

Digital Health and Safety

Prakash Senghani

Safety Design in Buildings

Dammam Conference



October 10, 2018, Sheraton Dammam

Speaker Bio

Prakash Senghani is the Digital Project Delivery Lead for Construction and Project Management Services at AECOM Middle East, with a passion for developing and implementing technological solutions to make construction safer, quicker and more efficient. Having experience from both contracting and consulting perspectives on major projects in the UK and UAE, he has first-hand knowledge of the challenges the industry faces.

Learning Objectives

- What the newly minted PAS 1192-6 standards mean for the relationship of BIM and Health and Safety.
- How BIM during design can assist in identifying and mitigating Health and Safety risks.
- How BIM adjacent digital tools are enhancing our risk mitigation approach.

PAS 1192 Suite

Standards:

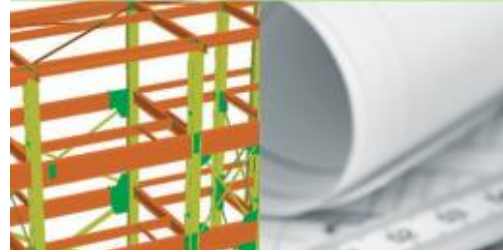
BS 1192:

- PAS 1192-2:2013 - Specification for **information management** for the capital/**delivery phase** of construction projects using building information modelling
- PAS 1192-3 is the 'Specification for **information management** for the **operational phase** of construction projects using building information modeling'.
- BS 1192-4: 2014, Collaborative production of information. Fulfilling employer's information exchange requirements using **COBie**. Code of practice.
- PAS 1192-5: 2015, a specification for [security-minded building information modelling](#), digital built environments and smart asset management.
- PAS 1192-6-2018, a specification for collaborative sharing and use of structured Health and Safety information using BIM

PAS 1192-2:2013

Incorporating Corrigendum No. 1

Specification for information management for the capital/delivery phase of construction projects using building information modelling



PAS 1192-3:2014

Incorporating Corrigendum No. 1

Specification for information management for the operational phase of assets using building information modelling

BS 1192-4:2014



BSI Standards Publication

Collaborative production of information

Part 4: Fulfilling employer's information exchange requirements using COBie – Code of practice

PAS 1192-6:2018

Specification for collaborative sharing and use of structured Health and Safety information using BIM



PAS 1192-5:2015

Specification for security-minded building information modelling, digital built environments and smart asset management



CPNI
Construction Project Network Information

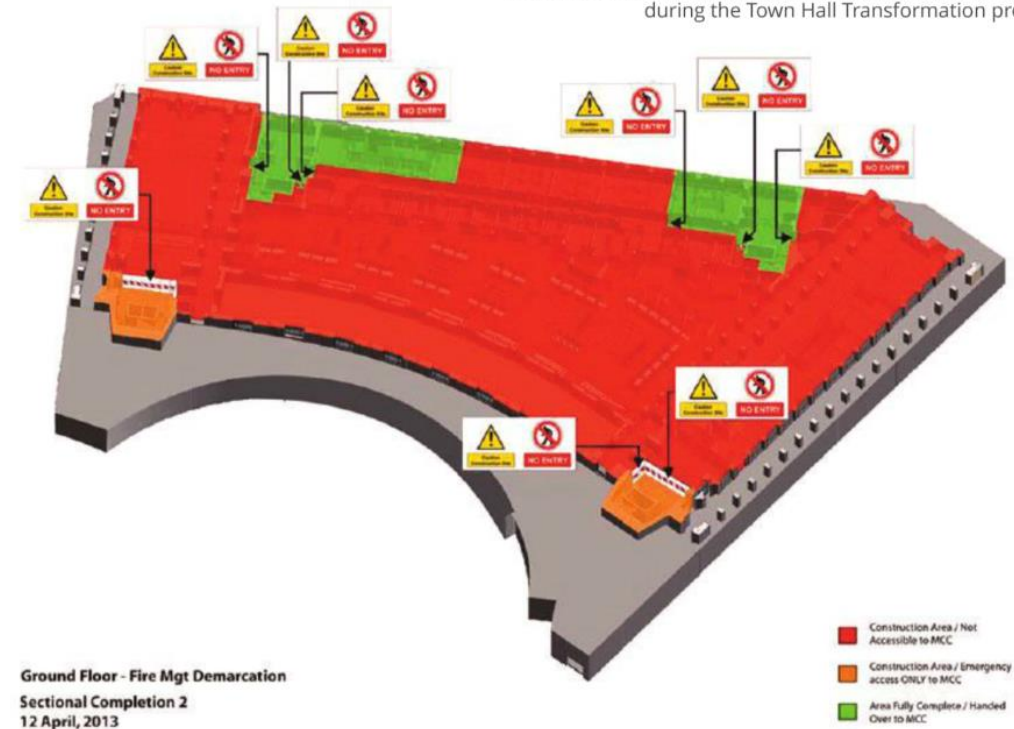
bsi.

