Documentation of pilot project
“Creative Works Arts Centre”


Work Package 4

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1 Background information

All pilot projects in WP4 have to be clearly documented. The following structure helps to keep track on IED processes in partner countries. This template emerges from work done in WP5 and WP6.

2 About this pilot project

Name/acronym of the pilot project: Creative Works
Owner: Blaenau Gwent County Borough Council
Name of contact person: David Watkins (prev. Byron Jones)
Function of contact person: Client
Location: Ebbw Vale, Wales
Type of the building: Arts Centre
Gross floor space in m²: 3600
Investment costs in EUR: €4 million

More information: The Creative Works Arts Centre is a proposed community arts complex joining a new development on a reclaimed steelworks site in the south Wales valleys. It will combine two local art venues into one, offering a mixed-use social area with a café and bar, two theatres, back-of-house areas and mixed-use offices for local businesses. The building will benefit from an existing district heating network.

3 Design goals

The candidate partner can here describe the design goals that are inspiring the design effort. For each of them, please report explicitly the target values or the acceptability conditions.
Table 1: Design goals per design phase.

<table>
<thead>
<tr>
<th>Design goal</th>
<th>Describe the goal and the set-point values if applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aesthetics</td>
<td>No direct aesthetics were required on this project. As the new building will sit amongst a new development, it is by proxy assumed the design of the building will be appropriate to its new setting.</td>
</tr>
<tr>
<td>Accessibility</td>
<td>No specific provisions beyond the requirements under the Equality Act (2010)</td>
</tr>
<tr>
<td>Cost-effectiveness</td>
<td>The indicative costs for the project from the design team were welcomed by the client. The client did not outline specific cost-effective requirements for the project.</td>
</tr>
<tr>
<td>Energy efficiency</td>
<td>The building is targeting a BREEAM Excellent rating (25% reduction in CO$_2$ emissions, compared to a notional building), and will be connected to the local district energy system.</td>
</tr>
<tr>
<td>Functional/Operational goals</td>
<td>The client has engaged with the specialists at Cultivate, an organisation focussed on developing resilient business models for arts institutes in the UK. The client has adopted their outline plans, and has engaged with the design team accordingly.</td>
</tr>
<tr>
<td>Historic preservation</td>
<td>N/A (new build)</td>
</tr>
<tr>
<td>Productivity</td>
<td>The business case mandate from Cultivate is the main source of building productivity, created collaboratively with the client. Job creation for the area is also a key role for the building.</td>
</tr>
<tr>
<td>Secure/Safety</td>
<td>Nothing beyond existing building regulations</td>
</tr>
<tr>
<td>Sustainability</td>
<td>BREEAM Excellent rating for the building is anticipated.</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
4  Work organisation

4.1 Team composition

Has been the design team the same during the whole process?
Yes, the design team has been the same. The current team involves:
Client: Life Leisure Trust, Blaenau Gwent, UK
Architect: Stride Treglown Architects, Cardiff, UK
Business Model Framework: Cultivate, Nottingham, UK
ID Facilitator: BRE, Swansea, UK
Energy Modelling: BRE, Swansea, UK

Has the multidisciplinary team increased the effectiveness of the design phase?
Within the four months of the preliminary design stage, the multidisciplinary approach by the
architect and the ID facilitator, along with the supportive client, added significant benefits to
the development of the proposed design. The workshops proved to be the most effective at
bringing the design team together and interrogating the brief. The design phase has been
put on pause as the scheme awaits information on funding availability. When funding is
granted, the design team will be keen to incorporate structural and M&E engineers as well as
engage further with the tenants and the site facilities manager. These additions are seen as
critical to the current design team to ensure a lower energy building and lower building cost.

Has the multidisciplinary team anticipated interferences between activities and avoided
problems?
The scheme is as yet undeveloped to have encountered many obstacles. However, early
stage workshops have discussed future issues for the building and have thus begun to flag
up potential clashes for the scheme’s development.

Do you consider useful the constitution of a multidisciplinary team from the beginning of the
design activities?
Absolutely. The architect has felt the current design stage is desperate for the inclusion of
other key partners, and the client has felt the benefits of the workshops held to date.

4.2 ID facilitator: role and function

Describe the role of the ID facilitator during the development of the pilot project.
The ID facilitator informed all parties on the design team about Integrated Design, led
workshops to inform the design team and the client, and described how it was to be
implemented throughout the project. The ID facilitator also performed early stage energy modelling for various design proposals.

Describe within maximum one page your level of actual involvement in the respective phase: Initial planning phase, Competition phase (if applicable in your country), Concept design phase, Detailed design phase, Construction phase.

Table 2: Role of the ID Facilitator per design phase.

