

University Property Rights

Trade, Data and
Performance Indicators

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Introduction

- This paper attempts to link
- The organisational structure of Universities
- The structure of their information systems
- The structure of costs
- The implications for trade and profit
- The relationship to performance indicators

A little costing history

- 1997-2002 JCPSG develop TRAC with JM Consulting
- Based on fEC and ABC
- 2002-2005 implementation across the sector
- 2006-2008 TRAC(T) implemented
- 2007 JM Consulting publish separate course costing advice

The structure of information

- HR/accounts
- HESA database
- Work planning
- TRAC(T)
- Lecturers/Staff Groups
- Students (Modules) Awards
- Lecturers (Staff groups)
Modules
- Lecturers – total teaching
activity (time reported)

Tensions between data systems

- TRAC(T) is based on actual time reported by lecturers, but may not be linked to courses
- *“These macro, top-down allocation, processes are primarily designed to support sector-wide purposes. They will provide useful management information for institutions on the costs of teaching, but necessarily are at a relatively aggregated level. “(JM Consulting 2007)*
- Work planning systems are often based on contact time and an hours based contract which may be difficult to relate to TRAC(T) methodology
- *“Course costing can become onerous in terms of the production and manipulation of data. For example, recording staff (and student) hours by method of delivery, for each module, would require significant effort” (JM Consulting 2007)*
- Simulation models are sometimes based on course structures (Cormack 1997)
- Student databases may not link to any of the above.

The structure of costs

- For a homogeneous modular structure, costs are non-linear (Cormack 1997)

- $$\text{HPS} = \frac{\text{N.Tw}}{\text{S}} + \frac{\text{M.Tg}}{\text{Ag}}$$

- $$\frac{d\text{HPS}}{d\text{S}} = - \frac{\text{N.Tw}}{\text{S}^2}$$

- $$\frac{d\text{HPS}}{d\text{N}} = \frac{\text{Tw}}{\text{S}}$$

- $$\text{SMR} = \frac{\text{S}}{\text{N}}$$

- where
 - **HPS**= **H/S** is hours per student
 - **H** is the total no. of hours taught
 - **N** is the no. of modules running
 - **M** is the no. of modules each student takes
 - **Ag** is average tutorial size
 - **Tw** is lecture hours per module
 - **Tg** is tutorial hours per module
 - **S** is the no. of FTE students
 - **SMR** is the student module ratio

Reducing Costs

- Teaching costs fall:
 - As the **number of modules (N) is reduced** (because fewer lectures are delivered but tutorials delivered remain about the same)
 - As the **number of students (S) rises** for a given number of modules (because tutorials rise in line with students, but there is no change in lectures)
 - As the **Student module ratio (S/N) rises** (combining the above). Trade between different entities in the University can increase the SMR

