

Performance Indicators for Polytechnic Higher Education Institutions: Applied Research, Cultural Creation and Societal Impact

**EURASHE Seminar' Smart solutions for the regions:
UAS applied R&I increasing regional cooperation'**

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Agenda

- ▶ **The research project rational**
- ▶ **The methodological path**
- ▶ **The final list of consensual performance indicators**
- ▶ **The applicability and feasibility of the performance indicators – the views of four PHEIs**
- ▶ **Possible practical uses of the proposed performance measurement framework**
- ▶ **Concluding remarks**

The research project rationale

In 2014, the Portuguese government reintroduced the discussion around HEIs performance assessment based on auditable indicators, assumed as “quality factors”.

This discussion was linked to the idea of introducing changes in the way public higher education was financed.

The research project rational

In order to review the financing formula/model for the specific case of the PHEIs, the government was especially interested in identifying auditable indicators for :

“knowledge transfer: assessed by the cultural, artistic, economic and social impact of the knowledge created, nationally and internationally, and (...) its contribution for regional development.”

FCT (2014). Call for research projects on the development and validation of performance indicators for knowledge production, transfer and diffusion in Portuguese PHEIs.

The research project rationale (the FCT call perspective)

- To develop performance indicators for the PHEIs, capable of measuring ***knowledge production, transfer and diffusion*** and, simultaneously, to allow assessing ***applied research and cultural creation activities and their impact for the region***;
- **Indicators different** from the ones **usually used to value** the scientific outputs of universities;
- **Indicators** that, ideally, would help to **strengthen the specific and differentiated character** of polytechnic higher education.

The research project rationale (the project team perspective)

Interest in...

- ... stabilising the **key dimensions of PHEIs areas of action** that complement their main mission (understood as teaching and learning);
- ... **identifying indicators** capable of facilitating organisational **performance assessment** processes and the definition of **improvement plans**;
- ... defining a performance indicators' proposal that would guarantee their **auditability** and data **comparability**.

The research project rational (the project team perspective)

Performance Indicators Characteristics

- **Relevance:** relevant and adequate to measure the PHEI performance in relation to the dimension under analysis;
- **Clarity:** understood by everyone;
- **Measurement:** able to be measured;
- **Traceability:** auditable, being possible to certify its non-manipulation and non-adulteration;
- **Aggregation/ Disaggregation:** able to be aggregated or disaggregated, from the individual level (teacher) till the PHEI level;
- **Easiness of collection:** easy to collect the data to calculate the indicator, not only in terms of time but also considering other needed resources.

The methodological path

Phase I

Document Analysis

- Analysis of existent work about **HEIs performance assessment**
- Assure that the PIs to build would relate to **others already existent**
- Development of the **theoretical framework** behind the proposed set of PIs

Phase II

Semi-structured interviews and focus groups

- Understand **PHEIs representatives' positions** regarding the proposed dimensions and PIs
- Look for **consensus and tensions** regarding the adequate way to measure **institutional performance**
- Discuss with the **project's consultants** the different PIs options

