

Patent Quality and Examination Efficiency at the EPO: An Objective Analysis by ipQuants AG

By

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1. Executive Summary: Assessing the European Patent Office Examination Efficacy

This Qthena Insights Report aims to provide an objective analysis of the European Patent Office's (EPO) examination process. We scrutinize the EPO's assertions of enhanced efficiency and patent quality by comparing them with the perceptions of the industry and the experiences of EPO patent examiners, as documented in various media reports. This report uncovers a paradox in the EPO's operation, characterized by an increased patent application workload, a reduced patent examiner workforce, decreased time to grant patents, and a significant rate of successful oppositions, which collectively suggest potential quality concerns.

Key Findings:

- **Increased Pending Workload:** There has been a 7.54% rise in pending patent applications at the EPO from 2018 to 2022, indicating an increased workload that traditionally would require a larger number of examiners.
- **Reduced Examiner Workforce:** The number of EPO patent examiners has decreased by 7% from 2018 to 2022, despite the rise in pending applications, suggesting a more significant workload per examiner and potential challenges in maintaining examination quality.
- **Decreased Time to Decision:** The time to grant for direct EP filings has been reduced by approximately 10% from 2019 to 2022, hinting at a more rapid, perhaps less thorough, examination process.
- **Diminished Communication:** A considerable proportion (48% in 2022) of granted EP patent applications received no Article 94(3) EPC Official Communications, reflecting an increase from 43% in 2013 and raising questions about the depth of examination.
- **Opposition Outcomes as a Quality Indicator:** The high rate of successful oppositions (72.9%) indicates that many EPO-granted patents do not withstand post-grant challenges, with only 27.1% of cases maintaining the patent as granted.

The data presented in this report substantiates the concerns about examination quality and workload at the EPO, echoing the issues raised by both industry stakeholders and the patent examiners themselves. The findings strongly suggest that the EPO must recognize and address these challenges. We propose a collaborative approach where EPO management, patent examiners, and industry stakeholders engage in open and constructive dialogue to recalibrate the examination process, ensuring that the quality of patent examination is not compromised.

2. Introduction and Purpose

One of the core objectives of ipQuants AG is to facilitate informed decision-making through objective, data-driven insights. Since our inception, we have steadfastly committed to empowering stakeholders by providing clarity and transparency in the intellectual property domain. Our data has been instrumental in various high-stake environments, ranging from top law firms and corporate patent departments to policy-making.

ipQuants AG is not only the only company world-wide able to provide such transparency around European Patent Office (EPO) patenting activity, but also empowers its users with strategic insights from global patent activity. ipQuants AG has since 2019 equipped patent applicants and their representatives with vital data-driven insights for them to manage their patent portfolio with data.

The formation of the Intellectual Property Quality Charter ([IPQC](#)) by key industry participants reflects growing concerns regarding the European Patent Office's (EPO) examination quality. It is not ipQuants AG's role to concur with or contest the viewpoints of either the EPO management or the IPQC. Our objective is to inform public discourse as we have done long before this debate between the EPO and the IPQC arose, a responsibility we have honoured by illuminating the EPO's operations through rigorous statistical analysis, ultimately benefiting both the EPO and the wider innovation community.

Rebuffing data-supported arguments, as observed in the EPO's [responses](#), does not advance the dialogue. This report demonstrates that the ipQuants Qthena patent index is not only reliable but also on par with those of the EPO, underscoring our capability to maintain objectivity (see Annex A). Unlike government agencies that may have influence over certain narratives and data, ipQuants AG has developed an unparalleled *independent* data resource, providing a critical third-party perspective on issues affecting patent quality - a vital asset for all EPO stakeholders.

Our commitment to impartiality and our track record of conducting high-impact statistical analyses are well established. This is evidenced by, among others, ipQuants AG being a co-author of the highly-impactful EPO study “Women's participation in inventive activity” in 2022 (see authors on page 56; [open report](#)). As we proceed, this report continues ipQuants AG's tradition of shedding light on the nuances of patent quality, reinforcing our role as a beacon of transparency in the intellectual property landscape.

3. Methodology and Data Integrity

As ipQuants AG unveils its latest Qthena Insights Report, we stand firmly on the precision and reliability of our data analytics. Our dedicated team ensures the highest quality of patent data, setting a benchmark for trustworthiness in the field. This report includes an annex dedicated to affirming the accuracy of our data from the outset. Our KPIs closely align with those published by the European Patent Office (EPO), demonstrating the validity of our metrics through near-perfect correlation. For instance, our count of officially granted EPO patents exhibits a negligible delta when compared to the EPO's own figures, and our year-by-year opposition rates align closely with official statistics (see details in [Annex A](#)). Such parallels substantiate the credibility of our findings and should dispel any concerns regarding data completeness or integrity.

While certain metrics from the European Patent Office (EPO) may not be fully accessible due to their proprietary calculation methods or internal-only access, ipQuants AG is committed to clarifying these areas with our detailed analytical approach. Our steadfast pursuit of unparalleled transparency is designed to empower not just patent applicants and innovators but also internal EPO stakeholders, such as patent examiners and examining divisions, by providing objective, transparent, and data-driven insights. The information detailed in this report goes beyond the quantitative data; it represents our firm commitment to providing clear, data-driven insights necessary for a substantive discussion. This is vital for the European innovation community, for whom patent filings are fundamental to commercial viability and market success. Our objective is to contribute to a transparent and knowledgeable dialogue, ensuring that the ecosystem of intellectual property rights continues to thrive on the bedrock of reliable information.