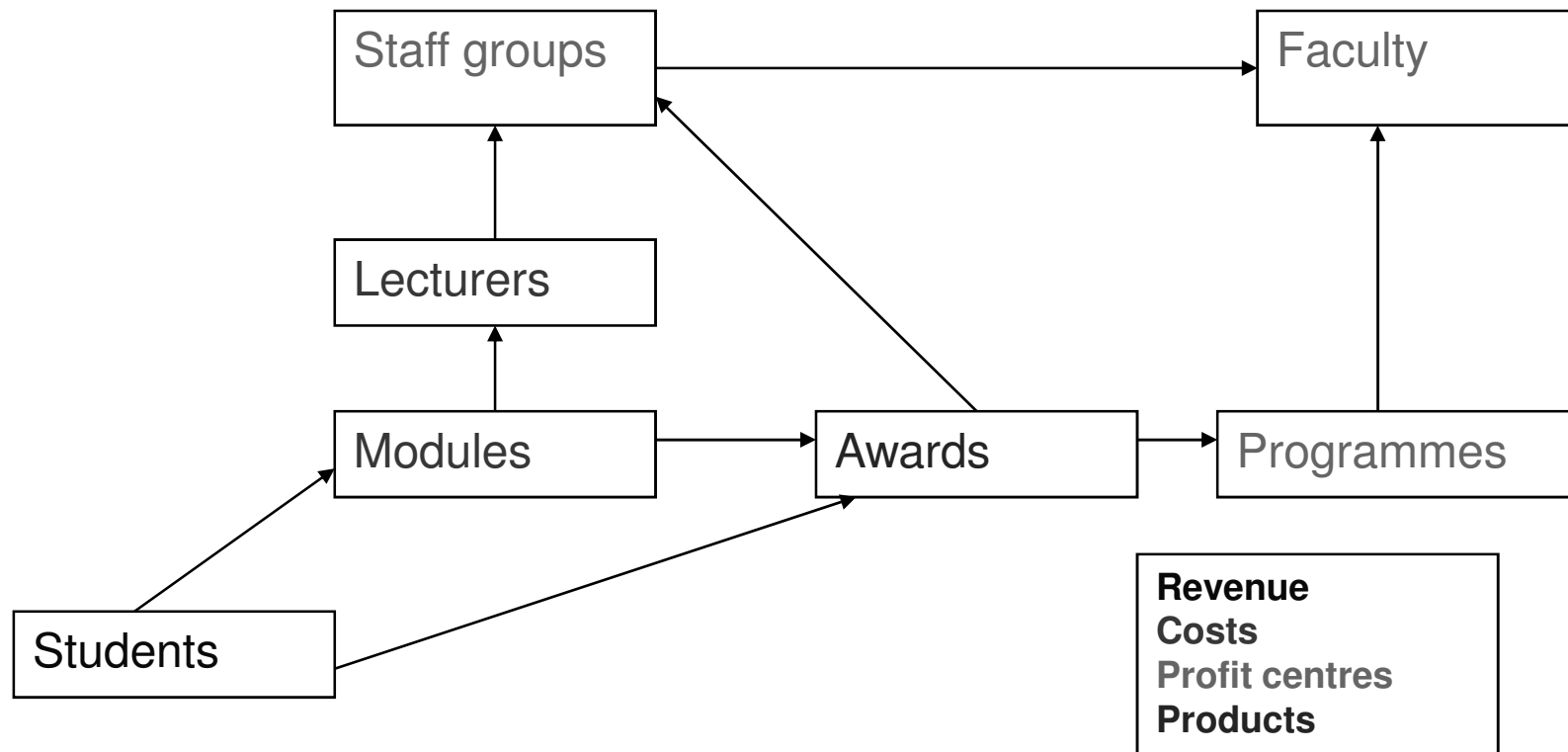
MC, AC and Scale

- Marginal costs only include tutorial costs
- Average costs include lecture costs as well
- ***So marginal costs will be below average costs*** (refer forward to trade)
- There are economies of module size, but as student numbers get larger and larger, cost reductions get smaller (refer forward to trade)

Trade and Property Rights

- Property rights may be established for
 - staff groups over a set of lecturers
 - staff groups over a set of modules
 - programmes and awards over students
 - programmes and awards over modules
- Once property rights have been established, trade can be in either lecturers or students. The arena in which trade takes place is the module
- If a staff group teach only students registered on its awards using only lecturers and other resources owned by the staff group, then there is autarchy.

The structure of the University



Definitions of programmes

PAS
Programmes
include
Awards
include
Students

AS
Awards
include
Students

PAMS
Programmes
include
Awards
include
Modules
include
Students

AMS
Awards
include
Modules
include
Students

- In PAS or AS, the award is defined by students registered on it. The programme is a set of awards
- In PAMS or AMS, the award is defined as a set of modules, and the student registrations on those modules

Definitions of staff groups

GAS
Staff Groups
include
Awards
include
Students

- The GAS definition of a staff group is based on the group being associated with awards, and the students registered on them

