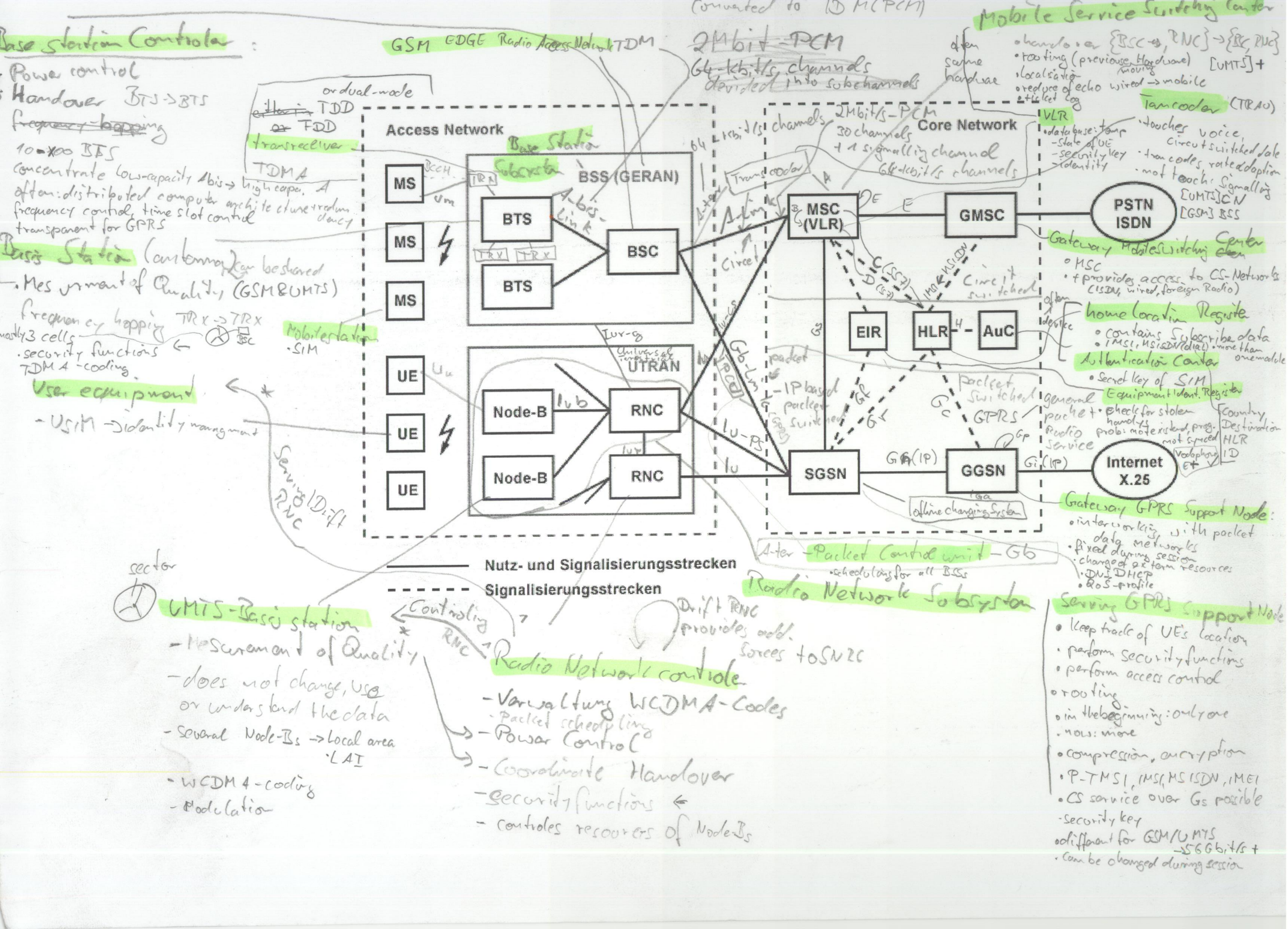
Base station Controla :
Power control
Handover BTS->BTS
frequency hopping
10-100 BTS
concentrate low-capacity Abis-> high capac. A
often: distributed computer architecture redundancy
frequency control, time slot control
transparent for GPRS
Basis Station (antennas can be shared
Mes urment of Quality (GSM&UMTS)
frequency hopping TRX->TRX
mostly 3 cells
security functions
TDMA-coding
User equipment
- USIM -> identity managment
GSM EDGE Radio Access Network TDM
2Mbit-PCM
64-kbit/s channels
devided into subchannels
or dual-mode
either TDD
or FDD
transreceiver
TDMA
Access Network
Base Station Subsyste
BSS (GERAN)
MS
BCCH
TRA
Um
BTS
A-bis-Link
TRX
BTS
BSC
Mobilestation
-SIM
UE
Uu
Node-B
Iub
RNC
Iur-g
Universal Terrestrial
UTRAN
Service&Diff
RNC
Iu-CS
Iu-PS
Gb-Link
Core Network
2Mbit/s-PCM
30 channels
+1 signalling channel
64-kbit/s channels
Transcoder
A-bis
A-Link
Circuit
MSC (VLR)
GMSC
PSTN ISDN
C (SS7)
D (SS7)
Circuit switched
often
device
EIR
HLR
AuC
Gs
Gb
Gc
Gr
Gp
packet
IP based packet switched
Packet switched
GPRS
general packet Radio service
SGSN
Gn (IP)
GGSN
Gi (IP)
Internet X.25
Ga
offline charging system
A-ter - Packet Control unit - Gb
scheduling for all BSS
Radio Network Subsystem
Nutz- und Signalisierungsstrecken
Signalisierungsstrecken
sector
UMTS-Basis station
- Measurement of Quality
- does not change, use or understand the data
- several Node-Bs -> Local area
LAI
- WCDMA-coding
- Modulation
Controling RNC
Radio Network controle
- Verwaltung WCDMA-Codes
- Packet scheduling
- Power Control
- Coordinate Handover
- security functions
- controles resources of Node-Bs
Drift RNC provides addi. sources to SRNC
Mobile Service Switching Center
often same hardware
handle a {BSC-s, RNC} -> {BSC, RNC} [UMTS] +
routing (previous Hardware moving)
localisation
reduce of echo wired -> mobile
ticket log
Tarcoder (TRAU)
touches voice, circuit switched data
trancodes, rate adoption
not touch: Signalling [UMTS] CN [GSM] BSS
VLR
database: temp
- state of UE
- security key
- identity
Gateway MobileSwitching Center
MSC
provides access to CS-Networks (ISDN, wired, foreign Radio)
home Location Register
contains Subscribe data
IMSI, MSISDN (dial) more than one mobile
Authentication Center
Secret key of SIM
Equipment Ident. Register
checks for stolen handy
prob: not existent, prog. not synced
Country Destination HLR ID
Vodafone D2
Gateway GPRS Support Node:
interworking with packet data networks
fixed during session
change of system resources
DNS DHCP
QoS-profile
Serving GPRS Support Node
keep track of UEs location
perform security functions
perform access control
routing
in the beginning: only one
now: more
compression, encryption
P-TMSI, IMSI, MSISDN, IMEI
CS service over Gs possible
security key
different for GSM/UMTS -> 56 Gbit/s +
can be changed during session