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European Robotics Forum 2016:

Robotics for the Western Balkans in 11 Points

Introduction:

The EU definition of the Western Balkans includes Albania (ALB), Bosnia and Herzegovina (BIH), Croatia (HRV), Kosovo (UVK), FYR Macedonia (MKD), Montenegro (MNE), Serbia (SRB). Most of the points apply to the whole of Southeastern Europe.

The following is a list of recommendations for the development of a robotics-minded society which is to bring about advantages for the population at large. Economy, political structures, education, culture, and popular beliefs in these countries are not homogeneous. Hence each single measure should be adapted to the regional and local situation.

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1. Regional Roadmap

Robotics is a rapidly advancing technology which will soon be ubiquitous in our lives: applications range from manufacturing to the health sector, from agriculture to mining, from maintenance of industrial plants to construction of buildings, from rescue to transport and logistics. Robots look different and do different things. Regions should develop a **regional strategy (a “roadmap”) with the aim to identify strengths and objectives around their existing core competencies**. It is important that regional stakeholders ranging from universities to industrial application experts cooperate.

Practical Suggestions:

- 1.1. Download and study the Multi-annual Roadmap MAR¹ and see how this could relate to regional business and industry.
- 1.2. Include partners who know the strengths of local/regional industries and business, such as the Chamber of Commerce. Point out that robotics offers opportunities for almost all industries, from manufacturing to agriculture, food production, logistics, mining, health, and so on.
- 1.3. Study the strengths of local universities, research, start-up support (banks?)
- 1.4. Do not only think about immediate research projects: be a pioneer in robotics, be a consultant of companies in general. Tell them about robots. Contacts are important.
- 1.5. Are there any schools/teachers who would be interested in robot competitions, or robotics in STEM² subjects?
- 1.6. Do a SWOT³ analysis of “robotics in your region” – strengths, weaknesses, opportunities, threats.
- 1.7. Include National Contact Points and information centres for EU funding, Worldbank, and other support institutions

¹ https://eu-robotics.net/cms/upload//H2020_Robotics_Multi-Annual_Roadmap_ICT-2016.pdf

² Science, Technology, Engineering and Mathematics (STEM)

³ strengths, weaknesses, opportunities, and threats

2. Open your doors to the population

Robots can lead to higher productivity and at the same time create many new jobs. In order to avoid a polarisation of the society, any **innovation strategy needs to take into account, and integrate, the whole society, most importantly educational and training organisations as well as existing industry.** This can be done often much quicker on a regional level.

Practical Suggestions:

- 2.1. Organise exhibitions, open door days of your institution, and invite the local population (free entrance). Invite also your partners from other parts of Europe to be present with exhibits and robots.
- 2.2. Organise (slide, video) presentations in public educational institutions, like evening classes, theatres, etc
- 2.3. Organise events for children and students, such as roboto competitions, or just for fun.
- 2.4. Invite the media/press to all of these events.
- 2.5. Include in your presentations the effects of robots on jobs. If necessary, get recent studies from euRobotics in Brussels.

3. Discussion on Jobs

The winners of creating new jobs are the ones **that add value to robots, either by producing robots, or making them sophisticated**, rather than replacing manual labour with robots in traditional industries.

Practical Suggestions:

- 3.1. In the discussion on the economic effects, point out that robots are most beneficial when robots, or components for robots, or any equipment or software for robots are produced.
- 3.2. The installation and use of robots can also have beneficial effects if this leads to higher productivity, such that wealth is locally generated, peripheral jobs are created (such as maintenance of robots), and the understanding of robots can be used to produce, at a later stage, robots or components (see above).
- 3.3. Important is that local/regional know/how exists and is extended, as part of the Roadmap. Example: agricultural robots used for harvesting crops may increase the productivity of the farmer, but the effect is more sustainable if the farmer can use his/her expertise to improve the robots, design new ones, or develop any additional components, together with companies.

4. Create Multidisciplinary Clusters

Robotics requires a **multidisciplinary approach of many competencies**, starting with mechanical and electrical engineering, computer science, ergonomics and – most importantly – competencies in applications and market domains. It is important that these **regional competencies** are kept and further developed by integrating them with robotics. Due to the multidisciplinary requirements of developing robots, the science base needs to be supported, in all TR (Technology Readiness) levels, from fundamental research to systems engineering. They all need to work hand-in-hand, any cultural splits between fundamental and applied research are a barrier.

Practical Suggestions:

- 4.1. These suggestions overlap with the SWOT analysis and a subsequent innovation plan. Important is to incorporate many other disciplines (in research: not only engineering and computer science, but also psychology, ergonomics, industrial design, physicists, etc.), but also application experts.
- 4.2. It is important to create regional “clusters”.
- 4.3. Examples:
 - Organic agriculture, a growing business in many regions, can be supported by robots built for “precision farming”.
 - Shoe industry can become profitable again when robots manufacture shoes. Many industries which have been lost to Asia may become profitable again when using robots.
 - Maintenance of chemical plants with robots is less costly than traditional methods.

5. Locate a Technology Transfer Centre

This community needs to be given a **forum where to meet and to exchange and develop views, progress, partnerships**, so-called “innovation hubs”. Ideal are existing technology transfer centres, universities or polytechnic schools.

