

Race4Scale Benchmarking Study in the EU Context based on the Barcelona and Catalonia trip in the spring 2022 done by the XAMK project team.

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This study is a part of WP2 "Benchmark study in the EU context". It was made based on the WP2 "Benchmarking of the automotive and motorsport ecosystem in the European context" work trip in Barcelona, Spain in May 2022 together with our Race4Scale project team in XAMK – Mr. Jarmo Kujanpää, Mr. Jan Kettula, Mr. Mikhail Nemilentsev.

Professional training in the world of motorsport and automobiles takes place at all levels of education in Spain. Barcelona and the Catalonia region as a whole were chosen as an example. The reasons were the proximity of sports car tracks, the international position of the city of Barcelona, the great influence of border states France, Italy and Portugal, and the accessibility of Barcelona International Airport for international events and competitions.

Geographical disposition is crucial in shaping the international mentality of students and teachers. And it is possible to use the local language de jure but be international de facto. In other words, it turns out that in Barcelona, almost all of the studies for automotive and motor sport specialisations take place in Spanish and Catalan, but local students are greatly influenced by the cross-border cooperation of the region of study itself. In addition, authenticity and a focus on the culture of the region are reflected in the languages of instruction. Secondary and higher education establishments teach mainly in Catalan. In addition, some classes are also taught in Spanish. English-language courses are rather limited, but the principle of English-language education is actively visible in the international events organised in the region of Catalonia and Barcelona in particular.

It can be compared to studying in our region of Kymenlaakso, where there are plenty of English-language programmes and everyone generally speaks English, but where international students and tourists have some difficulty in finding truly international events and competitions. Of course, a caveat should be made that the regions are not fully comparable in terms of population. But the principle of an international living environment itself remains relevant. Language is only a tool to achieve a goal, but not the goal of education itself. The availability of English language programmes in universities and colleges facilitates cross-border cooperation and the influx of international students and international teachers. However, it is international competitions and events, conferences and the headquarters of international organisations that make the international environment and the future itself.

Although courses are given mainly in Spanish or Catalan, studies represent an immersion in a truly international environment. There are certain reasons for that: proximity of other EU countries; easy access of international visitors to racetracks in Barcelona or its surrounding; an international nature of work & studies; a real team spirit in race preparations, racing studies or racing competitions; wide cross-national expertise of course teachers who also serve as mechanics/engineers/experts during all competitions.

The region of Catalonia and Barcelona as a regional centre breath the international environment. Learning in the colleges focuses on practice and teamwork between students and teachers. In addition, teachers act as mentors not only in the "laboratory" conditions of the campus, but also on the track in the case of future mechanics and motorsport specialists. Universities, on the other hand, shape students' future competencies, letting them try to build for example future-oriented engines for motorbikes and racing cars, as well as forge innovative developments in aerodynamics and composite materials used to achieve maximum on-track performance.

It is noteworthy that Spain does not divide higher education institutions into applied and research institutions, as is the case in Finland and several other European countries. In other words, higher education in Spain aims to develop students' applied skills without disconnecting them from scientific research and experience, which is particularly evident in a number of technical (engineering) fields of study.

We had the honour of being invited to the city of Terrassa at the UPC - The Universitat Politècnica de Catalunya (2022) hosted by Professor Pedro Javier Gamez Montero (Figure 1). Together with Professor Montero, we exchanged our best practices of RDI-driven education in the field of motorsport and automotive industries, explained the role of Race4Scale project (2022) in the Kymenlaakso and cross-border region as well as discussed potential areas of collaboration between our departments. UPC is one of the leading European universities in the field of education and engineering science, with the clear practical focus and international disposition of its applied and academic research.



Figure 1. Meeting at the UPC campus in Terrassa. (Jarmo Kujanpää, Mikhail Nemilentsev, Pedro Javier Gamez Montero, Jan Kettula – on the photo, photo made by UPC).

