



# HILTRON PROFILE

International **Healthcare** Consultants



**PATIENT FOCUSED - ENGINEERING - WELLNESS - ARCHITECTURE**



- 1) Medical equipping consultancy
- 2) Advice on health planning, hospital design, medical equipment and IT planning
- 3) For healthcare providers, architects, contractors and funders in relation to healthcare projects within the UK and internationally.
- 4) In-house architectural and engineering services
- 5) Connections with practices in the USA, Middle East and Europe.

- i Hiltron are specialist Healthcare consultants with experience (since 1983) in providing advice on health planning, hospital design, medical equipment specification and IT planning/procurement to healthcare providers, architects, contractors and funders in relation to healthcare projects within the UK and internationally.
- ii Entirely independent with no commercial dependency on any manufacturer or supplier, Hiltron does not manufacture, supply, or act as agent for any supplier.
- iii Clients include government organisations, healthcare providers, project contractors, project funders, architects, consulting engineers and managerial services.
- iv The company has offices in London, Edinburgh and Iraq and has partnerships with companies in the USA and Nigeria.

In 2013 Hiltron Limited amalgamated with ZEF Concepts to expand the capabilities of both companies and to offer an enhanced package of services to clients. Since amalgamating, ZEF/Hiltron have continued to develop, creating a specialist team of planners, architects and engineers focussing on energy efficient design for health facilities. New software has been developed to assist in health planning utilising the basis of patient focussed design and permits us to develop the components and design of hospital to meet clients unique demographic requirements.

STUDY  
LOCAL  
HEALTH  
NEEDS

PATIENT  
NUMBERS

MEDICAL  
CODING

SCHEDULING  
OF STAFF  
REQUIRE-  
MENTS

TECHNICAL  
AND OFFICE  
SPACES

## HEALTH PLANNING

We use a patient focused and holistic approach to hospital design which gives advantages in patient and staff satisfaction, quality of design and cost.

### MEDICAL EQUIPMENT PLANNING

We use knowledge gained over many years to design and specify equipment and facilities suitable for the country under consideration with the knowledge that medical science in all countries is advancing rapidly.

### ARCHITECTURAL DESIGN

Our design and briefing philosophy is based on an understanding of the care and treatment required by patients in the area which the project is to serve. This requires thorough analysis and documentation of local and national factors.

### ENGINEERING SERVICES

Our engineers are dedicated to providing high quality solutions that meet client needs with appropriate technology and within budgetary constraints.

### SUSTAINABILITY FRAMEWORK

Hiltron develops designs that maximise the inherent benefits of a site, whilst minimising any adverse and future impacts. Our sustainability strategy is not an 'add-on' but instead acts as an integrated part of the process.

Our design and briefing philosophy is based on an understanding of the care and treatment required by patients in the area which the project is to serve. This requires thorough analysis and documentation of local disease profiles (epidemiology) but also consideration of other local or national factors such as likely prevalence of accidental injury (is the project near a major road or airport?). It is also important to look at other local or national facilities and the general planning for optimisation of specialised services.

**PATIENT FOCUSED PLANNING**

**SUSTAINABILITY**

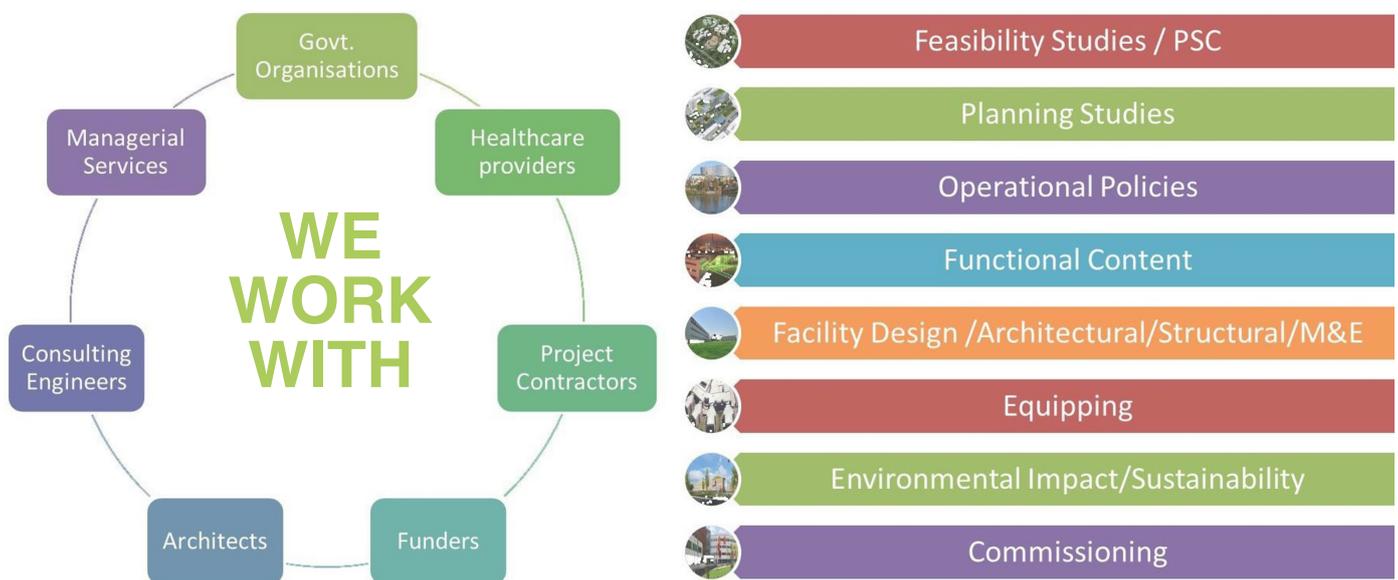
**EFFICIENCY**

**INTEGRATED PLANNING**



## When preparing a design brief for a hospital we consider:

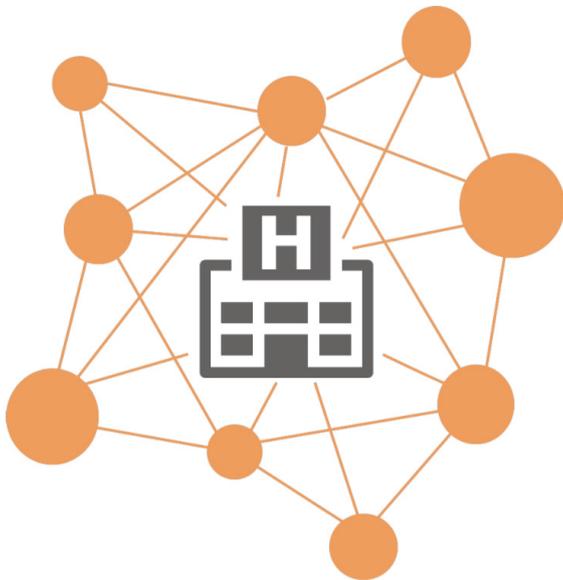
- 1) The epidemiology of the population it is to serve
- 2) Its position in the health care system within its defined region and how external factors might influence its development
- 3) What would be a successful outcome for all stake holders
- 4) The aspirations of the management and staff and career development patterns
- 5) The practicalities of service delivery and how any constraints might be addressed



- i We consider each patient type shown to be required by epidemiology and practical local experience, how medical teams care for them and what facilities and services these teams require. We design for the individual needs of patients, staff, visitors etc.
- ii Each hospital is 'tailor made' ensuring full support for modern requirements while saving space, energy and cost.
- iii Our building block is the patient, but in the majority of cases patients can be categorised by 'type'; for example Surgical and Medical, and by Sub-type; for example Cardiac, Urology, Orthopaedics etc.
- iv Modern medical practice will involve assigning a Medical Team to each patient type. We use services required by the team (through a medical coding database) to test the requirements for technical rooms.

## Briefing:

- 1) Strong management structures which support and enhance the work of the clinical departments in delivering top quality patient care
- 2) A clear mission statement for the hospital setting out its goals, objectives and ethos
- 3) Comprehensive operational policies covering all hospital departments
- 4) Clear and objective performance targets against which the overall quality of service can be monitored
- 5) Regular reports providing the client with information on the hospital's performance against clinical, financial or other measures



## What to do:

- Assessment of demographics
- Assessment of cultural requirements
- Assessment of patient 'types'
- Assessment of patient volumes
- Development of clinical pathways
- Development of flow diagrams
- Site surveys
- Assessment of functional requirements and functionality
- Assessment of design implications
- Development of operational policies
- Preparation of functional content requirements

### Hospital policies:

Setting out the overall mission and ethos of the hospital, its operational structure, and the inter-relationships of its various departments

### Operational policies:

Operational policies provide the overall framework within which individual departments function for the complex range of interaction between departments that is essential to the effective running of a modern hospital

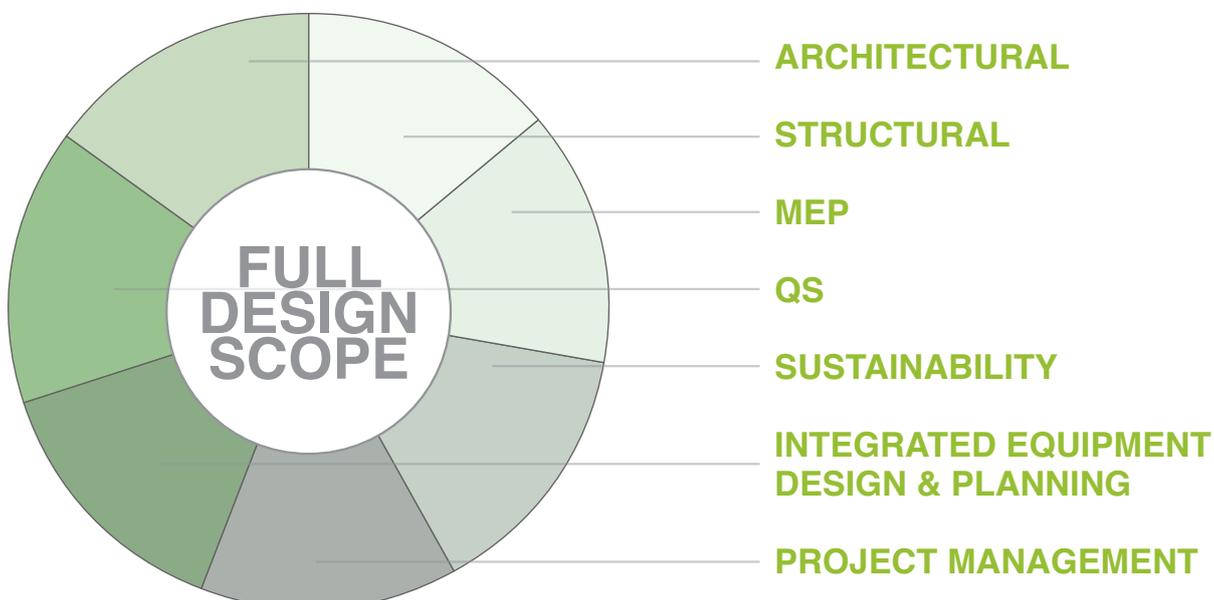
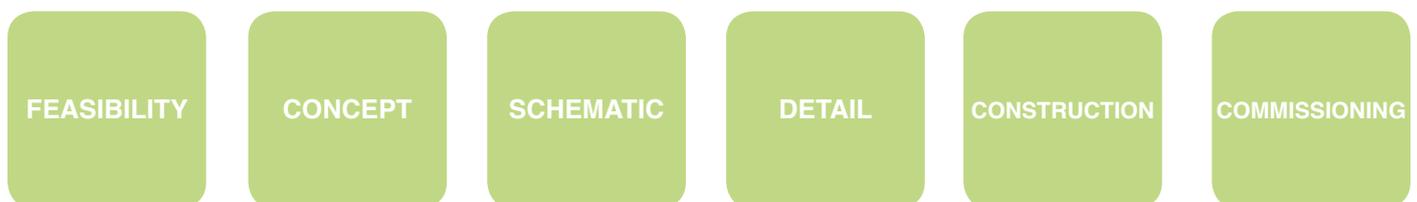
### Departmental policies:

Setting out in detail how the departments shall operate on a day to day basis.

