Chapter 12

The power of place and perspective
Sensory media and situated simulations in urban design

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It may be said that a Copernican turn in media is underway. Increasingly, we are set free from the physical constraints of traditional media locations for our regular information feed, be it the cinema house, the TV set, the radio, or our favorite reading chair. Instead, information in its many forms and the interfaces we activate to access, produce, and share it, gravitate around us as individuals. They follow us everywhere, and always, and, importantly, they do so as we move. This gives new meaning to the significance of location and perspective. Added to these dimensions is the further condition that dynamic information media engage us with the sensorial in the situations of their use. While earlier media were conceived as sensorial extensions of our nervous system (as championed by McLuhan 1964), now the metaphor applies to the handheld media devices themselves. These terminals are no longer only subordinate augmentations of our human sensory system, but have their own complex sensorial capabilities as well. We may say, then, that we are experiencing the age of situated and sensory media.

This turn away from the physical restrictedness and immobility of traditional media hardware to the individual body of the users and their always-on mobile devices will most probably cause changes in the power of place and perspective (Bratton 2009). In the following pages we explore these consequences in the context of an urban design case from Scandinavia that concerns the placement and selection of a new national museum within wider processes of urban change. The addition of location-based technologies and dynamic situated media (that are processed and interpreted on site) raises a number of challenges in negotiating relations between place, position, perspective, and perception. The use of these new technologies and related negotiations around them may open up issues for cultural policy and decision making. Consequently, they may also have some bearing on our understanding of sites of public cultural communication.

Below, we first describe the basic features of the digital platform we have been experimenting with over the last several years: We have called this situated simulations \((\text{sitsim})\), and it has been identified as a form of indirect augmented reality (Wither \textit{et al.} 2011). Alongside this is the potential inclusion of yet another mode of visual, spatial, and now dynamic situated communication as
part of urban planning and change (Schnädelbach 2009). Digital platforms like *sitsims* are becoming part of the tools we employ to imagine our cities culturally and technically (Donald 1999; Williams and Dourish 2006; Farman 2012). Location-based technologies provide us with additional technical and spatial affordances for positioning designs for the built environment in situ (e.g., Felix *et al.* 2008). They also open out for further extensions of our projections and perceptions of the multimodally mediated designs of architects, cultural institutions, and planning agencies. This is already apparent, for example, in debates surrounding developments on delicate cultural and political sites such as the World Trade Center in New York. It reaches into the online mediation of leading architectural museum complexes such as the Tate Modern in London and the new National Museum of 21st Century Arts (MAXXI) in Rome (Pierroux and Skjulstad 2011). Architectural competition finalists are also often featured in research and design publications as exemplars of emergent and contemporary innovation in materials, computing, form, and aesthetics. Competitions for public buildings, especially large cultural institutions such as national museums, are filled with political contest; they are sites of significant mediation as part of highly competitive processes of selection and award. National museums often become cultural landmarks that are architectural as much as they are known by their collections, curatorial prowess, and quality of exhibitions. These architectural competitions are foregrounded in complex processes that entail the projected cultural location of prestige projects that will eventually be lodged in the built environment.

We draw on a developmental approach to research by design, which involves making and analyzing over time and with reference to emerging mobile technologies. In contrast to social science mobilities research (e.g., Büscher *et al.* 2011; Hjorth *et al.* 2012) influenced by sociology and studies of technological systems, our inquiries and productions are also closely related to practices and published research in the digital humanities (Morrison and Mainsah 2012). We draw on these as resources in designing and communicating how the *sitsim* redefines mediation of place and perspective. Next, we present the core case in which we have applied *sitsim* with respect to the planned building of the new national museum in downtown Oslo. Here we particularly focus on the public visualization of the new architecture and briefly contextualize it in terms of cultural debates, policies, and decision making. We then move on to describing the features of the *sitsim* and its design and trial evaluation with international students on location. This leads to a discussion of the results in context of place and perspective. Finally, we place the findings in a wider frame of interaction design, mediated communication, and cultural discourse and suggest further experiments and scenarios for this kind of experimental research and development.

