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1 Introduction

This document contains a description of the calculation rules to be used in the 2006/07 Train to Gain (TtG) calculation module. This module will be included in the learner information suite (LIS) and in the online data collection portal.

The same module will be used for FE and WBL data collected through Provider Batch, and for WBL data collected through Provider Online.

The rules are shown in the same order as the calculations should be executed in the calculation module.

Section 4 shows lookup parameters which are not dependent on learner or aim data, and which have single values only. These values are held externally to the code, allowing values to be changed without changing the code. To allow use of the calculation module in other non-LIS applications, the calculation module should load these values from an external data source. These variables are referred to in a different font.

Section 5 shows lookup parameters which are either dependent on learner or aim data, or which have multiple values. As with other lookups, these values are held externally to the code, allowing values to be changed without changing the code, and as with other lookups the calculation module should load these values from an external data source.

1.1 Calculation module structure and interfaces

The calculation module must be provided as a modular component, to allow its use by other applications. There needs to be an interface to the module which third party MIS suppliers in the sector can use to call the module outside of the LIS. Documentation of this interface should be a deliverable for this project.

It is also expected that the LSC will wish to make the source code of this calculation module available to third party software suppliers. The source code should be written with this in mind, and the source code itself should be a deliverable from this project.

1.2 Validation

The calculation module should be passed a set of learner data from the LIS. These learners should not have failed any ILR Validation Rules that are marked as "Funding" rules in the Validation Rule Specification. (Note that this doesn't necessarily mean the data has **passed** all such rules: for example some FE rules would not apply to WBL learners, and WBL learners would neither have passed nor failed such rules as they should not have been tested against those rules.)

2 Input and output files

2.1 Input fields

In the current LIS FE funding calculation module, there is a function contained within the module to allow calling applications to determine which fields are required to call the calculation. Therefore interrogating applications can access an updated list similar to the one below. It is desirable that the new module should have a similar function.

For the equivalent FE calculation module, these fields are passed to the calculation module in two input files, one at learner level and the other at aim level. For this Train to Gain calculation module, there are few fields at learner level, so it is suggested that these fields should be passed in a single file, showing all data at aim level.

Field	Source	What is field used for?
L01	ILR	Identify provider
L03	ILR	Identify learner
A05	ILR	Identify aim sequence
A10	ILR	Identify if aim is TtG funded
A18	ILR	Identify which rate to use for some aims
A27	ILR	Aim start date - used to identify which year/period to assign start funds to
A28	ILR	Aim learning planned end date used to identify which year/period the learner MAY achieve in, if they achieve on planned end date
A31	ILR	Actual end date - used to identify which year/period to assign achievement funds to, for FE collection data (instead of A40).
A35	ILR	Identify that learners have achieved (used for WBL collection types)
A39	ILR	Identify that learners have achieved and are claiming achievement funding (used for FE collection types)
A40	ILR	Achievement date - used to identify which year/period to assign achievement funds to, for WBL collection data (instead of A31).
A46a	ILR	National learning aim monitoring (field 1) - used to identify level 3 pilots
A46b	ILR	National learning aim monitoring (field 1) - used to identify level 3 pilots
IsCollectionWBLOrFE	ILR	Based on the ILR collection, this field is F if this data file is an FE-collection file, or W if this file is a WBL-collection file.
TTG_Rate1	LAD	New field to identify (unweighted) Funding Rate1. For some types of aim (Skills for Life) this would be the only rate available; for others this would be the

Field	Source	What is field used for?
		higher of two rates.
TTG_Rate2	LAD	New field to identify (unweighted) Funding Rate2. For some types of aim (Skills for Life) this would be blank; for others this would be the lower of two rates.
TTG_Wgt_Factor_Code	LAD	New field to identify programme weighting for Train to Gain aim.
SKILLS_FOR_LIFE	LAD	Existing field which identifies aims which count towards Skills for Life target. Used to determine which funding calculation to use and whether to use A18 to look for a second rate.
AREA_COST_FACTOR	Providers table	Weighting of rates, based on Area Cost for that provider (and in some cases, that Local LSC). See section 2.5.1 for more information on how this is derived.

The LAD data source should be selected from the relevant table, using the aim reference from field A09, using the relevant academic year.

The Providers data source should be selected from the tables in LIS holding Provider information. More information is in section 2.5.1.