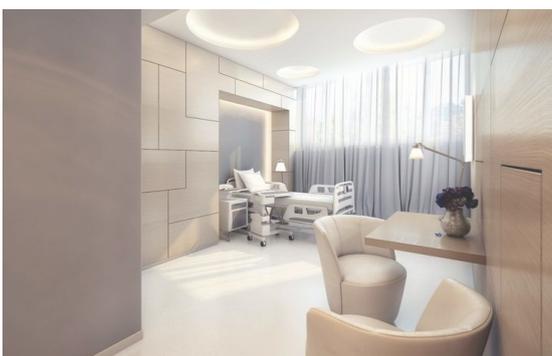
# DESIGN AND SCHEDULING

## Initial Design:

- 1) Developing intra-departmental relationships
- 2) Preparation of schedules of accommodation
- 3) Preparation of room data sheets
- 4) Preparation of indicative budgets
- 5) Identification of structural and engineering implications and requirements
- 6) Development of design solutions
- 7) Assessment of design alternatives
- 8) Development of departmental layouts
- 9) Development of services design and layouts
- 10) Development of room layouts (clinical functionality and ergonomics)
- 11) Design and guidance requirements for the design team and the client



# EQUIPPING AND COMMISSIONING



- 1) Assessment of equipment requirements
- 2) Production of equipment schedules
- 3) Production of equipment specifications
- 4) Assessment of maintenance requirements
- 5) Assessment of replacement upgrade cycles
- 6) Production of tender documentation
- 7) Tender Issue
- 8) Management of tender
- 9) Tender assessment
- 10) Tender/contract negotiation
- 11) Supervision of construction
- 12) Problem solving
- 13) Developing a commissioning programme
- 14) Developing training requirements and a training programme
- 15) Developing a staffing plan
- 16) Supervision of service testing
- 17) Supervision of equipment delivery, installation and testing
- 18) Managing the training programme
- 19) Managing 'Bringing into use'
- 20) Final handover arrangements and documentation

# HILTRON STUDIO

## BESPOKE PATIENT FOCUSED PLANNING SOFTWARE

Our most recent development is our bespoke Patient Focussed Planning Tool “The Hiltron Studio”, which has been developed in association with Microsoft, the University of Chicago and professionals from Health Planning, Architecture, Structural, Mechanical and Electrical Engineering, and Information Technology.

The Hiltron Studio is a computer assisted planning process focused on patient needs and offering cost effective analysis of all aspects of project requirements.

This specialized proprietary software designed in association with industry professionals and international universities aids the process of design and equipment planning, providing a centralised database of entire facilities, including detailed Room Data Sheets covering Architectural, Environmental and Equipment elements for every room. It includes comprehensive, current medical equipment databases, assisting in planning, scheduling, equipping, budgeting and controlling projects. The system is based on patient focussed principals of design and enables calculation of technical and support accommodation based on patient needs and demand requirements.

Having established the type and likely numbers of various patient types we link these to the medical procedures which they are statistically likely to require and allow for a probability factor. For this process we use any current computer national medical coding, or recommend a suitable system such as that used in the USA and UK. These codes are extensive and detailed and can be used to imply the medical specialists required to carry them out, and also space planning and equipment and many other needs. Our system allows for development and extension of the coding to allow for local practices.



Space Pattern Library

<div style="background-color: #92d050; padding: 2px;">Space Families</div> <ul style="list-style-type: none"> <li>Patient Support</li> <li>Surgical</li> <li>Diagnostic</li> <li>Administration</li> </ul>	<div style="background-color: #92d050; padding: 2px;">Pattern</div> <ul style="list-style-type: none"> <li>Single Bed Type A</li> <li>Single Bed Type B</li> </ul>	<div style="background-color: #92d050; padding: 2px;">Problem Addressed</div> <p>Inpatient space for general patient</p>									
<div style="background-color: #92d050; padding: 2px;">Type</div> <ul style="list-style-type: none"> <li>Inpatient Medical</li> <li>Inpatient Surgical</li> </ul>	<div style="background-color: #92d050; padding: 2px;">Sub Type</div> <ul style="list-style-type: none"> <li>Bed Spaces</li> </ul>	<div style="background-color: #92d050; padding: 2px;">Advantage</div> <p>Patient privacy</p>	<div style="background-color: #92d050; padding: 2px;">Disadvantage</div> <p>Increase requirements for space</p>								
		<div style="background-color: #92d050; padding: 2px;">Culture</div> <p>UK</p>	<div style="background-color: #92d050; padding: 2px;">Room Patterns Included</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Pattern ID</th> <th>Work</th> <th>Work Units</th> <th></th> </tr> </thead> <tbody> <tr> <td>002</td> <td>1440</td> <td>Mins/Day</td> <td> <ul style="list-style-type: none"> <li><input type="checkbox"/> Architecture</li> <li>Recommended Length 3.02</li> <li>Recommended Width 4.8</li> <li>Recommended Height 2.8</li> <li><input checked="" type="checkbox"/> Energy</li> </ul> </td> </tr> </tbody> </table>	Pattern ID	Work	Work Units		002	1440	Mins/Day	<ul style="list-style-type: none"> <li><input type="checkbox"/> Architecture</li> <li>Recommended Length 3.02</li> <li>Recommended Width 4.8</li> <li>Recommended Height 2.8</li> <li><input checked="" type="checkbox"/> Energy</li> </ul>
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Projects

Library

# PROJECTS ACROSS THE WORLD

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- Malta
- South Africa
- UAE
- Pakistan
- Nigeria
- Ethiopia
- Portugal
- Egypt
- Bahrain
- Europe
- USA



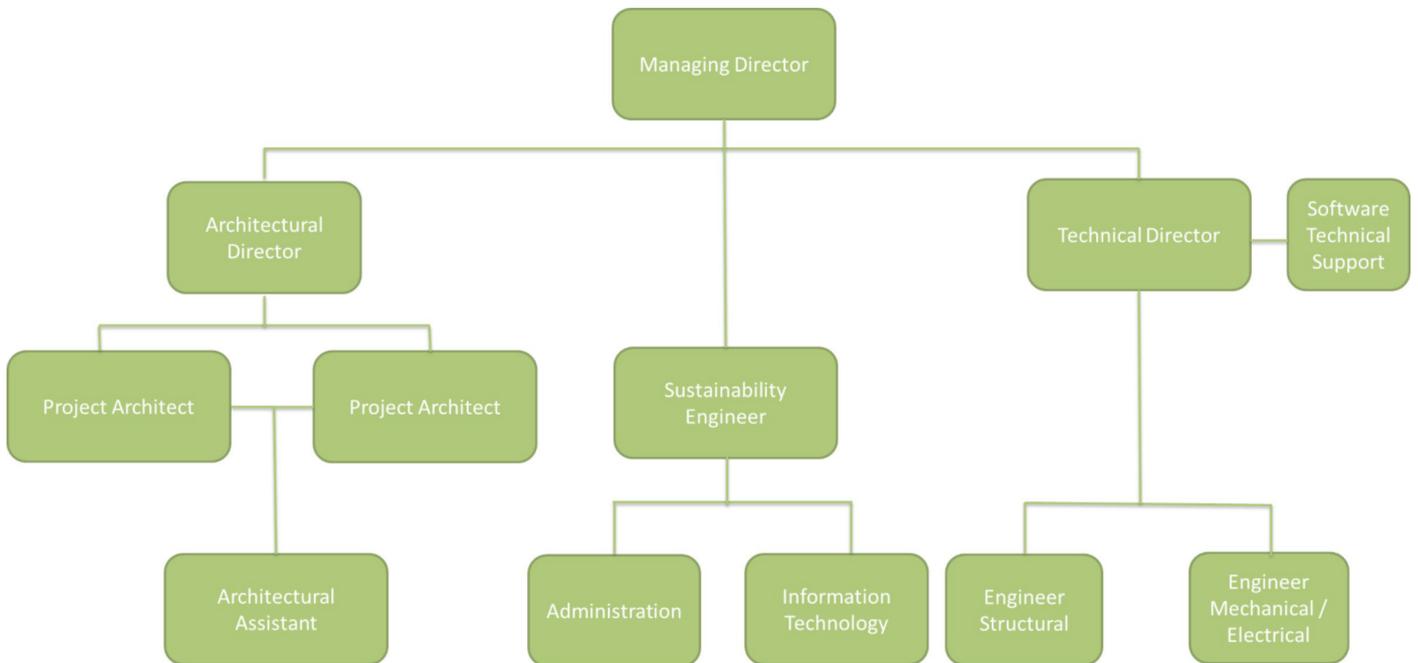
Working in public and private healthcare facilities across the world, we have carried out feasibility studies, project management, condition & equipment surveys/valuations, managing medical equipment and IM&T procurements, health planning, hospital scheduling, concept and detailed design, engineering design, construction management, contract negotiations, equipment planning, staffing, commissioning and design in use studies.

## ‘ONE STOP SHOP’

We believe Hiltron is unique as a ‘one stop shop’ for developing health care projects from inception through to completion and management encompassing all the professional personnel required for each stage of the development of the project.



# OUR TEAM



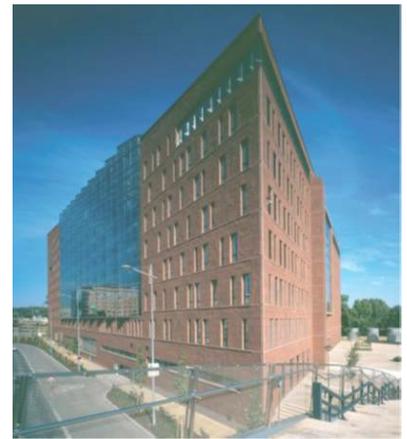


**Rabih El Fadel – Engineering**  
*B Eng (Hons)*  
*Mechanical and Energy Engineer*

Rabih El Fadel (\* 1964) has a unique understanding of sustainability, with over 13 years experience in Low energy designs, Low- carbon emission initiatives, including energy buildings passive design, efficient systems, renewable energy, building management system calculation methodology. Rabih's 24 years experience encompasses project design and development, technical implementation and management Environmental Design, sustainability framework (Energy, Water, Waste, Internal environmental quality, renewable energy, solar passive design) for projects in Europe, Middle-East, USA and Africa.

### **Expertise**

- Formulated sustainability framework & development plans for masterplans, buildings, industries & municipalities;
- Low energy and sustainable Project Design & Development;
- Work on evaluating Energy Services Companies;
- Vast experience on projects across a number of continents: able to display ethical equality, sensitivity and adaptability;
- Has been actively involved in past and current projects to develop and improve the quality of life within the built environment. This is shown through a spectrum of projects;
- Extensive knowledge of building regulations and codes for a number of countries.



## Awards

### 2009

- Bank Libanais de Commerce, Royal Institute of Human Development, Bahrain
- El Ray won Stephen Lawrence, Prize in RIBA Awards
- Creative Exchange Cambridge - Best Sustainable Building, East Anglian Local Authority Building Awards

### 2008

- Lambeth ACCORD
- Avanti House won 'Tomorrow's Lifestyle Home' competition at The Mail on Sunday, British Homes Awards

### 2007

- AUB, Beirut

### 2005

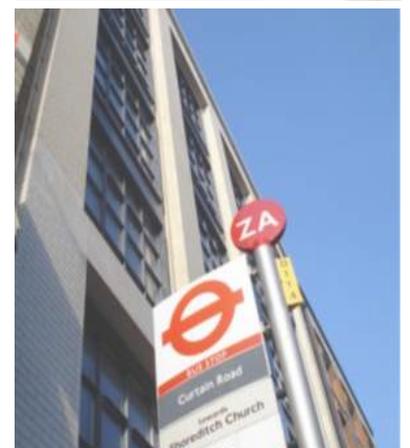
- Luxembourg Gare (2nd)

### 2004

- Milton Keynes

### 2003

- RIBA best building Prague



## General Experience (Highlights)

### 2011

Commissioned by 24h work on a Royal Eco tourism project in Morocco

Started to work on the 'Biopod' project. A revolutionary residential and eco-touristic solution for a changing world.

## **2010**

Commissioned to work on the Arab Forum for Environment & Development (AFED).

Commissioned by the IFC to work on projects in Lebanon & the region.

## **2009**

River City Prague Amazon Court was chosen winner in the Future Office building category in the MIPIM awards.

## **2005**

UNDP Lebanon Thermal Guide - was appointed to chair the development of the first Lebanese Thermal Guide.

## **2004**

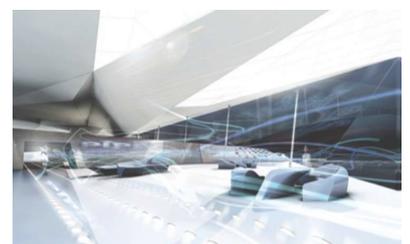
UNDP Education for All, Nigeria. Developed a design code for Nigerian schools which integrated soft sustainable strategies.

Evaluating energy services companies for Elephant and Castle (London, UK).

## **2003**

RIBA best building in Prague.

Co-wrote a paper on Lebanon electricity in the context of sustainable development with Dr. Harajli.





Iain Johnston  
MHS DipHSM MIHM FRSPH  
Health and Medical Equipment Planning

*Member of the Institute of Healthcare Management*  
*Fellow of the Royal Society for Public Health*  
Technical Director at Hiltron Ltd

### Previous Positions

Principal Consultant Health and Medical Equipment Planning. 16 years NHS Experience as a Hospital Manager and Planner.