PAS 1192 - 6

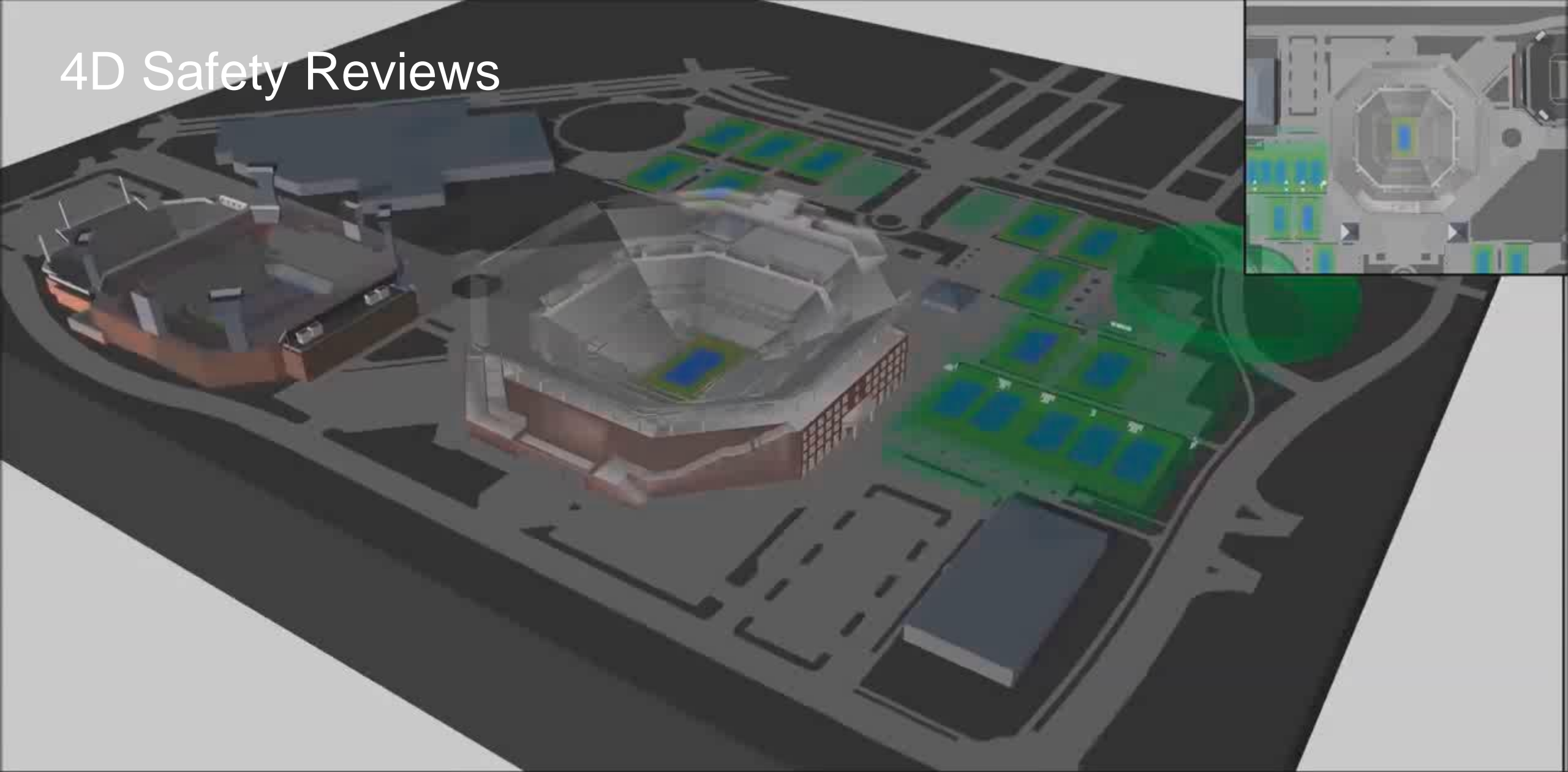
- Integration of Safety data into BIM process – 4D
- Transfer of risk information through project life cycle
- Standardisation of information capture and storage