The methodological path

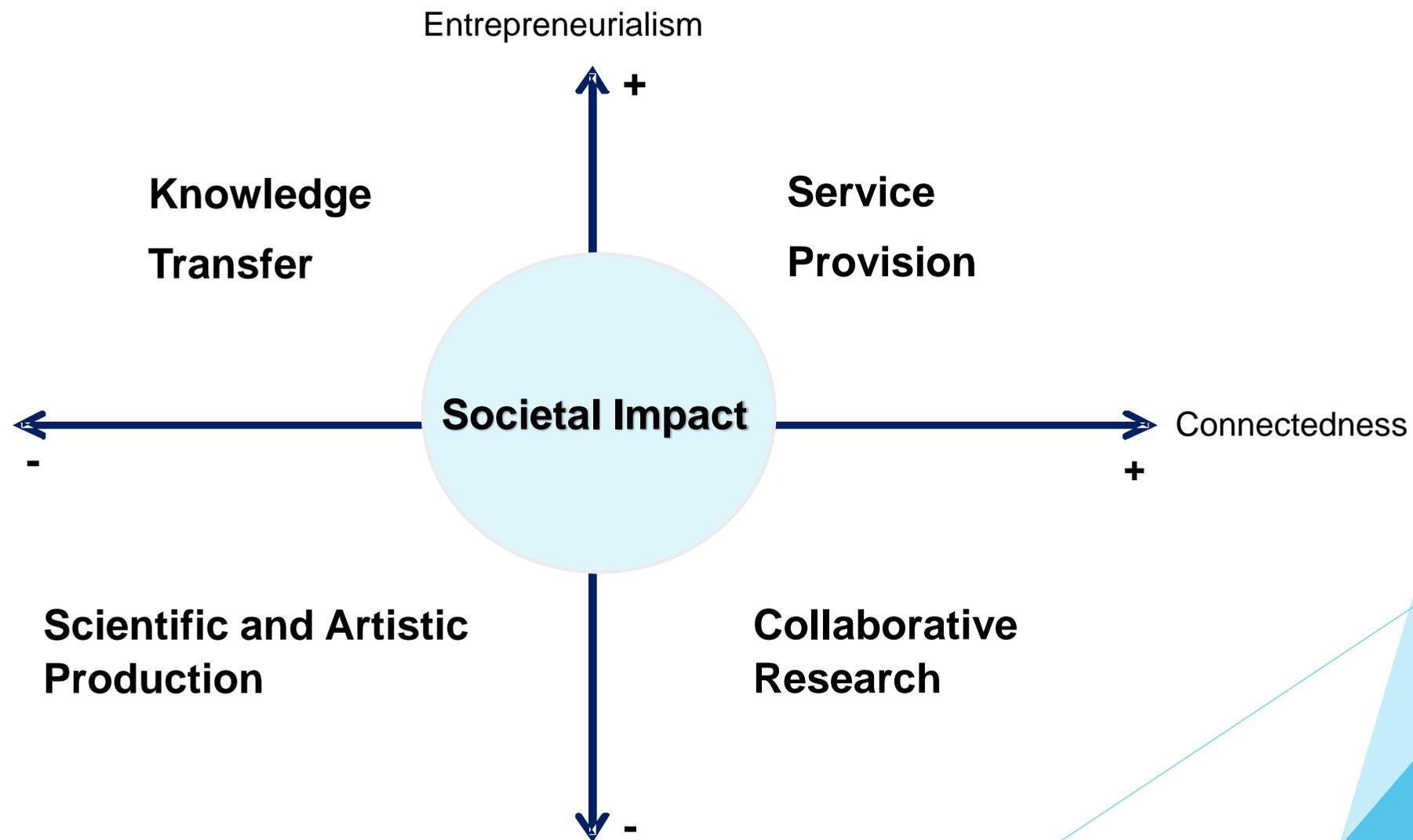
- ▶ Portugal - binary higher education system:
 - ▶ Universities: legally expected to perform **fundamental research**;
 - ▶ Polytechnics: legally expected to perform **applied research**.
- ▶ But **how different are research activities** conducted in **polytechnics** and in **universities**? Should these be **assessed differently**?
- ▶ Do the usual PIs defined for HE reflect the specificities of PHEIs, allowing for their **positioning at research level in the HE landscape**?
- ▶ How to **assess research** in PHEIs?

The methodological path

- ▶ The different types of research and cultural activities existent in PHEIs were categorized according to two axes:
 - ▶ The vertical axis classifies research activities according to their **degree of commercialization**, which we call the **Entrepreneurialism Axis**.
 - ▶ The horizontal axis classifies research activities according to their **degree of partnership** between the academic world and the community, which we call the **Connectedness Axis**.
- ▶ **PIs were assigned to each of the groups** labelled based on their position in these two axes.

The methodological path

Dimensions of analysis for organizing research and cultural activities in PHEIs and their societal impact



The methodological path

- ▶ **“Scientific and Artistic Production”** refers to research activities with low potential of connectedness and entrepreneurialism, **e.g. scientific publications.**
- ▶ **“Knowledge Transfer”** refers to research activities that involve an effort of HEIs to commercialize its knowledge, but with low connectedness - no involvement in terms of the inputs other than the HEIs own resources, **e.g. patents or start-ups.**
- ▶ **“Service Provision”** consists of research activities with high connectedness -commercialization of the existing stock of knowledge, **e.g. consultancy services.**
- ▶ **“Collaborative Research”** includes research which is developed with non-academic partners – hence the high connectedness – with the output not necessarily having commercial purposes.
- ▶ **“Societal Impact”** includes the impact that the research activities have at the social and economic level of the region that the specific HEIs are inserted in.