2.1.1 Other ILR fields required for funding but not passed to the funding calculation module

These fields are additional ILR fields (in addition to those above) which are required to locate the correct fields to pass to the funding calculation module, but aren't in themselves used by that module.

Field	Source	What is field used for?
L25	ILR	Identify local LSC of provider - required to select correct Area Cost.
A09	ILR	Aim reference in LAD

2.2 Result data from calculation module

The following table is the main results table from the TtG calculation funding module.

A results record would only be present in this file if one of the funding fields is non-zero for that aim in that period. So for periods when an aim is learning, after the start period, but before the learner achieves, there would not be a result record (as the values would be zero).

Details of the calculations populating this table are in section 3.

Table: TtGFundingData

Field	Description
L01	Identify provider

L03	Identify learner
A05	Identify aim sequence
AcYear	Academic Year which this funding is assigned to
Period	Period (month) which this funding is assigned to
StartFund	Funding for starts
AchFund	Funding for achievements
PotentialAchFund	Potential Achievement funding if learner achieves on planned end date. Note that this calculation is not required to calculate actuals, but it is likely to be helpful to have an indication of maximum possible achievement funding, and when it may be claimed, and it is convenient to calculate in this module rather than attempt to reproduce the calculations elsewhere.

2.3 Calculation steps from calculation module

In the FE calculation module it has been found helpful to have an extra table of "Calculation Steps". These are not calculation results, but record some of the logical branches taken by the software in the process of the calculation. They have been found to be very helpful to support users in their understanding of what's happening.

For Train to Gain, the calculation is much simpler, but as it is new to all providers and LSC users, the calculation steps are included to help understanding.

Table: TtGCalcSteps

Field	Description
L01	Identify provider
L03	Identify learner
A05	Identify aim sequence. This could potentially be 0 for Calculation Steps at learner level
CalcSeq	Identify the sequence of the calculation step for that value of L01/L03/A05. Each new calculation step is assigned the next available integer value
CalcStepCode	Code for this particular type of calculation step. There will be an associated table of TTG Calculation Step Codes, with a description of each, which will be used in the Funding Viewer.
CalcValue	Result value for that calculation step.

2.4 Calculation errors from calculation module

There are some cases where the calculation module does not find data it is expecting. Generally, if these relate to ILR data, then it should be possible to prevent this happening through ILR validation rules.

It is also possible that the errors stem from data issues in the LAD. It is not possible to trap all such instances through validation rules.

If the developers identify any such issues during the course of coding, they should feed them back to the LSC.

If errors are identified at runtime then a Calculation Errors table should be used to hold errors:

Table: TtGCalcErrors

Field	Description
L01	Identify provider
L03	Identify learner
CalcErrorCode	Identify the error code for this error.
ErrorMessage	Text message including details of the specific invalid data value that caused the problem (for instance LAD aim reference)
FunctionName	Internal name of the function causing the problem

2.5 Data passed to calculation module

Certain logical steps are required in the surrounding components in LIS (and Online Data Capture) that create the data to be passed to the calculation module. More details are shown in this section. These calculations are not part of the calculation module itself, but part of the application calling the module.

2.5.1 Area Cost Factor Data

Area Cost Factors should be passed to the calculation. For 2006/07, a further table will be added to the LIS (and online data capture) holding Provider Train to Gain Area Cost Factors for a given combination of L01 (Provider Number) and L25 (LSC Number of Funding LSC).

For each learner, the calling application should do the following;

- a if L25 is non-zero for that learner (which should be true for WBL collections), lookup in this table for the combination of L01 and L25 for the learner. If it finds a match, it should pass the value from the Area Cost Factor from that table. If it does not find a match, it should pass a default Area Cost Factor of 1.
- b if L25 is zero for that learner (which should be true for FE collections), lookup in the table for the combination of that value of L01, and an LSC number of 000. If it does not find a match, it should pass a default Area Cost Factor of 1.

Area costs factors should be held to 5 decimal places, so an example value might be 1.12345

2.5.2 LAD Data

Data from the LAD should be retrieved from the All_Annual_Values table and the TTG_Annual_Values table. Data should be selected from these tables based on the current academic year and the value of A09 (Learning Aim Reference) from the ILR.

3 Calculation of Train to Gain funding

This section shows the calculation of train to gain funded for a single learning aim. The calculations are shown in the order which the calculations should be run for each aim.

