Univerza v Mariboru

Priprava projektov

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2026

Predstavitev predavanja

Namen: osvojitev znanja za priprava projekta za prijavo na specifičen razpis.
Gonilo: od ideje do uspešnega projekta.

- Kazalo:

- Osnovni pojmi
- Celosten razvoj ideje
- Od ideje k projektu
- Osnutek
- Viri sredstev
- Razširjen osnutek
- Priprava projekta za prijavo na razpis
- Končna priprava/prijava projekta
- Koordinacija projekta in pričakovani rezultati

OSNOVNI POJMI

- **Raziskovalni projekti: vezani na raziskovalno dejavnost**

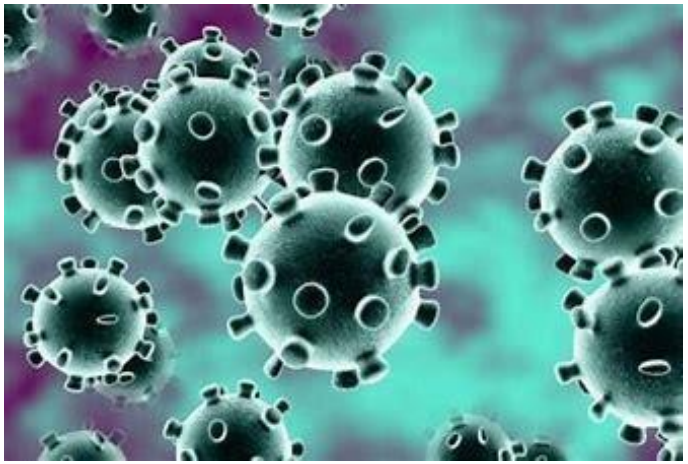
Kaj sploh je raziskovalna dejavnost?

- Na kratko bi jo lahko definirali kot sistematično ustvarjanje, pridobivanje, poglabljanje in razširjanje znanja ter kot prenos dosežkov znanosti v družbeno prakso (socialni in ekonomski vpliv).

- Značilno za raziskovalno dejavnost je, da temelji na ustvarjalnosti, uporablja znanstvene metode (hipoteze in raziskovalno metodologijo dela), njeni rezultati pa vsebujejo prvine izvirnosti oz. novosti.

Kaj sploh je raziskovalna dejavnost?

- Z raziskovanjem se ugotavljajo ali potrjujejo dejstva, ugotavljajo in verificirajo rezultati preteklega dela, **rešujejo novi ali obstoječi problemi in razvijajo nove teorije, tehnologije, produkti…..**



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Raziskovalni projekt

Projekt je časovno omejena namera z jasnimi cilji; je enkratna, razdeljena na posamezne korake in vpeta v čas, kadrovanje in stroške. Projekt je torej namera skupine ljudi, da v najkrajšem možnem času ustvari edinstven proizvod, tehnologijo ali storitev.

O projektu govorimo, če:

- je opravilo enkratno,
- zajema nove vidike (inovativnost),
- ima jasne cilje in opredeljene rezultate s kazalniki,
- ima rok – je časovno omejen in
- ima opredeljen proračun.

Pri oblikovanju projekta **vedno izhajamo iz problemov**: na katere probleme naš projekt odgovarja? Katera pričakovanja (v ožjem in širšem smislu) želimo zadovoljiti s raziskovalnim inovativnim pristopom?

*Na začetku oblikovanja projektne ideje vedno opravimo **analizo problema.***

Raziskovalni projekti

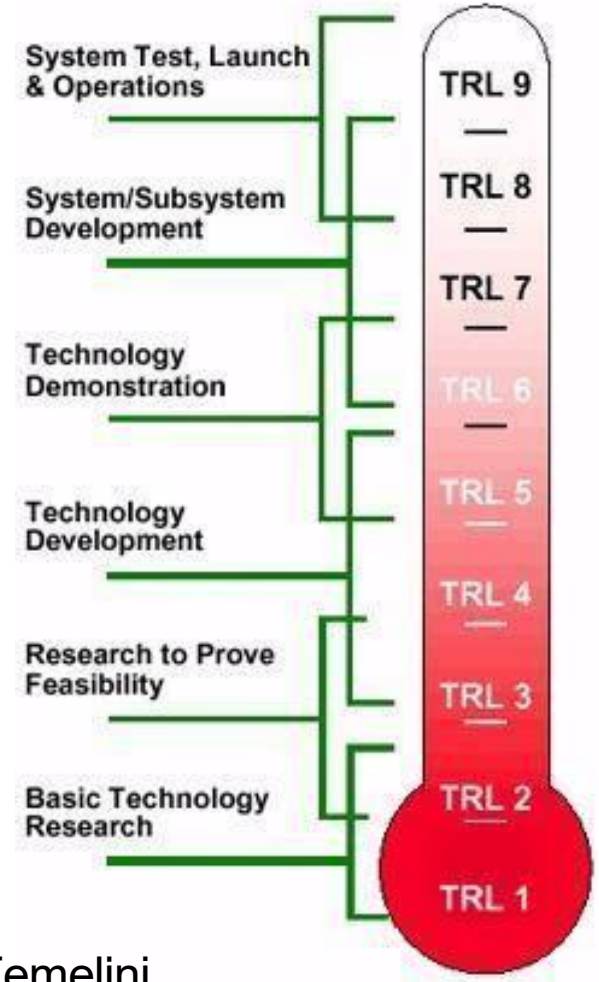
Ločimo **temeljne (bazične)**, **uporabne (aplikativne)** in **razvojne raziskave**. Za vse navedene vrste je značilno medsebojno prepletanje in oplajanje.

- **Temeljno raziskovalno** delo je usmerjeno k iskanju novih temeljnih spoznanj in bazičnih ugotovitev ter zakonitosti in daje prispevek k obči zakladnici človekovega znanja.
- **Uporabno (aplikativno) raziskovalno delo** je namenjeno reševanju konkretnih problemov. Temelji na spoznanjih temeljnih raziskav, išče možnosti in rešitve za uporabo teh znanj v praksi ter je hkrati vir novih znanstvenih problemov kot tudi spoznanj (prototipi-uporabna vrednost).
- **Razvoj (eksperimentalni/industrijski)** je sistematična uporaba znanja, pridobljenega s temeljnim in uporabnim raziskovalnim delom- praktična raziskava, in je usmerjen k ustvarjanju novih materialov, naprav, tehnologih, sistemov in metod v realnih okoljih in aplikaciji na trg.. .. *Primeri*

Osnovni pojmi

Lestvica

- **RAVNI TEHNOLOŠKE RAZVITOSTI**



TRL: Technology Readiness Levels

- 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)

TRL 1-2 Temeljni

TRL 3-6 raziskovalno-razvojni aplikativni projekt

TRL 7-9 Razvoj na trgu

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl4-2022-resilience-01-13

Osnovni pojmi

Opredelitev raziskav vedno podrobno preveri v razpisu

Razpis, SPS- Strategija pametne specializacije, S4/S5

Industrijske raziskave so načrtovane raziskave ali kritične preiskave, usmerjene v pridobivanje novega znanja in spretnosti za razvoj novih proizvodov, procesov ali storitev ali za znatno izboljšanje obstoječih proizvodov, procesov ali storitev. Vključujejo oblikovanje komponent kompleksnih sistemov in lahko zajemajo izdelavo prototipov v laboratorijskem okolju ali okolju s simuliranimi vmesniki obstoječih sistemov ter pilotih linij, kadar je to potrebno za industrijske raziskave, zlasti za vrednotenje generične tehnologije.

Pod pojmom **eksperimentalni razvoj** je mišljeno pridobivanje, združevanje, oblikovanje in uporaba obstoječega znanstvenega, tehnološkega, poslovnega in drugega ustreznega znanja in spretnosti, katerih cilj je razvoj novih ali izboljšanih proizvodov, procesov ali storitev. Ti lahko vključujejo npr. tudi dejavnosti, usmerjene v konceptualne opredelitve, načrtovanje in dokumentacijo novih proizvodov, procesov ali storitev. Lahko vključuje izdelavo prototipov, predstavitve, pilotne projekte, preskušanje in potrjevanje novih ali izboljšanih proizvodov, procesov ali storitev v okoljih, ki so tipični za vsakdanje pogoje obratovanja, kadar je osnovni cilj nadalje tehnično izboljšati proizvode, procese in storitve, ki niso v veliki meri ustavljeni. To lahko vključuje razvoj prototipa ali pilotnega projekta za tržno uporabo, ki je obvezno končni tržni izdelek in je predrag, da bi ga izdelali samo za namene predstavitve ali potrjevanja.

Raziskovalni projekti

- Različni programi ponujajo in klasificirajo različne tipe projektov. **Recimo:**

- **ARIS** (temeljni, aplikativni, podoktorski…)
- **Horizon Europe** ((Research and Innovation Actions (RIA), Innovation Actions (IA), Coordination and Support Actions (CSA), Programme Co-fund Actions (CoFund), Innovation and Market Deployment Actions (IMDA), Training and Mobility Actions (TMA), (MSCA), Pre-commercial Procurement Actions/ (PCP), Public Procurement of Innovative Solutions Actions (PPI)). Vsako od teh področij ima številne programe/razpise s specificiranimi zahtevami /razlika napram ARRS.
- **ERA NET:** aplikativni
- **EUREKA, EUROSTAR:** razvojni

RIA vs. IA v Horizon Europe

Dve vrsti projektov – dva cilja, en skupni namen: učinek za Evropo.

ZNAČILNOST	RIA – Research and Innovation Action (Raziskava in inovacija)	IA – Innovation Action (Inovacijska akcija)
Glavni cilj	Ustvarjanje novega znanja	Uvajanje inovacije v prakso in na trg
Ključno vprašanje	Ali lahko razvijemo novo rešitev?	Ali lahko rešitev uspešno uporabimo?
TRL na začetku	2–5	5–7
TRL na koncu	4–6	7–9
Fokus projekta	Raziskave, razvoj metod, modeli, algoritmi, prototipi	Demonstracija, validacija, pilotna uporaba, skaliranje
Stopnja tveganja	Visoka raziskovalna tveganja	Nižja tehnična tveganja
Vloga univerz	Vodilna	Pomembna, vendar manj dominantna
Vloga podjetij	Sodelujoča	Ključna
Glavni rezultat	Novo znanje, metode, prototipi	Tržno pripravljena rešitev, poslovni učinki
Kaj želi videti ocenjevalec?	Znanstveni preboj	Tržni in družbeni učinek
Najpomembnejši kriterij	**Excellence (Znanstvena odličnost)**	**Impact (Učinek)**

RIA – »Can we build it?«

Ideja → Raziskave → Razvoj koncepta → Prototip → Validacija → Novo znanje

Raziskovalni pristop za ustvarjanje novega znanja in tehnologij.

IA – »Can we use it?«

Rešitev → Pilot → Demonstracija → Uporaba v praksi → Trg in uporabniki

Usmerjeno v uporabo, vpliv in tržni uspeh.

ZLATO PRAVILO

RIA odpovori na vprašanje
"Ali lahko razvijemo novo rešitev?"

IA odpovori na vprašanje
"Ali lahko novo rešitev uspešno uvedemo v prakso in na trg?"

Oba pristopa sta ključna in se pogosto dopolnjujeta na poti od ideje do učinka.

Skupaj za inovativno, konkurenčno in trajnostno Evropo.

Motivacija. Zakaj iskati in definirati projektne ideje?

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- Rešitev problema: izziv.
- Nove zaposlitve.
- Razvojni in raziskovalni izzivi.
- Razvoj novih produktov in tehnologij
- Ker je financiranja za temeljno dejavnost vse manj.
- Ker je treba razpršiti finančne vire, da nas zmanjšanje financiranja iz enega vira preveč ne prizadene.
- Ker je vedno več poudarka na inovativnosti; konkurenčno rast.
- Mreženje (tudi z možnimi investitorji in kupci, itd.)

Celosten razvoj ideje

- ✓ Ni nacionalnih virov financiranja.
- ✓ Tekmovati z najboljšimi v "mercedes ligi".
- ✓ Prodor na evropski prostor; internacionalizacija ter vpetost v EU smernice; mreženje v specifičen segment ali interdisciplinarnost.
- ✓ Izkušnje vodenja in dostop do mreže znanja in ustrezne infrastrukture.
- ✓ Vzpostavljanje kreativnega okolja za plodne raziskave.
- ✓ Prebojne tehnologije (mikro- in nanoelektronika, nanotehnologija, fotonika, napredni materiali, industrijska biotehnologija in napredne proizvodne tehnologije..).

http://www.najstudent.com/saveti/kako-napisati-predlog-projekta-drugi-deo-272

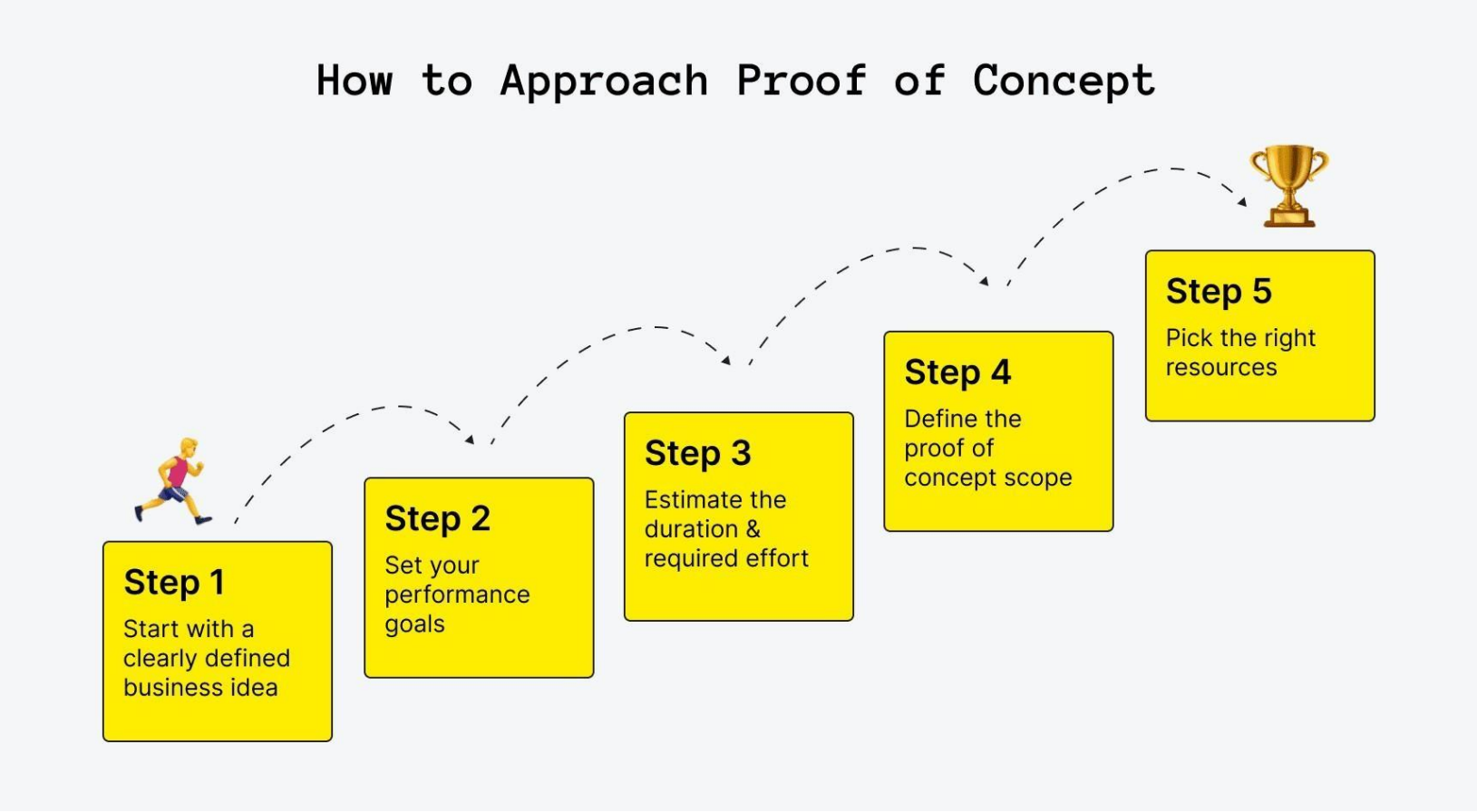
Priprava projekta

Metodologija dela naj zajema:

- **Razvoj projektne ideje**.
- Pisanje projektnega osnutka.
- Iskanje ustreznega vira so/financiranja (razširjen povzetek).
- Razvoj in koordinacija projektnega partnerstva.
- Priprava projektne dokumentacije za konkreten razpis in oddaja projekta -osnovni elementi prijave.
- Razdelitev dela med projektne partnerje med pripravo in tekom projekta.
- Priprava stroškovnega plana.
- **Odobritev projekta:** delo in poročanje, rezultati.

https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcRhHdA8FN6G0nZefC0cXchr_N41JxE8ge-g0R3WEkqNsOZbvk7r

Logika


How to Approach Proof of Concept
Step 1
Start with a clearly defined business idea
Step 2
Set your performance goals
Step 3
Estimate the duration & required effort
Step 4
Define the proof of concept scope
Step 5
Pick the right resources

- Vodilo projekta = projektna ideja; srčica projekta

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Celosten razvoj ideje

- **Projektna ideja** - raziskovalna tematika (raziskovalno področje):

Temelj ideje (razčlenitev): Kaj želimo s to idejo doseči? Kateri problem bomo rešili? Kako? Inovativna? Skladna z razvojno vizijo inštituta/podjetja? Strateški cilj? Financiranje? Infrastruktura? Je ideja atraktivna? Politično aktualna?, itd.

Podlaga za dobro projektno idejo: *poznavanje stanja - problemov, potreb ter priložnosti v družbenem okolju ter širših strateških ciljev družbe kot tudi matičnega podjetja*. Vpliv na razvoj znanosti/stroke, gospodarstvo ter družbo (direktno, indirektno).

Celosten razvoj ideje

- ✓ Kot smo že povedali, nas pri oblikovanju projektnih idej **vodijo strateški cilji** oz. **poslanstvo organizacije**; hkrati pa se je zelo pomembno zavedati, da vsaka projektna ideja **rešuje neki problem.**

- ✓ Ali rečeno drugače, uspešne (financirane) projektne ideje so le tiste, ki zelo **natančno opredelijo in utemeljijo problem** ter pojasnijo, kako in s katerimi **aktivnostmi (inovativnimi pristopi) bo projekt** ta problem rešil. Problem mora biti **pereč in aktualen** na nacionalnem kot tudi EU nivoju (politično aktualni problem; podporne dokumente vključiti).
- ✓ Ne gre zgolj za raziskovalno obarvanost, ampak-socialno ekonomski vpliv.

Ai orodja

http://www.mladimaribor.si/si/imgCustom/news_image_245s.jpg

Celosten razvoj ideje

Raziskovalno delo=timsko delo

- Za **snovanje projektne ideje** je zato zelo pomembna **problemska analiza,** ki jo lahko izvajamo na različne načine, eden izmed njih je tudi oblikovanje **problemskega drevesa.**

- Metoda iskanja in analize idej pa je tudi **možganska nevihta** (*angl. brainstorming*) ali pa pridobivanje idej z **metodo 6 3 5.**

http://www.mladimaribor.si/si/imgCustom/news_image_245s.jpg

Pridobivanje idej z metodo 6 3 5

Pridobivanje idej z metodo **6 3 5 se** je v praksi izkazalo kot zelo uporabno in je med udeleženci dobro sprejeto.

V njej sodeluje **6** udeležencev, ki morajo v **5** minutah oblikovati vsak **po 3** ideje in jih napisati na obrazec. Obrazec z napisanimi idejami podajo naslednjemu v skupini (svojemu sosedu) in tako poteka izmenjava. V naslednjih 5 minutah sodelujoči dopolnjujejo ideje, zapisane na dobljenem obrazcu. Obrazce izmenjujejo na način, da v roke znova dobijo svojega. Po končani izmenjavi sledi skupni pregled pridobljenih idej in odločitev, katere **ideje so najboljše**.

FILM: https://www.youtube.com/watch?v=TR1i1PPd8ZU

http://www.portalosv.si/wp-content/blogs.dir/3031/files/podjetnost/pridobivanje_idej.jpg

Viharjenje možganov oz. Brainstorming (angl.)

*Najbolj znana in enostavna metoda iskanj idej je "**brainstorming**"*

***ali "viharjenje možganov, možganska nevihta".** To je metoda iskanja idej v skupini. Vsak lahko pove idejo, ki se mu je v tistem trenutku utrnila, ostali jo sprejmejo brez kritiziranja ali spreminjanja. Cilj je, da pridobimo čim več idej, jih sproti ne komentiramo in ocenjujemo glede na kakovost ali uporabnost. Vse ideje zapišemo na tablo ali list papirja in jih šele kasneje kritično ovrednotimo in o njih razpravljamo.*

– strukturiran in nestrukturiran

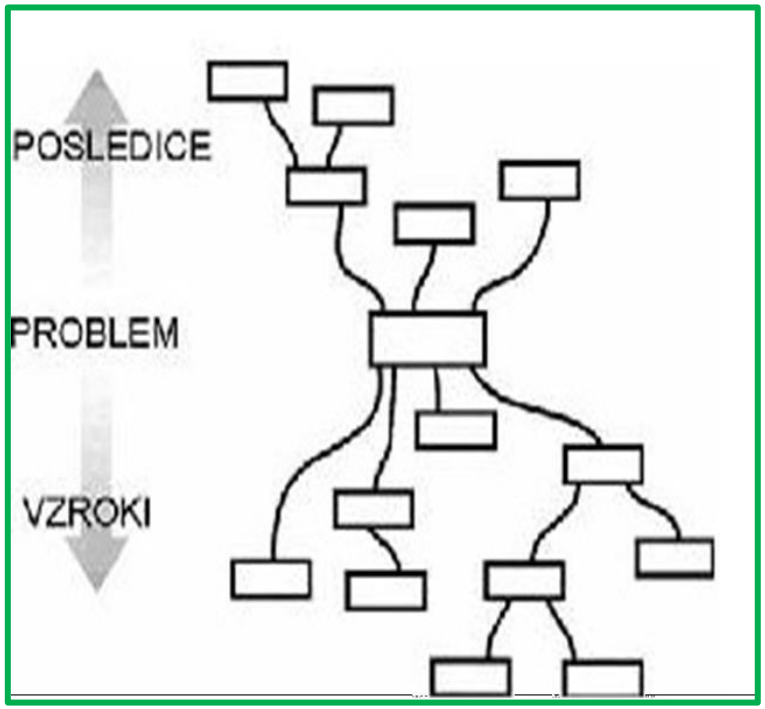
- **Kaj bomo dosegli?**

Skupinsko viharjenje možganov bo v ljudeh spodbudilo drugačno razmišljanje in zavedanje, da vsaka ideja šteje; njihove ideje so pomembne za tim in podjetje.

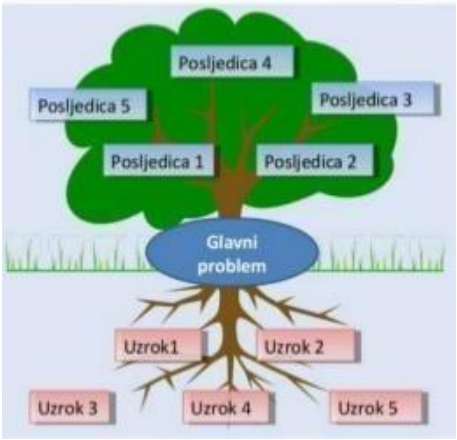
Primeri pri tabli FILM: https://www.youtube.com/watch?v=PrdbZMYiEY8

https://www.youtube.com/watch?v=yg9Svx9zkzw

Celosten razvoj ideje

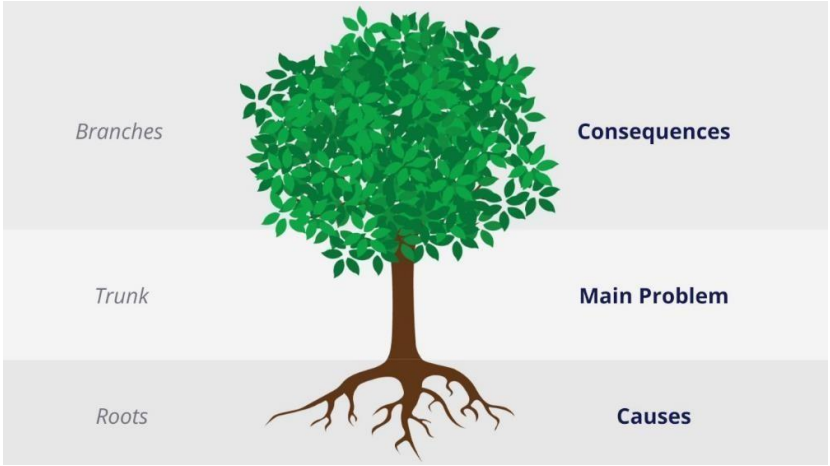


- ✓ **Problemsko drevo** se gradi od sredine navzven. Na sredini, v sredino zapišemo problem, kot ga vidimo v danem trenutku. Ta problem predstavlja deblo drevesa.
- ✓ Navzdol od tega debla vejamo korenine, ki predstavljajo vzroke za nastanek problema. Vejamo jih na več nivojih, tako da poleg vzrokov zapišemo tudi vzroke vzrokov, vzroke vzrokov teh vzrokov in tako naprej.
- ✓ Navzgor pa vejamo veje, ki predstavljajo posledice opaženega problema. Tudi teh ne zapišemo le na enem nivoju, ampak navedemo tudi posledice teh posledic, posledice posledic in tako naprej.

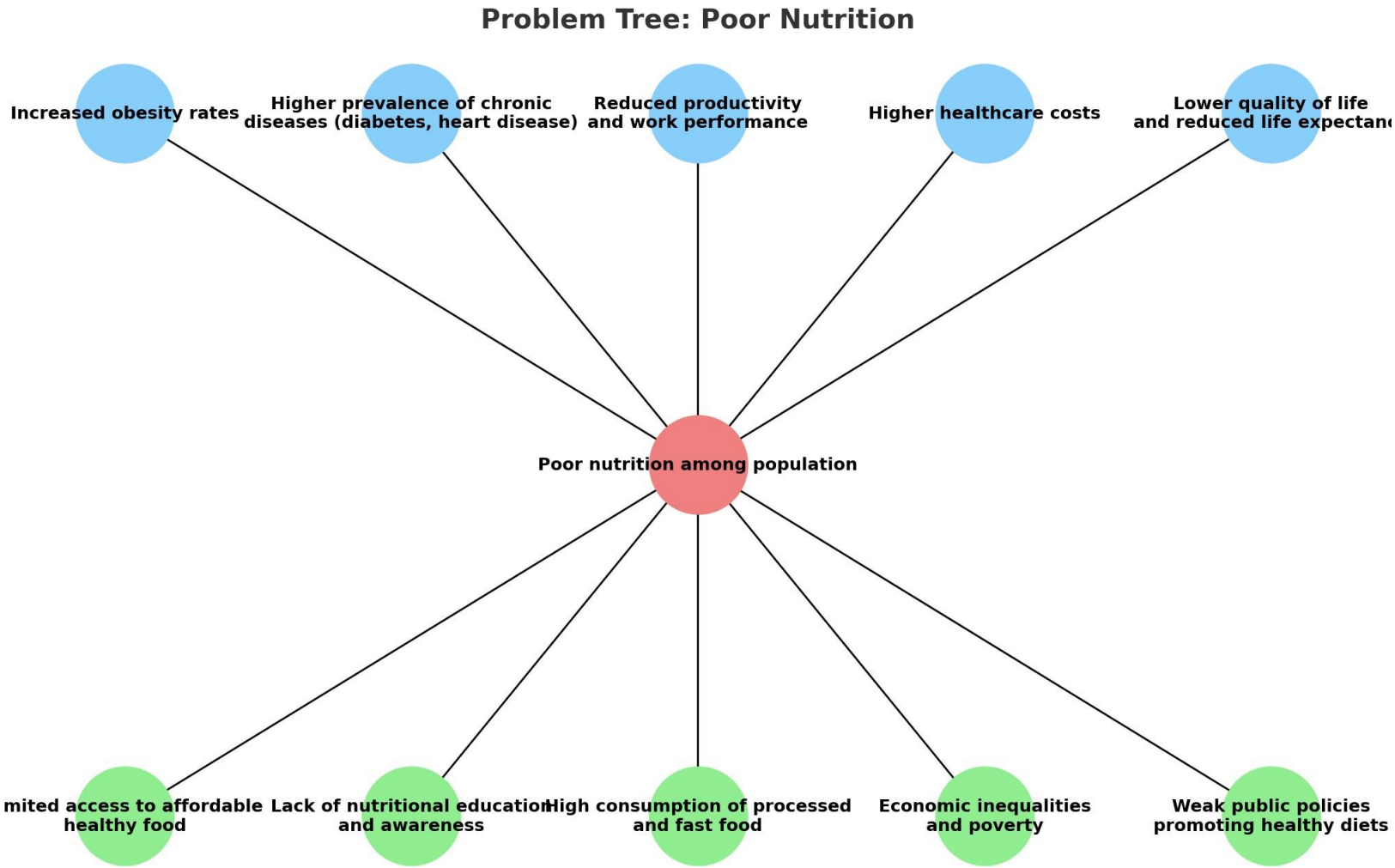


https://i.ytimg.com/vi/-j-_Y7D35H4/maxresdefault.jpg

http://www.nijz.si/sl/sodobni-nacini-pakiranja-zivil-0



Celosten razvoj ideje



PROBLEMSKO DREVO

Pakiranje, ki podaljša rok trajanja živil: aktivna in biorazgradljiva embalaža

Posledice

1. Hitrejše kvarjenje živil
2. Več odpadne hrane
3. Ekonomske izgube v proizvodnji in trgovini
4. Krajši čas skladiščenja in distribucije
5. Večja okoljska obremenitev zaradi odpadne embalaže
6. Manjše zadovoljstvo in zaupanje potrošnikov

Kratek rok trajanja živil in okoljsko obremenjujoča embalaža

Vzroki

1. Izpostavljenost kisiku, vlagi in svetlobi
2. Rast mikroorganizmov in oksidacija živil
3. Načini pakiranja in uporabljene tehnologije
4. Vrsta embalažnega materiala
5. Pomanjkanje aktivnih zaščitnih funkcij embalaže
6. Visoke zahteve glede varnosti in kakovosti živil

Možna rešitev

- **Aktivna embalaža:** absorbira kisik, vlago ali etilen ter lahko deluje protimikrobno
- **Biorazgradljiva embalaža:** izdelana iz okolju prijaznejših materialov
- **Cilj:** podaljšan rok trajanja živil, manj odpadkov in manjši vpliv na okolje

Celosten razvoj ideje

■Ko je problemsko drevo narejeno, **obkrožimo vzrok ali skupino vzrokov,** na katere se želimo s projektom osredotočiti, in prav **tako posledico ali skupino posledic, ki jih želimo spremeniti.** Pri iskanju vzrokov bodimo pozorni na svoje **poslanstvo in strateški načrt ter ekspertizo**.

■Posledice pa nam pomagajo določiti, na katere probleme s svojim projektom poleg osnovnega še naslavljamo naš projekt. Prav tako nam problemsko drevo **ponudi usmeritev**, na **katere razpise** lahko svojo **projektno idejo prijavimo (SPS, Horizon, Interreg).**

Problemsko drevo nam pomaga odgovoriti na več vprašanj:

Kaj je pravi problem?

S katerimi drugimi problemi je povezan (posledice)?

Kakšne so lahko rešitve problema?

Kaj bi s temi rešitvami rešili, kaj so učinki?