The methodological path

Phase III

● **Triangulation
Phases I and II**
Analysis and
consensus building
within the research
team around a final
list of 29 PIs

Phase IV

● **e-Delphi**
Final validation of
the analysis
dimensions and PIs
through e-Delphi
(public and private
PHEIs'
representatives)

Phase V

● **Views of 4 PHEIs**
The final list of 23
PIs was tested for
applicability and
feasibility in 4
PHEIs

The final list of consensual PIs

▶ For each PI...

- ▶ Designation
- ▶ Explanation
- ▶ Calculation formula
- ▶ Data sources

Dimensions	Indicators
Service Provision	Percentage of service provision revenue
	Contract revenue of service provision per full-time equivalent academic
Scientific and Artistic Production	Percentage of research revenue
	Research intensity per full-time equivalent academic and non-academic
	Peer reviewed scientific production per full-time equivalent academic
	Artistic production per full-time equivalent academic
	Scientific production impact per full-time equivalent academic
	Own revenues for academic research per full-time equivalent academic
	Academics integrated in research centres that have been evaluated by FCT

The final list of consensual PIs

▶ For each PI...

- ▶ Designation
- ▶ Explanation
- ▶ Calculation formula
- ▶ Data sources

Dimensions	Indicators
Collaborative Research	Percentage of revenue for collaborative research
	Co-patents per PHEI
	Scientific production with non-academic partners, per full-time equivalent academic
	Artistic production with non-academic partners, per full-time equivalent academic
	Overall volume of R&D funding for collaborative research with non-academic partners, per full-time equivalent academic
	Post-graduate students integrated in collaborative research activities developed with non-academic partners
Knowledge Transfer	Dynamic entrepreneurial
	Patents per PHEI
	Royalties and licence agreements revenue per full-time equivalent academic

The final list of consensual PIs

▶ For each PI...

▶ Designation

▶ Explanation

▶ Calculation formula

▶ Data sources

Dimensions	Indicators
Societal Impact	Contribution to active population qualification of the region
	Contribution to R&D of the region
	Contribution to R&D of the region (moving average)
	Contribution to employability of young graduates of the region
	Contribution to resident population qualification per region
	Attractiveness of young population for the region
	Capacity for renewal/requalification of employed population
	Human capital fixation capacity in the region
	Business practices and graduates job placement
	Cultural dynamic impact
	Contribution for social dynamic

PIs applicability and feasibility

- the views of 4 PHEIs

- ▶ **4 PHEIs** with different organisational characteristics (public and private; specialised and comprehensive; non-integrated schools and polytechnic institutes; located in different regions; and with different numbers of students).
- ▶ **Goals:**
 - to check for the **real possibilities of calculating** the PIs
 - **qualitative assessment** of the dimensions and PIs relevance
 - considerations about the **possibilities of using** the proposed set of PIs

PIs applicability and feasibility - the views of 4 PHEIs

Main Results

- ▶ **PIs are feasible** and it is **relatively easy to collect the data** needed to calculate them; less easiness for the Societal Impact PIs (namely concerning employability data)
- ▶ Some suggestions regarding the need for **language adjustments** in order to make more clear the type of data needed
- ▶ Possible to identify **different profiles among the 4 PHEIs** in relation to the five dimensions
- ▶ **The proposed framework** (dimensions and PIs) is **relevant** as a **performance monitoring and management tool**
- ▶ Its use is **arguable** in any **financing formula** (some of the variables are not controllable or controlled by the PHEIs)

PIs applicability and feasibility - the views of 4 PHEIs

Main Results

- ▶ Using only the number of papers published in *Scopus* is **problematic** because it leaves aside a significant number of other relevant scientific outputs
 - ▶ **broadening the scope**, through the inclusion of papers published in other indexed data bases, as well as books and chapters from scientific repositories?
- ▶ Artistic Outputs– **how to ‘weight’ what is taken into account?**
 - ▶ **relevance** (international; national; local); **critics acknowledgement; prizes**
 - ▶ introduction of an **assessment grid** allowing **weighting** the outputs’ numbers by their **quality**

