

Unlocking university IP: how AI accelerates technology transfer

Universities generate innovations that can transform industries and society. Yet most Intellectual Property (IP) produced never reaches the market, with 70 to 80 percent of university patents remaining unlicensed. Bridging this gap between discovery and impact is the central mission of technology transfer offices (TTOs), which face the ongoing challenge of converting discoveries into actionable opportunities. In this context, artificial intelligence (AI) has emerged as a powerful enabler, helping teams manage large-scale analysis and highlighting where expert attention is most needed, without replacing humans.

At an operational level, AI frees teams from routine tasks such as searching patents, reviewing prior art and mapping overlaps. What once took weeks to complete can now be accomplished in mere hours, allowing TTOs more time to interpret results, shape strategy and negotiate deals. Platforms such as Dennemeyer's [Octimine](#) analyze thousands of patents and papers at once, revealing connections across disciplines that were previously hidden. This deeper investigation could uncover a biomedical device that may align with innovations in avionics, or a chemical process that may intersect with materials science. These AI-driven insights help TTOs focus on value, rather than volume.

Today, many TTOs are adopting a four-step framework: technology readiness, market potential, competitive differentiators and commercialization strategy. Throughout this process, AI supports each step by providing structured data and orientation, creating a common foundation and leaving human discernment to drive interpretation and decision-making.

How AI makes the difference: the four-step process

AI excels at processing scale, comparing inventions and highlighting patterns. It cannot, however, discern motivation, timing or subtle signals that indicate when a company is ready to license or collaborate. Its value lies in providing structured insights that guide human judgment.

Step 1 – Orienting technology readiness

Every IP evaluation begins with understanding where an invention sits on the journey from concept to application. At this early stage, clarity matters: AI-driven semantic search can reduce thousands of documents to a focused set for expert review. Tools such as Octimine identify relevant prior art and show whether an invention coincides with active or emerging fields.

When seeking a return on research investments, orientation is essential. In 2023, U.S. universities generated \$3.6 billion USD in licensing income — down from \$3.8 billion USD in 2022 — while research expenditures exceeded \$104 billion USD. This recovery ratio of about 3.5 percent highlights both the effort invested in innovation and the untapped opportunity. By narrowing the field early, AI helps TTOs

accelerate the path from discovery to market by pinpointing where human knowledge can have the greatest impact, without replacing technical judgment.

Step 2 – Assessing market potential

Once technical readiness is established, the focus shifts outward. TTOs assess commercial traction by asking where, and how, an invention might compete. AI reveals active and emerging domains through semantic comparisons, but insight alone is not enough. Experts must verify whether these signals align with market realities. Area of operation matters: in semiconductors, technology drives value directly, while in media or entertainment, factors such as customer adoption and regulation play a larger role.

Market signals also emerge through patent filing behavior, revealing areas of saturation and opportunity. Dense technology fields are often suitable for non-exclusive licensing, while narrower portfolios may support exclusive agreements or spin-offs. To strengthen these positions, institutions increasingly bundle protected technology with operational know-how to accelerate adoption. In parallel, collaborative pools bring together smaller portfolios, creating critical mass that attracts partners and speeds commercialization.

Step 3 – Mapping competitive differentiators

With market context established, differentiation becomes the priority. Identifying competitors helps reveal what makes an invention unique. AI highlights key applicants, uncovers activity clusters and indicates novelty and proximity. Neighborhood analysis shows whether a patent sits among strong peers or in a more dispersed field.

Interpreting this context sharpens strategic choices. A strong patent surrounded by weak neighbors may signal a market gap, while a solid asset in a dense area suggests momentum and defensibility. Considering novelty alongside neighborhood context strengthens the case for commercialization.

Step 4 – Choosing the right commercialization strategy

Only after readiness, market potential and differentiation are clear can structure follow. With these elements defined, TTOs can organize the transfer with greater confidence. Filing density provides a practical guide: high-density fields may support non-exclusive licensing, moderate density may favor an exclusive agreement and low density may warrant spin-offs or startups.

Commercialization rarely hinges on patents alone. Combining rights with specialist experience or trade secrets can accelerate market adoption. Likewise, small collaborative pools with credible members create scale and increase the likelihood of a successful transaction. Governance tools like the AUTM Model Inter-Institutional Agreement (IIA) — a template agreement to help research institutions manage jointly owned patents — simplify alignment and transparency, while AI provides the data and scenarios. Yet the final decisions, including licensing, collaboration, spin-off formation and revenue allocation, remain under human control.

The way forward: enabling action with secure collaboration

As these processes grow more data-driven, security becomes paramount. Technology transfer involves highly sensitive data. IP disclosures must remain protected, with encryption and separation from public systems. AI tools built into IP software safeguard this information, ensuring it is not shared externally or used to train outside models. At the same time, secure digital environments also allow teams to collaborate effectively, including members who are technically skilled but not IP experts.

Ultimately, effectiveness depends on balance. AI manages volume, highlights patterns and provides structured evidence. Experts interpret insights, apply judgment, negotiate and steward value. Combining both creates a deliberate, transparent system that accelerates technology transfer while preserving the societal purpose of IP.

Putting this framework into practice does not require reinvention. TTOs can act immediately by selecting a high-priority disclosure, building a focused set of 50 to 150 items using semantic similarity, drafting a structured offer combining patents and know-how and exploring collaborative opportunities with the AUTM model IIA guided by AI-informed metrics. The principle is simple but powerful: AI triages and orients while people tell the story and execute the deal.

For a deeper look at current technology transfer challenges and emerging best practices, watch Dennemeyer's [**Innovation Navigator webinar series**](#).