

## **IES PHYSICALS: WHAT ARE THEY?**

### **Introduction**

People are generally aware of the term called 'Quantities', which is found in most Financial, Business and Accounting systems. These quantities and their usefulness range from very basic to more extensive, i.e. from being applied for no more than Order and Inventory Quantities in some systems, to extended use with some further application in other systems. In **INFOLAB** Enterprise Server, Quantities are a subset of the more advanced concept, which we have termed PHYSICALS. Physicals in IES include Quantities, Units, Resources and Key Performance Indicators (KPI's). The term PHYSICALS is then further expanded to include to relationships that are formed between the components of the Physicals and the Financials, and which become an integrated and intelligible information set within IES.

The purpose of this Document is to explain this concept that we have termed PHYSICALS, and to whet your appetite for it, without explaining it from all angles. After all, it is such a powerful capability in the system that you may be excused for allowing your imagination to run wild as to what you would like to get out of it, and it probably will be able to do just that, provided a bit of logical thought is applied. So, to be crystal clear, this Document cannot explain all possible examples of how Physicals can be applied in IES, because there are too many possibilities, but by introducing you to some examples, the concept and the capabilities of it will be to some extent understood. And that is all that is required here, because Businesses are all different, and some will use the PHYSICALS in very different ways to others.

### **Some Concepts**

Physicals in Ledgers (Quantities? Not only!)

In IES Ledgers, we treat Physicals with exactly the same respect as we do Financials. This means that any Ledger Account can be processed not only with Financials, but also with Physicals, or with either or both. That also means that just like a Ledger Account 00000001 may have a Financial Balance of \$20,000-00 at the end of the month, likewise the SAME Account may have a Physical Balance of 3,500-00. It also means that just like the same Account can reflect net movement of \$5,500-00 for the Month, it may reflect 1,250 for Physical movement.

Resources

The Account in the example stated above may further be connected to a Resource Class, e.g. Man Hours, while the Resource Class may include multiple Resources, e.g. Standard Man Hours, Overtime Man Hours @ 1.5, Overtime Man Hours @ 2.0, etc. Therefore, the per Man Hour average cost for the Account, Period to Date, would translate to  $20000 / 3500 = 5.71$ , but in terms of the movement for this month it is  $5500 / 1250 = 4.4$  ;

KPI's

Now just before you think this is no more than Per Unit Cost, let's add a KPI, i.e. no of Hectares Ploughed, which can also go into the Ledger. This then means that if over the Period to Date 2,000 Hectares have been ploughed, we have a Man

PHYSICALS IN IES

Cost of \$10 per Hectare ploughed, Period to Date, and whereas in the Current Month we had 450 Hectares ploughed, this translates to a Man Cost of \$12.22, which immediately raises the Question of why the Man Cost per Hectare this Month is higher than the average over the Period to Date (e.g. Season, Year, etc.) Also, we could translate an average Number of Man Hours applied per Hectare ploughed, and so on.

On top of the KPI, in this case Hectares, we may add further elements to translate Meanings and Indicators, e.g. Harvest Cycle, Project, etc. (This forms part of the Cost Code capabilities in IES Costing, which integrates to the Ledgers.)

**Some Examples**

Budgets

	Budget		Previous	Actuals
1	25.00	Jun 2004	40.00	3.00
2	25.00	Jul 2004	40.00	37.00
3	25.00	Aug 2004	70.00	55.00
4	25.00	Sep 2004	40.00	0.00
5	25.00	Oct 2004	24.00	15.00
6	25.00	Nov 2004	40.00	0.00
7	25.00	Dec 2004	26.00	10.00
8	25.00	Jan 2005	40.00	17.50
9	25.00	Feb 2005	40.00	0.00
10	25.00	13th Period	40.00	0.00
11	25.00	Mar 2005	40.00	0.00
12	25.00	Apr 2005	40.00	0.00

In the picture shown above, we are using a Physical Budget option to record Budget figures for Account 10101043, using HA (Hectares) as the KPI to budget on Man Days. This means that the Account is connected to a Resource and KPI combination of Man Days and Hectares, and that (in this example), and standard application Factor of 2 Man Days per Hectare is specified on the Resource Type, as well as an average Man Day Cost of \$35-00. The Operator now only indicates the Number of Hectares to be done during each Period (in this example it is Months, but it can be any Period that you wish to use), and the system will, for each Hectare indicated, calculate the Number of Man Days to Budget, as well as the Financial Budget, e.g. \$35-00 per Man Day, as translate form the number of Hectares. So the Physical and Financial Budget for this Account is done in 1 step, and is actually based on a KPI.

