

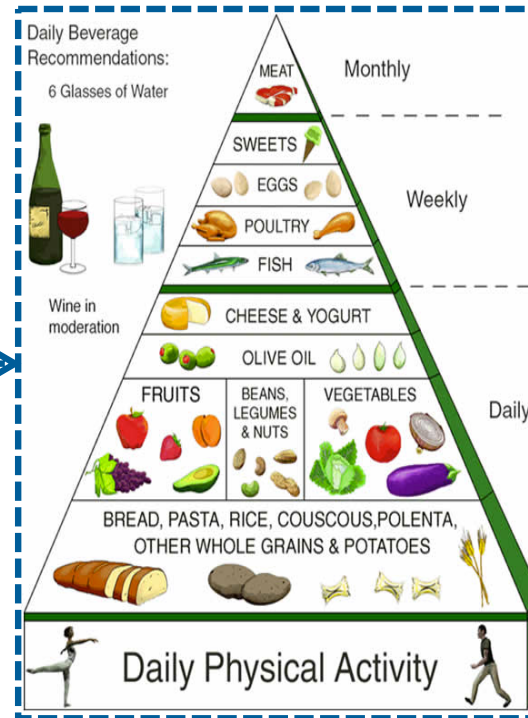


# THE ROLE OF MEASUREMENT

Why it is important to measure in a managerial context



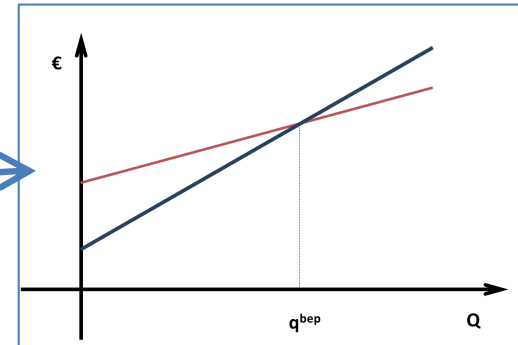
# COHERENCE BETWEEN INFORMATION AND DECISIONS



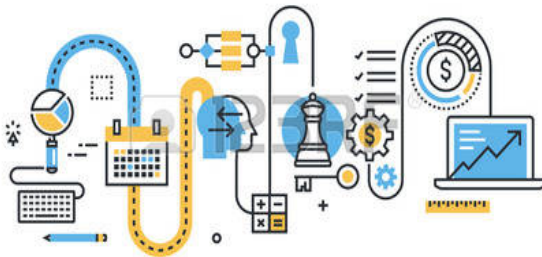
DECISION  
MODELS

# DECISION MODELS

**SELECTED CONCEPTS AND  
SELECTED RELATIONSHIPS  
BETWEEN THEM**

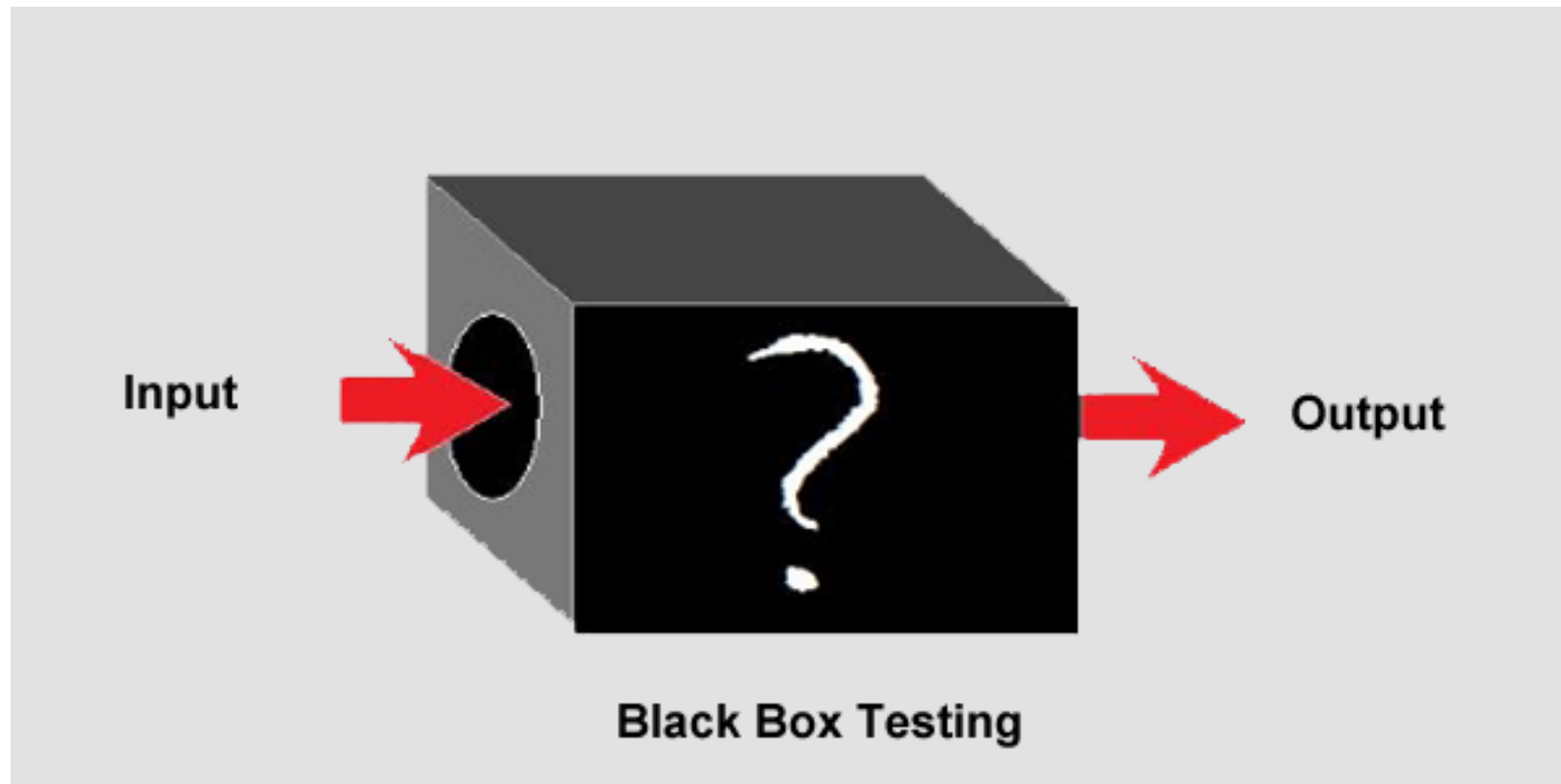


**DECISION MODEL  
(ABSTRACTION)**



**BUSINESS PROCESSES  
(REALITY)**

# THE FIRM AS A “BLACK BOX”

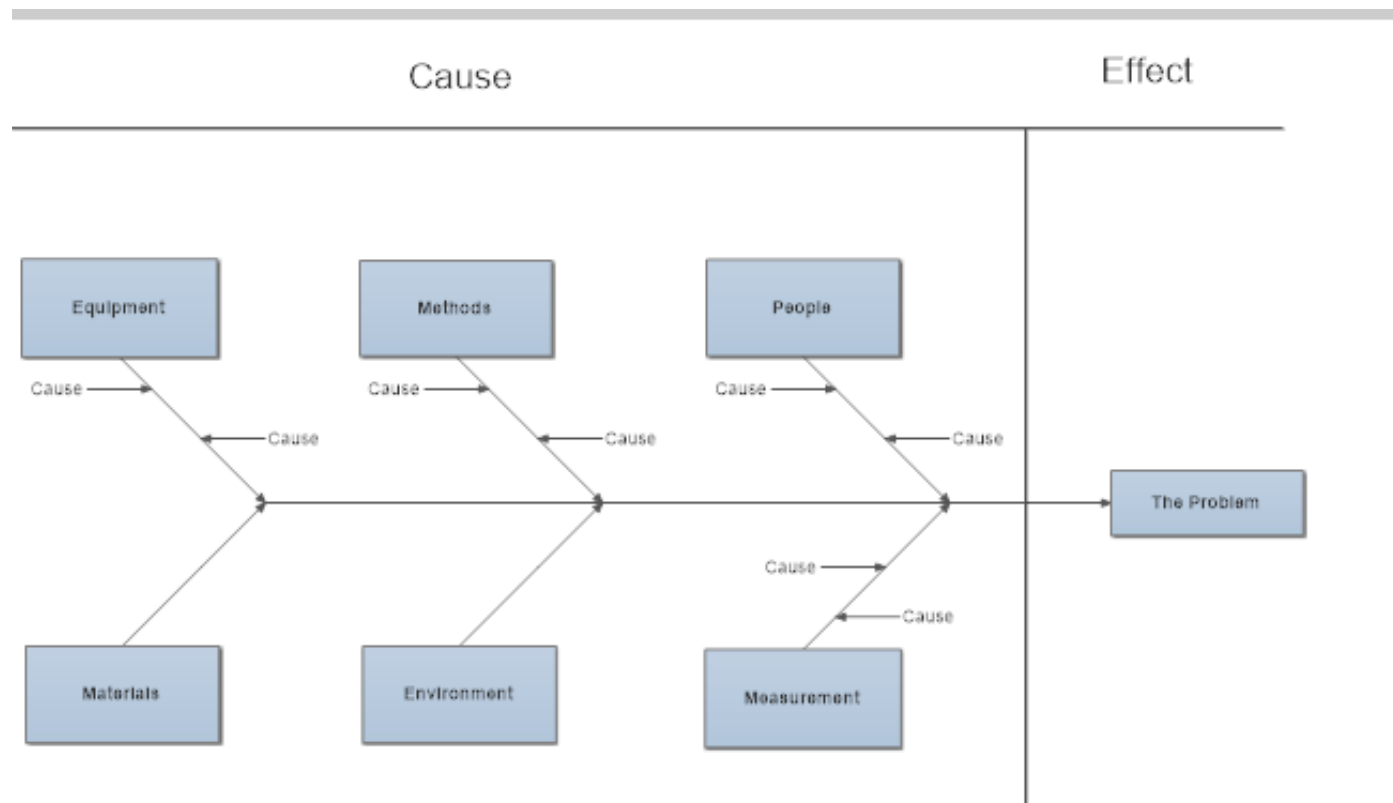


<<In most of the microeconomic theory, the firm is depicted as a “black box” consisting of a set of production activities or even a presumed production function with a finite set of inputs to be adjusted so-as-to generate a set of outputs corresponding to a maximal level of profits or some other measure of owner utility. The inputs controlled by the firm are then assumed to be put to their most efficient use without having a look “inside” the firm or “outside” in the relations with other economic agents, excepting for competition with other firms>>.

SOURCE: Andersson & Johansson, “Inside and outside the black box: organization of interdependencies”



# CAUSES AND EFFECTS RELATIONSHIPS



If one really wants to manage a business, one must know the various cause-effect relationships that link inputs and outputs. One must make the black box transparent by reconstructing (on the basis of the measurement of analytical reasoning) which are the main relationships on which attention must be focused if the desired effects are to be produced. Managing requires a focus on causes so that effects can be produced.

# CASUALITY AS THE GUIDING PRINCIPLE IN COST MODELING

**Cost modeling** provides a monetary representation of the organization's resources, processes, and products and services. [...].

