

Exmo. Senhor  
Professor João Luis Marques Pereira Monteiro  
Centro Algoritmi  
Universidade do Minho  
Campus de Azurém  
4800-058 Guimarães

0.10.1 / 8185 13 / 319 Lisboa, 01 de Março de 2004

**Assunto: Avaliação de Unidades de Investigação - 2002/2003**

Tendo sido concluído o processo de *Avaliação de Unidades de Investigação 2002/2003* de 24 áreas científicas, venho transmitir a apreciação e recomendações do Painel de Avaliação relativas à unidade dirigida por V. Exa, as quais se encontram transcritas no relatório anexo (*Panel Evaluation Report*).

Tratou-se de um processo complexo que contou com o bom acolhimento dos investigadores. Gostaria de agradecer o esforço que certamente foi feito para que as sessões de avaliação decorressem bem e fossem produtivas, especialmente a compreensão que todos demonstraram ao ajustarem as suas disponibilidades ao calendário de execução.

De acordo com a classificação atribuída, o financiamento plurianual para o triénio 2003-2005, será calculado por doutor elegível com base na tabela seguinte:

Excellent	4500 €
Very Good	4050 €
Good	2700 €
Fair	1125 €
Poor	não financiado

Os novos valores de financiamento por doutor elegível visam premiar as unidades com melhor desempenho e qualidade científica. Este financiamento poderá ainda ser reforçado com um montante adicional a definir, tendo em atenção as recomendações específicas do Painel de Avaliação e a classificação da unidade. Após definição destes montantes e da conclusão do processo de validação do número de doutores elegíveis, actualmente em curso com a inclusão das novas unidades, será comunicado em breve o montante global de financiamento plurianual atribuído à unidade para 2003-2005.

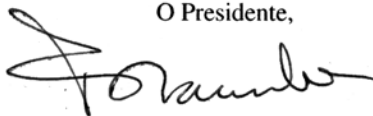
O coordenador da unidade terá a responsabilidade de alocação deste financiamento pelos diferentes projectos apresentados pela unidade, em resposta ao nosso ofício de 13/03/2003. No caso das novas unidades, a apresentação dos planos de actividade/orçamento em forma de projectos será solicitada após a comunicação do financiamento global.

No caso da sua unidade pretender contribuir para o relatório final com uma auto-apreciação, ou com um comentário ao relatório do Painel de Avaliação poderá fazê-lo, enviando-nos um texto que não poderá exceder 400 palavras. Este texto deverá ser enviado para a Coordenação da Avaliação até ao final de Março, usando o endereço de email:

**avaliacao\_2002@fct.mces.pt**

Com os melhores cumprimentos,

O Presidente,



Fernando Ramôa Ribeiro

RESEARCH UNIT NUMBER 13 / 319

COORDINATOR João Luis Marques Pereira Monteiro

RESEARCH UNIT NAME Centro Algoritmi  
Universidade do Minho

Electrical and Computer Engineering

PANEL MEMBERS Luigia Carlucci Aiello, Tariq Durrani, Franco Maloberti, Moira C. Norrie, David Padua, Janak H. Patel, Christopher Rose, José Manuel Fonseca de Moura (Coordinator)

Overall Research Unit Quality

☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor

Comments and recommendations regarding the Unit activities, research orientation, organization and application of funds

**Electrical and Computer Engineering - 1** *Very Good*

Overall Research Unity Quality (5-4.5-4-4-3.5-3.5-3.5-3.5)

The R&D activity of the Center Algoritmi of the University of Minho is distinguished into four groups:

- Electronics and Control
- System Engineering
- Information Systems and
- Communication and Computer Engineering

For various reasons the "old" Algoritmi proposed to divide itself into two Units, giving rise to a new autonomous center covering the last discipline under the name CCCT (Center for Computer Science and Technologies). The activity in the latter area is assessed separately with a different Unit number (752).

Since Algoritmi has grown substantially in the last 4 years, and because of the geographical distribution of the unit it makes sense to separate the center in two as they proposed. Nevertheless, some mechanism should be devised to help cooperation between the two units and avoid duplication/fragmentation of the activities.

The remaining of this report refers to the evaluation of the groups of the Algoritmi Center.

