

A toolkit for costing IT services

For JISC

Overview

1. This is the conceptual design of a costing toolkit that can be used to build up the annual costs of an IT service. It is designed for use by the manager of an IT department, who does not necessarily have extensive costing expertise.
2. It draws upon cost principles from TRAC (the Transparent Approach to Costing), which is in use by every higher education institution in the UK (see Annex 1).
3. The toolkit was developed following a short study at Oxford University Computing Services. It was prepared by J M Consulting, in conjunction with OUCS.
4. After its development the methods in the toolkit were applied to a number of services. The results of this second implementation exercise are given in the document "Adopting the Toolkit for Costing IT Services". Some lessons learnt from that implementation exercise led to further clarification of the methods described in the toolkit, and this is the final version.
5. Three IT services at OUCS were considered in some depth during the study, as well as a fourth service provided by a university administration department. A fifth service was examined during the implementation phase.
6. The five types of service are provided in different areas of the University:
 - IT services provided by OUCS
 - i. HelpDesk – a service which supports other IT service areas;
 - ii. Hierarchical File Service (HFS) – an archiving/back-up IT service with relatively high equipment but lower staff cost;
 - iii. WebLearn – the Oxford University VLE, which allows staff to create and store materials to support their teaching and learning activities. This has relatively high staff cost, but low equipment cost;
 - Business process based on new IT system in student administration
 - iv. A new student administration module – Points Based Immigration (PBI) – which is managed by the Student Administration Department (not OUCS) and is used by academic departments and colleges.
 - IT service provided by an academic department or Oxford College
 - v. Described in the document covering implementation of the toolkit.
7. A glossary of terms and definitions is provided in Annex 1, along with a list of the units or services in OUCS.
8. The focus of this toolkit is on the first three services (i) to (iii) above – those provided by OUCS. Annex 2 then briefly considers implementation of the toolkit for services provided by other non-academic departments (iv above) and academic departments (v above).

9. The toolkit consists of nine steps that can be followed in the design of a costing method:

A. Costing principles
Step 1 Aim
<ul style="list-style-type: none"> a) Agree what the purpose of the costing exercise is b) Identify areas of risk (so that they can be avoided)
Step 2 What service is to be costed
<ul style="list-style-type: none"> a) Agree the service to be costed, and define its characteristics b) Identify inter-dependencies and decide how these will be dealt with in the costing model
Step 3 What costs are to be included
<ul style="list-style-type: none"> a) Decide whether the full cost of a service should be identified, or whether it would be more useful (and easier) to exclude some of the fixed, or wider university costs b) Confirm that only operational costs are included – not development costs c) Agree the period for which the costs are to be collected
B. Establishing the costs
Step 4 Department costs (type 1)
<ul style="list-style-type: none"> a) Decide whether to take all departmental costs (type 1) into the costing model, or only some of them b) Identify the department costs and activities that are relevant to the costing exercise c) Establish time and cost directly spent on the service d) Establish departmental management and administration costs
Step 5 Equipment spend or charges (type 2)
Identify the costs of equipment
Step 6 IT Backbone and Network Infrastructure (type 3)
Attribute the costs of the IT Backbone and Network Infrastructure to the services being costed, if required
Step 7 Estates (type 4)
Establish the estates costs attributable to the department, and then the element relevant to the services being costed, if required.
Step 8 Central service functions (type 4)
If central service costs are to be included use an appropriate method, suitable for the purpose of the costing exercise. For example, estimate the costs of relevant central service functions from TRAC, and use a simple method to attribute them to the services being costed (method A in the toolkit).

Step 9 Reporting and use

- a) Understand and measure use, and recharge
- b) Understand how costs change
- c) Ensure the basis of the cost information is understood

10. Each step is described below. Users of the toolkit should carry out the actions summarised in each box, using the text and examples to assist them.

A. Costing principles

1 Aim

Step 1

- a) Agree what the purpose of the costing exercise is
- b) Identify areas of risk (so that they can be avoided)

a) Purpose

1.1 The costing methods described here can be used to build up the full costs of an IT service. Before starting, it is important to identify and agree aims to ensure that appropriate costs are identified.

1.2 In the preparation of the toolkit, the main aim was identified as providing information for planning, decision-making and cost management. This would:

- assist with decisions as to whether to operate the service internally or buy-in;
- help with costing a new IT service;
- inform cost reduction reviews; and
- help to demonstrate the impact of changes in user numbers.

1.3 Other aims were to:

- understand how each service is provided, in particular the inter-dependencies with other IT service areas, and how costs change as demand for the service changes;
- charge costs to internal users (and be in a better position to explain those charges);
- inform prices for external users (prepared in the knowledge of the full cost).

1.4 And therefore to provide information for:

- resource allocation models (RAMs); and
- TRAC cost allocation models.

1.5 The following table lists different objectives, and describes the types of costs that are likely to be relevant to each. Step 3(a) below, then describes each type of cost, and decisions should be made at that point about whether they are included or not.