The guiding principle for operations modeling (and, hence, cost modeling) is **causality**, the ability to reflect **cause-and-effect relationships**.

A useful cost model must efficiently guide a manager

- (1) from a monetary effect to the operational cause and
- (2) to clear and direct insight into the probable monetary effect of a particular operational action (or cause) being considered

**Causality:** The relation between a managerial objective's quantitative output and the input quantities consumed if the output is to be achieved

By applying the principle of causality and its associated concepts, **we can create a model that represents an organization's operations and explains the resulting financial results**. This establishes the baseline from which managers will seek to achieve strategy in an optimal manner.

Source: IMA (Institute of Management Accountants), "The Conceptual Framework for Managerial Costing," Statement on Management Accounting

# AN INPUT-PROCESS-OUTPUT MODEL OF THE FIRM



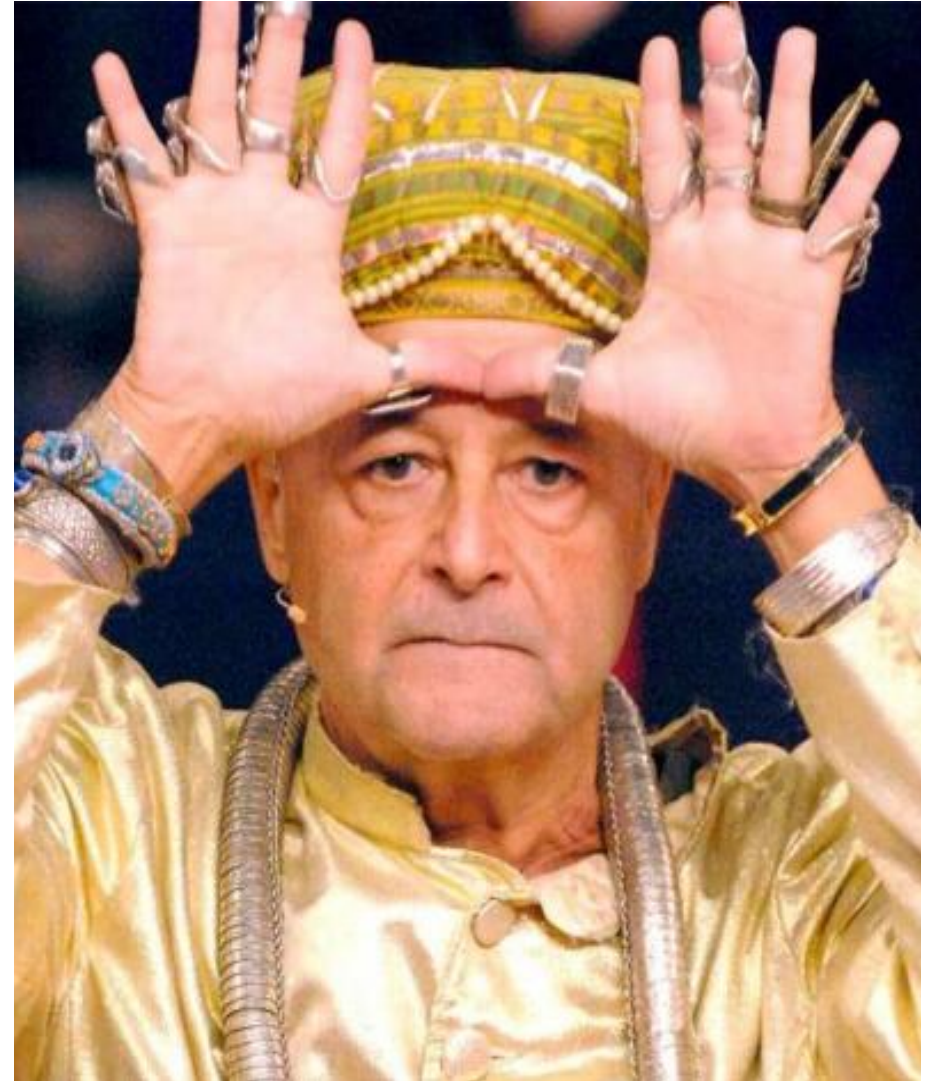
A well-designed cost model highlights the relationships that exist between the different **resources that are used**, the specific **activities that are carried out** as a result of the use of the different resources available, and the multiple **outputs (tangible or intangible) that are obtained** as a result of carrying out the activities that constitute the business process

# PLANNING IS NOT MAKING PREDICTIONS ABOUT THE FUTURE

As mentioned in Part I, an important portion of the actions taken by management to increase the levels of efficiency and effectiveness with which the business process is carried out is planning activity.

Clearly planning is something completely different from trying to make predictions about the future.

Instead, the activity of planning is, in part, like that carried out by those who make weather forecasts. It involves the establishment of a causal model (i.e., a model based on cause-effect relationships) and then using it by developing hypotheses about the underlying causal variables



# PETER DRUCKER ON PREDICTIONS

We know only two things about the future:

- It cannot be known.
- It will be different from what exists now and from what we now expect.

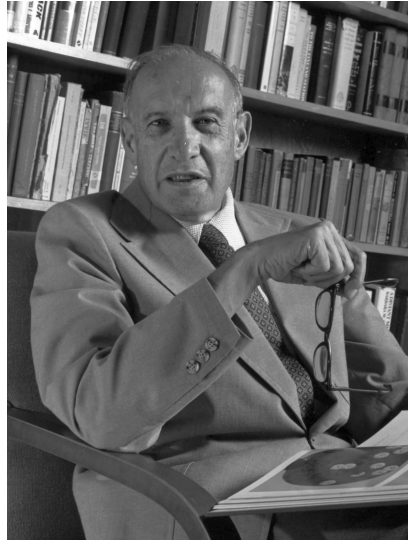
These assertions are not particularly new or particularly striking. But they have far-reaching implications.

1. Any attempt to base today's actions and commitments on predictions of future events is futile. The best we can hope to do is to anticipate the future effects of events that have already irrevocably happened.
2. But precisely because the future is going to be different and cannot be predicted, it is possible to make the unexpected and unpredicted come to pass. To try to make the future happen is risky; but it is a rational activity. And it is less risky than coasting along on the comfortable assumption that nothing is going to change, less risky than following a prediction as to what "must" happen or what is "most probable."

Managers must accept the need to work systematically on making the future. But this does not mean the manager can work for the elimination of risks and uncertainties. That power is not given to mortal man. The one thing he or she can try to do is to find, and occasionally to create, the right risk and to exploit uncertainty. The purpose of the work on making the future is not to decide what should be done tomorrow, but what should be done today to have a tomorrow.



# ON PREDICTIONS AND FORECASTING

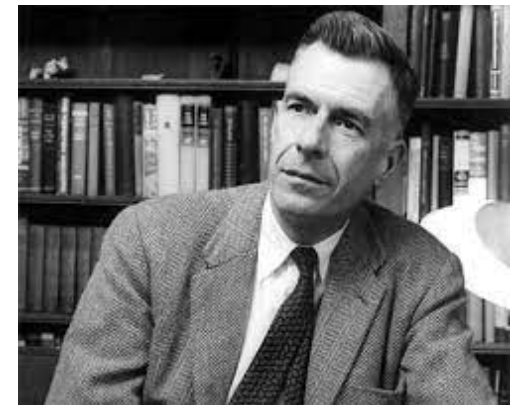


“Any attempt to base today’s actions and commitments on predictions of future events is futile.”

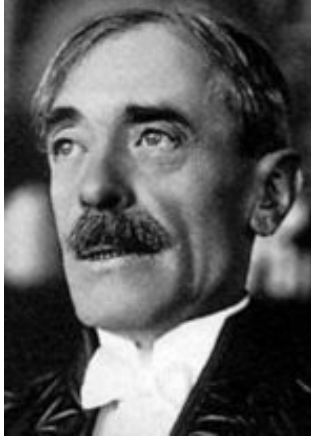
**Peter Ferdinand Drucker**, management consultant, educator, and author.

“The only function of economic forecasting is to make astrology look respectable.”

**John Kenneth Galbraith**, economist, diplomat, public official, and intellectual.



## ON PREDICTIONS



“The trouble with our times is that the future is not what it used to be.”

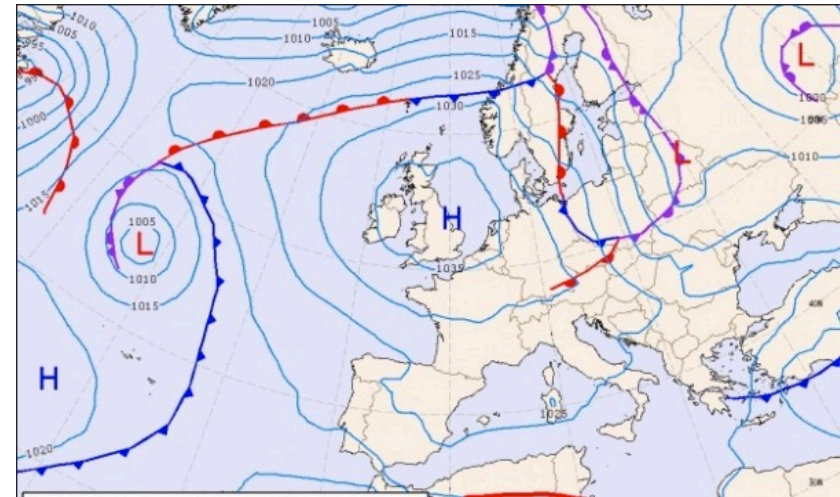
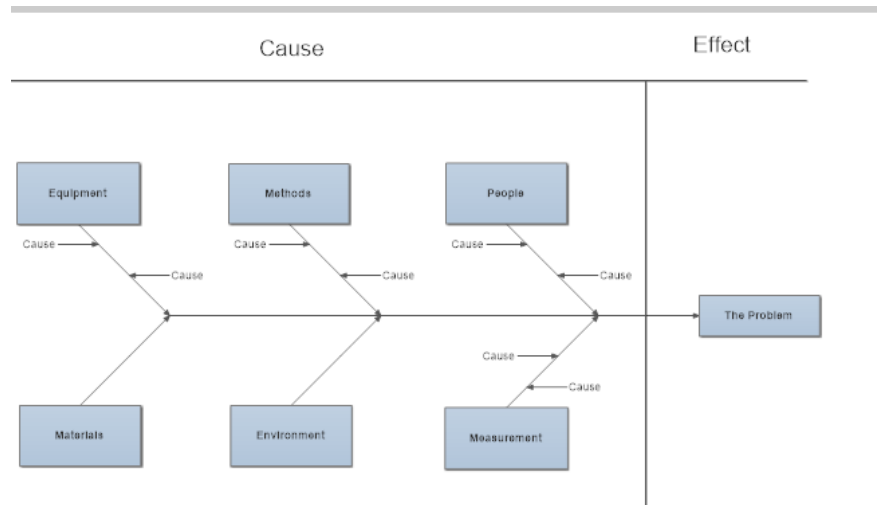
Paul Valéry, poet, essayist, and philosopher.

“Prediction is very difficult, especially if it's about the future.”

Niels Bohr, physicist, Nobel laureate 1922.