## PHYSICALS IN IES

## Fleet Management

For each Vehicle or Plant Item, inclusion may be specified in both the Asset Register (for Asset Management and Depreciation), as well as in the Job Costing, where Life time Expenses will be tracked. In the Job Context, there are Cost Types present, e.g. Oil, Fuel, Maintenance, Labor, Parts, etc. and a range of Financial and Physical elements may be applied. The Job Costing will also track the Meter (e.g. Kilometer, Hour Meter, etc.), and the current Meter Reading may be recorded each time the Vehicle makes a stop at the Fuel Pump. In addition, for Jobs so applied, the Item may be applied for Tasks, e.g. a Tractor that is applied for Land Preparation.

In this example, we wish to draw attention to the Physical Performance Measurement capabilities inherent in the Job Costing system, and which is completely integrated to the Ledger and other Modules of IES. Below, we show just an example of the definition of a Measurement Type, but each Measurement Type may be easily included in a Job Report, for example to provide Reports on Fuel Consumption, Recovery Efficiencies in Re-Charge scenarios, Productivity, Downtime, etc.

Define Measurement Type [1] ()

Measure Key #

Lookup Description   
 Column Header For Report

specify EITHER Cost Types or Tasks, not Both!

Cost Types	Task Profiles
1 * - ALL Cost Types	1 -

Process Type   
 Do Total?

Column Width   
 Decimals

In the example above, we show a Profit / Loss Measurement Type. Such a Measurement Type is useful for application where a Vehicle is used to provide Services, and then the Costs are recovered or re-charged. But there are endless examples of Measurements that can be defined. Here is a list of some of the standard formula elements:

- f - Financial Value
- f/p - Financial per Physical
- f/m - Financial per Meter unit
- p - Physical Quantity
- %f - Percentage of Financial Cost for ALL Cost Types
- p/m - Physical per Meter (where Job is metered in Km or Hours, etc.)

PHYSICALS IN IES

- m/p - Meter per Physical
- m - Meter Movement
- kpi - Key Perf Indicator QUANTITY
- f/kpi - Financial per KPI
- kpi/f - KPI per Financial
- p/kpi - Physical per KPI
- kpi/p - KPI per Physical
- kpi/m - KPI per Meter
- m/kpi - Meter per KPI
- pl - Prof/Loss
- r - Recovery

A little imagination is required here to perceive the power of what can be achieved with these Measurement Types, until you see them in action. Bear in mind also that all IES Reports on Financials and Physicals can be dynamically mapped to Time periods of your choice. In other words, a Measurement Report on a selected range of Vehicles, and that include Operational Indicators like Fuel and Oil Consumption, etc., may be run for the Year to Date, Current period, Life to Date, Season, or any selected range of Periods.

Workshop Management

Let us consider for a moment a Workshop where Maintenance is performed. For the sake of simplicity, let us call it a Garage type of Workshop, i.e. where Vehicles are serviced and repaired. The Job Costing system will provide for any type of Workshop Measurement and Job Cards required for the operation, and recorded Service, Parts and Labor Details can in addition flow through to the Vehicle Jobs themselves (i.e. as in the Garage being an internal Service Dept), or to Customer Accounts, Invoices and Statements. This example, however, is not about that, but rather to draw attention to another example of the application of Physicals (of which there are obviously many others in the Garage context). This time, we want to allude to the Human Resource re-Charge Register, which is part of IES Physicals.

The screenshot shows a software interface with the following elements:

- Individual Key:** 001
- Name:** Dawie Numan
- Class:** Artisan
- Notes:** A table with one row containing the number '1'.
- Team:** 01 Team 01
- Resource and Rate Table:**

Resource	Rate
1 *	300.00

Two text boxes with red arrows provide context:

- Top Box:** "All the Human Resources in the Garage may be defined on the Human Register, with Class Application, and as members of Teams." (Arrow points to the 'Class' field).
- Bottom Box:** "Multiple Charge Out Rates may be specified per Human Resource, e.g. a different Rate for Auto Electrical Work, another for unspecified Tasks, etc." (Arrow points to the 'Rate' column in the table).

PHYSICALS IN IES

The Job Cards contain Time (hours) spent on various Tasks, all of which are captured in IES. The Garage can now get Productivity Reports on the Human Resources, or Utilization Reports, plus the Reports that indicate other Physical elements, i.e. average time per Vehicle Serviced, etc.

Project Management

IES Physicals can be used with great success in Project Management, and a Project can be any kind of Project. IES will manage the Financials, the Costing, the Physicals and the Project reports. Below is a little 'window' extracted from a wider Plant Utilization report, and not as meaningful as we would like in terms of the sample that can be displayed here, but it does show some examples of KPI and Resource measurement.

