Step 1: Determine strategic objectives

**Aim:**
To determine the organisation’s strategic objectives.

**Who:**
Individual(s) or group(s) with an understanding of the organisation and its strategic objectives.

It is advisable to have an information management expert supporting the whole methodology to help guide the process, but at this stage it is most likely that subject matter experts will be needed to identify and explain all relevant objectives.

**Description:**
Determine the strategic objectives that the organisation aspires to achieve. These strategic objectives influence decision-making across the organisation and require information to inform this.

Organisations typically have multiple strategic objectives. These may include targets and performance measures to help monitor and understand performance in relation to desired overall outcomes. Additionally, organisations will usually need to fulfil a range of legislative and regulatory requirements which require information and documentation to demonstrate compliance.

These strategic objectives, targets and legislative or regulatory requirements are typically described at too high a level to be able to develop and agree clear information purposes. However, they may form the basis for organisational information requirements (OIRs: ‘information needed by an organisation in order to satisfy its business objectives’). Therefore, the SIA methodology seeks to establish what information purposes support what strategic objectives, targets and performance measures. The information purposes so identified can then be used to develop a consistent and detailed set of OIRs, which can subsequently cascade and be filtered appropriately into AIRs, PIRs and EIRs, and still be tracked back to the information purposes.

**Hints:**
- Strategic objectives are often directly connected to the organisation's stated vision or mission and may be contained in related strategic direction documents.
- Organisations may include directives in business policies, plans and procedures to deliver their overall vision, mission, and strategic outcomes or objectives. Strategic objectives may also be found within organisational or departmental policies, plans and procedures – for example, in the organisation’s Asset Management Plan.
- To begin with, it will be easier to start with one strategic objective and work through the methodology focusing just on this.
- For ease of understanding and cross-referencing later in the methodology, it is advisable to assign unique identifiers to each of the objectives, and subsequent purposes (for example, in the demonstrator workbook image below, the strategic objectives are numbered SO 01, SO 02, etc).

**Key Questions:**
- What are your strategic objectives?
- What information might be needed to show achievement of the objectives?
- Which strategic objective(s) do you want to take through the SIA methodology and why? Are they ones that are most important to you, or are they the easiest examples to start with?

(Further information on Information Requirements may be found at ISO 19650 Guidance D: Developing information requirements (notion.site).)
**Step 1: Fire Safety Information Demonstrator**

**Strategic Objective:** To run and operate a safe and compliant estate

**Capability Grouping:** Safety

**Capability area:** Fire Safety

**Business Requirement:** Our estate shall include fire safety considerations within planning, design and delivery of asset

**Information purpose:** Design Gateway Assurance against client Fire Safety requirements

---

**Example from the Fire Safety Information Demonstrator Workbook:**

- **Ribbon diagram of the demonstrator**

---

**Standard Info. Approach: Fire Safety Information Demonstrator**

**Run & operate a safe and compliant estate | Safety | Fire Safety**

**Information purposes:**

- Compliance with Building Regulation
- Fire alarm and detection specification
- Fire suppression specification
- Cellular cables and cabling schedule
- Evacuation route and egress assistance
- Entry and exit clearances
- Appliance for safety information
- Flood protection and safety information
- Access to building evacuation plan
- Structural design and construction
- Fire safety management structure, SMS, and responsibilities
- Keyholder in each building section: organisational for fire safety
- Information required by Principal Designer or Undertaker PPR
- Organisations, fire safety managers
- Fire safety manual
- Building evacuation plan
- Building fire safety risk assessment
- Business continuity, property protection: asset management requirements: fire safety
- Heating system: risk assessment: organisation maintenance and operation
- Location of external intumescent
- Location fire detection
- Grouping characteristics (occupancy, distribution, etc.)
- Organisation membrane seal design procedures for fire safety
- Provision of hydrant main access

---

**Step 1: Determine strategic objectives**

**Org. information: requirements**
Step 2: Identify organisation capability grouping

**Aim:**
To break down the strategic objectives, directives and plans and identify the relevant organisation departments, operations, functions (capability groupings)\(^2\) that deliver, or contribute to delivery of, the objectives.

