Improving the efficiency of patent search -

—the role of inter-personal communication.—

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1 INTRODUCTION

The concept of "efficiency" has been defined in various ways, at different points in industrial and social history. Engineers in the 18th and 19th century began to recognise efficiency as a measurable quantity, which could be expressed as the ratio of 'useful work performed' to 'total energy expended' (or the ratio of useful output to total input). In the field of economics, the definition of an efficient working economy is one in which every resource is optimally allocated. A manufacturing business may define its efficiency by measuring the lowest amount of inputs required to create the greatest amount of outputs. In everyday usage, the word "efficient" may simply mean that we have succeeded in minimizing wasted effort or wasted time.

One factor is very clear from all of these different definitions of "efficient" . In order to grasp the true meaning of what is efficient, and to be able to work towards increasing efficiency, we have to consider the **entire system** in which each individual process or step takes place. In other words, we can only discuss efficiency by comparing our environment (process, social situation etc.) with one which is similar, and comparing the outcomes. For example, we may be sold a "very efficient" car on the basis that it has a very good fuel consumption. This should mean that we can achieve high outputs (numbers of road journeys completed) for a comparatively small input (the amount of petrol we have to put into the car). But if this same car costs us a great deal of money to insure, and needs to have its tyres replaced every year, then the overall running costs are higher than we anticipated. When we measure the overall performance, we may conclude that this is not the most efficient vehicle for our needs, despite the fact that one aspect of its performance is very good.

When we come to consider the business of patent searching, the same questions must be faced. How should we measure our current efficiency, and what steps can we take to improve the efficiency of our searching? It is a mistake to think that efficient searching can be measured by a simple parameter such as "number of searches completed every month" (tangible outputs) or "total budget for online systems usage per year" (financial inputs).

These factors will not give us a complete or fully accurate measure of efficiency. In order to understand the total resources (inputs) and results (outputs) of the patent search process, we must be careful to consider not only the time and effort spent on conducting a specific search task, but all the linked activities which happen before searching starts, and all the post-search analysis and reporting as well.

2 EFFICIENCY IS NOT THE SAME AS QUALITY

It is easy to fall into the trap of trying to measure quality, and think that we are measuring efficiency. The two parameters are related but they are not the same. Confusion is particularly easy if the process which we are examining is one which produces tangible goods. Quality – in the modern industrialised context – can be measured as a function of variance from an agreed norm or standard. On a high-quality production line, every output item should match as closely as possible to the defined 'prototype'. If the customer is told what to expect (that is, what are the properties which should be available in the intended end product), then they are able to judge whether the production line has succeeded in matching the specification, and produced a quality product. However, if every item coming off a production line is hand-built for a specific customer to a unique specification, it is impossible to define a fixed standard. Without a fixed standard (or objective, target, aim), it is meaningless to try to measure variance from the standard, and so our model for understanding quality breaks down.

Patent searching is not like a factory production line, turning out identical replicas as quickly as possible to satisfy a mass need. Each search is unique, both in defining what resources are to be used (inputs) and how the results are to be delivered (outputs). Each search has its own built-in quality standard, and also presents its own challenges to being completed in an efficient manner.

3 UNDERSTANDING INEFFICIENCY

It is relatively easy to understand some of the factors which contribute to decreased efficiency. One of the most obvious is timeliness of delivery. If search results arrive too late for the customer to take any form of action in response to them, then clearly all the work expended on obtaining the search results has been wasted. It is no longer relevant whether or not the results were of a high quality from the technical viewpoint – they cannot be used for the original intended purpose, and so the search process has been inefficient.

