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Patents 101

Presented by:
Brian Giles, PhD, JD, Thomas|Horstemeyer, LLP
Steven Schwarz, JD, Venable LLP


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Patents 101 Objectives

- Discuss the history and policy for patents
- Learn the requirements for patentability
- Learn the process for obtaining a patent
- Discuss considerations for managing a patent portfolio

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Webinar Agenda

- Part I: Overview of Patents and Requirements for Patentability
- Part II: Discussion of Patent Application Process
- Questions & Answers


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Part I: Overview of Patents and Requirements for Patentability


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What is Intellectual Property?

“Intellectual Property” is any product of the human intellect that the law protects from unauthorized use by others.

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What is Intellectual Property?

“Intellectual Property” is any product of the human intellect that the law protects from unauthorized use by others.

Why does the law protect IP?

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Evolution of SOCIETY

Foraging Society Pastoral Society Horticultural Society Agricultural Society Industrial Society Postindustrial Society

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Knowledge economy

— Agricultural age
— Industrial age
— Knowledge age

The key component of a knowledge economy is a greater reliance on intellectual capabilities than on physical inputs or natural resources.


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Knowledge economy

Knowledge - unlike labor, land, and capital - is not limited or inherently excludable.

Intellectual property is therefore critical in a knowledge economy



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A Constitutional mandate

The Congress shall have Power . . . to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries . . .

- U.S. Const. Art I., Sec. 8, Clause 8.





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HOW can IP Promote Innovation?


Innovation is theoretically spurred by patent laws in at least two ways.


Rewards Inventor

- The inventor can secure exclusive rights, so innovating gives the inventor a higher probability of financial rewards in the market place.

Rewards the Public

- Publishing the invention, rather than keeping it a trade secret allows others to build upon the technology.





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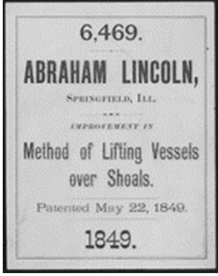
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Purpose of Intellectual property

“the patent system . . . has secured to the inventor, for a limited time, the exclusive use of his invention; and thereby added the **fuel of interest to the fire of genius**, in the discovery and production of new and useful things.”

- Abraham Lincoln.





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Types of intellectual property

- Patents

- Copyright

- Trademarks/ Trade dress

- Trade secrets


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Patents

A patent is a form of right granted by the government to an inventor, giving the owner the right to exclude others from making, using, selling, offering to sell, and importing an invention for a limited period of time, in exchange for the public disclosure of the invention.






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Anatomy of a Patent

- Summary page
- Abstract
- Drawings
- Background of the invention
- Brief summary of the invention
- Brief description of the drawings
- Detailed description of the invention
- Claims




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Patent rights defined by claims

- A patent is a property right and that right is defined by the claims.
 - “The name of the game is the claim.” -- Hon. Rich
- A patent does not give the holder the right to actually practice their own invention
 - Others may also have patents covering product – no freedom to operate



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Patent Properties

- A patent is a right to exclude others from practicing your invention
 - A patent is NOT a right to practice your own invention
 - Others may have patents that you would infringe (no freedom-to-operate)
- Duration: 20 years from first non-provisional filing date
 - Subject to terminal disclaimer, patent term adjustment, and patent term extension



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Types of US Patents

- Utility Patent (20 years)
 - Protects a new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof
- Design Patent (15 years)
 - Protects the ornamental design of a functional item
- Plant Patent (20 years)
 - Protects new varieties of asexually producible plants




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Basis for Patent Protection

- Statutes
 - 35 U.S.C. § 101 → Utility/Eligible Subject Matter
 - 35 U.S.C. § 102/103 → Novelty and Non-Obviousness
 - 35 U.S.C. § 103 → 35 U.S.C. § 112 → Disclosure Requirements of Patent Application
- Federal Court Decisions
 - Interpretations of Constitution and Statutes
 - Judge made law
- Administrative Law
 - USPTO rules applying the statutes and abiding by court decisions



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Patentability Requirements

- Novel (new) – 35 U.S.C. § 102
 - The quid pro quo of the patent system is not satisfied if the invention is already in the public domain – includes public sales or offers for sale
 - Prevents patenting of prior art

- Non-obvious (inventive step) – 35 U.S.C. § 103
 - Invention not found in a single prior art reference but obvious to combine prior art references to arrive at invention
 - Evaluated from the perspective of a “person having ordinary skill in the art.”