Objectives	Relevant costs
Decisions as to who should provide the service – centrally, in academic departments (devolved), or through an external source	Departmental costs and probably also Full economic cost
Cost management, and setting budgets – understanding where costs are sitting and how resources are being used	Departmental costs and probably also Estates and Equipment costs
Setting budgets – understanding how cost levels will change if new demands are placed on a service	Departmental costs, with an understanding of their behaviour and probably also Estates and Equipment costs
Directly charging some services to external customers (e.g. research grants and contracts, a large archiving project NSMS)	Full economic cost
Resource allocation – setting levels of internal charges (from the IT department to academic departments)	Departmental costs including all costs that are recharged to the IT department (estates, equipment)
Pricing	Full economic cost

b) Risk

1.6 Potential problem areas should be considered before costing commences, so that they can be avoided in the design and implementation of the system. For example:

- too much detail – there is a danger of spurious accuracy, or of producing detailed figures when a broader-brush approach would produce equally useful information;
- imposing burdens on staff when preparing the costs (e.g. requiring timesheets);
- presenting costs that do not lead to useful decisions (e.g. presenting academic departments with full costs – including university-wide costs – which would never be charged to them in an internal RAM; or establishing full costs of an increase in volume in an existing service when many costs are fixed and would not change when volume changes);

- double-counting costs (e.g. including university-wide costs in charges to academic departments, when they may already be charged all those costs directly)
 - ignoring relevant costs (inter-dependencies in IT services, internal management, depreciation on equipment);
 - not recognising the importance of assumptions in the final cost figures (central overheads can account for half of all costs, yet they are the most difficult to arrive at, and there are many competing, equally good, ways of calculating them);
 - inappropriate presentation or management of the costing exercise – leading to misuse or misinterpretation of the results.
- 1.7 These types of risks should be avoided when costing through careful design. The approach taken in this toolkit aims to minimise these risks.

2 What service is to be costed

Step 2

- a) Agree the service to be costed, and define its characteristics
- b) Identify inter-dependencies and decide how these will be dealt with in the costing model

a) The service

- 2.1 Carefully selecting and defining the service to be costed means there is less confusion or ambiguity in the subsequent costing work. Identifying its main characteristics also helps to inform some of the steps that need to be taken in the costing process. (This is of course an essential part of costing a new service, and would require more effort than described in this toolkit.)
- 2.2 The following table lists a number of characteristics and illustrates these with reference to the three services costed in this study. This table should be completed as one of the first steps in the costing exercise, to ensure the area being costed is fully understood.

Characteristic	HelpDesk, HFS, WebLearn
Provider	Each are units in the Oxford University IT department (OUCS)
Users	Staff and students in departments and colleges. No external users. Some internal use (by other OUCS services)
Discretionary nature	Discretionary (it is up to users whether it is taken up at all, and level of take-up)
Volume of use	Can be measured directly (phone calls) or through proxy (volume of storage provided or number of WebLearn sites)
Nature of service	HelpDesk – phone and email queries. Not, however, hardware repair, on-line shop or open-access walk-in centre, which are currently part of the HelpDesk unit. HFS – archiving and storing files WebLearn – providing IT tools to assist staff to prepare materials
Status of service (proposed, emerging, established, winding-down)	Established
Space	HFS uses dedicated space within the DataCentre. Also firesafes elsewhere (probably not material). HelpDesk is linked to 'openaccess area' but this was excluded from the scope of the HelpDesk service
Equipment	Vary – HFS is capital intensive (servers, robotic tape library), others are not All rely on university Backbone/ Network Infrastructure and desktop computers used by staff
Staff	HelpDesk and WEbLearn are staff intensive. HFS is not.

b) Inter-dependencies

- 2.3 When defining the service ((a) above), inter-dependencies between services should be understood. This is a normal feature of IT departments and it is very important to identify these up-front and decide how the costing needs to reflect these.
- 2.4 Again this is illustrated in the table overleaf with reference to the three IT services provided by OUCS (a full list of OUCS services is provided in Annex 1):

What are the inter-dependencies between the units or services being costed and other units or services within the IT department?

	Type of inter-dependency	HelpDesk	HFS	WebLearn
a	Are there shared staff (e.g. staff in one unit work for part of their time for another unit or service)?	Yes, staff in other units work for part of their time for the HelpDesk. This time should be recorded against the HelpDesk.	Yes, DataCentre operators work for HFS. This time should be recorded against HFS.	Yes, staff in E-Learning Support and the IT Learning Programme work part-time for WebLearn. This time should be recorded against WebLearn.
b	Does more than one unit provide front-line support for the service being costed (e.g. to staff and students outside OUCS)?	Yes, frontline support is provided to WebLearn and Email. The relevant HelpDesk costs could be allocated to HelpDesk, or to WebLearn and Email.		Yes, frontline support is provided by the HelpDesk to WebLearn. (See note left.)
c	Does more than one unit provide second-line support for the service (e.g. provide advice to the staff in the unit being costed)?	Yes, specialist advice is received from HFS, Network, Security, Nexus, Teachers. The relevant costs of this advice could be allocated to HelpDesk, or retained by the units providing it.	Yes, specialist advice is provided to the HelpDesk. (See note in column to the left.)	Some HelpDesk support is provided by WebLearn which is shortly to be moved to the HelpDesk. Again the costs of this support could be reported against HelpDesk or WebLearn.
d	Is there is disproportionate use of other OUCS services made by this service being costed?	Yes, HelpDesk makes significant or sole use of the Request Tracker System, internet ports (Security), Web Registration	No	Yes, WebLearn makes disproportionate use of Oak LDAP, Web Auth and VLE/Web

e	Is a disproportionate use made of the service being costed by other OUCS units?	No	15% of data occupancy relates to NEXUS; and there is support to a large archiving project NSMS However, although WebLearn has a particular archiving need, this is not material.	No
f	Does the service being costed use IT Infrastructure (including Backbone) and IT Support services?	Yes	Yes	Yes

The references (a) to (f) are used below e.g. in paragraphs 2.7 et seq

2.5 Where a 'yes' appears in this table, then the costs of this work or service need to be considered for including (or excluding) from the costing model:

