Generation And Simulation Of Manufacturable 2D Soft Bodies

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Presentation Overview

- Project scope

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- Objectives

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- Methodology

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- Methodology
- Upcoming Work

Project Scope

- Automate the generation and simulation of 2D soft bodies

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  - Generate 2D bodies built from smaller building blocks with specific deformations
  - Non-linear FEM with hyper-elastic material models
  - Evaluate the bodies and building blocks according to predefined goals

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- Limitations
  - Two dimensions
  - Pre-existing material models

Software

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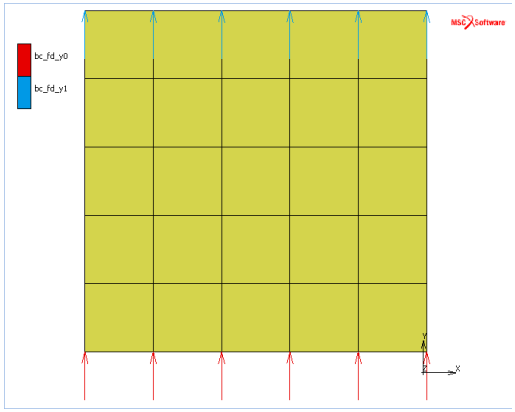
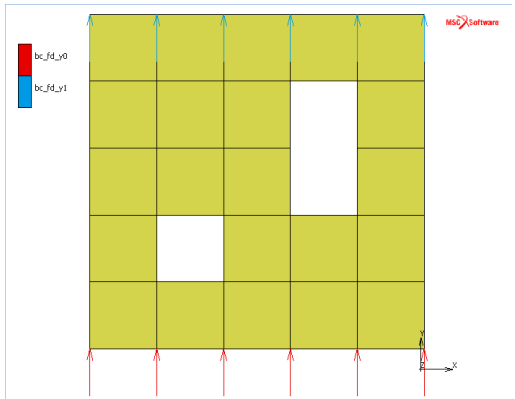
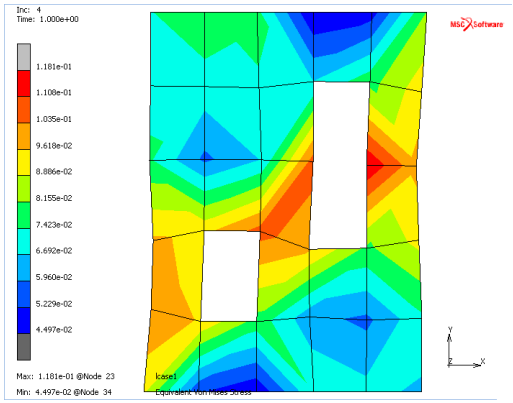
    - $$E_b = \sum_{i=1}^{n_n} d_i \times F_i$$
    - If i is a boundary node

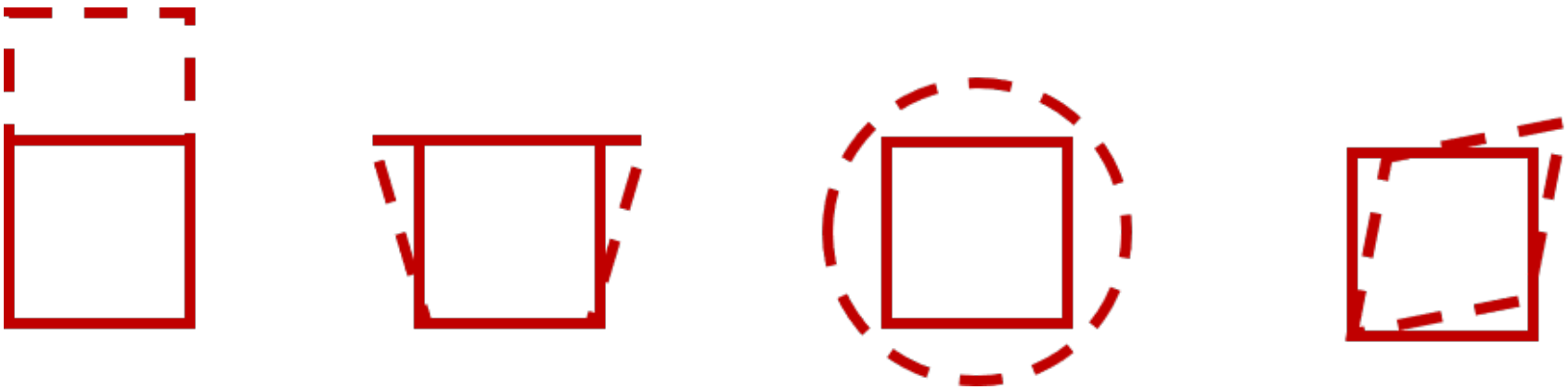
Methodology (cont.)



