



**Hewlett Packard
Enterprise**



**Hewlett Packard
Labs**

Sustainable Research Management

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Funded by
the European Union

AQTIVATE

ERL in 1 slide

Partnering with leading organizations in the EMEA region to advance supercomputing R&D

Our Role

- Deep technical collaboration with industry, academia, and public sector.
- Long term technical relationships surrounding research, co-design, and operational support.
- Focus on new technologies, driving HPE products.
- Create reusable PoCs & European IP

Research Interests

- HPC, Cloud, AI, Quantum
- Data movement, analysis, and workflows
- Heterogeneous computing and novel accelerators
- Programming languages and models
- Compilers and mathematical optimisation
- Performance portability, security, and containerisation
- Energy efficiency and sustainability

Engagement Models

- Centres of Excellence
- Advanced Collaboration Centres
- Value-add projects
- Joint-funded research projects
- Nationally/internationally funded research projects
- Ph.D. and Placements

ERL PRESENCE MAP



A distributed team engaging with partners across EMEA





**What can be managed about research?
What should be?
Facets of sustainability**

Research costs money - Funding

Institutional Interest

- Universities
- National entities
 - CNRS, Max Planck Society, ...
 - National interests
- International (Research) Organizations
 - CERN, ITER, EMBL
 - Policy making entities