Examples of capability groupings:

<table>
<thead>
<tr>
<th>Strategic</th>
<th>Core (Customer Facing)</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Strategic Finance</td>
<td>9. etc</td>
<td>13. IT Support</td>
</tr>
<tr>
<td>5. etc</td>
<td>14. etc</td>
<td></td>
</tr>
</tbody>
</table>

**Who:**
Individual(s) or group(s) with an understanding of the organisation and the way in which it is structured or organised from a business perspective to deliver its strategic objectives.

**Description:**
Identify the capability grouping(s) relevant to a specific strategic objective. This will help identify the people who can describe activities, tasks and decisions which will require information, and what that information should be. It will also allow for information purposes and requirements which relate to a particular grouping to be grouped together. This can be useful in identifying information sets which can be specified and then delivered in a consistent manner. The next step will be to break the grouping down into capability areas (see Step 3).

**Hints:**
- A capability is ‘what’ the business or perhaps what a department or team does.
- Start with just one capability grouping (a department or team) and work through the methodology focusing just on this.

**Key Questions:**
- What groups, departments or teams are relevant to this strategic objective?
- Which groups, departments or teams do you want to take through the SIA methodology?

---

\(^2\) Capability grouping: the department or functional team that delivers, or contributes to delivery of, a particular strategic objective.
Step 3: Determine the capability areas

Aim:
From the organisation’s capability groupings (they may be departments or teams), identify the relevant capability areas\(^3\) within a grouping.

Who:
At this point, the roles/disciplines/subject matter experts should consider who is relevant and should have a relevant input in identifying the areas within each capability grouping.

Description:
Organisation capability groupings are high-level and can span from policy, through strategic asset management to IT (information technology) support. To be able to identify the uses and needs for information, it is important to understand the end user of that information. A wide range of capability areas may be packed into one strategic objective. It is important that information is delivered which is appropriate to the discipline and level of skill of the information consumer. This step enables this important link to be made.

Hints:
- As with the capability groupings, capability areas can also be derived from organisation/business policies, plans and procedures.
- Capability areas may differ from organisation to organisation.

Key Questions:
- For the capability grouping under examination, what are the capability areas?
- Is there a particular order or priority of the capability areas to be tackled?

---

\(^3\) Capability area: within a capability grouping, ‘what’ the department, group or functional team does to deliver, or contribute to delivery of, a particular strategic objective.
Example from the Fire Safety Information Demonstrator Workbook:

- **Step 1: Determine Strategic Objectives**
- **Step 2: Identify Organisation’s Capability Groupings**
- **Step 3: Determine Organisation’s Capability Areas**

Illustration of how the ribbon diagram builds up using the Demonstrator for two of the strategic objectives:

a. Run and operate a safe and compliant estate
b. Ensure sustainability and performance are enhanced across the estate

Ribbon diagram of the demonstrator
Step 4: Identify user and business requirements

Aim:
To determine the reasons users need information, and from this to identify the business requirement for information which can ultimately be connected back to the organisation’s strategic objectives.

Who:
The subject matter experts and the end-users of the information to be defined (examples are provided in the fire safety example below).

Description:
Following identification of the capability areas (Step 3), it becomes possible to identify the relevant subject matter experts who help define the purposes that need information and the end-users of that information. There are two steps to capturing user and business requirements:

a. Undertake discovery sessions with the relevant subject matter experts/users for each capability area to determine:
   - their role
   - how they do what they do
   - their true goals, needs, and success criteria for achieving the desired outcomes
   - their pain points.

b. Following the user discovery sessions, define the business requirements6. The aim should be to frame them as formal statements of intent which clearly relate to the relevant strategic objective.

Hints:
- One approach to this step would be to employ agile methodologies that help achieve a structured process of eliciting user requirements.
- Subject matter experts consulted as part of these user discovery sessions will help refine the capability areas (Step 3) that sit underneath a capability grouping (Step 2).
- User requirements help determine the business requirements relevant to the capability area.

