INTELEKTUALNA SVOJINA I TRANSFER TEHNOLOGIJE

Kriterijumi evaluacije za transfer tehnologije

2.3. NAUČNE OBLASTI PODOBNE ZA KTT

KTT će razmotriti Prijave iz svih oblasti nauke i tehnologije za potencijalnu komercijalizaciju. Pored „industrijske svojine" (koja se obično štiti patentima), KTT će razmatrati i žigove (robna marka), industrijski dizajn, kao i druge inovacije nazvane „kreativnim radovima" koje se obično štite autorskim i srodnim pravima. Dodatna polja interesovanja uključuju stvari poput istraživačkih alata, softverskih aplikacija, baza podataka bioloških materijala i drugih primera „materijalne intelektualne svojine".

- Nivo tehnološke spremnosti (inovativnost tehnologije, proizvoda ili usluge);
- Informacije o relevantnom kompetitivnom okruženju (tržište);
- Stanje intelektualne svojine (novost i inventivnost predloženog rešenja i jasnoća vlasništva);
- Procenjena komercijalna i finansijska održivost i potencijal za stvaranje vrednosti i koristi za korisnike proizvoda i komercijalne partnere;
- Procena konkurentnog tržišta i kako bi se potencijalni proizvodi bazirani na pronalasku kotirali;
- Kvalitet članova tima, njihovi kredencijali i sposobnost da se ostvare rezultati;
- Zainteresovanosti komercijalnih partnera.

Transfer tehnologije je termin kojim se opisuje formalni prenos prava drugom licu na korišćenje i komercijalizaciju (ostvarivanje prihoda) novih otkrića i pronalazaka koji su nastali kao plod naučnog istraživanja. Naučnoistraživačke organizacije najčešće vrše transfer tehnologije kroz zaštitu (koristeći patente i autorska prava) i potom licenciranje novih pronalazaka. Bitni koraci u ovom procesu uključuju otkrivanje pronalazaka, patentiranje pronalazaka uporedo sa objavljivanjem naučnog istraživanja i licenciranje prava na ove pronalaske privredi za komercijalni razvoj.

ŠTA JE TO PRONALAZAK?

Pronalazak je jedinstvena i nova naprava, metod, sastav ili proces. Neki pronalasci mogu biti patentirani. Patent pravno štiti prava intelektualne svojine pronalazača i pravno priznaje da je predloženi pronalazak zapravo pronalazak. Pravila i zahtevi vezani za patentiranje pronalazaka variraju od države do države i proces dobijanja patenta često može biti skup.

PODSTICAJI U PROCESU TRANSFERA TEHNOLOGIJE

Kada se pronalazak otkrije Kancelariji za transfer tehnologije, počinje proces koji može voditi do komercijalizacije te tehnologije. Mnogo je razloga za učestvovanje u ovom procesu i oni su često jedinstveni za svakog istraživača, a najčešći razlozi uključuju:

- Stvaranje pozitivnog efekta na društvo;
- Dobijanje priznanja i finansijskih nagrada;
- Ostvarivanje dodatnog prihoda i izvora finansiranja za određeno istraživačko odeljenje/centar;
- Ispunjavanje obaveza stečenih ugovorom o istraživanju;
- Privlačenje sponzora za istraživanje;
- Stvaranje obrazovnih prilika za student;
- Povezivanje studenata sa budućim prilikama za zaposlenje.

Dozvoljeni troškovi

Za vreme pripreme razvojnog plana, Korisnik podrške mora imati u vidu da su sredstva koja se dodeljuju u okviru Programa TTF namenjena prevashodno za dodatni razvoj u svrhu povećanja komercijalne spremnosti. Za Projekte sa jasnom intelektualnom svojinom i vlasništvom nad njom, ova sredstva mogu biti korišćena za usluge iz domena zaštite intelektualne svojine, prvenstveno za izradu patentnih prijava i prijava autorskih prava, troškove podnošenja i izdavanja, na nacionalnomi međunarodnom nivou. Izrada prototipa sa specifičnim operativnim funkcijama će takođe biti razmotrena. Troškovi konsultanata specijalista koji bi pružali ekspertizu za razne korake u procesu komercijalizacije su takođe dozvoljeni.

