NSF Engines' IP Management Plan[1]

A. Background

1. Rubric Background

The NSF Engines program adopted "rubrics" to inform the design and content of the component parts of the Strategic and Implementation Plan, establish expectations for outcomes, and as the program or project continues, estimate progress toward Engines' goals. They also foster discussion among new and established multi-disciplinary teams within the NSF Engines program, among the group of award recipients, and between NSF program staff and Engines.

Rubrics are composed of three components: topics, criteria, and stage of development (Figure 2). Topics are conceptual areas of the program or project essential to its successful development and implementation. For the Engines program, examples of topics are research and development or ecosystem building. Criteria are characteristics or descriptors inherent in the topics, and they are often presented sequentially for a topic. Stage of development describes steps to fully achieve a criterion. Each stage of development builds on the previous stage, moving from initial steps to a mature state (left to right).

Engines will follow an iterative path of planning, drafting plans, approving them, evaluating the implementation of their plans, and planning again to make necessary adjustments. The stages of development thus begin in drafting the plan (preliminary stage), continue with finalizing and approving the plan (intermediate stage), and then

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implementing the plan (operational stage). The next round of planning needs the experience of implementation. The most advanced stage of development in this rubric (established) is when the Engine assesses how the plan was implemented and if it determines that changes are needed, amends the plan. An Engine reaches this stage of the rubric when their plans have been implemented for a sufficiently long period of time to test the given criteria. It is suggested that this length of time be at least three months. As the new period begins, the Engine will draft amendments to the original plans, thus returning to the preliminary stage of this rubric and from there on, the planning stages start again.

Topic	Criteria	Stage of Development				
		0. No Evidence	1. Preliminary	2. Intermediate	3. Operational	4. Established

Figure 2. Rubric Composition

Rubrics make transparent the essential components of program, project, or policy development and implementation. Rubrics are intended to promote honest assessment of the state of an Engine's progress and identify areas that may benefit from additional consideration. They are not intended to evaluate the importance or value of an Engine.

2. Intellectual Property Management Plan Background

Intellectual property rights (IPR) are a legal person's bundle of rights over the product of human thought, such as "inventions; literary and artistic works; designs; and symbols, names and images used in commerce."[2]

U.S. law governs IPR across several categories. *Copyright law* protects "original forms of expression" (such as books, songs, films, and works of art), granting the creators of those forms exclusive rights to "reproduce, adapt, and publicly perform their creations." *Patent law* protects new products and processes such that the patent holder can exclude others from "making, using, or selling their inventions." *Trademark law* protects "sellers of goods and services to apply distinctive words or symbols to their products" and to exclude competitors from using the same or similar words, phrases, and symbols. *Trade-secrets law* grants owners, generally a firm, the ability to preclude competitors from using confidential information (such as formulas or marketing strategies) obtained by theft or deceit.[3]

An *IP Management Plan* describes the policies and measures an organization adopts and implements to generate and commercialize their IPR. This plan typically

[2] WIPO. "What is Intellectual Property." https://www.wipo.int/about-ip/en/ Accessed May 4, 2024.

[3] *Encyclopedia Britannica, Online*. "Intellectual Property Law." Accessed May 4, 2024.

encompasses other related provisions that include policies to obtain and defend those rights, as well as the strategies for monetizing these assets or using them as the foundation of partnerships.

The NSF Engines program requires Engines as part of its deliverables to prepare an IP Management Plan describing policies for the administration of the Engine's IP portfolio.[4]

3. Intellectual Property Management Plan Rubric

The rubric presented in Section D below is designed to be used as a tool for Engines in the preparation of their IP Management Plan deliverable.

This chapter presents the rubric in two sections: Section A describes six criteria. The first two criteria correspond to the policies for the management of IPR divided in two criteria, the first for patent policy and the second for trademarks, copyrights, and trade secrets grouped together. The next two criteria involve agreements based on IP, first with the university partner and second with other strategic industrial partners. The last two criteria include a plan to attract investors leveraging IP and a compliance plan, as laws on IP are complex and specialized. The details of these six criteria are elaborated below. The second section, Section C, describes the stages of development of the criteria as they apply to the planning process and Section D briefly describes how to propose new criteria per the specific needs of each Engine.

a. Criteria of the Rubric

- *Patent Policy*: Describe your plan for managing patents. Your plan may include a description of:
  - Rules and procedures for innovation disclosures.
  - The decision process leading to filing a patent with the U.S. Patent and Trademark Office.
  - The decision process leading to paying maintenance fees.
- *Trademark, copyright, and trade secrets policy*: Describe your plan for managing trademarks, copyrights, and trade secrets. Your plan may include a description of:
  - The decision process for filing a trademark application with the U.S. Patent and Trademark Office.
  - The decision process to register a claim to copyright with the U.S. Copyright Office.

[4] NSF Terms and Conditions.