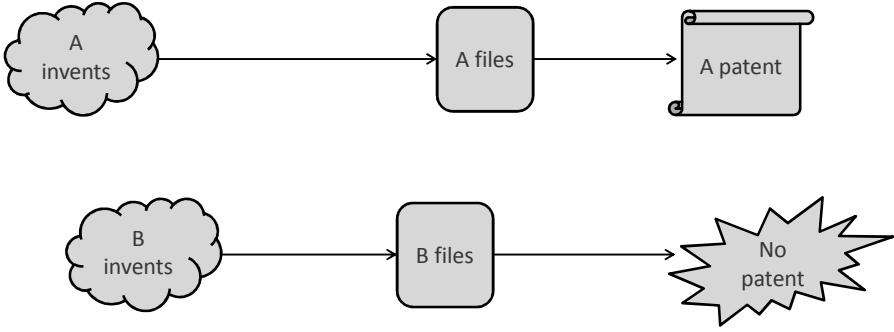
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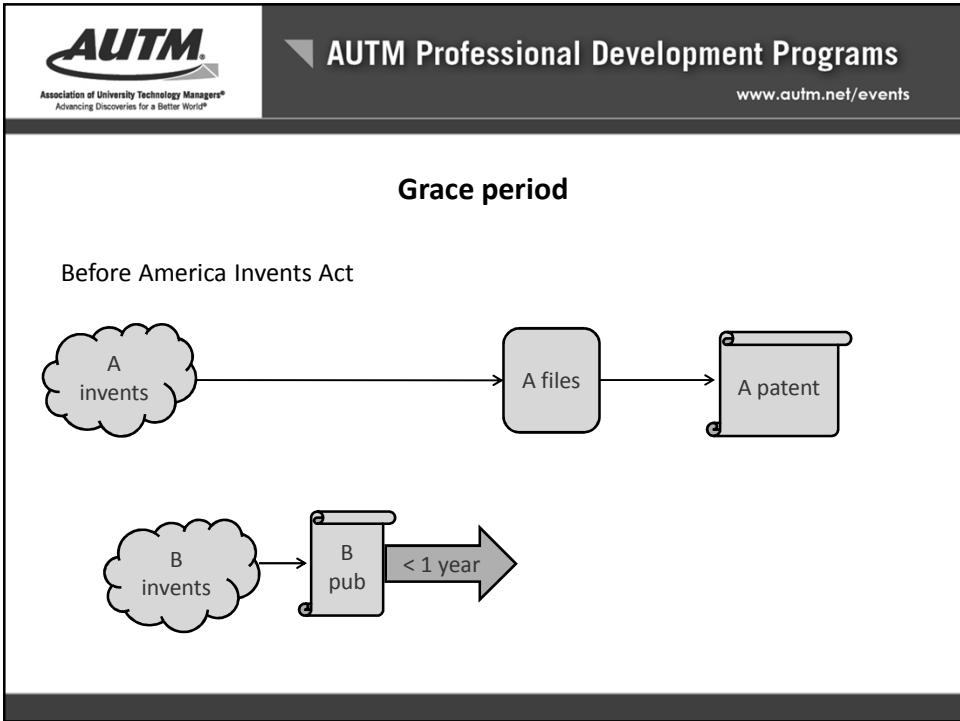
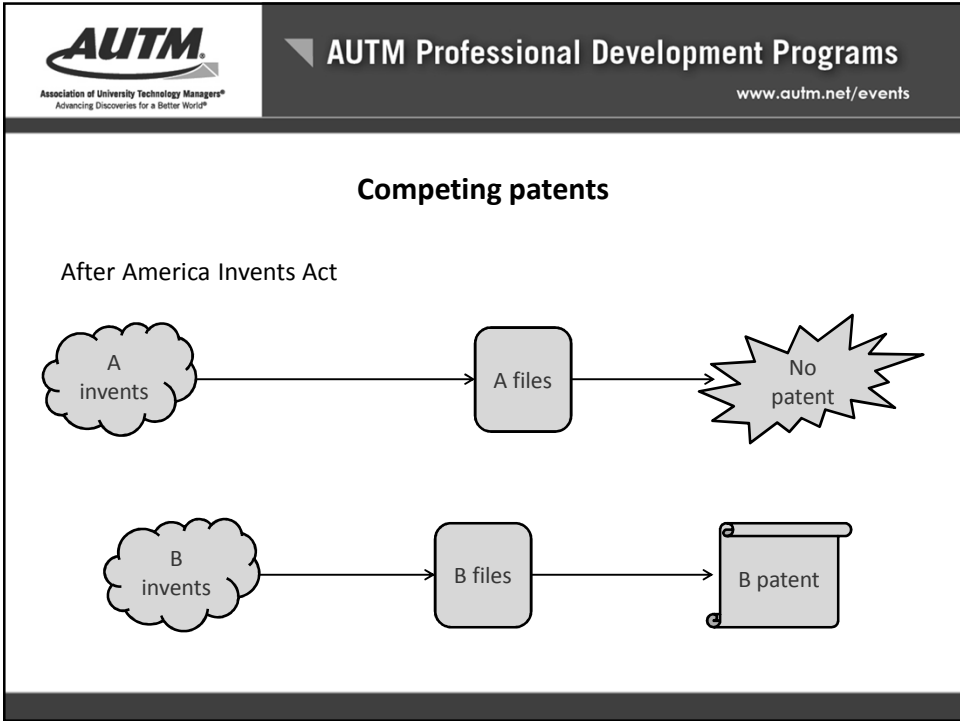
Competing patents

