

# The strategic innovation programme Smart Built Environment announces call for proposals

## Digitalisation and industrialisation for a sustainable built environment

**Smart Built Environment** is part of a collaborative initiative in strategic innovation programmes by **Vinnova**, the **Swedish Energy Agency** and **Formas**. The programme has recently been granted funding for its second three-year period, and this is the first call in the second period. The purpose of the strategic innovation programmes is to foster international competitiveness and sustainable solutions for global societal challenges. Read more about strategic innovation programmes on the [Formas website](#).

For more information about this programme, visit the [Smart Built Environment website](#).



**Revision history**

Any changes to the call text are listed below.

<b>Date</b>	<b>Change</b>

## 1 The call in brief

The digital transformation taking place in the built environment sector is in full swing. Intensive efforts are underway to develop standards, tools and processes and to test solutions on small and large scales alike. Within Smart Built Environment, over 80 projects were launched during the first programme period and several of them have been completed. Several of the projects have identified issues and opportunities for continued development, and some of these ideas have been realised in new innovation projects. As a result of this development we also see that new roles and services will evolve, highlighting the need for new or enhanced business models. These developments are taking place across the value chain and among all stakeholders in the built environment sector.

Digitalisation and industrialised construction within the built environment will open up brand new ways to conduct more complex analyses, to enable decision-making with the use of more parameters and to leverage completely new technical solutions. This will enable the sector to better manage several relatively complex challenges, such as reducing climate impact, increasing resource efficiency and creating safe and secure habitats. It is crucial for this evolution to take place in all parts of the built environment process together with stakeholders. Digitalisation of the entire process is being held back today by the limited responsibility that the stakeholders have for their own (relatively) small deliverables in the process. This will only result in minor improvements instead of the disruptive effects needed for a digital transformation. Incentives are needed for all stakeholders in the chain so that together they can transform the entire process and benefit from the opportunities that digitalisation brings. One example is the demand for intelligent models that swiftly provide the information requested.

The strategic innovation programme Smart Built Environment is now announcing grants for continued digitalisation and industrialised construction for a sustainable built environment. The purpose of this call is to enable larger and longer projects within the programme that can accelerate the pace of digital transformation, through activities involving stakeholders across the value chain. Its goal is to increase knowledge in the sector, attracting new entrants such as municipalities or stakeholders from other sectors. We also welcome start-ups and other innovation-driven players. The programme also aims to increase the pace of development of innovative processes and application of results. We are keen to see a high degree of innovation that goes beyond incremental development.

The call provides funding of approximately 30 million kronor and requires project co-funding of at least 50 percent of project costs. We welcome projects that request from 500,000 to 4 million kronor in project grants. The projects can be started immediately following a grant award and can run for a maximum of 3 years.

Formas has developed its application process and associated system support for this call. Please read the instructions carefully, even if you have previously applied for a Smart Built Environment grant.

**The following dates apply for this call**

Please note that all dates are preliminary. For the latest information, see [the call's website](#).

<b>Opening date</b>	<b>18 February 2019</b>
<b>Application deadline</b>	<b>29 April 2019, 14:00 CET</b>
<b>Decision date</b>	<b>Around 20 June 2019</b>
<b>Project start no earlier than</b>	<b>1 July 2019</b>

**Questions about the background, purpose and desired effects of the call:**

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**Questions about how to apply, the assessment process, state aid and the Prisma application system:**

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## 2 Goal of the call

### 2.1 Background

Smart Built Environment has now entered its second programme period. After its first three-year period, the programme is considered to be established. In the upcoming programme period, further steps will be taken to achieve the programme's overarching objectives and impacts for a more resource-efficient built environment through digitalisation.

Both within and outside the programme, digitalisation and industrialised construction are advancing at a rapid pace. The results of completed activities and projects and the ongoing programme activities, together with developments abroad, have contributed to the design of future activities.

