Ε Λ Λ Η Ν Ι Κ Η Δ Η Μ Ο Κ Ρ Α Τ Ι Α

ΕΙΔΙΚΟΣ ΛΟΓΑΡΙΑΣΜΟΣ ΚΟΝΔΥΛΙΩΝ ΕΡΕΥΝΑΣ
Π. Δ. 432/81
ΤΗΛ: 2610/996660
FAX: 2610/996677
E-mail: rescom@upatras.gr
http://research.upatras.gr

Πάτρα, 15/12/2016

Αριθμ. Πρωτοκόλλου: 33971

Εργαστήριο Συστημάτων Παραγωγής και Αυτοματισμού / Δυναμικής Μηχανών

Τμήμα: Μηχανολόγων και Αεροναυπηγών Μηχανικών, Πανεπιστήμιο Πατρών

ΠΡΟΣΚΛΗΣΗ ΕΚΔΗΛΩΣΗΣ ΕΝΔΙΑΦΕΡΟΝΤΟΣ ΓΙΑ ΥΠΟΒΟΛΗ ΠΡΟΤΑΣΗΣ ΠΡΟΣ ΣΥΝΑΨΗ 53 ΣΥΜΒΑΣΕΩΝ – ΣΥΜΦΩΝΗΤΙΚΩΝ ΙΔΙΩΤΙΚΟΥ ΔΙΚΑΙΟΥ ΓΙΑ ΤΗΝ ΑΝΑΘΕΣΗ ΕΡΓΟΥ

Ο Ειδικός Λογαριασμός Κονδυλίων Έρευνας του Πανεπιστημίου Πατρών σύμφωνα με απόφαση της αρ. 489/ 07-12-2016 Συνεδρίασης της Επιτροπής Ερευνών του Πανεπιστημίου Πατρών, για την υλοποίηση των έργων

Α/Α	ΦΚ	ΤΙΤΛΟΣ ΕΡΓΟΥ	ΦΟΡΕΑΣ ΧΡΗΜΑΤΟΔΟΤΗΣΗΣ	ΛΗΞΗ
1	D.787	FP7 COOPERATION 608855: ROBO-PARTNER: Seamless Human-Robot Cooperation for Intelligent, Flexible and Safe Operations in the Assembly Factories of the Future	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	30/04/2017
2	D.812	FP7 COOPERATION 608604: LIAA: Lean Intelligent Assembly Automation	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	01/09/2017
3	E.282	H2020-RIA (637081): MASHES: Multimodal spectral control of laser processing with cognitive abilities	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	30/11/2017
4	E.297	H2020-RIA(636992): BOREALIS: Borealis – the 3A energy class Flexible Machine for the new Additive and Subtractive Manufacturing on next generation of complex 3D metal parts	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/12/2017
5	E.285	H2020-RIA (636966): ProRegio: Customer-driven design of product-services and production networks to adapt to regional market requirements	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/12/2017
6	E.284	H2020-RIA (636862): ICP4Life: An Integrated Collaborative Platform for Managing the Product-Service Engineering Lifecycle	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/12/2018
7	E.288	H2020-RIA (636692): DIVERSITY: Cloud Manufacturing and Social Software Based Contect Sensitive Product-Service Engineering Environment for Globally Distributed Enterprise	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/01/2018
8	E.287	H2020-IA (637107): SYMBIO-TIC: Symbiotic Human-Robot Collaborative Assembly: Technologies, Innovations and Competitiveness	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/03/2019
9	E.469	H2020-FOF (680567): ComMUnion: Net-shape joining technology to manufacture 3D multi-materials component based on metal alloys and thermoplastic composites	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/05/2019

10	E.476	FP7 CP-IP 608849: EUSMART - EUROC: European Robotics Challenges	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/12/2017
11	E.573	LEGINT:ADVANCING LEGACY MACHINE TOOLS: Leglnt: ADVANCING LEGACY MACHINE TOOLS INTO THE DIGITAL MANUFACTURING CENTURY	FORMTEC INGENIEURG ESELLSCHAF T FUER	01/04/2017
12	E.663	H2020-RIA (723633): FUTURING: Futuring European Industry	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	28/02/2018
13	E.662	H2020-RIA (723616): THOMAS: Mobile dual arm robotic workers with embedded cognition for hydrid and dynamically reconfigurable manufacturing systems	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	30/09/2020
14	E.680	H2020-RIA (723611): HINDCON: Hybrid Industrial Construction through a 3D printing 'all-in-one' machine for large-scale advanced manufacturing and building processes	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	14/09/2019
15	E.659	H2020-RIA (723082): STREAM-0D: Simulation in Real Time for Manufacturing with Zero Defects	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/03/2020
16	E.695	H2020-RIA (723711): MANUWORK: Balancing Human and Automation Levels for the Manufacturing Workplaces of the Future	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/03/2020
17	E.696	H2020- RIA (723737): HUMAN: HUman MANufacturing	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	30/09/2019
18	E.697	H2020-RIA (723777):CONNECTEDFACTORIES: Industrial scenarios for connected factories	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/08/2019
19		VERSATILE (731330): Innovative robotic applications for highly reconfigurable production lines	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	31/12/2019
20		4D HYBRID (723795):Novel ALL-IN-ONE machines, robots and systems for affordable, worldwide and lifetime distributed 3D hybrid manufacturing and repair operations	ΕΥΡΩΠΑΙΚΗ ΕΠΙΤΡΟΠΗ	36 μήνες από την υπογραφή της σύμβασης

που χρηματοδοτούνται από την Ευρωπαϊκή Επιτροπή στο πλαίσιο των δράσεων FP7 και HORIZON 2020, με Επιστημονικό Υπεύθυνο τον Γεώργιο Χρυσολούρη, Ομότιμο Καθηγητή του Τμήματος Μηχανολόγων και Αεροναυπηγών Μηχανικών, του Πανεπιστημίου Πατρών, προτίθεται να προβεί στην ανάθεση έργου ως κάτωθι:
Ερευνητική δραστηριότητα και συμμετοχή στην υλοποίηση των έργων του ανωτέρω πίνακα, όπως αυτά περιγράφονται στο Παράρτημα Ι της παρούσας πρόσκλησης.
Η ανάθεση στα επιμέρους έργα θα πραγματοποιείται σύμφωνα με τις ανάγκες υλοποίησης των έργων και το χρονοδιάγραμμα των δραστηριοτήτων τους, κατόπιν εισηγήσεων της επιτροπής αξιολόγησης.
Παρέχεται η δυνατότητα ανανέωσης της σύμβασης, σε περίπτωση επέκτασης του φυσικού ή οικονομικού αντικειμένου του έργου.
Δ**ιάρκεια σύμβασης/συμφωνητικού**: Θα ορίζεται ανά ανάθεση/ έργο σύμφωνα με την εισήγηση της επιτροπής αξιολόγησης με δυνατότητα ανανέωσης
Επιθυμητός χρόνος έναρξης εκτέλεσης έργου: 01/01/2017