Key Questions:
- What is your role – where does it sit within the organisation and how does it relate to the organisation’s strategic objectives?
- How do you deliver your role?
- What does your job entail – can you describe the main goals, your needs and the success criteria that help you to know you have achieved them?
- What are the sorts of things which make your job difficult?
- What decisions do you have to make, and what information do you use to inform them?

6 Business requirements describe why an activity, task or process is needed, whom it will benefit, when and where it will take place, and what standards will be used to evaluate it.
Step 1: Determine Strategic Objectives

Step 2: Identify Organisation’s Capability Groupings

Step 3: Determine Organisation’s Capability Areas

Step 4: Identify User and Business requirements

Examples include:

Step 5: Capture information purposes

Aim:
To identify and record information purposes, ensuring that the connection back to the relevant strategic objective(s) is retained.

Who:
The subject matter experts and the end-users of the information to be defined.

Description:
It is important that information purposes are broken down or decomposed as much as possible so that each one can be associated with a specific task, activity or process.

Hints:
• Once the business requirements have been determined (Step 4), consider the context – the relevant trigger event\(^5\) - to help narrow down the information purposes.
• For each information purpose, consider whether it could be broken down further. Look at this from both an information and a business perspective.
• For ease of understanding and cross-referencing later in the methodology, it is advisable to assign unique identifiers to each of the information purposes as illustrated in the demonstrator workbook below.
• It can be useful to apply an input and output approach, i.e. what input data is required to undertake the task/activity/process, and what output data/information will be provided from undertaking the task/activity/process?

Note that one activity’s output may be another activity’s input.

Trigger event: A planned or unplanned event that changes an asset or its status during its life cycle, which results in information exchange (ISO 19650-1:2018 3.2.13).

Key Questions:
• What decisions do you have to make, and what information do you use to inform them?
• What is the context – what is the trigger event which requires that decision?
STEP 5: Fire Safety Information Demonstrator

<table>
<thead>
<tr>
<th>Strategic Objective:</th>
<th>To run and operate a safe and compliant estate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capability Grouping:</td>
<td>Safety</td>
</tr>
<tr>
<td>Capability area:</td>
<td>Fire Safety</td>
</tr>
<tr>
<td>Business Requirement:</td>
<td>Our estate shall include fire safety considerations within planning, design and delivery of asset</td>
</tr>
<tr>
<td>Information purpose:</td>
<td>Design Gateway Assurance against client Fire Safety requirements</td>
</tr>
</tbody>
</table>

Further examples include:

- Fire safety Information to support Planning permission
- Information required by Principal Designer
- Compliance with Building Regulation
- Information required by authority having jurisdiction
- Operations Fire Risk management
- Fire safety requirements for the space management system
- Fire safety requirements for CAFM (Computer Aided Facilities Management) set up
Step 6: Identify any functional requirements, plain language questions, key performance indicators

Aim:
To establish if there are any functional requirements\(^6\), plain language questions\(^7\) or key performance indicators (KPIs)\(^8\) which are associated with an information purpose.

Who:
The subject matter experts and the end-users of the information to be defined.

Description:
In some instances, the information purposes may require further breaking down by considering elements such as functional requirements associated with a client Fire Safety Requirement. Plain Language Questions may need to be addressed to move from one gateway to another. There may be Key Performance Indicators (KPIs) which need to be measured for the relevant information purposes. However, it is possible that where information purposes have been sufficiently broken down, Step 6 may not be required. An example would be compliance with building regulation from a fire safety perspective.

Hints:
- Break down or decompose information purposes as far as possible.
- Before getting too concerned about this step, assess whether it is required.
- For example, KPIs outlined within a maintenance contract or PLQs that need to be answered to move from one gateway to another.

Key Questions:
- Does this information purpose have any functional requirements behind it?
- Are there any plain language questions which will need to be addressed for this information purpose across gateways?
- Are there any KPIs which need to be measured for this information purpose?

---

\(^6\) Functional requirement: a statement of how a system must behave. It defines what the system should do in order to meet the user’s needs or expectations.

