The data can also be combined
 665 with other information areas as needed to provide the necessary reference details for other data.
 666

667 The named targeted data exchanges include:

- 668
- 669 • Reporting calendar used for cost details;
- 670
- 671 • Schedule calendar;
- 672
- 673 • Reporting structure;
- 674
- 675 • Resources;
- 676
- 677 • Variance thresholds;
- 678

679 **5.3.6.1. Reporting Calendar**



681
 682
 683 This data exchange allows the ability to send details about a given cost reporting calendar. The reporting
 684 periods associated with a calendar can reflect accounting periods (monthly or weekly), summary time
 685 frames such as current period, cumulative to date, and at complete or other time frames as needed. The
 686 period entity (EV_Period) identifies the start and end dates for a given reporting period.
 687

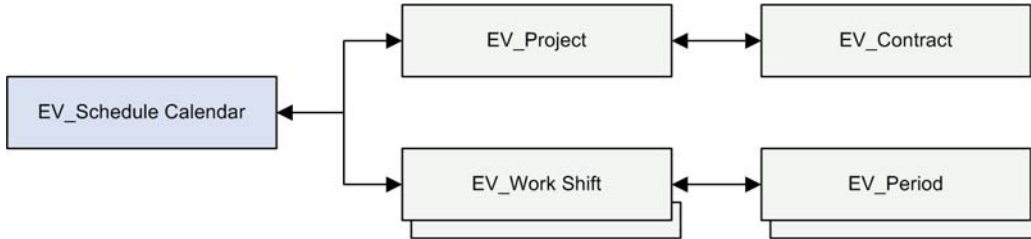
688 **Use Case Scenarios**

689
 690 Example 1. Create Project, Reset Project Baseline, or Update Project Within Baseline use case. Data
 691 provider sends their reporting calendar information to a data consumer for reference or for use in their
 692 software tools.
 693

694 Example 2. Report Project Performance use case. Contractor sends their current reporting period
 695 calendar along with the reporting structure cost data for the current reporting period to the customer.
 696

697 **5.3.6.2. Schedule Calendar**

698



699
700

701 This data exchange allows the ability to send details about a given schedule calendar (holidays and rest
 702 days) as well as work shift details.

703

704 **Use Case Scenario**

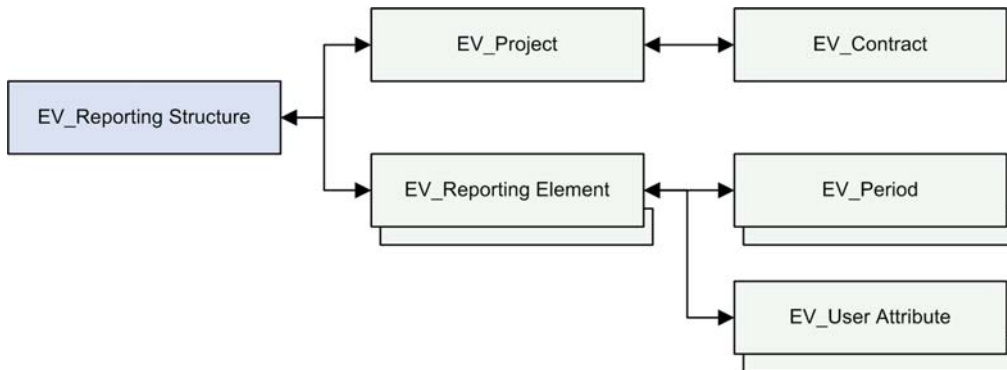
705

706 Example. Create Project, Reset Project Baseline, or Update Project Within Baseline use case. Data
 707 provider sends their schedule calendar information to a data consumer for reference or for use in their
 708 software tools.

709

710 **5.3.6.3. Reporting Structure**

711



712
713

714 This data exchange allows the ability to send details about a given reporting structure such as a work
 715 breakdown structure, organization breakdown structure, or milestone hierarchy structure. As an option,
 716 start and finish dates can be included; typically this would be applicable for lower level work breakdown
 717 structure elements (overall time frame for a given scope of work).