**Augmented realities: past and future**

Since the virtual reality hype collapsed in the mid-1990s the field of augmented reality has proved itself to be an experimental research tradition in steady
growth. Augmented reality has matured and become a more diverse platform expanding and moving beyond its mixed reality origin as described by Milgram and Kishino (1994). The recent emergence and availability of sensor-based and location-aware smartphones and tablets challenges the original taxonomy of augmented reality and how it has subsequently been characterized in the research literature (Azuma 1997; Azuma et al. 2001). With mobile sensory devices, the mixed reality boundary no longer resides at the level of the display. The frame of the display has itself become the border between the computer graphics generated environment and the real (Liestøl 2011). These new configurations, based on the sensor fusion approach as opposed to fiducial markers and pattern recognition, have been named indirect augmented reality (Wither et al. 2011). A situated simulation is an example of this indirect kind of mobile augmented reality.

In a situated simulation there is approximate congruity between the user’s visual perception of the real physical environment and the user’s visual perspective into a 3D computer graphics environment as it is represented on the full screen of the device. The relative correspondence between the real and the computer-generated perspectives is obtained by letting the artificial camera’s position and movement in the 3D environment be controlled by the location, movement, and orientation input from the hardware sensors (GPS, accelerometer, gyroscope, and magnetometer). As the user moves both herself and the device in real space, the perspective inside the computer graphics space changes accordingly. This form of constructed representation is then applied to simulate alternative versions of a given location in situ. Such a simulation may relate to and display information and versions of the environment which are no longer in existence, hidden, or have not yet come into existence; that is past, present, or future dimensions and topics, or even completely fictional spaces and scenarios.

So far we have primarily concerned ourselves with simulations of past topics: a reconstruction of the original Mission Dolores in San Francisco from 1791; a burial scene of the Oseberg Viking ship and a Viking settlement in Norway from the early Viking Age; the Parthenon and Erechtheion temples on the Acropolis in Athens; the republican and imperial fora in ancient Rome; as well as a reconstruction of the fortified city of Phalasarna on Crete as of 335 BC. Feedback from continual and controlled user testing during the design of these sitsims has shown that users appreciate the incremental value of the simulated environments in that they augment the experience of the specific place in engaging and rewarding ways (Liestøl et al. 2011, 2012; Liestøl and Morrison 2013).

Research and development of the sitsim platform can be exemplified by our efforts to create simulations of the Roman Forum. This has been an experimental process of trial-and-error involving students from both the University of Oslo and the Norwegian Institute in Rome. We have designed and tested numerous prototypes on location. The sitsim was originally a rudimentary reconstruction of Julius Caesar’s Temple in the Forum around its completion in 29 BC. It has evolved into a more complex environment involving the whole Forum with reconstructions from both 44 BC and 29 BC including sequences of actions and
events related to Caesar’s funeral and cremation. These versions have also served as narrative investigations, experimenting with flash backs as well as flash forwards by means of parallel movements in both time and space (Liestøl 2011).\textsuperscript{1} Results from repeated on-location testing with students and school children across all our productions clearly indicate that this is a viable platform for further development and may be shared to form potential genres suitable for various user contexts from research and education to informal learning and guiding. Users have found it particularly rewarding to experience the double perspective the sitsim renders possible and the added value the extra perspective creates in its interaction with the real place.

In developing these sitsims, we were mindful that mobile augmented reality has its precedents in print media. As visitors to Rome we are offered books showing combined views of new and old. A common rendering of these print display techniques presents a page with a current photographic image on top of which you may turn a partly transparent leaf combining the photographed remains of ancient buildings with reconstructions of the absent parts. Turning the transparent page back and forth gives us the opportunity to compare the past and the present over time. Other types display the past and present concurrently with images positioned on opposing pages in an open book. Most common examples are the Then and Now books with a display tradition optimized in the eminent work of Mark Klett (2006). In the first version the juxtaposition is

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure_12_1}
\caption{The Roman Forum sitsim showing a now-and-then snapshot of the Via Sacra looking toward the Temple of Caesar (© G. Liestøl).}
\end{figure}
temporal, in the latter it is spatial. These different modes demand and produce different forms of perspectival actions from the user, turning pages as opposed to switching gaze. The temporal perspective is more sequential and memory demanding, while the spatial perspective gives room to simultaneous comparison of pictorial elements. This difference of display techniques in print media is mirrored in mobile augmented reality. The mixed reality (combined screen) solution gives a layered palimpsest image where the difference between past and present is turned on and off, while the indirect augmented reality mode is similar to the spatial juxtaposition of the real and the computer-generated perspectives in the now-and-then display tradition.

Based on these experiences (Liestøl et al. 2011) we have more recently experimented with future topics, constructing a simulation of a planned building project in downtown Oslo, Norway. Using mobile augmented reality for preconstructions of future buildings and structures also has its precedents in print technology as well as physical 3D models.

