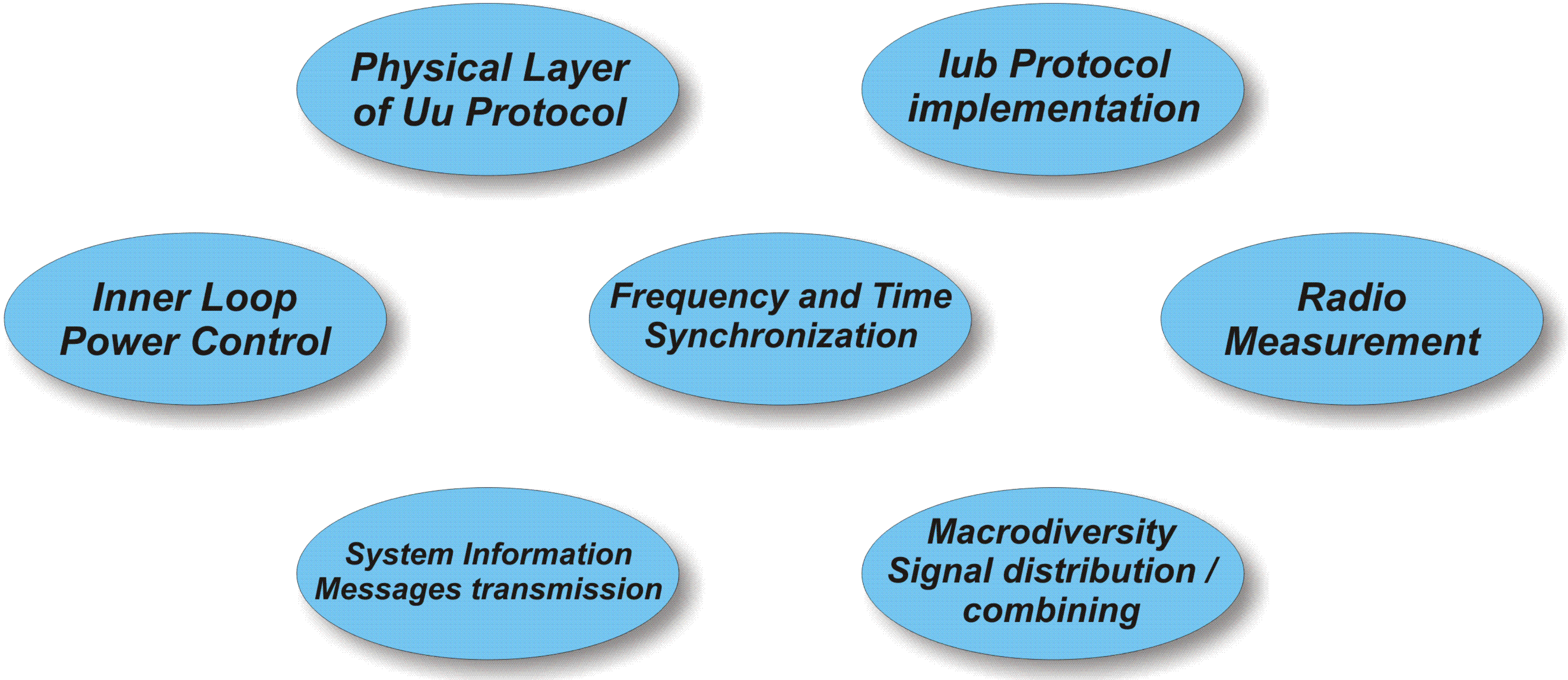
Tasks and Functions of the Node B



Tasks and Functions of the Node B

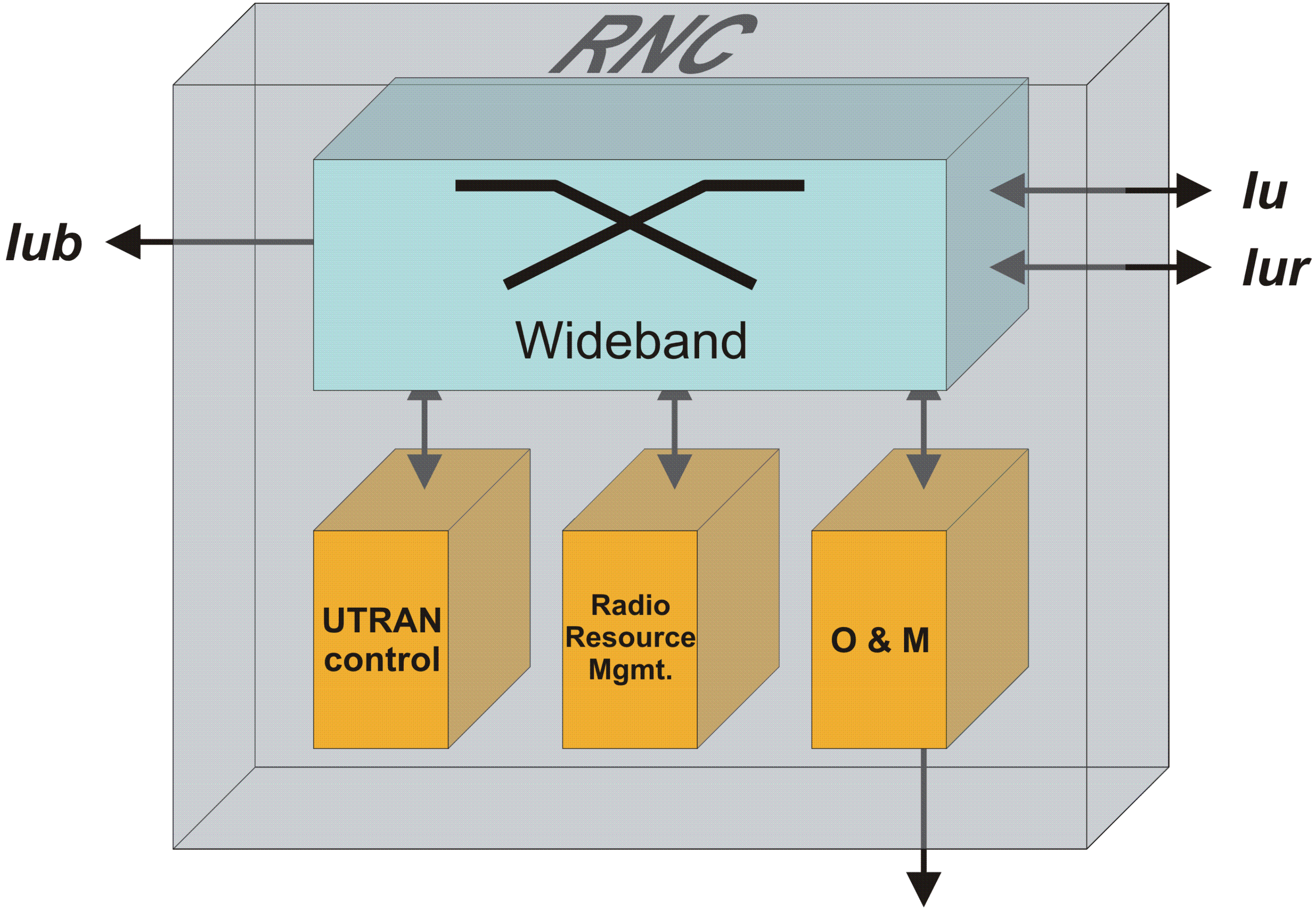
The main tasks for the node B are the implementation of the physical layer of the Uu interface on the one side and the implementation of the Iub interface protocol stack on the other side. The internal processing in the node B includes the transfer of information from the transport channels on the Iub interface to the WCDMA radio access physical channels on the Uu or air interface.

Besides this basic transfer function the node B handles the inner loop power control and performs the radio measurements e.g. for handover decision, load estimation in the cell, or for admission control as requested by the RNC. One other function is the frequency and time synchronization (chip, bit, slot, frame).

The system information messages will be distributed by the node B according to the schedule given by the RNC. In case of macrodiversity the node B handles the signal distribution to the different cells and also combines the received signals in case of softer handover.

The coordination between node B and RNC is performed on a master – slave basis.

Tasks and Functions of the RNC



Tasks and Functions of the RNC

The major tasks of the RNC are the connection of the radio bearer - or of radio bearers in case of macrodiversity - with the related Iu bearer. To maintain this connection between the core network and the UE also during movement of the UE the RNC contains a switching network suitable to switch wideband signals.

Additionally for the set up of radio bearers and for their release later on specific UTRAN control functions are necessary. The Radio Resource Management keeps control over the radio path stability and is responsible to guarantee the QoS of the radio connection.