718

719 Note that this entity can also be used to send details about a single level reporting structure used to
 720 organize, sort, and select data such as by phase, location, supplier, and so forth.

721

722 **Use Case Scenario**

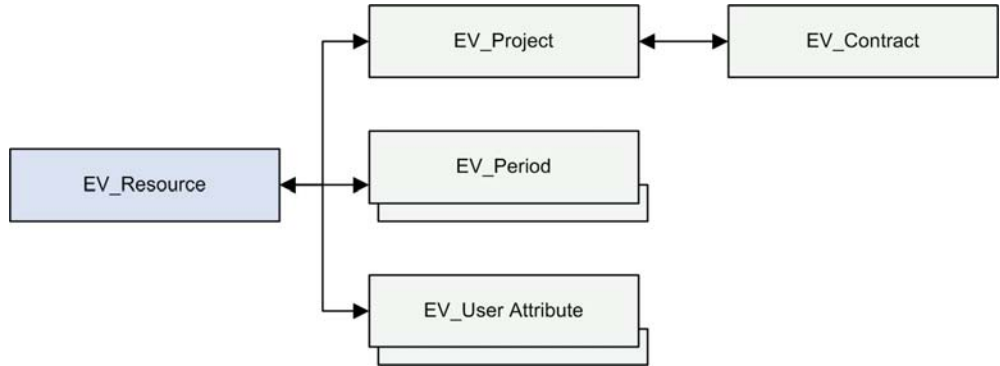
723

724 Example. Create Project, Reset Project Baseline, or Update Project Within Baseline use case. Data
 725 provider sends reporting structure information to a data consumer for reference or for use in their
 726 software tools.

727

728 **5.3.6.4. Resources**

729



730

731

732 This data exchange allows the ability to send details about available resources that will be used to
733 perform work on a given project. This detail is the source list used for the work task resource
734 assignments (network schedule with resource assignments data exchange). Availability time frames can
735 also be included (EV_Period) with the resource detail as needed.

736

737 **Use Case Scenario**

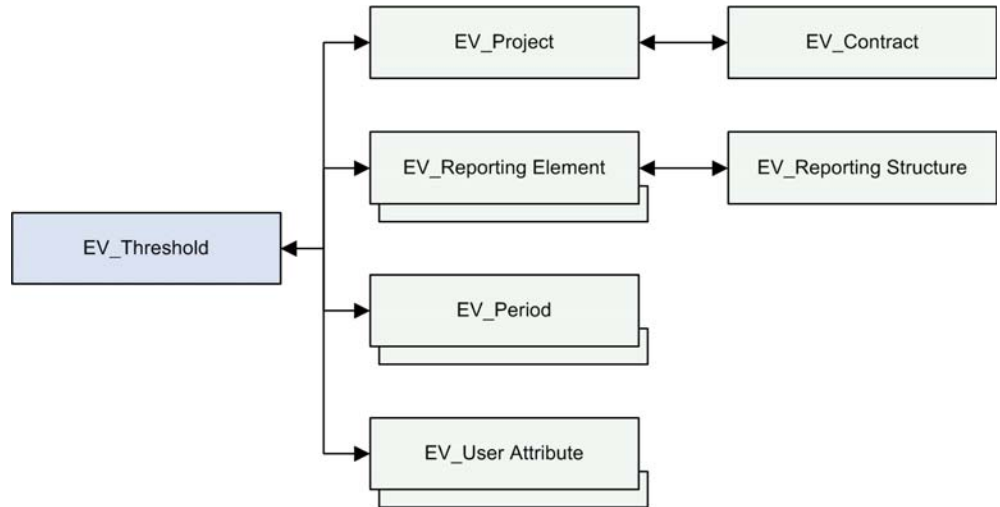
738

739 Example. Create Project, Reset Project Baseline, or Update Project Within Baseline use case. Data
740 provider sends resource information to a data consumer for reference or for use in their software tools.