4. Qthena Insights Report Approach

This report is structured to offer clear and precise insights into the examination procedures at the European Patent Office (EPO). Our aim is to present transparent statistics that explore not only the workload and efficiency of the EPO but also to objectively evaluate the quality of the examination procedures.

To accomplish this, we begin by **examining the number of patent examiners** at the EPO, whose responsibility it is to manage the increasing number of filings. We then provide an analysis of the **actual pending workload**, elucidating the resources expended and the effort invested in each decided EP application. An **estimation of the time spent per application** up to the point of grant is provided, which also considers **the likelihood of a successful outcome** from the applicant's perspective. Ultimately, we analyse **decisions from the opposition division** as a **measure to assess the quality** of the EPO's examination process.

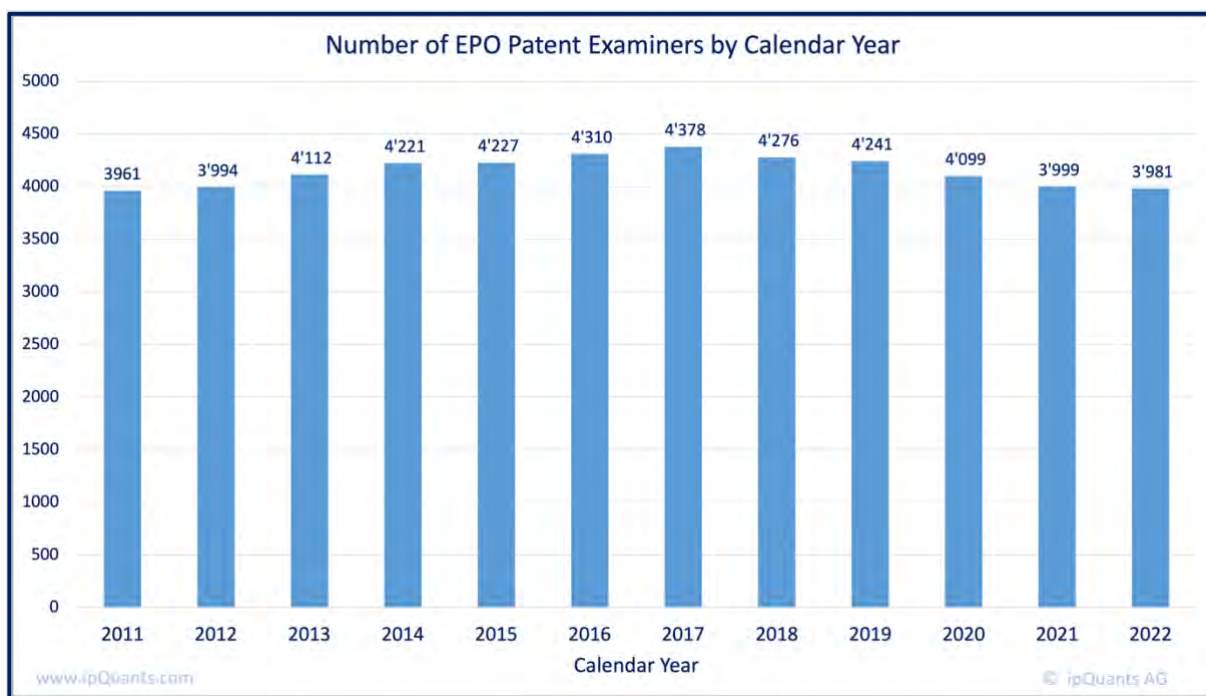
The sequence of topics laid out in this report is intentional, building a comprehensive view that informs our final conclusions regarding the quality of the patent examination procedure at the EPO.

5. Number of EPO Patent Examiners

In the dynamic environment of the European Patent Office (EPO), the patent examiner workforce is a critical component in the patent application process. Recent trends, as outlined in the EPO's Social Reports, indicate a notable decrease in the number of patent examiners. Specifically, the data shows a **6.9% reduction** from 4'276 examiners in 2018 to 3'981 in 2022.

The reduction in staff poses several potential consequences for the EPO's operations. Primarily, there is concern over whether the depth and thoroughness of patent examinations can be maintained with fewer examiners. Additionally, the ability of the EPO to keep pace with the timeliness of its decisions may be impacted, a factor that is particularly crucial given the steady increase in patent filings.

The broader implications of this workforce contraction extend to the overall efficiency of the EPO's examination process and the quality of its output. We will delve deeper into the possible consequences and nuances of these implications in the following chapters. As the cornerstone of the European innovation ecosystem, the robustness of the patent examination procedure is of paramount importance.



