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Searching for patents & other prior art: **Why & how?**



Talk by:
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Vidula is a technology transfer and intellectual property professional with a Ph.D. in Law from Symbiosis International University and a Post Graduate Diploma in Intellectual Property Rights from NALSAR University of Law. A Registered Technology Transfer Professional (RTTP), she has expertise in patent analytics, prior-art searches, patentability assessments, and IP strategy, with experience across pharmaceuticals, biotechnology, and medical devices. At Venture Center, she is part of the Innovation Management team, supporting IP services, technology transfer, and technology commercialization initiatives.

Dr. Premnath V

Director, Venture Center

**Mode: Online via zoom****29th Sept 2026****4:00 pm to 5:30 pm****REGISTER NOW**

**Interactive session, where participants can
engage directly and clarify their questions.**

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Today's Event

- Vidula Walimbe, PhD: Searching for patents & other prior arts: Why & how?
- Premnath V, PhD and Vidula Walimbe, PhD: Ask Me Anything

Searching for patents & other prior arts: Why & how?

Vidula Walimbe, PhD

29 September 2026

(With inputs from Premnath V, PhD)

Outline

- Quick primer on patents
- Why are patent searches needed/ important, goals for searching and when is it needed
- Where to do searches?
- How to do searches?
- How to get insights from the search results?
- Understanding limitations of searches and conclusions
- Special topics
- Some additional resources, links

Quick Primer on Patents

Quick Intro to Intellectual Property

- **Trade secret:** Not publicly disclosed. Information access controlled by CA/NDA.
- (Formal) **Intellectual property rights:** Intellectual property rights are the rights given to persons over the creations of their minds. They usually give the creator a right to prevent others from the use of his/her creation for a certain period of time.
 - **Patent:** For inventions. Public disclosure. Right to exclude others for 20 years.
 - Industrial design
 - Copyright
 - Trademark
 - Plant varieties
 - Others (circuit layouts, geographical indications)

Patents

- **Patents:** Rights issued by the Government to protect “Inventions”
- These are territorial rights. No such thing as “global patent”
- Deal between the Government and the Applicant that in return for disclosing their invention, the applicant gets a period where they can exclude others from practicing the claimed invention without permission of the applicant.
- Criteria for issuance:
 - Novelty: The invention must be completely new and never shared with the public before (globally, before the first filing date, all types of disclosed information)
 - Non-obviousness: It cannot be an obvious change that someone skilled in that field would easily think of.
 - Usefulness: It must work and have a practical, real-world application.

Key dates

- **Priority date:** First filing date anywhere in the world
- **Publication date:** When the patent document is published by the patent office; at 18 months milestone
- **Grant/ Issuance/ Approval date:** Date when the patent office approves the patent application.
- **Date of independent public disclosure:** Date when the inventors may choose to disclose the invention public (say, via a conference presentation or journal paper)

Important message: Ensure that “Priority Date” precedes “Date of Independent Public Disclosure”

