Derived Data in Classifying an EO

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iTips provide guidance on topics important to the FPA community. They explain the application of IFPUG FPA method in a particular situation. iTips are not rules, but interpretation of the rules, and provide guidance using realistic examples to explain the topic being covered.

This iTip is focused on describing the IFPUG FPA method as it applies to derived data as defined in the current CPM. This iTip provides examples of what is considered derived data and what is not. This is not an exhaustive examination of the subject.

Background

There are currently three areas in Part 1 (the rules) of the CPM addressing Derived Data.

In the Terms and definitions section of the ISO standard, the definition states:

- *Section 3 – Terms and Definitions*

   3.17 derived data: data created as a result of processing that involves steps, other than or in addition to, direct retrieval and validation of information from data functions

Within the processing logic section, derived data is given a narrower scope, because it just focuses on that type of derived data that makes a difference between an EO and an EQ:

- *Section 5.5.2.3 – Forms of Processing Logic*

   9. Derived data is created by transforming existing data to create additional data

This directly affects the elementary process classification of an External Output:

- *Section 5.5.3 – Classify Each Elementary Process*

b) an EO, if it has the primary intent of presenting information to the user and it includes at least one of the following forms of processing logic:

1) mathematical calculations are performed;

2) one or more ILFs are updated;

3) derived data is created;

4) the behavior of the application is altered,

There are two concepts that are represented here – the first is the definition of derived data which is very broad; the second is the type of derived data that qualifies as processing logic that makes a difference between an EQ and EO, which is much narrower.

When establishing accounts, the unique identifiers often contain derived data. They are created by transforming existing data to create additional data such as government identification numbers, Credit Card Numbers, Driver's License numbers from some countries and Vehicle Identification Numbers. Most often, the resulting derived data from the process of transforming existing data to create additional is stored in an ILF.

The justification for classifying an elementary process as an EO or an EQ is not the presence of derived data. It is the presence of the element of *processing logic* which states how the data is derived – specifically that "Derived data is created by transforming existing data to create additional data" - Number 9 in the Forms of processing logic table.

The following examples illustrate the application of the above discussion in evaluating the presence of derived data vs. processing logic to derive data for presentation, thus allowing classification as an EO.

Example 1: Populating a "Y" or an "N" on a Report

A field on a report is populated with "Y" or "N" following the rule - if the customer in the report is willing to receive emails or not - the information on receiving the email is stored on an ILF as an email address. The processing logic checks for an email address in the ILF; if found, the field on the report is populated with "Y", otherwise with "N".

This would be classified as an EQ. To be counted as an EO, requires that "Derived data is created by transforming existing data to create additional data" (CPM part 1, Page 15). This is not the case in this example. The "Y" or "N" is a result of Form 3 of processing logic "Equivalent values are converted".

Other forms of processing logic involved are:

- Form 1, "Validations are performed",
  (Validation is usually indicated by a true/false situation),
- Form 7, "One or more ILFs or EIFs are referenced", and
- Form 11, "Prepare and present information outside the boundary".

Example 2: Logical Results Displayed

To determine what customers should appear on a report the processing logic checks for customers that live in Maryland, have dependents, and own a home.

This is as an EQ. To be counted as an EO requires that "Derived data is created by transforming existing data to create additional data" (CPM part 1, Page 15). This is not the case in this example. The forms of processing logic involved are:

- Form 4, "Data is filtered and selected by…..",
- Form 7, "One or more ILFs or EIFs are referenced",
- Form 8, "Data or control information is retrieved", and
- Form 11, "Prepare and present information outside the boundary".

Example 3: Report Includes Hard-Coded Information

A report displays a comment if the customer is from Maryland. The report displays a different comment if the customer is a home owner. If both conditions exist, the home owner comment takes precedence. The comments are hard-coded. Hard-coded data is generally the type of code data classified as static data. It is treated the same as if the static data were stored in a table structure.

This is an EQ. To be counted as an EO requires that "Derived data is created by transforming existing data to create additional data" (CPM part 1, Page 15). This is not the case in this example. The content of the hard-coded comment field is from Form 3 of processing logic "Equivalent values are converted".