3.1 Determine if aim is LSC-TtG funded

A learning aim is flagged as LSC Train to Gain (TtG) funded based on a lookup on ILR field A10 (LSC Funding Stream), using lookup variable ILRA10TTGFunded. The lookup will hold a Yes/No value for each value of A10. If the lookup returns a value of Yes (currently for the value A10=60), then the aim is funded through the Train to Gain stream.

The Calculation step *LSCTtG_FundedA10* should be set to Yes if the value of A10 shows the aim is Train to Gain funded, to No otherwise.

If A10 shows the aim is not TtG funded, then no further calculations are required for this aim and the calculation for this aim can exit.

Note that it is assumed that validation rules would have already checked (using the LAD) that the aim is one which is fundable through Train to Gain.

3.2 Determine if aim is not Formula Funded through standard method

For some aims (currently for Level 3 Pilots), the normal Train to Gain funding calculation should not be applied.

This is determined using ILR field A46a and A46b (National Learning Aim Monitoring), using lookup ILR46DontCalculateFunding. If this lookup returns a value of "NoCalc" for either A46a or A46b, then no further calculations are required for this aim.

Currently a value of A46=63 will stop funding calculations from being attempted.

The Calculation step *LSCTtG_FundedA46* should be set to No if either value of A46 shows the aim is not Train to Gain funded. The calculation step should not be returned otherwise.

3.3 Determine Base Funding Rate for Aim

The input data for the calculation module will include the TTG_Rate1 and TTG_Rate2 fields from the LAD.

If the TTG_Rate1 field is zero or null, then the calculation module should report an appropriate Calculation error (see section 2.4) and exit the whole calculation for that aim.

If the Skills_For_Life_Code in LAD is 'Y', then the base funding is found in the TTG_Rate1 field. If this is so, then the function can return this value and continue to section 3.4 (as no further work is required to determine the base rate), after setting calculation step *BaseRate* to the calculated value followed by "(SFL)".

If the Skills_For_Life_Code in LAD is not 'Y' then the field value in ILR field A18 (Main Delivery Method) should be used with the lookup ILRA18WhichRate. This lookup will return a

value 1 or 2, and TTG_Rate1 or TTG_Rate2 should be used accordingly. Calculation step *BaseRate* should be set to the calculated value followed by "(A18=nn)" where *nn* is the value of A18.

If the TTG_Rate2 field was used, but contains a zero or null value, then the calculation module should report an appropriate Calculation error (see section 2.4) and exit the whole calculation for that aim.

3.4 Determine Weighted Funding Rate for Aim

Based on the Base Rate for that aim calculated in section 3.3, calculate the weighted base rate for the aim by multiplying the base rate by both of the following:

- a The Area_Cost_Factor
- b The programme weighting factor for the aim. This is determined from the TTG_Prog_Weight_Code field from the LAD (which gives a code A, B, C) and the lookup LAD_TTGPW_Value, which gives a numeric value for that code.

Calculation step *WgtBaseRate* should be set to the weighted base rate.

3.5 Determine Start Funding and Period for aim

3.5.1 Determine Start Period and Year for Aim

Based on the start date in ILR field A27 (Learning Start Date), determine the start academic year and period for that aim. The rules should use a formula to convert calendar month and year into the month within the academic year (with Month 1 being August), and the academic year itself.

Examples are indicated in the table below:

Date range	Period	Academic year
1/8/2006 - 31/8/2006	1	2006/07
1/8/2006 - 31/12/2006	(Calendar Month -7)	2006/07
1/1/2007 - 31/7/2007	(Calendar Month + 5)	2006/07
1/8/2005 - 31/12/2005	(Calendar Month -7)	2005/06
1/1/2006 - 31/7/2006	(Calendar Month + 5)	2005/06
1/8/2007 - 31/12/2007	(Calendar Month -7)	2007/08
1/1/2008 - 31/7/2008	(Calendar Month + 5)	2007/08
etc.		

Note that the examples include calculations for start dates in 2005/06 - in practice these dates should not arise, but the calculation module should be constructed using a formula that will work for any year, so that for example a date several years into the future would still be assigned to the correct academic year.

Set Calculation Step *StartPeriod* to this period (value from 1 to 12). Set Calculation Step *StartAcYear* to the academic year (formatted as "2006/07").

3.5.2 Determine Start funding for aim

Once the start period has been determined, assign the Start Funding to that period in the result record for the combination of provider/ learner/ aim/ academic year/ period.