<table>
<thead>
<tr>
<th>Design phase</th>
<th>Describe the involvement of the ID Facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial planning phase</td>
<td>N/A – The project was established by the local council prior to the involvement of the design team.</td>
</tr>
<tr>
<td>Competition phase</td>
<td>N/A – The architect alone bid for the project.</td>
</tr>
<tr>
<td>Concept design phase</td>
<td>The ID facilitator was engaged early on to assist the architects’ interrogation of the brief and liaised with the client as to the benefits of the ID process. The ID facilitator also advised the team to ensure design aspirations were communicated to everyone throughout the project. Finally the ID facilitator performed early stage energy modelling on several design variations to inform the design team in their choices.</td>
</tr>
<tr>
<td>Detailed design phase</td>
<td>N/A – The project is currently awaiting funding for progression. Once funding is granted, the ID process will continue with a much larger design team.</td>
</tr>
<tr>
<td>Construction phase</td>
<td>N/A – See above</td>
</tr>
</tbody>
</table>

4.3 ID facilitator mandate

Has the ID facilitator received a mandate from the owner?

The ID facilitator has received consent from the owner to use Integrated Design as a design framework for the project.

Please, attach a copy of the mandate in the Annex X at the end of this report if possible.
5 Communication among the team members

5.1 Use of Building Information Model (BIM) tools

In case more than one BIM tool was used during the design, there were problems in sharing the numerical model among the team members?

The architects utilised a ‘lonely BIM’ in preparation for the addition of other BIM team members. Their design model was an integral model, meaning the variations on design were variations of one model, not three or four stand-alone models. This helped significantly in file-sharing. The ID Facilitator utilised some outputs from the ‘lonely BIM’ to perform energy modelling. The project is not at an official BIM stage yet.

Can you briefly report your experience in using BIM tools, basically by referring to the lessons learnt? N/A

Do you think that the level of development of the software you used is adequate to be used in the practice?

Yes. The information in the architect’s models at the early design stage were clear enough to translate in terms of energy modelling and informing the client and presenting at workshops.

Can you point out some lacks you found in using BIM tools? N/A

5.2 File sharing system

How do you evaluate the efficiency of your file sharing system?

Emails were the primary method of sharing files for the project, with servers in each company housing the project files. A project-wide file sharing system or file naming system was not established but will be pursued as the project gains funding and momentum. No team member complained about the file sharing system implemented on this project.

On the base of the experience gained during this project, would you take in consideration the adoption of more advanced systems to share files?

Absolutely. This project will become complex, and an advanced BIM with an efficient file sharing system will be critical to ensuring the ID process is maintained throughout the project.

5.3 Information sharing

How do you evaluate the efficiency of sharing information during this project?
As an ID project, everyone in the design team was made aware of the key aspects of clear information sharing. The ID facilitator ensured information was shared equally and records kept of information shared. The utilisation of workshops ensured the proper dissemination of information at the appropriate times.

On the base of the experience gained during this project, would you take in consideration the adoption of more advanced systems to share information?

As the ID facilitator, we are always looking for more efficient, sharper methods of sharing information. The team would be open to adopting new systems to share information in a uniform, replicable manner.

5.4 **Transfer of knowledge**

Transfer of knowledge is about how the ID process increases understanding and knowledge of all specialists work conditions. The aim of transferring this knowledge is that by increasing awareness and knowledge during all stages of the planning process it should provide even better ID processes in the future.

Describe how transfer of knowledge took place among architects, engineers and developer.

The architect traditionally strives to use collaboration in its projects. However both the architects and the client were new to ID and were subsequently encouraged to pilot the process. Preliminary meetings between the two under the supervision of the ID facilitator enabled each party to strengthen their mutual understandings of the design process and how ID sits within the project. The use of workshops further enhanced their understanding of the process and empowered them to work more collaboratively than in recent projects. The early stages of the design process were rocky to a small degree, but all parties are looking to expand their early exposure to ID as the project continues.

6 **ID Strategy – Workflow**

6.1 **Quality assurance plan & Quality control plan**

A Quality Assurance Program describes the overall goals for the building. The values have to be described both as goals and demands. It may also be useful to weight the goals or rank them. It is important that the Quality Assurance Program is deeply rooted in the decision makers of the project and it should be given the same status as the budget and time schedule for the project.

The Quality Assurance Program has to be followed up by a Quality Control Plan. This plan is a tool for the project team and a document that makes it possible for the building owner to
control and follow up the goals. The quality control plan defines goals and related sub goals, defines milestones through the planning and construction phases, and specifies who is responsible for each task.

As the project has only reached the early design stages, a Quality Assurance and Quality Control Plan has yet to be implemented in full. All the parties on the design team are looking forward to cementing their early stage ID plans into a QAP and QCP as soon as the project takes off again. They see it as imperative to ensuring the directives of the early design stage last throughout the project.

6.2 Setting responsible, milestones and highlighting critical points per each design phase

The responsible in charge for a given design phase helps the ID facilitator in managing the whole process. He/she has the responsibility for the correct implementation of the tasks planned in a specified phase and for the on-time execution of the activities.

A milestone is a formal checkpoint defined by the whole design team during the initial planning phase. It can be a formal approval by the owner or the delivery of one or a set of documents. The approval of a milestone allows access to a subsequent phase.

A critical point is an unexpected situation that has occurred during a given design phase. Please report the solution discussed within and proposed by the design team.
Table 3: Responsibilities, milestones, critical points and outcomes per design phase.

