Bridging Industry and Academia: A Guide to Acadustrial PhD Programs

A practitioner guide based on interviews with students, academic supervisors, and industry mentors who have navigated dual-appointment doctoral programs

CRA-I
Computing Research Association
Industry

July 2026

Executive Summary

The "Acadustrial PhD" is a dual-appointment model in which a candidate is simultaneously a registered, full-time doctoral student and a full-time industry employee. While not entirely new, these arrangements are becoming more prevalent as companies seek access to cutting-edge research while retaining high-potential technical talent.

This guide draws on more than a dozen interviews conducted by the CRA Industry Practitioner-to-Professor (P2P) Working Group with students, academic supervisors, and industry mentors who have lived this model firsthand. The findings are consistent: Acadustrial PhD programs can be exceptionally productive when the right conditions are in place and can fail when they are not.

The central message of this guide is this: success depends less on the formal program structure and more on the quality of three relationships (between the student, the academic supervisor, and the industry mentor) and the supporting infrastructure around them. When all three sides of this triangle are strong and aligned, the model delivers results that no single relationship could achieve alone.

This guide is written for:

- PhD students and industry professionals considering a dual-appointment arrangement
- Academic supervisors evaluating whether to take on an industry-embedded student
- Industry mentors and research managers who sponsor or supervise such students
- University administrators and legal teams setting up institutional frameworks
- Industry business leaders and university strategic relations officers whose support makes these programs possible

What Is an Acadustrial PhD?

The term "Acadustrial" was coined within the computing research community to describe a specific type of doctoral program: one in which a candidate holds both a full-time employment contract with a company and an active registration as a PhD student, for the entire duration of their studies.

This is distinct from:

- Traditional internships, where a PhD student pauses their studies to work.
- Sponsored research, where a company funds a student who is otherwise fully embedded in academia.
- Faculty dual appointments, where a professor holds roles at both a university and a company.

The Acadustrial model sits in a unique space. The student is genuinely employed in industry and enrolled in a PhD program, at the same time, for the full duration.

Why Now?

Several forces are driving interest in this model:

- Companies need access to cutting-edge AI and computing research but are increasingly risk-averse about traditional university funding models.
- Some highly capable engineers reach a stage in their careers where they need a research injection to stay engaged, making the Acadustrial PhD an effective staff retention tool.
- Some employees already have research ideas or questions born from their work and want the structure and credential to pursue them.
- Remote and hybrid work has made multi-site arrangements more logistically feasible than in earlier decades.

From the interviews	"*The people most attracted to this model are highly disciplined, mature individuals who often have real-world experience and treat the PhD like a nine-to-five job.*"

Core Design Principles

1. The Tripartite Relationship



The biggest success factor (cited in virtually every interview) is deep, upfront alignment among the three central parties: the student, the academic supervisor, and the industry supervisor. These three form a triangle, and the relationship fails when any side is weak, absent, or unaligned.

What alignment means in practice:

- All three parties agree on the research direction and its dual purpose (academic + industrial contribution).
- All three have realistic expectations about time commitments, publication rights, and IP ownership.
- All three communicate regularly (ideally holding weekly or biweekly joint meetings) rather than the student serving as a go-between.

Best practice	Weekly or biweekly tripartite meetings—with all three parties present—are the single most consistently cited differentiator between successful and unsuccessful arrangements. When the two supervisors only coordinate through the student, conflicting directions are nearly inevitable.

2. The Industry Mentor Must Be a True Research Supervisor

The industry side of the triangle requires a genuine research mentorship commitment. The most effective industry supervisors share several traits:

- They hold a PhD themselves and remember what the process demands.
- They are motivated to teach, not simply to extract value from a cheap researcher.
- They actively shield the student from gradual expansion of operational demands into research time.
- They understand what makes a topic academically interesting, not just industrially useful.