Key Physical: Tractor Hrs		Standard Charge Out Rate: 235.00		
RESOURCE UNIT	QUANTITY	RATE	COST	
EACH EACH	1.00	1,574.18	1,574.18	
ea EACH	1.00	9.09	9.09	
			-----	
			1,583.27	
			-----	
KPI/QTY	QTY/KPI	QUANTITY	RATE	COST
5.00	0.20	2.00	791.63	1,583.27
				-----
				1,583.27
				-----
				1,583.27
				*****
RESOURCE UNIT	QUANTITY	RATE	COST	

Agricultural Fields Management with Activity based Costing

IES Ledgers support Activity based Costing. Let's consider for a moment a list of Accounts numbered 1000036, 10001036 and 10007036. If you consider digits 4 and 5 in these 3 accounts, we notice a different Activity Code in each case, but they all belong to the same Department, e.g. '100', and are all for the same Cost Centre, e.g. '036'. Now let us suggest that Cost Centre '036' is used for Wages, and Activities 00, 01 and 07 relate to different Tasks, for example Weeding, Land Prep and Harvesting. Various Wages and Overtime Journals are posted to these 3 Accounts. Per our previous explanations, we can derive Man Day Averages from the Movement and Balances in these Accounts, and use KPI's as well, provided we post Financial as well as Physical detail to these Accounts (not necessarily at the same time). In the example shown here, it becomes clear that we can build further on the previous examples, and now provide these statistics and indicators with an additional element, i.e. Activity. And if your Salaries and Wages system has the capability to produce some Physicals Parameters in addition to the

## PHYSICALS IN IES

Financials processed there (some do), then this information can be fed to IES electronically, i.e. without re-capturing.

**Some Benefits**

As with the subject of Accounting, which is far too extensive to cover exhaustively in a single document, you may consider Physical Accounting on a par, and here are simply a few examples of benefits that may be derived from using Physicals in IES, but there are many others, depending on the Business using it, and the context in which applied.

- ✓ Physicals are integrated through all IES Modules, and therefore Data may flow from different directions, depending on Business Process requirements, yet flow to the destined target points to be used by IES Physicals interpretation. In other words, data elements do not need to be present on the same Journals in order to 'make a connection'. For example, a Journal flowing to Account 00000001 may contain purely Financial Information, whereas another contains Financial and Physical, and yet another only Physical, yet they all become logically and intelligently connected for Financials as well as Physical 'meaning'.
- ✓ All the information required for Physicals Management and Reporting are managed in the same Data set as your Financials, with the same integrity and controls, so there is no need to double-handle information by exporting to Spread Sheets, and import or capture from yet other sources in order to bring together the elements required for the Reporting you need.
- ✓ Physicals are also catered for in the Budget Module, so both Physical and Financial Budgets may be applied for the Ledger Accounts so required, while some may be purely in Financial terms, i.e. having no need for Physical interpretation.
- ✓ The Physicals capabilities allow for Physical Management and Reporting in addition to Financial Management and Reporting. Here is an example: A certain Manager of an Agricultural Section reports to the Financial Director, and they discuss why the Budget has been overspent on certain Accounts. It turns out that the overspent Accounts all relate to Salaries and Wages, over which the Manager has no control. Even though some Cost Centers for his Department, i.e. those that cover Salaries and Wages, form part of his Budget responsibilities, he has no Financial Control over them, because it is in fact the Personnel Department that negotiates Wages Rates with the Union. However, in his physical Budget, he does state and control how many Human Resources he applies, and can demonstrate that he is entirely within Budget in terms of the Physicals, which he controls, rather than the Personnel Department.
- ✓ Physicals convey Management Information that cannot be conveyed by purely Financial Information. For example, when it is observed that Field Preparation Costs are higher than for the same period in the previous Year, the Physicals add meaning to the fact by indicating that last year only x10 Hectares were ploughed, while this year, x20 Hectares were ploughed, and by the fact that even though the average number of Man Hours or Tractor Hours applied per Hectare have remained largely the same, the average cost per Man Hour is higher due to Wage increases, and the average cost per Tractor Hour has gone up due to a Fuel Price increase.

### **In conclusion**

You really do not have to bend your mind around PHYSICALS unless you particularly enjoy doing so, as we do, having invented it in response to real Customer needs and requirements. All you need to do, is to present your IES Consultant with a practical question, e.g. 'How can I get a Report on my Vehicle Fleet that will tell me my average Fuel and Oil Consumption per KM traveled, my Insurance, my Service Cost, my Capital cost per 1000 KM, per Vehicle, and so on?', and you will find that the options are present, and simply have to be put in a 'logical row' for the answers to be able to come out. And then you will realize that in IES, we have taken Accounting and Business Management Information to new levels.

© Infolab, 2004.

This Documentation is copyrighted by Infolab (Pty) Ltd. [ [www.infolab.cc](http://www.infolab.cc) ] All rights are reserved. Licensed INFOLAB Users are granted permission, for internal use ONLY, to reproduce the Documentation, and to include amendments dealing with specific instructions local to your installation.