Troškovi koji neće biti razmatrani za finansiranje u okviru finansijske podrške uključuju, ali nisu ograničeni na:

- Otplaćivanje kamata ili duga koji postoje prema bilo kom licu;
- Plaćanja i provizije za moguće gubitke ili dugove u budućnosti;
- Poreze, uključujući PDV, carine i naknade;
- Stavke koje se već finansiraju kroz drugi okvir, program ili kompaniju/instituciju;
- Gubitke po osnovu negativnih kursnih razlika, naknade i kazne;
- Kupovinu zemljišta ili zgrada, uključujući bilo kakvo renoviranje.

https://www.inovacionifond.rs/program/program-transfera-tehnologije/ttf-dokumentacija

Primer

TITLE OF INVENTION:

Serbian language: Razvoj nove generacije ergonomski prilagodjenih stolica u kranskim kabinama

English language: Development of new generation of ergonomically adapted crane cabins' chairs

BRIEF SUMMARY OF THE INVENTION (approximately 150 words)

Innovative crane cabin chair/seat designed for population of crane operators (not designed on data of general population as usually but on large representative sample of crane operators) with 10° forward slope enables periods of work and rest of an operator in two different positions. Innovation is based on the facts that crane operators use 30-70% of effective working time on maneuvering, so it is possible them to take rest between working cycles in the most comfortable position. When working, transparent leg support enables good visibility, while in rest period, operators use legs support system to relax muscles. Proposed design enables the operator's fatigue and stress reductions due to ergonomic adjustments, together with increasing the productivity of the crane and safety and security while decreasing production and insurance costs. It takes interior space of crane cabin that is very close to those obtained in E!6761 and it is expected that techno-economic analysis in sense of cabins` weight and production price will prove this project as economically beneficial.