Warning	*It's important that the industry supervisor avoid what one interviewee called the "fraternity view" of mentorship, the idea that because the mentor had a difficult experience, the student should too. The industry mentor's personal experience of academic rigor is an asset; recreating hardship for its own sake is not.*

3. Balancing Rigor and Impact

The most consistent point of tension in the tripartite relationship is the gap between what academia values (open, publishable, theoretical contributions) and what industry values (proprietary applications and product impact). Neither side can get everything it wants. A successful Acadustrial arrangement requires principled compromise:

- If the company has no interest in publishing a full study on a theoretical result, a shorter publication (a workshop paper or short communication) may satisfy the academic record without over-investing company resources.
- If the student's core thesis work involves data or methods the company wants to keep private, a separate, parallel research thread on publicly available data or theory can anchor the academic contribution.
- Both parties should state their red lines at the outset. Specific IP and publication rights norms are addressed in Principle 4 below.

4. IP and Thesis Protection

Intellectual property is the most procedurally complex element of any Acadustrial arrangement. Key principles that must be part of any agreement:

- IP ownership should be defined in writing before the PhD begins (do not assume informally).
- The student should be trained early in what constitutes IP generation, including how even answering questions at conferences can constitute disclosure.
- The industry mentor should conduct stepwise reviews of thesis outlines and drafts, not just the final version. Catching a sensitive disclosure early (at the outline stage) is far less disruptive than at the final draft stage.
- Universities will typically not give up their right to publish or the right to use generated knowledge for internal research. These are standard red lines that companies should expect.
- However, with some thoughtful negotiation the parties should be able to reach a sole owner and license resolution that works for both parties. Joint IP arrangements are

possible but administratively complex; they require companies with internal processes to track usage (not all companies have these).

The Stakeholder Ecosystem

While the core of the arrangement is the central triangle (student, academic supervisor, and industry supervisor), the interviews conducted for this study consistently revealed that programs can succeed at the triangle level while still failing due to the other stakeholders around it.

A fuller picture includes at least six key roles:

Role	What They Need to Know and Do
PhD Student	Must be highly self-directed, disciplined, and capable of context-switching between academic rigor and industrial application. The Acadustrial PhD is not a model that works for every student; it is best suited to mature individuals with real-world experience who treat the PhD as a professional commitment.
Academic Supervisor	Must be willing to engage regularly with industry partners, adapt the research agenda to accommodate legitimate company constraints, and actively manage the publication and IP process. The supervisor's group often benefits secondarily from the industrial connection. Formal sponsorship arrangements typically include compensation for the academic supervisor; arrangements where the supervisor is unpaid create a structural imbalance that can undermine the relationship over time.
Industry Supervisor	Must act as a true research mentor, not a production resource manager. Should hold (or deeply understand) a PhD, protect the student's research time from operational demands, and engage in joint supervisory meetings. Note: This person may or may not be the student's direct manager. The arrangement works in both configurations, though the dynamics differ significantly depending on the reporting relationship.

Role	What They Need to Know and Do
Legal & IP Representatives	Should be engaged early (before the PhD begins) to define the IP framework, confidentiality obligations, and publication review process. Early engagement prevents crises at the thesis stage.
University Liaison / Program Office	Must engage early and maintain standardized processes for executing arrangements. Institutions with dedicated industry relations teams or Provost-level partnership programs will be best equipped to execute agreements quickly and consistently. A standardized Master Services Agreement saves significant time and reduces negotiation friction.
Industry Business Sponsor	Must secure and sustain durable, multi-year commitment to the arrangement at the executive level. Without that institutional backing, the program is vulnerable to annual budget cycles, personnel changes, and organizational restructurings.

The most common infrastructure failure modes are:

- IP or legal teams that are not engaged until the thesis stage, leading to late-breaking conflicts.
- An industry sponsor who leaves or loses enthusiasm, removing multi-year funding protection.
- A university program office that has no standardized agreement, requiring every arrangement to be built from scratch.
- A company acquisition that changes the sponsoring entity mid-PhD, destabilizing every contractual relationship.