The programme has now been restructured from eight focus areas into four broader themes. For this first call within the second programme period, we would like to explore these new themes. We want to be an enabler of unexpected outcomes, where daring leaps are taken to develop the built environment sector. To bring about real change in the sector, at both the individual and the organisational level, we particularly welcome applications that address the application of technical solutions or explore innovative work approaches and formats (see also Chapter 4). We also gladly welcome new entrants to the programme's activities and projects, such as start-ups, municipalities and stakeholders from other sectors.

### 2.2 Themes

#### **Innovations and new applications**

Through this call, we aim to stimulate ideas and initiatives that can develop into innovations and new applications of products, services or processes within the built environment. Within this theme, focus is placed on breaking ingrained patterns and work methods and discovering new solutions. We gladly accept applications that challenge these patterns and contain disruptive elements. Examples in this theme include projects that test previously identified standards in combinations with a view to create continuous digital information flows.

#### **Value chains and business models**

Value chains, incentives, and business and operational models are interrelated and must be studied and developed in order to harness the power of digitalisation and industrialised construction. This theme also addresses questions about stakeholder roles, skills, work methods and the organisation of projects and processes. This also relates to issues of public procurement and contract law within the "Information infrastructure" theme. Here, we gladly accept applications that involve value chains with practical application in the built environment sector and that include stakeholders from the entire value chain. We would like to receive

applications that identify and develop new competencies or new forms of collaboration.

### **Information infrastructure**

This theme concerns the common infrastructure that the sector needs for digital and industrial development. It includes standardisation of the exchange and integration of information in smart built processes, including lifecycle information structures as well as issues of data accessibility and data ownership. The theme also includes legal issues related to property restructuring, detailed zoning plans and building permits, as well as procurement and contract forms for the optimal use of digitalisation. Continued strategic investments will also be made in this area, but we gladly accept applications that, for example, involve testing of identified standards in a real-world environment.

### **Knowledge and skills**

Harnessing the power of digital transformation in both the private and the public sectors requires a knowledge leap on several levels. This theme should contribute to raising awareness and building knowledge at private companies and public organisations, both at the management level and in daily operations. The theme also relates to how we can create and make use of new knowledge. In this area, we gladly receive applications that involve literature reviews and syntheses that can provide input for further testing in business operations or contribute to educational efforts. We would like to see skills improvement initiatives in addition to purely educational efforts, such as support for small and medium-sized enterprises to digitalise their businesses.

## **3 Who can apply?**

The call is targeted to consortia of organisations, such as private companies, public-sector organisations, universities and research institutes. At least two parties must participate in the application. The project manager can come from a private company, the public sector, academia or an institute, but at least one of the participating parties must come from either a private company *or* a public-sector organisation.

We gladly accept applications from either established players or new entrants in the sector. For example, we welcome start-ups within digitalisation and public-sector test beds such as municipalities.

Project participants from outside Sweden are welcome to contribute their time or other resources as a project co-funder. International project participants can also receive a limited part of the grant, according to the research funder's rules. However, participants outside Sweden may not be project managers.

Smart Built Environment and Formas strive for an equitable, gender-equal and inclusive built environment. This means that applicants should design the project so that its results can benefit a diverse group of people and should consider the

gender distribution and different backgrounds of project members. Applicants should also consider the distribution of power and influence within the project.

## 4 What can you apply for?

### 4.1 Activities eligible for funding

In this call, we would like to see different forms of work methods and tools used to implement the project. The following list contains examples of such tools. Applications may combine several different tools.

- **Research and development projects**  
Projects containing different levels of research and innovation, such as Ph.D. students or post-docs, or the development of research results for increased commercialisation.
- **Test beds and demonstrations**  
Examples include the creation of test bed environments – virtual or physical – and demonstrations of the results from research and development projects, such as results from previous projects within the programme.
- **Implementation and educational initiatives**  
Here, we would like to see new ideas about awareness-raising and knowledge-building, as well as activities that reach out to the many stakeholders and businesses in the built environment sector. The project should preferably complement traditional education.
- **Literature reviews and syntheses of completed projects**  
Activities that complement the overall syntheses that are part of Smart Built Environment's coordination efforts. This can include results from two or more implemented projects, or a synthesis between projects in the programme and other initiatives.
- **Competitions and hackathons**  
Various forms of innovative competitions aiming to achieve disruptive innovations and increase the appeal of the built environment sector. Implementation of hackathons and crowd learning events are some examples of such activities.
- **Other new forms of collaboration**  
The use of different forms of collaboration that increase the possibility to benefit from digitalisation in the sector.

