Can cities be smart enough without being spatially enabled? The answer is undoubtedly no but it is not obvious. To be considered as spatially enabled, a community (city, local government, society, university), must first consider location and spatial information as common goods, and then make them available in order to stimulate innovation. Therefore, in order to become spatially enabled, three conditions are required. First, community members have to be “spatially literate.” Secondly, spatial enablement requires a conducive environment to open and share spatial data. Last but not least, there is no possible spatial enablement without shared and unified geospatial standards (Roche et al., 2012). For its part, the idea of the Smart City resulted from a very aggressive strategy developed by Information Technologies giants, such as IBM or CISCO, it was quickly taken up by researchers from various disciplines. Some of them see it as an opportunity to rethink the notion of urbanisation with a more systemic approach, reintegrating the concept of sustainable development into urban context. Some others associate the idea of Smart City with an active commitment of citizens into urban innovation processes, thus overhauling city governance through open and bottom-up procedures (government, data). Finally, the others take this opportunity to advocate the fact that urban infrastructures based on the systematic use of information and communication technologies show greater efficiency.

Nevertheless, to date, no consensus has been reached from this proliferation of interests. In order to understand the concepts underlying the Smart City, we have focussed on what specialists had to say about it. I’m currently carrying out a meta-analysis from a corpus of 67 recent publications [24 peer-reviewed scientific papers, 23 studies published by private companies and 20 reports (uses cases or case studies) published by local governments (essentially cities)]. This corpus contains a total of 71 8923 words (33 542 distinct words). I do not intend to go into the details of the lexicometric analysis in progress; yet, I would like to use the preliminary results of this study to propose and discuss a draft framework for Spatially Enabled Smart Campus.

The proposed framework is based on the four puzzle pieces shown on this figure, which need to be properly organized by university stakeholders in order to advance campus development. For implementing and maintaining each of this puzzle parts the role of information and geospatial technologies is crucial. A campus could be seen as a small city (e.g., Laval campus: 50,000 people, 40 buildings and a 1.8 km² area). So in term of administration and infrastructure management (building; services: energy, water; BIM, transport . . . ) the issue is very similar to
the one of a city. But the rationale of a university is very different: knowledge and universality are the core business of Universities.

1) The digital campus aims at efficiently operating an infrastructure based on communication and information technologies, networks and sensors so as to optimize campus’ “routine” operations, which could be called campus Operation System. GISciences can support Smart campuses by dramatically enhancing this digital dimension, and in particular the university informational infrastructure. When the concept of digital Earth is for instance applied to campus contexts, it closely reflects this digital dimension. Indeed, ongoing work in the fields of SDI and big data offer possible methodological and technological solutions to support campus in the implementation of a digital model (e.g., a Lidar-based 3D model has been developed for the Laval campus to serve multiple applications). More particularly, and to use the words of Craglia et al. (2012), the next generation of digital campus will not be a single system but, rather, multiple connected infrastructures (related to various physical components of the campus: transportation, land organisation, BIM, as well as kind knowledge components: online and mobile courses, student services, research supports . . .) based on open access and participation across multiple technological platforms that will address the needs of different audiences (student, faculty (cross-disciplinary), citizens, etc.).

2) The open campus is a way to create methods of governance re-structured around informational infrastructures and open services/data, based on collaboration and partnership to improve the efficiency of the services provided to the university community (not only internal), especially in terms of knowledge transfer, scientific mediation, participatory learning . . . This “open democracy” dimension can benefit from the recent advances in GISciences. Indeed, the concept of open democracy is threefold: cooperation (transversality and partnership), participation (co-construction of public policy, consultation, debates) and transparency (open data and dataviz: use of images). GISciences are particularly relevant in terms of participation and transparency. For instance, they provide technological mechanisms and infrastructures to develop access and delivery (location-based and mobile) platforms for open knowledge and open course, ensuring their qualification (adding metadata and sharing students experiences) adapted to various audiences and enhancing readability through multimedia and (carto) graphic representations.

3) GIsciences can also support the development of the intelligent campus dimension, that is to say of the social infrastructure and civic spatial engagement practices. Crowdsourcing and VGI, including location-based social networks (in Laval, the use of dedicated social medias are exploding, including as a new teaching tools), stand out today as key geospatial data sources indicative of the pulse of places. The connected campus community members, acting as active sensors, have the capacity to contribute even more efficiently to the spatial intelligence of campuses. Indeed, GIsciences offer different types of potential support: the design of mobile positioning technologies centred on the individual, and providing more user-friendly interfaces for various applications (M-Learning, serious gaming as the one that has been developed in my department for the green campus challenge . . .) or teaching approaches to improve community
members’ spatial skills and provide them with spatial thinking advanced abilities so that they could use spatial analysis approach in various discipline.

4) A Smart campus is a place where students should become citizens, where they could be part of renewing the forms of active citizenships built on the participatory involvement of all community members, with a concern for innovation. The live campus dimension refers to a way of seeing university campuses as living/fab labs that are continuously being reshaped (adaptive to change). In this context, GeoDesign, with a big D (Goodchild, 2010), as part of GISciences, provides innovative, creative, deliberative, uncertain, multi-actor, multi-scale and multi-thematic methods and tools to design smart campus and impact on their physical and “senseable” structure (e.g., the TEDxCity2.0 lab we have recently organized across the Laval campus with external partners or the GeoHack meetings that have started in the campus in order to improve community members’ spatial skills and help them to be more efficiently involved in its design.