Milestones	Steps	Tools involved	Deadline	Estimated number of hours	Effective number of hours
Understand the ϕ-FEM technique	**1. Read the documents related to ϕ-FEM** • Read the introductory paper • Read the Neumann boundary case		03/11/2020	20	10
The Poisson equation	**1. Install FEniCS using Docker** • Install the most recent version • Test the installation with the demo case provided **2. Solve the Poisson equation using the classic FEM technique** • Use a simple domain (a unit disk) • Validate this step by differentiating a known solution and verifying the results **3. Perform the convergence study in norms L^2 and H^1** • According to the theory, the slopes must be respectively close to 2 and 1 **4. Solve the Poisson equation using the ϕ-FEM technique, without stabilising terms. Compare the results with the classic FEM technique** • Validate this step by comparison with the test cases in the paper **5. Repeat the preceding test, while applying stabilizing terms** • Validate this step by comparison with the paper • Repeat the exact test cases in the paper if necessary	Docker FEniCS	10/11/2020	25	50
The elasticity equation	**1. Reformulate the elasticity equation using ϕ-FEM** • Take inspiration from the Poisson formulation **2. Solve the equation using FEniCS** • The method can be validated using academic cases as done in the papers • The method can also be validated on classical solid mechanics cases such as beams	Docker FEniCS	19/01/2021	25	30
Simulations on organ geometries	**3. Find the geometries** **4. Integrate the results into SOFA**	Docker FEniCS SOFA	19/01/2021	25	0