



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

Strengthening Ties Between Doctoral Programs and Society: A Driver of Innovation

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Outline

- The Role of Doctoral Education.
- Designing a PhD Program Aligned with Societal Needs
- Training through Cross-Sector Internships
- Collaborative Research Projects
- Recruitment and Talent Attraction
- Conclusion



The Role of Doctoral Education

- Historically, the main purpose of the Doctorate has been **training for university research and teaching**, but this scenario has changed.
- The **number of PhD students** has been **growing** everywhere: ~ 800 new yearly enrollments at the University of Bologna, with a faculty staff of 3.500 professors and researchers.
- Doctoral education must increasingly equip PhD candidates with the **skills** needed to pursue **highly innovative career paths beyond academia**.

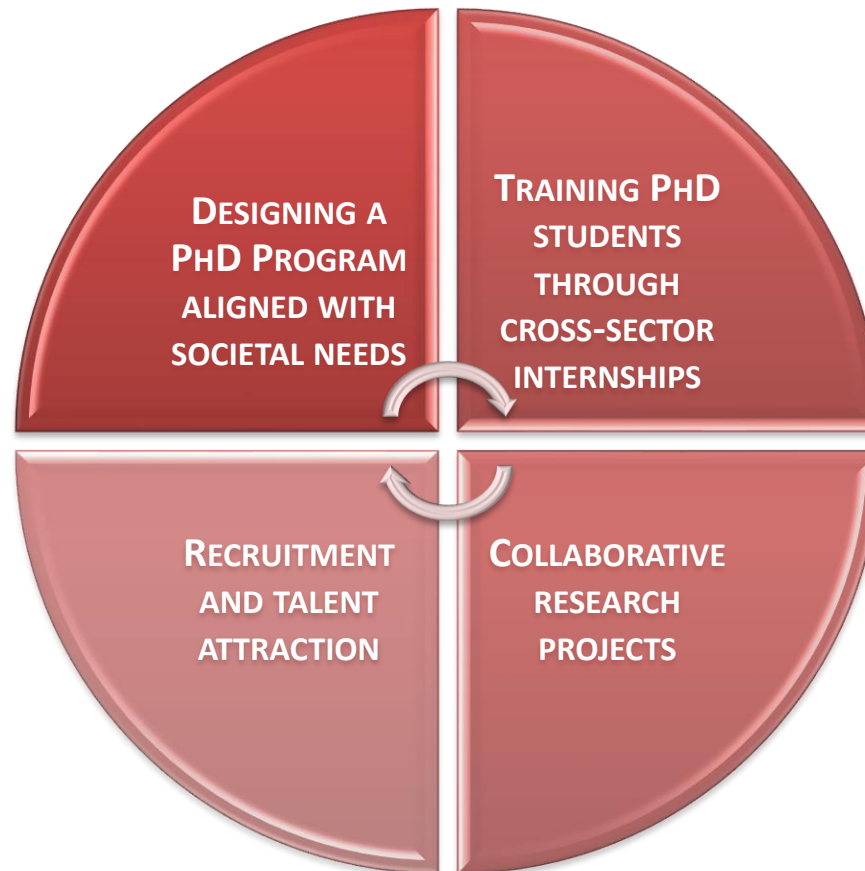


PhD student learns to solve
difficult problems with
methodological rigor and
creativity: these skills are valued
in **any sector**!



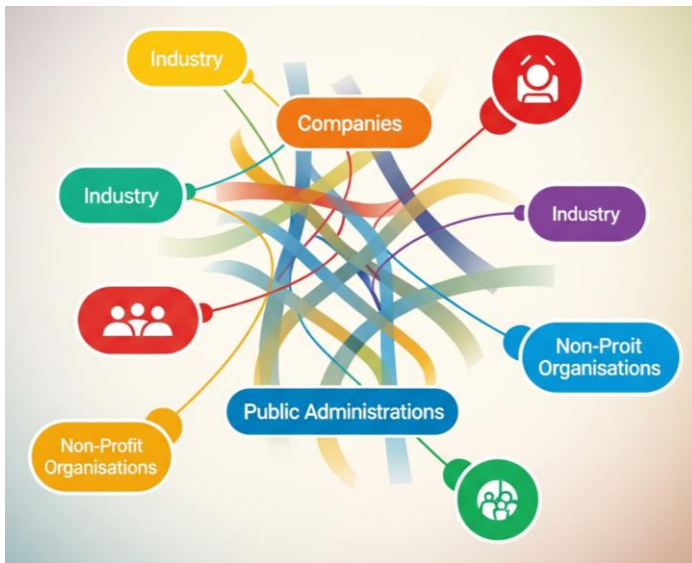
The Role of Doctoral Education

- A doctoral education **valuable to society** must also **engage with societal needs and challenges**.
- The University of Bologna's approach to **rethink the role of doctoral education** involves **four dimensions** to strengthen the **ties between PhD Programs and society**:



Designing a PhD Program Aligned with Societal Needs

- PhD Programs should be structured not only to foster **excellent scientific research**, but also to align with specific **cultural and professional career profiles** that address the **innovation needs** of sectors related to the Program's research themes.
- A PhD Program must not only reflect the **scientific evolution of specific disciplines**, but also identify the **expected cultural and professional profiles** of its PhD graduates:
 - What are the **societal needs** that our PhD graduates are expected to address?
 - What are the **roles outside academia** for which we are equipping our PhD graduates with **knowledge and skills**?