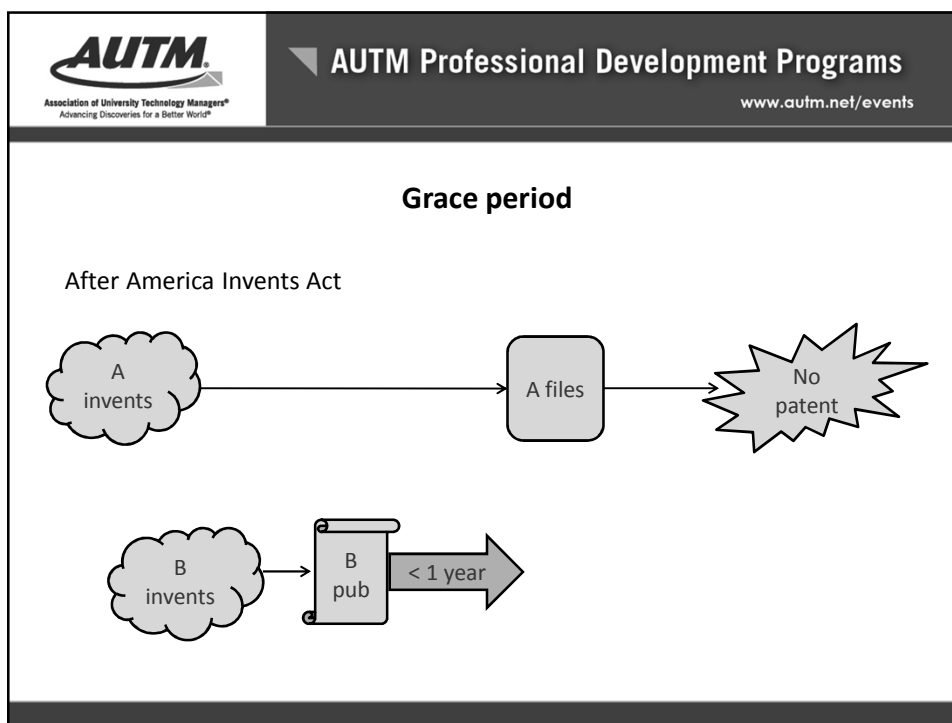
Before America Invents Act



```

graph LR
    A_invents((A invents)) --> A_files[A files]
    A_files --> A_patent[A patent]
    B_invents((B invents)) --> B_files[B files]
    B_files --> No_patent[No patent]
  