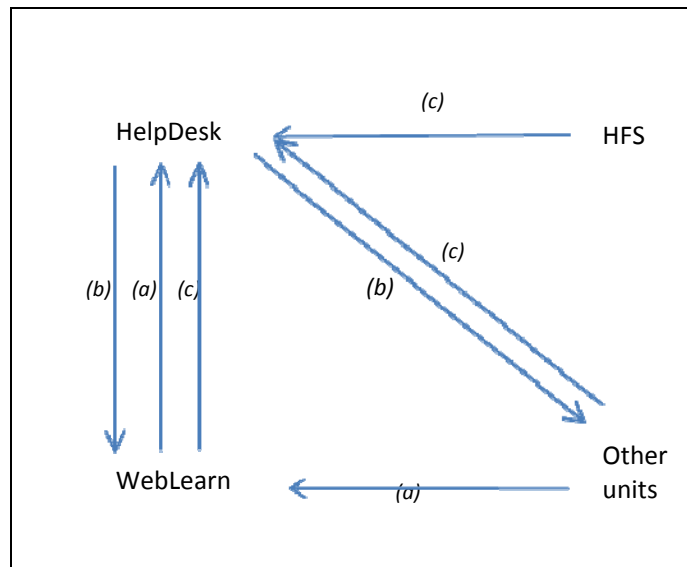
- Is it likely to be material? If it is meaningful quantity the impact on costs should be considered.
- Can it be quantified? If the drivers of the costs can be quantified (e.g. time spent in providing specialist advice to the HelpDesk; proportion of HelpDesk effort (emails, phone calls) provided to WebLearn and Email clients) then the costs can be allocated.

If yes to both of these:

- Where are the costs to be reported? This is discussed in the paragraphs that follow.

2.6 Where staff in one unit work directly for another unit (a) then the decision is easy – the costs should be allocated to that second unit. So HFS staff who 'man the HelpDesk' should be allocated to the HelpDesk. DataCentre operators helping HFS should be allocated to HFS. E-Learning Support staff helping WebLearn should be allocated to the latter.

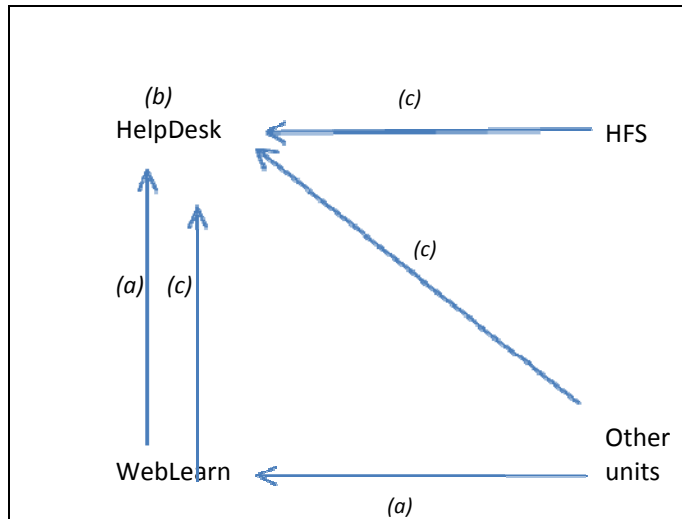
2.7 In some cases, there is choice where the costs lie. In particular, should all HelpDesk costs be included in the HelpDesk, or should they be spread more widely around the different service units when they specifically relate to those other services? The following diagram illustrated the inter-relationships described in (b) and (c). Each line represents a time (and therefore cost) of a service being provided between a OUCS unit to another. The recipient of the service is indicated by an arrowhead. This diagram shows how inter-dependencies can flow both ways at the same time, and the complexity that can arise.



- (a) Staff employed in one unit who are 'shared' (i.e. work for) another unit
- (b) Front-line support (e.g. from the HelpDesk to the WebLearn unit)
- (c) Second-line support (e.g. specialist advice from WebLearn staff to the HelpDesk)

- 2.8 There are two approaches to reporting the costs. In both cases, the relevant part of the costs of shared staff ((a) where the staff work for two units but the salaries are recorded against only one for administrative convenience) are transferred.
- 2.9 In the first approach shown in the first diagram (i) below, the HelpDesk could hold all the costs. The full costs (a) and (c), without any recharge for (b), would be recorded against the HelpDesk.

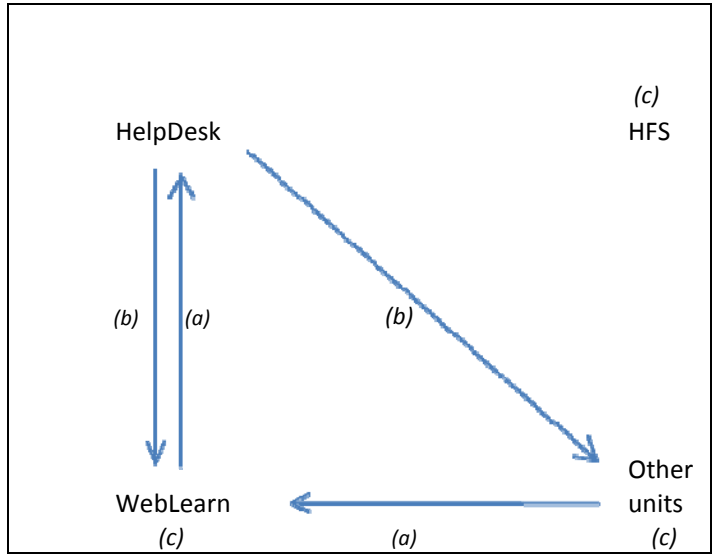
Option (i) The HelpDesk holds all costs of the HelpDesk services that are provided to external users



- (a) Staff employed in one unit who are 'shared' (i.e. work for) another unit
 (b) Front-line support (e.g. from the HelpDesk to the WebLearn unit)
 (c) Second-line support (e.g. specialist advice from WebLearn staff to the HelpDesk)

- 2.10 Alternatively, the costs of each IT service could include the full costs of supporting it (including the helpdesk service it offers externally). So although the costs of shared staff (a) are still transferred to the HelpDesk, an appropriate share of all HelpDesk costs are transferred out to other units (b). Those other units also retain the costs of specialist advice that they provide to the HelpDesk (c).
- 2.11 This is shown in the second diagram (ii) below.