The StartFund value for that period is calculated by multiplying the factor StartFundingProportion by the weighted base rate calculated in section 3.4.

3.6 Determine Achievement Funding and Period for Aim

This is based on input value IsCollectionWBLOrFE. If this is F, then ILR field A39 (Eligibility for Achievement Funding) is used to determine achievement, otherwise A35 (Learning Outcome) is used.

3.6.1 Determine if learner achieved aim

If IsCollectionWBLOrFE is F, then use the value in ILR field A39 (using the lookup ILRA39DidTheyAchieve to determine if the value of A39 is one which counts as achievement. If Yes, then continue to determine achievement period and year after setting Calculation Step *AimAchieve* to "Yes (A39)", if not, then set the Calculation Step *AimAchieve* to "No (A39)", and the rest of the calculations in section 3.6 are not required for this aim.

If IsCollectionWBLOrFE is not F, then use the value in ILR field A35 (using the lookup ILRA35DidTheyAchieve to determine if the value of A35 is one which counts as achievement. If Yes, then continue to determine achievement period and year, after setting Calculation Step *AimAchieve* to "Yes (A35)", if not, then set the Calculation Step *AimAchieve* to "No (A35)", and the rest of the calculations in section 3.6 are not required for this aim.

If the learner did achieve this aim, then continue with the following calculations:

3.6.2 Determine Achievement Period and Year for Aim

The date to use to determine the achievement period depends on the collection being used. This is based on input value IsCollectionWBLOrFE. If this is F, then ILR field A31 (Learning Actual End Date) is used as a date, otherwise A40 (Achievement Date) is used.

The date is converted into a period within the academic year, using the same calculation as in section 3.5.1. Set Calculation Step *AchPeriod* to this period (value from 1 to 12) followed by "(A31)" or "(A40)" in brackets as appropriate. Set Calculation Step *AchAcYear* to the academic year (formatted as "2006/07") followed by "(A31)" or "(A40)" in brackets as appropriate.

3.6.3 Determine Achievement funding for aim

Once the achievement period has been determined, assign the Achievement Funding to that period in the result record for the combination of provider/ learner/ aim/ academic year/ period.

The AchFund value for that period is calculated by multiplying the factor AchFundingProportion by the weighted base rate calculated in section 3.4.

3.7 Determine Maximum Potential Planned Achievement Funding and Period for Aim

This is the potential achievement funding for that aim if it finishes on the planned end date. This is not a required "actual" result, but calculating it is likely to be helpful for those attempting to estimate likely future achievement funding. Further factors (such as likely success rates) would be needed to create accurate estimates - the value calculated here is based on each learner achieving the aim on the planned end date, so the total for all learners is likely to be more than the actual achievement.

3.7.1 Determine whether Potential Achievement is required

If the aim has already been achieved (determined in section 3.6.1) then no calculation of PotentialAchFund is required, and the calculation can exit section 3.7 after setting Calculation Step *PlanAch* to "No (Achieved)"

If IsCollectionWBLOrFE is F, then use the value in ILR field A39 (using the lookup ILRA39DefiniteNoAchieve to determine if the value of A39 is one which means the learner has not achieved this aim. If this lookup returns "NoAch" then no calculation of PotentialAchFund is required, and the calculation can exit section 3.7 for this aim after setting Calculation Step *PlanAch* to "No (A39)".

If IsCollectionWBLOrFE is not F, then use the value in ILR field A35 (using the lookup ILRA35DefiniteNoAchieve to determine if the value of A35 is one which means the learner has not achieved this aim. If this lookup returns "NoAch" then no calculation of PotentialAchFund is required, and the calculation can exit section 3.7 for this aim after setting Calculation Step *PlanAch* to "No (A35)".

3.7.2 Determine Potential Planned Achievement Period and Year for Aim

The date to use to determine the planned achievement period is ILR field A28 (Learning Planned End Date).

The date is converted into a period within the academic year, using the same calculation as in section 3.5.1.

Set Calculation Step *PlanAchPeriod* to this period (value from 1 to 12). Set Calculation Step *PlanAchAcYear* to the academic year (formatted as "2006/07").

3.7.3 Determine Potential Planned Achievement funding for aim

Once the achievement period has been determined, assign the potential planned achievement funding to that period in the result record for the combination of provider/ learner/ aim/ academic year/ period.