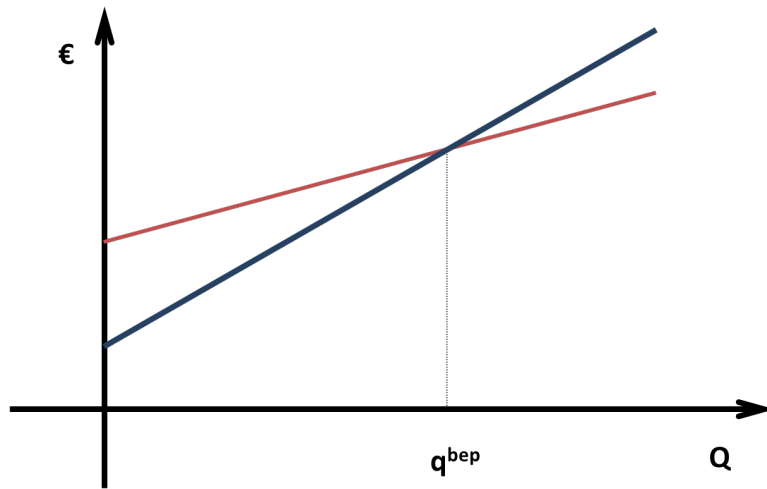
# ANALOGY AS THE GUIDING PRINCIPLE FOR DECISION MAKING



The guiding principle for decision making is **analogy**—the **use of causal insights to infer past or future causes or effects**. Managers use cost information by **applying the principle of analogy to infer past or future causes or effects**. This results in learning from the past, making plans for the future, and supporting resource application decisions to achieve strategic objectives.

Source: IMA (Institute of Management Accountants), "The Conceptual Framework for Managerial Costing," Statement on Management Accounting

# INFERRING THE FUTURE USING THE CURRENT INFORMATION

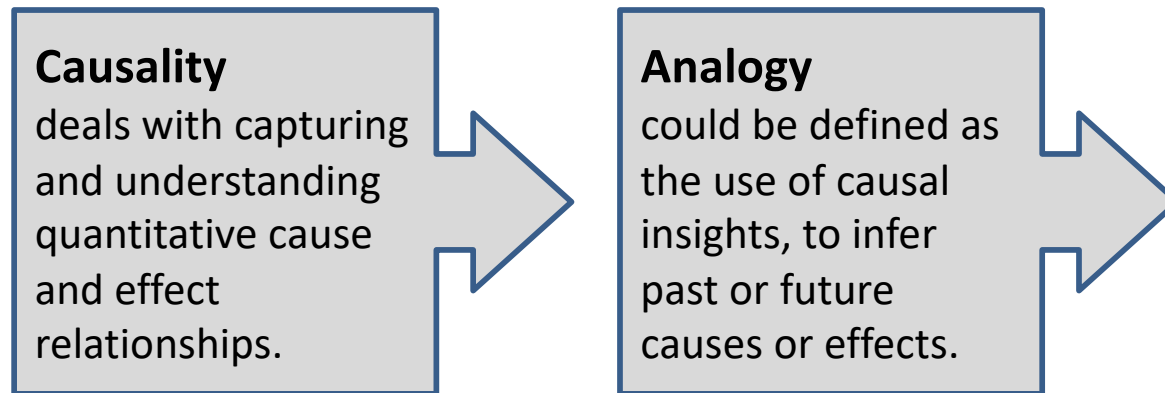


*if the quantity sold were to increase by 20% and fixed costs were to rise by 10%, then the new break-even point would be 7,700 units and EBIT would rise by 36.47%.*

Contribution Margin per unit:     \$ 375.00  
Total Fixed Costs:                     \$ 2,625,000  
Actual level of Sales:                 11,250 units

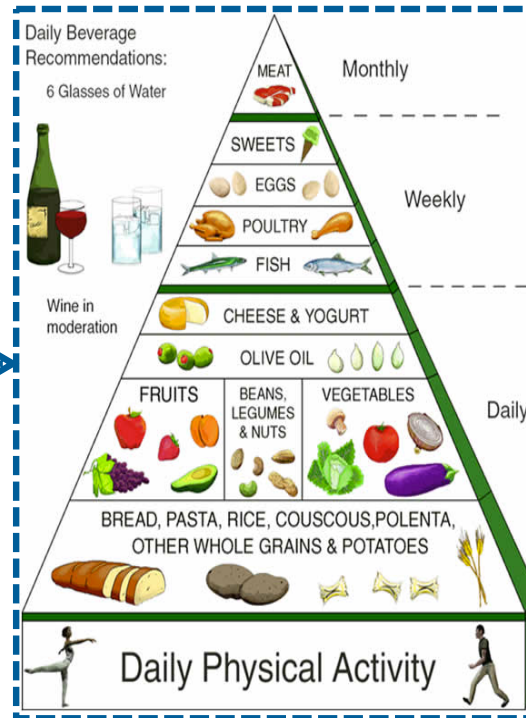
# PURPOSES OF MEASUREMENT

- To understand the **real causes** of the value creation process.





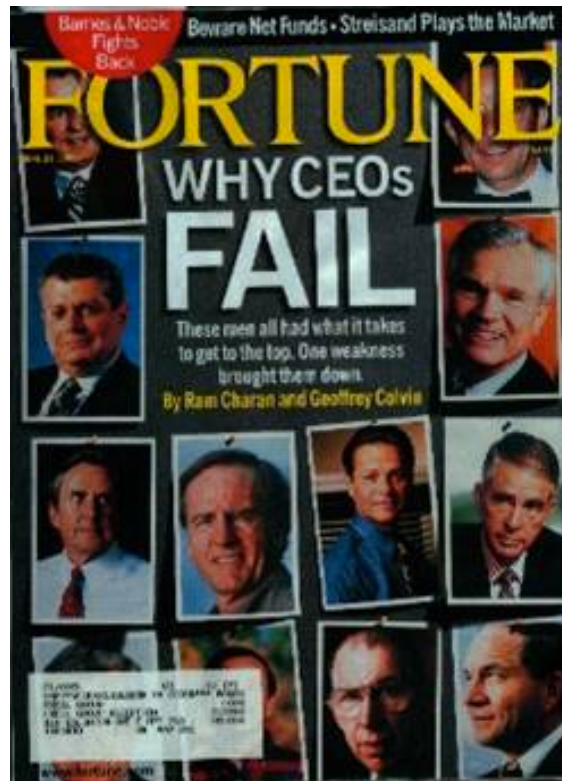
# ABILITY TO INDUCE ORGANIZATIONAL BEHAVIOR



DECISION  
MODELS

?

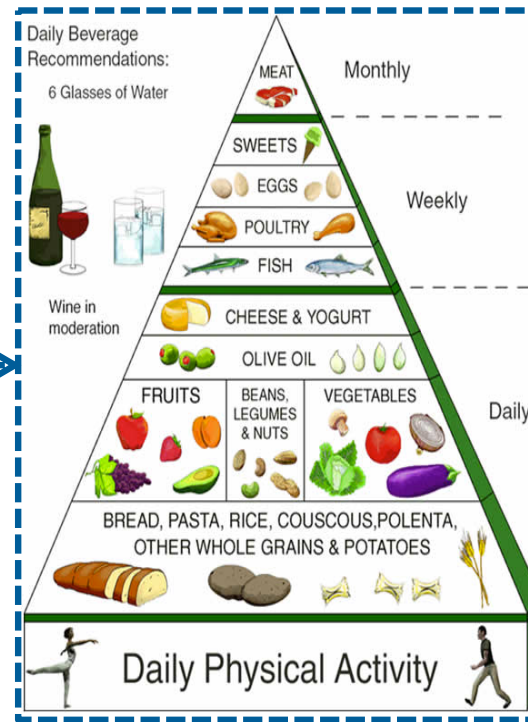
# “WHY CEOs FAIL”



“It's bad execution. As simple as that: not getting things done, being indecisive, not delivering on commitments.

We base our conclusions on careful study of several dozen CEO failures we've observed over the decades--through our respective work as a consultant to major corporations and a journalist covering them. The results are beyond doubt”.

# ABILITY TO INDUCE ORGANIZATIONAL BEHAVIOR



After strategies are set and plans are made, management's primary task is to **take steps to ensure that these plans are carried out**, or, if conditions warrant, that the plans are modified.

This is the critical control function of management. And since **management involves directing the activities of others**, a major part of the control function is **making sure other people do what should be done**.

**MANAGEMENT  
CONTROL**

SOURCE: Kenneth A. Marchant, The control Function of Management, Sloan Management Review, Summer 82, pgg. 43-55



# DO YOU LIKE TO BE CONTROLLED?



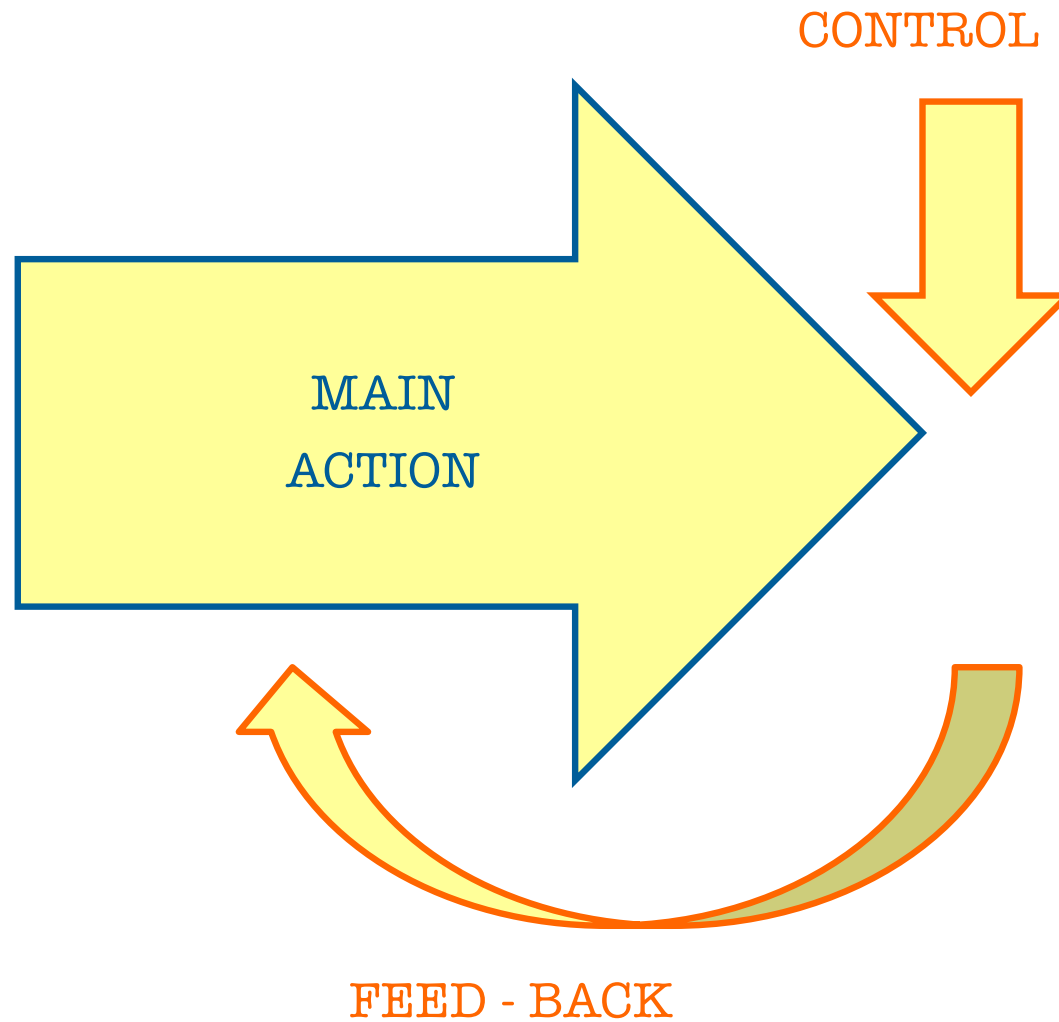
# TO CONTROL: TO CHECK, TO VERIFY, TO INSPECT, TO AUDIT, TO REVIEW