BIT/SRČICA PROJEKTA

Pasti

Ob oblikovanju problemskega drevesa se lahko srečamo tudi z različnimi pastmi:

- Ko pripravljamo problemsko drevo, je treba upoštevati korake. Zaradi morebitnega izpuščanja faz je analiza lahko nepravilna. Pomembno je tudi, da korakov ne zamenjujemo.
- Neki problem zapišemo večkrat, vendar vsakič z drugimi besedami. Analiza je zato neuspešna oziroma nepopolna.
- Več problemov predstavimo kot enega. Zato so vzročno-posledična razmerja med problemi nepravilno opredeljena.
- Namesto problema izrazimo rešitev in jo predstavimo kot problem. "Premalo denarja" je rešitev, ki je predstavljena kot težava – z dobrim projektom bomo sredstva zagotovo dobili.

Zemljevid idej

■ Raziskovalna ideja: *IZVIRNOST IDEJE*

Nujno preveriti- izvirnost ideje/projekta:

Trenutno stanje raziskav (*angl. State of the art*) ter presežek trenutnega stanje raziskav (*angl. Beyond state of the art*). Slednje je izrazitega pomena, saj nakazuje **inovativnost** ideje:

- (pregled literature, patentov, zaključenih in sedanjih projektov na to temo, vzpostavljenih tehnologij, tržnih izdelkov, itd.; ″Proquest Dissertation & Theses″, ″SAGE Journals″, ″Science Direct″, ″Wiley Online Library″ in ″Springer Link″..)

http://www.najstudent.com/saveti/kako-napisati-predlog-projekta-drugi-deo-272

Raziskovalna ideja: *IZVIRNOST IDEJE*

https://th.bing.com/th/id/OIP.CRtkLNK-vhnQd4hl8K0DxQHaEL?w=307&h=180&c=7&r=0&o=5&dpr=1.25&pid=1.7

baze po katerih iščemo:

- http://www.uil-sipo.si/uil/dejavnosti/baze-podatkov/; http://home.izum.si/izum/ft_baze/;
- http://cordis.europa.eu/home_en.html; http://www.eurekanetwork.org/eureka-projects; itd.
- pregled projektov je zelo pomemben.
- trg

Zavisi od TRL!

Pri ideji hiter pregled na spletu, pri pisanju projekta pa intenzivni proces!

Od ideje k projektu

https://www.ideasprojectharvard.org/wp-content/uploads/2012/02/slideshow2.jpg

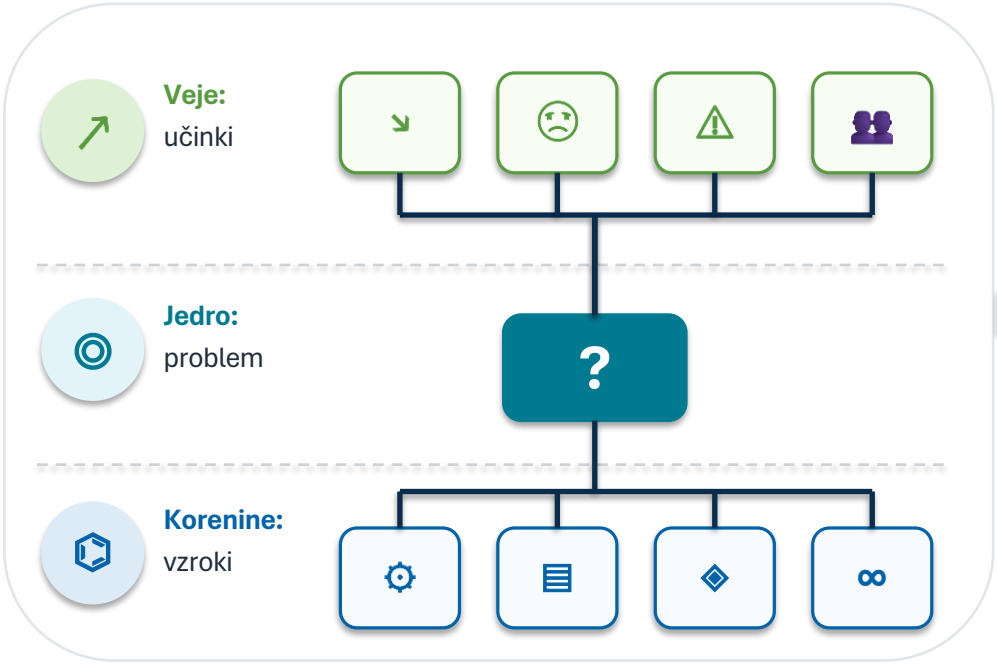
- Najlažje je pridobiti finančna sredstva za izvedbo ideje, ki je načrtovana in se je razvila še pred razpisom. Zato je najbolje, da se takoj, **ko se ideja porodi, oblikuje projektni načrt (problemsko drevo in osnutek, v obliki razširjenega povzetka ali že s osnovnimi elementi projekta).**
- Tako je že vse pripravljeno na to, da se lahko projektna ideja prijavi in ustrezno samo **prilagodi na različne razpise.**

Pravilo:

Prijava na razpis in pridobitev sredstev mora biti posledica in ne povod za definiranje projektov! Uspeh!

Koncept ideje

Ko probleme pretvorimo v inovativne rešitve, lahko začnemo pisati projekt (namen projekta)!



- **PRIPRAVA PROBLEMSKEGA DREVESA**

Ko probleme pretvorimo v inovativne rešitve, lahko začnemo pisati projekt (namen projekta!).

Problemsko Drevo

Projektni osnutek

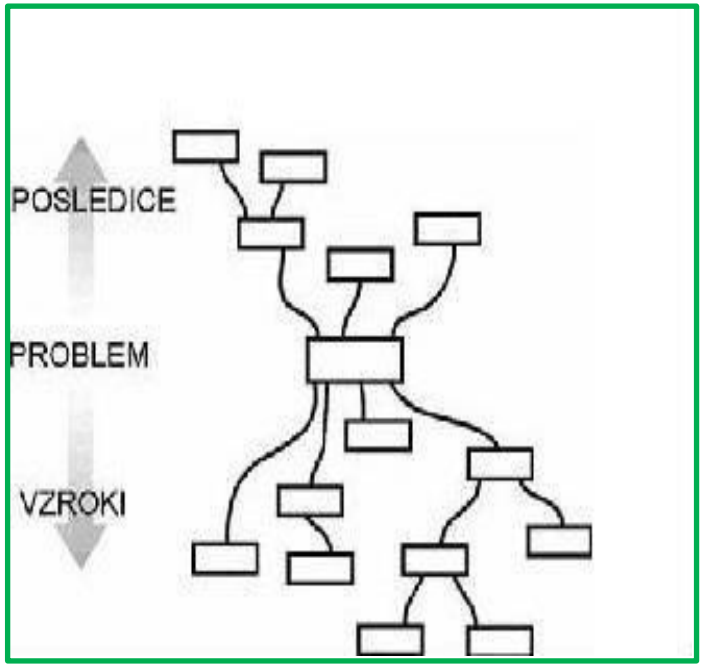
Povzetek

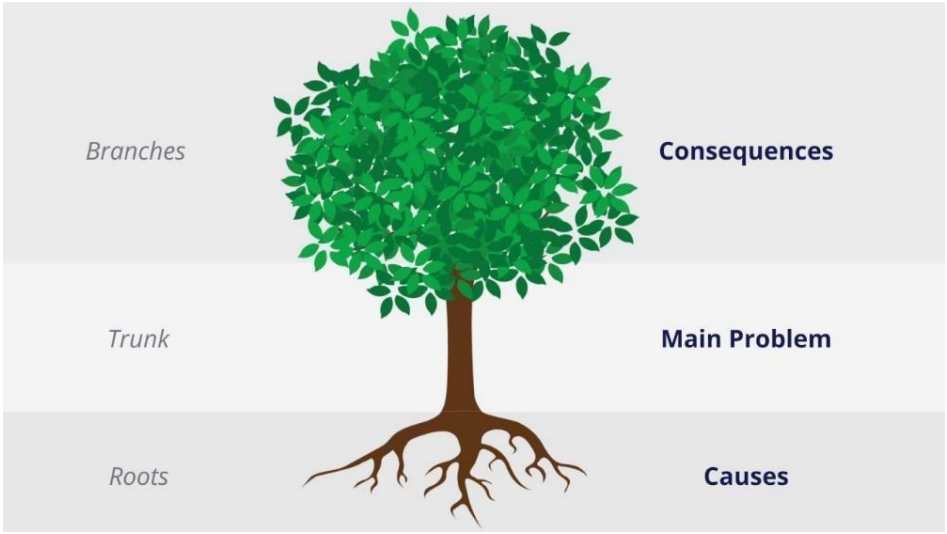
Viri sredstev

Razširjen osnutek: DS

Projekt z zahtevanimi osnovnimi elementi prijave: všečno, triki!

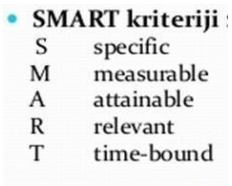
Problemsko drevo





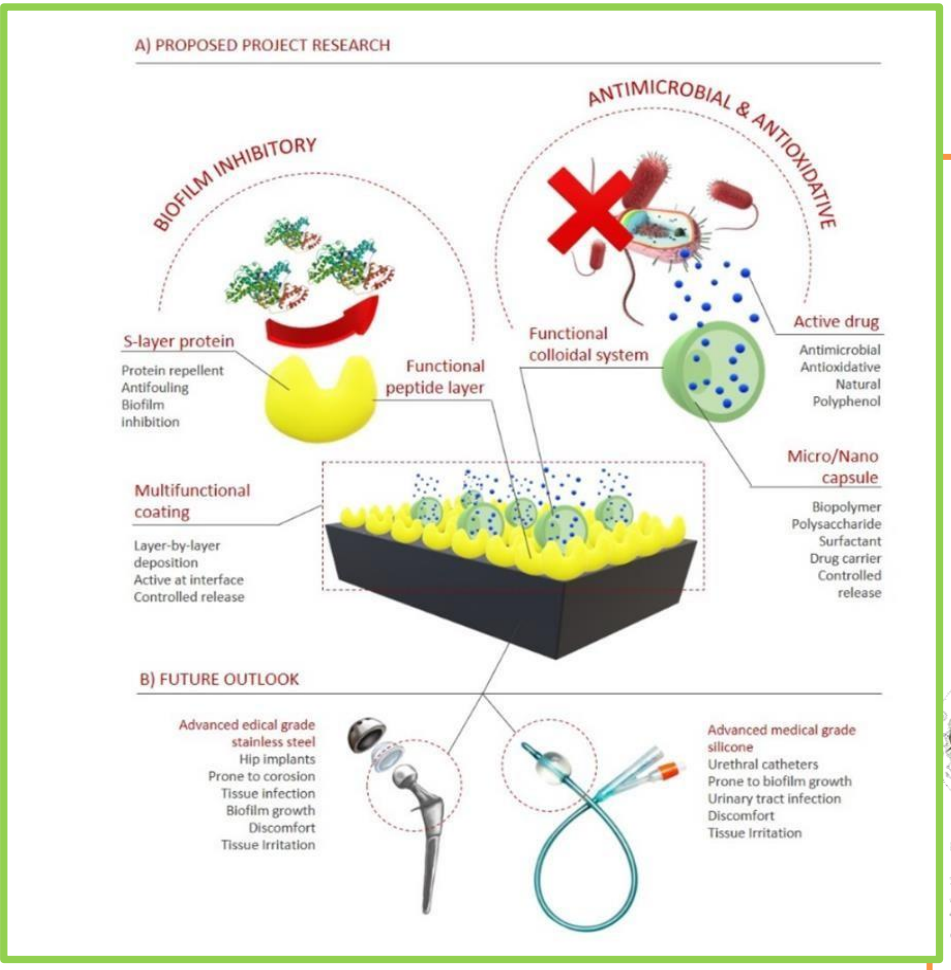
Pripravi izhodišče projekta: osnutek -na osnovi svoje „zrele“ ideje, kjer poleg problemskega drevesa definiraj:

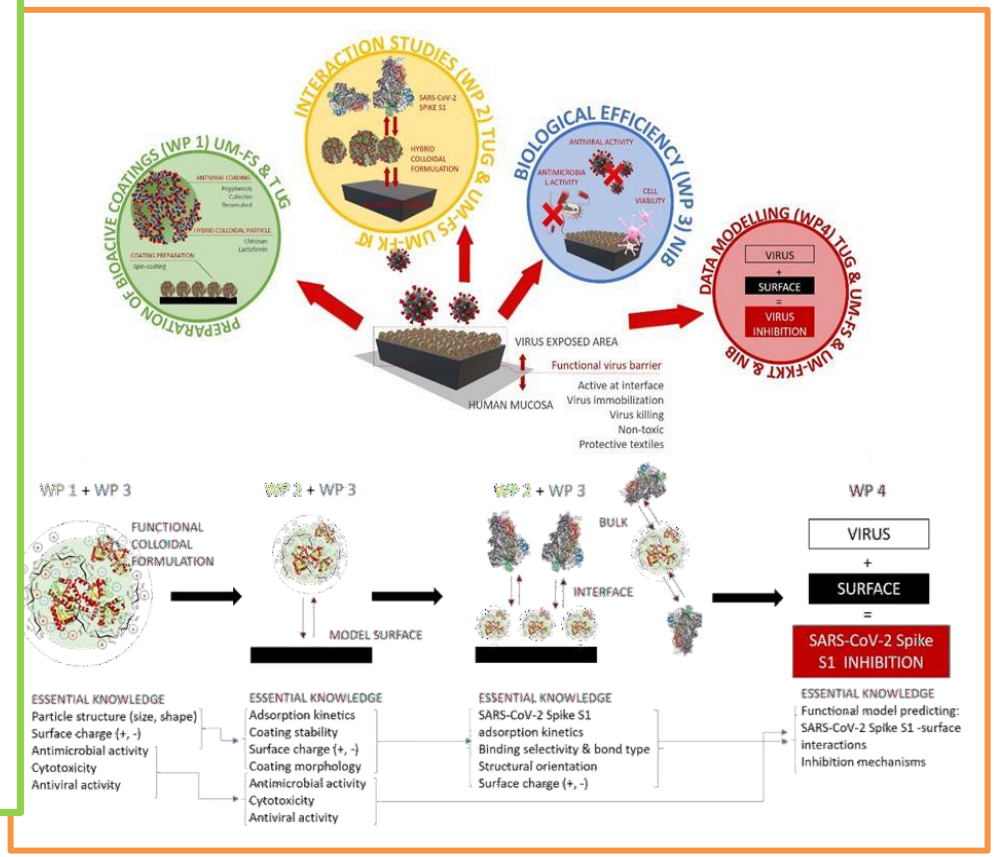
- ❑ IZZIV
- ❑ SPLOŠNI CILJ
- ❑ SPECIFIČNI CILJI (pod - cilji)
- ❑ REZULTATI IN
- ❑ VPLIVI (IMPACT)
- ❑ CILJNE SKUPINE
- ❑ INOVATIVNOST
- ❑ SHEMATSKI PRIKAZ PROJEKTA



Dokumenta služita kot odlična osnova za predstavitev ideje projektnim partnerjem; kratko in jedrnato ter prepričljivo!

Od ideje k projektu





Od ideje k projektu

HEAR-DEX

Bioadhezivni termoodzivni hidrogel za podaljšano intratimpanično dostavo deksametazona

1) Klinični problem

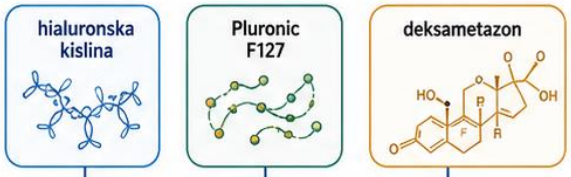
Klasična vodna formulacija:
hitro odtekanje, kratka retencija, nepredvidljiva izpostavljenost

injiciranje skozi 25–27G iglo

Klinične indikacije

- nenadna senzorinevralna izguba sluha
- Ménièrova bolezen
- tinitus
- vestibularne motnje

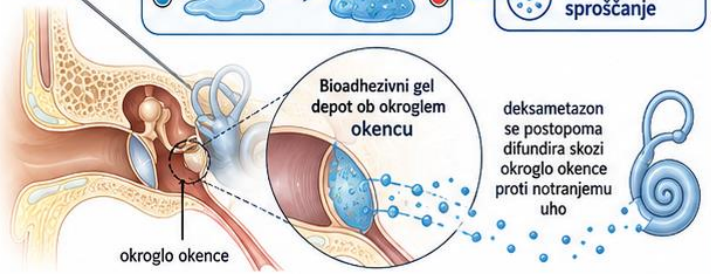
2) Rešitev HEAR-DEX



- bioadhezivnost
- termoodzivnost
- podaljšana retencija
- kontrolirano sproščanje

Termoodzivni prehod

tekoče pri nižji temperaturi → gel pri telesni temperaturi



3) Raziskovalni potek

a **Priprava formulacij**

b **Optimizacija:** reologija, sol–gel prehod (28–34 °C), injektabilnost

c **Karakterizacija:** FTIR, QCM-D, HPLC/UV-VIS, Zetasizer, mikroskopija

d **Vrednotenje:** bioadhezija, sproščanje ≥72 h, stabilnost, biokompatibilnost

e **Izbor vodilne formulacije in priprava SOP**

4) Pričakovani učinki

- daljši stik z okroglim okencem
- zmanjšano odtekanje skozi Evstahijevo cev
- večja lokalna biodostopnost
- manj ponavljajočih aplikacij
- manjša sistemska izpostavljenost
- osnova za klinični prenos

Interdisciplinarno sodelovanje

UKC Maribor – klinične zahteve in translacija ↔ **Medicinska fakulteta UM** – farmakokinetika, analize, biokompatibilnost ↔ **Fakulteta za strojništvo UM** – razvoj hidrogelov in karakterizacija

In tudi kot osnova za

Iskanje virov za realizacijo idej/e k projektu

Primeri problemskega drevesa in osnutkov

Od ideje k projektu

Ideja: Razvoj sistema za čiščenje gramoznih voda, ohranjanje ekosistema in možnosti spremembe v javna kopališča

Rešitev problema:
Razvoj multi-robotskega sistema avtonomskih vodnih vozil, ki bo opravljal funkcije, kot so čiščenje smeti na vodni gladini, črpanje kisika v vodo, po potrebi vnašanje ustreznih kemikalij in hrane za živali ter preverjanje kakovosti vode

Inovativnost: multirobotski sistem

Projektni osnutek

IZZIV: Izkoriščanje in čiščenje veliko število gramoznih voda v Sloveniji

SPLOŠNI CILJ: Razvoj multi-robotskega sistema avtonomnih vodnih vozil za preprečevanje onesnaženosti gramoznih voda

SPECIFIČNI CILJI:

- ✓ Študija velikosti gramoznic v podravski regiji, njihove onesnaženosti
- ✓ Razvoj navigacijskega algoritma za detekcijo smeti na vodi in gibanja kolektiva
- ✓ Izdelava stroškovno učinkovite, robustne, stabilne, hidrostatične strukture vozil
- ✓ Razvoj sistema za zbiranje smeti in detekcijo kisika
- ✓ Razvoj energetsko učinkovitega sistema za gibanje po vodi in sistema za aplikacijo kisika
- ✓ Izdelava spletne aplikacije za spremljanje statistike (količina kisika, temperatura, padavine, vsebnosti drugih spojin,..)
- ✓ Validacija ekosistema in vodnih površin za uporabo

REZULTATI:

- o Izdelava študija o velikosti gramoznic in njihovi onesnaženosti v podravski regiji
- o Implementiran optimiziran algoritem, ki upošteva velikost gramoznice, energetsko učinkovitost,…
- o Testiran in optimiziran multi-robotski sistem za energetsko učinkovito gibanje po vodi in pobiranje smeti ter pošiljanje ključnih parametrov (količina kisika, temperatura, padavine, vsebnosti drugih spojin,..)
- o Izdelana spletna aplikacija za enostavno spremljanje parametrov, ki so ključni za "zdrav" ekosistem
- o Validarina gramozna jama za kopališča

CILJNE SKUPINE: Država, občine, kjer se nahajajo gramoznice, podjetja za čiščenje vodovja, snaga, prebivalci …

IMPACT: Okoljski: preprečevanje umiranja naravnega ekosistema in onesnaževanje vodovij. Gospodarski: nezmožnost kopanja za ljudi → primanjkovanje javnih kopališč za druženje in rekreacijo. Znanstveni: patenti; Socialni: druženje ljudi na kakovosten način (šport), okoljevarstvo…

Inovativnost: multi robotski sistem

Od ideje k projektu

MULTI-ROBOTSKI SISTEM
za čiščenje gramoznih voda in
ohranjanje ekosistema v javna kopališča

1 PROBLEM

2 VZROKI

3 KONCEPT REŠITVE

4 CILJI

5 DELOVNI SKLOPI

6 REZULTATI

7 INOVATIVNOST

8 VPLIV (IMPACT)

9 CILJNE SKUPINE

Od ideje k projektu

Ideja: Razvoj naprave, ki bi pretvarjala pisavo evropskih držav (latinico) v pisavo za slepe (Braillovo pisavo).
Uporaba: učbeniki in knjige.

Če bi obstajala takšna naprava ne bi bilo potrebe po tiskanju novih knjig v Braillovi pisavi – posledično knjige niso nič bolj debele – lažje rokovanje z njimi in nošnja.

POSLEDICE

Šibka pomoč slepim pri vključevanju v življenje. Neenakopravnost.	Slaba dostopnost učbenikov za slepe in slabovidne - slabše izobraževanje – temeljna pravica vseh ljudi.	Omejitve pri razvoju - vsesplošna razgledanost itd…

PROBLEM

Slaba razpoložljivost knjig in učbenikov v Braillovi pisavi

Da bi omogočili slepim in slabovidnim izobraževanje in branje v enaki meri, kot je to omogočeno ostalim, bi bilo potrebno natisniti več takšnih knjig, odpreti v vsaki večji lokaciji še knjižnico z Braillovo pisavo ali le dodaten oddelek in prostor nekoliko prilagoditi. Zakaj ne bi tega olajšali in razvili pripomoček, ki bi eno pisavo pretvarjal v drugo? Podobni pripomočki v svetu že obstajajo, zakaj ne bi korak naprej šli še mi?

VZROKI

V Sloveniji samo ena knjižnica za slepe - Knjižnica slepih in slabovidnih Minke Skaberne (Kotnikova 32, Ljubljana)	Ocenjujejo, da je vseh slepih in slabovidnih v Sloveniji približno 10.000.	Slepim in slabovidnim je običajni, črni tisk, nedostopen za branje, zato potrebujejo knjižna gradiva v prilagojenih oblikah.	Prilagajanje učbenikov in delovnih zvezkov še vedno ni sistemsko urejeno – posledično nedostopnost učb. za slepe.

Rešitev problema:
Razvoj pripomočka, ki bo pisavo evropskih držav pretvoril v pisavo za slepe (Braillovo pisavo).

„Prevedeno v današnji digitalni čas pomeni, da je osnova brajice digitalna in dvojiška (binarna) izbočena pika. Ta je prisotna (1) ali pa je ni (0). Lahko bi dejali, da je knjiga, napisana/natisnjena v brajici, pradigitalna knjiga. “

Louis Braille je poskrbel za ogromen napredek med slepimi in slabovidnimi s preprostim sistemom pisave s šestimi pikami. Vedeti je namreč treba, da je v teh šestih pikah skrito mnogo več kot le pisava. Za slepe je v teh šestih pikah skrit ves svet. Že kot otrok lahko s pomočjo brajice vstopiš v čudovit svet škratov, vil in drugih pravljičnih bitij, ki ti skozi prste burijo domišljijo, prihajajo v tvoje sanje, hkrati pa se kot vsi tvoji polnočutni vrstniki počasi spogledueš z osnovnim znanjem in vsesplošno razgledanostjo.
Brajeva pisava slepim in slabovidnim osebam omogoča, da s so v stiku s svetom in tako deležni enakih kulturnih vrednot ter možnosti za vključevanje v družbo.

PROJEKTNI OSNUTEK

IZZIV: Razvoj naprave, ki bi pretvarjala pisavo evropskih držav (latinico) v pisavo za slepe (Braillovo pisavo).

SPLOŠNI CILJ: Razvoj pripomočka za slepe, ki jim bo omogočil izobraževanje in vsesplošno razgledanost s prebiranjem različnih knjig.

SPECIFIČNI CILJI:

- ✓ Študija Braillove pisave.
- ✓ Analiza trga – kakšni so podobni pripomočki, ki na trgu že obstajajo.
- ✓ Analiza obstoječe tehnologije v Sloveniji.
- ✓ Laboratorijski razvoj pisave iz ene oblike v drugo.
- ✓ Oblikovanje prototipa – Razvoj naprave, ki bi pretvarjala eno obliko pisave v drugo.
- ✓ Funkcionalen in estetski pripomoček

REZULTATI:

- o Prototip pripomočka za slepe in slabovidne, ki jim bo v pomoč pri branju.
- o Izdelana študija o pomenu Braillove pisave za slepe.
- o Ozaveščanje ljudi o pomenu vključevanja slepih in slabovidnih (brošure in delavnice).
- o Vključitev manjšine slepih in slabovidnih – enakopravnost.

CILJNE SKUPINE: slepi in slabovidni, vse knjižnice v Sloveniji, društva za slepe in slabovidne, šole in izobraževalne ustanove,…

Od ideje k projektu

PROTOTIP PRIPOMOČKA SE BI IZDELAL V TEJ SMERI…

Ne vem, koliko je to izvedljivo. To je samo ideja…

Od ideje k projektu

https://www.abilitynet.org.uk/news-blogs/worlds-first-multi-line-braille-e-reader-blind-people-wins-coveted-abilitynet-tech4good
https://www.bbc.com/news/technology-27243376
https://www.forbes.com/sites/lilyrugo/2019/01/17/british-tech-company-developing-a-portable-braille-e-reader/
https://blitab.com/
htthttps://competition.adesignaward.com/design.php?ID=67604p://bristolbraille.co.uk/
https://competition.adesignaward.com/design.php?ID=67604
http://www.tuvie.com/braille-e-book-for-visually-challenged-people/

Par primerov izdelkov, ki so že na trgu in tistih, ki se šele razvijajo,…

https://youtu.be/NyRsoeRtqeY

Inovativnost in drugačnost od sedanjih izdelkov?

RAZVIL BI SE PROTOTIP IZDELKA, KI BI GA KASNEJE LAHKO PONUDILI NA TRG. OBSTOJEČI IZDELKI (NI JIH VELIKO), KI SO ŽE NA TRGU SO ZELO DRAGI, TAKO DA BI BIL NAŠ CILJ RAZVITI PRODUKT DOSTOPNEJŠE CENE. TAKIH PRIPOMOČKOV V SLOVENIJI ŠE NISEM ZASLEDILA, V TUJINI SO VEČINOMA V ZAČETNIH FAZAH RAZVOJA. NAŠ BI SE OD ŽE OBSTOJEČIH RAZLIKOVAL PREDVSEM V DIZAJNU. TI PROTOTIPI IN IZDELKI, KI ZDAJ ŽE OBSTAJAJO, TEMELJIJO NA PRENOSU KLASIČNE PISAVE V BRAILLOVO IZ SPLETNIH DATOTEK E-KNJIŽNIC. MI BI RAZVILI PROTOTIP-PRIPOMOČEK, KI BI PRETVARJAL PISAVI IZ NATISNJENIH KNJIG, KI JIH JE MOČ DOBITI V VSAKI KNJIŽNICI IN KNJIGARNI. MOGOČE BI KASNEJE LAHKO ŠLI V RAZVOJU NAPREJ IN BI PRIPOMOČEK NE LE PRETVARJAL PISAVI IZ KNJIG AMPAK IZ RAZLIČNIH PODLAG – NPR. ETIKETE NA EMBELAŽIŽIVILSKIH IZDELKOV, ALI ETIKETE CEN NA OBLAČILIH,… S TEM BI SE NAREDIL OGROMEN KORAK NAPREJ.

Od ideje k projektu

https://www.delo.si/novice/ljubljana/knjiznica-za-slepe-junija-v-novih-prostorih.html

https://www.delo.si/novice/slovenija/slepi-se-se-vedno-spoprijemajo-z-ovirami-in-nedostopnostjo-192235.html

https://www.dnevnik.si/1042734418

http://www.zveza-slepih.si/2019/01/4-januar-je-svetovni-dan-brajice/#.Xnel5ohKjIU

https://www.feelif.com/ - **TO PODJETJE BI BILO PRVO, KI BI GA KONTAKTIRALA**

Na Feelifu, startupu s svetovno nagrajeno inovacijo, so razvili pametne naprave in vsebine za slepe in slabovidne, s katerimi slepi digitalno spregleda. Te omogočajo, da slepi in slabovidni občutijo oblike ter fotografije na zaslonu na dotik. Razvili so tri produkte, en pametni telefon ter dva tablična računalnika. Zaradi kombinacije vibracij, zvoka in vizualij je slepim in slabovidnim omogočena natančna orientacija na zaslonu ter prepoznavanje oblik in slik prikazanih na standardnem zaslonu. Razvili so več aplikacij na področju zabave, izobraževanja in praktičnih vsakodnevnih aplikacij, da bi omogočili slepim čim večjo vključenost v družbo in opolnomočenje.

DRUGA SLO TEHNOLOŠKA PODJETJA:

https://dewesoft.com/

ABCS sistem d.o.o. - V podjetju se ukvarjajo z razvojem pametnih smernikov za enosledna vozila – tako so razvili Smart Turn System: prvi sistem za samodejni izklop smernikov na motorju, ki avtomatsko izklopi smernik po koncu manevra.

Certus d.o.o. - Podjetje za storitve in informacijske rešitve na osnovi inženirskih modelov, ki omogočajo integrirano načrtovanje in upravljanje.

Agilicity d.o.o. – Razvili so interaktivno regulacijo oblike zazidave - Modelur, ki predstavlja novo metodo načrtovanja in oblikovanja, ki bi lahko dopolnila običajne instrumente regulacije.

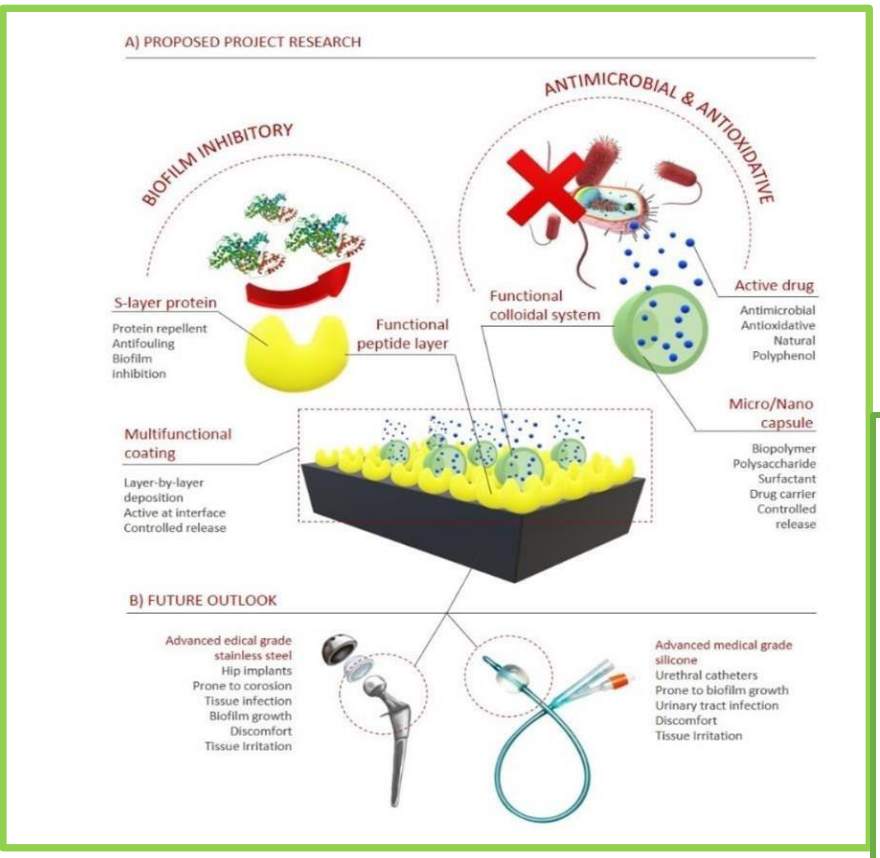
Mysteria Colorum d.o.o. - Podjetje prenaša visokotehnološko znanje iz področja znanosti o materialih v produkte z visoko dodano vrednostjo in nudi visoko sposobnost reševanja problemov v proizvodnji.

