

USPTO Needs to Improve Management over the Implementation of the Trademark Next Generation System

FINAL REPORT NO. OIG-19-012-A

MARCH 13, 2019



U.S. Department of Commerce
Office of Inspector General
Office of Audit and Evaluation



March 13, 2019

MEMORANDUM FOR: Andrei Iancu
Under Secretary of Commerce for Intellectual Property
and Director of the U.S. Patent and Trademark Office

Mark H. Zabarsky

FROM: Mark H. Zabarsky
Principal Assistant Inspector General for Audit and Evaluation

SUBJECT: *USPTO Needs to Improve Management over the Implementation
of the Trademark Next Generation System*
Final Report No. OIG-19-012-A

Attached for your review is our final report on the audit of the U.S. Patent and Trademark Office's (USPTO's) Trademark Next Generation (TMNG) system. Our audit objective was to determine whether USPTO provided effective oversight of TMNG implementation.

Overall, we found USPTO did not provide effective oversight of TMNG implementation. Specifically, we found the following:

- I. USPTO investment board members did not exercise adequate oversight to correct or terminate underperforming TMNG investments.
- II. Weaknesses exist in the Capital Planning and Investment Control process.
- III. USPTO provided ineffective project management and oversight for the TMNG examination tool.

On November 20, 2018, we received USPTO's response to the draft report's findings and recommendations, which we include within the report as appendix C. USPTO generally agreed with all six report recommendations, and noted actions it has taken and will take to address them.

Pursuant to Department Administrative Order 213-5, please submit to us an action plan that addresses the recommendations in this report within 60 calendar days. This final report will be posted on OIG's website pursuant to sections 4 and 8M of the Inspector General Act of 1978, as amended (5 U.S.C. App., §§ 4 & 8M).

We appreciate the cooperation and courtesies extended to us by your staff during our audit. If you have any questions or concerns about this report, please contact me at (202) 482-3884 or Amni Samson, Audit Director, at (571) 272-5561.

Attachment

cc: Laura Peter, Deputy Under Secretary of Commerce for Intellectual Property and Deputy
Director, USPTO
Anthony Scardino, Chief Financial Officer, USPTO
David Chiles, Acting Chief Information Officer, USPTO
Sarah Harris, General Counsel, USPTO
Welton Lloyd, Audit Liaison, Office of Planning and Budget, USPTO
Robert Fawcett, Audit Liaison, Office of Planning and Budget, USPTO



Report in Brief

March 13, 2019

Background

In August 2009, the Under Secretary of Commerce for Intellectual Property and Director of the U.S. Patent and Trademark Office (USPTO) instructed the agency's Chief Information Officer (CIO) to start separating the Trademark information technology (IT) infrastructure from the rest of the USPTO IT infrastructure. To accomplish this task, the CIO was directed to begin planning, creating, and implementing an integrated IT system that would function as a cloud-based system and allow for end-to-end electronic processing of trademark applications and trademark registration maintenance and renewals. The proposed system—now referred to as *Trademark Next Generation* (TMNG)—is intended to replace USPTO's current trademark IT infrastructure.

Since its inception, TMNG has experienced significant cost overruns and delays. The initial TMNG investment's cost was estimated at \$30.3 million, with completion planned for fiscal year (FY) 2014. However, the investment's obligations were \$68 million at its conclusion in FY 2015, and the investment did not deliver all of the planned results. Consequently, USPTO pushed the investment's scope to a follow-on investment (TMNG-2).

Why We Did This Review

Our audit objective was to determine whether USPTO provided effective oversight of TMNG implementation.

U.S. PATENT AND TRADEMARK OFFICE

USPTO Needs to Improve Management over the Implementation of the Trademark Next Generation System

OIG-19-012-A

WHAT WE FOUND

We found that USPTO did not provide effective oversight of TMNG implementation. Specifically, we found that (1) USPTO investment board members did not exercise adequate oversight to correct or terminate underperforming TMNG investments; (2) weaknesses exist in the Capital Planning and Investment Control (CPIC) process; and (3) USPTO provided ineffective project management and oversight for the TMNG examination tool.

TMNG has experienced significant cost growth and schedule delays. The concept for TMNG was in response to the need to replace decades-old systems. In 2011, USPTO initially estimated the TMNG investment to cost approximately \$30.3 million, with completion planned for FY 2014. However, July 2017 estimates for TMNG placed the final cost at \$260.7 million, with completion planned for 2021—more than eight times the initial estimated cost and 7 years later than originally planned. TMNG's escalating costs and schedule delays are, in part, the result of inadequate oversight, planning, and a flawed process to correct deficiencies. Consequently, the development of TMNG has been divided into four separate investments, overlapping from fiscal year to fiscal year.

Programs that do not receive adequate oversight are at risk of wasting money, missing milestones, and not achieving performance requirements. Further, USPTO continues to spend funds to operate and maintain legacy IT systems that support its business operations. For example, USPTO has already spent approximately \$38.6 million in operating and maintaining trademark legacy systems from FY 2011 through FY 2017, while concurrently spending \$166.5 million as of March 2018 attempting to develop TMNG.

WHAT WE RECOMMEND

We recommend that the Under Secretary of Commerce for Intellectual Property and Director of the U.S. Patent and Trademark Office do the following:

1. Ensure the CPIC Review Board (CRB) adheres to the requirements in the CPIC policies and procedures. Specifically, if an investment is identified by the CRB as not meeting expectations as it pertains to schedule, budget, or other factors, ensure that the CRB alerts the IT Investment Review Board with recommendations for appropriate action.
2. Update IT CPIC policies and procedures to establish (a) an attendance requirement for CPIC meetings; (b) that all relevant information is presented to the boards to ensure greater transparency of significant issues; (c) the steps and actions the boards can take when an IT investment is not meeting expectations; and (d) the threshold criteria that the investment boards should use when determining whether to take remedial action.
3. Strengthen USPTO's IT investment management by ensuring all pending TMNG investments and future IT investments have a complete cost estimate prior to the boards' recommendation and the CIO's approval.
4. Improve USPTO's CPIC process by ensuring CPIC oversight functions are able to verify and ascertain whether completed IT investments were obtained in the most cost-effective way possible.
5. Continue to address outstanding TMNG development issues using the Path Forward Team.
6. Develop improvement plans to mitigate risk of significant, recurring problems with TMNG activities that are covered in the TechStat sessions.

Contents

Introduction	1
Objective, Findings, and Recommendations	3
I. USPTO Investment Board Members Did Not Exercise Adequate Oversight to Correct or Terminate Underperforming TMNG Investments	3
A. <i>The CRB did not provide the complete TMNG-related schedule and cost growth concerns to the ITIRB</i>	4
B. <i>Board members often missed critical investment meetings</i>	5
C. <i>The CRB was not appropriately notified of negative software implementation issues</i>	6
D. <i>The USPTO CPIC Guide does not align with GAO’s best practices</i>	7
II. Weaknesses Exist in the CPIC Process	8
III. USPTO Provided Ineffective Project Management and Oversight for the TMNG Examination Tool	10
A. <i>OCIO developed and delivered a TMNG examination tool that did not meet USPTO’s requirements</i>	10
B. <i>USPTO lacked defined business requirements during the development of the TMNG examination tool</i>	11
C. <i>USPTO did not develop improvement plans to mitigate risk of significant, recurring problems with TMNG activities</i>	12
Recommendations	12
Summary of Agency Response and OIG Comments	14
Appendix A: Objective, Scope, and Methodology	17
Appendix B: TMNG Investment Cost and Schedule Changes	19
Appendix C: Agency Response	20