Source: EPO Social Reports 2011 through 2022

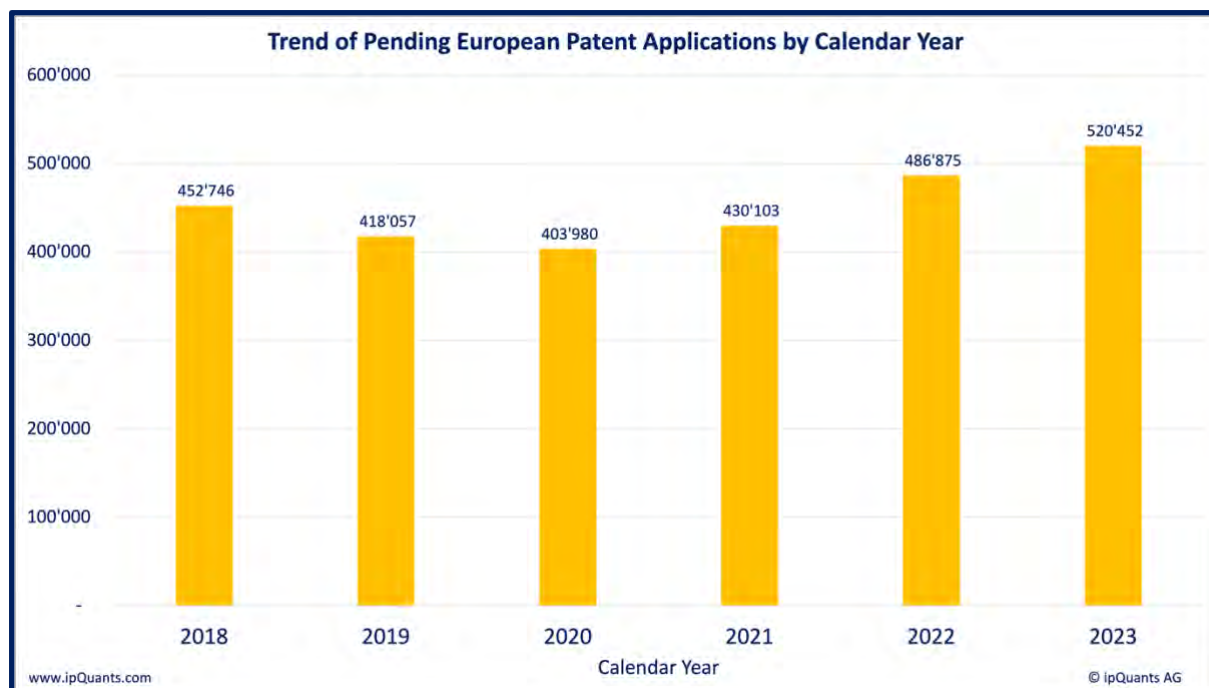
6. Trend of Pending European Patent Applications

A comprehensive figure representing the total number of pending European patent applications remains elusive in official European Patent Office (EPO) communications. The EPO's published data often categorize backlogs in a manner that is not entirely transparent to external entities, relying on internal data inaccessible to the public. For example, the EPO's annual quality reports offer pendency statistics for applications in specific stages, such as those under examination, yet these figures are often further divided by arbitrary timeframes, making them challenging to interpret.

The most current and detailed disclosure of EPO pendency, to our knowledge, is found in the IP5 Statistics Report (2021 Edition), which segments pending applications into two distinct groups: those awaiting examination request and those under examination. The total pending EP applications for the years 2020 and 2021, as per the IP5 Statistics Report, stand at 421'669 and 453'587, respectively.

Our ipQuants Qthena Index offers a close comparison, indicating 430'103 pending EP applications in 2021. Given the inevitable delay in public access to patent office records, the proximity of our figures to the official count speaks volumes about the ipQuants data quality team's excellence (refer to [Annex A](#) for further details).

The data points toward a growing backlog at the EPO, an issue that would benefit from greater transparency. A unified, unambiguous count of all pending EP applications would be a significant aid to all parties involved in the patent process. The objective of this report is to provide such clarity, delivering unparalleled transparency and an unbiased assessment of the essential metrics related to the examination procedure.



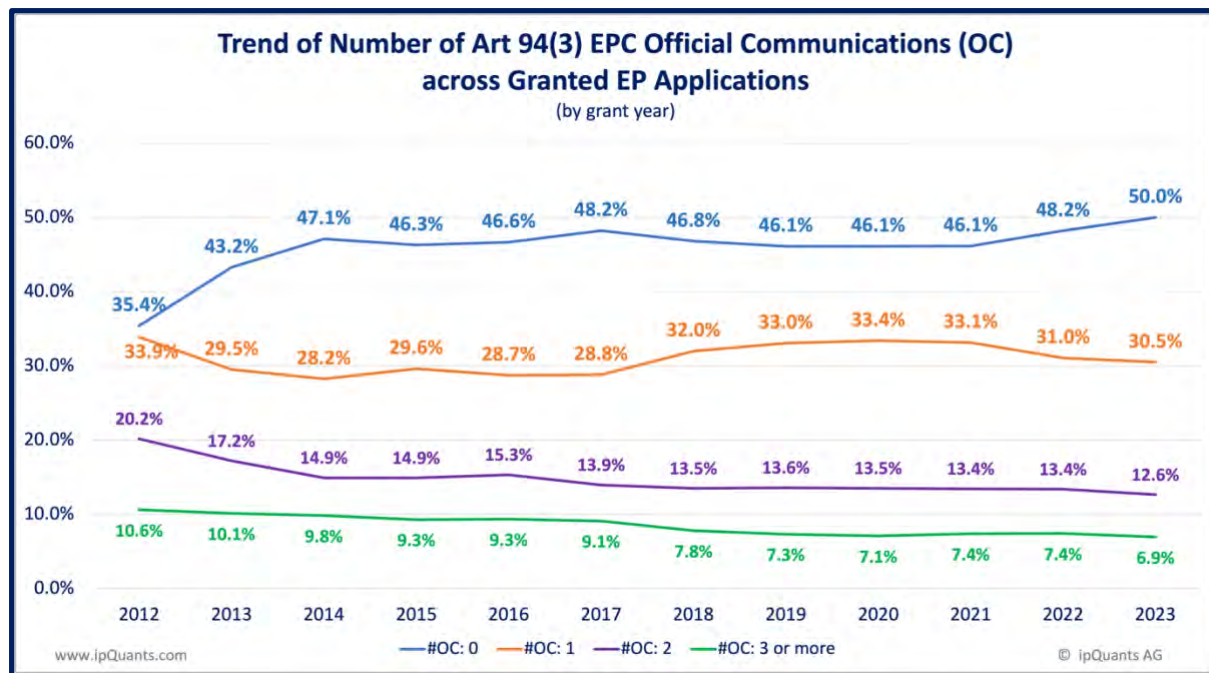
7. Number of Official Communications Across Granted EP applications