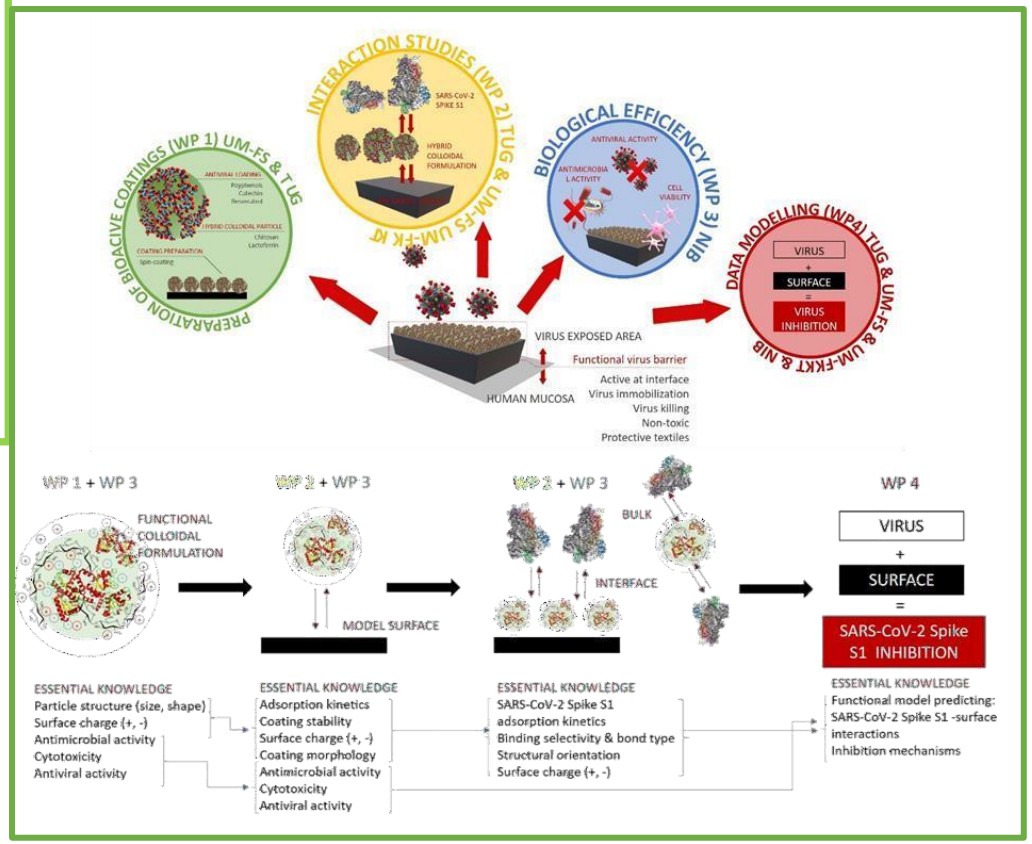
Visionect d.o.o. - Visoko tehnološko podjetje, ki se ukvarja z razvojem in izdelavo inovativnih rešitev s primarnim fokusom na izredno nizki porabi energije, visoki robustnosti in naprednih brezžičnih povezavah.

Elaphe d.o.o. - Podjetje deluje na področju inovacij in razvoja elektromotorjev za direktni pogon električnih vozil.

MV4HGS - Strojni vid za detekcijo napak na površinah z visoko odbojnostjo – Ekipa je razvila metodo za detekcijo napak na površinah z visokim sijajem, s katero objektivno vrednotimo napake na izdelkih z visokim odbojem.

Od ideje k projektu





Viri sredstev

- **Imamo definirano idejo, pripravljen osnutek in lahko začnemo iskati vire sredstev!**

Viri sredstev za financiranje projektne ideje:

- **Javni viri**: razpisi občin, različnih ministrstev, nacionalnih agencij, FIHO, direktorati Evropske komisije, evropski strukturni skladi, Svet Evrope..
- **Mednarodni viri**: švicarski prispevek, norveški mehanizem..
- **Neodvisne fundacije:** organizacije, ki namenjajo finančno podporo organizacijam, delujočim na specifičnem vsebinskem in geografskem področju. Med njimi so fundacije, kot na primer: Trust for Civil society in CEE, Charles Stewart Mott Foundation, Sigrid Rausing Trust. Neodvisne fundacije so sicer veliko bolj pogoste v ZDA in Veliki Britaniji, vendar pa mnoge finančno podpirajo tudi organizacije, ki delujejo v nekaterih specifičnih geografskih področjih, npr. na Balkanu.
- **Podjetja,** ki želijo s pomočjo koncepta družbene odgovornosti zadovoljevati potrebe potrošnikov ob sočasni skrbi za zaposlene, dobavitelje in skupnost, v kateri delujejo. Tovrstna podjetja se skoraj izključno osredotočajo na podpiranje lokalnih aktivnosti, ki imajo dolgoročni vpliv na skupnost.
- **Premožni posamezniki** – tako kot fundacije in podjetja se tudi mnogi posamezniki odločijo podpirati skupnost na različne načine. Finančna podpora, ki pride s strani premožnega posameznika, je običajno zaznamovana z željo točno določene spremembe v družbi. Tak posameznik želi preko finančne podpore pomagati skupnosti ali skupini ljudi oz. »vrniti svoj dolg skupnosti« (primera za to sta Fundacija Vincenca Drakslerja za odvisnike in Janez Škrabec).

- Osnovne razlike med javnimi in neodvisnimi viri v EU

Značilnosti javnih virov:

- Različna področja financiranja (kultura, izobraževanje, znanost, mladinski programi, človekoljubna pomoč, podjetništvo, šport, zdravje, promet, energetika itn.).
- Projekti morajo imeti **izrazito civilno-družbeno komponento**.
- Finančna podpora preko projekta vpliva na spremembo v družbi, ki vključuje tudi evropsko dimenzijo.
- Oblike podpore vključujejo različne oblike projektov (od publikacij, seminarjev, konferenc do turističnih, energetskih in drugih objektov, ki vplivajo na kvaliteto življenja skupnosti).
- Finančna podpora je večinoma projektna in upravičeni stroški se le v določenem odstotku nanašajo na osnovna sredstva organizacije.
- Poudarek na partnerstvu med več organizacijami ali mreženju organizacij.

Značilnosti neodvisnih virov:

- Specifična in določena interesna področja financiranja (značilno predvsem za fundacije in posameznike donatorje).
- Različne oblike (finančne) podpore (šolnine, štipendije, sponzorska sredstva, materialna podpora, različne oblike raziskav, športne in arheološke odprave ipd.).
- Ni poudarka na partnerstvu ali mreženju.
- Finančna podpora ima vpliv na spremembe **v lokalni** skupnosti ali v specifični populaciji (mladostniki, revni…).
- Finančna podpora se lahko nameni za osnovna sredstva v organizaciji (vzdrževanje prostorov, plače delavcev ipd.),
- Različna motivacija fundacij in podjetij (družbena odgovornost, davčna olajšava, osebni interes vodilnih v podjetju ali fundaciji, ugled v javnosti ipd.).
- Promocijski interes donatorja ali sponzorja.

Raziskave in razvoj

Razpisi:

- Nacionalni razpisi (domači in mednarodni, SPS)
- https://www.aris-rs.si/sl/progproj/rproj/razpisi/
- https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-izobrazevanje-znanost-in-sport/javne-objave
- https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-gospodarski-razvoj-in-tehnologijo/javne-objave
- http://www.svrk.gov.si/delovna_podrocja/strategija_pametne_specializacije/
- EUREKA in EUROSTARS programih: https://www.eurostars-eureka.eu/about-eurostars
- ERA NET programi: https://m-era.net/joint-calls/joint-call-2022
- HORIZON 2020*; **HORIZON EUROPE**
- (**http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/master_calls.html**);

Era net

- M-ERA NET
- ERA Flagship
- E-Rare ERA-NET
- EJP RD - European Joint Programme on Rare Diseases
- ERA-PerMed
- ERA-Net Smart Energy Systems
- ERA-NET Cofund
- ERA-MIN
- ERA-Net Transport
- ERA-Net for Research Infrastructures

PRIMA

- PRIMA (Partnership for Research and Innovation in the Mediterranean Area) je iniciativa, ki združuje države iz območja Sredozemlja in Evropske unije. Njen cilj je spodbujanje sodelovanja in inovacij na področju vodnih virov, hrane ter trajnostnega kmetijstva v Sredozemlju.

- Reševanje izzivov, povezanih s podnebnimi spremembami, trajnostnim gospodarstvom in varovanjem naravnih virov v regiji Sredozemlja.

Raziskave in razvoj

Razpisi:

- **STRUKTURNI IN KOHEZIJSKI SKLADI:** Evropski strukturni skladi so finančni instrument regionalne politike EU. Njihov cilj je zmanjšati razlike in ustvariti okolje za enakomeren in uravnotežen razvoj vseh držav in regij Evropske unije:

Horizon Europe:

- European regional development fund (ERDF)
- European social fund (ESF)
- Cohesion fund (CF)
- European agricultural fund for rural development (EAFRD)
- European maritime and fisheries fund (EMFF)

Skladi Evropske kohezijske politike

Kohezijski sklad (KS)

Preberi več

Evropski socialni sklad plus (ESS+)

Preberi več

Evropski sklad za regionalni razvoj (ESRR)

Preberi več

Sklad za pravični prehod (SPP)

Preberi več

- gospodarskega in socialnega razvoja
- reševanje skupnih izzivov na področju okolja, javnega zdravja, varnosti in zaščite
- prenosa dobrih praks ….

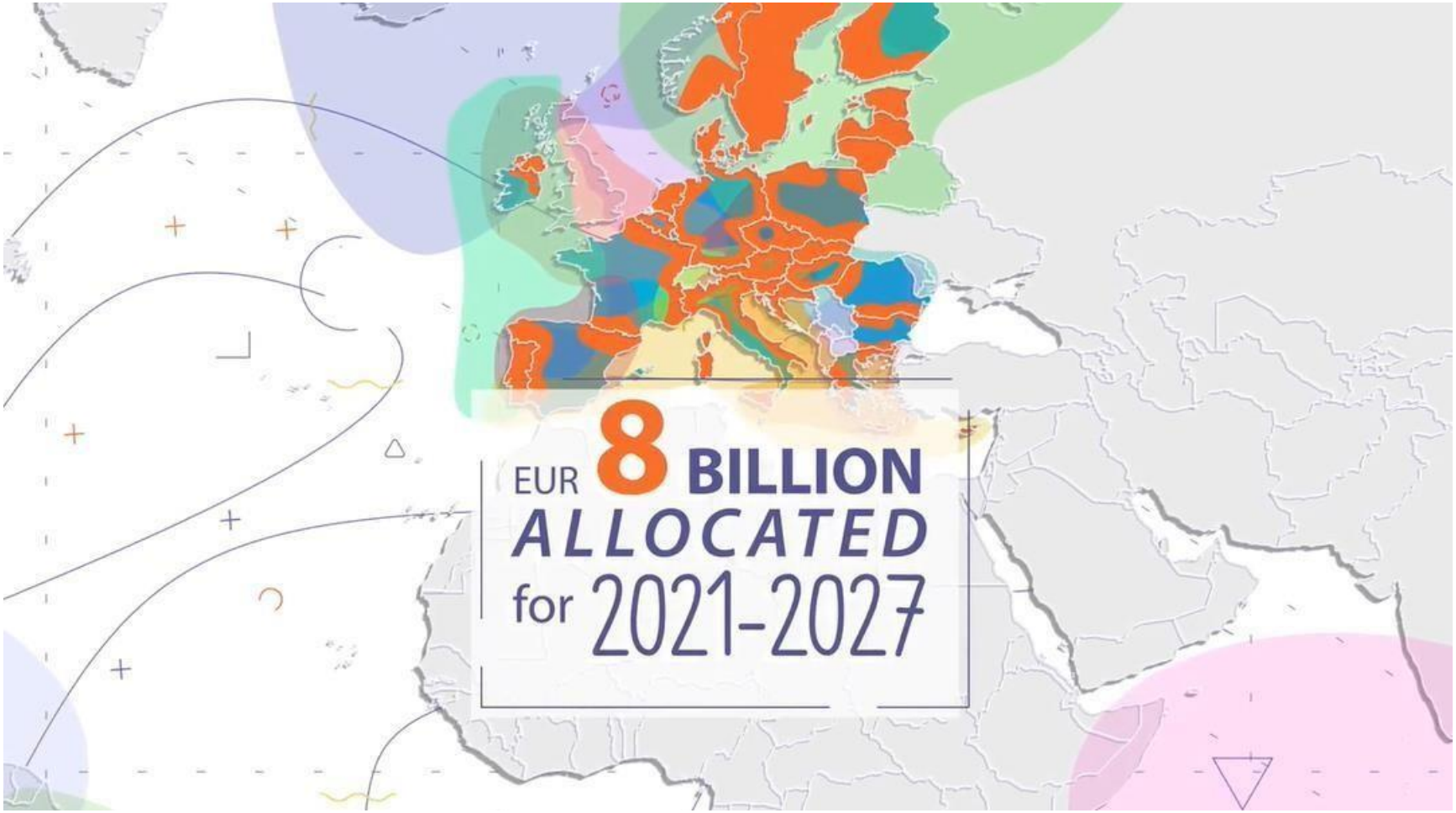
Kohezijska politika 2021-27

5 prednostnih področij, ki so gonilna sila naložb:

1. **pametnejša Evropa** (inovativno in pametno gospodarsko preoblikovanje);
2. **bolj zelena, nizkoogljična Evropa** (vključno z energetskim prehodom, krožnim gospodarstvom, prilagajanjem podnebnim spremembam in obvladovanjem tveganj);
3. **bolj povezana Evropa** (mobilnost in povezljivost IKT);
4. **bolj socialna Evropa** (evropski steber socialnih pravic in podpora za zdravstveno varstvo);
5. **Evropa bliže državljanom** (trajnostni razvoj mestnih, podeželskih in obalnih območij ter lokalne pobude).

https://www.youtube.com/watch?v=yXhYOBO8ZdM
https://evropskasredstva.si/cilji-politik/

Viri sredstev



Interreg programi

https://evropskasredstva.si/interreg-programi/

Čezmejno sodelovanje

Preberi več

Transnacionalno sodelovanje

Preberi več

Medregionalno sodelovanje

Preberi več

Viri sredstev

REPUBLIKA SLOVENIJA
SLUŽBA VLADE REPUBLIKE SLOVENIJE ZA RAZVOJ
IN EVROPSKO KOHEZIJSKO POLITIKO

Interreg

ETS v Sloveniji v 2021-2027

SI-AT

SI-HU

SI-HR

IT-SI

MEDITERAN

SREDNJA EVROPA

OBMOČJE ALP

PODONAVJE

JADRANSKO-JONSKI (ADRION)

INTERact
European Union

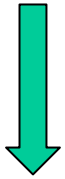
INTERREG EUROPE

Raziskave in razvoj

Linki ostalo/splošni:

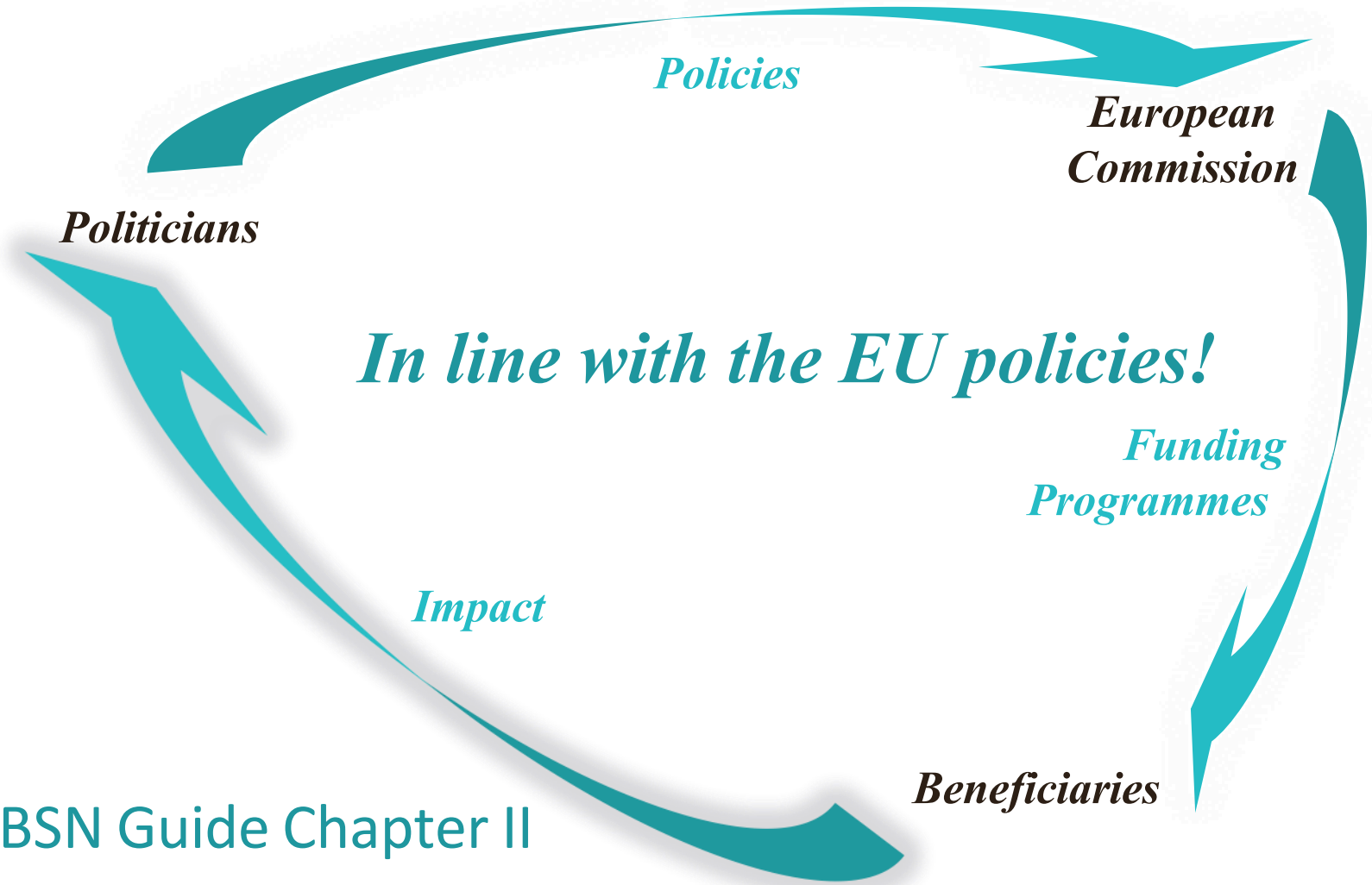
- http://www.eu-skladi.si/razpisi
- https://een.si/

Horizon 2020



HORIZON EUROPE

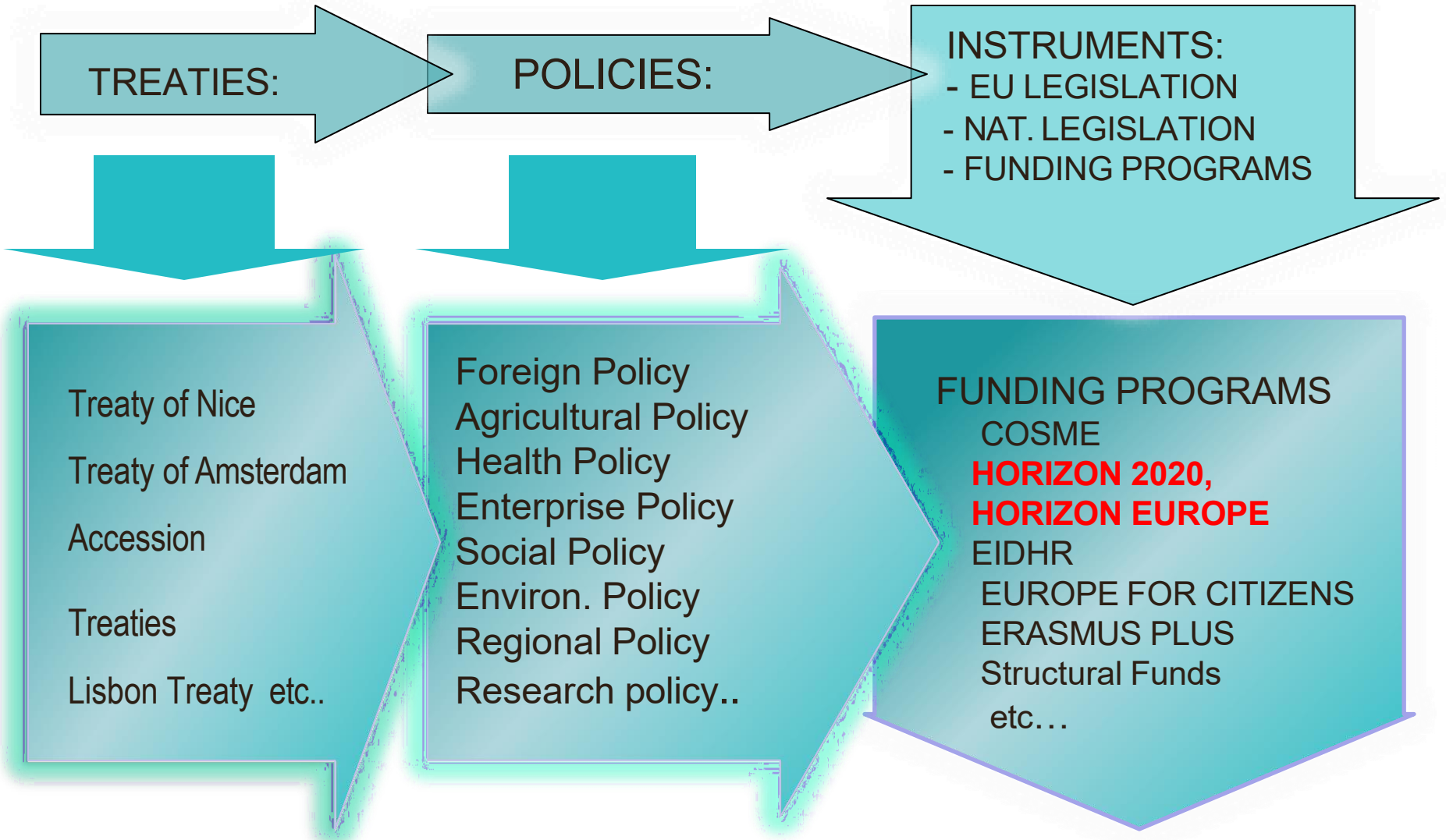
Horizon



BSN Guide Chapter II

EU policy objectives here - http://europa.eu/pol/index_en.htm - Read the Brochures!

Kako deluje EU program?



Grants, funds and programmes by EU policy - http://ec.europa.eu/contracts_grants/index_en.htm

What is Horizon Europe?

European Commission's programme to fund research and innovation projects through grants.

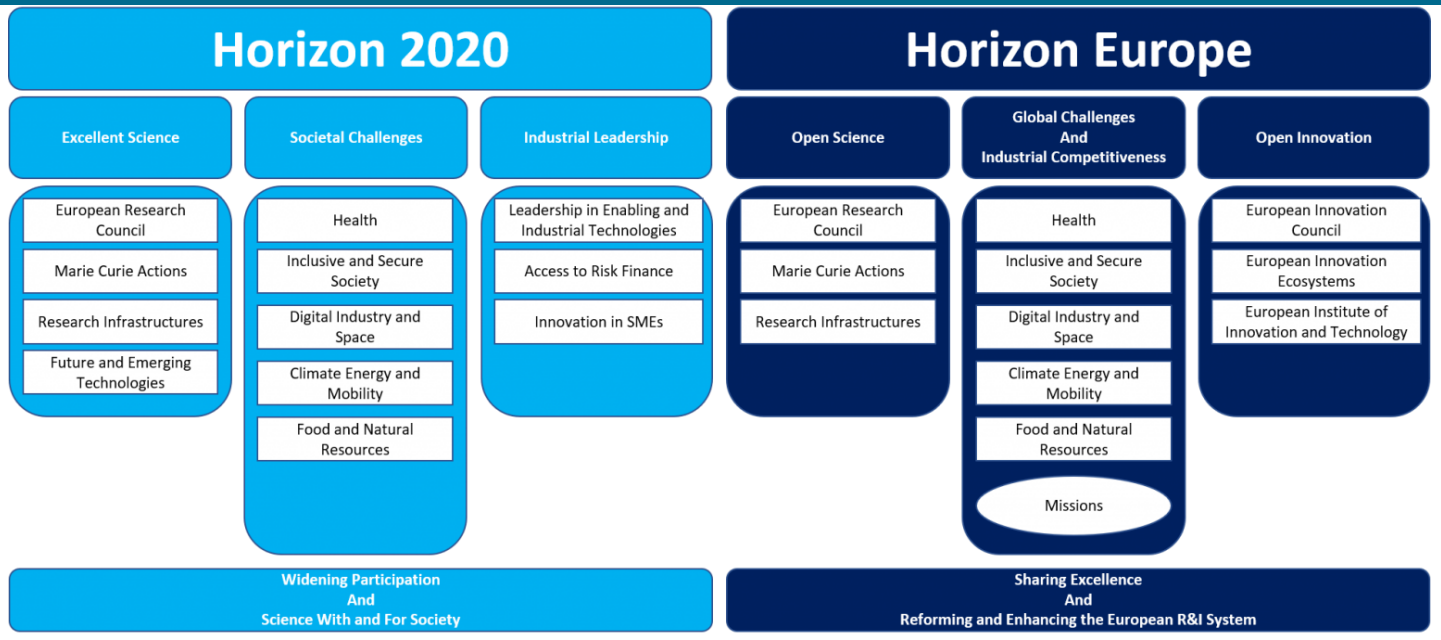
Open to public or private institutions based in an eligible country, i.e. EU member states + associated countries.

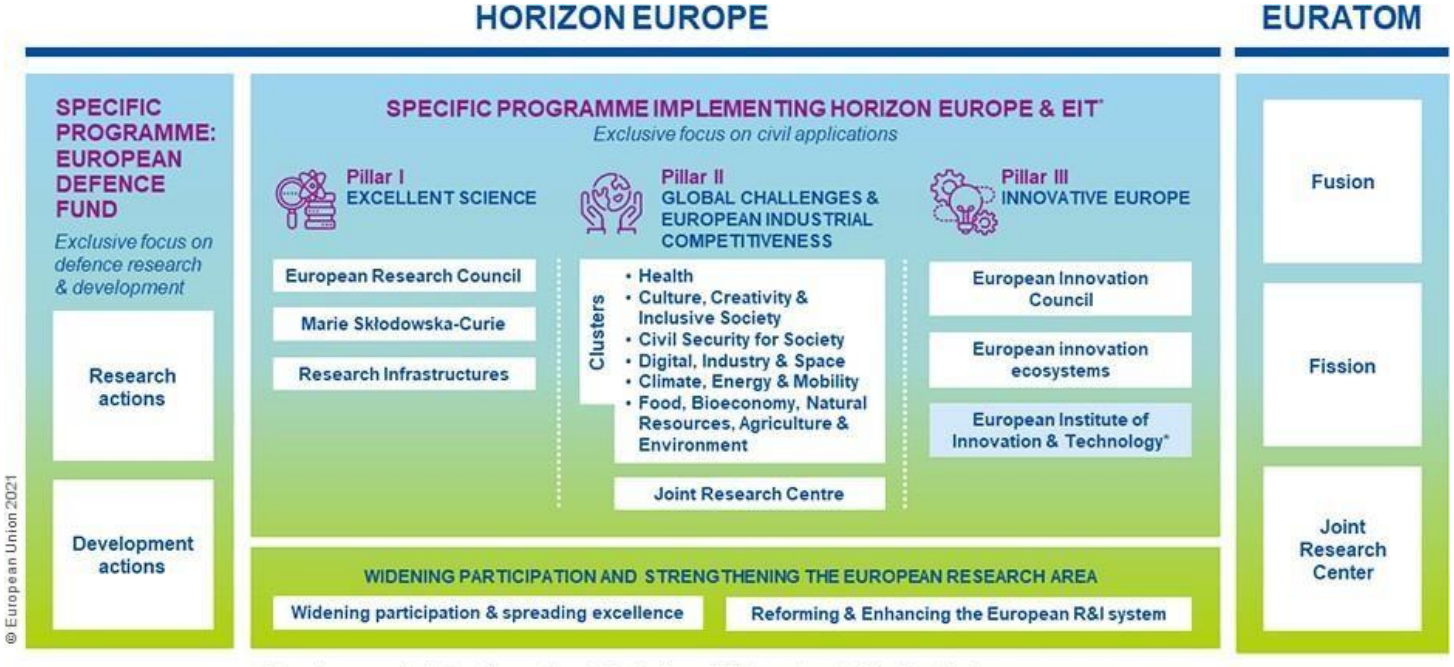
RAZISKAVE IN INOVACIJE V EU

Horizon Europe benefits

- Competitive funding promoting excellence.
- Attracting the best talents.
- Critical mass to address global challenges.
- Creating new market opportunities.
- Trans-national exchanges, collaboration and networks.