Architectural model making has undergone considerable transformation in the past two decades, principally through the near encompassing use of computer-aided design/computer-aided manufacturing (CAD/CAM) technology and tools. All in all, models have a double representational role, as we have argued earlier in respect to developments in digital media (Liestøl et al. 2003). On the one hand they are scaled renderings of larger projected buildings. On the other hand, they become communicative artifacts in their own right and mediate cultural values and projected and intended outcomes. In the selection of media in architectural model making Nick Dunn (2010) offers the student options that range from paper and cardboard; wood; Styrofoam and plastic; resin, clay, and cast materials; steel and other metal works; CAD/CAM; and photography and film. Edward Robbins (1994) has traced, for example, the significance of drawing in the work of a range of leading architects; the views of Kevin Lynch (1960) have continued to be influential in visualizing urban contexts where overlays, annotations, and projections have now been extended into virtual spaces (e.g., Schnädelbach 2009).

We have also witnessed a turn toward the digital in architectural and urban design (McCullough 1998, 2004), with the parametric in architectural design, such as shown in the Verb book series by Actar (e.g., Meredith et al. 2008), influencing too the types of public buildings and mediations we meet as consumers and future dwellers. Parametric design refers to the possible fluid relationships between componential objects in unfolding design processes and systems, maintaining aspects while modifying others through transformations and iterations. While the tools that enable such dynamics in design and the resulting aesthetics of built designs might be infused with the marks of such tools, we see their effect across studios, locations, and competitions. Today architectural competitions migrate these tools and techniques from their own “drawings” in CAD suites to companies that then render these as filmic materializations (see Hah et al. 2008) that have persuasive and rhetorical force, as has been the case across
Importantly, architectural competitions come to be an enduring location for public use, one that is now interlinked with locative media technologies from Quick Response (QR) codes, Radio Frequency Identification (RFID) tags and social media messaging. Mobile devices already enable the download and generative use of applications (“apps”) for overlaying information and interpretations upon screened content and actual sites of interest in a mode of “net locality” (Gordon and de Souza e Silva 2011).

Clearly, digital tools have a bearing on the workflows and activities as well as the practices within which a mix of professionals are now connected, from government planners to urban developers, through cultural policy makers to museum curators. Architectural competitions are characterized by intricate processes of planning, promotion, tenders, and selections (Chupin 2011), much of which is outside the purview of the wider public. However, appearance of completed designs and designs—whether by select experts or wider committee—has begun to change rather dramatically with the advent of social media and locative annotation especially as the final, mediated public stages of such contests increasingly come under public scrutiny. We have already seen several highly contested competitions that have shifted beyond their formal professional boundaries into debates across media types, interest groups, and earlier linear processes of formal decision making. Today, architectural competitions for large cultural centers and their relationships to changing urban landscapes and lifeworlds are very much in the public eye and claim in the Nordic context to include a measure of dialogue, albeit in terms of management rather than public hearings (Kreiner et al. 2011; Rönn 2011). Planning and design specialists to some degree are now forced to meet the responses of a varied public as projected buildings and their demonstrated uses are reviewed and discussed. These processes increasingly take place online and via social media.

However, it is still questionable as to what effect these wranglings and contested interpretations have in wider overall planning processes: Large public buildings, as well as private cultural institutions, are tendered on the basis of massive and often intricate funding mechanisms and alliances. The public meets the tail end of a large process, rarely having enough of a powerful flick to return it to its major redesign or inception. However, tenders and competition submissions now entail a mix of media: rarely do we see paper-based models, but in their place filmic renderings of the to-be-built. This is typically a world that may be described as “unreal estate” (Morrison and Skjulstad 2010) by way of its use of projected futures and hyper-real aesthetics that are enacted as persuasive devices in promoting preferable, beguiling, and better “realized” futures. Just as architectural competition now involves a high degree of film as its main mediational means, locative media technologies that draw on a mix of place, navigational, and situated mediation have begun to be taken up as part of the repertoire of architects’ offices. Here the tablet has featured prominently as architects have experimented with its applications, such as Layar, and in layers of “augmented” mediation of urban augmented reality (UAR) app of the Netherlands Architecture...
Institute (Verhoeff 2012: 129) that can be seen as a performative cartography enabled by the smartphone and its capacities to facilitate our production of hybrid screenscapes (ibid: 119). It is such dynamic qualities that we wanted to embody in our own applied uses of indirect augmented reality in the context of the new national museum in Oslo.