CONTROL

- POST ACTION CONTROL (FEED BACK)
- CONTROLLER AS A THIRD PART (“GUARDIAN”)
- SANCTIONS



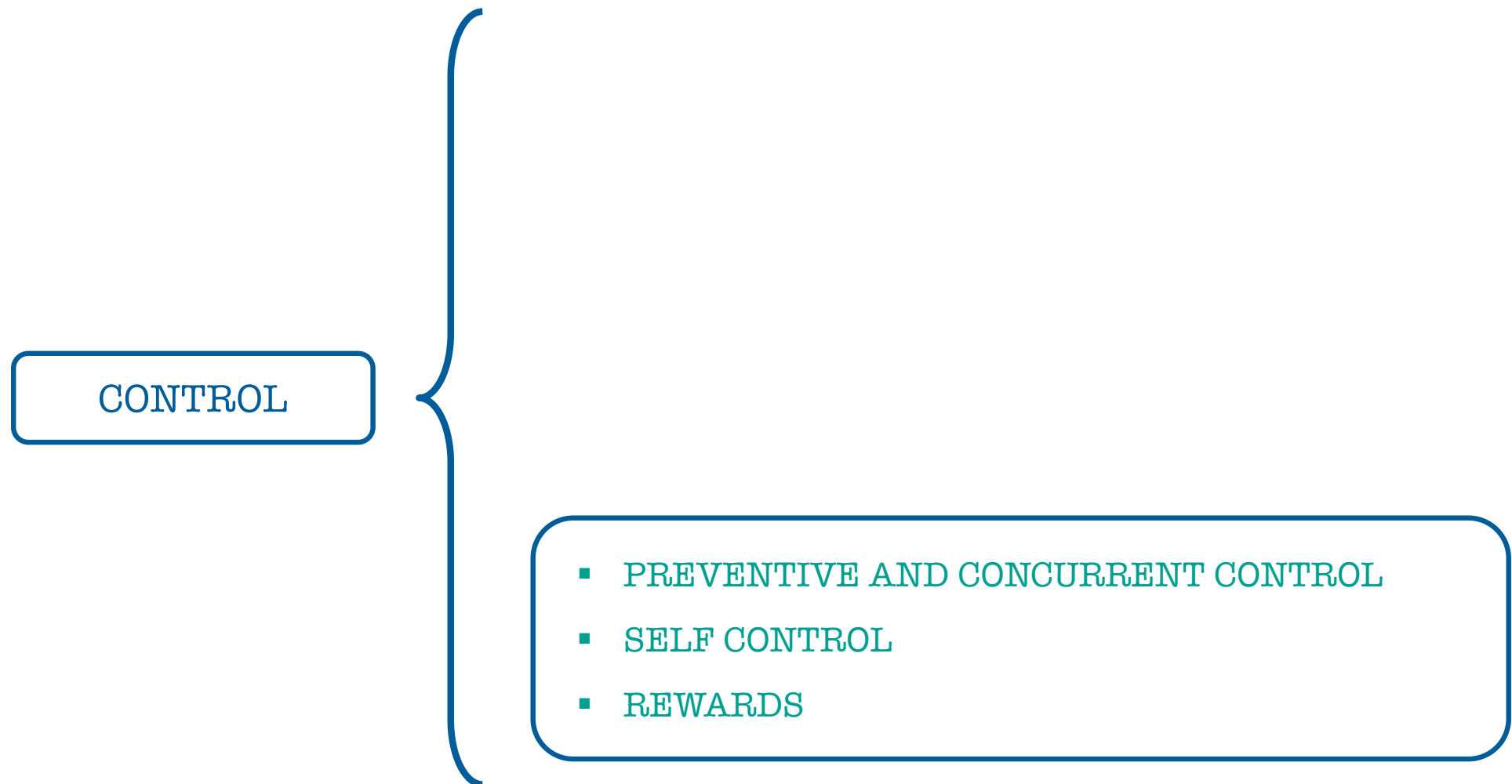
# EX POST CONTROL



# WHAT ABOUT THIS?



# TO CONTROL: TO DIRECT, TO LEAD, TO GOVERN, TO DRIVE, TO MANAGE



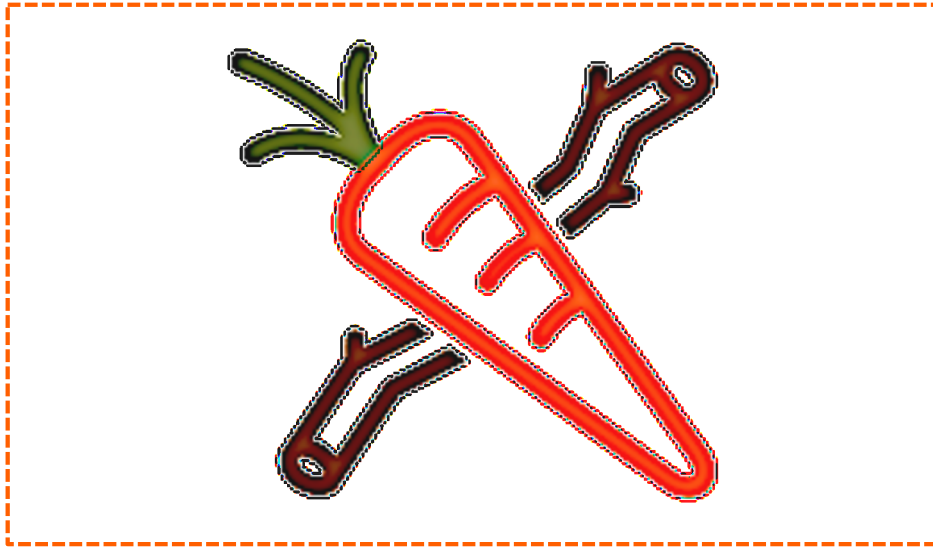
# TWO DIFFERENT MEANINGS OF THE TERM

## CONTROL

- POST ACTION CONTROL (FEED BACK)
- CONTROLLER AS A THIRD PART (“GUARDIAN”)
- SANCTIONS

- PREVENTIVE AND CONCURRENT CONTROL
- SELF CONTROL
- REWARDS

# BOTH ARE NEEDED!



There are basically two ways to get people to do what you want. You can **threaten them with punishment** or you can also **entice them with rewards**. Normally we do both. One way of saying this is what we call “the **carrot-and-stick approach**.”



# MANAGEMENT INVOLVES DIRECTING THE ACTIVITIES OF OTHERS

A dual sets of  
**control mechanisms**  
Is needed

The first is designed to **guard against undesirable behavior**. It aims, therefore, to **avoid that wrong or dangerous actions are carried out**. It performs the same functions of **“brakes”** in a car: it blocks actions, avoids collisions.



The second set of control mechanisms is used in order to **encourage desirable behavior**, to **motivate people** to perform better than average, to induce them, if possible, to **go above and beyond their duties and abilities**. The aim of this different group of control mechanisms, therefore, is to “provide energy to the system”. The analogy, here, is clearly with the **“accelerator”** (throttle) of the car.



# MANAGEMENT INVOLVES DIRECTING THE ACTIVITIES OF OTHERS

A dual sets of  
**control mechanisms**  
Is needed

## LIMITS AGAINST UNDESIRABLE BEHAVIOR

The "Administration" responsibility centre may not, in the coming year, exceed the following values for any single cost item

- consultancy costs \$250,000
- training expenses \$120,000
- travel and transfers \$80,000

## INCENTIVE TO CARRY OUT DESIRED ACTIONS

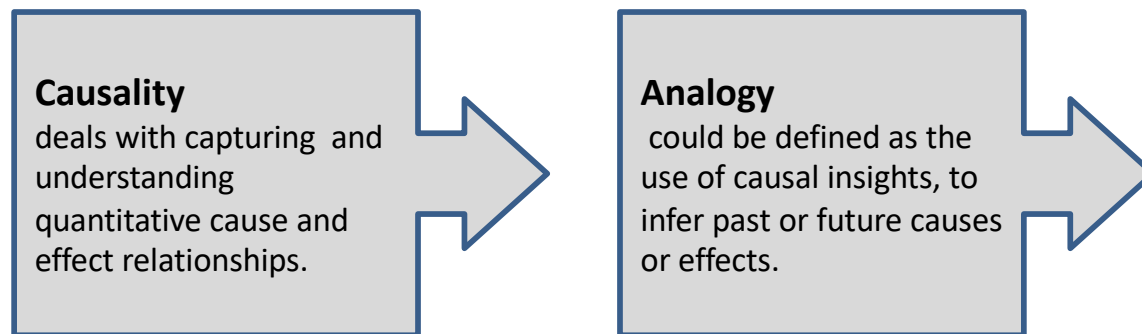
The manager of the "Painting" centre will receive a bonus if the average cost per square centimetre painted is less than \$ 2.15



# PURPOSES OF MEASUREMENT

What are the purposes of measurement applied to management?

- To understand the **real causes** of the value creation process.

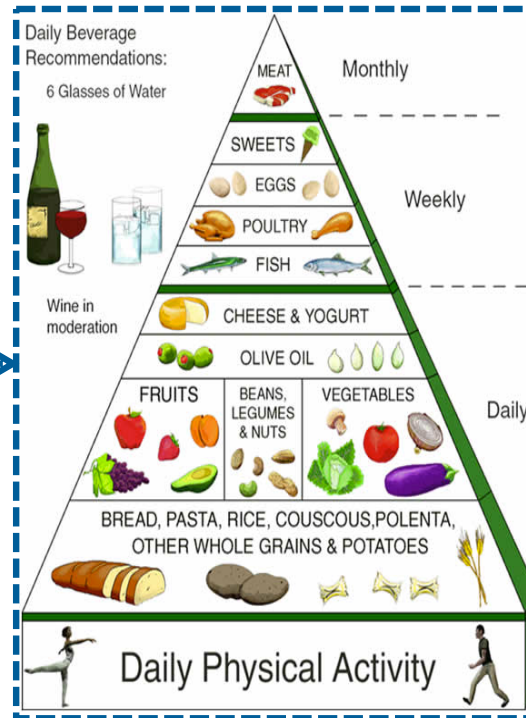


- To influence (to drive) **behavior**.

Human beings adjust behavior based on the metrics they're held against. Anything you measure will impel a person to optimize his score on that metric. What you measure is what you'll get. Period.

