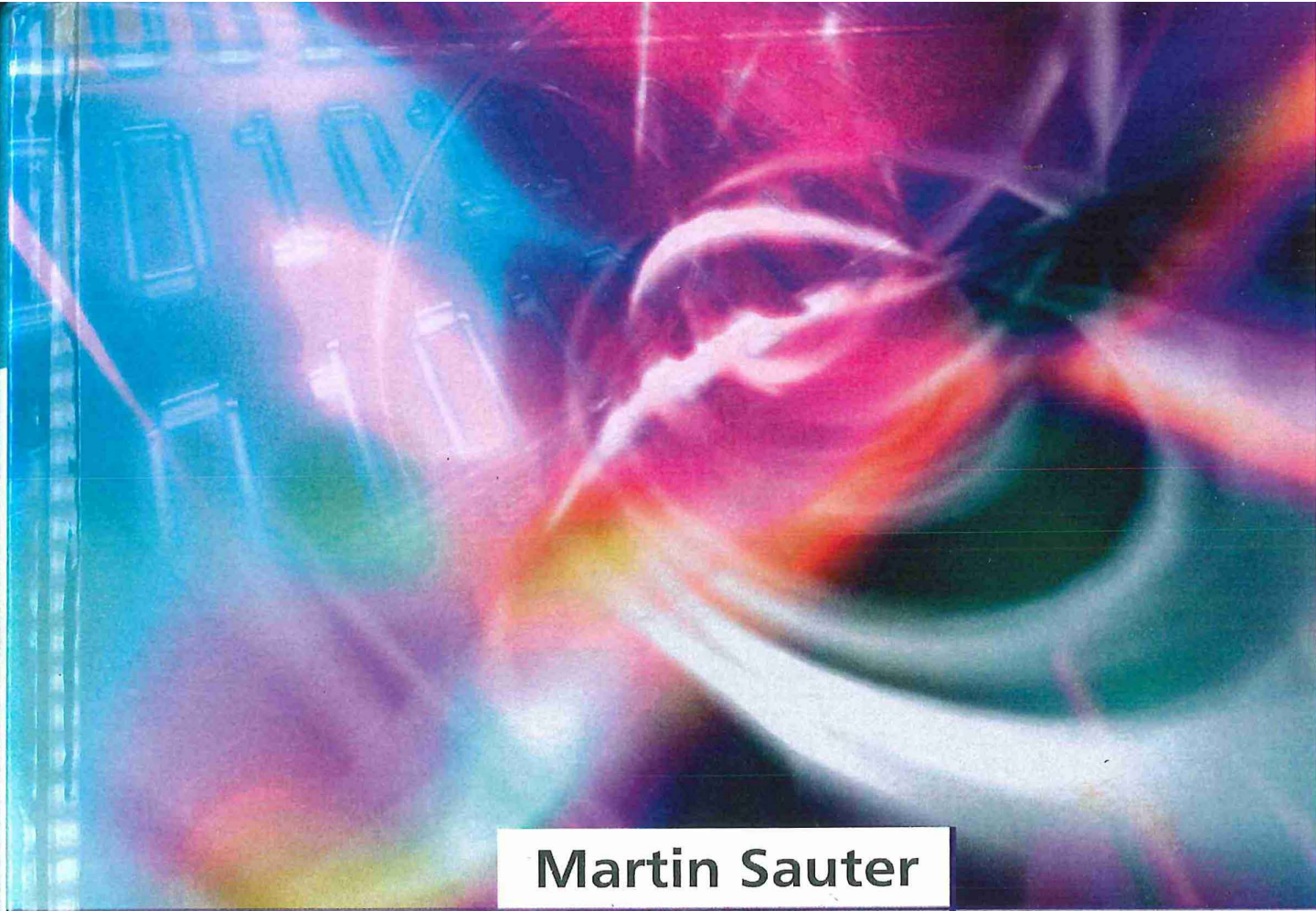




Martin Sauter

Communication Systems

for the Mobile Information Society

Companion Website

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Communication Systems for the Mobile Information Society

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Nortel Networks, Germany



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2.12.2 Web Browser Optimization for Mobile Web Browsing

As has been shown, GPRS and EGPRS connections behave differently when used for web surfing compared to fixed-line connections. As most users access the Internet via fixed-line connections, web browsers are usually optimized for short latency and very high bandwidth connections. However, some browsers allow changing their network access settings which can help to improve the download times. The Firefox browser for example allows changing the values for pipelining of web requests. Pipelining is a method which was introduced with HTTP 1.1 to request several elements of a page at once in a single TCP connection instead of only sending the next request once the previous element was downloaded. In this way it is possible to reduce the effect of the higher latency of the wireless connection.

Pipelining is activated in the Firefox browser as follows:

- In the URL field, `about:config` has to be entered to get the list of all parameters that can be changed.
- Pipelining is activated by setting the `network.http.pipelining` parameter to `TRUE`.
- A good value for the number of accumulated requests that should be set in `network.http.pipelining.maxrequests` is eight.

When comparing the page download times of a large web page with and without pipelining in an EGPRS network a big difference can be observed. While the delay to display the first parts of the page is almost unchanged the time to download the complete page including all pictures was reduced from 60 seconds to 40 seconds.

2.13 Questions

1. What are the differences between circuit-switched and packet-switched data transmission?
2. What are the advantages of the data transmission over GPRS compared to GSM?
3. Why are different modulation and coding schemes used?
4. What is the difference between the GPRS ready state and the GPRS standby state?
5. Does the GPRS network perform a handover if a cell change is required while data is transferred?
6. Which are the new network elements that have been introduced with GPRS and what are their responsibilities?
7. What is a temporary block flow?
8. What actions are performed during an inter-SGSN routing area update (IRAU)?
9. Why is the IP protocol used twice in the protocol stack of the Gn interface?
10. Why is it not necessary to change any settings on the terminal for GPRS when roaming abroad?
11. What is the difference between a GPRS attach and a PDP context activation?
12. Why is an access point name (APN) necessary for the PDP context activation procedure?
13. How are MMS messages sent and received via GPRS?
14. Name the different parts of an MMS message.