## 4.2 Project period

The project must run for a minimum of 12 months and a maximum of 36 months. Projects can start on 1 July 2019 at the earliest and 1 December 2019 at the latest. Projects must be completed by 30 November 2022.

Project grants may be used up to three months after the scheduled project end date. In addition, the project duration can be extended if there are special circumstances that are approved by the project manager and administrating organisation, such as sickness or parental leave.

After the availability period for the grant is over, the project manager has an additional month to submit a financial and scientific report. The manager must use a template provided by Formas to create this report. For projects longer than 12 months, Formas will also request a financial progress report halfway through the project period.

## 5 How much can you apply for?

### 5.1 Funding amount under the call

Under this call, Smart Built Environment has allocated programme funding of approximately 30 million kronor. Applicants can apply for grants between 500,000 and 4 million kronor.

### 5.2 Funding types

There are four types of funding an applicant can specify in the application:

1. **Requested grant from Formas:** Indicates the amount requested from Formas within the framework of Smart Built Environment.
2. **Other aid (public):** Indicates any funding received from other public funders towards implementing the project.
3. **Other aid (private):** Indicates any funding received from other private funders towards implementing the project.
4. **Self-funding:** Indicates the project parties' own contributions in terms of time, money and other resources.

Requested grants from Formas may constitute a maximum of 50 percent of the total project budget. If other aid from public funders is included in the project budget, this aid together with the requested grant may constitute a maximum of 50 percent of the total project budget.

Self-funding and other aid from private funders together constitute the project's co-funding. This portion should amount to at least 50 percent of the total project budget. Project parties from the public sector who provide self-funding can be included in the co-funding. Contact Formas if you are unsure about what counts as co-funding (see the contact details in Chapter 1).

The project consortium may itself determine how to distribute the grants, costs and co-funding levels as long as the project as a whole is co-funded to at least 50 percent and complies with state aid regulations (see Section 5.3). A participating project party can thus (1) only apply for grants from Formas, (2) only contribute self-funding, or (3) apply for a grant *and* provide self-funding.

Funding for other aid (public or private) and self-funding must be secured when the application is submitted under this call.

See Section 9.3 for budget instructions.

### 5.3 State aid

Private companies and other organisations engaged in economic activity that want to apply for grants from Formas must follow specific regulations on state aid. The regulations are based on the principle of EU law, which states that aid to private enterprises normally distorts competition but that certain exemptions are allowed.

The aid intensity that Formas can offer depends on the size of the organisation and the type of activities in the project. The organisation's size is assessed using the EU definition of small and medium-sized enterprises. Activities will be primarily assessed on the basis of industrial research, experimental development or aid for process innovation or organisational innovation.

In addition, de minimis aid can also be a possible basis for granting aid. For projects in which this might be the case, Formas will ask the applicant to fill in a special form after the project is awarded funding.

The [Formas website](#) contains more information about state aid. Questions about state aid should be sent to Formas (see the contact details in Chapter 1).

## 6 Eligibility criteria for application assessment

In order to be eligible for assessment according to the criteria in Section 7.1, the following requirements must be met. Failure to meet any of these requirements is grounds for an early rejection of the application, and it might not continue to the assessment phase.

- The application must be written in Swedish or English.
- The project description should be written using the template provided on [the call's website](#).
- The project description must not exceed 10 A4 pages and must be written in a 12-point text size.
- The project parties must be legal persons.
- At least two organisations must participate as project parties in the project, of which at least one must come from a private business or the public sector.

## 7 Assessing applications that meet the procedural requirements

### 7.1 What do we assess?

The projects that are awarded grants should help to achieve Smart Built Environment's impact targets (see Appendix 2). Applicants should address the relevant impact targets and at least one of the four themes. The application must indicate the impact targets and the theme addressed, and clarify how the project will achieve them.