Dan Ariel

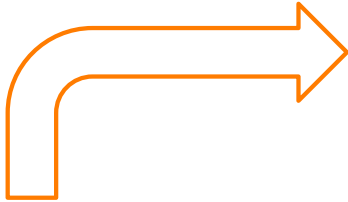
# ABILITY TO INDUCE ORGANIZATIONAL BEHAVIOR



DECISION  
MODELS

MANAGEMENT  
CONTROL

# PERIODICITY OF THE ANALYSIS



## **COST & REVENUES ANALYSIS**

A set of logic, criteria, methods and techniques for the

- ✧ collection,
- ✧ classification,
- ✧ aggregation and
- ✧ attribution

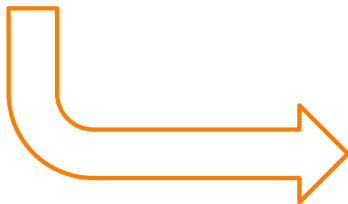
of **costs** and **revenues**

## **SYSTEMATIC AND CONSTANT INFORMATION FLOWS**

### **COST SYSTEMS**

Focused on cost-objects that are considered particularly relevant for day-by-day decisions and, therefore, that need constant monitoring

## **PRODUCTION OF "AD HOC" INFORMATION IN RELATION TO SPECIFIC DECISION MAKING**



### **ONE-OFF COST ANALYSIS**

Relating to specific cost-objects, from time to time different depending on the type of decision to be taken



# BACK TO THE ORIGINS

Robert Anthony is unanimously recognized as the originator of the whole idea of Management Control. He did more than anyone else to introduce a conceptual structure to this new discipline, derived from Accounting.

In his 1965 masterpiece *Planning and Control Systems: A Framework for Analysis*, published in 1965, Anthony defined management control as “the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives”.

Subsequently he adjusted it in the following way: “Management control is the process by which managers influence other members of the organization to implement the organization's strategies”, Robert Antony, *Planning and control systems: a framework for analysis*, 1988.

# CONTROLLING AS DRIVING: A GREAT ANALOGY



Like a formula 1 driver, a manager must have the ability to direct the resources assigned to him or her along winning directions!

# IF HE OR SHE WANTS TO WIN, A GOOD DRIVER MUST...

- know at all times where he is and have an idea of where he wants to go and, therefore, which trajectories he wants to follow
- know how the opposing drivers are behaving
- know perfectly well how the 'resource' (the car) at his disposal really works
- have the ability to perceive the onset of any problems before they are manifested
- have at the same time the ability to understand what is working properly
- have sufficient information flow (from the pits) and be able to interpret it correctly and quickly
- be able to extract the maximum result from his vehicle, without depleting it, but on the contrary making it grow in quality over time.

# WHY ARE CONTROLS NEEDED?

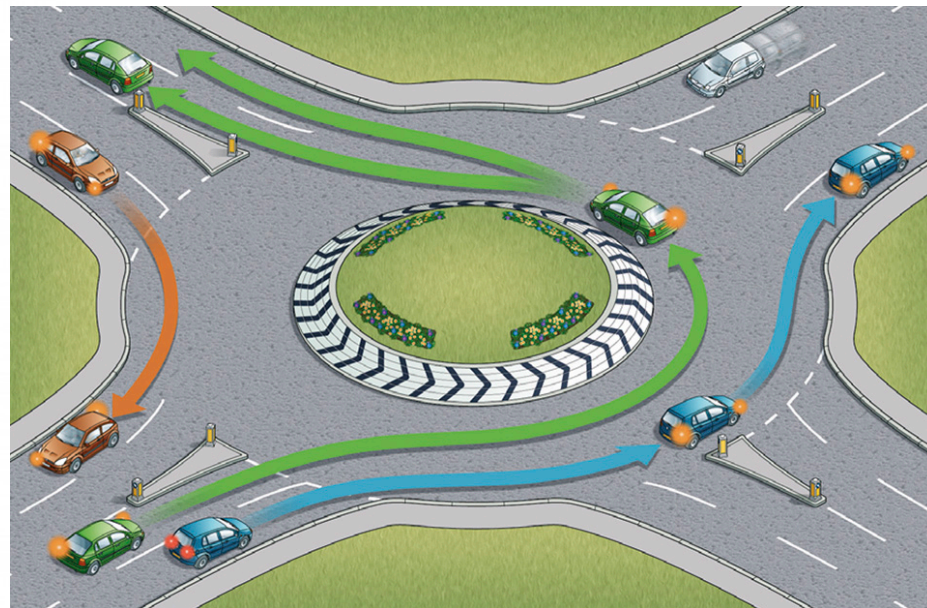
If all personnel always did what was best for the organization, control - and even management - would not be needed. But, obviously **individuals are sometimes unable or unwilling to act in the organization's best interest**, and a set of controls must be implemented to guard against undesirable behavior and to encourage desirable actions.

**Personal limitations.** People do not always understand what is expected of them nor how they can best perform their jobs, as they may lack some requisite ability, training, or information. In addition, human beings have a number of innate perceptual and cognitive biases, such as an inability to process new information optimally or to make consistent decisions and these biases can reduce organizational effectiveness. Some of these personal limitations are correctable or avoidable but for others, controls are required to guard against their deleterious effects.

**Lack of goal congruence.** Even if employees are properly equipped to perform a job well, some choose not to do so, because individual goals and organizational goals may not coincide perfectly. In other words, there is a lack of goal congruence. Steps must often be taken either to increase goal congruence or to prevent employees from acting in their own interest where goal incongruence exists.

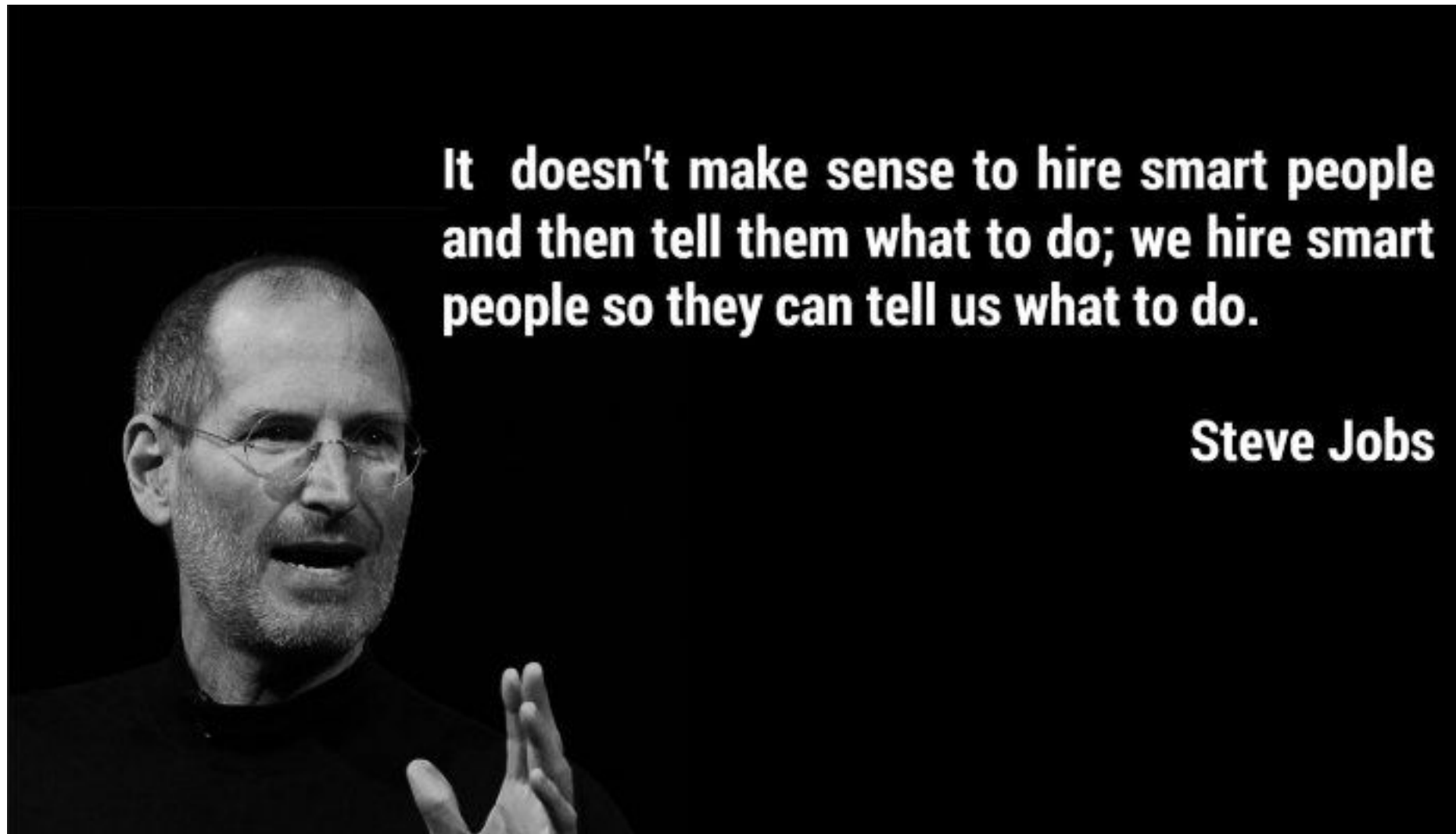
SOURCE: Kenneth A. Marchant, The control Function of Management, Sloan Management Review, Summer 82, (43-55)