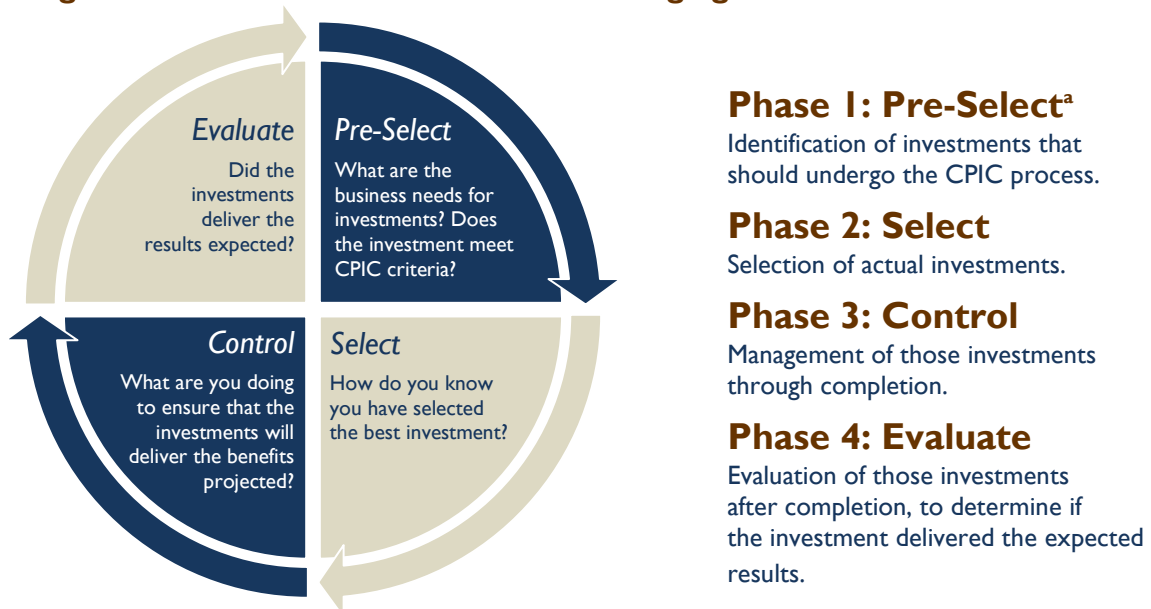
Cover: Herbert C. Hoover Building main entrance at 14th Street Northwest in Washington, DC. Completed in 1932, the building is named after the former Secretary of Commerce and 31st President of the United States.

Introduction

In August 2009, the Under Secretary of Commerce for Intellectual Property and Director of the U.S. Patent and Trademark Office (USPTO) instructed the agency's Chief Information Officer (CIO) to start separating the Trademark information technology (IT) infrastructure from the rest of the USPTO IT infrastructure. To accomplish this task, the CIO was directed to begin planning, creating, and implementing an integrated IT system that would function as a cloud-based system and allow for end-to-end electronic processing of trademark applications and trademark registration maintenance and renewals. The proposed system—now referred to as *Trademark Next Generation* (TMNG)—is intended to replace USPTO's current trademark IT infrastructure. The current system is a collection of legacy applications and databases that (a) operates on relatively old software, (b) is not well documented, and (c) is not fully compatible with a modern, integrated, and more capable system. Moreover, TMNG is intended to give trademark owners, practitioners, and examining attorneys the upgraded tools they would need for end-to-end electronic trademark processing, and accommodate the increasingly large and complex electronic specimens of use now being filed in connection with trademark applications. Since 2011, the Office of the Chief Information Officer (OCIO) has been working on the development, testing, and implementation of TMNG.

USPTO established a Capital Planning and Investment Control (CPIC) process for overseeing USPTO IT investments,¹ which includes TMNG. USPTO's CPIC process is a flow of IT investments through four sequential phases (see figure 1).

Figure 1. USPTO's CPIC Process for Managing USPTO IT Investments



Source: USPTO CPIC Guide, Version 4.1

^a All investments begin at **Pre-Select** and eventually conclude at **Evaluate**.

¹ The Clinger-Cohen Act of 1996 (Pub. L. No. 104-106, Division D & Division E) requires agencies to establish effective and efficient capital planning processes for selecting, managing, and evaluating the results of all of its major IT investments.

USPTO's CIO is partly responsible for the management of the IT CPIC process, including performing the following tasks:

- Developing and maintaining USPTO's CPIC process, with advice and concurrence from the heads of the other USPTO business units
- Approving IT investments
- Approving re-baselines²
- Approving the suspension or cancellation of active IT investments

Additionally, USPTO developed a board structure to provide principal oversight of its IT investments. The two principal oversight bodies within the scope of our audit include the IT Investment Review Board (ITIRB) and the CPIC Review Board (CRB). The composition of the boards includes several levels of USPTO's organizational structure.

Table I. Description and Purpose of the ITIRB and the CRB

Board	Purpose	Members	Chaired by
ITIRB Meets at the request of the CIO	Oversees the USPTO CPIC process, reviews proposed investments for recommendation to the CIO, and monitors ongoing investment performance throughout the CPIC cycle to ensure IT investments are meeting strategic goals	Executive management representing USPTO's 12 business units ^a	CIO
CRB Meets monthly	Reviews progress of approved investments, recommends corrective action on investment activities, recommends investments to the ITIRB for review, recommends discontinuation of investment activities, and evaluates final results of investments	Senior-level managers representing USPTO's 12 business units	Chief Financial Officer

Source: OIG analysis of USPTO *CPIC Guide, Version 4.1*

^a As required in USPTO's Agency Administrative Order 212-05, executives from each business unit (heads of the business unit) serve on the ITIRB.

Since its inception, TMNG has experienced significant cost overruns and delays. The initial TMNG investment's cost was estimated at \$30.3 million, with completion planned for fiscal year (FY) 2014. However, the investment's obligations were \$68 million at its conclusion in FY 2015, and the investment did not deliver all of the planned results. Consequently, USPTO pushed the investment's scope to a follow-on investment (TMNG-2). As of September 30, 2017, TMNG was comprised of the following four investments:

1. TMNG: FYs 2011–2015 (completed)
2. TMNG-2: FYs 2015–2019 (active)
3. TMNG-Externally Facing Systems (TMNG-Ext): FYs 2013–2019 (active)
4. Trademark Trial and Appeal Board (TTAB): To be determined (planned)

² The term *re-baseline* is a formal adjustment to the investment's cost, schedule, or performance.

Objective, Findings, and Recommendations

Our audit objective was to determine whether USPTO provided effective oversight of TMNG implementation. Appendix A provides a more detailed description of our audit objectives, scope, and methodology. Overall, we found that USPTO did not provide effective oversight of TMNG implementation. Specifically, we found the following:

- I. USPTO investment board members did not exercise adequate oversight to correct or terminate underperforming TMNG investments.
- II. Weaknesses exist in the CPIC process.
- III. USPTO provided ineffective project management and oversight for the TMNG examination tool.

TMNG has experienced significant cost growth and schedule delays. The concept for TMNG was in response to the need to replace decades-old systems. In 2011, USPTO initially estimated the TMNG investment to cost approximately \$30.3 million, with completion planned for FY 2014. However, July 2017 estimates for TMNG placed the final cost at \$260.7 million, with completion planned for 2021—more than eight times the initial estimated cost and 7 years later than originally planned. TMNG’s escalating costs and schedule delays are, in part, the result of inadequate oversight, planning, and a flawed process to correct deficiencies. Consequently, the development of TMNG has been divided into four separate investments, overlapping from fiscal year to fiscal year. Appendix B provides further details regarding TMNG investment costs and schedule changes.

Programs that do not receive adequate oversight are at risk of wasting money, missing milestones, and not achieving performance requirements. Further, USPTO continues to spend funds to operate and maintain legacy IT systems that support its business operations. For example, USPTO has already spent approximately \$38.6 million in operating and maintaining trademark legacy systems from FY 2011 through FY 2017, while concurrently spending \$166.5 million as of March 2018 attempting to develop TMNG.

I. USPTO Investment Board Members Did Not Exercise Adequate Oversight to Correct or Terminate Underperforming TMNG Investments

The effectiveness of IT governance processes depends, in large measure, on engagement by the entity’s governing boards and senior management. Best practices dictate that any such board or senior manager should exercise an active role in directing, evaluating, and monitoring IT operations and projects. The *USPTO CPIC Guide*³ states that the ITIRB and

³ There were three versions of the *USPTO CPIC Guide* that were applicable to our audit:

(1) U.S. Patent and Trademark Office, Office of the Chief Information Officer, October 2010. *USPTO Capital Planning and Investment Control Guide*, Version 3.0. Alexandria, VA: USPTO OCIO.