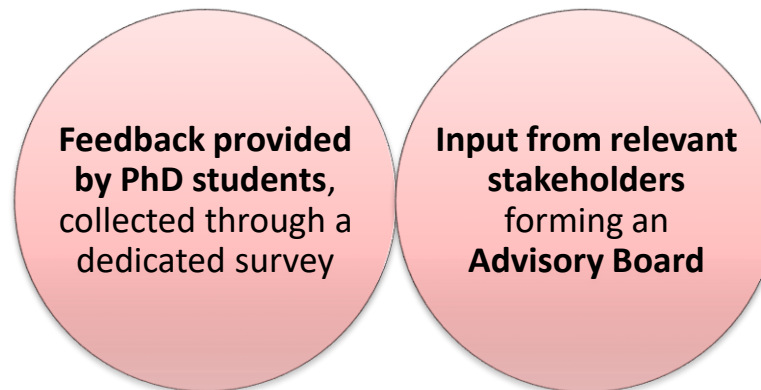
- A continuous **consultation of relevant stakeholders** (beyond Universities and Research Centers) interested in our PhD profiles is essential to acquire input on their **training and innovation needs and priorities**.



Designing a PhD Program Aligned with Societal Needs

- At the **University of Bologna**, each PhD program is required to draft a **training and research plan** based on **specific cultural and professional profiles**.
- The plan is updated **annually**, based on a **self-assessment** that uses both qualitative and quantitative indicators:

Cornerstones of Self-assessment



- The **Advisory Board** is primarily composed of **strategic partners external to the University** to promptly capture **changes in the cultural and professional landscape** of the context relevant for the Program.



Designing a PhD Program Aligned with Societal Needs

- While a profound knowledge of a **specific topic** is essential for writing an **excellent thesis** and making a **breakthrough within a discipline**, **non-disciplinary training** is a **key asset** for PhD graduates pursuing **careers outside academia**.
- We developed a system of **doctoral credits** where each Program sets the **minimum number of credits** that PhD students must earn across a **broad range of activities**:

Disciplinary and cross-disciplinary training



Soft skills



Teaching support and tutoring



Extra-curricular activities



Dissemination



Training through Cross-Sector Internships

- The **Next Generation EU** initiative has funded an unprecedented number of doctoral positions in Italy, **reshaping established practices in doctoral training** also in terms of **compulsory periods abroad** and **internships within non-academic partners**.
- Collaboration with **non-academic partners** significantly enriches the **training experience of PhD students**, in terms of:

Exposure to real-world challenges and diverse professional contexts, which complement and broaden their academic expertise

Application of their knowledge across different domains and develop a range of transferable skills

Understanding how research can address societal needs and contribute to economic and social development

- In the University of Bologna's guidelines for PhD-Program design, a period of at least **6 months outside the University of Bologna**, including **international mobility** and **internships in non-academic settings**, is recommended as a **good practice**.



Collaborative Research Projects

- The **Next Generation EU initiative** also boosted **doctoral positions in collaboration with and co-funded by companies**, leading **all academic domains**, including **non-STEM disciplines**, to **engage beyond the university** and seek out **external partners**.
- We undertook a major effort to organize events **showcasing our doctoral programs to corporate organizations**, discovering that many companies in our region were **open to collaboration** but were **unaware of the opportunities available**.





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DOTTORATI E IMPRESE: TALENTI PER LA RICERCA E L'INNOVAZIONE

19 Marzo
2025
15.00-16.30



Collaborative Research Projects

- Our **key messages** to companies emphasized that **joint research projects**:



represent a strategic investment, enabling collaboration with **highly qualified university research teams** on **topics of direct relevance to the company**



support the development of **cutting-edge knowledge**, potentially leading to **innovative products and services**



cultivate **highly skilled human capital** who may be recruited into the company

- In the first year of implementing this plan, we successfully **tripled corporate investment in doctoral scholarships**—from €2.5 millions to €7 millions.
- These partnerships are also instrumental in facilitating the **transfer of scientific and technological knowledge from academia to society**, thus increasing the **societal relevance** and **visibility of academic research**.



Recruitment and Talent Attraction

- Collaboration with external stakeholders can serve as a strong attractor for **high-quality doctoral candidates**.



PROBLEMS

- Mainly in **STEM fields**, the true bottleneck to expanding doctoral programs is not a lack of funding, but the **limited availability of qualified candidates**, due to:
 - the **language barrier** posed by Italian for international applicants;
 - the generally **low value of Italian scholarships** compared to the European average;
 - the **strong appeal of the job market** for Master's graduates in STEM fields;
 - the **uncertainty surrounding career prospects** after completing a PhD.



SOLUTIONS

- **Engaging recognized companies** in PhD Programs can play an important role not only in **securing financial resources** but also in **attracting top talents**.
- Doctoral positions that offer:
 - a **competitive salary/scholarship**,
 - **include non-academic internships**,
 - are potentially **linked to future employment opportunities**,may be **more appealing** than traditional, academia-focused positions.



Conclusion

- Modern PhD programs must **evolve** so they can better address complex innovation challenges, delivering **value to PhD graduates** and **broader society** alike.
- We must rethink doctoral education as a system that:
 - **engages society,**
 - prepares researchers for **diverse paths,**
 - drives innovation **through strategic partnerships.**
- In particular, the partnership with non-academic stakeholders:
 - strengthens the **alignment between doctoral education** and **societal needs,**
 - helps **attract top-tier doctoral candidates,**
 - provides PhD students with more **comprehensive training** and **enhanced career prospects,**
 - ultimately **improves the quality of the research** conducted within the university.





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