```





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Patentability Requirements

- Novel and non-obvious
- Utility – 35 U.S.C. § 101

Utility Requirement

The application must identify a specific and substantial utility for the invention or provide enough information to make its usefulness immediately apparent to those in the field.



This disclosed utility must also be credible




Patentability Requirements


- Novel and non-obvious

- Utility

- Sufficient Disclosure – 35 U.S.C. § 112
 - Written Description
 - Enablement
 - Best Mode



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Disclosure considerations

- Patent specification must enable one skilled in the art to practice the full scope of the claimed invention without undue experimentation
 - The Broader the claim the more Data you need
 - Can provide post-filing evidence in some countries
- Patent specification must adequately describe the invention
 - Provide sufficient species to describe a genus
 - Describe genus with structure instead of function
- You cannot add anything new once application filed (new matter)



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Patentability Requirements

- Novel and non-obvious
- Utility
- Sufficient Disclosure
- Statutory Subject Matter – 35 U.S.C. § 101



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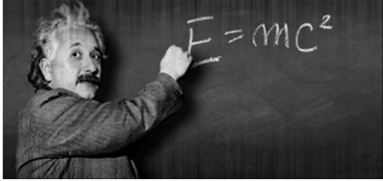
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Eligible Subject Matter

- **Statutory Definition:** includes “any new and useful process, machine, manufacture, or composition of matter”

- **Judge made exceptions:**
 - Abstract Ideas
 - Laws of Nature
 - Product of Nature





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Abstract Idea

- Mathematical formula (algorithms) are not patent eligible.

- Application of a mathematical formula may be patent eligible if it is not merely an attempt to limit use of the formula to a particular technological environment or add insignificant post-solution activity.
 - It helps if it is described as a technical solution to a technical problem.




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Product of Nature

- *AMP v. Myriad Genetics* (2013)
 - A naturally occurring DNA segment is a product of nature and not patent eligible merely because it has been isolated, but cDNA is patent eligible because it is not naturally occurring.
 - A product is not “directed to” a judicial exception if it is “markedly different” from what occurs in nature (structure or function).




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Law of Nature

- *Mayo v. Prometheus*, 132 S. Ct. 1289 (2012)
 - A correlation is considered law of nature
 - To be patentable subject matter, the claim must be directed to a specific application of the law of nature




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Who is an inventor?

- An inventor is anyone who makes an intellectual contribution to the conception of the claimed invention.
- Conception is “the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice.”
- An idea is definite and permanent when the inventor has a specific, settled idea, a particular solution to the problem at hand, not just a general goal or research plan he hopes to pursue.



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Who is NOT an Inventor?