\(^7\) Plain language question: A request for information that is expressed in simple, easy to understand terms.

\(^8\) Key performance indicator: quantifiable measure that an organisation uses to gauge or compare performance in terms of meeting its strategic and operational objectives.
Step 7: Establish the target for which information is required and managed

**Aim:**
To establish the specific target for which information is required and managed.

**Who:**
The subject matter experts and the end-users of the information to be defined.

**Description:**
This is normally a quite straightforward step to progress. Previous steps have:
- broken down the information purpose so that it refers to a single activity, task, or process;
- identified the trigger event;
- identified any functional requirement, plain language question or KPI.

This step defines the specific target for which the information is required and will be (or is being) managed.

**Hints:**
- A functional requirement, plain language question or KPI may require information for e.g. a built asset, a space, component, landscape unit

**Key Questions:**
- What is the specific target for which this information is required and managed?
Step 8: Define information requirements

Aim:
To clearly define how the purpose of the information is served.

Who:
As well as the subject matter experts and end-users, it is at this point that the methodology needs to focus on information management skills.

Description:
Once the target for which information is managed has been identified, it is important to define what information is required, when this information is first available, who is responsible for providing it and how this information will be delivered.

Hints:
- It is not unusual for information requirements to serve numerous information purposes.
- Remember, however, to keep the link with each information purpose and the mapping back to the strategic objective it serves.
- End users can select the information requirements that are relevant to each appointment and feature it within an EIR9.
- Information requirements can also be filtered on an asset level.

Key Questions:
- What information is required?
- How should the information be provided?
- When should the information be provided?
- Who is the information provided for?
- How does this information track back to its purpose and ultimately the strategic objective – has this been recorded?

---

1 Further information on developing information requirements may be found at ISO 19650 Guidance D: Developing information requirements (notion.site)

10 The IMP is a process and technology suite that enables the secure specification, procurement, assurance, storage, presentation and exploitation of information, whether data or information is obtained internally or from third parties, to maximise value in the creation, maintenance, use and disposal of a client’s assets. Refer to “GIIG IMP Guidance Document”.
## Step 8: Fire Safety Information Demonstrator

### Strategic Objective:
To run and operate a safe and compliant estate

### Capability Grouping:
Safety

### Capability area:
Fire Safety

### Business Requirement:
Our estate shall include fire safety considerations within planning, design and delivery of asset

### Trigger Event:
New Build

### Information purpose:
Design Gateway Assurance against client Fire Safety requirements

### Functional Requirements:
Provide specification and drawing for key fire safety assets

<table>
<thead>
<tr>
<th>Target for which information is</th>
<th>Information Requirements</th>
<th>Data Type</th>
<th>Information Exchange</th>
<th>Information provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Alarm</td>
<td>Fire alarm and detection specification</td>
<td>Unstructured data</td>
<td>Detail Design</td>
<td>Lead appointed Party</td>
</tr>
<tr>
<td>Fire Suppression</td>
<td>Fire suppression specification</td>
<td>Unstructured data</td>
<td>Detail Design</td>
<td>Lead appointed Party</td>
</tr>
<tr>
<td>Smoke Control</td>
<td>Smoke control specification</td>
<td>Unstructured data</td>
<td>Detail Design</td>
<td>Lead appointed Party</td>
</tr>
<tr>
<td>Internal walls</td>
<td>Fire resistance</td>
<td>Structured data</td>
<td>Detail Design</td>
<td>Lead appointed Party</td>
</tr>
<tr>
<td>Zone</td>
<td>Zone Identifier</td>
<td>Geometrical</td>
<td>Detail Design</td>
<td>Lead appointed Party</td>
</tr>
<tr>
<td>Space</td>
<td>Space height</td>
<td>Structured data</td>
<td>Detail Design</td>
<td>Lead appointed Party</td>
</tr>
<tr>
<td>Lift</td>
<td>Lift specification</td>
<td>Unstructured data</td>
<td>Detail Design</td>
<td>Lead appointed Party</td>
</tr>
</tbody>
</table>