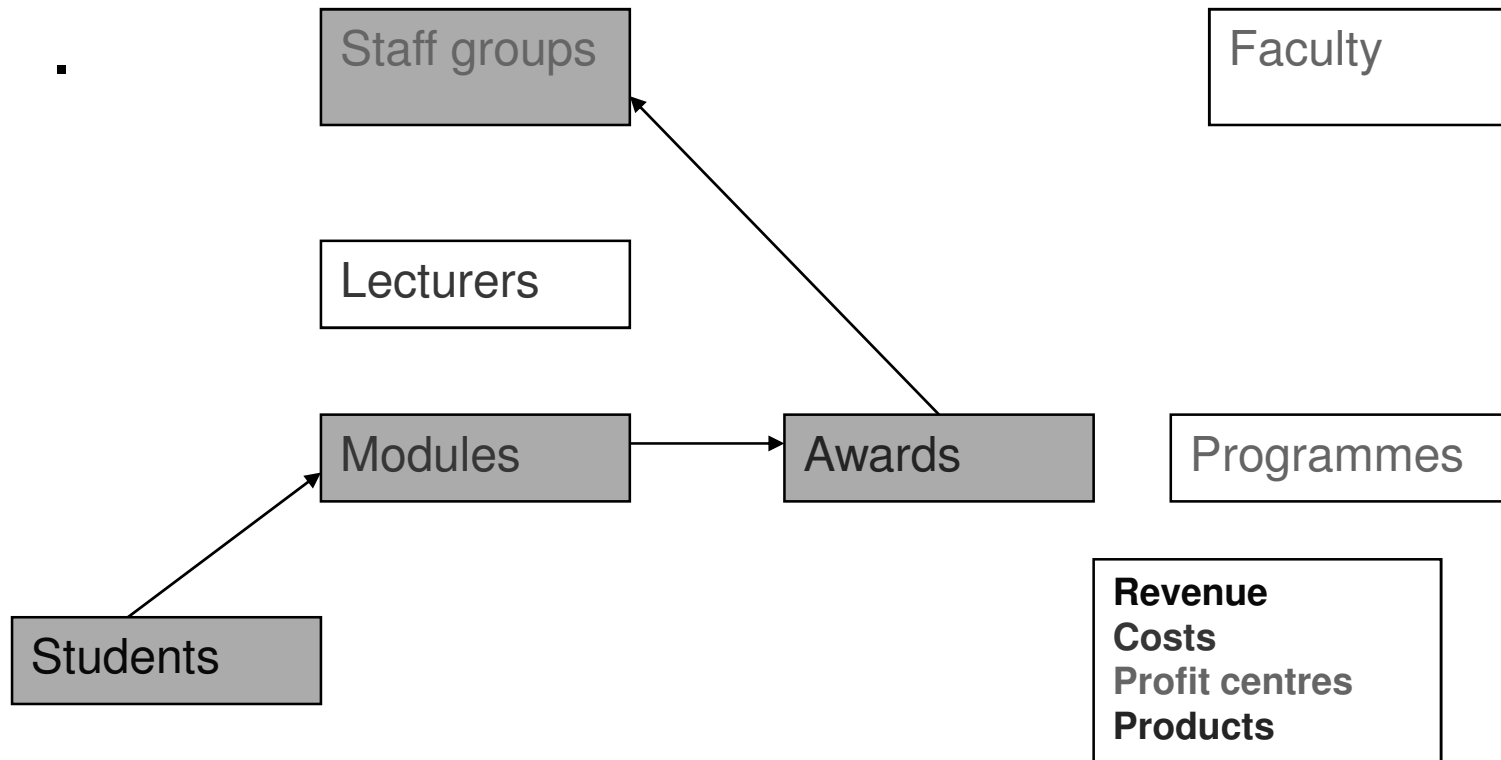
GAMS
Staff Groups
include
Awards
include
Modules
include
Students

- The GAMS definition is based on awards associated with the staff group being defined by a set of modules and the students registered on them