- One who suggests an idea of a result sought but not the means of accomplishing it
- One who simply conducts standard tests at the direction of an actual inventor
- One who merely supplies reagents or materials or funds the research
- One who’s contribution started AFTER full conception is complete

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Part II: Discussion of Patent Application Process


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The University Tech Transfer Model

```
graph TD; UE[University Employee] <-->|Innovative Technology| U[The University]; U <-->|Employment, University resources, etc.| UE; U <-->|***Intellectual Property Rights, Patents, Copyrights, Trademarks| L[Licensee]; L <-->|License Fees, Royalties, Reimbursements, Milestone Payments, Sponsored Research| U; L <-->|Commercialized Technology| P[The Public]; P <-->|Sales, Profits $$| L;
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Credit: Dillon I. Beardsley



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Considerations Before Filing a Patent Application

- Invention Disclosure Form (IDF)
 - Describe the innovation
 - Identify commercial applications
 - Describe prior art and competing technologies
 - Inventorship
 - Funding
 - Bar dates / Prior Public Disclosures
- Prior Art Search
 - Is the innovation patentable?
 - Does it have value?



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The Patent Application Process

- Examination at the U.S. Patent and Trademark Office (USPTO)
- Foreign Patent Prosecution
- Portfolio Management
 - Continuations/CIPs
 - Maintenance Fees
 - Foreign strategy




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Types of U.S. Patent Applications

- Provisional Application
 - Placeholder to obtain filing date
 - Does not grant as a patent
 - Not examined by USPTO
 - One-year pendency
- Utility/Non-Provisional Application
 - “Regular” patent application
 - Undergoes formal and substantive examination
- Continuing Applications
 - Continuation
 - Divisional
 - Continuation-in-Part



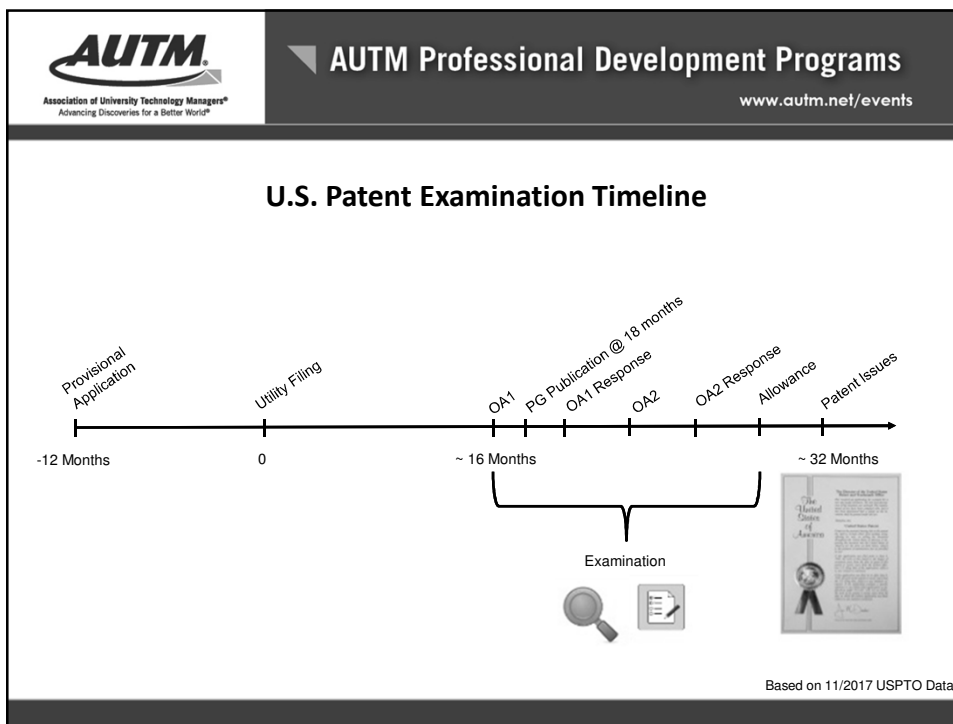
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Use of Provisional Applications

- Placeholder to obtain early filing date
 - File before upcoming disclosure or bar date
- No formal requirements or examination
 - Relatively inexpensive
 - Can be prepared quickly
- Technology still in early stages of development
 - **Warning:** only claims of the non-provisional that are fully supported by the provisional disclosure obtain the benefit of the provisional filing date




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U.S. Patent Application Filing

- Specification, including (see 37 CFR 1.77)
 - Title of invention
 - Background of the invention
 - Brief summary of the invention
 - Brief description of the drawings
 - Detailed description of the invention
 - At least one claim
 - Abstract
- Figures
- Oath/Declaration, Assignment, POA
- Fees




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Substantive Examination by the USPTO

- Restriction Requirement / Election of Species
 - Applicant must elect invention / embodiments for prosecution
 - Can also traverse the requirement
 - File divisional application(s)?
- Examiner’s Prior Art Search
 - Search prior art to find claimed invention
- Information Disclosure Statements