Project based

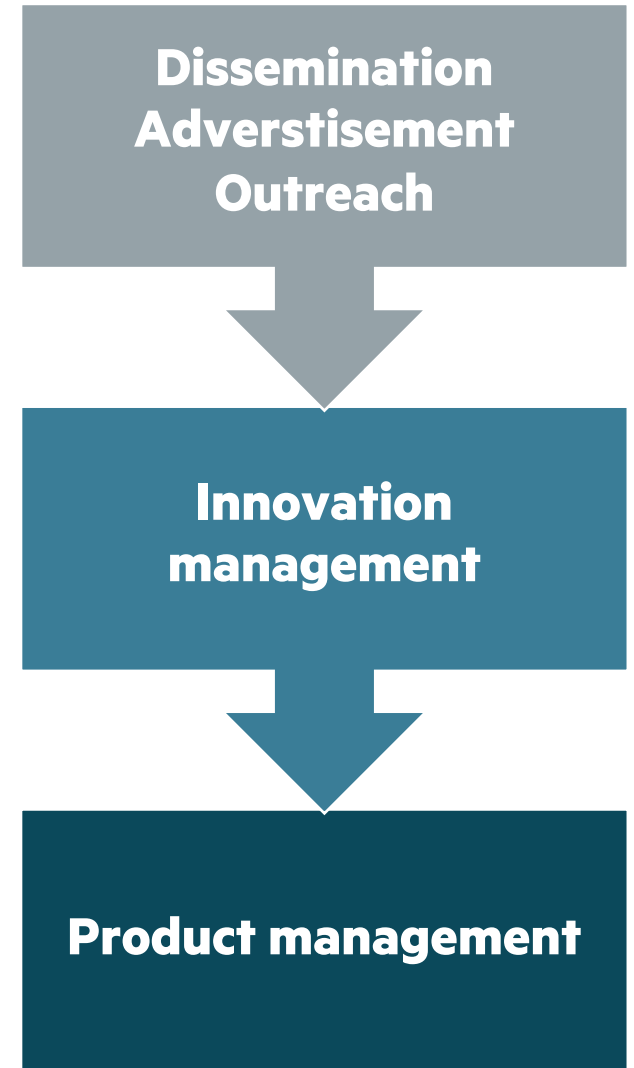
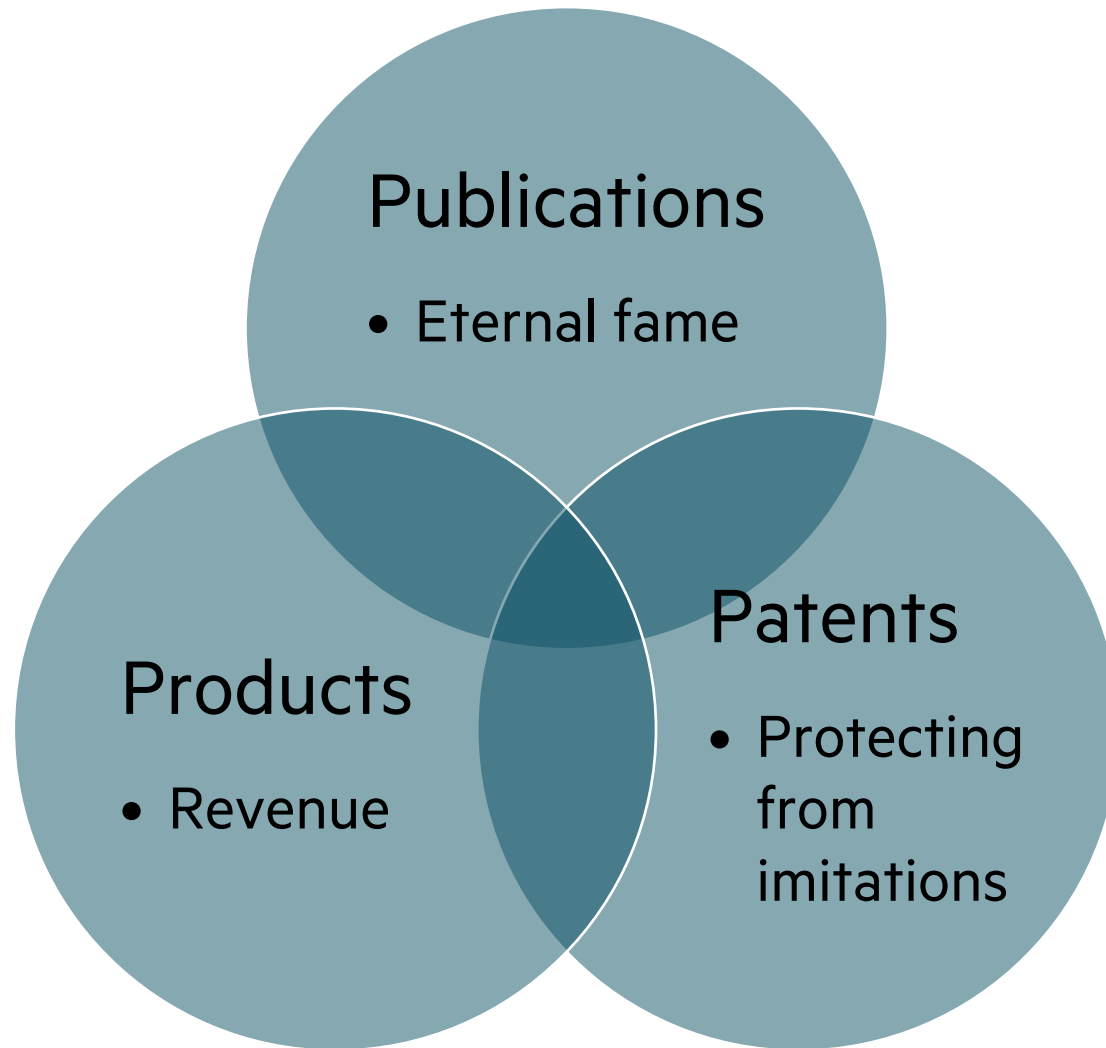
- Global scope
 - SKA
- Regional scope
 - Horizon Europe
- National scope
 - BMBF (Germany), NSF (USA)
- Local scope
 - Trinational Research Region Oberrhein, ...

Private Interest

- Company-driven
 - Inside R&D
 - Formalized
 - Hewlett Packard Labs, IBM Research,
- Startup Ecosystem
 - Core business value creation
- Philanthropy-driven
 - Rockefeller Foundation, Wellcome Trust, Gates Foundation



Innovation tracking: 3xP



Exploitation

Based on IP exclusivity, i.e., the right to exclude



Co-design and Co-opetition

Co-Design

“participatory approach to designing solutions, in which community members are treated as equal collaborators in the design process”

- Participation (transparency, broad input, inclusive, diverse), development with visibility, ownership & power balancing, outcomes & intent as starting points.
- The opposite of “we know which product you need”
- Great model for one-off solutions
 - Scaling the result to a larger market may be hard
- CI/CD agile development can be considered co-design in some well-managed cases
 - Otherwise it’s more like banana-ware