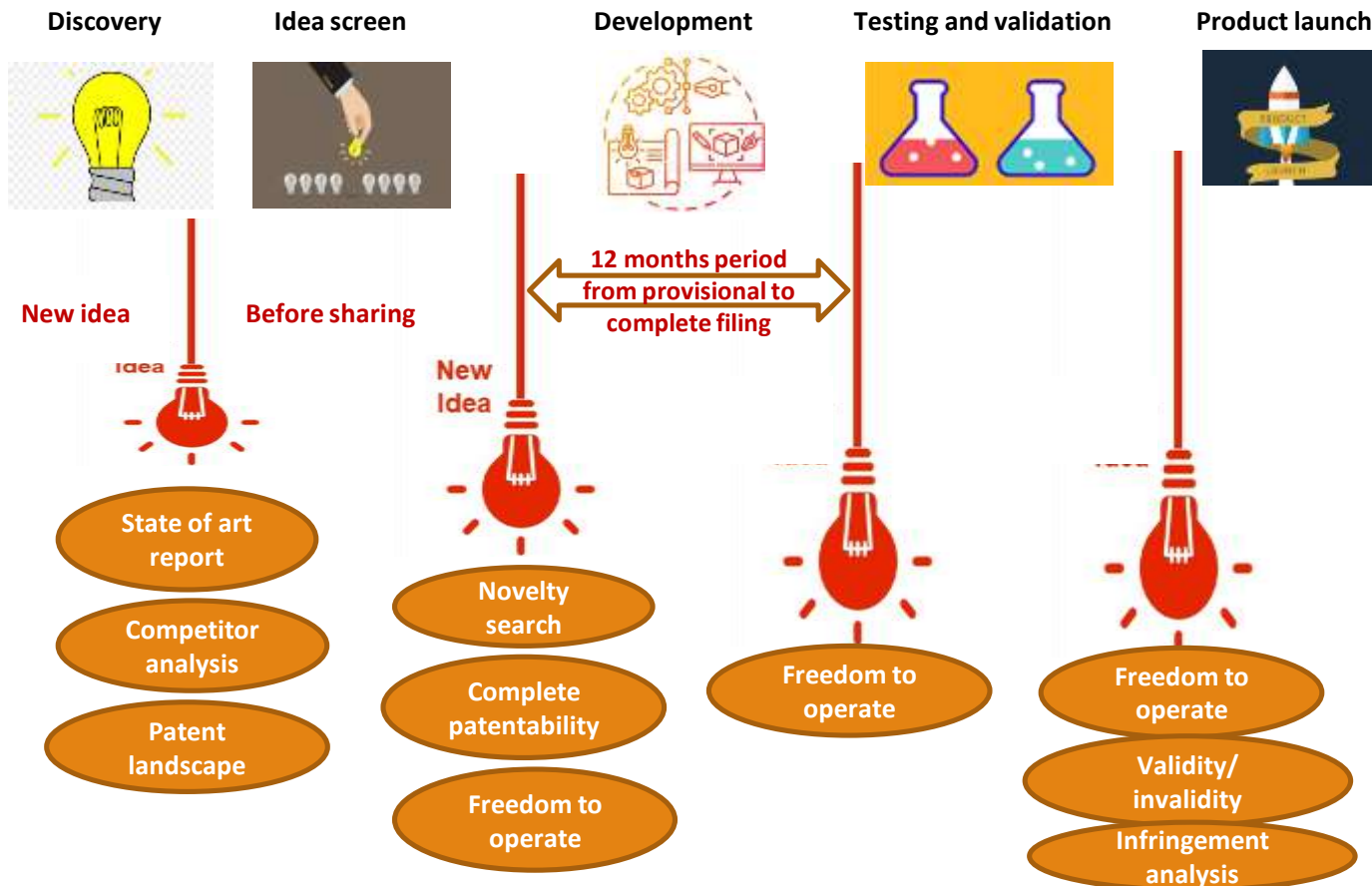
Why are patent searches needed/ important, goals for searching and when is it needed

Why are patent searches needed/ important?

- Patent documents contain a vast body of valuable technical, scientific, legal and commercial information.
- Help identify what has already been developed and where opportunities or gaps—“white spaces”—may exist.
- Reveal the inventors, universities, companies and research organizations working in a particular technology area.
- Help answer questions relating to patentability, validity, enforceability, freedom to operate and possible infringement.
- Support R&D planning by helping researchers avoid duplication and identify potential directions for further work.
- Help identify companies and organizations that may be interested in the technology for licensing, collaboration or commercialization.