BACKGROUND OF THE INVENTION

- Cranes are amongst of the most dangerous equipment used in both the industry and construction sites. Despite todays' the risk awareness, incidents in crane's operations have not substantially decreased. Crane operators work long hours in constrained workspaces requiring awkward postures. Their neck extension, trunk flexion and repetitive arm movement are associated with an increased risk of developing neck and shoulder pain that leads to reduced working capacity, quality and safety.
- To further improve those aspects, there is the need of a more integrated approach, where design safety and safety in the use fields, quality and productivity should be considered as one entity, with special attention paid to human error issues (Häkkinen, 1993, Milazzo et al., 2015). The space within the crane cabin is adequate for only 18.5 % of operators, while 28.9 % of them feel extremely uncomfortable (Tam & Fung, 2011). Possible reason lies in the fact that today's available standards and manufacturers, relay on anthropometric data of the general population, which differs from crane operators` population (Zunjic et al., 2015). Although previous research demonstrated that 42% of all incidents are linked to the crane cabin design (Gambatese et al., 2008), very little research has been done in the field of the assessment of the anthropometric convenience of crane cabins. Sen&Dus (2000), Ray& Tawari (2012) and Spasojevic Brkic et al. (2015) notice necessity to minimize the anthropometric mismatch in crane cabins to solve human error issues that bring very high occupational risks. Results of the project E!6761 also have shown that in contemporary crane cabins' design only 48.5% of operator- control devices interaction, 25% of safety and 40% of anthropometric adjustment issues remain un solved. The cabin shall be equipped with a seat suitable for operating the crane that minimizes operator fatigue and permits visual, reach, and communications access so the intended work tasks can be performed efficiently and without interference. Unfortunately, results on the sample of Serbian operators in E!6761 show that when ordinary seats are used as it is done in that project, seat design problems count on 35% of all problems on crane cabins ergonomic inconvenience. Since previous research show the need for innovation in crane cabin seat design this project intends to give that solution through new generation of chairs that will be ergonomically adjusted and economically justified.
- It is well known that the best sitting posture is obtained on horseback, opposite to ordinary work-chairs that cause excessive loading of the back. The crane operators had previously indicated that discomfort was mainly contributed by a forward flexed sitting position that happened during lifts close to the crane (Kittusamy&Buchholz, 2004). Accordingly, the basic idea of innovative chair in this project is in seat slope of 10° forwards instead of backwards and legs support solution (to be used in non-operating periods). Sloping forward enables position in which muscles at the front and back of the thighs are in relaxed balance. Also, since there is tendency that all populations are taller and taller, it makes logical tendency to produce higher chair, although today we are witnesses of lower and lower chair trends.
- Kushwaha, & Kane (2016) have noticed that, in their sample of 27 operators, 100% of them continuously suffer from some kind of musculoskeletal disorder. Le Long et al. (1998) found that sloping the seat 10° forwards resulted in up to a 30% decrease in intra-discal pressure. Hamaoui et al. (2016) have confirmed that, but put into question undesirable over activity of upper and lower limbs muscles to prevent the body from sliding. Rasmussen et al. (2009) noticed that seat pan inclination
- appears to cause muscle fatigue unless sufficient friction is present - when the friction coefficient is small, there is a beneficial effect of a forward inclination until approximately 10° and when the friction coefficient is high enough to prevent slip between the seat and the body, the muscles are
- unaffected by the seat pan inclination.
- Till today there were no measurements with a forward inclined seat pan, since those experiments could be invasive (Rasmussen et al., 2009). Tall crane operators are probably the most vulnerable workers, as Carragee et al. (2008) synthesized the literature and presented the fact that among workers in manual occupations, the annual prevalence of neck pain varied from 16.5% in spinning industry production line workers in Lithuania to 74% in Swedish crane operators, who are among the tallest in Europe, together with Serbian. Bovenzi, Pinto &Stacchini (2002) have found 40-60% of operators with 12-month prevalence of low back pain.
- Crane operators need to lean forward and look down through the clear floor of the cab in order to lift and lower containers in the yard even with traditional seat. They even have to be more focus during night shift as the condition of the surrounding is slightly dark and limited compared to day shift. The operators are required to maintain a forward, trunk-flexed position (23.9 ± 2.9 degrees) of forward flexion to adequately view the workspace for 70% of their workday (Munro, 2014).Trunk angles during the maneuvering tasks averaged 30.7± 0.4 degrees and the highest workload experienced by the operators was seen at this time (Munro, 2014).
- In that aim we have already taken anthropometric measurements on 83 crane operators recently to model new generation of chairs with forward sloping seat and legs support components, useful in rest periods that account at least of 30% of working time. Algorithm for anthropometric accommodation is developed by this team, too. Algorithm application arrives to solutions given on Figures 1-3 and it is evident that interior space for this ergonomically extremely convenient solution has dimensions 1230 × 1100 × 1850 mm. It is expected that this innovation will further reduce the human operator's fatigue and stress in only 6.6% larger space compared to the smallest obtained in E!6761 (1095 × 1150 × 1865 mm) while increasing the productivity of the crane and quality of executed operations with increase safety and security while decreasing insurance costs, in such a way as to widely and evidently justify the investment costs.
- It is expected that proposed innovation gives also lessen biomechanical stress to operator, but future survey is needed to check possibility of force exertion on brake pedals. It would be also beneficial to enlarge sample of crane operators in aim to have more reliable and very fresh data.
- To check hypothesis that new generation of crane cabins` chairs is feasible solution with TRL at least 5 it is necessary to solve multidimensional issues and fulfill the following objectives:
- Objective 1: to collect large sample of anthropometric measurements data on crane operators.
- Objective 2: to identify seat components dimensions for a seat design in the sloping forward operating posture.
- Objective 3: to understand the interaction effects between seat design parameters and acting of the anthropometric measurements as mechanical mechanisms in the sloping forward operating posture with legs support system.
- Objective 4: to understand the effects of a new chair design on operations quality (with special emphasize on brake force executed) and long-term operator comfort.
- Objective 5: to analyze the economic feasibility of production and usage of the new generation crane cabins` chairs.