Figure 11 – Use of risk symbol annotation to BS ISO 3864-3:2012 thematically coloured according to the likelihood of the risk (Credit: to follow)

Model used for emergency planning by Manchester City Council during the Town Hall Transformation programme

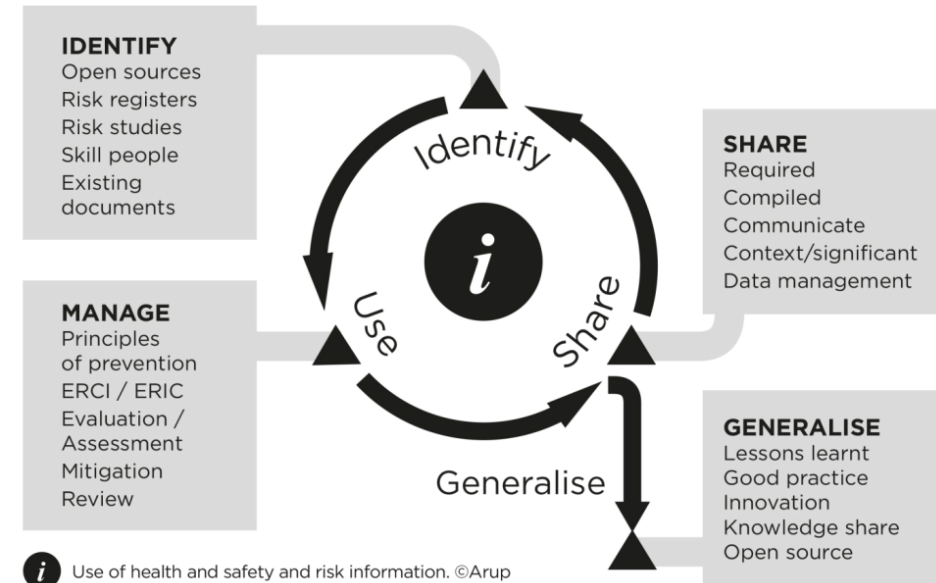
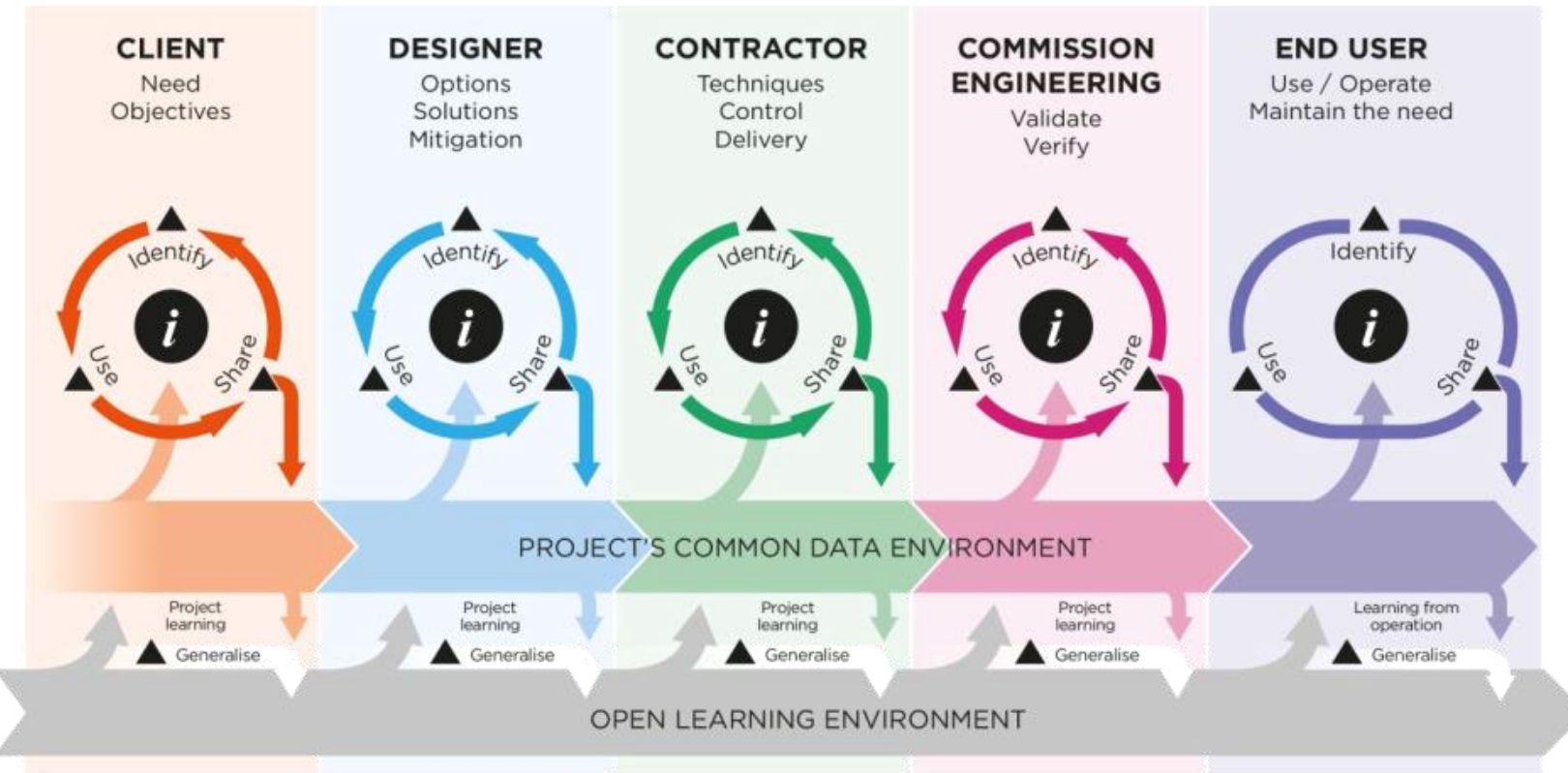