Search reports and the questions they answer

- **Patentability assessment:** Is this patentable as per the law?
- **FTO/FTP:** Can I practice this knowhow freely in region X?
- **Patent landscape:** What all is being/has been patented by whom in this domain?
- **White space analysis:** Are there gaps in patent coverage in this topic?
- **Infringement assessment:** Is a technology infringing claims protected by patent set Y?
- **Citation analysis:** How often is a patent being cited and by whom? Is this patent “important”?
- **Competition assessment:** Who all are competing in this space and what is each party’s strength/weakness?
- **State-of-art/ Prior art report:** What all has been done (all documents) on this topic and what is current leading edge of the technology?
- **Portfolio analysis:** Analysis of a set of patents around various axes (regional coverage, age, nature of claims, strength of claims, citation strength, industry where relevant, subject etc) with an emphasis on strategy
- **IP audit:** Audit of a set of patents with the goal of optimization of patent portfolio for cost-benefit including goals such as pruning patents, etc
- Others



Myth: You need to search patents only if you are filing patents yourself

- Even if you are not filing patents yourself, you need to ensure that others have not filed patents on the same topic and hence you may not be able to practice your invention because of existing valid patents. That is you do not have Freedom to Operate.
- The patent literature is a vast body of literature that can provide useful information, leads and insights for your research.

Where to do searches?

Where to do searches?

FREE / PUBLIC DATABASES

Google Patents

Fast full-text and family screening

WIPO PATENTSCOPE

PCT applications and international search

Espacenet

Worldwide documents, families and classifications

InPASS

Indian patent applications and granted patents

USPTO Patent Public Search

US patents and published applications

SUBSCRIPTION DATABASES

Derwent Innovation

Enhanced titles, abstracts and analytics

Orbit Intelligence

Families, legal status and analytics

PatBase

Global families and classification tools

CAS SciFinder

User-friendly chemical structure, reaction and literature searching

STN international

STN is a command-driven platform

Links to databases

Free Databases

- Google Patents: <https://patents.google.com/>
- WIPO PATENTSCOPE: <https://patentscope.wipo.int/search/en/advancedSearch.jsf>
- Espacenet: <https://worldwide.espacenet.com/>
- InPASS: <https://iprsearch.ipindia.gov.in/PublicSearch>
- USPTO Patent Public Search: <https://ppubs.uspto.gov/pubwebapp/>

Paid Databases

- Derwent Patent Search: <https://clarivate.com/intellectual-property/derwent/patent-search/>
- Orbit Intelligence: <https://www.questel.com/patent/ip-intelligence-software/orbit-intelligence/>
- PatBase: <https://www.patbase.com/>
- CAS SciFinder: <https://www.cas.org/solutions/cas-scifinder-discovery-platform/cas-scifinder>
- STN International: <https://www.stn-international.de/en/>

How to do searches?

Searchable patent fields and outputs

Fields	What it means
Name of assignee	Potential partners, customers, licensees, acquisition candidates or organizations who are using the technology, competitor details
Name of inventor	Scientist working the invention
Priority date, application date, publication date	- Date of the first filing (priority date) - Filing trends about the invention
Legal status	To understand patent status: grant, validity, or expiry
Protection, filing, designated countries	If the application is regional or international, the countries in which the rights may be extended; to know the global market
Citation and references	References related to technology information uncovered by the applicant or by a patent examiner during the patent granting procedure
Description	Explanation of known existing technology, explanation about how the invention could be applied to address the problem in prior art, specific embodiments of the new technology
Claims	Legal boundary of the invention, unique technical features, supported by description

Patent search has three phases

1

PREPARE

- Define the decision and scope
- Break the invention into features
- List synonyms and likely classifications

2

SEARCH

- Run several keyword queries
- Expand with IPC/CPC and citations
- Repeat when terminology changes

3

REVIEW

- Read claims, description and figures
- Consolidate patent families
- Check legal status and record evidence

Searching is repetitive: review findings, then refine the search

Example

Example: A smart self-watering plant pot

The invention relates to a smart self-watering planter that automatically supplies water to a plant according to its needs. It includes a water reservoir, a soil-moisture sensor, a controller and a valve or pump. When the moisture level falls below a set limit, the controller activates the valve or pump to supply water, and stops the supply once the required moisture level is reached.

What to consider during search?

