Museumsrunde Berlin

Die raeumliche Kultur von Ausstellungsarchitektur

Auswirkung des Raumes auf die Besuchererfahrung

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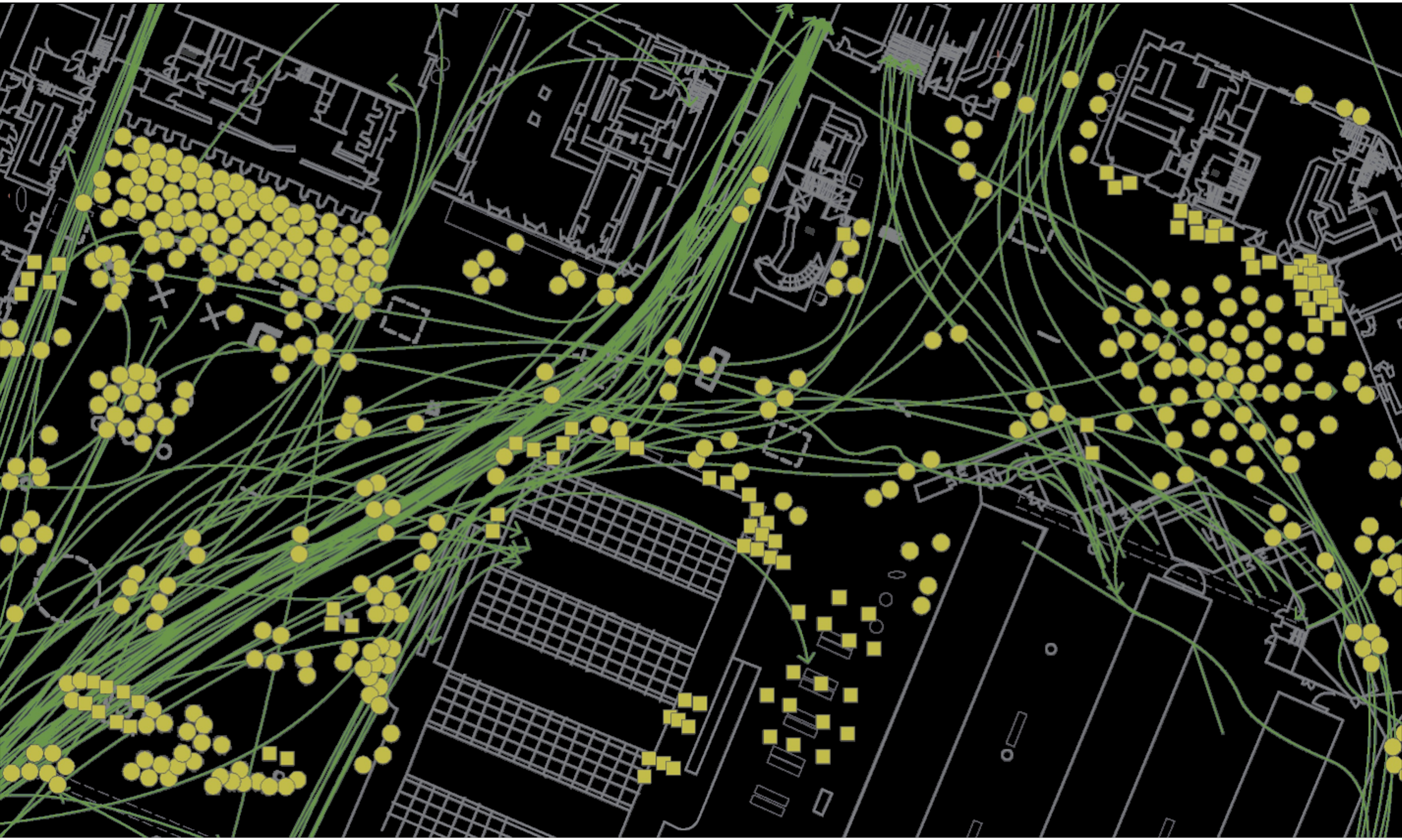
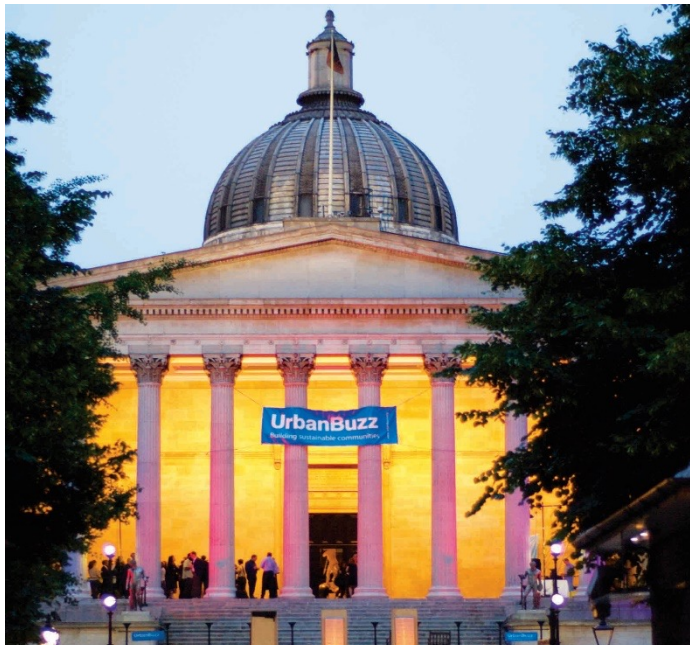
Juni 2022

Space Syntax

Understanding human activity in buildings and cities



Who we are Evidence-based design



UCL Space Syntax Laboratory

Fundamental research
Teaching
Technology development

Technology People Innovation

Space Syntax Limited

Strategic consulting
Internship
Technology development

Outcome-based approach

People at the heart of planning and design

Data-driven decision making

Transparency, accountability, confidence

Holistic approach to issues

Collaboration across domain siloes

Cities past and future

The space of the city is a theatre:
playing out everyday human activity.

The purpose of this activity is interaction:
social & economic.

Any urban place is a trading engine:
a hugely valuable asset.

Public Space More London

Public Space More London

Victoria and Albert Museum John Madejski Garden

British Museum Great Court

Victoria and Albert Museum Entrance Ramps

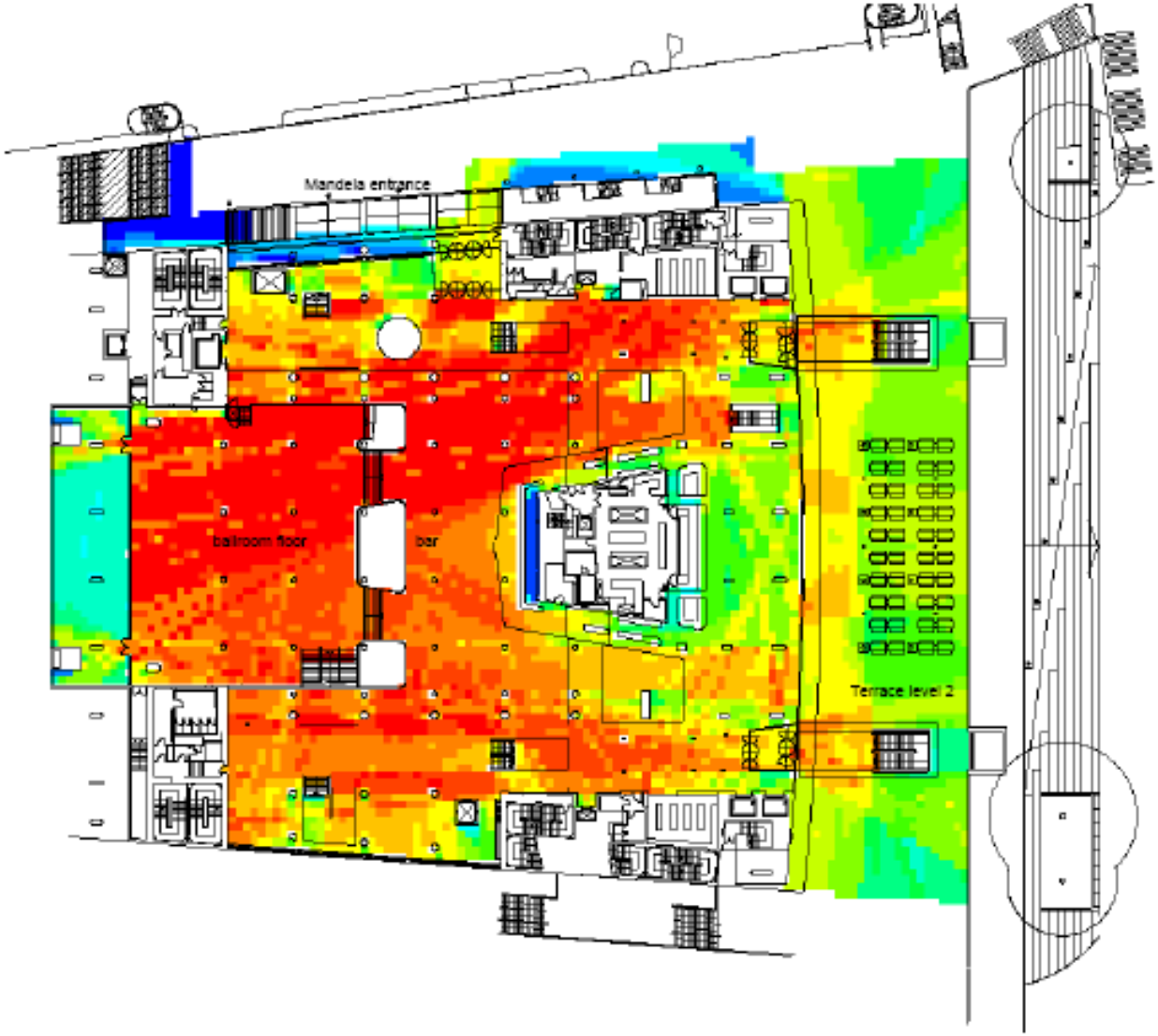
Victoria and Albert Museum Entrance Hall

Tate Modern Turbine Hall

The fundamental role of space Social Impact

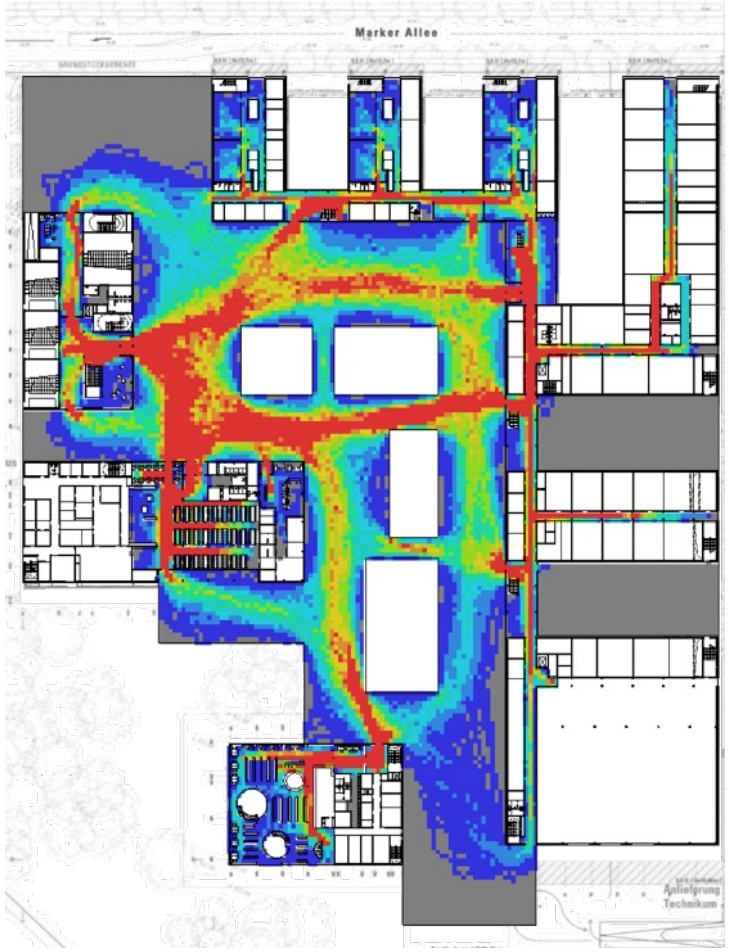
The spatial layout of buildings and urban places **exerts a powerful influence on human behaviour**.

The way space is designed is directly related to **the way that people move, interact and transact.**



Royal Festival Hall, level 2 Foyer and Ballroom, Terrace, Riverwalk

The fundamental role of space Movement

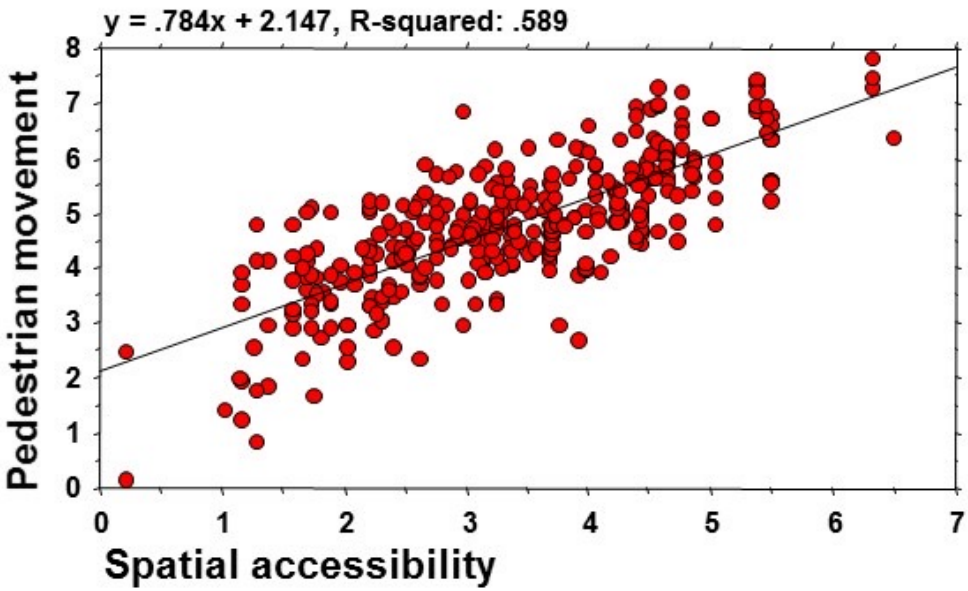


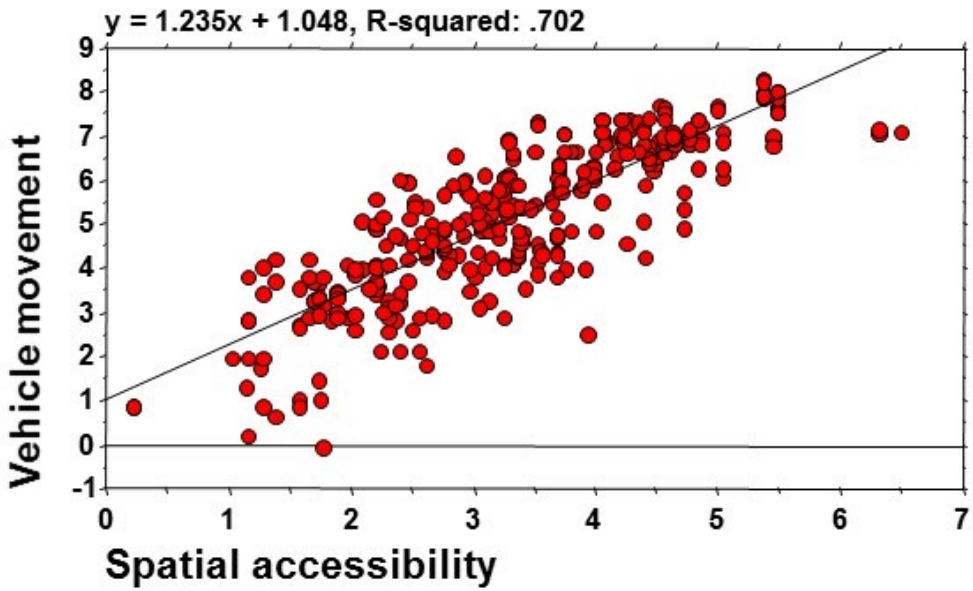
Network Hierarchy

Visibilty Analysis

Movement Agent Simulation

The fundamental role of space Predicting Movement





Research shows that **60-80%** of movement flows are due to the structure of the network, measured by spatial accessibility.

More accessible places get more movement.

Introduction

Why space matters

1. Organises movement
2. Distributes activities and influence value generation
3. Influences wayfinding and interaction
4. Influences innovation
5. Influences curatorial and educational intent
6. Shapes spatial culture

Approach

Key questions

How does the layout of the exhibitions influence visitor experience?

How will users arrive at and move in the space during the average, peak and special scenarios?

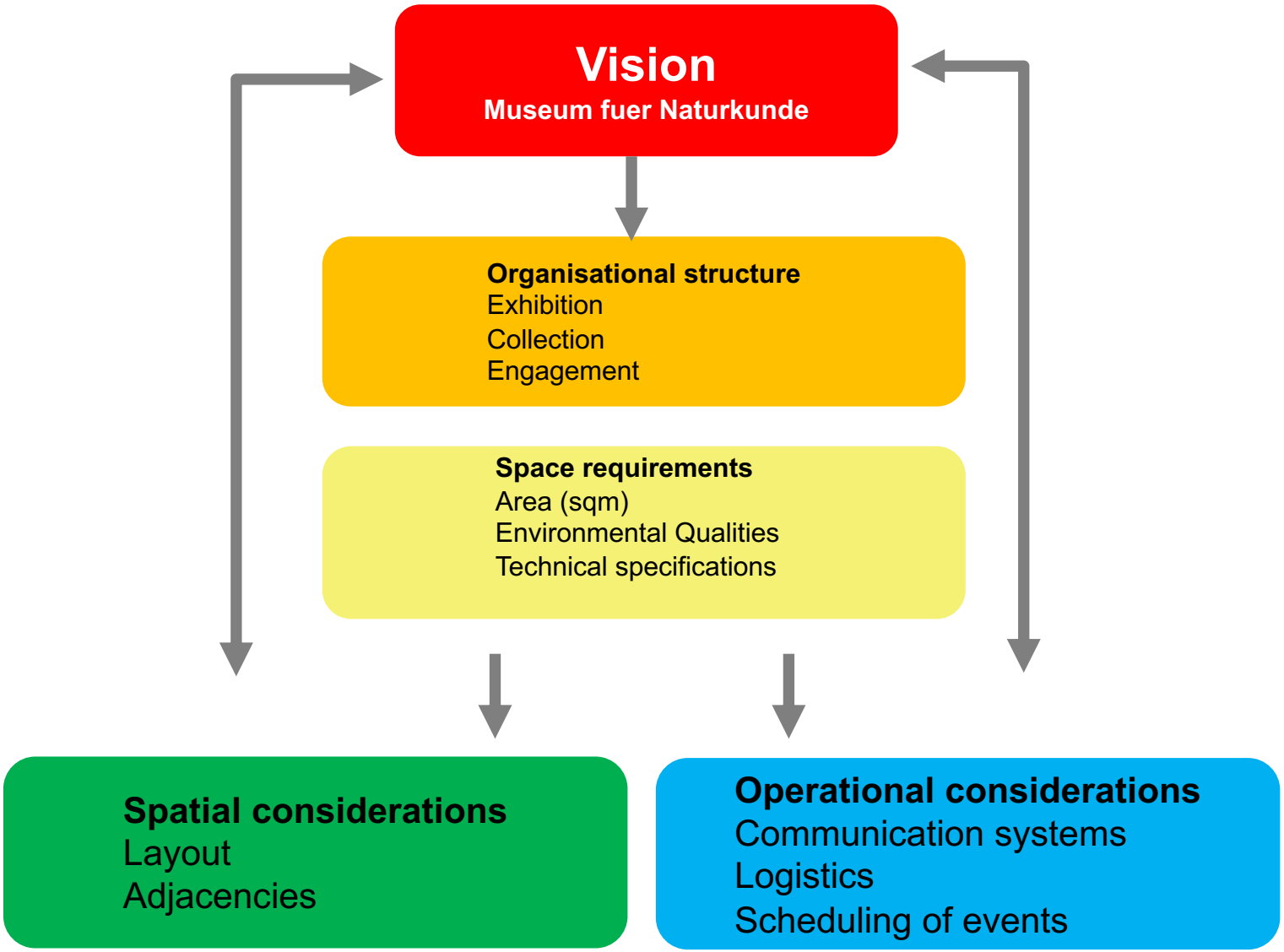
How can the movement patterns in the museum be optimised and managed?