Option (ii) HelpDesk costs are held by other services



- (a) Staff employed in one unit who are 'shared' (i.e. work for) another unit
- (b) Front-line support (e.g. from the HelpDesk to the WebLearn unit)
- (c) Second-line support (e.g. specialist advice from WebLearn staff to the HelpDesk)

- 2.12 The decision on the approach will depend upon the reason for establishing the costs:
- i. If it was, for example, to show academic departments what type of costs they might incur if they wished to provide their own comprehensive HelpDesk support, then the more comprehensive definition of HelpDesk might be appropriate, with all the costs included, including those of WebLearn, for example – option (i) above.
 - ii. On the other hand, staff can choose whether or not to use WebLearn, and if that service no longer existed, there would be no need for HelpDesk support in that area (so including HelpDesk support in with WebLearn costs would be more useful) – option (ii) above.
- 2.13 Two other inter-relationships are shown in the boxes on pages 6 and 9. Where one service makes a disproportionate use of other IT services (d), this should be costed and charged to the service using them (e.g. the HelpDesk makes significant use of various facilities, such as the Request Tracker System, which should be recharged to the HelpDesk).
- 2.14 This also applies in reverse, where services may be drawn on disproportionately by other units within OUCS (e). For example where HFS provides a particularly high level of service to NEXUS, or a particular service to NSMS. Once quantified, the costs should be allocated from HFS to those other services.
- 2.15 Finally, a decision is required whether to allocate the costs of the IT Infrastructure and IT Support services (f), to the services being costed. This is discussed further in Step 6.

3 What costs are to be included

Step 3

- a) Decide whether the full cost of a service should be identified, or whether it would be more useful (and easier) to exclude some of the fixed, or wider university costs
- b) Confirm that only operational costs are included – not development costs
- c) Agree the period for which the costs are to be collected

- a) Full economic cost, or only part of these

3.1 It is a key costing principle within TRAC that the full economic costs of an activity should be established. This includes:

- Direct costs – the costs of the staff providing the service, and of the non-staff costs that have been specifically incurred to support the service
- Administration/management costs – the costs of the management and administration of the service, including the head of unit, and part of the time of the department manager, and of the divisional manager, and their administrative staff.
- Estates costs – the full costs of the space used by the staff and the equipment required for the service. Full costs include utilities, cleaning etc, but also amortisation of a replacement cost for the estate (depreciation) and a cost of capital (called in TRAC Return for Financing and Investment (RFI)) for that estate
- Central support costs – the costs of central services such as Finance, Personnel, etc, but also another part of the TRAC RFI which recognises the need to build up funds for restructuring and investment.

3.2 Few management information systems in universities (reporting costs and income of each department, each month) include full economic costs. Very few charge any costs of estates or central support to IT departments. If some of these costs, such as estates, are recharged, they rarely represent the full cost (they generally exclude depreciation or the RFI).

3.3 Although the full costs of a service can be established, in most cases, cost models should focus only on costs that are relevant and useful to decision-making planning and cost management. This was illustrated in the table in paragraph 1.5

3.4 It is helpful to categorise costs into one of four types when considering which costs should be included.

Type 1 Departmental costs – part of the recurrent costs of OUCS

Direct staff costs for the time required to provide the service

Non-staff costs such as software licence fees, equipment maintenance contracts

OUCS administration and management

A share of divisional administration and management

Estates – the cost borne by OUCS (e.g. estates costs charged internally)

Type 2 Capital equipment costs

These are not in the recurrent department budget for OUCS – they are in the capital budget.

There are three ways of including costs:

- i. Purchases of equipment made during the year being examined
- or
- ii. An annual charge (depreciation) for the equipment that has been purchased over the past few years, calculated using institutional assumptions as to useful life (e.g. 5 or 10 years)
- or
- iii. A full economic cost of the equipment (the cost of replacing current equipment, spread over a reasonable lifetime e.g. 5-15 years)

Type 3 IT Infrastructure and IT Support costs – part of the costs of OUCS.

IT Infrastructure (backbone, security, mail infrastructure, access management) costs are used by the whole university as well as by the units within OUCS.

In addition these costs would include the IT desktop support provided to OUCS by their local ICT Support Team (ICTST)

Type 4 Central service costs – university-wide costs that are not charged to the department providing the service in the management accounts or RAM. They would need to be allocated through a proxy such as space used or staff numbers

The full economic costs basis (TRAC fEC) would involve the following:

Estates

- Full economic cost cost of the department's estate i.e. including all costs in the accounts, plus depreciation on the replacement cost (the TRAC infrastructure adjustment),
- less the cost borne by the department (e.g. estates costs charged internally) – if included as part of type 1 above

A share of central university functions such as finance, personnel, planning, marketing, Vice-Chancellors offices. As with estates, any costs charged internally into OUCS accounts that have already been included in types 1, 2 or 3 above, would be removed, to avoid any double-counting.

