THE COST ASSIGNMENT PROCESS

Similarities and differences between "cost tracing" and "cost allocation"

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

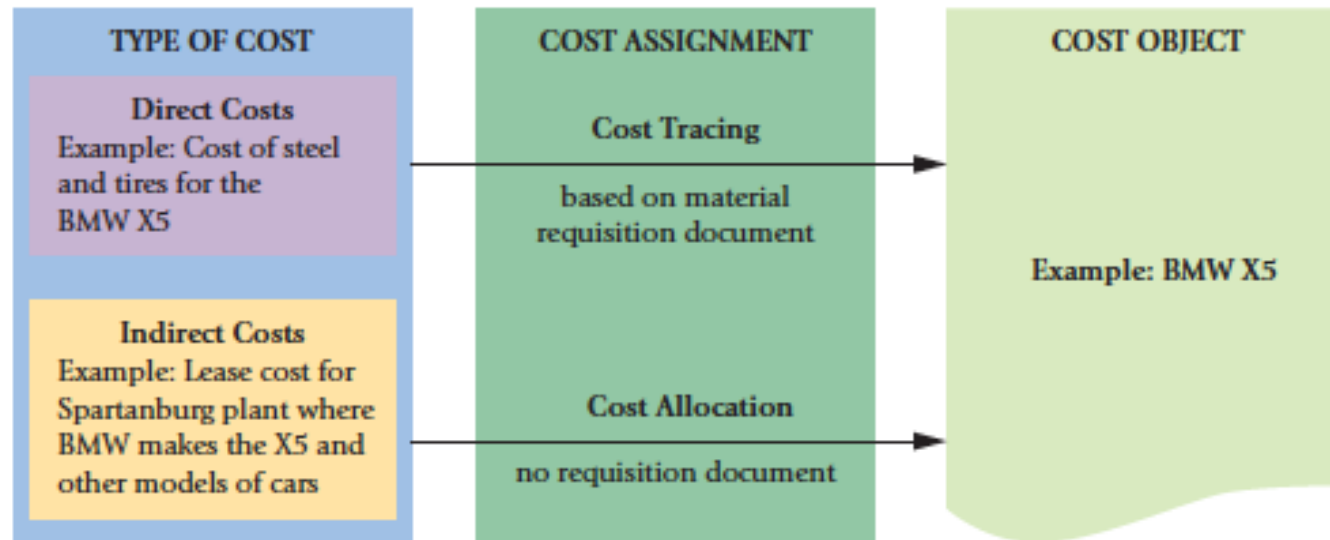| 582 |

COST COLLECTION SYSTEMS

Cost accumulation is the collection of cost data in some organized way by means of an accounting system.

Cost collection systems typically accounts for costs in two broad stages:
1. they initially **accumulates** costs classifying them **"by nature":** that is to say into categories that remind us the **type of resources purchased or consumed** (e.g., raw materials, depreciation, transports costs, rent expenses, wages and salaries, etc.). Later this criterion is combined with other two that focus their attention on **cost behavior** (fixed and variable costs) or on the **robustness of the** relation that link a cost to a specific cost objects (direct and indirect costs) .
2. They then **assign** these costs to cost objects.

COST ACCUMULATIONS

COST ASSIGNMENT

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 583 |

COST ASSIGNMENT TO A COST OBJECT

TYPE OF COST	COST ASSIGNMENT	COST OBJECT
Direct Costs Example: Cost of steel and tires for the BMW X5	**Cost Tracing** based on material requisition document	Example: BMW X5
Indirect Costs Example: Lease cost for Spartanburg plant where BMW makes the X5 and other models of cars	**Cost Allocation** no requisition document	

Cost Object	Illustration
Product	A BMW X5 sports activity vehicle
Service	Telephone hotline providing information and assistance to BMW dealers
Project	R&D project on enhancing the DVD system in BMW cars
Customer	Herb Chambers Motors, the BMW dealer that purchases a broad range of BMW vehicles
Activity	Setting up machines for production or maintaining production equipment
Department	Environmental, health, and safety department

SOME (VERY) BAD DEFINITIONS

A direct cost is a price that can be completely attributed to the production of specific goods or services
https://www.investopedia.com/terms/d/directcost.asp#ixzz4xwrVbOUE

Most cost estimates are broken down into direct costs and indirect costs.
Direct costs are directly attributable to the object. In construction, the costs of materials, labor, equipment, etc., and all directly involved efforts or expenses for the cost object are direct costs. In manufacturing or other non-construction industries the portion of operating costs that is directly assignable to a specific product or process is a direct cost.
https://en.wikipedia.org/wiki/Indirect_costs

An expense that can be traced directly to (or identified with) a specific cost center or cost object such as a department, process, or product.
www.businessdictionary.com/definition/direct-cost.htm

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

TAUTOLOGY

tau•tol•o•gy | tôˈtäləjē |

noun (pl. **tautologies**)
the saying of the same thing twice in different words, generally considered to be a fault of style (e.g., *they arrived one after the other in succession*).
• a phrase or expression in which the same thing is said twice in different words.
• Logic a statement that is true by necessity or by virtue of its logical form.

DERIVATIVES
tau•to•log•i•cal | ˌtôtlˈäjikəl |adjective,
tau•to•log•i•cal•ly | ˌtôtlˈäjik(ə)lē |adverb,
tau•tol•o•gist | -jist |noun,
tau•tol•o•gize | - jīz |verb,
tau•tol•o•gous | -gəs |adjective

ORIGIN mid 16th cent.: via late Latin from Greek, from **tautologos** *'repeating what has been said,'* from **tauto-** *'same'* + *-logos* (see **-LOGY**) .

tautology

noun
avoid such tautology as "let's all work together, everyone, as a team" by saying simply "let's work together": PLEONASM, repetition, reiteration, redundancy, superfluity, duplication.

Look up *tautology* in Wiktionary, the free dictionary.

Tautology may refer to:

- Tautology (rhetoric), a self-reinforcing pretense of significant truth
- Tautology (grammar), the use of redundant words
- Tautology (logic), a universal truth in formal logic
- Tautology (rule of inference), a rule of replacement for logical expressions
- Tautonym, a species name composed of a repeated word, or one identical to the genus name

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

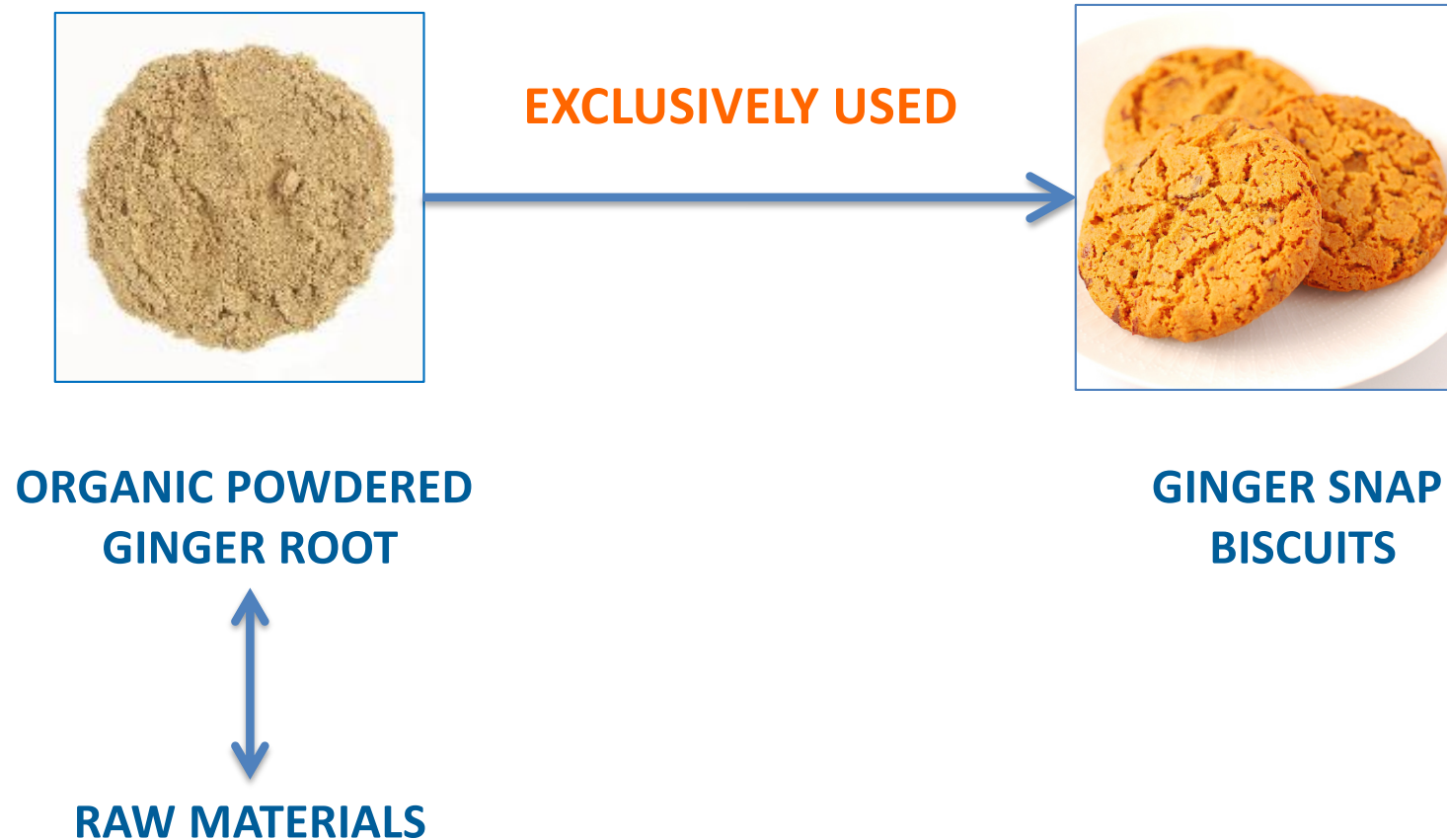| 586 |

DIRECT COSTS – EXCLUSIVE USAGE

A direct cost is a cost that in uniquely and unequivocally attributable to a cost object.
Any cost that can be related unambiguously (without ambiguity) to a cost object is, therefore, a direct cost of that cost object.