The European Patent Office's (EPO) efficiency in examining EP applications can be partially gauged by the number of Official Communications (OC) under Article 94(3) EPC issued during the examination phase. In 2022, nearly half of the granted EP applications, specifically 48.2%, proceeded to grant without a single Article 94(3) EPC communication being issued. These grants were based solely on the initial Search Report and the corresponding search opinion—documents that are standard for all applications and are not included in the OC count referenced here.

This figure has remained relatively stable since 2018 when it was reported that 46.8% of granted cases did not involve an Article 94(3) EPC communication. However, looking back over the past decade reveals a significant shift; in 2012, only 35.4% of grants were issued without an OC.

When examining cases that involved at least one OC, there has been a slight decrease from 32.0% in 2018 to 31.0% in 2022. More notably, the proportion of granted applications that included two OCs has remained low at 13.4% in 2022, a decrease from 17.2% in 2013. Granted applications that included three or more Official Communications (OCs) have become increasingly rare, now accounting for only around 6.9% of cases. This represents a substantial decrease of 32% from the figures observed a decade earlier.

In conclusion, these trends suggest that the EPO's Examining Divisions have become more efficient in reaching final decisions, as evidenced by a reduced frequency of OC issuance. This indicates a streamlined examination process that, while efficient, may raise questions about the depth of examination and the implications for patent quality.



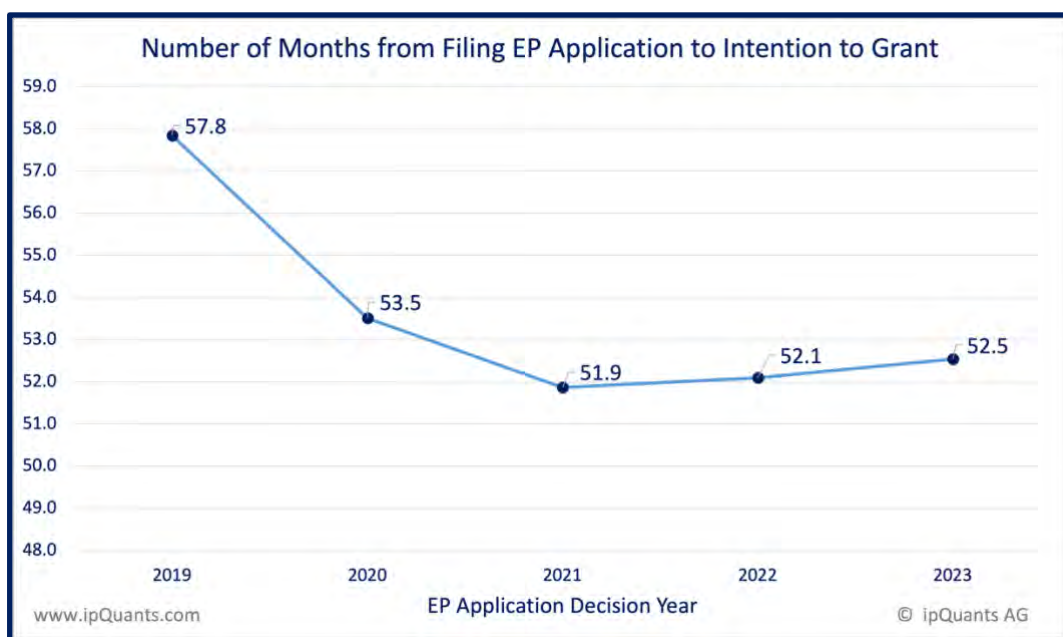
8. Days To Grant Across Granted EP Applications

In the pursuit of a comprehensive understanding of the European Patent Office's efficiency, the metric of time to grant is indispensable. Various methodologies exist to estimate this duration, each with its unique set of parameters. The EPO, in its own publications such as the annual review, breaks down the timeline into distinct stages, including search and examination, offering granular insights into the progression of applications.

For instance, the EPO's examination duration metric, as outlined in the EPO 2022 Statistics Report, is derived from the period between a valid examination request and the dispatch of the examiner's intention to grant, focusing on "standard examination". This EPO delineation notably excludes cases with two or more instances of late fee payment, multiple requests for time extensions, or rescheduling of oral proceedings. Furthermore, it omits cases that do not result in a grant.

Aiming for a straightforward and inclusive approach, ipQuants has chosen to calculate the average duration from the filing of a direct EP application to the issuance of the Intention to Grant communication across all granted applications. This measure encompasses all cases, without exception, presenting a holistic and unbiased view of the examination timeframe. By not excluding any scenarios, we ensure that our metric reflects the reality of the examination process in its entirety, offering a true-to-life gauge for stakeholders.

