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Writing Reports to Facilitate Patent Applications

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Writing Reports to Facilitate Patent Applications

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ABSTRACT

Brief disclosures may often be sufficient for the filing of a Technical Advance with Sandia's Intellectual Property Center, but still be inadequate to facilitate an optimum patent application where more detail and explanation are required. Consequently, the crafting of a patent application may require considerably more additional interaction between the application preparer and the inventors. This inefficiency can be considerably mitigated if the inventors address some critical aspects of a patent application when they write a technical report.

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1. Introduction

A U.S. Patent is a limited monopoly that gives the patent owner potentially valuable rights to inventions described and claimed in the patent. Patents are provided for in the U.S. Constitution because our founding fathers recognized that a country advances faster when new ideas are available for everyone to use and improve. A patent is an incentive for inventors to disclose their inventions.

At Sandia National Laboratories, the patent process for a novel device or process begins with the submission by the inventors of a Technical Advance that discloses the invention to the Intellectual Property Center. Details of the process can be found on Sandia's internal web site. The main purpose of the Technical Advance is to provide (1) the Department of Energy with a record of the existence of the invention and (2) sufficient information for a determination as to whether a patent application should be prepared.

In an ideal world of unlimited resources, a patent application would be filed on every reported Technical Advance, as it is impossible to predict what technology or invention may be useful twenty years in the future. However, patents require both time and money, so most inventing entities, including Sandia, have an evaluation process for identifying Technical Advances from which patent applications are prepared. In FY2002 Sandians disclosed 344 Technical Advances but only 215 patent applications were filed.[1]

Since this evaluation is usually made with the assistance of the inventor's management, the disclosure of an invention in a Technical Advance may be very brief, as it only needs to provide a description of the problem solved by the invention, a description of how the invention differs from known solutions to the problem, and, preferably, the advantages of the invention over known solutions. While the Technical Advance need not be written like an entire patent application, it should nevertheless contain sufficient background information to enable the reader to appreciate the significance of the improvement, and enough detail to explain the essential characteristics of the invention to the assigned Sandia patent agent/attorney.

However, such a brief disclosure usually contains insufficient details and/or background to adequately facilitate preparation of an effective patent application. Consequently, the crafting of a patent application requires considerably more interaction between the application preparer and the inventors. Such inefficiencies hinder the process and reduce the number of patent applications that can be filed. This overall process could be considerably streamlined if the inventors would address early in the process some critical information required by the patent application.

Overall, the purpose of a patent is to both disclose and protect the intellectual property of the inventor. In patent law, the description must be adequate to teach the invention to "one of ordinary skill in the art." By definition, such a person is a routine practitioner of the field of the invention. For example, if the invention is a plow, 'one of ordinary skill' might be a farmer. If the invention is a typical Sandia technology, 'one of ordinary skill' might be a person with an advanced technical degree and some experience with the technology.

In theory, most Sandians would probably feel that if their co-workers could make the invention from a disclosure, it is sufficient. But this feeling overlooks an important fact: if Sandia is a recognized leader in a technology (such as synthetic aperture radar, or parallel processing, or photonics, etc.), it is safe to assume the knowledge of the Sandians working these technologies is more than ordinary skill.

In practice, the most important audience for a patent application will be a patent examiner, typically with a Bachelor of Science degree and no work experience in the field of the invention. This is the person who will ultimately decide if you get a patent. If that examiner finds a patent disclosure insufficient to convince him that 'one of ordinary skill' can make and use the invention, you will not get a patent. His decision could be appealed to a Board of Appeals within the Patent Office, but while the Board members have considerably more patent experience than most examiners, they will usually have even less knowledge of complicated technologies. While a discussion of the journey of a patent application through the Patent Office is beyond the scope of this report, the interested reader is referred to some of the published literature for some useful insight to this process.[2,3]

Consequently, it can be very useful for technically challenging patent applications to disclose more than necessary for Sandians to make and use the invention, and, perhaps, more than necessary for 'one of ordinary skill in the art.'

In a similar manner, for similar reasons, a report that is intended to facilitate the drafting of a patent application should be written with a similar audience in mind.

While existing documents discuss the mechanics of an official Sandia (SAND) report,[4] what follows is a discussion of the unique needs of communicating the necessary information to the Intellectual Property Center for the purposes of filing a patent application.

2. The Parts of a Patent Application

It is instructive to succinctly describe the principal parts of a patent application, and their purpose. While their preparation is the responsibility of the Patent Attorney or Patent Agent, ultimately these need to be addressed, reviewed, and validated by the inventors themselves.

What follows are the essential, or principal parts of a patent application in order of appearance. A perusal of the patent database is instructive in providing examples.

ABSTRACT

The abstract of a patent application is a very short description of the disclosed invention. The abstract is printed on the first page of a patent and facilitates an examiner's search for references to be used against subsequent patent applications.

BACKGROUND OF THE INVENTION

The background section sets the stage for the invention. It references prior art, that is, earlier and related inventions, publications, and descriptions in the field, and often explains how a problem exists in the prior art that is solved by the invention.

SUMMARY OF THE INVENTION

The summary is a brief description that summarizes the broadest claims of the patent. The summary is typically drafted by the patent agent/attorney after the claims have been written.

BRIEF DESCRIPTION OF THE DRAWINGS

These are essentially the captions to the figures, charts, diagrams, images, and drawings that are employed.

DETAILED DESCRIPTION OF THE INVENTION

The purpose of this section is to provide the details of an example implementation, or embodiment, of the invention. Enough detail should exist to allow one of ordinary skill in the art to duplicate the claimed results. As discussed above, it is usually safer to err on the side of too much disclosure rather than too little disclosure. This section can be quite lengthy.