RESOURCE ⟶ COST OBJECT
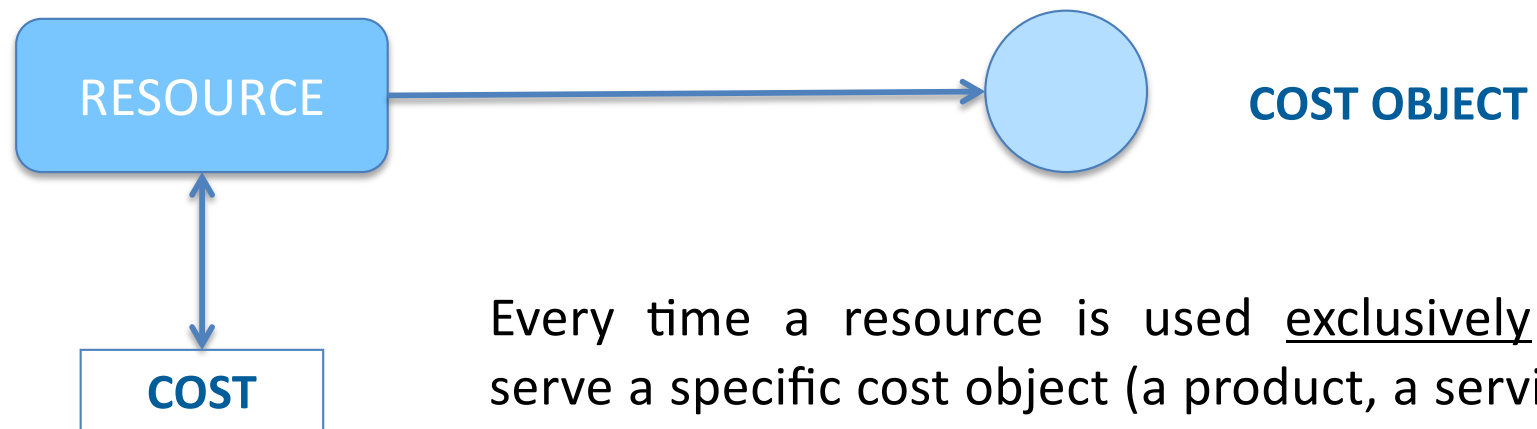
COST

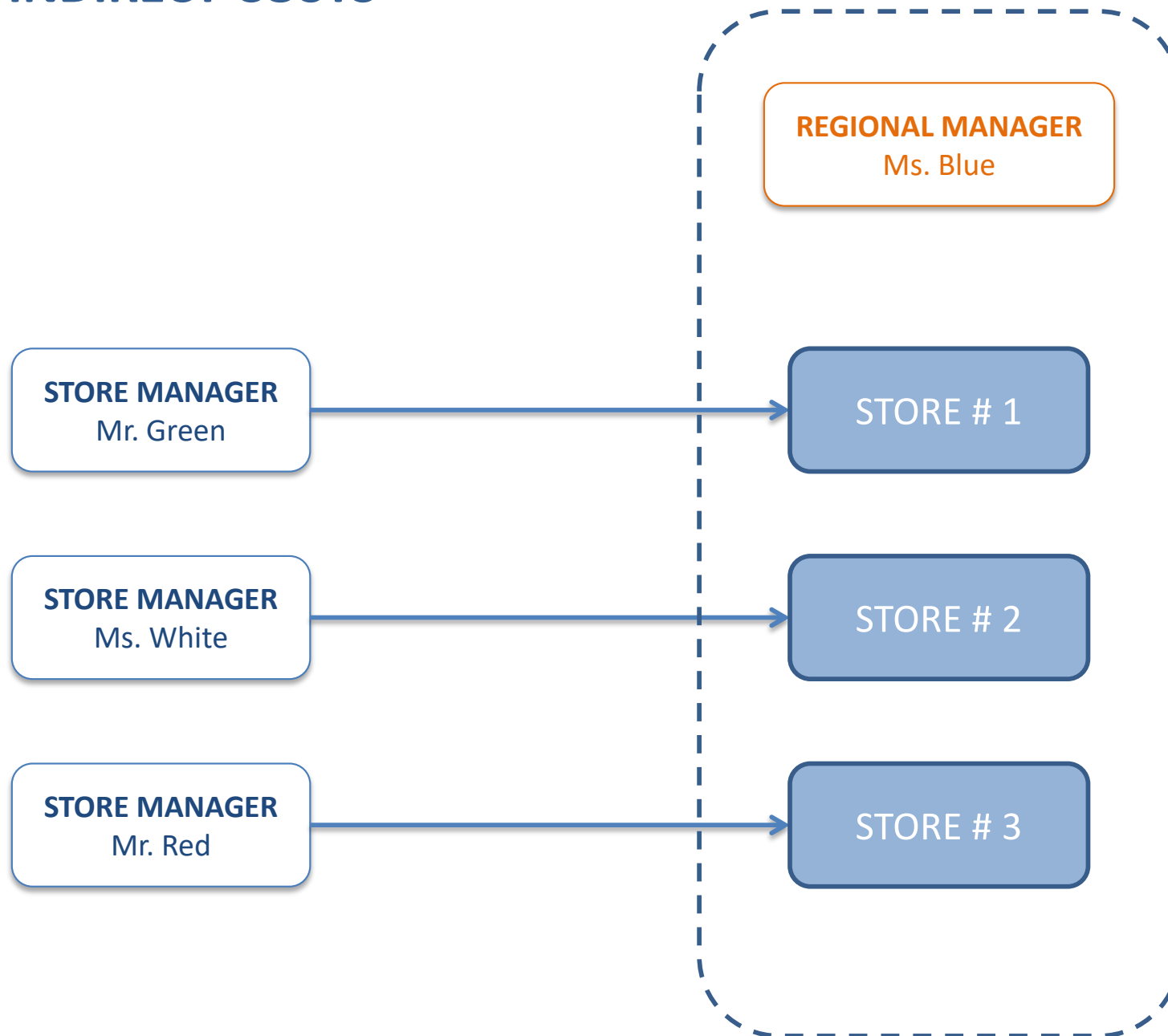Every time a resource is used <u>exclusively</u> to serve a specific cost object (a product, a service, a customer, a distribution channel, an activity, a department) the cost that arises form its usage pertains unequivocally to that cost object.
It is therefore a direct cost of that cost object.

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 587 |

DIRECT COSTS – EXCLUSIVE USAGE

EXCLUSIVELY USED

ORGANIC POWDERED GINGER ROOT

GINGER SNAP BISCUITS

RAW MATERIALS

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 588 |

DIRECT & INDIRECT COSTS

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 589 |

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

DIRECT COSTS OR INDIRECT?

FLOUR

↕

RAW MATERIALS

GINGER SNAP BISCUITS
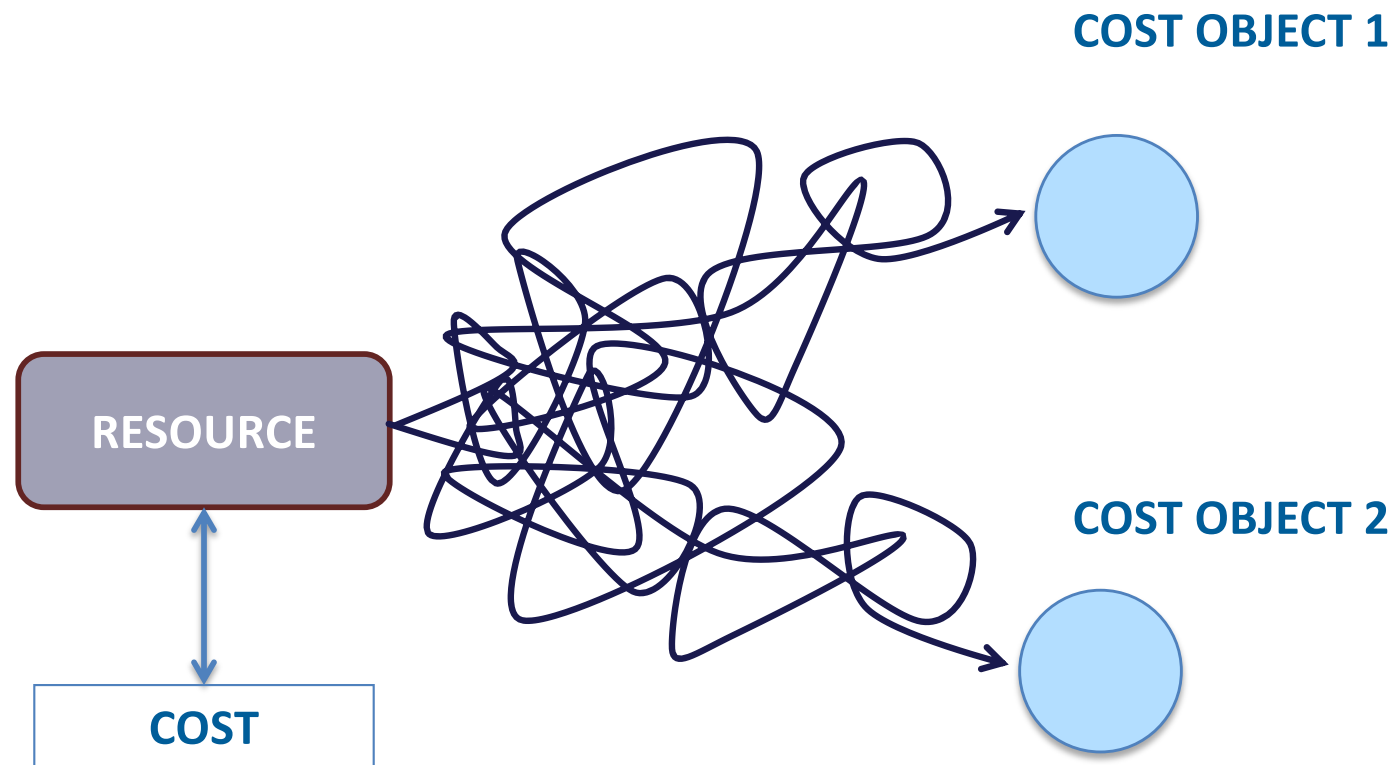
STRAWBERRY BISCUITS

GOLDEN FLAKY BISCUITS

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 590 |

MULTIPLE USAGE

COST OBJECT 1

RESOURCE

COST OBJECT 2

COST

Normally a resource is used to support more than a cost object.

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 591 |

DIRECT COSTS – MEASUREMENT OF PHYSICAL CONSUMPTION
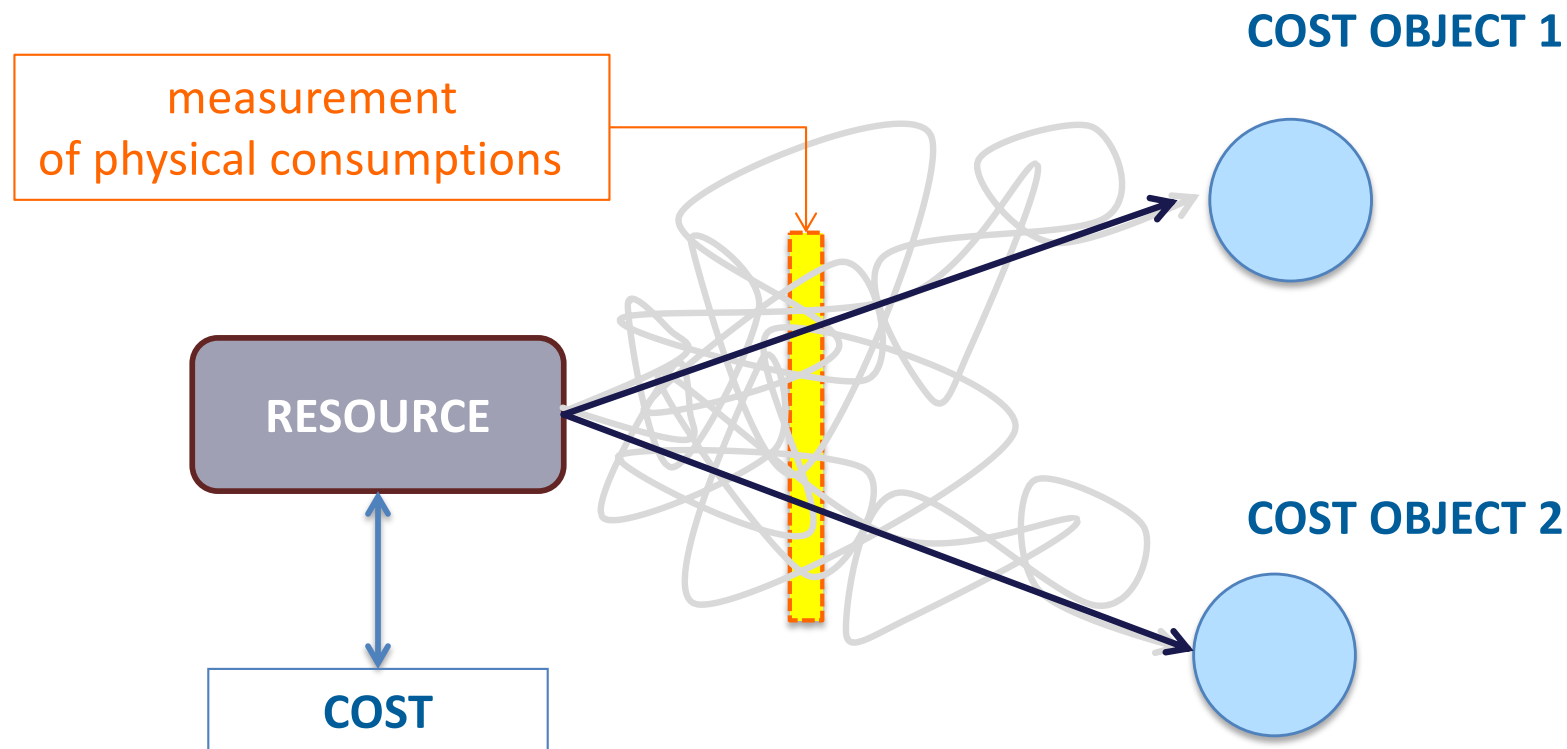
Normally a resource is used to support more than a cost object. In that case an unambiguous relation between the cost incurred and a specific cost object can be established only if it is possible to measure (in physical terms) the quantity of the resource consumed to serve the cost object considered.