Direct filings, as referenced in our methodology, pertain to EP applications that are filed directly at the EPO, as opposed to those entering the EPO's jurisdiction via the PCT-EP route. This distinction is crucial as it eliminates variables associated with the PCT phase, which could obscure the true efficiency of the EPO's examination process. By focusing exclusively on direct filings, we sidestep potential complications and ensure a more straightforward assessment. Our approach guarantees a transparent and unbiased perspective on the actual time taken by EPO examiners to grant a patent, offering a clear and direct measure that stakeholders can rely on for an accurate understanding of the EPO's performance.



It is important to note that in our dedication to ensuring clarity and impartiality, the ipQuants Qthena index meticulously incorporates all categories of EP applications when computing its metrics, eschewing any form of exclusion. This approach upholds our commitment to a methodology that is both transparent and free from bias.

A review of the available literature revealed that the only available EPO time-to-grant metric is found within the IP5 Statistics Report of 2021, rather than in an official EPO report. According to this report, the EPO indicates that the average duration from filing to the intention to grant for "EP first filings" is 43.3 months. It is notable that the EPO specifies this statistic solely for "first filings," which refers to initial patent applications that precede any subsequent international filings. This definition inherently omits a substantial segment of applications - particularly those from entities that typically file in multiple jurisdictions, including multinationals - thus presenting a metric that may not fully reflect the broader spectrum of global patent filing strategies.

The selective disclosure by the EPO of this metric raises concerns about its representativeness, suggesting that it might not capture the full scope of the patent application landscape. By contrast, ipQuants AG's methodology seeks to provide a more encompassing view, one that considers the diversity and complexity of patent applications as encountered in real-world scenarios.

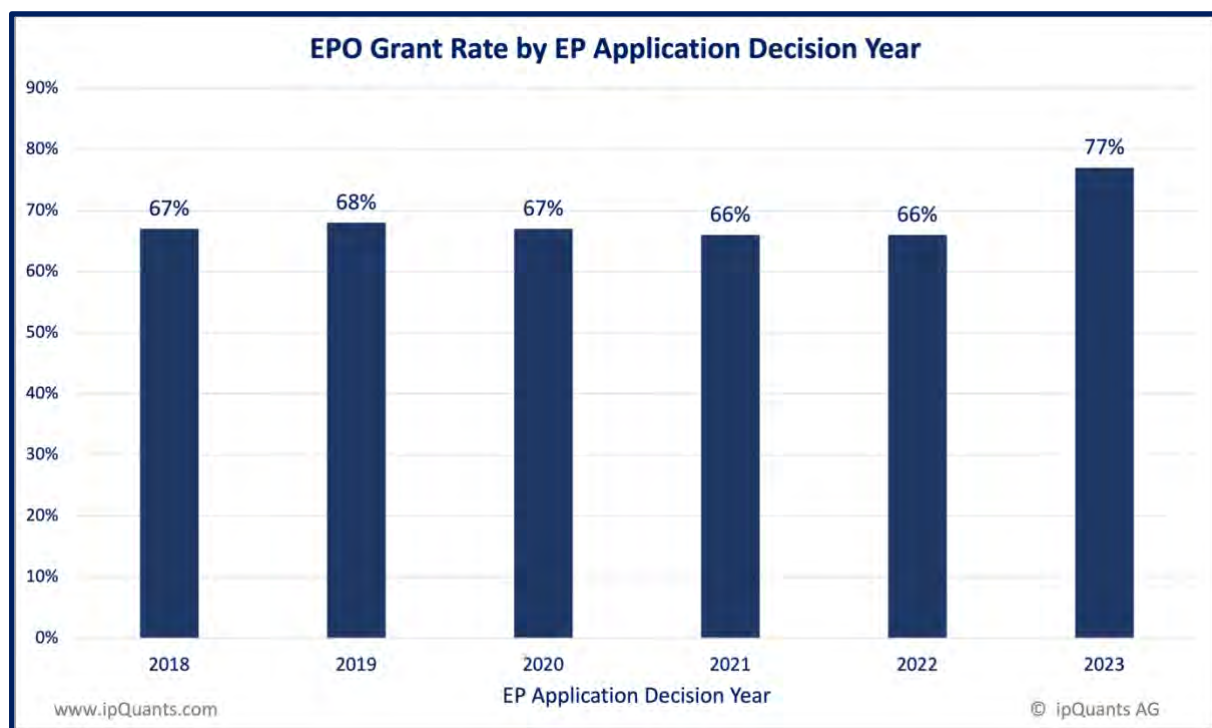
Based on the ipQuants Qthena methodology, the **5-year average of the time from filing to the intention to Grant for direct EP filings is 53.9 months**. This value was calculated across direct EP filings that included an intention to grant event between 2019 and 2023.

9. Grant Rate Trend across decided EP Applications

In 2022, the European Patent Office (EPO) maintained a steady grant rate, with 66% of examined EP applications resulting in granted patents. This indicates that nearly two-thirds of the cases completed within the year were recognized as defining novel and inventive contributions to their respective fields.

Historically, the grant rate has hovered around 66% over the past several years. The notable increase to 77% in 2023 can be largely attributed to the strategic timing of applicants in anticipation of the Unitary Patent system's implementation. Many applicants chose to delay their grants to optimize their patent strategies under the new system. Therefore, the elevated grant rate observed in 2023 is expected to be an anomaly rather than a trend, with projections suggesting a return to the normative rate in 2024.