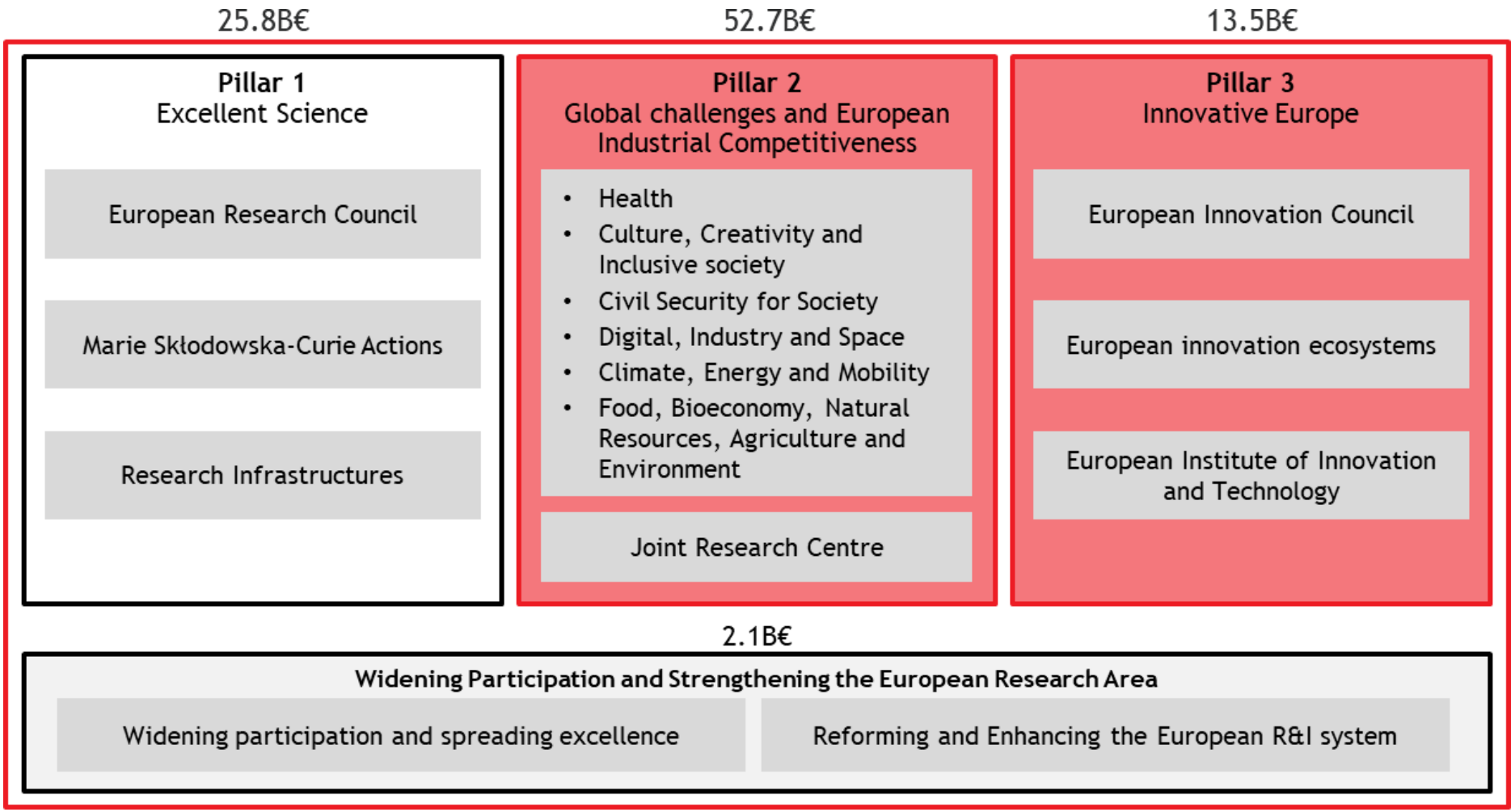
Viri sredstev





* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

Viri sredstev



Ko najdeš razpis

Projektni pristop/Prilagoditev projekta razpisu/

<u>če je to potrebno</u>

Identificiraj projektno idejo + osnutek projekta, najdi ustrezen razpis in analiziraj razpis!

Preveri, predvsem, če tvoj osnutek projekta odgovarja zahtevam razpisa (*značilnost EU razpisov*), definiraj DS in potrebne akterje – konzorcij in predstavi usklajenost tvojega projekta z razpisom (v katerih točkah in kako).

Pripravi izhodišče projekta-na osnovi svoje „zrele“ ideje, kjer definiraj:

IZZIV

SPLOŠNI CILJ

SPECIFIČNI CILJI

CILJNE SKUPINE

OUTPUT/OPRIJEMLJIVI REZULTATI (IMPACT)

INOVATIVNOST

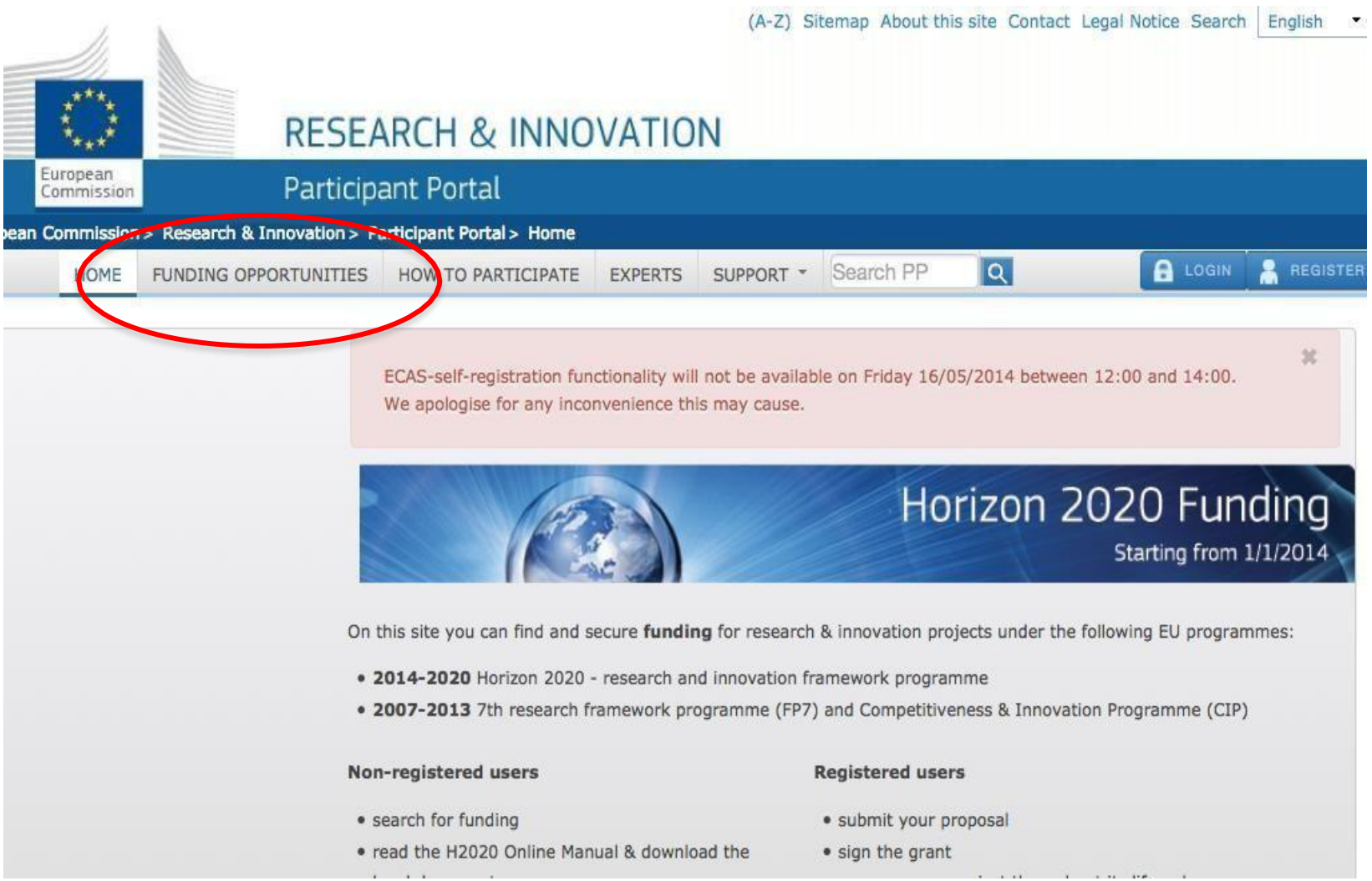
SHEMATSKI PRIKAZ

RAZPIS, USKLAJENOST:

- DS IN KONZORCIJ
- Vpliv/ Impact

Sledi priprava razširjenega povzetka, vzpostavitev konzorcija in konkretna priprava projekta na razpis¨!

Praktični del



Najdi ustrezen razpis

- Projektna ideja
- Identificiran program H2020?

Primer:

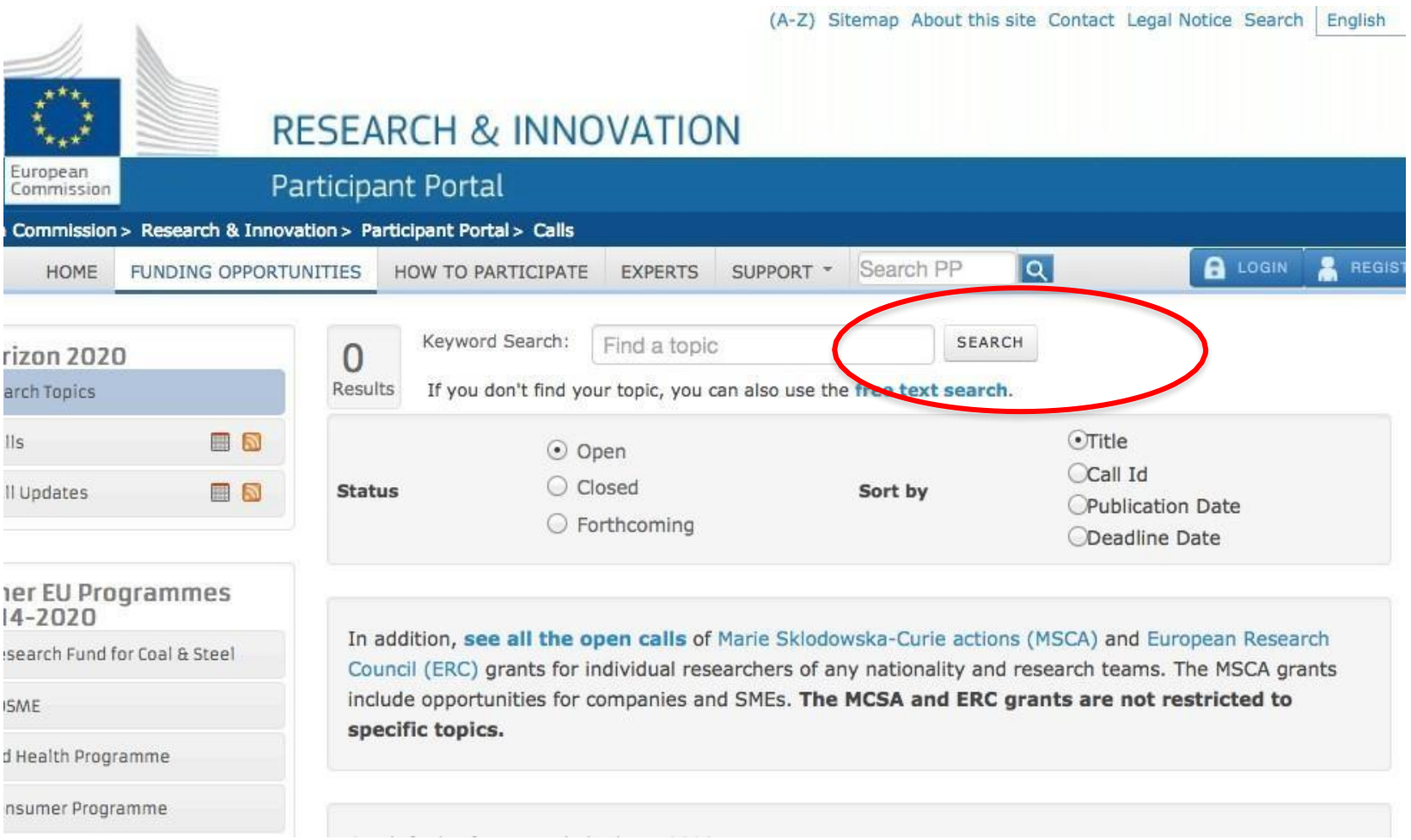
- You are a university department, and you want to develop a portable device for security clearance in a wide range of application scenarios, usable world-wide and based on secure cloud servers.

The “Secure Access” Device

Get access to all security restricted areas: banks, airports, or public administration based on a once and only security clearance.

Praktični del

Search Funding & Tenders (europa.eu)



- "DS-2-2015: Access Control" je ustrezen.
- Razpis je "Innovation Actions"
- €3m - €8m EURO

- Naslednji koraki:

1. Analiziraj tekst, osnovni elementi teksta
2. Kreiraj DS (angl. WPs)
3. Partnerska vloga glede na tematiko
4. Vpliv (angl.Impact) analiza

Focus

- The focus is on the development and testing of usable, economic and privacy preserving access control platforms based on the use of biometrics, smart cards, or other devices.
- The solutions are to be installed and tested in a broad-band network, giving access to smart services running over networks with state-of-the-art security, avoiding single points of failure.
- Proposed work should include the management of the access rights in particular for the service providers, ensure the security and privacy of the databases, facilitate a timely breach notification and remediation to the user, and reduce the insider threat.
- The proposed solutions have to guarantee interoperability and portability between systems and services, sparing the user to have to install a platform, service or country specific technology.
- Proposed work could assist the objective of implementing a secure information sharing network.

Scope

WP: Device Development

- The focus is on the development and testing of usable, economic and privacy preserving access control platforms based on the use of biometrics, smart cards, or other devices.
- The solutions are to be installed and tested in a broadband network, giving access to smart services running over networks with state-of-the-art security, avoiding single points of failure.
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- Proposed work could assist the objective of implementing a secure information sharing network.

WP: Testing of Smart Service

WP: Access rights management

WP: Secure cloud databases

WP: Interoperability

WP: Business plans

Work Packages and adeqate Partner Profiles

WP: Device Development	Hardware, microsystems
WP: Testing of Smart Service	Service provider
WP: Access rights management	Secure software development
WP: Secure cloud databases	S/W development for Clouds
WP: Interoperability	More service providers in different countries
WP: Business pans	IT Solution provider

Izidi- angl. Impact

- **Vedno preberi zahteve, jih podčrtaj in ustrezno uporabi**
- **Expected Impact:**
  - ✓ Actions supported under this objective will deliver secure, but user-friendly, access to ICT systems, services and infrastructures, resulting in a consumerisation of devices or access control.
  - ✓ The level of security of online services and critical infrastructures protected by these access systems should be demonstratably higher than by the state-of-the-art approach.
  - ✓ The proposed solutions are expected to support the creation of commercial services making use of electronic identification and authentication.

Na vsako zahtevo moraš odgovoriti za odličen projekt !

Primer:

Expected impact:

- Experimental capability at European level that covers a variety of networking technology areas and allows tens of experiments to be run on top of them each year.
- *The proposed project will achieve this impact because …*
- A reliable, diversified infrastructure of approximately ten world-class experimental facilities and platforms, covering different aspects of advanced networking and applications.
- *The proposed project will develop an infrastructure with 12 experimental facilities …*
- Potential to experiment without the constraints of the physical location or access to a specific experimental facility.
- *Our infrastructure ….*
- Development of common architectures across the various prototypes and experiments across a variety of settings and/or application areas.

Tematika:

- Food processing, Food packaging

Topic: Innovative solutions for sustainable novel food processing: SFS-17-2014

Call title: Sustainable Food Security Status:Closed

Call identifier: H2020-SFS-2014-2

Deadline: 12-03-2014

Praktični del

- **Scope:** Proposals could comprise activities such as prototyping, testing, demonstrating and piloting in a (near to) operational environment, as well as experimental production, all with a view to paving the way for subsequent market replication. Proposals may, possibly, include limited R&D activities. In cases where there are clear market failures or barriers to uptake, proposals could comprise activities such as validating the benefits for the users/buyers of the first application in real life operating conditions, validating technical and economic performance at system level, validating standards, as well as activities to prepare market uptake and ensuring optimal access to and dissemination of results. Participation of SMEs is encouraged.

- The Commission considers that proposals requesting a contribution from the EU in the range of EUR 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

- **Expected impact:** Wider and faster deployment of innovative solutions for sustainable novel food processing resulting from greater user acceptance, higher visibility of innovative solutions and the creation of scalable markets. Improved competitiveness as well as opportunities for growth, diversification and job creation for the EU food (equipment) sector in general and SMEs in particular.

Type of action: Innovation actions

- M-ERA
- http://www.si-at.eu/2127/open-call/

- Search Funding & Tenders (europa.eu)
- https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home.

RAZŠIRJEN OSNUTEK

Od ideje k projektu

Ideja: Razvoj sistema za čiščenje gramoznih voda, ohranjanje ekosistema in možnosti spremembe v javna kopališča

Rešitev problema:
Razvoj multi-robotskega sistema avtonomskih vodnih vozil, ki bo opravljal funkcije, kot so čiščenje smeti na vodni gladini, črpanje kisika v vodo, po potrebi vnašanje ustreznih kemikalij in hrane za živali ter preverjanje kakovosti vode

Inovativnost: multirobotski sistem

Projektni osnutek

IZZIV: Razvoj multirobotskega sistema za čiščenje gramoznih voda, ohranjanje ekosistema in možnosti spremembe v javna kopališča

SPLOŠNI CILJ: Razvoj multi-robotskega sistema avtonomnih vodnih vozil za preprečevanje onesnaženosti ekosistema

SPECIFIČNI CILJI:

- ✓ Študija velikosti gramoznic v podravski regiji, njihove onesnaženosti
- ✓ Razvoj navigacijskega algoritma za detekcijo smeti na vodi in gibanja kolektiva
- ✓ Izdelava stroškovno učinkovite, robustne, stabilne, hidrostatične strukture vozil
- ✓ Razvoj sistema za zbiranje smeti
- ✓ Razvoj energetsko učinkovitega sistema za gibanje po vodi
- ✓ Izdelava spletne aplikacije za spremljanje statistike (količina kisika, temperatura, padavine, vsebnosti drugih spojin,..)
- ✓ Validacija ekosistema in vodnih površin za uporabo

REZULTATI:

- o Izdelava študija o velikosti gramoznic in njihovi onesnaženosti v podravski regiji
- o Implementiran optimiziran algoritem, ki upošteva velikost gramoznice, energetsko učinkovitost,…
- o Testiran in optimiziran multi-robotski sistem za energetsko učinkovito gibanje po vodi in pobiranje smeti ter pošiljanje ključnih parametrov (količina kisika, temperatura, padavine, vsebnosti drugih spojin,..)
- o Izdelana spletna aplikacija za enostavno spremljanje parametrov, ki so ključni za "zdrav" ekosistem
- o Validarina gramozna jama za kopališča

CILJNE SKUPINE: Država, občine, kjer se nahajajo gramoznice, podjetja za čiščenje vodovja, snaga, prebivalci …

IMPACT: Okolijski: umiranje naravnega ekosistema in onesnaževanje vodovji. Gospodarski: nezmožnost kopanja za ljudi → primanjkovanje javnih kopališč za druženje in rekreacijo. Znanstveni: patenti; Socialni: druženje ljudi na kakovosten način (šport), okoljevarstvo…

Inovativnost: multi robotski sistem

- Primer: osnutek usklajen **in razširjen s razpisom: DS s razpisom, če potrebno! Vplivi, izidi.**

Razpis, delovni sklopi in izidi

- Link do najdenega razpisa: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ict-25-2016-2017;freeTextSearchKeyword=Robotics%20for%20environment;typeCodes=0,1;statusCodes=31094501,31094502,31094503;programCode=null;programDivisionCode=null;focusAreaCode=null;crossCuttingPriorityCode=null;callCode=Default;sortQuery=openingDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState

- Razpis je "Research and Innovation Actions" TRL 7-9
- 2 to 4 million EURO

Specific challenge

- The specific challenge here is to develop robots that respond more flexibly, robustly and efficiently to the everyday needs of workers and citizens in professional or domestic environments, and which will also maintain Europe at the forefront of global research and development. The actions will address the whole research value chain, whether generic technology, developing RAS building blocks in the form of key technical capabilities, or market-led prototypes directly involving end users. End users will help drive Innovation Actions as active partners, setting the operating parameters for a given application as well as testing and validating the prototype solutions.

Scope

Research and Innovation Actions addressing generic advances and technical capabilities:

- a. Open, generic forward-looking research into novel technical advances in robotics – open to all robotics-related research topics and disciplines. Proposals are expected to address technical topics which cut across application domains and which can be developed further with a view to achieving high future impact on markets or societal sectors in Europe.

- b. Technology research and development to achieve step changes in the capabilities of the following high priority RAS technologies: systems development, human-robot interaction, mechatronics, perception, navigation and cognition. Step changes are sought through either a multiplicative improvement in technical capability, for example achieving a difference in order of magnitude in the number of everyday objects a robot can recognise or handle, or a categorical advance, for example moving from rigid to intuitive human-robot interfaces.

Scope

Innovation Actions driven by end users:

- c. Improving the deployment prospects of RAS through end user-driven application developments in domains and application areas with significant market potential. Proposals are expected to address system development beyond TRL 5.
- The outputs will not be purely technological; actions will generate economic and operational data that will provide a valuable basis for setting operating parameters and for reducing commercial risks for future investors.
- d. Filling technology or regulatory gaps through end user-driven innovation actions, where the gap represents a challenging market entry barrier. Proposals are expected to address a gap in either technical capability or system ability. The targeted gap and the required steps to tackle the gap must be clearly identified in the proposal.

Work Packages

IJS

5. Robot system development

Inštitut za robotiko – laboratorij za industrijsko robotiko

4. Research new navigation control

Inštitut za računalništvo - FERI

3. Energy efficient solution

2. Marketing strategies for end-users

Market analysis service providers

1. Testing and validating prototype solution

Snaga d.o.o.

6. Data tracking system

Ektimo d.o.o.

0. Business plan

Inštitut za robotiko – laboratorij za industrijsko robotiko

The expected impacts for the **Research and Innovation Actions** are:

- Promote excellent science and technology knowledge in Europe, demonstrated by a high standard of research outputs (including publications, open source software or, as appropriate, patents);
- The proposed project will promote technology and science in Europe by developing a state-of-the art robotic system accompanied with new research studies regarding navigation, energy-efficiency,…
- Develop a new generation of robotic and autonomous systems with clear and measurable progress over the state of the art in terms of step changes in technical capabilities, as evidenced by improvements in performance (including in terms of affordability, reliability and robustness, energy autonomy and user acceptability);
- The proposed project will develop a new type of multi-robotic and autonomous systems capable of efficiently cleaning polluted water in lakes, seas and oceans while still offering longevity and affordability
- Greater industrial relevance of research actions and output as demonstrated by deeper involvement of industry and stronger take-up of research results;
- Our project will gather results from institutes that are on the leading edge of robotic design regarding communication, navigation, movement and materials and provide a comfortable environment for sharing ideas, clearing concepts, …
- Fostering new links between academia and industry, accelerating and broadening technology transfer;
- Our project will not only create new international links between academia and industry but also give young entrepreneurs and students from Europe the opportunity to work with large technological companies and thus giving them the knowledge and tools necessary for creating new technological start-ups that will shape our future

- **ARRS NE ZAHTEVA SPECIFIČNE TEMATIKE IN PODREJENOST IZIDOM**

Seznam družbenih ciljev, ki jih je opredelilo ministrstvo, pristojno za znanost, z ustrezno primarno vedo:

Zap. št. cilja	Družbeni cilji	Naravoslovno–matematične vede	Tehniške vede	Medicinske vede	Biotehniške vede	Družboslovne vede	Humanistične vede
1	Raziskave o nevrodegenerativnih boleznih (JPND)	●		●	●		
2	Kmetijstvo, varnost hrane in podnebne spremembe (FACCE)		●		●		
3	Zdrava prehrana za zdravo življenje (HDHL)	●		●	●	●	
4	KULTURNA DEDIŠČINA Kulturna dediščina in globalne spremembe	●	●			●	●
5	URBANA EVROPA Urbana Evropa – svetovni urbani izzivi	●	●		●	●	●
6	Daljše in boljše življenje (MYBL) Možnosti in izzivi, ki jih prinašajo demografske spremembe	●		●		●	●
7	Protimikrobna odpornost (AMR)	●		●	●		
8	Vodni izzivi za spreminjajoči se svet (WATER)	●	●		●	●	
9	Zdrava in produktivna morja in oceani (OCEANS)	●	●		●	●	
10	Povezovanje znanja o podnebju za Evropo (CLIMATE)	●		●		●	

Imamo razpis; na vrsti je konzorcij
Iskanje partnerjev

Razvoj in koordinacija projektnega partnerstva

Kako najti partnerja?

- pretekli ali sedanji projekti,
- delavnice, konference,
- poslovni partnerji, raziskovalni kolegi,
- mednarodne poslovne mreže,
- informativni dnevi in podobni dogodki,
- javno iskanje preko: Cordis, IDEAL-IST, EEN..
- raziskovalni članki,
- patenti,
- znanstvene konference,
- **internet.**

Pomembno je, da na udarnih spletnih straneh ustvarimo svoj lasten profil!

http://www.gzs.si/images/clanki/img33238.jpg

Najdi partnerje/koordinatorje iz prejšnjih projektov

- *Poišči projekte, ki tečejo ali so zaključeni na tvojem področju raziskav*

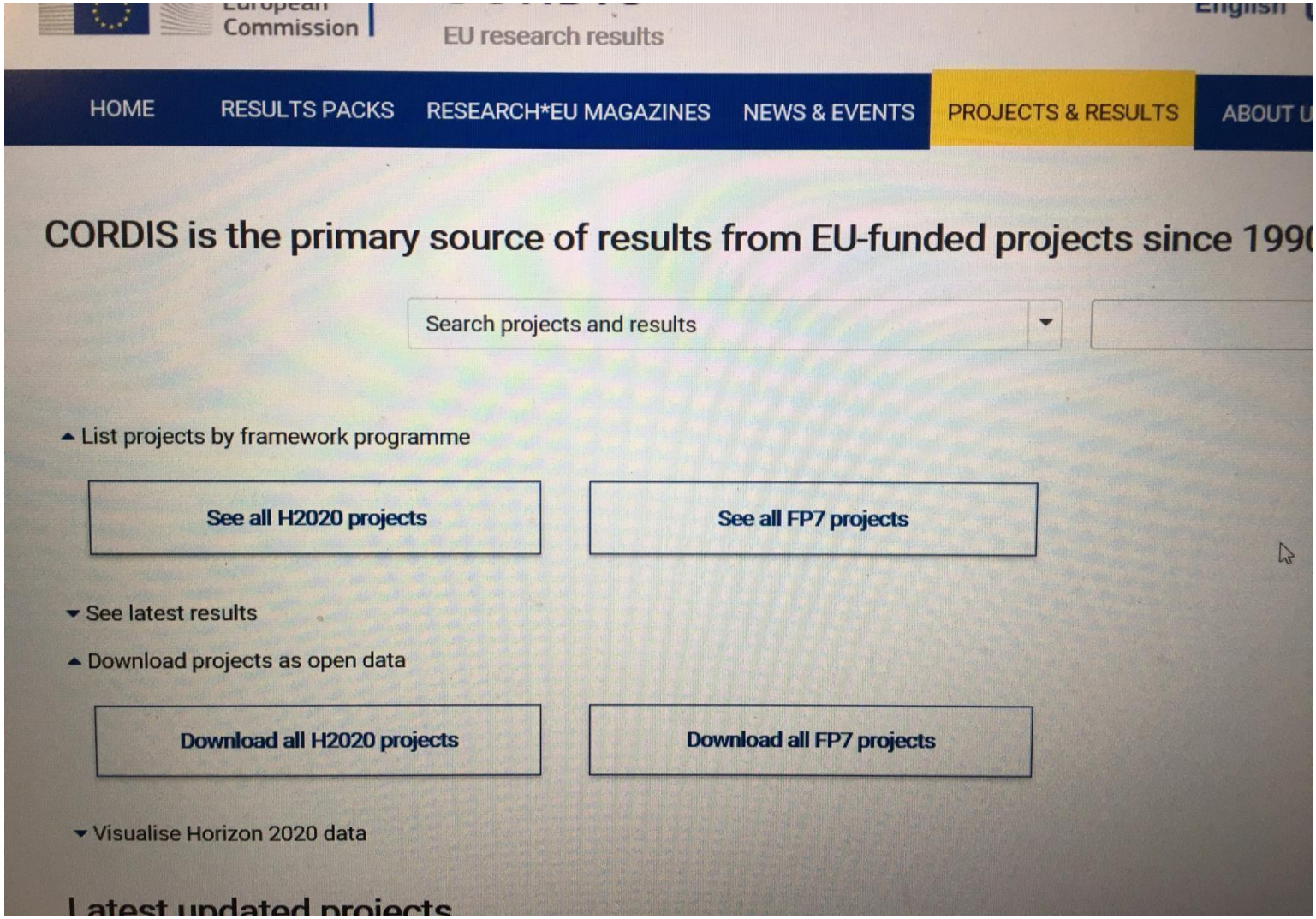
www.itconsult-eu.de/wbc (FP7 projects)

Ali preko strani Cordis
https://cordis.europa.eu/partners/web/guest

EEN http://een.mra.si/index.php?lang=sl
https://een.si/mednarodno-poslovno-sodelovanje/

Cordis: Projects and Results

Razvoj in koordinacija projektnega partnerstva

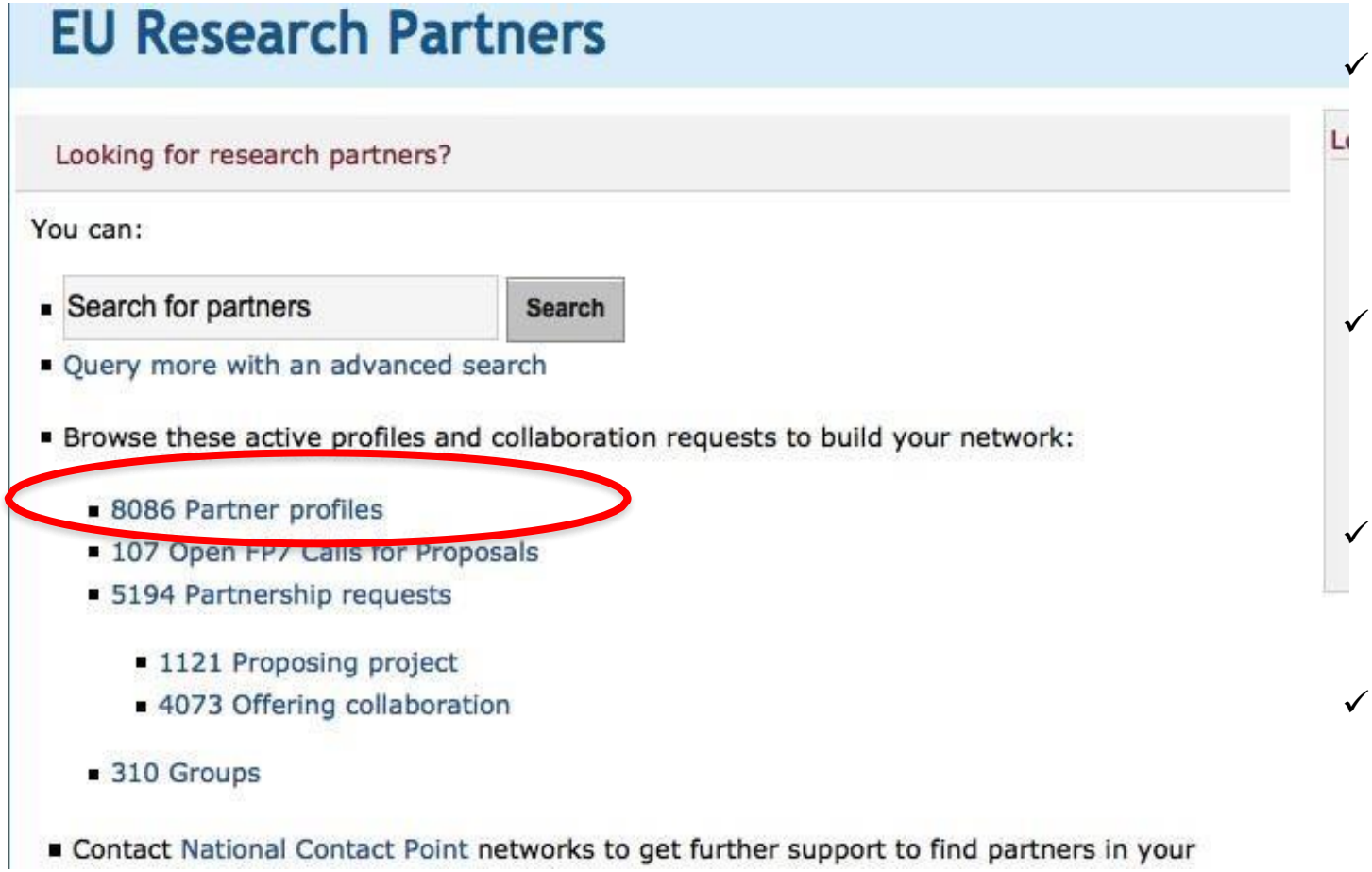


CORDIS: cordis.europa.eu/partners

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/partner-search

How to participate

Partner Search



- ✓ Find partners for your project ideas among the participants in past EU projects.
- ✓ Enter a keyword or a topic of a past call for proposals for finding related organisations.
- ✓ Search by geographical criteria or by types of organisation.
- ✓ For more specialised partner search service see Online Manual.