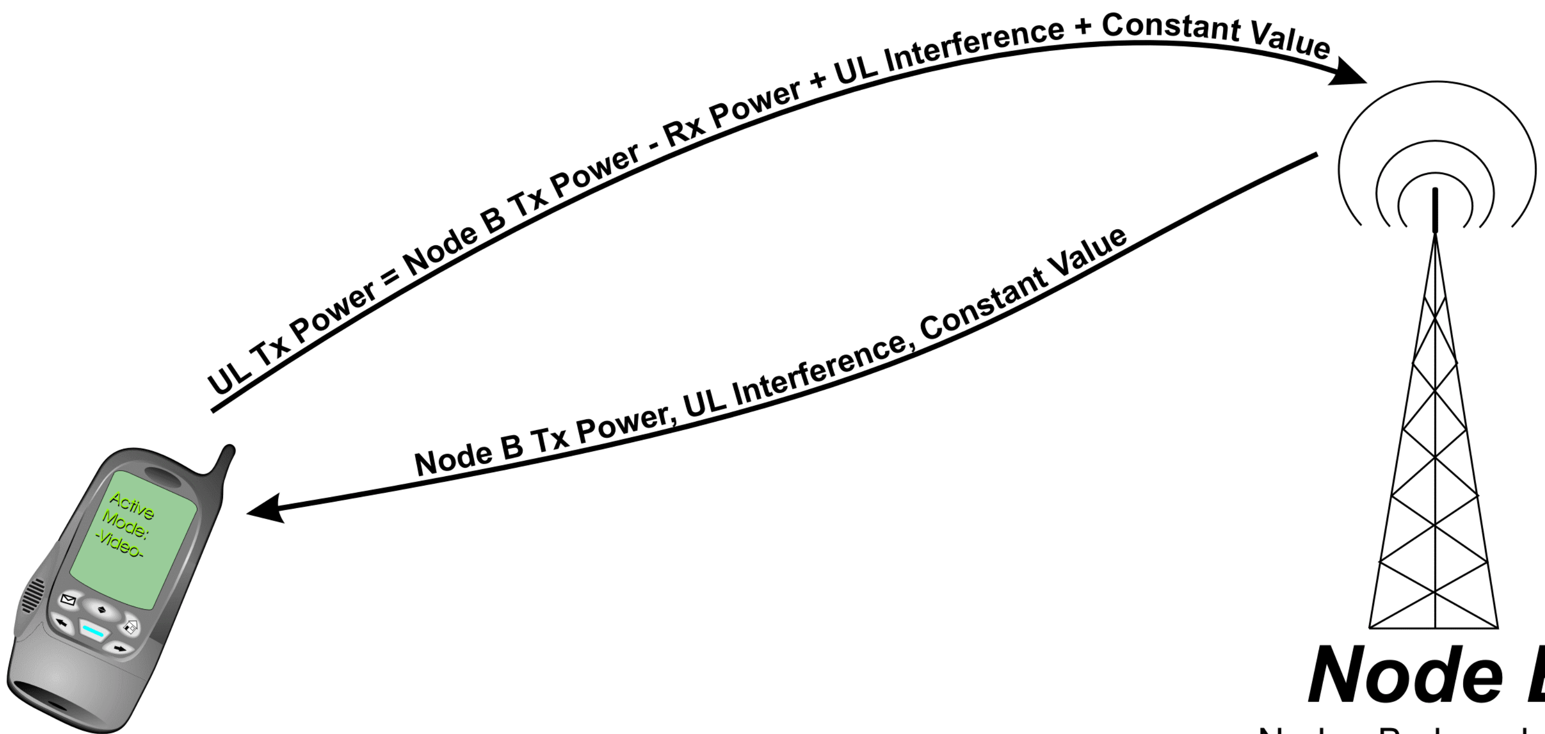
The major functions of the Radio Resource Management are:

⇒ handover control for user mobility
⇒ power control for interference minimization
⇒ admission control in case of new bearer set up and packet scheduling to limit the effects of bit rate variation and burstyness
⇒ code management mainly in case of downlink spreading code allocation

For control and management of the radio bearers additional functions called UTRAN control functions are requested:

⇒ system information broadcasting to inform about the individual cell conditions
⇒ random access control to avoid congestion
⇒ UTRAN security functions
⇒ mobility management in connected mode
⇒ database handling for UE and cell specific data
⇒ support of UE positioning for location based services
⇒
⇒ Also a network management interface for operation, administration, and maintenance is included in the RNC.

Open Loop Power Control



Node B

Node B broadcasts parameters to the UE

UE

UE calculates adequate Tx power using received parameters and measured Rx power

Open Loop Power Control

For Open Loop Power Control, the output power (TX power) of the UE is dependent on the received (RX) power.
NodeB transmits the parameters which are needed by the UE to calculate the adequate output power via the system information. The lower the RX power, the higher the TX power of the UE.

⇒ For open loop power control, the output power of the UE is solely based on the received power from the NodeB.

