

# Future developments of Henri Coanda's scientific heritage in the field of economics, engineering and social sciences

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**Abstract:** *The work of the Romanian scientist Henri Coanda marked the crucial transition from the experimental scientific research to the industrial development of aeronautics. Based on his contribution over the years a series of developments in various branches of research have been made possible. The paper presents such possible developments in economics, engineering, including the technology of information and social sciences*

*Key Words:* Henri Coanda, scientific research, technological development aeronautics.

## 1. INTRODUCTION

This paper is part of the authors' new research on the ERP software and fiscal administration, including the correlation between the budget policies and the economic growth. Henri Coanda's work makes possible new ideas related to data processing, project management, technical and social sciences. The aviation and industrial development of aeronautics represents a basis for different developments in various fields. The intrinsic value of research and technological development of the aviation brings new arguments in favor of flat taxes, including the highly complex workloads.

## 2. DEVELOPMENTS IN THE FIELD OF DATA PROCESSING

Based on Henri Coanda's work, the following developments in IT and data processing are today possible and also necessary such as real-time data processing, the information replication technique in terms of the pursued processes' complexity, the process information storage and preservation technology, the concept of “ERP software platform”, the concept of “information technology procedure”, the concept of “distributed information system”.

1. The real-time data processing has become a severe restriction for the aviation in terms of technological advancement of the work done by scientist Henri Coanda. While for other areas the real-time data processing represents a performance target, for the aviation any design of data processing system shall start from the assumption of its ability to process the information in real time;
2. The information replication technique in terms of the pursued processes complexity has a high performance field validation – the civil and military aviation. A number of other

areas have benefited from developments in the replication of information but the core of the research requirements in this direction is represented by the applications in aviation.

3. The process information storage and preservation technology had a wide and immediate scope in the air disaster events;
4. The concept of “ERP software platform” (Enterprise Resource Planning) provides the development of the fundamental research at a concept level allowing progress dedicated applications depending on the nature of the technological processes; this concept makes possible the study of the objectives and functions of various categories of modules required in accordance with the available infrastructure. The aviation has a number of features determining the development of an aviation software platform, a concept that also involves ways to integrate and use information under severe restrictions. This development of the software platform concept also allows the correlation between the IT solutions and a combination of functionality and performance. The ERP software development platform is used in the advanced processing and integrated analysis of large and very large volumes of data stored in data warehouses of projects with complex field of study. The aviation technology makes possible to integrate data from complex technologies with severe restrictions and information from databases.
5. Developing the concept of “information technology procedure” allows a simulation of a set of internal procedures for the advanced information technology systems, integrated with the companies system of procedures based on procedural modelling; the progress in aviation management can not be achieved outside the complex and reliable system of procedures; disasters are often due to system failure regarding procedures;
6. The concept of “distributed information system” studies the specific design of dynamical systems, like those in aviation, the performance characteristics and specific features of achievement since the early stages of analysis, design and implementation. This approach facilitates the application of modern management solutions for the aviation, including the target costing method of calculation. Aviation will increasingly require solutions and complex computer applications built into the technical system.

### **3. PROJECT MANAGEMENT**

Following developments in project management are today possible and necessary in developing the work of scientist Henri Coanda: the separation of information circuits from the decision-making ones, the importance of the resource time, the evolution of integrated management information systems, the dynamics of advanced database systems.

1. The separation of information circuits from the decision-making ones has a concrete and credible exemplification in the pilot-aircraft system;
2. The importance of the resource time in project management for handling aircrafts is a case study with developments in a still unsuspected area;
3. The evolution of integrated management information systems makes possible the establishment of objectives and specific features, of technical and functional characteristics, including needed technological support, ways of achievement and component module development opportunities.

4. The dynamics of advanced database systems allows the execution of advanced data models tested by knowledge based applications.

#### **4. TECHNICAL DEVELOPMENTS**

1. The evolution of the national aviation industry should no longer be overshadowed by the ideological component; starting from Henri Coanda we have an aviation technological tradition that we must not neglect any longer;
2. The work of scientist Henri Coanda can be put into the context of a series of bright ideas of Romanian technical thinking which may give an impulse to re-industrialize the country.

#### **5. SOCIAL SCIENCES**

1. Aviation, an area where Romania has its established and recognized priorities, should find a more prominent place in the national history;
2. Romania's aviation achievements despite the place and conditions they were obtained should not be neglected any longer; the victories of World War II are a continuation of the tradition started or raised to a new level by Henri Coanda. The battles in the Soviet space and the airspace battle in Ploiesti are moments on which we should refer to with pride.
3. The concept of terrorism must take into account the top position in the arsenal of military aviation in terms of concentrating resources and technological innovation. From this perspective will be treated as terrorism, at least for the interpretation of historical events, all actions taken against civilian population by air force. Considering this interpretation, countries such as Romania were subjects of terrorist actions in the Second World War due to allied air force raids including against civilians.

#### **6. NEW APPROACHES IN THE FISCAL ADMINISTRATION AND IN THE CORRELATION BUDGET POLICIES – ECONOMIC GROWTH**

The aviation's entering in the technological development stage based on the impulse given by the scientist Henri Coanda led to new approaches in the fiscal administration and in the correlation between the budget policies and the economic growth: the ability to lead the economy of the aeronatic industry, the great capacity for dissemination of the research results, taking advantage of the thinking and of the military doctrine in the field of management and business, the focus on the labor use and mobility.

