

## **Considerations beyond mobility for the O3B**

Sensing the imminent/possible transformation of the ‘other 3 Billion’ discussion into one that focuses on addressing the challenges of mobility, I wanted to quickly jot down some other perspectives the group and others might consider in the future.

Most of our discussion of “what is architecture” and what is not seems to be about “what is required” and what is optional in the architecture. Like others, I’d argue that thoughtful design of some key optional pieces (concurrent with the design of the required parts) is crucial, because even those optional pieces are still quite low-level relative to the problem domain of many applications. They therefore benefit immensely from design and interoperability efforts by network architects who understand the supporting “required” components and their motivations.

The question of better support for new application developers amongst the 3B came up in plenary and was repeated in the session. Solving issues with mobility is just the first of many challenges developers will face that are about overcoming technological realities so they can work at a level of abstraction closer to their problem domain. There are others. Thoughtfully designed, standardized, and widely-deployed “optional” pieces (for example DNS and DHTs, as discussed) are of immense value to application developers, especially early adopters.

These “optional” parts of the network architecture, especially where they intersect with *naming, resource sharing, identity, trust and privacy*, will embody social and cultural norms in a more direct way than, say, the IP layer. They are also where a mismatch amongst other norms and those that are dominant understandings in the internet architecture community seem most likely to occur. Exploring designs that try to address that mismatch may better support alternate technology trajectories in the developing (and developed!) world from which spring surprising and wonderfully specific platforms and applications.

A paper that I’ve found useful in other contexts for considering the affordances of a {language, system, architecture} relative to supporting applications is Green & Petre (1996) cited below—not so much for anything regarding visual representation as for its articulation of some specific cognitive dimensions: *abstraction gradient, closeness of mapping, consistency, diffuseness, error-proneness, hard mental operations, hidden dependencies, premature commitment, progressive evaluation, role-expressiveness, secondary notation, viscosity, visibility*. I suspect these (and other similar frameworks that must be out there) can be useful in considering application support in optional architecture pieces and even “core” services—whatever that might mean to a particular architecture.

- Green, T.R.G. and M. Petre (1996) “Usability Analysis of Visual Programming Environments: a ‘cognitive dimensions’ framework,” *Journal of Visual Languages and Computing* 7:131-174.  
<http://remap.ucla.edu/jburke/misc/o3b/Green&Petre.pdf>

Here are a few other references that might be useful leaping off points for considering social and cultural context of any 3B (from the pragmatic to the abstract):

- While I think it’s quite challenging to translate the viewpoints of the papers at the following conference (which I just ran across) into architectural implications, it seems valuable to see the questions and concerns voiced in venues like this: International Center for Information Ethics 2004 Symposium – “Localizing the Internet: Ethical Issues in Intercultural Perspective”, 4-6

October, 2004, Karlsruhe, Germany. <http://icie.zkm.de/congress2004> (Though the papers are not post, several can be found with a quick web search.)

- I suspect these raise similar issues to the CRA workshop (Clark & Nissenbaum) mentioned earlier in the Summit. (The version of their report that I could find quickly was here: [http://www.cra.org/ccc/docs/Preliminary\\_Report-Network-Design-and-Societal-Values.pdf](http://www.cra.org/ccc/docs/Preliminary_Report-Network-Design-and-Societal-Values.pdf))
- One early discussion of the relationship between culture and privacy that we have returned to at CENS several times: Altman, I. (1977) "Privacy Regulation: Culturally Universal or Culturally Specific," *Journal of Social Issues* 33(3):66-84. <http://remap.ucla.edu/jburke/misc/o3b/Altman1977.pdf>
- Another starting point is to consider some of the work being done at the intersection of ethnography and infrastructure: Star, S. L. (1999) "The Ethnography of Infrastructure," *American Behavioral Scientist* 43:377-391. [http://remap.ucla.edu/jburke/misc/o3b/star99\\_ethnographyOfInfrastructure.pdf](http://remap.ucla.edu/jburke/misc/o3b/star99_ethnographyOfInfrastructure.pdf) (Consider, for example, the section starting on p9 called "Tricks of the Trade," that the author calls "helpful for 'reading' infrastructure and unfreezing some of its features.)
- Finally, a dimension that could be interesting to consider is how differences in high-context vs. low-context communication might impact architectural affordances, especially in these optional "higher-level" pieces or content-centric components/approaches- <https://digitalcommons.georgetown.edu/blogs/isdyahoofellow/edward-halls-context-prism/>

And, mostly because it's a fun read:

- Medina, E. (2006) "Designing Freedom, Regulating a Nation: Socialist Cybernetics in Allende's Chile," *Journal of Latin American Studies* 38:571-606. <http://remap.ucla.edu/jburke/misc/o3b/MedinaJLASAugust2006.pdf>

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