### Diagram:
Ribbon diagram of the demonstrator

---

**Step 8: Define information requirements**

### Standard Info. Approach: Fire Safety Information Demonstrator

Run & operate a safe and compliant estate

### SIA METHODOLOGY REPORT

**Org. information requirements**

<table>
<thead>
<tr>
<th>Requirement ID</th>
<th>Information Requirements</th>
<th>Data Type</th>
<th>Format</th>
<th>Information exchange</th>
<th>Information provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>F8008</td>
<td>Provide specification and drawing for key fire safety assets</td>
<td>Fire Alarm</td>
<td>Fire alarm and detection specification</td>
<td>Unstructured</td>
<td>PDF Report</td>
</tr>
<tr>
<td>F8003</td>
<td>Provide specification and drawing for key fire safety assets</td>
<td>Fire Suppression</td>
<td>Fire suppression specification</td>
<td>Unstructured</td>
<td>PDF Report</td>
</tr>
<tr>
<td>F8002</td>
<td>Provide specification and drawing for key fire safety assets</td>
<td>Smoke Control</td>
<td>Smoke control specification</td>
<td>Unstructured</td>
<td>PDF Report</td>
</tr>
<tr>
<td>F8001</td>
<td>Provide specification and drawing for key fire safety assets</td>
<td>Lift</td>
<td>Lift specification</td>
<td>Unstructured</td>
<td>PDF Report</td>
</tr>
<tr>
<td>F8006</td>
<td>Raw data: fire and fire resistance performance</td>
<td>Fire resistance</td>
<td>Unstructured</td>
<td>Unstructured</td>
<td>PDF Report</td>
</tr>
<tr>
<td>F8005</td>
<td>Zoning of fire alarm shall be clearly identified</td>
<td>Space</td>
<td>Space identifier</td>
<td>Structured</td>
<td>InfoExchange</td>
</tr>
<tr>
<td>F8004</td>
<td>Zoning of fire alarm shall be clearly identified</td>
<td>Space</td>
<td>Space identifier</td>
<td>Structured</td>
<td>InfoExchange</td>
</tr>
<tr>
<td>F8003</td>
<td>Zoning of fire alarm shall be clearly identified</td>
<td>Space</td>
<td>Space identifier</td>
<td>Structured</td>
<td>InfoExchange</td>
</tr>
<tr>
<td>F8000</td>
<td>Zoning of fire alarm shall be clearly identified</td>
<td>Space</td>
<td>Space identifier</td>
<td>Structured</td>
<td>InfoExchange</td>
</tr>
</tbody>
</table>

---

**Ribbon diagram of the demonstrator**
Formatting the information requirements

Once the information requirement has been identified in Step 8, the next task is to describe how the detailed information requirements are to be delivered. At this stage it is necessary to draw on existing approaches provided by the IMP (Information Management Platform), Uniclass and IFC (Industry Foundation Classes). A high-level summary of the characteristics which should be considered is provided in the table below. The SIA methodology gives the means to tie each detailed information requirement back to its specific information purpose(s) and strategic objectives, whilst Uniclass, IFC and the IMP provide the means to deliver it.

### Description of Information provided

<table>
<thead>
<tr>
<th>Identification</th>
<th>Description</th>
<th>Classification</th>
<th>Status</th>
<th>Location/Spatial</th>
<th>Dates and Times</th>
<th>Relationships</th>
<th>Dimensions</th>
<th>Ratings</th>
<th>Assessment</th>
<th>Stakeholders</th>
<th>Financial</th>
</tr>
</thead>
</table>

The information requested may be one of three generic types, each of which has distinct characteristics:

- **Alphanumeric fields** that may be dates, numbers, text, or selectable values and will typically be stored in a single database field;
- **Geometric information** relates to three dimensional objects or 2D spatial extents that will be stored, viewed, and manipulated in dedicated design or GIS (Geographic Information Systems) tools.
- **Documentation typically containing narrative text and supporting metadata stored in a particular format and intended to be read by individual(s), and**

