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Professor Roos

Sir,

referring to the gift ESD received from Cordell Hull for infrastructure research, here is my proposal.

*System Architecture Approaches To Improve Infrastructure Development*

Traffic congestion and traffic related pollution are increasing problems worldwide. The normal approach to solve these problems is to increase traffic network capacity in the apparent bottleneck. This ad-hoc method is bound to fail, since widening the bottleneck just moves it elsewhere, which may in the end make the overall situation worse. My research proposal is to use system architecture approaches in design better and less ad-hoc solutions to the traffic related problems.

In particular, I propose developing a set of general requirements for any traffic network. These would involve, for example, the following: end-to-end trip times, minimum average speed, average number of transfer, the amount spend in waiting for transport, resiliency (in case of accidents and breakdowns), dependability (how reliably the transport start within certain time), total amount of pollution, the cost of transportation system in percents of GNP, safety (people killed in traffic per year), and amount of space used for transportation. Once we have the set of requirements, we can calculate current value of each requirement. Then, we can use system architecture tools and methods in designing better solutions for traffic related problems. We can also build general simulation models for traffic problems, and use the models in comparing alternative solutions.

Regards,

Matti Kinnunen