

INESC-PORTO Feedback

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Strong Points

- INESC-Porto LA has matured substantially since the last visit!

“It is solving real world problems that do not respect the boundaries of academic disciplines”.

Strong Points

- People – vibrant young researchers
- Management + Support Services
 - Low administrative overhead
- Stable Funding
 - Very Good multiplicative factor of base funding
- Improved International Visibility
 - Attracted international scholars, Ph.D. students
 - Reached international markets
- Improved scientific productivity (5 fold while 2x researchers)
- Several exciting cutting edge research projects
- Established a successful technology transfer infrastructure
 - 8 startups

Weak Points

- Lack of prominence of vision, strategy and goals
- Uneven quality of research. Some labs need:
 - More (new) focus+ critical mass
 - Assessment of strategic goals
- Units are becoming silos!
- No structural approach:
 - To exploit diversity of expertise
 - To manage maturity of areas
 - To refresh units management
- External visibility can still be improved
- Enhance outreach to potential customers

Recommendations 1

- Create a clear picture for the INESC Porto LA
 - Vision (what will INESC PORTO be in the future)
 - Mission (what is the purpose of INESC)
 - Goals (how to accomplish the mission)
- We believe that the “From Knowledge Production to Science Based Innovation” is the right motto.
- But the story is not told anywhere,... create an exciting message!

Recommendations 2

- Understand better relationship among units to improve effectiveness and emphasize agility.
 - Evaluate and promote cross unit dynamics
 - Develop criteria to create, modify and/or dismantle units
- Identify institute-wide technical challenges to exploit the full potential of INESC (e.g. smart grids).

Recommendations 3

- Integration of LIAAD and CRACS should be an Institute wide effort.
- INESC Porto should engage Industrial /Service/ Community representatives
- Continue to increase archival journal publications

Recommendations 4

- Raise the profile of INESC achievements internally and externally
 - e.g. best (student / senior) papers, INESC Porto project award etc.
- Create regular institute (lab)-wide seminars
 - Internal + Distinguished external lecturers
- Demonstrate more clearly how unit goals contribute to INESC strategy

Unit Specific Recommendations: Telecommunications and Multimedia

Overarching Observations:

- The Unit is comprised of disparate sub-areas of activity
- It is clearly organised in terms of a layerer model of telecommunications :
 - Physical (Optical and electronics technology)
 - Network (Mobile and wireless, Internet Architectures)
 - Services/Applications (Multimedia)
- However, there is limited interactions between these such that the benefits of synergy are not being realised
- Consider integrative projects to exploit complementary technical capabilities

Unit Specific Recommendations: Telecommunications and Multimedia

- Multimedia Technologies and Systems
 - The area has a good command of the relevant technologies
 - However, some of the technologies are fast maturing
 - To enhance relevance, more attention should be placed in designing solutions based on requirements from (potential) customers

Unit Specific Recommendations: Telecommunications and Multimedia

- Wireless and mobile networks
 - The area has identified real applications on mobile and reconfigurable networks
 - Integrating results of some projects could significantly add value

Unit Specific Recommendations: Telecommunications and Multimedia

■ Optical and Electronics Technologies

- Wide range of disparate topics, encompassing reconfigurable digital electronics, microwave electronics and optical systems
- There is good work being undertaken at the level of individual activities, with able students and evidence of fruitful international collaborations
- However, the scale of individual activities risks being sub-critical and the scope for synergy between the activities is not clear

Unit Specific Recommendations: Telecommunications and Multimedia

- Internet Architectures and Networking
 - This is a very recent new activity within UTM
 - A clear mission and well defined objectives
 - Good national and international links, both academic and industrial
 - A good pattern of early achievements
 - A well-articulated vision of the future
 - Clearly identified measures of success

Unit Specific Recommendations

■ Power Systems

- Identify the key contributions to establish an expertise brand (for presentation of the achievements of the Unit)
- Establish a mechanism to backup and extend Unit leadership.
- Define an attractive career for the scientific research staff within INESC that allows the creation of new positions for brilliant younger researchers (i.e. research professors).
- Expand post-doc and graduate international programs in collaboration with other institutions to promote exchange of scientific research staff and international projects.
- Define a strategic expansion plan for the Unit.
- Look for new, more stable funding sources to partially cover fixed costs of new scientific staff positions.

Unit Specific Recommendations

■ Power Systems

- Create an environment for seeking international recognition (i.e. IEEE Fellows)
- Good opportunity to contribute to define a flagship INESC research area around Smart grids
- Define a target in the expected number of papers in peer review journals by PhD students
- Present research work as a composite whole (i.e. branding yourself)

Unit Specific Recommendations

- Manufacturing Systems Engineering
 - Clear academic credentials (combinatorial and meta heuristics)
 - Unit is not coherent (social networks?).
 - Unclear objectives for sustained growth as a Unit (only discipline based goals).
 - Priority should be to redefine boundaries.

Unit Specific Recommendations

■ Optoelectronics and Electronic Systems

Observation: This unit has successfully incorporated the recommendations of Advisory Board and has clear strategic plan for the next 4 years

- Consider exploiting unit's strengths in thin films, micro-fabrications, and sensors in the area of "Energy" in collaboration with other units at INESC.
- Consider establishing organized relations with other research centres in the areas of life sciences and health to further explore the applications of technologies developed in the unit
- Given the significant investments made on micro-fabrication infrastructures, it is appropriate to explore the use of this facility in other disciplines through collaborative work.

Unit Specific Recommendations

- Innovation and Technology Transfer
 - An important and appropriate new development
 - Actions include:
 - Service to other units of INESC
 - Engagement with companies on taking value from R&D
 - 'Academic' Research on Technology Transfer and Innovation
 - The 'service' and 'research' elements are different in character; Consider how they contribute to the overall INESC mission

Unit Specific Recommendations

- Information and Communication Systems
 - Keep the excellent industrial and services activity
 - Keep narrowing down the scope of research activities: only 1 per theme (SE , GIS) high level publication objective
 - Unit should not continue in the present form and INESC LA should prepare a plan for change in six months.
 - Priority on cooperation with other units: Power systems, MSE, Telecom and multimedia, LIAAD, CRACS.

LIAAD-CRACS-INESC

■ Great potential/opportunity

■ Challenges

- Clearly defined vision, mission and goals
- Operational model
 - Only administrative convenience or
 - Also enabling joint work and synergies
 - Overcome geographical distance? Reconcile cultures? Incentivize collaborations? Topical reorganization?

■ Dangers

- Proliferation of thin efforts
- Incompatible models and/or unhealthy competition

Center for Research in Advanced Comp. Sys. (CRACS)

- Identify core competencies and their evolution into new timely areas of research
 - E.g. from languages to sensor networks
- Manage resource limitations (human, etc) through partnerships
 - To quickly progress in chosen new areas (e.g. bioinformatics, data mining, social nets, etc)
 - To create critical mass and avoid thin efforts
 - Avoid redundant work
 - Specifically with INESC and LIAAD
- Identify vision, mission and goals in LA context
 - From knowledge production to science-based innovation

LIAAD

- Research is good but broad in terms of theoretical models and applications
- “Partner in associated lab” model risks achieving hardly any real benefits (no shared coffee machine ...)
- Too broad to be INESC unit
- Try to establish new INESC units that are more focused and include elements from LIAAD, CRACS and INESC.

Thank you for the hospitality

Very interesting 2 days!