Over 30 years experience of Healthcare management, facility and services planning and staffing and Equipping in more than 20 countries

- Feasibility Studies
- Health Planning
- Medical Equipment Planning
- Space Programming
- Operational Policies
- Project Management
- Commissioning
- Design in Use Studies

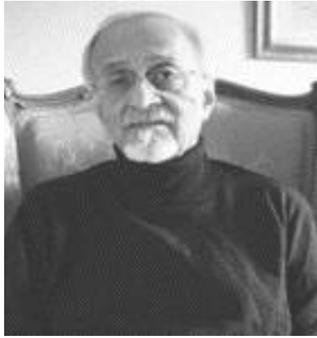
### Healthcare experience

- The King Hamad Hospital, Bahrain
- Mid Yorkshire Hospitals (Pinderfields and Pontefract)
- The Mater and Children's Hospital, Dublin
- St Vincent's Hospital, Dublin
- South Buckinghamshire Hospital
- South Tees Hospital
- Chester-le-Street Hospital



- Invergordon Community Hospital
- Langborough PCT
- IALC Hospital, Durban, South Africa
- Essex Rivers NHS Trust
- Glasgow Royal Infirmary
- Edinburgh Royal Infirmary
- Northern Neuro disability centre
- Various Private Hospitals
- North Tees Disability Services Hospital
- Sheffield Teaching Hospitals
- Royal Wolverhampton Hospital
- Bishop Auckland General Hospital
- Newcastle Acute Hospitals
- Alder Hey Children's Medical Park
- Benghazi Medical Centre, Libya
- Krasnodar Perinatal Centre, Russia
- National Heart Centre, Singapore
- St James' Hospital, Leeds
- Sharif Medical City, Pakistan
- St Georges Hospital, Tooting
- Ikitelli Hospital, Istanbul Turkey
- Guys and St Thomas' Hospital
- Almadi Hospital Kuwait
- Chris Hani Bara Hospital South Africa
- Rashid Hospital, Dubai
- East of England Ambulance Service
- Royal Liverpool Hospital
- Walsall Independent Treatment Centre
- Yemen Medical City
- Al Haouri Hospital, Libya
- Leeds Teaching Hospitals
- North Middlesex Hospital
- Northern Batch
- Field Hospital, Pakistan
- Saana Educational Hospital
- Walsgrave Hospital
- The Royal Hospital for Sick children, Edinburgh
- Diagnostic Facilities, Ghana
- Suez Canal University Hospital, Egypt
- Directorate of Preventative Health, Iraq
- Medico Legal Institute, Iraq
- Al Nasiriyah Clinic, Iraq
- General 100 bed Hospital, Iraq
- Specialist Cardiac Hospital, Iraq
- Specialist Diabetology and Endocrinology Hospital, Iraq
- Oncology Centre, Iraq
- Ophthalmology Hospital, Iraq
- Kirkuk Hospital, Iraq
- Karbala Hospital, Iraq
- Healthpoint Abu Dhabi





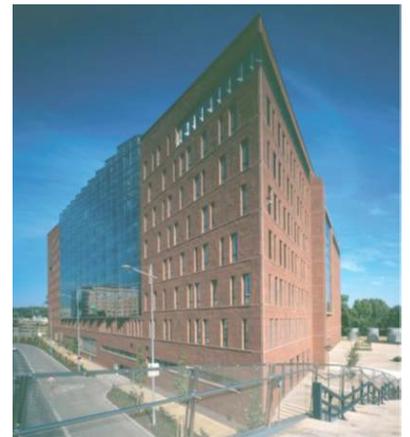
Armando Maximiano Figueiredo – Architecture  
*DipArch RIBA MAAK(A) MAPM*  
*Chartered Architect and Project Manager*

I am a Principal Consultant with ZEF Concepts Ltd UK leading design consultancy work on International Projects for Public Sector and Corporate Clients.

I have spent 50 years designing and supervising projects in Developing Countries. My particular specialty skills include Tropical Architecture and the application of appropriate technology.

I have been a Partner and Director of Norman + Dawbarn, an international firm of Architects, Consulting Engineers and Planners since 1975. In this senior position I have been responsible for managing the delivery of public sector development projects of varying size and complexity, from initial inception to completion, commissioning and hand over. Project sectors covered include Health, Education, Commercial & Mixed Use Industry, Research Facilities, Housing and Leisure.

My work overseas have given me the opportunity to travel extensively in Africa, Asia, the Far East, the Middle East, Europe and North America experiencing varying cultural and economic conditions while developing extensive expertise in dealing with International Funding Institutions and Multilateral Funding Agencies. I have assisted Clients with feasibility studies, pre-appraisal project preparation and funding applications. I have managed construction and infrastructure projects funded by IDA (World Bank), IADB (USA) AFDB (African Development Bank), DFID (UK), EDF, IDB (Islamic Development Bank), BADEA, DANIDA and SIDA.



## Membership in Professional Societies

- 1962 Corporate Member of the Royal Institute of British Architects
- 1965 Architect Member of the Architectural Association of Kenya
- 1975 Founder Member of the Malawi Institute of Architects
- 1998 RIBA Certificate in Project Management
- 1998 Member of the Association for Project Management UK
- 1999 Member of the Health Care Engineering and Estate Management IHEEM UK



## Relevant Experience

- Design Director for the following Health Projects:
- Upgrading and expansion of National Consultants Hospital Mulago Uganda
- Rehabilitation and expansion of National Referral Hospital Muhimbili Tanzania
- State Referral and Teaching Hospital Gombe State Nigeria
- National Referral Army Hospital Accra Ghana
- Rehabilitation of National Consultants Hospital Zanzibar Tanzania
- Referral Hospital at Mizan Tefferi Ethiopia
- Research Hospital at Mengo Kampala Uganda
- Master Plan for National Consultants Hospital for Malta

## Education

- 1957-62 University of Nairobi, Kenya  
Diploma in Architecture
- 1964 Completed RIBA Part III examination successfully and accepted as Associate Member of Royal Institute of British Architects
- 1998 Completed successfully the RIBA Project Managers Certificate course held at Cambridge University

## General Experience

### ***Current 2012 to date***

Principal Design, Planning and Project Management Consultant ZEF Concepts Ltd UK

### ***2009 to 2012***

Project team leader for the design and supervision of the Skills Training and Vocational Education Project (STVEP) Nigeria funded by the African Development Bank . This includes the expansion of 9 Federal Colleges located around the country. Designs were developed for modular teaching buildings, workshops and student accommodation and support facilities. Innovations introduced include planning for passive cooling of buildings, the use of cement stabilised compressed soil blocks for walling, harnessing solar energy for stand by power and rainwater harvesting.

### ***2010 to date***

Technical advisor on the Rivers Monorail project for Port Harcourt Nigeria

### ***2010 to date***

Technical advisor to the design team for US\$ 900m mixed use development in Lagos Nigeria for Exxon Mobile Oil Company.

### ***2004-2006***

Project leader for the design and development of AKUTECH – Akwaibom University of Technology SE Nigeria. AS Project Manager led a multi disciplinary team to execute the Master Plan (Urban Plan ) for a new township of 30,000 people and the detail design of the faculty of Engineering Sciences, Main infrastructure and Building Engineering Services.

### ***2006-2009***

Project Leader on the design of a 300 bed 5star Hilton Hotel at Lagos International Airport.



### **2004-2007**

Project leader of the team carrying out the Master Plan and Economic Plan for the Niger Delta SE Nigeria for the Niger Delta Development Commission. This plan included 9 States with a total population of 30 million and covered all sectors of the economy in the region from transportation, Education, Agriculture, commerce. The emphasis was on poverty alleviation and job creation.

### **2004-2005**

Technical advisor on a team drawing up a strategic plan for Technical Education and Vocational training For the Government of Papua New Guinea. The study was funded by the European Union Brussels

### **2000-2003**

Project Director for the design and construction of major production factories for British American Tobacco in Turkey and Nigeria. Completed Master Plan Architectural designs and working drawings and managed Architectural Team during construction.

### **2003-2005**

Project Leader and designer of a 500 bed Specialist Army Hospital Accra Ghana. This included the Master Plan , New Ward blocks and a new Out patients Department.

### **2000- 2007**

Project Manager and lead design Architect for The First Health Project Tanzania funded by the African Development and Government of Tanzania. This included the main National referral Hospital of 1800 beds, 3 no Regional Hospitals and 40 Dispensaries.

### **2002-2007**

Project Manager and lead design Architect for major rehabilitation at Muhimbili National Hospital Dar es Salaam Tanzania. This included a state of the art Pathology laboratory and New Out patients Department The project was funded by Axios and Abbot Laboratories of USA



## Experience Record

- 1966** Joined Norman + Dawbarn Architects, Consulting Engineers Planners
- 1972** Appointed Senior Architect in charge of projects in East Africa .
- 1975** Appointed Architect Partner with responsibility for the firm's offices in East and Central Africa.

***Since 1988 Senior Director International Division.***

### **2005- 2012**

Senior Consultant with Capita; an International firm of Architects, Engineers and Project managers.

### **2012 to date**

Principal Consultant, Design, Planning and Project Management ZEF Concepts

Currently assisting with developing the marketing strategy for the international division of ZEF Concepts and preparing technical and financial proposals on projects funded by international funding agencies and National Governments.

### **A. Selected projects as Project/Programme Manager**

#### **2009-date**

Lead Architect / Planner for the expansion of 9 No Skills and Vocational Training Colleges in Nigeria for the Federal Ministry of Education Nigeria and funded by the African Development Bank. The project introduced modular designs and developed sustainable solutions.

#### **2003-2007**

Lead Architect /Planner for The Akwa Ibom University Of Technology Uyo Nigeria. The University was planned for 10,000 students on a green filed site in the Niger Delta. As a team we dealt successfully with the challenging ecological, geological and social conditions.  
Project Manager for the design of Phase 1, Engineering Laboratories for research and development



### **2002-2009**

Project Director for the Master Planning expansion and rehabilitation of Muhimbili National ( Teaching ) Hospital under AfDB and Central Pathology Laboratories / OPD under AXIOS Foundation Inc. These are major projects intended to uplift Muhimbili to a centre of excellence. The project is complete.

Project Value US\$ 19,000,000.00

### **2000-2002**

Special Courts for Seiraleone ; funded by United Nations. This was a very specialized highly secure building for conducting trials of war criminals in the region.

Project Value US\$4,000,000

### **1998-1999**

Project Director in charge of new 1000 bed Acute General Hospital for Malta. My role was to manage the multi professional design team made up from 5 firms from UK, France and Malta. The Master planning and development control proposals are complete. The Client is now seeking design-build proposals. Funded by European Fund for Social Development.

Project value £ 120,000,000.

### **1996-1998**

Project Director in charge of developing detailed program for the rehabilitation of 12 tertiary hospital and centres of excellence in NW Nigeria, funded by the Petroleum Trust Fund, Abuja, Nigeria.

I lead a multi disciplinary team of UK & Nigeria professionals in conducting surveys, developing the needs for each centre related to the national health plan and state health needs; establishing design briefs and cost budget and agreeing priorities related to the operational policies of each centre; establishing detailed brief and room data for each building to be rehabilitated and new build;



developing project implementation programs for design and production drawings; preparation of specification tender documents, submittals and presentations to project sponsors after agreeing procedures for checking of design and production drawings and review of all tender documentation prior to final submittal. Pre-contract and tender stages completed and implementation about completed.

Project value US\$ 12,000,000.

### **1992-1997**

Project Director in charge of the construction and completion of 250 bed Gombe Referral Hospital NE Nigeria.

I was appointed Design Director for the design stage and took over as Project Director in 1994 after funding had been secured for the project from the African Development Bank. I was a member of the team that prepared the funding justification document and application on behalf of the Client.

My role as manager included controlling a multi disciplinary team of UK & Nigerian professionals completing production drawings and tender documents including the procurement of bio-medical equipment, furniture, semi-consumables and consumables. In addition I was responsible for preparing detailed implementation programs, monitoring performance and output against these programs and preparing quarterly progress financial and technical reports for the funder AfDB. My duties included preparing a plan for installation of medical equipment and commissioning which is currently being executed and scheduled for opening in 2 – 3 months time.

Project value US\$ 60,000,000



### **1992-1994**

Appointed as Project Manager for the Eye Hospital India. My duties included visit to site, discussions with the end users, report on site conditions and environment, negotiating transfer of land to local non-profit making charitable organization supported by Sight Savers of UK. When the site was secured I went to prepare a detailed brief and budget, travelled to Bhopal to brief a local architect, vetted designs, production drawings, tender documents and tender report.

### **2002-2009**

Following appointment of a contractor made visits, monitored construction and expenditure and advised the funder on value for money, payments to consultants and contractors and the final account.

A particular difficult task was advising on quality of mechanical and electrical services to meet international health safety standards.

Project value US\$ 2,000,000.

### **1991-1993**

Project Director on the development of a medical training school on a green field site in Zanzibar funded by the Government of Oman.

My duties included developing a statement of intent (Project content and value) for the two Governments to sign an agreement, followed by monitoring of the design, tender and construction stages to final completion, installation of client supply materials and equipment, commissioning and hand over.

Project value US\$ 8,000,000



***Selected major international projects as Partner/  
Director in charge by Country.***

***B) Saudi Arabia***

Farasan Berth and associated facilities including large industrial complex, offices and a small township. Duties included preparing a Master Plan and supervising a multi-disciplinary team to complete production drawings for Construction.

***Jamaica-West Indies***

Competition Winning Entry for Student Village at the University of the West Indies, Jamaica (funded by EEC). Led UK multidisciplinary team for completion of Student Village Master Plan and the detail design and production / construction documentation.

