

## Putting **People First** Transforming Adult Social Care

# PSS EX1 Medium Term Solution : Approach & Design

### Care Services Efficiency Delivery: supporting sustainable transformation

As part of the recent review of the PSS EX1 return, DH made a commitment to look at an alternative way for collecting PSS EX1 and related returns (referred to as the 'medium term solution' in the two published DH documents covering the revisions).

At the time we envisaged creating two related deliverables to 'prove the concept' of the proposed medium term solution:

- Input to the NHS Information Centre's goal of achieving a national data warehouse (the National Adult Social Care Intelligence System [NASCIS]), a key element of which we saw as standardisation of the underlying data; and
- A tool to demonstrate how a semi-automated solution to producing PSS EX1 and related returns might be implemented.

This document addresses the former of these deliverables, using our learning from developing the latter to illustrate how this might work.

The majority of the document is targeted at the technical audience.

### **The challenge we are addressing**

The current PSS EX1 return is recognised as being both; unreliable as a source of comparative unit cost data, and limited in its ability to address the transformation agenda necessary to sustain social care provision for the increasing numbers of individuals in need of such services. The current mechanism for collecting such information is constrained by the somewhat two-dimensional nature of spreadsheets and the fact that the burden for completing such templates increases as more detailed information is requested (and the new returns for 2008-09 and 2009/10 request this). Furthermore, the data which underpins the PSS EX return often resides in multiple systems (finance, care management, off-site, spreadsheets, Supporting People, and so on). Whilst a few of the larger councils have data warehouse solutions to collate this data, to date the interfaces to the wide variety of, often incompatible, systems is highly bespoke. This is not helped by the fact that, even with systems from the same software provider, councils have configured their implementations in completely different ways.

Transformation under Putting People First requires joined up analysis of client level data from these disparate sources and integration of relevant demographic data (usually from public sources). Without standardisation of the data, the costs to implement the emerging products can be high.

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### Preface to Version 2 of this document

The appendices of this document have been updated in this version of the document. However, we are not updating the body of the document until the TRIPS functionality fully stabilises. For this reason distribution of this document is restricted to those who have made comments on the appendices.

### Background to this document (and our Tool for Rapid Analysis of Care Services)

This document (and the associated tool being developed) evolved out of our experiences of implementing our Tool for Rapid Analysis of Care Services (TRACS). TRACS has been successful in the following respects:

- It has demonstrated the feasibility of bringing data from the widely disparate care management system implementations (both in system and in configuration terms) together into a standard tool for analysis and simulation purposes. For the commonly used systems (CareFirst, SWIFT, Raise and, shortly, Paris) we can usually do the necessary mapping within a day or so);
- It has provided councils who have had the drive with a tool to investigate changes to prices, quantities, costs and mixes of changes. Analysis which would often take weeks using traditional approaches can be done in minutes with TRACS; and
- It has shown that it is possible to very quickly view care management data in much more informative and interactive ways (on Google® Maps and Microsoft Office charts) than those traditionally made available via existing solutions.

However, whilst TRACS has been implemented in a significant number of councils, there are only a handful who are making active use of it. Our friendly critics tell us that the main reason for this is that, whilst TRACS provides useful 'what-if' scenario analysis, it is not an operational (and therefore, routinely maintained) tool. TRACS was designed to test commissioning options quickly and, within the context of operational use, suffers from the following:

- It does not routinely capture 'actual' data from either finance or other real-time operational systems (such as electronic monitoring and scheduling systems);
- Because price change simulation requires information at transaction level, the volumes of data TRACS collects is large (with the big Shires we routinely hit limits). In practice we have learnt there is a better way to do this;
- The lack of standardisation has meant that interfaces to new systems has taken longer than we had hoped – and we have done the majority of this work;
- Because of the lack of 'actual' data TRACS is limited in its ability to provide routine management information (particularly about expenditure versus budget);
- The way that TRACS calculates client numbers over time is different to that usually required; and
- There were no 'must have' features – such as automated completion of returns – to encourage operational adoption.

TRACS was always seen as a means to an end – not an end in itself. (The end being to support councils with the information and analysis to commission more cost effective and efficient services).

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We believe that the approach described within this document is a much more comprehensive and useful means of achieving this end. It does not depend on TRACS, since this document is largely about standardisation to enable such solutions to be developed in a more consistent, and hopefully lower cost way.

In the new financial year (2008-09) we intend to migrate existing TRACS implementations to this new way of meeting this end (supported by the tools we are building with this end in mind).

### Our vision for the medium term solution

The way we see the medium term solution working is somewhat different to how the process of collecting returns now operates:

- The council routinely loads all of the data required to complete the PSS EX1 and related returns into a single, locally operated, data repository (hereafter referred to as the data warehouse). Some councils already do this.
- The process of collecting this data is largely automated (enabled via the standardisation of import datasets into the data warehouse);
- Functionality associated with the data warehouse cleans, maps and merges these disparate sets of data into a cohesive dataset (the toolkit we are developing supports this process);
- Rich reporting and analytical tools (graphing, mapping, etc) are routinely used by council staff to decide on optimal service configurations, monitor trends, and manage their services. Richer and more comprehensive PSS EX1 and related returns outputs are available as monthly (or weekly) views of this information;
- In order to develop robust and evidence based commissioning strategies, councils are quickly able to feed relevant data into the emerging set of applications designed to support this activity (e.g. CareTrak, Dr Foster, Planning4Care, etc.). (The cost for using these tools has been lowered by standardisation of export datasets);
- At the time of the annual returns a single aggregate dataset is sent to the NHS Information Centre for loading into the national data warehouse. This is a database friendly extract (XML) which can be generated automatically and processed automatically. The configuration necessary to convert from council language to standard language is a core part of the operational data warehouse;
- Because the dataset is database friendly, it can be processed quickly. By the next day, the council is able to log into the national data warehouse and see how it compares with other councils from the perspective of all of the current returns;
- Once it has identified other councils it may wish to have a more in-depth benchmarking discussion with, there is a conversation which compares how the data has been compiled. Because the process for mapping is the same and the mapping configuration is visual, the councils can quickly re-configure their data to make it more comparable (transparency versus consistency). The NHS Information Centre may also collect this mapping data to refine definitions for the future.