DIRECT COSTS – MEASUREMENT OF PHYSICAL CONSUMPTION

0.82 ounces per biscuit

0.67 ounces per biscuit

0.48 ounces per biscuit

GINGER SNAP BISCUITS

STRAWBERRY BISCUITS

GOLDEN FLAKY BISCUITS

FLOUR

RAW MATERIALS

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 593 |
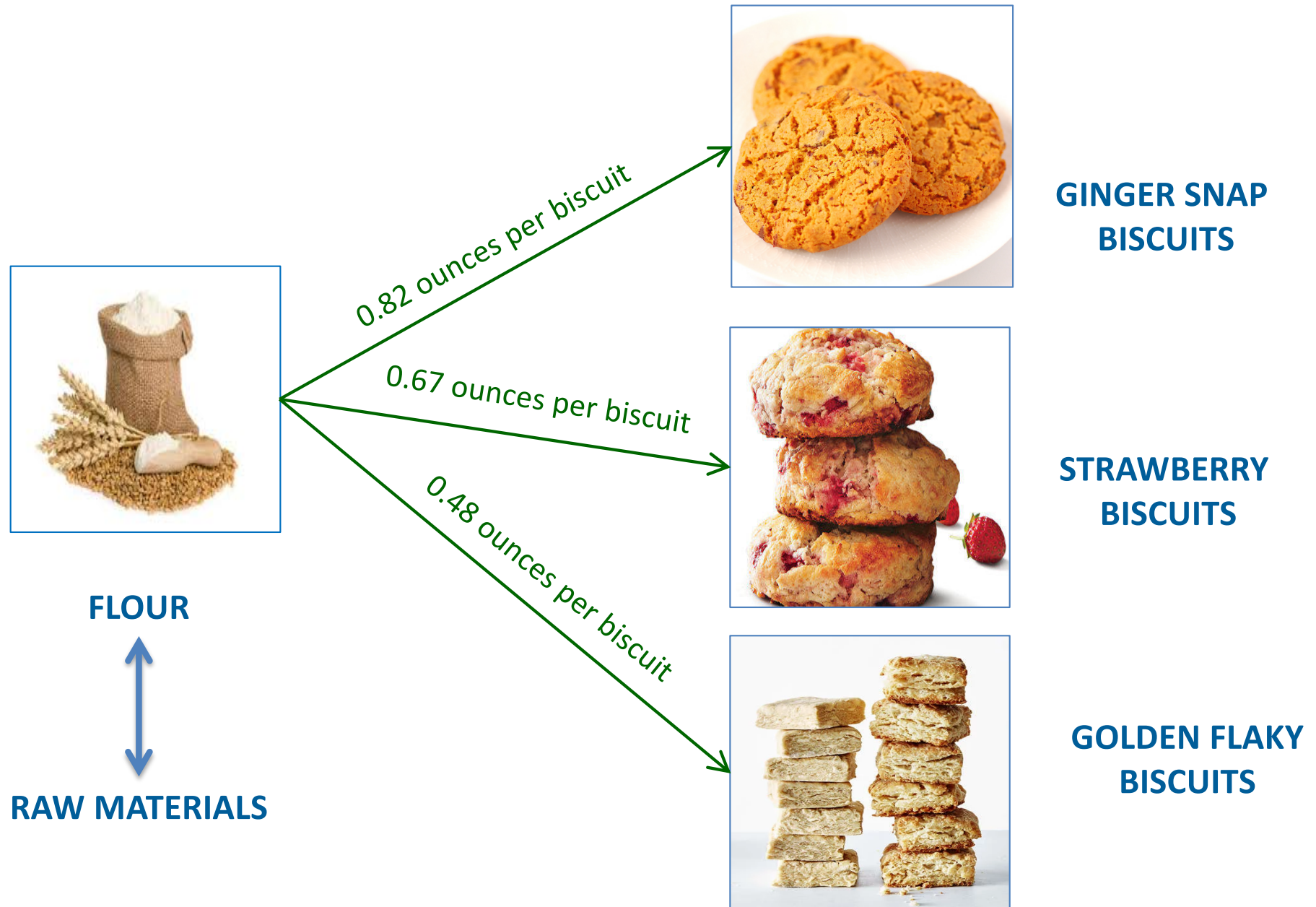
TWO DIFFERENT KINDS OF DIRECT COSTS

REGIONAL MANAGER
Ms. Blue

hours worked for Store # 1

STORE MANAGER
Mr. Green

STORE # 1

hours worked for Store # 2

STORE MANAGER
Ms. White

STORE # 2

hours worked for Store # 3

STORE MANAGER
Mr. Red

STORE # 3

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 594 |
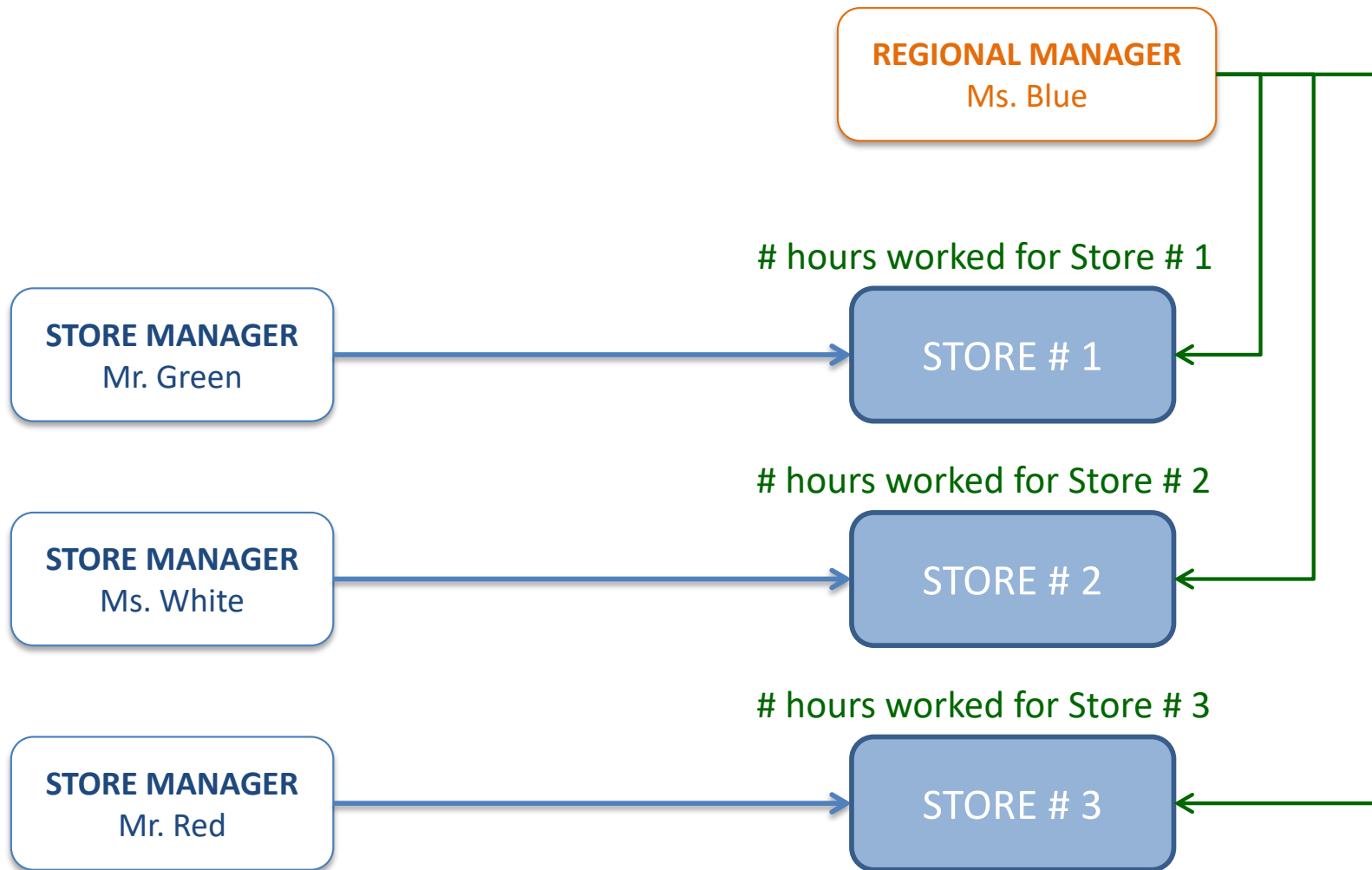
WHY IT IS DIFFICULT TO COMPUTE....

EFFICIENCY

1. OPERATIONAL PRODUCTIVITY

a) Partial ✔
b) Total ✘

2. FINANCIAL PRODUCTIVITY

a) Partial ✘
b) Total ✔

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 595 |
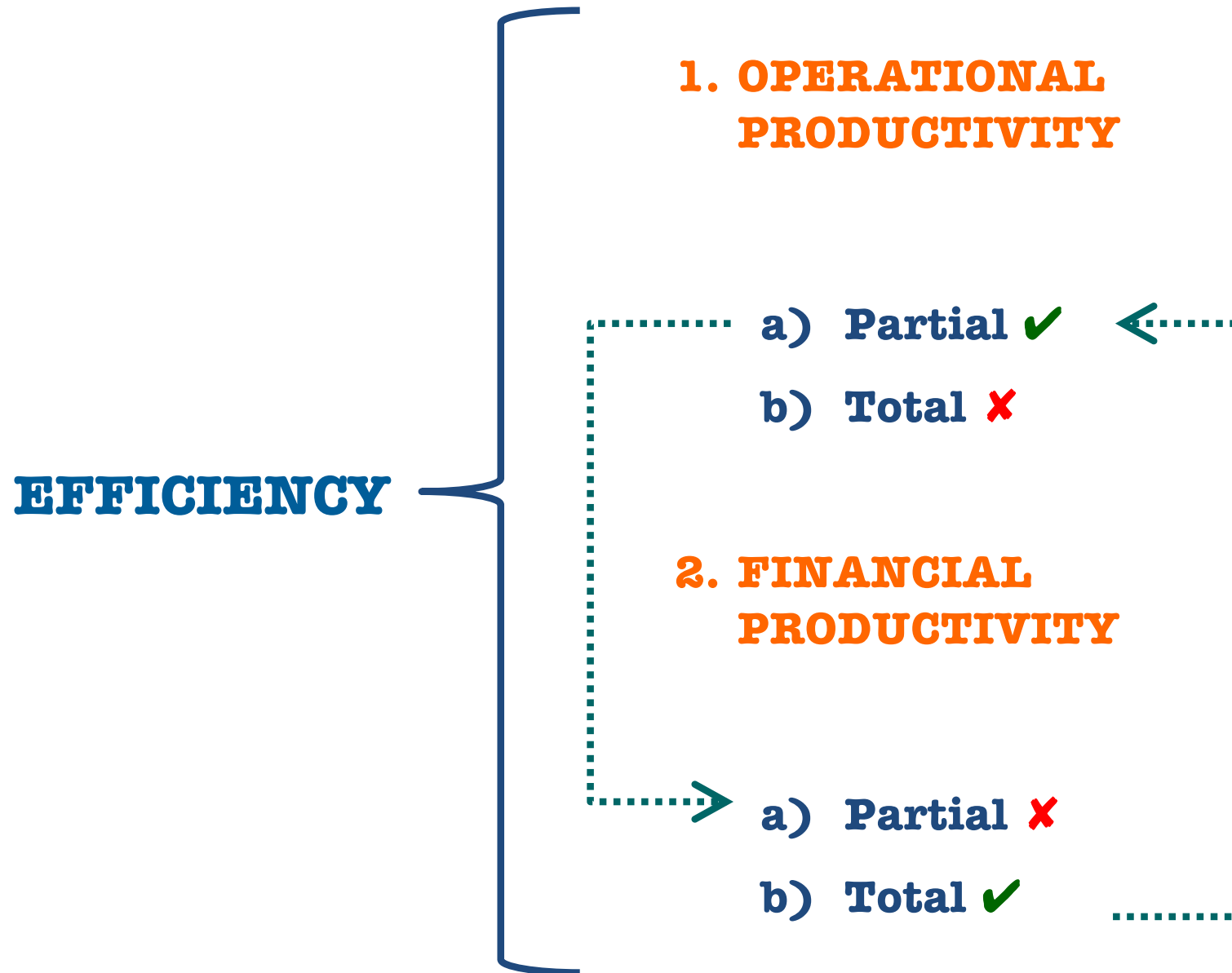
MEASUREMENT OF PHYSICAL CONSUMPTION

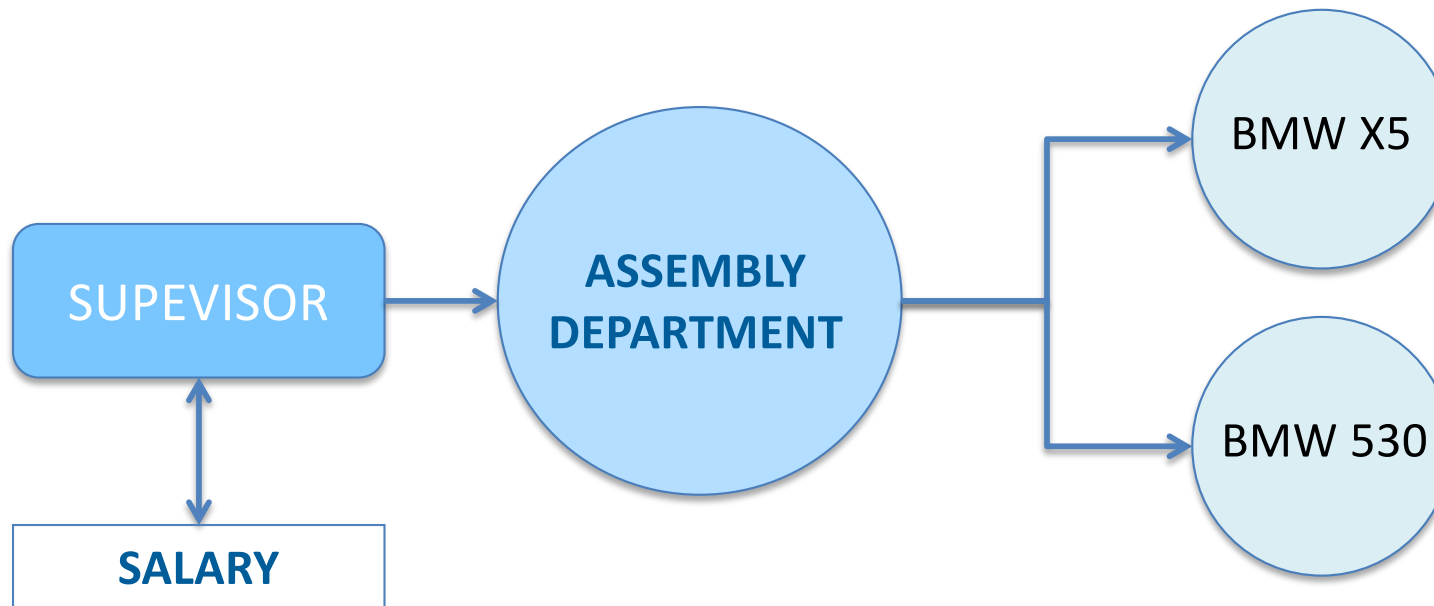The measurement of resource consumption can take place in different ways:

✧ Continuously by means of tools such as electric meters, bar code readers, picking lists, material requisition forms, time report, activity log, time clock or other electronic system, etc.