A share of the Return for Financing and Investment (a cost of capital calculated by the TRAC model)

- 3.5 Precisely which costs are classified as type 1, and which as types 2 to 4, will vary by institution e.g.:
- institutions with full space charging based on TRAC costs would include all estates costs in type 1;
 - some institutions will not charge divisional administration/management costs in their management accounts and those will be in type 4, not type 1;
 - some institutions will be charged institutional administration/central service costs, and these may be in type 1.
- 3.6 The costs in types 1 to 4 together make up the full economic cost of the service. If only some of the costs described above are included, then they are not full fEC costs according to TRAC definitions. As explained in Step 1, costing models may deliberately be designed to exclude some of these fEC costs, depending upon the purpose of the costing exercise.
- 3.7 The higher the type, the less 'direct' the costs are – they are less under the control of the IT unit or department, and are less easy to establish. The costs in types 2 to 4 tend to be fixed and do not vary even with large changes to the size of the IT service department:
- Type 1 departmental costs are generally easier to establish, and under the control of the IT service manager.
 - Many of the type 2 equipment costs are not reported as part of the management accounts (they are covered by a capital, not operating, budget). Three approaches to costing equipment are shown in the above table. The third approach, a full economic cost, is described under Step 5 below.
 - Type 3 IT Infrastructure/Support costs might be easy to establish, and under the control of the IT service manager, but their user base is large (the whole university) and the IT service being costed would form a very small part of this.
 - Type 4 estates/central service costs are generally more difficult to establish, and require the use of broad proxies to estimate and attribute to the services being costed. There are alternatives to using a TRAC-based approach, and these are discussed under Step 8 below.
- 3.8 When costs are established to inform internal charges, decisions on adding/removing a service or changing the volume (quantity) of service being provided, then type 1 and 2 costs will usually suffice. However, full economic costs (types 1-4) are useful when setting prices for external users.
- b) Operational costs, not development
- 3.9 None of these costs include the one-off development costs or purchase costs required to set up the IT software or service. However, they are likely to include licence costs (to support and upgrade the software) or, for systems that have been developed internally, departmental staff time spent on these activities.
- c) The period

- 3.10 Generally one year's accounts are used to provide the basis for most costs in the costing model. This can be budget or forecast for the current year. As the costs are extracted, exceptional items or circumstances would be identified and 'corrected' (e.g. unusual levels of vacancies would be 'filled', any significant one-off costs of a development activity or project would be excluded).
- 3.11 A longer time would be taken to identify capital costs (e.g. equipment spend and replacement needs).

B. Establishing costs

4 Department costs (type 1)

Step 4

- a) Decide whether to take all departmental costs (type 1) into the costing model, or only some of them
- b) Identify the department costs and activities that are relevant to the costing exercise
- c) Establish time and cost directly spent on the service
- d) Establish departmental management and administration costs

a) All or some department costs

- 4.1 When costing services in an IT department it would generally be appropriate to take the costs in the management accounts or budget that relate to the whole department. This would consist of staff costs, non-staff expenditure and possibly some estates costs (type 1), possibly some equipment (type 2) and IT Backbone/Network Infrastructure costs (type 3). Even though the service may be a small part of the IT department, looking at all costs in that department provides a valuable insight into inter-dependencies.
- 4.2 It is useful to take the total (gross) costs of the department, and not costs after income (e.g. the costs of research projects should be included). This ensures that there are no hidden recharges being made internally, that are not understood. It also allows a full picture of the department's activities to be established, allowing estates, administration and management costs to be attributed more fairly.

b) Identify relevant costs

4.3 In the IT department, costs would then be examined and analysed into the following:

Type of departmental cost	For allocation, see:
The direct staff and non-staff costs in the units providing the services being costed (e.g. in the HelpDesk)	Step 4(c)
Network Infrastructure and IT Support – those units which provide or support the university IT infrastructure. The costs of these units would be partially charged to the service being costed (e.g. the HelpDesk) as well as to other units and academic departments.	Step 6
Other units providing front-line services to academic departments and students or external bodies, e.g. HFS, WebLearn, Email. This category would include any research activity (e.g. work chargeable to research grants and contracts). The costs of these activities would not generally be part of the service being costed (e.g. the HelpDesk) - subject only to sorting out the inter-relationships.	Step 4(c)
Managers or administrative staff and costs that are not specifically categorised into any of the units above.	Step 4(d)
Capital equipment spend or charges	Step 5
Estates costs or charges	Step 7
Any divisional or central service department charges	Step 8

c) Establish time and cost directly spent on the service

4.4 Time and costs of staff working directly on the service need to be established.

4.5 In the IT department, OUCS, this could most easily be done by interviewing the head of each unit that is providing the service being costed. If more detail is required, individual members of staff could be asked to break down their time (perhaps by way of a time allocation schedule that covers a whole year and records percentages of time against different areas of work). This would however add to complexity.

4.6 Time would be expressed in terms of FTEs (e.g. 1.0 or 0.6 of a full-time equivalent member of staff); proportions of time on a particular activity (e.g. 3/5ths or 60%); or days (e.g. 130 days). Any or all of these could be used.

4.7 During this interview with the head of unit (augmented if necessary by information from individual members of staff):

- establish whether the annual spend is 'normal' or not and adjust to remove any abnormalities. An example here is the two members of staff in WebLearn who are on a migration project whose time would be excluded.

- identify if any direct costs are 'hidden' elsewhere in the department's accounts (e.g. the costs of part-time staff) and include them.
- identify what staff are in that unit, and their staff cost (remembering to include add-on costs).
- establish an average personnel cost for staff. The main alternatives here are:
 - actual salaries for individual members of staff, or standard average pay for each of say three grades of staff (managerial/senior, middle grade, junior). The latter ensures confidentiality of what might be sensitive data, and makes the costing system simpler;
 - costs per annum, day or hour. TRAC assumptions of 1650 hours or 220 days p.a. would be used. The relevant cost per FTE, cost per day, or cost per hour would be applied, depending on how the time estimates were recorded (see paragraph 4.6).
- quantify inter-dependencies and allocate staff and non-staff costs These were identified in Step 2 (the table under paragraph 2.4):
 - where there are shared staff, include the fractional part that is allocated to the service being costed ((a) in the table);
 - where the services are provided by a number of units, decide where the costs should sit and allocate them accordingly - (b) and (c) in the table;
 - where one service makes disproportionate use of another IT service, recharge those costs - (d) and (e) in the table;

(equipment, estates and central service costs for these staff should also be allocated, the cost model is adjusted as necessary for this in Step 9).