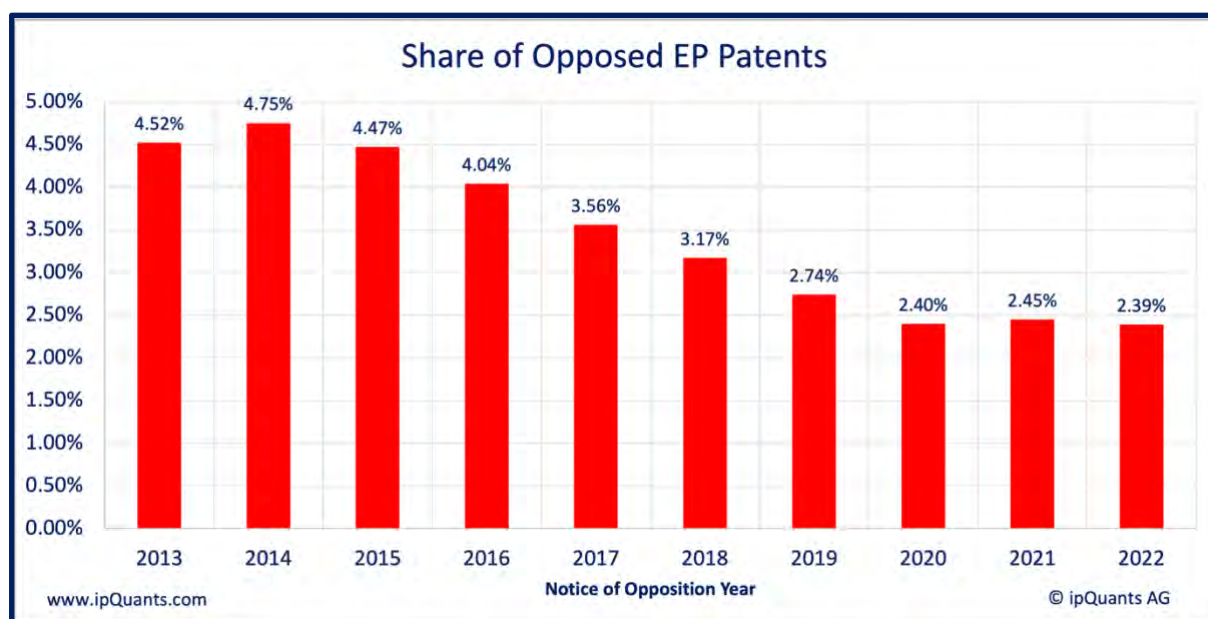
The **Average Grant Rate*** for EP applications decided between 2018 to 2023 stands at **68.2%**.



**Calculated across 999'418 EP applications that got decided between 2018 and YTD 2023.*

10. EPO Opposition Procedure

In the discourse on patent quality between the EPO and industry stakeholders, understanding the examination procedure, particularly in terms of workload and efficiency, is only part of the equation. The quintessential measure for assessing the robustness of granted patents lies within the outcomes of the EPO's opposition procedures. Although the proportion of granted EP patents faced with opposition is minimal, at 2.39% in 2022, the implications of these challenges are substantial and merit detailed examination.

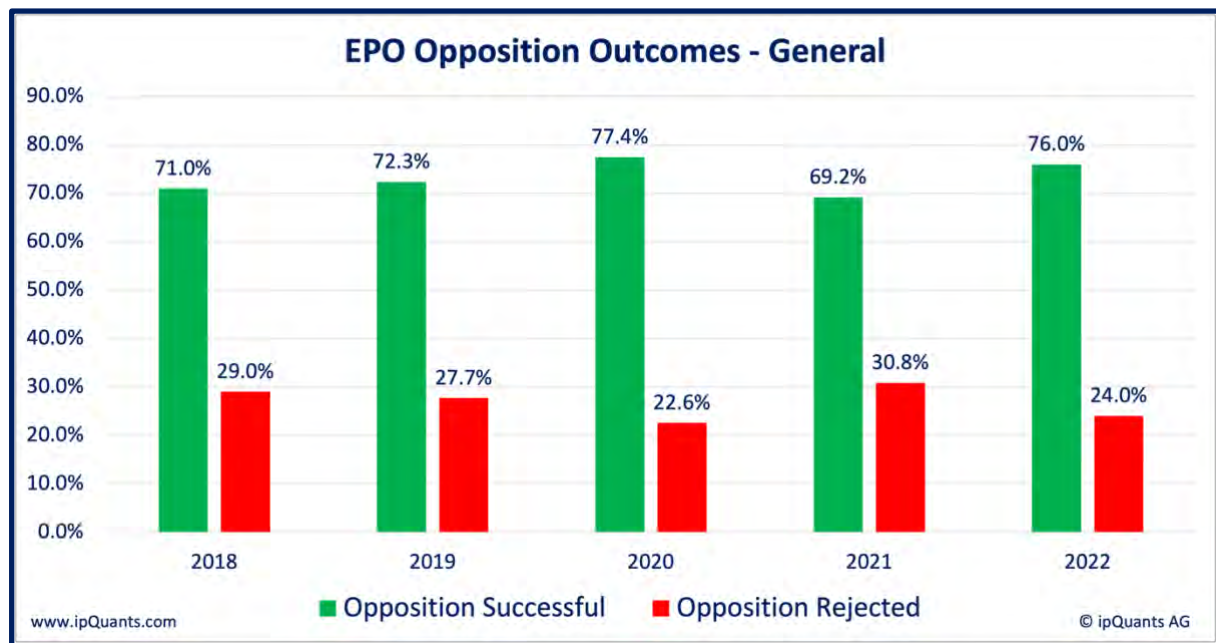


The EPO's opposition divisions conduct a thorough review of contested patents in view of the raised opposition grounds, usually based on novelty, and/or inventive step. The outcomes of opposition procedures are telling: a patent may be revoked, maintained in amended form, or upheld as granted. The latter outcome reinforces the original decision of the Examining Divisions, while revocation or amendment suggests a departure from the initial findings, often prompted by new prior art or arguments introduced during the opposition by the opponent(s).