PIs applicability and feasibility - the views of 4 PHEIs

Main Results

- ▶ PIs have an **excessive focus on self-financing**
 - ▶ How to **include the activities** that do not generate money but have a significant relevance?
 - ▶ **Danger of deviation from the public mission** (e.g. teaching vs. training) in a context of teaching duties overload
 - ▶ **Lack of autonomy** to strategically allocate own resources
- ▶ The **NUT III** as the geographical indexation region may be a **limitation** regarding the PHEIs societal impact
 - ▶ **broadening of scope** to include the NUT II and/or NUT I?
 - ▶ other options (?)

PIs applicability and feasibility - the views of 4 PHEIs

Main Results

- ▶ The PIs proposal **may be used** as:
 - ▶ a basis to design and create **auditable databases**
 - ▶ a stimulus to PHEIs to start **monitoring in a systematic, representative and effective way** aspects that are crucial for their functioning
- ▶ The PIs proposal should be used as a **management tool**: definition of each **PHEI actual positioning** and a basis to define improvement actions for achieving a **better future positioning**
- ▶ The **scientific areas** need to be taken into account
- ▶ The defined PIs respect fundamental criteria for an adequate performance assessment, namely **auditability** and **comparability**

Possible uses of the proposed performance measurement framework

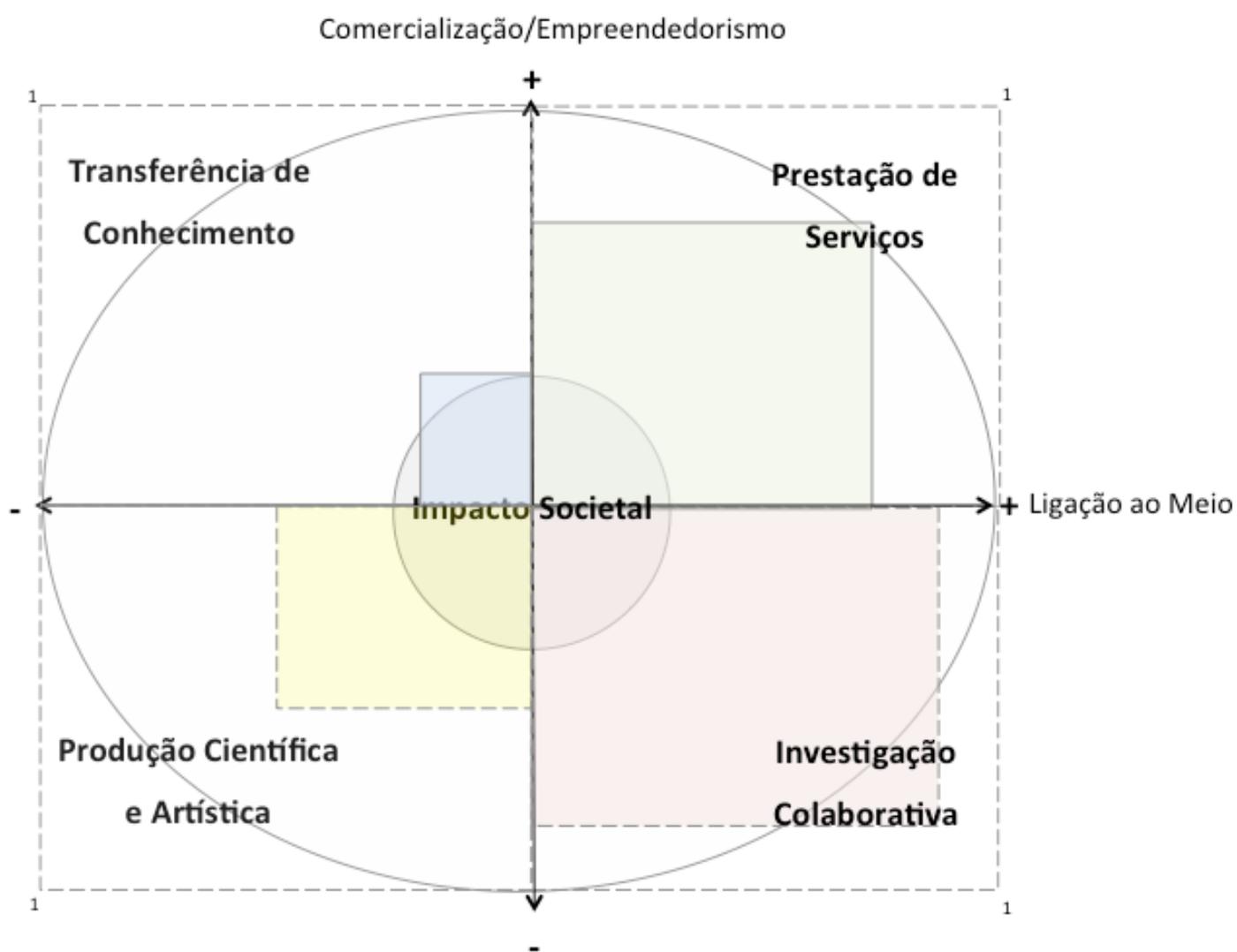
- ▶ **A3ES** (internal quality assurance systems and external accreditation/evaluation)
- ▶ Contracts with the **Ministry**
- ▶ **Metrics** to assume/adapt in:
 - ▶ teaching staff **appraisal systems**
 - ▶ **performance assessments**
 - ▶ institutional **strategic plans/activities plans/activities reports**