Προτάσεις υποβάλλονται από υποψηφίους που πληρούν τις κάτωθι προϋποθέσεις:

1. Ιδιαίτερα έμπειροι ερευνητές: 9 θέσεις

- Προσόντα:

1. Πτυχίο ΠΕ Πολυτεχνικής Σχολής ΑΕΙ της ημεδαπής ή της αλλοδαπής
2. Διδακτορικό δίπλωμα
3. Μεταπτυχιακό δίπλωμα
4. Γνώση αγγλικής γλώσσας
5. Εμπειρία με συμμετοχή σε ερευνητικά έργα συναφή και σχετικά με το υπό ανάθεση έργο
6. Επιστημονικές δημοσιεύσεις

- ΒΑΘΜΟΛΟΓΙΑ ΚΡΙΤΗΡΙΩΝ

Α/Α	**Κριτήριο**	**Σημαντικότητα Κριτηρίου**	**Βαθμολόγηση (σε αριθμό μορίων)**
1	Πτυχίο ΠΕ Πολυτεχνικής Σχολής ΑΕΙ της ημεδαπής ή της αλλοδαπής	η μη πλήρωση του κριτηρίου 1 καθιστά την πρόταση απορριπτέα ON/OFF	ON/OFF

2	Διδακτορικό δίπλωμα		10
3	Μεταπτυχιακό δίπλωμα		5
4	Γνώση αγγλικής γλώσσας	Καλή Γνώση: 3 Πολύ Καλή Γνώση: 4 Άριστη Γνώση: 5	5 max
5	Εμπειρία με συμμετοχή σε ερευνητικά έργα συναφή και σχετικά με το υπό ανάθεση έργο	η μη πλήρωση του κριτηρίου 5 καθιστά την πρόταση απορριπτέα ON/OFF 0,5 μόρια/ μήνα	30 max
6	Επιστημονικές δημοσιεύσεις	η μη πλήρωση του κριτηρίου 6 καθιστά την πρόταση απορριπτέα ON/OFF 0,5 μόρια/ δημοσίευση	20 max
7	Συνέντευξη	Εφόσον κριθεί αναγκαία	30 max
ΣΥΝΟΛΟ			100 max

2. Έμπειροι ερευνητές: 14 θέσεις

- Προσόντα:

1. Πτυχίο ΠΕ Πολυτεχνικής Σχολής ΑΕΙ ή Πληροφορικής ΑΕΙ ή άλλο ισότιμο της ημεδαπής ή της αλλοδαπής
2. Διδακτορικό δίπλωμα
3. Μεταπτυχιακό δίπλωμα
4. Γνώση αγγλικής γλώσσας
5. Εμπειρία με συμμετοχή σε ερευνητικά έργα συναφή και σχετικά με το υπό ανάθεση έργο
6. Επιστημονικές δημοσιεύσεις

- ΒΑΘΜΟΛΟΓΙΑ ΚΡΙΤΗΡΙΩΝ

Α/Α	**Κριτήριο**	**Σημαντικότητα Κριτηρίου**	**Βαθμολόγηση (σε αριθμό μορίων)**
1	Πτυχίο ΠΕ Πολυτεχνικής Σχολής ΑΕΙ ή Πληροφορικής ΑΕΙ ή άλλο ισότιμο της ημεδαπής ή της αλλοδαπής	η μη πλήρωση του κριτηρίου 1 καθιστά την πρόταση απορριπτέα ON/OFF	
2	Διδακτορικό δίπλωμα		10
3	Μεταπτυχιακός τίτλος		5
4	Γνώση αγγλικής γλώσσας	Καλή Γνώση: 3 Πολύ Καλή Γνώση: 4 Άριστη Γνώση: 5	5 max
5	Εμπειρία με συμμετοχή σε ερευνητικά έργα συναφή και	η μη πλήρωση του κριτηρίου 5 καθιστά την πρόταση απορριπτέα ON/OFF	30 max

	σχετικά με το υπό ανάθεση έργο	1 μόριο/ μήνα	
6	Επιστημονικές δημοσιεύσεις	η μη πλήρωση του κριτηρίου 6 καθιστά την πρόταση απορριπτέα ON/OFF 1 μόριο/ δημοσίευση	20 max
7	Συνέντευξη	Εφόσον κριθεί αναγκαία	30 max
ΣΥΝΟΛΟ			100 max

3. Ερευνητές: 19 θέσεις

- Προσόντα:

1. Πτυχίο ΠΕ Πολυτεχνικής Σχολής ΑΕΙ ή Πληροφορικής ΑΕΙ ή άλλο ισότιμο της ημεδαπής ή της αλλοδαπής
2. Διδακτορικό δίπλωμα
3. Μεταπτυχιακό δίπλωμα
4. Γνώση αγγλικής γλώσσας
5. Εμπειρία με συμμετοχή σε ερευνητικά έργα συναφή και σχετικά με το υπό ανάθεση έργο
6. Επιστημονικές δημοσιεύσεις

- ΒΑΘΜΟΛΟΓΙΑ ΚΡΙΤΗΡΙΩΝ

Α/Α	**Κριτήριο**	**Σημαντικότητα Κριτηρίου**	**Βαθμολόγηση (σε αριθμό μορίων)**
1	Πτυχίο ΠΕ Πολυτεχνικής Σχολής ΑΕΙ ή Πληροφορικής ΑΕΙ ή άλλο ισότιμο της ημεδαπής ή της αλλοδαπής	η μη πλήρωση του κριτηρίου 1 καθιστά την πρόταση απορριπτέα ON/OFF	
2	Διδακτορικό δίπλωμα		10
3	Μεταπτυχιακό δίπλωμα		5
4	Γνώση αγγλικής γλώσσας	Καλή Γνώση: 3 Πολύ Καλή Γνώση: 4 Άριστη Γνώση: 5	5 max
5	Εμπειρία με συμμετοχή σε ερευνητικά έργα συναφή και σχετικά με το υπό ανάθεση έργο	η μη πλήρωση του κριτηρίου 5 καθιστά την πρόταση απορριπτέα ON/OFF 2 μόρια/ μήνα	30 max
6	Επιστημονικές δημοσιεύσεις	2 μόρια/ δημοσίευση	20 max
7	Συνέντευξη	Εφόσον κριθεί αναγκαία	30 max
ΣΥΝΟΛΟ			100 max

4. Τεχνικοί: 11 θέσεις

- Προσόντα:

1. Απολυτήριος τίτλος Λυκείου ή άλλος ισότιμος τίτλος σχολικής μονάδας της ημεδαπής ή της αλλοδαπής
2. Γνώση αγγλικής γλώσσας
3. Αποδεδειγμένη γνώση χρήσης Η/Υ (ECDL ή αντίστοιχο)
4. Εμπειρία με συμμετοχή σε ερευνητικά έργα συναφή και σχετικά με το υπό ανάθεση έργο

