

POSITION SUMMARY

We are looking for a **C++ Developer (freelance/P.IVA)** to consolidate LivGemini's existing medical imaging, computational and analytical components into a unified C++ software platform.

The selected contractor will be responsible developing a new application in C++, integrating already developed algorithms and computational modules, and bringing the different components into a single, cohesive and maintainable software environment.

The role will involve consolidating functionalities related to DICOM data management, 3D and multi-planar visualisation, morphological analysis and interaction with LivGemini's internal computational engines, with a strong focus on software performance, maintainability and modularity.

The developer will work closely with the internal team to ensure that the different components are effectively integrated into a robust and scalable application, following established coding best practices and relevant regulatory requirements.

Applications are open from September 14th to September 30th, 2026.

ABOUT LIVGEMINI

LivGemini is an innovative start-up based in Italy focused on developing software solutions based on AI and computational modeling to support clinicians in diagnosis and pre-operative planning. LivGemini has been recognized with the Italian Innovation Award in the MedTech category in 2023. Our mission is to revolutionize how clinicians plan and perform cardiovascular surgical procedures by integrating in-silico models. We envision a future where each patient receives a personalized treatment based on his anatomical and physiological features, significantly reducing complication risks and enhancing precision for improved clinical outcomes.

ABOUT THE PROJECT

LivSpace is a modular application. The scope of this engagement covers the application framework and four functional modules:

- Patient Management — data ingestion and session management, with DICOM networking (C-FIND, C-MOVE, DICOMweb WADO-RS/STOW-RS) and local filesystem import, plus metadata indexing into a local relational database.
- Baseline Inspection — volumetric viewer based on VTK: direct volume rendering, real-time Multi-Planar Reconstruction with synchronised 3D crosshairs, arbitrary oblique slices, clipping widgets, interactive window/level control with anatomical presets and diagnostic measurement tools.
- Morphological analysis pipeline: include the segmentation engine provided by LivGemini, centerline extraction (VMTK), automated morphological characterisation (diameters, lengths, volumes) and manual override tools allowing clinicians to refine automated results (python algorithms already available).

- Surrogate Modeling — client side of the advanced analytical workflow: ROI selection, asynchronous job submission and result retrieval towards LivGemini's backend solvers, and colour-mapped rendering of scalar and vector fields synchronised across 3D and 2D MPR views.

The application is completed by a set of shared services and by a centralised reporting service handling the formatting and PDF generation of clinical outputs.

Scope boundary. The Contractor will develop and test the application using mocked and test datasets provided by LivGemini, including DICOM series, VTK/VTP meshes with mapped scalar fields and JSON files containing aggregated results. The scope includes the C++/Qt application framework, user interface, DICOM and data-management layer, integration of existing LivGemini algorithms, client-side communication with internal computational services, shared services and reporting functionalities.

Development of LivGemini's backend computational solvers, development of new scientific algorithms, clinical validation and generation of production clinical datasets are outside the scope of this engagement.

ABOUT THE JOB

The candidate will:

- Design and develop the modular C++/Qt application framework of LivSpace, ensuring clean architecture, separation of concerns and straightforward extension with additional clinical modules.
- Implement DICOM data ingestion, PACS connectivity and metadata indexing, together with the patient management user interface.
- Re-write in C++ the high-performance volumetric and multi-planar visualisation, including transfer functions, interaction models and rendering optimisation for large CT volumes.
- Re-write in C++ the geometric processing and morphological analysis user interface, integrating segmentation and centerline extraction pipelines and the related manual editing tools.
- Implement the asynchronous client-side pipeline towards the internal computational backend (e.g. REST/gRPC) and the visualisation of the returned physiological fields.
- Develop the shared service layer (data providers) and the centralised reporting service for clinical PDF report generation.
- Contribute to software design activities: software architecture document, API contracts between modules, and definition of input/output data mocks.
- Implement and execute unit tests to ensure robustness and reliability of the code.
- Produce the technical documentation required.
- Participate in code reviews and continuous improvement of software quality.
- Collaborate with the internal team to align developments with system integration needs.

The work is organised into **5 Work Packages**, expected to progress broadly in sequence: **(1)** project foundation and architecture; **(2)** core framework and shared services; **(3)** baseline inspection module; **(4)** morphological analysis module; **(5)** fluid dynamics surrogate module. Each Work Package may be initiated following LivGemini's approval of the relevant preceding dependencies and will be closed against pre-agreed acceptance criteria (test coverage, functional acceptance criteria and documentation).

The engagement will be structured as a freelance contract, expected to start in October 2026 with a planned end in July 2027. The Contractor remains free to determine the place and timing of performance, subject only to participation in agreed online coordination meetings and code reviews, and achievement of project milestones.

Prior to contract signing, the Parties will define and agree upon all Deliverables, Milestones and KPIs, including acceptance criteria. A mutual Non-Disclosure Agreement (NDA) will be executed in addition to the service agreement.

COMPENSATION

Model: payment upon milestone completion and acceptance.

Overall project budget: approximately **€45,000** across the full scope of the **5 Work Packages**.

Work Package allocation: the overall budget is distributed across the 5 Work Packages in proportion to their estimated effort. The overall project budget may be allocated across one or more contractors. LivGemini reserves the right to assign individual Work Packages, or portions thereof, to different professionals or suppliers according to project requirements, specialist expertise and availability.

Accordingly, the €45,000 amount refers to the aggregate budget for the complete project scope and does not constitute a guaranteed contract value or minimum compensation for any individual contractor. Each contractor will be compensated exclusively for the Work Packages, milestones and deliverables formally assigned to them.

The core framework and shared services are expected to represent the largest share of the overall project budget, followed by the three functional modules (fluid dynamics surrogate, morphology and baseline inspection) which carry broadly comparable weight. The initial architecture, mocking and setup phase is expected to account for a smaller share.

For each contractor, the specific Work Packages assigned, together with the corresponding compensation, milestones, deliverables, KPIs and acceptance criteria, will be agreed and documented before the relevant activities commence.

Payment terms: 30 days from invoice date.

REQUIRED QUALIFICATION AND EXPERTISE

- Solid experience in modern C++ development.
- Proven experience with Qt (Qt 6) for the development of complex user interfaces.
- Experience with VTK or equivalent scientific visualisation toolkits, including 3D rendering and interaction pipelines.

- Experience with DICOM libraries (DCMTK and/or GDCM) and working knowledge of the DICOM standard and its networking services.
- Previous experience in software design principles, modular or plugin-based architectures and API design.
- Experience with unit testing frameworks.
- Familiarity with version control systems (Git).
- Good knowledge of English, which is the working language for technical documentation.
- Experience with medical image processing toolkits (ITK, VMTK) and mesh processing.
- Nice to have - experience in regulated medical device software development (IEC 62304, ISO 13485).
- Nice to have - GPU programming or shader experience for rendering performance optimisation.

APPLICATION

If you are interested in joining our team, please get in touch!

Send your CV (maximum 4 pages) to info@livgemini.com with the title: “Application LG-FLP001-2026 LastName FirstName”. Feel free to include, if available, links to public repositories or a short portfolio of C++/Qt/VTK work. After evaluating the CVs, upon closing the position, selected candidates will be re-contacted to arrange an online assessment meeting on a pre-determined date.