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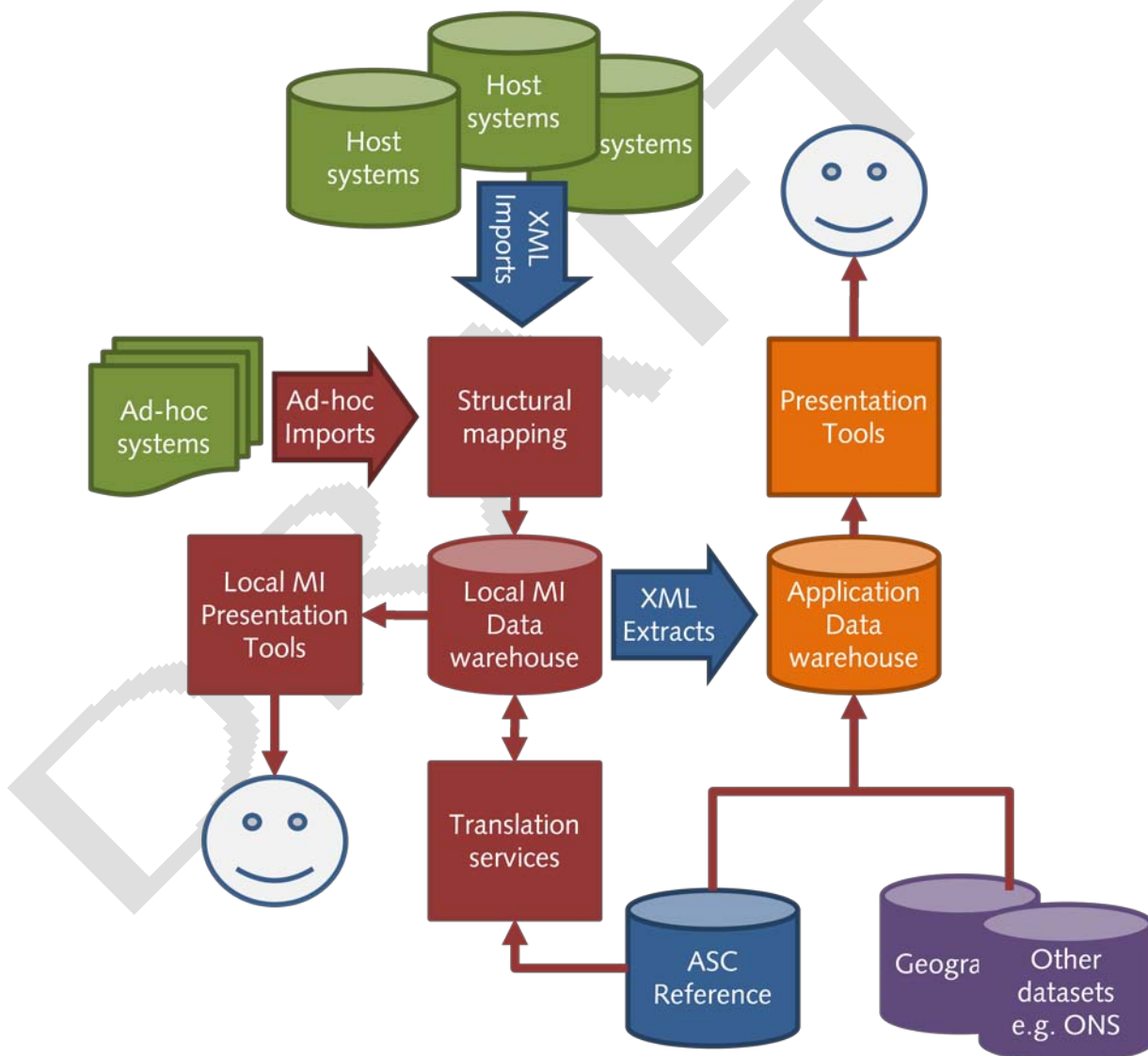
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- As new services and client categories (e.g. health) come to the fore, there is an annual process for reviewing a richer set of definitions than is currently the case and there is agreement to which subset of these are mandatory for the return in the following year. There are no changes to the underlying systems – existing terms are simply re-mapped to new headings (another part of the data warehouse).

It is this vision which provides the basis for the rest of the document.

## Solution Architecture

The following diagram provides an illustration of the architecture which has been assumed for the purposes of identifying where we believe standardisation is required and what the functionality of an appropriate data warehouse might look like (the basis of the tool we are developing). We hope that this is suitability generic for any solution (either existing or in development).

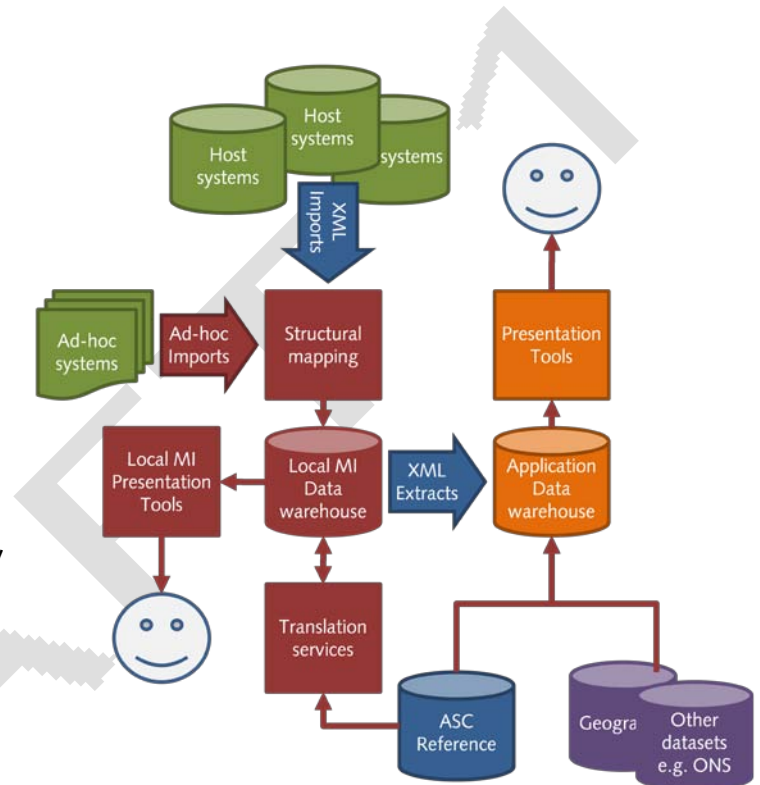


First of all the colour coding (apologies for those reading this page in shades of grey):

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- The blue components** (*XML Imports, XML Extracts and ASC Reference*) represent the parts of the architecture which we believe benefit from standardisation. The vast bulk of this document (in terms of pages) represents a first attempt at this standardisation. Whilst the focus has been on the PSS EX1, the fact that PSS EX1 relies on so many of the other returns means that we have attempted the ambitious and put a peg in the sand for the purposes of many of the other returns as well (RAP, Combined Activity Return, etc.). See later (especially the Appendices) for more details.
- The green components** (*host systems and ad-hoc systems*) represent the existing sources of information (care management, finance, spreadsheet, etc.). Such systems are usually designed to optimise transaction efficiency and often do not lend themselves readily to the production of useful management information.
- The orange components** (*Presentation tools and Application Data warehouse*) represent the third party applications which add value to the information held by the council. Within this context the NHS Information Centre solution is seen as a third party application as are the offerings from Dr Foster and CareTrak and others. The simulation and presentation capabilities of our current TRACS product would also fit here.
- The purple datasets** (*Other datasets e.g. ONS, Geography and others such as Health and Demographics*) cover the additional datasets which the third party applications may access to add their value. They are separated because many are typically available within the public domain or councils already have access to them and may wish to build their own 'application' front ends.
- The deep red elements** (*ad-hoc imports, structural mapping, local MI Data warehouse, translations services and local MI presentation tools*) are the parts of the system which provides the storage and functionality we believe belong within the broader concept of the local data warehouse (and which we are building within the associated toolkit).



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### Concepts which underpin the design of the solution

#### A single dataset can provide all of the information necessary for PSS EX1 and related returns

Whilst there may be some changes – primarily to reduce those aspects of the current returns which can not be readily automated – we see no reason why the majority of activity and finance returns could not be compiled from a single dataset. This dataset is multi-dimensional as will be described later. The only exception we have found so far is the staffing return which will probably require a separate dataset (although the core set also proposes to capture staff numbers in the future).