4D Safety Reviews



Jan 2014	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 2015	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 2016	Feb	Mar	Apr	May	Jun	Jul
wk 41	wk 45	wk 49	wk 54	wk 58	wk 62	wk 67	wk 71	wk 75	wk 80	wk 84	wk 88	wk 93	wk 97	wk 101	wk 106	wk 110	wk 114	wk 119	wk 123	wk 128	wk 132	wk 136	wk 141	wk 145	wk 149	wk 154	wk 158	wk 162	wk 167	wk 171

Transfer of Risk Data



i Use of health and safety and risk information.

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Standardise Risk Data

Column	Facility
Name	B005
CreatedBy	role@company.com
CreatedOn	2017-02-12T11:00:00
Category	En_20_15 : Administrative office entities
ProjectName	P005
SiteName	S005
LinearUnits	millimeters
AreaUnits	squaremeters
VolumeUnits	cubicmeters
CurrencyUnits	Pounds
AreaMeasurement	Indicative
ExtSystem	AEC3 BimServices
ExtObject	IfcProject
ExtIdentifier	1TB8MXxlf6BAI7EOPDWY8
ExtSiteObject	IfcSite
ExtSiteIdentifier	1TB8MXxlf6BAI7EOPDWYA
ExtFacilityObject	IfcBuilding
ExtFacilityIdentifier	1TB8MXxlf6BAI7EOPDWY9
Description	Office building 5
ProjectDescription	Design and construction of new office building 5
SiteDescription	Site 5, North London Redevelopment
Phase	CIC 6 : Handover