- ΒΑΘΜΟΛΟΓΙΑ ΚΡΙΤΗΡΙΩΝ

Α/Α	**Κριτήριο**	**Σημαντικότητα Κριτηρίου**	**Βαθμολόγηση (σε αριθμό μορίων)**
1	Απολυτήριος τίτλος Λυκείου ή άλλος ισότιμος τίτλος σχολικής μονάδας της ημεδαπής ή της αλλοδαπής	η μη πλήρωση του κριτηρίου 1 καθιστά την πρόταση απορριπτέα ON/OFF	
2	Γνώση αγγλικής γλώσσας	Καλή Γνώση: 8 Πολύ Καλή Γνώση: 9 Άριστη Γνώση: 10	10 max
3	Αποδεδειγμένη γνώση χρήσης Η/Υ (ECDL ή αντίστοιχο)		10
4	Εμπειρία με συμμετοχή σε ερευνητικά έργα συναφή και σχετικά με το υπό ανάθεση έργο	2 μόρια/ μήνα	40 max
5	Συνέντευξη	Εφόσον κριθεί αναγκαία	40 max
ΣΥΝΟΛΟ			100 max

Το έργο δύναται να υλοποιηθεί στις εγκαταστάσεις του Εργαστηρίου Συστημάτων Παραγωγής και Αυτοματισμού / Δυναμικής Μηχανών, του Τμήματος Μηχανολόγων και Αεροναυπηγών Μηχανικών, του Πανεπιστημίου Πατρών.
Οι ενδιαφερόμενοι, παρακαλούνται να υποβάλουν ηλεκτρονικά τις προτάσεις τους με τα απαραίτητα αποδεικτικά έγγραφα στο Ενιαίο Σύστημα Υποβολής Αιτήσεων – Προτάσεων της Επιτροπής Ερευνών του Πανεπιστημίου Πατρών και συγκεκριμένα στον σύνδεσμο http://proskliseis.upatras.gr/ , μέχρι την 30/12/2016 (κατ' ελάχιστον 15 ημέρες από την επομένη της ανάρτησης).
Απαραίτητα αποδεικτικά έγγραφα που θα συνοδεύουν την πρόταση:

1. Πρόταση εκδήλωσης ενδιαφέροντος
2. Αναλυτικό βιογραφικό σημείωμα
3. Τίτλοι σπουδών
4. Βεβαιώσεις για την απόδειξη εμπειρίας
5. Άλλο…….

Η επιλογή της πρότασης θα γίνει ύστερα από εκτίμηση των απαραίτητων, επιθυμητών και πρόσθετων προσόντων. Επισημαίνεται ότι στους υποβαλλόμενους φακέλους υποψηφιότητας για τη θέση θα πρέπει να αναγράφεται ο τίτλος του Εργαστηρίου: «Εργαστήριο Συστημάτων Παραγωγής και Αυτοματισμού / Δυναμικής Μηχανών», το ονοματεπώνυμο του Επιστημονικού Υπευθύνου (Γ. Χρυσολούρης) και η θέση (αύξων αριθμός και ειδικότητα) για την οποία υποβάλλεται υποψηφιότητα. Ο δικαιούχος φορέας διατηρεί το δικαίωμα να καλέσει τους υποψηφίους ή όσους έκρινε κατάλληλους σε συνέντευξη.
Για πληροφορίες, παρακαλείσθε να επικοινωνείτε με τον Επιστημονικό Υπεύθυνο Ομότιμο Καθηγητή κ. Γεώργιο Χρυσολούρη, Εργαστήριο Συστημάτων Παραγωγής και Αυτοματισμού / Δυναμικής Μηχανών, του Τμήματος Μηχανολόγων και Αεροναυπηγών Μηχανικών, του Πανεπιστημίου Πατρών, τηλέφωνο 2610-910160, e-mail: xrisol@lms.mech.upatras.gr.

ΑΞΙΟΛΟΓΗΣΗ ΤΩΝ ΠΡΟΤΑΣΕΩΝ – ΛΟΙΠΟΙ ΟΡΟΙ

1. Από τις προτάσεις που υποβάλλονται εμπρόθεσμα και παραδεκτά κατά τα ανωτέρω, επιλέγεται εκείνη που κρίνεται πιο κατάλληλη με βάση τις προϋποθέσεις/κριτήρια της παρούσας προκήρυξης και συνάπτεται σύμβαση μίσθωσης έργου με τον επιλεχθέντα στο πλαίσιο της ελευθερίας των συμβάσεων (ΑΚ 361). Εμπρόθεσμες θεωρούνται οι προτάσεις που θα έχουν υποβληθεί στον σύνδεσμο http://proskliseis.upatras.gr/ μέχρι την παραπάνω οριζόμενη ημερομηνία.
2. Η επιλογή της πρότασης πραγματοποιείται ύστερα από εκτίμηση των απαραίτητων, των επιθυμητών και των πρόσθετων προσόντων με τη σύνταξη πρακτικού αξιολόγησης.
3. Ο δικαιούχος φορέας διατηρεί το δικαίωμα να καλέσει σε συνέντευξη όσους υποψηφίους δεν αποκλείονται με βάση τον Πίνακα Βαθμολογίας Κριτηρίων.
4. Αντικατάσταση της πρότασης ή διόρθωση αυτής ή συμπλήρωση τυχόν ελλείψεων των απαιτούμενων δικαιολογητικών επιτρέπεται μόνο μέχρι τη λήξη της προθεσμίας υποβολής των προτάσεων.
5. Επισημαίνεται ότι η διαδικασία πρόσκλησης υποβολής προτάσεων για σύναψη της σύμβασης για την ανάθεση έργου της παρούσης δεν είναι διαδικασία διαγωνισμού, ενώ η τυχόν επιλογή αντισυμβαλλόμενου έχει το χαρακτήρα αποδοχής πρότασης και όχι «πρόσληψης». Η διαδικασία της πρόσκλησης θα ολοκληρωθεί με σύνταξη πίνακα κατάταξης, ενώ όσοι επιλεγούν θα ειδοποιηθούν κατ' ιδίαν.
6. Η υποβληθείσα πρόταση η οποία δεν πληροί τα απαιτούμενα προσόντα της πρόσκλησης δε βαθμολογείται και απορρίπτεται.
7. Το αποτέλεσμα της επιλογής θα αναρτηθεί στον ιστότοπο «ΔΙΑΥΓΕΙΑ» και στον ιστότοπο του ΕΛΚΕ.
8. Ενστάσεις επί της βαθμολόγησης των κριτηρίων μπορούν να υποβληθούν στον Ε.Λ.Κ.Ε. Πανεπιστημίου Πατρών σε αποκλειστική προθεσμία τριών (3) εργάσιμων ημερών από την επόμενη της ημέρας ανάρτησης των αποτελεσμάτων αξιολόγησης στην ιστοσελίδα του Ε.Λ.Κ.Ε. Π.Π.
9. Οι υποψήφιοι έχουν δικαίωμα πρόσβασης εντός τριών (3) εργάσιμων ημερών από την επόμενη της ημέρας ανάρτησης των αποτελεσμάτων αξιολόγησης, κατόπιν γραπτής αίτησης προς την Αναθέτουσα Αρχή, στους ατομικούς φακέλους και στα ατομικά φύλλα αξιολόγησης/βαθμολόγησης των υπολοίπων υποψηφίων υπό τον όρο τήρησης των προβλεπόμενων στο Ν.2472/97, αρ. 5§2 ε΄, σύμφωνα με τα ειδικότερα διαλαμβανόμενα στις αρ. 17/02, 56/03 και 40/05 αποφάσεις της Αρχής Προστασίας Δεδομένων Προσωπικού Χαρακτήρα και στο υπό στοιχεία Γ/ΕΞ/4163-1/06.07.2012 έγγραφό της, ήτοι, όταν συντρέχει στο πρόσωπό τους έννομο συμφέρον της υπεράσπισης των δικαιωμάτων τους ενώπιον των αρμόδιων δικαστηρίων.
10. Καθ' όλη τη διάρκεια εκτέλεσης του έργου και κατά τους όρους της σύμβασης/συμφωνητικού, μπορεί να πραγματοποιηθεί αντικατάσταση του/των επιλεγέ-ντος/ντων με άλλ-ον/ους ενδιαφερόμεν-ο/ους στο πλαίσιο της παρούσας πρόσκλησης εκδήλωσης ενδιαφέροντος και σύμφωνα με τον ανωτέρω πίνακα κατάταξης.
11. Ο Ε.Λ.Κ.Ε. Πανεπιστημίου Πατρών δεν αναλαμβάνει καμία δέσμευση προς σύναψη της σύμβασης, καθότι επαφίεται στην απόλυτη διακριτική του ευχέρεια η σύναψη ή μη