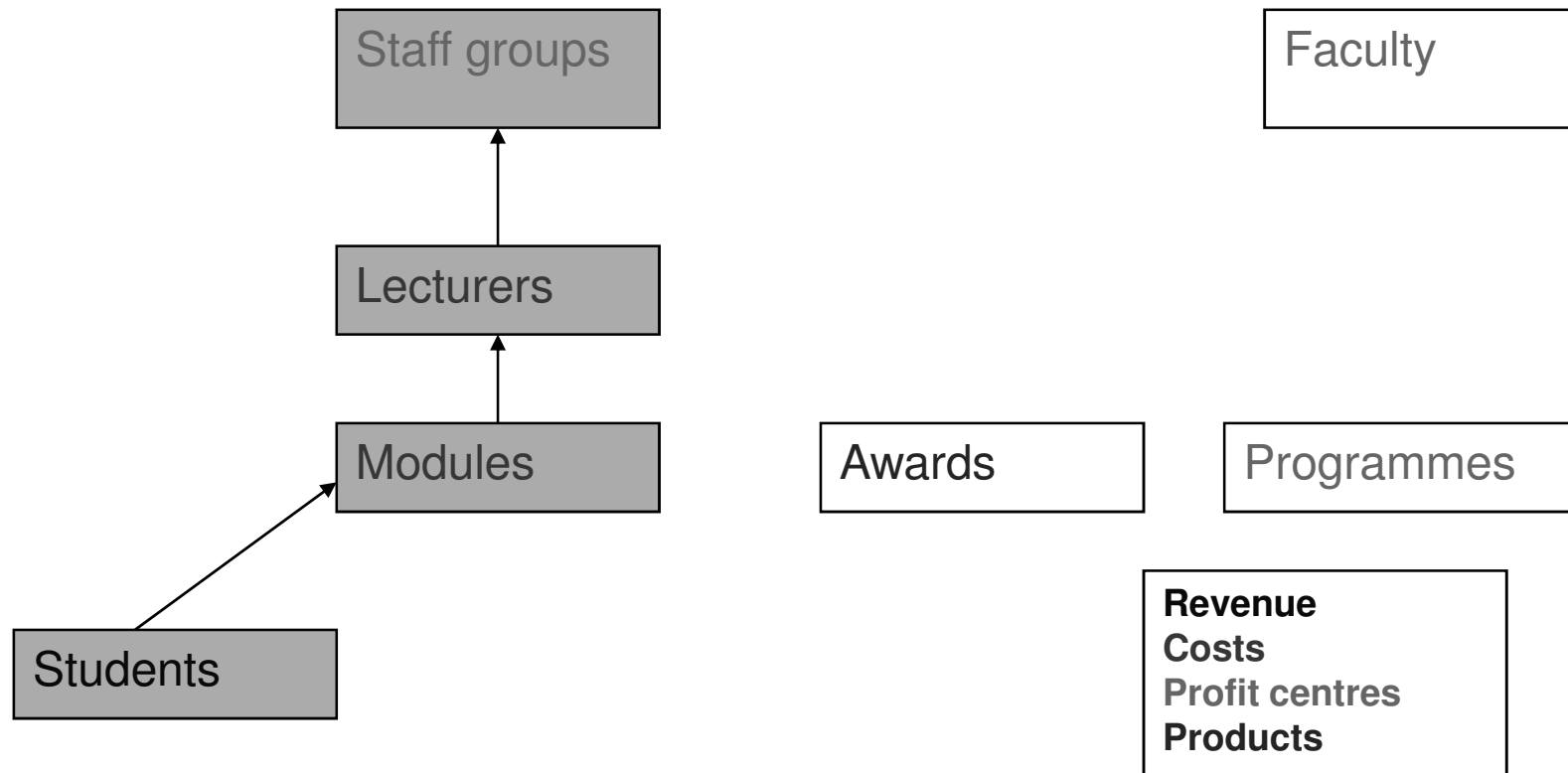
GLMS
Staff groups
include
Lecturers
include
Modules
include
Students

- The GLMS approach considers the output of the staff group to be the set of modules taught by its constituent lecturers, and the students registered on them