Assessment criteria for "Digitalisation and industrialisation for a sustainable built environment":

#### Relevance

- How well does the application relate to any of the four themes? (see Section 2.2)
- How do the selected activities (see Section 4.1) help to address the impact targets? (see Appendix 2)
- How well is the project as a whole linked to Smart Built Environment's overall impact targets? (see Appendix 2)

#### Potential

- Are the project's expected results innovative or significantly better than what is available on the market or than best industry practices in the built environment?
- Is there a need for a strategy to manage the project results, and how feasible is it?
- What potential does the project have for contributing to greater gender equality or other diversity and integration in society in terms of issues like gender equality, social or cultural background, class, disability or age?

#### Implementation

- Is the project plan for implementation, completion and application feasible?
- Are the timetable and budget reasonable in relation to the project's organisation and expected results?

#### Organisation and stakeholders

- Does the proposed organisation have the skills, resources and experience needed?
- Is there any need for international anchoring and, if so, how will this take place?
- How does the composition of the team (key people) reflect the distribution of genders, skills, experience and different perspectives on the built environment and digitalisation?

## 7.2 How does the assessment process work?

Summary of the decision-making process:

1. Applications that meet the procedural requirements (see Chapters 5 and 6) will be assessed using assessment criteria by external independent reviewers. The applications will then be ranked and a recommendation for funding made.
2. Formas will take the decision on which projects are awarded funding.
3. The decision will be announced to the applicants and the managers of Smart Built Environment and published on the websites of both Formas and Smart Built Environment.

## 8 Decisions and conditions

### 8.1 Formas' decision

The grant decision states the amount that each party in the project is awarded. Funding will be granted under the EU Commission block exemption Regulation GBER (EU no. 651/2014 and/or de minimis regulation (EU no. 1407/2013). The basis for the aid is stated in the decision and also governs which costs are eligible to be covered.

Formas' decision to award or reject an application cannot be appealed.

### 8.2 Terms and conditions for awarded grants

For awarded grants, Formas' general terms and conditions for grants apply. The terms and conditions include rules regarding payouts, follow-up, reporting and usefulness of results.

Since the call takes place within the framework of the strategic innovation programme Smart Built Environment, there are additional special conditions and instructions that regulate reporting, follow-up, communication, etc. for the programme. See <http://www.smartbuilt.se/verktyg> (in Swedish only).

If any project party is subject to the state aid regulations, Formas' special terms and conditions for state aid will also apply.

Additional special terms and conditions may be determined for individual projects.

Any party that does not comply with Formas' terms and conditions might be held liable to return funds. This also applies if the party has been granted an incorrect or excessive amount.

## 9 How to apply

Formas has developed its application process and associated system support for this call. Please read the instructions carefully, even if you have previously applied for a Smart Built Environment grant.

### 9.1 Procedural requirements

In the Smart Built Environment programme, organisations apply for funding to implement projects together in collaboration. Applying organisations must have a corporate identity number and be legal entities. Sole proprietors are therefore not eligible to receive funding.

At least two and a maximum of six organisations must be included as project parties on an application. One of the applying organisations must be the lead applicant and is called a coordinating project party. Other organisations that participate in the project's design contribute to the implementation and share the associated risks and results. They should be specified as project parties. Organisations that have a small role in the project, such as participation in workshops or reference groups, are not specified as project parties but are instead described in the project description.

The coordinating project party will become the administrating organisation when the grant is awarded. Being an administrating organisation means that Formas approves the organisation as the recipient of funds for research, development or innovation, and that this organisation is responsible for allocating funds to other applying organisations in the project.

Formas distinguishes between generally approved administrating organisations (mainly universities, colleges and research institutes) that can apply under all calls, and administrating organisations that are approved under an individual call. Formas welcomes organisations that are not generally approved administrating organisations to apply as coordinating project parties in Smart Built Environment. Decisions on approving new administrating organisations will be taken soon after decisions on the call to ensure, that the decisions are based on recent data. Prior to taking a decision, Formas performs checks on the project parties that apply for funding and engage in economic activity in order to assess their financial stability and ability to complete the project.