συμβάσεων, καθώς και ο αριθμός αυτών, ανάλογα με τις ανάγκες του έργου, αποκλειόμενης εκ των προτέρων οιασδήποτε αξιώσεως των ενδιαφερομένων για οποιοδήποτε λόγο και αιτία.

12. Η ανάθεση του έργου θα γίνει σύμφωνα με τα προβλεπόμενα στον Οδηγό δεδομένου ότι η σύναψη της σύμβασης, ενίοτε εξαρτάται από τη σύμφωνη γνώμη του διαχειριστικού φορέα.
13. Η ανάθεση του έργου πραγματοποιείται σύμφωνα με τα προβλεπόμενα στον Οδηγό εφαρμογής του προγράμματος.
14. Ο υποψήφιος επί ποινή απαραδέκτου δηλώνει στην πρόταση – αίτησή του ότι αποδέχεται πλήρως το περιεχόμενο της προκήρυξης, δηλαδή τους όρους και τις προϋποθέσεις συμμετοχής στη διαδικασία επιλογής και κατάρτισης της σχετικής σύμβασης.
15. Οι ενδιαφερόμενοι θα πρέπει να ανατρέχουν στον ιστότοπο του Ε.Λ.Κ.Ε. Π.Π. (http://research.upatras.gr/el) για πληροφορίες σχετικά με την εξέλιξη της διαδικασίας.

Ο Πρόεδρος της Επιτροπής Ερευνών

Καθ. Δημοσθένης Κ. Πολύζος

Αναπληρωτής Πρυτάνεως

Έρευνας και Ανάπτυξης

ΠΑΡΑΡΤΗΜΑ Ι

Projects abstract & tasks

ROBOPARTNER (D.787)

Human skills are the main driver that enables producing high added value products in Europe. Thus, the manufacturing processes are based on utilizing these skills. ROBO-PARTNER aspires the integration of the latest industrial automation systems for assembly operations in combination with human capabilities, combining robot strength, velocity, predictability, repeatability and precision with human intelligence and skills. Thus, a hybrid solution involving the safe cooperation of operators with autonomous and adapting robotic systems through a user-friendly interaction is proposed. The focus will be given in the following directions:

- Development of highly intuitive interfaces for safe human-robot cooperation during assembly by using sensors, visual servoing, speech recognition, advanced control algorithms
- Development of advanced safety strategies and equipment allowing fenceless human robot assembly cells
- Introduction of robust methods and software tools for determining the optimal planning of assembly/disassembly operations using a multi-criteria, simulation enabled approach
- Adaption of simplified robot programming by means of: a) Programming by demonstration & b) Robot instructions libraries
- Introduction of mobile robots acting as assistants to the human operators (e.g. for supplying parts to the assembly line)
- Development of more flexible integration and communication architecture by utilizing a distributed computing model and ontology services.

WP8 Pilot Case Execution

Task 8.1: Automotive Cooperative assembly

Task 8.3: White goods industry–Sealer assembly

WP9 Exploitation, Dissemination, Roadmapping

Task 9.1: Dissemination

Task 9.2: Exploitation

WP10 Project Management

Task 10.3: Project Portal

LIAA (D.812)

LIAA aims to keep assembly jobs in Europe by creating and implementing a framework that enables humans and robots to truly to work together in assembly tasks. Co-working allows the senses and intelligence of the human to be complemented by the strength and endurance of the automation and so obtains the best from each of them, reducing repetitive injuries and costs and enhancing job satisfaction and the average length of time that a worker can continue in the same job.

The LIAA framework will be developed not from theory, but instead from the extensive experience partners have gained through many previous projects. It will not be a thought experiment, but applied to create solutions to five real use cases from five different areas of industrial assembly. In this way, the framework will be forced not only to be useable and functional but also general enough to be broadly applicable.

WP8 Coordination & Integration: Lean Intelligent Assembly Framework

Task 8-1 Sharing Knowledge and Collaboration

Task 8-4 Implementation of Lean Intelligent Assembly Framework

WP9 Demo Scenarios: Execution & Validation

Task 9-1 Development of Industrial Test-Beds

Task 9-2 Development of End-User Demonstrators

WP10 Exploitation

Task 10-1 Continuous Development of Exploitation Plan and IPR Management

Task 10-2 Course Material and Wiki

Task 10-3 Safety Certification and Standardization

WP11 Dissemination

Task 11-2 Continuous Development of Dissemination Plan

Task 11-3 Publications, Events, Seminars and Conferences

Task 11-4 Project Workshops and Exhibitions

Task 11-5 E-Book: Lean Intelligent Assembly Automation

MAShES (E.282)

MAShES proposes a breakthrough approach to image-based laser processing closed-loop control. Firstly, a compact, snapshot, and multispectral imaging system in the VIS/MWIR spectral range will be developed. This approach will enable a multimodal process observation that combines different imaging modalities. Moreover, it will enable an accurate estimation of temperature spatially resolved and independent on emissivity values, even for non-grey bodies and dissimilar materials. Secondly, a fully embedded approach to real time (RT) control will be adopted for efficient processing of acquired data and high speed -multiple inputs/ multiple outputs- closed-loop control. Thirdly, a cognitive control system based on the use of machine learning techniques applied to process quality diagnosis and self-adjustment of the RT control will be developed.

