ViCon Dimensions

Autumn 2011

HOCHTIEF
ViCon

Build digitally first.

Company Profile

HOCHTIEF ViCon

HOCHTIEF ViCon is an innovative system provider for process and technology management in the virtual construction sector. Through our research activities and our service portfolio we cover the entire value added chain within construction projects. Since 2004 HOCHTIEF ViCon has successfully conducted more than 400 Projects.

"Virtual Design and Construction" (ViCon) refers to planning and simulating the processes of constructing and operating a building through using personal computers.

Symptomatic for HOCHTIEF ViCon is the continuous utilisation of three-dimensional digital models which are assigned to various fields of application throughout the whole lifecycle of a building. The new industry related term for this procedural method is Building Information Modeling (BIM).

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Lusail City,
Doha, Qatar

Foreword
BIM is becoming industry standard

Dear Clients,

The Building Information Modeling (BIM) revolution is now a reality and HOCHTIEF ViCon is leading the way. This has become apparent to us for a number of reasons. In the US and Australia, ViCon's expertise in integrated data management is in much higher demand now than in recent years. In the UAE, we have seen BIM requirements an aspect of almost all tenders of late. And, importantly, the UK passed a law to make BIM mandatory for infrastructural projects from 2016 onwards. Taken in the context of Singapore and the U.S.A. also adopting such measures, what was once thought of as simply nice-to-have is now recognized by more and more governments as necessary to maximize project value.

Paralleling this increase in demand and regulatory requirement, ViCon has seen an increase in demand for standardized training and certification. There have been cries in the industry for expert BIM education, and ViCon has received training requests from customers across the world. We are proud to say that in using our curriculum, we've helped the first Qatari national ever to gain BIM Manager Certification. She'll be working on 3D models for a variety of projects.

Training and educating client personnel about BIM are among our core strengths. With three years of experience in the field, ViCon aims to create a dedicated BIM education center in Qatar, which will also provide the industry with much needed standards.

I invite you to read on, get some of our latest news and discover how HOCHTIEF ViCon is enhancing construction projects and smoothing the transition to facility maintenance using Building Information Modeling.

Sincerely,

René Schumann
Managing Director
HOCHTIEF ViCon Qatar W.L.L

Project Summary

Lusail City

Lusail City is located 15km north of Doha city centre and covers an area of 38km². The waterfront land has been planned into 19 districts of mixed use developments.

The name ‘Lusail’ hails from the historical origins of the site itself, going back to the late 1800s.

The city will comprise residential, commercial, retail and hospitality functions, along with community infrastructure such as schools and medical facilities. With accommodation for 200.000 residents and 170.000 daily working visitors, Lusail City is expected to become a focal point of the State of Qatar.

With convenience and modern amenities a key aspect, a community oriented lifestyle will be nurtured. Privacy and security take a high priority in all districts, which are each designed in a unique way to retain a distinct charm and character.

Environmental sustainability has been at the forefront of the master plan for the city, with the Qatar Sustainability Assessment System (QSAS) being implemented to ensure compliance with green building practices. Lusail aims to be a model for future city design and construction in the region.

The CEO of Lusail Real Estate Development Company, Engineer Essa Mohammed Ali Kaldari, maintains ‘the new extension to Doha, Lusail City, is a meticulously planned urban development unlike anything witnessed before.’ He goes on to emphasize that through the city ‘we are bringing to life a comprehensive and vibrant city master-planned around mixed-use developments that create diversity, integration and sustainability.’

Project Update

Lusail City

HOCHTIEF ViCon has been involved in the Lusail City project since early 2009, contracted directly by Lusail Real Estate Development Company to coordinate and implement new 3D technologies.

One of the major goals is to develop a digital 3D model for all primary infrastructure services to enhance the project collaboration. The 3D model works to improve design quality before construction, and acts as a visualization of the project scope.

Presently, HOCHTIEF ViCon has modeled 16 trades and services, using 8801 2D drawings, which makes it one of the largest 3D models ever: for example, more than 100km of roads and highways, 60km of foul sewer and over 160km of storm water pipes are accurately represented in 3D. The team is currently developing an average of 1km of multi lane roadways - including all related infrastructure - per week.

Beyond this, Lusail will use 3D models of high rise buildings to add value to the building permit procedure for external developers. ViCon is supporting this unique service which will enhance collaboration between the municipality and the owners - ultimately simplifying communication and saving time and money.