***Ethiopia***

- Major extensions to the Addis Ababa University to increase student intake by 3,000 funded by World Bank (IDA).The project involved the development of Teaching and Research laboratories for the faculty of Science
- International Livestock Center for Africa – funded by member countries and World Bank (CGIAR). The Project included Research buildings, Conference facilities, hostels and housing.
- Rural Hospitals 120 bed, funded by EEC.
- School for Laboratory Technicians, funded by EEC.

**India**

- Specialist Eye Hospital, India for “Sight Savers” (IRCSB).

***Kenya***

- Headquarters for the National Library Services, Nairobi and regional libraries at Kisumu and Eldoret.
- Masterplan and development study for Ramogi Institute of Science and Technology.



## ***Addis Ababa Ethiopia***

Major expansion for 4000 students; New faculties of Science and Social Sciences

## ***Eritrea***

350MW Power Station.

## ***Sudan***

Housing compound for Technical Cooperation Officers Sudan. Funded by ODA (DFID).

## ***Sierra Leone***

Special Court set up by UN to try war criminals.

## ***Zanzibar***

- Islamic College, Zanzibar, funded by the Islamic Development Bank. Refurbishment and upgrading of Africa House and Zanzibar Hotels for TTC. College of Health Sciences Zanzibar funded by the Government of Oman.
- Technical Secondary School for 200 students (residential) funded by IDB including design and management of school furniture supply throughout the islands.

## ***Angola***

- Extensions to British Embassy.
- Diplomating Housing for the British Embassy

## ***Nigeria***

- New 282 bed referral hospital in Gombe, Bauchi State funded by African Development Bank.
- Rehabilitation of 22 general hospitals in 5 states funded by AfDB. A 5 year program which commenced in 1993.
- Secondary schools program for entire State of Gongola and construction of pilot projects.
- Regional Development Plan for Niger delta Region SE Nigeria
- Commercial mixed use development Central Port Harcourt in collaboration with Harcourt Adukeh Associates



- 300 room Hilton Hotel Lagos International Airport.
- Industrial Manufacturing Complex Ibadan for British American Tobacco
- Equatorial Guinea West Africa
- Development of campus for Marathon Oil ( Administrative offices, Housing and Hostels.



### **Ghana**

- 500 bed Specialist Army Hospital Accra Master Plan and detail Design. Rehabilitation of 300 room Ambassador Hotel
- Master Plan for 600 bed Army Hospital in Accra Ghana. Design and construction of Phase 1 & 2.



### **Uganda**

Rehabilitation and expansion of 2,000 bed Consultant and Teaching Hospital, Mulago.



### **Malawi**

- Expansion of University of Malawi various donor funding and IDA. (World Bank) Expansion of Bunda Technical College.
- Major expansion to Agricultural Research Centres nationally funded by the World Bank ( IDA)
- Options study on new prototype design for secondary schools program funded by IDA (World Bank)
- Prototype designs for Government Housing.



### **Zambia**

Agricultural Research Project civil works component, pre-feasibility study for upgrading existing centres and construction of new ones. Funded by World Bank (IDA).



### **Turkey**

New factory Complex for BAT- British American Tobacco.

### **Egypt**

Master Plan and concept design for a 20 sq km Tax free industrial park in the Gulf of Suez ; for manufacturing and assembly/storage of finished goods.



## **Malta**

- Master Plan and development Plan for the Consultant Hospital 10000 bed capacity.
- Master Plan and design for a major 40 story point block with mixed use including commercial centre of the City including Housing, Offices, Leisure and Hotel

## **Tanzania**

- Tourism study and design of Hotel Management School funded by World Bank.
- IDA 1 to 7 Education program over a period of 10 years involving 20 secondary schools and 10 colleges of Education, funded by the World Bank (IDDA).
- Training Center for TAT in Tabora funded by World Bank Residential Training College for THA funded by NORAD Mbeya Referral Hospital, 500 bed, funded by ODA (DFID).
- Supervision of Construction for 'Umoja House' new British High Commission and joint European Union Embassies in Dar es Salaam. Funded by FCO.
- Rehabilitation and expansion of 1800 bed Muhimbili Referral and Teaching Hospital funded by AfDB.
- Urban Health Study by SDC. (Swiss)
- Winning design for Science Centre, University of Dar es Salaam
- University of Dar es Salaam ; 6,000 student capacity, 8 facilities and complete university township phased over 20 years.
- Strategic grain stores in Dodoma, Shinyanga and Makambako funded by ODA (DFID) Vocational Training School Arusha





**Guido Camata – Engineering**  
*PHD ENG*  
*Structural Engineer Consultant*

Guido Camata is a Structural Engineering Professor at the University of Chieti- Pescara and at the University of Colorado, Boulder, USA and managing partner of ASDEA S.r.l.

Dr. Camata has over 10 years of experience in the implementation of civil engineering projects covering a wide range of sectors: public and private buildings, infrastructure, civil and structural engineering and risk assessment.

Dr. Camata obtained a Master degree in Civil engineering from the University of Bologna, Italy. He worked at ISIS Canada (Intelligent Sensing for Innovative Structures) in Winnipeg, Canada, and after at the University of Colorado at Boulder, where he completed a doctorate in structural engineering. At the University of Colorado he also worked as a researcher. Since 2004, he has been working with the Structural Department Engineering of “G. D’Annunzio” University in Chieti-Pescara, Italy. He regularly is a visiting professor and since 2011 adjunct professor at the University of Colorado, USA.



Dr. Camata's research experience includes both experimental and numerical work, his main research interests are:

- structural analysis, structural dynamics, earthquake engineering
- testing, design and analysis of structures,
- computational methods in nonlinear analysis,
- fracture mechanics
- seismic risk
- application of nonlinear analysis in seismic design codes.

He is specialized in coordination of design and implementation of civil works, technical norms in seismic areas and seismic risk assessment.

### Reviewer for the following academic journals:

Journal of Structural Engineering, ASCE, ACI Structural Journal, Composite Part B, Elsevier, Journal of Materials Science, Springer, Journal of Engineering Mechanics, ASCE

He has published over 60 papers in international journals, books and conferences. He has a broad experience as a structural designer and he has been involved with the design of a wide range of existing and new structures.

### Academic Experience

*The University of Chieti-Pescara, Italy*

**2011** Aggregate Professor

**2008-2011** Assistant Professor

**2004-2005** Lecturer

*The University of Colorado, Boulder, USA*

**2009-2011** Visiting Professor

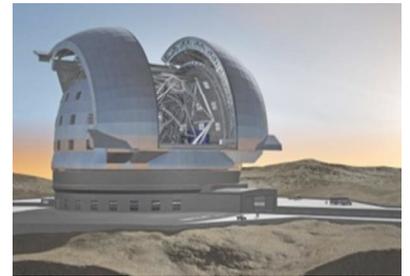
**2011** Adjunct Professor

**200-2004** Researcher



## Research Experience

- Dr. Camata has research experience in several Universities/Research Institutes:
- Università of Limerick, Ireland,
- ISIS Canada (Intelligence Sensing for Innovative Structures), University of Winnipeg, Manitoba, Canada.
- University of Colorado at Boulder, USA University of Chieti-Pescara
- The research activity has been published in several scientific papers on international journal and conferences.



## Experimental Experience

Dr. Camata has long experience on experimental research acquired at ISIS Canada, University of Manitoba, Winnipeg, Canada and at the University of Colorado at Boulder. He has been responsible for research on FRPs, bridge decks, hybrid FRP-concrete structures and debonding FRP issues.

## General Experience

### **2009 to 2012**

Probabilistic Seismic Hazard Study and Seismic isolation design of the E-ELT Telescope, the largest telescope ever designed in the world, Chile (for ESO European Organization for astronomical research in the southern hemisphere).



### **2012**

Structural design for the refurbishment of the school "Masciaglioli" Italy (for Progetto Integrato).



### **2006 to 2012**

Structural design for the refurbishment of the school "Mordani" Italy (for Comune di Ravenna)

### **2011**

- Final design for L'Aquila Courthouse office building
- Structural design for the refurbishment of "G. Mazzini" hospital of Teramo



- Structural design for the refurbishment of the school “Giovan Battista Vico” school, Italy (for TOL & SA Costruzioni S.r.l.)



### **2009 to 2011**

- Structural design for the refurbishment of the Abruzzo Region Headquarters (for the region of Abruzzo)
- Structural design for the refurbishment of “Palazzo Valloni” monument; (for Cicchetti Engineering)



### **2008 to 2011**

Structural Design and works supervision of the new Febo Group Headquarters Building, Pescara, Italy (For Febo Group)



### **2008 to 2010**

Structural design of biological filtration system of the new "Malta South" waste water treatment plant



### **2010**

- Definitive Design and Seismic isolation of 12 bridges in Grotta Minarda, Italy (for SGI Spa)
- Seismic vulnerability assessment of the Ravenna City Hall, Italy, very large monument of the XIII Century (for the County of Ravenna)



### **2006 to 2010**

Structural Design and works supervision of S.Pellegrino Hospital, Mantua, Italy (for Coghi S.p.a.)



### **2009**

Executive Design of Gulf Cement Company – Sea Water desalination plant, Qatar (for SGI Spa)



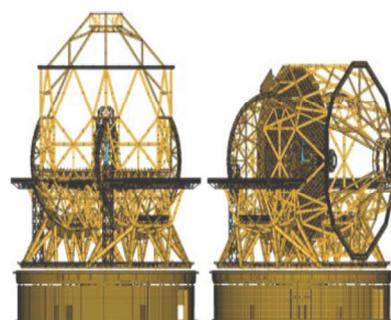
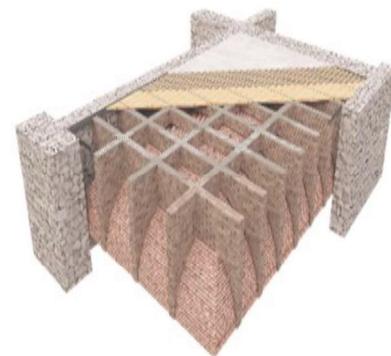
### **2006**

Seismic Retrofit of an existing 75 meter high industrial tower using FRP at a high temperature; the first accomplished in the world using this technique at such a high temperature, Pederobba, Veneto, Italy (for TAI S.r.l., Cementirossi, S.p.a.)

## Selected Publications

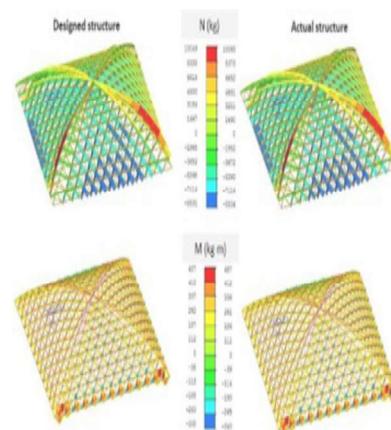
### 2012

- Tarque N, Camata G, Spacone E, Varum H, and Blondet M. 2012. Elastic and inelastic parameters for representing the seismic in-plane behaviour of adobe wall. Submitted to Terra 2012, Catholic University of Peru. Lima, Peru.
- Tarque N, Camata G, Spacone E, Varum H, and Blondet M. 2012. Non-linear dynamic analysis of an adobe module. Submitted to Terra 2012, Catholic University of Peru. Lima, Peru.
- Tarque N, Camata G, Spacone E. 2011. Non-linear static analysis of an adobe wall with Midas FEA. Structural modelling: magazine di ingegneria strutturale. Vol 4, 12-15. Italy.



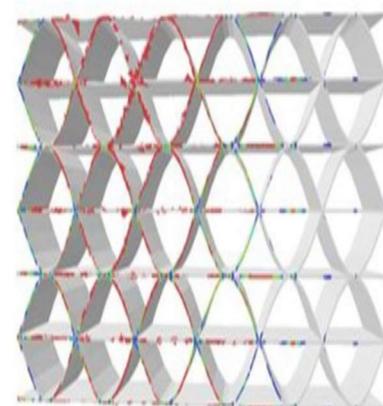
### 2011

- Tarque N, Camata G, Spacone E, Varum H, and Blondet M. 2011. Numerical modeling of adobe walls under monotonic in-plane loads. Submitted to Computers and Structures Journal.
- Cantagallo C., Camata G., Spacone E. and Corotis R. (In press). The variability of deformation demand with ground motion intensity. Journal of Probabilistic Engineering Mechanics, Elsevier.
- Ucci, M., Camata, G., Spacone, E., Lilliu, G., Manie, J., Schreppers, G. J., 2011 "Nonlinear soil-structure interaction of a curved bridge on the Italian Tollway A25", Proceedings of the EuroDyn 2011 Conference, Leuven, Belgium, July.



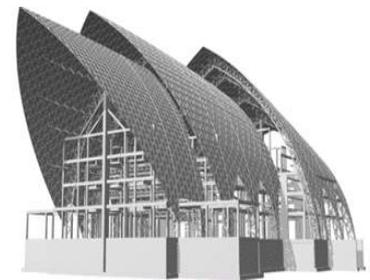
### 2010

- Cantagallo C., Camata G., Spacone E., Corotis R. (2010), The Variability of Deformation Demand with Ground Motion Intensity, Computational Stochastic Mechanics – Proc. of the 6th International Conference (CSM-6), Rhodes, Greece, June 13-16
- Tarque N, Camata G, Spacone E, Varum H and Blondet M. 2010. Numerical modeling of in-plane behaviour of adobe walls. In proceedings of 8th National Conference on Seismology and Earthquake Engineering. University of Aveiro, Aveiro, Portugal.