As a result, a unified and compact embedded solution for RT-control and high speed monitoring will be developed that brings into play:

- The accurate measurement of temperature distribution,
- The 3D seam profile and 2D melt pool geometry,
- The surface texture dynamics, and process speed.

WP1-Specification and integration

Task 1.4: System integration and laboratory validation

WP3-Sensor electronics and embedded processing

Task 3.4: Embedded monitoring and RT control functions

WP4-Cognitive control

Task 4.4: Interoperability: CP compliance

Task 4.5: System operation and usability

WP5-Multiprocess validation and demonstration

Task 5.1: Welding monitoring and control demonstration

Task 5.2: LMD monitoring and control demonstration

Task 5.3: Benchmarking

WP6-Communication, exploitation and dissemination of results

Task 6.1: Communication to general public

Task 6.2: Scientific and industry oriented dissemination

Task 6.3: Exploitation and business plan development

BOREALIS (E.297)

Borealis project presents an advanced concept of machine for powder deposition additive manufacturing and ablation processes that integrates 5 AM technologies in a unique solution. The machine is characterized by a redundant structure constituted by a large portal and a small PKM enabling the covering of a large range of working cube and a pattern of ejective nozzles and hybrid laser source targeting a deposition rate of 2000cm3/h with 30 sec set-up times. The machine is enriched with a software infrastructure which enable a persistent monitoring and in line adaptation of the process with zero scraps along with number of energy and resource efficiency optimization policies and harvesting systems which make the proposed solution the less environmental invasive in the current market.

WP1-Project management

Task 1.2 - Financial administration

WP9-Integration, Monitoring and Optimization

Task 9.2 - Borealis monitoring, context recognition and capability assessment

Task 9.3 – Multi-level Optimization of Borealis behaviour over time

WP10-Borealis Demonstration

Task 10.1 – Virtual demo

WP11-Borealis Dissemination and exploitation

Task 11.1 – Scientific dissemination

Task 11.4 - Exploitation Program Definition

ProRegio (E.285)

The ProRegio project aims at developing a manufacturing intelligence based product-service that will rigorously change the current way how customer requirements are addressed by manufacturing companies. The development of this new business approach is based on three major issues, namely (i) design of customer oriented product-services for frugal innovation in a bottom-up development process, (ii) optimization of production systems and networks based on interaction of stakeholders, and (iii) planning and control of production networks and regional production systems to enable ad-hoc re-design. The three goals are enabled by innovative cloud-based product lifecycle management (PLM) solutions integrating production (shop-floor and supplier) as well as customer feedbacks using open IT-platforms and advanced multi-objective optimization methods in comprehensive decision support tools.

WP3 - Distributed production network design and management

Task 3.6: Implementation of the production network decision support tool

WP5-Fusion to cloud-based ProRegio innovation platform

Task 5.3: Implementation of the cloud-based ProRegio platform

WP6 - Testing and validation

Task 6.2: Testing and validation - Use Case 2: Design of a production network for frugal domestic appliances

WP7 - Dissemination and exploitation of results

Task 7.1: Public awareness and dissemination

ICP4Life (E.284)

ICP4Life proposes an integrated, collaborative platform for the design, development and support of product service systems for SMEs, equipment manufacturers and energy suppliers in order to maximize the impact in the European industry. The proposed platform comprises of three main components. The first component demonstrates a collaborative web-based application for the creation and management of products and services by engineers and designers of multiple disciplines. The second component is a Product-Service configuration tool for customers, enabling the easy and intuitive formation of Products and Services. The same component will be used for managing product related data pertaining to the manufacturer, supplier and the customer. The third component will support the efficient, adaptive and responsive planning and decision making phases, for managing the dynamic operation of the plants and the supply chain. All the components will be compatible with open standards, such as AutomationML, in order to make the most out of and accelerate the adoption by the European industry.

WP2 - ICP4Life Designer
Task2.3 ICP4Life Designer integration
Task2.4 ICP4Life Designer refinement
WP4 - ICP4Life Planner
Task4.3 ICP4Life Planner integration
Task4.4 ICP4Life Planner refinement
WP5 - ICP4Life Services
Task5.3 ICP4Life Services development
Task5.4 ICP4Life Services refinement
WP6 - ICP4Life Integration
Task6.2 ICP4Life Integration - first cycle
Task6.3 ICP4Life Integration - final cycle
WP9 - Dissemination-Exploitation activities
Task9.2 Dissemination activities
WP10 - Project management
Task10.3 ICP4Life web portal

DIVERSITY (E.288)

The objective of DIVERSITY is to create a new product-service engineering environment based on a combination of CMfg, PDM/PLM and social software, as well as a set of software tools to support real time sharing of knowledge among various actors, from the designer up to the customer, aimed at small and medium sized companies producing machines/equipment for mass product manufacturers. A new methodology for concurrent collaborative product-service design applying lean based product design paradigm will be developed.

WP2-Methodology and tool for Lean PSS design

T2.2 Methodology for lean product-service design

WP4 - Context Sensitive Tools for Search, Stakeholders Feedback Analysis and KPIs

T4.1 Specification of tools and KPIs for assessment of PSS design processes

T4.2 Early prototype of tools - achieving TRL 5

T4.3 Full prototype of tools - achieving TRL 6

WP5 - Integration and Infrastructure

T5.1 Business cases specification and infrastructure

T5.2 Integration and optimisation

WP6 - Validation and Demonstration

T6.3 Validation of Full prototypes

T6.4 Business Case demonstrators

WP7 - Dissemination and Exploitation

T7.1 Dissemination Strategy

T7.2 Communication

T7.3 Exploitation

T7.4 Standardisation

WP8 – Management

T8.1 Global and Administrative Management

SYMBIO-TIC (E.287)

The European robotics industry is moving towards a new generation of robots, based on safety in the workplace and the ability to work alongside humans. This new generation is paramount to making the factories of the future more cost-effective and restoring the competitiveness of the European manufacturing industry. However, the European manufacturing industry is facing the following challenges: (1) lack of adaptability, (2) lack of flexibility, and (3) lack of vertical integration.

The proposed SYMBIO-TIC project addresses these important issues towards a safe, dynamic, intuitive and cost effective working environment were immersive and symbiotic collaboration between human workers and robots can take place and bring significant benefits to robot-reluctant industries (where current tasks and processes are thought too complex to be automated). The benefits that the project can bring about include lower costs, increased safety, better working conditions and higher profitability through improved adaptability, flexibility, performance and seamless integration.

