Future transport

The future is bright, but the transport challenges are clear and present. The future of transport must be more than autonomous vehicles and hyperloops.

While we envy those preparing to travel at 1 200 km/h, we take a look at some of the very real challenges that are impacting us on the ground and how technology alone cannot create a brighter future. We need to get the basics right.

RE-ENGINEERING OUR CITIES

For a start we need to rethink how our cities work. As engineers we need to collaborate more closely with urban planners to combat urban sprawl and build more inclusive, mixed-use spaces where communities interact with one another and have a better quality of life. We need to ensure that the transformation of our urban landscape does not outpace essential transport planning, bearing in mind that transportation systems, like the Bus Rapid Transit (BRT) systems, are often the behind-the-scenes catalysts that spark urban regeneration. While the benefits are huge, this smart new way of travelling also comes with its challenges, from rising OPEX costs to enduring modal competition during initial stages of development. We need to develop solutions on how to make systems affordable to the lower-income groups while still being attractive to the growing middle-income car-user group. The drive to combat urban sprawl will move people and opportunities closer together, with larger portions of the population enjoying greater accessibility to the system, improving its economic viability and proving once again that land use and transport planning need to work hand in hand for maximum impact.

INTEGRATING OUR URBAN TRANSPORTATION SYSTEM – THE FUTURE IS MULTIMODAL

Without question we need to fast-track integration of our rail, BRT, minibus-taxi and municipal bus services. People in cities travel for different purposes, at different times of the day and over varying lengths. Consequently no single mode of transport can satisfy all travel needs. It is important that transportation systems embrace all modes and deploy them in an optimum way, appreciating the strengths and weaknesses of each. The BRT, with its sophisticated AFC and APTMS equipment already outpaces ageing rail and municipal bus infrastructure in certain areas. With poor interface and flexibility between the different modes, it is difficult to plan and implement one 'seamless' system that enjoys optimal connectivity across the modes. This, together with constrained financial resources, means that we as engineers need to figure out how we can address these interface issues. We need to optimise our system designs, rationalise overlapping services on contracts that municipalities have control over (such as the municipal bus services) and review industry compensation models.

SAFE AND INCLUSIVE ROAD NETWORKS

As urban communities deal with congestion and rising fuel costs, rural communities face the challenges of being disconnected from the real economy. Often the only lifeline to these communities is the national road network. This places our national routes under severe pressure, reducing mobility and introducing serious safety hazards to high-speed motorists, truck drivers and villagers alike. It is essential that the future holds commitment to constructing the supporting transport network, bringing meaningful transport and development opportunities to rural communities. Planning effort and political intervention are therefore crucial in addressing the transport challenges that these communities face.

MAKING SUSTAINABLE CHOICES

Environmental factors will very soon play an important role in deciding which transport technologies are implemented. The revitalisation of our ageing rail system will undoubtedly help create low-carbon, urban environments. As transport engineers we need to ensure that available funding is wisely spent on repairing and replacing this declining system to recover its role as the most effective and efficient mass mover of people and goods.

KEEPING UP WITH THE REST OF THE WORLD

Uber revolutionised transport on demand, so we cannot help but think what's next in the transport field? The international community has enjoyed transport *apps* for some time now and we look forward to our own Gauteng-on-the-Move (the new *app* that provides real-time public transit information) going main-stream. Big Data, populated from transport-wide sensor systems, on-board vehicle monitoring, cell phones and social media providing important customer preferences can be used to both plan and modernise transport systems. The challenges with harnessing Big Data and turning it into meaningful insights and real-world practices is that it requires cross-disciplinary collaboration in research and development between information technology (IT), engineering and other stakeholders.

And for the high-techs amongst us, as self-launching drones become a reality at Dubai Airport, the chance of using an air-taxi might be sooner than expected. And we're not ruling out that the next phase of Gautrain could be a hyperloop? After all, Africa does not have the restrictive regulatory systems of first world countries that often prevent new technology from entering the marketplace.

Apart from novel technologies, the future of transport is still one that has to be integrated and multimodal, safe and inclusive, and should support re-engineered cities, reduce its footprint on the environment and delight the users and the dreamers amongst us. ☐

Info

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