# DESIGNING CONTROLS



**Source:** Bjarte Bogsnes, *Implementing Beyond Budgeting Unlocking the Performance Potential*, Wiley, 2016.





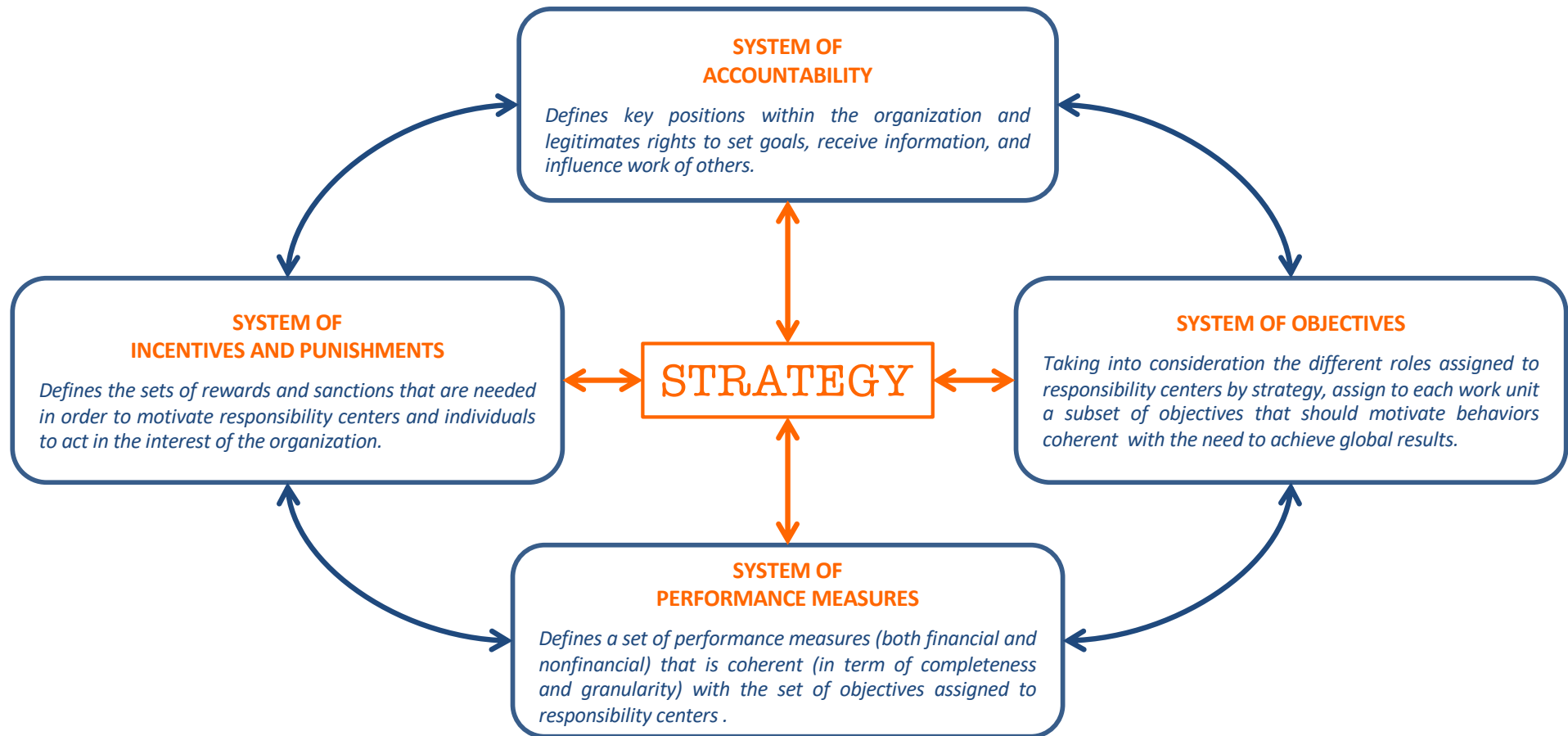
# PETER DRUCKER ON CONTROL AND CONTROLS

In the dictionary of social institutions, the word “controls” is not the plural of the word “control.” Not only do more controls not necessarily give more control, but the two words have different meanings altogether. The synonyms for controls are “measurements” and “information.” The synonym for control is “direction.” Controls pertain to means; control to an end. Controls deal with facts, that is, with events of the past. Control deals with expectations, that is, with the future. Controls are analytical, concerned with what was and is. Control is normative and concerned with what ought to be.

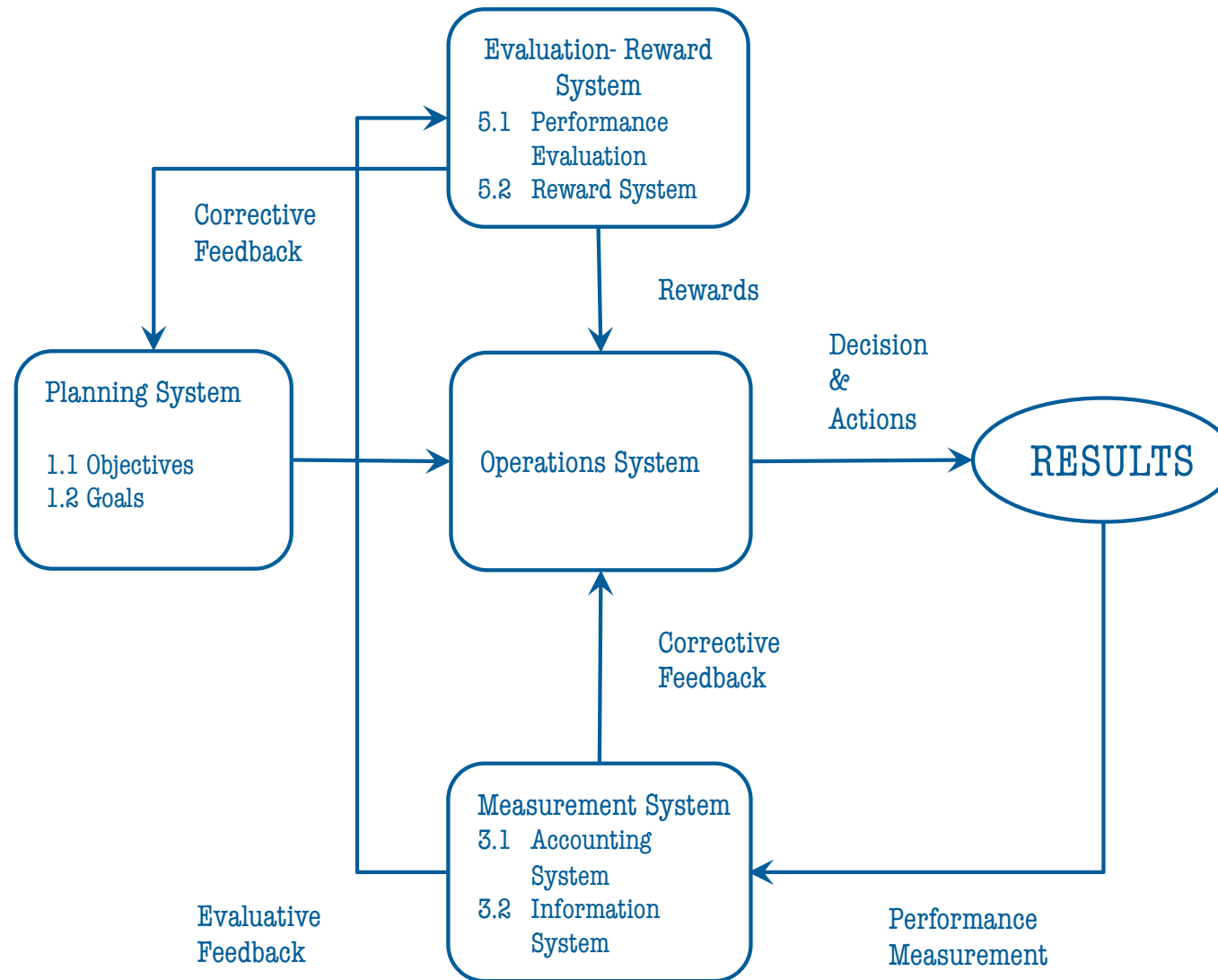
We are rapidly acquiring great capacity to design controls because of a great improvement in techniques, especially in the application of logical and mathematical tools and in the ability to process and analyze large masses of data very fast.

What does this mean for control? Specifically, what are the requirements for these greatly improved controls to give better control to management? For, in the task of a manager, controls are purely a means to an end. The end is control.

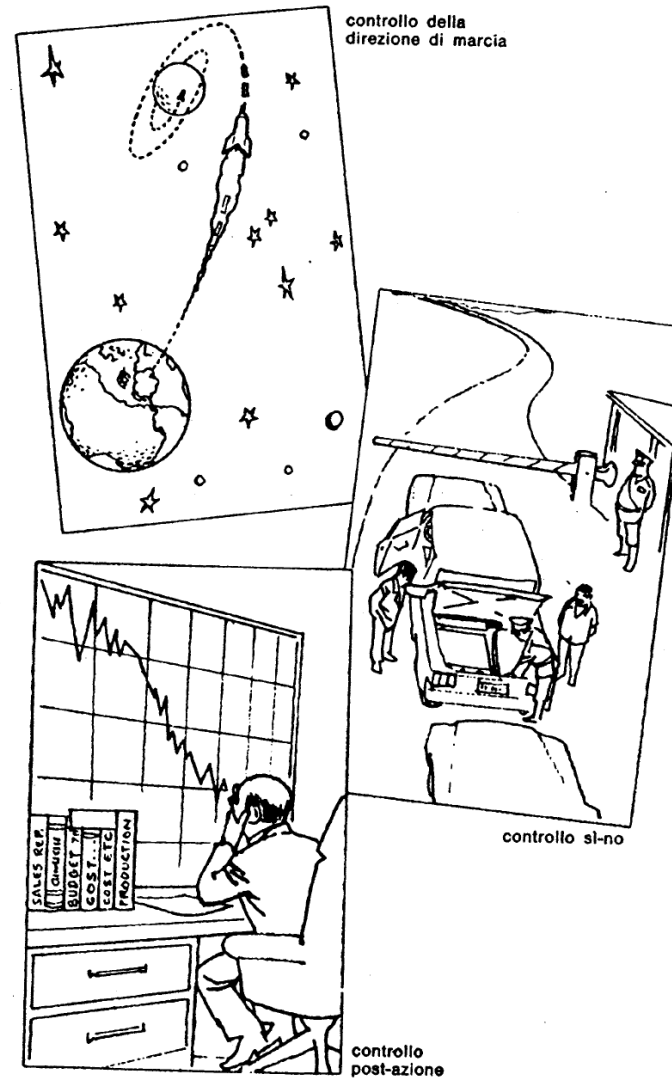
# FEEDBACK WITHIN ORGANIZATIONS



# SCHEMATIC MODEL OF THE CORE CONTROL SYSTEM



# TYPES OF CONTROL ACCORDING TO NEWMAN





# TYPES OF CONTROL ACCORDING TO NEWMAN

Control efforts can be made much more effective by recognizing three different types of control:

- 1. Steering-controls.** Results are predicted and corrective action is taken before the total operation is completed. For example, flight control of the spacecraft aimed for the moon began with trajectory measurements immediately after take-off and corrections were made days before actual arrival.
- 2. Yes-no controls.** Here, work may not proceed to the next step until it passes a screening test. Approval to continue is required. Quality checks and legal approval of contracts are examples.
- 3. Post-action controls.** In this type of control action is completed; then results are measured and compared to a standard. The typical budgetary control and school report cards illustrate this approach.

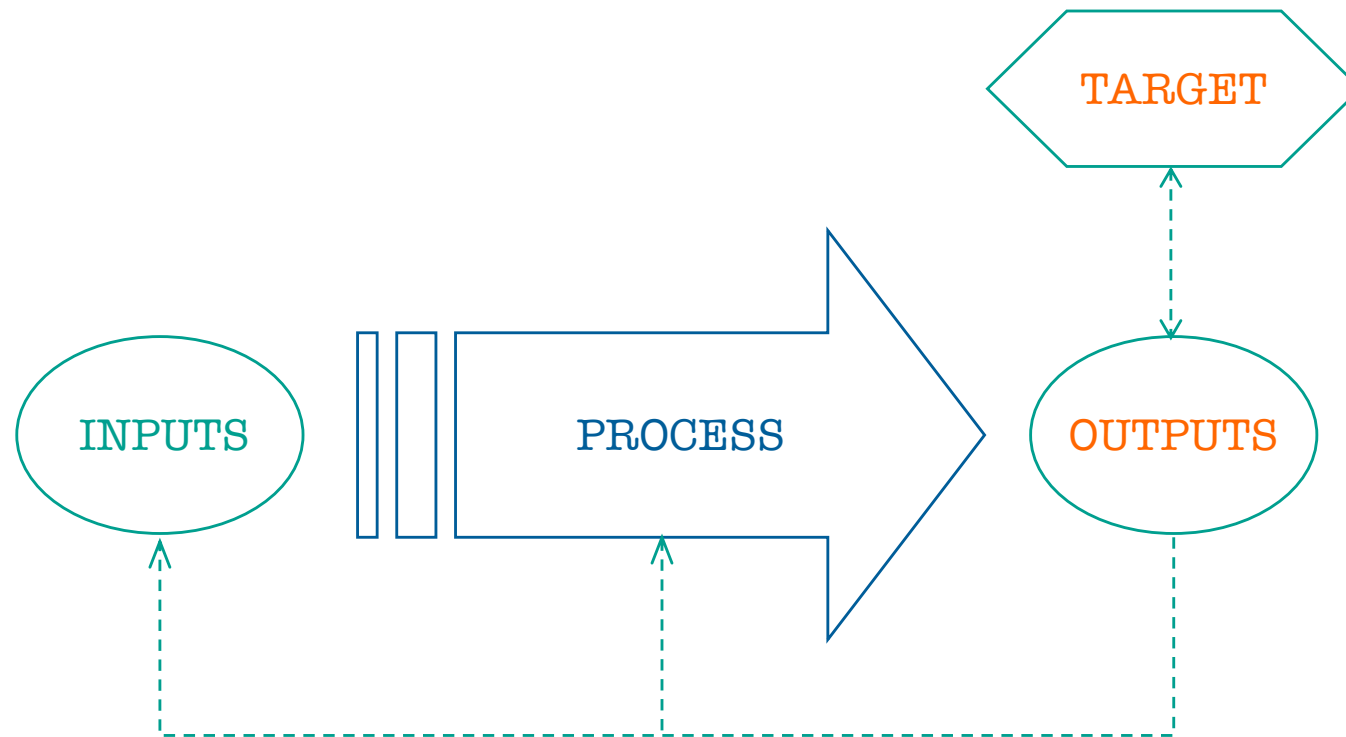
# SOME REFLECTIONS

It is **steering-controls** that offer the greatest opportunity for constructive effect. The chief purpose of all controls is to bring actual results as close as possible to desired results, and steering-controls provide a mechanism for remedial action while the actual results are still being shaped.