Some other factors which impact our efficiency have to do with our choice of resources, and our method of deploying them, during the course of a single piece of search work. The following are examples of some of the danger signs, of inefficient practices becoming more dominant in our searching processes:

a) *Making an inappropriate choice of search sources*. Knowledge of the full range of databases and other technical information which may have an impact upon the subject matter is a fundamental skill for the patent information specialist. Attempting to use the same database for every search, simply because it is the searcher' s favourite and best-known source, can lead to significant loss of efficiency.

b) *Adhering to rigid protocols for search*

procedure. Whilst some types of search can be assisted by the use of a defined standard operating procedure (SOP) or similar, these should never be applied so rigidly that the searcher is afraid to depart from the guidelines and investigate the subject using less well-known sources or techniques.

c) *Lack of flexibility during the conduct of the search*. One of the great advantages of interactive searching (from the 1970s when time-shared computer systems became available) is the ability of the searcher to interact with their initial results. The searcher reads and absorbs the information from their initial results, and uses the insight which they give to re-focus their search strategy and refine the search question. An inefficient searcher is one who insists on pursuing the question as originally defined, and will ignore any related results as if they are a distraction away from that line of enquiry. It is efficient to avoid *unhelpful* distractions, but if the searcher carefully avoids all interaction with interim results, they run the risk of missing the bigger picture.

d) *Poor initial briefing*. One of the biggest factors leading to inefficient search is when the requestor of the search fails to instruct the person doing the search in a complete and clear manner. This often happens when the requestor (examiner, attorney, inventor) tries to communicate a complex subject with the minimum amount of description. The requestor will often have taken days or weeks to understand the invention, and their mind will be full of alternative developments and an awareness of how the research has developed to its present state. By contrast, the searcher is generally unaware of all this background information when the enquiry first arrives. In understanding the context of the search enquiry, and possible alternative approaches, the searcher is totally reliant upon the requestor to fill in these gaps. One of the key skills of the searcher is to establish a clear understanding of the question; the corresponding responsibility of the requestor is to be willing to offer as much time and effort as the searcher needs, in order to establish clear objectives and intermediate goals for the conduct of the search.

e) *Inability to express the unfelt need for information*. Point (d) above addresses the need for both requestor and searcher to communicate fully. However, there are times when the requestor genuinely has no idea how to express their need for more information. Typically, this can happen early in the life of a research project, when information retrieval requests arise out of the feeling that "I don' t know what I don' t know" . Some academic models of information-seeking behaviour are built upon this (uncomfortable) starting state [1], which is referred to as an "Anomalous State of Knowledge" or ASK.

f) *Incomplete delegation of authority*. Some requestors find it difficult to attain the right balance of relationship in the course of a search request project. This is a common problem in all types of team work – the individual team members can struggle to identify their own place within the team and to hand over tasks to other team members whose skills may be more appropriate to the task in hand. Early in a relationship between a search requestor and a searcher, there is a common tendency to either micro-manage (not give the searcher the authority and freedom to follow their own skills and experience) or to fail to maintain any level of interaction (a total "hands-off" approach). Neither extreme is helpful, since they represent a

misunderstanding of the complementary nature of the roles of the team members, and can lead to conflict at worst, or inefficiencies in searching at best.

g) *The 'customer is always right' syndrome*. Information retrieval teams, especially within industry, may be administered as part of the common services departments, supplying day-to-day consumables to assist the smooth running of the organisation. This can lead to the mentality amongst the searchers that they are not entitled to any freedom to vary their function – they exist in a wholly *re*-active relationship to their customers, and never take a *pro*-active stance in providing information. This can inhibit even the best searcher from trying out alternative approaches to a search, even when their past experience is strongly indicating to them that there may be a better (more efficient) way of getting to the desired results. This is related to points (b) and (f) above; it is important for the overall efficiency of searching within the enterprise, that the professional searchers feel that they have sufficient authority within the working relationship to undertake autonomous actions (try out alternative methods). The searcher should not have to refer back constantly to the requestor and seek permission to modify the approach to the task.

h) *Lack of awareness of the wider developments in information science*. In the present era, there can be little excuse for the professional searcher to be unaware of new tools or techniques being launched. However, it is also easy to become over-comfortable with established working methods, and use administrative or budgetary excuses to prevent change in working practices. One of the major sources of inefficiency developing within a search group is that there is no effort made to review the wider world of information, and to invest the time and effort needed in order to establish whether new tools can – or should – be incorporated into existing working practices. After a period, if a searcher persists in using only the familiar practices from 5-10 years ago, their efficiency in delivering appropriate results will drop.