Participant register: naredi svoj profil in postani prepoznaven

Primer:

- **Kaj je "Profile"in zakaj ga potrebuješ?**
- Da vstopiš v H2020 program moraš biti partner ali vodja.
- Potrebuješ potencialne partnerje, ki jih želiš prepričati, da te povabijo v konzorcij.
- Predstavi svojo ekspertizo, veščine, ideje, opremo, izkušnje, itd.

Profil-kako ga izdelaš

Ključne točke

- Contact Details, Organization Details
- Topic areas in terms of H2020:
- For example 'e-Infrastructures' or 'ICT Generic micro- and nano-electronic technologies' [Note: Cordis is not yet using the H2020 terminology]
- Expertise description, Skills and competences
- Experience in FP/Horizon projects (if applicable)
- Research infrastructure of the organization (if applicable)
- For universities: brief description of your research group (size, no of PhD students, research topics, …)
- Outstanding results

Razvoj in koordinacija projektnega partnerstva

Nick Timmons (Ireland)

FP7-ICT

Electronics, Microelectronics, Information processing, Information systems, Telecommunications, ICT Applications, Network technologies, Space and satellite research, Renewable sources of energy, Energy saving, Other energy topics, Biotechnology, Medical biotechnology, Agricultural biotechnology, Waste management

Profile completeness

64 % completed

About Nick Timmons

Nick Timmons has 0 recommendations

Nick Timmons has 1 connection

Nick Timmons has 0 active partnership requests

Nick Timmons belongs to 0 groups

Interact with Nick Timmons

Last update: 2014-03-24

Tutorials & Help

Wireless sensor network design and implementation.

Partnership request description::

We can provide wireless sensor network design for the remote monitoring of streetlighting, RF, antenna, and wireless design expertise, embedded systems, firmware and software applications, electronic hardware design, pcb design, prototyping services.

Partner offering expertise: Nick Timmons (Ireland)

Partner expertise: Electronics. Microelectronics, Information processing. Information systems, Telecommunications, ICT Applications, Network technologies, Space and satellite research, Renewable sources of energy, Energy saving, Other energy topics, Biotechnology, Medical biotechnology, Agricultural biotechnology, Waste managemen

Call for proposal title: [illegible]

Call for proposal identifier: H2020-SCC-2015

Partner role: Project participant

Description of the collaboration sought:

Industries, research groups, municipal entities, who are interested in the concept of smart cities and specifically the area of energy conservation.

Expertise sought: Environmental protection, Energy saving, Energy storage. Energy. Transport, Renewable sources of energy, Network technologies, ICT Applications, Telecommunications,

Roles sought: Project participant,

Countries sought: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom,

Call for proposal specific information

1. ***Themes covered by this call***

   SCC-01-2015: Smart Cities and Communities solutions integrating energy, transport, ICT sectors through lighthouse (large scale demonstration - first of the kind) projects

2. ***Funding schemes applicable for this call (Please see call fiche for full details)***

   IA (Innovation action)

An example that is to the point …

Razvoj in koordinacija projektnega partnerstva

antonella silipigni (Italy)

FP7-HEALTH, FP7-ENERGY, FP7-ENVIRONMENT, FP7-SSH, FP7-SECURITY, FP7-COORDINATION, FP7-IDEAS, FP7-PEOPLE, FP7-JRC

Transport, Renewable sources of energy, Energy saving, Biofuels, Other energy topics, Medicine, Health, Life sciences, Agriculture, Food, Resources of the sea, Fisheries, Water resource management, Project management methodologies, Safety, Environmental protection, Waste management, Sustainable development, Social aspects, Education, Training, Information, Media, Economic aspects, Regional development, Employment issues, Security, Policies, Legislation, Regulations, Forecasting, Evaluation, Innovation, Technology transfer, Coordination, Cooperation, Scientific research, Business aspects, Research ethics, Intellectual property rights

Profile completeness

78 % completed

Italian partners (public and private) and expertise ready to apply in your call

Partnership request description::

My Agency Tikkun Fenix has great experience working with European funding programmes including ENPI, LLP, Daphne III, ESF, EIF, TEMPUS, PROGRESS, Erasmus for Young Entrepreneurs, Youth in Action, Europe for Citizens and others. Last year we were part of different consortia that applied under FP7 and now we are taking part of the preparation of H2020 proposals for the next deadlines with many partners.

Partner offering expertise: antonella silipigni (Italy)

Partner expertise: Transport, Renewable sources of energy, Energy saving, Biofuels, Other energy topics, Medicine. Health, Life sciences, Agriculture, Food, Resources of the sea, Fisheries, Water resource management, Project management methodologies, Safety, Environmental protection, Waste management, Sustainable development, Social aspects, Education. Training, Information, Media, Economic aspects, Regional development, Employment issues, Security, Policies, Legislation. Regulations, Forecasting, Evaluation, Innovation. Technology transfer, Coordination. Cooperation, Scientific research, Business aspects, Research ethics, Intellectual property right

Call for proposal title: Reflective Societies: Cultural Heritage and European Identities

Call for proposal identifier: H2020-REFLECTIVE-SOCIETY-2014

Partner role: Project coordinator

Description of the collaboration sought:

Expertise sought: Research ethics, Business aspects, Coordination. Cooperation, Evaluation, Employment issues, Regional development, Economic aspects, Information. Media, Education. Training, Social aspects, Sustainable development,

Roles sought: Project participant, Project coordinator,

Countries sought: Italy, Ghana,

Call for proposal specific information

1. ***Themes covered by this call***

   REFLECTIVE-9-2014: Social Platform on Reflective Societies

2. ***Funding schemes applicable for this call (Please see call fiche for full details)***

   CSA (Coordination & support action)

An example that you should NOT follow …

- **Projektni konzorcij –na kaj moramo biti pozorni!**

Putting together a project consortium

http://www.eatip.eu/default.asp?SHORTCUT=476

INTERDISCIPLINARNOST

YOU

- Subject area
  - Environment
  - Agriculture
  - ICT
  - Social science
- Geography
  - WBCs
  - Scandinavia
  - Mediterranean
  - West EU
  - New MS
  - Assoc states
- Partner type
  - HES
  - REC
  - PRC
  - PUB
  - NGO
- Expected impacts
  - Better food
  - Social benefit
  - Competition
  - Sustainability
  - Dissemination

Consortium

You need to be aware of many more types of activity and types of partner than for just your subject area!

Projektni konzorcij: partnerji projekti

- Partnerje izbiramo glede na njihov tehnični in vsebinski prispevek k projektu, ki ga prijavljamo. Dobro je čim bolj (s)poznati zgodovino in delo partnerskih organizacij, v vlogo za sredstva pa ne pozabimo priložiti tudi potrdila o **partnerskem sodelovanju**, ki naj bo potrjeno s strani vseh sodelujočih organizacij v projektu.

- Preverimo tudi, kakšne so izkušnje partnerskih organizacij z izbranim donatorjem.

Projektni partnerji; pravila

- čimprej in čimbolj pozorno izberite partnerje;
- uskladite interese in cilje;
- prijavo projekta pripravite skupaj;
- upoštevajte načelo “koristi za vse”;
- jasno razdelite odgovornosti in vloge partnerjev (Gantogram);
- posamezne dejavnosti projekta (DS) in delitev stroškov- tabelorično.

Načrtovanje izvedbe in delitev nalog:

- Če je bila razpisna dokumentacija podrobna, bo že sama prijava na projekt vsebovala vse potrebne podatke. Sicer pa je treba po odobritvi projekta določiti:
- Vlogo partnerjev pri projektu.
- Natančen opis aktivnosti in roke za izvedbo (časovnico): DS in Gantogram.
- Pričakovane rezultate.

Komunikacijski načrt:

Komunikacijski načrt je namenjen načrtovanju aktivnosti za povečanje vidnosti projekta.

Namenjen je:

- Širitvi rezultatov projekta, tudi po njegovem zaključku.
- Zavedanju osebja in ciljne skupine o izvedenem delu.
- Seznanitvi interesnih skupin in širše javnosti z rezultati projekta.
- Vplivu na odločevalce.
- Povečanju možnosti za mednarodno sodelovanje.

Specifikacija posameznega DS oz. WP

WP number:		02	
WP title:		**Effective antimicrobial/antioxidant nano-coated PLA/starch composite material for package design**	
Leader:		Petru Poni Institute of Macromolecular Chemistry (PPIMC), Institute of Excellence of the Romanian Academy (Petru Poni)	
Partners involved:		UNI MB,UL BF, ICEFS, IPM	
Start date	**End date**	Month 8	Month 15
Objectives:		Development of polymeric active materials with embedded evaluated natural antimicrobial and antioxidant agents	
Type of activities:		Applied Research	
Description activities * responsible partner		• Strategies to produce active materials as mono- and multi-layers with similar properties as conventional ones: electro- spraying (Petru Poni*, UNI MB, IPM), printing and inkjet deposition (IPM*, Petru Poni) • Characterization of surface properties, coating stability (adhesion strength) and antimicrobial/antioxidant activity with controlled overall migration limit below 10 mg/dm^2 as required by EU legislation rules (UNI MB*, UL BF, IPM, ICEFS, Petru Poni). The release of the bioactive compounds will be followed by using assays such as HPLC, spectroscopic methods, Franz cells and antioxidative assays. • Methods like ASTM E2149-01, 4833 and ISO22196 and advanced molecular methods (real-time PCR) for the antibacterial testing in presence of typical bacteria found in meat will be performed (Salmonella spp., E. coli, Listeria monocytogenes, Bacillus cereus) (UL BF*).	
Expected results and deliverables:		D2.1 Evaluated strategies for the efficient irreversible and controlled bindings (month 12) D2.2 Characterized antimicrobial/antioxidant nano-coated PLA/starch composite (month 14) Results: Optimized procedure for the incorporation of antimicrobial/antioxidant agents onto PLA/starch matrices	
Milestones		**M2 Polymeric active food contact materials with incorporated natural antimicrobial/antioxidant agents** (month 15)	

Delovne naloge: jasne

Delovni sklop	Naloge	1. leto	2. leto	3. leto
DS1: Karakterizacija funkcionalnih lastnosti izbranih LB in študij interakcij med LB in LF	N1.1. Protimikrobna aktivnost LB			
	N1.2. *In vitro* interakcije med LF in LB			
	N1.3. Sposobnost izbranih LB in LB z LF, da zavirajo/razgrajujejo biofilme, ki jih povzročijo bakterije v povezavi z BV, AV in LM			
DS2: Priprava stabilnih formulacij	N2.1.Izdelava LB z uporabo monolitne kationske izmenjalne kromatografije CIM®			
	N2.2. Izdelava mikrobiološke mase			
	N2.3.Stabilizacija mikrobiološke mase, posamezno ali v kombinaciji z LF			
	N2.4. Priprava in karakterizacija koloidnih formulacij			
DS3: Modelne študije interakcij celuloznih filmov z LB-LF sistemom	N3.1. Adsorpcijski/desorpcijski pojavi			
	N3.2. Modeliranje podatkov			
DS4: Realna aplikacija na filme in vlakna s tehnikami predenja in premazovanja	N4.1. Priprava biopolimernih filmov			
	N4.2. Izdelava nanovlaknatih struktur s kontroliranimi strukturnimi lastnostmi			
	N4.3.Priprava premazov za vlakna			
DS5: Podrobna karakterizacija fizikalno-kemijskih lastnosti funkcionalnih filmov, nanovlaknatih struktur in prevlečenih vlaken	N5.1. Fizikalno-kemijski parametri			
	N5.2. Desorpcija			
DS6: Ocena bioloških lastnosti in stabilnosti LB in LF, ujetih v polimerne filme in celulozni material, ter priprava načrta kliničnega preskušanja	N6.1. Ocena preživelosti LB v funkcionalnih filmih, nanovlaknatih strukturah in prevlečenih vlaknih			
	N6.2. Ocena bioaktivnosti (LB in LF) v razvitih materialih			
	N6.3. Ocena stabilnosti ujetih LB/LF in sinergija			
	N6.4. Priprava na *in vitro* testiranje			
DS7: Sinteza in diseminacija rezultatov	N7.1 Tehnično, finančno, pravno, administrativno in kakovostno upravljanje			

Razvoj in koordinacija projektnega partnerstva

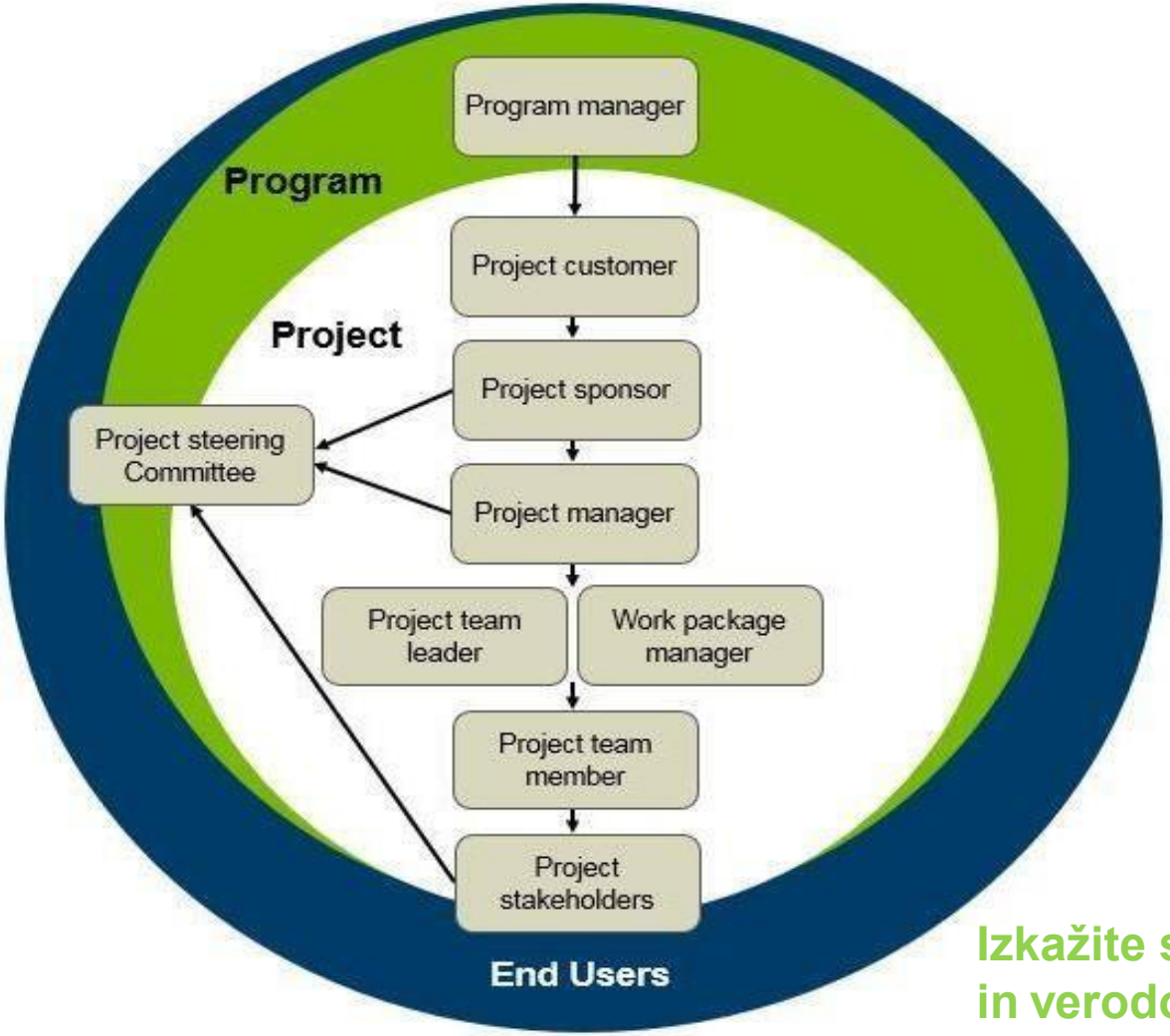
Kaj naj velja za partnerje?

- **Partnerji naj bodo močni.** Močni partnerji so v družbi prepoznavni in imajo več *referenc in so prepoznavni strokovnjaki*. S takšnimi ima projekt veliko več možnosti, da bo sploh odobren.
- **Partnerji naj se za projekt zanimajo.** Izvedba projekta bo od partnerjev zahtevala tudi določen vložek; tu ne gre nujno za denar, vložek je lahko tudi čas, znanje, prostor ipd. Če partnerja projekt ne zanima, njegov vložek, ne glede na morebitni profit in stopnjo tveganja, veliko težje pričakujemo.
- **Njihovi motivi se skladajo z našimi.** Partner naj ima približno enake vrednote in interese, saj bomo ob nestrinjanju že na načelni ali osnovni vsebinski ravni z njim zelo težko sodelovali.
- **Njihova dejavnost naj bo komplementarna naši dejavnosti.** Partner, ki izvaja dejavnost, zelo podobno naši, je v bistvu naš konkurent! Premislimo, zakaj sploh potrebujemo takšnega partnerja in kaj bomo od tega imeli. Tisti partnerji, ki pa izvajajo dejavnosti, **ki so komplementarne** našim dejavnostim, nas s tem dopolnjujejo in podpirajo.
- **Naj bodo zmožni izvesti svoj del projekta.** Če pri projektu pade en partner, običajno pade kar cel projekt. Projektna skupina je tako močna, kot je močan njen najšibkejši člen. Dobro je, da med partnerji vlada zaupanje v to, da bo vsak opravil korektno svoj del naloge.

Kriteriji za selekcijo

- Interes in motivacija.
- Ekspertiza (strokovno znanje in izkušnje) iz področja.
- Viri v splošnem-infrastruktura.
- Kritična masa na specifičnem področju.
- Dostopnost do trga, kontaktnih točk.
- Obvlada angleški jezik.
- Prejšnje izkušnje vodenje oz. sodelovanja v projektih.
- Ima dobro mrežo v Bruslju, itd.

Glavne vloge v projektu:



Koordinacija je zahtevna:

- Finančno
- Raziskovalno
- Organizacijsko

Veščine:
- organizacija,
- vodenje,
- upravljanje,
- nadzorovanje.

Izkažite se kot zaupanja vreden in verodostojen partner!

Razvoj in koordinacija projektnega partnerstva

Projektno vodenje obsega:

- ***Vodenje delovne skupine in srečanj:*** Funkcije vodenja se nanašajo na postavljanje ciljev, organiziranje, motiviranje, razvoj ljudi, sporazumevanje, merila in analiziranje. Skupina se srečuje glede na načrtovane aktivnosti in urgentnost situacije. Priporočljivo je, da se skupina sreča vsaj enkrat mesečno. Koordinator projekta ali vodja posamezne aktivnosti organizira **sestanek delovne skupine z jasnim dnevnim redom in cilji sestanka.**
- ***Komunikacijo z ostalimi pomembnimi akterji*:** Glede na naravo in potek projekta je pomembno, da se vzdržuje permanentna komunikacija – obveščanje in vključevanje pomembnih, ki lahko veliko prispevajo k uresničitvi posamezne akcije in celotnega projekta. Če pride do spremembe, je nujno obvestiti financerja o nastalih spremembah. Rešitve je treba predlagati skupaj z razpisanimi pogoji in jih ne oblikovati izven konteksta zastavljenega projekta.
- ***Reševanje konfliktov, problemov, ki se pojavljajo med izvedbo projekta***: Če prihaja do težav in nesporazumov pri načrtu, jih je treba sproti reševati. Neprestano moramo biti osredotočeni na izvajanje načrta in ne smemo dovoliti, da nas nastali konflikti odvrnejo od tega.

Razvoj in koordinacija projektnega partnerstva

- ***Zagotavljanje potrebnih virov***: Glede na potrebe projekta in odobrena sredstva, je včasih treba zagotoviti še dodatne vire, ki so potrebni, da se uresniči zastavljeni načrt. Glede na potek dogodkov in sinergij znotraj projekta, se nam lahko na poti pojavi nova priložnost, da pritegnemo nove vire k projektu.
- ***Dokumentiranje in arhiviranje:*** Pisanje vmesnih poročil je pomembno za oblikovanje končnega poročila in dokumentiranje izvajanja projekta. Tu gre za zbiranje računov, pisanje in shranjevanje zahtevkov, oblikovanje dokumentov ter poročil o opravljenem delu. Pri končnem poročilu je pogosto treba oddati fotokopije računov za posamezne postavke proračuna. Preciznost in natančnost.
- **Kontrolo oz. nadzor**: Vključuje merjenje napredka pri doseganju ciljev in aktivnosti, ki so potrebne, da odstopanja od načrta ne vplivajo na doseganje zastavljenih ciljev. Gre za poudarek na razumevanju nepričakovanih zamud, preseganju zastavljenih finančnih postavk ali sprememb pri ciljih. V določenih časovnih intervalih je treba preveriti, ali nastajajo odstopanja od zastavljenega načrta ali poteka v smeri doseganja načrtovanega napredka-Gantogram.

Finančno vodenje projekta:

- Pravilno vodenje in arhiviranje projektne dokumentacije.
- Organizacija projektne mape.
- Načrtovanje porabe projektnih sredstev.

Večina financerjev zahteva, da se projekt finančno vodi na svojem stroškovnem mestu. Tudi če tega ne zahtevajo posebej, je to priporočljiva praksa (računovodstvo, finančna služba):

- Vsi stroški in prihodki morajo biti vodeni na svojem stroškovnem mestu.
- Takoj ob odobritvi projekta projektni vodja javi računovodstvu, naj odpre stroškovno mesto.
- Računovodja v šifrantu stroškovnih mest odpre novo stroškovno mesto z imenom projekta.
- Projektni vodja mora tekom projekta v računovodstvo poročati, kateri stroški in v kakšnem znesku naj se knjižijo na določen projekt.
- Smotrna in poštena uporaba sredstev.

http://www.racunovodski-servisi.org/tiny_upload/slika4_3.png

- Konzorcij je zgrajen, sledi priprava projekta na konkreten razpis.

- **Smernice za uspešen projekt:**

priprava oz. prilagoditev osnovnih elementov razpisu

OSNOVNI ELEMENTI RAZPISA SO TEMELJ PROJEKTA!

Vsebinska logika projekta

You know why you need a project and what your project promises to deliver. Now, you need to define **how** it will deliver:

- The concept = scientific hypotheses, assumptions and models.
- The methodology = building blocks of the work to be performed.
- The work plan = the way the work is organised.

Elementi razpisov: razpisna dokumentacija

Elementi razpisa:	Ime razpisovalca in razpisa	Predstavitev ozadja razpisa	Cilji razpisa
Prednosti	Višina sredstev za so/financiranje projektov	Najmanjši in najvišji znesek sofinanciranja	Največji odstotek sofinanciranja
Kriteriji upravičenosti	Merila	Način prijave + prijavni obrazec…	

Vsebina: Razpisni obrazec-prilagoditev osnovnih elementov projekta

Overview Part B

- **Section 1: Excellence**
- 1.1 Objectives
- 1.2 Relation to the work programme
- 1.3 Concept and approach
- 1.4 Ambition
- **Section 2: Impact**
- 2.1 Expected impacts
- 2.2 Measures to maximise impact
- **Section 3: Implementation**
- 3.1 Work plan — Work packages, deliverables and milestones
- 3.2 Management structure and procedures
- 3.3 Consortium as a whole
- 3.4 Resources to be committed
- **Section 4: Members of the consortium**
- 4.1. Participants (applicants)
- 4.2. Third parties involved in the project
- **Section 5: Ethics and Security**
- 5.1 Ethics
- 5.2 Security

Temeljito preberi in preglej razpisno dokumentacijo (večkrat)!

Primer razpis ARIS 2025

https://www.arrs.si/sl/progproj/rproj/razpisi/24/razp-proj-25.asp

Prednost: področja so ohlapna in je tako razpis lažji!

- Osnovni elementi vloge

- Recenzentu se posreduje vloga v ocenjevanje v angleškem jeziku; to je izpolnjena prijava, kot jo na spletnem portalu agencije DigitalForms izpolni prijavitelj.

- Navedeno pomeni, da bo recenzent prejel izključno navedbe prijave v vnosnih poljih, namenjenih angleškemu besedilu, in priponke, pripete na mesto, namenjeno angleškemu besedilu. Odgovornost prijavitelja je, da prijavo pravilno in odlično izpolni.

- Odlično pripravimo obe vlogi, poseben poudarek pa seveda na angl. verziji.

OBRAZEC – VSEBINSKA VLOGA

DESCRIPTION OF THE RESEARCH PROJECT

23.1. Scientific background, problem identification and objective of the proposed research

23.2. State-of-the-art in the proposed field of research and survey of the relevant literature

23.3. Detailed description of the work programme

23.4. Available research equipment over 5.000 €

23.5. Project management: Detailed implementation plan and timetable

23.1. Scientific background, problem identification and objective of the proposed research

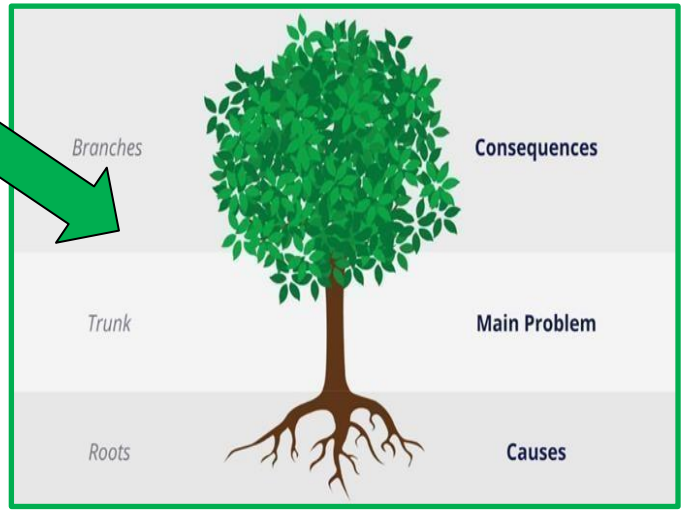
The overall idea of the research and contribution to the field

Aktualna in izvrstna ideja

- ✓ **Ozadje in Problem - udarno, podkrepljen s statistiko. Potrdimo, da je aktualen in da je reševanje tega problema strateško** (konkretno naslavljanje na strateške dokumente: EU dokumente….).
- ✓ Dosedanje rešitve, slabosti, vrzeli (kritika) in predstavitev vašega koncepta, ki mora biti „beyond state of the art“.
- ✓ Podamo glavni cilj (angl. main objective) in nato specifične cilje (angl. specific objectives). Raziskovalna vprašanja. **Hipoteza.**
- ✓ Shema projekta.
- ✓ Poudarimo, s katerimi udarnimi nacionalnimi in EU strategijami, politikami in programi je usklajena projektna ideja!

Problem - Problemska analiza

- Izhodišče = Možganska nevihta, problemsko drevo, itd.



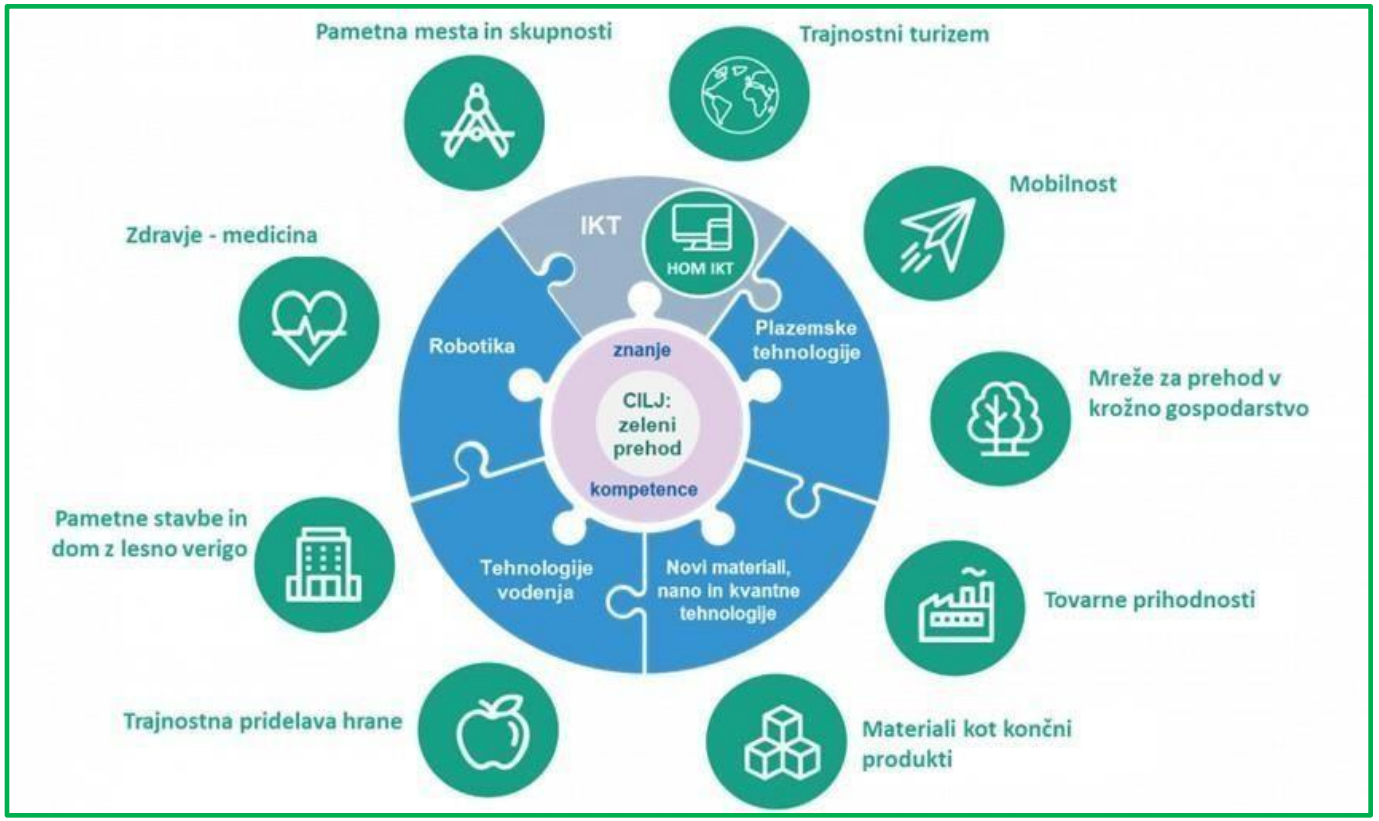
- *Odgovori:*

- *Kaj je pravi problem? Vzroki, posledice.*
- *S katerimi drugimi problemi je povezan?*
- *Kakšne so rešitve problema, ki so korak naprej od stanja raziskav (inovativne)? Kritika, pomanjkljivosti-*
- *Kaj bi se s temi rešitvami dosegli; doprinos?*
- *Stanje/Analiza potreb (nacionalni nivo-S4-akcijski načrti, EU dokumenti, politike, vizija združenj, asociacij, programi, itd.)*
- *Konkretno podpreti s številkami.*

EU policy objectives here –
http://europa.eu/pol/index_en.htm
(PRIORITIES AND ACTIONS)

SPS- Strategija pametne specializacije

- Pametna specializacija predstavlja platformo za osredotočenje razvojnih vlaganj na področja, kjer ima Slovenija kritično maso znanja, kapacitet in kompetenc ter na katerih ima inovacijski potencial za pozicioniranje na globalnih trgih.