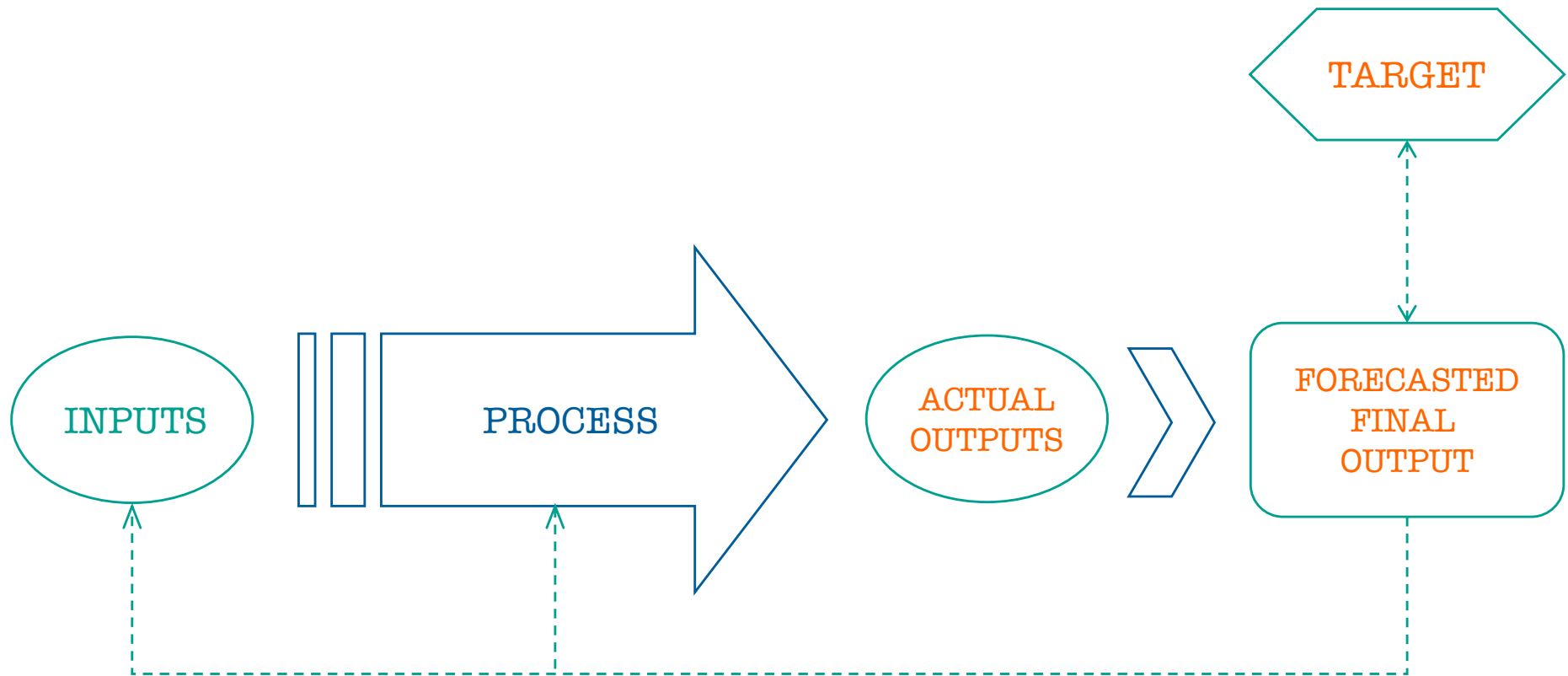
**Yes-no controls** are essentially safety devices. If we could be confident that our steering-controls were effective, the yes-no controls would be unnecessary; unfortunately, steering-controls may not be fully reliable, or may be too expensive, so yes-no controls are applied.

**Post-action controls**, by definition, seem to be applied too late to be very effective. The work is already completed before it is measured.

# POST ACTION CONTROL



# STEERING CONTROL



# POSSIBLE PURPOSES OF POST-ACTION CONTROLS

Actually, post-action controls do serve two purposes.

- a) If rewards (a medal, bonus, discharge, self-esteem, etc.) based on actual results have been promised, these results must be measured and the appropriate rewards made to build future expectations about the dose relationship between actual results and rewards. The aim is psychological reinforcement of the incentive scheme. The pay-off in this reinforcement lies in future behavior.
- b) Post-action controls also provide planning data if similar work is undertaken in the future.



# PLANNING AND CONTROL SYSTEMS: A FRAMEWORK FOR ANALYSIS

In Robert Anthony original framework (1965), management control is the critical link between strategy and operations.

In his framework he provided the following definitions of strategic, management and operational control.

He defined **Strategic Planning** as:

*“the process of deciding on objectives of the organization, on changes in these objectives, on the resources used to obtain these objectives, and on the policies that are to govern the acquisition, use, and disposition of these resources.” (Anthony 1965, 24)*

He defined **Management Control** as:

*“the process by which managers assure the resources are obtained and used effectively and efficiently in the accomplishment of the organization’s objectives.” (Anthony 1965, 27)*

He defined **Operational Control** as:

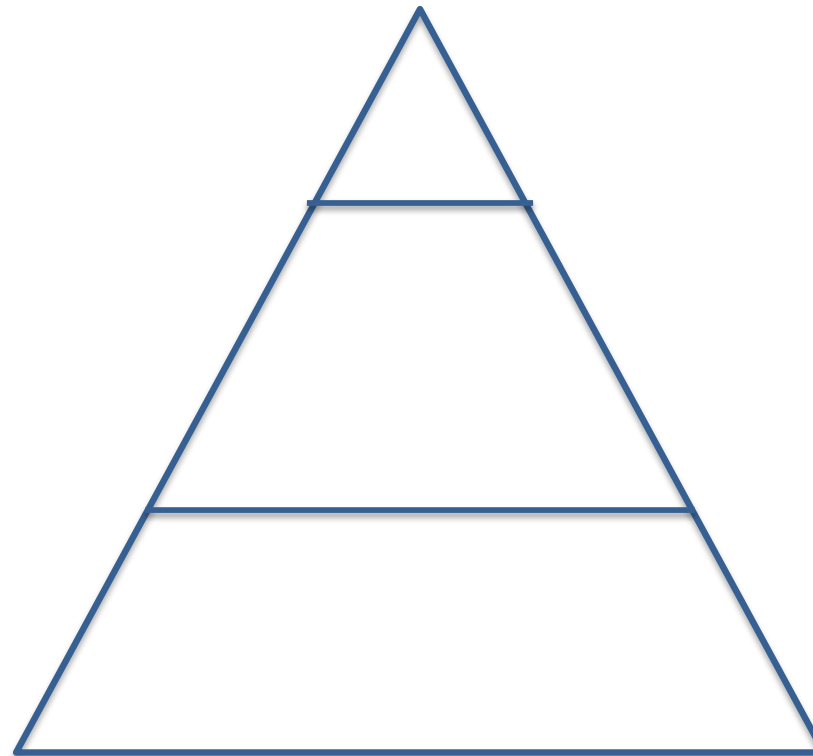
*“the process of assuring that specific tasks are carried out effectively and efficiently.” (Anthony 1965, 69)*

# PLANNING AND CONTROL SYSTEMS: A FRAMEWORK FOR ANALYSIS

TOP  
MANAGEMENT

MIDDLE  
MANAGEMENT

FIRST LINE  
MANAGEMENT



STRATEGIC  
PLANNING

MANAGEMENT  
CONTROL

OPERATIONAL  
CONTROL

# A SHIFT TOWARD EXECUTION

In 1988, Anthony revised his original definition of Management Control Systems to the following:

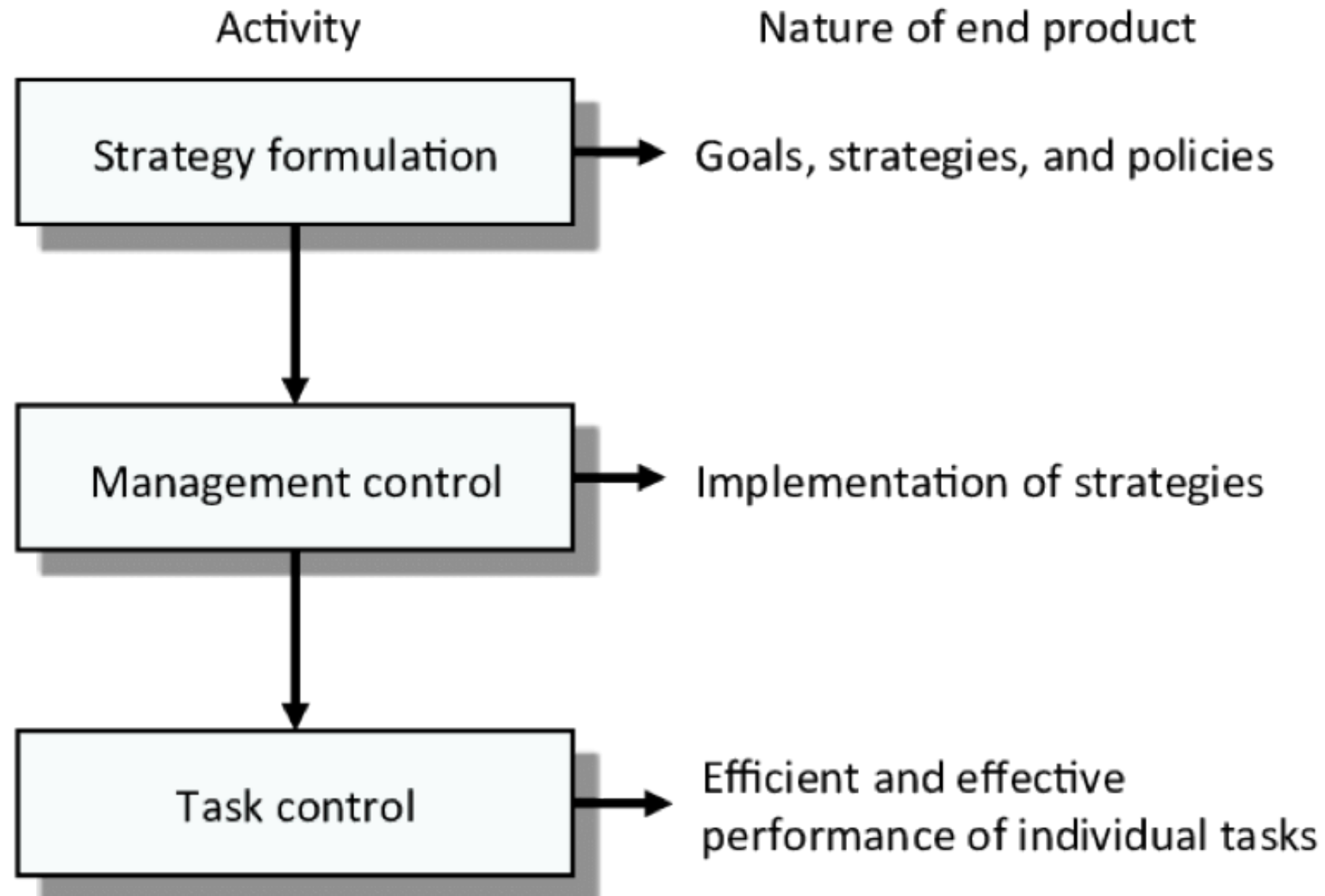
***“Management Control is the process by which managers influence other members of the organization to implement the organization’s strategies.”***