4 COMMUNICATION AS A KEY TO IMPROVING EFFICIENCY

If we start to recognise any of the signs outlined above, they can act as a warning that our search operation is becoming less efficient. In order to tackle this problem, we need to ask ourselves – "Is there any common factor leading to the development of these problems?" I would suggest that there is a major common factor, which can be summed up in one word – communication. In my experience, a search department (or an individual searcher) will be at their most efficient when they can perform their job in an atmosphere where there is

- a set of common and mutually understood objectives, both long- and short-term,
- a clear definition of the role of each person in the search process, and
- mutual respect for the complementary skill sets across the team members.

Let us consider how the application of these principles can work out in practice, in three hypothetical situations:

a) an industrial information unit conducting patent searches in support of in-house patent attorneys,

b) a private-sector search firm conducting outsourced searches on behalf of a range of inventor clients (both corporate and individual), and

c) dedicated staff within a national patent

office or authorised agency, conducting statutory searches on newly-filed patent applications.

How does good communication contribute to high efficiency in each of these different environments?

5 THREE SHORT EXAMPLES OF COMMUNICATION

In the first example, we commonly find that industrial search specialists are under pressure from the increasing popularity of 'end-user searches' . As search engines have become more 'friendly' and accessible directly to researchers rather than through intermediaries, it has often triggered a debate within the organisation about whether there is a role for the search specialist. Management may feel that the processes of search within the enterprise will be more 'efficient' if greater numbers of search results are obtained for the same – or reduced – cost. If this situation arises, it is necessary for all the parties concerned to have a detailed debate about strategic objectives. Decisions which affect individual job roles should not be made purely on the basis of tactical targets. Efficient operation of the search function consists in defining the **most appropriate tasks** (and corresponding methods for completing them) which will enable the customer to make progress in their research, and in allocating those tasks to the **most appropriate person(s)** to carry them out. Notice that this approach does not exclude the possibility of work-sharing (more than one person being involved in the search process), nor does it prohibit the possibility that the customer themselves may sometimes be the most appropriate person (or one of them). The key to good decisions about end-user searching is to establish an agreed set of objectives for overall information services. These objectives then provide the basis for all parties to agree on the tasks and the persons. In order to define the objectives, there must be constant and detailed communication between all parts of the organisation. If a combined group of researchers, attorneys and searchers have a common understanding of the overall objectives, it may result in a decision that the most appropriate task is in fact not to conduct a search at all, or to conduct a different search to the one which was originally under discussion. The end result is less waste of resources, which equals greater efficiency!

In our second example, the searchers working in the private sector, the biggest challenge is often being able to communicate in anything like a direct fashion. Information specialists working in this situation are the most vulnerable to mis-communication. Their work instructions are the most open to suffering from "Chinese whispers" [2]. This is because the request may have passed through a long chain; from junior inventor to technical team leader, to patent liaison, to patent attorney, to outsourcing account executive, to searcher. Unlike in-house searchers, it can be very difficult for the person who is going to conduct the search to speak directly to the person who has made the invention. The searcher is reliant upon what has been transmitted to them, though multiple mouths, and is hindered from taking any steps to clarify areas of ambiguity. In fact, some out-sourcing firms have a policy of preventing the individual searcher from making contact with the client, and ensuring that all communication is directed through an account executive. This may be an arrangement of administrative convenience (and arguably can improve some

aspects of the efficiency of the overall search service), but it can have a disastrous impact on the efficiency of the conduct of an individual search. In these circumstances, efficiency has been lost because there has been insufficient understanding of the role of each person in the search process, and hence the needs which each person has, in order to carry out their part in the process. The searcher has been relegated to the role of a machine, turning out search results to order like a production line, and their inter-personal need – to interact with the client – has been ignored. In this environment, it is hardly surprising that the search process becomes inefficient; the most common output is a set of results which addresses an entirely different question to the one which the requestor intended.