#### XML versus Excel

We do not believe that Excel is the right way to collect this type of data – which predominantly resides in databases – for the 21<sup>st</sup> century. We are proposing XML as the standard.

#### Mapping versus Changing Systems

In the vast majority of cases we believe that councils do not have to change their existing systems or configurations to meet the emerging needs. This is the principle of mapping and translation illustrated, simply, below:

Council specific language	Common language
LD	Learning Disability
Learn Dis	Learning Disability

The benefit of this approach is twofold:

- It allows councils to have their own taxonomy without being constrained by national standards; and
- It creates flexibility for the future as new language becomes commonly adopted (particularly relevant within the context of transformation). A council simply remaps whatever heading they use into the new standard.

#### Two level (and sometimes three level) mapping

The PSS EX1 return for 2008/09 implements, initially on a voluntary basis, a second level of detail for service and client categories. This increases the visibility of changes to services as councils embrace the thinking behind Putting People First and the transformation necessary to meet financial constraints over the coming years.

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This is illustrated below. The 2008/09 return already requests that Dementia/EMI be separately identified – what we are suggesting here is that councils also map to the other sub-headings (which will hopefully receive attention around definitions moving forward).

Client group	Client class
Mental Illness	Depression
Mental Illness	Neurotic Disorder
Mental Illness	Dementia/EMI (required)
Mental Illness	...

Within the appendices, in the case of client categories, we have deliberately chosen sub-categories which align with the conditions held within POPPI and PANSI.

We are conscious that the prevalence factors which currently underpin the underlying tables, are based on research – often with a limited population on which to base them.

If councils are able to map to these lower levels a much richer source of statistics becomes available which can subsequently be used to improve the prevalence data.

We also believe there is a strong case to expand on the suggested Health related category in order to start to improvement alignment with PCTs.



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### The principle of data derivation

It is widely recognised that council's financial structures may not be able to split out these lower levels of detail. Whilst most councils have adapted their coding structures to align with the PSS EX1 return (in line with the Best Value Accounting Code of Practice [BVACOP]), even now there are some entries which councils prorate rather than populate directly.

The data warehouse solution offers a much richer mechanism for prorating missing information than is possible via traditional means (usually just client numbers and total expenditure). Information such as the exact number of clients, number of client weeks, quantity of service delivered, commitment value (based on the care plan), and so on, become available for prorating purposes. Furthermore, a data warehouse approach enforces a highly logical (and more auditable).

Service		Mental Illness					
Home Care		Clients : <b>10</b>		Commitment : <b>£800,000</b>		Cost : <b>£600,000</b>	
		Dementia			Other Mental Illness		
		Clients	Commitment	Cost	Clients	Commitment	Cost
	Home Care	<b>3</b>	<b>£400,000</b>	<b>A: £300k</b>	<b>7</b>	<b>£400,000</b>	<b>B: £300k</b>
	Reablement	<b>1</b>	<b>£100,000</b>	<b>C: £75k</b>	<b>3</b>	<b>?</b>	<b>E: £129k</b>
Personal Care	<b>2</b>	<b>£300,000</b>	<b>D: £225k</b>	<b>4</b>	<b>?</b>	<b>F: £171k</b>	

In this example we know:

- From accounts the actual amount spent on Home care within Mental Illness;
- From the care management system, the total number of clients and the total commitment values (as calculated from the care packages) for Home Care within Mental Illness.
- We also know the spread of clients across Reablement and Personal Care across both Dementia of our 'Other Mental Illness' category; and
- The commitment data about dementia clients receiving reablement and personal care.

What we don't know are:

- Actual expenditure at any of the lower levels of detail; and
- Commitments for Reablement and Personal Care for those with other forms of Mental Illness.

A suitable derivation priority rule might look something like:

If the Commitment value is available firstly prorate on this basis.  
Otherwise, if the number of clients is know then use this.

This would result in the following calculations to arrive at the prorated actual cost:

- |   |                                       |
|---|---------------------------------------|
| A. Commitment split evenly at the home care level, therefore  | = $400 * 600 / 800 = 300k$            |
| B. As above for B (both based on the Commitment value rule)   | = $400 * 600 / 800 = 300k$            |
| C. We know the commitment value for this client, therefore    | = $100 * 300 / 400 = 75k$             |
| D. Likewise for D   | = $300 * 300 / 400 = 225k$            |
| E. We do not know the commitment value, so we use the clients | = $3 * 400 / 7 = \text{approx } 129k$ |
| F. Likewise for F   | = $4 * 400 / 7 = \text{approx } 171k$ |

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### Weighted Derivation Rules

In the description of the proposed PSS EX1 dataset you will find fields ending with the word 'Weighting'. This provides a more refined approach to deriving the missing costs previously calculated.

To illustrate, Consider our previous example where the number of clients was used to derive an approximate amount for Other Mental Illness clients. Taking into account the duration of care as well as the intensity, and reviewing the data on those with Dementia, it seems that the cost of reablement is  $\frac{2}{3}$ <sup>ds</sup> (approximately 67%) of that for Personal Care. By applying this weighting we get an weighted cost split of £100k versus £200k (versus the original £129k versus £171k)

	Other Mental Illness			Weighting	Weighted Cost
	Clients	Commitment	Cost		
Home Care	7	£400,000	B: £300k		B: £300k
Reablement	3	?	E: £129k	67%	E: £100k
Personal Care	4	?	F: £171k	100%	F: £200k

The final fields in this part of the data cube simply capture any manual adjustments, along with a comment to capture why such an adjustment might have been necessary.

### Sometimes the data generated from systems is just wrong

Whilst we believe that active use of management information derived from the approach being proposed here will provide an incentive to clean data at source (something we have observed with TRACS users), there are still times when we recognise it is necessary to make manual adjustments. With the data warehouse approach it becomes easier to capture the audit path as to why such changes were made.

### Reconciling identities

Given the wide range of systems in use and the difficulties with some systems for ensuring uniqueness of identity, it is not surprising that the same individual or organisation can have multiple identities which need reconciling once the data is pulled together.

The rigorous use of identifiers such as the NHS Number for identification of individuals is one solution to this problem. However, even where this is tightly controlled within the care management environment, it is often desirable to link in data from systems where this rigour is not yet being applied.

Therefore, we believe the data warehouse will need to support other mechanisms to reconcile identities (and some of the data proposed within the import data sets is being suggested to enable such tools to be used). Technologies such as phonetic matching allow for this to be done relatively reliably.