The following sections offer practical guidance tailored to each stakeholder in the arrangement. While the core principles in this guide apply broadly, the day-to-day responsibilities (and the most common failure points) differ depending on your role.

For Prospective Students

Personal motivation and structured self-management are more predictive of success in this model than raw academic ability. Candidates should examine honestly whether they want the arrangement for the right reasons and whether they can sustain the discipline it requires over a multi-year program.

A strong, trusting relationship with the industry manager should be in place before the program begins. Supportive management is not guaranteed and may not survive organizational changes; students who enter without that foundation are exposed from the start.

The most common failure point is allowing weeks to pass without engaging the thesis, then losing continuity. Daily contact with the research—even brief—prevents this drift in a way that periodic intensive sessions do not.

Joint meetings between academic and industry supervisors should be established from the outset. Serving as the sole communication bridge between two supervisors is a structural vulnerability, not a responsibility students should accept.

For Academic Supervisors

Selectivity is essential. The tripartite model succeeds when the right three people are involved; it is not appropriate to treat it as a pipeline for generating industry-funded students without ensuring genuine alignment on all sides.

Academic supervisors should engage directly with the industry supervisor—not just through the student. Regular joint meetings protect the supervisor, the student, and the company from the miscommunication that accumulates when the student is the only link.

Stepwise reviews of thesis outlines and drafts—not only the final version—are the single most effective safeguard against late-breaking IP conflicts. Catching a problem at the outline stage costs nothing; catching it at the defense stage costs everything.

The secondary benefits of the arrangement are real and worth appreciating: students embedded in industry often bring practical perspectives and cross-group connections that sharpen the work of the entire research group.

For Industry Mentors and Research Managers

Industry supervisors should enter the arrangement with genuine mentorship intent, not simply to direct a researcher's labor. The most successful industry supervisors are those who had strong academic mentors themselves and are motivated to pay that forward.

Research time must be treated as a protected resource. Every time the student is redirected onto a production deadline, time is effectively borrowed from the thesis—and unlike other resources, it is rarely paid back.

Legal and IP teams should be engaged early, and the student should be trained in IP generation practices from the outset. A student who understands what constitutes

IP—including how answering a question at a conference can generate a disclosure—is far less likely to trigger an IP conflict at the thesis defense, where such conflicts are hardest to resolve.

Multi-year sponsorship should be secured at the executive level before the arrangement begins. An arrangement that depends on the continued presence of a single manager is structurally fragile; one with institutional backing survives the personnel changes that are inevitable over a four- or five-year program.

For University Administrators and Legal Teams

Developing or adopting a standardized Master Services Agreement that can be executed quickly is one of the highest-leverage investments a university can make in this space. Custom agreements for every arrangement slow everything down and systematically disadvantage smaller companies that cannot sustain extended legal negotiations.

Legal and administrative teams are most valuable when engaged at the start of a proposed arrangement, not after its structure has already been set. Early involvement in framing IP and publication rights prevents the late-stage conflicts that most often derail programs.

Publication rights and the right to use generated knowledge for internal, non-commercial purposes are non-negotiable red lines for universities. These protect the institution's research mission and should be stated clearly at the outset of any negotiation, not introduced as late-breaking conditions.

Project and Topic Scoping

Getting the research topic right is one of the most consequential early decisions in an Acadustrial PhD. A well-scoped project can sustain both parties through the inevitable tensions of the arrangement. A poorly scoped one creates friction from day one.

The most successful projects are grounded in theoretical contributions that can be practically realized in different contexts, rather than narrow engineering tasks with a single industrial application. This scoping serves both parties:

- The student can produce publishable, academically rigorous work.
- The company gets research that generalizes to future applications, not just a one-time deliverable.
- If the company shifts priorities or the application area changes, the research still has a home.

Example	A project on automating the optimization of arithmetic circuits provides theoretical contributions to compiler and hardware design research (while being directly useful to a semiconductor company) without being so narrowly tied to one product that a cancellation ends the research.