4.8 Time then needs to be converted to cost, using the time and pay data established above.

d) Establish departmental administrative and management costs

4.9 Identify the manager and administrative costs of the IT department, including any recharges of divisional administration. Apply as a % to the costs of all other parts of the department, or as a £/FTE (where the FTEs are staff in all other parts of the department). The former % allocation method will allocate more administration/managerial costs to units with higher staff pay or higher non-staff costs, than the £/FTE method.

4.10 This will provide an add-on to the costs of the service being examined.

5 Capital equipment spend or charges (type 2)

Step 5

Identify the costs of equipment recorded against capital budgets
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- 5.1 As shown in the table in Step 3, institutional policies on how to charge equipment to specific departments will vary. Commonly, only the purchase price of some equipment is charged in the management accounts. Many costs will be reported elsewhere, in a capital budget. Few management accounts show depreciated cost. Spend will be very lumpy.
- 5.2 A practical approach to costing equipment was shown in the Table as option (iii). This would involve:
- assuming the management accounts (the recurrent budget for OUCS, under their direct control) already include a reasonable amount for the replacement of some of the high volume or (relatively) lower cost items (e.g. computers used by staff in the department, some of which might be replaced each year);
 - removing the costs of all large capital purchases during the year (e.g. the replacement of servers) from the management accounts if they are in there;
 - adding in the replacement cost of replacing such kit over a reasonable timescale (5-15 years), spreading the replacement cost over that timescale.
- 5.3 This will derive a full economic cost of the most significant items of equipment, which would be attributed to the relevant service or across the department as a whole. In the latter case it could be attributed in a similar way to IT Infrastructure/IT Support (see Step 6).
- 5.4 It is relevant to note that TRAC only includes the depreciated historic purchase cost of equipment in the full economic cost it calculates (i.e. option (ii) in the table in Step 3). TRAC is under-costed as a result.

6 IT Infrastructure/IT Support (type 3)

Step 6

Attribute the costs of the IT Infrastructure/IT Support to the services being costed, if required

- 6.1 Establish the costs of the IT Infrastructure/IT Support services, if these are to be included. There are likely to be at least two types:
- i. In the IT department, OUCS, the relevant units and staff providing the IT network and backbone (including security, access management etc) to the university (and to OUCS services) would need to be identified. Non-staff costs such as licences and equipment would be added;
 - ii. Costs of local support areas such as the desktop and software support service provided by ICTST to OUCS would be identified.
- 6.2 Choose a method to apportion these costs onto the service of being examined. Given the nature of IT Infrastructure and IT Support, these services are used across the whole university. The apportionment needs to reflect this.
- 6.3 There are various ways of apportioning these types of central costs (these are not mutually exclusive):
- allocate to staff and students using the IT infrastructure; or to staff and students benefitting from the IT infrastructure (not necessarily the same);
 - allocate to research and academic staff, or to all staff including administration; or weight some of the student or staff numbers (e.g. undergraduates at 0.1 compared to a member of staff at 1.0);
 - allocate on the basis of costs across the university, not staff; or allocate using some measured usage, e.g. network registered hosts;
 - use a combination of the above (e.g. apportion half the costs using one method, apportion half the costs using another method). This is useful where some of the services (e.g. access management) are provided either centrally (by OUCS) or locally (where department makes its own arrangements, and therefore should not be charged costs from OUCS for these particular services).
- 6.4 One fairly simple, but reasonable, approach would be to limit the scope of the apportionment, and apportion all IT infrastructure costs to the staff who provide or support IT services across the university:
- divide the costs of the IT infrastructure by the number of IT staff across the university. In Oxford there are around 700 IT officers, including those in OUCS providing services to academic departments and students;
 - this results in a calculated IT infrastructure cost for each one of these IT officers;
 - apply this to the FTEs directly working on the service (e.g. the HelpDesk) to give an allocation of IT infrastructure costs to that service.

7 Estates costs (type 4)

Step 7

Establish the estates costs attributable to the department, and then the element relevant to the services being costed, if required.

- 7.1 Under Step 3(a), a decision would have been taken whether to include estates costs or not, and if so, whether to incorporate a) full economic costs, or b) the costs in the management accounts.
- 7.2 Under Step 4, the estates costs that had been charged to the department in the management accounts would have been established. The full economic costs of the estate used by the department are readily obtainable from the university's TRAC manager – whether the department is IT, Student Administration, or academic.¹
- 7.3 Under Step 2(a), any dedicated space would have been identified (separately from the space used by every member of staff). Using the TRAC weightings for laboratory/heavily serviced laboratory/office (see footnote 2), the cost of the dedicated space can be established separately and included in the costs of the relevant service. Any other dedicated space would be established and excluded. The remaining costs of 'office' space would be divided by the number of staff in the department to provide a cost per staff FTE. This would then be added to the costs of each service, based on the FTE staff numbers providing that service.
- 7.4 This approach could be used for both the IT department and the Student Administration Department. However, where the services being costed are a very small part of the department's activities, or there is no dedicated space, as in WebLearn, it would be simpler to:
 - estimate how many square meters of office space that a member of staff generally requires,
 - obtain a cost per square meter for office space (from the TRAC manager), and
 - thus calculate the total estates cost for the FTEs providing the service.

¹ Under TRAC, the square meters of all university space is attributed to the departments using it. Each room is allocated a weighting (generally one of three, describing the additional costs that a heavily serviced laboratory or a 'standard' laboratory incurs when compared to a classroom or office). The full economic costs of university space are established and include replacement cost depreciation, the RFI etc. These costs are attributed to each department based on the weighted square meters.