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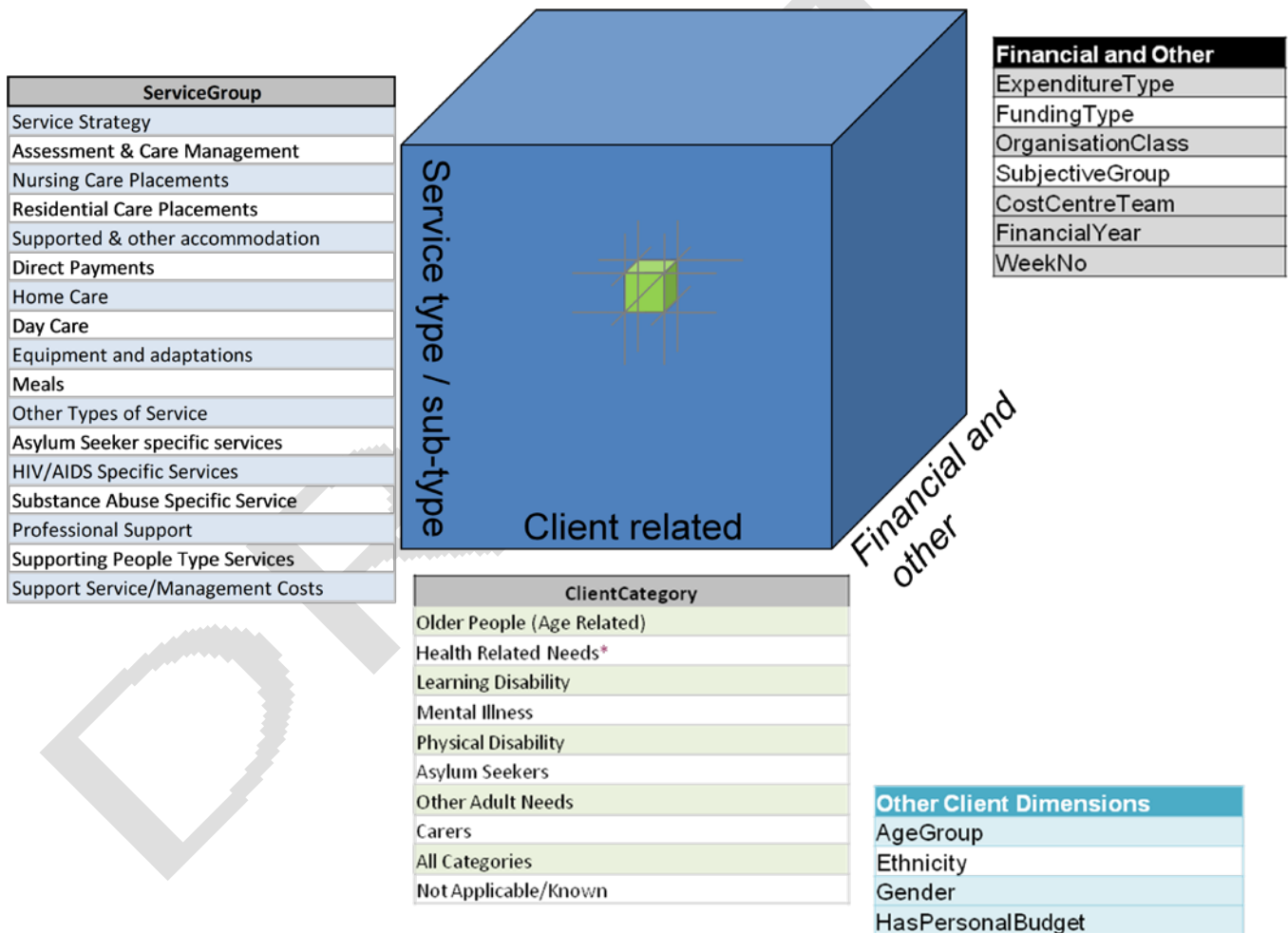
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### Applying the “datacube” principle to the PSS EX1 return

The PSSE EX1 dataset is intended to operate as a datacube (OLAP object for those familiar with the concept).

In addition to producing a report which we expect will look very similar to the current PSS EX1 spreadsheet, we anticipate online functionality will be provided to allow for analysis by any combination of the various dimensions. We expect the user to be able to drill down to any selected part of the cube.

At the centre of the cube is a set of data which can be numerically analysed. Some of this data is “Required” – a formal part of the PSS EX1 return. However, the warehouse has been designed to be of operational use and there are therefore additional fields to support this – both numerical and otherwise (for example, in the Financial and Other dimensions there is a CostCentreTeam field [to allow for the data to be selectively cascaded to team managers] and a WeekNo field [to allow for trend analysis over time]).



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### The Proposed PSS EX1 Dataset

The following dataset is split into three parts (please refer to the appendices for the latest version of this table):

- The first part contains the fields which make up the various dimensions of the cube;
- The second part (on the next page) holds the proposed values available for analysis; and
- The third part are behind-the-scenes fields for holding information about how certain fields may have been derived or manually adjusted for whatever reason – they provide an audit path.

Looking at each of these in turn:

#### *Dimensions of the cube*

Dimension	Field Name	Data Requirement	Ref Table	Field Definition
Identification	<b>PSSEX1ID</b>	Automatic		Unique row reference for the purposes of referring back to the individual record in the case of any queries
Identification	<b>AuthorityID</b>	Required	tbl_ASC_CSSRs	Reference to the Authority responsible for the data
Service	<b>ServiceGroup</b>	Required	tbl_ASC_ServiceGroups	Reference to the service group (LD, MH, etc) to which this information relates to (fixed code used in order to mask data)
Service	<b>ServiceCategory</b>	Conditional	tbl_ASC_ServiceCategory	Reference to the service category to which this information relates to (fixed code used in order to mask data)
Service	<b>ServiceBand</b>	Conditional	tbl_ASC_ServiceBands	Any banding associated with the service (eg. Within Assessment and Care Management [RAP A7] there are time bands)
Client	<b>ClientGroup</b>	Required	tbl_ASC_ClientGroups	Reference to the client group to which this information relates to (fixed code used in order to mask data)
Client	<b>ClientCategory</b>	Conditional	tbl_ASC_ClientCategory	Reference to the client category to which this information relates to (fixed code used in order to mask data)
Client	<b>Gender</b>	Required	tbl_ASC_Genders	The gender for the individual
Client	<b>AgeGroup</b>	Required	tbl_ASC_AgeGroups	The age group within which the clients sit (different to the Older People client category)
Client	<b>EthnicCode</b>	Required	tbl_ASC_Ethnicity	The ethnic group to which this individual belongs (ONS codes)
Client	<b>HasPersonalBudget</b>	Required		Indicates whether or not this data relates to clients in receipt of a Personal Budget
Financial	<b>IsIncome</b>	Required		Indicates whether the data relates to an income (True) or an expenditure (False)
Financial	<b>ExpenditureType</b>	Required	tbl_ASC_ExpenditureType	Reference to the expenditure type (Revenue, Capital, Income)
Financial	<b>FundingType</b>	Required	tbl_ASC_FundingTypes	Reference to the type of funding (income or expenditure) (e.g. Grant, In-House, Fee/Charge, etc)
Financial	<b>OrganisationClass</b>	Required	tbl_ASC_OrganisationClasses	Reference to the organisation class from where income is received or expenditure is made (e.g. 3rd Sector, Client Health)

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Dimension	Field Name	Data Requirement	Ref Table	Field Definition
Financial	<b>SubjectiveGroup</b>	Required	tbl_ASC_SubjectiveGroups	Reference to the subjective group (per CLG definitions) for the purposes of enabling more useful analysis at the local level
Financial	<b>CostCentreTeam</b>	Optional		An optional field to allow a council to group the data into teams (so that management information can be selectively cascaded to appropriate individuals)
Financial	<b>PSSEXNote</b>	Optional		A note to explain anything else which the individual may wish to add to the entry
Timescale	<b>Financial_Year</b>	Required	tbl_ASC_Calendar	The year to which this return relates
Timescale	<b>Week_No</b>	Optional	tbl_ASC_Calendar	The week number within the year to which this return relates (0 if not provided)

Most of the columns should be fairly explanatory. The **Data Requirement** column indicates whether this is considered to be a must have field (Required), entirely up to the council (Optional) or dependent on the specific circumstances (Conditional).