FEA, damage at peak load

- Camata, G.; Shing, P.B. 2010. Static and fatigue load performance of a GFRP honeycomb bridge deck. *Composites, Part B* 41: 299-30
- Massimo Meghella, Giorgia Faggiani, Enrico Spacone, Guido Camata, Giuseppe Brando. 2010. A risk analysis framework for the safety assessment of dams in Italy. 8th ICOLD European Club Symposium Austria, Innsbruck 22-23 September.



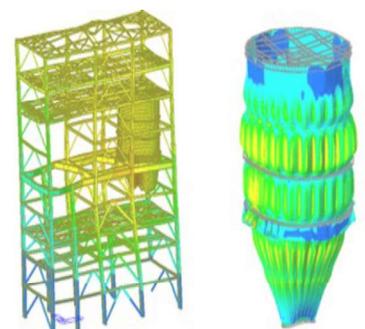
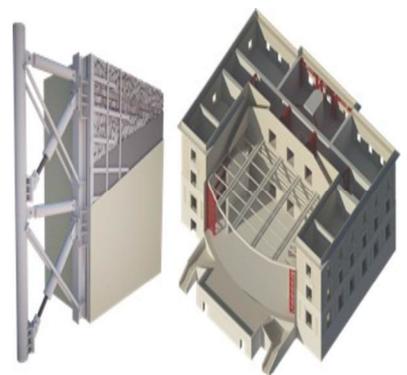
## 2009

- Camata G., Biondi S., De Matteis G., Lai C., Spacone E., Vanzi I., Vasta M. (2009) Post Damage Assessment of the L'Aquila, Abruzzi April 6, 2009 Earthquake. Keynote address, COMPDYN, June 22-24, Rhodes, Greece
- "Rebuilding L'Aquila following the 2009 Earthquake: Priorities and Perspectives," (with A.B. Liel, J. Sutton, G. Camata, E. Spacone and R. Bricker-Ford), ICASP 11, August, 2011, Zurich, Switzerland.
- Biondi S., Camata G., Spacone E. Valente C. (2009) Ambient Vibration Identification of a masonry tower, ANIDIS, Bologna, Italy.

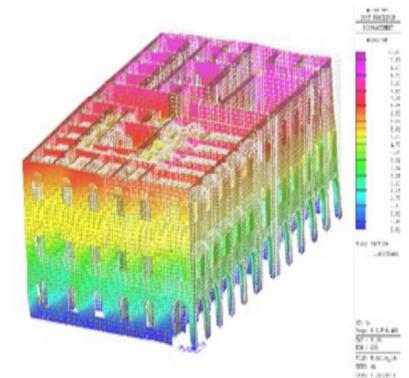
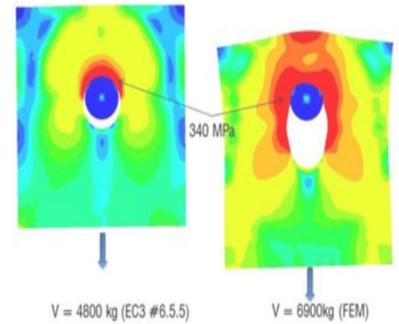


## 2008

- Bosco M., Camata G., De Stefano M., Gherzi A., Lucchini A., Magliulo G., Marino I., Martinelli E., Monti G., Petti L., Saetta A, Spacone E., Trombetti T. (2008) Guidelines for Nonlinear Analysis of Existing Reinforced Concrete Buildings. Assessment and Reduction of the Vulnerability of Existing Reinforced Concrete Buildings.
- Camata G., L. Cifelli, E. Spacone, J. Conte, M. Loi and P. Torrese. (2008) Seismic safety assesment of the tower of the S.Maria Maggiore Cathedral in Guardiagrele, Italy Proc. The Ninth International Conf. on Computational Structure Technology, edited by Topping and M. Papadrakakis. Athens, Greece 2-5 September.
- Camata G., L. Cifelli, E. Spacone, J. Conte and P. Torrese. (2008) Safety Analysis of the bell tower of S.Maria Maggiore cathedral in Guardiagrele (Italy) Proc. 14th World Conference on Earthquake Engineering (14WCEE), Beijing, China 12-17 October.

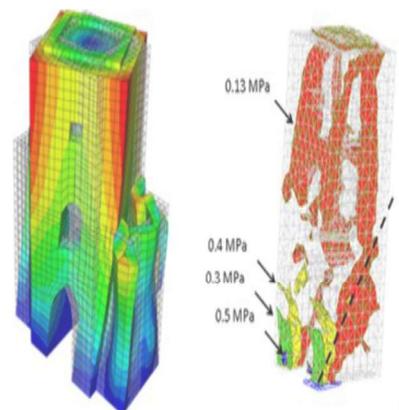
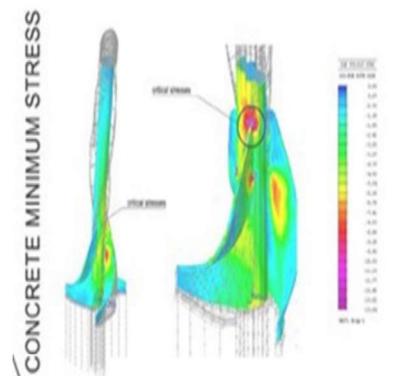


- Spacone E., Camata G., Faggella M. (2008) Nonlinear models and nonlinear procedures or seismic analysis of reinforced concrete frame structures. In: Charmpis D.C., Papadrakakis M., Lagaros N.D., Tsompanakis Y. Computational Structural Dynamics and Earthquake Engineering. ISBN: 9780415452618. Taylor and Francis (Netherlands).
- Spacone E., Camata G. and Faggella M. (2008). Nonlinear models and nonlinear procedures for seismic analysis of reinforced concrete frame structures keynote Lecture, ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, M. Papadrakakis, D.C. Charmpis, N.D. Lagaros, Y. Tsompanakis (eds.), Rethymno, Crete, Greece, 13- 16 June.



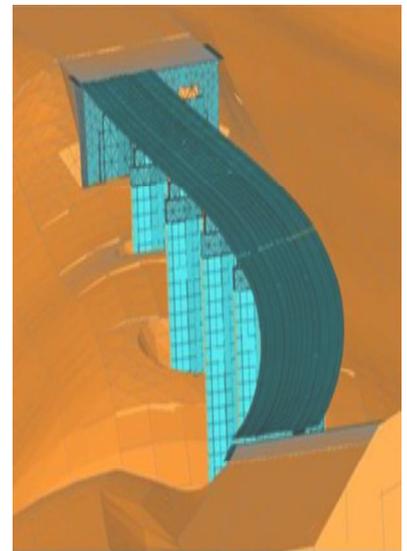
## 2007

- Camata G., Spacone E., and Zarnic, R. (2007) "Experimental and Nonlinear Finite Element Studies of RC Beams Strengthened with FRP Plates." Composites: Part B, Elsevier, 38, 277-288.
- Thomsen, H., Spacone, E., Limkatanyu, S., and Camata, G. (2003) "Failure Mode Analyses of Reinforced Concrete Beams Strengthened in Flexure with Externally Bonded Fiber Reinforced Polymers." ASCE Journal of Composites for Construction, 8(2), 123-131.
- Camata G., Spacone E. and Zarnic R. (2007) "Experimental and Nonlinear Finite Element Studies of RC Beams Strengthened with FRP Plates." Composites Part B: Engineering, Elsevier.
- Benedetti A., Camata G., Mangoni E. and Pugi F. (2007). "Out of plane seismic resistance of walls: collapse mechanisms and retrofit techniques" The Tenth North American Masonry Conference (10 NAMC), June 3-6.
- Saouma V., Camata G., Sbaizero O., Tussiwant G. and Viggiani G. (2007). "Applications of the Cohesive Crack Model to Concrete, Rock, Ceramics and Polymers" FraMCoS-6, Catania, June 17-22.
- Camata G., Pasquini F. and Spacone E. (2007). "High Temperature Flexural Strengthening with Externally Bonded FRP Reinforcement" FRPRCS-8, University of Patras, July 16-18.



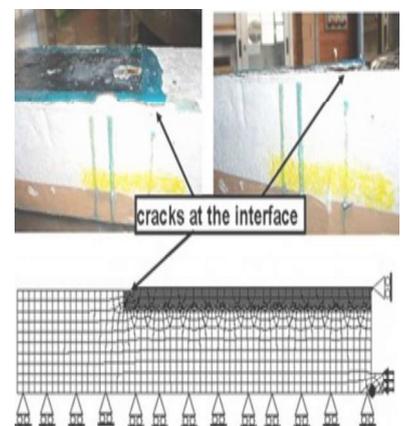
## 2005

- Camata G. and Shing B. "Evaluation of GFRP Honeycomb Beams for the O'Fallon Park Bridge." *Journal of Composite for Construction*, ASCE, 8, (6), November/December 2005, 545-555.



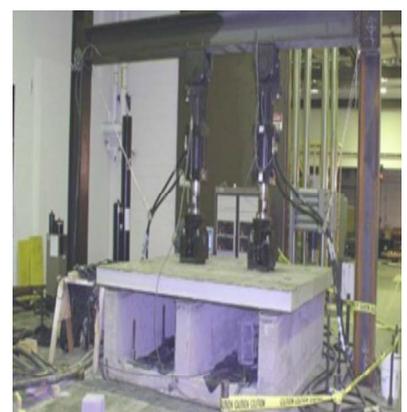
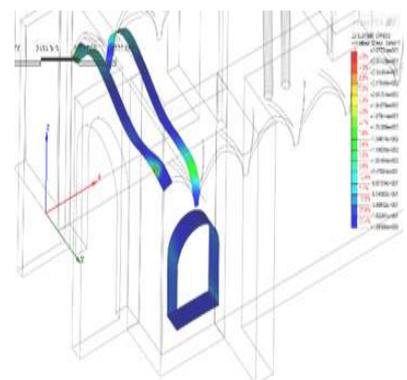
## 2004

- Camata G., Spacone E., Al Mahaidi R. and Saouma V. (2004). "Analysis of Test Specimens for Cohesive Near-Bond Failure of Fiber-Reinforced Polymer-Plated Concrete." *Journal of Composite for Construction*, ASCE, 8 (6), 528-538.
- Camata G., Corotis R. and Spacone E. (2004). "Simplified Stochastic Modeling and Simulation of Unidirectional Fiber Reinforced Composites." *Journal of Probabilistic Engineering Mechanics*, Elsevier, 19 (1-2), 33-40.
- Thomsen H., Spacone E., Limkatanyu S. and Camata G. (2004). "Failure Mode Analyses of Reinforced Concrete Beams Strengthened in Flexure with Externally Bonded Fiber Reinforced Polymers." *Journal of Composite for Construction*, ASCE, 8 (2), 123-131.
- Camata G. and Spacone, E. (2004). "Brittle-Failures of RC Structural Members Strengthened with Fiber Reinforced Polymers." *Proc., Innovative Materials and Technologies for Construction and Restoration, IMTCR-04, 6/9 June 2004 Lecce, Italy, volume 2, 97-106.*



## 2003

- Camata G., Spacone E. and Saouma V. (2003). "Nonlinear modeling of debonding failure of RC structural members strengthened with FRP laminates." *Proc., 6th International Symposium on Fibre-Reinforced Polymer (FRP) Reinforcement for Concrete Structures, FRPRCS-6, July 8-10, Singapore.*
- Limkatanyu S., Thomsen H., Spacone E. and Camata G. (2003). "Parametric Studies of RC Beams Strengthened in Flexure with Externally Bonded FRPs." *Proc., 6th International Symposium on Fibre-Reinforced Polymer (FRP) Reinforcement for Concrete Structures, FRPRCS-6, July 8-10, Singapore.*
- Camata G., Spacone E., Al Mahaidi R. and Saouma V. (2003). "Modeling FRP strengthened reinforced concrete structural members using nonlinear fracture mechanics." *Proc., International Conference on Composites in Construction, September 16-19, Rende (CS), Italy.*





**David Russell – Architecture and Engineering**  
*Bsc (Hons)/ B Arch (Hons)/ RIBA*  
*Educated at Strathclyde University UK*

**Held senior positions at:**

- Capita Property & Infrastructure
- Hiltron Ltd Health Planners
- Aulton Lp architecture engineering planning

Over 20 years experience of architecture, interior design & space planning, in 14 countries

- master planning
- workplace
- healthcare and laboratories
- education
- Industrial
- residential
- leisure

***Healthcare and Laboratory experience***

12 M Oil Research Laboratories	EG
13 Teaching Hospital	Basra, Iraq
15 Cardiac & Diebetology	MoH, Iraq
15 Ophthalmology Centre	MoH Iraq
14 Community Hospital	MoH Iraq
14 Health Clinic	Al Nisariya, Iraq
13 300 Bed Hospital	Karbala, Iraq
14 400 Bed Hospital	Kurkuk, Iraq
05 Health Centre	Trinidad
01 Out Patient Department	Accra, Ghana
00 Military Hospital	Accra, Ghana
06 Akwa Ibom University	Akwa Ibom, Nigeria



## Other major project experience

- 12 ExxonMobil Residential/Offices Lagos, Nigeria
- 11 Marathon Oil HQ EG
- 12 Office HQ Lagos, Nigeria
- 04 United Nations Court house Freetown, Sierra Leone





Valerio Pagliuca – Architecture  
*MArch*  
*Architectural Assistant*

***Work Experience***

***10/2015-current***

Architectural Assistant  
ZEF Concepts Ltd

***09/2014-12/2014***

Architectural Intern  
X-Tu Architects

LLP/Erasmus Placement scholarship winner at IUAV. Optimization of a green wall system: identification of major technical issues of the first X-TU prototype of green wall bags. New design options. Prototyping. Tests.