✧ Occasionally through measurement of resource usage caused in a specific period by the production of a particular amount of product or the provision of a specific service.

✧ Developing specific time-motions study in which analysts determine the cost of a product or a service by means of direct observations of the consumption of resources caused by the activities performed.

✧ Using statistical or parametrical approaches

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 596 |

FACTORS AFFECTING DIRECT/INDIRECT COST CLASSIFICATIONS

Several factors affect the classification of a cost as direct or indirect:

✧ **Design of operations.** Classifying a cost as direct is easier if a company's facility (or some part of it) is used exclusively for a specific cost object, such as a specific product or a particular customer.

✧ **The materiality of the cost in question.** The smaller the amount of a cost—that is, the more immaterial the cost is—the less likely that it is economically feasible to trace that cost to a particular cost object.

✧ **Available information-gathering technology.** Improvements in information-gathering technology make it possible to consider more and more costs as direct costs. Bar codes, for example, allow manufacturing plants to treat certain low-cost materials such as clips and screws, which were previously classified as indirect costs, as direct costs of products.

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

UNIVERSITÀ DEGLI STUDI DI TRIESTE

| 597 |

DIRECT/INDIRECT COST CLASSIFICATIONS: A CAUTION
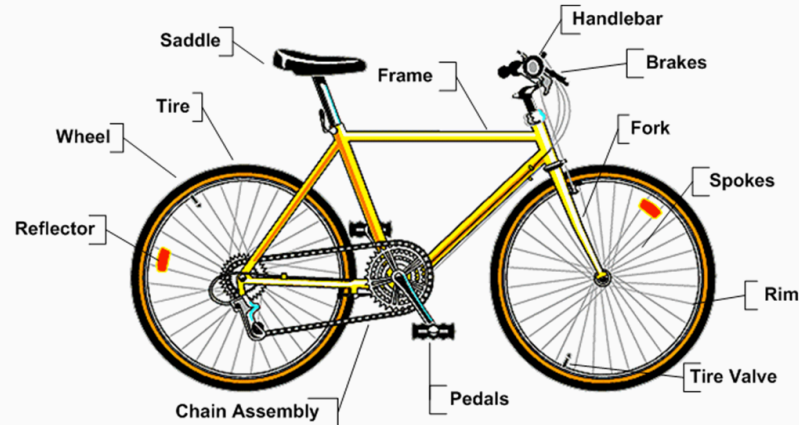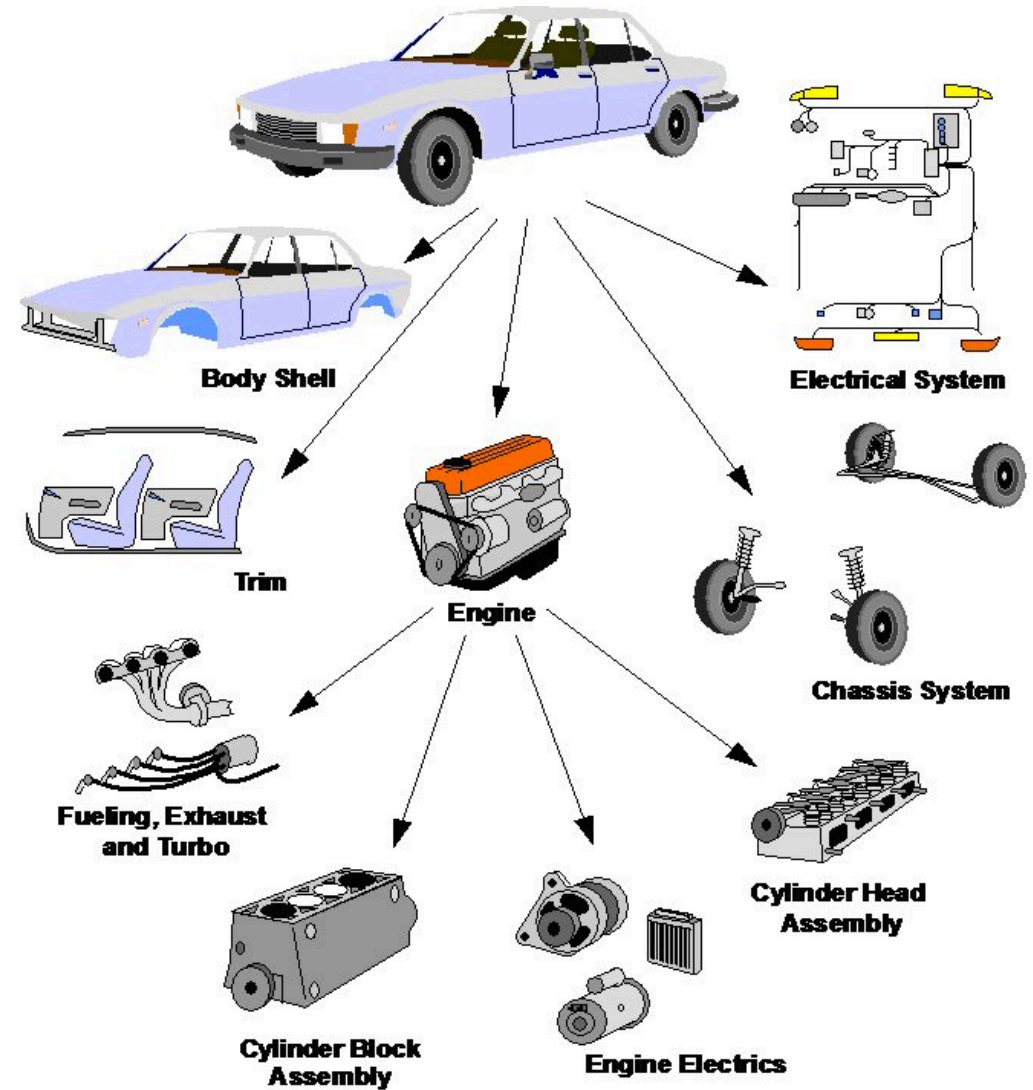

A specific cost may be both a direct cost of one cost object and an indirect cost of another cost object.

A useful rule to remember is that the broader the definition of the cost object—the assembly department rather than the X5 SAV—the higher the proportion of total costs that are direct costs and the more confidence a manager has in the accuracy of the resulting cost amounts.

BILL OF MATERIALS (B.O.M.)

Bicycle BOM (Bill of Materials)

Level 0 (Finished Good)	Bicycle (1 pc.)	
Level 1 (Main Components)	Wheel (2 pcs.)	Frame (1 pc.)
Level 2 (Sub-assemblies)	Rim (2 pcs.) · Tire 2 (pcs.) · Spokes (72 pcs.)	Color
Level 3	Tire Valve (2 pcs.)	
Level 4	Bolt (1 pc.) · Nut (1 pc.) · Cap (1 pc.)	

Body Shell

Electrical System

Trim

Engine

Chassis System

Fueling, Exhaust and Turbo

Cylinder Block Assembly

Engine Electrics

Cylinder Head Assembly

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 599 |

DIFFERENT STANDARDS

How many corks are needed to cork a bottle of wine?

$$\frac{1\ CORK}{1\ BOTTLE} = 1$$

$$\frac{21\ CORKS}{18\ BOTTLES} = 1.3125$$

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

UNIVERSITÀ DEGLI STUDI DI TRIESTE

| 600 |

IDEAL VS NORMAL STANDARD

Companies set standards at one of two levels: ideal or normal.

- Ideal standards represent optimum levels of performance under perfect operating conditions.
- Normal standards represent efficient levels of performance that are attainable under expected operating conditions.

Some managers believe ideal standards will stimulate workers to ever-increasing improvement. However, most managers believe that ideal standards lower the morale of the entire workforce because they are difficult, if not impossible, to meet. Very few companies use ideal standards.

Most companies that use standards set them at a normal level. Properly set, normal standards should be rigorous but attainable. Normal standards allow for rest periods, machine breakdowns, and other "normal" contingencies in the production process.

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 601 |

SPOILAGE, SCRAP AND REWORK

Spoilage refers to unacceptable units that are discarded or sold for disposal value.

Scrap is the material left over from the manufacture of the product; it has little or no value.

Rework units are units produced that must be reworked into good units that can be sold in regular channels.

"Level" of the problem

Normal: *occurs under normal operating conditions; it is uncontrollable in the short term and is considered a normal part of production and product cost.*
➔ the cost incurred is absorbed by the cost of good units produced.

Abnormal: *is in excess over the amount of normal spoilage expected under normal operating conditions.*
➔ the cost incurred is charged as a loss to operations in the period detected.

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 602 |

SOURCE DOCUMENTS: MATERIAL REQUISITION FORM

Material Requisition

Employee: Date:

Material	Job name	Customer name	Quantity	Unit cost	Total cost
Total					

Employee signature   Approved by signature

© 2014 www.double-entry-bookkeeping.com   material requisition v 1.1

SOURCE DOCUMENTS: BILL OF MATERIALS

Thomasville Furniture Industries, Inc.
Bill of Materials

CHANGES FOR 14521–211

PLANT ___"T"___

STYLE ___14531–210___   ARTICLE ___GEORGIAN END TABLE___   DATE ___1–19–07___   SHEET ___1___ OF ___2___

LINE	NO. PCS.	DESCRIPTION	FINISH SIZE				MULTI	ROUGH SIZE			FOOTAGE	SKETCH
			L	W	T	BS		L	W	T		
1	14531–210 ONLY / 1	TOP	26	20	13/16		1	27	21	9/16		
2	1/2	TOP CORE					1	17	47½	3/4		
3	1	TOP CORE SIDE BANDS	47½	2	3/4		1	47½	2	4/4		
4	2	TOP CORE FRT. & BK. BANDS	21	2	3/4		1	21	2	4/4		
5												
6	2	SIDE PANELS	22⅜	4¹⁵/₁₆	3/4	21⅜	4	23⅞	21¾	5/8		4/4 POP CORE
7	2	SIDE APRON RAIL	22⅜	1⅞	1⁷/₁₆	21⅜	1	23⅜	2⅛	8/4		
8	1	BACK PANEL	16⅜	4¹⁵/₁₆	3/4	15⅞	4	17⅞	21¾	5/8		4/4 POP CORE
9	1	BACK APRON RAIL	16⅜	1⅞	1⁷/₁₆	15⅞	1	17⅞	2⅛	8/4		
10	2	FRONT POST	22¾	2½	2½		1	23¾	2¾	3 pcs 5/4		
11	2	BACK POST	22¾	2½	2½		1	23¾	2¾	3 pcs 5/4		
12												
13	14531–210 ONLY / 1	DRAWER FRONT	14⅞	3⅞	3/4		3	16⁷/₁₆	16⁵/₁₆	5/8		4/4 POP CORE
14	2	DWR. SIDES	20	3	7/16		1	21	3¼	5/8		
15	1	DWR. BACK	14¹¹/₁₆	2⅞	7/16							
16	1	DWR. BOTTOM	14¼	19¹³/₁₆	3/16		1	15¾	20⅞	R.C.		
17	1	DWR. GUIDE—FEMALE	20½	1⁹/₃₂	9/16	19¹³/₁₆	1	21½	2¼	4/4		
18	1	DWR. GUIDE—MALE	22½	1	½		1	23½	1¼	4/4		
19	1	DWR. HOWE PULL										
20												

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 604 |

UNIVERSITÀ DEGLI STUDI DI TRIESTE

SOURCE DOCUMENTS: TIME TICKET

TIME TICKET

Ticket Number	B-309	Date	June 6, 2010
Employee Name	Dale Johnson	Job Number	#351
Operation	Assembly	Approved by	Juanita Perez

Time Started	Time Completed	Hours Worked	Rate	Cost
8:00 a.m.	11:00 a.m.	3.00	$10.00	$30.00
Total Cost				$30.00

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 605 |

ShopfloorConnect   **OEE By Machine (with Machine Ideal Rate)**

Machine: Press 7	Interval: 2nd Shift

Report Range   **From:** 4/2/2013 12:00:00 AM   **To:** 4/26/2013 12:40:10 PM

AVAILABILITY	Interval Period: 4/3/2013 8:00:00 AM To 4/3/2013 4:00:00 PM

A. Total Available Time	480	min
B. Planned Downtime	0	min
C. Net Available Time (A - B)	480	min
D. Unplanned Downtime	103	min
E. Operating Time (C - D)	377	min
F. Availability (E / C) x 100	78.6	%

PERFORMANCE EFFICIENCY

G. Total Cycles Run	21,703	cycles
H. Ideal Production Rate	3600.0	cycles/hr
Actual Production Rate (Calculated)	3,450	cycles/hr
Cycle Time	1.04	seconds
I. Performance Efficiency ((G / E) / (H / 60)) x 100	95.8	%

QUALITY RATE

J. Total Defects (Rework + Scrap)	0	parts
K. Quality Rate ((G - J) / G) x 100	100.0	%

OEE

Overall Equipment Effectiveness (OEE) by Tool (F x I x K) Equipment Availability x Performance Efficiency x Quality Rate	75.4	%

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 606 |

DIRECT MATERIALS AND INDIRECT MATERIALS (CONSUMABLE)

Direct material is all of the physical items built into a product.