The other forms of processing logic involved are:

- Form 4, "Data is filtered and selected by…..",
- Form 5, "Conditions are analyzed…..",
- Form 7, "One or more ILFs or EIFs are referenced",
- Form 8, "Data or control information is retrieved", and
- Form 11, "Prepare and present information outside the boundary".

Example 4: Populating a "Y" or an "N" Based on a Calculation

 On an Inventory Report, the 'Reorder Now' field is populated with "Y" or "N" depending on if the reorder point has been reached. The processing logic checks the quantity on hand to see if it is less than or equal to the reorder point value. If true, the 'Reorder Now' field is set to yes.

This is an EO based on the assumption that the quantity on hand is calculated.

If the quantity on hand is not calculated, it is simply a comparison of the quantity on hand to the reorder point. It must be noted that comparisons (less than, greater than, equal, etc.), by themselves do not constitute a mathematical formula or calculation. That is processing logic Form 5, "Conditions are analyzed....."

Example 5: Print Advertising Messages

A Customer Letter includes advertising messages retrieved from an EIF based on customer profile data (e.g., previously ordered certain services).

This is an EQ. To be counted as an EO requires that "Derived data is created by transforming existing data to create additional data" (CPM Part 1, Page 15). No derived data is created in this example.

The forms of processing logic involved are:

- Form 4, "Data is filtered and selected by.....",
- Form 5, "Conditions are analyzed.....",
- Form 7, "One or more ILFs or EIFs are referenced",
- Form 8, "Data or control information is retrieved", and
- Form 11, "Prepare and present information outside the boundary".

Example 6: Transactional Data

An application extracts records that have been added, updated or logically deleted from one of its ILFs and sends them to another application. It must include a transaction code for add, change or delete.

This would be classified as an EQ. To be counted as an EO requires that "Derived data is created by transforming existing data to create additional data" (CPM part 1, Page 15). This is not the case in this example. The transaction codes are based on a logical determination and not a transformation.

The forms of processing logic involved are:

- Form 3, "Equivalent values are converted",
- Form 4, "Data is filtered and selected by.....",
- Form 5, "Conditions are analyzed.....",
- Form 7, "One or more ILFs or EIFs are referenced",
- Form 8, "Data or control information is retrieved", and
- Form 11, "Prepare and present information outside the boundary".

Example 7: Transformed Data

An application has an elementary process to print the shipping label with the unique package tracking number as a QR code. The package tracking code is a derived field consisting of Customer ID, shipping company, order ID. (Note: we are

not intimating that the QR generation process is derived data – just the package tracking code itself is.) The information is not stored as part of the elementary process.

This would be classified as an EO. Form 9, "Derived data is created by transforming existing data to create additional data" is involved.

Other forms of processing logic involved are:

- Form 7, "One or more ILFs or EIFs are referenced",
- Form 8, "Data or control information is retrieved", and
- Form 11, "Prepare and present information outside the boundary".

Summary

For an output transaction to be classified as an EO due to derived data, the processing logic must transform existing data to create additional data. The presence of derived data alone is not sufficient.

Frequently Asked Questions (FAQ)

1. Is there ever a situation where derived data is created by transforming existing data to create additional data in an output transaction where the data is not also updating an ILF?

   Yes, see Example 7. However it is far more likely for derived data to be created as part of an external input or to be saved as part of the elementary process when it occurs as an output because it generally represents something that the user wants to use in the future.

2. Is formatting data for presentation a situation where derived data is created by transforming existing data to create additional data?

   No. There is no additional data created by formatting. Formatting data is part of form 11 of processing logic: "*Prepare and present information outside the boundary* or Form 3 of processing logic: *Equivalent values are converted.*

3. Is displaying retrieved information from a code table as a result of logical analysis a situation where derived data is created by transforming existing data to create additional data?

   No. New data is not created as part of the elementary process.

Further Reading

IFPUG Counting Practices Manual, Part 1, Section 5.5 – Measure Transactional Functions.

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