AI Engineering Workflow Challenge

1. Objective

The objective of the challenge is to identify, evaluate and showcase innovative, reliable and transparent AI-assisted engineering workflows for structural engineering and infrastructure management. The challenge recognizes workflows, not isolated tools or demonstrations, that show clear engineering value, appropriate human oversight, technical validation, transparency and responsible use of AI. A workflow is understood as a structured sequence of steps in which AI tools and engineering judgement interact to produce a verifiable engineering outcome.

2. Format and eligibility

The challenge is organized in **two phases**:

(1) an open call for short concept proposals (phase 1) and
(2) a pilot challenge for the selected finalists (phase 2), concluding with presentations and awards at the symposium.

The competition is open to **researchers, practitioners,** and **students**. A team may consist of a maximum of 5 members and may submit only one concept proposal. For every team member the proposal must state:

- first name
- family name
- e-mail address
- position
- affiliation

One member must be designated as contact person. The challenge is model- and vendor-neutral: any AI tool or LLM may be used, provided its use is documented. The working language of the challenge is American English.

3. Phase 1 — open call for concept proposals

Each team submits a concept proposal of maximum 4 pages (excluding references and the signed declaration of rights and responsible use), using the formatting template provided by the organizers on the symposium website. The page limit is intentionally short: phase 1 evaluates the quality and credibility of the idea, not a finished implementation. Proposals exceeding the page limit will not be evaluated. Proposals must be submitted as a single PDF file through the *fib Symposium Dresden 2027* ConfTool submission system, by 23:59 CET of the deadline stated in Section 8.

Structure of the concept proposal

The template contains the following mandatory sections:

1. **Team and problem statement: title, team name (optional), team members with first name, family name, e-mail address, position and affiliation (all mandatory for each member), contact person, an abstract of maximum 100 words, and the structural engineering or infrastructure management problem addressed.**
2. **Proposed AI-assisted workflow: main steps, inputs, outputs and intended users, including the role of LLMs or other AI tools at each step. A workflow diagram is strongly encouraged.**
3. **Human oversight and validation:** where and how the engineer remains in control, and how outputs will be checked against reference solutions, expert judgement or established engineering procedures.
4. **Transparency and expected engineering value: how sources, assumptions and intermediate steps will be documented and traceable, and the expected benefit for design, assessment, maintenance, decision support, knowledge access or infrastructure management.**
5. **Limitations, risks and material use: technical limitations, uncertainty and possible misuse, together with the documents, datasets or sources the team intends to use; the material actually used in the pilot challenge is agreed with the organizers as set out in Section 4.**

The template includes a mandatory signed declaration confirming that copyright, confidentiality and intellectual property restrictions are respected for all material used, and granting *fib* the non-exclusive publication rights defined in Section 7. The declaration does not count towards the page limit. The template also contains a references section, which likewise does not count towards the page limit; references follow the Vancouver style and are numbered consecutively in the order of first citation. The organizers may provide general reference material related to the scope of the challenge to support the development of proposals.

Evaluation of concept proposals

Proposals are evaluated by the jury (Section 6) against the following weighted criteria, each scored on a 0–5 scale. **Up to five proposals will be selected for phase 2.**

Weight	Guiding question	Weight
Relevance	Is the problem meaningful for structural engineering or infrastructure management?	15%
Workflow quality	Is the workflow clearly described, technically plausible and well structured?	20%
Innovation and added value	Does the proposal introduce an original or useful way of integrating AI into engineering practice?	15%
Validation and reliability	Does the proposal explain how results will be checked or validated?	20%
Transparency and oversight	Are sources, assumptions and reasoning steps traceable, and is the role of the engineer clearly defined?	20%
Feasibility	Can the workflow realistically be developed into a pilot within the available time?	10%

4. Phase 2 — pilot challenge

The selected teams develop a pilot workflow based on their proposed concept. The material used in the pilot — including the documents, datasets and sources declared by the team in Phase 1 and any reference material, datasets or validation cases made available by the organizers — is agreed between each finalist team and the organizers after the notification of finalists. Where appropriate, the organizers may propose common reference material or validation cases to support comparability among the pilots. Confidential or proprietary material may be used where the team holds the necessary rights and its handling has been agreed with the organizers in advance.