741

742 **5.3.6.5. Variance Thresholds**

743



744

745

746 This data exchange allows the ability to send details about the variance thresholds used for cost and
747 variance analysis useful for exception reporting (work elements that exceed the thresholds allow
748 management to identify and address project problem areas). The thresholds apply to a given reporting
749 element within a reporting structure, typically the work breakdown structure. This allows the ability to
750 tailor the thresholds based on the scope of work (high risk versus low risk work). The boundaries can
751 change over the duration of the project (EV_Period details).

752

753 **Use Case Scenario**

754

755 Example. Create Project, Reset Project Baseline, or Update Project Within Baseline use case. Data
 756 provider sends variance threshold information to a data consumer for reference or for use in their
 757 software tools.
 758

759 **5.4. Business Rules**

760 The business rules for this data exchange are common to other business data exchanges. It is
 761 anticipated that the data exchanges will occur in batch and/or interactive modes.
 762

763 Standard data transmission and access requirements such as security and system level
 764 acknowledgements will be required. This is outside the scope of this document.
 765

766 It is anticipated that digital signatures will be also be part of this data exchange. This is a typical
 767 requirement for reporting project performance and funding status.
 768

769 **5.5. Definition of Terms**

770 **Project Management Terms**
 771
 772

773 The source for the definition of common project management terms is the American National Standards
 774 Institute/Electronic Industries Alliance (ANSI/EIA) Standard for Earned Value Management Systems (EIA-
 775 748-A) published by the Electronic Industries Alliance, Technology Strategy & Standards Department,
 776 2500 Wilson Boulevard, Arlington, VA 22201, USA.
 777

| | |
|------------------------|---|
| ACTUAL COST | The costs actually incurred and recorded in accomplishing work performed. |
| ACTUAL DATE | The date on which a milestone or scheduled work task is completed. |
| APPORTIONED EFFORT | Effort that by itself is not readily measured or divisible into discrete work packages but which is related in direct proportion to the planning and performance on other measured effort. |
| AUTHORIZED WORK | Effort (work scope) on contract or assigned by management. |
| BUDGET AT COMPLETION | The total authorized budget for accomplishing the program scope of work. It is equal to the sum of all allocated budgets plus any undistributed budget. (Management Reserve is not included.) The Budget At Completion will form the Performance Measurement Baseline as it is allocated and time-phased in accordance with program schedule requirements. |
| CONTROL ACCOUNT | A management control point at which budgets (resource plans) and actual costs are accumulated and compared to earned value for management control purposes. A control account is a natural management point for planning and control since it represents the work assigned to one responsible organizational element on one program work breakdown structure element. |
| COST VARIANCE | A metric for the cost performance on a program. It is the algebraic difference between earned value and actual cost (Cost Variance = Earned Value - Actual Cost.) A positive value indicates a favorable position and a negative value indicates an unfavorable condition. |
| CRITICAL PATH ANALYSIS | See NETWORK SCHEDULE. |
| DIRECT COSTS | The costs or resources expended in the accomplishment of work which are directly charged to the affected program. |
| DISCRETE EFFORT | Tasks that are related to the completion of specific end products or services and can be directly planned and measured. (Also may be known as work packaged effort.) |