(2) USPTO OCIO, November 2014. *USPTO Capital Planning and Investment Control Guide*, Version 4.0. Alexandria, VA: USPTO OCIO.

(3) USPTO OCIO, August 2016. *USPTO Capital Planning and Investment Control Guide*, Version 4.1. Alexandria, VA: USPTO OCIO.

CRB are responsible for regularly reviewing the progress of approved investments, recommending corrective action(s), or terminating underperforming investments. Despite this delineation of responsibilities, we found USPTO had inadequate oversight processes. Specifically,

- the CRB did not provide the complete TMNG-related schedule and cost growth concerns to the ITIRB;
- board members often missed critical investment meetings;
- the CRB was not appropriately notified of negative software implementation issues; and
- the *USPTO CPIC Guide* does not align with the U.S. Government Accountability Office's (GAO's) best practices.

GAO's executive guide *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity (GAO Framework)*⁴ states that IT investment boards should monitor all projects relative to cost, schedule, and technical baselines to measure (a) the progress of IT projects under development, as well as (b) the performance of projects upon deployment. When an IT project is not performing according to expectation, these review boards should seek corrective actions to be taken. We found that the IT investment boards have not been consistently involved in overseeing TMNG. The lack of effective oversight from these IT review boards contributed to TMNG cost overruns, schedule delays, and performance issues.

A. The CRB did not provide the complete TMNG-related schedule and cost growth concerns to the ITIRB

The ITIRB—comprised of USPTO senior executives—is empowered to make recommendations to the CIO that should correct or lead to termination of underperforming IT investments. The *USPTO CPIC Guide* requires the CRB to inform the ITIRB with a recommendation for appropriate action when an investment is not meeting expectations as it pertains to schedule, budget, or other factors.

However, when TMNG was not meeting its planned schedule and cost estimate, we found that the CRB did not fully communicate those issues to the ITIRB. To illustrate, from May 2015 through June 2017, the CRB held five In Room Review (IRR⁵) meetings to discuss TMNG-2 progress. During each IRR, the IT Investment Team⁶ informed the CRB that the TMNG investment was behind schedule and/or over the cost baseline. For example, in the IRR meetings held in May and November 2015, the IT Investment Team

⁴ U.S. Government Accountability Office, March 2004. *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, GAO-04-394G. Washington, DC: GAO, 45 and 50.

⁵ An IRR is a formal review conducted by the CRB with the IT Investment Team on the performance and progress of an investment. The IRR occurs every 6 months until the investment is completed. During an IRR, if a CRB member identifies an issue that they believe should be elevated to the ITIRB, then the CRB member has an opportunity to raise it with the board and chairperson.

⁶ The IT Investment Team, comprised of OCIO and USPTO business unit representatives, maintains lead responsibility for the performance and progress of an investment.

informed the CRB that the TMNG-2 was up to 4 years behind schedule and over the cost baseline by as much as \$13.9 million. However, the CRB never communicated these issues to the ITIRB, as required. Instead of notifying the ITIRB, which would have prompted the ITIRB to consider meeting and discussing corrective actions or termination of the underperforming TMNG investment, the CRB waited until the annual update meetings to concur with the IT investment teams' four requests to revise the cost estimate, scope, critical success factors,⁷ and/or schedule without requesting further review from the ITIRB. Appendix B provides further details regarding TMNG investment costs and schedule changes.

B. Board members often missed critical investment meetings

USPTO appointed senior executives and business unit leaders to the ITIRB and CRB to review and monitor investments as well as provide recommendations to correct or terminate investments that do not meet expectations. The purpose of this critical process is to ensure that USPTO provides effective oversight for its IT investments throughout all phases of the CPIC cycle. However, we found that these board members frequently delegated meeting attendance to other officials, who may not have sufficient knowledge or, in some cases, did not send anyone to represent their business unit. For example:

- All three ITIRB meetings⁸ held for TMNG investments selection had substitute members in attendance and unrepresented business units. To illustrate, in a meeting held in December 2013 for the selection of the TMNG-Ext investment, there were three board member substitutions and four unrepresented business units. These four unrepresented business units consisted of the Office of the Chief Financial Officer, Office of the Chief Administrative Officer, Office of the Chief Communications Officer, and Office of Equal Employment Opportunity and Diversity.
- Of the 12 IRR meetings from FYs 2011–2017 for which we reviewed the minutes, 11 listed CRB substitution members and unrepresented business units. For example, in a November 2015 meeting for the TMNG-2 investment, there were three unrepresented business units, five board member substitutions, and one chairperson substitution.

USPTO's CPIC guide does not specify a requirement for board member attendance, and we recognize that situations may arise where individuals are not able to attend every meeting. However, having the appropriate representation and participation at these meetings demonstrates leadership's commitment to the board's work. According to a USPTO board member, the investment issues discussed at the board meetings are complex, and board members need additional information to understand the investment's complexities. Therefore, it is critical for board members to attend because substitute members may not have a clear understanding of, or make informed decisions regarding, the investment. The lack of such participation can hinder USPTO's

⁷ Critical success factors are used to evaluate the success or failure of the investment and milestones.

⁸ These ITIRB meetings were held in May 2011, December 2013, and August 2014.

opportunity for a substantive exchange of information and its ability to promote sound decision-making regarding the TMNG investment.

C. The CRB was not appropriately notified of negative software implementation issues

Relevant and reliable information is essential for informed decision-making about each investment's progress toward cost and schedule expectations as well as anticipated benefits and risk exposure. Such information should be communicated to those who need it, within a timeframe that enables them to carry out their responsibilities. However, we found the CRB was not provided full disclosure or made aware of issues affecting the TMNG investment on a consistent and appropriate basis. For example:

- The IT Investment Team failed to inform the CRB on critical issues relating to the TMNG investment. Specifically, the IT Investment Team did not inform the CRB that a rollout of the TMNG examination tool⁹ failed because major components were nonfunctional, to include examining attorneys' inability to examine international filings. Subsequently, an entire USPTO law office of examining attorneys (Law Office 122¹⁰) stopped using the TMNG examination tool. Rather than communicating the unsuccessful rollout of the TMNG examination tool to the CRB, the IT Investment Team presented this event as a positive accomplishment, stating that "one law office was trained using TMNG examination, and examining attorneys have successfully processed 5,296 Office Actions using TMNG Examination since May 2016."

Also, the IT Investment Team did not tell the CRB that the law office stopped using the TMNG examination tool and was retrained on the legacy examining tool. Instead, the IT Investment Team informed the CRB that the investment was behind schedule and that there were ongoing discussions to determine a 'back-on-track' plan for the deployment of the TMNG examination tool to the remaining law offices.

- The CIO conducted several Technical Status Reviews (TechStat) sessions¹¹ relating to the TMNG examination tool, but the IT Investment Team did not consistently report these session activities or the results to the CRB in the IRR meetings. For example, the CIO conducted a TechStat review in September 2016 to determine why the development and deployment of the TMNG examination tool was repeatedly behind schedule. USPTO officials stated the ITIRB and CRB are indirectly notified about the TechStat sessions through the project team. However, there was no mention of this TechStat session activity in the November 2016 IRR meeting.

⁹ The TMNG examination tool, ultimately to replace the First Action System for Trademarks-1 (FAST-1) legacy system, will be used for examining TM applications and conducting the research required for such examinations.

¹⁰ Law Office 122 is a group of trademark examining attorneys that were hired by USPTO in May 2016.

¹¹ A *TechStat* review addresses the causes of significant problems with an IT investment and is initiated by (a) frequent re-baselines or (b) chronic failure to make investment progress. *TechStat* sessions focus on the "issues" impeding product delivery based on "root causes" and arriving at specific concrete action "items" to turnaround the investment.

Without accurate and full disclosure of information, the CRB cannot make informed decisions and take appropriate actions to correct TMNG's cost, schedule, and performance problems.