The third example, searchers in an intellectual property office or dedicated search agency, can illustrate the effects of poor communication upon the mutual respect within the enterprise. No-one disputes that most patent offices are now operating under serious pressure, with ever-increasing numbers of applications filed and with industry demanding faster processing and earlier confirmation of their IP rights. A number of patent offices have time-based guidelines for their search examiners, limiting the number of hours which they can spend on searching each case. If such guidelines are imposed rigidly upon the searcher, it *may* lead to increased throughput but it *certainly* leads ultimately to decreased efficiency. This is because a time-based approach to searching ignores the fact that an efficient search is one which is designed to ensure that the wider objectives of the enterprise can be met, as well as the immediate request. In the case of a patent office, that wider objective is the granting of IP rights which are a fair and reasonable recognition of the work of the inventor. The search process should not be a bottle-neck in the course of prosecution, but neither should it be an open door. Sometimes a patentability search *must* be allowed to occupy more time than 'average' . The patent office is under an obligation to ensure that each new application is fairly and rigorously examined against the prior art. The search results are designed to help the examiner to take an informed and equitable decision as to whether an invention is worthy of the grant of a patent. Each invention is different. "Small" inventions are not necessarily quick to search; neither are "block-buster" inventions always more time-consuming. The controlling factors in search should be primarily based upon how far the new invention / technology diverges from any existing prior art, and how obscure or difficult it is to identify the closest previous disclosures. Under these circumstances, I believe that the searcher must be given the freedom to operate in the light of their experience, and not be constrained by artificial time-based guidelines. If that freedom is not granted, it implies that the enterprise does not actually regard the searcher as a professional, nor trust them to conduct their part in the wider process to the best of their ability. Once again, poor communication and poor understanding of the role of search can lead to inefficient work practices.

6 SUMMARY

I have tried to illustrate in this article that the business of improving search efficiency should not concentrate exclusively on the 'hard' skill set of the searcher (knowledge of databases, understanding search techniques etc.) but should also give attention to the 'soft'

skills, notably the role of communication and relationships in the workplace. Many different industries and enterprises now wish to use patent information, for many different purposes. An experienced patent searcher can make a valuable contribution in many of these work environments, but they will only be able to operate at maximum efficiency if their function is recognised, and they in turn work alongside colleagues with complementary roles to play.

REFERENCES and NOTES:

[1] Belkin, Nicholas J. (1980). "Anomalous states of knowledge as a basis for information retrieval." The Canadian Journal of Information Science." 5, 133-43.

[2] "Chinese whispers" is an English idiomatic expression, meaning that the content of a message gets distorted as it passes from one person to another, so that the final person receives an entirely different instruction to that sent out by the first person in the chain.

特許調査の効率向上―対人コミュニケーションの役割（抄録）

Stephen Adams

1．はじめに

「効率性」の概念は、産業や社会の歴史の中で異なる点で、様々な方法で定義されている。特許検索プロセスの総資源（インプット）と結果（出力）を理解するためには、我々は時間と労力だけでなく、特定の検索タスクを行うために費やされた予備検索と関連する全ての活動、例えば検索開始前におこなったこと、検索後の検索結果分析とその報告まで含めて、全ての効率を考慮する必要がある。