Whilst most of the specific fields are adequately described in the table, there are a couple which are worth expanding on in terms of the thinking behind them:

**ServiceCategory and ClientCategory** : These hold the lower levels associated with the ServiceGroup and ClientGroup respectively. Note that there are some activities which get managed as a 'service' within the context of this data cube – especially those within the assessment and care management area (for example the number of individuals receiving a RAS settlement will be captured as part of the RAS 'service').

**ServiceBand** is specifically to address the situation where there is information which relates to the same effective "service", but under different conditions. This field was specifically introduced to accommodate some of the requirements of the RAP return, although it provides flexibility to do the same thing elsewhere.

Within this proposed data warehouse contacts, referrals, assessments and reviews (and resource allocations) are treated as second level services under Assessment and Care Management (see the Appendices).

Within the RAP return there is a requirement to split out the number of assessments based upon the time taken to complete them. This is handled by the proposed structure in the following way:

ServiceGroup	ServiceCategory	ServiceBand	
Assessment and Care Management	Initial Points of Contact		
	Referrals		
	Assessments	Assess < = 2 days	
		Assess between 3 days and 2 wks	
		Assess between 2 wks and 4 wks	
		Assess between 5 wks and 3 mnths	
Assess > 3 mnths			
	Resource Allocations		
...	...		

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Clearly, whilst activity data will be stored against such entries, cost data will not.

*Note that other aspects of the RAP return, for example the distinction between new and existing clients is captured elsewhere within the cube design.*

**HasPersonalBudget** is designed to allow for analysis of those who have had funds allocated via the resource allocation process. This allows for a cleaner analysis of the proportion of individuals who are electing to continue to use commissioned services as part of the settlement and those who elect to take all, or part of, their settlement in the form of a Direct Payment.

**SubjectiveGroup** is designed, amongst other things, to accommodate equivalence with CLG returns. Easily available from most finance systems (since they have to be reported in other returns), we are proposing to capture the breakdown at the intermediate level within the CLG structure (i.e. Pay, FRS17, Premises, Transport, Supplies & Services, etc.) Our view is that having this level adds little complexity to the automatic generation of the returns but potentially adds quite a bit of value for local management information purposes – since it clearly breaks out those costs which are easily able to be influenced in different ways. It is a further refinement on the principle of separating out Management and Support Services costs.

**CostCentreTeam** and **WeekNo** are purely there for local use within a Management Information context. The **CostCentreTeam** allows the data to be segmented into chunks suitable for use at the team level. The **WeekNo** field allows the data to be used for trending and monitoring processes (e.g. expenditure against budget – see later).

### Values to be available for analysis

The table on the following page, contains a definition of the fields which are proposed to be available for analysis (and derivation where actual data may not be present).

Broadly speaking the values intended to be made available for analysis include:

- Amounts (the amount of money from whichever source);
- The number of clients (from various perspectives);
- Quantities (in units appropriate to the service);
- Visits and weeks of service (partially to allow for things like Intensive Care to be identified);
- Related staff numbers (mainly in case staff numbers are used for prorating costs such as those associated with IT and other similar services). *In the short term it is unlikely that the CSED toolkit will populate these fields; and*
- Information which is useful from a procurement analysis perspective (the number of providers and number of transactions).

The fields have been designed to allow capture from multiple sources. So, for example, the actual, forecast, budgeted and year to date (YTD) amounts are expected to be available from the finance system. The calculated and committed amounts, on the other hand, are more likely to come from the care management system.

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You should note that most of these entries are optional. Most of these have been added to facilitate the production of useful management information. Equally, even if provided at the high levels, some of this information will not necessarily be available at the lower ones. The only fields where an attempt will always be to derive a value will be the Amount and Qty (the core dimensions of the PSS EX1 return).

### *Proposed Values to be populated within each cell of the data cube*

Dimension	Field Name	Data Requirement	Ref Table	Field Definition
Value	<b>Amount</b>	Required		The best available amount over the period. If Actual is available it will use this, otherwise either the Derived or best of Calculated or Planned
Value	<b>Amount_Actual</b>	Optional		The amount as provided by the financial system (in the case of Accounts payable, the actual amount paid over the period)
Value	<b>Amount_Calculated</b>	Optional		The amount as calculated using a formula such as Actual Qty * Price
Value	<b>Amount_Committed</b>	Optional		The committed amount (e.g. as extracted from the care plans within the care management system)
Value	<b>Amount_Forecast</b>	Optional		The amount forecast for the total financial year (as provided - potentially calculated in the future)
Value	<b>Amount_Budgeted</b>	Optional		The amount as budgeted at the start of the financial period
Value	<b>Amount_YTD</b>	Optional		The amount spent in the financial Year To Date
Value	<b>Amount_Derived</b>	Conditional		The amount as derived from whatever derivation rules have been put in place
Value	<b>Clients</b>	Required		The average number of clients who received a service. For ease of derivation, this is calculated as $Total - \frac{Int((Starters - Leavers)}{2})$ when this data is available (otherwise it will be derived)
Value	<b>Clients_LastDay</b>	Required		The number of clients who were receiving a service on the last day of the period (RAP P2)
Value	<b>Clients_Total</b>	Required		The total number of clients who received services over the period (RAP P1) (this will include both starters and leavers and so will be higher than the average)
Value	<b>Clients_New</b>	Required		The number of 'new' clients (RAP P1) defined as clients who wasn't otherwise recorded as receiving a service during the calendar month (versus immediately) prior to the current period
Value	<b>Clients_Starters</b>	Optional		The number of clients who joined the particular service during the period
Value	<b>Clients_Leavers</b>	Optional		The number of clients who left the service during the period
Value	<b>Clients_PBs</b>	Required		The number of clients who were in receipt of Individual or Personal Budgets
Value	<b>Qty</b>	Required		The best available quantity. If Actual is available it will use this, otherwise it will use either Planned or Derived depending on which it is instructed to use

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Dimension	Field Name	Data Requirement	Ref Table	Field Definition
Value	<b>Qty_Actual</b>	Optional		The actual quantity (e.g. as extracted from the time sheeting system)
Value	<b>Qty_Committed</b>	Optional		The committed quantity (e.g. as extracted from the care management system)
Value	<b>Qty_Derived</b>	Conditional		The derived quantity (as calculated using the derivation rules)
Value	<b>Qty_UOM</b>	Required	tbl_ASC_Units	Reference to the unit of measure in which the quantity is reported
Value	<b>Visits</b>	Required		The number of visits - generally from the Planned data (although it may come from actual, if available)
Value	<b>WeeksOfService</b>	Required		The weeks of service received by all clients during the period (generally assumed to come from the planned data)
Value	<b>Employee_WTEs</b>	Optional		Working time Equivalents (includes all sources of labour)
Value	<b>Employee_Total</b>	Optional		The number of heads, regardless of whether full time or part time, full employee or agency / contract
Value	<b>Employee_Staff</b>	Optional		The number of direct employees, excluding agency / contract staff (ignores whether full time or part time)
Value	<b>Providers</b>	Optional		The number of providers providing services over the period
Value	<b>Transactions</b>	Optional		The number of transactions over the period

### *Audit path fields*

The final aspect of the proposed PSS EX1 dataset covers the audit path to how the key figures of Amount, Clients count and Quantity (Qty) have been derived and/or manually adjusted.