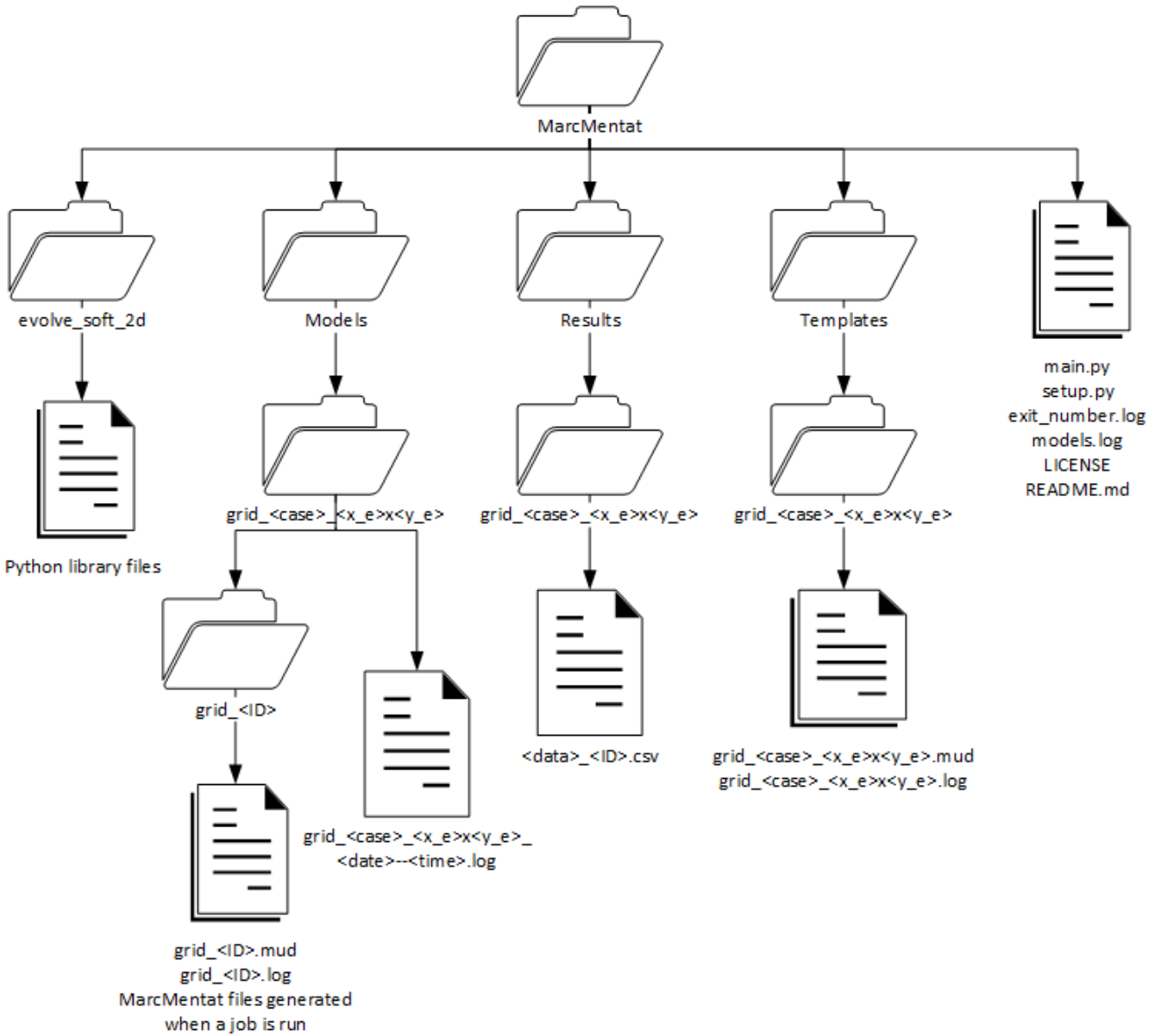




Methodology (cont.)



File Hierarchy



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$$W_1(\lambda_1, \lambda_2, \lambda_3) = \sum_{i=1}^{N} \frac{\mu_i}{\alpha_i} (\lambda_1^{\alpha_i} + \lambda_2^{\alpha_i} + \lambda_3^{\alpha_i} - 3)$$

Upcoming Work

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Questions?