Are there any capacity issues for both movement flow and room occupation and how can these be mitigated?

How can the optimum visitor experience be delivered?

Organisation Vision and Culture Key for design strategy

Example Museum fuer Naturkunde Berlin: a world class, open research campus where the *existing collections can be explored, cutting-edge science can be carried out*, and related *knowledge can be shared* with an international public, both on campus and online.



Spatial Culture

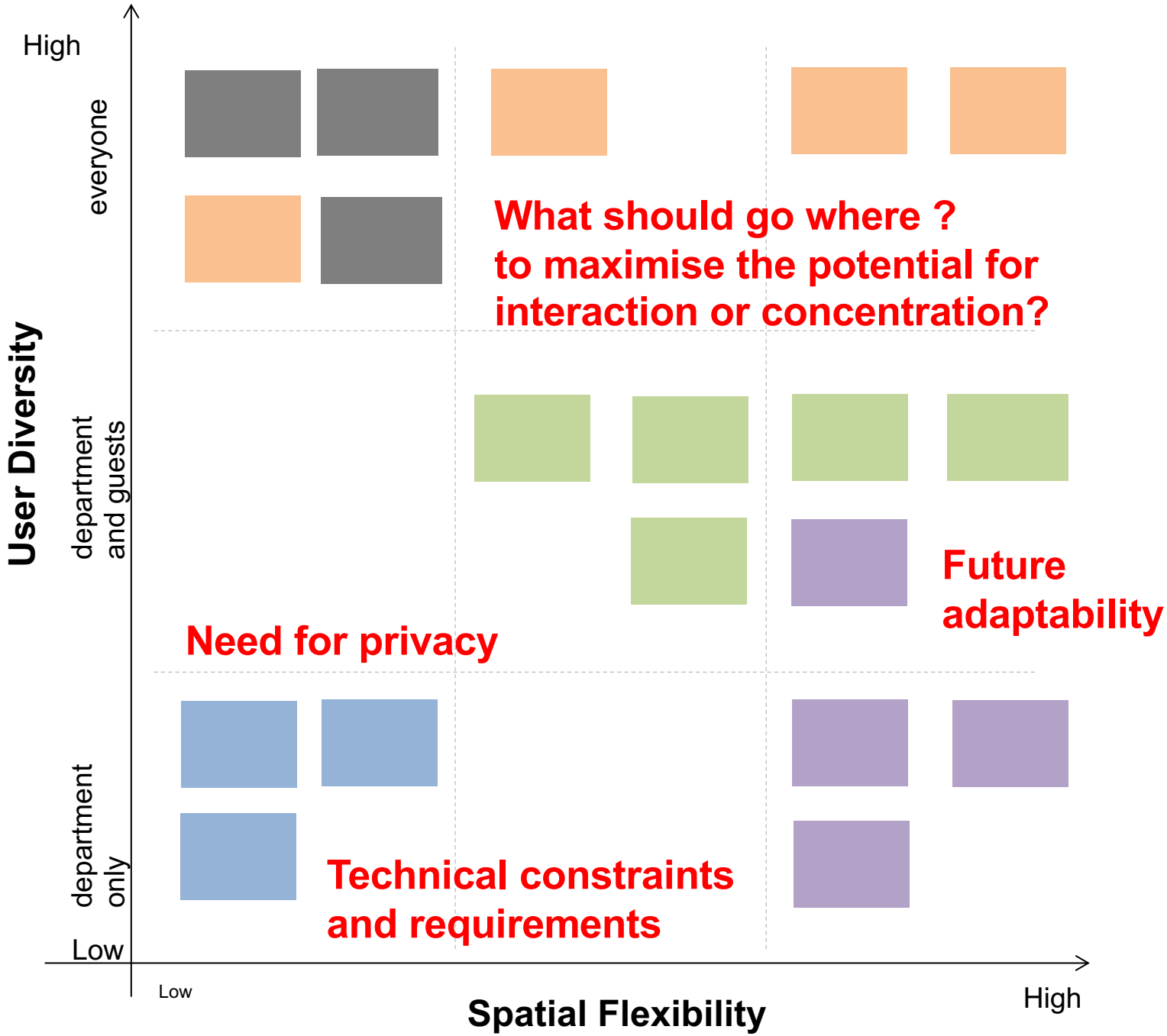
Vision
Expectations of what would be successful building?

Spatial considerations
How can we optimise the building to support the vision and success of the organisation?

Operational considerations
Develop ideas for organisational strategies in relation to Vision

POTENTIAL FOR DESIGN INTERVENTION AND INNOVATION

Spatial organisation How do we work together?



User categories and spatial flexibility

There are a number of spaces, which are **location-specific**. Others are **location flexible.**

Some spaces are used by **specific user groups** while some others can be used by larger **more diverse groups.**

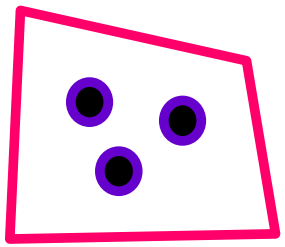
The proximity of spaces to the main circulation areas, including vertical circulation cores and the entrance, determines accessibility to and from other spaces and user groups

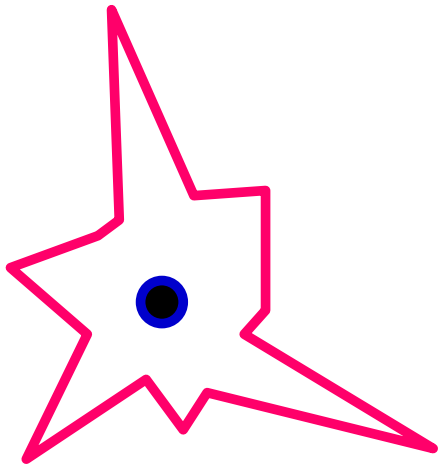
People Behaviour

people

spaces

People:



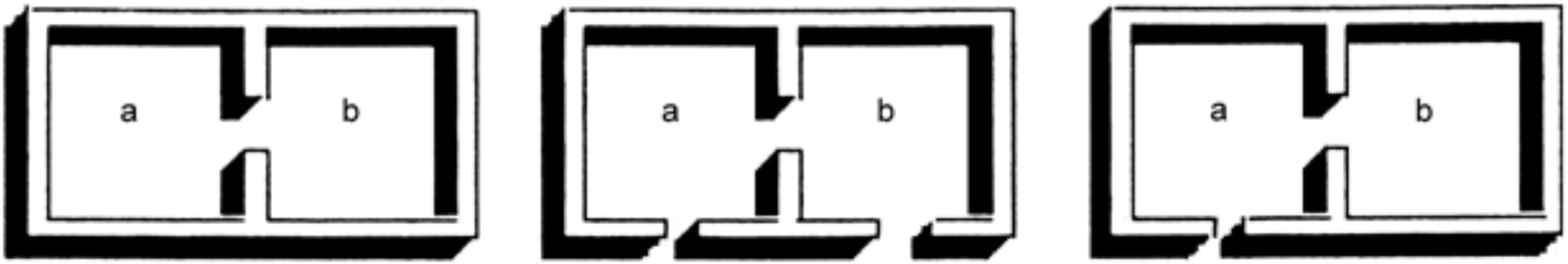


move along lines

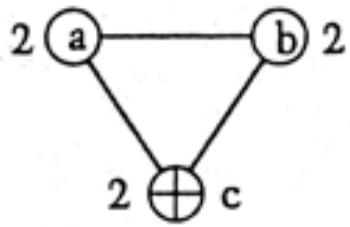
interact in convex spaces

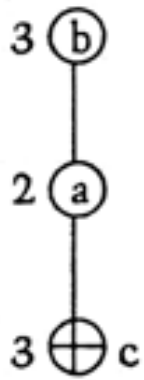
perceive changes in visual fields as we move

Graph Theory Modelling the environment



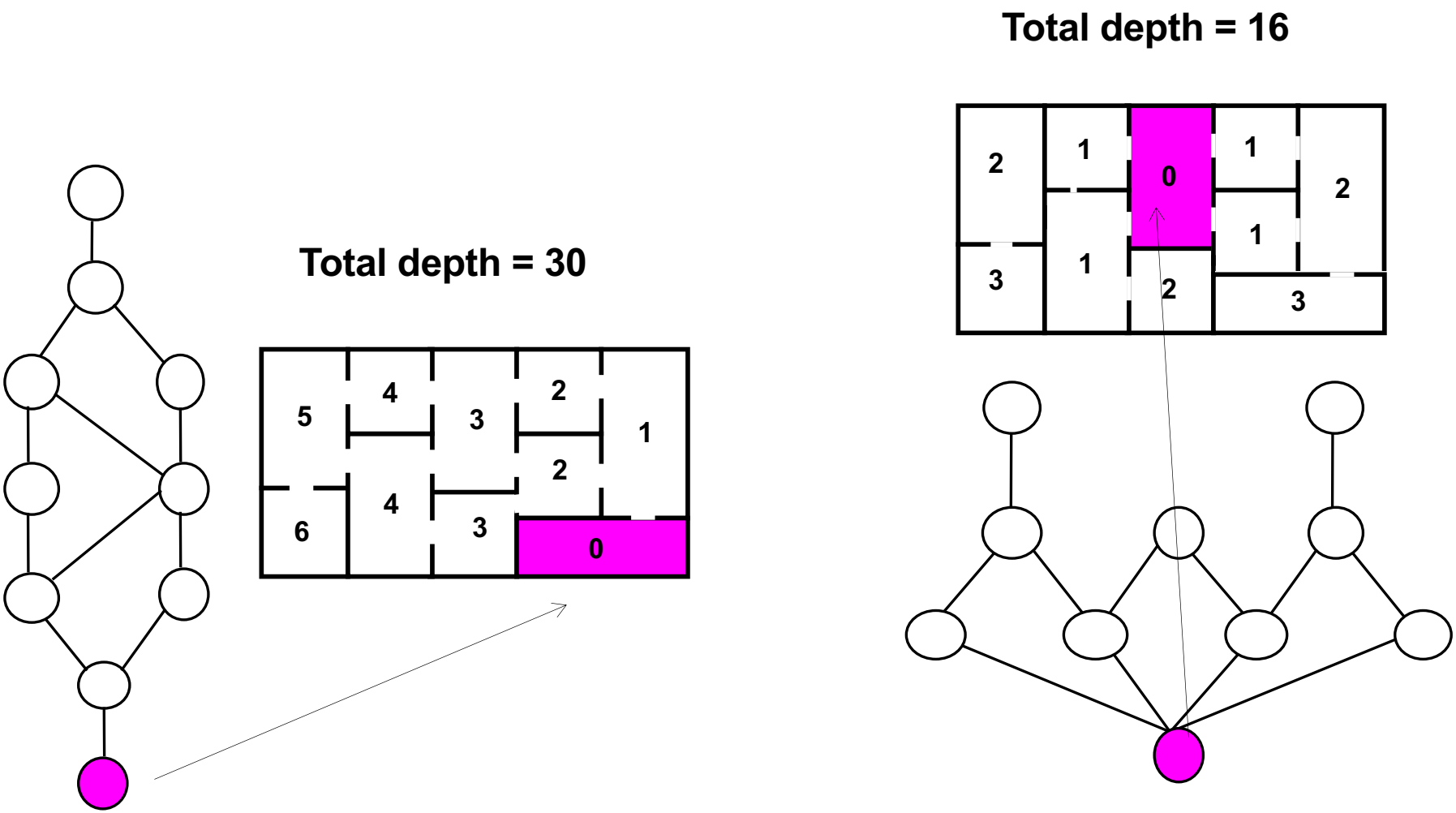
Spatial Configuration Graph Theory





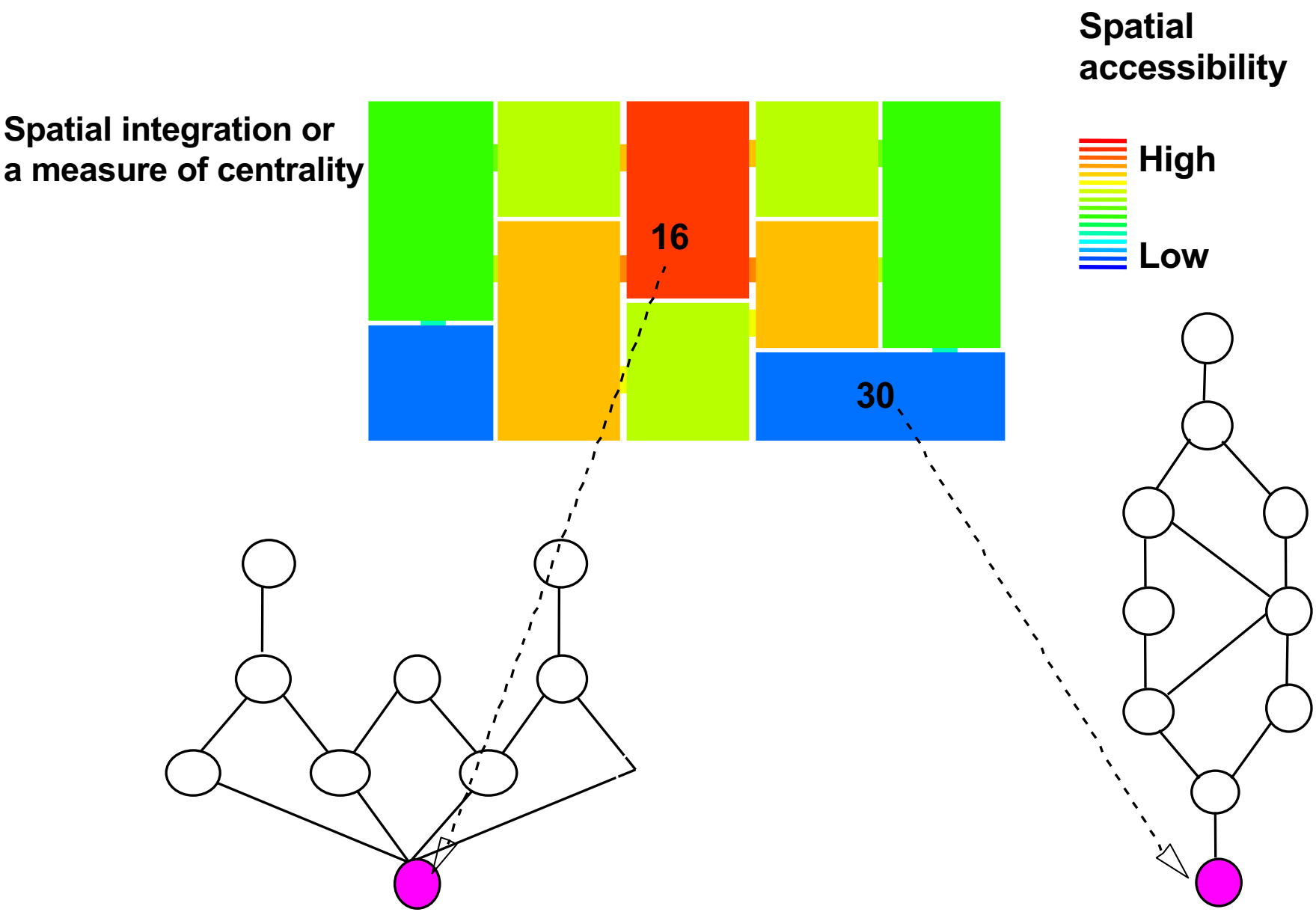
diagrams of relations - analytical way of thinking about spatial geometries

Graph Theory Modelling spatial configuration



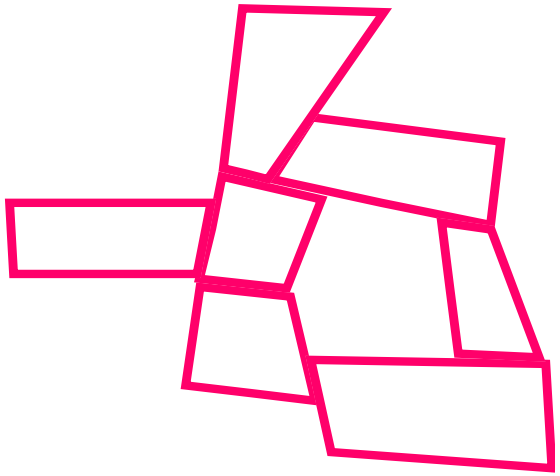
Different from different points of view

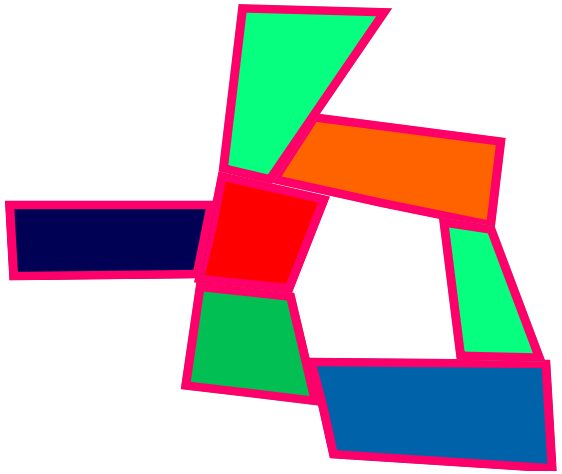
Graph Theory Modelling spatial accessibility

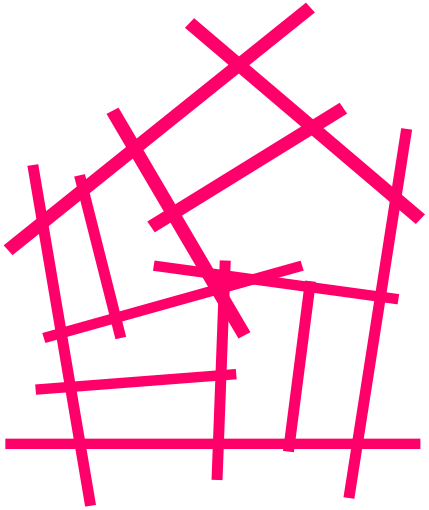


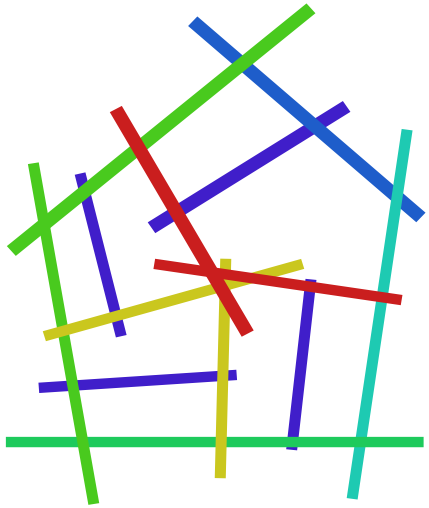
Representation Measuring *simultaneous* relations