Never Put the Student on the Critical Path

This principle was stated in nearly identical terms by multiple interviewees: the student's research should not be tied to a production deadline where the company "explodes" if the student misses a milestone. This is the single fastest path to the Production Trap failure mode described in the Failure Modes section below and illustrated in Vignette D in the appendix.

Contractually define what the student will and will not be responsible for delivering on company timelines. The research should have industrial utility, but it should not be the load-bearing element of a product release.

Consider Strategic Separation in Sensitive Environments

In classified, legal, or ethically complex environments (government agencies, defense contractors, financial institutions), it can be safer and simpler to separate the thesis topic entirely from the student's day job. This approach:

- Eliminates IP and classification conflicts at their source
- Enables the student to use foundational principles from their professional work without exposing sensitive material
- Requires greater personal discipline (there is no work time available for thesis work), but removes bureaucratic friction

From the interviews	*"Had I done a topic related to my work, I would have had to wait for security review before sending every revision to my advisor. I chose to completely separate the two, which made the context-switching harder but removed a layer of bureaucracy that would have slowed everything down."*

Organizational Maturity Path

Institutions on both sides of the academic-industry divide differ significantly in their readiness to execute Acadustrial arrangements. Programs tend to fall into one of three levels of maturity:

Level	Name	Characteristics
1	**Bespoke One-Off**	Programs start entirely from pre-existing personal relationships between a specific professor and an industry leader. Each legal agreement is built from scratch. Success depends almost entirely on the chemistry of the specific three people involved. Hardest to replicate or scale.
2	**Structured Program**	The university has standardized Master Services Agreements, maintained by a Provost or Graduate School office. Business processes (tracking, matchmaking, contract execution) are systematized. The arrangement is no longer dependent on any single relationship to execute.
3	**Alliance Ecosystem**	The most mature model is where a research lab or institute operates on tiered membership fees (e.g., a major research lab's industry alliances program). Companies gain broad access to faculty, students, and research—not through individual contracts but through sustained institutional membership. IP and publication norms are pre-agreed.

Most Acadustrial PhDs currently operate at Level 1. The bespoke nature of these arrangements is not inherently a problem—the best outcomes in our interviews came from highly tailored, relationship-driven arrangements—but it limits scale and makes success fragile. The goal of this guide, and of CRA Industry's broader work in this area, is to help more institutions move toward Level 2 readiness, without losing the relational quality that makes Level 1 arrangements successful. Level 3—the Alliance Ecosystem model—remains rare; it requires sustained institutional investment and multi-stakeholder coordination that few organizations have yet achieved, and represents a longer-term aspiration rather than a near-term target.

Failure Modes and How to Address Them

The following failure modes appeared repeatedly across interviews. They are not mutually exclusive—a struggling program can exhibit several at once.

	Failure Mode	Warning Signs	How to Address It
Production Trap	The company promises research time but consumes the student's time with immediate operational deadlines.	The student is "always" in meetings; rarely attends the lab; their paper count stagnates; and the student says "I'll have more time next month."	Contractually block out protected research time before the PhD starts. The industry supervisor must actively shield the student from the gradual expansion of operational and production demands into that protected time. Weekly joint meetings make violations visible.
Mastering Out	The student discovers mid-program that they prefer building products to doing academic research.	The student loses interest in publishing; gravitates entirely to industrial work; and the advisor has difficulty getting the student to make thesis progress.	Accept this as a possible (and legitimate) outcome. If the student gets a strong job and the company retains talent, the arrangement may still be considered successful, even without a completed PhD.
Disconnect and Drift	Supervisors fail to meet jointly, leaving the student to manage conflicting directions alone.	The student gives different accounts of the project direction to each supervisor; delayed feedback cycles; and missed milestones.	Mandate weekly or biweekly tripartite meetings. Do not let the student be the sole communication channel between supervisors. If necessary, consider