- **Reservoir:** stores water
- **Moisture sensor:** detects when soil is dry
- **Controlled flow:** releases water only below a threshold

Define the features—not the product name

Product description

“Smart plant pot”

Too broad, marketing-led and likely to miss patents that use different words.

Patent description

Reservoir + sensor + controlled water release

Break the invention into functions, and components.

Search the problem, the feature and the function

Then add synonyms, classifications, applicants and citations.

Convert product into searchable concepts

Component	Technical function	Useful search words
Plant container	holds plant and reservoir	plant pot · planter · flowerpot · container
Moisture sensor	detects dry soil	moisture · humidity · water content · sensor
Valve / pump	controls water delivery	release · dose · flow · irrigat* · valve · pump

Search operators

BOOLEAN

AND narrows; **OR** adds
synonyms; **NOT** excludes

(planter OR flowerpot) AND
reservoir

PROXIMITY

**Finds concepts
appearing near one
another**

moisture NEAR/3 sensor*

TRUNCATION

**Retrieves grammatical
and spelling variants**

irrigat* → irrigate, irrigation,
irrigating

Combine synonyms first; then connect concepts

Query is defined in layers

Broad concept

(planter OR flowerpot OR "plant pot") AND (watering OR irrigation)

Classification + citations

Search relevant IPC/CPC classes; review backward and forward citations of close patents.

Key mechanism

AND ("soil moisture" OR "soil humidity") AND (sensor OR probe)

Control feature

AND (controller OR microcontroller) AND (valve OR pump)

Broad → precise → broader again through classifications and citations

Keywords find words; IPC and CPC find technical concepts

Why classifications is important

Patents describing the same technology may use different terminology or languages. Classification codes group them by technical subject.

Practical method

1. Find one close patent by keywords
2. Note its IPC/CPC codes
3. Search those codes alone and with keywords
4. Check citations and family members