WP1-Active Collision Avoidance

Task 1.5: Development of an integrated and functional subsystem

WP2-Planning & Control Cockpit

Task 2.5: Development of cockpit prototype

WP3-Adaptive Robot Control

Task 3.3: Interfacing with robot controllers

Task 3.5: Implementation of an adaptive robot control module

WP4-Mobile Worker Assistance

Task 4.3: Multimodal communication with robots and human workers

Task 4.4: Automatic contents generation for mobile workers

Task 4.5: Development of a wearable suite to support mobile workers

WP5-Real-World Demonstrators

Task 5.1: Test-bed preparation at KTH and demonstrator sites

Task 5.4: Demonstrator 3 at VCC's engine assembly plant in Sweden

WP6-Dissemination

Task 6.2: Development of a dissemination plan

Task 6.3: Scientific dissemination and IPR management

Task 6.4: Market dissemination and ecosystem development

WP7 - Exploitation and Standardisation

Task 7.1: Development of exploitation strategy and plan

Task 7.4: Standardisation

WP8 - Project Management

Task 8.3: Financial reporting

COMMUNION (E.469)

ComMUnion enables productive and cost effective manufacturing of 3D metal/ Carbon Fibre Reinforced Thermoplastic (CFRT) multi-material components.ComMUnion will develop a novel solution combining tape placement of CFRTs with controlled laser-assisted heating in a multi-stage robot solution. High-speed laser texturing and cleaning will overcome the limitations of current joining technology to provide greatest performance joints. ComMUnion will rely on a robot-based approach enabling on-line inspection for layer-to-layer self-adjustment of the process. Moreover, tools for multi-scale modelling, parametric offline programming, quality diagnosis and decision support will be developed under a cognitive approach to ensure interoperability and usability. ComMUnion will address the following key innovations:- Texturing and cleaning based on high speed laser scanning for surface condition.- High-speed spatially resolved control of surface temperature profile.- Multi-scale metal/CFRP modelling, self-adaptive process control, and quality diagnosis based on multimodal active imaging.

WP1 - Process specification and integration
Task 1.5: System integration and laboratory demonstration
WP2 - Joining design and multi-scale modelling
Task 2.2: Lay-up and adhesive deposition process simulation
Task 2.3: Mechanical design
Task 2.4: Decision Support System
WP5 - Multi-stage demonstration
Task 5.3: Assembly and disassembly capabilities
WP6 - Communication, exploitation and dissemination of results
Task 6.1: Communication to general public
Task 6.2: Scientific and industry oriented dissemination
Task 6.3: Exploitation and business plan development

LegInt (E.573)

Modern Smart Industry 4.0 Factories build on paradigms such as Cloud Manufacturing for global ubiquitous collaborations through advanced internet supported business models. They employ distributed and embedded technologies such the Internet of Things (IoT) to assess the factory status covering the shop floor as well as the management and logistics levels for quicker and more efficient decision making.
However, a vast majority of machines today do not enjoy the opportunities that Industry 4.0 offers. Even though some of these machines may be only a couple of years old they still could be considered “legacy” as most of them are not well connect to the internet and do not feature any easy-to-use interfaces that make them truly IoT enabled. This holds even more so for older legacy machines which have only very limited interfaces and only little machine monitoring capabilities. Many factories in the EU and worldwide could benefit from advanced process monitoring, improved machine coordination and rapid ad-hoc process optimisation. The project *LegInt* targets these challenges head on through introducing and testing a “shell” that augments legacy machine tools through a set of interfaces that help embed legacy machines into an advanced Cloud Manufacturing environment. This shell consists of both, hardware and software components. The project will stay well-focused, demonstrating the potential of LegInt through a practical industrial experiment. The focus will lie on legacy CNC-milling machines, however, the applicability of the approach will not be limited to milling machines only.

WP4 Integrated software platform

FUTURING (E.663)

FUTURING aims at contributing to define the strategy for the re-industrialization of Europe, by focusing on the role of Research and Innovation within the framework of other dimensions – Economy, Society, Environment, Globalization, geopolitics– and incoming paradigms such as Circular Economy.

It explores 2030 future scenarios, concerning EU Industry, through the use of foresight and other Policy Intelligence tools, to identify critical factors on which action should be taken in order to overcome barriers and to foster opportunities for the EU re-industrialization process.

WP1 Vision of EU Reindustrialization

T1.1 Framework for the definition of circular economy context for EU industry

T1.2 Baseline Vision for EU re-industrialization in a circular economy

WP2 Science-technology-economy-society analysis: enablers/barriers and best practices

Task 2.4 – Advanced production technologies in the circular economy

WP3 Benchmark of cases/strategies for circular economy

T3.1 Framework for EU investment and expansion in circular economy

T3.4 Public and Private funding opportunities

WP4 Strategy to support EU Reindustrialization

T4.1 Vision-Scoping and Priority-Setting

T4.2 Shaping the strategy to reindustrialize Europe

WP5 Community building and dissemination

T5.1 Community building and outreach

T5.2 Dissemination and Events

WP6 Project Management

T6.1 Project Management

THOMAS (E.662)

The vision of THOMAS is: “to create a dynamically reconfigurable shopfloor utilizing autonomous, mobile dual arm robots that are able to perceive their environment and through reasoning, cooperate with each other and with other production resources including human operators”.

The objectives of THOMAS are to:

- Enable mobility on products and resources. Introducing mobile robots able to navigate in the shopfloor and utilize dexterous tooling to perform multiple operations.
- Enabling perception of the task and the environment using a) the individual resource’s and b) collaborative perception by combining sensors of multiple resources
- Dynamic balancing of workload. Allowing the resources to communicate over a common network and automatically adjust their behaviour by sharing or reallocating tasks dynamically.
- Fast programming and automatic execution of new tasks by a) automatically generating the robot program for new products and b) applying skills over the perceived environment to determine required adaptations
- Safe human robot collaboration, eliminating physical barriers, by introducing cognitive abilities that allow the detection of humans and their intentions THOMAS will demonstrate and validate its developments in the automotive and the aeronautics industrial sectors.

WP1 Use case definition, specifications and KPIs

T1.1 Pilot case scenarios and validation metrics definition
T1.2 User requirement extraction and analysis
T1.3 Reference architecture design
T1.4 Hardware and software specifications for safe mobile robots

WP2 Human Robot Interaction and Safety

T2.3 Human robot interaction

WP3 Environment and Process Perception

T3.2 Perception for process' context awareness

WP5 Network of services and work balancing

T5.1 Resource planning and collaboration - Shared Perception
T5.2 Modelling and representation of tasks for human, robots and cooperative scenarios
T5.3 Dynamic work reorganization for human robot production
T5.4 Service oriented communication - network of resources
T5.5 Architecture for communication of resources (ROS based and services)
T5.6 Station controller and for task supervision and orchestration

WP6 THOMAS Open Production Station as a product

T6.1 Mobile Platform with dual arm Robot (MPR) - Design and development
T6.5 THOMAS Open Production Station as a product

WP7 THOMAS demonstrators and assessment

T7.1 Automotive dashboard assembly demonstrator
T7.2 Aeronautics components manufacturing demonstrator
T7.3 Performance assessment and validation

WP8 Exploitation, Dissemination and Standardization

T8.1 Public Web portal
T8.2 Dissemination activities: Roadmap and implementation
T8.3 Exploitation activities: Roadmap, implementation and IPR management

WP9 Project Management

T9.1 Project management
T9.2 Project Portal for managing partners interaction

HINDCON (E.680)

The main aim of the HINDCON project is to develop and demonstrate a hybrid machine regarding 3D printing technologies with concrete materials focused on the industrialization of the Construction Industry, delivering to this sector an innovative technology that reduces environmental impact at the same time it reduces dramatically economic costs. The collaborative structure of the project will help to:

1) Integrate different technologies that converge in a hybrid solution. HINDCON “all-in-one" machine will integrate Additive Manufacturing concrete extruder and Subtractive Manufacturing tool kit with the use of cementitious materials including mass materials with alternatives in concrete and additives, and reinforced with composites.