The PotentialAchFund value for that period is calculated by multiplying the factor AchFundingProportion by the weighted base rate calculated in section 3.4.

4 Lookup parameters with single values and independent of learner and aim data

LookupKeyValue	Value	Comment
AchFundingProportion	0.5	Percentage of funding to be assigned to achievement
StartFundingProportion	0.5	Percentage of funding to be assigned to start
PeriodsPerYear	12	This isn't a lookup but is instead a constant variable. The aim is to not hard-code the value "12" throughout the code.

5 Lookup tables based on input learner and aim data, or with multiple values

LookupField	Value1Means	Value2Means	Value3Means (or comment)
ILRA10TTGFunded	Is this value of A10 LSC-TTG Funded?- Yes/No		
ILRA18WhichRate	For this value of A18, which rate field in LAD to use? Values 1, 2 or 'None'		
ILRA35DefiniteNoAchieve	Does this value of A35 mean learner definitely did not achieve (and therefore won't have achievement on the planned end date). Possible values are "NoAch" and "Unspecified"		
ILRA35DidTheyAchieve	Does this value of A35 generate achievement funding? Yes/No (Used for WBL collections)		
ILRA39DefiniteNoAchieve	Does this value of A39 mean learner definitely did not achieve (and therefore won't have achievement on the planned end date). Possible values are "NoAch" and		

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LookupField	Value1Means	Value2Means	Value3Means (or comment)
	"Unspecified"		
ILRA39DidTheyAchieve	Does this value of A39 generate achievement funding? Yes/No (Used for FE collections)		
ILR46DontCalculateFunding	For some values of A46, the calculation module should not attempt to calculate Train to Gain funding. If either value is NoCalc then the calculation should not be attempted. Possible values are NoCalc/Calc		
LAD_TTGPW_Value	Programme Weighting Factor as a numeric value, for each alphabetic weighting factor code value		

6 Assumptions

Assumption
<p>1. The indicative rates document says that additional learning support can also be claimed for Train to Gain learners.</p> <p>It is assumed that additional support will not be formula funded in a way that needs to be calculated by this module.</p>
<p>2. It is assumed that the actual end date will be used to set the achieving period for learners in FE collections who achieve.</p> <p>The logic is that this allows the monthly summary report to be stable (so that the same learner doesn't appear as "this month" in several different reports).</p> <p>An alternative proposal was to use collection to indicate when a learner achieved, but this would give unstable results for providers as the same learner could appear in LIS reports as achieving "This month" for several months. Also the collections do not take place on month boundaries so again this would not make sense. Also cross-year learners would cause a problem in future.</p>
<p>3. It is assumed that each aim will generate funding purely based on the setting of A10. If a learner starts multiple aims (possibly withdrawing from one or more of them) then each aim will generate a separate start payment regardless of any start payments that learner may have already received.</p>
<p>4. It is assumed that A10 will only be set to 60 for learners eligible for train to gain funding. This module does not attempt to validate A10 based on other ILR fields, or to generate a zero result where other ILR fields indicate the learner may not be eligible.</p>

7 Validation Rules Assumed

The validation rules in the following areas are required to ensure the Train to Gain calculation works:

7.1 ILR Validation required

- a Validation is required to ensure that A10 is only set to "Train to Gain funded" if the aim is present in the LAD TTG_ANNUAL_VALUES table, with a status of 1 or 2.
- b Validation is required to ensure that if A10 is set to "Train to Gain funded", then A18 must be one of the 2 new values allowable for Train to Gain.
- c For WBL collections with, if A10 is set to "Train to Gain funded", then A40 must not be null if A35 is set to a value which generates achievement funding for Train to Gain.
- d For FE collections with, if A10 is set to "Train to Gain funded", then A31 must not be null if A39 is set to a value which generates achievement funding for Train to Gain.
- e All ILR fields should be in the correct format (for example Date fields should contain dates).
- f All ILR fields which are based on a list of valid codes (such as L25, A10, A18, A46, A35, A39) must contain a valid lookup if entered.

7.2 LAD Validation required

- a Validation is required to ensure that if the status in the LAD TTG_ANNUAL_VALUES table is 1 or 2, then TTG_Rate1 field is not null
- b Validation is required to ensure that if the status in the LAD TTG_ANNUAL_VALUES table is 1 or 2, and the SKILLS_FOR_LIFE field in the ALL_ANNUAL_VALUES table is not =Y, then TTG_Rate2 field is not null.