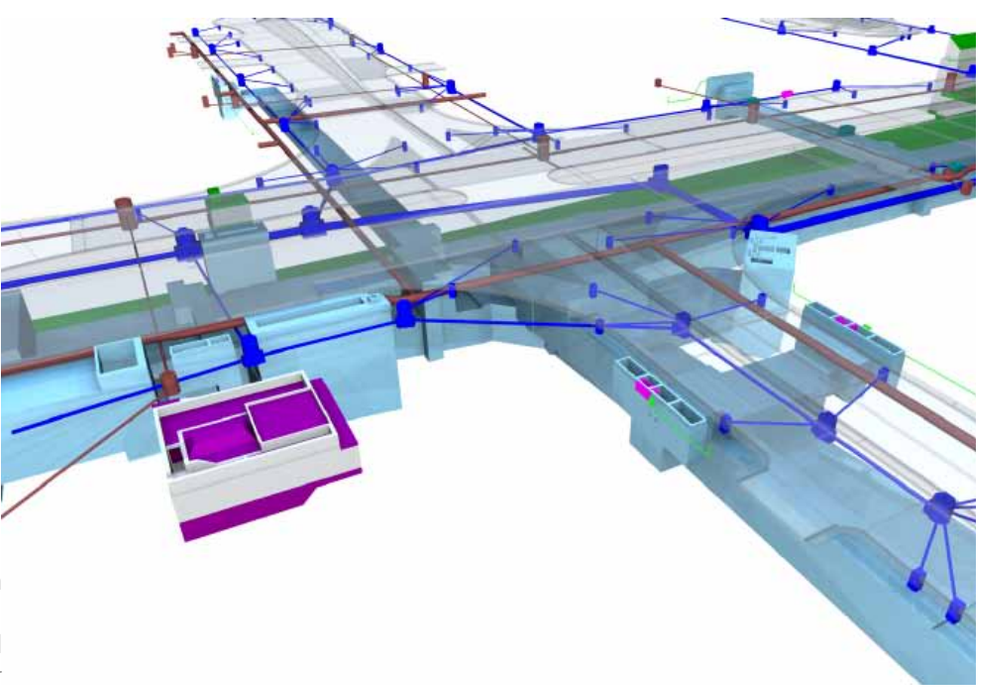
To improve long term operation of the city infrastructure, the 3D Model is continuously updated during construction to finally represent the as-built status.

The development of a central database tailored to Lusail City needs is currently also underway. This database will enable plot and land use, spatial distribution and sales and availability analysis. Further attribute analysis will be available, detailing statistics such as resident density and occupancy rates. This data will seamlessly integrate into Qatar's sophisticated GIS environment.

The project is utilizing the digital 3D model to create high end marketing movies and renderings to promote the unique vision of Lusail City. The images can be seen in various types of media, and even on billboards across Doha. Further visualizations have been created to support the planning and design processes to ensure that Lusail City reaches its aim of being a state of the art destination.

Lusail City is a landmark project, with an emphasis on producing a high quality of life for all its inhabitants by using sophisticated 3D technologies to an extent not often seen in the region.

Native flora and fauna in the Wadi district of Lusail City



3D model with stormwater pipes, utility tunnels and foul sewer

Service Focus

BIM Implementation

BIM know-how and proven references for companies are now being seen as a required prerequisite for tenders.

The implementation of Building Information Modeling (BIM) into construction projects is on its way to becoming an industry standard. Due to the increasing advantages of 3D based design, general construction risks, and a lack of interoperability, the motivation to utilize BIM is stronger than ever.

While BIM is becoming an industry standard, BIM know-how and proven references for companies are now being seen as a required pre-requisite for tenders. As projects grow in scale and complexity, industry professionals and group bodies are accepting that digital models and BIM processes are becoming the most effective way of reducing costs and risk while increasing quality. This forces the construction sector to develop own knowledge to be competitive. BIM embraces a new way of working. Along with this, the challenges of managing people, processes, policy and technology arise. It is an important cornerstone to manage these challenges for a successful BIM implementation into construction projects.