A

Human necessities

A01

Agriculture

A01G

Horticulture;
cultivation

A01G 27/00

Self-acting watering devices,
e.g. for flower-pots

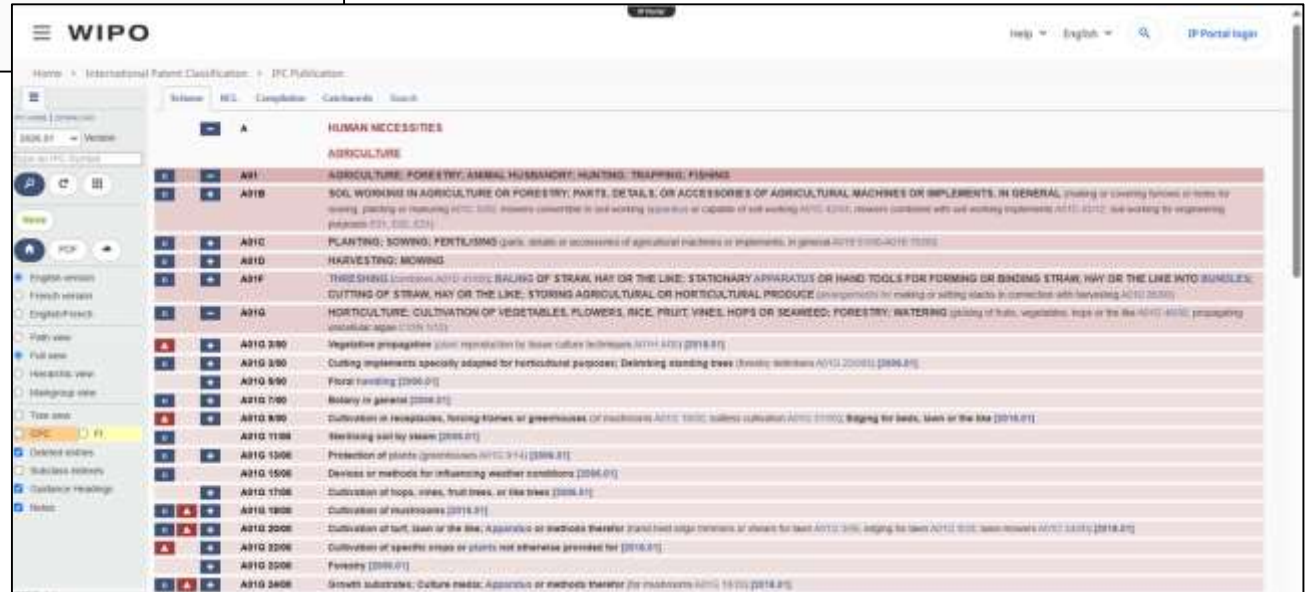
A01G 27/02

...having a water
reservoir

Use keywords + IPC/CPC together



← Identify IPC codes



→ Expand into the section, then the class



Combine text with IPC

1. CN105210705 - 具有自动排水功能的花盆

Patent Status: Issued | Description | Claims | Drawings | Documents

Office
China

Title
(25) Process for making automatic watering function

Application Number
20141020041.0

Application Date
21.05.2014

Publication Number
10010705

Publication Date
09.01.2016

Publication Kind
A

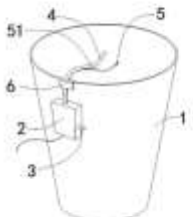
IPC
A01G 9/00 • A01G 27/00

Applicant
SH

Inventor
SH

Agency
北京中知专利商标代理有限公司

Abstract
(26) The watering controller (2) is provided with a water inlet pipe plug (7) and a water outlet pipe (8) and a soil moisture sensor (5). The watering controller (2) comprises a temperature (17), a drive circuit (22), a relayed valve (23), and a power supply module (24). An input end of the temperature (17) is connected to the soil moisture sensor (5) by means of a wire (12). The temperature (17), the drive circuit (22), and the relayed valve (23) are respectively connected, and the water inlet pipe plug (7) is in communication with the water outlet pipe (8) by means of the selected valve (23). The present invention has the advantages of saving time in manual watering, saving effort, and convenience to use, simple in structure, low in cost and wide in application range.



Check the bibliographic data,
claims & description



Espacenet: EP patent search



Patent search

282 495 results found

Search results for: 20141020041.0

1. **Adaptive hydration system for indoor gardening**
US1017308 • 1003-05-14 • No applicant available
Earliest priority: 1001-10-00 • Earliest publication: 1002-02-14
No abstract available

2. **Hydroponic system**
US1010274 • 1005-05-14 • No applicant available
Earliest priority: 1001-08-17 • Earliest publication: 1001-05-14
No abstract available

3. **Micro-grafting method for seedling plant of Crotalaria nepalensis (Crotalaria nepalensis) and Crotalaria (Crotalaria) nepalensis - 2017-08-31 • UNIV HUNAN PROV AGRICULTURE**
Earliest priority: 2016-10-08 • Earliest publication: 2017-05-01
The invention discloses a micro-grafting method for seedling plant of Crotalaria nepalensis (Crotalaria nepalensis) and Crotalaria (Crotalaria) nepalensis. According to the micro-grafting method, when micro-grafting or tissue culture seedlings of Crotalaria nepalensis (Crotalaria nepalensis) and Crotalaria (Crotalaria) nepalensis, a transparent silica gel tube is adopted as a seedling and being material of a seedling and Crotalaria (Crotalaria) nepalensis.

4. **Providing an elongated pipe structure for irrigation of a plant in a container**
Earliest priority: 1002-02-10 • Earliest publication: 1001-05-01
No abstract available

5. **Hydroponic system for growing plants**
US1010274 • 1005-05-14 • No applicant available
Earliest priority: 1001-08-17 • Earliest publication: 1001-05-14
No abstract available

Bibliographic data

Application
US20141020041.0 • 2014-05-21

Publication
US1017308 • 2017-01-01

Publication
US1010274 • 2017-05-01

Abstract
An indoor gardening apparatus includes a base defining a grow chamber and a grow module located within the grow chamber for receiving a plurality of plant parts. A hydration assembly is positioned within a grow chamber and includes a plurality of nozzles that are independent movable and adaptable. A controller directs an amount or undesirable growth condition, e.g., plant roots growing in a single direction, they control with each other, toward a growth point, at a further absolute direction. The hydration assembly may be adjusted to correct the abnormal or undesirable growth condition, e.g., by modifying a hydration schedule, a nutrient concentration, a spray direction or frequency, or another hydration parameter.



