Parking Zero

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Abstract. The impact of innovation might end up in an unexpected fall out of problems, which need an even more creative outcome for getting solved.

The automotive car seemed to fulfill the dream of personal mobility, but generated two human generations later, by tremendous acceptance worldwide, many of the thorny problems and even conflicts, which we have to deal with today.

The absurd paradox is the urban immobility, the result of the stand by cars on the drive ways and parking lots, which shrink aggressively the available surface and hinder the traffic.

We are addressing the topic and the potential ways to addressing it, with a vision.

1 Reasons

Every major innovation is a great promise to fulfill an expectation and many are able to fulfill the desire at least for a time. Some of them are so successfully, that by their dissemination new problems rise, which are growing bigger than the initial one, the innovation has been supposed to solve.

A cascade of subsequent innovations follows, addressing down the stream the problems, created by previous solutions.

This fractal pattern is nowhere else more evident than along the major coordinate of life, which is the mobility.

Mobility is inherent to the life, as it answers the existential need for browsing options and reaching targets. Mobility is about the reach, the encompassed distance.

Along the time and across the civilizations, the human mobility was determined either by the own fitness or by biological or material carriers. These carriers came with an additional volume, which was left behind or in stand by after reaching the target.

Howsoever these external platforms have been: either other humans or animals, either palanquins or rickshaws, either carriages or motorized cars, they always required a special surface for the stand by time, “the parking place”.

The situation grew dramatically with the multiuser and heavy duty motor vehicles, which grew from 980 millions in 2009 to 1015 millions in 2010 and since then shows a growth rate of more than 35 millions vehicles an year.

In order to figure out one billion cars, just remember, that a parking lot needs a fairly large space, around 25 m^2, this is just 40,000 cars /km^2. One billion cars needs

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hence a neat 25,000 km^2, roughly the surface of Belgium and is growing by 1,000 km^2 every year. This loss of living surface is worse than earth warming and the consequent growth of the planetary ocean level.

More scaring is the stationary image of this huge surface for most of the time, as a car is used in average just 200 h an year.

We have reached the stage of URBAN IMMOBILITY.

All these figures show, the need a radical, new approach.

We need disruptive concepts, enhancing the usual human reach, without letting any "vehicle" behind, realizing a reminder-less mobility.

They are some options, which have been already addressed:

- **Fitness** (slides)
  This enables one's natural walking capacity and maintains his endurance, but doesn't extend the reach.
- **Enhancing the walking skills** (slides)
  Understanding the human potential and dynamic of walking and optimizing the walking procedure.
  The Olympic "Walking" competition induced a process of optimizing the walking procedure, which might be efficient, but is acceptable on running track only.
- **Plyometrics** (slides)
  The jump and the equipment enhanced jump are great sport challenges, but no procedures for urban mobility, even if sometimes happens.
- **Exoskeleton aided walking** (slides)
  There is an intensive research and a lot experimental output, mainly for rescue and military purposes. Exoskeletons and leg bound equipment enhances many times the endurance even under heavy loads.
  It might promise relieve for elderly and other motoric impaired people.
  The cyborg character of this equipment must be overcome, in order to reach a more general acceptance in the future.
- **Wearable** (slides)
  Even if in the same conceptual segment like the exoskeletons, the "wearable one's" impact is just the interface between the street and human.
  Started in early XX century as "skates", the wearable's diversified as typology, some of them getting motorized, but managed to leave behind the sport and play grounds, getting a large presence in the urban environment. They enhance manifold the reach and even the speed and show a major Urban Mobility potential, accompanying the owner everywhere and not affecting in stand by the street or side walk.
- **Portable** (slides)
  They are venerable as well and show a spectacular development either as boards, power boards or foldable and portable wheeled platforms.
  The acceptance is even higher than of the wearable ones. When in use remind the urban bicycle or scooter.
  Lightweight, compact and expensive the portables are stored indoors and don't crowd the public urban space.

– **Mobile sidewalks** (slides)
  Result of a creative mental process of inversion, the mobile sidewalks seemed to be a curiosity of the end of XIX century exhibitions.
  However they managed to develop recently to human conveyors endorsing the mobility indoors, for short tracks in airports and malls.
  The mechanical drive is limiting the application field.
  There is a serious potential to develop the street and sidewalk to a dynamic vector from the passive surface of today.

A special approach is the "Mobile Road" concept, which has been realized as a Moving Sidewalk and as a Shared Vehicle system.

They are concepts of autonomous vehicles, like Google's SDC, Self Driving Car, which are increasing the operating time by sharing vehicle system. They are still volume presences in stand by and planked surfaces on the street.

Their success will recreate the actual problem within a short time.

– **Shrinking the stand by vehicle** (slides)
  The foldable object, from the tent to the yurt, is the attribute of the traveller, of the ephemeral, of the mobility per se.
  The conceptual proximity should have invited to reflect about the collapsible, implosive, foldable vehicle and it did.

Sharing the mobile platform, which becomes a dynamic vector of the street, leaves still a stationary, parked platform behind, but increases her frequency of use.

Shrinking Vehicle is a better option of shared use with minimal footprint in parking position. We have dedicated a special attention to this approach in the project "Bus-Bank".

Many urban areas have rails for streetcars or the peripheral rail system. The problem is the stations, which are bottlenecks, supposed to be reached and the trains, which have their own schedule and the inconveniences of mass transportation.

But the rails have the major advantage of a smooth ride on a metal track, which can transport information and energy.

These features would help overcome the energy storage disadvantage inherent to electrical cars and open a new dimension to the urban mobility.

In our solution we are considering the "minimal footprint in parking" criteria, reducing occupied surface in stand by foldable capacity and sharing the use. (Animation)

– **Dematerialization**
  The ideal vehicle is having a presence just in use, fading away after that, in order to return into materiality, when is needed.
  Fernando Cortés gave this example as he burnt down his ships, after reaching the American shore. He meant "no way back", but gave an example of "just for a ride" expandable mobility platform.
  However we would like this way, Einstein says perhaps, sir Isaac Newton says "nothing is for free = entropy".

– **Virtual Presence** (slides)
  We have started wondering, how the car, promising ultimate personal mobility led soon to urban i-mobility for all.
  As usually, there is another conceptual space, where a radical approach is coming from, virtual reality.

There is a significant progress in holographic representation and cave technology, allowing realistic 3D visual presence. These telecommunication tools are beyond the experimental stage and promise some relieve to the schedule and traffic problems related to the business meetings.

This horizon of Immobile Ubiquity shall not be the ultimate urban mobility bliss.

PARKING ZERO, "the parking lot in the trunk" is still a challenge to the human creativity and I want to invite you all, to accept this challenge, inviting you to a PARKING ZERO contest of concepts.

Meanwhile the available world is shrinking by 1000 sq/km an year for parking.

It is time for action!

Our Danubius Academic Consortium invites the students from Europe, to address successfully the topic of mobility without leftovers.

We would win for the life 25,000 km^2 plus 1,000 km^2 every year. This is a lot, a great award.

Join us!

2 Conclusion

The emerging horizon of Immobile Ubiquity shall not be the ultimate urban mobility bliss. It is up to our creative power. Let's overcome the expected by unusual, disruptive new concepts.