Possible uses of the proposed performance measurement framework

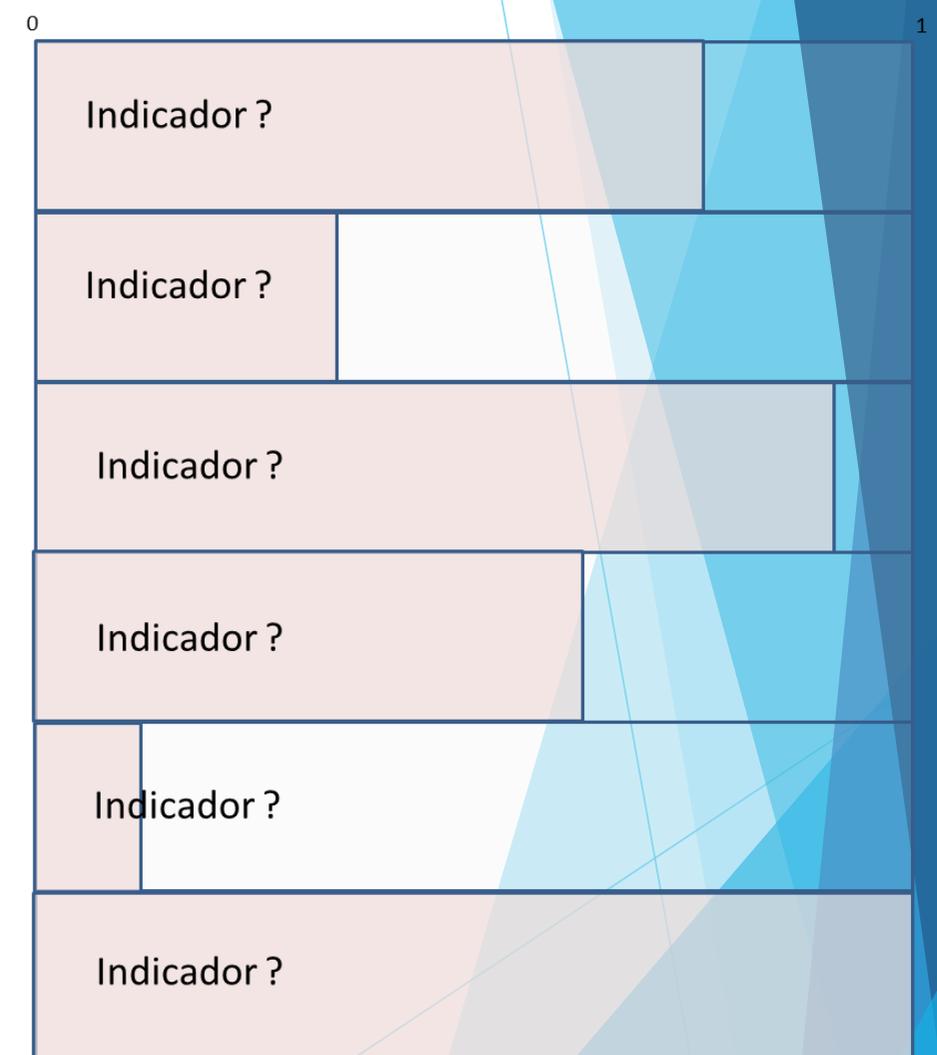
But... essentially as a framework for PHEIs **strategic positioning**