How to get insights from the search results?

Patentability assessments

What do you check for?

- Is it novel?
- Is it non-obvious?
- Is it useful?
- Is not in the exclusions list in the Patent Law?

Best Practices:

- It takes efforts to understand, identify and outline the invention accurately
- Frame rough draft clauses before searching
- One can change draft claims after you get an initial assessment. Patentability assessments should be seen as guidance notes rather than make-or-break documents.
- Patentability assessments are not 100% fail proof

Patentability searching looks for prior arts before the priority date

CLAIMED FEATURES

Break the proposed invention into essential technical features.

CRITICAL DATE

Search for material publicly available before the relevant filing or priority date.

PRIOR ART SOURCES

Patents, papers, theses, products, manuals, videos—and other public disclosures.

ASSESSMENT

Ask whether one reference destroys novelty or several references affect inventive step.

Patentability report

D1: [CN105210705A](#)

Title: Flowerpot having automatic watering function

Priority date: 21/6/2014

Abstract:

The invention discloses a kind of flowerpot with automatic watering function, comprise pot body (1), pot body (1) is provided with sprinkling controller (2), sprinkling controller (2) is provided with water inlet pipe plug (3) and outlet pipe (4) and soil humidity sensor (5), sprinkling controller (2) comprises comparator (21), drive circuit (22), magnetic valve (23) and power module (24), the input of comparator (21) is connected with soil humidity sensor (5) by wire (51), comparator (21), drive circuit (22), magnetic valve (23) is connected successively, water inlet pipe plug (3) is connected with outlet pipe (4) by magnetic valve (23). The present invention have can realize soil automatic watering, easy to use, structure is simple, the advantage of with low cost, applied range.

Claims (3)

Hide Dependent ^

1. one kind has the flowerpot of automatic watering function, comprise pot body (1), it is characterized in that: described pot body (1) is provided with sprinkling controller (2), described sprinkling controller (2) is provided with water inlet pipe plug (3) and outlet pipe (4) and soil humidity sensor (5), described sprinkling controller (2) comprises comparator (21), drive circuit (22), magnetic valve (23) and power module (24), the input of described comparator (21) is connected with soil humidity sensor (5) by wire (51), described comparator (21), drive circuit (22), magnetic valve (23) is connected successively, described water inlet pipe plug (3) is connected with outlet pipe (4) by magnetic valve (23), described power module (24) respectively with comparator (21), drive circuit (22), magnetic valve (23) and soil humidity sensor (5) are connected.

2. the flowerpot with automatic watering function according to claim 1, is characterized in that: the edge of described pot body (1) plugs and is fixed with pipe clamp (6), and described outlet pipe (4) and wire (51) are all clamped and fastened in pipe clamp (6).

Patentability report

Feature of the proposed invention	D1
Planter	Yes
Water reservoir	No
Soil-moisture sensor	Yes
Preset moisture limit and controller	Yes
Automatically operated valve/pump	Yes
Watering according to soil moisture	Yes

Novelty: Does **one earlier document** describe the whole proposed arrangement?

Inventive step: Would adding a reservoir to that known arrangement be an expected change?