Akcijski načrti:
http://www.svrk.gov.si/si/delovna_podrocja/strategija_pametne_specializacije/strateska_razvojno_inovacijska_partnerstva_srip/

https://www.gov.si/assets/vladne-sluzbe/SVRK/S4-Slovenska-strategija-pametne-specializacije/Slika_1_pametna-specializacija_240122.png

SPS- Strategija pametne specializacije

Seznam Strateških razvojno-inovacijskih partnerstev – SRIP

Strateško razvojno – inovacijsko partnerstvo	Institucija	Kontaktna oseba	Spletna stran
Pametna mesta in skupnosti	Institut Jožef Stefan	dr. Nevenka Cukjati nevenka.cukjati@ijs.si	http://pmis.ijs.si
Pametne stavbe in dom z lesno verigo		dr. Brane Širok brane.sirok@fs.uni-lj.si	https://srip-pametne-stavbe.si/
Mreže za prehod v krožno gospodarstvo	Štajerska gospodarska zbornica	Nina Meglič nina.meglic@stajerskagz.si	https://srip-krozno-gospodarstvo.si/
Trajnostna pridelava hrane	GZS – Zbornica kmetijskih in živilskih podjetij	dr. Tatjana Zagorc tatjana.zagorc@gzs.si	https://www.gzs.si/srip-hrana/
Trajnostni turizem	EF Center poslovne odličnosti Ekonomske fakultete	dr. Monika Lapanja monika.lapanja@ef.uni-lj.si	https://www.srip-turizem.si/o-sript/
Tovarne prihodnosti	Institut Jožef Stefan	doc. dr. Igor Kovač igor.kovac@ijs.si	http://ctop.ijs.si/sl/o-partnerstvu/
Zdravje – medicina	Slovensko inovacijsko stičišče, evropsko gospodarsko interesno združenje (SIS EGIZ)	dr. Alenka Rožaj Brvar, MBA direktor@sis-egiz.eu	https://www.sripzdravje-medicina.si/
Mobilnost	Gospodarsko interesno združenje ACS Slovenski avtomobilski grozd	Tanja Mohorič tanja.mohoric@acs-giz.si	https://www.acs-giz.si/o-acs
Materiali kot končni produkti	Gospodarska zbornica Slovenije	Vesna Nahtigal vesna.nahtigal@gzs.si	https://matpro.gzs.si/

https://www.gov.si/zbirke/projekti-in-programi/izvajanje-slovenske-strategije-pametne-specializacije/

Research questions and objectives

Določanje ciljev → rezultatov

- Ločimo: splošne in specifične cilje.
- **Splošni** cilj določa celosten razvoj, k kateremu bodo prispevali specifični cilji.
- **Specifični cilji – podcilji** so neposredno povezani s cilji programa: kakšni bodo učinki projekta na določeno ciljno skupino/območje in zlasti, kaj bodo dosegli posamezni projektni partnerji. Povedano drugače, specifični cilji naj bi razložili, kaj natanko bo v projektu doseženo, kakšne so pričakovane koristi za ciljno skupino.

Določanje ciljev

- Cilji (splošni in specifični) morajo biti usklajeni.
- Cilje projekta je treba s tem projektom doseči do zaključka projekta.

Cilji projekta morajo odražati ozadje projekta (utemeljitev): projekt upošteva sedanje stanje, probleme, priložnosti in ciljne skupine. Projekt mora biti ustrezen v luči lokalnih, regionalnih, nacionalnih in evropskih strategij ter politik.

Določanje ciljev in rezultatov

- *DOBRO DOLOČEN CILJ*:

- Kaj želimo doseči?
- Kako bomo to dosegli?
- Kdo bodo glavni uporabniki?

SMART metoda (Specific, Measurable, Achievable, Realistic, Time)

Cilj mora: i) biti jasno opisan, biti merljiv, biti uresničljiv/dosegljiv, biti realističen in imeti končen rok ter mora biti *strateški.*

https://www.project-management-skills.com/images/xsmart-goals.jpg.pagespeed.ic.SJJ-0L-ijT.jpg

Osnovni elementi projektne prijave: 23.1.

Splošni cilji: Kaj želimo doseči? Kako bomo to dosegli? Kdo bodo glavni uporabniki? Usklajenost s politikami?

- **Thus the overarching objective** is to fabricate multi-structured **composite biodegradable** material that will act as a smart **active& intelligent packaging system** with antimicrobial and antioxidant surface activators and integrated sensors capable to maintain and monitor food quality and safety along the food chain. **This new generation of packaging** will reduce the food spoilage of target food by surface contacting or releasing micro/nano antimicrobials-antioxidants (polysaccharides and polyphenols in synergistic formulation) and to monitor the packed foods quality extending in this way the foods shelf life, and thus enabling the food industry to enhance the food shelf existence and maintaining high food quality for consumers as well as to reduce the food waste. In this project the EU policy (natančno ime dokumenta) regarding Innovative solutions for sustainable novel food processing will be *strengthen* and consumer food safety will be enriched.

- PRAVILO: *Guide for project development and proposal writing, Balkan Security Netwoork*

The overall aim of the project is to contribute …
(successful implementation of EU policies,
national priorities, local strategies..) for (some specific area and target group)…
through creation of… (platform, mechanisms, action, office, centre, team for (solving some specific problems, improving situation , policy advancement, capacity building,
better communication and collaboration).. that will ensure (some results) ..and (make a lasting impact).

Osnovni elementi projektne prijave: 23.1.

Specifični cilji (kvantifikacija), podcilji splošnega cilja:

KAZALNIKI

Primer:

Specific objectives:

- **O.1 – Basic material validation**

i) Producing of biodegradables films from biopolymers (PLA, starch) that meet the same food packaging requirements as conventional packaging (mechanical, thermal and barrier properties defined as thickness of 230 μm; **tensile strength 32 MPa, breaking elongation 400 %; heat seal temperature range 125 – 165 °C, O_2 permeability rate </= 9 cm3/m2/24h/bar, water vapor permeability </=1 g/m2/24h);** ii) validation of additive antimicrobial-antioxidant formulations(nano/microstructured dispersions, suspensions, etc.), iii) validation of non-invasive optical sensor system based on biodegradable polymers such as cellulose and its derivatives. WP1 trough task T1.1., D1.

- **O.2 – Integration of antimicrobial and antioxidant agents into PLA/starch films–pilot line**

i) pilot line with the capacity of 5 kg/h for fabrication of PLA-starch biodegradable films continuously coated with antimicrobial and antioxidant formulations *(polysaccharides (PS) and plant polyphenols with highest potential as natural agents as mono- and/or multi-layer coatings on PLA- starch films);* ii incorporation (printing) of sensors: demonstrating sensorial properties; iii) final demonstrating action about efficiency of antimicrobial-antioxidant & intelligent functionalized films: sufficient inhibition of at least two of the following pathogens (Listeria monocytogenes (G+); Salmonella sp. (G-); Staphylococcus aureus (G+); E. coli (G-); P. fluorescens (G-); Camp. Jejuni (G-); S. Enterica (G-); B. cereus (G+) and Fungi Candida Glabrata; an overall migration limit (OML) to be below 10mg/dm2 or 60mg/kg food and scavenging effect of min. 60%. In this way the nanosafety conditions are realized and are in accordance with the EU regulations and standards (Nanosafety document; page x, link…). WP3 through task T2.2., D2.-3.

……O.3.…

Osnovni elementi projektne prijave: 23.1.

Specifični cilji (kvantifikacija), podcilji splošnega cilja:

KAZALNIKI

Primer:

Specific objectives + KPI

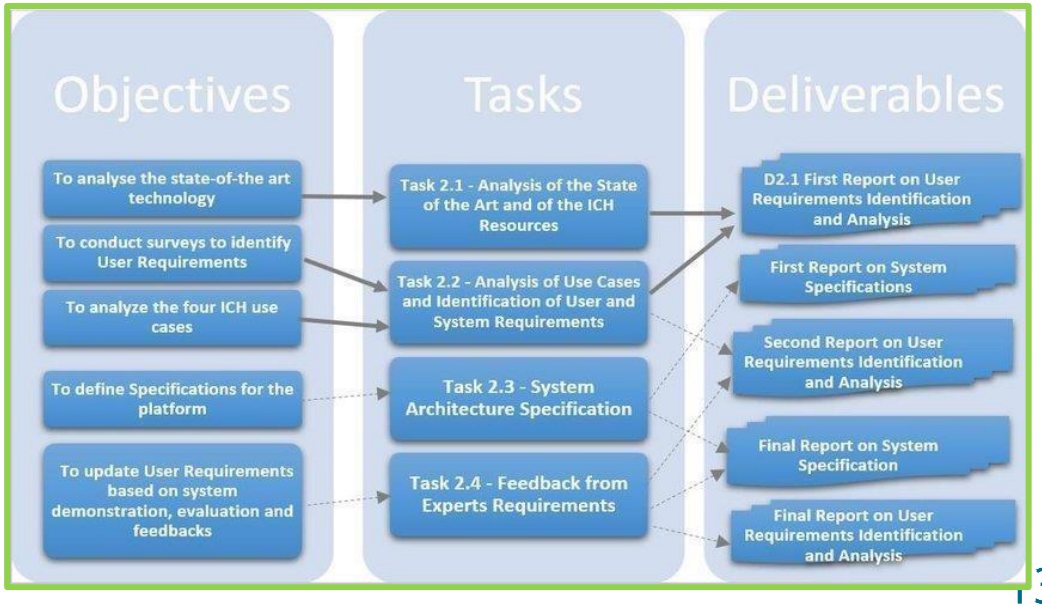
- **O.1 – Basic material validation**

i) Producing of biodegradables films from biopolymers (PLA, starch) that meet the same food packaging requirements as conventional packaging ii) validation of additive antimicrobial- antioxidant formulations(nano/microstructured dispersions, suspensions, etc.), iii) validation of non-invasive optical sensor system based on biodegradable polymers such as cellulose and its derivatives. WP1 trough task T1.1., D1.1

- **KPIs for O.1** – Basic Material Validation (WP1, T1.1, D1)Mechanical & physical performance:≥90% of PLA/starch films meet food-packaging requirements: thickness 230 ± 10 µm, tensile strength ≥ 32 MPa, elongation at break ≥ 400%.Thermal & barrier properties:Heat-sealability within 125–165 °C; oxygen permeability ≤ 9 $cm^3/m^2/24$ h/bar; water vapour permeability ≤ 1 $g/m^2/24$ h. Additive formulation validation:Laboratory validation of ≥ 3 antimicrobial/antioxidant formulations (nano-/microstructured dispersions) with proven stability and activity.Optical sensor validation:Functional biodegradable optical sensor (cellulose-based) with ≥ 90% reproducibility and clearly detectable optical response.Regulatory compliance:100% compliance with EU food-contact and environmental standards; timely delivery of D1.

Bodi pozoren na: Povezavo med cilji, aktivnostmi in rezultati

- Cilje dosežemo z določenimi aktivnostmi (jih v tekstu poveži; da recenzentu jasno pokažeš povezavo). Gre za dejavnosti, ki jih bomo izvedli zato, da bomo dosegli (specifične) cilje. Ti pripeljejo do rezultatov v specifičnem delovnem sklopu.

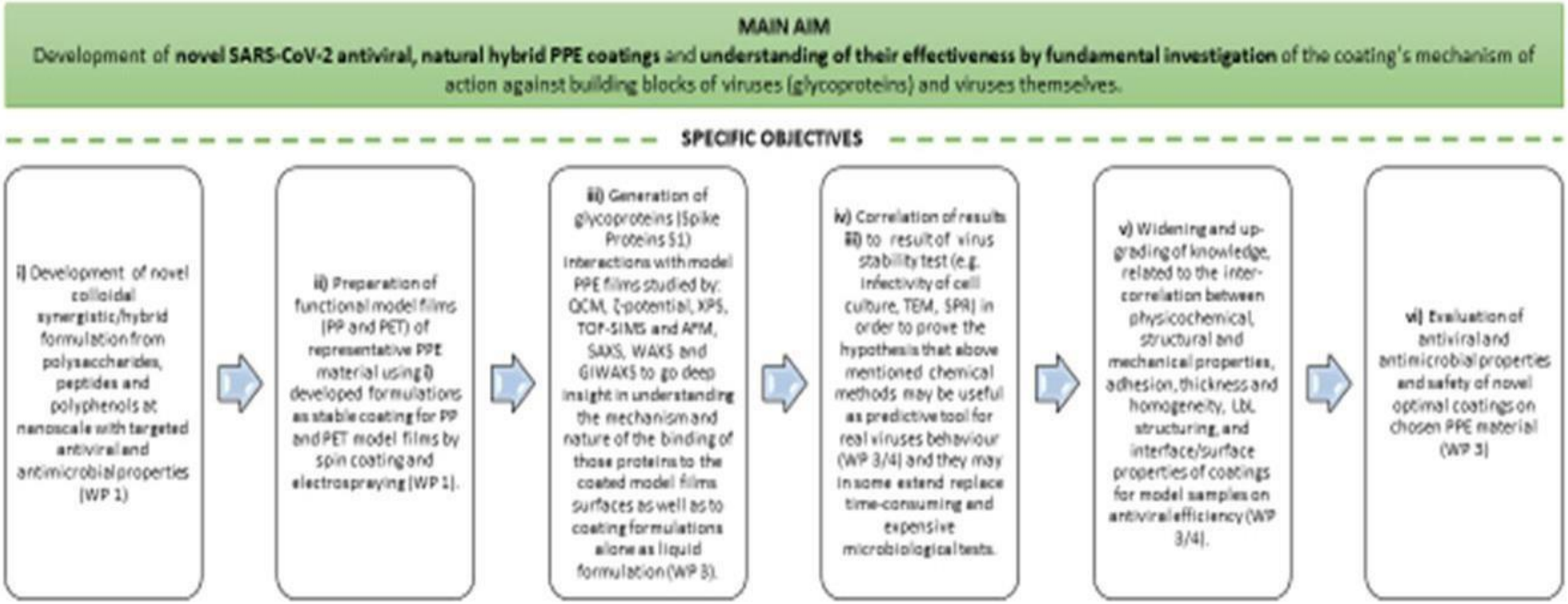


&ust=1643356145342000&source=images&cd=vfe&ved=0CAsQjR xqFwoTCPi77-240fUCFQAAAAAdAAAAABAJ

https://www.google.si/url?sa=i&url=https%3A%2F%2Fwww.researchgate.net%2Ffigure%2F1-Overview-of-WP2-objectives-tasks-and-deliverables-Below-2-depicts-the-overall-WP2_fig1_271530318&psig=AOvVaw37eZQ_Qz8BMtADpOnkK8P6

Splošni in specifični cilji

Splošni in specifični cilji



Osnovni elementi projektne prijave: 23.1.

Razvijete raziskovalna vprašanja in hipoteze

Antivcoatmode Hypotheses

H1	• Prepared colloidal hybrid formulations of natural compounds can be used as a novel chemical-inhibiting multifunctional coating of PPE for viruses, and these formulations aim to inactivate viruses (and also bacteria) on their surface.
H2	• By fundamentally investigating the interactions between glycoproteins (Spike Proteins S1 as adsorbate) and the material surface (as adsorbent) of representative model films, the mode of action between chemical inhibitors and specific viral proteins will be clarified on the base of physico-chemical, structural and mechanical parameters of adsorbate and adsorbent.
H3	• The understanding of the adsorption/desorption phenomena as well as the kinetics and thermodynamics of proteins binding to the solid model films of PPE **can**, through advanced chemical techniques (QCM, zeta potential, AFM, XPS, TOF-SIMS, SAXS, WAXS and GIWAXS), as optimised and for the first time created for this purpose, **serve** as prediction models for infectivity assays through established correlation among each other.
H4	• An in-depth study of adsorbate/solid-carrier interactions as well as the interactions of functionalised material in contact with the biological environment will make it possible to determine the surface effects of PPE materials and allow reverse manipulation to optimise the physico-chemical and bioactive properties for their efficient operation in the contact of antiviral efficiency through binding of specific proteins.
H5	• The qualitative and quantitative material surface properties alone or in the combination like (charge, surface free energy, morphologies, elemental composition, etc.) are responsible for antiviral efficiency. Through this, critical parts are identified and vice versa additional experiments for successful model adaptations are performed**.**

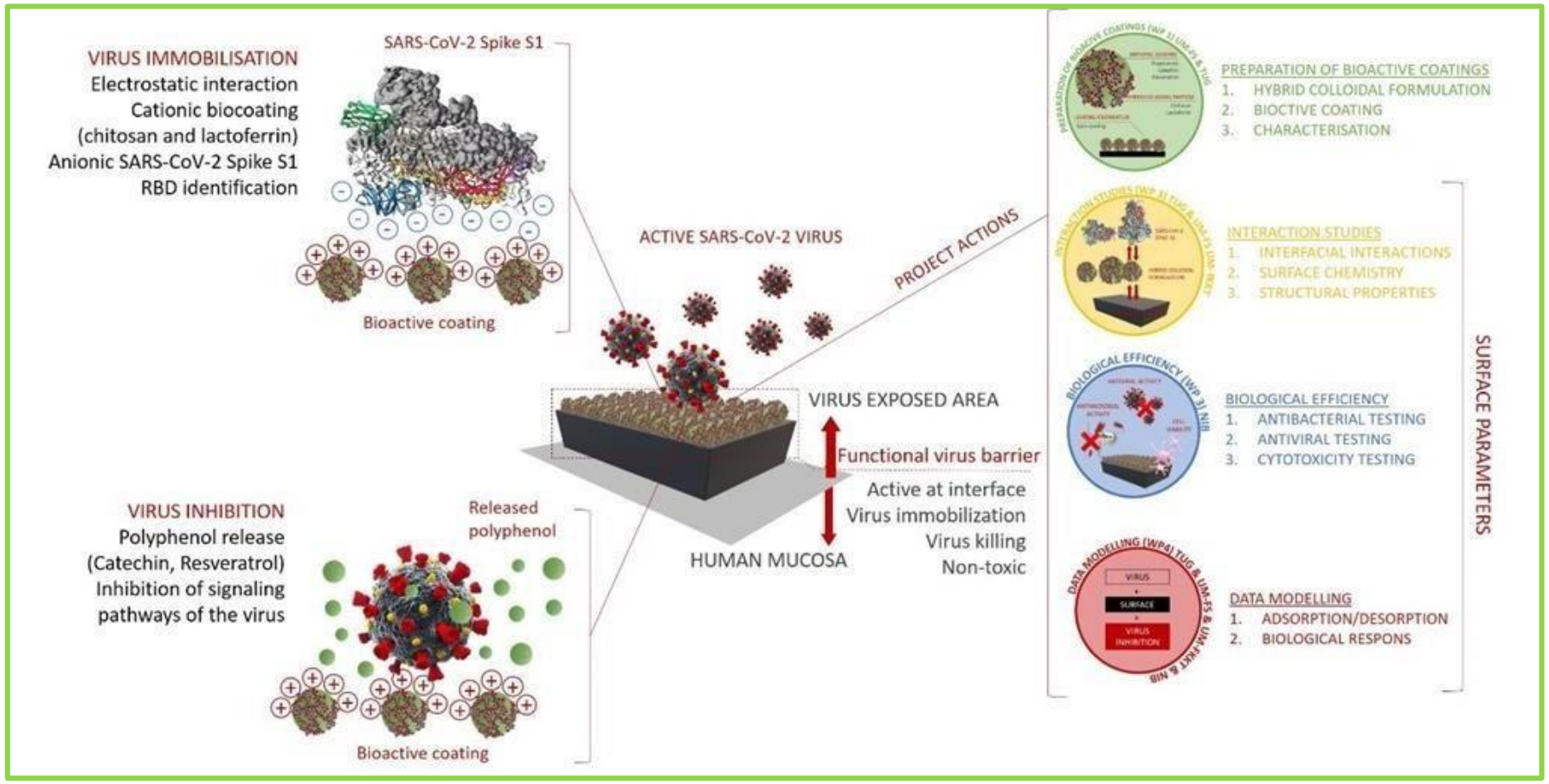
Osnovni elementi projektne prijave: 23.1.

Table 2: Alignment of research questions (RQ), hypotheses (H), objectives (O), implementation and measurable outputs.

RQ	Hypothesis	Specific objective(s) (SO)	WP/Task	KPI (measurable)	PM
RQ1. Which BCC design motifs govern binding selectivity and interaction kinetics toward IAV HA and SARS-CoV-2 S protein on PPE-relevant substrates?	**H1.** Multi-component hybrid BCCs composed of polysaccharides, lactoferrin/peptides and polyphenols will exhibit synergistic interfacial functionality and induce stronger perturbation of HA and S proteins than single-component coatings.	**SO1** Prepare PPE-relevant model surfaces (PP, PET). **SO2** Prepare hybrid BCC formulations with controlled composition and colloidal stability. **SO3** Deposit BCCs on model and real PPE substrates and assess reproducibility, stability and desorption. **SO4** Quantify interfacial interaction kinetics and binding selectivity. **SO5** Resolve surface-chemical drivers of glycoprotein binding. **SO6** Resolve morphology and structural signatures before/after S1/HA interactions.	WP1 / T1.1–T1.3; WP2 / T2.1–T2.3	Model PP/PET films prepared; ≥10 candidate formulations; ≥5 stable formulations; ≥3 substrate classes treated; adsorption/desorption kinetics dataset established; surface chemistry dataset established; AFM and GI-SAXS/GI-WAXS signatures resolved; procedures for interaction studies established	M0–M30
RQ2. Which transferable physicochemical and structural descriptors best explain and predict glycoprotein interaction phenomena and antiviral performance on porous fibrous PPE?	**H2.** A compact but information-rich descriptor set integrating surface chemistry, charge, wetting, morphology, structure and coating integrity under ageing/leaching conditions can predict antiviral outcomes across porous PPE substrates and support rational candidate down-selection.	**SO3** Deposit BCCs on model and real PPE substrates and assess coating reproducibility, stability and desorption behaviour. **SO4** Quantify interfacial interaction kinetics and binding selectivity. **SO5** Resolve surface-chemical drivers of glycoprotein binding. **SO6** Resolve morphology and structural signatures. **SO10** Define and validate descriptor matrix linking coating chemistry, structure, interfacial behaviour and PPE performance.	WP1 / T1.3; WP2 / T2.1–T2.3; WP4 / T4.2	Stability/desorption dataset completed; descriptor set includes ζ-potential, SFE/wetting, XPS/ToF-SIMS chemistry, AFM morphology, GI-SAXS/GI-WAXS structure; validated descriptor matrix produced; PPE metrics integrated (ΔP, filtration/barrier properties)	M3–M36
RQ3. Can descriptor signatures be quantitatively linked to infectivity reduction to establish a predictive performance framework that accelerates candidate down-selection?	**H3.** Optimised BCC-coated PPE prototypes will retain antiviral efficacy after realistic ageing, reuse and decontamination scenarios, while preserving key PPE performance metrics and meeting in vitro safety/biocompatibility criteria.	**SO7** Demonstrate antiviral efficacy on surrogate enveloped viruses, validate on influenza A (H1N1), and confirm top-performing candidates on SARS-CoV-2. **SO8** Evaluate functional performance of prototype masks. **SO10** Define and validate descriptor matrix. **SO11** Assess durability, reuse/disinfection compatibility, recyclability potential, practical safety and retention of PPE quality. **SO12** Evaluate safety and biocompatibility of BCC suspensions and coated PPE materials.	WP3 / T3.1–T3.4; WP4 / T4.2; WP5 / T5.1–T5.3	Surrogate-virus dataset generated (phi6, MHV); validated efficacy dataset on influenza A (H1N1); final SARS-CoV-2 confirmation for top candidate; VFE according to EN 14683 approach; ageing/disinfection dataset completed (MV/O_3/UV); retention of key PPE properties verified; cytotoxicity and ISO 10993-5/-12 extract-based assessment completed	M6–M36
RQ4. Can inverse molecular docking generate robust mechanistic hypotheses that guide formulation optimisation and improve translation from model films to real textile PPE?	**H4 (central hypothesis)**. Antiviral performance on real PPE can be predictively engineered through precise control of interfacial chemistry, colloidal architecture and durability of bioactive coatings on fibrous textile substrates, supported by inverse molecular docking and experimental validation.	**SO4** Quantify interfacial interaction kinetics and binding selectivity. **SO6** Resolve structural signatures before/after glycoprotein interactions. **SO7** Demonstrate antiviral efficacy on relevant viral systems. **SO9** Develop inverse molecular docking workflows and integrate them with experimental descriptor evidence. **SO10** Define and validate descriptor matrix linking chemistry, structure, interfacial behaviour and PPE performance.	WP2 / T2.1, T2.3; WP3 / T3.2–T3.4; WP4 / T4.1–T4.2	Docking protocol established; ranked candidate list produced; mechanistic hypotheses generated; experimentally supported docking–descriptor correlation achieved; contribution to finalist down-selection and formulation optimisation demonstrated	M9–M36

Osnovni elementi projektne prijave: 23.1.

Shematski prikaz koncepta



23.2. State-of-the-art in the proposed field of research and survey of the relevant literature

- ✓ Pregled stanja raziskav (poudarek zadnjih 5 let).
- ✓ Izpostavi vse podobne koncepte in jasno definiraj, kje si ti korak naprej od stanja raziskav.
- ✓ Izrecno izpostavi inovativnost.

IZVIRNOST PROJEKTA

Trenutno stanje raziskav (*angl. State of the art*) ter **presežek** trenutnega stanje raziskav (*angl. Beyond state of the art*).

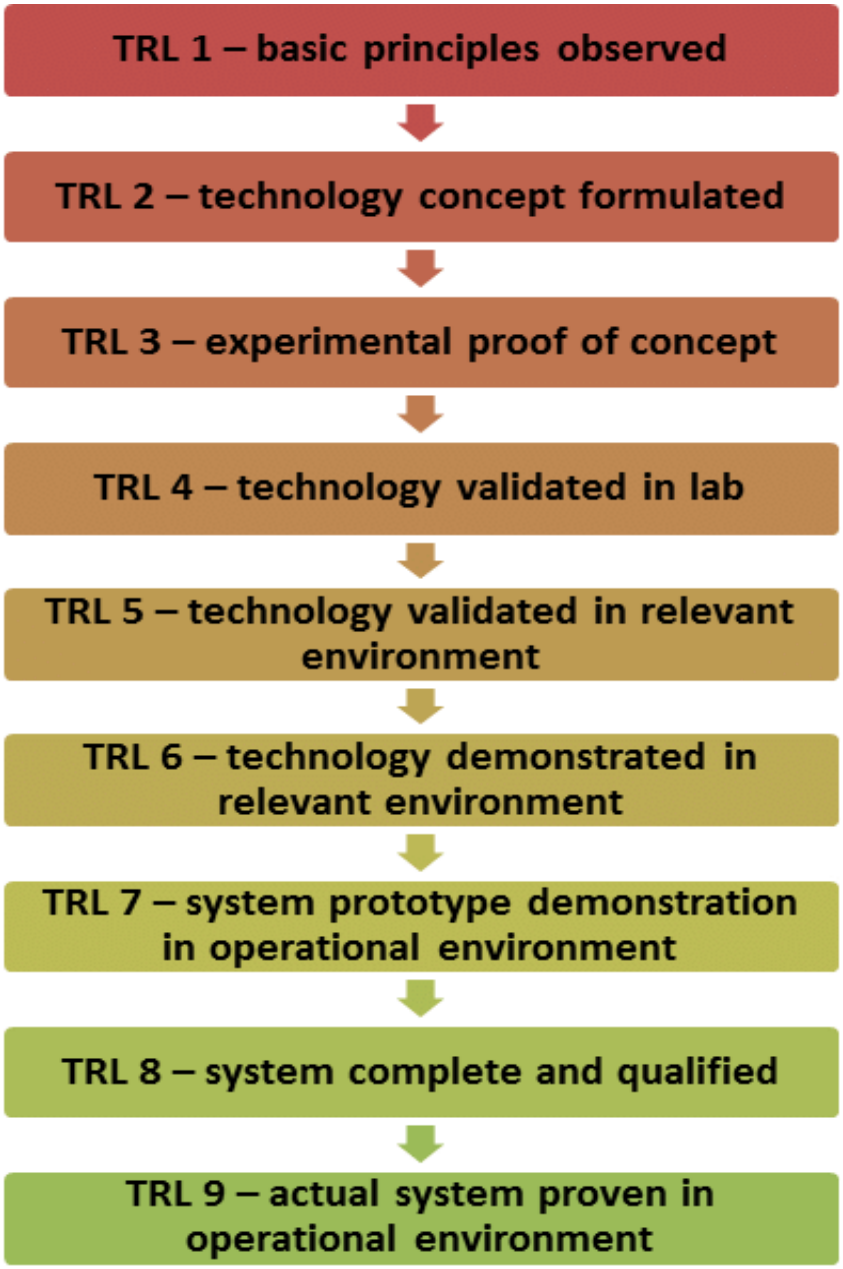
Slednje je izrazitega pomena, saj nakazuje **inovativnost**:

- (pregled literature, patentov, zaključenih in sedanjih projektov na to temo, vzpostavljenih tehnologij, tržnih izdelkov, itd.; ″Proquest Dissertation & Theses″, ″SAGE Journals″, ″Science Direct″, ″Wiley Online Library″ in ″Springer Link″..)

TRL: TEMELJNI ALI APLIKATIVNI

http://www.najstudent.com/saveti/kako-napisati-predlog-projekta-drugi-deo-272

Osnovni elementi projektne prijave: 23.2.



Osnovni elementi projektne prijave: 23.2.

IZVIRNOST PROJEKTA

Baze po katerih iščemo:

- *http://www.uil-sipo.si/uil/dejavnosti/baze-podatkov/; http://home.izum.si/izum/ft_baze/;*
- *http://www.freepatentsonline.com/*
- *https://si.espacenet.com/*

Web of Science

Engineering Village 2

ScienceDirect

ProQuest

Virtualna knjižnica Slovenije COBISS Virtual Library of Slovenia

Europäisches Patentamt European Patent Office Office européen des brevets

TRL: TEMELJNI ALI APLIKATIVNI

pr[illegible]ektov j[illegible] pomemben-EU projekti:

- **https://cordis.europa.eu/projects/en**
- **http://www.eurekanetwork.org/eureka-projects; itd.**
- **trg.**

http://www.najstudent.com/saveti/kako-napisati-predlog-projekta-drugi-deo-272

Osnovni elementi projektne prijave: 23.2.