**Forum artis—the New National Museum**

Planning and erecting public buildings in Oslo is not an easy matter, particularly when cultural institutions are involved. The ongoing and now protracted political conflicts concerning a new Edvard Munch Museum is only one of many examples of urban planning and change, which continue to haunt the Norwegian public sphere and paralyze political decision making. The history of the new national museum is also typical of this tendency. The planning process for building on the current site (Vestbanen) has been going on for decades and several competitions have been held. A winner (OMA/SpaceGroup) was declared after an international competition in 2002. But a new competition was announced in 2009. After a second round the contribution “forum artis” by Kleihues + Schuwerk was declared the winner from among five other final contenders. Their ambition is that the new museum will be “a vital national research and resource center for the visual arts. The museum complex will distinguish the National Museum as an international exhibition and communication arena” (official leaflet). The Norwegian parliament approved the project in 2013, and the National Museum is planned to be completed by 2019.

The visualizations of the Kleihues + Schuwerk architecture have been published in various media and are available both on the web and in print. The illustrations included in these presentations follow a clear pattern. The aim to exhibit the yet-to-be-built structure in easy to understand overviews is obvious both with still image renderings in print and on web pages, as well as in video sequences. The relationship between framing and position tends to be of two kinds: (1) either the perspective is a bird’s-eye overview with a distant wide angle framing, including as much as possible of the contextual environment (see Figure 12.2), or (2) the position and perspective is on the ground as a street level view and the structures/building elements are close up, with a focus on detail, not overview (see Figure 12.3). The combination of street-level perspective and (distance) overview framing, however, cannot be found in the various illustrations used to present the building complex.

**Forum artis as a situated simulation**

Contact and collaboration with the research and development department at the Norwegian Public Construction and Property Management (Statsbygg) led to the sitsim of the planned new national museum. Statsbygg is responsible for large-scale national building projects in Norway. Their motivation for embarking on
Figure 12.2 Example of perspective combining high altitude bird’s-eye overview and distance (© Statsbygg).

Figure 12.3 Example of perspective combining street level, close up and detail. Perspectives combining large frame, wide angle, and distance are absent from the presentations (© Statsbygg).
this particular sitsim project was two-fold: They wanted to explore new channels and options for dissemination of planned and ongoing projects to the public, and they intended to explore the possible interface between their industry/domain standard, the BIM-platform (Building Information Modeling)—and the basic tools applied for the sitsim platform (Unity3D with export to both iOS and Android). The simulation itself was then designed to be demonstrated and tested by representatives from Statsbygg’s research and development section as well as representatives from The New National Museum Project. Production of the prototype (NasMus for short) was carried out in the fall of 2011 and demonstrated and tested on location that November. The demo of the prototype was by all accounts a success and consequently led to additional trials over the subsequent months. One of the reactions we noticed during these trials was the fact that the people close to the planning process found the relative size between the old and the new building to differ from what they expected. To better understand this response we decided to have a more systematic user test and evaluation. We return to this in the next section.

Based on 3D models and other documentation and material from the planning process, a rudimentary environment was created including the new museum—forum artis—the old railroad station, some of the adjacent structures, and parts of the harbor. The sitsim environment had only two positioned links: One included links to Statsbygg’s website for the project and the other had a “fly-in” function to access an imagined exhibition room of the Edvard Munch collection on one of the upper floors. In this case, the artificial camera is lifted vertically and fixed in a central position inside the gallery room. The ability to tilt and pan the camera, however, is intact. Consequently, the user can orient and move the artificial camera inside the graphically reconstructed gallery in any direction or angle while its position remains stable. Two universal links (buttons) were included in the hide/show dock at the bottom of the screen. One of these was for making the link layer invisible (turning informational mode off) and one for changing and adjusting the altitude of the artificial camera to twelve meters (±50 percent).

The adjacent and peripheral buildings were given a simplistic representation in a light gray color. For the Oslo West Station we used photography-based textures without editing or retouching the images themselves. The new museum building was textured with available resources provided by Statsbygg. For the demos we primarily used the iPad2, but also the iPhone4. We also activated the built-in feature “Tilt offset” which causes the artificial camera to be lifted about fifteen degrees relative to vertical tilt of the device. The reason for this feature is to not have the screen of the device in the middle of the user’s sight and thus block the view, but to instead allow her to be able to hold it lower and thus make it easier to compare the real view with the simulation scenery displayed on the screen. This slight vertical displacement of the correspondence between the two perspectives has proven to function well with users. The horizontal correspondence between the two perspectives, however, remains intact. For the sake of the
illustrations in this chapter we deactivated tilt offset when taking pictures of a typical user sequence (see Figures 12.4–12.7).