### Define Information Type and Format

**Alphanumeric fields**

- **Identification**: typically containing text data, such as names, codes, or numbers that identify an object or event.
- **Description**: narrative text that describes the object or event.
- **Classification**: category or type of the object or event.
- **Status**: current condition or state of the object or event.
- **Location/Spatial**: geographical coordinates or spatial extent.
- **Dates and Times**: dates and times related to the object or event.
- **Relationships**: connections or associations between objects or events.
- **Dimensions**: physical dimensions of the object or event.
- **Ratings**: subjective or quantitative assessments.
- **Assessment**: formal or informal evaluation.
- **Stakeholders**: individuals or groups with an interest.
- **Financial**: monetary values or financial data.

### Information delivery specification (IDS)

- **Geometric information** relates to three dimensional objects or 2D spatial extents that will be stored, viewed, and manipulated in dedicated design or GIS (Geographic Information Systems) tools.

Appendix one: Definitions

For established definitions of terms used by the GIIG, please refer to the GIIG Glossary. For ease of reference, key terms relating to the SIA are briefly defined below.

**Asset information requirements (AIR):** Information requirements relating to managerial, commercial and technical aspects of asset operation – GIIG definition based on ISO 19650-1:2018 3.3. AIR set out managerial, commercial and technical aspects of producing asset information.

**Business requirement**: describes why an activity, task or process is needed, whom it will benefit, when and where it will take place, and what standards will be used to evaluate it.

**Capability area**: within a capability grouping, ‘what’ the department, group or functional team does to deliver, or contribute to delivery of, a particular strategic objective.

**Capability grouping**: the department, group or functional team that delivers, or contributes to delivery of, a particular strategic objective.

**Decomposition**: breaking of a complex problem or system into smaller parts that are more manageable and easier to understand (ISO 9241-220:2019, 3.3)

**Exchange information requirements (EIR)**: Requirements relating to an appointment, concerning the production of project or asset information – GIIG definition based on ISO 19650-1:2018 3.3.6.

**Functional requirement**: a statement of how a system must behave. It defines what the system should do in order to meet the user’s needs or expectations.

**Information delivery specification (IDS)**: A computer-interpretable document that defines the exchange information requirements of model based exchange.

**Information purpose(s)**: the purpose(s) for which data or information is created or for which that data or information exists – the process, activity or task it will help to address.

**Information requirement**: the specification for what, when, how and for whom information is produced: ISO 19650-1:2018 3.3.2

**Key performance indicator**: quantifiable measure that an organisation uses to gauge or compare performance in terms of meeting its strategic and operational objectives.

**Organisational information requirement (OIR)**: The information needed by an organisation in order to satisfy its business objectives - GIIG definition based on ISO 19650-1:2018 3.3.3.

**Plain language question**: a request for information that is expressed in simple, easy to understand terms.

**Project information requirement (PIR)**: Information requirements in relation to the delivery of a defined project – as defined ISO 19650-1:2018 3.3.5.

**Reference Data Library**: a curated and securely accessible collection of reference data standards and data sets (externally or internally authored) required to be used for built environment information management throughout an organisation, including by its authorised external supplier partners.

**Schema**: an organisational pattern or structure describing categories of information and the relationships among them.

**SME**: Subject matter expert: someone with the capability to ensure the facts and details in an area of expertise are valid.

**Trigger event**: a planned or unplanned event that changes an asset or its status during its life cycle, which results in information exchange (ISO 19650-1:2018 3.2.13).

**Use case**: the description of an information use for a specific purpose by one or more actors and/or systems (ISO 29481-3).
Acknowledgements

The following have been consulted on, and contributed to, the development of this methodology. However, these organisations should not be seen to have endorsed the SIA methodology.

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Environment Agency
Faithful+Gould
GIIG
Government Property Agency, Government Property OGP
N G Bailey
National Highways
National Physical Laboratory
Nima (formerly the UK BIM Alliance)/ buildingSMART
Rolls Royce
Scottish Futures Trust