2．効率は品質と同じではない

各検索はそれぞれにユニークであり、どのリソースを使い入力するか、結果の出力をどのように配信するかの両方の定義において、それぞれ異なっていて良い。

各検索は、独自の組み込みの品質基準を有しており、また、効率的な方法で履行されることに独自の挑戦を提示しても良い。

3．非効率の理解

非効率の明白な一つは、結果の配信の適時性を失った場合である。顧客の必要期限に間に合わなければ、無駄となりうる。

もう一つは、リソースの選択と検索履行の方法において不適切というリスクがあり非効率になりうる。以下に、非効率の場合を示す。

a) データベースの選択が不適切な場合の非効率。 代行検索者が最も使い慣れてお気に入りのデータベースだからという単なる理由で選んで履行する非効率。

b) 既知の検索手順基準（SOP）を厳密に守り過ぎ、良く知っていないリソースと技術を調査するためのガイドラインを学んでから調査することを回避する非効率。

c) 検索の行為中の柔軟性の欠如。定義された依頼事項に関して問い合わせを慎重に行ってから検索するというコミュニケーション対話を回避した場合の非効率。

d) 悪い初期のブリーフィング説明。簡単な説明では背景情報の一般認識が不可能で、依頼者の発明内容を理解するのに数日または数週間もかかる非効率。

e) 必要な情報で依頼者が気づかないことは依頼時に表現されていない場合。依頼者が「何が必要情報か解かっ

ていない状態」で依頼する非効率。

f)　不完全な権限の委任。検索要求プロジェクトを複数人のプロセスで行う過程で、連鎖のチームメンバーが自分の役割を誤解して次のチームメンバーに伝え、全体のチーム達成業務が落とし穴に導かれる非効率。

g)「顧客は常に正しい」症候群。代行検索者は日常的に業務を繰り返すことに専念し、代替案も考えてみようという積極的な姿勢で情報提供に踏み込まない非効率。

h)　情報科学の広義の発展のための気づきの欠如。新しいツールや新しい情報技術に平素から注目し、試し、慣れることが必要である。新しいツールと新しい情報技術を使って検索・分析しない非効率。

4．効率向上のためのキーとしてのコミュニケーション

筆者の経験では、検索部門（または個々の検索者）が最も効率的になったのは次の３つの原則ケースであった。

・長期と短期のプロジェクトの両方において、共通目標の相互理解が良い。
・連鎖する検索処理中の一人一人が、自分の役割の定義を明確に理解して履行している。
・チームメンバー間で補完的なスキルをお互いに蓄積するための相互尊重が守られている。

前述の３つの原則がうまく適用されて、コミュニケーションが効率向上につながる３つの仮想的な状況を挙げる。

a)　社内弁理士を支援して特許検索を行う企業内情報部

b)　発明のクライアントに代わりに、外部委託検索を行う民間サーチ会社

c)　新たに出願された特許出願の法定の検索を実施すべく、国内認定特許事務所または認定機関の中のスタッフ

これらの異なる環境のもとでの効率化に対して、良好なコミュニケーションはどの様に貢献しているだろうか。

5．コミュニケーションのための３つの事例

事例１）エンドユーザー検索の人気が高まり、企業の検索専門家が圧力を受けて自信を失いかけているケースである。企業の組織内でのコミュニケーションは頻繁に行われるが、検索のプロセスよりも管理的な効率性を強く感じ求められる場合に起こりうる。目的を定義するために組織内の全ての部分との間に一定かつ詳細なコミュニケーションと同意が求められる。研究者・弁理士・検索者の間では同意された検索しか全く行われなくなる。また、最初に討議した内容とは全く別の検索を（同意したからといって）行うような結果になりうる場合が起きる。

事例２）発明者・技術チームリーダー・特許リエゾン・弁理士・予算管理執行者・検索者の連鎖業務において、管理上の便宜に配慮をし過ぎた場合である。最も一般的な陥りやすい出力結果は、要求者が意図したものと全く別の質問に対処したような結果の解答セットになりうることである。

事例３）コミュニケーション不足と相互信頼の欠如の場合である。

知的財産事務所と専用の検索代理店の連携において、特許件数がかってないほど増加しており、処理を急がせ、特許権の早期確認確定を求めるあまりに、検索側に深刻な圧力が掛かる場合に起こる。そうすると、１案件当たりの処理目標時間を設定するようになるとか、目標処理時間内しか案件を調査しないようになる。検索の効率向上化の理想からすれば反対の行為で、極めて良くないことである。

6．まとめ

検索効率を向上させるビジネスは検索者の「ハード」スキルセット（例えば、データベースの知識、検索技術の理解など）だけに集中するべきではない。むしろ、職場でのコミュニケーションとその相関関係の顕著な役割という「ソフト」に注意を払う必要があると指摘したい。

経験豊富な特許検索者は、彼らのその機能役割が認められた場合には、これらの作業環境の下で多くの貴重な貢献を同僚と補完しながら達成することができる。