Insights

Novelty: D1 already describes a planter that starts and stops watering according to a preset soil-moisture level. The basic watering mechanism is therefore not new. D1 uses a water inlet rather than water reservoir as disclosed in the invention, so D1 alone does not disclose every feature of invention. **Combination described in the present invention appears novel because D1 does not disclose the reservoir.**

Inventive step: Supplying water from a reservoir instead of a water inlet appears to be an expected change to D1's planter. **Based on the features currently described, there is no inventive step.**

FTO/FTP

- **Technology developer** needs to know if knowhow can be practiced freely if the developer wants to use the knowhow her/himself for manufacturing and sales.
- **Licensee** needs to know if knowhow can be practiced freely especially if he/she is giving assurances to the licensor.
- **Licensor** needs to confirm for him/herself that knowhow can indeed be practiced freely without anybody suing or the need to seek additional licenses. Value diminishes if additional licenses are required.
- **Investor's** assessment of value of knowhow depends on whether the knowhow has FTO or not.
- **Funding agencies** (ex: BIRAC) want to check FTO to ensure that the knowhow proposed can be practiced.

FTO begins with the proposed commercial activity

PRODUCT

Break the final product or process into technical features

TERRITORY

Define where it will be made, used, sold or imported

TIME

Fix the proposed launch date and monitor pending applications

CLAIMS

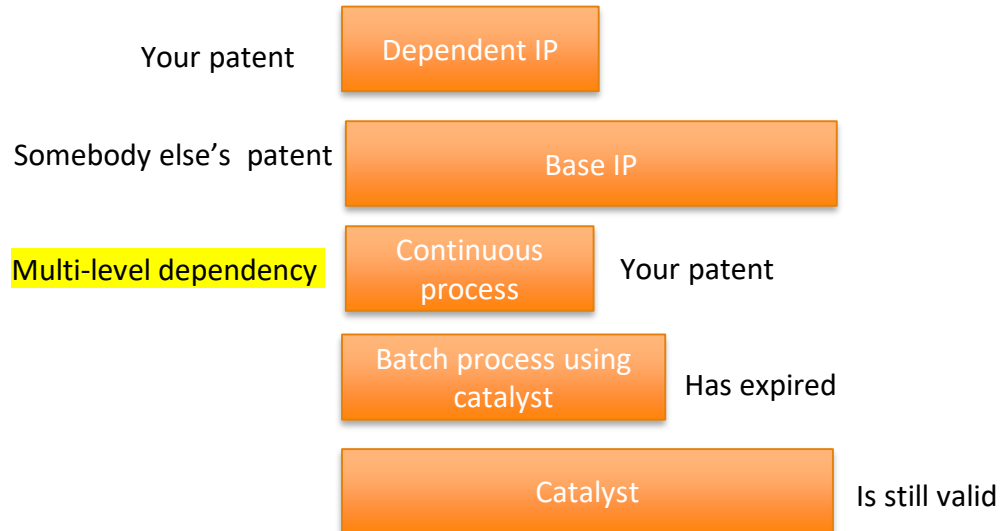
Compare each product feature with live, enforceable claims

FTO is not the same as patentability

Example: Patentability vs FTO

Caution

If your knowhow is patentable, does it mean it has FTO? No!



FTO report

Product Y – Smart self-watering planter

A planter with a water reservoir, soil-moisture sensor, controller, and valve or pump. When soil moisture falls below a set level, the controller starts watering. It stops watering when the required moisture level is reached.

Product Y – Knowhow elements

- Sense the soil-moisture level.
- Compare it with a set limit.
- Start water flow from the reservoir using a valve or pump.
- Stop water flow when the required moisture level is reached

Start: Company X wants to sell Product Y in the USA

Here are key KH elements

Is any current valid patent protecting any of these KH elements via their novel & inventive elements?

(AND KH elements are not in invalid or expired or unpatented but disclosed prior art)

FTO report: Prior art

Prior art	Patent no.	Title	Priority date	Status
D1	US8408229	Plant watering system	11/8/2009	Expired
D2	US9326462	Soil moisture sensor	10/3/2015	Active

- **D1, Claim 1:** A plant-watering apparatus with a soil-resistance probe, water reservoir and level detector, user calibration, indicator lights, and a controller that uses the probe reading to control water supply.
- **D2, Claim 1:** A soil-moisture sensor with a horizontally elongated body, an internal circuit and antenna, and a probe extending from one end of the body.