- A plan to maintain secrecy for any commercially valuable formula, pattern, compilation, method, or any other trade secret that results from the work of the Engine.

- *Agreement with partner university's office of technology transfer:* Engines may be chartered within a university or, chartered separately, may enter into a partnership agreement with a university. In either situation, the Office of Technology Transfer (OT2) of that university is likely to become a key partner of the Engine in all matters related to managing its IPR. As part of the IP Management Plan, the Engine should formalize the relationship with the OT2 with an "agreement" or "memorandum of understanding" or similar document, where the terms of collaboration are spelled out, the terms of delegation from the Engine to the OT2 are clearly stated, as well as all claims of jurisdiction by the university. On this latter point, Engines should take note that under U.S. law (35 U.S.C. 212) and Federal regulations (37 CFR Part 401), the university retains rights to patenting any inventions that result from federally funded research.

  The agreement with the OT2 may include:

  - Rules and policies for licensing IPRs.
  - The decision process for using IPR in partnerships with industry innovators, including various firm sizes from start-ups to large firms.
  - The criteria for exclusion of any inventions/patents over which the university has no jurisdiction or no interest to take title.
  - The procedures and expenses of disclosure, filing, and maintenance of university patents originated with the Engine.
  - The decision process for challenging in court the infringement of the Engine's IPR.

- *Other IP-based agreements policy:* Some Engine's IPR may be outside the jurisdiction of the partner university and thus not covered by the aforementioned agreement with the OT2. The Engine may thus anticipate partnerships with organizations other than the university OT2 and adopt a policy for those IP-based agreements. Such a policy may include:

  - Rules and policies for licensing IPR not covered in the agreement with the university (ex-university IPR).
  - The decision process for using ex-university IPR in partnerships with industry innovators, including various firm sizes from start-ups to large firms.

  - The procedures and expenses of disclosure, filing, maintenance, and registration of ex-university IPR.
  - The decision process for challenging in court the infringement of ex-university IPR.

- *Prospective Investors Plan*: As part of their IP Management Plan, Engines should have a plan for attracting investors as potential partners of the Engine. These partners bring capital and management expertise and take in exchange of those resources a stake in the Engine's IPR, usually by licensing them.
- *IPR Compliance Plan:* The legal domain of IP is complex and Engines should make a plan for compliance with Federal laws and regulations, as well as State and local laws as they apply. All Engines are strongly encouraged to seek the assistance of a legal expert in IP compliance to complete this criterion of their plan.

b. Open Response Rubric

The Open Response Rubric is an optional rubric that is provided as a free space for you to provide additional topics or criteria that are not captured in the IP Management Plan Rubric.

B. Instructions to Complete the Rubric

To complete the deliverable, Engines should submit two documents to NSF: the written IP Management Plan that will include a section for each criterion on the rubric and the Self-Assessment Index for each criterion listed on the rubric.

The process starts with the IP Management Plan; use the IP Management Plan Rubric (Section D) to make sure all elements of the plan are in place. Then, fill out the Self-Assessment Index (Appendix A) for each criterion in the IP Management Plan Rubric. Declare a stage of development for each criterion in Section B.3.a and justify your choice of stage with text from your IP Management Plan and any other pertinent information. Please mark the page of the excerpt in your IP Management Plan so that this index maps criteria with their respective excerpts. If you would like to share information that does not adhere to the criteria provided here, do so in the Open Response Template at the end of the rubric.

- **Content of the IP Management Plan Rubric**. Any information germane to the IP Management Plan should be used to respond to the rubrics. Use of information verbatim from prior documents is acceptable to keep administrative burden as low as possible.

- **Framework for assessing each criterion**. Each criterion in the rubric should be examined through the lens of its description in Section B.3. of this document. Each criterion in the rubric should be applied to the Engine's IP Management Plan.
- **Determining the stage of development**. The selection of a given stage of development assumes that prior stages have been completed. Many of the criteria are anticipated to be at the preliminary, possibly the intermediate stage of development, and future analyses will show advancement over time. If a criterion is not applicable or a task is not yet started, please indicate so in the "No Evidence" column.
- **Documents constituting the NSF deliverable**. Two documents: The IP Management Plan itself and the Self-Assessment Index (Appendix A) that maps the criteria of the rubric to supporting text from the plan.
- **Submission process**. Upload content to your NSF Engine's SharePoint site within the following folder path: "Award Oversight – Programmatic à Strategic and Implementation Plan à Drafts of Component Plans à Governance and Management Plan". Email the cognizant and second Program Directors for your NSF Engine after uploading the documents.
- **Questions about the IP Management Plan Rubric**. STPI will hold a webinar to introduce this rubric to Engines and will participate in NSF office hours to resolve further doubts. Award recipients should direct Engine-specific questions to their cognizant and second Program Directors. If you want to meet with STPI outside of the earlier noted webinar or office hours, please organize this through your cognizant and second Program Directors.