8 Central service costs (type 4)

Step 8

If central service costs are to be included, choose an appropriate method. The fEC approach based on TRAC would estimate the costs of relevant central service functions from TRAC, and use a simple method to attribute them to the services being costed (method A). There are other methods (see B-E below).

- 8.1 Under Step 3 (a), a decision would have been taken whether to include central service costs or not. If central service costs are not being included, then this should be made clear when the cost information is presented, to ensure that the information is not used inappropriately (e.g. for pricing externally).
- 8.2 If central service costs are to be included in the costs of the service, then a relatively simple approach can be taken, that is in line with TRAC:

Method A. TRAC fEC

identify costs:

- review annual TRAC figures and identify each central service function that is not directly related to Teaching or Research (such as Registry, Research Administration, Examinations etc). Some areas such as Libraries might also be considered to be mainly Teaching/Research and would also be excluded.
- identify the costs of the relevant central service functions – these are likely to be the University Administration functions (Finance (without the student fees office), VC offices, Planning, Personnel, staff welfare, sport)
- identify any specific increases in staff effort or cost directly related to the introduction of the new systems (these are unlikely to be material).
- take the costs of these functions into the cost model. These would include the estates costs allocated to those functions in TRAC. Add on 2.85% to reflect the TRAC RFI calculated on costs (standard across all HEIs).

identify staff FTE numbers:

- identify, again from TRAC, the total number of academic and researcher FTEs (direct time on Teaching, Research and Other only). Add to this the number of PGR students, weighted by 0.2, as in TRAC (again, this is standard across the UK HE sector). This provides the denominator of the charge-out calculation.

calculate and apply an indirect cost rate:

- divide the costs of the relevant central service functions by the staff/PGR FTEs (the denominator) to arrive at a central service cost per FTE.
- use this as a proxy: apply it to the FTEs of staff providing the IT service to calculate the central service costs attributable to this function.

- 8.3 The same cost per FTE could be used when costing services provided by either an IT department, or staff in other departments. The allocated indirect

cost total would replace any central service charges already made to the department through a RAM.

- 8.4 This has the benefit of using a figure easily derived through TRAC, and therefore the quality of the data and approach should be high. However, it does assume that the IT staff providing the service are similar in nature to academic staff, i.e. they 'generate external income' to the university (academic staff, for example, teach students who bring in fees and grants, and generate research grant income). It might be a useful approach when pricing a service for users external to the university. It would not be helpful when costing a service for internal charging, or when deciding whether to run the service internally or externally.

- 8.5 Method A benefits from its ease of calculation, but it is also a simplistic approach. Improvements could be made by, for example:

Method B: TRAC fEC variation

Including IT department staff in the denominator, and there is some logic in including all university administrative staff in the denominator, or

Method C: TRAC fEC variation

Including taught student numbers (perhaps weighted) in the denominator.

- 8.6 Both methods B and C would reduce the central service costs attributable to IT services. However, these would be more complex, and the more broad-brush calculation, which is relatively easy to calculate, is likely to be as useful for planning and external pricing.

- 8.7 An alternative method might be more useful for internal charging. This is described as Method D. This would provide a 'partial fEC' cost total, rather than the 'full TRAC-based fEC cost total' from Methods A-C:

Method D: Use internal charges, not TRAC fEC

Taking only those central service costs which are allocated internally to the IT department, OUCS, by the university in its management accounts, resource allocation model, or other planning system. These costs are likely to be much lower than the TRAC cost total used in method A above. In method D, only the OUCS staff would form the denominator to calculate a central service cost per staff FTE.

- 8.8 Finally, It is relevant to note the alternative approach that used to be commonly used to calculate and allocate central service costs, pre-TRAC:

Method E: Apply notional overhead percentage

Adding 46% to the direct or pay costs of each service.

- 8.9 This may be even easier to calculate than methods A-D, but is unlikely to reflect a fair and reasonable estimate of indirect costs. (This is an outdated figure used for Research Council project funding, and was never based on actual costs).

- 8.10 Whichever method is chosen, central service costs thus attributed to the service should be compared to any existing calculation: for example, overheads calculated using the old '46% method'; or an amount allocated through the RAM. The purpose of this comparison is to note the different results from the different methods, and understand why they arise, and any relevance to decision-making.

9 Reporting and Use

Step 9

- a) Understand and measure use, and recharge
- b) Understand how costs change
- c) Ensure the basis of the cost information is understood by users

a) Understand and measure use, and recharge

9.1 The costs of each service should be shown analysed into their various types (direct, equipment, IT infrastructure/support, estates, central services).

9.2 Any direct charges to other IT services should be made if not already done. For example:

- for the support that the HelpDesk provides to WebLearn. The staff time was reallocated in Step 4, however if IT infrastructure, estates and central services costs are included in the costing model, an element of these costs may still need to be recharged;
- for the support that HFS provides to NEXUS and NSMS. HFS non-staff costs such as software licence and maintenance contract, equipment costs, and estates costs, are significant, and would need to be recharged along with relevant staff time.

9.3 Some measure or driver of use should be established to assist with this e.g. capacity (HFS), or a emails/phone calls (HelpDesk). This would reflect disproportionate use.

9.4 Once the internal charges have been made within the IT department, the costs can be spread across all other users on the basis of their use.

b) Understand how the costs will change

9.5 It would be important to understand how the costs change with changes in volume of use, level of service, or new types of service. We have not used the terms 'fixed' (costs which do not vary by level of use) or 'variable' (costs which change when volumes change) in this costing model, as most of the costs covered here are semi-variable – with step-changes as volumes increase.