Start: Company X wants to sell Product Y in the USA

Here are key KH elements

Is any current valid patent protecting any of these KH elements via their novel & inventive elements?

(AND KH elements are not in invalid or expired or unpatented but disclosed prior art)

Example: Patentability vs FTO

Caution

If your know-how is patentable, does it mean it has FTO? No.

Your proposed product (Y)	Smart self-watering planter
Somebody else's patent: D1 expired	Automatic plant-watering apparatus with a reservoir, pump and timed watering
D2 active	Specific soil-moisture sensor design

D1 has elements in common with Product Y, but D1 has expired. Even then, Product Y does not automatically have FTO. If the sensor used in Product Y is covered by the claims of active D2, D2 may still block Product Y in the US

Understanding limitations of searches & conclusion

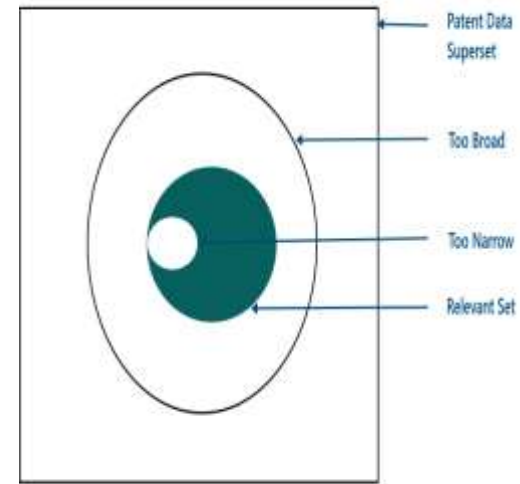
Understanding limitations of searches & conclusion

- Patent searches cannot guarantee that every relevant document has been identified.
- Patent applications generally remain unpublished for a prescribed period. These unpublished patent documents are not publicly available and cannot be retrieved during the search.
- Search results depend on the keywords, classifications, databases and search strategy used.
- Differences in terminology, language, translation and database indexing may affect the results.
- Patentability conclusions are preliminary; the Patent Office may assess the invention differently
- FTO conclusions depend on the final product, relevant patent claims, legal status, country and proposed date of commercialization.
- Patent claims and legal status may change during examination, opposition, appeal or other legal proceedings.
- Patent searches and conclusions should be updated before filing a patent application or launching and commercializing a product.

When to stop the search?

General pointers relevant to all types of searches that can help you figure out when to stop a search.

- All the promising databases and strategies have been tried
- The same or similar documents keep appearing
- You find documents that are somewhat relevant but nothing more relevant, despite further effort
- Highly relevant documents have been found but they can't be used e.g. because they were published too late – and further effort has revealed nothing



Special topics

Good practices in using AI tools

How AI can help

- AI-based patent searching can be carried out using a technical description or invention concept.
- AI tools can help understand the invention and identify its important technical features.
- They can identify keywords, synonyms and related technical terms.
- They can help prepare search queries and find conceptually similar patent documents.
- They can summarize patent documents and support the screening of large sets of results.

Limitations

- AI search results may not be complete or fully accurate.
- AI searching should be followed by regular keyword and IPC/CPC classification searches.
- Relevant patent documents should be read in detail, particularly the claims.
- Patent numbers, dates, family information, claims and legal status should be verified in reliable patent databases.
- Confidential or unpublished invention details should be entered only after checking the tool's confidentiality and data-use terms.
- Final conclusions should be drawn only after review by a person having appropriate technical and patent knowledge.

Some additional resources, links

Some additional resources

- <https://wipo-analytics.github.io/manual/datafields.html>
- <https://www.techtransfer.online/handbook/>
- <https://www.wipo.int/en/web/patent-analytics>
- <https://www.patsnap.com/resources/blog/articles/patent-analysis/>

Thank you

