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Modeling and Complexity Reduction in PDES for Multiphysics

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MOX Modellistica e Calcolo Scientifico

POLITECNICO DI MILANO

MOX

CMCS

MATHICSE

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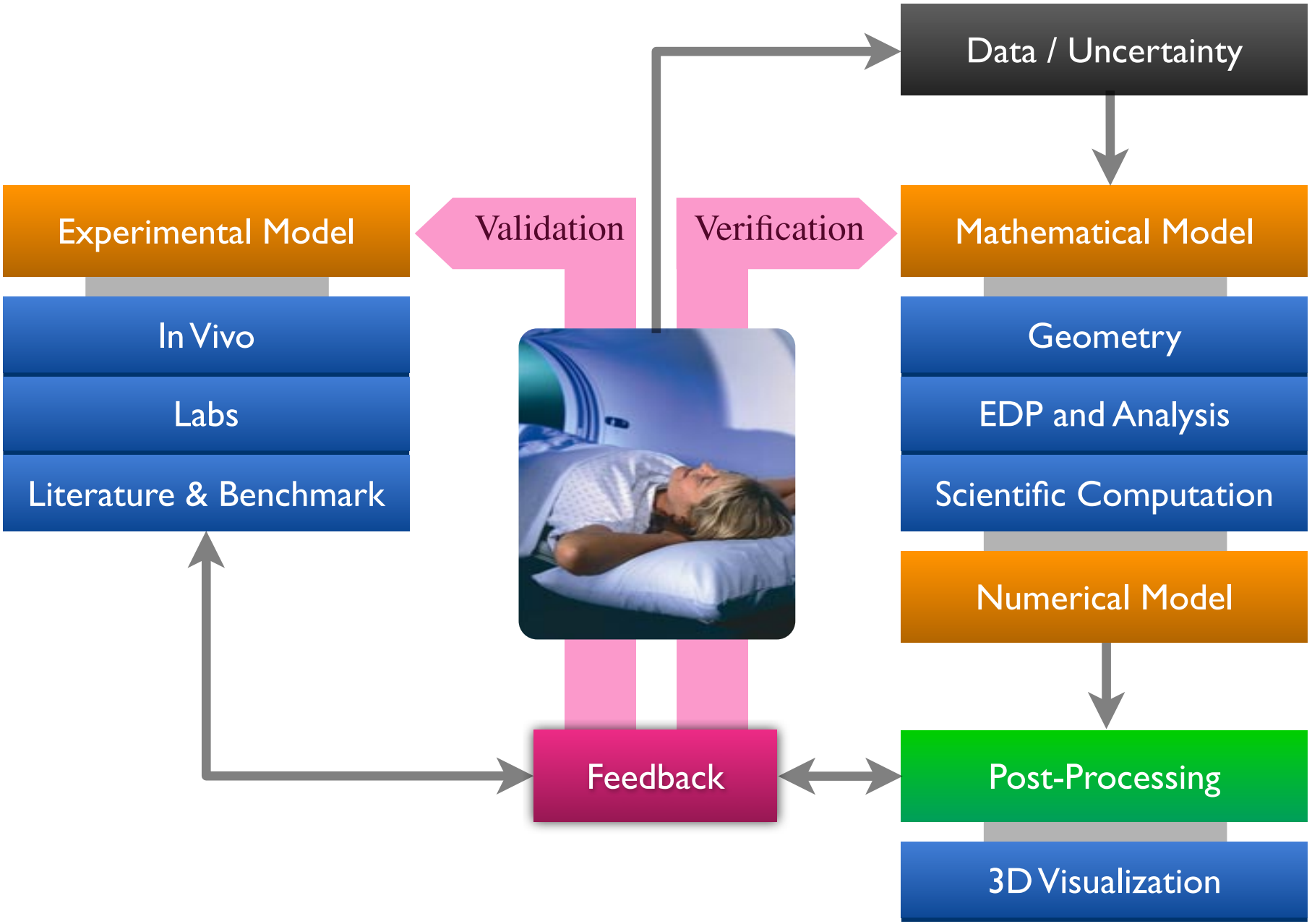
Mathematical and Numerical Modelling: an Outlook



STRATEGIES/Contents

Heterogeneous DD

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Applications

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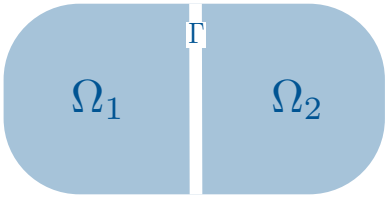
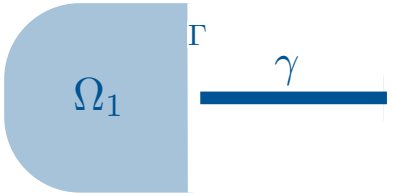
Homogeneous Domain Decomposition



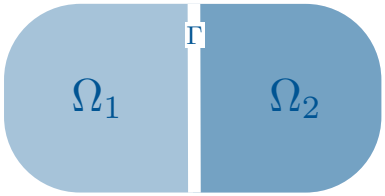
$$Lu_1 = f_1 \quad \text{in } \Omega_1$$
$$Lu_2 = f_2 \quad \text{in } \Omega_2$$
+ coupling conditions on Γ

Sequential Multiscale



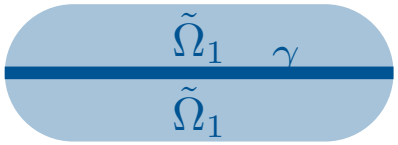
$$Lu_1 = f_1 \quad \text{in } \Omega_1$$
$$L_\gamma u_\gamma = f_\gamma \text{ on } \gamma$$
+ coupling conditions on Γ

Heterogeneous Domain Decomposition



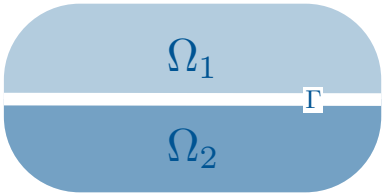
$$Lu_1 = f_1 \quad \text{in } \Omega_1$$
$$\tilde{L}u_2 = f_2 \quad \text{in } \Omega_2$$
+ coupling conditions on Γ

Embedded Multiscale 1



$$L_1 u_1 = f_1 \text{ in } \tilde{\Omega}_1$$
$$L_\gamma u_\gamma = f_\gamma \text{ on } \gamma$$
+ coupling conditions on γ

Multiphysics



$$L_1 u_1 = f_1 \quad \text{in } \Omega_1$$
$$L_2 u_2 = f_2 \quad \text{in } \Omega_2$$
+ coupling conditions on Γ

Reduced Basis Method