Spatial Accessibility Convex spaces and lines of sight





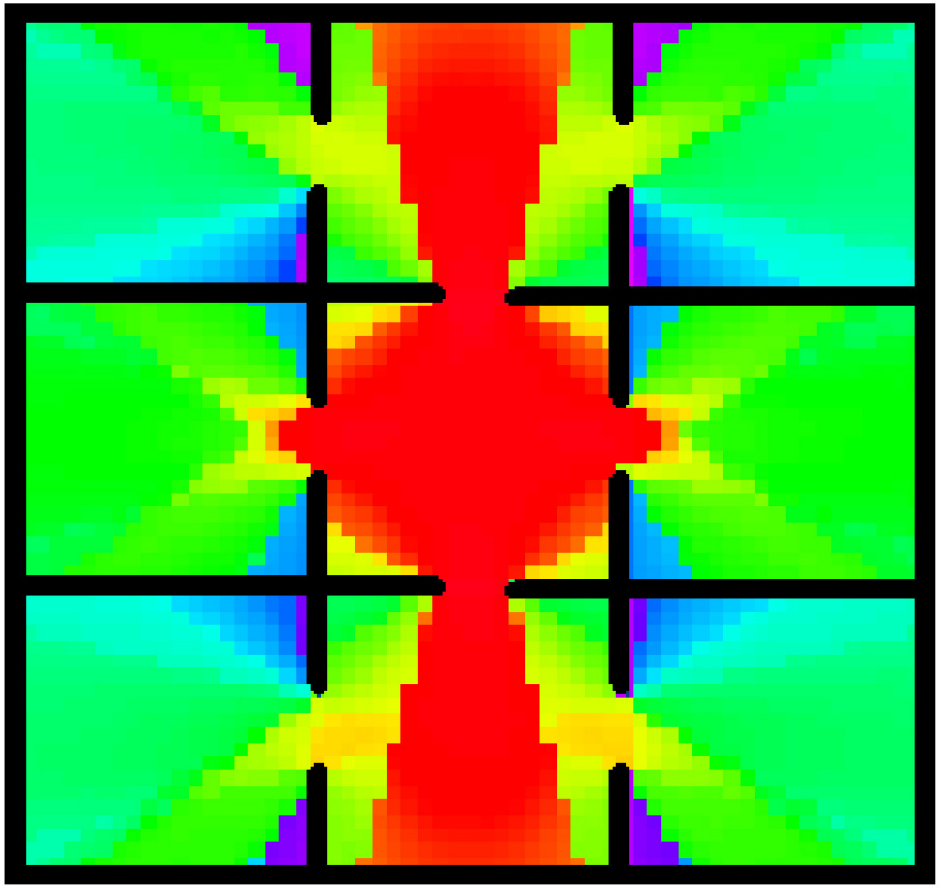




Convex Space
Co-presence awareness

Linear
Movement interaction

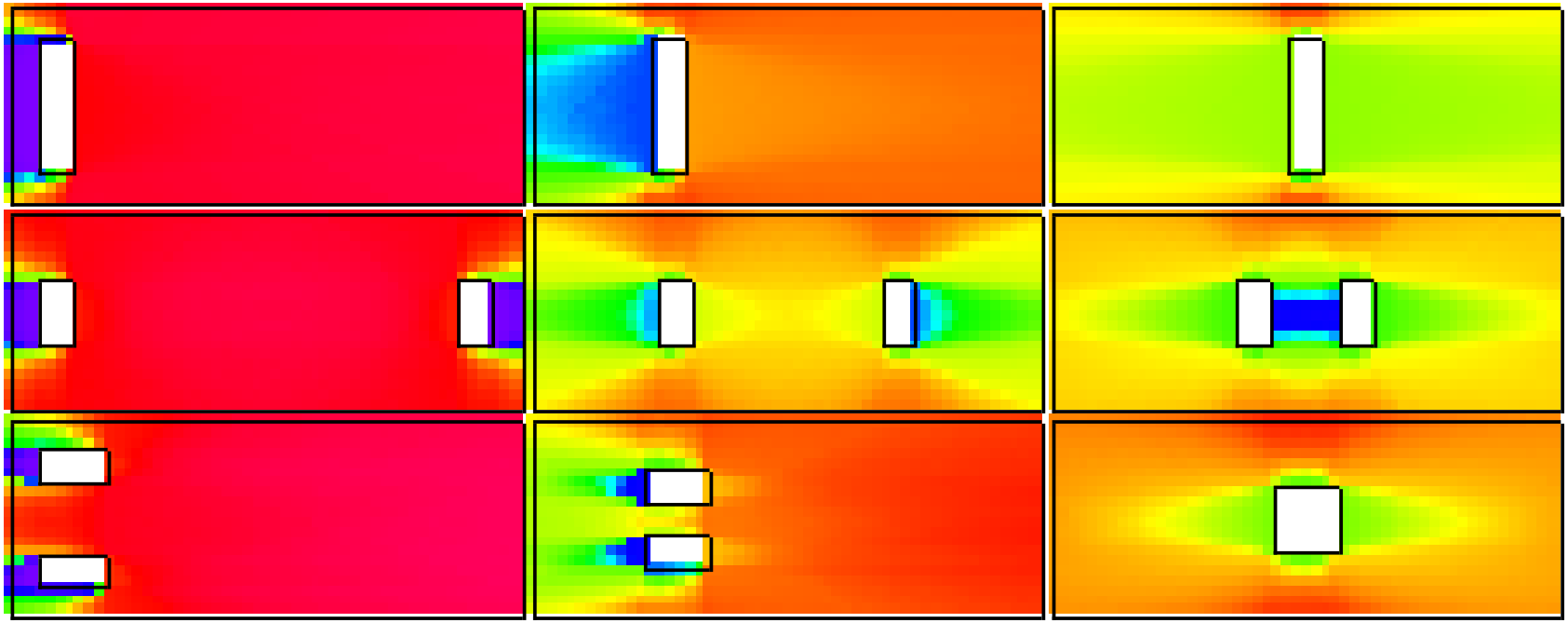
Spatial Accessibility Visual integration analysis



The resulting pattern of *visual integration* says more than how much you can see from each point. It says how difficult it is to to get to see *all* the space in the layout from each point. This has turned out to be particularly useful where movement is more exploratory and impromptu.

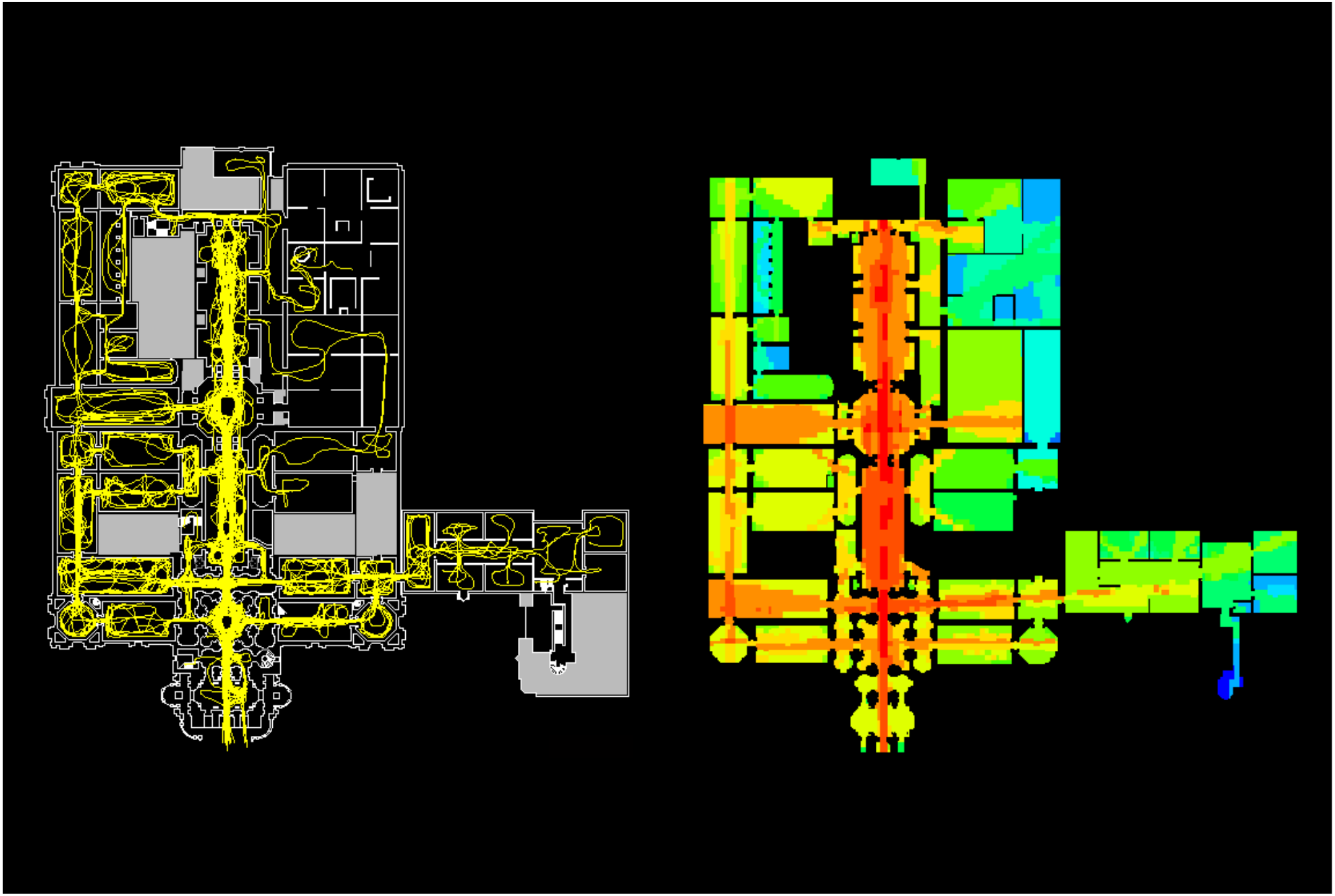
Spatial Accessibility Visual integration analysis

Configuration of objects in space

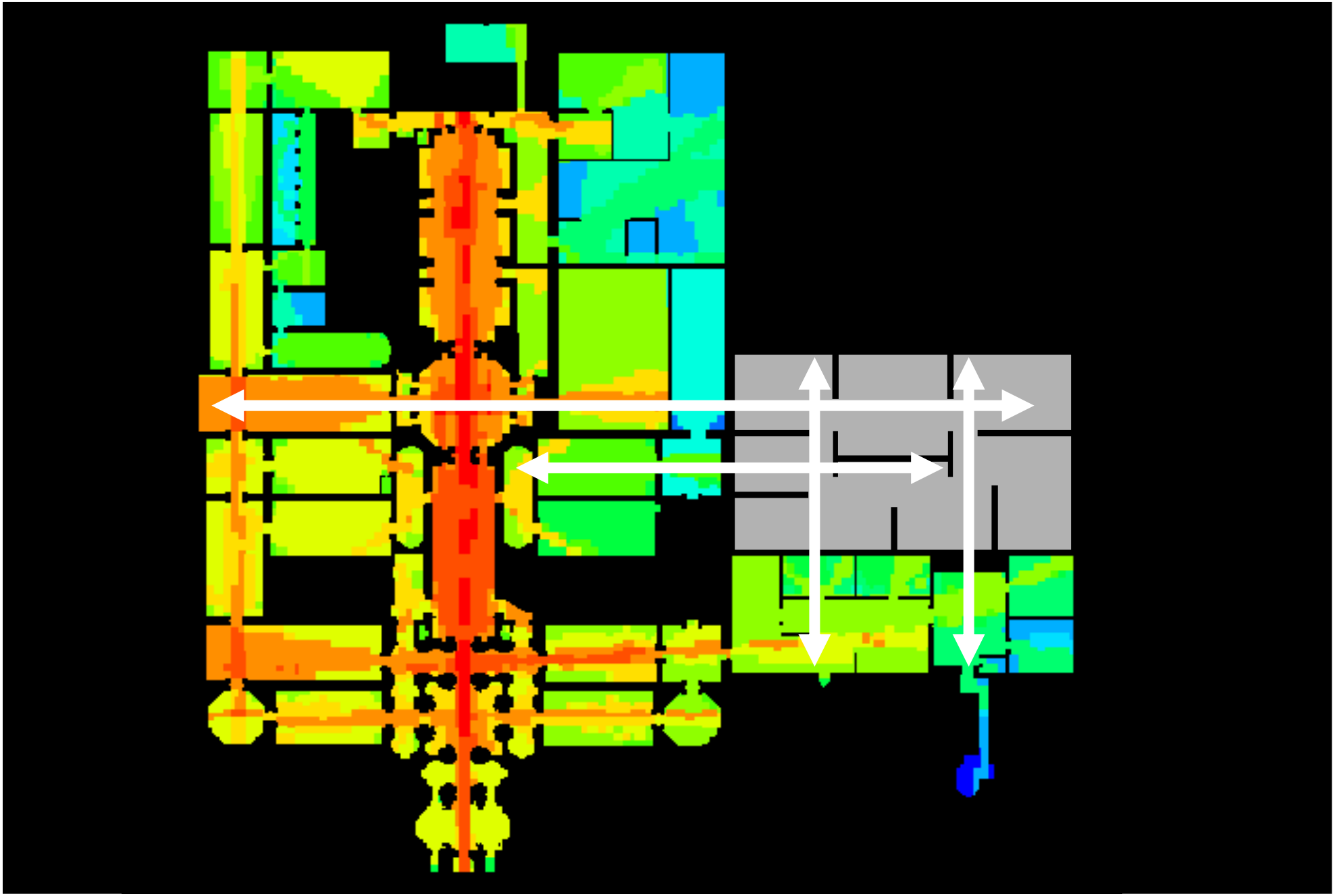


Configuration of objects in space

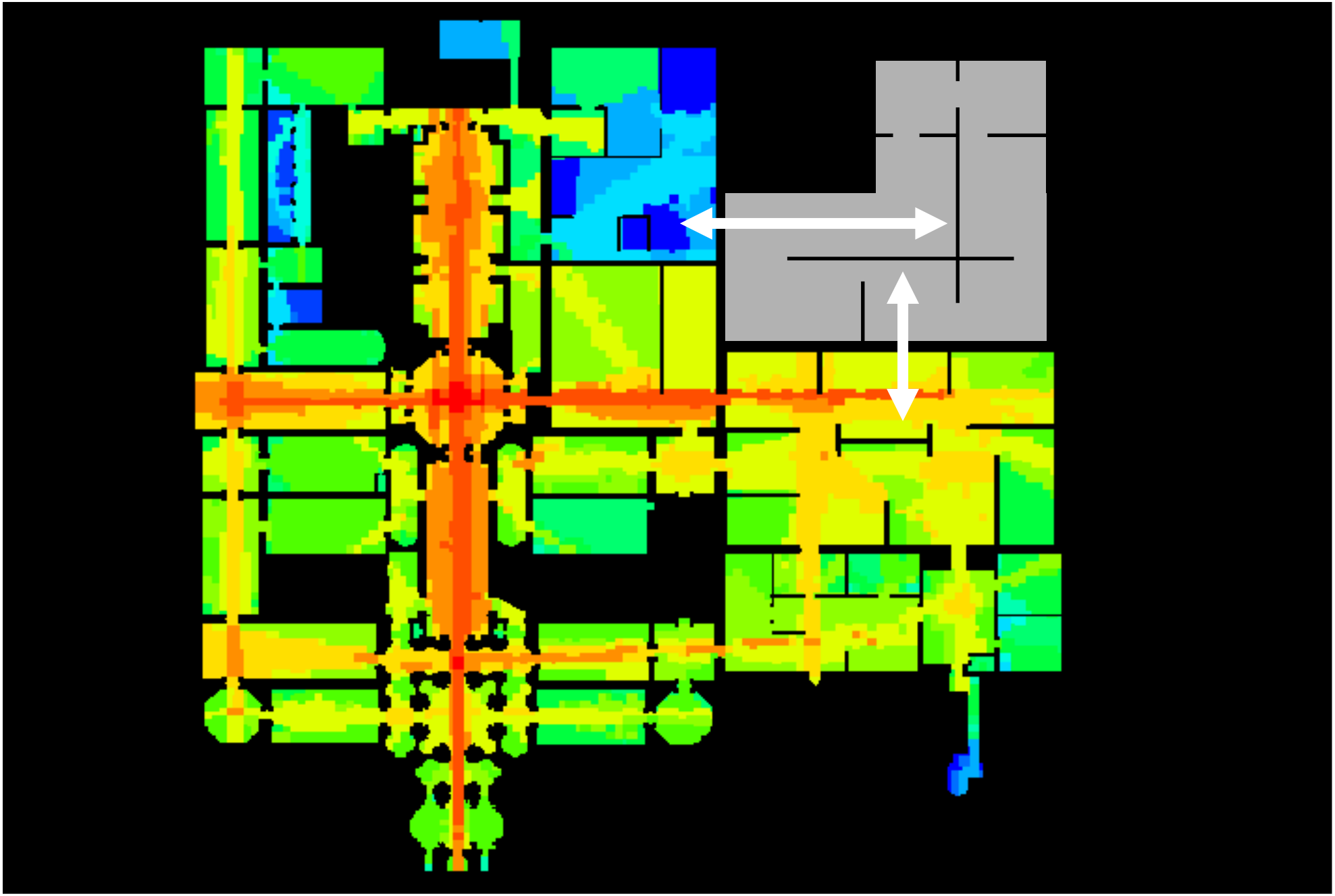
Visual integration and movement Tate Britain



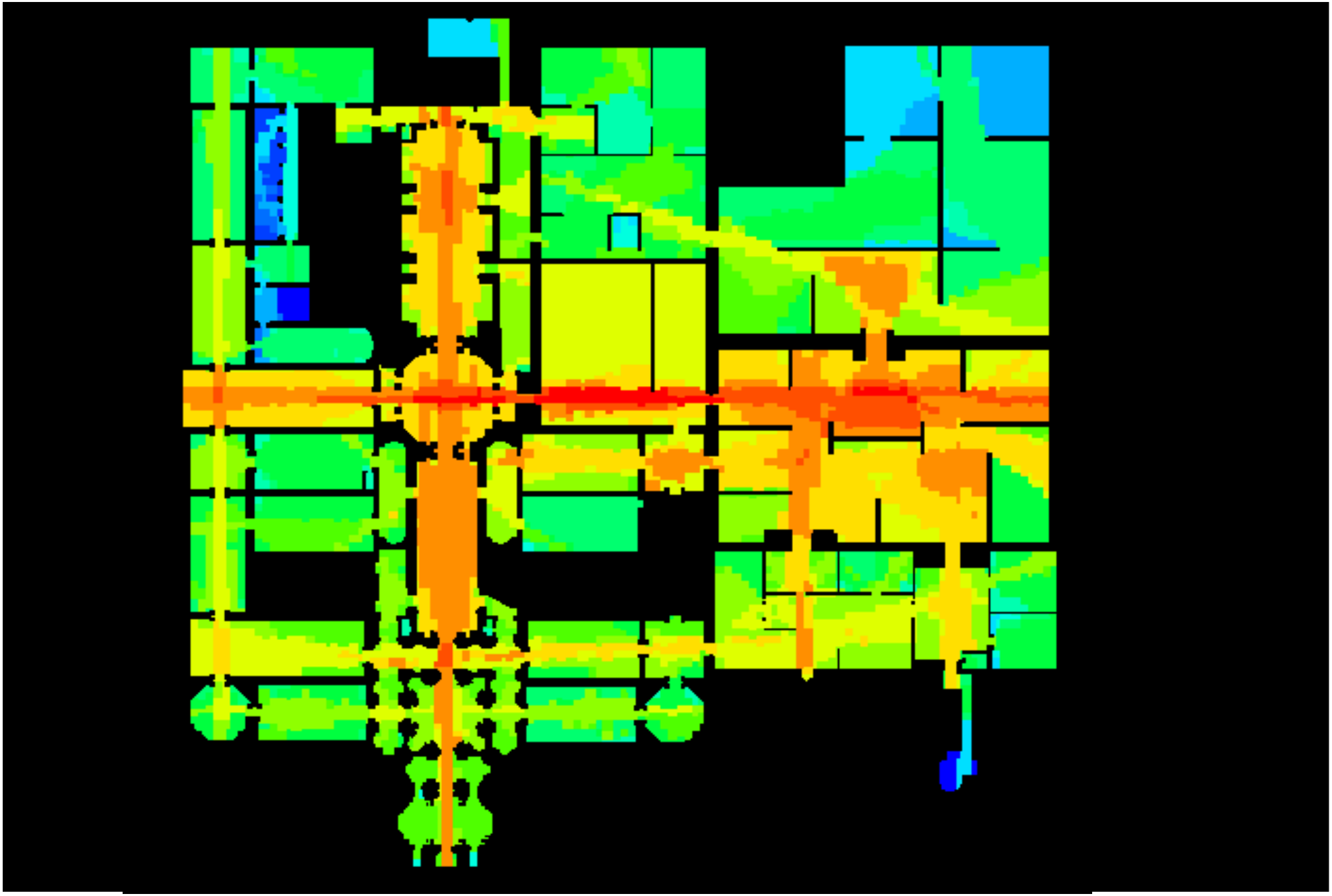
Visual integration and movement Tate Britain