D. The USPTO CPIC Guide does not align with GAO's best practices

GAO *Framework*¹² reflects currently accepted IT investment management, as well as the reported experience of federal agencies and other organizations in creating their own investment management processes. Using these best practices as a guideline, we found several instances of USPTO's CPIC guide not aligning with *GAO Framework*, thus raising the likelihood that (a) the TMNG investment is not receiving the proper level of oversight and (b) oversight authorities are not ensuring appropriate corrective actions are taken:

- *Thresholds.* *GAO Framework* recommends that policy should include thresholds¹³ for the investment board to use when analyzing project performance as part of its oversight function. The threshold is typically based on cost or schedule measures—for example, currently more than 10 percent over expected cost is a major factor in determining whether to take remedial actions. However, USPTO's CPIC guide does not define such thresholds for cost, schedule, performance, and critical success factors. Instead, USPTO's CPIC guide leaves discretion up to the CRB for deciding when to elevate threshold breaches to the ITIRB.

To illustrate: the CRB concurred with two re-baselines, with an initial cost estimate of \$30.3 million re-baselined twice to \$66.4 million and one re-planning request that further increased the cost estimate to \$68.6 million – a total increase of 126 percent (due to cost growth, schedule delays, and performance changes). However, the CRB did not elevate these issues to the ITIRB even though the critical success factors changed and the investment was not able to meet the revised critical success factors. Additionally, both the ITIRB and CRB recommended the selection of the TMNG investment, but only the CRB formally reviewed the investment results at its conclusion.

- *Paths.* *GAO Framework* recommends that policy should specify the procedures for escalating unresolved and/or significant issues for board members outlining appropriate steps to elevate or address if thresholds are exceeded. However, USPTO's CPIC guide does not specify the paths for board members outlining appropriate steps to elevate or address the slippage if thresholds are exceeded.

For example, USPTO's CPIC guide does not list TechStat sessions as one of the remedial actions the board can take on an investment that is "slipping." As a result, the CRB did not request a TechStat review even though the TMNG

¹² GAO-04-394G, 52 and 53.

¹³ A *threshold* is the limiting acceptable value of a measurement, typically based on cost or schedule measures. Thresholds serve as benchmarks for comparison; any breach of threshold value may call for a complete review of the threshold measure not being met, such as cost or schedule.

investments had substantial cost growth and schedule delays, and re-baselined numerous times (see appendix B for more details). Providing the boards with defined paths can enable the board to take corrective action to mitigate investment risks.

- *Steps.* GAO Framework recommends that policy should specify the corrective actions required when the project deviates or varies significantly from the project management plan, and the conditions under which a project would be terminated and the funds redirected to other “successful” projects. However, USPTO’s CPIC guide does not specify the steps that the board(s) should take to correct, suspend, or cancel an investment that has slipped beyond an established threshold. Although CPIC materials are available to ITIRB members, the policy lacks specific guidance to ensure the CRB’s Capital Investment Decision Paper (CIDP) annual update decisions¹⁴ are formally communicated to the ITIRB.

To illustrate, for the TMNG-Ext investment, the CRB concurred with a request to re-baseline the investment’s cost, schedule, and performance baselines in July 2016. However, the CRB did not request the ITIRB to review the request, even after the CRB was informed that two projects were removed from the investment and the cost baseline was increasing by more than 20 percent, from \$21.1 to \$25.7 million. The USPTO IT investment coordinator stated that they expect the CRB members to inform their respective ITIRB members of relevant actions or issues. Providing the boards with specific guidance can ensure the boards know the types of corrective actions they should take when an investment deviates significantly from expectations.

II. Weaknesses Exist in the CPIC Process

The Clinger-Cohen Act states that an agency’s CPIC process shall provide for the identification of a proposed IT investment with quantifiable measurements for determining the net benefits and risks of the investment. In addition, Office of Management and Budget (OMB) Circular No. A-11 requires the development of a realistic baseline cost, schedule, and performance goals before proceeding to full acquisition of the useful asset (or canceling the acquisition).¹⁵ The baseline cost and schedule goals should be realistic projections of total cost, total time to complete the project, and interim cost and schedule goals.

Each phase of the CPIC process should be designed to have controls in place to ensure USPTO is maximizing value, and assessing and managing the risks of the IT investment. However, USPTO did not adequately implement some of these controls. For example, the

¹⁴ A CIDP annual update is a formal document prepared by the IT Investment Team, which document changes to the investment’s baselines, to include a proposal for a re-baseline to scope, schedule, and/or financials. These updates occur 1 year following the approval of the CIDP and every year thereafter. A CIDP is the investment’s business case that describes the scope, estimated costs, schedule, and other relevant information that will be used as a basis for decision-making, monitoring, and measuring the performance of the investment.

¹⁵ Office of Management and Budget, July 2017. *Preparation, Submission, and Execution of the Budget*, OMB Circular No. A-11 (Revised). Washington, DC: OMB, “Capital Programming Guide,” 83. The 2017 version of this circular was relevant to the timeframe of the audit fieldwork.

investment's business case we reviewed (with investment boards' approval) did not (1) have a completed cost estimate and (2) consider estimated cost savings.

As a result, USPTO did not have complete information when making decisions on the TMNG investment, which may have contributed to both cost and schedule overruns. To illustrate, the TMNG investment's approved business case included an estimated schedule completion date of FY 2014 and a cost estimate of \$30.3 million, with some of the cost elements—such as operating costs and investment costs for other phases—listed as “To-Be-Determined” (TBD). However, USPTO did not implement TMNG within those parameters. See table 2 for more details on how USPTO did not meet estimated cost, scope, and timelines.

Table 2. Schedule and Estimated Versus Completion Costs of TMNG Investments

Investment	Schedule Estimate	Original Estimated Costs	Completion Costs	Amount and Percentages Above Actual or Estimate Costs	Note
TMNG (Completed)	FYs 11–15	\$30M	\$68M (Actual)	\$38M, 126.7% above original estimated cost	This investment did not deliver on all of the planned results. Accordingly, USPTO pushed the unfinished components to a subsequent investment, TMNG-2.
TMNG-2 (Active)	FYs 15–19	\$83.7M	\$168M (Current Estimated)	\$84.3M, 100.7% above original estimated cost	This investment is more than 2 years behind schedule with an estimated completion date of 2021 (pending the CIO's approval).
TMNG-Ext (Active)	FYs 13–19	\$21.1M	\$23.5M (Current Estimated)	\$2.4M, 11.4% above original estimated cost	—
TTAB	TBD	TBD	TBD	N/A	This investment is in the planning phase, so estimated costs have not yet been determined.

Source: OIG analysis of TMNG investments

USPTO did not evaluate whether the completed TMNG investment was obtained in the most cost-effective way possible. Because it did not have a complete cost estimate at the beginning, USPTO was not able to determine whether its initial TMNG investment was cost-effective.

III. USPTO Provided Ineffective Project Management and Oversight for the TMNG Examination Tool

Effective project management and oversight is a key management control for providing valuable IT products that meet cost and schedule performance. We found that USPTO did not provide effective project management and oversight for the TMNG examination tool. Applicable USPTO attorneys will use the examination tool for (a) examining trademark applications, (b) conducting required researches for examinations, and (c) preparing office actions. When deployed, the examination tool is supposed to allow the retirement of the legacy system FAST-1.

Specifically, we found that

- OCIO developed and delivered a TMNG examination tool that did not meet USPTO's requirements;
- USPTO lacked defined business requirements during the development of the TMNG examination tool; and
- USPTO did not develop improvement plans to mitigate risk of significant, recurring problems with TMNG activities.

As a result, USPTO has incurred significant cost increases and schedule delays. To illustrate, as of June 2017 the baseline for TMNG-2 investment (an investment focused primarily on the TMNG examination tool) was \$97.6 million, but the estimated-at-completion (EAC) was \$168 million. TMNG-2 is also behind schedule and rollout of the TMNG examination tool to all applicable USPTO law offices, which was anticipated by the second quarter of FY 2019.