One significant difference between a patent application and a typical technical report is that a patent application does not have to explain *why* an invention works; it merely has to disclose the structure or steps that have to be followed for it to work. A thesis may have many pages describing how you determined that radar frequency X will give improved performance; but a patent application merely has to say: "Applicant has determined that use of X frequency gives 10% better resolution." If your conclusion is

correct, and if one of ordinary skill can build a radar using X frequency, your patent disclosure is sufficient.

A point to remember is that additional subject matter may not be added to a patent application after it has been filed with the Patent Office. You can remove superfluous material, but you cannot add necessary material.

CLAIMS

Claims are very stylized statements that define the invention. While most of the other parts of a patent are written to the standard of one of ordinary skill in the technology, the claims are written by patent people in a manner that often defies normal word usage and grammar. As an inventor, while you may be asked to help the patent agent/attorney understand how your invention is distinguished from the prior art, it is the agent/attorney's responsibility to put those thoughts in proper claim form.

DRAWINGS

The figures, charts, diagrams, images, and drawings that are employed are generally appended to the patent application as a group.

3. Suggestions for a Report Format

The job of a Patent Attorney, or Patent Agent, is to prepare a patent application from the input documentation of, and interaction with the inventors. This can be quite daunting, especially with a complex subject field outside the area of expertise of the application preparer, as is often the case. To facilitate an efficient process, the inventors should make themselves aware of the kinds of information that the patent application preparer requires, and provide this information to the extent possible. The preparer will never understand the innovation as well as the inventors themselves do.

Towards this end, the following report format for a SAND report was designed to facilitate the preparation of a patent application.

ABSTRACT

The abstract of the SAND report follows more traditional style and content. It should briefly summarize the essential points of the report, and be on the order of a handful of sentences, usually in a single paragraph. The patent application abstract might be an abbreviated version of the SAND report abstract.

INTRODUCTION & BACKGROUND

This section provides context for the invention, and contains the information necessary to write the "Background of the Invention" section of the patent application. Much grief can be prevented by being thorough in researching the prior art. This is the homework portion of a patent application, and shouldn't be short-changed.

A good source to search for related patents is the US Patent & Trademark Office (USPTO) web site.[5] A good source to find related publications is the INSPEC database.[6]

In this section an inventor can be preemptive in overcoming a patent examiner's objections, and save much time later in dealing with PTO actions. For example, one might employ statements of the form

> "Knot & Even[7] disclose in US Patent 6,543,210 a technique that……. However they fail to consider the effects of……"
>
> "A paper by Crowd, et al.,[8] describes a system that ……. but that requires…… No mention is made of ……."
>
> "Books by Wise & Himer,[9] and Didd & Geddit[10] discuss the principles of…. but always presume…… and fail to……."

All citations need to be complete, that is, with enough detail to facilitate their unambiguous and ready retrieval.

In any case, it is better to have more than less, but a good idea is that at least one citation be made for any reasonably anticipated argument against the innovativeness of any critical claim in a patent application. Furthermore, more recent is better than less recent.

OVERVIEW & SUMMARY

This section is the basis for the "Summary of the Invention" section of a patent application. It provides a high-level but reasonably complete description of the invention, what it is designed to overcome, and generally the principles of its operation. It addresses in general how this invention overcomes the shortcomings of the references cited in the previous section.

One of ordinary skill in the art should be able to read this section and understand the fundamental principles of the invention.

DETAILED ANALYSIS

In this section the details of the invention are presented. This precipitates the "Detailed Description of the Invention" portion of the patent application. Theory is presented or developed with as much detail as is necessary to justify the results which are claimed. At least one plausible implementation technique needs to be presented and described with enough detail to allow one of ordinary skill in the art to duplicate the invention. This description doesn't need to be for the "best" way to implement an invention, just a "workable" way. More, other, and/or different ways can be presented, too, for completeness.

It is advantageous for the detailed description to make liberal use of figures, charts, diagrams, images, and drawings to illustrate the functionality of the invention. There should be enough of these to adequately convey the novelty of the invention, and how to implement it, to the reader.

To enhance the readability of the SAND report, figures and their captions are generally embedded in the text of the report, and not relegated to a special section, as in the patent application. Modern word processing software allows easy reformatting and collection of the figures in preparation of the patent application.

CONCLUSIONS

This section should clearly identify the essential elements of the innovation, and be a precursor to the "Claims" section of the patent application. Speculation on extensions and uses in related fields and engineering disciplines are quite appropriate.

REFERENCES

As previously stated, all citations need to be complete, that is, with enough detail to allow their unambiguous and ready retrieval.

4. Conclusions

A patent application requires specific format and information. Its purpose is to both protect the rights of the inventor as well as to educate anyone of ordinary skill in the art.

If a report (SAND report or otherwise) were written with the sections described, and containing the features discussed, then the subsequent completion of a patent application would be considerably aided.

Should the inventors desire to not write a formal SAND report, then the same information should be provided by alternate vehicle or means.

Electronic and editable copies of the report should then be made available to the patent application preparer.

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References

[1] Sandia Lab News – Labs Accomplishments 2003, page 15.

[2] David Kushner, “Why Are So Many Patents Pending?”, IEEE Spectrum, April 2003.

[3] USPTO, "Manual of Patent Examining Procedure", Edition 8 (E8), August, 2001, Latest Revision February 2003.

[4] Creative Arts Department, “Guide to Preparing SAND Reports and Other Communication Products”, Sandia Report SAND2002-2068P, Version 1.0, September 2002.

[5] http://www.uspto.gov/patft/index.html

[6] http://inspec.lanl.gov/sandia/

[7] fictitious example

[8] fictitious example

[9] fictitious example

[10] fictitious example

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