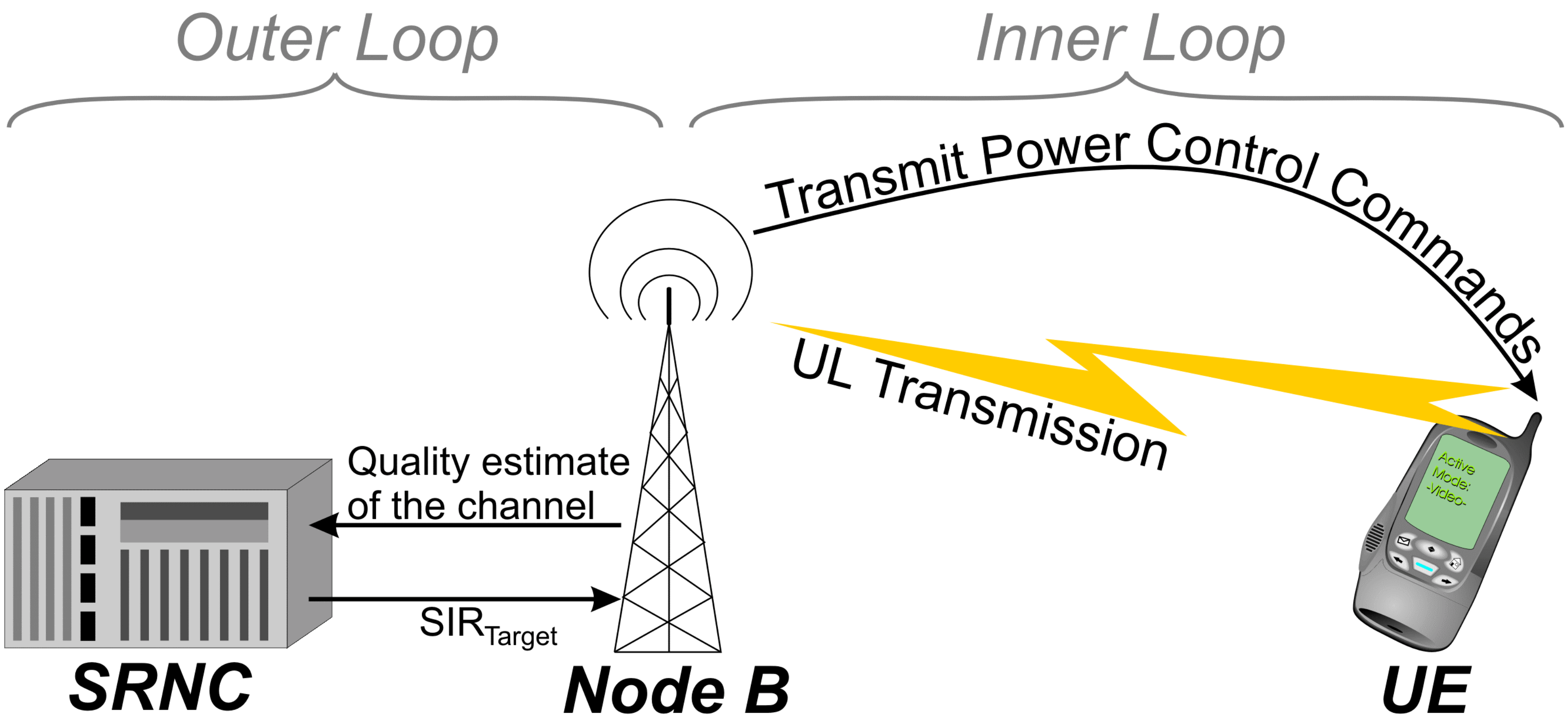
The problem is that the interference level is frequency selective. If, for example, only the downlink frequency has interference, the output power of the UE would be higher than needed resulting in unnecessarily high interference on the air interface.

⇒ Since the TX and RX signals in FDD use different frequencies (190 MHz shift), this method gives the right output power only on average.

The advantage of the Open Loop Power Control is that no feedback channel is required.

⇒ This method is used if no feedback channel is available, i.e. initial network access.

Closed Loop Power Control



SRNC compares the estimated level with the repaired quality level and sets SIR_{Target} for Inner Loop Power Control accordingly.

Node B estimates SIR and transmits TPC commands to achieve $SIR_{EST} = SIR_{Target}$

UE increases / decreases transmit power according to the TPC commands

Closed Loop Power Control

In contrast to open loop power control, closed loop power control is based on measurements performed by the receiving entity. Closed loop power control is used both in the uplink and in the downlink.
Closed loop power control is based on two measurements:

Outer Loop Power Control

The outer loop power control is located in the SRNC (UL) and in the UE (DL).
In the UL, the SRNC sets the SIR target for the UL inner loop power control which is located in the NodeB according to the target channel quality value.
The DL outer loop power control works in a similar way except that the UE estimates the DL channel quality. However, the DL channel quality target is also set by the SRNC.
The Outer Loop Power Control sets the SIR target for the Inner Loop Power Control according to the desired channel quality. The outer loop power control is more quality control of the radio channel than power control.

Typically, the outer loop power control is updated 10 – 100 times per second (10 – 100 Hz).