A. *OCIO developed and delivered a TMNG examination tool that did not meet USPTO's requirements*

For the development and implementation of TMNG, USPTO is using Agile software development methodology.¹⁶ The highest priority of Agile software development is to satisfy the customer through early and continuous delivery of valuable software. OCIO did not deliver a functional software that met the examiners' needs. Implementing nonfunctional components caused significant setbacks to examining attorneys as well as to the development of the TMNG examination tool.

To illustrate, Trademark hired examining attorneys for Law Office 122 and trained them to do their work with the new Examiner tool, to serve as both part of beta testing¹⁷ and rolling the tool out to examining attorneys. However, the newly hired examining attorneys discovered significant issues, such as the inability to examine international

¹⁶ *Agile methodology* is an adaptive approach to product development. The iterative and incremental nature of Agile allows for real time "course corrections" based upon consistent customer feedback as well as continuous improvement of processes and products.

¹⁷ Beta testing is done by an expanded group of Trademark-provided examiners and managers in a production environment.

filings, send final actions, and draft appeal briefs. This prompted Trademark to stop using the tool and retrain the examining attorneys on the legacy examination tool, sacrificing significant time and resources.

The TMNG examination tool failed in part because of ineffective software development practices. According to GAO's effective Agile software development practices,¹⁸ software should be tested early and often throughout the life cycle. Furthermore, testing should be performed prior to software delivery to reduce risks and remediation costs. However, for the TMNG examination tool, USPTO did not perform user acceptance testing¹⁹ prior to software delivery. The examination tool was deployed to the newly hired examiners for beta testing in a production environment. As a result, the examiners encountered multiple functionality issues. As of the end of our fieldwork in October 2017, USPTO still did not have a functional TMNG examination tool. As of October 2017, the OCIO estimated that full rollout of the tool to all Trademark law offices would not be completed until the second quarter of FY 2019, almost 3 years after the original projection of the first half of FY 2016.

During the course of our audit, USPTO formed a collaborative working group between OCIO and Trademark (known as the *Path Forward Team*) to focus on addressing the outstanding issues with TMNG. In addition, OCIO and Trademark agreed to perform testing early and often during software development.

B. USPTO lacked defined business requirements during the development of the TMNG examination tool

Business analysts play a critical role in Agile software development efforts, as they gather user input (user stories²⁰) to create Trademark software requirements and translate those requirements to the software developers. Accordingly, familiarity with the business process and requirements are crucial when developing software. However, USPTO hired outside contractors unfamiliar with Trademark's business process and requirements to fulfill critical business analyst roles, further contributing to development delays.

For example, we reviewed several business user stories that were unfinished during the development of the TMNG examination tool, and noted the user stories were split or carried over into subsequent sprints.²¹ USPTO officials confirmed that the user stories were unfinished due to an incorrect understanding of business requirements that required clarification. Additionally, upon review of TechStat sessions and the *Trademark Public Advisory Committee (TPAC) 2017 Annual Report*,²² we found that USPTO reported

¹⁸ GAO, July 2012. *Software Development: Effective Practices and Federal Challenges in Applying Agile Methods*, GAO-12-681. Washington, DC: GAO, 13.

¹⁹ Software testing performed by the users (Trademark examiners) in the test environment.

²⁰ *User stories* convey the customer's (that is, the end user's) requirement or feature expressed briefly from the customer's perspective.

²¹ A *sprint* is a theme-driven timebox of requests to be worked on and accepted within a release of product.

²² USPTO, September 30, 2017. *Trademark Public Advisory Committee 2017 Annual Report*. Alexandria, VA: USPTO, 18.

the contractor's performance was below average during the TMNG examination development period due to a high turnover rate. We spoke with USPTO officials who confirmed that having contractors fill the business analyst role was challenging because they had to retrain new contractors frequently, which was time-consuming and frustrating.

During the course of our audit, USPTO took corrective action by hiring internal candidates to take over business analyst responsibilities after the performance period ended with the contractor in December 2016.

C. USPTO did not develop improvement plans to mitigate risk of significant, recurring problems with TMNG activities

Improvement plans mitigate future risk by helping turn around high-risk IT projects with significant problems. Accordingly, the *TechStat Guide*²³ provides instructions for identifying problems, analyzing root causes, and developing preventative measures. We reviewed six CIO-requested TechStat sessions, and found USPTO did not develop improvement plans for any of the TMNG examination tool issues discussed in these meetings. USPTO personnel stated they did not prepare improvement plans for the TechStat sessions because the CIO did not request one. Without having an improvement plan, USPTO will not be able to recover from the problems and issues they are facing. As a result, TMNG activities will continue to be behind schedule and over cost.

Recommendations

We recommend that the Under Secretary of Commerce for Intellectual Property and Director of the U.S. Patent and Trademark Office do the following:

1. Ensure the CRB adheres to the requirements in the CPIC policies and procedures. Specifically, if an investment is identified by the CRB as not meeting expectations as it pertains to schedule, budget, or other factors, ensure that the CRB alerts the ITIRB with recommendations for appropriate action.
2. Update IT CPIC policies and procedures to establish (a) an attendance requirement for CPIC meetings; (b) that all relevant information is presented to the boards to ensure greater transparency of significant issues; (c) the steps and actions the boards can take when an IT investment is not meeting expectations; and (d) the threshold criteria that the investment boards should use when determining whether to take remedial action.
3. Strengthen USPTO's IT investment management by ensuring all pending TMNG investments and future IT investments have a complete cost estimate prior to the boards' recommendation and the CIO's approval.

²³ USPTO, July 2017. *USPTO TechStat Guide*, Version 2.0, Alexandria, VA: USPTO, 17, 18, 30, and 31. The guide provides guidance to USPTO teams who have been selected for a TechStat by the CRB, ITIRB, or the CIO.

4. Improve USPTO's CPIC process by ensuring CPIC oversight functions are able to verify and ascertain whether completed IT investments were obtained in the most cost-effective way possible.
5. Continue to address outstanding TMNG development issues using the Path Forward Team.
6. Develop improvement plans to mitigate risk of significant, recurring problems with TMNG activities that are covered in the TechStat sessions.

Summary of Agency Response and OIG Comments

In response to our draft report, USPTO concurred with all six recommendations. We are encouraged that USPTO has already begun to address our recommendations. However, we are concerned that USPTO's responses to recommendations 1, 2, 3, and 4 do not guarantee that the issues related to these recommendations will be resolved. We look forward to USPTO's action plan that will provide details on its corrective actions.

We have summarized details of USPTO's response within this section, as well as provided comments to its response. Within its response, USPTO included technical comments to our report. We discussed the technical comments and responses with USPTO, and we addressed the technical comments in the report, as appropriate. USPTO's complete response to our draft report is in appendix C.

Regarding Recommendation 1

Agency response. USPTO noted that the TMNG investment was unique in that it had been elevated to the Deputy Director of USPTO, rather than the ITIRB, due to concerns about meeting expectations in accordance with established budgets and timeframes. USPTO stated that it will ensure that any future improvements in the CPIC process, policies, and procedures address scenarios such as this.

OIG response. USPTO stated it would ensure that improvements in the CPIC process are made to avoid situations described in this report. However, throughout the audit, USPTO did not disclose to us that TMNG investment concerns were elevated to the Deputy Director. Furthermore, USPTO did not provide any evidence of actions taken by the Deputy Director that addressed the TMNG not meeting expectations.

USPTO, in accordance with the Clinger-Cohen Act, established a CPIC process for overseeing its IT investments, such as TMNG. CPIC is a process that agencies use to select, manage, and evaluate information technology investments in alignment with the process for making budget, financial, and program management decisions in order to maximize the value of investments while assessing and managing risk. As stated in this report, we found that USPTO's CPIC process was ineffective, resulting in project results, and system development not meeting expectations.

Regarding Recommendation 2

Agency response. In response to our specific recommended changes to the CPIC policy, USPTO concurred with the basic tenets of our recommendation and will evaluate accordingly to determine the viability of each specific sub-element.