NOVEL ASPECTS OF THE INVENTION

There are no solutions like this in the crane operators' chairs or seats on the market. We have no found in the field any solutions that use the possibility to take different position during the work and rest cycles of crane operators. Even all existing solutions are based on general population anthropometric data. Innovation herein enables that during the rest period all muscles are relaxed in comfortable position, while during working cycles muscles at the front and back of the thighs are in relaxed balance, too. Forward sloping of the seat is known solution applied in other fields, with the best results when taking slope of 10°. Seat dimensions are initially obtained using data on Serbian crane operators (this project will enlarge sample), as tall population, because it is known that tall operators have the largest comfort problems. This innovation also suggest introduction of legs support components. It takes into account space needed for operator accommodation and gets savings in that field and further on crane cabin production price even with legs support components application. Accordingly, this novel solution is useful for operators to reduce fatigue and stress and increase the productivity and quality of their work, but also for crane cabin producers and production sites that have crane cabins due to their monetary savings in sense of production and insurance costs.

PRIOR ART

Although cranes are amongst of the most dangerous equipment used in both the industry and construction sites and their operators' discomfort and safety significance is known, there is no product like this neither on market, in EPO base (https://worldwide.espacenet.com) or in previously published literature. Crane cabin chairs producers such as Gessmann (http://www.gessmann.com/start.html) or even Brieda Solutions (http://www.briedacabins.com/) do not offer inclined seats solutions. Basic idea on herein proposed solution is given by principal investigator, while other investigators contribution is given in their specific fields of expertise. It is proposed that inclined seat solution is especially appropriate for crane operators due to their bent and inclined position (even when seating in traditional seats) due to visibility from the cab issues. Solutions with forward inclined seat pan in other fields are available, but till today even in other fields there were no measurements with a forward inclined seat pan, since those experiments could be invasive (Rasmussen et al., 2009). Project E!6761 has proved that cabin's interior anthropometric optimization is needed, possible and economically beneficial, so it is expected that innovation proposed herein will make further optimization and savings. It can be concluded that solutions like this do not exist although could be beneficial from comfort, safety, productivity and cabin production price views.

In which markets do you think the invention will find most success?

List below as many actual or hypothetical products or services as you can think of that might benefit from your invention.

TARGET MARKETS

The potential market for our product is worldwide spread. Any users or producers of crane cabins are potential users of our product. New generation of crane cabins` chairs could be mounted in both new and existing cabins, since it occupies as small as possible space.

ADVANTAGES AND BENEFITS

List the three key commercial benefits or advantages of the invention:

The solution improves crane transport safety through enabling higher comfort for operator.

The solution improves crane transport productivity through enabling higher comfort for operator.

The solution takes convenient size of interior space of crane cabin in sense of cabins` weight and production price.

POTENTIAL ROUTES TO MARKET

List the names of companies that you think might be interested in using your invention to make, use or sell products or services.

Do you have any existing contacts in these companies?