Direct materials are rolled into the total cost of goods produced, which is then subdivided into the cost of goods sold (which appears in the income statement) and ending inventory (which appears in the balance sheet).

The direct material classification typically includes all materials physically present in a finished product, which is raw materials and sub-assemblies. However, that is not the full extent of direct materials. In addition, direct material includes that amount of scrap and spoilage normally encountered during the production of goods.

Some costs are for materials that are not considered direct materials, and so are instead classified as indirect material costs. These materials are **so immaterial as not to be worth tracing to a specific product or cannot be clearly associated with** a specific product. Examples of indirect materials are:

◇ Rags and solvents used during the construction of a house

◇ The grease used on machines that manufacture products

◇ The thread used in clothing

DIRECT OR INDIRECT?

Bottles (glass)
Corks
Screw caps
Capsules
Labels
Packing paper
Pallets
Wooden caskets
Descriptive cards
Sales commissions
Allowance for doubtful accounts
Selling transport costs
Bulk discount in goods (1/10)

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 608 |

WINERY'S VARIABLE COSTS

Bottles
Corks
Capsules
Labels
Packing paper
Pallets
Wooden caskets
Descriptive cards
Sales commissions
Allowance for doubtful accounts
Selling transport costs
Bulk discount in goods (1/10)

"MANUFACTURING"

"SELLING"

"DIRECT"   "INDIRECT"

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 609 |

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

ENERGY USE IN THE STEEL INDUSTRY

The steel industry actively manages the use of energy. Energy conservation in steelmaking is crucial to ensure the competitiveness of the industry and to minimize environmental impacts, such as greenhouse gas emissions.
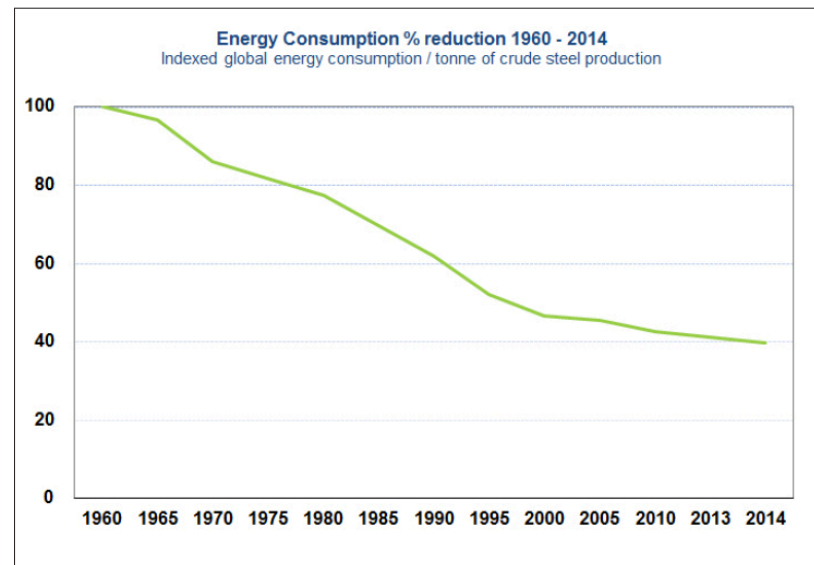
Steel production is energy intensive. However, sophisticated energy management systems ensure efficient use and recovery of energy throughout the steelmaking process for reuse, wherever possible. Improvements in energy efficiency have led to reductions of about 60% in energy required to produce a tonne of crude steel since 1960.

ENERGY USE IN THE STEEL INDUSTRY

Energy constitutes a significant portion of the cost of steel production, from 20% to 40% in some countries.

Thus, improvements in energy efficiency result in reduced production costs and thereby improved competitiveness.

The energy efficiency of steelmaking facilities vary depending on:
- production route,
- type of iron ore and coal used,
- the steel product mix,
- operation control technology, and
- material efficiency.

RESEARCH TIMESHEET

Timesheet

Please refer to Notes tab before completing

Full Name:	
Staff Category:	
Month & Year:	
Staff No:	
FTE (see note 5):	

Starter/Leaver Dates (see note 3)	
Start date:	
Leave date:	

Chargeable Activity		Week 1 Beginning									Week 2 Beginning							
		Hours Worked									**Hours Worked**							
		Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
Project 1 - Title	RTD								-								-
Project Type:	Demonstration								-								-
Research Account No:	Coordination								-								-
Contract No:	Support								-								-
	Management								-								-
	Other								-								-
Project 2 - Title	RTD								-								-
Project Type:	Demonstration								-								-
Research Account No:	Coordination								-								-
Contract No:	Support								-								-
	Management								-								-
	Other								-								-
Project 3 - Title	RTD								-								-
Project Type:	Demonstration								-								-
Research Account No:	Coordination								-								-
Contract No:	Support								-								-
	Management								-								-
	Other								-								-
Project 4 - Title	RTD								-								-
Project Type:	Demonstration								-								-
Research Account No:	Coordination								-								-
Contract No:	Support								-								-
	Management								-								-
	Other								-								-
									-								-

Non-chargeable Activity	Week 1								Week 2							
	Hours								**Hours**							
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
Other Research Projects								-								-
Management and Administration (Excl. Mgt/Admin on FP7 Projects)								-								-
Teaching								-								-
Other (e.g. Consultancy)								-								-
								-								-

Non-productive Time	Week 1								Week 2							
	Hours								**Hours**							
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
Sick Leave (see note 4)								-								-
Annual Leave (see note 4)								-								-
Other non-productive time (e.g. parental leave, unpaid absence)								-								-
								-								-

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Total Productive (worked) hours	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total hours	-	-	-	-	-	-	-	-	-	-	-	-	-	-

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 612 |

AUDITOR TIMESHEET

PMW: Rogers, Steven

Project	Task	Pay Type	Bill Type	Comment	Sun Aug 4	Mon Aug 5	Tue Aug 6	Wed Aug 7	Thu Aug 8	Fri Aug 9	Sat Aug 10	Totals	
	Current												
Corporate	Other	Vacation	Standard	in NYC		8:00						8:00	M
Millstone Productions	Reqs	Regular	Standard	outline for manual				4:00				4:00	M
A&A Biscuit Co	Meetings	Regular	Standard	team meeting				1:30				1:30	M
A&A Biscuit Co	Meetings	Regular	Standard	team meeting			2:00					2:00	M
DalEx Inc.	Docs	Regular	Standard	online help content			6:00					6:00	M
	New												
– A&A Biscuit Co	s	Sickday	Standard									0:00	
Corporate Webpage	er	Regular	Standard									0:00	
Intranet													
root	Other	Regular	Standard									0:00	
Totals					0:00	8:00	8:00	5:30	0:00	0:00	0:00	21:30	

Project	Task	Pay Type	Bill Type	Comment	Sun Aug 4	Mon Aug 5	Tue Aug 6	Wed Aug 7	Thu Aug 8	Fri Aug 9	Sat Aug 10	Totals

[Save Changes] [View Timesheet] [Submit for Approval] **Approval Report**

[<--] [-->] [📅] 08/07/2002 [Go]
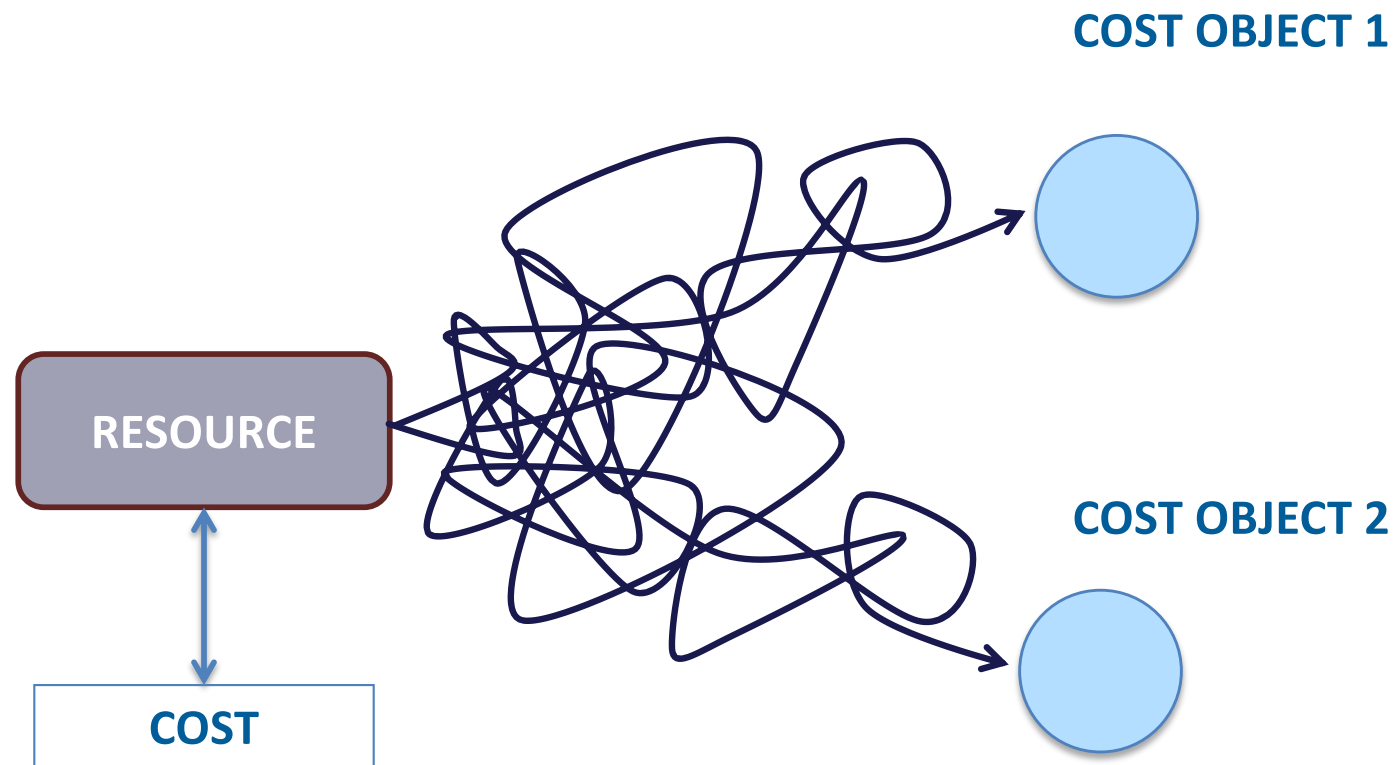
MULTIPLE USAGE

COST OBJECT 1

RESOURCE

COST OBJECT 2

COST

Normally a resource is used to support more than one cost object.