OIG response. While USPTO will evaluate and determine the viability of each specific sub-element, we emphasize the importance of USPTO not only evaluating viability but also ensuring inclusion of each specific sub-element in ongoing CPIC process improvements. It is critical that USPTO implement policies and procedures addressing each sub-element to ensure appropriate

board representation, transparency, and steps and actions the board can take when an IT investment is not meeting expectations. Without such policy and procedures, USPTO risks recurrence of similar issues.

Regarding Recommendation 3

Agency response. USPTO confirmed that the initial approval of the TMNG investment was based on an incomplete “To Be Determined” cost estimate, stated this was an isolated incident, and added that no additional investments have been or will be approved with a “To Be Determined” cost estimate. USPTO further stated that the TMNG “To Be Determined” cost estimate was replaced the following year with a rough order of magnitude cost estimate.

OIG response. We recognize that USPTO replaced the 2011 “To Be Determined” cost estimate with a \$30.3 million rough order of magnitude cost estimate in 2012. However, a recurring concern throughout our report’s findings was USPTO’s lack of planning and appropriate oversight of investment costs, including the establishment of initial cost estimates. USPTO significantly underestimated costs and subsequently re-baselined in pace with ballooning costs, reporting a low overall cost variance.

In its technical comments, USPTO stated that the order of magnitude estimate included a low-to-high range of -25 percent to +75 percent, or \$22.7 million to \$53 million. Even if USPTO were to base its calculations on the higher-end estimate of \$53 million, it would still end up underreporting its total investment by almost 30 percent. Nevertheless, we found that the CIO generally approved re-baseline requests—and we did not find an incident where they denied a re-baselining request for this or any other TMNG-related investments. For the initial TMNG investment alone, the CIO approved two re-baselines, a “Budget Estimate” increasing the baseline to \$53.1 million and a “Definitive Estimate” increasing the baseline to \$66.4 million (more than doubling the initial \$30.3 million rough order of magnitude estimate). Total obligations for the initial TMNG investment were \$68.2 million; as a result, with continuous re-baselining, USPTO reported only a 2.7 percent cost variance.

The Clinger-Cohen Act states that an agency’s CPIC process shall provide for the identification of a proposed IT investment with quantifiable measurements for determining the net benefits and risks of the investment. In addition, Office of Management and Budget (OMB) Circular No. A-11 requires the development of a realistic baseline cost, schedule, and performance goals before proceeding to full acquisition of the useful asset (or canceling the acquisition). As stated in our report recommendation, USPTO should strengthen IT investment management by ensuring that all pending TMNG and future IT investments have a complete cost estimate prior to the Boards’ recommendation and the CIO’s approval. Establishing complete initial cost estimates that explicitly identify and include requirements and associated costs may provide USPTO with better cost oversight—and help avoid subsequent re-baselining due to underestimated up-front costs.

Regarding Recommendation 4

Agency response. USPTO noted that the TMNG investment objectives did not include a goal for cost savings. When USPTO assesses the result of an investment, the evaluation is completed to determine whether the investment achieved its intended objectives.

OIG response. We recognize that the TMNG investment objectives did not include a goal for cost savings. However, OMB Circular A-130 requires government agencies to deliver IT services in the most cost-effective way possible. USPTO was not able to determine whether its initial TMNG was cost-effective because it did not have a complete cost estimate at the beginning. As stated in our report recommendation, USPTO should improve its CPIC process by ensuring CPIC oversight functions are able to verify and ascertain whether completed IT investment was obtained in the most cost-effective way possible.

Appendix A: Objective, Scope, and Methodology

The objective of our audit was to determine whether USPTO provided effective oversight of TMNG implementation. To accomplish our objective, we performed the following actions:

- Obtained an understanding of USPTO's CPIC process by interviewing USPTO personnel.
- Reviewed and analyzed CPIC documentation (e.g., meeting minutes, presentation documentation, and CIDPs) to determine whether USPTO evaluated progress of the TMNG investments and took corrective action.
- Reviewed and analyzed the CIDP evaluation to determine if USPTO compared results of the completed investment with planned expectations.
- Obtained an understanding of TMNG project oversight by interviewing key Trademark and OCIO personnel and reviewing reports and correspondence.
- Reviewed TechStat documentation to verify if improvement plans were developed to mitigate risk of significant recurring TMNG examination tool issues.
- Interviewed Trademark officials and analyzed documentation (e.g., feedback from end users, correspondence, and production metrics) used by Trademark management in the decision to deploy the examination tool to examining attorneys and retrain them on the legacy tool.
- Obtained an understanding on how business requirements were developed by interviewing Trademark and OCIO personnel and reviewing documentation (e.g., user stories, meeting minutes) for the examination tool.

We gained an understanding of internal controls significant within the context of the audit objective by interviewing USPTO officials and reviewing documentation for evidence of internal controls. Although we could not independently verify the reliability of all the information provided by USPTO, we compared it with other available supporting documents to determine data consistency and reasonableness. From these efforts, we believe the information we obtained is sufficiently reliable for this report. While we identified and reported on internal controls deficiencies, no incidents of fraud, illegal acts, violations, or abuse were detected within our audit. We identified control weaknesses regarding management's oversight of TMNG.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence that provides a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

We conducted this performance audit from January 2017 through May 2018 at USPTO offices in Alexandria, Virginia, under the authorities of the Inspector General Act of 1978, as amended (5 U.S.C. App.), and Department Organization Order 10-13, dated April 26, 2013.

Appendix B: TMNG Investment Cost and Schedule Changes

Investment ^a	Update No.	Cost Estimate	Schedule Estimate	CRB Concurrence	Elevated to ITIRB for Review?	Request Type
TMNG	Initial	\$30,260,000	FYs 11–14	Yes	Yes	Initial
	1	\$53,071,000	FYs 11–14	Yes	No	Re-baseline
	2	\$66,425,000	FYs 11–14	Yes	No	Re-baseline
	3	\$68,660,000	FYs 11–15	Yes	No	Re-plan ^b
TMNG-2	Initial	\$83,723,000	FYs 15–17	Yes	Yes	Initial
	1	\$97,605,000	FYs 15–19	Yes	No	Re-baseline
TMNG-Ext	Initial	\$21,107,000	FYs 13–16	Yes	Yes	Initial
	1	\$21,107,000	FYs 13–16	Yes	No	N/A – no changes submitted
	2	\$25,663,000	FYs 13–19	Yes	No	Re-baseline

Source: OIG analysis of TMNG investments

^a In total, the CRB concurred with cost baseline increases of over \$56 million for the TMNG investments.

^b Re-plan occurs when USPTO’s CPIC participants acknowledge that one or more “interim” aspects of the baseline has changed nominally, but the investment remains measured against the current baseline.

Appendix C: Agency Response



UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

NOV 20 2018

MEMORANDUM FOR: Mark Zabarsky
Principal Assistant Inspector General for Audit and Evaluation

FROM: Andrei Iancu *Andrei Iancu*
Under Secretary of Commerce for Intellectual Property
and Director of the U.S. Patent and Trademark Office

SUBJECT: Response to Draft Report: USPTO Needs to Improve Management
over the Implementation of the Trademark Next Generation System

Executive Summary

We appreciate the work you and your staff performed in reviewing the United States Patent and Trademark Office's (USPTO) oversight of the Trademark Next Generation System during the ten months ending in October 2017. Information technology (IT) is a mission-critical enabler for every aspect of the USPTO's trademark operations. Given the necessity of IT to maintain the quality, efficiency, and productivity of trademark operations, one of the USPTO's highest priorities is strengthening the various mission-critical legacy IT systems while accomplishing multi-year IT modernization goals.

As you noted in your report, the USPTO has faced some challenges with our investment in Trademark IT modernization, an effort we refer to as Trademark Next Generation (TMNG). The complexity of replacing Trademark legacy systems, some of which are decades old, while continuing to stabilize them without disrupting the production goals and quality levels established for trademark applications has indeed tested the Agency. Despite the challenges, the TMNG investment achieved successes through our pilots, prototypes, and foundational system separation and virtualization work. In addition, between late 2012 and early 2017 we successfully deployed four modernized systems, some of which are used internally and by external stakeholders, and retired four legacy systems.