The fields ending with the word '**Basis**' (e.g. AmountBasis) are designed to be automatically completed by the system in the absence of actual data. This will simply record, at each cell in the cube, how the data has been derived if it was not directly available from a source system.

Dimension	Field Name	Data Requirement	Ref Table	Field Definition
Other	<b>AmountBasis</b>	Conditional	tbl_ASC_DatasetFields	The basis on which the amount has been calculated (if derived)
Other	<b>AmountWeighting</b>	Conditional		Any weighting used impact the relative proportion of any derived amount
Other	<b>AmountAdjustment</b>	Optional		A percentage which has been manually applied to correct for inaccuracies in source data used to get to the amount.
Other	<b>AmountAdjReason</b>	Conditional		A brief (one line) explanation of why a manual adjustment has been applied to the amount
Other	<b>ClientBasis</b>	Conditional	tbl_ASC_DatasetFields	The basis on which the number of clients has been calculated (if derived)



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Dimension	Field Name	Data Requirement	Ref Table	Field Definition
Other	<b>ClientWeighting</b>	Conditional		Any weighting used impact the relative proportion of any derived count of clients
Other	<b>ClientAdjustment</b>	Optional		A percentage which has been manually applied to correct for inaccuracies in source data used to generate the number of clients
Other	<b>ClientAdjReason</b>	Conditional		A brief (one line) explanation of why a manual adjustment has been applied to the number of clients
Other	<b>QtyBasis</b>	Conditional	tbl_ASC_DatasetFields	The basis on which the quantity has been calculated (if derived)
Other	<b>QtyWeighting</b>	Conditional		Any weighting used impact the relative proportion of any derived quantity
Other	<b>QtyAdjustment</b>	Optional		A percentage which has been manually applied to correct for inaccuracies in source data used to generate the quantity
Other	<b>QtyAdjReason</b>	Conditional		A brief (one line) explanation of why a manual adjustment has been applied to the quantity
Other	<b>UpdatedOn</b>	Automatic		A date/time field to record when the record was last changed

### Commonly used detail data sets (candidates for standardisation)

At this point in time we believe there are about 15 independent but related sets of information which are desirable for completing the PSS EX1 in a comprehensive way (*this compares with access to between 30 and 40 raw tables within TRACS from the Care Management system alone*).

These datasets are derived from multiple systems which include:

- Contact Management or CRM systems (assumed here to be independent of the Care Management System);
- Care Management (assumed to hold details about the client, services and packages of support). This may not be a single system – we know of many councils who manage home care using standalone systems and, as inferred earlier, it is often the case that Mental Illness clients are managed separately;
- Finance (assumed to hold the accounting information and any payment or receipt transactions associated with care); and
- Human Resources (for staff related information) – *to be addressed in more detail in a future version of this document.*

Clearly, there is potential to include other datasets in the future; outcomes, performance, and user satisfaction being just three which come to mind which may come from other types of system.

The focus here is on management information, not operational sharing of data. Therefore, it is well beyond the scope of this document to cover the detailed sets of records necessary to share, for example, detailed assessment information.

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The entities which we believe are candidates for standardisation (and which we include here) are summarised in the following table (for the latest listing, please refer to the Appendices – which are automatically generated from the data warehouse tool):

Name	Description
<b>Activities</b>	Information about time spent with clients (often available from a separate time scheduling system)
<b>Contacts</b>	Information (often from a separate contact management system) about calls and resolutions made at point of contact. This may also be used to capture information from external sources who have no concept of 'events' as described below (e.g. some Mental Health Trust systems).
<b>Contributions</b>	Any third party contributions to the cost of a service (linked to either the organisation or client making the contribution)
<b>Establishments</b>	Information about places of residence, hostels, etc - used as a means of capturing quality, performance, user satisfaction, inspection and other information related to the specific establishment
<b>Events</b>	Information concerning referrals, assessments and reviews. As has been implemented in some of the care management systems, Resource Allocations are treated as an event.
<b>Individuals</b>	Information initially about clients and carers such as their date of birth, gender, ethnicity, last home postcode, etc. (whether or not they are considered a client or carer will be defined via associated records).
<b>LedgerSummaries</b>	Information about all expenditure and income relevant to social services
<b>Organisations</b>	Information about organisation such as the type of organisation, their company type (Limited, PLC, etc), and (payment) postcode
<b>Packages</b>	Information which links the client to the offer, provider, establishment and service and which captures the various quantities and commitments associated with the package. On the import side there is a table called <b>Attendance</b> . This is designed to capture attendance details from establishments whose clients are not recorded in a care management system (such as day centres). These records will end up in the Packages table.
<b>PackageDetails</b>	Designed for systems (such as TRACS) which provide price simulation capabilities. Not needed for aggregated returns, this table provides the details necessary to correctly cost a package of care.
<b>Payments</b>	Information about monies paid to different parties (expected to com mainly from the finance system)
<b>Prices</b>	Whilst primarily designed for price simulation purposes, the structure of this table has been designed to capture the various forms of pricing information. In the future, we would hope that the table could provide a basis for obtaining prices from providers in an electronic way compatible with electronic processing of offers and for automated loading into care management systems (currently a very cumbersome process)
<b>Receipts</b>	Information about monies received from different parties (expected to mainly come from the finance system)
<b>Services</b>	Information about the generic (versus provider specific services) - this will be a council specific set of services which will be mapped to the standard services defined in the mapping
<b>Staff</b>	(Future) information concerning the grades and levels of staff providing each of the services (if in-house)
<b>Zones</b>	Designed to capture and share any council specific geographical zoning

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Some of these datasets (especially about individuals and organisations) may be sourced from each one of the contributing systems. A good data warehouse will provide functionality to merge such data to create, for example, master client records. (*The CSED toolkit provides this functionality*).

As stated earlier, these datasets can be viewed from two perspectives:

- The perspective of what might be exported to another system (once cleansed and processed into a common language); and
- The perspective of what might be imported from the various host systems. To a large degree the contents of imports will mirror what might ultimately be exported. However, in most cases additional information may be required in order to assist the cleansing process.