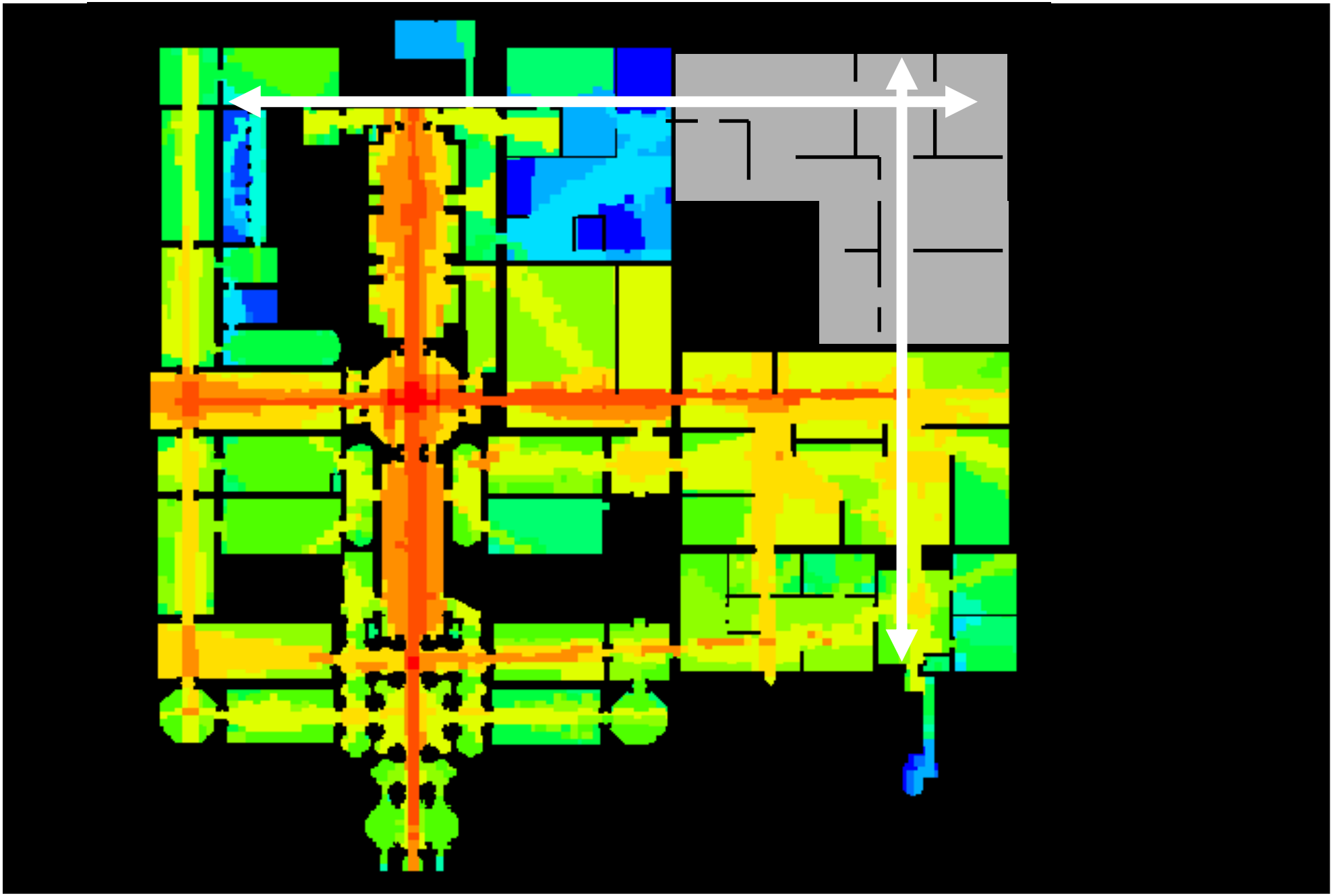
Visual integration and movement Tate Britain



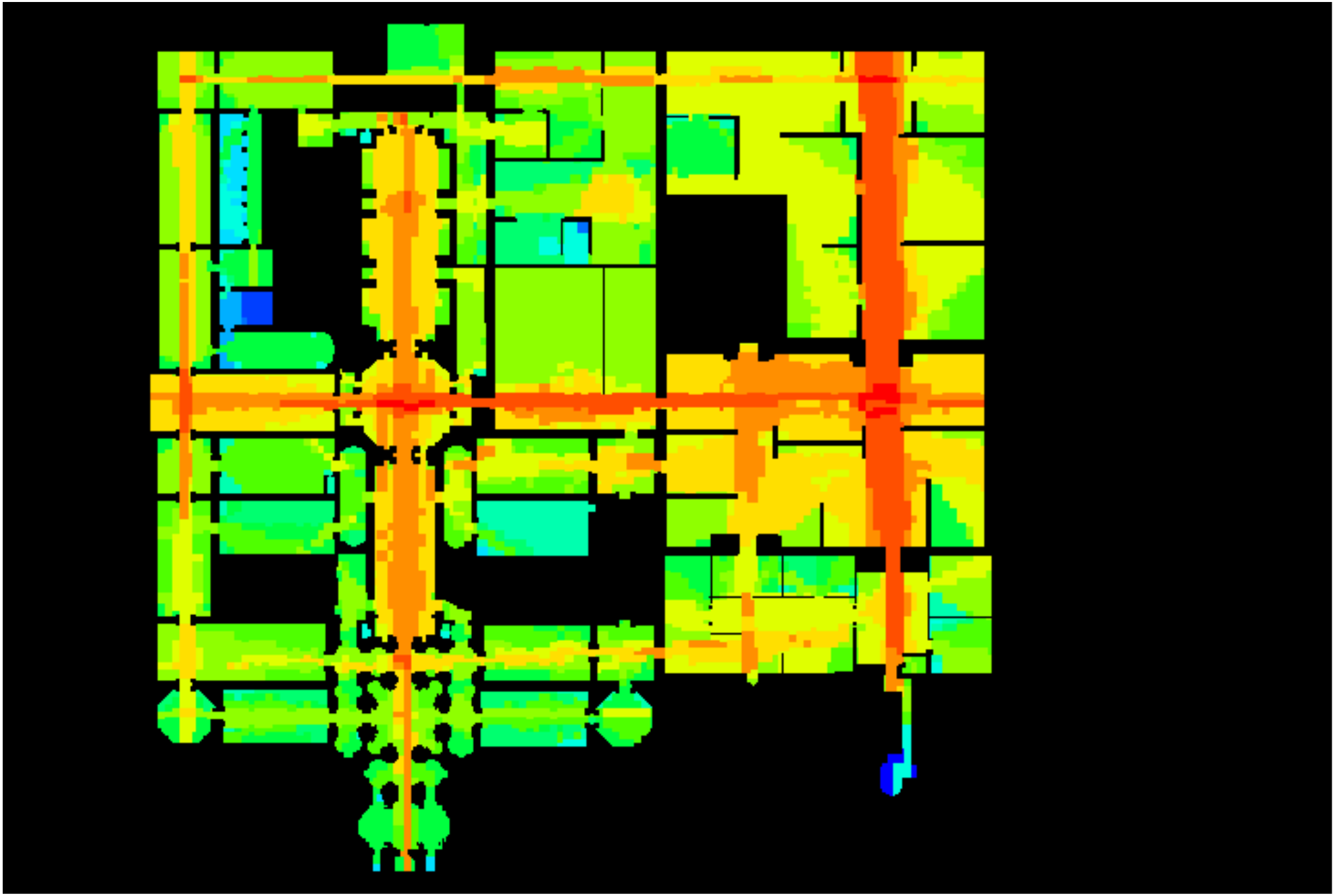
Visual integration and movement Tate Britain



Visual integration and movement Tate Britain

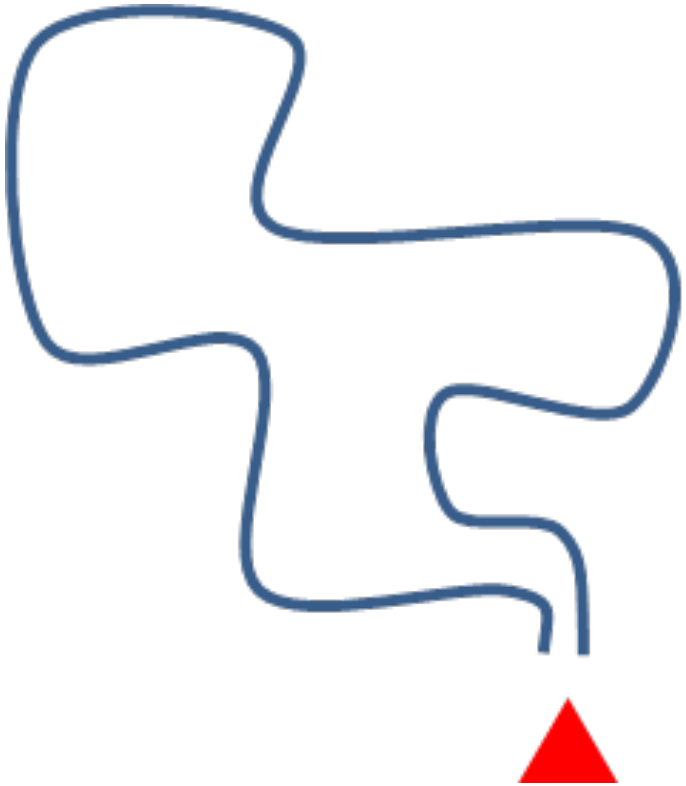


Visual integration and movement Tate Britain

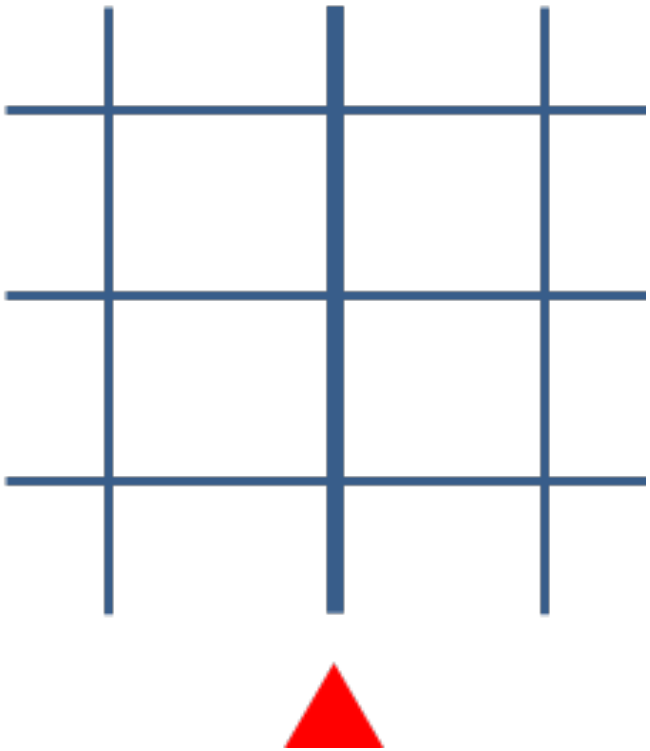


Spatial Culture Visitor Experience

a. Sequencing



b. Exploratory



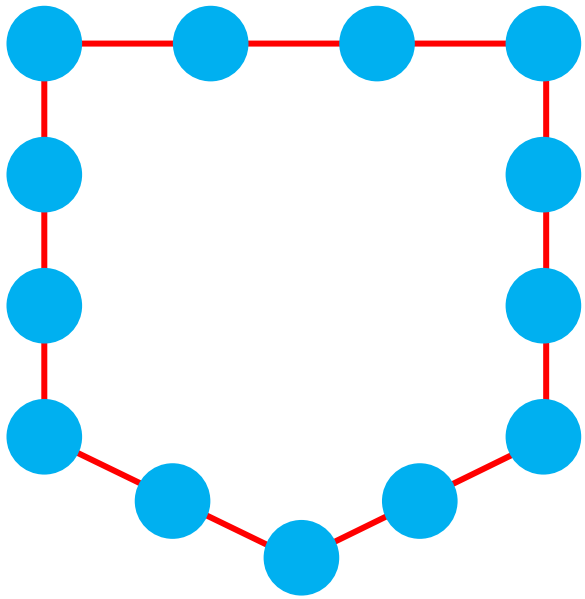
"Space is intrinsic to human activity: moving through space, interacting with other people in space, or even just seeing ambient space, from a point in it, has a natural and necessary geometry."
Space Syntax, the Language of Museums Space: Bill Hillier, Kali Tzortzi

Spatial Culture Idealised spatial types

a. Sequencing

Controlled narrative

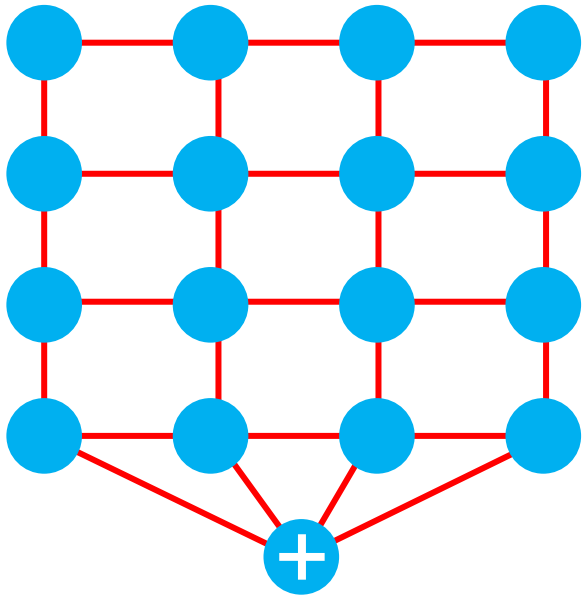
Socially limited experience



b. Exploratory

Self-determined experience

Socially richer experience



Spatial Culture Idealised spatial types

a. Sequencing

- deterministic
- visitors have the same experience
- restricts to a chronological curatorial narrative
- limited social experience
- Tate Modern

b. Exploratory

- probabilistic
- unique visitor experience
- narratives can be constructed independent from space
- rich social experience
- Tate Britain

Aims

A two-step scientific approach to the process of visitor circulation evaluation and design.

1. Understanding the effect of the physical and spatial layout characteristics of the Museum on visitor movement patterns.

2. Develop a robust **visitor circulation strategy** for the Museum in order to assist the development and implementation of individual projects

Visitor Circulation Strategy Aims

- to **address the key opportunities and constraints** identified in this study

- to provide the a **Museum-wide framework**

- to **test interventions and museum wide plans** and to ensure that each proposed interventions enables the museum wide framework, at the very least it doesn't hinder it

Visitor Circulation Strategy Aims

- to **integrate** the various elements of the Museum, as identified in the baseline analysis, into a coherent whole that can easily be read by visitors

- to offer visitors a sense of **spatial continuity** where the building naturally guides visitors

- to provide an **intelligible structure** that visitors can grasp and with this information can inform their navigation and wayfinding decisions.

Experience Natural History Museum 2013 – 2014

The opportunity
The Natural History Museum is a world-class visitor attraction and a leading science research centre. It attracts over 5 million visitors a year and is expected to grow by 40% in the next ten years. To accommodate a rapid growth, the Museum has implemented a series of capital projects which include the Darwin Centre and the opening of new circulation spaces in recent years.

To inform these projects and its long term masterplanning vision, the NHM has commissioned Space Syntax to provide a robust evidence-base analysis of visitor circulation and design advice.

Our contribution
Space Syntax has applied a two-step scientific approach.

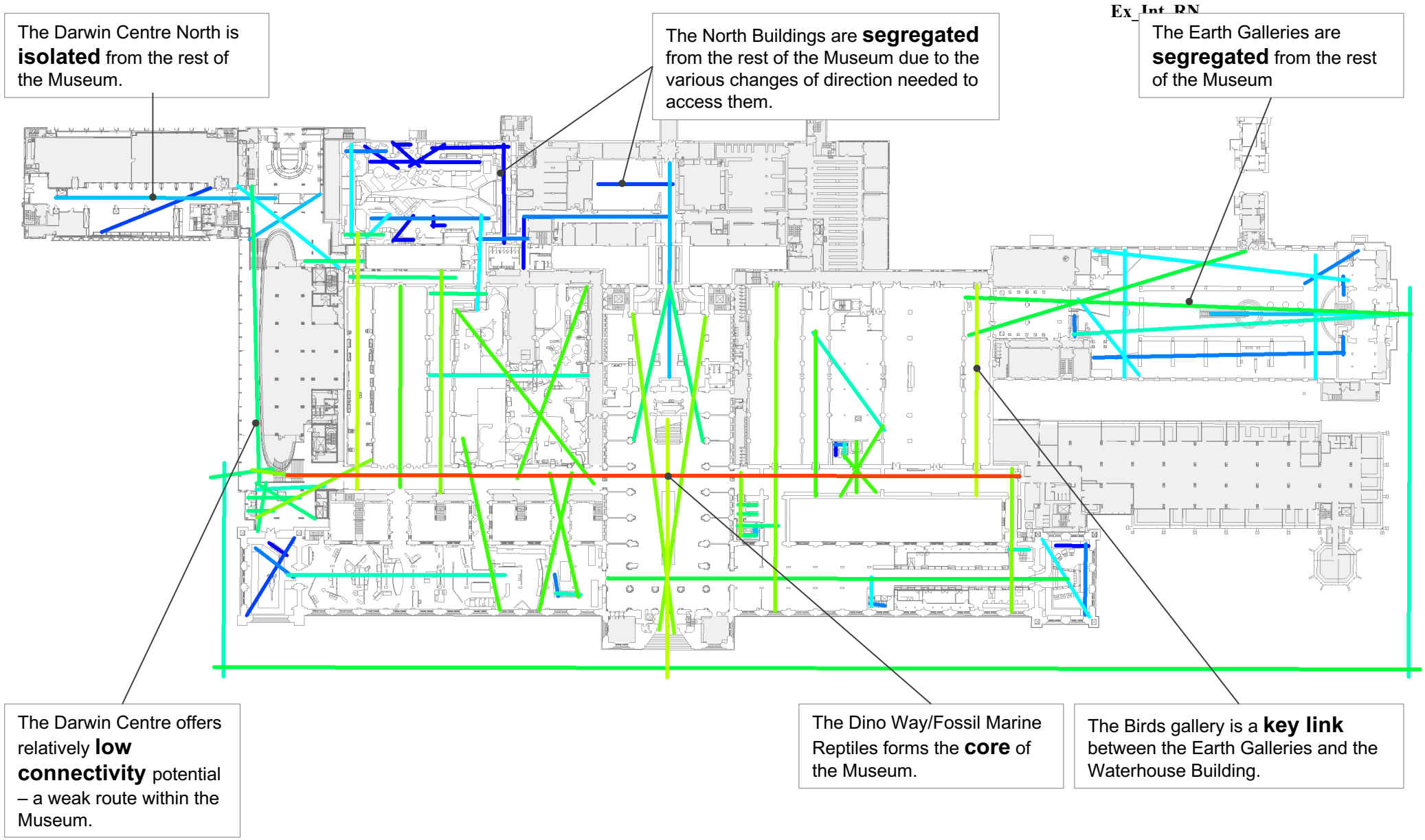
Urban and building baseline studies
A diagnosis of the existing conditions, using world-leading techniques of urban and building evaluation.

Spatial layout design advice
Informed by the baseline studies, we have then developed site-specific recommendations, which informed a visitor circulation strategy for the Museum. Intervention options were generated and tested through a close collaboration with the Museum.

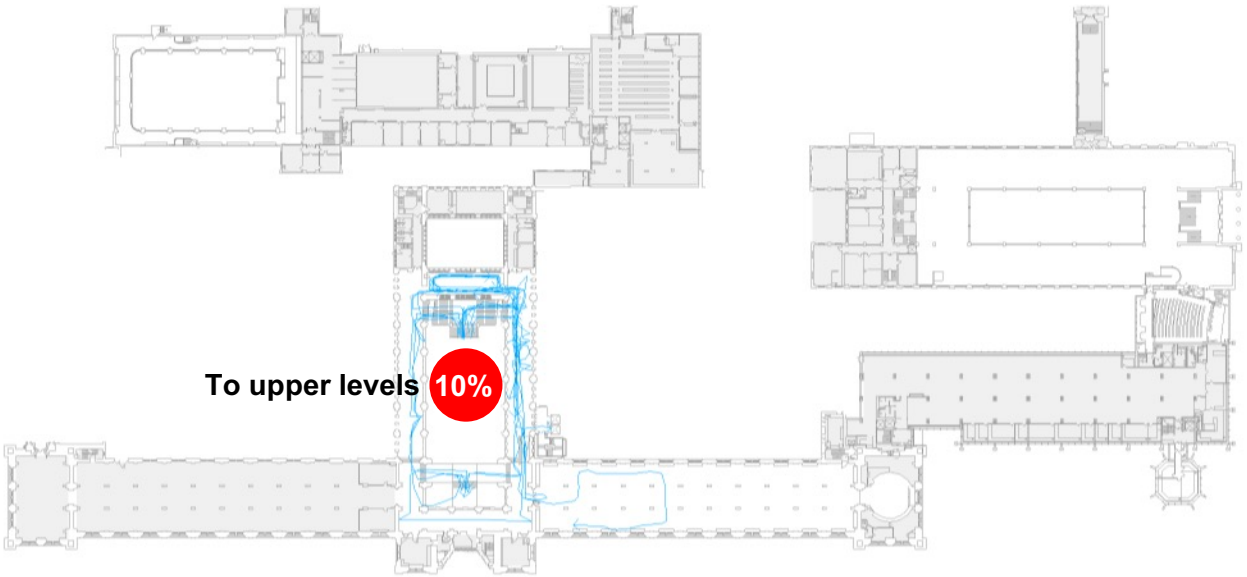
The outcome
The baseline studies, which have revealed various opportunities for the Museum, informed the development of a long-term visitor circulation strategy.

A final outcome was a development strategy that allows phased implementations of individual projects.