2) Cover the different aspects concerned (technology, economic, social and environment) and demonstrate the hybrid machine from different perspectives.

WP1 Project Management & Dissemination

Task 1.1 Project coordination and board meetings

Task 1.2 Project management and controlling. Day-to-day monitoring

Task 1.3 Resources management

Task 1.4 Dissemination and communication management

WP2 Additive Material Development

T2.4 Laboratory scale testing

WP4 Control software development

T4.1 Code development and validation for the additive tools

T4.2 Code development and validation for the subtractive tools

T4.3 CAD/CAM modules development and validation

T4.4 Automation development and validation

T4.5 Process / printing path optimization and simulation (Leaders)

WP5 Manufacturing and Construction processes

T5.3 Processed goods analysis (Leaders)

WP6 Life Cycle Assessment and Analysis

T6.2. Life cycle inventory analysis

T6.4 Interpretation and reporting

WP7 Business Model

T7.2 Business plan development. Cost and revenue structure

WP8 Demonstration of all-in-one machine

T8.2 System prototype installation and test

T8.4 Validation of results

STREAM-0D (E.659)

Zero-defect manufacturing and flexibility of production processes are some of the main challenges for European manufacturing. One of the engineering tools with higher potential is the linking of simulation tools with measurement devices for real-time control of applications. The huge potential of this synergistic loop remains untapped for manufacturing processes and could be used for reducing product variability, increase line flexibility and achieve zero defect production.

These objectives could be reached by integrating in the production line multi-physics simulation models, able to predict the product quality indicators in response to the values of critical input parameters (components dimensions, material properties, etc.), which are unavoidably subject to variability. The models will be fed with actual data from online measurements and, based on the model prediction, the critical steps of the line will be controlled to adjust the product to the exact design specifications or to quickly change specifications for producing customised batches.

WP1 Industrial requirements and specifications

T1.2 Description of the industrial processes

T1.3 Organization of the end user application projects

WP3 Online data gathering and data-driven models

T3.1 Compilation of the data that need to be gathered for each application

T3.2 Selection of the online data gathering systems

T3.3 Development and implementation of innovative measurement systems for material properties

T3.4 Installation of the data gathering systems in the production lines

T3.5 Data processing

T3.6 Development of data-driven models

WP4 Adaptive data control and decision making algorithms

T4.1 Decision making algorithms based on data-driven models

T4.3 Model-based process control

T4.5 Cloud implementation

WP5 Integration and pilot implementation

T5.1 Definition of the general layout

T5.2 Development of user interfaces

T5.3 Simulation models of the plant for HIL simulation

T5.4 Integration and testing under simulated environment

T5.5 Integration in the production lines

WP6 Demonstration and evaluation

T6.1 Evaluation of the production line for braking actuation units

T6.2 Evaluation of the production line for extruded seals

T6.3 Evaluation of the production line for tapered roller bearings

WP7 Dissemination, exploitation and IPR management

T7.1 Dissemination plan and activities

T7.2 Exploitation activities

WP8 Technical & administrative management and coordination

T8.1 Administrative and financial management

T8.3 Quality and risk management

MANUWORK (E.695)

Future manufacturing will be characterized by the complementarity between humans and automation, especially regarding the production of highly customizable products. This requires new methods and tools for the design and operation of optimized manufacturing workplaces in terms of ergonomics, safety, efficiency, complexity management and work satisfaction. MANUWORK aims to focus on the development of an integrated platform for the management of manufacturing workplaces of the future.

WP1 Specifications and Industrial Use-cases definition

T1.1 Specifications of the MANUWORK Platform

WP2 Continuous Adaptation and Balancing Methods

T2.3 Modeling of Automation Skills

T2.4 Determining optimal human-automation levels for load balancing

WP3 Framework for Worker Satisfaction, Safety & Health

T3.1 Evaluating Worker Satisfaction

T3.3 Safe Human-Automation Symbiosis

WP4 AR framework for adaptive shop-floor support & industrial social networking

T4.1 AR-based Human-Automation Interface

T4.2 The Industrial Social Network

T4.3 Knowledge capturing – Social Analytics

WP5 Integrated Platform for Human-Automation Balancing

T5.1 System Resources Network

T5.2 MANUWORK Database

WP6 Pilot Run and Validation

T6.1 Pre-pilot Validation

T6.2 Aerospace Demonstrator Setup/Pilot Run/Validation

T6.3 Automotive Demonstrator Setup/Pilot Run/Validation

WP7 Exploitation and Dissemination

T7.1 Exploitation

T7.2 Dissemination

WP8 Project Management

T8.1 Project Management

HUMAN (E.696)

EU manufacturers are increasingly adopting automation solutions that can improve productivity and reduce costs. Enterprises' ability to utilize these technologies may be their single most important competitive advantage, and the specific skills, experiences, competences, and flexibility of workers are pivotal to and at the core of this ability. To create a healthy workplace and increase the competitiveness of the manufacturing firms, the creation of an optimal environment for human automation integration and cooperation that harnesses and supports the workers' capabilities is needed. The HUMAN project aims to define and demonstrate workplaces where automation and human workers operate in harmony to improve the productivity, quality, performance of the factory as well as the worker satisfaction and safety.

WP1 HUMAN Requirements Engineering and Reference Architecture
T1.1 HUMAN Use Cases and Requirements
T1.2 Assessment Framework
T1.4 Reference Architecture
WP3 HUMAN Perception & Reasoning
T3.1 Sensing Layer
T3.2 Workplace Models
T3.3 Digital workplace Representation
T3.5 Long-term action selection
T3.6 Intervention Framework
WP4 HUMAN Decision and Action Layer
T4.3 Shop Floor Design Simulator
WP5 Social Organizational Intelligence
T5.5 Collaborative Workplace Design Tool
WP6 Integration and validation in Pilots
T6.1 Integration framework definition
T6.2 Integration and Testing
T6.3 Training Workshops
T6.5 Continuous improvement
WP7 Evaluation Studies
T7.2 COMAU Evaluation
T7.3 AIRBUS Evaluation
T7.4 ROYO Evaluation
WP8 Dissemination and Community Uptake
T8.1 Communication Channels and Public Engagement
T8.2 Creation of Supportive Climate
T8.3 Business Models and Exploitation
T8.4 Dissemination Events

ConnectedFactories (E.697)

There is a consensus among industry and policymakers that Europe is currently in the middle of an industrial revolution initiated by the digitisation of industrial processes. Cyber Physical Systems (CPS), the Industrial Internet and the Internet of Things (IoT) connect people, devices, machines and enterprises like never before.