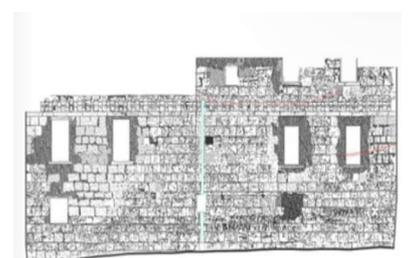
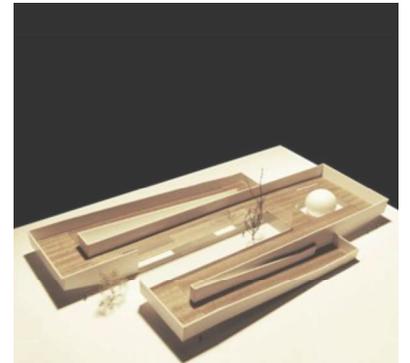
***03/2010-12/2013***

Architectural Intern  
Architecture Office “Iodicearchitetti”

Collaboration in international architectural competitions: Analysis announcement of competition. Collection and cataloguing of reference material. Base-line study site of project. Study of first proposals (sketches, models, CGI). Study of final project and graphic working out in 2d and 3d. Graphic post production and final work layout. Final physical model.



- Kindergarten in Rome, Italy. International competition.
- New library in Setúbal, Portugal. International competition
- Secondary school in Piano di Sorrento, Italy. International competition.
- Info Point with showroom in Rivello, Italy. Competition.
- Requalification of Place San Francesco in Cava de' Tirreni, Italy. Competition.
- Children's swimming pool and new pavilions for the park "Bois-de-la-Bâtie" in Geneva, Switzerland. International competition
- Enhancement of the Park of the Walls of Piacenza, Italy.
- International competition.
- Day care center in Beer Sheba, Israel. International competition.
- Extension of Cemetery park and crematorium temple in Prato, Italy. International competition.
- Multipurpose security centre in San Javier, Spain. International competition.
- Extension of the Gösta contemporary Art Museum, Finland. International competition.
- Mixed use office park in New Delhi, India. International competition
- Centre for promotion of Science in Belgrad, Serbia. International competition.
- Hotel centre in Herrera del Duque, Spain. International competition.
- 60 public housing in Melilla, Spain. International competition.



## Education and Training

**01/2014-03/2015**

Level II Master's Degree in Sustainable Constructive Processes

IUAV, Venezia (Italy)

Sustainability. PED methodology – Parametric Environmental

Design. BIM Design (Building Information Modeling).

Energy modeling. LEED rating system. Integrated management of constructive processes. Construction and management of NZEB (Nearly Zero Energy Building).

**11/2005-03/2012**

Architecture Master's Degree with the mark of 110/110 cum laude

Seconda Università degli Studi di Napoli, Facoltà di Architettura

“Luigi Vanvitelli”

Architectural design and urban planning.

History of Architecture.

Architectural restoration.

Architectural drawing.

Graduation thesis in architectural design and urban planning with the title “Planning of a linear urban system between Villa Literno and Castel Volturno” (Supervisor Prof. Arch. Efsio Pitzalis, Referee Prof. Eng Massimo Majowiecki).

**09/2007-02/2008**

École Nationale Supérieure d'Architecture de Paris La Villette

144 Avenue de Flandre FR-75019, Paris (France)

Erasmus scholarship winner at École d'Architecture de Paris La Villette (ENSAPLV) during third academic year.

Representation and communication techniques: photo, video, drawing.

Modeling and architectural survey.

Plastic and architectural languages.





*Cameron McCue – Architecture*

*B Arch*

*Educated at Mackintosh School of Architecture/  
Glasgow School of Art, UK*

A recent addition to the ZEF team since completing part 1 of architecture studies at the Mackintosh School of Architecture. Keen interest in sustainable design and creating architecture with longevity and purpose. Aims to complete M Arch at GSA in order to sit the RIBA part 3 examination in the coming years.

Participated on a range of academic projects from urban residential units to larger commercial office projects. In addition to studies; worked on shelter design and landscape design for private clients as well as participating in the organisation of various architecture degree shows in Glasgow and London.

**Relevant Experience**

- Healthpoint Hospital *Abu Dhabi*
- Cumberland House Renovation *London*
- 50m2 Sustainable House *Nigeria*

**General experience**

- Freelance landscape architecture (garden landscape design) for private clients.
- Shelter design and construction for Forestry Commission Scotland.
- Data analysis and transcription private consultancy for PSMR Ltd.



## Education

*BArch Mackintosh School of Architecture / Glasgow  
School of Art (2012-2015):*

- Architectural Design
- Urban Design
- Environmental & Sustainable Design
- History of Architecture
- Urban Studies
- Inter:ACT Multidisciplinary Competition
- Architectural Technology
- Professional Studies



## IT Skills

### **Adobe Suite:**

Photoshop  
Illustrator  
InDesign

### **Microsoft Office:**

Word  
Powerpoint  
Excel  
Publisher

AutoCAD  
Sketch-UP  
Rhino  
V-Ray for Sketch-UP  
IES  
Revit





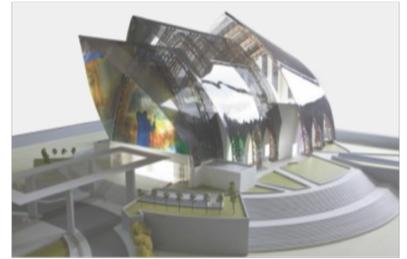
*Darwish Noureldin – Engineering*  
*B.Eng. MSc*  
*Environmental Engineer*

I am an Environmental Engineer having completed my Bachelors in Mechanical Engineering and a Masters in Environmental & Sustainable Technology which has given me a solid platform in the engineering field. I've been particularly interested in the field of sustainability during my studies which encouraged me to attend my 3-month internship at ZEF Concepts Ltd. in 2010 where I became engaged in sustainable design and renewables. During that time I learned how to perform thermal modelling using design software such as DesignBuilder and Ecotect and have had first-hand experience in multiple projects. After that I returned to ZEF Concepts Ltd. in November 2012 where I have been working as a full-time Environmental Consultant since.

**Education**

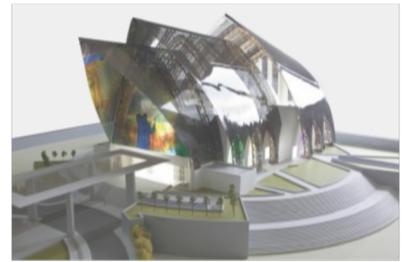
*MSc in Environment and Sustainable Technologies in University of Manchester (UK) with 2:1 classification (2011-2012):*

- Waste Water Engineering
- Energy Generation Systems
- Distributed and Renewable Energy Systems
- Sustainability, Resources & Waste
- Water Resource and Utilization
- Sustainable Development & Industry (LCA)



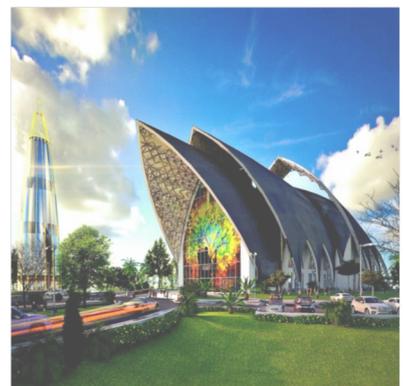
*Dissertation for MSc (distinction on paper):*

- Using polymer optical fibre to detect strain and stress within a structure.
- By embedding the fibres in different composite material layouts (where the arrangements were different between each fibre sensing system), the best fibre arrangement for measuring strain was determined.
- This application is necessary for innovative and “risky” structures that require constant monitoring of the internal strains and stresses to avoid any accidents. This could be applied to buildings that use recycled material which would improve the integrity of the structure, making it more desirable for use.



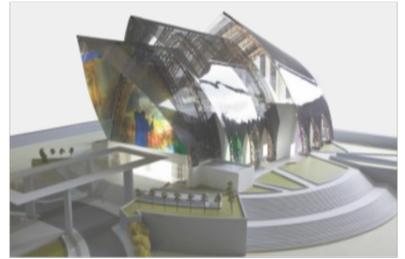
*Bachelors of Science in Mechanical Engineering in American University of Beirut (AUB, Lebanon) (2007- 2011)  
with a GPA of 2.95:*

- Thermodynamics
- Heat Transfer Operations
- Mechanical Vibrations
- Mechanics of Materials
- Energy Economics & Policy
- Engineering Economy
- Biomechanics
- Separation Processes (CHEN)
- Fluid Mechanics
- Advanced Fluid Mechanics
- Manufacturing Processes
- Mechanical Design
- Aerosol Dynamics
- Instrumentation & Measurements
- Control Systems
- Thermal/Fluid Systems



## Projects

- Building and programming of a Lego robot operated by Lego Mindstorm NXT (Engineering Tools).
- Building a miniature car (Engineering Tools).
- Building a miniature elevator with complex tasks controlled by a DAQ board using LabVIEW (Instrumentation and measurements).
- Manufacturing metallic parts for a car design using manufacturing tools (lathe, milling, and drilling) (Manufacturing Processes).
- Designing a forklift which is required to lift a certain load (Mechanical Design).



### *Final Year Project for BSME:*

- Finite Element Modelling of Impact Deformation.
- By using the software tool ABAQUS, our group simulated impact analysis on different shaft material, sizes and geometries to deduce the most energy absorbing model.

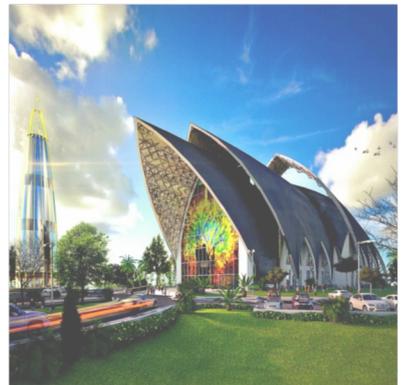


Rawdah High School (1995-2007) with Honours

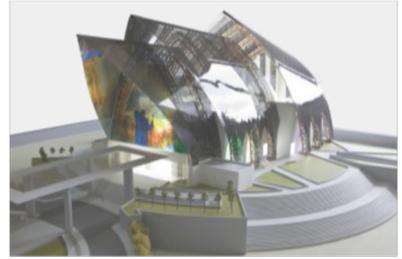
## Employment

*Environmental Engineer at ZEF Concepts Ltd. (November 2012 - current):*

- Performed thermal modelling on structures by using Ecotect and DesignBuilder software tools.
- By using Ecotect, I was able to perform climatic analysis to calculate the potential effectiveness of various passive design techniques or to optimise the use of available solar, light and wind resources on the desired structure.
- DesignBuilder is a tool that assisted me in checking building energy, carbon, lighting and comfort performance, which allowed me to compare the function and performance of different building designs.
- Assisted in the completion of the company's projects in the field of sustainability.



- Became acquainted with the roles and positions of the projects members, and worked with a diverse group of colleagues.
- Performed research on sustainable technologies in order to build up the company's database.