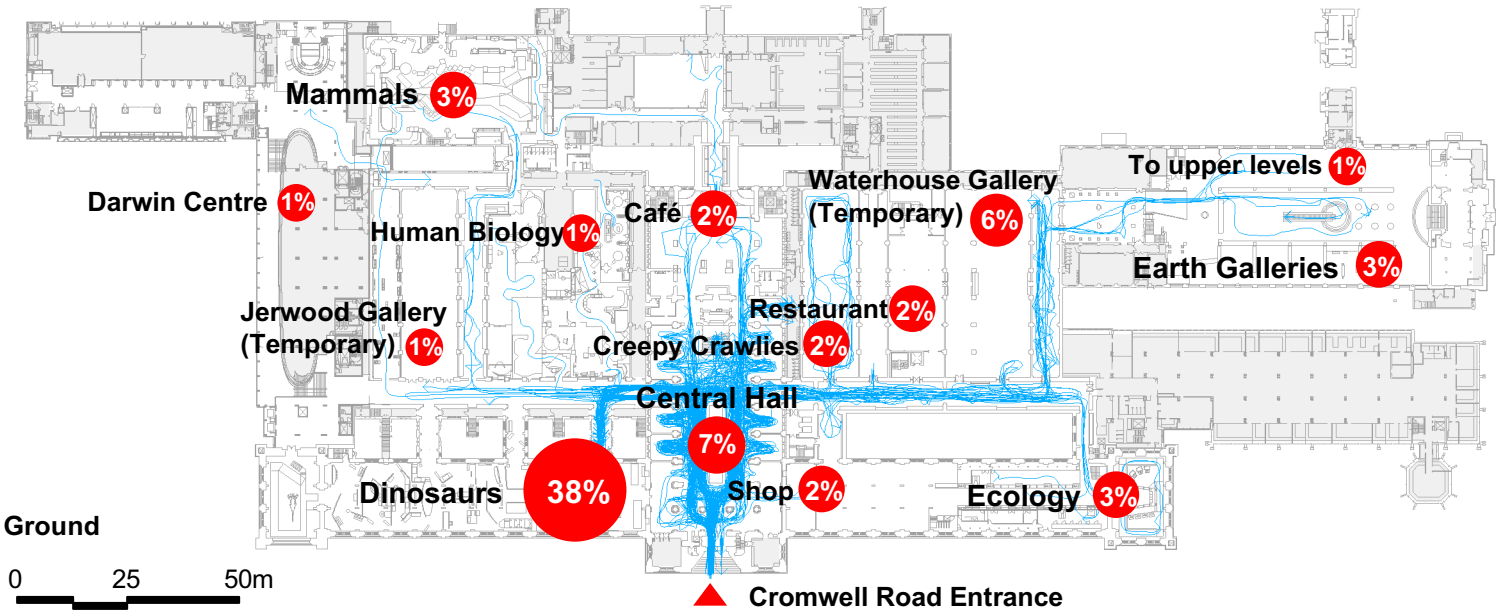
Building baseline Visitor Circulation Model



Building baseline Route choice



Level 1



Ground

0 25 50m

The visitor route choice survey highlights some of the issues identified earlier in the report, particularly related to the influence of the circulation layout in drawing visitors towards the Central Hall.

The images to the left show the superimposed paths of routes taken by visitors during the first 10 minutes of their visit (157 visitors from the Cromwell Road entrance and 81 from the Exhibition Road entrance, please refer to page XX of the appendix for a detailed description).

The image also highlights the first destination of the visit as a percentage of the total number of visitors from each entrance (in red).

Key findings from the surveys are:

The visiting pattern is strongly influenced by the choice of entrance. Only 4% of visitors using the Cromwell Road entrance make it to the Earth Galleries during the first 10 minutes of their visit. By comparison, more than a third of visitors (36%) using the Exhibition Road entrance make it to the Waterhouse building.

The Earth Gallery escalator is a successful devise to guide visitors to the upper levels of the building.

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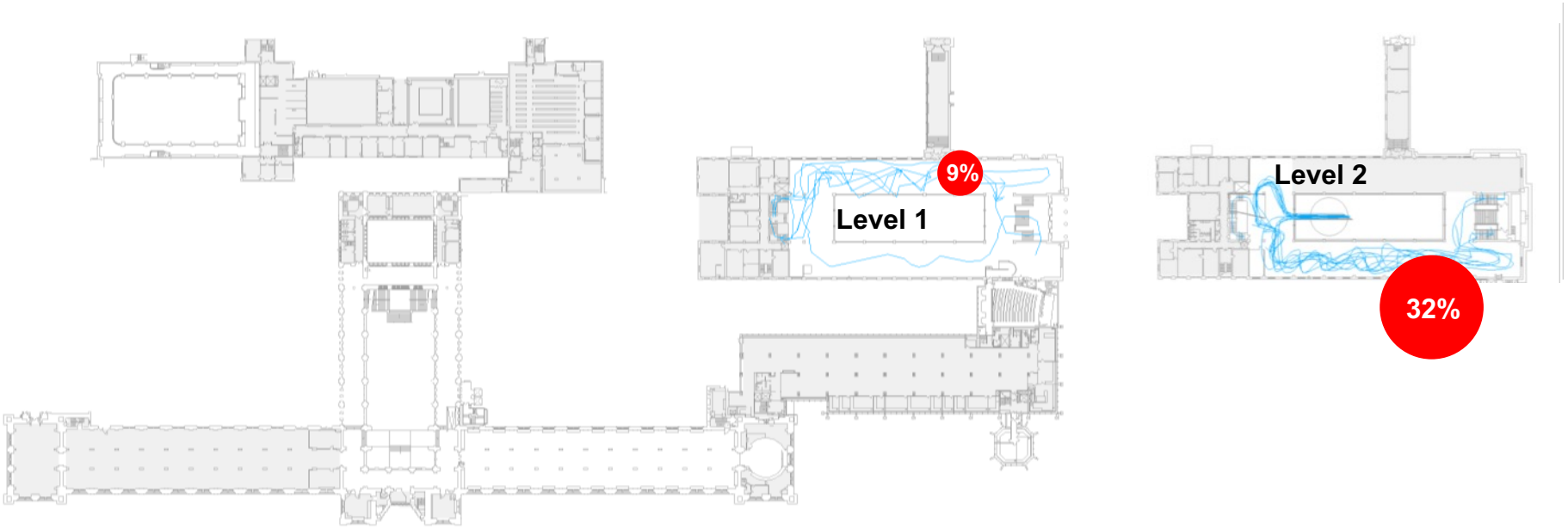
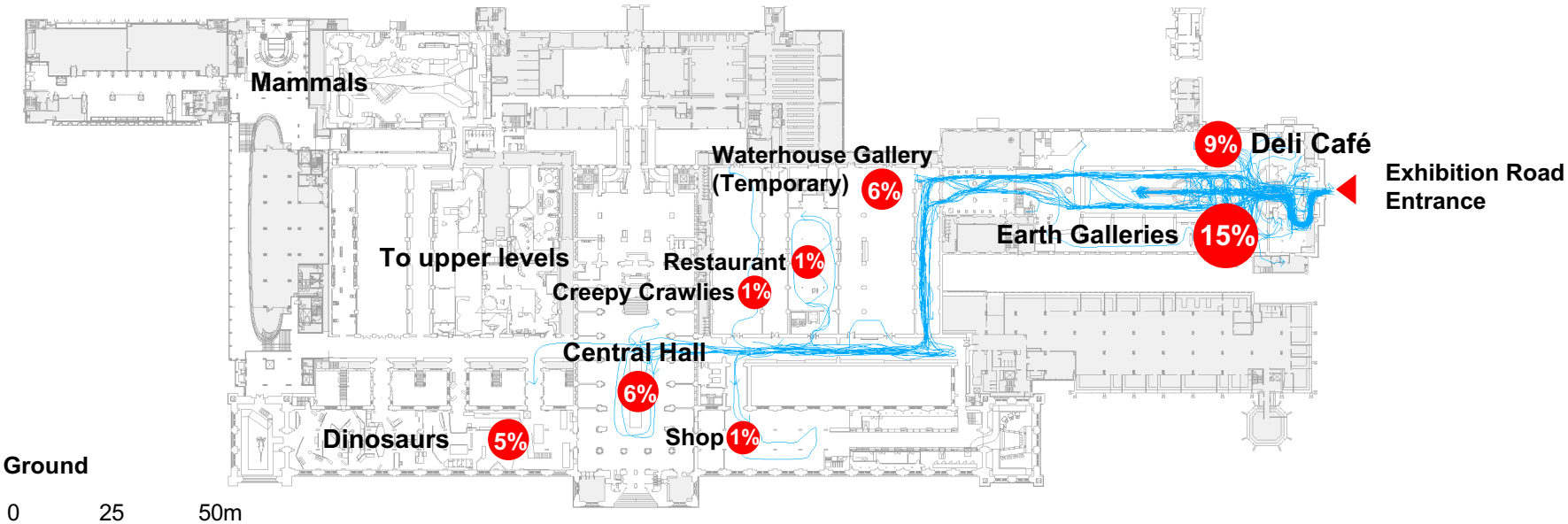
Building baseline Route choice



Level 1

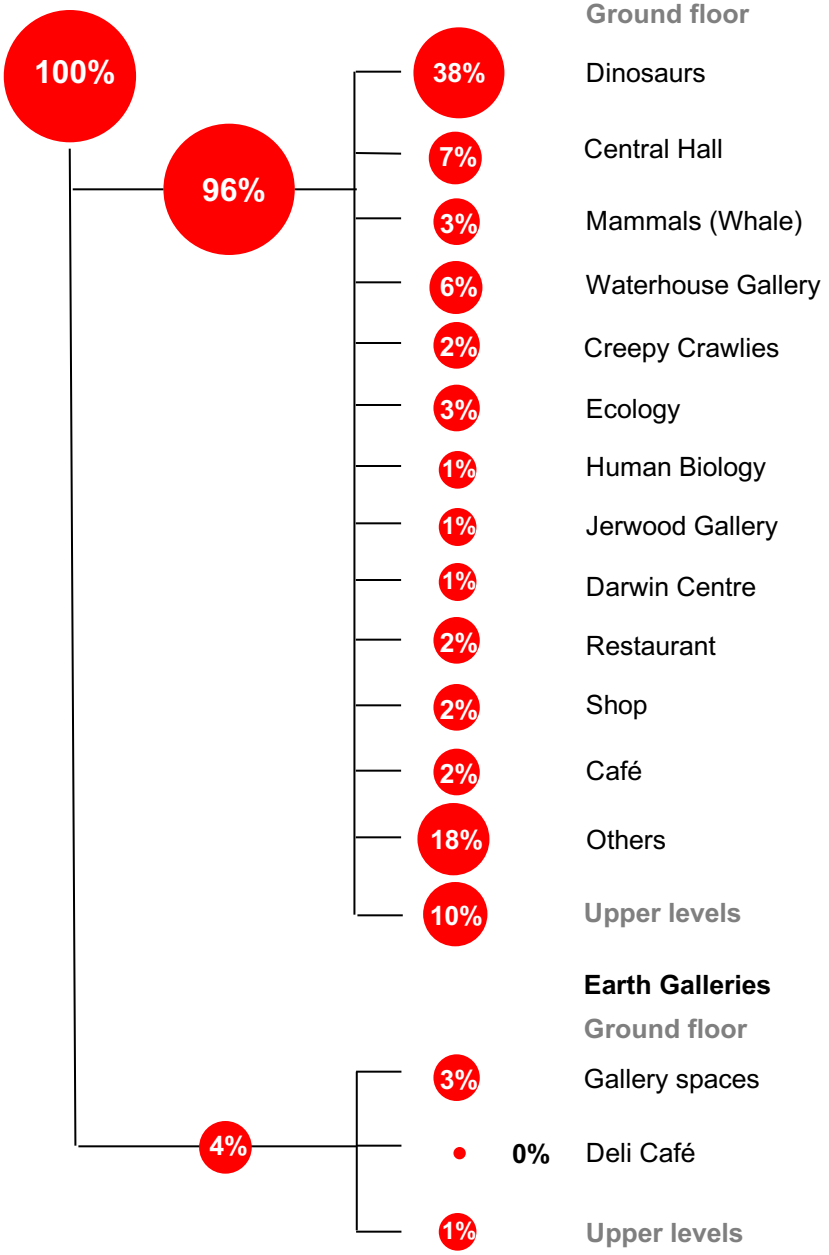


Ground

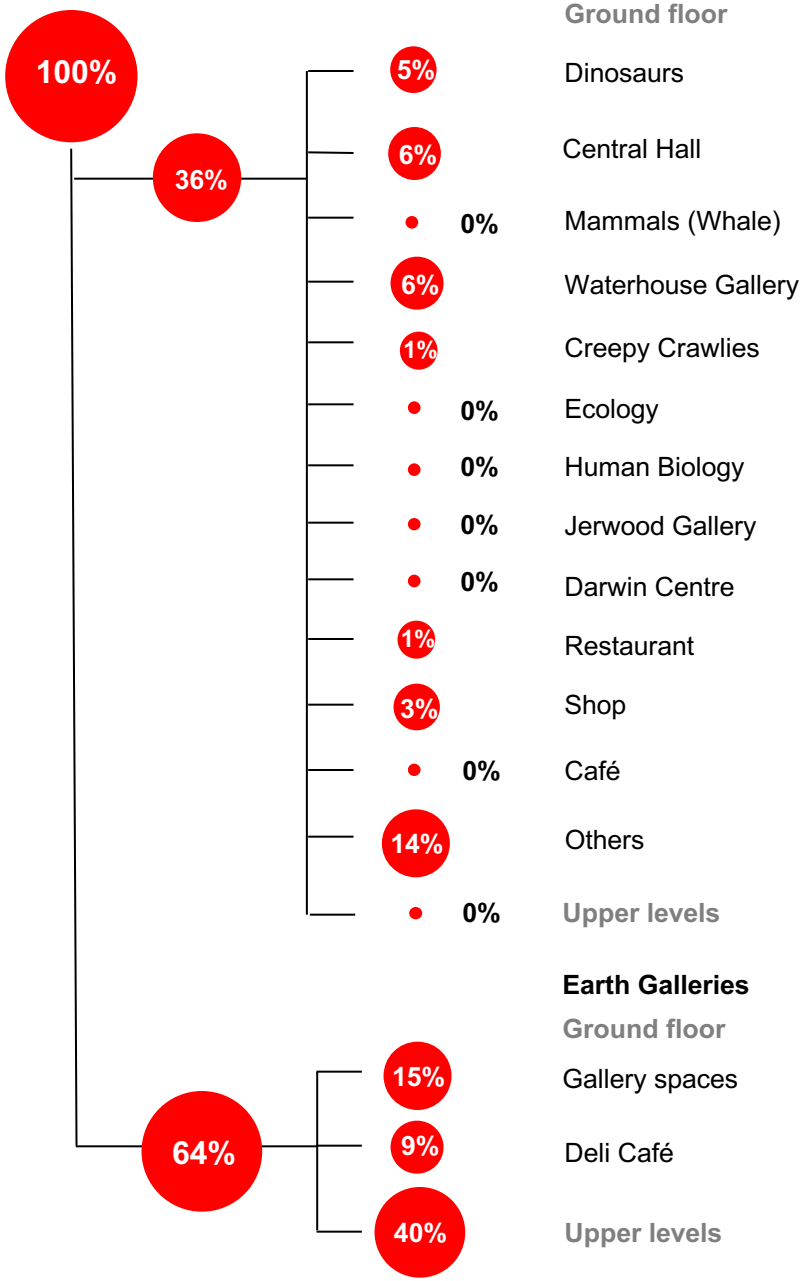
0 25 50m

Building baseline Route choice

Cromwell Road Entrance
157 visitors in total



Exhibition Road Entrance
81 visitors in total



Building baseline Legibility

Grand entrance design marking the main entrance on Cromwell Road

Access to the east-west spine, the Dino Way and the Fossil Marine Reptiles, are visible from the Central Hall. These spaces make key spines of the visitor circulation spaces.

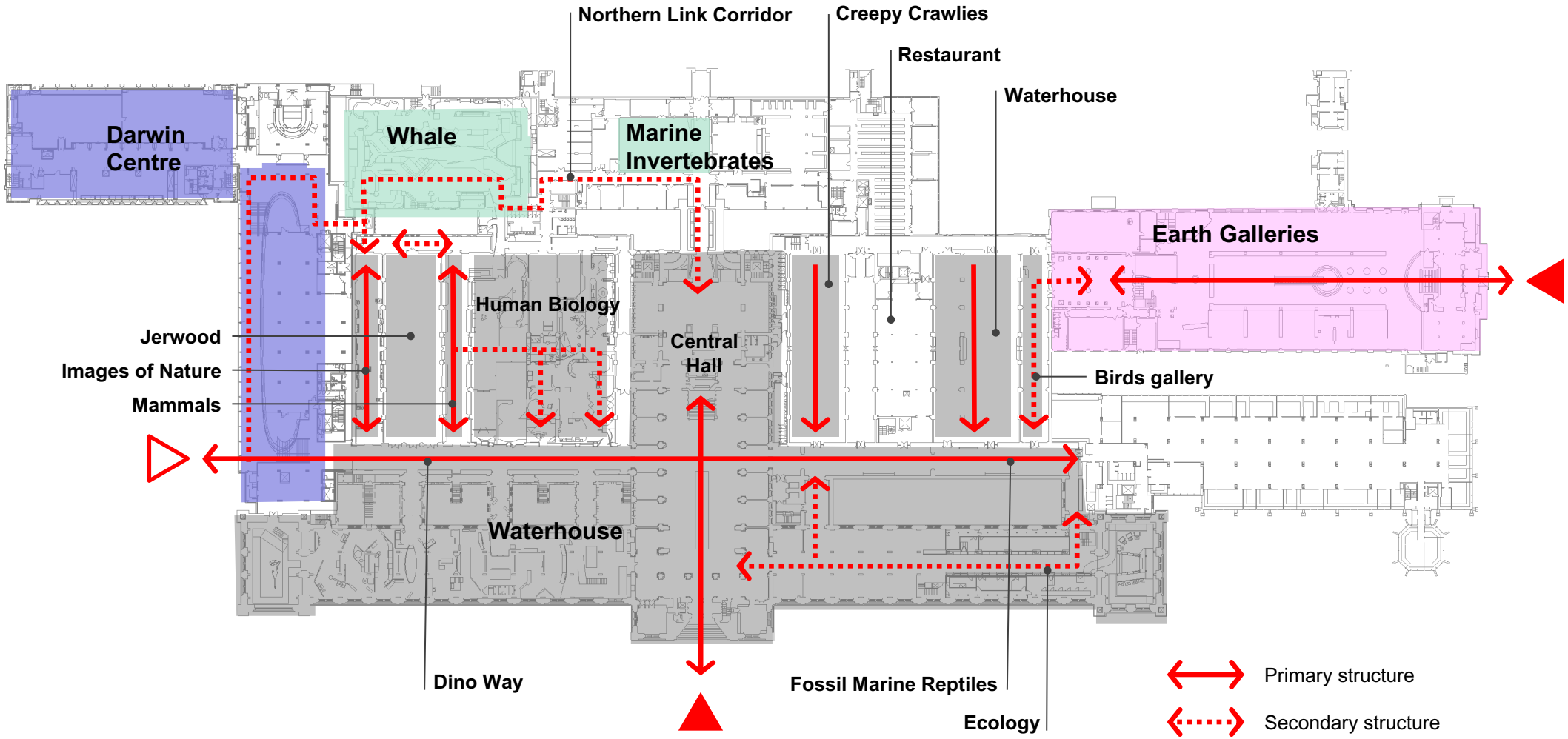
Birds gallery is at the end of the Fossil Marine Reptiles, which constantly has high levels of movement. The route is legible but it is not indicated clearly as a link to the Earth Galleries.

The access to the Earth Galleries is not visible from the southern end of Birds gallery. The gallery is 5th busiest gallery in the Museum attracting visitors as a route (the only link between the Earth Galleries and the rest of the Museum) and as a gallery.

Two openings connected to Lasting Impressions gallery only become visible half way through the gallery.

Two openings to the Earth Hall, which do not give away impressions of what lies behind.