For many years companies and research organisations have been addressing these challenges and opportunities both at European level (through the Factories of the Future PPP and related activities) and at national level. The ConnectedFactories project will build upon these activities and consolidate their expert networks, aiming at industrial consensus building across Europe. The ConnectedFactories project will establish and maintain a structured overview of available and upcoming technological approaches and best practices that are needed for mastering this paradigm shift. Present and future needs and challenges of the manufacturing industries will be identified in order to then identify possible scenarios of how digital platforms will enable the digital integration and interoperability of manufacturing systems and processes.

WP1 Analysis of technologies on the market and in the pipeline

T01.02 Sustained market analysis

T01.03 Develop reference documents on the state of the art and actual best practices

WP2 - Analysis of challenges

T02.02 Organise national/regional sessions

T02.03 Report per session (using common template)

WP3 - Analysis of projects

T03.01 Mapping of research activities

WP4 Scenario building – technology suppliers – end users

T04.03 Scenario analysis workshops (National/regional level)

T04.04 Develop final scenarios

WP5- Cross-cutting tracks

T05.04 Sustainability aspects

WP7 - Dissemination

T07.03 Representation of project at events

WP8 - Coordination

T08.01 Project reporting and financial management

VERSATILE

The recent trends of mass customization of products and lean approaches impacts production by a drastic reduction of production lot sizes. However, traditional automation and robotics fail to be competitive in such a context since all individual product variant would require a complete automation project. In addition, keeping up with the introduction of robots outside of the traditional sectors require to automate much more complex manual tasks, where again traditional robotics automation fails to provide a good ratio of cost vs robustness, mainly due to the rigidity of existing production equipment in terms of programming and tools.
The overall objective of the project is to provide a bridge for transferring, demonstrating and validating the latest R&D results in robotics towards different industrial environments proving their applicability and effectiveness.

WP1 Use case definition, specification and KPIs

T1.1 Pilot case scenarios and validation metrics definition
T1.2 User requirement extraction and analysis
T1.3 Versatile technologies: roadmap for achieving industrial TRL

WP2 Adaptation of robotics solutions for industrial environments

T2.1 Robotic Perception for Operation in Semi-Structured Environments
T2.2 Intuitive programming tools for highly reconfigurable robot tasks
T2.3 Dual Arm Mobile Manipulation
T2.4 Synchronization and Control Framework

WP5 Application in Consumer Goods Industry

T5.1 Pilot case design and Preliminary Risk Assesment
T5.2 Equipment customization
T5.3 Pilot case setup & deployment
T5.4 Pilot case first execution and refinement
T5.5 Pilot case final execution

WP6 Performance Assessment

T6.2 Methods for quantitative assessment of technical performance of Versatile technologies
T6.3 Technical evaluation of Versatile technologies
T6.4 Cost benefit analysis and quantitatve impact of Versatile technologies

WP7 Exploitation/ Dissemination

T7.1 Public Web portal
T7.2 Dissemination activities: Roadmap and implementation
T7.3 Exploitation activities: Roadmap, implementation and IPR management

4D HYBRID

The synergic combination of additive and subtractive processes could overcome individual shortcomings, going beyond the simple succession of steps. 'Plug and produce' modular approach is a key factor to success for such hybridization. In this scenario, 4D Hybrid will deliver 4 disruptive breakthroughs:

• A set of four elementary modules specifically designed for AM that embed the control and monitoring systems which can be integrated on new or existing concepts of machines and robots to realize different processes ranging from the DED (powder and wire) to ablation and cold spray;

• A new concept of CNC, constituting a high level sw layer which can be integrated on the top of commercial CNCs;

• A validated process model to fully exploit the synergistic interactions among elementary processes;

• A dedicated 4D Engineering CAD/CAE/CAM Platform.

Innovation will be physically demonstrated at three possible levels of hybridization:

• Modules - Small hybrid modules, integrated on new special machines, focusing on portable units for certified in-situ repair operations;

• Hybrid Machines – Hybridization on existing robots and machines;

• Production lines - Hybridization of a flexible production line focusing on new concepts for AM mass production.

WP1 Project management

Task 1.1 - Progress management

Task 1.2 - Financial administration

WP2 Product design by technology and 4D Engineering Platform

Task 2.1 - Requirements definition of reference industrial products

Task 2.2 - Design by tech and Round Robin Part Family Definition

Task 2.3 – 4D Engineering Platform design

WP3 Process design and CAx

Task 3.1 - Deposition and subtraction process design for Round Robin Parts and CAx chain

Task 3.2 - Closed loop process simulation and adaptation strategies

WP4 Design and configuration of the 4D modules

Task 4.1 - Development and optimization of the laser sources

Task 4.2 - Design and realization of the 3D scanner and optical system

Task 4.3 – Design of the 4D powder/wire and cold spray modules

Task 4.4 - Integrated modelling of process and 4D modules

WP8 4D Integration, monitoring and optimization

Task 8.1 - 4D modules integration to create 4D hybrid machines and robots

Task 8.2 - Multi-level Optimization

WP9 4D Demonstration

Task 9.1 - Virtual demo

Task 9.2 - Lab scale pilot demo

Task 9.3 - Final products-materials properties assessment

Task 9.4 - Full scale industrial pilots

WP10 4D dissemination and exploitation

4D dissemination and exploitation

Task 10.1 - Scientific dissemination

Task 10.2 - Industrial promotion

Task 10.3 - Exploitation Program Definition

ΛΟΓΟΤΥΠΟ
ΕΠΙΧΕΙΡΗΣΙΑΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ

Δ Ι Α Β Ι Β Α Σ Τ Ι Κ Ο Π Ρ Ο Τ Α Σ Η Σ

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ
Ε.Λ.Κ.Ε. Π.Δ. 432/81

Επώνυμο: ……

Όνομα: ……....

Διεύθυνση: ……..

Τηλ.: ……

Κιν.: …….

Email: ……..

Αριθ. Πρωτ. ……

Ημερομηνία……

Θέμα: Υποβολή Πρότασης για την Πρόσκληση Εκδήλωσης Ενδιαφέροντος με αρ.πρωτ. ΕΛΚΕ Π.Π ……../….-….-20..

Σας υποβάλλω πρόταση εκδήλωσης ενδιαφέροντος με όλα τα σχετικά δικαιολογητικά για την **παροχή έργου** …… (τίτλος του υπό ανάθεση έργου) ……. στο πλαίσιο των έργων του εργαστηρίου «Εργαστήριο Συστημάτων Παραγωγής και Αυτοματισμού / Δυναμικής Μηχανών».

☐ Αποδέχομαι πλήρως το περιεχόμενο της προκήρυξης, δηλαδή τους όρους και τις προϋποθέσεις συμμετοχής στη διαδικασία επιλογής και κατάρτισης της σχετικής σύμβασης.

Συνημμένα:
1)
2)
3)…

ΠΑΤΡΑ ……
ΥΠΟΓΡΑΦΗ