### An example, the Individuals Dataset

However, again for the benefit of those who are less familiar with what all of this means, the Individuals Dataset will now be used to illustrate this concept (see the Appendix for latest version):

Field Name	Field Category	FieldDesc	LookupTable
AuthorityID	Mapped	Reference to the authority identifier	CSSRs
IndividualID	Automatic	Reference to the unique individual (completely unique with no linkage to any other information for data protection reasons)	
IdentityType	Conditional	Used to identify to the recipient system the nature of the Identifier below. For example NHSIdentifier, NINumber, etc.	IdentityTypes
Identifier	Optional	Optional : Only included in secure circumstances where it is desired to merge the data with other sources (e.g. Health). The type of identifier is indicated in IdentityType	
DateOfBirth	Required	It is important to have a date of birth for age based analysis (even if estimated)	
DateOfDeath	Optional	The date of death if available	
ClientGroup	Required	Reference to the equivalent client group (in text form)	ClientGroups
ClientCategory	Required	The client sub-category (level 3 within the hierarchy of conditions : this will usually be optional but for certain conditions, such as dementia, this is required) (in text form)	ClientCategory
Postcode	Desirable	Useful from both a geographical positioning and client identification perspective. Wherever possible this should be their last known home postcode (not the postcode for a Residence)	
EthnicCode	Mapped	The ethnicity (in ONS code form)	Ethnicity
GenderKey	Mapped	The gender (as a single letter M(ale), (F)emale, (U)nkown)	Genders
HasSightImpairment	Desirable	Useful for creating the Blind and Partially Sighted return (SSDA902)	
HasHearingImpairment	Desirable	Useful for creating the Deaf or Hard of Hearing return (SSDA910)	

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Field Name	Field Category	FieldDesc	LookupTable
EmploymentStatus	Mapped	Added to cater for the combined activity return this captures the nature of employment (especially important for clients with Learning Difficulties)	Employment Status
EmploymentHrsPerWk	Optional	Used to store the hours worked per week for each individual	
HasRAS	Conditional	If not able to be identified via other means (e.g. the finance system) then useful to know which clients have been given resources via the RAS process	
EnteredOn	Required	The date on which this individual was first registered within Social Services (Used as part of the process of identifying New clients) If nothing else it should be date the record was created	
ClientGroupKey	Mapped	Abbreviated reference to the client group within the ASC reference tables (LD, MH, PD, etc)	ClientGroups
ClientCatID	Mapped	Abbreviated reference to the client category within the ASC reference tables (Dementia, etc)	ClientCategory

### An example of what the corresponding import definition might look like

This next table looks at what the matching standard import specification might look like.

Note that there is considerably more information about the individual – which has been included to support name matching.

Note that there are no look-ups here. Which structured in a standard way, this is still raw data from whichever host system the data was derived.

Whilst not quite as important from a national perspective, there are also benefits in standardising these tables (hence we also do this in the appendices).

FieldName	FieldCategory	FieldDesc	LookupTable
AuthorityID	Mapped	Reference to the authority identifier	CSSRs
SystemID	Automatic	Reference to the system from which this data came	
SystemIndividualKey	Optional	Reference to the key identifier for the individual within the host system (which should be unique to the system)	
IndividualKey	Required	The key to use (if unique for each individual). For example many systems will all use a common client identifier generated from the contact or care management system. If not otherwise available use the SystemIndividualKey	
IndividualRef	Optional	If the reference used within the system is different to the key.	
Title	Optional	If provided (and there is no explicit gender) this can be useful in determining gender	
Surname	Conditional	If use of name matching or duplicate key merging functionality is required then the surname should be provided	
Firstname	Desirable	Either the first name or first initial is useful to have for name matching purposes (there is a firstname lookup facility to determine gender if not otherwise available)	

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FieldName	FieldCategory	FieldDesc	LookupTable
<b>FullName</b>	Conditional	If is preferable to have surname and first name split out. However, within some systems all there is is the full name. Algorithms are available to parse such names.	
<b>DateOfBirth</b>	Required	It is important to have a date of birth for age based analysis (even if estimated)	
<b>EstimatedDOB</b>	Optional	Indicates if the date of birth has been estimated	
<b>DateOfDeath</b>	Optional	The date of death if available	
<b>NHSIdentifier</b>	Desirable	Helps to identify unique individuals (the NHS IC preferred method for ensuring uniqueness)	
<b>NINumber</b>	Optional	Helps to identify unique individuals if the National Insurance number is captured	
<b>Postcode</b>	Desirable	Useful from both a geographical positioning and identification perspective. Wherever possible this should be their last known home postcode (not the postcode for a Residence)	
<b>PrimaryClientCategory</b>	Required	Linkage to the client group (requires that client types have been mapped in imp_ClientTypes and that ClientTypeKey is completed)	
<b>HasSightImpairment</b>	Desirable	Useful for creating the Blind and Partially Sighted return (SSDA902)	
<b>HasHearingImpairment</b>	Desirable	Useful for creating the Deaf or Hard of Hearing return (SSDA910)	
<b>Ethnicity</b>	Required	The ethnicity of the individual - required for populating the ethnicity dimension of the return	
<b>Gender</b>	Conditional	Ideally the gender should be provided. It can be generated if there is either a distinct title or a first name	
<b>Religion</b>	Optional	Often captured, the individual's religion - not used for any returns but may be useful for local purposes	
<b>EmploymentStatus</b>	Mapped	Added to cater for the combined activity return this captures the nature of employment (especially important for clients with Learning Difficulties)	Employment Status
<b>EmploymentHrsPerWk</b>	Optional	Used to store the hours worked per week for each individual	
<b>HasRAS</b>	Conditional	If not able to be identified via other means (e.g. the finance system) then useful to know which clients have been given resources via the RAS process	
<b>EnteredOn</b>	Required	The date on which this individual was first registered within Social Services (Used as part of the process of identifying New clients) If nothing else it should be date the record was created	
<b>IsDuplicate</b>	Desirable	If it is already known that this is a duplicate record (stored in some systems) this should be populated	
<b>IndividualRowID</b>	Automatic	Unique reference to this record within the data warehouse	
<b>ImportedOn</b>	Automatic	The date and time on which the data was imported (completed as part of the import process)	

There are certain fields within these tables which can be derived in different ways. For example in both CareFirst and SWIFT there are often three routes to the PrimaryClientCategory (via the category as linked with the individual, via the service taxonomy – if structured in this way, and via the financial coding structures – cost centre or subjective).

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In a future version of this document, assuming councils feel it to be useful, we intend to document what we consider to be the best way of getting to this information based upon our experience with doing the work. This has potential implications for future configuration changes and in regard to the discipline of maintaining key data to a high standard (which we know councils sometimes struggle to do).

It is planned to document the above within the appendices alongside any system specific logic (in the form of SQL [Structured Query Language] which we have developed along the way.

### Use of the data warehouse at the client package level

In addition to providing the data necessary to populate aggregate returns data cubes as described for PSS EX, the import tables also provide the means by which client level information can be accessed and analysed for other purposes.

Unlike TRACS, where each transaction is recorded, a 'Package' in this context is effectively the combination of client and service information between start and end date (i.e. at this level it is not broken down to individual visits in the case of homecare). [*The table PackageDetails is designed to capture individual parts of the package for price simulation purposes*].

The diagram on the next page illustrates how the various elements link together. (There are some fields which have links which are not shown – these are primarily there for efficient operation of the data warehouse 'star'.

Note that, in each of the tables, where there is a link to another table which has not been defined as part of the reference data set (which is assumed to be universally available), there is a text version of the key (e.g. ProviderName and ProviderID within the Packages table).