While new arguments in opposition are typically supported by fresh prior art, it's worth noting that these documents emerge from additional searches conducted by the opponents. Ideally, such prior art would have been uncovered during the EPO's initial search and examination phase, emphasizing that a comprehensive search is a function of the time and resources allocated to the examiners.

The ipQuants Qthena index provides an impartial and direct evaluation of opposition outcomes. Recognizing that oppositions may lead to appeals, our analysis is centred on the initial decisions rendered by the Opposition Divisions. This approach avoids the potential bias introduced by subsequent appeal outcomes, which the EPO may prefer to report. Our focus on initial outcomes ensures transparency and offers patent owners a realistic assessment of their patent's strength at the conclusion of the initial opposition phase, which itself can span several years.

Our findings highlight a notable statistic: in 2021, 76.0% of oppositions were resolved in favour of the opponents, indicating that a significant majority of patents do not withstand the scrutiny of the opposition procedure in their granted form.



This high rate of successful oppositions, equating to a 76.0% "fault rate" in quality assurance terms, signals the need for introspection within the patent examination process. When considering only the patents that were entirely maintained, even at its highest in recent years, the rate stands at only 30.8%.

The **5-year averages** underscore the trend:

- **72.9%** of **successful oppositions** result in patents being revoked or maintained in amended form.
- **27.1%** of **oppositions are rejected**, with patents upheld as originally granted.

We can further break-down the **Opposition Successful** stats into patents revoked and maintained in amended form. The **five-year averages** for these outcomes are (see [Annex B](#) for details):

- **31.3% of Patents Revoked:** A substantial portion of patents faced *complete* revocation as a result of the opposition process.
- **41.6% of Patents Maintained in Amended Form:** This indicates modifications were made to the original patent following opposition, suggesting the need for adjustments to the initial grant of the Examining Division.

If we categorize only the **revoked patents** as definitively “faulty,” that figure alone is a concerning 31.3%. Such a high rate of invalidation would raise significant concerns in any industry, prompting a concerted effort to determine the underlying causes.

The implication for the innovation community is clear: there is a growing imperative to rigorously challenge patents. As the volume of patent filings increases, proactive measures are crucial to prevent the proliferation of low-quality patents, ensuring a patent landscape that truly reflects and rewards genuine innovation.

Annex A – ipQuants Qthena Stats VS EPO Official Stats

The tables presented in this Annex A offer a meticulous comparison between ipQuants Qthena index and the official data provided by the European Patent Office (EPO), focusing on two critical indicators: the count of granted patents and the share of opposed European patents.

The **first table** below details the count of **officially granted EP patents** year by year, showcasing that the ipQuants' data and the EPO's official statistics are aligned. The slight discrepancies observed are statistically negligible, reinforcing the precision and thoroughness of the ipQuants' data collection and validation methods. The differences, ranging merely from -4 to -17 in the total number of granted patents over a span of several years, underscore the negligible variance and affirm the robustness of ipQuants' analytical framework.

Grant Year of Officially Granted EP Patent	2018	2019	2020	2021	2022
Number of Officially Granted EP patents - ipQuants Qthena Stats	127'620	137'767	133'703	108'794	81'751
Number of Officially Granted EP patents - Official EPO Statistics	127'624	137'784	133'709	108'799	81'754
Difference between ipQuants Stats and EPO Stats (Count)	-4	-17	-6	-5	-3

EPO stats source: EPO Statistics and Trend Centre. <https://www.epo.org/en/about-us/statistics>

Similarly, the below **second table** examines the **share of opposed EP patents**, a key performance indicator reflective of the post-grant scrutiny applied by industry stakeholders. Here again, the concordance between ipQuants' figures and those from the EPO is striking, with deviations so minimal they are statistically insignificant. This reinforces the conclusion that the insights drawn from ipQuants' data are comprehensive and reliable, providing a fair and objective view of the EPO's landscape. The consistent closeness in values across the years—from a mere 0.01% to 0.14% difference - attests to the credibility of ipQuants' research and its foundational data integrity.

Year of EPO Notice of Opposition	Share of Opposed EP Patents (ipQuants Qthena Stats)	Share of Opposed EP Patents (Official EPO stats)	Difference between ipQuants Qthena vs Official EPO Stats
2013	4,52%	4,50%	-0,02%
2014	4,75%	4,70%	-0,05%
2015	4,47%	4,40%	-0,07%
2016	4,04%	4,00%	-0,04%
2017	3,56%	3,70%	0,14%
2018	3,17%	3,20%	0,03%
2019	2,74%	2,80%	0,06%
2020	2,40%	2,40%	0,00%
2021	2,45%	2,50%	0,05%
2022	2,39%	2,40%	0,01%

EPO stats source: EPO Quality Report 2022, p. 68

Annex B – Detailed Analysis of EPO Opposition Outcomes

The chart included in this annex provides a detailed breakdown of the opposition outcomes, further elaborating on the trends discussed in Chapter 10. The data are segmented according to the three official decision categories rendered by the EPO's opposition divisions (as shown in the chart). The categorization of patents revoked and patents maintained in an amended form aligns with what we defined as "Successful Oppositions" in Chapter 10, indicating cases where the original grant decision by the EPO was altered following opposition.