Co-opetition

“cooperating with a competitor to achieve a common goal or get ahead”

- Not new: standardization is a classic example
- Sharing cost of
 - R&D
 - Market entrance
 - Maintenance/service
- Game theoretic ‘what if I don’t cooperate here’ cases exist
 - DHL approached UPS to fly their parcels
 - If UPS accepts, DHL will be more profitable and survive, but UPS earns money on unused capacity
 - If UPS declines, DHL might go to FedEx and both competitors grow against UPS
- Differentiated offerings on top of common substrate allow sustainable business model

Protecting results



Copyright vs. intellectual property rights vs. German-style Urheberrecht

Copyright

- “the right to copy”
 - Originally referring to printed works
- Economic focus, protects the rights to a ‘work’
 - Exploitation rights can be held by original creator or a delegate
- Before Statute of Anne (1710, “Copyright Act”): copying was a right of the bookprinters guild
- After: exclusive rights of authors:
An Act for the Encouragement of Learning, by Vesting the Copies of Printed Books in the Authors or Purchasers of such Copies, during the Times therein mentioned.

Intellectual property rights

**“... are the rights given to persons over the creations of their minds. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time.”
(WTO)**

Urheberrecht

- Protects the creator
- Idealistic focus: creator automatically (without impressum!) has exclusive rights to the work
 - Right to copy
 - Right to be named as creator
 - Right to oppose disfiguring
- Usage rights can be licensed, Urheberrecht itself can not (in DE, AT – in CH it can)
- Lasts until death of author, can be extended 70 years beyond that

Publication

Authorship

- Permission to publish
- Funding acknowledgement

Dissemination

- Open (and not-so-open) Access publishing
- Preprints

Libraries in the 21st century



Inventions/Patents

Protecting your economically value ideas

Provides, the right to exclude others from making, using, selling, offering for sale, or importing the patented invention for the term of the patent.

History:

- Old Greek: [Athenaeus 300 BC]: “When one of the chefs [at Sybaris festivities 600 BC] invented his own delicious dish, no other person should be allowed to make use of this invention before the end of a year, only the inventor himself; during which time he would have the business profit from it, so that others would compete and surpass each other in such inventions”
- First record: Brunelleschi's patent for inventing a means of conveying heavy loads (specifically, large slabs of marble) up the Arno River for the construction of the Florence cathedral
- Statute of Venice 1474: protect new and inventive devices in return for disclosure to the Venetian Republic.

Inventions/Patents (2)

What can be patented?

An invention is patentable only if it is:

- New and previously undisclosed.
- Distinguished by an inventive step not obvious to someone expert in that technology.
- Capable of industrial application - that is, it is physically possible to make (produce) the invention.

Computer software **on its own**

- can be protected by copyright but not by patents in Europe.
- **However**, an invention that is implemented on computers by means of software is patentable in Europe.
 - practice differs between Europe and the USA.

Business methods may be patentable in the USA but not easily patentable elsewhere.

Inventions/Patents (3)

Protecting your economically value ideas

Provides, the right to exclude others from making, using, selling, offering for sale, or importing the patented invention for the term of the patent.