Stanje raziskav in preko stanja raziskav

R2R MANUFACTURING OF BIOANALYTICAL DEVICES	
State-of-the-art	**Progress beyond the state-of-the-art**
Complete production chain for bioanalytical microdevices	
• So far usually sequence of batch processes (mainly injection molding or hot embossing followed by back end processing) • Only few industrial production sites for high-throughput fabrication of complete, microfluidic devices, incl. biofunctionalization, bonding, etc. (e.g. SonyDADC) • Larger number of smaller companies producing specialized chips in comparably low numbers (e.g. microfluidic chip shop, ThinXXS, ibidi, etc.) • R2R: only single process steps shown so far in R&D (e.g. MKFluidics, FIN)	• Integrated process chain for bioanalytical devices based on R2R – NIL (O10-11) • Imprinting throughput: > 5.000 chips/h (or 20 m²/h, large area manufacturing) (O8) • Design rules for R2R manufacturing of microfluidics "design for manufacturability (DFM)" • Development Cycle: Design/Simulation → batch prototyping → R2R upscaling • in-line QC measures integrated (O12)
R2R-NIL process development	
• Sol-Gel shims shown for extrusion coating and injection molding (Inmold)[1] • Mostly expensive and delicate Ni-shims used • So far main efforts for pushing resolution limits to nanoscale[2], length scale integration (nm-µm) and deep channels were hardly addressed.	• Durable Sol-Gel based shims for R2R-NIL processes (O2) • Design flexibility due to polymer shims • Length scale integration by simultaneous imprinting of nano (sub-µm) and up to 100 µm patterns (O5) • Chemical contrast by residual-free UV-NIL • Wetting contrast due to nanotopography • Combined R2R HE – and UV-NIL
R2R equipment design, construction, and manufacturing	
• EVG® 750R hot embossing tool • R&D R2R pilot lines potentially suitable for biochips are currently installed at VTT (HE), JR (HE & UV-NIL) • Current industrial R2R imprinting equipment mainly for relatively simple optical microstructures in security applications (Kurz (DE), Stensborg (DK), Hueck (AT), etc.)	• Integrated printing, UV-NIL and HE pilot line incl. further complementary process steps (O2) • Concepts for integrated R2R manufacturing lines • Data on prod. yield, accuracy, bottlenecks, etc. (• Design rules for R2R equipment • Established QC–concept (in-line QC for 100% testing) (O12)
Functional NIL Materials/ Resist Systems	
• Various R2R UV-NIL resist prototypes available (MRT), but without biofunctionalization • PUA Resist: fast crosslinking kinetics, good embossing characteristics (AT-Pat. filed by JR) • Thiol-En Resists e.g. Norland Optical Adhesives® NOA81, NOA63,… (fast crosslinking kinetics, high aspect ratios) [3,4]. • Polyurethane-methacrylates(PUMA): e.g. DYMAX Inc. 140-M medical/optical adhesive® fully biocompatible, USP class IV certified) [5,Napaka! Zaznamek ni definiran.]	• Directly biofunctionalizable R2R UV-NIL resist (O1) • Residue free R2R UV-NIL resist • Up-scaling of R2R NIL resist synthesis to > 100 L • High durability SOG shim coating materials and processes for R2R –HE (O2)
Biofunctionalization methods	
• Non-patterned silane or plasma based modification of polymer devices (Eppendorf, PolyAN, SonyDADC, etc.); EP1847316, EP 2252410, WO2009066275, etc.	• High resolution patterned functionalization of microchannels by high throughput printing in combination with chemical/wetting contrast pattern (O7)

- Razdelati vsebinska področja glede na namen in TRL/razpis (članki, patenti, trg, primer dobrih praks)

- Seznam virov dodati z jasnim sklicem na vire

Pregled projektov

PROJECT	TOPIC/AIM	DIFFERENCES
HORTIBIOPACK	- Biodegradable polymer PLA. - Active antimicrobial coatings added on the PLA film (e.g zeolites). - Equilibrium Modified Atmosphere Packaging (EMAP) for fruits (peaches) and vegetables (cherry tomatoes) were determined experimentally.	Active coating formulation Target food Higher TRL
NANOBARRIER	- PLA, PET and MFC (microfibrillated cellulose). - The sensors can be in the form of nanoparticles or nanocapsules printed or painted on the food package or thermo-sensitive tags. The sensors irreversibly react on the pH changes and humidity inside package, resulting from the food decay, or temperature changes during improper storage.	Active coating established Higher TRL
ISA-PACK	- Polyhydroxybutyrate (PHB) copolymer materials - Intelligent indicator system that may be printed directly onto packaging materials	Basic material Active coating formulation Higher TRL
SUSFOFLEX	- PLA, PP/PE packaging. - Electrical sensor materials. - Smart functions can be made by using natural additives, filler and nanomaterials (natural antioxidant extracts, cellulose-based bionanocomposite, nano-silicates, edible nanolaminate coatings), by PLA films, and by developing nanomaterials based sensor array that can gain information on the condition of the product (e.g. freshness). -The sensor array was to be tailored for certain type of applications, e.g. sensing micro-organisms (biological sensor) or gases present (chemical sensor) in the package.	Basic material Active coatings formulation Higher TRL

- **pregled projektov je zelo pomemben pri analizi stanja raziskav: zavisi od razpisa; lahko naredi vtis na recenzenta!**
- **https://cordis.europa.eu/projects/en**

Search Funding & Tenders (europa.eu)

- **Definiraj projekt, program, šifro, kratek opis in razlike!**

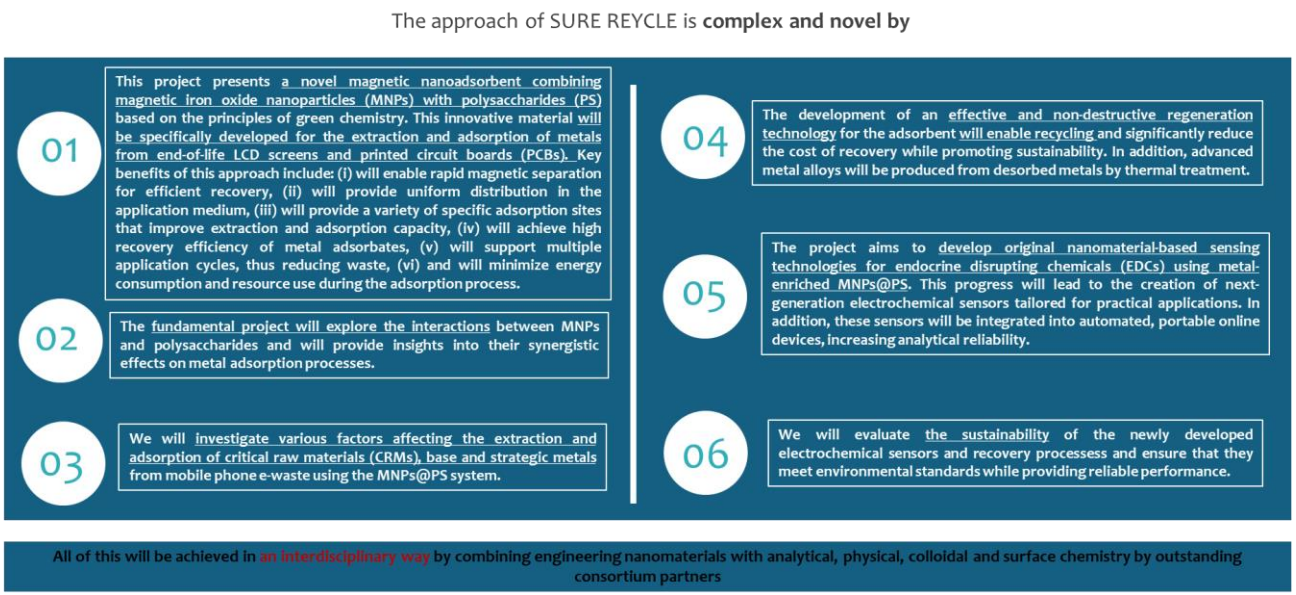
Osnovni elementi projektne prijave: 23.2.

Research dimension	Current SOTA	Main gaps / limitations	Proposed advance / beyond SOTA	Representative literature
Antiviral PPE coatings; dominant material classes	Most reported antiviral PPE coatings are based on metal or metal-oxide nanoparticles, synthetic polymers, graphene-related systems, and photocatalytic surfaces. These systems aim to inactivate viruses while preserving the barrier function of PPE.	The field is dominated by inorganic or synthetic systems. Sustainability, long-term compatibility and integrated multifunctionality remain limited.	The project shifts the focus toward hybrid bio-based colloidal coatings composed of natural polymers, peptides/glycoproteins and polyphenols, while retaining application relevance for PPE.	26,32–34
Bio-based antiviral compounds	Chitosan and its derivatives, fucoidan, carrageenan, lactoferrin, catechins, tannic acid and related natural compounds have shown antiviral activity against coronaviruses and/or influenza viruses.	Most natural compounds have been studied individually. There is little systematic work on synergistic multi-component coating formulations applied to PPE materials.	The project develops multifunctional hybrid formulations that intentionally combine polysaccharides, peptides/glycoproteins and polyphenols in one antiviral coating platform.	35–38
Influenza A-focused antiviral systems	Anti-influenza systems include metallic coatings, hydrophobic polycations, nanogels, chitin/chitosan systems, tannic-acid filters and selected natural extracts.	Most studies report isolated antiviral effects, not multifunctional colloidal coatings. Mechanistic evidence is often partial and difficult to generalize to practical PPE surfaces.	The project introduces multifunctional colloidal coatings for H1N1-relevant systems and studies them at the protein (HA and HA1 subunit), surface and *in vitro* levels.	39–41
SARS-CoV-2 protein-level understanding	Available studies have investigated polysaccharides, neutralizing antibodies, ACE2-related interactions, heparin binding and docking-based evaluation of selected inhibitors against spike-related targets.	Direct experimental evidence on how SARS-CoV-2 S protein and the S1 domain interact with functionalized solid surfaces is still scarce, especially for bio-based colloidal coatings.	The project directly investigates S protein and its S1 domain interactions with coated surfaces and links these interactions to coating chemistry, charge, structure and antiviral performance.	42–44
Mechanistic understanding of virus–surface interactions	Most published work relies on endpoint antiviral assays or on isolated mechanistic observations. Only a limited number of studies connect virological results with detailed interfacial analysis.	There is no broadly established framework that links viral glycoprotein adsorption, surface chemistry, nanoscale structure and infectivity reduction.	The project establishes a mechanistically driven framework connecting adsorption kinetics, surface energetics, chemistry, structure and in vitro infectivity.	39,45,46
Advanced surface and structural analytics	Techniques such as QCM-D, XPS, AFM, GISAXS, ToF-SIMS, surface zeta potential and electrophoretic analysis have been used for selected proteins and virus-related systems.	These methods are usually applied separately, not as one integrated design-to-function toolbox for antiviral PPE coatings.	The project combines interaction analysis, surface chemistry and structural characterisation into one coherent platform for rational coating design.	47–51
Predictive design tools	Molecular docking is increasingly used to predict antiviral potential of polyphenols, polysaccharides and other inhibitors, mainly in solution-phase or molecular inhibitor contexts.	Docking is underutilized in conjunction with surface science experiments or in rational design of antiviral coating materials.	The project introduces inverse molecular docking linked with experimental validation to predict the antiviral behavior of biopolymer-based coating systems.	43,52
Deposition technologies and translational relevance	Many antiviral surface studies remain at proof-of-concept level and use one selected laboratory deposition route without broader technology comparison.	Scalable comparison of coating technologies for hybrid bio-based antiviral PPE materials is largely missing.	The project compares spin coating, screen printing and electrospraying as deposition routes for advanced antiviral coatings and links fabrication to function.	33,53
Existing EU projects on this topic with ID	NANO-PROTECT (101109383); SMARTPRO (607295); IFREACT (285034); SUSAAN (GA 101057988), MIRIA (GA 101058751); Triple-A-COAT (GA 101057992); RELIANCE (GA 101058570) and NANO-PROTECT (GA 101109383)	Projects primarily focus on the development of durable, safe and scalable antiviral/antimicrobial coatings, optimisation of material formulations, and validation of performance on relevant substrates, with strong emphasis on sustainability, industrial applicability and standardisation. While they successfully demonstrate coating efficiency and application potential, their approaches are largely material-driven and based on empirical optimisation.	***INTERVIR*** goes beyond the current state of the art by establishing a mechanism-informed and predictive design framework for antiviral PPE textiles. Its key advantage lies in linking coating chemistry, interfacial descriptors and surface functionality with viral glycoprotein binding signatures, inverse molecular docking and infectivity reduction on real fibrous PPE substrates. This enables the transition from empirical coating development to rational, descriptor-driven design of antiviral materials, providing transferable design rules for next-generation protective textiles with controlled performance, durability and safety.	EU CORDIS DATABASE
Prior expertise of the proposing team	The team has already demonstrated expertise in polysaccharide-rich interfaces, surface functionalisation, colloidal systems, advanced coatings, antiviral materials and complementary analytical characterisation.	Existing know-how has not yet been fully integrated into one antiviral PPE platform addressing both mechanism and application.	The project builds on this strong internal platform and integrates materials design, surface analysis, virology and predictive modelling into one interdisciplinary concept.	54–60

Osnovni elementi projektne prijave: 23.2.

- Jasno izpostavimo novosti in original prispevek

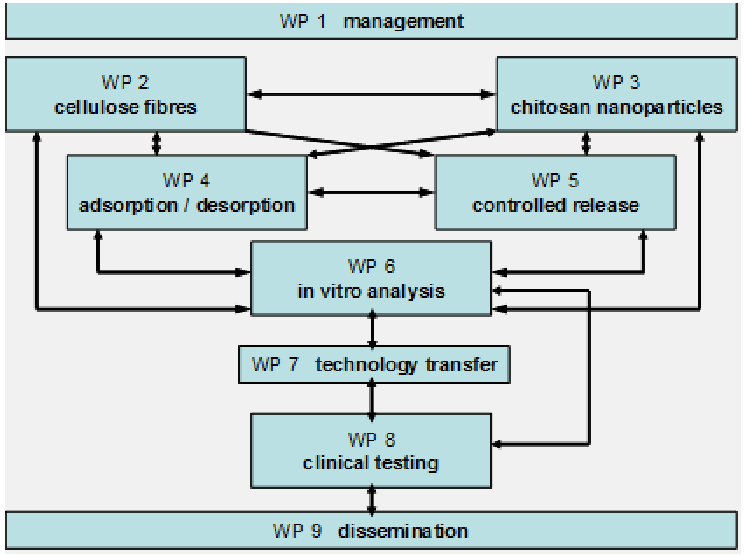
Description of the expected degree of originality or scientific innovation of the project

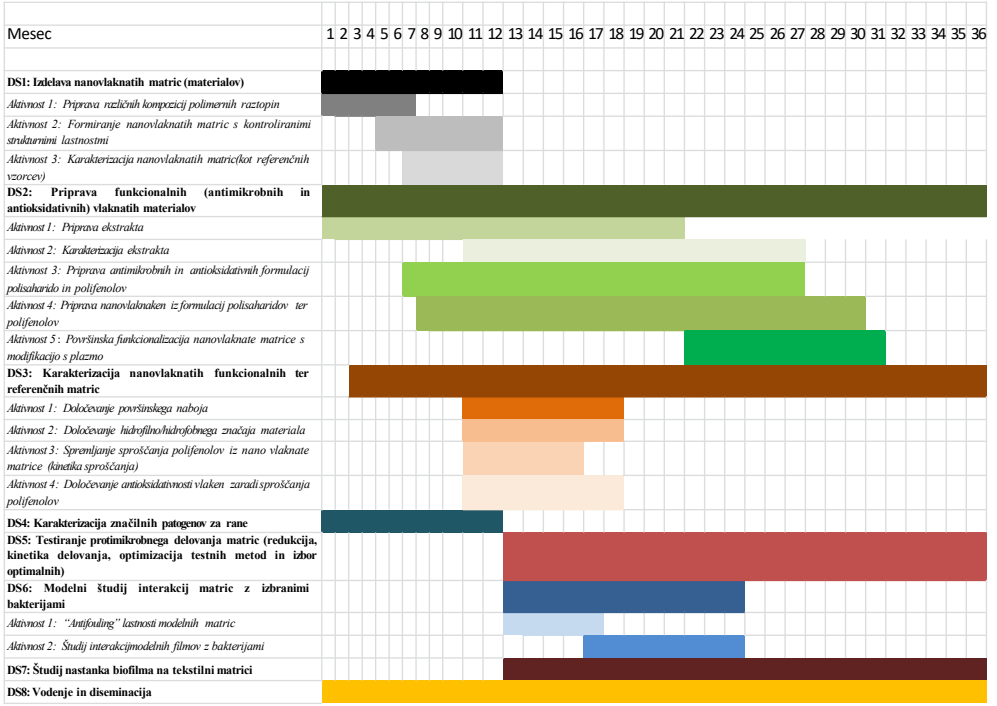


23.3. Detailed description of the work programme

- Razvoj dogodkov v obliki akcijskega plana; DS.
- Posamezne akcije podrobno razdelamo, določimo partnerje, ki bo specifične aktivnosti izvajal ter časovnice (v skladu s specifičnimi cilji).
- Za vsak delovni sklop podamo predvidene rezultate (indikatorji rezultatov), kakor tudi mejnike (kontrolne točke); lahko tudi tveganja (ali pa v ločeni tabeli).
- Pri planiranju aktivnosti imejmo v mislih kategorijo upravičenih stroškov, kajti le tako bodo stroški naših aktivnosti povrnjeni s strani programa in projekt odobren.

Osnovni elementi projektne prijave: 23.3.





Sosledje opisa:

- Povzetek aktivnosti;
- Pert diagram
- Gantt in kritična pot
- Tabela mejnikov in rezultatov delovnih sklopov

Osnovni elementi projektne prijave: 23.3.

Specifikacija posameznega DS oz. WP
Opis konkretnega raziskovalnega dela in vlog

WP number:	02		
WP title:	**Effective antimicrobial/antioxidant nano-coated PLA/starch composite material for package design**		
Leader:	Petru Poni Institute of Macromolecular Chemistry (PPIMC), Institute of Excellence of the Romanian Academy (Petru Poni)		
Partners involved:	UNI MB,UL BF, ICEFS, IPM		
Start date	Month 8	**End date**	Month 15
Objectives:	Development of polymeric active materials with embedded evaluated natural antimicrobial and antioxidant agents		
Type of activities:	Applied Research		
Description activities * responsible partner	• Strategies to produce active materials as mono- and multi-layers with similar properties as conventional ones: electro- spraying (Petru Poni*, UNI MB, IPM), printing and inkjet deposition (IPM*, Petru Poni) • Characterization of surface properties, coating stability (adhesion strength) and antimicrobial/antioxidant activity with controlled overall migration limit below 10 mg/dm^2 as required by EU legislation rules (UNI MB*, UL BF, IPM, ICEFS, Petru Poni). The release of the bioactive compounds will be followed by using assays such as HPLC, spectroscopic methods, Franz cells and antioxidative assays. • Methods like ASTM E2149-01, 4833 and ISO22196 and advanced molecular methods (real-time PCR) for the antibacterial testing in presence of typical bacteria found in meat will be performed (Salmonella spp., E. coli, Listeria monocytogenes, Bacillus cereus) (UL BF*).		
Expected results and deliverables:	D2.1 Evaluated strategies for the efficient irreversible and controlled bindings (month 12) D2.2 Characterized antimicrobial/antioxidant nano-coated PLA/starch composite (month 14) Results: Optimized procedure for the incorporation of antimicrobial/antioxidant agents onto PLA/starch matrices		
Milestones	**M2 Polymeric active food contact materials with incorporated natural antimicrobial/antioxidant agents (month 15)**		

WP2 – DEVELOPMENT AND VALIDATION OF THE MULTIPHYSICS STENT-ARTERY-BLOOD MODEL

Lead partner: FME-Design **Participants:** FM, UMC, UniZagreb **Start:** 2nd month **Duration:** 8 months

Objectives:

O2.1: Development of the constitutive model of the stent.

O2.2: Adaptation of the computational model of the femoral artery and blood flow.

O2.3: Development of the multiphysics computational stent model accounting for fully coupled stent-artery-blood interaction.

O2.4: Validation of the multiphysics computational stent model based on angiography data.

Preliminary results: Computational simulation of blood flow through aortic heart valve and the flow through coronary arteries has already been performed using the power-law model (Stroj. Vestn. – J. Mech. E., 2012 [7]). This will contribute to establishing the complex computational model of blood flow in a stent-artery problem. We have also already established the preliminary processes for digital twining and fully coupled fluid-structure interaction.

Activities:

A2.1: Determination of the stent's mechanical properties: To determine the stent's main mechanical properties in **WP1**, several experimental tests will be performed using a universal tensile/compression testing machine to determine the longitudinal stiffness and flexibility: tension, compression and bending. Special care will be taken to determine the stent's radial stiffness, for which special fixtures will be developed. Two different stent lengths will be considered to account for the influence of the length on the stent's mechanical properties. The mechanical properties of single stent wires will be further analysed by tensile tests.

A2.2: Development of the stent's digital twin: We will build the representative non-linear 3D finite element model. The geometry of tested stents will be virtually reconstructed using the micro-computed tomography (microCT) and own developed codes in MATLAB or Fiji/ImageJ. The mechanical properties obtained in A2.1 will be used to develop the stents' elastoplastic constitutive model. Additional required mechanical properties will be determined by complex inverse engineering using genetic algorithm optimisation, applying the commercial (Ansys) and in-house developed codes.

A2.3: Adaptation of the artery and blood models: The up-to-date available soft tissue computational models of the femoral artery will be adopted and extended according to the angiography in **WP1**. Computational fluid dynamics models for a non-Newtonian fluid description will be analysed and evaluated for further application in fluid-structure interaction (FSI) models. A general power-law rheological model will be tested together with other non-Newtonian blood rheological models. This will ensure an accurate and reliable evaluation of blood flow and shear stresses. The validated rheological models will then be implemented into the Ansys CFD software.

A2.4: Development of the fully coupled stent-artery-blood interaction model: The new complex 3D stent model (A2.2) and tailored artery and blood models (A2.3) will be combined within an advanced non-linear 3D computational model accounting for fully coupled stent-artery-blood interaction (Fig. 8). The sophisticated and computationally intensive model development and analysis will be supported by computer-aided engineering tool Ansys and high-performance computing cluster. Special care will be taken to determine high, and low velocity (recirculation) regions connected with high shear stresses on the artery wall that can strongly impact the stenosis development. Co-operation with UniZagreb, which has extensive experience in computational cross-validation of stent/artery models, has already been arranged.

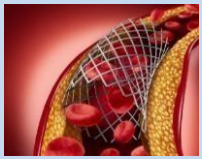


Fig. 8. Schematic of FSI modelling.

A2.5: Validation of the developed multiphysics model: The developed model (A2.4) will be subjected to full-size verification and validation tests based on performed angiography in **WP1** to assure precise determination and description of *in situ* stent conditions.

Applied methods: finite element method, finite volume method, computational fluid dynamics, computed tomography, supercomputing.

Milestones:

M2.1: Extensive experimental mechanical characterisation of the stents.

Tveganja

Description of risk	WP involved	Proposed risk-mitigation measures
Low Stability and non or limited (synergistic) functionality of NPs` dispersion	1	Stability may be improved through higher charging of dispersion (manipulation of pH) or by steric stabilisation, whilst functionality may be improved with substrates` concentration manipulation and changing of NPs` way of synthesis
Low or no loading agent incorporation in colloidal systems, resulting in low or no release/activity	1	Introduction of miscible apolar solvents in the polar (aqueous) environment, allowing control over drug solubility and, thus, diffusion in the core of the nano- and micro-carriers
Low affinity of functional colloidal coatings to model material surface, and hence, weak attachment and low stability	2	Introduction of crosslinkers (glutaraldehyde, etc.) for covalent binding of the functional colloidal systems to the activated implant surfaces
QCM with SPR mode (QCM-SPR) could not be acquired; precise dry masses of adsorbed SARS-CoV-2 Spike S1 cannot be determined	2	The QCM data obtained using the adsorption experiment will be used for the calculation for the protein quantity
Low adhesion of SARS-CoV-2 Spike S1 protein on model surfaces coated with functional colloidal formulations	1, 2	Increase of cationic functional groups on the surface by increasing the amount of adsorbed functional colloidal formulation by layer-by-layer deposition of several layers. Exchange of the cationic polymers for bioparticle formation with ones of higher cationic charge density.
Insufficient antimicrobial and antiviral activity of the functional colloidal systems and multifunctional coatings	1, 2, 3	Increasing the drug load in the colloidal systems by increasing the drug concentration or changing the drug type. Increasing the cationic charge density of the nano- and micro-carriers by attachment of an additional cationic biopolymer layer or by changing the biopolymer type with a high charge density one.
The results of relevant tests (e.g. antiviral activity) on the final medical face mask propotype may differ from those of the individual mask layers	1, 2, 3	Increase the amount of deposited multifunctional nanocoating by different deposition methods, but due to porosity, the correlation between the applied formulation and breathability is to be found.
Cytotoxicity is too high	1, 2, 3	Exchanging the cytotoxic component in the multifunctional coating with a component of lower toxicity
Model predictions out of sync with experimental data	4	Identification of single input parameters responsible for the largest deviation from experimental results. Repetition of the experimental characterisation of the selected parameter. If required, exclusion of the parameter

Jasno opredeljena tveganja z rezervnimi scenariji, konkretno povezana s DS in organizacijo in vodenjem

Feasibility

Project feasibility

0082, P2-0098, P2-0424, P2-0118, P2-0438, P2-0046, P4-0121. Moreover, this research proposal is timely as it is complimented by on-going EU projects. For example: the packaging material and photonic edible barcodes are under development in the FoodTraNet project, WASTELESS covers the whole strategy, legislation of waste including food waste, while migration studies and safety assessments of packaging materials, including organic and inorganic contaminants, are included in the currently accepted EMPIR project ScreenFood4Safety. The experience in using plasma technology for decontamination is part of the AgroServ services. Partners are also involved in the METROFOOD-RI infrastructure and EMN Food (European Metrological Network on Food Safety and Sustainability) network, where they can share equipment, experience and knowledge with other partners at the EU and international levels. INTER-PACK activities also align well with the newly established ERA Chair Foodomics (metabolomics in food and nutrition), launched in 2024.

Preliminary results

27.4. Available research equipment over 5.000 €

Naštej opremo vseh partnerjev /tabelorično

Osnovni elementi projektne prijave: 23.4.

27.4. AVAILABLE RESEARCH EQUIPMENT OVER 5.000 €

(Award criteria: Quality and efficiency of implementation and management – BT3)

Results will be achieved with **up-to-date testing methods** and **high-end equipment**. All the necessary equipment for implementing the project is **available on-site**. Thereby the project is entirely feasible within the available funds. The essentia available equipment of the consortium include:

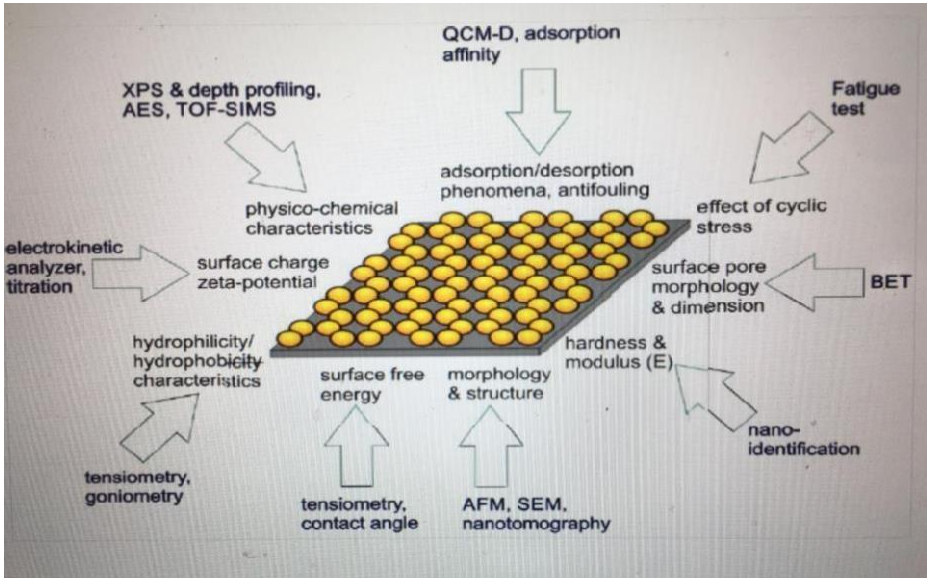
WP1:
Siemens Somatom Drive CT scanner
Philips Affiniti Ultrasound System 70 W
Philips Azurion B20/15 (with Clarity IQ)
GeSiM Bioscaffolder 3.2 3D (bio)printer
ThermoFisher EVOS FL
Leica TCS SP8 lightning
Epredia CryoStar NX 50

WP2-WP4:
Tinus Olsen electromechanical testing machine H10KT
Perkin Elmer Dynamic Mechanical Analyzer DMA 8000
Zeiss XRADIA 620 NanoCT
3D stereo-microscope Keyence VHX 7000
High Performance Computing (HPC) system MAISTER
Software: MATLAB, SOLIDWORKS, Ansys, LS-DYNA
Micro Materials nanoindentor NanoTest Vantage
HAAKE MARS Rheometer

WP5:
2x IRNAS VitaPrint 3D (bioprinter)

WP6:
Zeiss XRADIA 620 NanoCT
Zeiss Scanning Electron Microscope FE-SEM Supra 35 VP
Jeol Scanning Electron Microscope JSM-7900
DataPhysics Goniometer OCA 35
Anton Paar Rheometer SurPASS 3
Anton Paar Particle size analyser Litesizer
METTLER TOLEDO Titrator DL53
Kratos Supra+ XPS device for surface analysis
IONTOF M6 ToF-SIMS device for surface analysis
PerkinElmer Spectrum 3 NIR/MIR/FIR spectrometer

Due to well-established research activities of participating researchers and dedicated internationalisation and multilateral collaboration with foreign institutions in the past, **further equipment** would be at our disposal **without additional cost** if necessary.