 - Applicant’s duty of disclosure





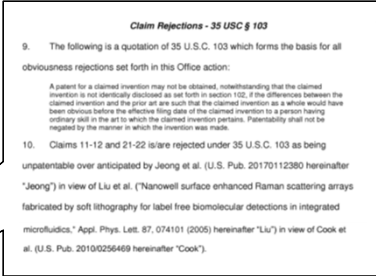
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Substantive Examination (cont.)

- Office Action on the Merits
 - Objections to form
 - Rejection or allowance of the claims
 - 35 USC § 101
 - 35 USC § 112
 - 35 USC § 102
 - Anticipation
 - 35 USC § 103
 - Obviousness



Substantive Examination (cont.)

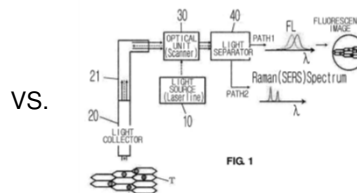
- Are all of the claim elements found in the prior art?

Claim

1. A contact-type endoscope surface enhanced Raman scattering (SERS) probe having a proximal end and a distal end, comprising:

a gradient-index (GRIN) lens;
a transparent substrate adhered to said GRIN lens; and
a rough metallic layer adhered to an opposite side of said transparent substrate from said GRIN lens,
wherein said GRIN lens focuses light from a Raman spectrometer onto said rough metallic layer,
and wherein said rough metallic layer is positioned at said distal end of said contact-type endoscope SERS probe.

Prior Art



- *In a single reference? Anticipated.*
- *In a combination of references? Obvious.*

Substantive Examination (cont.)

- Final vs. Non-Final Office Action
 - 1st Office Action is typically non-final
 - 2nd Office Action is typically final, unless it introduces a new ground of rejection not necessitated by a claim amendment or IDS
- Why does it matter?
 - Claims can only be amended as a matter of right after non-final rejection
 - Claim amendments at Examiner's discretion after final rejection
 - But, Request for Continued Examination (RCE)



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Substantive Examination (cont.)

- Response to Office Actions
 - Amend claims and/or argue against rejection
 - Missing claim element
 - Improper claim interpretation
 - No rationale to combine references / unexpected results
 - Submit Declaration from inventor and/or expert
 - Conduct Examiner Interview
 - In-person or telephonic
 - RCE or After Final Consideration Pilot Program
 - Only when after Final Rejection
 - Appeal




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Allowance and Issuance

- Notice of Allowance
- Issue Fee Payment
 - Comments on Examiner's Reasons for Allowance?
- Issuance
 - Check Patent Term Adjustment (PTA)
 - Due w/in 2 months of patent grant (extendable)




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Maintenance Fees

- Due 3.5, 7.5, and 11.5 years after grant
 - 6 month grace period
- Should you pay?
 - 3.5 year, likely
 - Is the technology licensed or commercialized?
 - Is anyone expressing interest in the technology?



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Continuation Practice

- A continuation application claims “priority” to an earlier-filed patent application
 - Parent -> Child relationship
 - Child application retains parent’s filing date for common subject matter
 - Child application must be filed while parent is still pending
- Types:
 - Divisional (no new disclosure)
 - Continuation (no new disclosure)
 - Continuation-in-Part (some new disclosure)



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Continuation Application Considerations

- Obtain protection for additional embodiments
- Obtain different claim scope (broader/narrower)
- Capture post-issuance design-arounds
- USPTO consideration of later-discovered prior art