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 614 |

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

DIRECT COSTS – MEASUREMENT OF PHYSICAL CONSUMPTION

COST OBJECT 1

COST OBJECT 2

measurement
of physical consumptions
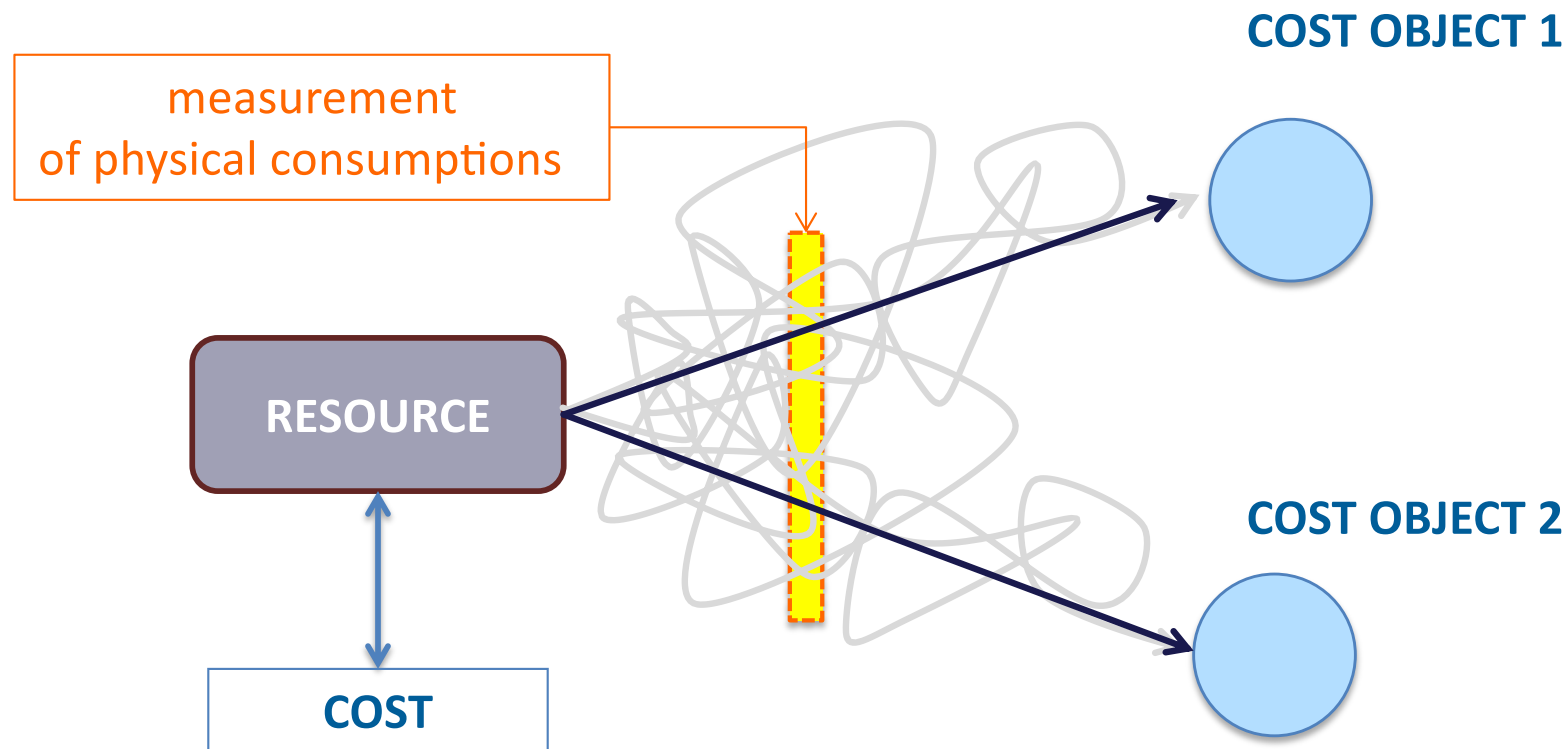
RESOURCE

COST

Normally a resource is used to support more than one cost object. In that case an unambiguous relation between the cost incurred and a specific cost object can be established only if it is possible to measure (in physical terms) the quantity of the resource consumed to serve the cost object considered.

MULTIPLE USAGE

Sometimes it is NOT technically or economically feasible to establish a clear, un-ambiguous relation between a resource (or a group of resources) consumed and the specific cost object considered.

In that case there are two possible options:

1. To limit the "scope" of the cost assigned to the cost object only to "direct costs"; all "indirect costs" are therefore necessarily considered "period costs";

2. To proceed in assigning also a portion of "indirect costs" to the cost object using a specific "cost allocation" procedure.
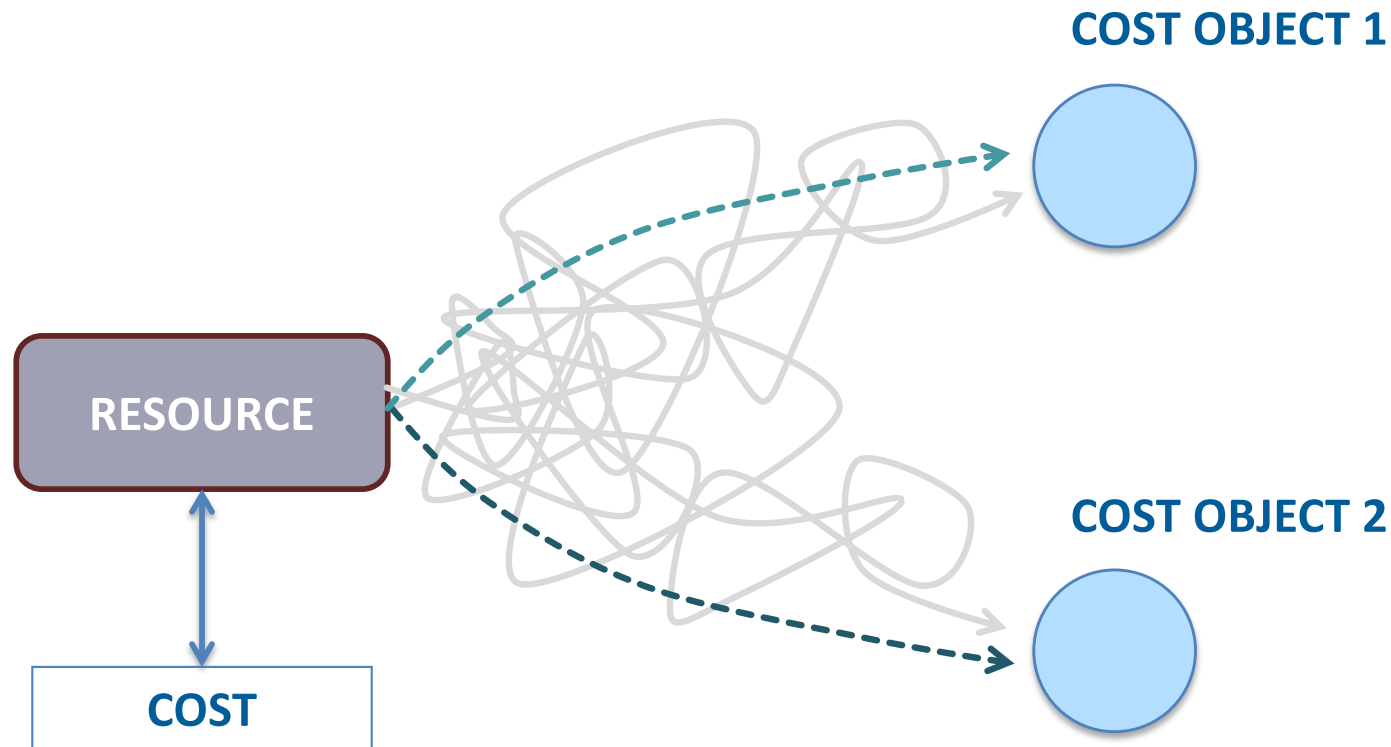
BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 616 |

INDIRECT COSTS – NO ALLOCATION

	JOB 1	JOB 2	JOB 3	JOB ...	JOB N	Total
+ Sales Revenues	xxx	xxx	xxx	xxx	xxx	∑
- Sales Commissions	xxx	xxx	xxx	xxx	xxx	∑
_____	―――	―――	―――	―――	―――	
= Net Revenues	= xxx	= xxx	= xxx	= xxx	= xxx	= ∑
- Direct Materials	- xxx	- xxx	- xxx	- xxx	- xxx	∑
_____	―――	―――	―――	―――	―――	
= First Margin	= xxx	= xxx	= xxx	= xxx	= xxx	= ∑
- Outsourced Work	- xxx	- xxx	- xxx	- xxx	- xxx	∑
_____	―――	―――	―――	―――	―――	
= Second Margin	= xxx	= xxx	= xxx	= xxx	= xxx	= ∑
- Other Direct Costs	- xxx	- xxx	- xxx	- xxx	- xxx	- ∑
- Direct Labor	- xxx	- xxx	- xxx	- xxx	- xxx	- ∑
_____	―――	―――	―――	―――	―――	
= Job Orders Direct Margin	= xxx	= xxx	= xxx	= xxx	= xxx	= ∑

		Total
- Manufacturing Overhead		- xxx
- Selling Overhead Expenses		- xxx
- Administrative Expenses		- xxx
- General Expenses		- xxx
_____		―――
= Ebit		**= xxx**

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 617 |

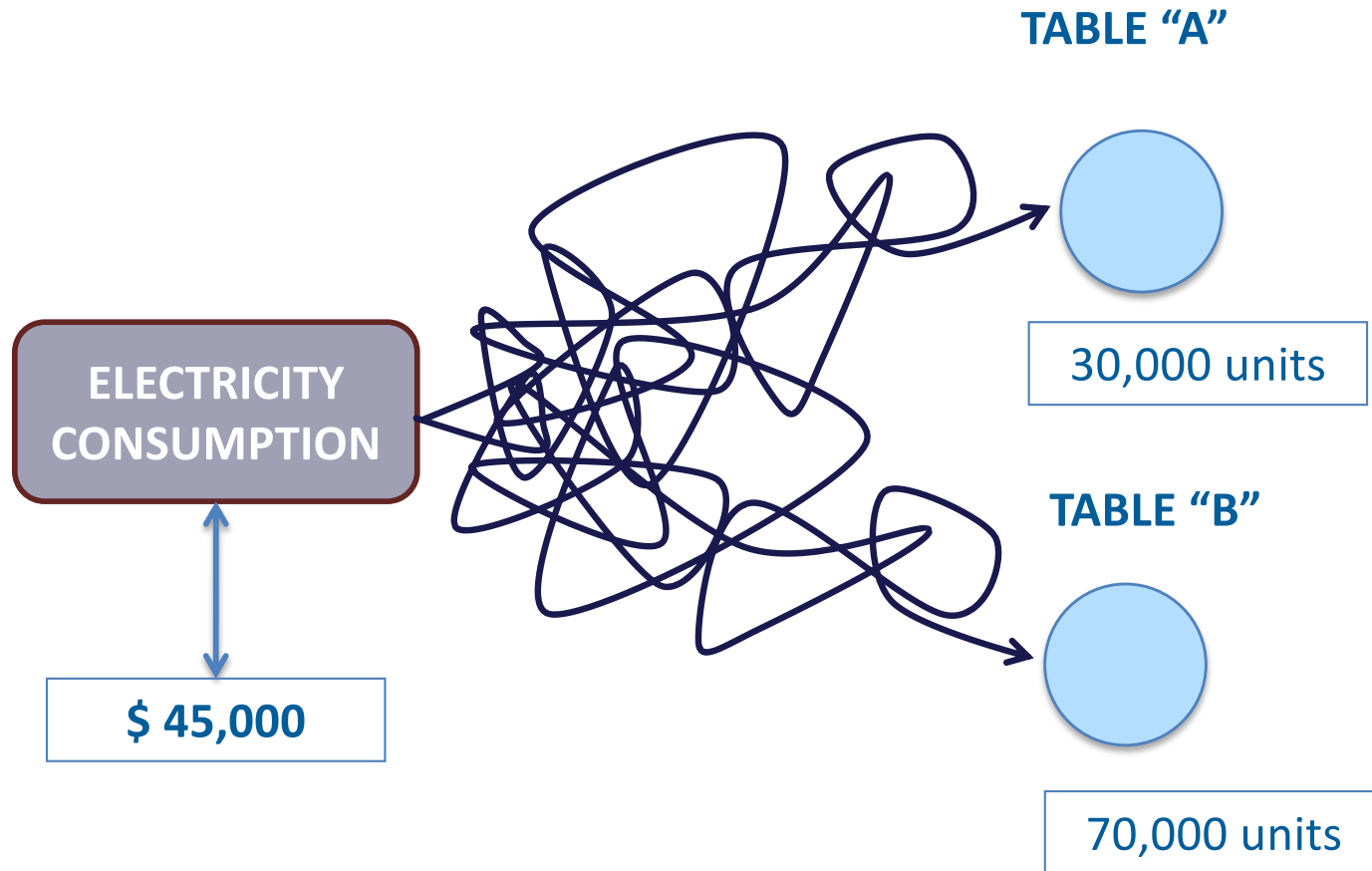# INDIRECT COSTS – ASSIGNING THEM TO COST OBJECT
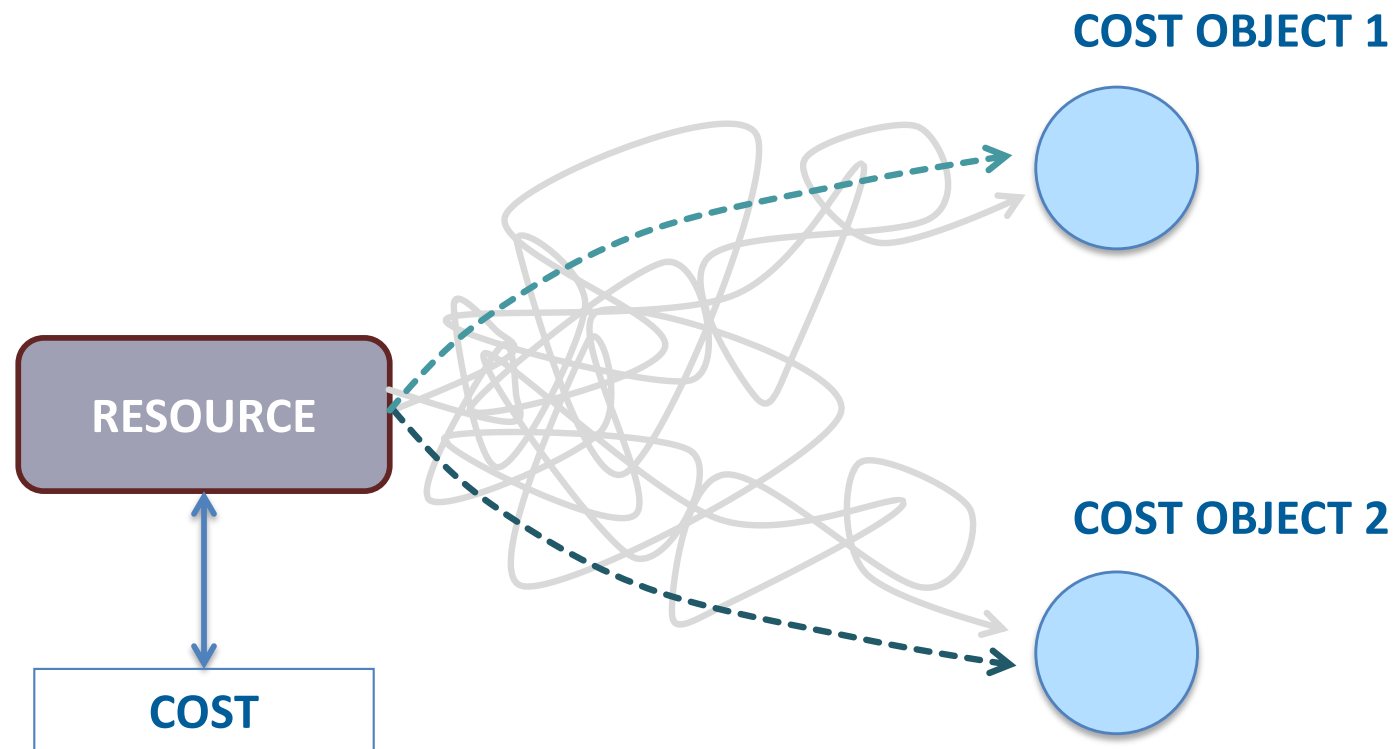
Cost allocation is the process of identifying, aggregating, and assigning **indirect costs** to several **cost objects.** The term "allocation" implies that there is no overly precise method available for charging a cost to a cost object (therefore one can not **trace** the costs to the cost object) we use instead an **"allocation base".**
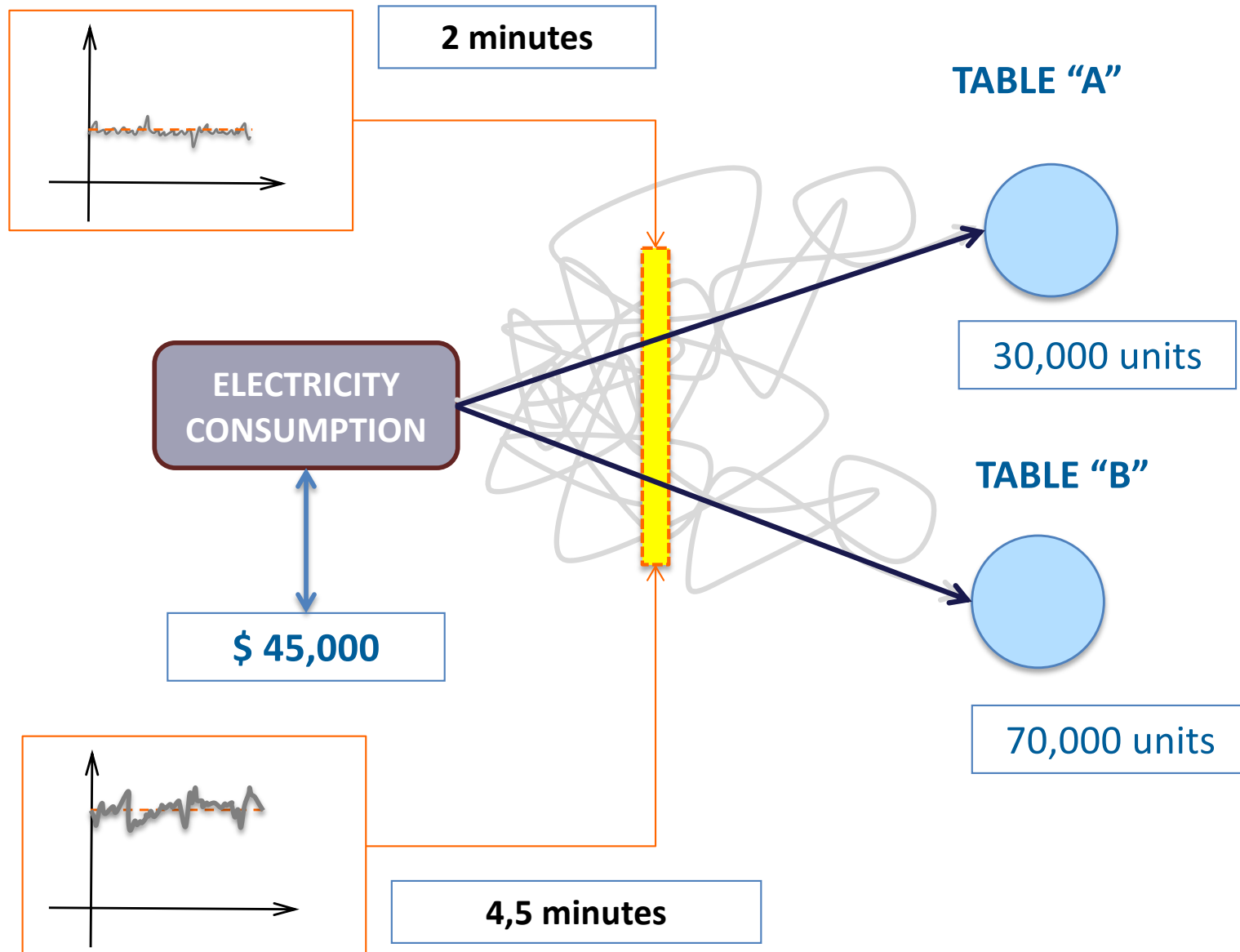
BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