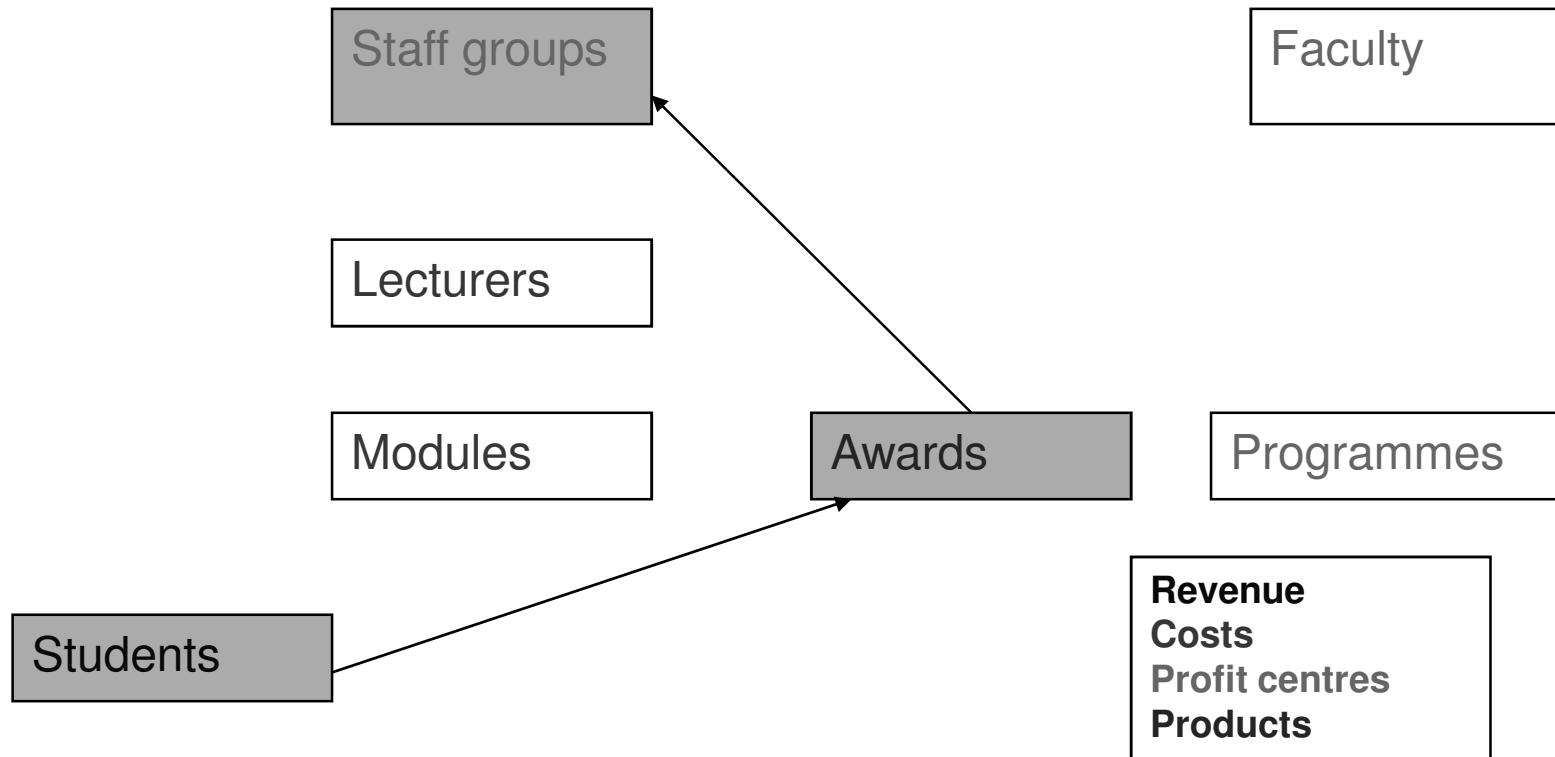
GAMS: the picture



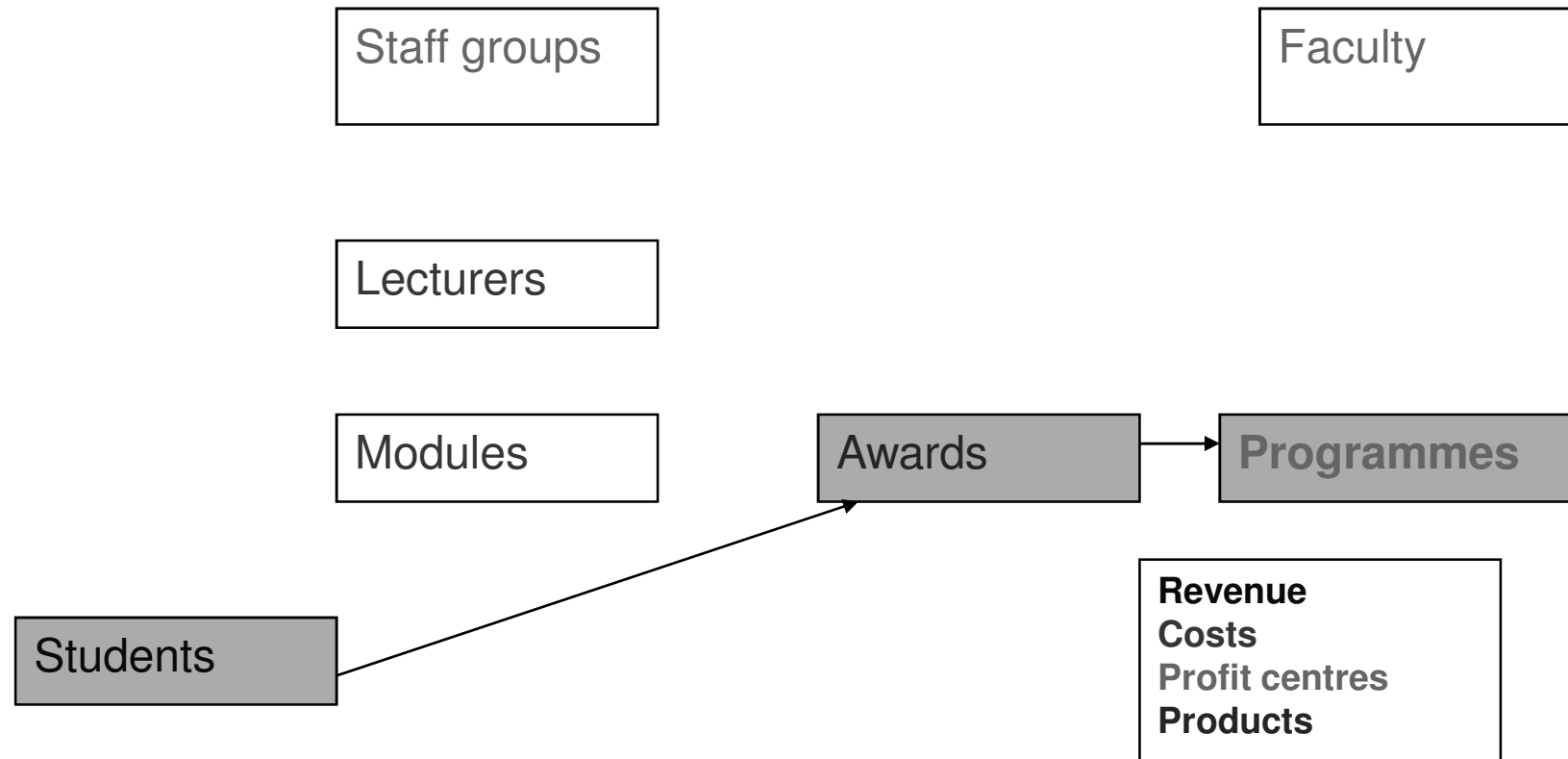
GLMS: the picture



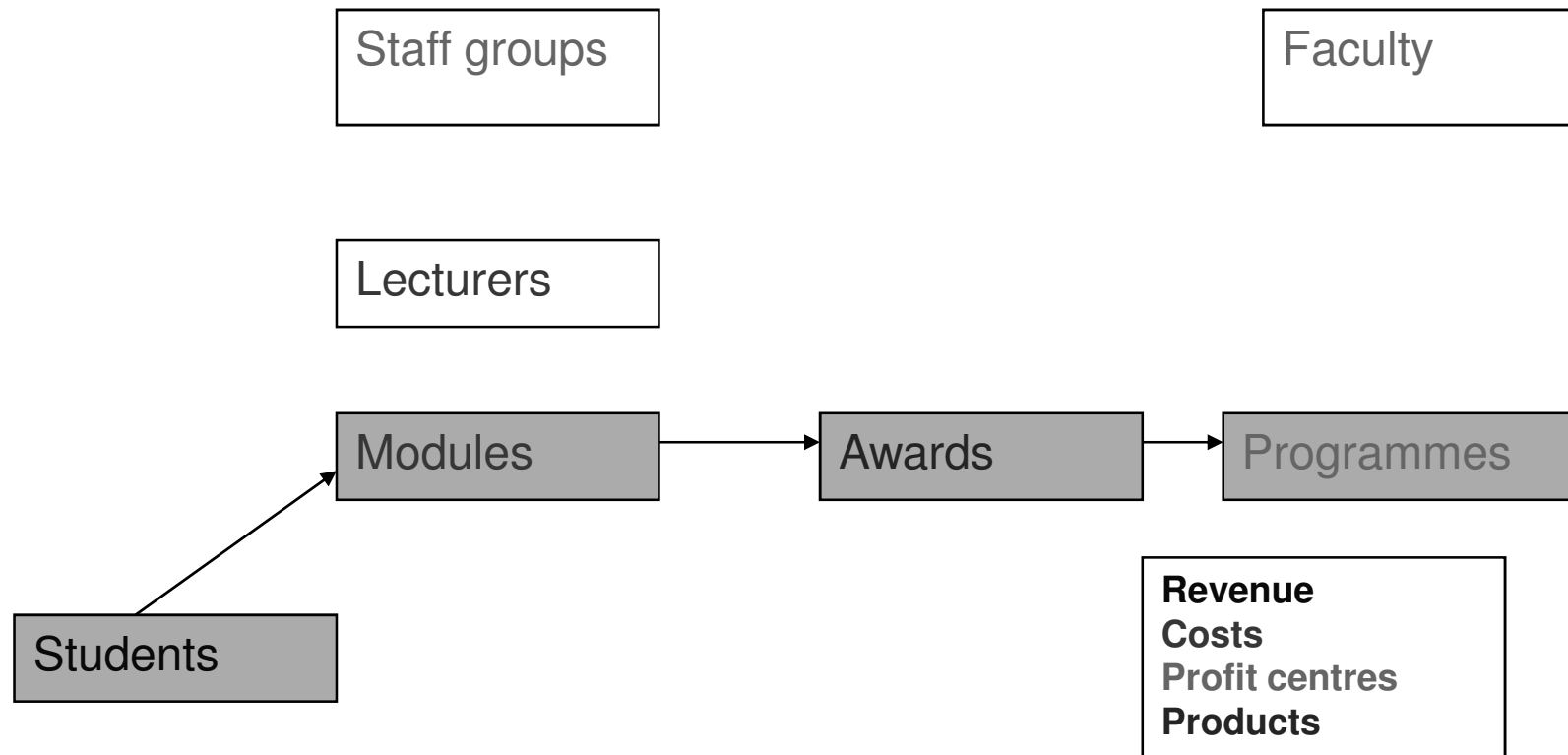
GAS: the picture



PAS/AS: the picture



PAMS/AMS: the picture



Ownership and information needs

	GAS	GAMS	GLMS	PAS	PAMS
Students linked to modules (HESA)		fees	fees		fees
Students linked to awards (HESA)	fees			fees	
Modules linked to awards (HESA)		fees			fees costs
Lecturers linked to modules (WP)		costs	costs		costs
Lecturers linked to staff groups WP	costs	costs	costs		
Modules linked to staff groups WP			fees costs		

Staff group trade and adjustments

- GLMS links revenues and costs of teaching. As such it is taken as the correct accounting model
- GAMS links revenue to modules, but there may be a mismatch with lecturers who may be imported / exported
- GAS neither links revenue to modules, nor costs to modules so there can be trade in students or staff which require adjustment
- GLMS will not be preferred to GAS for information and control reasons. GAMS will not be preferred for information reasons
- GLMS/GAMS will often be the model preferred by quality systems because of the link to modules

Programmes trade and adjustment

- PAMS links revenue to modules, but there may be a mismatch with lecturers who may be imported / exported. This may affect costs, depending on the transfer price.