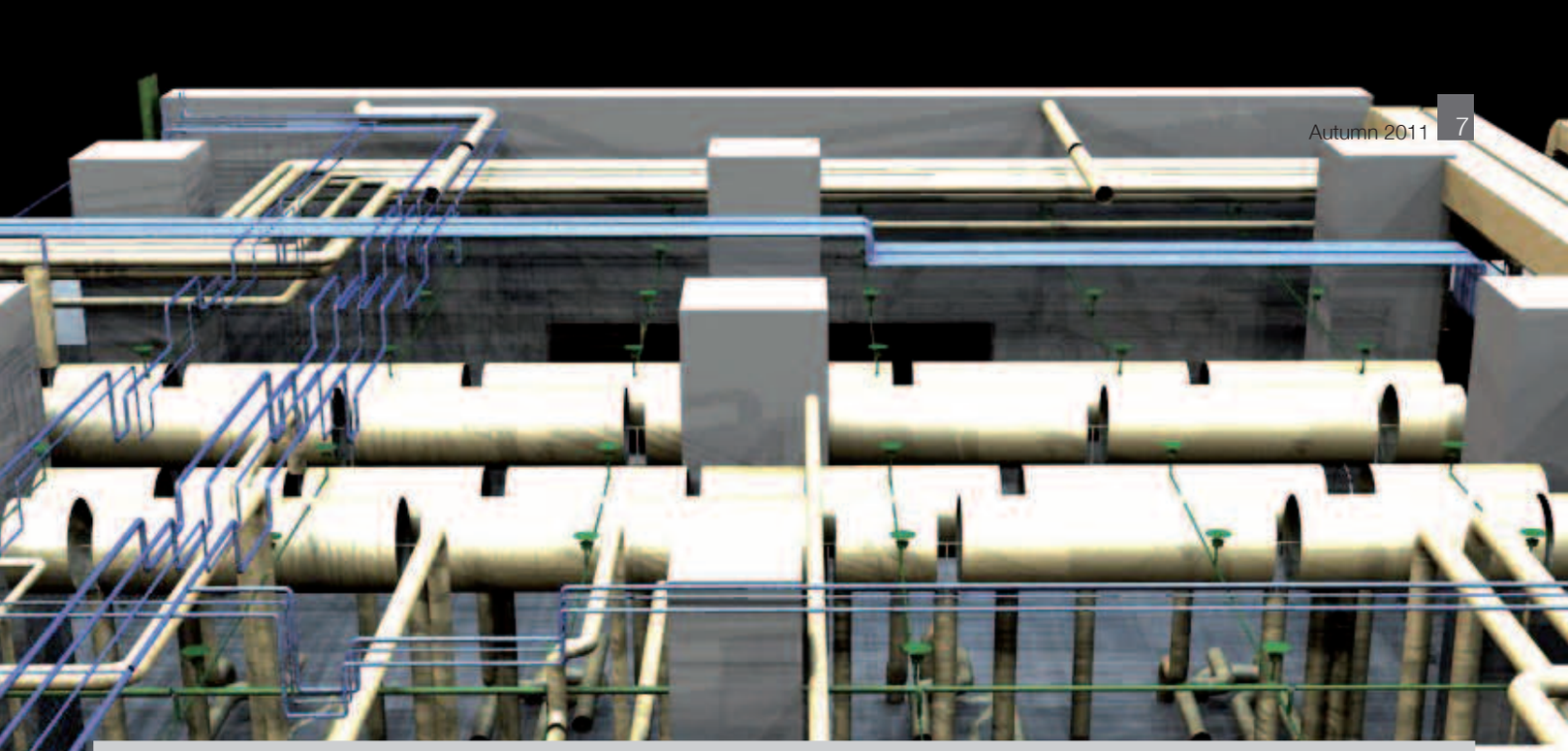
HOCHTIEF ViCon has developed standard processes and policies and addresses the training needs with its own Training and Certification System.

These standards will be adopted for project specific requirements and summarized in a BIM Implementation Plan. Our clients can therefore benefit from all our implementation experiences from the past 7 years. The following major topics will be addressed with our project specific implementation plans:

- Project analysis
- Definition of suitable business processes (Design Creation and Coordination, Progress and Cost Monitoring, Quantification, etc.)
- Allocation of responsibilities to involved project stakeholder
- Definition of required training for project personnel
- Definition of standards to be used by all stakeholders

With our valuable experiences in implementing BIM in large scale projects we are able to provide you with a BIM Implementation Plan in a short timeframe, considering your specific needs, the involved stakeholders and cultural circumstances.

Through successful
BIM Implementation, HOCHTIEF ViCon is able to support and guide your project and company to achieve your objectives at the highest level.



BIM Definitions

The Five Components of BIM

Successfully utilizing Building Information Modeling requires a supporting Project Management for driving the BIM Implementation. The Five Components of BIM reflect ViCon's core concept. Four components that form a successful implementation: process, people, technology and policy. Encircling them is the Management, who leads them to work in unison. It is in these four key components, that we can identify the BIM Manager's requirements.