- Management (3.5)

The unit has an enthusiastic Director, Joao Monteiro, although his presentation could have been more effective (too many slides, and no synthesis) in giving the panel a fundamental understanding of the bright and weak points of the Unit. The panel encourages Monteiro in putting efforts in determining a high level vision for his organization, showing the linkages and synergies between groups and articulating the strengths of the lab to interested parties. The task is not simple, however, the Director and the Unit do have in place procedures to help give scientific direction, manage and evaluate the research activity, such as the fact that they set aside 40% of the basic funding and of what they receive from the University to encourage and support with seed funding new activities and interactions among groups. Also the University forces the researchers to a bi-annual evaluation (2 pages of accomplishments).

- Publications (3.5)

The scientific production of the Center is good with examples of excellence. The average productivity of researchers is at a good level. However, out of 38 Ph.D.s 7 researchers have an insufficient publication rate. While some groups are producing good quality publications, there remain areas where the quantity and quality of publications are weak. There needs to be an internal evaluation procedure to identify these areas and act on areas of weakness.

Two of the young researchers (Correia and Bicho) merit a special mention for the quantity and/or quality of publications.

- Individual Research Groups

Electronics and Control (5): the work is very good across this area. The work on knitting and sewing, electronic tailor is very good. However, they should worry about who their target audience is since textile manufacture seems to be moving ever more away from western countries. The micro-system work (Higino Correia) is excellent. Namely, the work on micro-spectrometer and lab-on-chip can determine useful industrial fall-out. It is recommended continuing the support to the area and to expand the international links. The work of Bicho is excellent and well articulated. The work on robotic soccer did not show clearly if the contribution was more on the HW side, i.e., the robotic platform, or the learning algorithms. As a side note, the effort on teams of soccer playing robots has the potential to both attract the best students and researchers and to advance the field as well. Interesting is the work on nonlinear attractive dynamics. Good and well defined the research on power electronics.

Communications and Informatics (3): this work was good across the area. The work on automatic programming tool for microprocessors and DSPs seemed to be of interest but the student had a hard time to state the main contribution of the work. Other work on networking was uneven in quality, some very good, some weak.

Systems Engineering (5): this is an excellent research group with two excellent subgroups on cutting and packing (Valerio de Carvalho) on semi-infinite programming, and large scale integer programming. (Fernandes, Vaz). The contributions to optimization methods including integer programming theory and software tool kits are at world-class level. However, the group should target the highest quality journals and conferences to tell their (extremely good) story more widely and obtain the recognition they deserve in the OR community. Besides their theoretical work, the group has several attempts to transition their technology, for example, the scheduling of operations in automated warehouses jointly with Efaced.

Information Systems (3): The activities of the Information Systems group is split between the area of Management Information Systems and Information System technologies. This leads to certain problems of positioning of the group in terms of whether it should be more closely affiliated with the management department or the computer science department. This problem of positioning also causes certain problems in terms of funding acquisition.

Given the size of the current department, it would be better for the group to choose whether they should focus on one or other area, and seek to align themselves more closely with either management or computer science accordingly. Alternatively, the department needs to expand in order to have critical mass in both areas and be an independent unit. A concern is that, since the more senior members of the group are in the management information systems area, there may be an automatic tendency for them to pull the department towards the management area, without consideration for the development of more junior researchers with very promising work in technical areas. In fact, in terms of research quality and international visibility, some of this work is likely to have most impact in the future. At the same time, the various projects in the areas of mobile systems and context-awareness need to be consolidated to ensure maximal impact of results and exploitation of software developed as general research infrastructure for the group

### - Technology Transfer

The strategy described in the Monteiro's presentation shows that the unit divides the R&D activity according to two basic guidelines: doing basic research for creating a solid knowledge background and applying basic concepts for the development of products and systems. The second guideline leading to the support of interdisciplinary projects and establishing links with external institutions. It is recommended to keep a proper balance between basic and applied activity and not to put an exaggerated emphasis on the direct industrial exploitation of results.

### - Education

The panel feels important to introduce more activities targeting cross fertilization issues. Among them seminar series, visitor programs and internal workshops.

### - Funding

The level of funding from projects is reasonable considering the particular period of economic downturn.