- c) Ensure the basis of the cost information is understood
- 9.6 The very first step in setting up the costing model was to decide why the cost information was needed. This then determined the type of service that was costed, and the type of costs that were included. It is important when presenting the information that this is made clear – in particular:
- are all departmental costs included as incurred (or have some adjustments been made for example to reflect vacancies or to spread unusual expenditure across years – see step 4);
 - are equipment costs included, and if so how (purchases made in the year, or historical cost depreciation, or replacement cost depreciation – see step 5);
 - have IT infrastructure/support costs been included (see step 6);
 - have estates costs been included, and if so, on what basis (RAM charges, or TRAC full economic costs – see step 7);
 - have central service function costs been included, and if so, on what basis (RAM charges, or by applying a proxy indirect cost rate calculated from TRAC costs – see step 8).
- 9.7 A number of cost figures for the same service might result from the costing exercise, depending primarily on the method used to take account of estates and central services costs. The reason for the chosen method, and the impact on the final costs figures, should be understood. The most appropriate cost figure - 'relevant cost' - should be adopted for each purpose or decision (refer to the table under Step 1).

Annex 1

List of cost centres in Oxford University Computing Services, OUCS

These are called units or services in this study. They represent services provided by OUCS to the University (and to external users such as research grant sponsors and other projects such as NSMS). These cost centres are described in OUCS public set of Service Level Descriptions.

IT Infrastructure and IT Support Services

- Backbone
- DHCP, DNS (Network Infrastructure Services)
- OxCERT (Network Security)

Services being costed in this study

- HelpCentre
- HFS (Backup and Archiving)
- WebLearn

Other OUCS services

- VPN (Network Applications)
- SMTP, Oxmailers, SPAM filters (Mail Infrastructure Services)
- NEXUS

SSO, LDAP, Shibboleth, Registration (Identify and Access Management)

LINUX Shared Services

Consultancy Services (including IT Audits)

NSMS

Software Licence Management Service

User Support Services (HelpCentre is shown above)

- Online Shop
- PC Repair Service/Upgrades
- PC Maintenance Scheme

ITS3

Information Services (Infrastructure)

Information Services (Development and Consultancy)

Research Support

Learning and Teaching Support

Podcasting

Training

Wak-on-LAN

UCISA

ODIT

Other costs are also shown in the OUCS management accounts

- OUCS management/Administration

- Divisional Administration (recharged in the RAM)

- Estates costs (recharged in the RAM)

- ICTST (desktop support team) (is to be recharged in the RAM)

However, no central service costs are currently recharged in the RAM

Glossary of other terms

department – the IT department (OUCS), another administrative department (e.g. student administration), an academic department in the University, or an Oxford College

division – a group of departments

FTE – full-time-equivalent member of staff, or student.

full economic costs – in TRAC, this term is used to describe the total costs of an activity on a sustainable basis in the long term. It is based on the costs in the annual accounts of a university, plus two cost adjustments – an infrastructure adjustment which ensures depreciation of buildings is stated on a current cost basis, and a return for financing and investment.

service – a defined area of work or support carried out by a unit in OUCS which directly benefits a user of that service. Examples of services are HelpDesk, WebLearn, HFS.

TRAC – the Transparent Approach to Costing – see <http://www.icpsg.ac.uk/guidance/>

unit – part of a department, e.g. the HelpDesk or WebLearn, in OUCS

university – this term is used to refer to all higher education institutions

user – an OUCS unit, a member of academic staff, a student, an administration or academic department in Oxford University. External users would include the Research Councils and other sponsors or research grants or projects such as NSMS

Annex 2

Costing IT services provided by academic departments or Oxford Colleges:

Notes on implementation of the toolkit

Steps 1-9 in this toolkit describe a costing system suitable for application to an IT service provided by the IT department (OUCS). However, in its design, services provided by other departments (student administration, or academic) or Oxford College, were also considered. When costing IT services provided in these other administrative or academic departments, steps 1-9 can be used with the following adjustments:

Step 4 – departmental costs

When costing services being provided in another type of department, the amount of costs relating to the service will be a very small part of the total activity in that department. It would be difficult (and not very useful) to examine all the costs of that department or college. Therefore only the staff costs (and non-staff costs if any) of those directly engaged in the service would generally be considered. Only step 4 (c) described under Step 4 in the toolkit would be carried out (not 4 (a) or 4 (b):

(c) Time and cost directly spent on the service

The time of IT staff providing the service would be established through discussion with appropriate heads of unit/department. However, other costs and activities in the department would not be identified or costed. Care would need to be taken that relevant activities were taken into account – e.g. provision of the service, helpdesk for the service, training and documentation for users.

Specific non-staff costs in the department would also be identified through discussion with IT staff or their managers.

(d) Departmental administrative and management costs

The approach in the toolkit (establishing all administrative and management costs and apportioning them across all activities) would be too onerous to carry out. Instead a notional 30% could be added to direct staff time to cover administrative/managerial support provided in the department (this assumes 1 secretary supports a group of 10 staff and one manager supports a group of 5-7 staff).

IT Infrastructure/IT Support

IT infrastructure costs from the central IT department would need to be identified and apportioned to the IT officers in the academic department being costed. If the costs of the IT department itself were not to be examined in detail, then a broadbrush approach would be taken (e.g. all costs of the IT department as presented in the current management accounts apportioned across all IT officers). This could be made more sophisticated by removing any costs obviously charged on other bases (e.g.

directly charged to users) or taking into account disproportionate use by the academic department being costed, or another user.

Estates

The costs would be established using the simple approach described at the end of Section 7.

Central services

Method D – using the central service costs charged to this department in the internal resource allocation model or planning system, might be the most practical and useful. This would, however, depend upon the purpose of the costing exercise (see Step 1 in the toolkit).

Using Method D would not produce a TRAC-based fEC, which should be made clear.