Design Patterns and Frameworks	**Exercise Sheet No. 11**
Dr.-Ing. Max Leuthäuser	Software Technology Group
INF 2081	Institute for SMT
http://st.inf.tu-dresden.de/teaching/dpf	Department of Computer Science
	Technische Universität Dresden
	01062 Dresden

Tools-and-Materials Pattern Language

Task 11.1: Basic Tools and Materials

For this task, it may help if you look at some additional literature on tools and materials. I suggest [1], but you can, of course, use other material from the library or from the web, too.

1a)

Explain the terms Leitmotif *(Leitbild)*, usage model *(Benutzungsmodell)*, and design metaphor *(Entwurfsmetapher)*. What are the relevant instances in the context of the tools and materials approach?

1b)

How do tools use materials? What is the construction pattern (it's called a 'design pattern' in [1]) behind the coupling of tools and materials?

1c)

What parts do tools consist of? How is the communication between these parts organised? Why is this beneficial?

1d)

Explain the layers in an application built following the tools and materials approach. What constraints must be observed regarding communication and generalisation?

Bibliography

1. Heinz Züllighoven et al. Das objektorientierte Konstruktionshandbuch nach dem Werkzeug & Material-Ansatz. dpunkt.verlag, 1998

Task 11.2: Financial Consultancy Tool Smithery

Financial consultants need to perform a variety of tasks. They plan investments, set up credit plans, sell retirement plans etc. They maintain a client folder for each client, which contains records of all transactions performed for this client. For example, there is a credit folder which contains data on all credits and loans handed out to this client, and informs about their status. There is also a sheet containing information about the current income and regular costs of the client; this defines the client's monthly budget. There is also material on all insurances the client has obtained.

When the financial consultant wants to plan a new credit for a client, he must understand the monthly income and obligations of the client. He may also need to analyse the client's investment plan, potentially adjusting it to make room for the credit back payment.

Using the tools and materials approach, design an application that will support the financial consultant's work.

2a)

What materials can you determine from the description above?

2b)

What tools will the financial consultant require in the course of planning a new credit? What materials do they work on?

2c)

Compare the solution above to a solution that would have come out of a more standard design process. What are the advantages?