- In PAMS, accurate accounting information requires good information about students moving between different awards and programmes for their modules
- PAS neither links revenue to modules, nor costs to modules so there can be trade in students or staff. There is no cost base, so PAS cannot be used for accounting purposes
- The absence of ownership in PAS/ PAMS over lecturers may mean they are neutral about the origin of the lecturer (but staff groups will not be).
- PAMS is taken as the correct accounting model because revenue from students is linked to costs of modules. Accurate data may not be available

Problems of determining transfers

- The production cost of importing students to a module will be the marginal cost
- The cost allocation approach will use average cost, which is higher
- There may be disputes over the correct wage rate to use in relation to transfers
- The revenue associated with the transferring student will be more closely related to average cost

Motivation to trade

- In a situation of bilateral monopoly, the transfer price will be between marginal and average cost. Prices outside or at the limit of this range are problematical.
- When module location is determined (validation), staff groups have it in their interests to gain control of larger modules (economies of module size)
- Trade may be discouraged by
 - Unadjusted GAS systems
 - Inappropriate transfer prices
 - Inappropriate service teaching

Programmes and Staff Groups

- **Staff groups subsuming programmes**
- Although this is in principle a more autarchic position there will still remain problems of
 - Trade in lecturers
 - Trade in students
 - Spare capacity
- **Programmes subsuming staff groups**
- This situation may result in problems of module location, particularly with a AMS approach, or cost allocation problems
- GAS and GLMS measures are likely to be very different particularly if the staff group provides modules to awards associated with other staff groups.

Conclusions

- The fragmentation of the information system acts as a brake on the development of accurate accounting figures, and a discouragement for trade
- Fuzziness or impermanence of property rights may have advantages for senior management.
- If trade is discouraged by the existing system, performance indicators may be used as a proxy, particularly the SMR
- An SMR may encourage either greater efficiency at the award level, or greater trade.
- Where modules are not of a standard size, it can be substituted by the Student Credit Ratio