Process — The first mandatory component of BIM supported construction is defining the right business processes. As the basis for all 3D computer model based activities, an intelligent process design supports the success of implementing BIM.

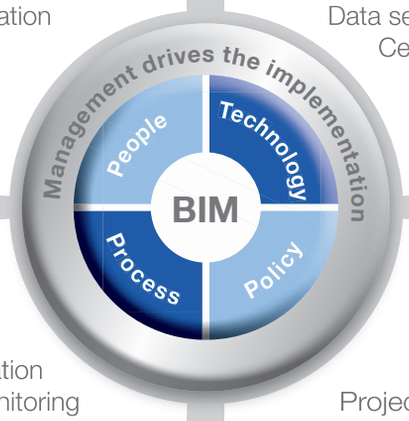
Policy — Complete and successful BIM Implementation stems from having BIM in project contracts. Clear and thorough technical specifications should be the basis for the 3D model development and exchange. These conditions must clarify the building standards in project guidelines and contracts relating to BIM.

Technology — The current IT environment in construction projects today is not yet able to support the proper usage and utilization of 3D models. The right setup of hardware and software has to be defined together with the data exchange and storage processes.

People — The team is the success. No achievement would be possible without the right people on board. Knowing that BIM is still a new frontier in the AEC (architecture, engineering, construction) industry, the challenge of finding and nurturing the right team of people is ongoing.

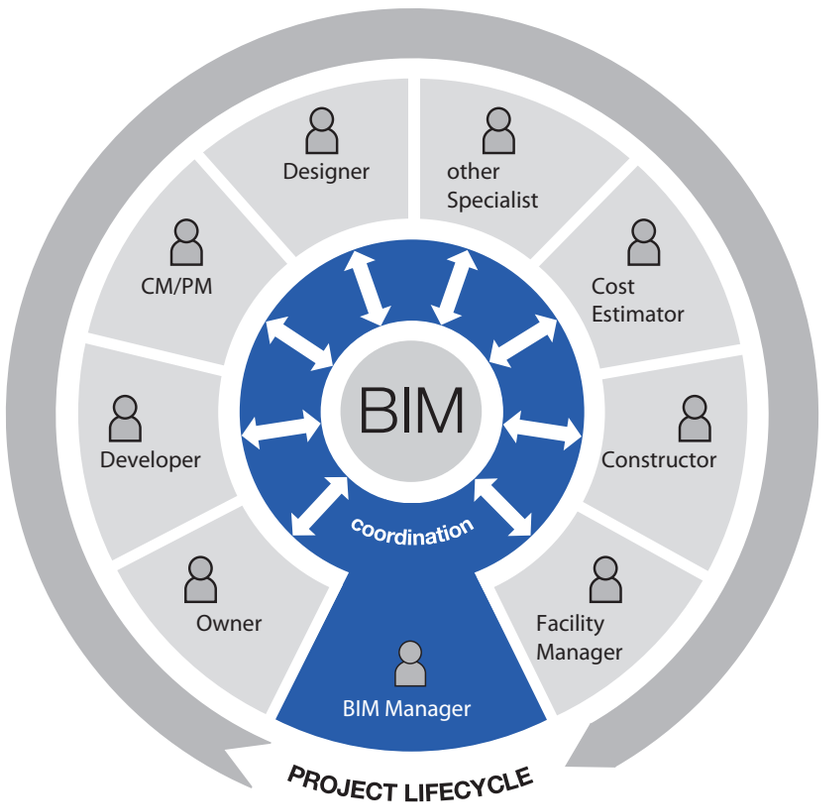
Collaboration and communication
Knowledge and experience
Roles and responsibilities
Trust and commitment
Culture

Data security and user management
Certified hardware and software
Data formats and structure
Data versioning
Internet



Cost estimation
Quantity take-off
Change management
Operation and maintenance
Design creation and coordination
Scheduling and progress monitoring

Building standards
Risks and insurance
Ownership of deliverables
Project guidelines and contracts



BIM Roles

BIM Manager

While BIM is becoming an industry standard, BIM know-how and proven references are often a prerequisite in international project tenders. This forces the construction sector to develop own knowledge to be competitive. Leading the technology within organizations or projects is one of the responsibilities of the BIM Manager, along with:

- Defining data exchange procedures and ensure interoperability
- Advising project management on suitable BIM use cases
- Reporting and monitoring BIM utilisation within the project

Besides the mentioned tasks, project teams will receive additional training and support by the BIM Manager. He will streamline business processes in order to improve the collaboration of project departments. The quality of collaboration within a project is a major factor for on time delivery within the given budget.