Practical Suggestions:

- 5.1. It is very useful to give the initiative an address, at least where meetings and presentations can be performed.
- 5.2. Ideal are regional locations to work together, such as technology transfer centres, or central robot laboratories, with offices for the various groups. This has the advantage of creating a community and sharing experience, between research, mechanics, industrial partners, to build and to test prototypes. If possible, also open to visitors at certain times.
- 5.3. Such a location may be available from industrial areas which are no longer in use. The whole region should be aware of a “robotics centre”.
- 5.4. Innovation hubs (another word for regional technology transfer centres) are infrastructure and could be funded by special funding programmes (e.g., EU structural funds for regional development).
- 5.5. Start-up companies should be given space in the same location, with the possibility to become “slowly independent”.

6. Create a Network of Networks and organise Public Relations

Regional initiatives in the Western Balkans should **create a network to inform each other and report progress and success from the individual region.**

Practical Suggestions:

- 6.1. It may be useful to establish a “network of networks” in the Western Balkans, to share experience and information, and take advantage of historical relations.
- 6.2. This network may be called “BalkanRobotics” or “RoboBalkans” (only two examples).
- 6.3. The network may be non-legal (e.g., consortium) or a legal entity (e.g., registered association). It may become an Associate Member of euRobotics (Associate Members have no voting rights but pay only 250 EUR per year; they have access to all information, especially the roadmapping).
- 6.4. The network should organise regular meetings (circular in locations), share experience and information, but also equipment, if needed.
- 6.5. Go for public relations / create a website for your activities – directed both top the population as well as to the members of the networks.
- 6.6. The network may organise conferences and exhibitions.
- 6.7. The network may organise exchange programmes for students.
- 6.8. The network should link up with networks in other countries, such as the clusters “Robotics and Mechatronics” in Austria, Switzerland, Germany, and take part in their annual conferences and exhibitions.

7. Entrepreneurship and Start-ups

Have a special focus on entrepreneurship, the creation of start-ups and the integration of SMEs in robotics. These are very important stepping stones for the regional development.

Practical Suggestions:

- 7.1. Entrepreneurship is not to be confused with Capitalism. Even if a student or engineer is not personally interested to create his/her own company: entrepreneurship is a mind-set which helps to become more innovative, and respectful to industrial activities, which again will likely require that science is to solve practical problems.
- 7.2. Make sure that the regional transfer centres allow “pioneers” to learn how to establish a company, e.g., by offering courses and seminars.
- 7.3. Start-up companies should be given inexpensive space to rent – possibly within the building or complex of the transfer centre. They should be part of this community and learn how to become independent.
- 7.4. They may also need, in the first phase, to have access to some equipment.

8. Innovation and Motivation radiates to the society

Important is the motivation which radiates from such community to the whole population of the region. This can be done by media, but even better, by including schools, e.g., by means of robotics classes and robot competitions. Young people are very keen in building and inventing robots. This will spur innovative ideas, motivation, and the convincement that the region has something to offer. Robotics should be visible to the whole population. Let the whole population visit the robotics centres.

Practical Suggestions:

- 8.1. This is similar to suggestion No. 2, which should allow the population to support robotics and avoid any fears. Suggestion No. 8 is to radiate the motivation from robotics to other industries, but also inspire the basic feeling of the population that the “region is going to make it”.

9. Be active in the European Roadmapping Process

Because of the strategic importance for the European industry, the European Commission has decided to establish together with euRobotics a public-private partnership on Robotics, called SPARC. The purpose is to bring together both industry and academia from all areas of robotics research, technology and application, as well as other stakeholders who are critical to the establishment of a new high-tech industry, to develop a European Roadmap of Robotics. Organisations of the WB should use this opportunity to link with other European stakeholders and ensure that WB interests are reflected in the European roadmap.

Practical Suggestions:

- 9.1. Join those Topic Groups which are relevant to your regional network. Be active in setting objectives to be included in the future version of the roadmap.
- 9.2. Taking part in Topic Groups gives you early information about the funding schemes and topics.
- 9.3. Network with Topic Groups working on related technologies and/or robotic applications. This is also a good opportunity to establish consortia, or “value chains”.
- 9.4. Consider this also as part of the networking – to point to any special circumstances in your region – to remove obstacles and possibly unfair conditions.

10. Make use of European (and other) Funding Programmes

European Funds, such as from the funding programme of the European Commission set up under the SPARC partnership with euRobotics, should be used for supporting infrastructure, science, education, innovation, cooperation, and outreach to the population. Take advantage of these funds. They require that the initiative starts on the regional level.

Practical Suggestions

- 10.1. Establish a catalogue of funding opportunities for robotics. Ask experts for help, such as National Contact Points, regional representatives, your own government. Identify persons who can help and add them to your network.
- 10.2. EU Structural Funds and Horizon 2020 funds can be combined. Study other combinations.
- 10.3. A special attention should be given to funds which are not obviously “for robotics”, but for innovation, employment, political processes. Often it requires personal contacts with the persons in charge, to improve the chances that the request matches the objectives of the funding agency.

11. Use the Brokerage Services of euRobotics

Important for regional activities are connections with other parts of Europe, both in sharing and exchanging innovation measures, and building value chains with other industrial and research partners. euRobotics, the European robotics association, is an excellent address in identifying partners for R&D projects and also purely commercial relations. euRobotics is dedicated to opportunities for a development of all European regions, to the economic and societal benefits everywhere.

Practical Suggestions:

- 11.1. Study positive examples of robotic networks, such as the ones in Scandinavia. See how they pass information to their members.
- 11.2. Take part in brokerage and information-giving events organised by euRobotics.