- Portuguese PHEIs have **different profiles**: size; curricular offer; link with the region.
- The framework can be used as a way to respect, identify and promote the different PHEIs profiles = promotion of the **diversity of institutional missions**
- The framework can help PHEIs to **reinforce their strategic positioning** within the HE system
- The idea is to provide a **benchmarking instrument** sufficiently flexible to accommodate different institutional missions

Possible uses of the proposed performance measurement framework

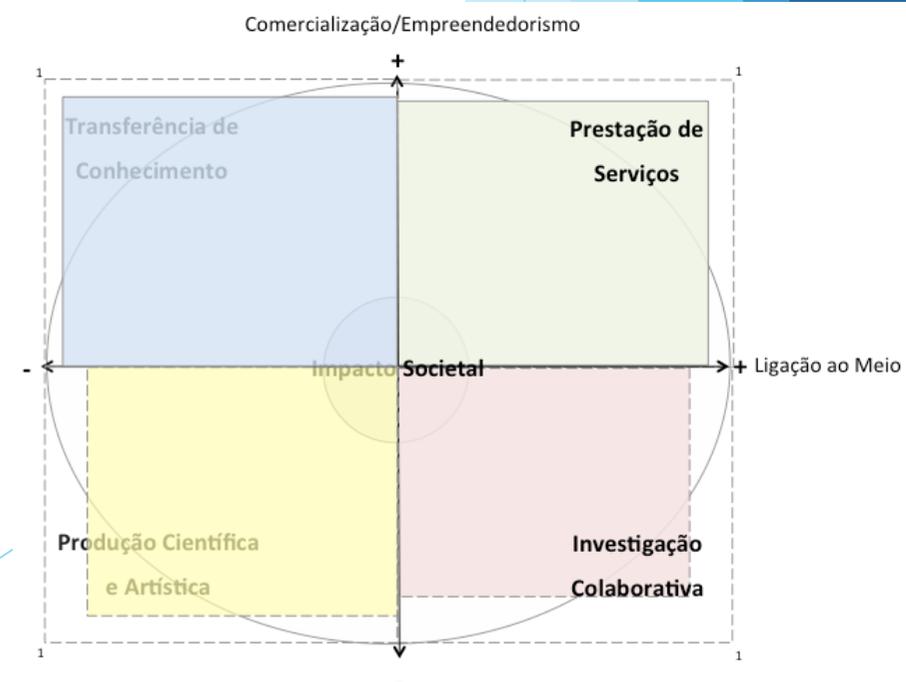
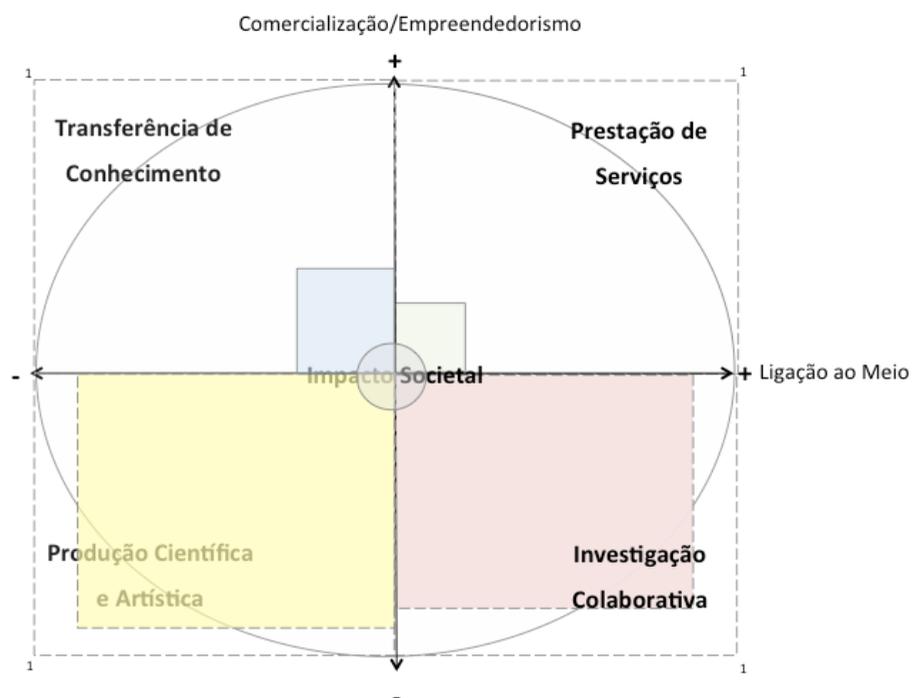
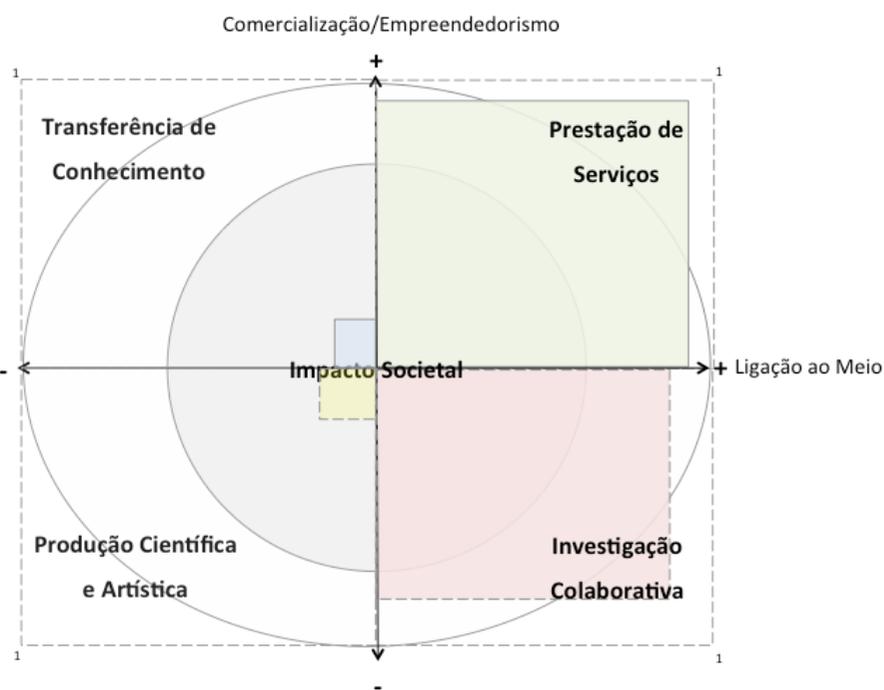