	Failure Mode	Warning Signs	How to Address It
			changing personnel or restructuring the program.
Corporate Turbulence	Layoffs, reorganizations, or mergers and acquisitions (M&A) eliminate the student's internal champion or funding commitment.	A key industry contact leaves the company; the budget for the arrangement is cut mid-program; or the student loses access to data or resources.	Secure multi-year contractual funding commitments before the PhD starts. Include personnel-change clauses in the upfront research agreement that require approval from all parties. Termination can be a valuable option; limping along in an unsatisfactory state leads to poor outcomes.
Infrastructure Failure	The triangle is functional but the supporting ecosystem (legal, IP, university program office) is not.	The thesis cannot be submitted because an IP review was never formally set up; publication is blocked by company lawyers; and legal agreements take 12+ months to execute.	Engage legal, IP, and university liaison teams at the beginning, not after the research has begun. Use standardized Master Services Agreements where available.

Conclusion: Making the Model Work

The Acadustrial PhD is not a program to stumble into. The evidence from these interviews is consistent: when the right people are in place, the right topic is chosen, and the supporting infrastructure is built in advance, it can produce outcomes that neither academia nor industry could achieve alone—original research that is simultaneously theoretically rigorous and industrially grounded, with benefits that extend well beyond the three central parties. When those conditions are absent, it produces a slow-moving failure that costs everyone involved years they cannot recover.

The central takeaway is simple: structure follows relationships, not the other way around. No contract, however well-drafted, compensates for an industry supervisor who is not a genuine research mentor, an academic supervisor who treats the arrangement as a funding convenience, or a student who has not honestly reckoned with what the model demands. Get the people right first. Build the infrastructure around them.

For readers who are considering an Acadustrial arrangement—in any role—the practical next steps are:

- If you are a prospective student, have an honest conversation with your industry manager before approaching a university. That relationship needs to be strong in order to survive a PhD.
- If you are an academic supervisor, do not take on an industry-embedded student without a direct relationship with the industry supervisor. The student should not be the bridge.
- If you are an industry mentor or sponsor, engage your legal and IP teams now, before a student is identified. The single most avoidable failure mode in this guide is an IP conflict that surfaces at the thesis defense because no one set up the framework at the start.
- If you are a university administrator, the most valuable thing your institution can do is develop a standardized Master Services Agreement and a named point of contact for these arrangements. The barrier to entry should not be a twelve-month legal negotiation.

The Acadustrial PhD will not be right for every student, every supervisor, or every company. But for the right combination of people and institutions, it represents one of the most productive intersections of academic and industrial research available. The goal of this guide is to help more of those combinations succeed—and to help everyone involved recognize, early, when the conditions for success are not yet in place.

Appendix. Case Vignettes

The following vignettes are drawn from interviews conducted by the CRA Industry P2P Working Group. Names, institutions, and identifying details have been generalized; all participants received this document for review prior to publication. These cases are selected to illustrate the full spectrum of outcomes across a range of settings.

Vignette A — The Gold Standard: Relationship-Driven Success	
Setting	A PhD student at a major UK research university, simultaneously employed full-time by a large semiconductor company in the United States. The arrangement was set up by the student's direct industry manager, who had previously completed a PhD with the same academic supervisor.
What worked	The three-person alignment was exceptional: the industry supervisor understood both worlds and drove regular joint meetings. Legal and IP agreements were set up in advance and reviewed stepwise throughout the thesis. The research topic—automating optimization of arithmetic circuits—was grounded in theoretical contributions with practical industrial application, without being on any production critical path. The student was based primarily at the university and visited the company regularly.
Outcomes	Award-winning PhD; multiple patents and publications. The arrangement is now cited as a model by both institutions. The student went on to mentor subsequent students through their own Acadustrial PhDs.
Key lesson	A relationship-first model can produce outstanding outcomes when the right three people are in place from the start and when the legal/IP infrastructure is built in advance rather than retroactively.