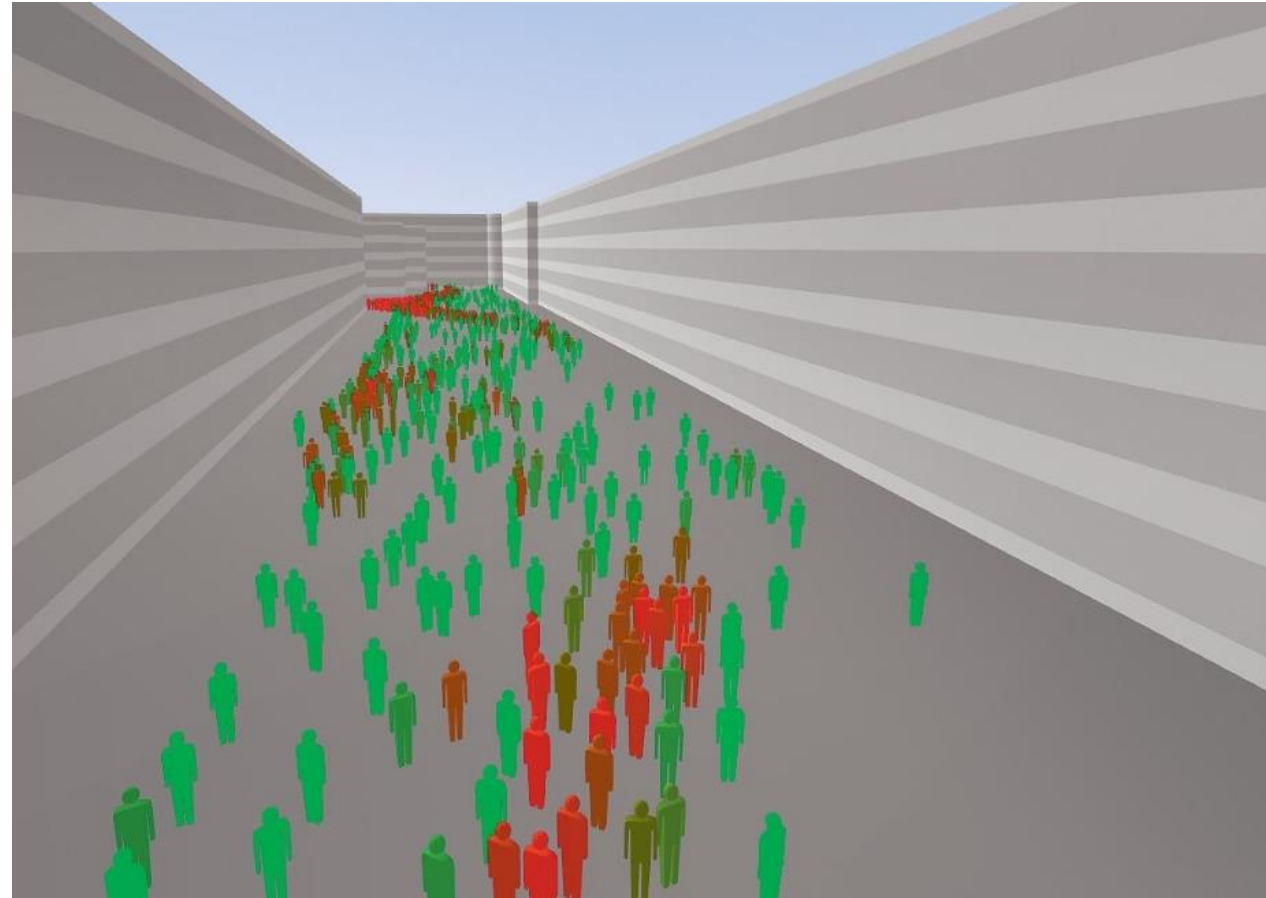
Table 9 – Use of the COBie Facility sheet (transposed) indicating the context of the risk assessment

Column	Issue
Name	AAA12
CreatedBy	role@company.com
CreatedOn	2016-11-04T11:08:38
Type	Struck by falling object
Risk	Moderate
Chance	Low
Impact	High
SheetName1	Space
RowName1	Roof Terrace
SheetName2	Type
RowName2	Large feature planter
Description	Falling branches from height in heavy wind
Owner	role@company.com
Mitigation	Wind protection and ensure distance from edge
ExtSystem	
ExtObject	HS_Risk_UK
ExtIdentifier	

Table 10 – Use of the COBie Issue sheet (transposed) indicating a managed risk

Virtual Fire Life Safety

- Virtual Evacuations
- FLS equipment placement
- Virtual Civil Defence approvals



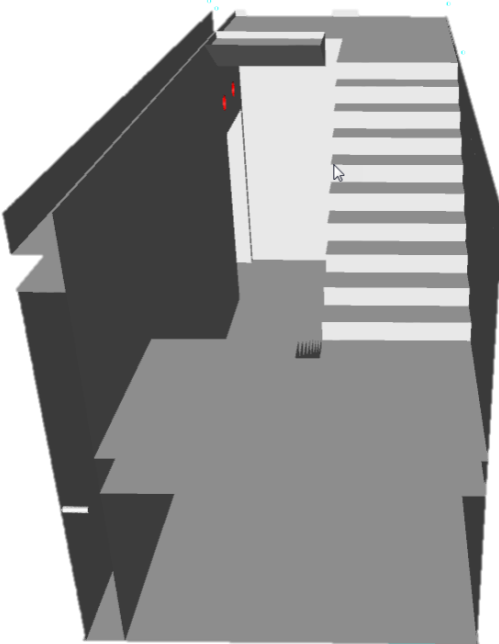
Virtual Reviews



Virtual Operations and Maintenance



Design Intent Verification – Laser Scan



Design Intent Verification – 360 Cameras



AECOM

Imagine it.
Delivered.