Building baseline Diagnostic



Ground floor

Primary structure

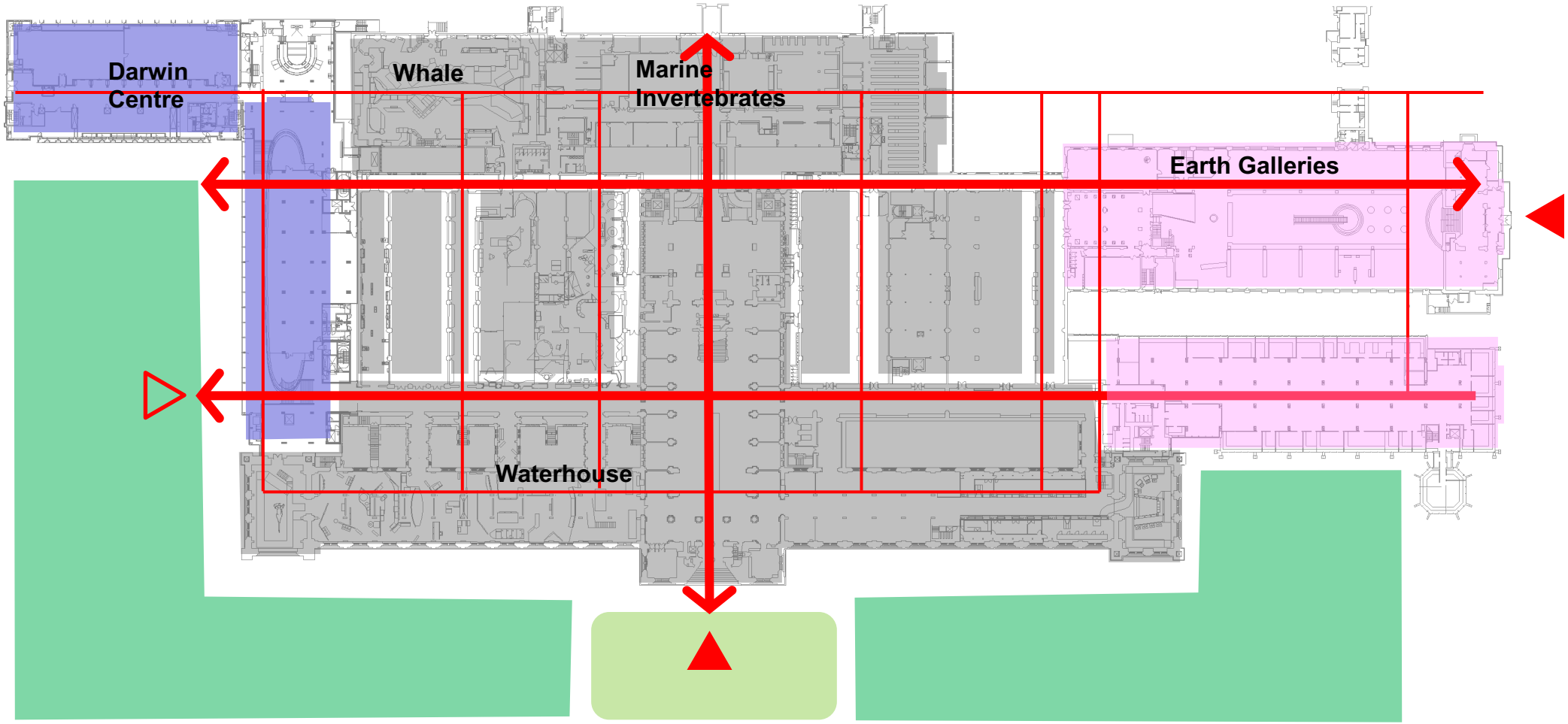
Secondary structure

Entrance

Temporary entrance (used only during periods of high visitor demand)

0 25 50m

Visitor Circulation Strategy An integrated museum



Primary structure

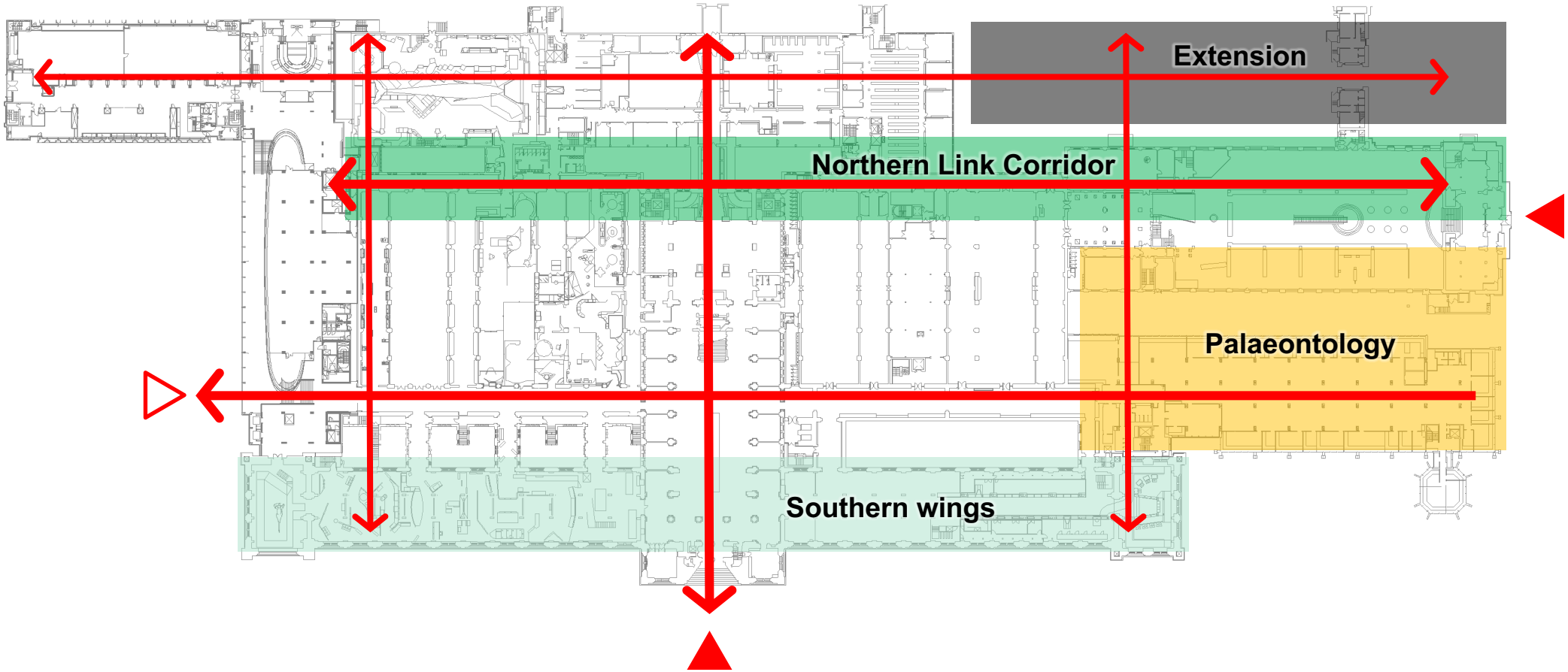
Secondary structure

Entrance

Temporary entrance (used only during periods of high visitor demand)

0 25 50m

Visitor Circulation Strategy Intervention areas



Primary structure

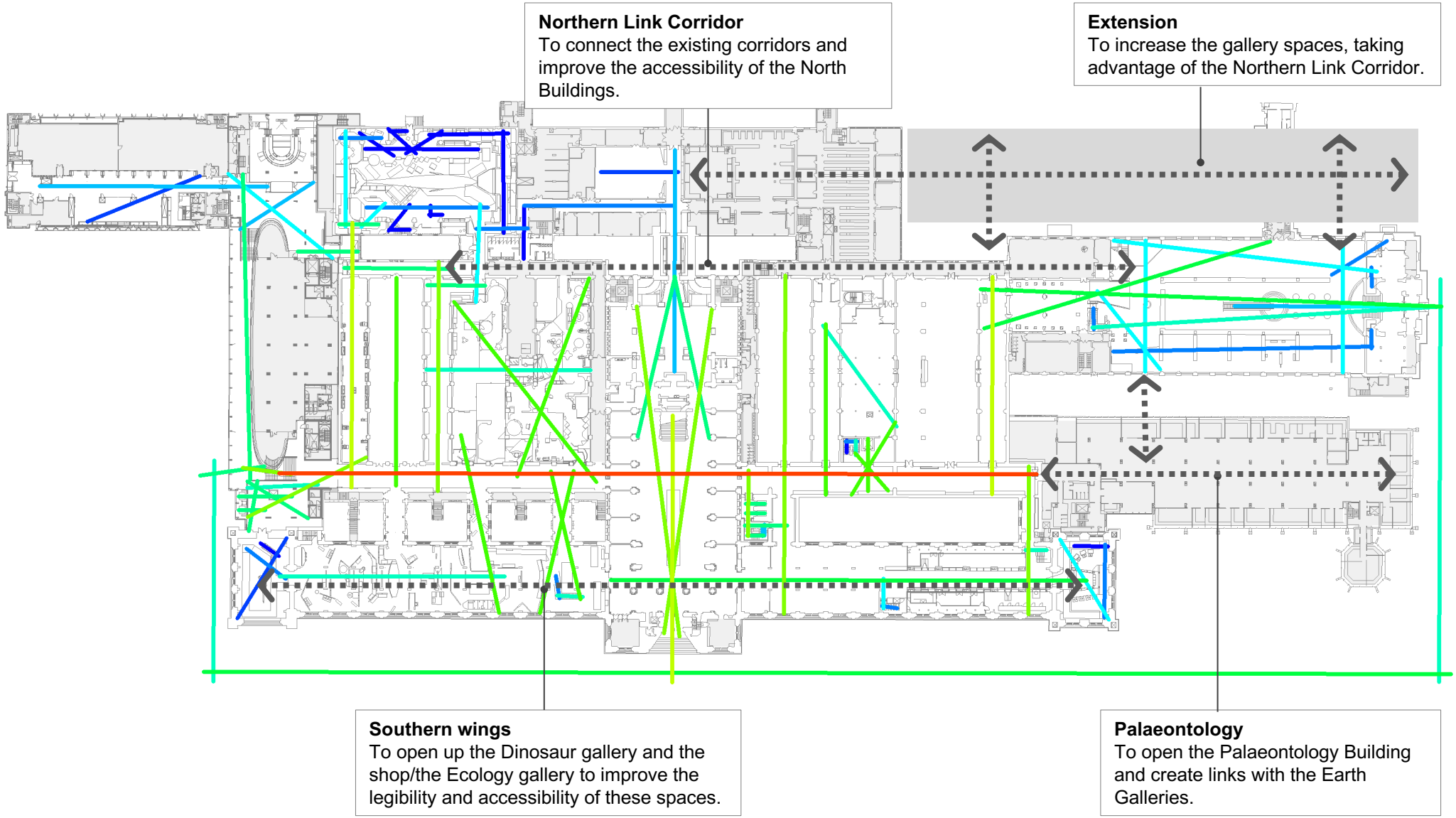
Secondary structure

Entrance

Temporary entrance (used only during periods of high visitor demand)

0 25 50m

Visitor Circulation Strategy Proposed interventions



Ground

0 25 50m

Spatial accessibility

low high

Visitor Circulation Strategy An integrated museum

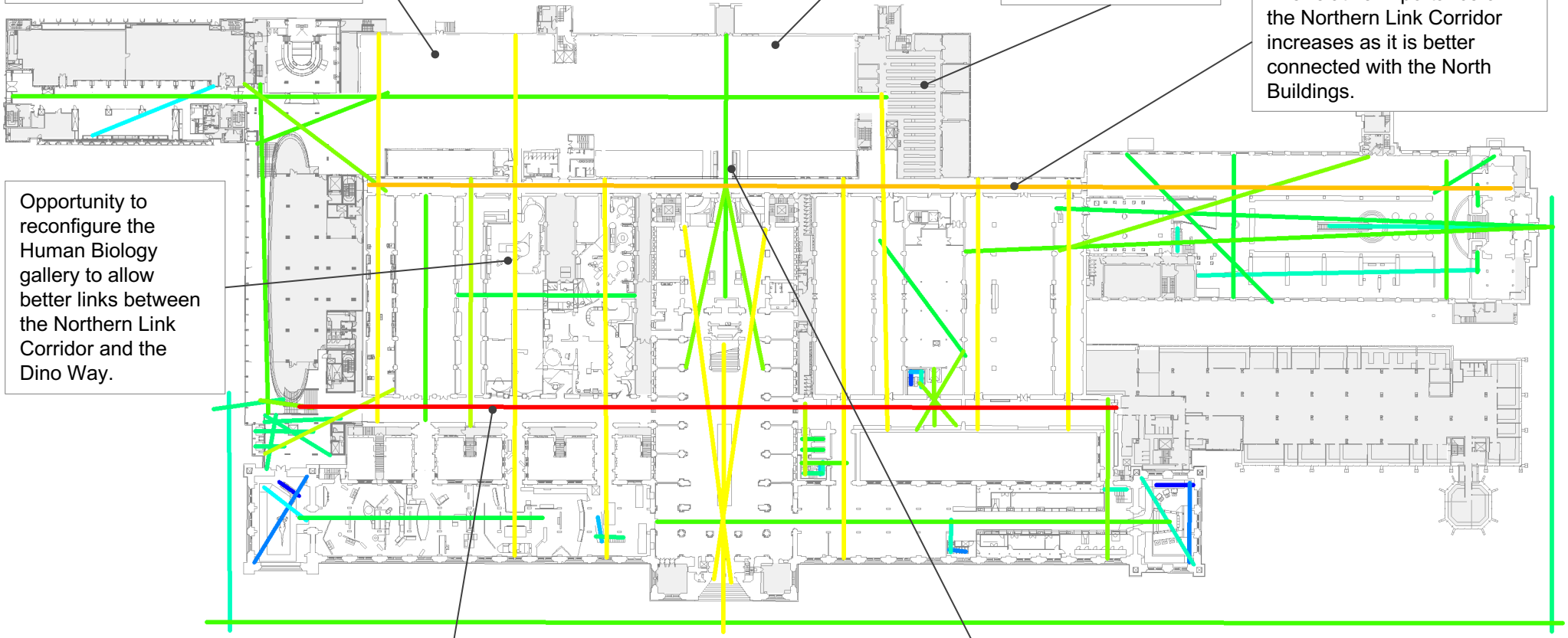
Opportunity to open up the Mammals (blue whale) to allow a legible corridor through the North Buildings and the Darwin Centre.

New gallery spaces will be created in the North Buildings.

Opportunity to open up the library to the public or as a new gallery space.

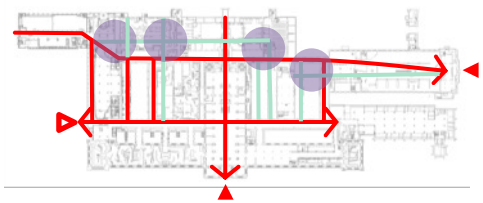
The relative importance of the Northern Link Corridor increases as it is better connected with the North Buildings.

Opportunity to reconfigure the Human Biology gallery to allow better links between the Northern Link Corridor and the Dino Way.



Dino Way/Fossil Marine Reptiles will remain as the spine of the Museum.

The north-south link via the bridge is further enhanced.



Ground

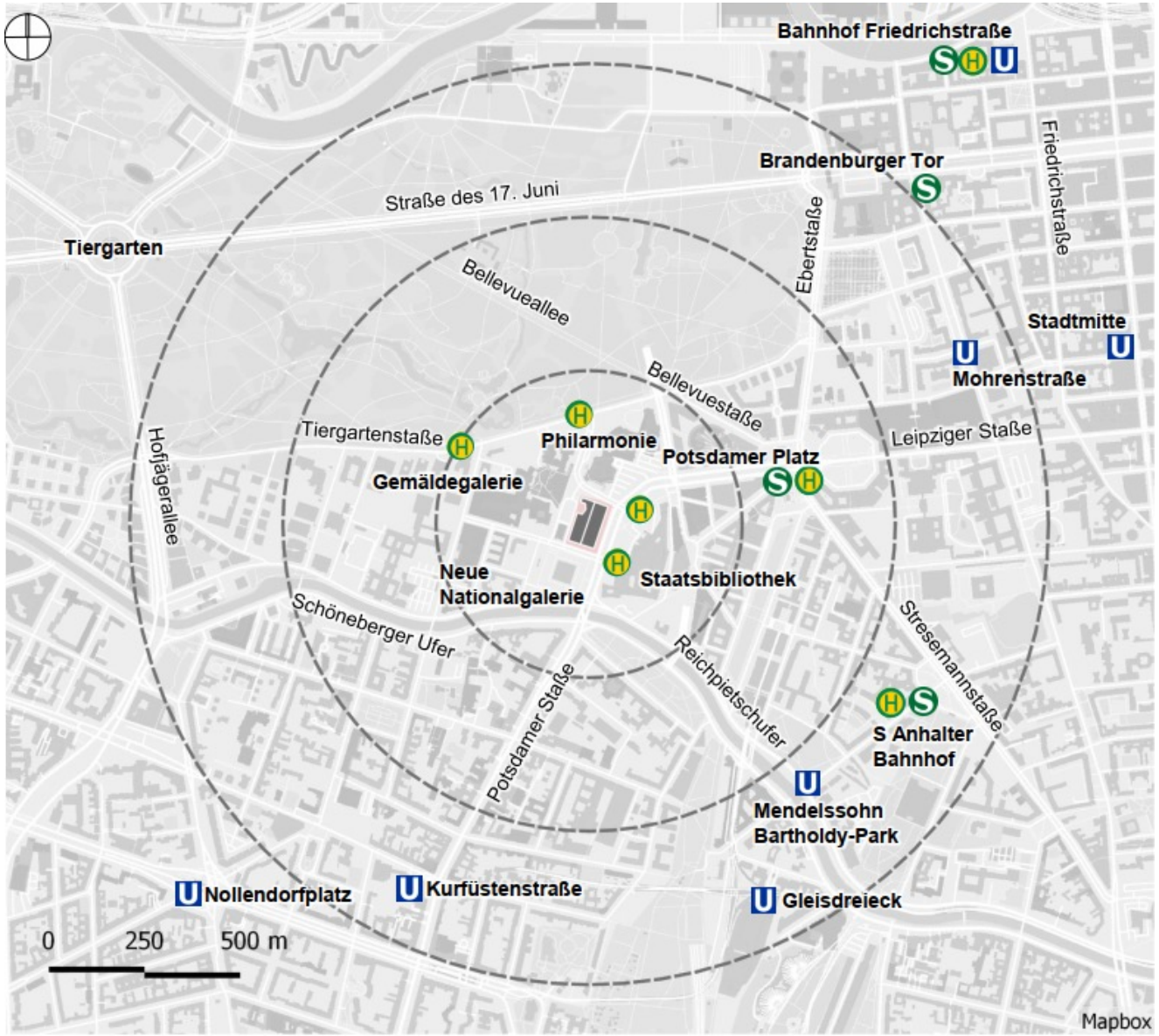
0 25 50m

Spatial accessibility

low high

Museum des 20.Jahrhunderts Berlin

2. 1.1. STÄDTISCHER GESAMTZUSAMMENHANG



Das Museum des 20. Jahrhunderts ist Teil des Kulturforums, welches mehrere kulturelle Einrichtungen umfasst. Nach dem 2. Weltkrieg sollte hier ein Kulturzentrum für West-Berlin erschaffen werden. Auch in der Zeit nach dem Mauerfall litt das Gebiet noch stark unter den Folgen des Krieges. Heute stellt das Kulturforum eine große Chance für Stadterneuerung dar.