Scores by PI/Dimension



Possible uses of the proposed performance measurement framework

The framework should be capable of evidencing the existence of different institutional profiles...



Concluding Remarks

Limitations and Further Work...

- **Scientific areas** -> have to be taken into account otherwise the effort to measure the diversity between different institutions may be in danger -> different scientific areas may perform better in a certain dimension
- **The region** -> the link to the region may allow a better “natural” capacity to achieve a higher performance from a certain region (size, richness, other HEIs presence/external actors)
- **Adaptation to universities** -> the discussion can be broadened to think about the possibilities of using the framework also in universities

Concluding Remarks

- **Defining a research profile for PHEIs** based on the fundamental vs applied divide can be **problematic**
- The **activities** performed by PHEIs in **connection with the environment** need to be **recognised**: accommodate different institutional missions within the HE system seems to be the better option
- **The proposed framework intends to give more visibility to these activities!**
 - accommodating different strategic positioning, allowing each PHEI to reflect about its actual position in the system based on harmonised information;

Concluding Remarks

One final remark...

The performance management of the applied research and cultural creation activities, and their societal impact, **should not be based solely in a performance measurement framework.** On the contrary, such a framework should be used to **inform decision making** but always in **conjunction with other instruments**, including of a more **qualitative nature.**

Research Team

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