We have contacts in the following companies and suppose that they might be interested in using invention to make, use or sell products or services:

1. Vaming d.o.o. (http://vaming.rs/)
2. Electrum d.o.o. (http://electrum.rs/)
3. ADQM d.o.o.

BUSINESS MODEL CANVAS

<table>
<tr>
<td rowspan="2">Key Partners
Key partners are companies Vaming, Electrum and ADQM whose consulting services partially will be used in this project. Future partnerships with them as product sellers are planned.</td>
<td>Key Activities
1. Large anthropometric data base, 2. Experimental testing on brake pedal force on novel chair, 3. Economic feasibility study, 4.Prototype production and testing, 5. Serial production of different chair models.</td>
<td rowspan="2">Value Proposition
Benefits of using new generation of chairs in crane cabins results in more comfortable operators` position, better operators` health, improved safety and productivity at site that consequently leads to incidents reduction. We expect that economic appraisal will prove cost reduction, too.</td>
<td>Customer Relationships
Our channels personally interact with potential customers, but also can offer co-creation model. There are also included automated characteristics, because we already have base of anthropometric measurements that will be enlarged by this project and every next customer in sense to include preferences.</td>
<td rowspan="2">Customer segments
This product fulfills diversified markets needs, including: 1. Crane operators that seat on chairs, 2. Crane cabins` producers that usually sell cabin with chair and 3. Companies where crane cabins operate (there is a possibility to replace traditional with novel chair).</td>
</tr>
<tr>
<td>Key Resource
Key resources will be given in detail in economic feasibility study.</td>
<td>Channels
Both own (Faculty of Mechanical Engineering certifies large number of cranes) and our partners channels (Vaming – cranes production and assembly, Electrum – cranes electrical parts and ADQM – certification in field of safety at work)</td>
</tr>
</table>

Technology Readiness Levels in the European Commission (EC)

Technology Readiness Level	Description
TRL 1.	basic principles observed
TRL 2.	technology concept formulated
TRL 3.	experimental proof of concept
TRL 4.	technology validated in lab
TRL 5.	technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
TRL 6.	technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
TRL 7.	system prototype demonstration in operational environment
TRL 8.	system complete and qualified
TRL 9.	actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

Patenti

Intelektualna svojina (Intellectual Property Rights - IPR)

- Intelektualna svojina, kao i svojina u materijalnom obliku, predstavlja imovinu i kao takva se može kupovati, prodavati, licencirati, razmenjivati ili ustupati. Predmet zaštite prava intelektualne svojine su nematerijalna dobra, duhovne tvorevine („proizvodi uma“), koje su rezultat kreativnosti i intelektualnog rada, te prva stvaralaca (inovatora i autora).
- Pravo intelektualne svojine obuhvata:
  - Pravo idustrijske svojine
  - Autorsko pravo i srodna prava
- U okvru prava industrijske svojine razlikuju se sledeće kategorije:
  - Patent (pronalazačko pravo)
  - Žig (znaci za obeležavanje roba i usluga)
  - Modeli i uzorci (industrijski dizajn)
  - Geografske oznake porekla
  - Topografija integrisanih kola

Patenti

Patenti pripadaju pronalazačkom pravu, te predstavljaju pravo koje stiče inovator - pronalazač na osnovu rezultata svog kreativnog rada, čime se podržava kreativnost kao suštinska odrednica i uslov inovativnosti. Patenti se odnose na pronalaske koji su proizvod, postupak ili primena.

O patentima se moće govoriti s obzirom na sledeće komponente:

- Patenti kao **mehanizam aproprijabilnosti inovacije**
- Patenti kao **izvor informacija i podrška inovativnosti**
- Patenti kao **pokazatelj stepena inovativnosti i razvoja**

Patenti su **vremenski i prostorno ograničeno pravo**. Npr. patent obično traje 20 godina od podnošenja prijave, a odobren je samo u pojedinim zemljama.