Professor Montero noted that most of the students in his department come from the Catalan region but that they train professionals for the whole world – in a kind of

“born global” perspective. Despite teaching mostly in Spanish and Catalan, the UPC students' projects are international in nature. The professor said that XAMK's approach to general (i.e., interdisciplinary) courses common to all faculties/departments - From Idea to Innovation, Communication Skills and the Fundamentals Of Entrepreneurship - seemed fantastic for Spain. They do not currently have a similar approach, where students of all majors and levels study the above courses together. In his opinion, these courses form a certain "practical international language" and endow each student and teacher with the soft skills so necessary to promote their engineering ideas and technical solutions on the international market.

In addition to what has already been said, Professor Montero expressed his gratitude for such a strong disposition towards RDI used in XAMK. In his opinion, Spain needs more practical lectures. Although some professors have experience in enterprises and act as so-called professors of practice, many UPC employees still teach all their lives without leaving their academic seats. The Catalan region also does not compulsorily supply projects for lectures and seminars during undergraduate studies. At the same time, as they approach their master's degree and work on their master's theses, UPC students have the unique opportunity to witness high-tech testing at racetracks and circuits, as well as internships at the parent companies of world tech leaders based in Barcelona and its surroundings.

During our visit to the headquarters of Casa Seat (2022), we had the opportunity not only to get acquainted with the physical environment of the site, but also to participate in an international seminar where future possible scenarios for the development of the world economy were discussed based on the current research of Harinder Kohli, Founding Director and Chief Executive de Emerging Markets Forum (Kohli et al. 2022).



Figure 2. Show room in Casa Seat (photographer – Mikhail Nemilentsev).

A few comments should be made regarding the organization of space and the functionality of the Casa Seat headquarters (Figure 2). Firstly, anyone can get into

the building to see the novelties of the automotive industry, located on the second floor in a kind of showroom. The emphasis is on modern technologies and electrification of the automotive industry. In addition, the building has a space for young people to work with all the necessary attributes of networking: Wi-Fi, a cafe area and a meeting area, individual workplaces with a laptop or tablet, as well as a large space reserved for presentations and guest performances.

Every month, Casa Seat hosts English-language seminars and discussions on issues of global importance relating to the sustainable economic, technological, social and cultural development of society, and not just specific branches of technology. That is, in the headquarters building, located in the very center of Barcelona, both a professional in motorsport and the automotive industry, and a person who does not have any professional technical training, can find an occupation of interest. It was good to see journalists from international and Spanish periodicals, as well as researchers and entrepreneurs, at the above discussion of the study on the future towards 2060. Similar activities should be developed in the Kymenlaakso region to create a more suitable global learning and business environment.

We also became spectators of the three-day Formula 1 Grand Prix in Barcelona-Catalonia (Spanish Grand Prix 2022). The entire organization of the event testified to the many years of successful experience of cooperation of the Catalonia region with car manufacturers, the service economy, as well as the involvement of regional educational institutions in the process of servicing the auto track and car teams. The audience of many thousands, despite the thirty-degree heat, was fully included in the sports show. Everything was organized just great. One could see how important it is for the region to have world-class sports events: it attracts scientific developments, investments and, most importantly, people to the region not only during the events themselves, but also during the period of training and work in the relevant specialties (Figure 3).



Figure 3. Spanish Grand Prix Formula 1 (photographer – Mikhail Nemilentsev)

At the end of our trip, the project team visited one of the leading colleges in Europe for the training of mechanics for the automotive and motorsport industry - Monlau

Motul School (2022). With its pioneering pedagogical approach presented by the Director of Monlau Motul Technical School Mr. Carlos López, students are set in teams and continuously guided by their instructors-teacher (Figure 4). All educational staff has multi-year working experience on the racetracks and are currently assisting the world's leading race teams in regular international competitions. Students get their internships in the Spanish and overseas race stables and can complete on-the-job studies. With the basic education mainly run in Spanish (or Catalan), all the internship work is done in English. Being highly competitive in the international landscape, the school preserves quite many features of the regional educational institutions.



Figure 4. Motul School Visit in Barcelona (Students and Director of Motul School as well as Xamk project team are in the photo; photo is made by Motul School).

