From Theory To Practice:
What can we learn from our U.S. experience?

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(page 1) When I first developed an activity schedule model in 1994 as a student at MIT, I did it with the hope that it would lead directly to the implementation and use of activity-based models.

(page 2) As I thought about what I might say today I reflected on the progress that has happened in the U.S. since then. This presentation is a preliminary attempt to chronicle some of that progress, and reflect on what made it possible.

THE PROJECTS AND THEIR INNOVATIONS (THE FACTS)

(page 3) Here is a list of projects I have chosen to mention. It includes (a) US projects (b) that have sometimes been called activity-based models, (c)where a sponsor expressed some intent to implement and use the model, and (d) development has started. Lets take a quick look at innovations that have been implemented in each project.

(page 4) The Metro model was the first to be implemented. (page 5) It was based directly on the activity schedule approach I developed at MIT. (page 6) In addition, it included a range of important features that fleshed out that approach, and was used once for policy analysis.

(page 7) The San Francisco County model used the same basic design. (page 8) It was the first of the models to be calibrated, and then used on an ongoing basis for policy analysis. Along the way, innovative procedures were developed for doing that analysis.

(page 9) In New York, (page 10) a different approach was used for integrating the tour models. Within each household, the simulated tour choices explicitly depended on the purpose of tours alreeady simulated for this and other persons in the household. The NYMTC model has also been used for innovative analyses, some of which would not be possible with a traditional 4-step model.

(page 11) The Columbus model started with the NYMTC framework (page 12) and enhanced it substantially, with a strong emphasis on implementing explicit household interactions and, detailed time of day modeling.

(page 13) The Sacramento model also used the MIT activity schedule approach. (page 14) It reformulated the day activity pattern, introduced parcel-level spatial resolution, demonstrated the possibility of rapid development and deployment, and used innovative techniques for rapid equilibration of activity-based microsimulation models.

(page 15) The Lake Tahoe project (page 16) was the first implementation for a small MPO, and the first to transfer and recalibrate a model built for another region.

(page 17) The Oregon model (page 18) was the first activity schedule model to be implemented for an entire state, and it was also integrated into a land use model system.

(page 19) In a recent major project, the SFCTA model (page 20) was enhanced to support road pricing.

(page 21) Ohio imported the Oregon statewide model (page 22) and enhanced it to include long distance inter-regional trips.

(page 23) The Atlanta model, which will be based on the MORPC design, hasn't been fully implemented yet, (page 24) but they have implemented a flexible population synthesizer, and other innovations are on the way.

(page 25) DRCOG (page 26) and MTC (page 27) are the most recent locations where new development projects are under way.

(page 27) We should notice three important things about these projects:

(1) Although the amount of innovation has varied greatly, every one of them has been innovative.
(2) Every project has led to a fully operational model system.
(3) Except for Metro, every implemented model has continued to be used.

SOME LESSONS LEARNED (MY OPINIONS)

(page 28) I've been sharing facts up to this point. Now I will switch to opinions. "What made these projects happen?"

(page 29) I would cite six important factors:
(1) Workable design framework
(2) Trusted instigating advocate
(3) Motivated sponsor
(4) Powerful internal champion
(5) Capable innovative developers
(6) Capable user staff

(page 30) At Metro, Keith Lawton moved forward after he saw a successful university prototype. Having a complete enough framework to build on seems to have been crucial.

(page 31) For every project, someone who is trusted by the sponsor must step forward and say, "Let's go for it". Everybody knows that Keith Lawton did this at Metro. What I didn't know until a week ago, is that Gordon Schultz deserves the credit for being the instigator in three of the next five projects out of the blocks.

(page 32) A third key ingredient is sponsorship, And that includes an adequate stream of funds to see the project through to completion. Each of these projects has its own important story of how that sponsorship came about and was sustained.

(page 33) The project also needs an internal champion to build and maintain sponsor support.

(page 34) An innovative project needs developers who are able to embed creative research and development into the fabric of the project as it unfolds.

(page 35) Finally, it also needs users to do the follow through, breaking in the new features and initiating ongoing improvements.

(page 36) But one of these models is no longer being used, and some have been in development for a very long time. What's up with them? At the risk of ruffling some feathers, I think it is instructive to bring up two specific examples.

(page 37) First, "Why didn't Metro keep using their model?" (page 38) I think the problem had to do with sponsorship. When it came time to calibrate and validate the model,
(1) the MPO was struggling financially
(2) and substantial federal funds became available from TranSIMS
(3) so the development money and staff resources were dedicated to the TranSIMS project,
(4) and the model calibration and validation work was never funded.

(page 39) My second dangerous question is "Why is it taking ARC so long?" (page 40) Again, the answer is not technical. Again it has to do with sponsorship.
(1) In this case, a cautious ARC top management chose to invest at a very slow rate in the development effort.
(2) They also became pre-occupied with a major geographic expansion of their MPO region from 13 to 20 counties,
(3) and didn't commit major resources to development until this year.

CONCLUSION

(page 41) Although many different conclusions could be drawn, I would like to highlight three that stand out to me.

(1) Projects that have brought these new methods into practice have conducted substantial amounts of the research and development needed for their implementation.
(2) From the standpoint of being implemented and used, they have a very good track record,
(3) And finally, the biggest risk of failure has not been technical, but rather has been insufficient sponsorship.