| | |
|----------------------------------|--|
| DUE DATE | The date by which a milestone or task is scheduled to be completed. |
| EARNED VALUE | The value of completed work expressed in terms of the budget assigned to that work. |
| ESTIMATE AT COMPLETION | The current estimated total cost for program authorized work. It equals actual cost to a point in time plus the estimated costs to completion (Estimate To Complete). |
| ESTIMATE TO COMPLETE | Estimate of costs to complete all work from a point in time to the end of the program. |
| ESTIMATED COST | An anticipated cost for specified work scope. |
| EXPECTED COMPLETION DATE | The date on which a scheduled milestone or task is currently expected to be completed. |
| INDIRECT COST | The cost for common or joint objectives that cannot be identified specifically with a particular program or activity. Also referred to as overhead cost or burden. |
| INTERNAL REPLANNING | Replanning actions for remaining work scope. A normal program control process accomplished within the scope, schedule, and cost objectives of the program. |
| LEVEL OF EFFORT | Unmeasured effort of a general or supportive nature usually without a deliverable end product. Examples are supervision, program administration and contract administration. |
| MANAGEMENT RESERVE | An amount of the total budget withheld for management control purposes rather than being designated for the accomplishment of a specific task or set of tasks. |
| MILESTONE | A schedule event marking the due date for accomplishment of a specified effort (work scope) or objective. A milestone may mark the start, an interim step, or the end of one or more activities. |
| NETWORK SCHEDULE | A schedule format in which the activities and milestones are represented along with the interdependencies between activities. It expresses the logic of how the program will be accomplished. Network schedules are the basis for critical path analysis, a method for identification and assessment of schedule priorities and impacts. |
| ORGANIZATION STRUCTURE | The hierarchical arrangement for the management organization for a program, graphically depicting the reporting relationships. The organizational structure will be by work team, function, or whatever organization units are used by the company. |
| OTHER DIRECT COSTS | Usually the remaining direct costs, other than labor and materiel, like travel and computer costs. |
| OVER-TARGET BASELINE | Replanning actions involving establishment of cost or schedule objectives that exceed the desired or contractual objectives on the program. An over-target baseline is a recovery plan, a new baseline for management when the original objectives cannot be met and new goals are needed for management purposes. |
| PERFORMANCE MEASUREMENT BASELINE | The total time-phased budget plan against which program performance is measured. It is the schedule for expenditure of the resources allocated to accomplish program scope and schedule objectives, and is formed by the budgets assigned to control accounts and applicable indirect budgets. The Performance Measurement Baseline also includes budget for future effort assigned to higher Work Breakdown Structure levels (summary level planning packages) plus any undistributed budget. Management Reserve is not included in the baseline as it is not yet designated for specific work scope. |
| PERFORMING ORGANIZATION | The organization unit that applies resources to accomplish assigned work. |
| PLANNING PACKAGE | A logical aggregation of work, usually future efforts that can be identified and budgeted, but which is not yet planned in detail at the |

| | |
|-------------------------------------|---|
| | work package or task level. |
| PROGRAM BUDGET | The total budget for the program including all allocated budget, management reserve, and undistributed budget. |
| PROGRAM TARGET COST | The program cost objective based on the negotiated contract target cost, or the management goal value of the authorized work, plus the estimated cost of authorized unpriced work. |
| RESOURCE PLAN | The time-phased budget, which is the schedule for the planned expenditure of program resources for accomplishment of program work scope. |
| RESPONSIBLE ORGANIZATION | The organizational unit responsible for accomplishment of assigned work scope. |
| SCHEDULE | A plan that defines when specified work must be done to accomplish program objectives on time. |
| SCHEDULE TRACEABILITY | Compatibility between schedule due dates, status, and work scope requirements at all levels of schedule detail (vertical traceability) and between schedules at the same level of detail (horizontal traceability). |
| SCHEDULE VARIANCE | A metric for the schedule performance on a program. It is the algebraic difference between earned value and the budget (Schedule Variance = Earned Value - Budget). A positive value is a favorable condition while a negative value is unfavorable. |
| STATEMENT OF WORK | The document that defines the work scope requirements for a program. |
| UNDEFINITIZED WORK | Authorized work for which a firm contract value has not been negotiated or otherwise determined. |
| UNDISTRIBUTED BUDGET | Budget associated with specific work scope or contract changes that have not been assigned to a control account or summary level planning package. |
| WORK BREAKDOWN STRUCTURE | A product-oriented division of program tasks depicting the breakdown of work scope for work authorization, tracking, and reporting purposes. |
| WORK BREAKDOWN STRUCTURE DICTIONARY | A listing of work breakdown structure elements with a description of the work scope content in each element. The work descriptions are normally summary level and provide for clear segregation of work for work authorization and accounting purposes. |
| WORK PACKAGE | A task or set of tasks performed within a control account. |

778
779