Uslovi patentabilnosti:

1. **Novost** - pronalazak se smatra novim ako nije obuhvaćen trenutnim stanjem tehnike
2. **Inventivnost** - ako rešenje određenog problema za stručnjaka ne proizilazi na očigledan način iz stanja tehnike
3. **Industrijska korisnost** - kada je pronalazak primenljiv u industrijskoj ili drugoj delatnosti

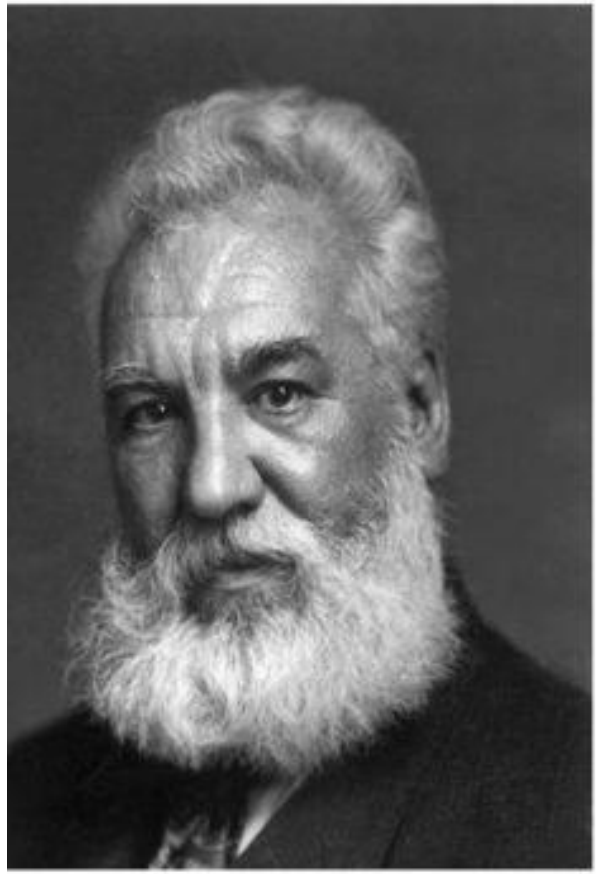
Pored moralnih prava inovatora, nosilac patenta stiče i **imovinska prava zaštite** neovlašćenog korišćenja pronalaska:

- *Korišćenje u proizvodnji zaštićenog pronalaska*
- *Stavljanje u promet predmeta izrađenih prema zaštićenom pronalasku*
- *Raspolaganje patentom*

Patentna dokumentacija - to su neke publikacije iz oblasti inovacije, a **prednosti** nad običnim publikacijama su:

- Najnovija rešenja nekih tehničkih i tehnoloških problema
- Informacije koje se ne mogu naći ni u jednoj drugoj literaturi
- Unificiranost - imaju jedinstvenu strukturu
- Pronalasci su detaljno opisani
- Može se sagledati pravac u kome se određene oblasti tehnike razvijaju

Patentiranje telefona



Žigovi (brendovi)

Žig se nekad poistovećuje sa brendom. Zbog toga je pravo zaštite inovativnog proizvoda/usluge - inovacije robnim/uslućnim žigom, zapravo, mehanizam primene jednog od prava intelektualne svojine u procesu kreiranja i razvoja brenda.

Brend se odnovi na skup svih psiholoških relacija između kupca i proizvoda ili usluge. On predstavlja izvor konkurentne prednosti i obezbeđenje konstantnog kvaliteta koji se identifikuje sa imenom. Brend može biti lokalni, regionalni i globalni, kao Coca Cola.

Karakteristike žigova koji su, zapravo, brendovi:

- Brendove izgrađuju i poseduju ljudi, javnost, kupci
- Imidž koji brend nosi sa sobom postoji u svesti onih koji taj brend razumeju, a ne u samom brendu
- Imidž brenda je individualna stvar
- Brend pruža jaku vezu poverenja između vlasnika brenda i kupca
- Brendovi poseduju uočljivu različitost
- Vrednost brenda se može kvantitativno utvrditi kroz tri ključne komponente koje su međusobno zavisne: **lojalnost, vrednost, imidž**

Primeri:

- Pored imena se javlja brojčana oznaka - Nokia Lumia 820, Nokia Lumia 920
- Radikalnije ekstenzije: kompanija Virgin je osnovana za izdavanje muzike, a danas ima radio stanicu, TV stanicu, avioprevoznike, mobilnu telefoniju,itd.