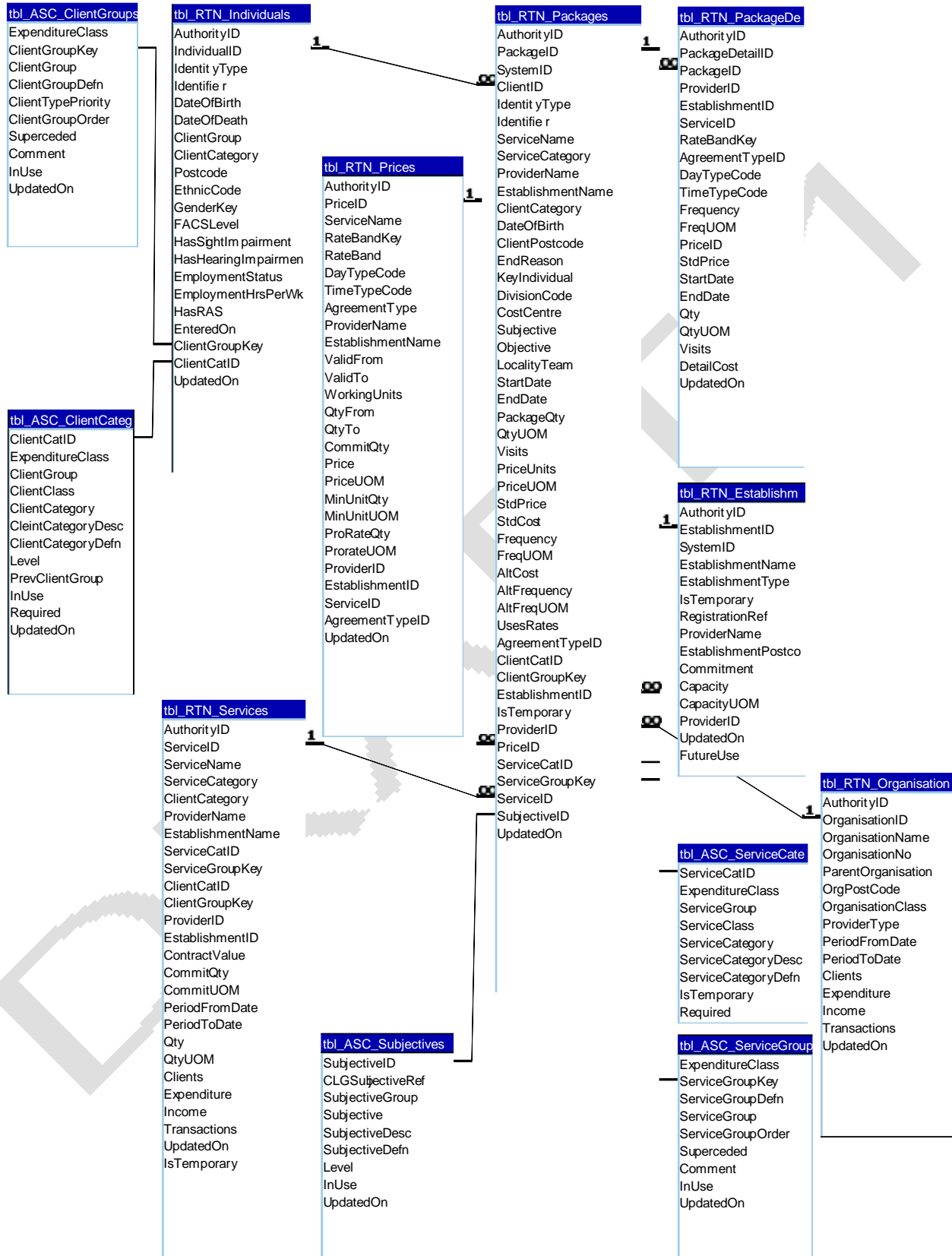
Each of these tables and fields is described in some detail within the appendices.

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Package / Client Level Relationships

13 February 2009



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### Introduction to the Appendices

#### Appendices A and B : Illustration of Standard Reference Tables

Appendix B is an attempt at bringing together all of the reference tables implied or directly used by the returns we have analysed. At present each return often has its own set of references, whereas – with this approach – there is only one, shared across the whole of the returns process.

As has been requested by the councils engaged with the process we are following, we believe there is scope to standardise such tables – this will also help systems providers become more compatible with the vision expressed earlier.

**We stress that, whilst every attempt has been made to be comprehensive and true to the original returns, these tables are currently for illustration purposes only.**

**WHILST THESE TABLES HAVE UNDERGONE AN INITIAL REVIEW BY A LIMITED NUMBER OF COUNCILS AND THE NHS INFORMATION CENTRE, THESE TABLES SHOULD STILL BE CONSIDERED TO BE IN DRAFT DEVELOPMENT.** There are some tables which have deliberately been expanded to illustrate the sort of thing which might done in the future.

#### Appendices C and D : Illustration of the inclusion of other datasets (e.g. DCLG, ONS, etc)

These two appendices illustrate the inclusion of other datasets such as those from DCLG and ONS. We will increasingly add these datasets to TRIPS as we engage with councils.

Also included in this section are some library tables (tbl\_LIB\_\*) which have been added to illustrate how dimensions such as Units are handled by TRIPS

#### Appendices E and F : Import and Export Specifications

Appendices E and F represents a starting point, subject to support from stakeholders, for arriving at a standardised set of import and export specifications for the key data entities which we believe are necessary to implement a comprehensive data warehouse solution.

Note that there are usually two tables for each entity. The first, prefixed by **imp\_STG**, represent those which would be imported into a data warehouse (and therefore exported from whatever systems feed it). The second, prefixed by **tbl\_TRP**, represents what might be sent to external applications for the purposes of analysis. You will note that these 'export' datasets have been cleaned and mapped by the data warehouse. (This is also functionality which the providers of the third party applications offer – however, the more which the council can do for itself, the lower the cost of configuring these other solutions).

There is also a third category of table (prefixed by **tbl\_RTN** which relate to standard returns datasets.

#### Appendix G : The PSS EX1 Datacube

Appendix G repeats the definition of the PSS EX1 dataset (extracted from the previous section for convenience).



DRAFT

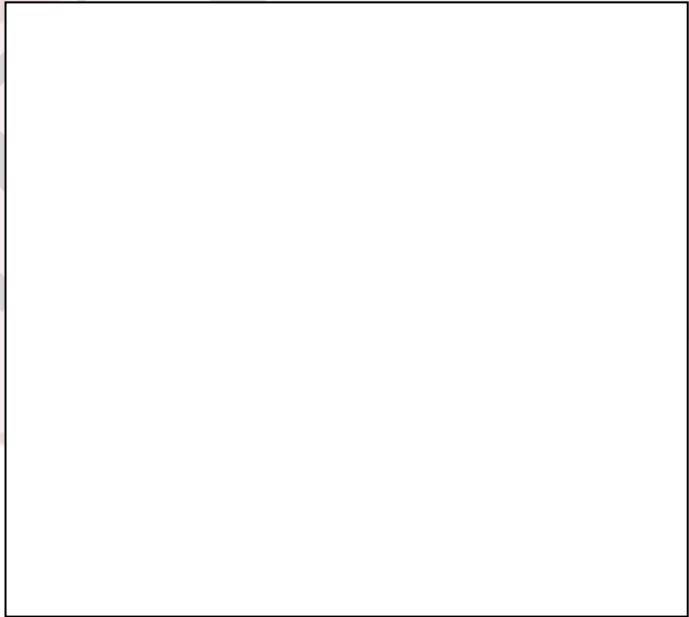
## Summary : Some Key Points

To be completed

- ..

## Next Steps

To be completed



### Related CSED Activities (see the web)

- ...

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For more information, visit CSED at [www.csed.org.uk](http://www.csed.org.uk)