

Fostering Entrepreneurship in Higher Education: Summary

A Comparative Study of Silicon Valley and Germany



Insights and Recommendations for Enhancing Stand-up and Spin-off Ventures in German Universities.

Study by Cambrian Futures
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Land of Ideas

Executive Summary

Higher education institutions serve as one of the world's largest drivers of economic and societal well-being, going beyond education and research to take an active role in entrepreneurial, innovative, and technological growth. The United States, and California in particular, have become exemplars of how technology transfer and university-born entrepreneurialism can transform business, government, and cultural life. Countries, states, cities, and universities worldwide have sought to replicate Silicon Valley's model with varying degrees of success. While technology transfer and entrepreneurial success are never a "one size fits all" story, California and its university-to-business pipeline provide a useful guide for higher education institutions worldwide.



This report provides a comparative view of the technology transfer and entrepreneurship ecosystem between Germany's and California's institutes of higher education. It seeks to provide recommendations, selected and/or tailored for Germany's unique realities, that could expand the capacity of its universities to better capitalize on university-generated intellectual property (IP) and the entrepreneurial energy of their faculty, researchers, and students. Such cross-border and cross-cultural comparisons come with inherent limits, some overt and some more subtle. The countries' different legal and institutional frameworks pose an obvious challenge to this type of analysis. Limited data on different types of university-originated ventures complicate efforts to make direct quantitative appraisals. Even the degree to which broader cultural and societal factors differ, such as attitudes toward risk tolerance, affect entrepreneurial activity and mindsets around university ecosystems.

To account for these limitations, this analysis employs an "innovation ecosystem" lens, which extends beyond legal and institutional frameworks to examine a wider array of factors that enable or hinder entrepreneurship in higher education.

Innovation ecosystems involve the interplay of the academic, private, and public sectors and their collective focus on developing inventions and scaling them into innovations that potentially shape how economies and societies evolve. Working from that innovation ecosystem perspective, the study compares Germany and California across five key dimensions: 1) intellectual property and personnel law; 2) organizational capacities and networks; 3) talent pools and practices; 4) mindset, culture, and education; and 5) funding landscape for university ventures. The chapters that follow provide a breakdown of each of these dimensions, as well as recommendations based on that analysis.



Intellectual Property and Personnel Law

The report delves into the historical development and contemporary state of legal and programmatic frameworks in the U.S./California and Germany, with a particular emphasis on intellectual property (IP) law, personnel, and employment law. While both countries recognize the crucial role of universities in technology transfer, Germany has realized less success in patenting and patent commercialization activities, despite modeling its IP laws after the U.S. This is partly due to the lack of emphasis on patent commercialization and the neglect of auxiliary laws, such as budgetary regulations or state aid law, which persistently hinder universities today. While German institutions have begun incentivizing more startup endeavors among researchers, the prevalent risk-averse culture still curtails entrepreneurial initiatives.



Recommendations:

For IP Law

- Establish a national priority list of innovation spaces and incentives for Länder and their universities to generate IP
- Establish fast track and additional funding for promising patents
- Establish a central advisory unit for IP commercialization

For Personnel and Employment Law

- Establish federal professional development and similar career path opportunities
- Make entrepreneurial activities a component of academic careers
- Promote entrepreneurial skills and exchange with the private sector

Organizational Capacities and Networks

Organizational capacities and networks in technology transfer offices (TTOs) play an indispensable role in efforts to promote IP commercialization and entrepreneurial activity. A narrower focus and sparser resources for German TTOs have hindered their effectiveness. While Germany has produced a strong model of regional clusters and hubs of industrial activity that bridge the higher-ed and business communities, adopting the more multi-sectoral types of collaboration seen in California could further enhance these relationships.

Recommendations:

For Technology Transfer Offices

- Strengthen the TTO network in Germany and establish exchange platforms with TTO networks in the U.S.
- Develop and promote specialized programs for technology managers
- Create programs between TTOs and business, science, and engineering schools
- Create a global partnering and bridging network with industry incubators and accelerators instead of building isolated university programs

For Mechanisms to Promote University-Industry Collaboration

- Experiment with government funding of multi-university and interdisciplinary collaborations
- Set up DATI as a TTO-like national service platform
- Connect venture capital and corporate venturing groups to DATI



Talent Pools and Practices

The report addresses the core roles that human talent pools and practices play in the acceleration of tech transfer and entrepreneurship. In both California and Germany, migrants fuel significant shares of entrepreneurial activity, underscoring the importance of factors such as language and mentorship. These elements can help retain talent, but additional legal and financial incentives could help Germany become a more enticing home for the world's top students, researchers, professors, and startup founders.

How Can Germany Attract and Retain Talent?





Recommendations:

For the Role of Migrants in Entrepreneurship

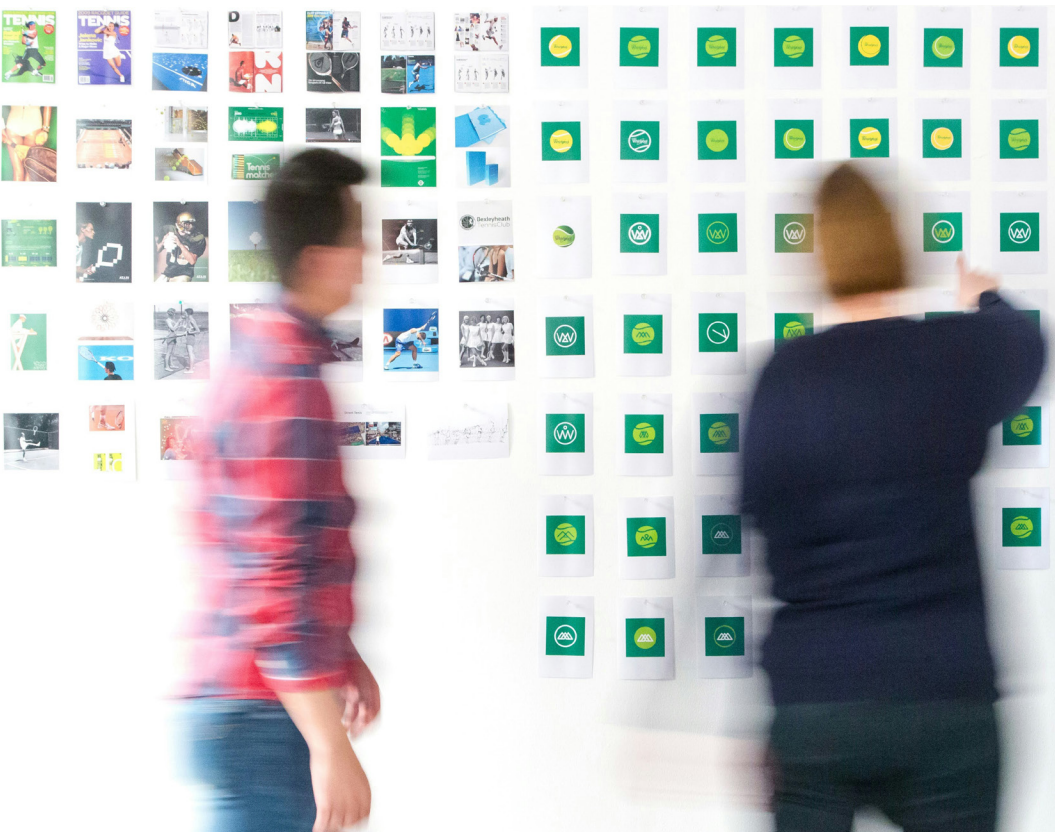
- Introduce English as a second official language in Germany
- Induce founders in the U.S. to open a second headquarters for Europe in Germany
- Design a program for scientists of German origin in the U.S. and elsewhere to become mentors for the next generation of German entrepreneurs

For Talent Attraction and Retention at Universities

- Increase the share of English-language programs at German (excellence) universities
- Foster student exchange between U.S. and German universities
- Offer free certificates in entrepreneurship, venture finance, and IP regulations and processes to foreign students



How Can Germany Encourage An Entrepreneurial Mindset?



Mindset, Culture, and Education

Mindset, culture, and education are integral to universities' entrepreneurial ecosystems. This perhaps shows the starkest contrasts between California and Germany, where a shift toward a more entrepreneurial and risk-tolerant mindset would likely enhance tech transfer and startup formation. An expanded emphasis on interdisciplinary and entrepreneurial education with more experiential and problem-based programs would help instill the social-emotional skills that drive entrepreneurship (e.g., grit, resilience, and networking).

Recommendations:

For Culture and Mindset in Higher Education and Innovation Ecosystems

- Actively support bottom-up development of highly local startup communities
- Create strategies to facilitate and enhance trust as the most valuable currency for professional transitions and information exchange
- Create networking and collaboration platforms with trusted transaction mechanisms

For Interdisciplinary and Entrepreneurial Education

- For undergraduates, incentivize and enable more openness to interdisciplinary studies and IP collisions
- For graduates and researchers, incentivize and enable cross-functional and cross-border team formation
- Integrate experiential learning
- Encourage interdisciplinary collaboration and hubs
- Develop and/or expand digital entrepreneurship platforms



Funding Landscape

The report concludes with an analysis of venture funding around the higher-education institutions in California and Germany, looking at the status of both early- and late-stage funding. The longstanding and robust venture-funding environment in the U.S. and California has spawned a diverse set of capital sources, including everything from government grants, to crowdfunding and alumni investing. Germany relies far more heavily on government grants and, despite recent capital-market reforms, it will need to incentivize domestic startup investment in ways that diversify the funding sources for universities' startups and entrepreneurs. Finally, while regulations governing foreign acquisition of both public and private companies in the United States are relatively streamlined and mature, Germany's regulatory environment is somewhat less efficient and sub-optimally arranged for venture exits through foreign acquisition.

Recommendations:

For Early-Stage Funding

- Foster academic entrepreneurship through tailored university venture funds and regulatory adaptations
- Implement a standardized framework for financing IP transfers into spin-offs

For Late-Stage Funding

- Create alumni investment networks for university spin-offs
- Combine public and private expertise to build partnerships for scale
- Cultivate a "NextGen" sovereign wealth fund for deep tech
- Drive legal reform to enable easier exits of Germany originated ventures by way of acquisition



Conclusion

By comparing and contrasting entrepreneurial environments surrounding Germany's and California's higher-education institutions through a broad "innovation ecosystem" lens, this study provides one of the most comprehensive analyses of the many elements that encourage or restrict IP commercialization, technology transfer, and startup formation. Copying and pasting Silicon Valley's model onto German institutions is neither desirable nor helpful, but these recommendations, when tailored to Germany's unique environment, could expand the university-to-business pipeline. As such, this study should serve as a foundation for further research into the intricacies of implementing these recommendations, as well as ways to bridge the higher education and entrepreneurial ecosystems more closely in California and Germany.



Let's Bridge The Entrepreneurial Ecosystems in California and Germany



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