| 618 |

INDIRECT COSTS – ALLOCATION BASE

An allocation base is a parameter that could be used as a "**proxy**" of resource consumption. Therefore, in this instance, we do not measure the consumption, but we try to establish its value using a variable that - we believe - is correlated with the level of resource usage.
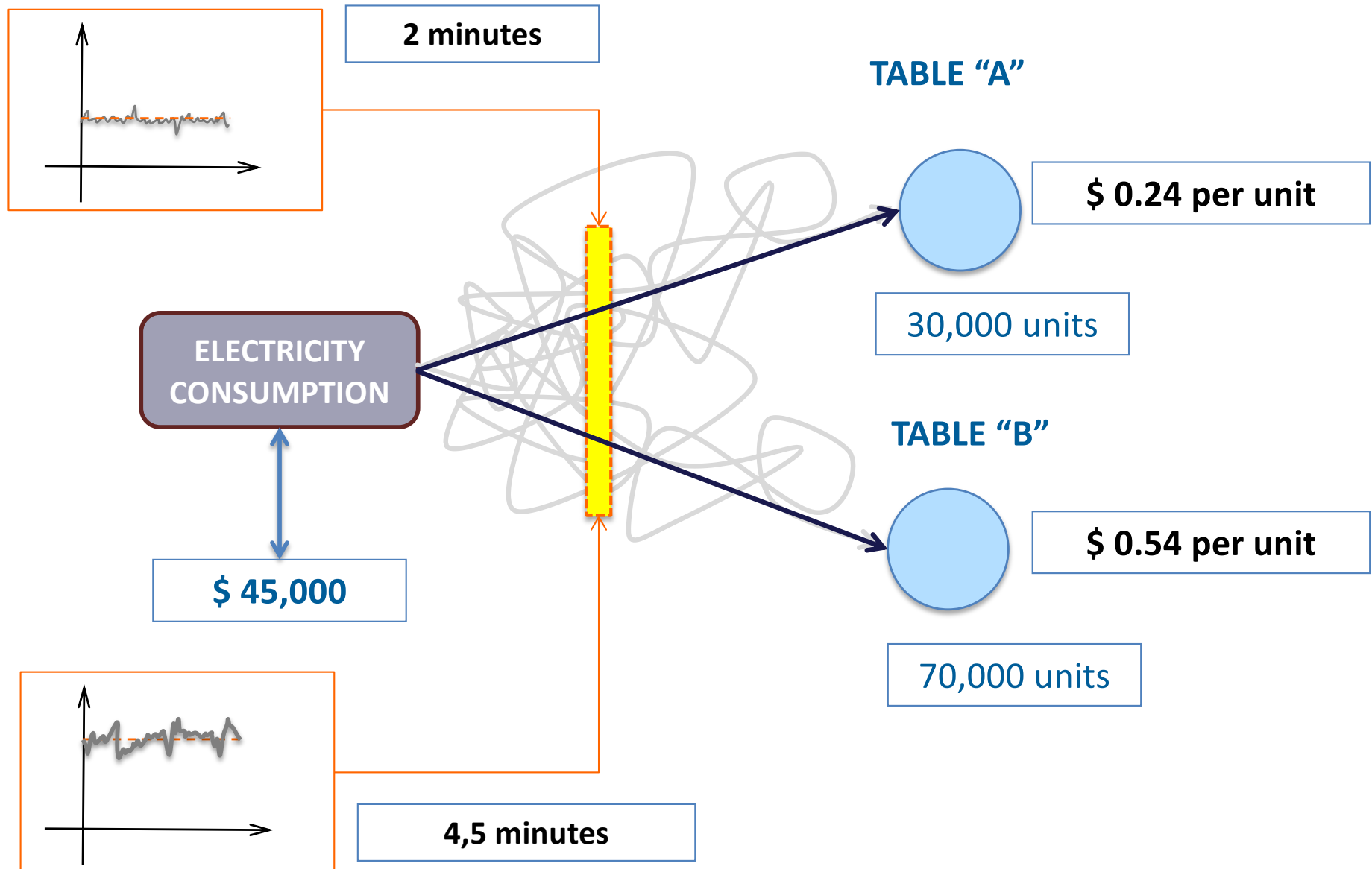
BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 619 |

A SIMPLE EXAMPLE – ELECTRICITY COST DUE TO SANDING ACTIVITIES

TABLE "A"

ELECTRICITY CONSUMPTION

30,000 units

$ 45,000

TABLE "B"

70,000 units

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 620 |

A SIMPLE EXAMPLE – MEASURING THE CONSUMPTION OF RESOURCE

2 minutes

TABLE "A"

30,000 units

ELECTRICITY CONSUMPTION

$ 45,000

TABLE "B"

70,000 units

4,5 minutes

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 621 |

A SIMPLE EXAMPLE – MEASURING THE CONSUMPTION OF RESOURCE

2 minutes

TABLE "A"

$ 0.24 per unit

30,000 units

ELECTRICITY CONSUMPTION

$ 45,000

TABLE "B"

$ 0.54 per unit

70,000 units

4,5 minutes

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 622 |

A SIMPLE EXAMPLE – USING A FAIR, REASONABLE PROXY

2 square meters

ELECTRICITY CONSUMPTION

$ 45,000

4 square meters

TABLE "A"

30.000 units

TABLE "B"

70.000 units

A SIMPLE EXAMPLE – USING A FAIR, REASONABLE PROXY

2 square meters

TABLE "A"

$ 0.26 per unit

30.000 units

ELECTRICITY CONSUMPTION

$ 45,000

TABLE "B"

$ 0.53 per unit

70.000 units

4 square meters

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 624 |

A SIMPLE EXAMPLE – WHAT IS THE DRIVER?

driver

driver

driver

driver

driver

driver #

SURFACE AREA

RESOURCE
CONSUMPTION

COSTS &
EXPENSES

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 625 |

UNIVERSITÀ
DEGLI STUDI DI TRIESTE
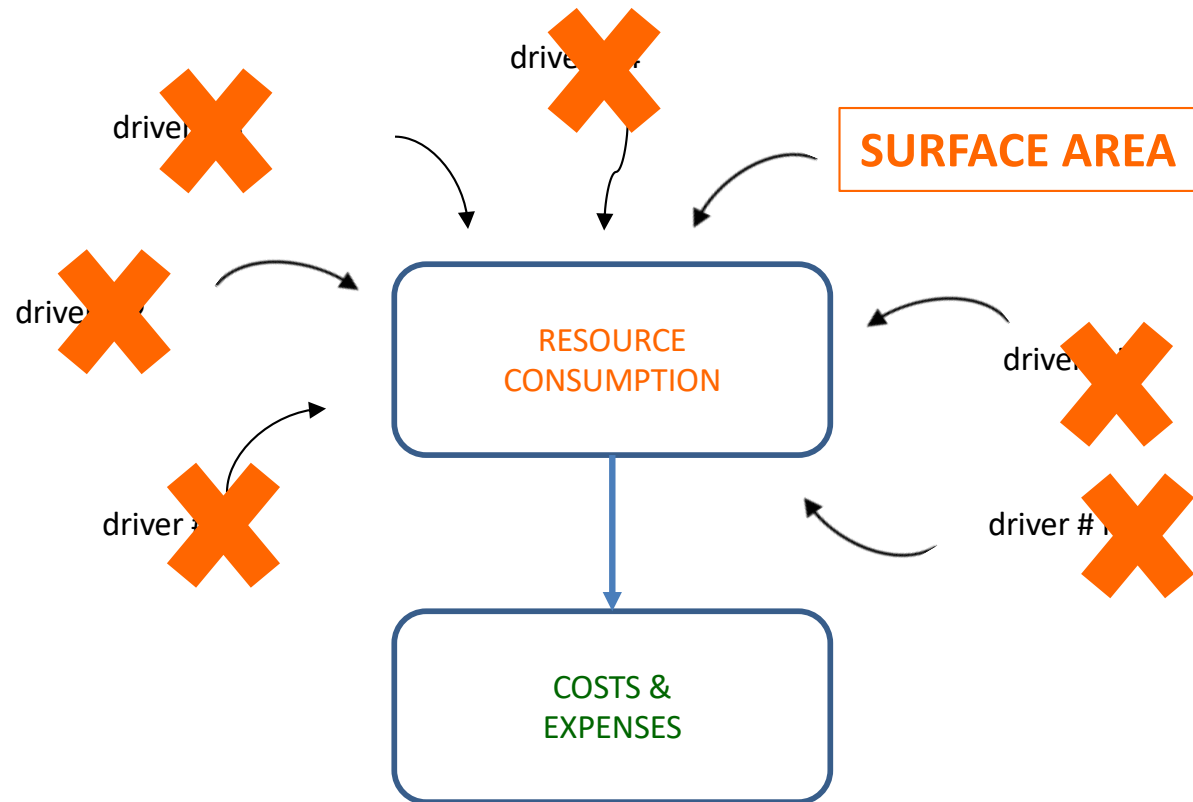
A SIMPLE EXAMPLE – WHAT IF MORE THAN ONE DRIVER EXIST?