In the following we exemplify a typical user sequence by means of photos taken of the sitsim in use on location and accompanied by explanatory captions and summaries. The new museum and its alabaster-colored hall can be seen to the right. From this view the old building is certainly not dominated by the new building (Figure 12.4). The highest section of the forum aris is clearly subdued by the two towers of the Oslo West Station, despite the fact that the real difference in altitude is more than ten meters. This is dramatically different from the perspective in the public illustrations from the competition and planning process. On moving toward the left, or northern, side of the old museum building, additional details of the proposed structure can be seen (Figure 12.5).

Then, as shown in Figure 12.6, the old and new buildings can be seen; the stone wall of the new one directs one’s eyes toward the atrium of the old. Next, while still standing on the ground and with the positioning locked, by using the fly-in function one can ascend to the Munch Gallery, and also tilt and pan the phone to look around the simulated or reconstructed room (Figure 12.7).

**Trial and evaluation**

As part of a Master’s course in Media Innovations aimed at international students at the Department of Media and Communication, University of Oslo, we organized a trial and evaluation of the NasMus-simulation in early March 2012.

*Figure 12.4* The double perspective as viewed from the starting point at a distance of about 75 meters and facing the old building of the museum (© G. Liestøl).
Figure 12.5 Moving toward the left (northern) side of the old building more details of the planned museum appears (© G. Liestøl).

Figure 12.6 Old and new. The stone wall of the new building points in the direction of the main entrance in the atrium behind the old building (© G. Liestøl).
Through a lecture on the university campus the students were first introduced to the general *sitsim* platform as well as the building project of the new museum. They were shown many examples from the material used to present the *forum artis* in the competition and for later public dissemination (as mentioned above). They were deliberately not given or shown any information about the NasMus-sitsim itself before actual testing on location.

On location we selected a starting point at which the students were each given an iPad2. They were encouraged to walk around and view the planned National Museum from different perspectives and positions. They were also informed that there were two links they could activate for access to additional information: the project’s website and the Munch Gallery. The students spent about fifteen to twenty minutes each trying out the simulation. When they returned to the meeting point they each answered a written questionnaire with nine questions.

In total ten students (three male and seven female) participated in the trial and handed in the written forms. Their ages ranged from twenty-three to thirty-one. In this group 70 percent had their own touch device, smartphone or tablet. Half of these were iOS devices, the other half were Android. All found the application and its interface fun and easy to use. They liked best the fact that another dimension could be visualized in parallel with the real environment. Many also favorably mentioned the possibility of accessing the Munch Gallery. Two students noted that they felt a bit too much drawn to the screen and thus “forgot” the real environment. One noted the fact that the GPS positioning had problems when you moved too close to the walls of the existing building. Another student wanted a mixed reality solution so that it could be possible to toggle between

*Figure 12.7* Using the fly-in function the user can tilt and pan the device to look around in the simulated Munch room (© G. Liestøl).
virtual and real perspectives on the screen. Some also wished that a larger part of
the surrounding environment could have been included as part of the simulation.

Asked to compare the visual presentations of the Museum project given in the
lecture with the in situ use of the sitsim, all favored the use of the on-location
simulation. When asked directly if they found the new museum building more or
less dominating than expected prior to testing the app onsite, as compared to the
information they had after the lecture, all the group agreed that the new building
looked less dominating than they had expected.

**Conclusion and further research**

We have shown that position and perspective as mediated by use of the sitsim
platform—a form of indirect augmented reality—makes a difference in the
users’ perceptions of the proposed architecture. The fixed camera perspective
(still or moving) based in traditional display conventions (Figures 12.2 and 12.3)
is in opposition to the free perspective and movement of the virtual camera con-
trolled by the mobile user. This indicates a shift in the visual culture and practice
of urban design and planning.