 - Enforcement
 - Licensing negotiations
- Patent post-filing improvements to technology (CIP)




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Foreign Patent Prosecution

- U.S. patents do not provide rights outside of the United States
- Options:
 - PCT International Application
 - Must be filed within 12 months of U.S. filing date
 - National applications due 30-31 months from U.S. filing date
 - **Warning:** Not all countries are members of the PCT
 - Argentina, Chile, Peru, Taiwan, parts of Middle East
 - Direct national filings (Paris Convention)
 - Must be filed country-by-country within 12 months of U.S. filing date
 - Only option for non-PCT countries



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PCT International Application

- Filed as a single PCT international application
- Serves as a placeholder to file in 148 PCT member countries
- National filings delayed until 30-31 months from U.S. filing
- Applicant's participation in examination at PCT stage is optional
 - International Search & Search Report
 - Written Opinion
 - Applicant's Response (optional)
 - International Preliminary Report on Patentability

The 148 PCT Contracting States



Image from info.legal-patent.com



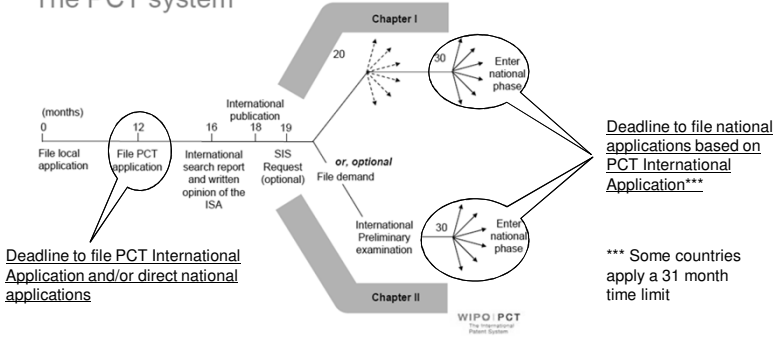
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PCT International Application System

The PCT system



The diagram illustrates the PCT system timeline in months:

- 0: File local application
- 12: File PCT application
- 16: International search report and written opinion of the ISA
- 18: International publication
- 19: SIS Request (optional) or, optional File demand
- 20: Chapter I (International Search Report and Written Opinion)
- 30: Chapter II (International Preliminary Examination) or Enter national phase
- 30: Enter national phase (from both Chapter I and Chapter II)

Deadline to file PCT International Application and/or direct national applications (at 12 months)

Deadline to file national applications based on PCT International Application*** (at 30 months)

*** Some countries apply a 31 month time limit

WIPO PCT
Image from USPTO.GOV



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Foreign Filing Considerations

- Should we foreign file?
 - Licensed vs. unlicensed?
 - Funding or prospective funding?
 - Use PCT to buy time?
- If yes, where?
 - Geographic market for the technology
 - Potential manufacturing sites
- Note, most foreign countries require annuities similar to U.S. maintenance fees




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Helpful Websites

- U.S. Patent and Trademark Office (USPTO)
 - www.uspto.gov
 - Full-text patent searching
 - Search patent assignments
 - Check maintenance fees
 - Public PAIR
- Google Patents
 - www.google.com/patents
 - Full-text patent searching
- Espacenet
 - www.espacenet.com
 - Access to over 100 million worldwide patent documents

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Questions?

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Our Contact Information

<p>P. Brian Giles, Ph.D. Partner Thomas Horstemeyer 3200 Windy Hill Road SE Suite 1600E Atlanta, GA 30339 (770) 738-2323 thomashorstemeyer.com</p>	<p>Steven J. Schwarz Partner Venable LLP 600 Massachusetts Avenue, NW Washington, DC 20001 (202) 344-4295 Venable.com</p>
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