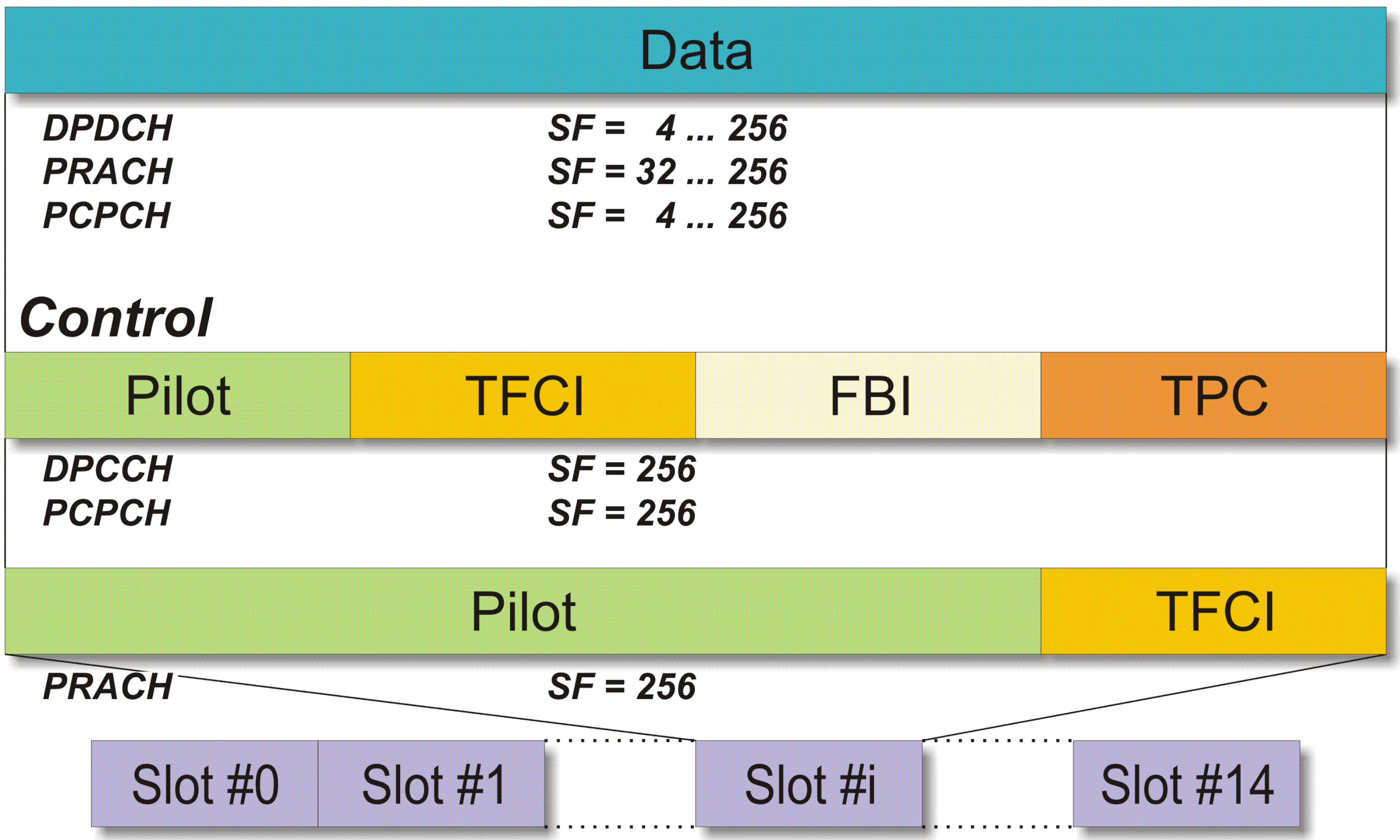
Inner Loop Power Control

The inner loop measures the SIR (Signal to Interference Ratio) on the air interface. The SIR target is determined by the Outer Loop Power Control.
The receiving entity sends a Transmit Power Control (TPC) command to the transmitting entity to either increase or decrease the transmission power.
The Inner Loop Power Control is based on the SIR received. Since the receiving entity controls the output power of the transmitting entity, one speaks about closed loop power control.

The Inner Loop Power Control is also referred to as fast-closed loop power control since the transmission power is updated each 0,667 ms (1500 Hz).

Uplink Radio Frame Structure

Data



Uplink Radio Frame Structure

In uplink direction I/Q code multiplex is used. Control data will be transmitted always in the Q plane, user data will be transmitted in the I plane, only if there are more than one coded composite transport channels available they will be assigned alternatively to the I and Q branches.

For the different data channels all spreading factors are allowed and the individual factor will be selected by the RNC depending on the data volume, the requested QoS and the actual interference situation in the serving cell. Only for the PRACH data channel the spreading factor is limited because the should be received also from the cell border.

For the control data always the highest spreading factor of 256 is applied providing also the highest spreading gain. The format of the control channel differs according to the channel type. In addition, for the DPCCH several slot formats exists with different length fields for the individual parameters selected by the RNC.

