

$$\frac{d}{dt} \int_{\Omega_i} \mathbf{W} d\Omega - \int_{\partial\Omega_i} \mathbf{W} (u_{\Omega_i} \cdot \mathbf{n}) dS + \int_{\partial\Omega_i} \Psi(\mathbf{W}) \cdot \mathbf{n} dS = \int_{\partial\Omega_i} \mathbf{S} d\Omega$$