Razpoložljiva oprema

IJS	UL FM	FS UM
Langmuir probe	2 ultramicrotomes Leica ultracut. (Safety Cabinet Class I, Iskra PIO SMBC 183AV)	Quartz Crystal Microbalan QCM; E4 system
Catalytic probe		Titrator Mettler Tolledo D
Optical Emission Spectrometer (OES)	Cell Culture Incubator, HERA Cell, Heraeus/Kendro Model B12	Mini Lyotrap freeze dryin machine, LTE Scientific Lt
Plasma reactor 1200 W, 12.56 MHz	Transmission electron microscope TEM Philips CM100	Spin coater (Polos MCD)
Plasma reactor 15 W, 27.12 MHz	Scanning electron microscope SEM Tescan VEGA3.	Goniometer OCA 35 (Data
Plasma reactor DC 20 kW	Fluorescence microscope Imager Z1 Carl Zeiss with Axiovert software, and structured illumination (ApoTome),	Wide angle Xray Scatterin Small angle Xray Scatterin
Atmospheric pressure plasma jet	Live-cell-imaging chamber and multi-positional object stage for simultaneous analysis at multiple positions in a sample	Perkin Elmer Lambda 900 1020
Drop Shape Analyser Krüss DSA100		Spectrophotometer DATA SpectraFlash SF600
X-ray photoelectron spectroscopy (XPS)		High-resolution Camera A MRc (D)
Secondary Ion Mass Spectrometry (SIMS)	**TIK d.o.o.**	System Spectrum GX (Per Elmer)
Atomic Force Microscopy (AFM)	Surface Analyst™ Model SA2001 BTG LABS	Microscope Axiotech 25 H (+pol); Intensify 50x 1000
	Mecmesin Multitest 1-dv **VectorPro™**	HPLC 1100 Hewlett Packa

Sklic na DS

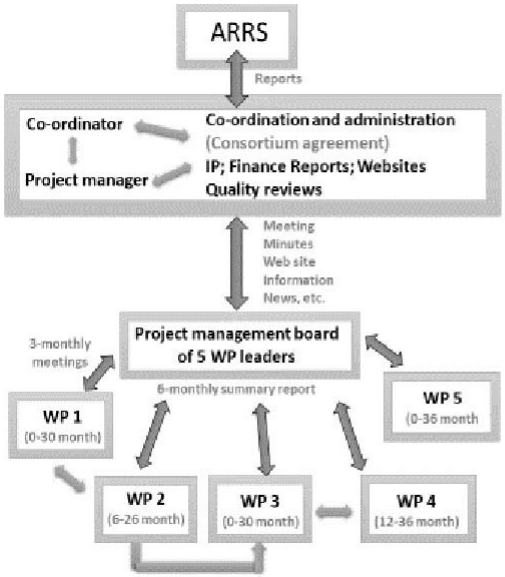
23.5. Project management: Detailed implementation plan and timetable

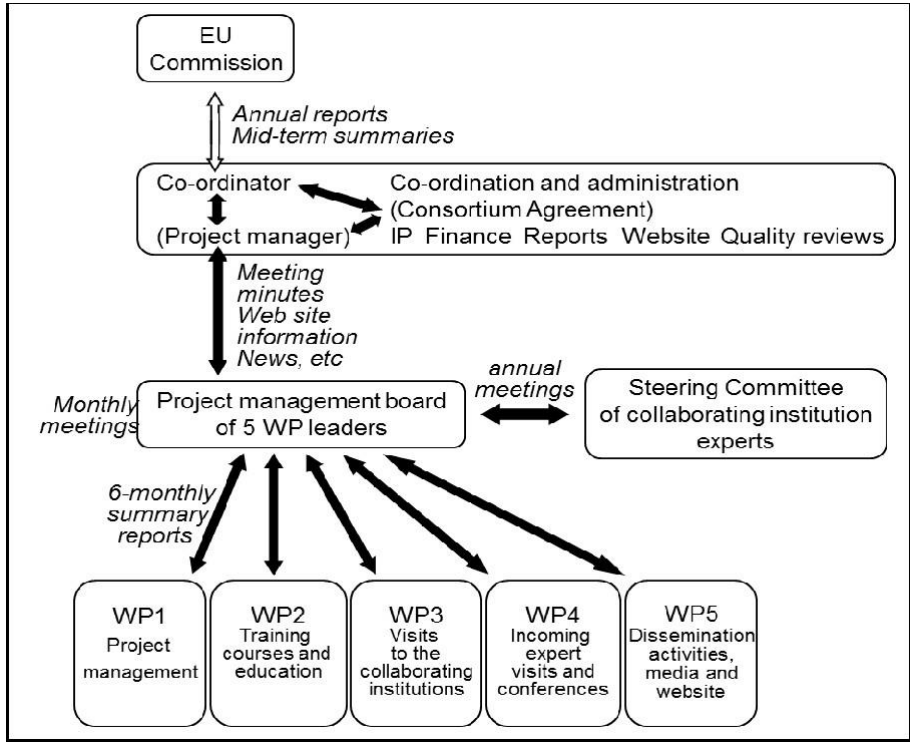
Osnovni elementi projektne prijave: 23.5.

Opis in sestave Konzorcija: Ekspertize; Uravnoteženost, Komplementarnost, Interdisciplinarnost (geografska, veriga vrednosti, znanstvena področja…)

Upravljanje projekta

Organizacijska shema in vodenje (Opis funkcij in odgovornosti); CV koordinatorja, izjemni dosežki !



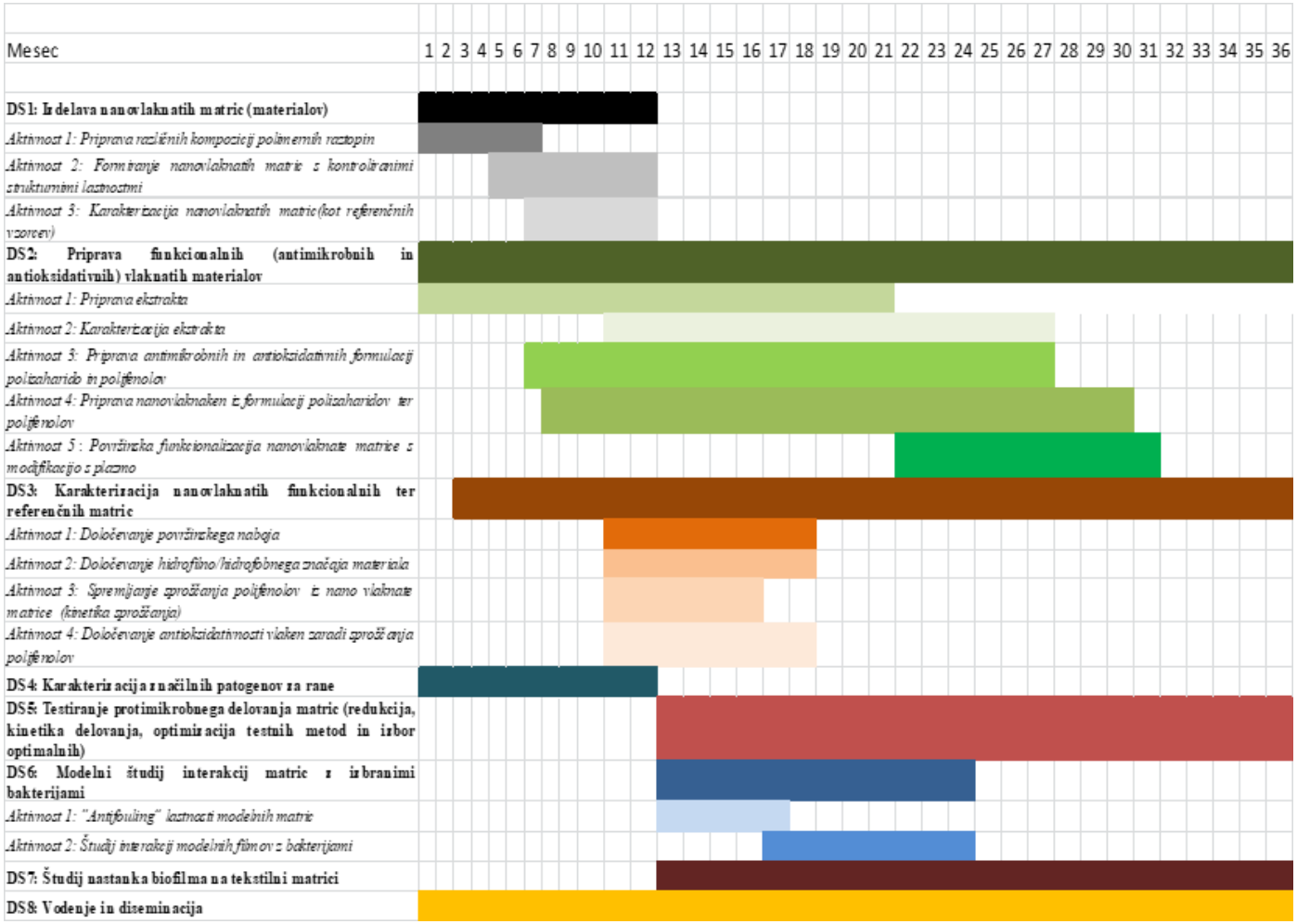


Organizacija: sestanki in način poročanja

LIST OF MEETINGS		
Meeting	**Timing**	**Type**
Project Management (PC, PM, IPR)	monthly	in person or conference call
Consortium/General Board (GB)	every 6 months	in person
Work Package Leaders (WPL)	on demand / quarterly	in person or conference call
Advisory Board (AB)	on demand	in person or conference call

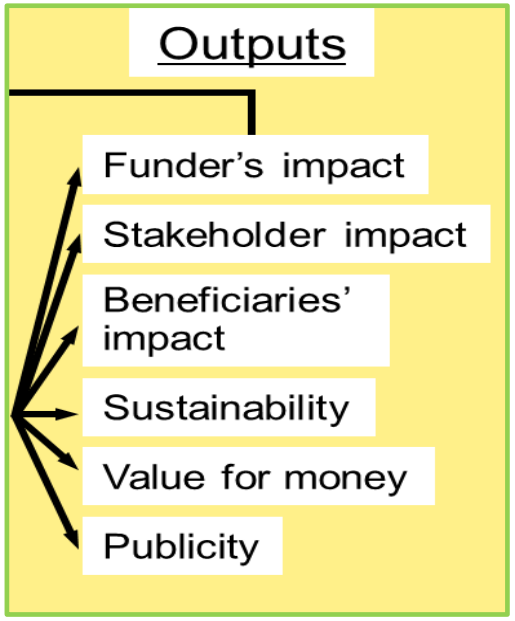
- ***Zajeta dodatna podpoglavja:*** *Decision-making procedures; Communication and reporting procedures; Conflict resolution procedures; Management of Intellectual Property (IPR; Quality assurance procedures; Risk management procedures, Data management ..)*
- *Primeri za slednje: Konzorcijska pogodba , opredelitev IPR pravic in lastnine in opravljanja s njo ter komunikacija v zvezi s tem*

Gantogram


Mesec
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
DS1: Izdelava nanovlaknatih matric (materialov)
Aktivnost 1: Priprava različnih kompozicij polimernih raztopin
Aktivnost 2: Formiranje nanovlaknatih matric z kontroliranimi strukturnimi lastnostmi
Aktivnost 3: Karakterizacija nanovlaknatih matric(kot referenčnih vzorcev)
DS2: Priprava funkcionalnih (antimikrobnih in antioksidativnih) vlaknatih materialov
Aktivnost 1: Priprava ekstrakta
Aktivnost 2: Karakterizacija ekstrakta
Aktivnost 3: Priprava antimikrobnih in antioksidativnih formulacij polisaharida in polifenolov
Aktivnost 4: Priprava nanovlaknaken iz formulacij polisaharidov ter polifenolov
Aktivnost 5 : Površinska funkcionalizacija nanovlaknate matrice z modifikacijo z plazmo
DS3: Karakterizacija nanovlaknatih funkcionalnih ter referenčnih matric
Aktivnost 1: Določevanje površinskega naboja
Aktivnost 2: Določevanje hidrofilno/hidrofobnega značaja materiala
Aktivnost 3: Spremljanje sproščanja polifenolov iz nano vlaknate matrice (kinetika sproščanja)
Aktivnost 4: Določevanje antioksidativnosti vlaken zaradi sproščanja polifenolov
DS4: Karakterizacija značilnih patogenov za rane
DS5: Testiranje protimikrobnega delovanja matric (redukcija, kinetika delovanja, optimizacija testnih metod in izbor optimalnih)
DS6: Modelni študij interakcij matric z izbranimi bakterijami
Aktivnost 1: "Antifouling" lastnosti modelnih matric
Aktivnost 2: Študij interakcij modelnih filmov z bakterijami
DS7: Študij nastanka biofilma na tekstilni matrici
DS8: Vodenje in diseminacija

Vpliv projekta in izidi: vpliv na ciljne skupine

- Pomen za razvoj znanosti oziroma stroke (patenti, članki, konference: po možnosti konkretno s številkami in imeni; mreženje, razvoj novega področja, ved, teorij, zakonov, poglavja knjig, vpliv na izobraževanje-pedagoško delo, itd..).
- Neposredni pomen projekta za gospodarstvo in družbo (tržna rast, konkurenčnost, zmanjšanje obolevnosti...).
- Ekonomski /pomen za partnerje, deležnike, itd (tržne analize in konkretna tržna napoved, dvig konkurenčnosti, zaposlitve).
- Posredni pomen projekta za družbo (staranje prebivalstva, znižanje stroškov finančne blagajne za zdravstvo...).
- Trajnost projekta - finančni vidik, institucionalna raven, politična raven (spremenjena zakonodaja?)
- Večkratni učinek (uporaba v drugem okolju, širitev dosežkov, itd).



Ocenjevalni kriteriji!

Ko projekt pišeš in bereš vedno imej pred seboj ocenjevalne kriterije in preveri ali si na vse odgovoril, kot je treba.

- Vzorec ocenjevalnega lista:

- https://www.arrs.si/sl/progproj/rproj/razpisi/21/inc/1/ARRS-RPROJ-JR-Prijava%202021-Vzorec-temeljni.pdf

- https://www.arrs.si/sl/progproj/rproj/razpisi/21/inc/1/ARRS-RPROJ-JR-Prijava%202021-Vzorec-aplikativni.pdf

Kako pripraviti najboljši projekt? Nekaj smernic!

Osnovna pravila všečnega pisanja in uspešne priprave ter oddaje projekta

- **Načelo:** projekt ne sme biti suhoparen, dati mu moramo človečnost, energijo! Razvidna mora biti inovativnost, reševanje aktualnega problema. Nobene „megle“, evidentno in dokazljivo pisanje. Kratki in jasni **opisi** brez ponavljanja, v pravem zaporedju. (brez dolgovezenja ,itd.)

KAJ PONUJAMO?	↔	KAJ ŽELI SLIŠATI OCENJEVALNA KOMISIJA?
- - -		- -

- **Vizualni izgled** dokumentacije, urejenost dokumentacije, berljivost, natančnost…
- **Ustrezna organizacija** pri pripravi in oddaji projekta!

Prijavo morajo odlikovati:

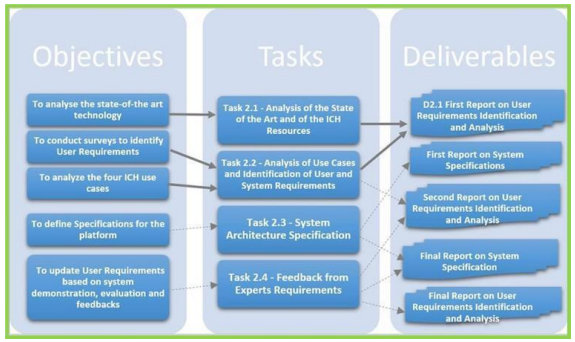
- Celovitost prijave projekta - ključni sestavni deli.
- Skladnost in logična medsebojna povezanost posameznih vsebinskih delov.
- Ustreznost po ocenjevalnih kriterijih.
- Formalna popolnost:

✓ Prijava naj vsebuje izpolnjene prav **vse rubrike** v prijavnici, **v pravem zaporedju**.

✓ Priložene naj bodo vse zahtevane **priloge** (podpisi).

Vsebinska logika projekta

■ **Skladnost in logična povezanost vsebinskih delov projekta:**



- predvideni rezultati uresničujejo zastavljene cilje;

in rešujejo obstoječe probleme / izpolnjujejo potrebe; poznavanje razmer na področju

- predvidene dejavnosti omogočajo dosego rezultatov;
- finančni načrt omogoča izvedbo načrtovanih dejavnosti;
- sestava in usposobljenost ter komplementarnost projektne skupine ter infrastruktura zagotavlja uspešno izvedbo vseh dejavnosti.

Projekt-vsebina

- naslavlja naj pomembna vprašanje,
- vključuje končne uporabnike in strategijo kako jih najti,
- kvaliteten partnerski konzorcij,
- realističen,
- inovativen,
- jasno strukturiran,
- merljivi rezultati,
- odličen povzetek,
- dobra angleščina,
- všečen akronim
- inovativen ter evropsko naravnan.

http://eco-shiftpower.com/wp-content/uploads/excellence-300x199.jpg

Povzetek:

PROBLEM → EVROPSKA POTREBA → INOVACIJA → REZULTATI → VPLIV

Filozofija uspešnega projekta

1. ***Natančno preberi navodila.***
2. ***Ne posplošuj (brez megle). Pisanje z evidentnimi dokazi- sklici na ustrezne dokumente, jedrnato, kratko, itd. Evidentnost čez cel tekst.***
3. ***Preveri vse ocenjevalne kriteriji, ki so na razpolago; izhodišče pri pisanju.***
4. ***Vrhunsko in inovativno raziskovalno delo, dobra oprema ter odličen konzorcij*** *(z predhodnimi izkušnjami).*
5. ***Signifikanten vpliv na celoten EU prostor*** *in na vse deležnike.*
6. ***Impresioniraj evaluatorje z vsebino in izgledom vloge.***
7. ***Jasno so vidne nove rešitve ali nadgradnja obstoječih.***

Na ta način boš kreiral vrhunski projekt, in……

http://www.gettyimages.co.uk/detail/news-photo/vietnamese-prime-minister-nguyen-tan-dung-european-news-photo/499586304

Urejenost teksta

- drug-induced recombination between wheat and alien chromatin
- detailed gene-based marker mapping of a yield QTL on 7AL
- testing a candidate gene for the 7AL yield QTL effect
- association mapping of yield QTL effects on 7AL in common and durum wheats
- testing a candidate gene for *Lr19* in durum wheat
- transfer of *Lr19* alien resistance gene to other wheats using cisgenics
- allelic variation in *Yp* genes amongst alien species
- effectiveness of particle bombardment as a vehicle for alien gene transfer
- effects of *H. chilense* introgressions on durum wheat pigment contents

Other spin-out publications on techniques and integrative aspects of the science are expected.

Aspects of the science developing during the project will also be presented at scientific meetings and through existing EU dissemination platforms, such as the COST Action Tritigen.

We expect aspects of the SMARTWHEAT science to impact beyond the immediate confines of research on wheat. The alien gene transfer technologies using drug-mediated induction of homologous pairing and recombination and particle bombardment are likely to have application in other crop species, not just within the gramineae, where alien gene transfer has a potentially major role to play in improving the crop.

The research proposed for SMARTWHEAT is strongly aligned with several goals of the European Technology Platform 'Plants for the Future' strategic research agenda 2025:

- 1.2.1 Develop and produce sufficient … plant raw materials,
  - deliverable 1.1 – *Diverse and affordable raw material for food*
  - deliverable 1.2 – *Plant raw materials with improved characteristics for producing nutritionally enhanced and more attractive food*
- 3.2.1 Improve plant productivity and quality
  - deliverable 1.1 – *Identify key drivers of plant yield productivity and stability*
  - deliverable 1.3 – *Climatic changes and plant tolerance to non-biotic factors*
- 3.2.2 Reduce and optimise the environmental impact of agriculture

Assuming the same prices and disease incidence/control approaches against leaf rust each year in Spain, employing SMARTWHEAT advances would thus deliver potential annual savings of around €76 million. The same calculations could be done for other European countries where leaf rust is a problem, and for which *Lr19* would provide effective natural resistance. Therefore an effective source of resistance to leaf rust for European wheat varieties could potentially provide economic benefits of *hundreds of millions of euros* every year – a major, and guaranteed impact on Europe's economy.

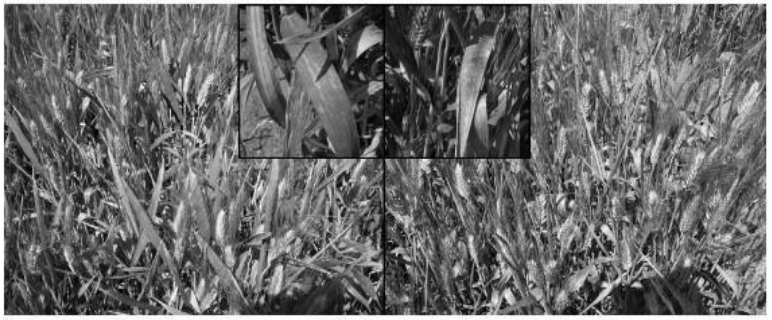


Fig. B3.1.1. Plots of a durum wheat line having a 7Ag terminal segment carrying *Lr19* (left), and the corresponding line without *Lr19* (right). Inset images show typical leaves from the two plots.

The effectiveness of *Lr19* in providing protection against leaf rust is illustrated in Fig. B3.1.1, for trials by P2 in 2007. The year 2007 was a bad year for leaf rust in several regions of Italy, associated with generally high summer temperatures which encourage pathogen development. In the absence of chemical fungicide protectants, micro trials conducted around Italy on advanced breeding lines carrying *Lr19* delivered yields, on average, 66% greater than controls (Table B3.1.1) under heavy rust epidemic (West coast). No yield penalty was observed under mild or absent leaf rust pressure (East coast and North).

Note: I find information easier to assimilate (take in or understand fully) when written in Arial fonts and *not* in Times New Roman fonts.

adapted varieties used as controls (2-3 per locality; control means = 100).

	Localities		
	West-Coast	East-Coast	North
Lr19+ lines vs. controls	166**	101^{ns}	102^{ns}

Nevertheless, these economic impacts would be present only if resistance to the disease is not readily overcome by the pathogen. A major problem for breeders, which discourages many from turning to alien species for sources of disease resistance is the speed and frequency with which single gene resistance can be overcome by the pathogen. Although an average time for disease resistance genes to remain effective is difficult to give, breeders agree that around 5-20 years is a realistic range. However, a strategy to extend the useful

Economic impact

With the dramatic doubling in grain prices during 2007 and subsequent fluctuations that have been a feature of the grain markets so far this season, it will be difficult to quantify the precise European economic benefit of the project. However, the economic consequence of increases in yield delivered through just one of the targeted traits for improvement, disease resistance, would be expected to be significant. A recent CIMMYT quotation [Plant Breeding News, 1 Oct 2006, 1.12] sums it up:

> "Every dollar spent on *all* wheat research at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico, has generated $27 in benefits when measured *only* from the resistance it has produced for *one* disease (leaf rust) in *one type* of wheat (spring bread wheat). This is a benefit of $5.36 billion (in 1990 dollars)."

Pisanje projekta

Kako lahko umetna inteligenca pomaga pri pisanju projektov?

AI pospeši, izboljša in nadgradi vsak korak od ideje do odlične prijave.

AI pomaga pri:

1. Raziskavi in analizi razpisov
Hitra analiza razpisne dokumentacije, identificira ključne zahteve, prioritete EU in ocenjevalna merila.

2. Razvoju ideje in koncepta
Generira ideje, določi cilje, predlaga inovativne pristope in pomaga oblikovati vrednostno ponudbo projekta.

3. Pisanje in strukturiranje vsebine
Ustvarja osnutke besedil (excellence, impact, implementation, work plan...), predlaga strukturo in povezuje vsebino s kriteriji ocenjevanja.

4. Meritve in kazalniki (KPI)
Predlaga merljive rezultate, kazalnike, metode preverjanja in načine monitoringa.

5. Konzorcij in partnerstva
Poišče ustrezne partnerje, kompetence in dopolnilne organizacije v EU.

6. Urejanje, popravljanje in optimizacija
Izboljša slog, jasnost, slovnico, skrajša besedila, uskladi z zahtevami razpisa in poveča kakovost prijave.

Rezultat: boljša prijava, višja kakovost, večje možnosti za uspeh!

Katere platforme uporabiti?

ChatGPT (OpenAI)
Odličen za pisanje, strukturiranje, ideje, razlage, optimizacijo in generiranje besedil.

Microsoft Copilot
Integriran v Word, Excel, PowerPoint.
Pomaga pri pisanju, analizah in vizualizacijah.

Claude (Anthropic)
Zelo dober za kompleksne analize, sintezo informacij in kakovostno pisanje daljših besedil.

Perplexity AI
Hitra raziskava, preverjanje dejstev in iskanje zanesljivih virov za razpise in podatke.

Elicit AI
Odličen za pregled znanstvenih virov, podatkov in stanja umetnosti.

Notion AI
Organizacija vsebin, strukturiranje delovnih paketov, časovnice in sodelovanje.

Zaključek

Umetna inteligenca ne nadomesti strokovne vsebine, temveč okrepi vašo ustvarjalnost, prihrani čas in vam pomaga napisati boljše projekte, ki so skladni z zahtevami EU.

Zlato pravilo

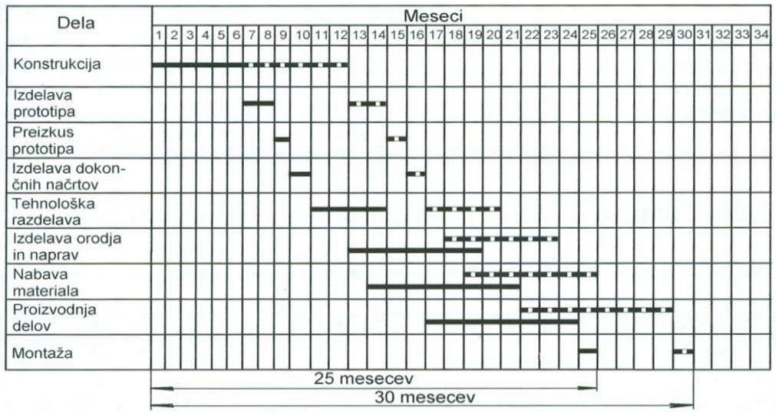
"AI je vaš sovoznik, vi ostajate vodja projekta."

https://ai4health.si/pjum/

Primeri uspešnih prijav

Realizacija ciljev

- Dobro napisani DS in gantogram so osnova za spremljanje realizacije ciljev.



WP number:	02	
WP title:	**Effective antimicrobial/antioxidant nano-coated PLA/starch composite material for package design**	
Leader:	Petru Poni Institute of Macromolecular Chemistry (PPIMC), Institute of Excellence of the Romanian Academy (Petru Poni)	
Partners involved:	UNI MB,UL BF, ICEFS, IPM	
Start date / **End date**	Month 8	Month 15
Objectives:	Development of polymeric active materials with embedded evaluated natural antimicrobial and antioxidant agents	
Type of activities:	Applied Research	
Description activities * responsible partner	• Strategies to produce active materials as mono- and multi-layers with similar properties as conventional ones: electro- spraying (Petru Poni*, UNI MB, IPM), printing and inkjet deposition (IPM*, Petru Poni) • Characterization of surface properties, coating stability (adhesion strength) and antimicrobial/antioxidant activity with controlled overall migration limit below 10 mg/dm^2 as required by EU legislation rules (UNI MB*, UL BF, IPM, ICEFS, Petru Poni). The release of the bioactive compounds will be followed by using assays such as HPLC, spectroscopic methods, Franz cells and antioxidative assays. • Methods like ASTM E2149-01, 4833 and ISO22196 and advanced molecular methods (real-time PCR) for the antibacterial testing in presence of typical bacteria found in meat will be performed (Salmonella spp., E. coli, Listeria monocytogenes, Bacillus cereus) (UL BF*).	
Expected results and deliverables:	D2.1 Evaluated strategies for the efficient irreversible and controlled bindings (month 12) D2.2 Characterized antimicrobial/antioxidant nano-coated PLA/starch composite (month 14) Results: Optimized procedure for the incorporation of antimicrobial/antioxidant agents onto PLA/starch matrices	
Milestones	**M2 Polymeric active food contact materials with incorporated natural antimicrobial/antioxidant agents** (month 15)	

- Gledaš zamike in ukrepaš ter upoštevaš rezervne scenarije pri tveganjih kot tudi pri raziskavah.
- Redna kontrola in sestanki, redno poročanje.

The project will have enormous impact on the field of preventive approaches to the control of COVID-19 through development of **new generation of surgical masks.** In addition to the development of a new generation of more efficient masks, this project also includes the investigations of a possible sterilization for reuse and recycling of the masks as big waste and thus contribute to circular economy.

3) METHODOLOGY and 4) Timetable of research activities.
The research work will be realized through following WPS:
WP1 Development of functional formulation /0-3 months/: T1.1. Preparation of antimicrobial and antioxidant colloidal formulation of polysaccharides (chitosan and its derivates, etc.) polyphenols (resveratrol, catechin), peptides (lactoferrin), without/with addition of functional nanocellulose, without/with addition of TiO_2, ZnO, Ag, zeolites in different ratios, using techniques of nano/microensapsulation, by spraying, ionic gelation and/or coacervation, where polymers/nanofibrililar cellulose will be matrix for embedment of polyphenols or metal nanoparticles. **T1.2**.The prepared formulations will be analyzed regarding size, surface charge, elemental composition, conductivity, surface tension and viscosity as well as antibacterial and antiviral activity on model microorganisms.
WP2. Development of ind-relevant coating technology for textile functionalization /3-6months/: T2.1. *Coating strategy:* developed optimal coatings will be applied onto selective fabrics layers (obtained from Omega Air) used for production of masks (see Concept) by using **spraying, electrospraying and screen-printing** techniques with previously developed protocols for textiles.**T2.2.** *Electrospinning:* variations of electrospinning solution (from WP1) process and environmental parameters will be optimized to yield fibers (as described and shown at Fig.2, point 2) with defined fineness and diameter and obligatory mechanical properties as required for protective masks.
WP3. Physic -chemical characterization of surface coated textiles /2- 16 months/: SEM and AFM imaging will be performed for determination of coating morphology. Elemental composition and interactions will be analysed by XPS, ATR- FTIR and/or Raman spectroscopy. Titration method and zeta potential will be used to follow charging behaviour. Contact angle will be determined for wetting properties and hydrophilicity/hydrophobicity. Protective layers/masks will be tested in accordance to the regulative EN14683-2019 and ASTM F2100-11: bacterial /viral filtration efficiency (BFE) in %; differential pressure, mmH_2O/cm^2; fluid resistance mmHg; particulate filtration efficiency % (PFE); splash resistance pressure (kPa); microbial cleanliness (cfu/g)...Stability of coatings deposition will be evaluated spectrophotometrically by UV-VIS and atomic absorption spectrometry as well as adhesion (nano scratch) testing. The release of extracts/polyphenols from fibre matrices will be studied by UV-VIS, GC-MS. Air permeability, water vapour and water/physical fluid penetration resistance properties of textiles will be assessed in order to evaluate their comfort and functional properties.
WP4. Bioactivity testing, interactions studies with viruses and biocompatibility /2-16 months/:
T 4.1. Interactions with viruses by physico chemical methods: interactions of viral lipids (phospholipid) and proteins (hemagglutinin) and functional selective layer and final mask will be studied through adsorption kinetics followed by a quartz crystal microbalance QCM, zeta potential, as well as AFM. The influence of surface parameters, morphology and chemistry of mask onto adsorption affinity of proteins (of Coronavirus) will be analysed. **T.4.2.** Antimicrobial activity and filtration efficiency of viruses: Model viruses (e.g. bacterial virus, Coronavirus) will be used for evaluation of antiviral activity of the functionalised masks. The activity will be assessed via viral filtration efficiency (% VFE) determination, where only viable viruses that passed the mask will be enumerated. Viruses with different outer characteristics (enveloped, non-enveloped) will be used to extrapolate the applicability of masks to possible other viral outbreaks. Safety, in terms of biocompatibility, of the final mask will be evaluated on human cell line (in line with the standard EN 14683:2019). Only biocompatible materials and masks will be accepted for further applications.
WP5. Prototype and its testing in real environment /12-16 months/: selected and optimally functionalised layers will be attached to each other (prototypes at TRL 5-6) by ultrasonic welding in Omega air; through previous supply and functionalization of masks layers and further tested as in WPs 3-4. Estimation of real application onto market (usability report preparation) will also be done.
WP6 Circular economy concept: reusability and recycling /0-16 months/: T 6.1. Reusability: Procedures and protocols for disinfection of protective masks intended for multiple use will be developed. Research will cover the development of chemo-thermal processes and methods of disinfection with MV, O3 and UV. Disinfection parameters will be evaluated on the properties of protective masks according to disinfection standards and suitability for reuse. The impact of different disinfection methods on the functionality and protective nature of unused masks in comparison with previously used items. **T6.2. Recycling**: to evaluate the end of life of waste (LCA, LCC), biodegradability (standard test) and methods for mechanical and thermal or chemical recycling (hydrolysis, pyrolysis) of waste masks and their transformation into secondary raw materials.

Poročanje

Poročanje: vedno poteka glede na DS.

REZULTATI: objava

- Članki, patenti, konference, delavnice, okrogle mize …..
- Članki: visoki faktor vpliva, izjemni dosežki
- Pazi na objave v odprtem dostopu
- Prenos v pedagoško delo (magisteriji, diplome…)
- Pomembne mednarodne konference
- Diseminacija: delavnice, spletna stran, intervjuji…..

Hvala za pozornost!

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http://static.igre123.com/images/forum/posts/f/fbd0706b2e79ea233dde970c0fd25cff.jpg

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