### 9.2 The Prisma application system

To apply for a grant from Formas, the project manager should submit an application online in the [Prisma](#) application system.

The organisation that is the coordinating project party needs to have an organisation account in Prisma. If the coordinating project party already has an

organisation account in Prisma, then that existing account can be used. If the organisation has a user account but is not a generally approved administrating organisation with Formas, it must notify Formas and request to be added to the list of possible administrating organisations in Prisma (see the contact details in Chapter 1).

If the organisation does not already have a user account in Prisma, an appropriate representative should request an organisation account on the Prisma website in good time before the application is submitted. Specify in the reason for applying for an organisation account that you want to apply under Smart Built Environment. Other project parties do not need to create any user accounts in Prisma.

The application should be initiated through the organisation account. The person responsible for the organisation account then automatically becomes the project manager, but the manager can change this by inviting another person to become a project manager. If another person should be the project manager, that person must have a personal account in Prisma. If the manager of the organisation account should be the project manager, then no personal account needs to be connected to the application.

To be able to submit the application, the organisation must specify its domicile. To choose a domicile, such a structure must be created in the organisation account.

### 9.3 Contents of the application

The application must be written in Swedish or English.

The following information is requested in the application. All sections are mandatory except for the reference list and justification of budget.

- **Basic information**
  - *Number of applied months*: The number must not be less than 12 months or exceed 36 months.
  - *Start month*: The earliest start date is 1 July 2019 and the latest start date is 1 December 2019.
  - *Calculated project time*: The project period is calculated automatically in Prisma, based on the start date and the number of months filled in.
  - *Project title in Swedish and English*: Maximum 200 characters per project title, including spaces.
  - *Abstract in Swedish and English*: A maximum of 2,000 characters per abstract, including spaces. The abstracts may be freely disseminated and published and so should not contain confidential or sensitive information.

- **Project description**
  - *Thematic areas within Smart Built Environment:* Identify the themes within Smart Built Environment that the project will primarily contribute to. At least one theme should be specified. Read more about the themes on [the Smart Built Environment website](#).
  - *Project description:* Maximum 10 pages. A project description template is available for download on [the call's website](#). The project description should be uploaded as a file, and its size must not exceed 4 MB. Please do **not** include any budget in the project description.
  
- **List of references:** Maximum 2 pages. This part of the application is optional and can be used to list references that substantiate the project description. The list of references should be uploaded as a file with a maximum size of 4 MB.
  
- **Budget:** The budget itemises the costs and funds for the entire project (not just funding requested from Formas). Applicants should fill in the information and budget for the coordinating project party and each project party. Prisma automatically totals these costs and funds for the project as a whole.

The following budget information is requested in Prisma:

#### ***Costs***

- *Personnel costs:* Eligible staff expenses for project parties not affiliated with a university, college or research institute may be allowed at a maximum of 800 kronor per hour.
- *Equipment, land and buildings*
- *Costs for consultants, licences, etc.*
- *Other direct costs including trips*
- *Indirect costs:* Overhead costs. Universities, colleges and research institutes may charge a markup for indirect costs according to the applicable full-cost pricing method. Other project parties may charge a markup for indirect costs of up to 30 percent of their eligible staff expenses.

#### ***Financing***

See Section 5.2 for a description of the four types of funding: (1) Requested grant from Formas, (2) Other aid (public), (3) Other aid (private) and (4) Self-funding.

A justification for the budget is also requested for each project party. Here, you should specify the average hourly rate for budgeted staff expenses. Personnel costs consist of gross salaries and actual payroll expenses.

Prisma automatically calculates the support level (aid intensity) and the degree of co-funding for each project party and for the project as a whole. The calculated support level is preliminary and can be adjusted prior to Formas' award decision.

The total cost for each project party, as well as for the project as a whole, must be the same as the total financing.

At the end of the budget form, the applicant can further justify the project budget using a maximum of 7,000 characters including spaces.

After the application period expires, the application can only be supplemented on request by Formas.