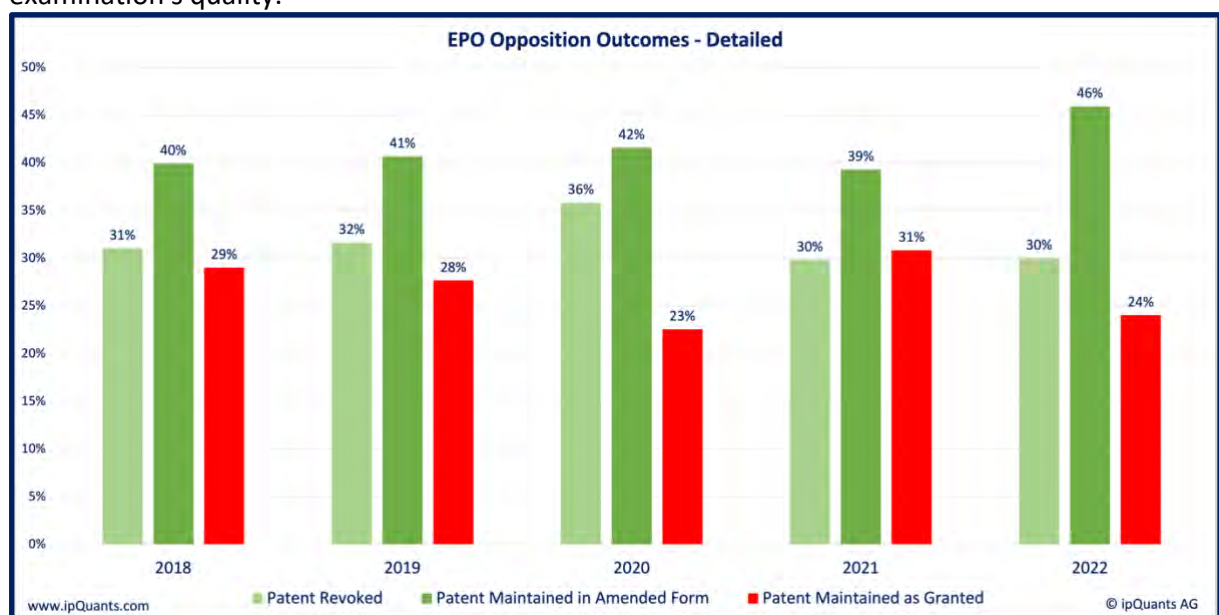
The **five-year average** is as follows:

- **72.9% of Oppositions Successful:** This encompasses patents that were either revoked or maintained in an amended form, reflecting a significant rate of change from the original grant decisions.
- **27.1% of Oppositions Rejected:** In these cases, the patents were maintained as originally granted, indicating the opposition claims did not result in any alteration of the patent.

We can further break-down the "Opposition Successful" stats into:

- **31.3% of Patents Revoked:** A substantial portion of patents faced complete revocation as a result of the opposition process.
- **41.6% of Patents Maintained in Amended Form:** This indicates modifications were made to the original patents following opposition, suggesting the need for adjustments to the initial grant.

These statistics provide a nuanced understanding of the EPO's opposition procedure outcomes and underscore the importance of considering opposition results as a key indicator of the initial examination's quality.



About the Authors

- Tony Afram, **Founder & CEO ipQuants AG**, is a European patent attorney and gained extensive commercial, legal and managerial expertise in the domain of global IP management before founding ipQuants AG. Tony has experience from working both for a leading IP law firm as well as being the Chief IP Counsel of a global company and is therefore intimately familiar with the problems ipQuants solves.
- Gianluca Tarasconi, **Founder & Chief Data Officer (CDO) ipQuants AG**, is a well-recognized innovation analytics and innovation economics expert. Gianluca is a frequent contributor to impactful innovation analytics & economics publications and research projects.
- Vasileios Vasileiadis (Ph.D.), **CTO ipQuants AG**, has throughout his career solved a wide variety of data science challenges, from statistically modelling satellite data to improving ecommerce product recommendations through machine learning. Before joining ipQuants as its CTO, Vasileios was an award-winning researcher at one of the world's leading technology companies.

About ipQuants AG

ipQuants AG, a Software-as-a-Service (SaaS) company based in Switzerland, is at the forefront of creating superior digital experiences for complex workflows. We achieve this by seamlessly integrating workflow automation with insightful analytics, all accessible through our flagship solution, **Qthena**.

Qthena stands as a unique digital co-pilot, featuring a purpose-built cockpit designed specifically to support knowledge workers managing intricate document-driven workflows.

As an industry innovator, ipQuants AG continuously explores new frontiers in technology to deliver unmatched workflow efficiency. Our Qthena platform, powered by generative AI, revolutionizes access to crucial information and insights. This transformational tool redefines how legal and innovation professionals interact with and manage information.

Our purpose at ipQuants is to provide every knowledge worker with a personalized digital strategy assistant. Leading the way in the legal sector, we have made significant strides towards realizing this vision. To discover more about Qthena and stay updated on our trailblazing journey towards a digitally empowered future, visit our website.

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