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 626 |
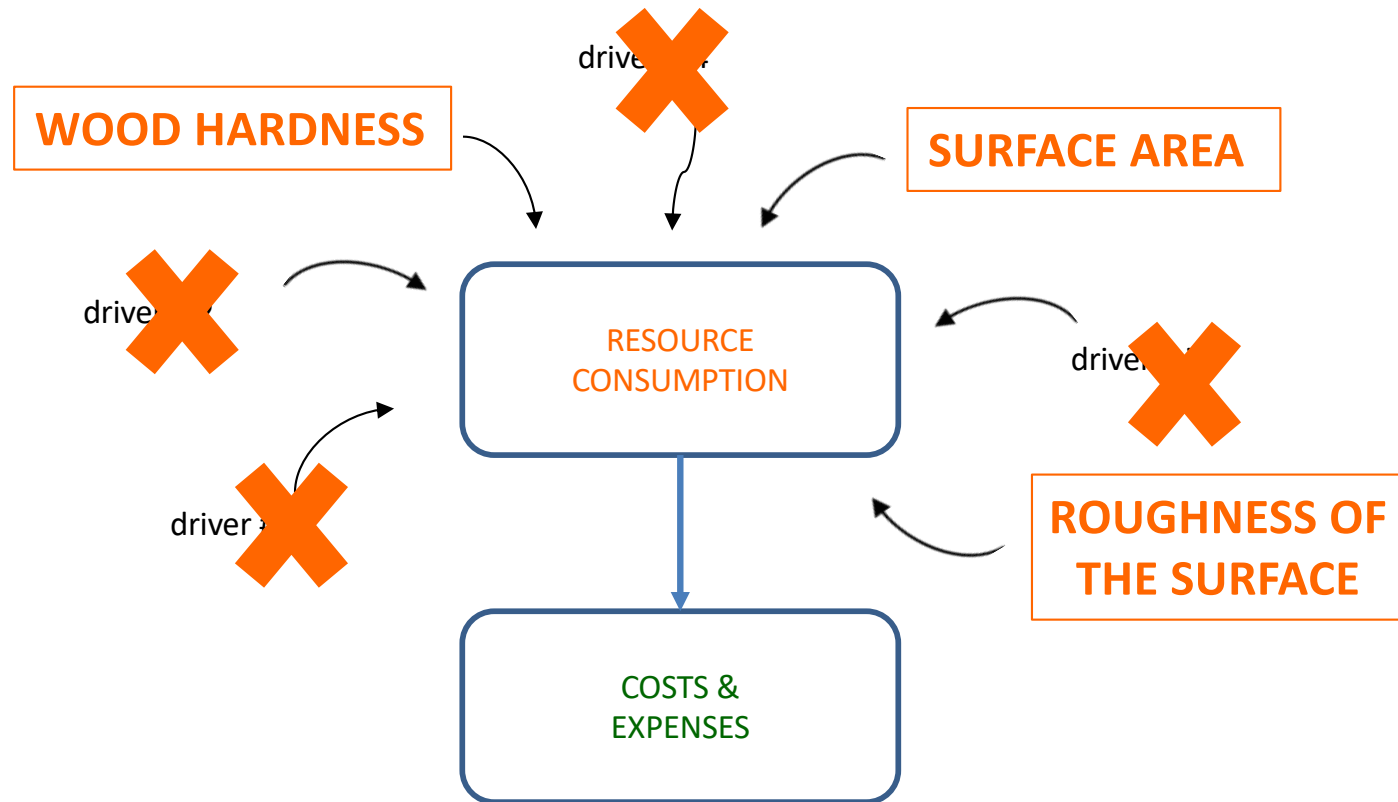
COST TRACING VS COST ALLOCATION
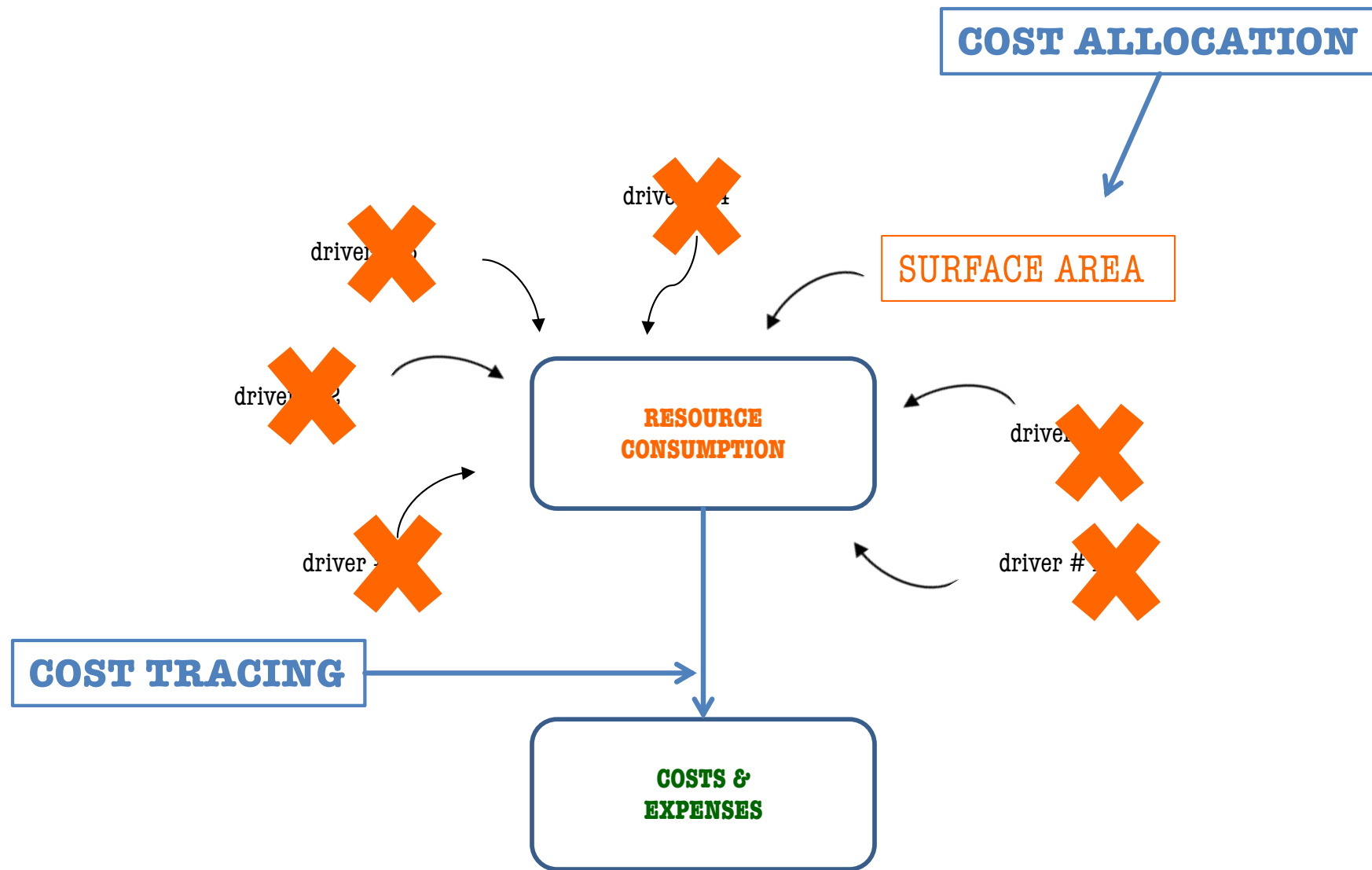
CROSSING THE TWO CLASSIFICATION CRITERIA

Assignment of Costs to Cost Object

	Direct Costs	**Indirect Costs**
Variable Costs	• Cost object: BMW X5s produced Example: Tires used in assembly of automobile	• Cost object: BMW X5s produced Example: Power costs at Spartanburg plant. Power usage is metered only to the plant, where multiple products are assembled.
Fixed Costs	• Cost object: BMW X5s produced Example: Salary of supervisor on BMW X5 assembly line	• Cost object: BMW X5s produced Example: Annual lease costs at Spartanburg plant. Lease is for whole plant, where multiple products are produced.

Cost-Behavior Pattern

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 628 |

SOME TAKEAWAY POINTS FROM MODULE # 9

❑ A direct cost is a cost that can be unambiguously related to a specific cost-object. To adequately establish whether this relationship exists, it is necessary to observe the link between the resource whose use determines the occurrence of the cost and the cost-object considered. There are two different circumstances in which the existence of an unambiguous relationship such as the one described here can be found.

❑ The first is when a resource is used in favour of a single cost object. If a productive factor is used exclusively to serve a single cost-object – and therefore there is a one-to-one link between it and the cost-object – we are undoubtedly faced with a clear, unambiguous relationship: we can therefore say that the cost of using that resource is a direct cost. However, as we will see in a successive moment, not necessary the whole amount of the cost is explained from the level of service offered to the cost-object. It is not said, therefore, that the entire amount of the cost must be assigned to the cost-object.

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 629 |

SOME TAKEAWAY POINTS FROM MODULE # 9

❑ A second situation in which the link between a production factor and a specific cost object can be said to be unambiguous is when the consumption relationship linking the resource used to the cost object served can be clearly defined even if the resource is used by different cost objects. This situation occurs when it is possible to measure (in physical terms) the consumption of the resource caused by the level of service rendered to a specific cost-object. Measuring in physical terms the consumption of the resource "caused" by the cost object in fact makes available all the information necessary to establish a clear, unambiguous consumption relationship between the production factor and the object served.

❑ However, such a form of measurement is not always technically possible or economically convenient (the costs of measurement exceed the relative benefits). In this case, the consumption relationship remains ambiguous, and the cost of the resource used is defined as "indirect". The term "indirect cost," therefore, indicates the difficulty of specifying a clear, strong, unambiguous link between the cost incurred and the cost object under consideration.

UNIVERSITÀ DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 630 |

SOME TAKEAWAY POINTS FROM MODULE # 9

❑ In the absence of a strong, clear, unambiguous relationship between a set of costs and a specific reference object, there are two possible alternatives in the cost assignment process.

❑ The first is to forego the assignment of that set of costs to the cost-object. In this case, therefore, the only costs assigned to the cost object are "direct costs" (those "traced" to the cost object) and, consequently, the margin that is eventually determined for the cost objects themselves is a "direct margin".

❑ The second alternative is, instead, to proceed through a process called "cost allocation" to assign a portion of indirect costs to each cost object involved in the process. In this case the allocation takes place using parameters – called allocation bases – which do not directly measure the consumption of the resource, but seek to infer it indirectly, through the adoption of appropriate hypotheses. The "allocation base" is therefore a parameter which is presumed in some way to be able to explain the consumption of a resource, not by measuring it, but by infering it from concrete occurrences and phenomena which appear to be related to it.

UNIVERSITÀ
DEGLI STUDI DI TRIESTE

BRUNO DE ROSA – PARTNER E SCIENTIFIC DIRECTOR DYN@MIKA S.R.L.

| 631 |

SOME TAKEAWAY POINTS FROM MODULE # 9

❑ The cost allocation process is therefore based on an inductive method grounded on assumptions and not on a process of objective measurement of the consumption of the resources. For this reason, it is, at least in part, dangerous. If the assumed hypotheses were to turn out mistaken the portions of cost assigned to the various cost-objects would not reflect the reality. The cost data in such way obtained would be therefore "distorted", "biased".

❑ The risk is, therefore, that of making decisions on information and data that are not sufficiently "robust", since they are to be derived based on assumptions that are contradicted by reality.

❑ For this reason, then, the process of allocating indirect costs should be avoided whenever their amount is likely to be significant enough to influence the decisions that will be made. In this case, it is worth improving the cost allocation process by taking more measurements and tracing a wider pool of originally indirect costs to the cost-objects.