## **10 Who can read the application?**

Applications submitted to Formas become publicly available documents after the decision is announced. However, Formas does not disclose information about an individual's business relationships or operating conditions, inventions or research results if the disclosure would be assumed to cause the individual suffering. If applications are requested, Formas conducts a confidentiality assessment.

When a grant is awarded, a simpler project description aimed at the general public that does not contain any confidential information will be submitted to Smart Built Environment's programme office. The office will provide a template for this purpose. This project description is used to communicate externally about the project.

## Appendix 1: Smart Built Environment in brief

The strategic innovation programme Smart Built Environment supports digitalisation and the opportunities it brings to the built environment sector. It has identified industrialised construction, common information infrastructure, business-driven applications and process integration as fundamental areas of interest. The programme's overarching objective is to foster the continuous flow of information using business-driven applications within BIM (building information modelling), geodata and industrial processes related to construction and including built environment processes.

Smart Built Environment's impact targets that the programme parties should achieve by 2030 are:

- 40 percent reduced environmental impact in a lifecycle perspective for new construction and renovation of buildings and infrastructure.
- 33 percent reduction in total time from planning to completion for new construction and renovation.
- 33 percent reduction in total construction costs.
- More new value chains and business models based on lifecycle perspectives, research platforms and new constellations of stakeholders

The call "Digitalisation and industrialisation for a sustainable built environment" covers all themes within the programme. The programme's impact logic describes the expected impacts in the short and long term (see Appendix 2).

For more information about Smart Built Environment, visit [the Smart Built Environment website](#).

Current information about the call and a link to the application function are available on [the Formas website](#).

## Appendix 2: Smart Built Environment impact logic

Smart Built Environment applies a so-called impact logic. This means that the project activities should help to achieve identified short-term impact targets, which in turn help to achieve four overall long-term impact targets. The overall impact targets and each theme's impact targets are described below. As set out in Section 7.1, the application should address a theme and describe the relevant impact targets that the application is expected to help achieve. Note that the same impact targets can be found in different themes.

### The programme's overall impact targets

- 40 percent reduced environmental impact in a lifecycle perspective for new construction and renovation of buildings and infrastructure.
- 33 percent reduction in total time from planning to completion for new construction and renovation.
- 33 percent reduction in total construction costs.
- More new value chains and business models based on lifecycle perspectives, research platforms and new constellations of stakeholders

### Innovations and new applications

- Improved continuous information flow in built environment processes
- Increased integration of BIM and GIS
- Integration and testing of digitalisation and industrialised construction in private companies and government agencies
- Open-access data for construction, use and maintenance
- Innovations based on open-access data
- Increased productivity
- Business models based on digitalisation and industrialised construction in a lifecycle perspective
- New services or products
- Digitalisation, optimisation or industrialised construction that leads to lower CO<sub>2</sub> and/or energy use
- New entrants from academia and the business community
- New organisational forms for construction projects, stakeholders and roles
- Increased innovation capacity

### Value chains and business models

- Improved continuous information flow in built environment processes
- Open-access data for construction, use and maintenance
- Business models based on digitalisation and industrialised construction in a lifecycle perspective
- New organisational forms for construction projects, stakeholders and roles
- More efficient government processes
- Model-based information has contractual status
- New legislation to support digital data sharing

- Solutions for accountability, ownership and use of digital information
- Methods for assessing the risks of changing structures

### **Information infrastructure**

- Improved continuous information flow in built environment processes
- Increased integration of BIM and GIS
- Digitalisation, optimisation or industrialised construction that leads to lower CO<sub>2</sub> and/or energy use
- Robust environmental and building product declarations, available and usable in a digital format
- Reduced resource consumption and process waste

### **Knowledge and skills**

- Increased productivity
- Research knowledge within the programme areas
- Business models based on digitalisation and industrialised construction in a lifecycle perspective
- More research, development and innovation environments established with increased integration between society and academia
- Changed work methods, processes and organisation within the built environment
- Learning organisations
- Digitalisation, optimisation or industrialised construction that leads to lower CO<sub>2</sub> and/or energy use
- New entrants in academia and the business community