*The ability to drive the economy of the aeronatic industry* became an indisputable fact in the technology development phase of the aviation. The aeronatic industry has a great capacity to drive the development of many industries, which is an important factor of an economic growth in the broad sense. At the same time, the aeronatic industry has an additional driving coefficient for the economic sectors that have a high share of added value. This means that the aeronatic industry particularly stimulates an intensive economic growth. For these reasons an issue is raised on concentrating the budget resources to support

technological research and development. Many specialists, including the liberal economic thinking ones, consider the allocation of important public resources to the aeronautic industry or to the development of air transport appropriate. Anglo-Saxon countries known for their liberal fiscal policies have allocated by chance huge sums from the state for the development of the aeronautic and air transport industry, which has assured them a technical, scientific and economic progress.

Following the tests carried out by the scientist Henri Coanda the first steps have been taken towards proving the effectiveness of researches in the aeronautic industry. After Henri Coanda countries have begun to understand that top research in general, and research for the aeronautic industry in particular, are areas which deserve to have allocated funds. Those who did not understand it, have lost in the global economic competition and those who have taken this fact for granted reached the top in the global development hierarchy. For this reason each of Romania's initiatives to develop the aviation industry should be appreciated, both from the time of King Charles II and from the first stage of the Ceausescu regime (60's-70's).

Another feature of aviation and the aeronautic industry that became obvious after Henri Coanda is *the great capacity for dissemination of research results*. This conclusion is reached if we take into account the developments of the results originally intended for aviation to areas such as household appliances, home comfort, land transportation, consumer goods industry. In the current standards of the European Union the ability to disseminate research results is an essential parameter for accessing funds or for the career advancement of the personnel in research and higher education.

The special driving effect that the aeronautic industry and aviation holds plus the intrinsic value of research and technological development of these activities bring new arguments in favor of uniform taxation of labor, including that of high complexity. The flat tax income from work is seen very differently even by the supporters of the progressive overall tax system when reporting to the efforts of creativity posed by the specialized personnel's activity in aviation and aeronautics, as in other top areas of high complexity. The comparison made on the example of aviation and aeronautic industry between the input of technological innovation and the input of the repetitive salary or entrepreneurial activity leads to the conclusion that it is impossible to accept additional taxation of technological innovation in the progressive global system. Calculation of the cumulative effects regarding a national or regional savings level of the innovation work performed by specialists in aviation or aeronautics industry draws our attention to the need to concentrate the efforts of people with talent and creative or innovative ability for specialized activities and the disposal of fiscal administration requirements imposed for them by the global and progressive tax system.

The current phase of economics development helps exploiting the thinking and military doctrine in the field of management and business. After the exploitation in management and business of the ideas of Sun Tz and Napoleon Bonaparte, the transition from the technological development stage of aviation technology has made possible the assumption in the economic management of elements from the management strategy of aviation and aircraft. The administration and management of economic problems will become an activity that builds solutions from multiple research disciplines. For example the air battle of Britain in the years 1940-1941 brought among other news, another report from the members of society: a large number of people owe greatly to a few people. If we utilise this conclusion of the military aviation strategy in the economy field it results with need of people and organizations to focus their attention on the selection, recruitment, training and promotion of

elites. The battle for supremacy between countries and organizations is a battle of elites that can promote economic, technical, technological, scientific knowledge and behavioral progress. A reality of aviation helps us understand the economic reality around us.

Another feature of aviation management is *the focus on the exploitation of labor and mobility*. Using it into economy implies that the professional or entrepreneurial mobility and the strength of organizations be concomitantly taken into consideration through public and private policies. The experience of the Romanian transition with a focus on the mobility without force is worth to be taken into account.

The taking over of the aviation management experience in the post Henri Coanda era leads to a number of implications in the scientific research methodology at both the macro-economic and micro-economic level. The accuracy required in aviation management processes becomes thus a goal or at least an ideal target for the business process management conducted at any level.

First, the accuracy and precision defining startup and departure points in aviation management processes must be remarked. The advancements in geography had been filled out by the ones in topography, remote measurement systems, the mechanism of satellite observations, all leading to identifying the exact points of departure and startup. In economics a close take-over of this rigour would require a set of tools for defining the starting point or the original state. Actions are taken often without analyzing information that regularly reaches the current managers of economic processes. On the macro-economic plan we can illustrate the start of the privatization process (otherwise strictly necessary) without being taken into account the extensive studies on market goods (products or services) without estimating the human resources value or at least the cost of this key potential training development. In micro-economics, analysts still underestimate the value of informational value of accounting or statistics. Moreover, there is a rift between the specialists in macro-economics and those specialized in micro-economics, which culminates with the misunderstanding of the mutual specialized languages or with the ignorance of the list of specific working tools of each level in the organization. What would the aviation do if every field of expertise that helps identify the spatial of the departure or destination location used tools unfamiliar to the other fields of expertise?

## CONCLUSIONS

A series of developments in IT and data processing are today possible and necessary in continuing the work of scientist Henri Coanda: the real-time data processing, the information replication technique in terms of the pursued processes complexity, the process information storage and preservation technology, the concept of “ERP software platform”, the concept of “information technology procedure” and the concept of “distributed information system”.

The aviation's entry in the technology development phase based on the impulse given by the scientist Henri Coanda led to new approaches in the fiscal administration and in the correlation between the budget policies and the economic growth: the ability to drive the economy of the aeronatic industry, the great capacity for dissemination of research results, exploit the thinking and military doctrine in the field of management and business, the focus on the use of labor and mobility.

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