Vignette B — The Self-Funded Path: Navigating Corporate Risk Aversion	
Setting	A full-time employee at a major technology company, working in technology research and partnerships. Self-funded two-thirds of tuition through a corporate education reimbursement program; funded the remainder personally. The PhD is in human-centered computing at a university physically close to the company's offices.
What worked	A strong prior relationship existed with a supportive manager. There was close physical proximity between the office and campus. The research topic aligned directly with the student's professional work, making the PhD and the job mutually reinforcing rather than competing. Self-funding avoided IP complications by removing the company's financial stake in the research outputs.

Challenges	The company's risk aversion made formal sponsorship impossible, leaving the advisor unpaid and the research funding relationship informal. A previous management assignment was unsupportive and would have prevented the arrangement entirely.
Key lesson	Self-funding via corporate education benefits can be a viable path when formal sponsorship is blocked by bureaucracy. However, it places a financial and administrative burden on the student and creates a structural imbalance in the academic supervisor's compensation.

Vignette C — Strict Separation: Succeeding in a Classified Environment	
Setting	A mid-career professional with extensive security and classification obligations, pursuing a PhD while continuing full-time work at a government agency. The thesis topic was deliberately selected to have no connection to the student's day job.
What worked	Purposeful separation of the thesis from the student's work eliminated IP and classification conflicts at their source. The student developed strong personal discipline routines (a fixed four-hour weekly writing block at a coffee shop; keeping the thesis open every day) to compensate for having no work time available for research. Regular campus visits by the student maintained connection to the academic community.
Challenges	Full separation required the student to do all thesis work in personal time, with no institutional support for the research itself. The context-switching burden was high. The student's first advice to anyone considering this model: "Don't. We have programs that give you more flexibility."
Key lesson	Strategic topic separation is a viable solution in high-security or high-sensitivity environments, but it demands exceptional self-discipline and should not be romanticized. When institutional programs offering more flexibility exist, students should seriously consider them first.

Vignette D — The Common Failure Mode: The Production Trap	
Setting	A PhD student at a US research university, also employed by a technology company. The company committed verbally to providing research time; the student's academic supervisor favored open-source, fundamental research.
What failed	The company consistently pulled the student into operational project deadlines, making real research time scarce. The student's physical presence in the academic lab declined to approximately once per month. The push-pull between the academic supervisor's open-source orientation and the company's desire for proprietary application was never formally resolved.
Outcome	The student is likely to complete the PhD, but with fewer publications than a traditional student and a narrower research record.
Key lesson	Verbal commitments to research time are insufficient. Protected research time must be contractually defined and actively enforced by the industry supervisor. The academic supervisor's orientation (toward open-source, fundamental work) should be disclosed to the company before the arrangement begins, not discovered through conflict.

About This Guide

This guide was produced by the CRA Industry Practitioner-to-Professor (P2P) Working Group, a collaborative effort of the Computing Research Association's Industry Committee. It is based on qualitative interviews conducted with more than a dozen individuals who have direct experience with Acadustrial PhD arrangements, including current and former students, academic supervisors, industry mentors, and legal and program administrators.

All interviewees received a draft for review and comment prior to publication. No statements are attributed by name without consent. The Working Group thanks all participants for their time and candor.

For more information about CRA Industry and the P2P Working Group, visit cra.org/cra-industry.

Authors

Lisa Amini, IBM
Jonathan Bell, Northeastern University
Theo Drane, AMD
Sarah Parsons, Wake Forest University
Kelly Shaw, Williams College
Rahul Simha, GWU
Heather Stephens, Oracle
Helen Wright, Computing Research Association

Suggested Citation

Amini, L., Bell, J., Drane, T., Parsons, S., Shaw, K., Simha, R., Stephens, H., & Wright, H. (2026). Bridging Industry and Academia: A Guide to Acadustrial PhD Programs. Washington, D.C.: Computing Research Association (CRA).