For the DPCCH two types of uplink channels exist; those that include a Transport Format Combination Indicator (TFCI, e.g. for several simultaneous services) and those they do not include a TFCI (e.g. for fixed-rate services). The number of FBI bits varies between 0 and 2. This field provides feed back information for closed loop mode transmit diversity and site selection transmission diversity (SSDT). The power control information (TPC) is 1 or 2 bits long and the pilot field carries between 3 and 8 bits. The total number of layer 1 control information per slot is always fixed to 10 bits, however the number of slots per frame used for transmission depends on normal and compressed mode.

Due to the same variation of the number of FBI bits in the PCPCH control message there are three different formats defined.

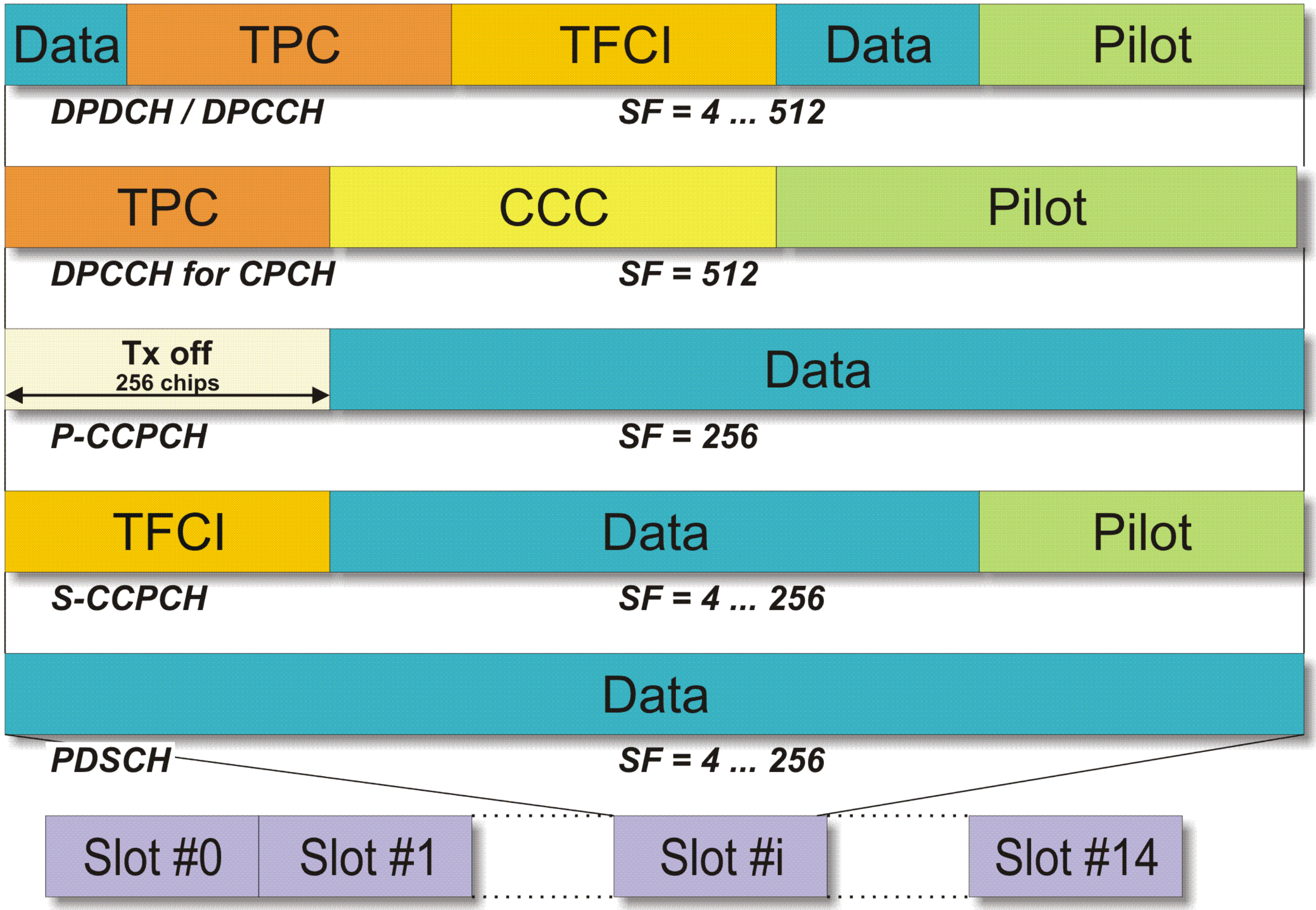
For the PRACH message control fields there is only one format specified with 8 pilot and 2 TFCI bits.

Remember: the control information transmitted in the pilot and TPC fields have to be processed every slot, the FBI fields have to be decoded every second or fourth slot and the TFCI fields have to be read over the complete frame period.

Remember: In the data path the spreading factor may change per radio frame.

[3GPP TS 25.211]

Downlink Radio Frame Structure



Downlink Radio Frame Structure

In downlink direction QPSK modulation is applied and control and user data are multiplexed together prior to the modulation stage.