Each finalist submits:

1. **a short pilot report (maximum 8 pages), prepared with the full-paper template of the *fib Symposium Dresden 2027* available on the symposium website, to be submitted by the deadline stated in Section 8;**
2. **a reproducibility package: prompts, interaction logs, model versions, code and configuration needed to trace how the results were obtained. The reproducibility package is used by the Jury for evaluation and verification only and is not published (Section 7).**

The pilot report is submitted as a PDF file and the reproducibility package as a single archive, through the channel indicated by the organizers in the notification of finalists. The pilot report is prepared for the purposes of the challenge; it is independent of, and does not replace, the regular full-paper submission procedure of the symposium. Pilot reports are not published in the symposium proceedings; they may be published by *fib* within the joint publication or *fib* document synthesizing the outcomes of the challenge (Sections 5 and 7).

During the symposium, in a dedicated *AI Engineering Workflow Challenge session*, each finalist presents the developed workflow, the engineering results obtained, the validation performed, the role of the engineer throughout the process, and strengths, limitations and lessons learned. At least one member of each finalist team must attend the symposium in person to deliver the presentation; the registration conditions of the *fib Symposium Dresden 2027* apply.

Evaluation of pilots

Pilots are evaluated by the jury (Section 6) against the following weighted criteria, each scored on a 0–5 scale:

Weight	Guiding question	Weight
Engineering results	Are the outputs technically sound and useful for the stated problem?	30%
Validation performed	Were the outputs actually checked, and how rigorously?	30%
Traceability and reproducibility	Can the results be traced and reproduced from the submitted package?	25%
Presentation and lessons learned	Are strengths, limitations and human oversight clearly and honestly communicated?	15%

5. Awards

Three awards may be assigned:

1. **Best Concept Award** — best concept proposal (phase 1 score)
2. **Best Pilot Award** — best implementation and demonstration (phase 2 score)
3. **Overall AI Engineering Workflow Award — overall winner, combining concept quality and pilot performance**

This three awards include:

- a certificate,
- recognition during the symposium closing session,
- a cash prize of 300 € per awarded contribution and
- an invitation to contribute to a joint publication or fib document synthesizing the outcomes of the challenge.

In addition, 100 € can be awarded by the Jury as special recognition.

6. Jury and governance

An international jury of 3 members is appointed by the organizers, combining expertise in structural engineering, infrastructure management and AI, and including at least one practitioner. Jury members with a professional or institutional link to a participating team abstain from evaluating that submission. Scores and rankings are documented; individual feedback may be provided to finalists.

7. Intellectual property and responsible use

Participants retain full ownership of the intellectual property of their workflows, software, data and results. Participation in the challenge does not transfer, license or restrict any right to use, further develop, protect, patent or commercially exploit the submitted work, and creates no obligation of exclusivity towards *fib* or the organizers.

By participating, teams grant *fib* a non-exclusive, royalty-free and worldwide right to reproduce and publish, for scientific and dissemination purposes only, the material submitted for that purpose: the title, the team details and the abstract of the concept proposal, the pilot report, the presentation delivered at the symposium, and a summary of the challenge outcomes. Publication of the full text of a concept proposal requires the separate written consent of the team.

Teams may mark clearly identified parts of their submission as confidential. Material so marked, and the reproducibility package of phase 2 in its entirety, are used by the jury for evaluation and verification only, are treated as confidential by the jury and the organizers, and are not published. Teams should nevertheless not include material that they are not willing to disclose to the jury.

Teams are responsible for the lawful use of all material, data and AI tools employed, and confirm this in the signed declaration included in the template. Confidential or proprietary material may be used only where the team holds the necessary rights.

8. Important dates

- Submission open: 1 December 2026
- Concept proposal submission deadline: 28 February 2027, 23:59 CET
- Notification of finalists: 31 March 2027
- Pilot report and reproducibility package submission deadline: 1 June 2027, 23:59 CEST
- Finalists' presentations and awards: *fib Symposium Dresden 2027*, 7–9 June 2027

9. Organizers and contact information

The **AI Engineering Workflow Challenge** is organized by:

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The organizers coordinate the scientific and technical development of the challenge and serve as the primary contact points for participants.

Questions concerning the **scope of the challenge, eligibility, preparation of the concept proposal, submission requirements, evaluation procedure, pilot challenge, or final presentations** may be addressed to either of the organizers.

Participants are encouraged to consult the competition rules and the official submission template before contacting the organizers. Questions of general relevance may be communicated to all participants through the *fib Symposium Dresden 2027* website or the official submission system.

For technical issues specifically related to the ConfTool submission system, participants should refer to the instructions and contact information provided on the *fib Symposium Dresden 2027* website (www.fib-2027.org).

Date of publication: 09.11.2026 (updated version)