<table>
<thead>
<tr>
<th>Design phase</th>
<th>Responsible(s) in charge for the phase</th>
<th>Milestone(s)</th>
<th>Critical point(s)</th>
<th>Outcome(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial planning phase</td>
<td>Stride Treglown</td>
<td>Approval by the Client</td>
<td>- Building Massing</td>
<td>- Various designs considered and discussed.</td>
</tr>
<tr>
<td></td>
<td>Blaenau Gwent</td>
<td></td>
<td>- Glazing on the Building</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Life Leisure Trust</td>
<td></td>
<td>- Various designs considered and discussed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BRE</td>
<td></td>
<td>- Building design</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Energy modelling</td>
<td></td>
</tr>
<tr>
<td>Competition phase</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concept design phase</td>
<td>Stride Treglown</td>
<td></td>
<td>- Building design</td>
<td>- Energy consumption comparison report.</td>
</tr>
<tr>
<td></td>
<td>Life Leisure Trust</td>
<td></td>
<td>- Comparisons of early stage energy models.</td>
<td>- Daylight study results.</td>
</tr>
<tr>
<td></td>
<td>BRE</td>
<td></td>
<td>- Solar study</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Daylight study</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Brise soleil study results</td>
<td></td>
</tr>
<tr>
<td>Detailed design phase</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction phase</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7 Innovation and Demonstration

7.1 Please report which are the most innovative features of your intervention. Why is this project innovative?

The CreativeWorks is an arts centre joining an existing district heating network, alongside two schools, a leisure centre and an office building and County archives. Its form and orientation within the valley and its operational schedule are critical to define as early as possible due to possible future expansion of the site, meaning early-stage energy modelling has an increased relevance in this instance. Furthermore, with expected Arts Council financial cuts over the coming years, the client is looking to ensure a 'cost optimal' solution for the building into the future.

7.2 What lessons have you learned during the ID process?

In this instance, the client was very receptive to adopting the ID approach. The project architect equally was very engaging with the process, and was open to learning from the early-stage energy comparison analysis. Being able to put energy consumption numbers to the various proposed designs was useful to everyone in the process.

However the nature of the project did not lend itself to having a full design team ready at the early design stage. The architect commented that they could have benefitted from a larger design team during the concept design stage.

7.3 What kind of problems did occur during the ID process and how did you solve it?

We encountered a few problems in data sharing, particularly in the process of converting the design models into a format suitable for energy modelling. Likewise, converting the outputs back into the design models was virtually impossible. As the project continues, we will look to work together to discover more efficient methods for data sharing, including symbiotic software for energy modelling and designing. For this project, we shared the data via internal reports and workshops – these proved very useful.
7.4 What would you do differently during the next ID process?

We would request the ID facilitator was involved with the client right at the beginning and that the facilitator worked very hard to set milestones and guidance in place for the emerging design team. Furthermore, we would ask the ID facilitator to liaise with the architect and client to develop a proactive, professional, knowledgeable design team who was engaged with and passionate about collaborative design.

7.5 Demonstration (Results and Process)

The early stage designs investigated the impact of solar radiation ingress, a brise soleil comparison, and a study into optimum orientation for the building. First of all, we modelled one design to discover the impact the surrounding buildings and landscape have upon the building. With rudimentary information to hand, we discovered the topography and nearby built environment decreased the cooling load of the building by 12% and increased the heating load by 5%, when combined to a similar design located in a rural, flat location.

![Creative Works Solar Study](image)

Figure 1: Creative Works Solar Study

Secondly, we discovered the slanted canopy roof over the front entrance alone reduced annual solar ingress by 21%. Additionally, the western façade contains a significant amount of unsheltered glazing. Two brise soleil designs were tested against each other for efficacy: a horizontal slat version and a vertical slat version. The results of the study demonstrated the horizontal slat version decreased the ingress of solar radiation by 7% as compared to 4% by the vertical slat version.
Finally, we performed a glare reduction study on the main internal space within the building. A daylighting study demonstrated a considerable amount of glare would be
coming from the western, unsheltered glazed façade given the right conditions. The introduction of the horizontal brise soleil would fix this issue: an unsheltered glazed façade would introduce a daylight factor of 16 within a few metres of the façade whilst a brise soleil would reduce this to a more manageable 4.

Figure 4: Creative Works Daylight Analysis

In short, we were able to put actual comparative figures to the proposals, which assisted the architect and client in deciding an optimal way forward toward the detailed design stage, should the funding be awarded.

7.6 Trials/ Evaluation

As the project is in the early design stages awaiting future funding, no trials or evaluation of the design or construction processes has been developed.

7.7 What kind of awareness rising

Through the collaborative architect, we have delivered a strong message on the benefits of ID. The client remains receptive to the ID methodology, and as the client is a council in one of the most dynamically changing areas in Wales, we are in a prime position to apply ID to future projects on The Works site. Furthermore, using this project as a case study in various local talks across south Wales has developed further interest in ID amongst local architects.