

OWC'2011 Panel Discussion

Beyond IEEE802.15.7: in search of the killer app

Visible light communications seems to be a solution searching for a problem.

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IEEE802.15.7 ... the VLC enabling standard?

It would be great if IEEE802.15.7 was widely deployed but currently there does not appear to be any uptake activity.

Why?



Market deployment characteristics of VLC

The VLC signal source is a signal of opportunity with low cost overhead provided the light source is reliable. Some characteristics are:

- Relatively directional transmissions due to LED construction.
- Receiver beam forming: using an optical lens and a photonics sensor array, VLC can offer excellent spatial separation (i.e. think photography).
- In strong LOS channels, the optical lens receiver can extract the LOS signal and almost completely reject multipath.
- Receivers are relatively cost effective, but performance is poor {i.e. photodetector related path loss is $40 \cdot \log_{10}(D)$ }
- Complex ecosystem ... who makes the investment!

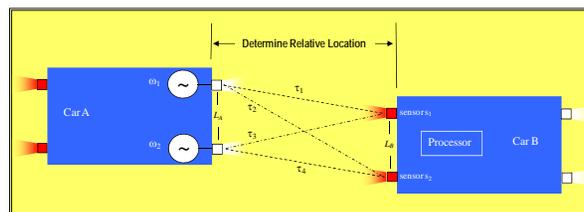


Ranking of Opportunities

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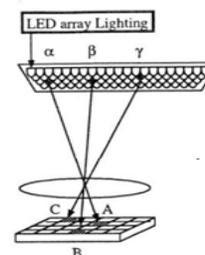
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1a. High Resolution Positioning



Example: auto positioning with 10 cm accuracy

1b. Indoor Photogrammetry Positioning



Example: indoor navigation with 1 meter accuracy

3. Location Enhanced Info Broadcast



Example: smart signage information broadcast

4. Visible LAN Communications



Example: secure conference room VLAN



What's next?

While VLC *potentially* has wide market appeal, what is needed for the technology to “gain traction” is to address a unique problem that can not be readily or economically solved by any other means.

Often it seems that researchers try to show that VLC can duplicate what can be done with more traditional wireless.

Does such a “VLC centric” problem exist (ignoring niche markets)? And is visible light the best solution or is infrared more appropriate? We need discussion, research and published papers that attempt to identify, clarify and justify, future VLC opportunities.