ÖPNV

- Bus
- S-Bahn
- U-Bahn
- Projektgebiet

Space Syntax

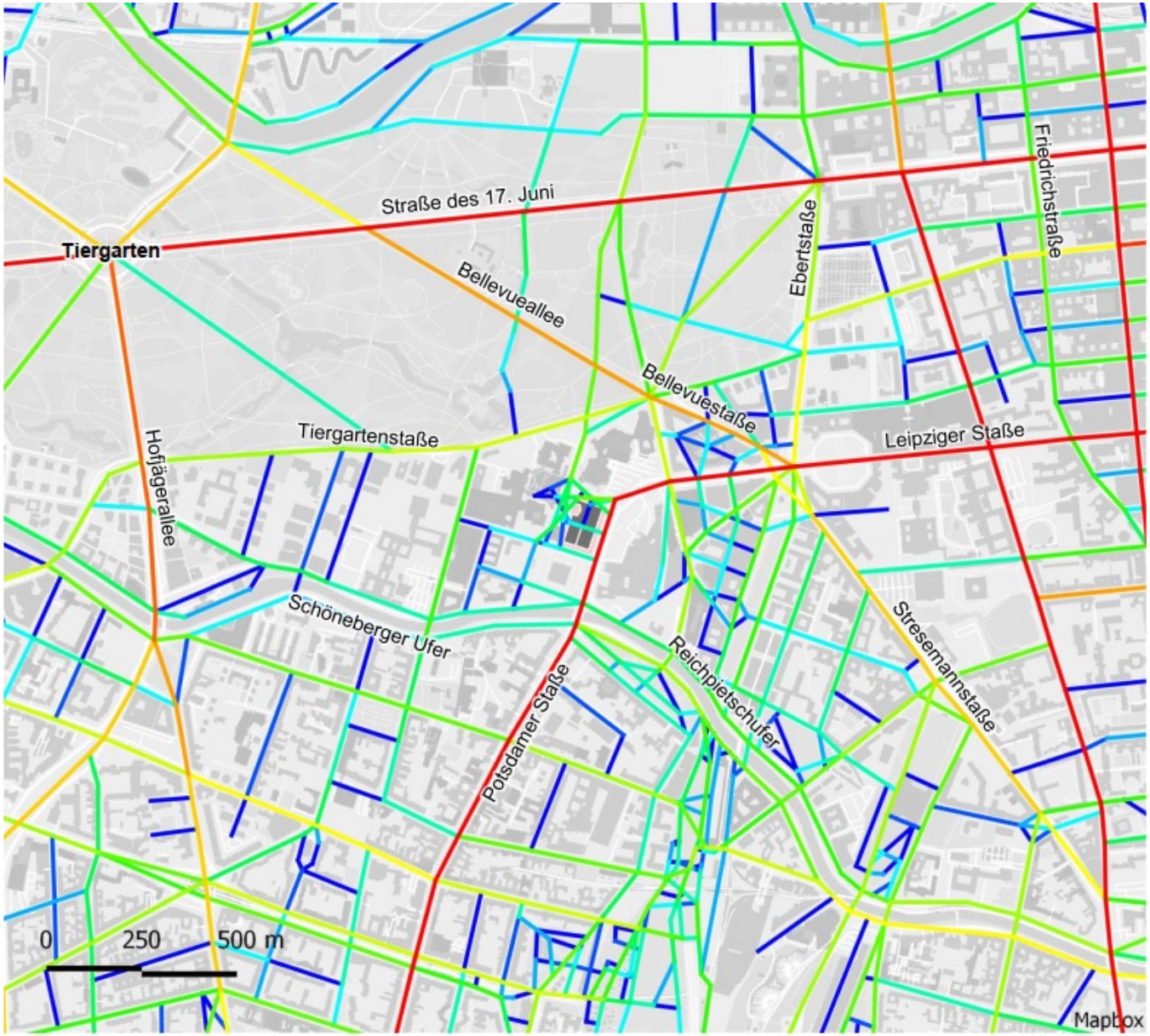
DREES & SOMMER

Space Syntax

Drees & Sommer

Museum des 20.Jahrhunderts Berlin

2.1.2. ANALYSE DER RÄUMLICHEN ERREICHBARKEIT



Die Analyse zeigt die strategisch gelungene Position des Museums in Berlin auf. Die Potsdamer Straße spielt auch über die Quartiersgrenzen hinaus eine Schlüsselrolle als wichtige Nord-Süd Verbindung Berlins.

Erreichbarkeit

hoch

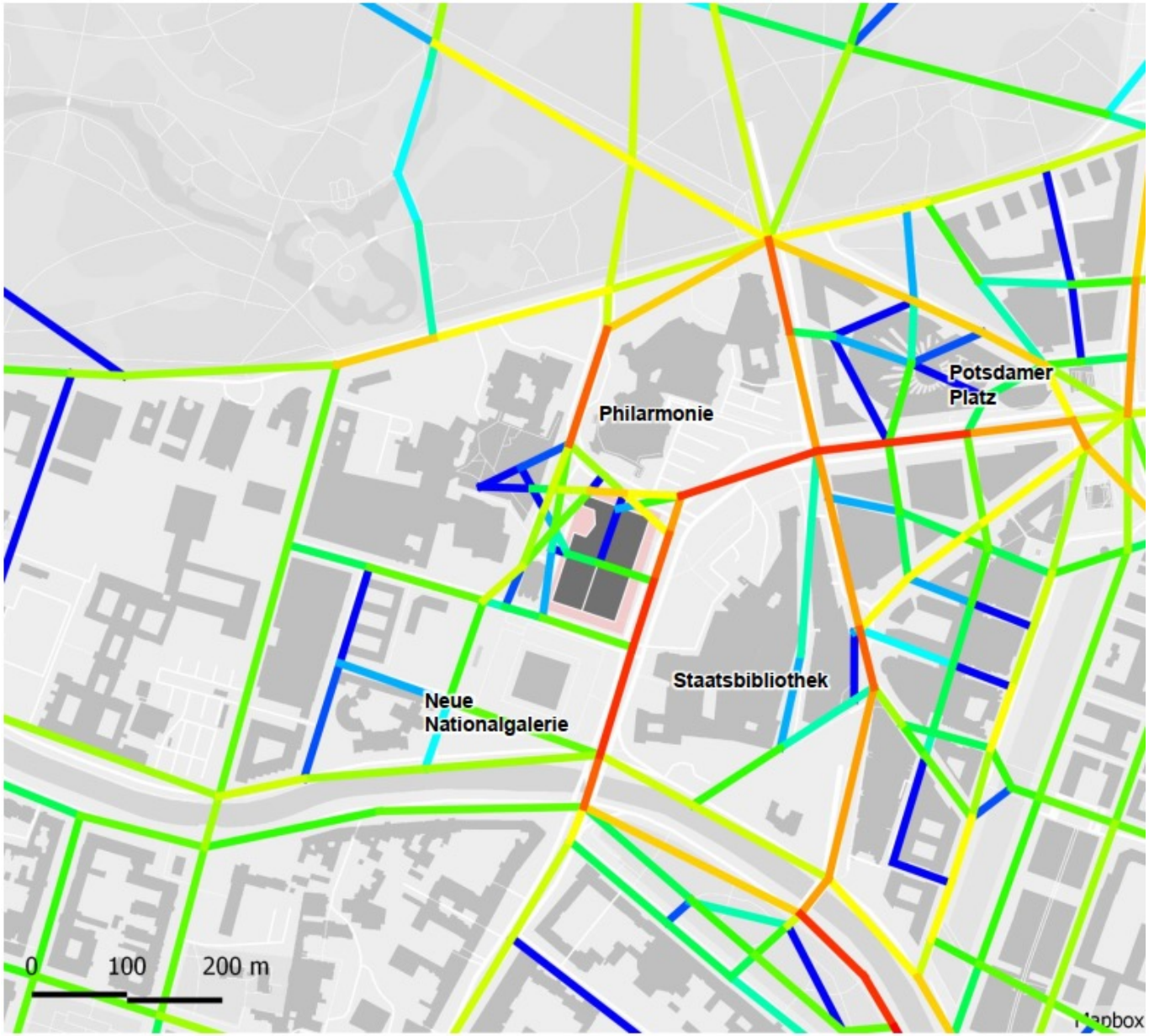
niedrig

Space Syntax

DREES & SOMMER

Museum des 20.Jahrhunderts Berlin

2.1.2. ANALYSE DER RÄUMLICHEN ERREICHBARKEIT



Das Museum des 20. Jahrhunderts bietet die Möglichkeit das Kulturforum permeabel zu gestalten und damit soziale Kontakte zu erhöhen.

Die Ost-West Verbindung durch das Museum vernetzt die Potsdamer Straße mit dem Matthäikirchplatz und platziert das Museum auf einer lokalen Verbindungsachse.

Den öffentlichen Plätzen nördlich sowie westlich des Museums kommt die Schlüsselrolle zu, das Kulturforum im gesamten, und auch das Museum im Spezifischen, aufzuwerten.

Erreichbarkeit

hoch

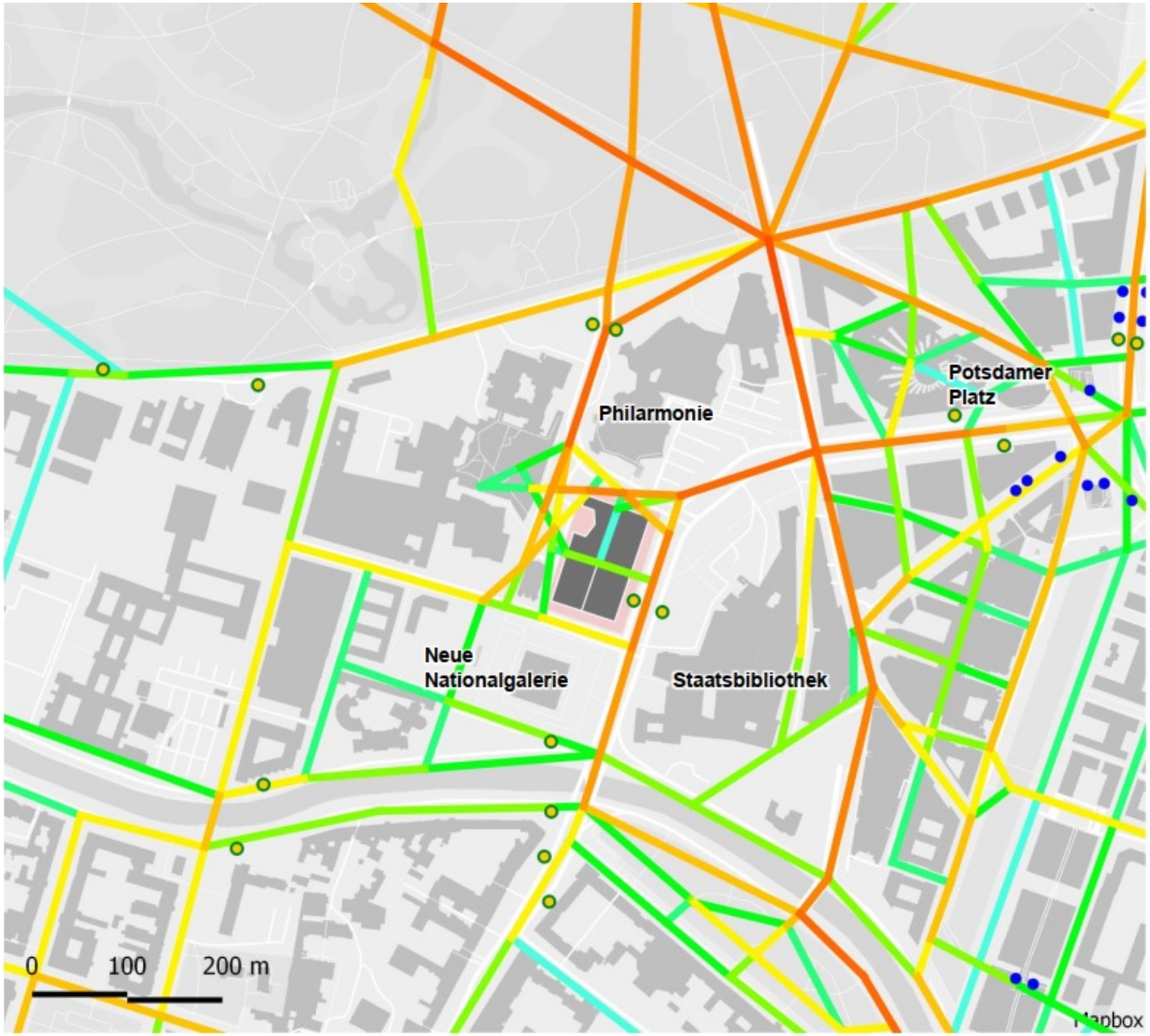
niedrig

Space Syntax

DREES & SOMMER

Museum des 20.Jahrhunderts Berlin

LOKALE ERREICHBARKEIT GEWICHTET NACH ÖPNV ENTFERNUNG



Transport

- Bus
- U-Bahn

Erreichbarkeit

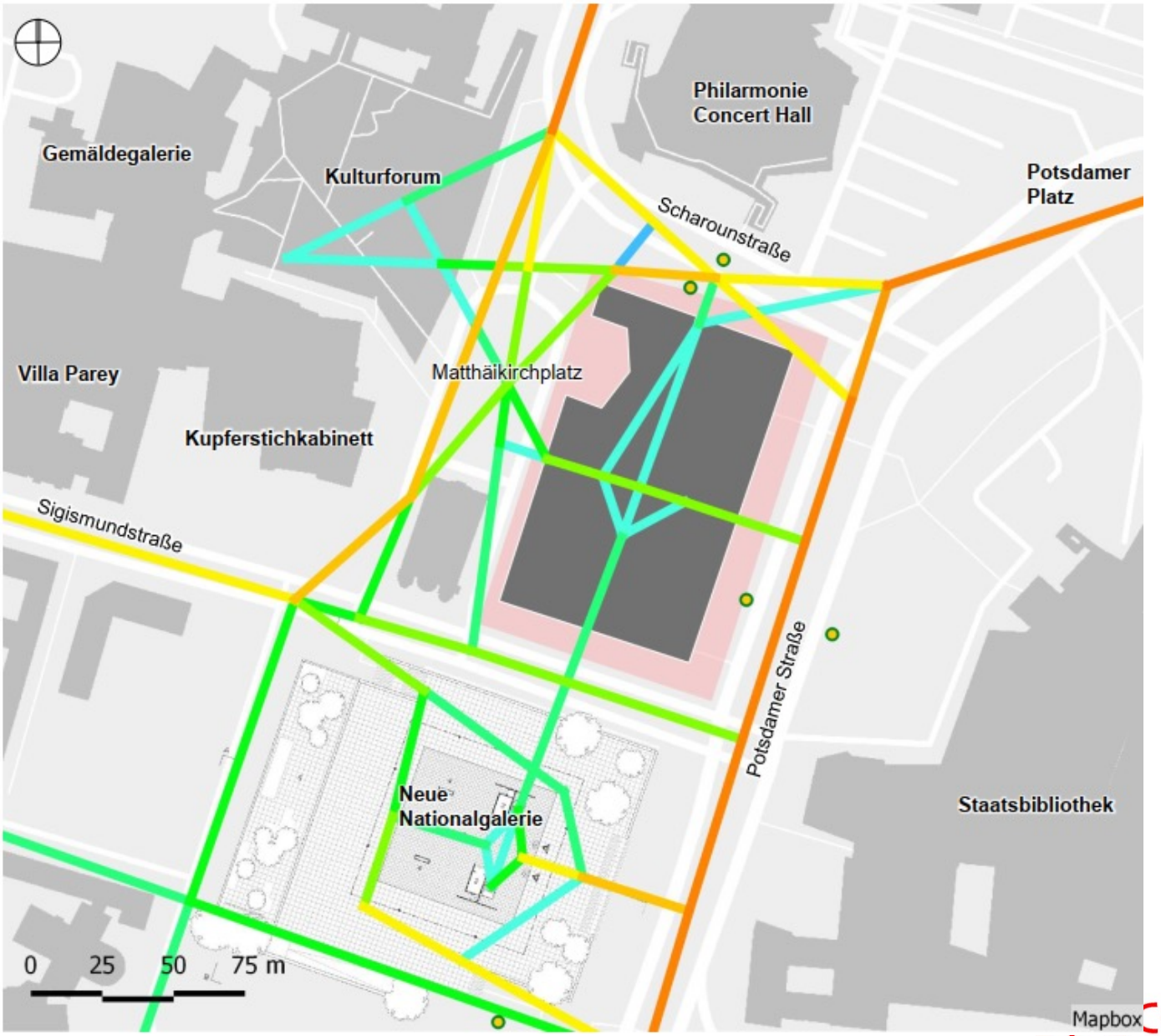
- hoch
- niedrig

Space Syntax

DREES & SOMMER

Museum des 20.Jahrhunderts Berlin

2.1.3. VERBINDUNG ZUR NEUEN NATIONALGALERIE



Die Verbindung zwischen den beiden Museen erhöht die Durchdringbarkeit des Kulturforums und damit auch die räumliche Erreichbarkeit auf Quartiersebene.

Transport

- Bus
- U-Bahn

Erreichbarkeit

- hoch
- niedrig

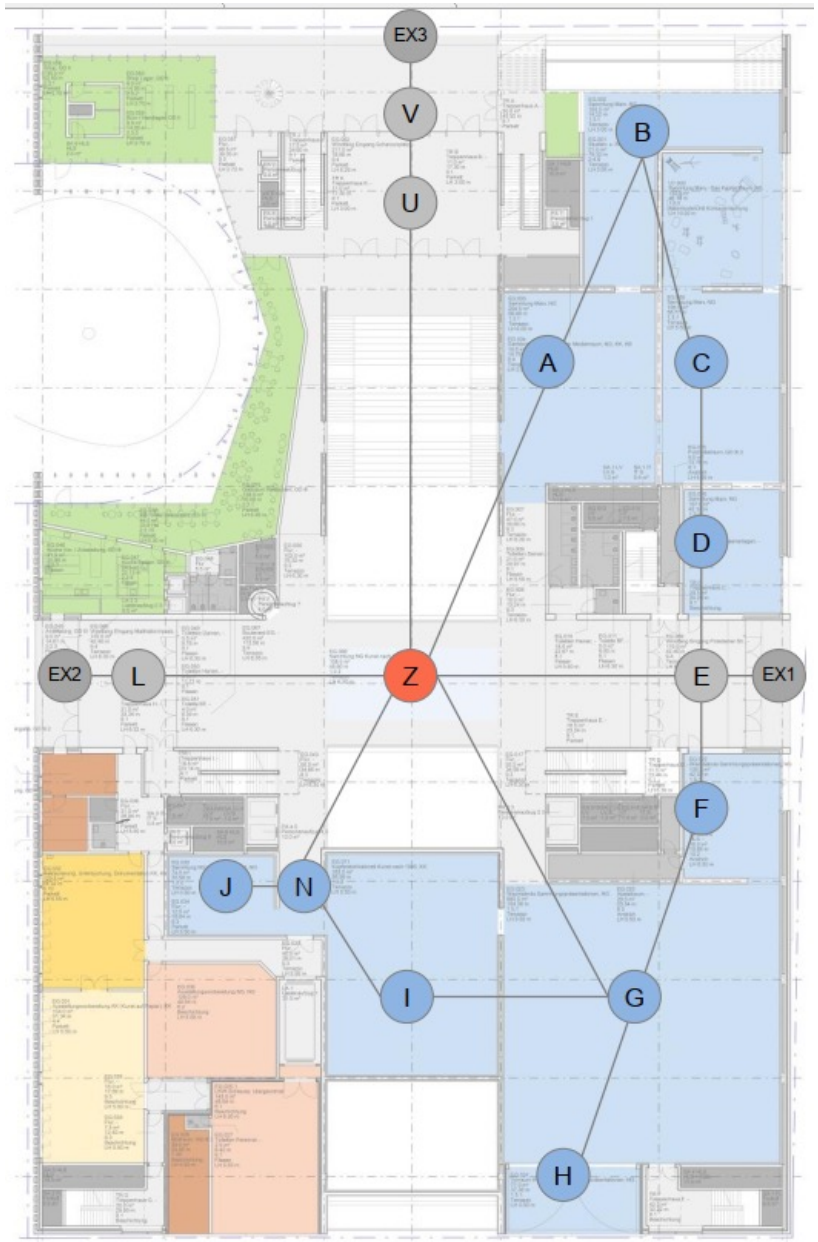
ce Syntax

DREES & SOMMER

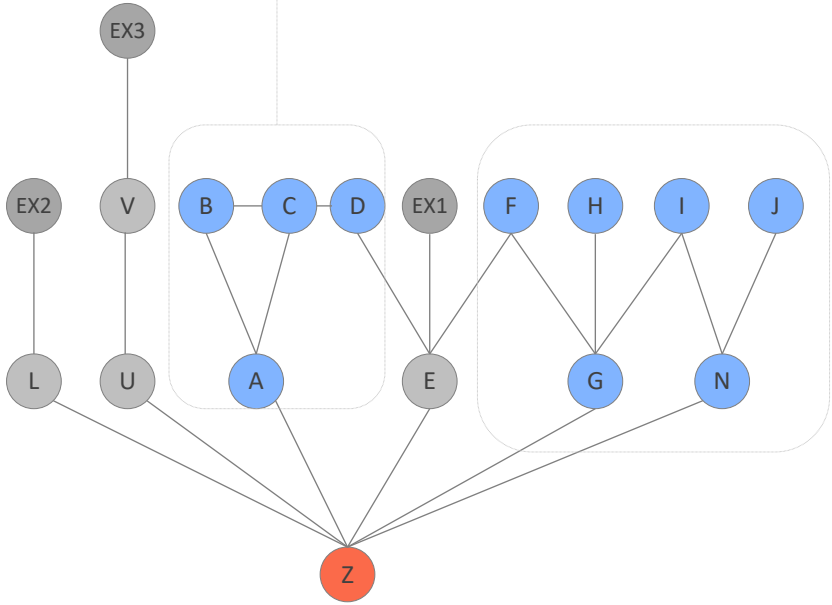
Museum des 20.Jahrhunderts Berlin

ANGEPASSTE GRAPHEN

EG



Die erste Gruppierung von Ausstellungsräumen sind eine Kombination aus Sequenz- und Ringform.