For the DPDCH again different slot formats are defined for each of the selected spreading factor. Accordingly the number of data bits per slot comprise between 2 (SF = 512) and 1248 (SF = 4), the TPC bits for power control range between 2 and 8, the number of pilot bits are within 2 and 16, and depending on the service a TFCI may be included or not (TFCI bits between 0 and 8).

In principle the same variation span is possible for the Secondary Common Control Physical Channel (S-CCPCH).

The Primary Common Control Physical Channel (P-CCPCH) is a fixed rate downlink channel used to carry the Broadcast Channel (BCH). This channel is not emitted during the first 10% of each slot period. This would relieve the requirements on the UE's rake receiver because the same finger can be used for decoding of the synchronisation channels and the PCCPCH; additionally the cell interference level would not be increased during this first part of the slot period.

The previous chart also shows two more specific downlink channel formats:

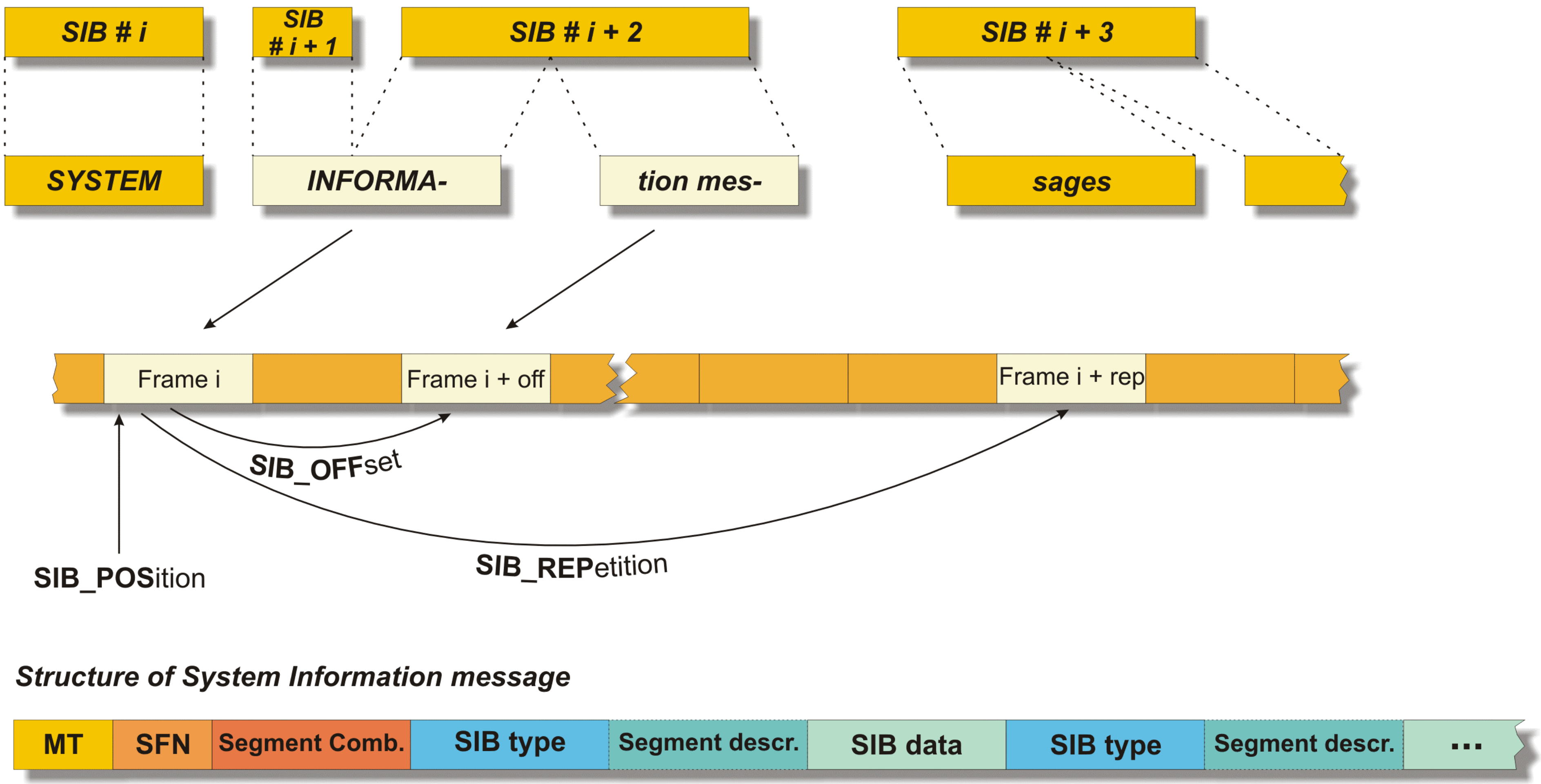
The Common Packet Channel (CPCH) is an uplink data channel that is assigned to one UE on a time interval basis (N_Max_frames). Due to the time period the CPCH is assigned to one UE, closed loop power control is mandatory and therefore a downlink DPDCH is necessary carrying only control information. Beside the pilot bits and power control data, CPCH Control Commands (CCC) are included to support CPCH signaling. An example for signaling using the CCC field is the emergency stop of CPCH transmission requested by higher layers.