Our most significant challenge has been with the trademark examination system. TMNG Examination intends to provide our examining attorneys with tools for docketing, researching, and authoring their office actions without impacting our ability to meet the strategic timeliness and quality commitments we have made to our customers. Given ongoing challenges with the functionality to examine applications, in 2016 we decided to cease a planned rollout of the examination tool to all examining attorneys. In 2017, we established a Path Forward team to define an improvement plan. Since you completed your fieldwork in October 2017, we have executed an improved development, test, delivery, and support process to mediate the identified deficiencies impacting the examining attorneys' ability to use the product and deployed it into a production environment in August 2018. We plan for a small group to beta test the tool soon.

P.O. Box 1450, Alexandria, Virginia 22313-1450 – www.USPTO.GOV

Given the increase in incoming trademark applications and the need to balance our timeliness goals for trademark application examination with our modernization efforts, we are approaching the rollout of the examination tool in phases. The results of our first round of beta testing will inform our next steps.

We were also pleased to see that many of the Office of Inspector General recommendations align with improvement efforts currently in progress at the USPTO. For example, some of the more recent successes with the examination tool stem from improvements we are making in our requirements definition and user story process. We also improved our testing strategy when we replaced the authoring functionality in the examination tool by having subject matter experts test side-by-side with developers.

Similarly, in the early part of fiscal year 2018 we identified a need to refine and improve our capital planning and investment control (CPIC) process and procedures. We created a process improvement team that has identified areas for improvement to support the various development methodologies in place at the USPTO. Many of the recommendations you and your team identified are very similar to some of our own targeted change proposals.

In summary, the USPTO appreciates and concurs with the tenets of the recommendations in your report, which we will use to further the improvement efforts currently underway. Our response to each recommendation is discussed in detail below and the USPTO provided technical comments under a separate cover.

Response to Recommendations

IG Recommendation that the Under Secretary of Commerce for Intellectual Property and Director of USPTO (1): Ensure the CRB adheres to the requirements in the CPIC policies and procedures. Specifically, if an investment is identified by the CRB as not meeting expectations as it pertains to schedule, budget, or other factors, ensure that the CRB alerts the ITIRB with recommendations for appropriate action.

USPTO Response:

The USPTO concurs with this recommendation. The USPTO agrees with the importance of elevating IT investments for appropriate action when the investment is not meeting expectations. In fact, the TMNG investment was unique in that it had been elevated to the Deputy Director of the USPTO because there were concerns about meeting expectations in accordance with established budget and timeframes. Consequently, the Capital Planning and Investment Control (CPIC) Review Board (CRB) did not elevate the investment directly to the ITIRB, as required by established CPIC policies and procedures. The USPTO will ensure that any future improvements in the CPIC process, policies, and procedures address scenarios such as this.

IG Recommendation that the Under Secretary of Commerce for Intellectual Property and Director of USPTO (2): Update IT CPIC policies and procedures to establish (a) an attendance requirement for CPIC meetings; (b) that all relevant information is presented to the boards to ensure greater transparency of significant issues; (c) the steps and actions the boards can take when an IT investment is not meeting expectations; and (d) the threshold criteria that the investment boards should use when determining whether to take remedial action.

USPTO Response:

The USPTO concurs with the basic tenets of the recommendation and will evaluate accordingly to determine the viability of each specific sub-element of the recommendation. The USPTO is currently conducting a CPIC process improvement effort where we identified improvement ideas that parallel this recommendation. The USPTO will incorporate evaluating each component of this recommendation into its ongoing CPIC process improvement activities.

IG Recommendation that the Under Secretary of Commerce for Intellectual Property and Director of USPTO (3): Strengthen USPTO's IT investment management by ensuring all pending TMNG investments and future IT investments have a complete cost estimate prior to the boards' recommendation and the CIO's approval.

USPTO Response:

The USPTO concurs with the recommendation. The USPTO reviewed its records and confirmed that the initial approval of the TMNG investment in 2011 with an incomplete cost estimate was an isolated incident. No additional TMNG investments – or other USPTO investments – have been, or will be, approved with a “To Be Determined” cost estimate. In 2011, the TMNG investment was approved with “To Be Determined” as part of the cost estimate because there was a desire to begin work on the aspects of the investment where we had a defined plan, while we were continuing to establish plans and cost estimates for other areas of the investment. The \$30.3 million estimate was a rough order of magnitude estimate for the portion of the work that had been defined. In fact, the initial Capital Investment Decision Paper (CIDP) stated that after one year, the functional/technical planning efforts would be completed (via pilots and prototypes) and the CIDP would be revised to include estimates for out-year activities around a more clearly defined scope. As planned, the “To Be Determined” was replaced with a rough order of magnitude cost estimate in 2012.

IG Recommendation that the Under Secretary of Commerce for Intellectual Property and Director of USPTO (4): Improve USPTO's CPIC process by ensuring CPIC oversight functions are able to verify and ascertain whether completed IT investments achieved any planned cost savings.

USPTO Response:

The USPTO concurs with this recommendation when the investment plans to achieve cost savings. However, the TMNG investment objectives did not include a goal for cost savings. When the USPTO evaluates an investment at completion, it determines whether an investment achieved its intended objectives.

IG Recommendation that the Under Secretary of Commerce for Intellectual Property and Director of USPTO (5): Continue to address outstanding TMNG development issues using the Path Forward Team.

USPTO Response:

The USPTO concurs with this recommendation. As noted in the Executive Summary, the USPTO has had success in using the Path Forward Team to develop and implement improvement plans for the TMNG Examination Tool.

IG Recommendation that the Under Secretary of Commerce for Intellectual Property and Director of USPTO (6): Develop improvement plans to mitigate risk of significant, recurring problems with TMNG activities that are covered in the TechStat sessions.

USPTO Response:

The USPTO concurs with this recommendation. The Path Forward Team continues to develop improvement plans to mitigate risk for future TMNG activities.

Conclusion

We appreciate your work and thank the Principal Assistant Inspector General for Audit and Evaluation for providing us with this report. The USPTO is always looking to improve its processes and drive the best outcomes on behalf of its stakeholders. This information helps us achieve those goals.

**OCIO/Trademarks Technical Comments to the
USPTO Needs to Improve Management over the Implementation of the Trademark Next
Generation System, Draft Report October 16, 2018**

Page 1, Paragraph 1, Sentence 3: *“The proposed system—now referred to as Trademark Next Generation (TMNG)—is intended to replace USPTO’s current trademark IT infrastructure.”* Suggest replacing “system” with “investment”.

Page 1, Paragraph 1, Last Sentence: *“Since 2011, the Office of the Chief Information Officer (OCIO) has been working on the development, testing and implementation of TMNG.”* Suggest replacing “Office of the Chief Information Officer (OCIO)” with “USPTO”; and suggest adding “definition,” prior to “development”.

Page 2, Paragraph 1, Bullet 3: *Approving re-baselines²* Suggest updating the footnote to explain that although the OCIO is responsible for approving rebaselines, the CRB provides concurrence (or not) with them.

Page 2, paragraph 3, Second Sentence: *“The initial TMNG investment’s cost was estimated at \$30.3 million, with completion planned for fiscal year (FY) 2014.”* This sentence isn’t entirely accurate without proper context. Suggest inserting “A portion of” prior to “The initial...” to begin the sentence. The additional context for the \$30.3 million estimate is: The initial estimate of \$30,260.11K was an “Order of Magnitude Estimate” made during the initiation process and was incomplete. By the USPTO’s definition at the time, an order of magnitude estimate has a range of -25% to +75% of the actual estimate. Further, the initial Capital Investment Decision Paper (CIDP) stated that after one year, the functional/technical planning efforts would be completed (via pilots and prototypes) and the CIDP would be revised to request funding for outyear activities around a more clearly defined scope. Thus, the initial estimate was never intended to be comprehensive, which is why the CIDP did not include estimates for some cost elements. The initial schedule for completion (September 2014) is correctly presented but does not account for the scope elaboration that would follow the first year’s pilots and prototypes. Suggest explaining this at some place in the report.