*Projects assisted with:*

**Yanegoa Church, Nigeria**

- Building an energy model of the church
- Estimating the heat and cooling loads on the building using DesignBuilder Software
- Proposing a waste management strategy for the site
- 



**Ophthalmology Centre, Iraq. Iraqi Ministry of Health.**

- Translation of the documents and designs from Arabic to English for the team

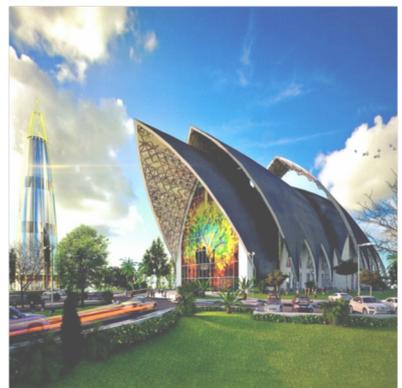


**100 Bed Community Hospital, Basra, Iraq. Iraqi Ministry of Health.**

- Translation of the documents and designs from Arabic to English for the team

**Nasiriyah clinic, Iraq.**

- Proposing an overall environmental strategy for the hospital
- Translation of the documents and designs from Arabic to English for the team



*Salaried internship at ZEFmed (June-August 2010), where I acquired the necessary training for the part time job.*

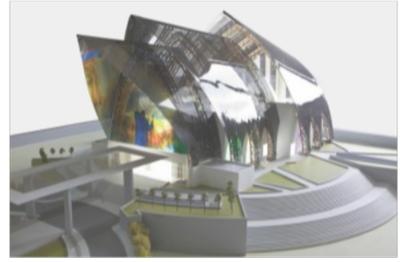
**Salt Cay Resort**

- Calculating the heat and cooling loads of the building
- Performing thermal modelling on the building using DesignBuilder
- Proposing solutions for alternative methods of cooling while remaining cost efficient



## NHCC

- Shadow analysis using Ecotect software in order to reduce the impact of shading from the centre to the surrounding buildings due to legislations against excess shading



## Thoumas Site

- Shadow analysis using Ecotect software to determine the impact of shading of the tree around the site on the building
- Calculating heat maps on the different rooms in the building during the different seasons



## Program Skills

Microsoft Office (Word, Excel, Powerpoint)

AutoCAD 2D

Ecotect

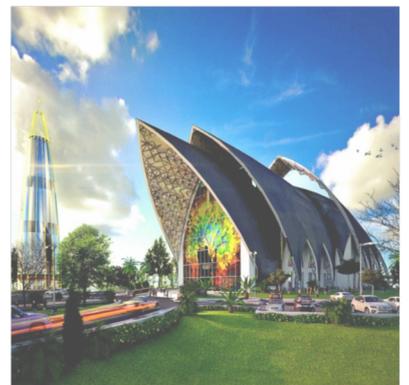
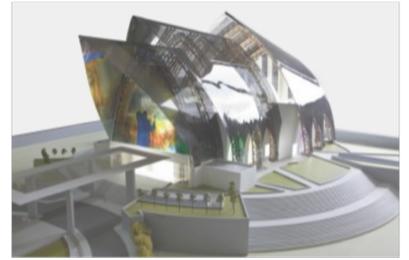
DesignBuilder

ABAQUS





*Hussein Noureldin – Engineering  
BEng, MSc  
Mechanical Engineer*



A hard working, dynamic and task-driven graduate in the engineering sector. I'm highly adaptable, eager to learn, and have a genuine interest in the fields of mechanical engineering and design.

### **Experience**

*Mechanical Engineer ZEF Concepts (March 2015-Current):*

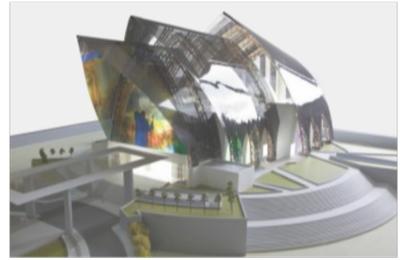
- Designing a geothermal heat pump system for a health facility
- Worked on an energy strategy report
- Used MatLab to help solve thermal analysis and design of passive solar buildings equations and models
- Design and costing of a 10KW solar energy system for a house in Nigeria
- Designing and costing of a sustainable garage conversion

*On-Site Mechanical Engineer Intern at Electro-mechanical specialists (EMS):*

- Worked as an on site mechanical engineer at a residential building construction site.



- Became capable with pipe sizing, material selection, and installation.
- Responsible for checking if mechanical works (plumbing, HVAC, fire systems) are installed according to the drawings.
- Became capable in sizing of pumps and HVAC systems and learned about how they are installed.
- Solving problems faced at the construction site and altering the plans.
- Became acquainted with the roles and positions of the projects members, and worked with a diverse group of colleagues.



## Education

*MSc in Engineering Design 2013 - 2014*

*University of Bath, UK*

- Group project: Feasibility study and design of a hybrid bus for bath
- **Dissertation:** Cost estimating in the automotive industry (in collaboration with Jaguar - Land Rover)



*BE in Mechanical Engineering 2009 - 2013*

*American University of Beirut, Beirut, Lebanon*

- Building a solar and wind energy miniature plant and using a motors and sensors programmed by Labview
- **Final Year Project:** Design and build of a rotary drum vacuum filter



*Lebanese Baccalaureate in General Science (GS) with Distinction 1995 - 2009*

*Rawdah High School, Beirut, Lebanon*

**Skills:**

*Microsoft Office*

*MATLAB & SIMULINK*

*AutoCAD*

*Solid Edge*

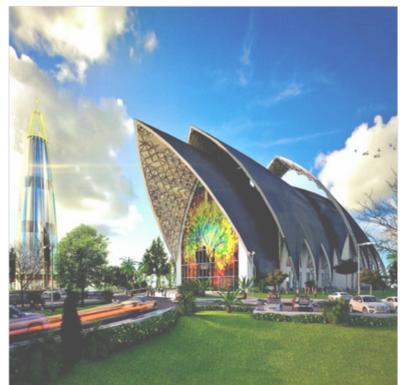
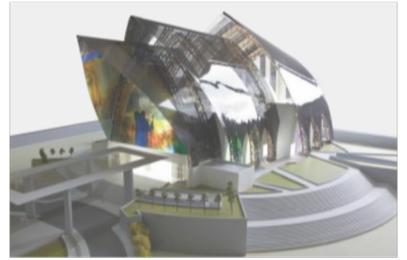
*SolidWorks*

*Pro-Engineer*

*LabVIEW*

*Rhino3d & Grasshopper*

*ArchiCAD*



# OUR PORTFOLIO





## CLIENT

Mubadala Healthcare

## ROLE OF HILTRON

Assessment and review of design proposals, preparation and management of Room Data Sheets, Coordination of input from design team, Assessment of equipment requirements based on space programme and operational policies, preparation of schedules, detailed specifications, tender documents., Management of the installation of equipment. Provision of an ongoing 2 year programme of equipment input.

STATUS: 2015 Ongoing

# 60 BED GENERAL HOSPITAL Al Nasiriyah



## CLIENT

Ministry of Health Dhi Qar

## ROLE OF HILTRON

Calculation of the Requirements, Schedule of Accommodation for six 60 bed General Hospitals. Creation of operational Policies, carrying out the Building Design, Environmental Design and Engineering Design of the Building. Preparation of all Design Data, including Architectural, M and E, Environmental and Equipment.

STATUS: 2014 Ongoing

# CARDIAC CENTRE

Kut



## CLIENT

Ministry of Health Dhi Qar

## ROLE OF HILTRON

Calculation of the Requirements, Schedule of Accommodation for a Specialist Cardiac Centre. Creation of operational Policies, carrying out the Building Design, Environmental Design and Engineering Design of the Building. Preparation of all Design Data, including Architectural, M and E, Environmental and Equipment. Full Design and supervision of construction and commission.

STATUS: 2013 Ongoing

# DIABETOLOGY & ENDOCRINOLOGY CENTRE

Al Nasiriyah



## CLIENT

Ministry of Health Dhi Qar

## ROLE OF HILTRON

Calculation of the Requirements, Schedule of Accommodation for a Specialist Cardiac Centre. Creation of operational Policies, carrying out the Building Design, Environmental Design and Engineering Design of the Building. Preparation of all Design Data, including Architectural, M and E, Environmental and Equipment. Full Design and supervision of construction and commission.

STATUS: 2013 Ongoing

# AL NASIRIYAH CLINIC

Iraq



## CLIENT

Ministry of Health Dhi Qar

## ROLE OF HILTRON

Calculation of the Requirements, Schedule of Accommodation for an Out-Patient Assessment and Treatment Facility. Creation of operational Policies, carrying out the Building Design, Environmental Design and Engineering Design of the Building. Preparation of all Design Data

STATUS: 2013 Ongoing

# OPHTHALMOLOGY CENTRE

Iraq



## CLIENT

Ministry of Health Dhi Qar

## ROLE OF HILTRON

Calculation of the Requirements, Schedule of Accommodation for a 100 Bed General Hospital. Creation of operational policies, carrying out the Building Design, Environmental Design and Engineering Design of the Building. Preparation of all Design Data, including Architectural, M and E, Environmental and Equipment.

STATUS: 2013 Ongoing

# 200 BED TEACHING HOSPITAL

Iraq



## CLIENT

Ministry of Health Dhi Qar

## ROLE OF HILTRON

Creation of the RFP documentation for two 200 bed teaching hospitals. Creation of Indicative Room Data Sheets based on operational policies arising from discussion and assessment of current practices and expectations within the region.

STATUS: 2013 Complete

# AL QALAA HOSPITAL

Iraq



## CLIENT

Ministry of Health Dhi Qar

## ROLE OF HILTRON

Calculation of the Requirements, Schedule of Accommodation for a 100 Bed General Hospital. Creation of operational policies, carrying out the Building Design, Environmental Design and Engineering Design of the Building. Preparation of all Design Data, including Architectural, M and E, Environmental and Equipment.

# IKITELLI INTEGRATED CAMPUS



**CLIENT**  
Samsung

## **ROLE OF HILTRON**

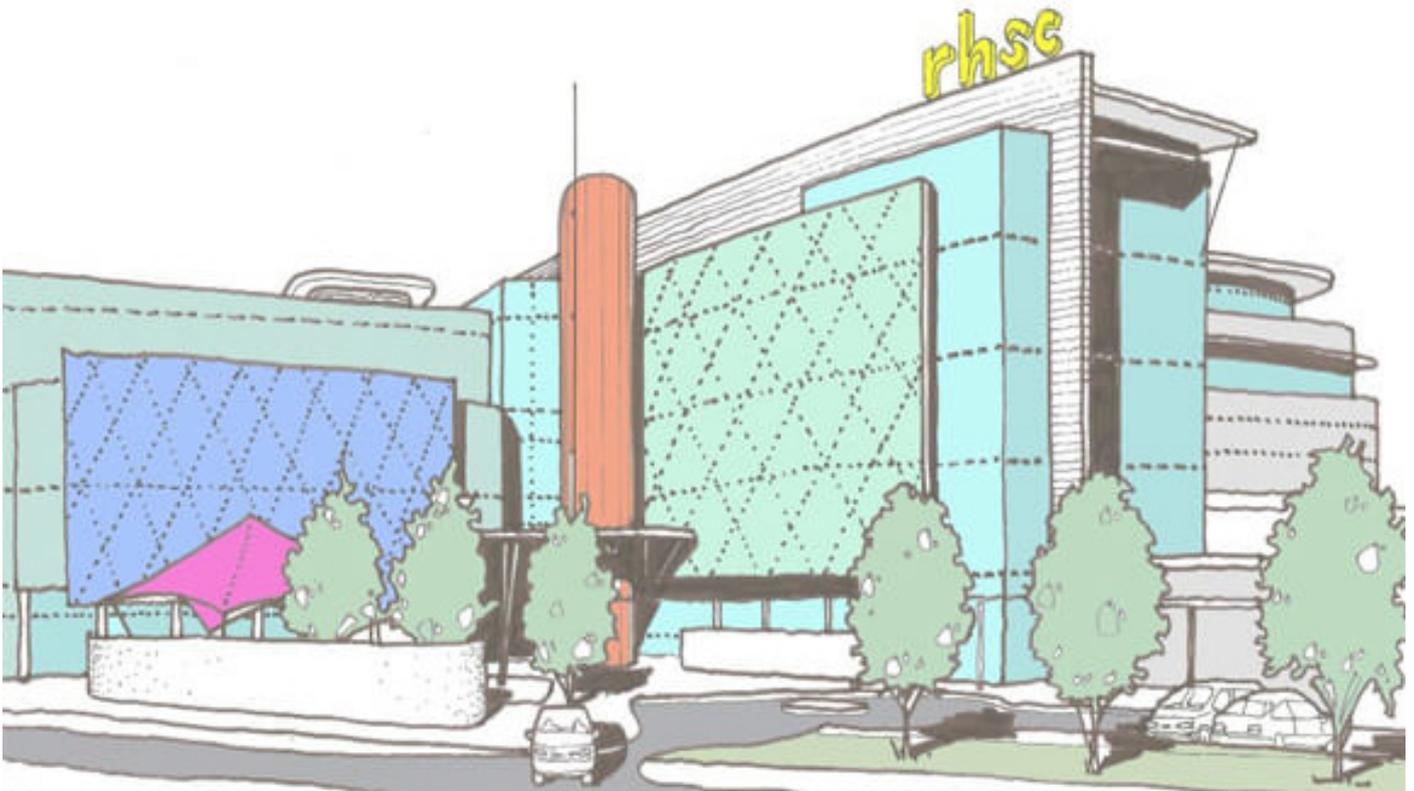
SAMSUNG C&T Corporation appointed Hiltron to act as their Medical Equipment and IM&T Advisors for their preparation of a first phase bid for the Ikitelli Integrated Health campus, Istanbul, Turkey PPP Project. Ikitelli is a 2,272 bed multi hospital facility. The Ministry of Health, Turkey has adopted a PPP approach to the provision of this hospital. Hiltron provided Samsung with Advice and guidance on their Equipment bidding strategy, Procurement support in the shape of Assistance in the identification and selection of suitable services suppliers (Imaging, Labs, Sterilisation, Rehab and Other Medical Equipment); Discussions & attendance at meetings with suppliers for refinement of offers; Support during the negotiation process with suppliers; Preparation of the Samsung C&T proposal for the above services; Preparation of a Schedule of Accommodation; Provision of a full Bill of Quantities for the medical equipment and the individual services; Pricing; Provision of specifications for the medical equipment.