In general, all visited places and events had one similar trait – internationalization at home. It can be also featured by the concept of glocalisation – when certain global processes occur at the local level. Barcelona and Catalonia as a region represent a wonderful combination of the rich physical environment, multi-sided technological and economic facilities, sport orientation and socio-cultural interactions at the cross-border and fully international landscape.

In conclusion, the track view of the main features of Race4Scale project (Figure 5) is given below learned during this benchmark visit of Barcelona in May 2022 and multiplied by the project teams' cross-border experience. International and domestic environment are mutually interdependent in any education or RDI process. Applied theory cannot exist without practice earned only in the real market environment. In our automotive and motorsport industry context, practice is nurtured on the track. Purely hard skills – such as engineering, ICT, technology in general – cannot lead to successful productization and commercialization of innovations. Hard skills have to be always balanced by the soft skills – the so-called “red thread” of intercultural skills, basics of entrepreneurship and innovation competences – that is successfully implemented at XAMK in the educational process at any level and in any branch. Visitors of the race events represent stakeholders of the educational process and the

automotive/motorsport industry. Multi-color flags represent certain pit-stops and interim checks that are critical to continues development of the industry – schools, colleges, universities, universities of applied sciences (UASs), and industry clusters.

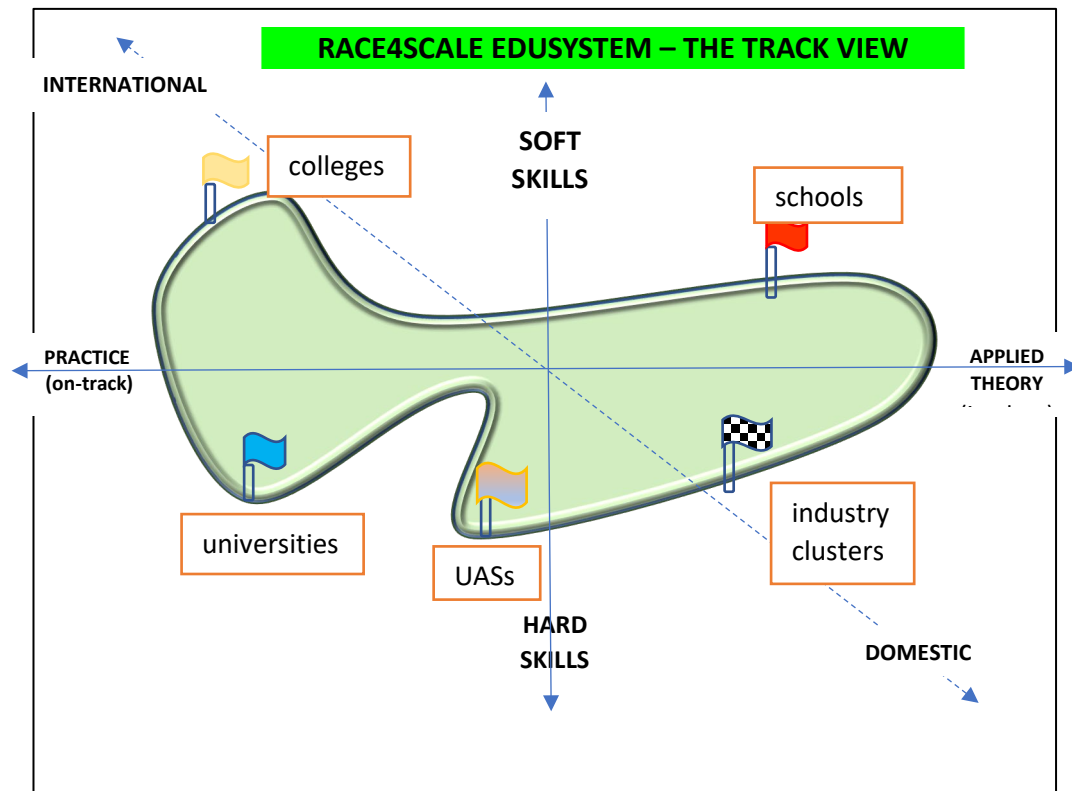


Figure 5. Race4Scale Edusystem – the track view (developed by M. Nemilentsev)

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