The need for a role in the form of a BIM Manager is driven by the challenges which are met when implementing BIM. In many cases, stakeholders do not have the required skill or experience in BIM processes. A BIM Manager has expertise and specialist training in technologies, processes and standards to ensure that the implementation of BIM is its most successful.

BIM Managers combine computer skills – especially 3D modeling and database technologies - with years of practical work experience in the industry and use this knowledge to lead and coordinate BIM processes.

Providing software independent BIM Management services and the education of required experts are ViCon's core competencies, which have proven to be a crucial success factor to establish and manage BIM in projects.

A new role in the construction industry

Market News

UK chooses BIM for public projects

The Government of the United Kingdom has announced that BIM will become part of the procurement process of public buildings. Bidders and contractors alike will be required to use BIM, and include it in all offers by 2016.

This comes on the back of decisions in the US and Singapore, who are already adopting BIM as their construction method of choice.

“I am convinced that this is the way to unlock new ways of working that will reduce cost and add long-term value to the development and management of built assets in the public sector, but the move needs to be made on a basis that is secure, that works for government clients and those who deliver services to them, and which draws on proven means of integrating the supply chain.” - said Paul Morrell, Chief Construction Adviser to the UK Government.

The move is motivated by the need to reduce costs and improve development of government buildings, along with a view to long term management improvements.

With the shift towards more environmentally friendly building practices, the government is also hoping that BIM use will aid in the development of more sustainable buildings.

The announcement heralds the growing commitment by governments worldwide to produce better designed and managed buildings at more competitive industry costs.

Market News

Survey on BIM in the Middle East

At the recently held annual buildSMART conference in Abu Dhabi, UAE in March this year, the results of the first ever GCC wide survey on BIM were released. The survey was compiled over the last 6 months throughout the region.

Through interviews with both individual and companies in the construction sector, the survey was designed to document the current BIM status in the region. Participants were all working in the GCC.

Prior to the commencement of the survey, Mr. Tahir Sharif, President, buildingSmart ME said “the region’s construction industry is at a decision crossroad, and the purpose of the survey is to provide perspective on how companies which are implementing BIM within their organizations are gaining tangible business benefits as a result”.

The results indicate clearly that the majority of those working in the field know about BIM, but most are not conversant in using BIM. The main obstacles are training and software costs .

While it is clear that many believe in its high potential, implementation of BIM is generally limited to the BIM know how and experiences of involved project consultants.

BIM Network

Project Qatar [Qatar]

Project Qatar, one of the Middle East region's leading building and construction industry events, was held in Doha from the 2nd-5th of May 2011.

With the theme of „One step ahead – Build digitally first", HOCHTIEF ViCon attended as a key exhibitor to demonstrate our belief that a focal point of a project is having a BIM Manager on site, facilitating all processes that lead to the successful completion of a project. Our expertise and knowledge of BIM was presented to visitors on an interactive touch monitor, alongside innovative 3D viewing technology.

HOCHTIEF ViCon was able to show its excellent capabilities in managing all matters concerning digital 3D computer models created for projects locally, regionally and globally. Through sophisticated technology, BIM education, streamlined processes and necessary project specifications, the construction community in Qatar could see that BIM is the next frontier of building in the Middle East.

BIM Network

Build Smart [UAE]

The Build Smart 2011 - BuildingSMART International Conference organized by buildingSMART ME was held in Abu Dhabi, UAE in March 2011. The event focus was to deliver the results of the first ever Middle East BIM Survey Report undertaken in 2009.

buildingSMART ME, formed in 2009, is a non-profit organization funded by membership and sponsorship. It aims to share best practice and promote member organizations who share the same objective.

HOCHTIEF ViCon attended the event taking part in several opportunities to network with other BIM experts in the region. Additionally René Schumann, Managing Director of HOCHTIEF ViCon Qatar W.L.L., gave a lecture about the "Integrated Construction Process" and exposed the specific experiences of HOCHTIEF ViCon within the Middle East market.

The valuable results of the buildingSMART survey reflect what HOCHTIEF ViCon has experienced in the American and European market. It endorses us to be on the right way with our services portfolio provided within the Middle East market.

ViCon Dates in the second half-year, 2011

15.09	BuildingSMART Forum - Speaker, Berlin, Germany
26.09	Qatar Construction Summit - Speaker, Doha, Qatar
04.10	Expo Real Exhibition - Exhibitor, Munich, Germany

Lusail City,
Doha, Qatar

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