- **Meshes:**

a) Primary mesh: regular triangular mesh
$\mathcal{T}_\Delta$ $\qquad \mathcal{T}_\Delta = \{\delta_r : r \in \mathbb{R}_h\}$, $\overline{\Omega} = \bigcup_{r \in \mathbb{R}_h} \overline{\delta}_r$

b) Secondary mesh: polygonally bounded boxes
$\mathcal{T}_{\mathcal{H}}$ $\qquad$ (e.g. MB or PB) corresponding to $\mathcal{T}_\Delta$:
(see Subsection 3.2):
$\mathcal{T}_{\mathcal{H}} = \{\mathcal{H}(x) : x \in \overline{\omega}_h\}$,
$H(x) = \text{meas}\, \mathcal{H}(x) = O(h^2)$,
$\overline{\Omega} = \bigcup_{x \in \overline{\omega}_h} \overline{\mathcal{H}(x)} = \bigcup_{i \in \overline{\omega}_h} \overline{\mathcal{H}(x^{(i)})}$

- **FEM:** $\mathcal{T}_\Delta \xrightarrow[\delta_r \overset{P_1}{\longleftrightarrow} \Delta \text{ map}]{} \underset{\overset{\cup}{H^1(\Omega) \cap C(\overline{\Omega})}}{\overline{V}_h} = P_1(\mathcal{T}_\Delta) \supset \underset{\overset{\cup}{V_0 = \overset{\circ}{H}{}^1(\Omega)}}{\overline{V}_{0h}} = \overset{\circ}{P}_1(\mathcal{T}_\Delta) = \text{span}\{p^{(i)} : i \in \omega_h\}$

$$(7)_{FEM} \quad \boxed{\text{Find } u_L = u_h \in \overline{V}_{0h} : a(u_h, v_h) = \langle F, v_h \rangle \; \forall v_h \in \overline{V}_{0h}}$$

$\longleftarrow u_L = \sum_{i \in \omega_h} u^{(i)} p^{(i)}(x)$

$\longleftarrow v_h = p^{(k)}, \; k \in \omega_h$

$$\underline{(7)}_{FEM} \quad \boxed{\text{Find } \underline{u}_L = \underline{u}_h = [u^{(i)}]_{i \in \omega_h} \in \mathbb{R}^{N_h} : K_L \underline{u}_L = \underline{f}_L}$$

with $K_L = [a(p^{(i)}, p^{(k)})]_{k,i \in \omega_h} = K_L^T$ p.d.,
$\underline{f}_L = [\langle F, p^{(k)} \rangle]_{k \in \omega_h} \in \mathbb{R}^{N_h}$.