The Ministry of Health, Turkey have adopted a PPP approach to the provision of a hospital wide IM&T service with the aim of filmless and paperless operation. This will incorporate an Electronic Medical Record, PACS, Critical Care systems, integration with Medical Equipment, supporting administrative systems, hardware, networking and full supporting services. Hiltron provided Samsung C&T with Advice and guidance on their IM&T bidding strategy; Procurement support; Assistance in the identification and selection of suitable suppliers; Discussions & attendance at meetings with suppliers for refinement of offers; Support during the negotiation process with suppliers

STATUS: 2012 Complete

# THE ROYAL HOSPITAL FOR SICK CHILDREN

Edinburgh



## CLIENT

Mott MacDonald Ltd

## ROLE OF HILTRON

Room Data Sheet Preparation Hiltron appointed by Motts to assist in the production of Room Data Sheets for the RHSC and Department of Clinical Neurosciences new build project. Using the Hiltron Planning System, Hiltron set up the schedule of accommodation and assisted in room numbering, allocation of sizes and other design data

STATUS: 2012 Complete

# ALDER HEY CHILDREN'S HEALTH PARK



## CLIENT

Balfour Beatty

## ROLE OF HILTRON

Balfour Beatty Healthcare have appointed Hiltron as IT Advisors for their bid to design and build the Children's Health Park for the Alder Hey NHS Foundation Trust. The role includes: support in the design of the IM&T Infrastructure and the preparation of the IM&T elements of the bid.

Balfour Beatty Healthcare also appointed Hiltron as Medical Equipment Advisors for their bid to design and build the Children's Health Park for the Alder Hey NHS Foundation Trust.

The equipping role includes provision by the consortium of selected equipment plus transfer of equipment from the existing facilities into the new facility.

STATUS: 2010 Complete

# NATIONAL HEART CENTRE

Singapore



## CLIENT

Broadway Malyan Architects

## ROLE OF HILTRON

Hiltron were retained by Broadway Malyan Architects and HealthConsult to provide advice on and the production of Room Data Sheets using the Hiltron Planning System for the National Heart Centre, Singapore. Preparation of Room Data sheets incorporating Equipment, Architecture, Design elements of each room. In the second round of the design process the entire schedule of accommodation has been created, and two rounds of user meetings held to discuss the design.

Status: 2010 Complete

# KING HAMAD UNIVERSITY HOSPITAL

Bahrain



## CLIENT

Government of Libya

## ROLE OF HILTRON

Medical Equipment Advice, Procurement, Evaluation King Hamad Hospital is located within the Kingdom of Bahrain and is a teaching hospital located adjacent to the Medical School (currently being constructed). The hospital will contain the key acute clinical services with a range of options appropriate for a teaching facility. It is anticipated that the hospital will provide a service for the immediate locality as well as complementary services to the existing hospital. Hiltron were appointed by Australian Hospital Design Company as medical equipment advisors to the Ministry of Works. Our role to provide: Scheduling of equipment in accordance with existing drawings; Scheduling of additional equipment as required by the MOH; Assistance to the MOH for the preparation of equipment specifications. Preparation of Pre-Qualification questionnaires for equipment providers

Assessment and recommendation of pre qualifying companies for equipment providers Assistance with the preparation of tender documentation Assistance during the tendering process; Evaluation of the Technical responses; Financial Evaluation of the submitted bids final recommendation.

STATUS: 2009 Complete

# MID YORKSHIRE HOSPITALS



## CLIENT

Consort Healthcare

## PROJECT VALUE

£343M

## ROLE OF HILTRON

Medical Equipment Advice; PFI Advice; Use of the HPS for Room Data Sheets Equipment advisors for a 753 bed PFI rebuild on the existing sites of the Pinderfields and Pontefract hospitals. Responsible for all areas of equipment, including hard and soft facilities management, working as part of the project team. Also, provision of equipment icons for the 1:50 drawings. Responsibilities include: attendance at meetings, including user group meetings; loading of room equipment data and design operational data to 1:50 sign-off; advising on PFI schedules; production of equipment transfer list; equipment lifecycle analysis; preparation of documentation, including data sheets, bills of quantity and specifications (with reference to operational requirements, user training, safety and usage); ensuring compliance with health standards, Trust policies, etc; collation of information for Financial Close.

Scope of Scheme: Facilities at the Pinderfields site include: A & E; critical care; a burns unit; radiology; thirteen theatres; child outpatients; child inpatients; a rehabilitation department including stroke inpatients, neuro-rehabilitation, intensive rehabilitation inpatients and spinal injuries; three inpatients wards comprising 358 beds; a maternity department including ambulatory maternity, ten birthing rooms, 36 beds, two theatres and a twelve cot special care baby unit; a general outpatients department including adult outpatients, a fracture clinic, neurophysiology, ophthalmology, cardio-respiratory investigations, ENT and oral and maxillo-facial areas; a day care unit including scoping, medical investigations, surgical short stay and oncology; a clinical support department (including mortuary, pharmacy and pathology); Facilities at the Pontefract site include: A & E; radiology; an ambulatory and delivery maternity unit; a rehabilitation suite; a general outpatients department including adult and child outpatients, cardio-respiratory investigations and ENT; a day care unit (including renal dialysis and a day surgery with four theatres) and oncology; pharmacy, pathology and appropriate support.

STATUS: 2009 Complete

# ROYAL LIVERPOOL & BROADGREEN HOSPITAL



CLIENT  
RLBHD

PROJECT VALUE  
£500M

## ROLE OF HILTRON

Equipment advisors for a 568 bed new PFI build on the existing site of the Royal Liverpool hospital. Gross internal area of scheme: 120,000m<sup>2</sup>. Responsible for all areas of equipment, including hard and soft facilities management, working as part of the project team. Also, provision of equipment icons for the 1:50 drawings. Responsibilities include: training the Trust in PFI awareness; risk assessment; advising on procurement options; development of realistic costings; attendance at meetings, including user group meetings; management of the prequalification process; evaluation and assessment of bidders' responses; development, ranking and pricing of long-list items and detailed development of short-listed options and preferred option; preparation of documentation, including change control sheets, room data sheets, bills of quantity and specifications; ensuring compliance with health standards, Trust policies etc.

Scope of Scheme: Facilities include: fifteen 28-bed inpatient wards; a 32-bed intensive care ward; an infectious diseases ward with nine isolation beds; a radiology department; eight theatres; renal dialysis (5 beds and 30 renal dialysis stations); a 20-bed haematology ward; an endoscopy department; an accident and emergency department including 36 emergency beds and emergency imaging; an outpatients department including audiology, cardio respiratory investigations, a fracture clinic, GI unit, neurophysiology and sexual health departments; pathology; pharmacy; an education centre; and appropriate support.

STATUS: 2008 Complete

# NORTH MIDDLESEX UNIVERSITY HOSPITAL

London



## ROLE OF HILTRON

Equipment advisors for a 150 bed PFI redevelopment of the existing North Middlesex hospital site. Responsible for all areas of equipment, working as part of the project team. Also, provision of equipment icons for the 1:50 drawings. Responsibilities include: attendance at meetings, including user group meetings; loading of room equipment data and design operational data to 1:50 sign-off; provision of initial IT advice; advising on PFI schedules (for example schedule 13); production of asset register and equipment transfer list; equipment lifecycle analysis; assessment of bids at the interim submission (2003); review of Trust equipment specifications and costs from the bidders; preparation of documentation, including room data sheets, bills of quantity and specifications (with reference to operational requirements, user training, safety and usage); ensuring compliance with health and safety standards, infection control, Trust policies, etc; reviewing of the payment mechanism; production of the bill of quantities for commercial close, with price verification; review of trust equipment quantities and groups for Public Sector Comparator (2006) and collation of information for Financial Close.

STATUS: 2006 Complete





## CLIENT

Government of Libya

## PROJECT VALUE ROLE OF HILTRON

Appointed by the Government of Libya, through Guys & St Thomas Hospitals NHS Trust, for the 1,280 bed Tertiary care Benghazi Medical Centre. To provide advice on: Health Planning, Equipment Strategy, IT Strategy, Procurement and Commissioning of Medical Equipment and IT. For IT, Hiltron's role was to provide:

Advice and guidance on IT strategy Procurement support Preparation of Prequalification Questionnaires; Execution of the Pre Qualification process, including evaluation of the responses and submission of information to the IT Committee for evaluation and decision making; Preparation of RFP documentation; Execution of the RFP process, including evaluation of the responses and submission of information to the IT Committee for evaluation and decision making; Support during the contract negotiation process. The BMC aim is to implement a filmless and paperless hospital system, incorporating an Electronic Medical Record, PACS, Critical Care systems, integration with Medical Equipment, and supporting administrative systems, provided via a long term partnering agreement with a supplier of standing and experience.

STATUS: 2004 Complete

# MATER CHILDREN'S HOSPITAL DEVELOPMENT

Dublin



## CLIENT

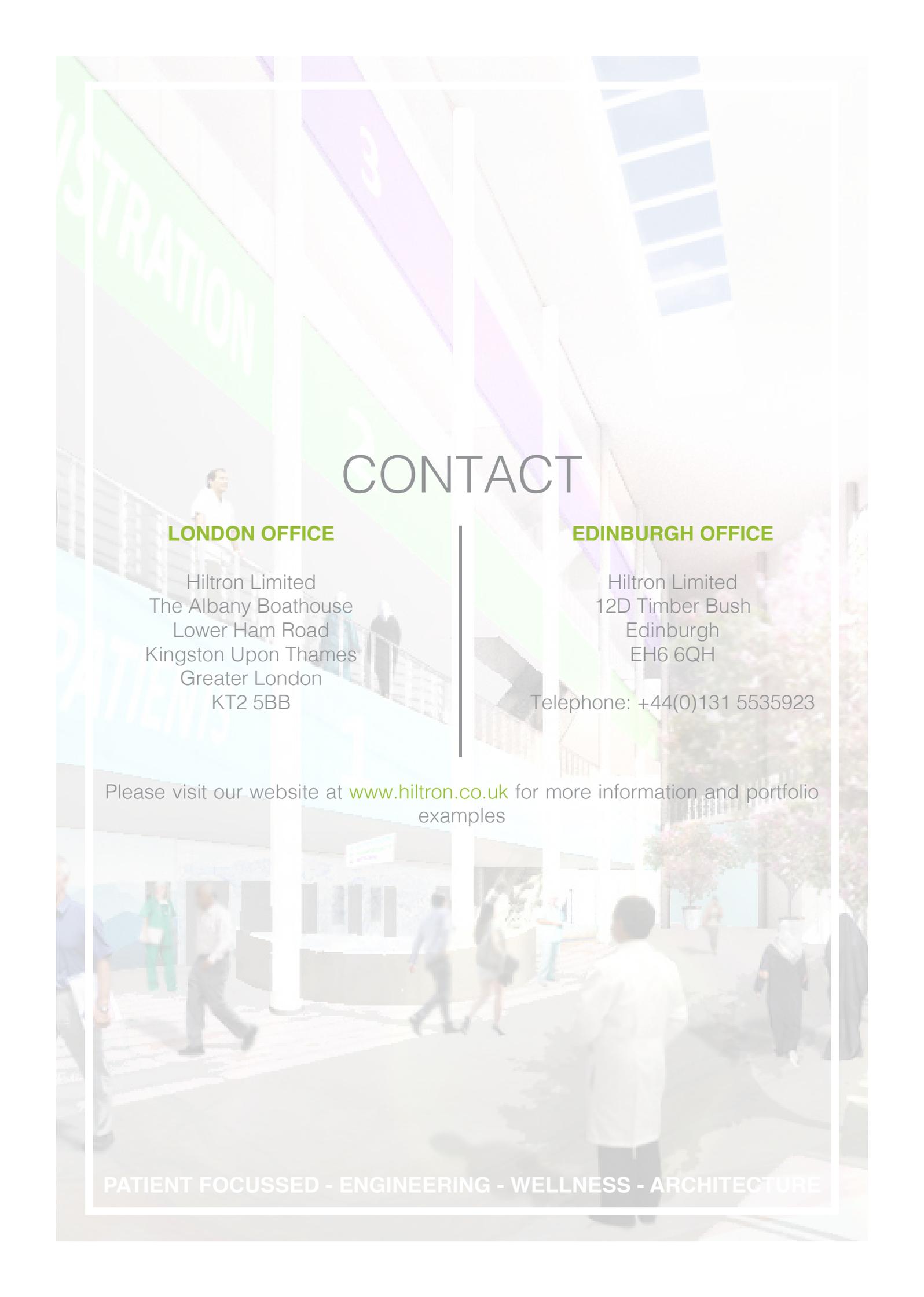
Mater University Hospital

## PROJECT VALUE

€160M

## ROLE OF HILTRON

Appointed by the Project Board to schedule the fixtures, fittings, medical equipment and furniture for this development of the Mater Misericordiae University Hospital, Dublin. Assisted the project team in rationalising the schedules post-end user meetings, providing consultancy services for ongoing development. MCHD signed a licence agreement for the use of the Hiltron Planning System for the duration of the project, which was maintained and management by Hiltron staff.



# CONTACT

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