# Update of thesis planning

*Created 10 February 2019*

Steps 1 to 3 have been completed already.

4. **Migrate marschner/dual scattering shader code to PBRT** — 32 hours
   - Should be relatively painless, both are written in C++.
   - The only difference is that before it was linked as plugin to Pixar's Renderman and now it should be part of PBRT scene.

   *Expected to be finished: 3 March*

5. **Adjust code to create Marschner/Dual Scattering lookup table** — 36 hours
   - Adjust marschner code to make use of more efficient dual scattering method
   - Create lookup tables that contains precomputed values for Marschner and Dual-Scattering algorithms.
   - Fix all bugs that are still present.

   *Expected to be finished: 21 March*

6. **Render scattering responses to file** — 32 hours
   - use visualization tool to plot results,
   - investigate visualization tools (maybe Matlab or something open source)

   *Expected to be finished: 4 April*

7. **Analyze response data** — 60 hours
   - find a mathematical formula that fits the scattering distribution
   - invert scattering distribution formula or use rejection sampling
   - Find out how to use discrete approach to finding the inverted function (if needed)

   *Expected to be finished: 5 May*

8. **Code sampling strategy in PBRT** — 60 hours
   - Implement importance sampling with the inverted formula find in (7).

   *Expected to be finished: 2 June.*

9. **Render samples using my optimized implementation (with importance sampling)** — 16 hours
   - Render same scenes as in step 2.
   - Create nice movies

   *Expected to be finished 16 June.*

10. **Evaluate performance of algorithm** — 40 hours
    - measure rendering time and quality (noise)
    - compare versus dual scattering papers
    - compare versus path tracing result

    → compare to path noise example using 1024 samples and 32 integration steps.

    *Expected to be finished: 4 July.*

11. **Add everything in thesis**
    *Expected to be finished 28 July.* — 40 hours

**Total:**
316 hours (~8 weeks full time)