In our work with a variety of sitsims on different topics, information that was
included by means of audio and written material, as well as reconstructions of
actions and events, have been highly appreciated. There can be no question,
though, that the immediate benefit for users with this form of representation and
mediation is the active combination of the two perspectives, the real and the
computer generated, on location and from the user’s subjective point of view.
The oscillation between these double descriptions generates new knowledge and
added value that cannot be reduced to the two perspectives individually. With
past topics this is a question of enriching a historical site with an added dimen-
sion that interacts with and improves the aura of the site (MacIntyre et al. 2004).
With future topics it is different. This is no longer a question of reconstruction of
a return or revisit to something that once existed; rather it is a question of pre-
construction, of potential or imminent change and presenting the new. How may
this turn be used in urban design? We have seen that the street-level perspective
and position of the sitsim user influences the experience of a future construction
in different ways than traditional illustrations. How may the subjective per-
spective play itself out in the hands of the public as part of future planning
processes?

“Renderings” such as those we include above in the form of a sitsim applied
to the to-be-built environment are already being taken up in architects’ offices in
parts of Europe, and perhaps further afield. It is likely that augmentation such as
we present above will be included in the array of tools and mediational means
architects employ in competitions, potentially tools in the hands of planners, stu-
dents of design, and the marketing of real estate more broadly. Cultural competi-
tions may soon be infused with sitsim-like contributions that will add an
additional rhetorical and persuasive layer of semiosis. They too will need to be
more closely studied in terms of their perceived and actual use over time in relation to positioning and location-centric views (cf. Bates-Brklajac 2009).

With the rapid spread of location-based functionalities, locative apps on smartphones and tablets have already been widely taken up in highly developed metropolitan areas. They are increasingly connected to our own situated uses and locative mappings as urban inhabitants. *Sitsim*-like renderings may well become a more significant feature of the wider communicative and persuasive inscription of locative media within architectural discourses. For the time being, it may well be that this is most apparent in mediations of future structures and their presentation earlier on in processes of urban change, regeneration, and gentrification.

The context and orientations of *sitsims* may also open out spaces for wider public discourses and locative engagement in projections of the future urban landscape, the types of buildings and their purposes and uses (Al-Kodmany 1999). As a locative, mediational, and multidimensional genre prototype, the *sitsim* offers us a potentially navigable platform but also a site for the performative annotation of our perceptions and interpretations. In the development of our *sitsims* we have taken this from historical Viking burial sites where cultural artifacts are not visible in the Norwegian countryside to the physical remains of the Forum in the middle of today’s Rome. In the case we report on here, we have moved this platform into the current urban fabric of processes of inviting, selecting, and projecting a significant new national museum in a capital city. In so doing, this *sitsim* nevertheless both incorporates and is dependent on contextualization in the physical world of the here-and-now. Yet, simultaneously, reference is also made to digital spatialization that can be annotated. This functionality gives future potential for the *sitsim* to also be actively taken up as part of the wider communicative and mediated negotiation of power, place, and participation in the city. We may see this as part of what Thrift (2004: 187) views as “new conditionings of position and juxtaposition.” This is increasingly what we see as a networked city (Martinussen 2013) where layers of tools and representations may be linked in our contexts of activity and thereby span communication types, data visualizations, social media, and augmented locative designs and technologies. For Thrift (2004: 188), however,

modern complex systems are so overdetermined that in their interleavings all kinds of gaps are likely to be found in which new kinds of “excursions” can be coaxed into existence. If things are showing up differently, we can do different things too, energetically opening up the new order of being. As the direction of attention changes, so perhaps, we make a change in the direction of our attention, sensing possible emergences and new embodiments.

However, these emergences, embodiments, and mediations need to be revised in terms of what they selectively represent, how they convey the spatial, visual, temporal, and sensorial, and what aspects they accentuate, augment, and filter via such tools and translations.
What we have shown is how we might approach the locative, mobile, and culturally contextual through hands-on design-centered innovation lodged in co-creative development that involves computational, cultural, and communicative knowledge that also needs to be critically examined further to escape the potential for locative functionalism or the mere generation of a form of mobile facades.

Design and development on the National Museum sitsim continues and in the late fall of 2012 a new more extensive version was published for free download on Apple App Store and Google Play. In this version users on location can give feedback directly via the sitsim from specific positions and thus compare their own experience of the new structure with other users, and the judgment of the jury from the last competition. This feedback will be analyzed and used for further designs and discussions of how employments of place, position, and perspective may be facilitated in continued development of sitsims and other mobile augmented reality solutions in urban planning.

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Notes
1 Currently, the most updated version of the ‘Roman Forum’ sitsim is available as a free download on Apple’s App Store and Google Play.
2 See: www.statsbygg.no/Utviklingsprosjekter/Nasjonalmuseet/Nasjonalmuseet-pa-Vestbanen/.

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