Page 3, Paragraph 2, Sentence 3: *“In 2011, USPTO initially estimated the TMNG investment to cost approximately \$30.3 million, with completion planned for FY 2014.”* As discussed above, this figure was a rough order of magnitude (ROM) number and was always expected to be incomplete. Suggest inserting “a portion of” between “estimated” and “the”; and inserting “of the related scope” between “completion” and “planned”.

Page 3, Paragraph 2, Sentence 4: *“However, current estimates for TMNG place the final cost at \$260.7 million, with completion planned for 2021 – more than eight times the initial estimated cost and 7 years later than originally planned.”* This sentence isn’t entirely accurate without some clarification. Suggest replacing “However, current estimates” with “Although the scope has increased, estimates as of July 2017” and inserting the word “incomplete” between the words “initial” and “estimated”. The additional context for the recommended edit is: The “as of” date helps to provide some clarification. In addition, while the schedule and cost estimated to realize the goals of TMNG have changed since the first formal estimate was prepared in FY 2011, so too has the scope and the USPTO’s insights into what technology and development approaches are necessary to deliver critical business value to internal and external stakeholders.

**OCIO/Trademarks Technical Comments to the
USPTO Needs to Improve Management over the Implementation of the Trademark Next
Generation System, Draft Report October 16, 2018**

Page 3, Paragraph 3, Last Sentence: *“For example, USPTO has already spent approximately \$38.6 million in operating and maintaining trademark legacy systems, while concurrently spending \$166.5 million attempting to develop TMNG.”* It is unclear how the numbers were derived. Suggest re-writing the sentence to read: *“For example, USPTO spends approximately \$10 million annually to operate and maintain the most significant trademark legacy systems, while concurrently spending \$161.6 million through fiscal year 2017 attempting to develop TMNG.”* The additional context for this recommended edit is: Total TMNG spending through FY 2017 is \$161.6 million, which includes \$66.9 million of adjusted expenditures for the closed investment (TMNG), \$16.7 million of obligated funding for the active TMNG-EXT investment, and \$78.0 million of obligated funding for the active TMNG-2 investment. Additionally, the \$38.6 million trademark O&M figure does not appear accurate. USPTO estimates approximately \$10 million is spent annually to operate and maintain the most significant trademark legacy systems.

Page 5, Section B, Bullet 1, sentence 3: *“These four unrepresented business units consisted of the Office of the Chief Financial Officer, Office of the Chief Administrative Officer, Office of the Chief Communications Officer, and Office of Equal Employment Opportunity and Diversity.”* While the information is technically accurate, we question the necessity in reporting the actual business units. If it is not necessary, suggest deleting this sentence.

Page 6, Section C, Bullet 1, sentence 3: *“Subsequently, the TMNG examination tool was abandoned by an entire USPTO law office of examining attorneys (Law Office 122).”* This is incorrect. The law office did not “abandon” TMNG, the Commissioner for Trademarks requested the rollout to cease and directed that LO 122 be trained in FAST 1 (the existing examination tool). Suggest rewording the sentence to read “Subsequently, USPTO stopped the Law Office 122 beta testing and ceased the rollout of the examination tool.”

Page 7, Section D, Bullet 1, Paragraph 2, Sentence 1: *“To illustrate: the CRB concurred with two re-baselines, with an initial cost estimate of \$30.3 million re-baselined twice to \$66.4 million and one re-planning request that further increased the cost estimate to \$68.6 million – a total increase of 126 percent (due to cost growth, schedule delays, and performance changes).”* Suggest inserting “incomplete” between the words “initial” and “cost”.

Page 8, Paragraph 1, Last Sentence: *“Providing the boards with defined paths can enable the board to take corrective action to mitigate acquisition risks.”* The term “acquisition” is confusing because the report doesn’t discuss acquisition anywhere else. Suggest deleting the word.

Page 9, Finding II: Finding II adds quite a bit of context for the information reported in Finding I (i.e., the “To-Be-Determined” cost estimate, which caused the \$30.3 million estimate to be incomplete). Suggest reordering findings I and II. If the report discussed Finding II before Finding I, when reading the information in Finding I, the reader understands that the \$30.3 million estimate is incomplete.

**OCIO/Trademarks Technical Comments to the
USPTO Needs to Improve Management over the Implementation of the Trademark Next
Generation System, Draft Report October 16, 2018**

Page 9, Section II, Paragraph 2, Sentence 2: *“To illustrate, the TMNG investment’s approved business case included an estimated schedule completion date of FY 2014 and a cost estimate of \$30.3 million, with some of the cost elements – such as operating costs and investment costs for other phases – listed as “To-Be-Determined” (TBD).”* The \$30.3 million figure was always understood to be a rough order of magnitude (ROM) number and was always expected to be incomplete. Suggest inserting “an incomplete” between “and” and “estimate”.

Page 9, Table 2, Row 1: *“\$68M.”* We believe this number is the final re-baseline estimate. The actual cost at completion was \$66.8M.

Page 9, Table 2, Row 1: *“\$30M.”* Suggest clarifying by adding “(incomplete)” under the \$30M number.

Page 10, Paragraph 1, Entire Paragraph: This entire paragraph implies that USPTO anticipated cost savings as a result of the initial TMNG investment. However, there was no commitment of cost savings in the approved Capital Investment Decision Paper (CIDP). When the USPTO evaluates the result of an estimate, the evaluation is completed to determine if the investment achieved its intended. The evaluation phase didn’t evaluate for cost savings because it was not a goal in the original CIDP.

Page 10, Section III, Paragraph 2: Given the time elapsed between the end of fieldwork and the date the report is being published, suggest replacing “current” (e.g., “current baseline”, “currently estimated”, and “currently anticipated”) with “as of” dates for clarity.

Page 11, Section III-A, Paragraph 2, Sentence 2: *“However, the newly hired examining attorneys discovered significant issues, such as the inability to examine international filings, send final actions, and draft appeal briefs.”* These issues were not “discovered” by the examining attorneys in LO 122. There were known missing features beforehand that were to be corrected before the system was to be rollout to the rest of examining attorneys production. However, the limitations were greater than expected and the fixes were not going to be implemented soon enough. Suggest rewording the sentence as follows: “The new Examiner tool was missing some features that would be fixed before rolling the tool out to the remaining examining attorneys. However, the feature limitations for the newly hired examining attorneys were greater than anticipated, such as the inability to examine international filings, send final actions, and draft appeal briefs.”

Page 11, Section III-A Paragraph 3, Sentence 4: *“However, for the TMNG examination tool, USPTO did not perform user acceptance testing prior to software delivery.”* During the preparation to launch TMNG to LO 122, the product owner and subject matter experts were given a demo of the upcoming capability. Suggest inserting “the product owner and subject matter experts were given a demo of the upcoming capability, but the” between “tool,” and “USPTO”.

**OCIO/Trademarks Technical Comments to the
USPTO Needs to Improve Management over the Implementation of the Trademark Next
Generation System, Draft Report October 16, 2018**

Page 11, Section III-A Paragraph 3, Sentence 5: *“The examination tool was deployed to newly hired examiners for beta testing in a production environment.”* The examining attorneys were not on production while working in TMNG. Suggest adding a footnote to clarify.

Page 11, Section III-A Paragraph 3, Sentence 8: *“The OCIO estimates that full rollout of the tool to all Trademark law offices will not be completed until the second quarter of FY 2019, almost 3 years after the original projection of the first half of FY 2016.”* Suggest adding “as of” dates. Also suggest replacing “OCIO” with “USPTO”.

Page 12, Paragraph 4, Third Sentence: *“We reviewed six CIO-requested TechStat sessions, and found USPTO did not develop improvement plan for any of the TMNG examination tool issues discussed in these meetings.”* Suggest adding the word “consistently” between “not” and “develop”; and suggest deleting the fourth, fifth, and sixth sentences in the paragraph. The additional context for the recommended edit is: Though not specifically referred to as “Improvement Plans”, each TechStat resulted in improvement actions that were documented in a Memorandum for the Record including at least one action to develop an Improvement Plan as part of the August 9, 2017 TechStat.

I0USPTO00275