*(Anthony, 1988, p. 10)*

Merchant held the view that:

***“Control is seen as having one basic function: to help ensure the proper behaviours of the people in the organization. These behaviours should be consistent with the organization’s strategy, if one exists, which, in turn, should have been selected as the best path to take toward achievement of the organization’s objectives.”*** *(Merchant 1985, p. 4).*

# PLANNING AND CONTROL SYSTEMS: A FRAMEWORK FOR ANALYSIS



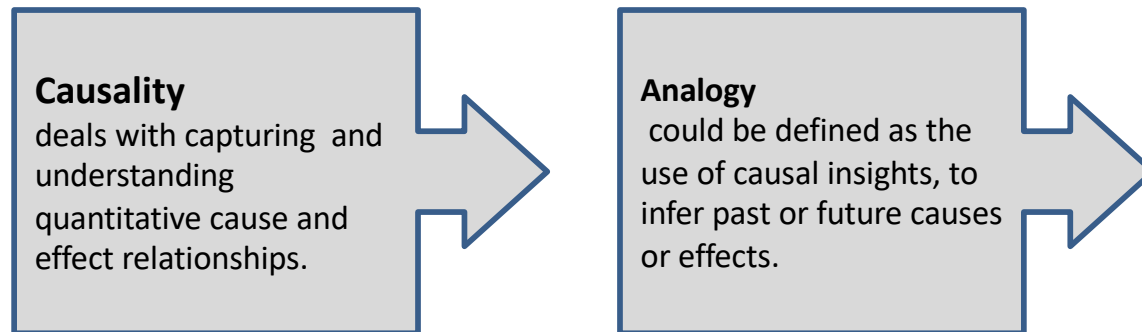
# ALIGNMENT OF BEHAVIORS



# PURPOSES OF MEASUREMENT

What are the purposes of measurement applied to management?

- To understand the **real causes** of the value creation process.



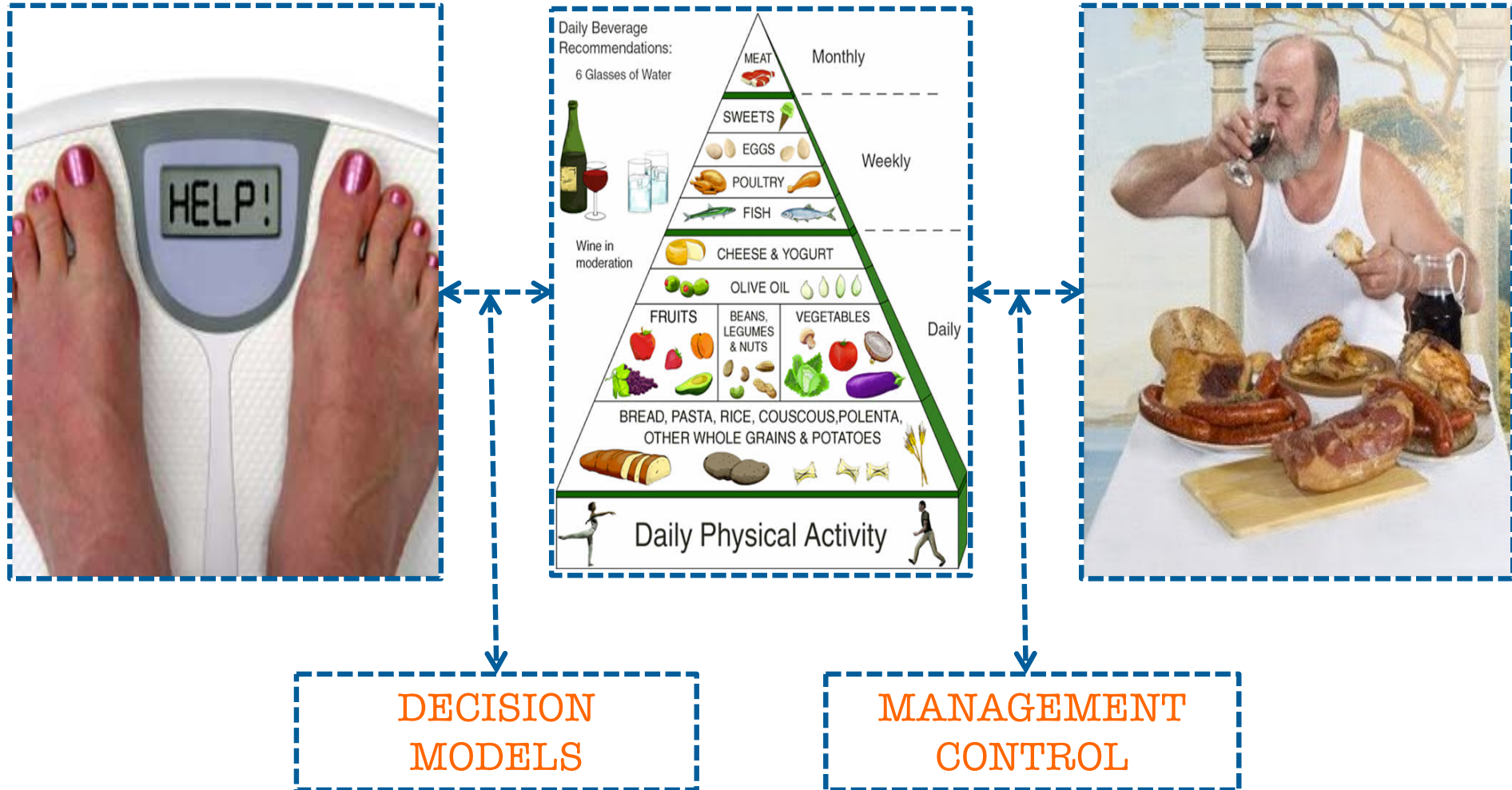
- To influence **behavior**.

Human beings adjust behavior based on the metrics they're held against. Anything you measure will impel a person to optimize his score on that metric. What you measure is what you'll get. Period.

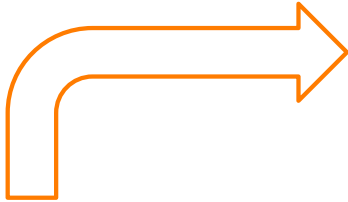
Dan Ariel



# ABILITY TO INDUCE ORGANIZATIONAL BEHAVIOR



# PERIODICITY OF THE ANALYSIS



## **COST & REVENUES ANALYSIS**

A set of logic, criteria, methods and techniques for the

- ✧ collection,
- ✧ classification,
- ✧ aggregation and
- ✧ attribution

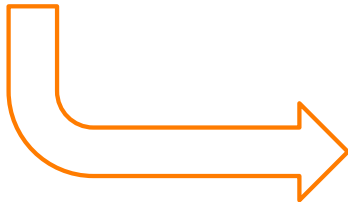
of **costs** and **revenues**

## **SYSTEMATIC AND CONSTANT INFORMATION FLOWS**

### **COST SYSTEMS**

Focused on cost-objects that are considered particularly relevant for day-by-day decisions and, therefore, that need constant monitoring

## **PRODUCTION OF "AD HOC" INFORMATION IN RELATION TO SPECIFIC DECISION MAKING**



### **ONE-OFF COST ANALYSIS**

Relating to specific cost-objects, from time to time different depending on the type of decision to be taken

## SOME TAKEAWAY POINTS FROM PART # 2

- ❑ According to Peter Drucker (who, as Mintzberg correctly points out, was the one who “put management on the map”) *measurement* is one of the five basic elements in the work of the manager.
- ❑ In the words of the great Scholar: *“The manager establishes targets and yardsticks—and few factors are as important to the performance of the organization and of every person in it. He or she sees to it that each person has measurements available that are focused on the performance of the whole organization and that, at the same time, focus on the work of the individual. The manager analyzes, appraises, and interprets performance. As in all other areas of this work, he or she communicates the meaning of the measurements and their findings to subordinates, superiors, and colleagues”.*
- ❑ Measuring, in management, is therefore an essential activity. However, Mintzberg reminds us quite correctly that a good manager must not become a prisoner of the measurement process nor forget to carefully consider so-called soft information. According to him: *“we have to cease being mesmerized by numbers and stop letting the hard information drive out the soft, instead combining both whenever possible”.*

## SOME TAKEAWAY POINTS FROM PART # 2

- ❑ Using again the metaphor of the F1 driver used in the classroom, we can say that having "under control" one's own vehicle implies, first of all, the ability to understand the existing situation, what works and what, instead, is causing problems or could cause them in the future. It also requires the ability to modify the existing situation in the desired direction.
- ❑ All of this requires skills, knowledge and abilities. It is not possible to keep under control a complex system (like an F1 car) if these characteristics are missing. It is not possible, therefore, to exercise a credible form of control if you come to exercise this task unprepared.
- ❑ Moreover, as pointed out during the lesson, true champions (and, in our case, true managers) do not limit themselves to seeking maximum performance in the short term (to win the race) but are able to constantly improve the “quality” and “performance” of the resource (the vehicle) entrusted to their care.

## SOME TAKEAWAY POINTS FROM PART # 2

- ❑ As Drucker makes clear, if measurement is one of the ways in which a manager seeks to influence the behaviour of others in the organization, this requires that *“he or she communicates the meaning of the measurements and their findings to subordinates, superiors, and colleagues”*. Objectives, in fact, are numbers with meaning.
- ❑ No one responds by changing their attitude if they are confronted with a number that is meaningless to them.
- ❑ But in order to be able to explain to others the reasons for selecting a particular metric, a particular cost figure, one must first understand them. In order to explain, one must first know.
- ❑ Measurement, if its goal is to change behaviour, is first and foremost a way of communicating. If you want to be a good manager, keep this in mind.