Die zweite Gruppierung von Ausstellungsräumen bildet eine Sequenz von zwei Räumen, mit einem a-Raum. Die zweite Route dieser Gruppe (G bis N) endet auch in einem a-Raum (J).

Kategorie

- Ausstellung
- Zirkulation
- Zentraler Raum

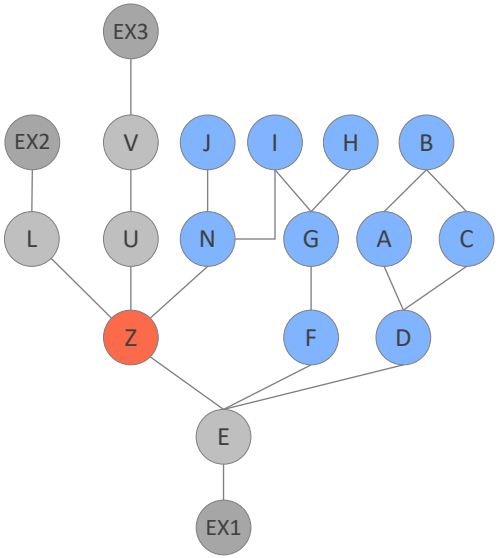
Space Syntax

DREES & SOMMER

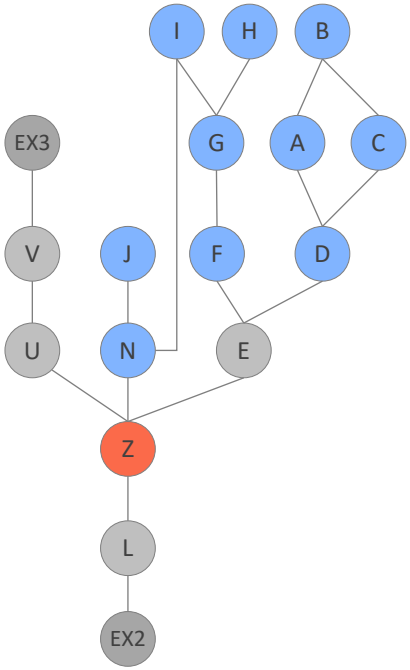
Museum des 20.Jahrhunderts Berlin

ANGEPASSTE GRAPHEN

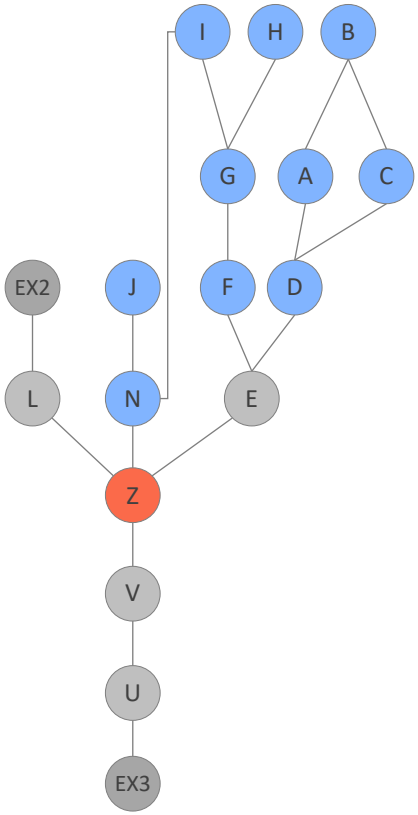
EG



Eingang 1 (EX1) schafft ein „flacheres“, mehr integriertes System. Die Ausstellungsräume können direkt über zwei Räume (F,D) und über den zentralen Raum (Z) betreten werden. Raum N ist erreichbar ohne maßgebliche Tiefe im Gebäude.



Besucher die über den Nordeingang (EX 2) das Museum betreten müssen durch den zentralen Raum in den östlichen Gang (E) um in die Ausstellungsräume (Beginn bei F oder D) zu kommen.



Der J-Graph welcher über den dritten Eingang (EX3) erreicht wird hat mehr Tiefe / ist mehr isoliert. Der Besucher muss durch zwei Räume gehen um zum zentralen Raum (Z) zu gelangen, um von dort die Ausstellungsräume zu erreichen.

Kategorie

- Ausstellung
- Zirkulation
- Zentraler Raum
- Ein- / Ausgang

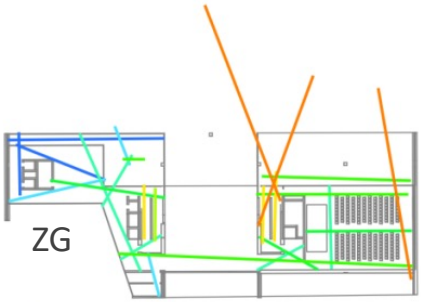
Space Syntax

DREES & SOMMER

Museum des 20.Jahrhunderts Berlin

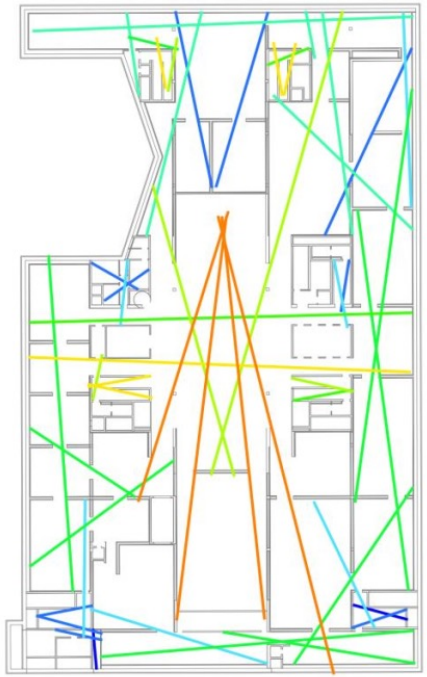
AXIALANALYSE

Alle Pläne

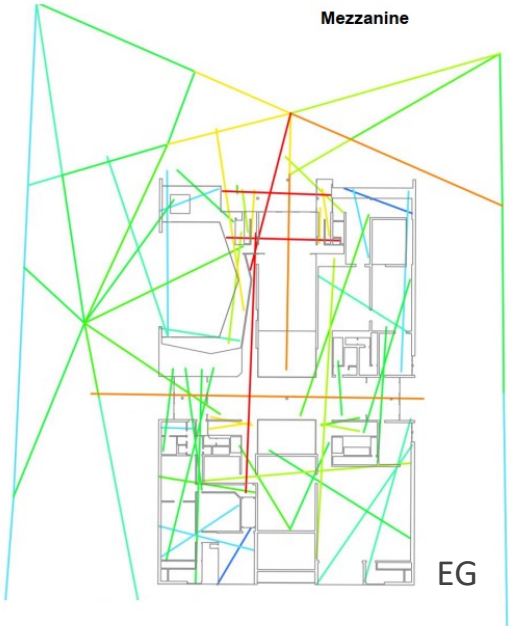


ZG

Eine der von SL verwendeten Darstellungsformen von räumlichen Anordnungen ist die „axial map“. Da Bewegungen eine fundamentale Funktion jedes Layouts ist, wird Bewegung in dieser Darstellung auf sogenannte Axiallinien (oder Sichtlinien) reduziert – die längste erreichbare Gerade auf der alle konvexen Räume liegen.



1.UG



EG

1. OG

Space Syntax

DREES & SOMMER

Museum des 20.Jahrhunderts Berlin

ERDGESCHOSS

Kategorien

Galerien · Ateliere · Durchgang
Studenten · Büros · Instandshaltung

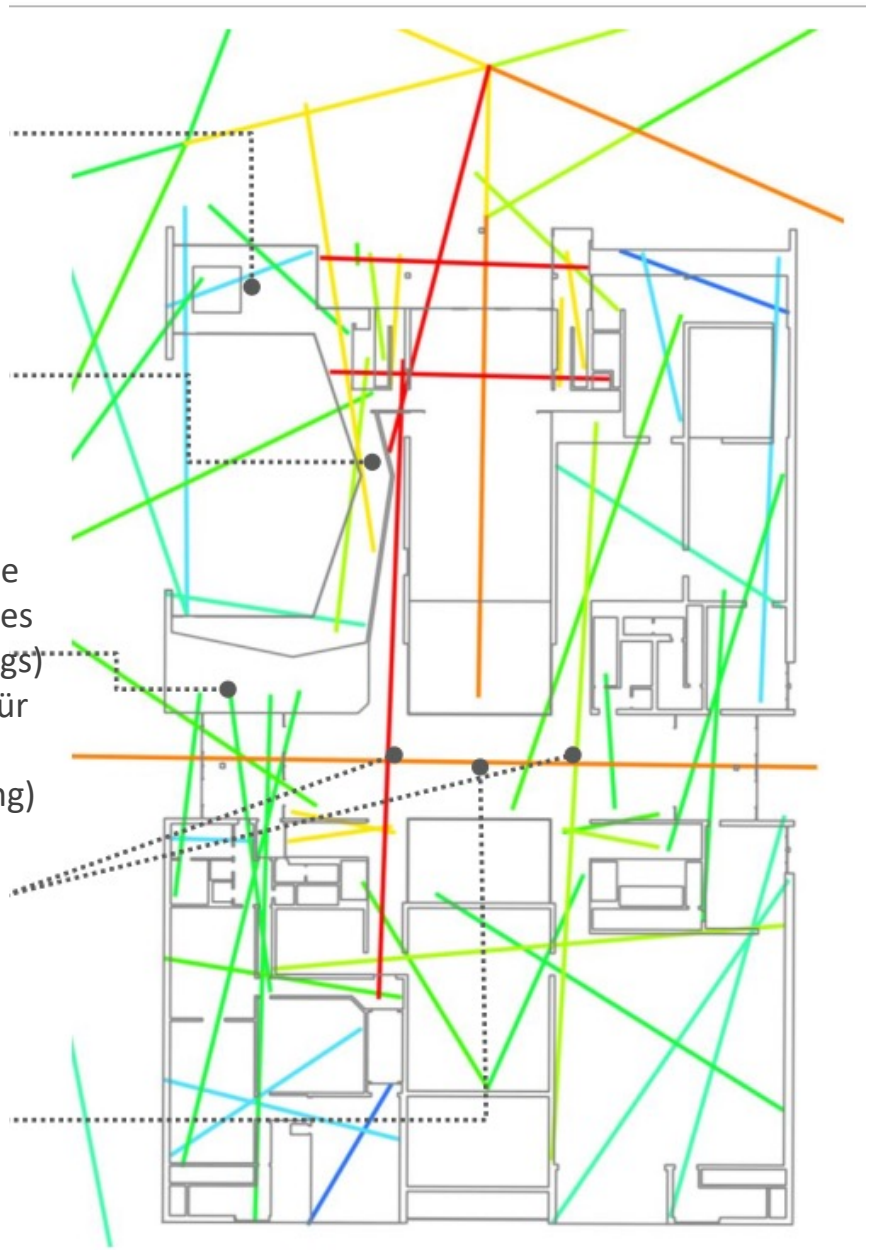
Der Museumsshop liegt dezentral, hier könnte eine andere Lage in Erwägung gezogen werden.

Dieser Raum ist die einzige Nord- Süd Verbindung, daher könnte es bei höchster Besucherdichte problematisch werden.

Basierend auf der Axialanalyse erweist sich der hintere Teil des Restaurants (dank des Eingangs) als wertvolle Positionierung für z.B. den Museumshop dank hoher Besucherfrequentierung)

Orte der Entscheidung: strategischer Ort für die Platzierung von Informationspunkten.

Sehr wichtiger Raum mit hoher Erreichbarkeit. Die Form und der Inhalt dieses Raumes sollte Bewegung nicht einschränken.



Space Syntax

DREES & SOMMER

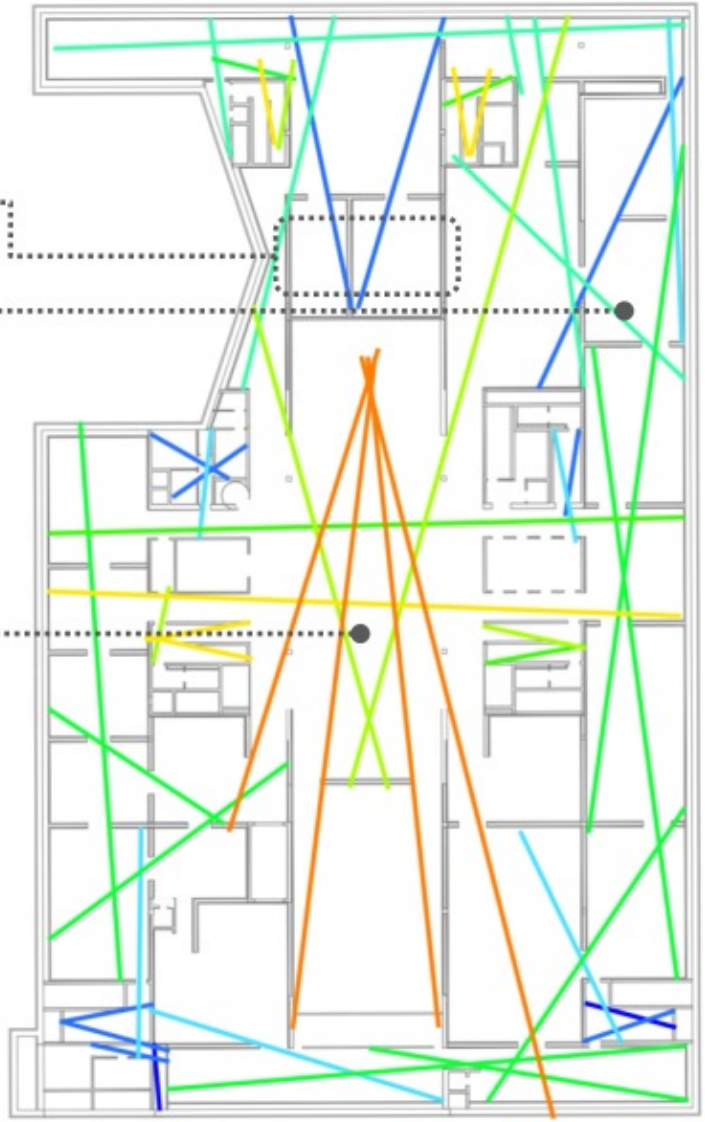
Museum des 20.Jahrhunderts Berlin

1.UG

Die Ausstellungsräume hinter der Treppe sind weniger integriert und untereinander kaum vernetzt, was die Bewegung und Orientierung zwischen den Räumen erschwert. Diese Wände könnten geöffnet werden, um einen Kreis zu bilden

Da diese Räume weniger sichtbar sind, könnten hier temporäre Ausstellungen stattfinden, da der Besucher so direkt hergeleitet wird, und die Räume dann gezielt genutzt werden.

Die am besten integrierten Teile dieses Stockwerks liegen direkt neben der Haupttreppe und in horizontaler Sichtlinie derer. Dies zeigt dass Garderobe und Kasse gut platziert sind.



Kategorien

- Galerien
- Ateliere
- Durchgang
- Studenten
- Büros
- Instandshaltung

Space Syntax

DREES & SOMMER

Museum des 20.Jahrhunderts Berlin

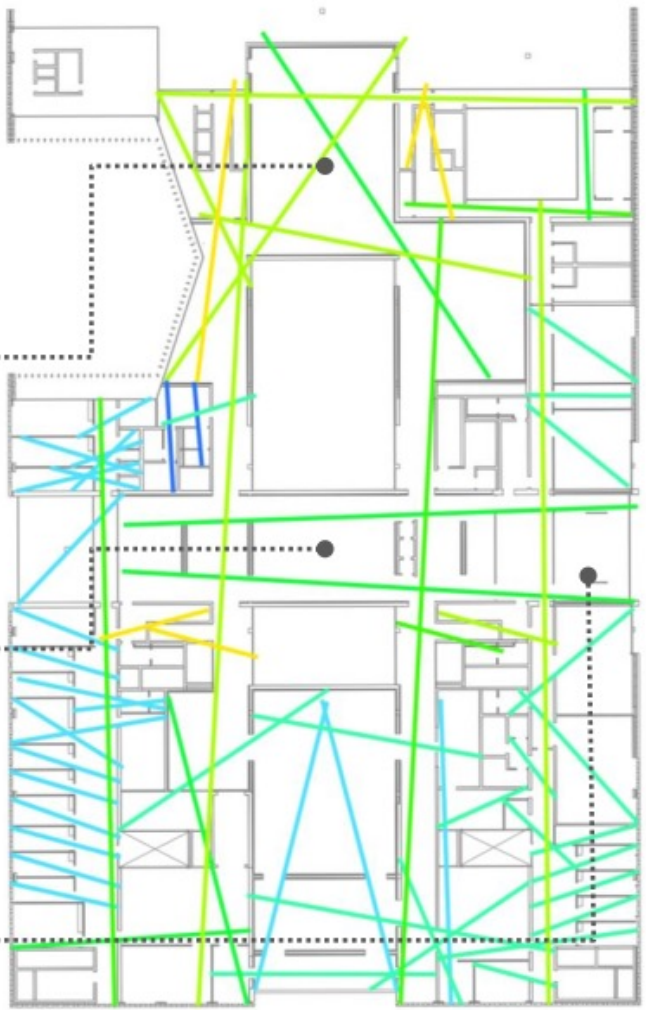
1.OG

Die „axial map“ zeigt, dass dieses Stockwerk ausgeowgen, jedoch vergleichsweise weniger gut erreichbar gestaltet ist.

Es liegt eine starke Trennung zwischen Nord und Süd vor, würde eine vertikale Öffnung den Besuchern zur Orientierung dienen?

Der zentrale Raum spielt eine Schlüsselrolle bezüglich der Vernetzung von ebendiesen vertikalen Öffnungen, um einen wichtigen Treff- und Entscheidungspunkt des Stockwerks zu bilden.

Der Studienbereich ist dank der Nähe zum Auditorium besser vernetzt als als der hintere Teil des Gebäudes, welcher der am wenigsten integrierte Teil des Stockwerks ist.



Kategorien

- Galerien
- Ateliere
- Durchgang
- Studenten
- Büros
- Instandshaltung

Space Syntax

DREES & SOMMER

Museum des 20.Jahrhunderts Berlin

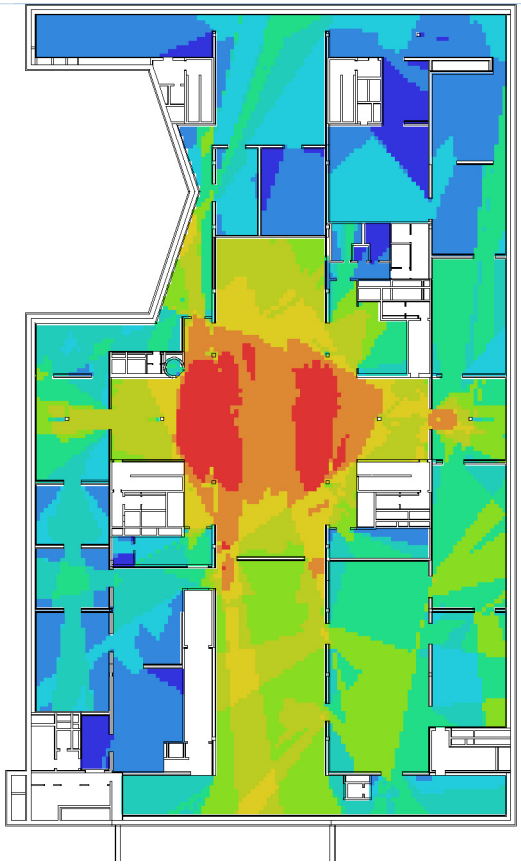
VERGLEICH PLANSTAND UND V5

Die VGA zeigt die übergreifende visuelle Beziehung der Layouts auf. Auf den ersten Blick wird erkennbar, dass Variante 5 im Vergleich zum Planstand 07.12. höhere Sichtbarkeit aufweist. Dies zeigt sich darin, dass hier mehr Fläche rot gefärbt ist.

Rot ist jedoch nicht gleich rot: Die rote Fläche eines Layouts ist verglichen mit anderen Teilen dieses Layouts besser visuell integriert – direkte Vergleiche zwischen Layouts sind nicht möglich.

Planstand

Variante V5



Die Räume im Nordbereich sowie im Südwesten sind in beiden Varianten kälter gefärbt – durch das Leitsystem oder der Platzierung besonderer Besuchermagneten (Kunst mit hoher Anziehungskraft) können Besucherströme dorthin geleitet werden. „Das Kapital“ hat einen positiven Effekt auf diesen Bereich.

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