Brend, kao alat uspešnog lansiranja inovacije, se može posmatrati na **sledeće načine**:

- Brend se može koristiti kao osnova za lansiranje inovacije
- Menadžeri inovacija i razvoja moraju biti fokusirani na izgradnju jakog brenda
- Inovacije i brendovi su međuzavisni

BOSCH

NOKIA

Industrijski dizajn

Industrijski dizajn je trodimenzionalni ili dvodimenzionalni izgled celog proizvoda, ili njegovog dela, koji je određen njegovim vizuelnim karakteristikama, posebno linijama, konturama, bojama...

Uslovi zaštite industrijskog dizajna su novost i individualni karakter.

Trodimenzionalni dizajn je pravo kojim se štiti novi spoljni oblik određenog proizvoda ili njegovog dela. To može biti geometrijsko telo, plastična forma...

Dvodimenzionalni dizajn je pravo kojim se štiti nova slika ili crtež koji može da se prenese na neki industrijski ili zanatski proizvod ili njegov deo. Predmet zaštite je grafičko rešenje koje može biti u boji, sa različitim sadržajem.

Apple i Samsung

U maju 2018, Samsung je platio odštetu Apple-u u iznosu od 539 miliona dolara.

Inovacije i industrijski dizajn

Geografska oznaka porekla predstavlja generički pojam za dve svoje kategorije - *oznaku porekla* i *geografsku oznaku*, kojima se obeležavaju proizvodi koji se proizvode na određenom geografskom području.

Vrednost geografske oznake porekla počiva na svesti i ubeđenju kupaca da su proizvodi, obeleženi geografskom oznakom porekla, proizvodi posebnih svojstava i kvaliteta, te da geografska oznaka porekla ima i garantnu funkciju.

Kategorije geografskih oznaka porekla:

- Prirodni proizvodi (kamen, mermer, vuna...)
- Poljoprivredni (paradajz, paprika, grašak)
- Prehrambeni proizvodi (sir, kajmak, pršut)
- Zanatski proizvodi (ćilim, opanak)
- Industrijski proizvodi
- Proizvodi domaće radinosti

Prisustvo prirodnog faktora je značajno kod poljoprivrednih proizvoda, npr Knjaz Miloš mineralna voda sa nekog specijalnog izvora. Sa druge strane, negde odlučujuću ulogu ima ljudski faktor: češki kristal, pirotski ćilimi itd)

Računarski programi

Računarski programi kao autorska dela

Računarski program predstavlja duhovnu tvorevinu i rezultat ljudskog stvaralaštva, čime se opravdava potreba zaštite nekim od prava intelektualne svojine. Ipak, računarski programi su isključeni iz sadržaja pojma pronalaska, te se ovde ne može govoriti o patentnoj zaštiti.

Pronalasci primenjeni na računaru

U evropskom patentnom zakonodavstvu se govori o **pronalascima primenjenim na računaru**, a ne o patentiranju računarskih programa, kako bi se prevazišla prepreka oko patentiranja softvera.

Pronalasci koji uključuju programe računara koji izvode proslovne, matematičke ili slične postupke, ali koji ne proizvode tehničke efekte kojima se rešava određeni tehnički problem, se ne mogu patentirati. Oni moraju imati **tehnički karakter** i predstavljati neočigledni **tehnički doprinos** u odnosu na stanje tehnike.

Primeri:

- ABS uređaj protiv blokiranja točkova na automobilu je patentiran jer ima tehnički karakter
- Sa druge strane, patentna prijava koja se odnosi na postupak planiranja zadataka u industrijskom procesu je odbijena

https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2020149757

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1. WO2020149757 - ERGONOMICALLY ADAPTED CRANE CABINS` CHAIRS

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