Patent process

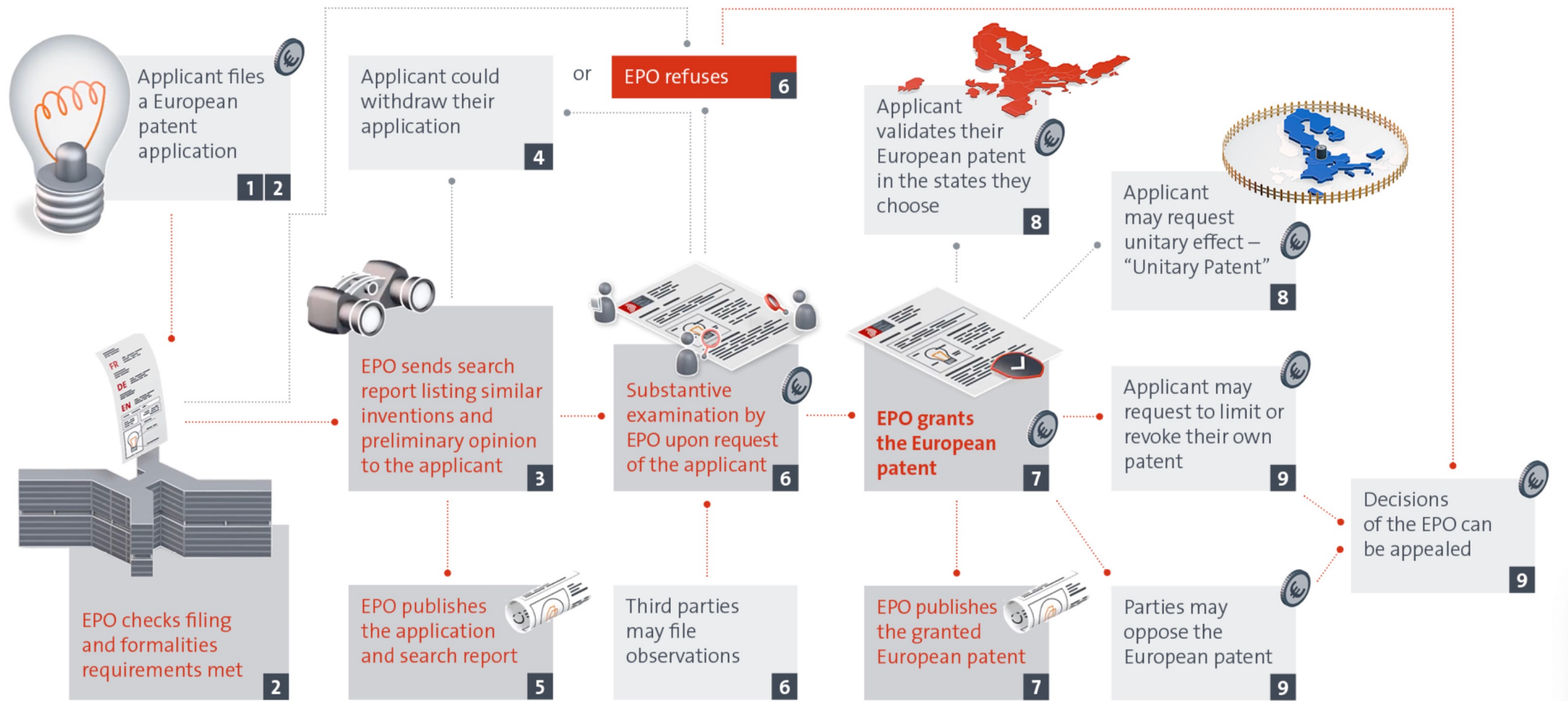
- The application contains a description of *how to make and use* the invention that must provide sufficient detail for a person skilled in the art to make and use the invention.
 - In some countries there are requirements for providing specific information such as the usefulness of the invention, the best mode of performing the invention known to the inventor, or the technical problem or problems solved by the invention.
 - The application also includes one or more claims that define what a patent covers or the "scope of protection".
- National (maybe multiple simultaneous), then other countries or European (but can reverse order)
- European patent: 20 years (from filing)

Patent trolls

- Companies accumulating [questionable] patents to earn money in court, not by exploiting the innovation

Overview of the European patent application process

(3-5 years)



€ = pay fees

~5k for application, ~5k fees,
~5k upkeep for 20 years

Brands and Marks

A trademark is a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises. Trademarks are protected by intellectual property rights.

- Marks come in 3 variants
 - Word marks
 - visual marks (drawing/symbol/3D features)
 - other properties like sounds, color shades, fragrances
- Nice classification (taxonomy) of the WIPO has 45 categories: 34 for goods, 11 for services
 - Overlaps are a topic for lawyers
- Protection applies only to the classes selected (price per category)
- 10y protection span, can be extended indefinitely
- Claim needs to be fought 1:1, agency only checks formalities at registration
- Primarily a national registration; international means many national ones; special EU marks process exists too



Takehome messages

Results first

- only successful research is sustainable, but interpretation of success may differ

Plan how results will be publicised early

- Talk to you co-authors, advisors, project managers

Involve professionals

- innovation management centers/agencies/departments

Your law team can be your friends

- They know what they are doing, but often need help understanding what you are trying to do!

Thank you

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