C. IP Management Plan Rubric

Topic	Criteria	Stages of Development				
		0. No evidence	**1. Preliminary**	**2. Intermediate**	**3. Operational**	**4. Established**
Intellectual Property Management	Patent policy	No evidence	First draft of policy	Policy finalized and internally approved	Policy is implemented	Policy is assessed, any changes recommended
	Trademark, copyright, and trade secret policy	No evidence	First draft of policy	Policy finalized and internally approved	Policy is implemented	Policy is assessed, any changes recommended
	Agreement with partner university's Office of Technology Transfer	No evidence	First draft of agreement policy	Policy finalized and internally approved	Policy is implemented	Policy is assessed, any changes recommended
	Other IP-based agreements policy	No evidence	Agreement drafted	Agreement finalized and internally approved	Agreement is implemented	Agreement is assessed, any changes recommended
	Prospective Investors Plan	No evidence	First draft of prospective investors plan	Plan finalized and internally approved	Plan is implemented	Plan is assessed, any changes recommended
	IPR compliance plan	No evidence	First draft of compliance plan	Plan finalized and internally approved	Plan implemented	Plan is assessed, any changes recommended

(Optional) Other Criteria Relevant to your Engine

Engines have the option to propose additional criteria that are relevant to them but not included in the rubrics above. Any new criterion proposed should be named, described, and accompanied by the rationale for its inclusion. The related description of the criterion's stages of development is optional.

Example Format

Topic	Criteria	Reasoning

Example Outline for the IP Management Plan Component Plan

The following is an example outline for organizing this section of the Strategic and Implementation Plan using the "Criteria" headers as sections. NSF Engine teams are NOT required to use this outline.

I. Introduction [Describe the different types of partnership categories to be used in the subsequent sections, based on the types of IP Management Plans needed for the NSF Engine. For example, by sector.]
II. Patent policy
III. Trademark, Copyright, and Trade Secret Policy
IV. Agreement(s) with University Office of Technology Transfer
V. Other IP-based agreements policy
VI. Prospective Investors Plan
VII. IPR compliance plan

Appendix A. Self-assessment Index

Section A. Regional Innovation Engine

Topic	Criteria	Engine self-assessment*	Explanation of self-assessment**
Intellectual Property Management	Patent policy (inc. disclosure, filing, and maintenance fees)		
	Trademark, copyright, and trade secret policy		
	Agreement with partner university's Office of Technology Transfer		
	Other IP-based agreements policy		
	Prospective Investors Plan		
	IPR compliance plan		

* Engines should indicate their self-assessment of the Stage of Development achieved in the deliverable.
** Refer to the text in your plan; note the page of the excerpt. You may also use any other documents that support your self-assessment.

Other Criteria Relevant to Your Engine

Topic	Criteria	Reasoning

Appendix B. Literature Review

The preparation of an IP Management Plan is not a subject of scholarly research but rather is the domain of legal and business practitioners. There are no theoretical debates on writing this sort of plan; rather, there are reference textbooks that Engines can consult as they prepare their IP Management Plan. In lieu of a literature review, some useful textbooks are here recommended.

Two classic texts are by Tanya Aplin and Jennifer Davis (2021) now in its 4th edition, and by Jorge Contreras (2022), of which particularly relevant for Engines is the chapter entitled *The Business of Licensing*.

STPI's rubric is general in content and is intended to be suggestive of best practices; therefore, STPI's rubric should not be construed as business or legal advice. Engines are highly encouraged to seek professional legal counsel for chartering their organizations and preparing the bylaws and internal policies.

A. Textbook Resources

Aplin, Tanya and Jennifer Davis (2021). *Intellectual Property Law: Text, Cases, and Materials, 4th Ed*. Oxford university Press.

Contreras, Jorge L. (2022). *Intellectual Property Licensing and Transactions: Theory and Practice.* Cambridge University Press.

B. Related Literature on IP Management

Innovation studies—the body of literature most relevant to Engines—is not focused on the operational level of IP management. That literature instead explores the outcomes of different strategies of IP management followed by the actors of innovation. The following is a list of selected readings that may help Engines place their IP management planning in a larger context.

Mowery, David C., Richard R. Nelson, Baven N. Sampat, and Arvids A. Ziedonis (2004). *Ivory Tower and Industrial Innovation: University-Industry Technology Transfer Before and After the Bayh-Dole Act*. Stanford University Press.

Pisano, G. P., & Teece, D. J. (2007). How to Capture Value from Innovation: Shaping Intellectual Property and Industry Architecture. *California Management Review*, 50(1), 278-296. https://doi.org/10.2307/41166428

Sampat, Bhaven N. (2018) *A survey of Empirical Evidence on Patents and Innovation.* National Bureau of Economic Research.

Valdivia, Walter D (2013). *University Patents: Critical for Improving Technology Transfer*. Brookings: Washington DC.