For the Physical Downlink Shared Channel (PDSCH) there are no control data included because the (one or more) PDSCH is always associated with one downlink DPCH. Then the DPCCH part of the associated DPCH carries the relevant control information.

Remember: The spreading factor in downlink direction is fixed (except for DSCH), user data variation is handled by discontinuos transmission or rate matching

[3GPP TS 25.211]

SIB Transmission



SIB Transmission

The number of information elements and so the length of each system information block will differ resulting in different block length which have to be transferred using a predefined transport channel (BCH). Thus segmentation of longer SIBs into two or more segments as well as concatenation of two or more SIBs has to be done to form a system information message that will fill exactly one transport block. The transport format for the BCH is fixed to 246 bits, CRC size of 16 bits, ½ convolutional coding, and a TTI of 20 ms.

Due to segmentation, a SIB may be transmitted completely or in segments as first, subsequent or last segment of a SIB (one SIB may be segmented in up to 16 segments). Consequently a system information message may include the different combinations (First segment, subsequent segment, last segment, last + first, last + one or several complete, last + one or several complete + first, one or several complete, etc.).

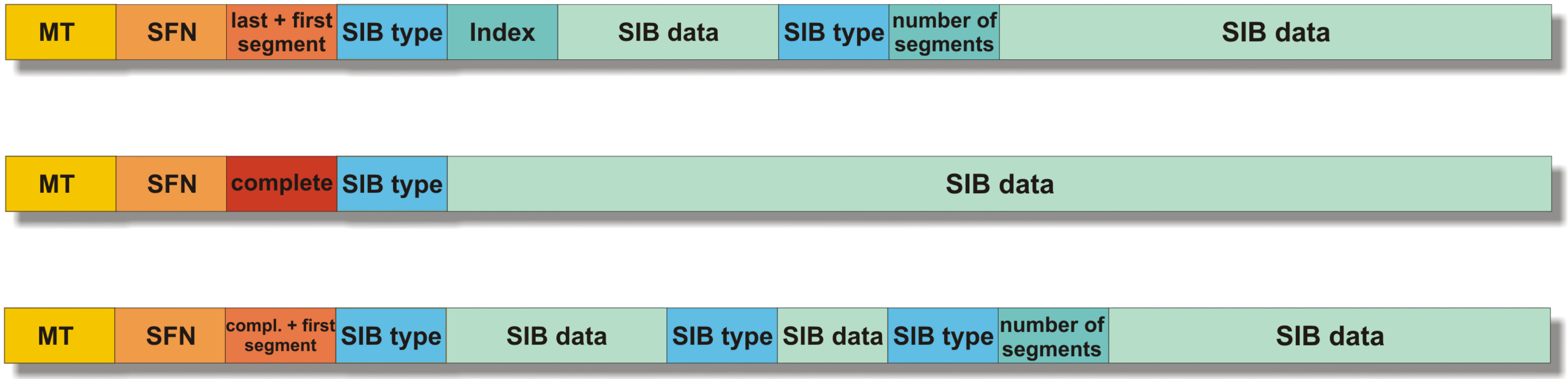
The detailed structure of a system information message is given by the RRC message type (MT) followed by the system frame number (SFN). After that the actual segment combination is indicated (as described above) followed by the individual SIB(s) or SIB segments. Each SIB or SIB segment first includes the SIB type, followed by a segment descriptor and the SIB data. The segment descriptor includes details of the current segment (e.g. number of segments if it is the first segment of a SIB, segment index if it is a subsequent or last segment, or there will be even no descriptor included if it is a complete SIB).

From the scheduling information for each SIB given in the Master Information Block or the Scheduling Blocks the starting position (SIB_POS), the number of segments and its positions (SIB_OFF) and the repetition rate (SIB_REP) can be derived. All positions are given with respect to the system frame number of the cell.

[3GPP TS 25.302 / 25.331 (8.1.1.1.3; 8.1.1.1.5; 10.2.48 to 10.2.48.7)]

System Information Messages

- **Examples**



System Information Messages

The first example shows a combination of the last and the first segment of two SIBs. Depending on the segment combination between SIB type and SIB data additional information may be included. The last segment of a SIB will always include the SIB type followed by an index field. The index field is included in a subsequent segment and a last segment only. For a last segment indication the index must match with the number of segments field included in the first segment of this SIB. Next the data field follows.
In the second SIB of this example a first segment is included with the SIB type, the number of segments and the SIB data field.

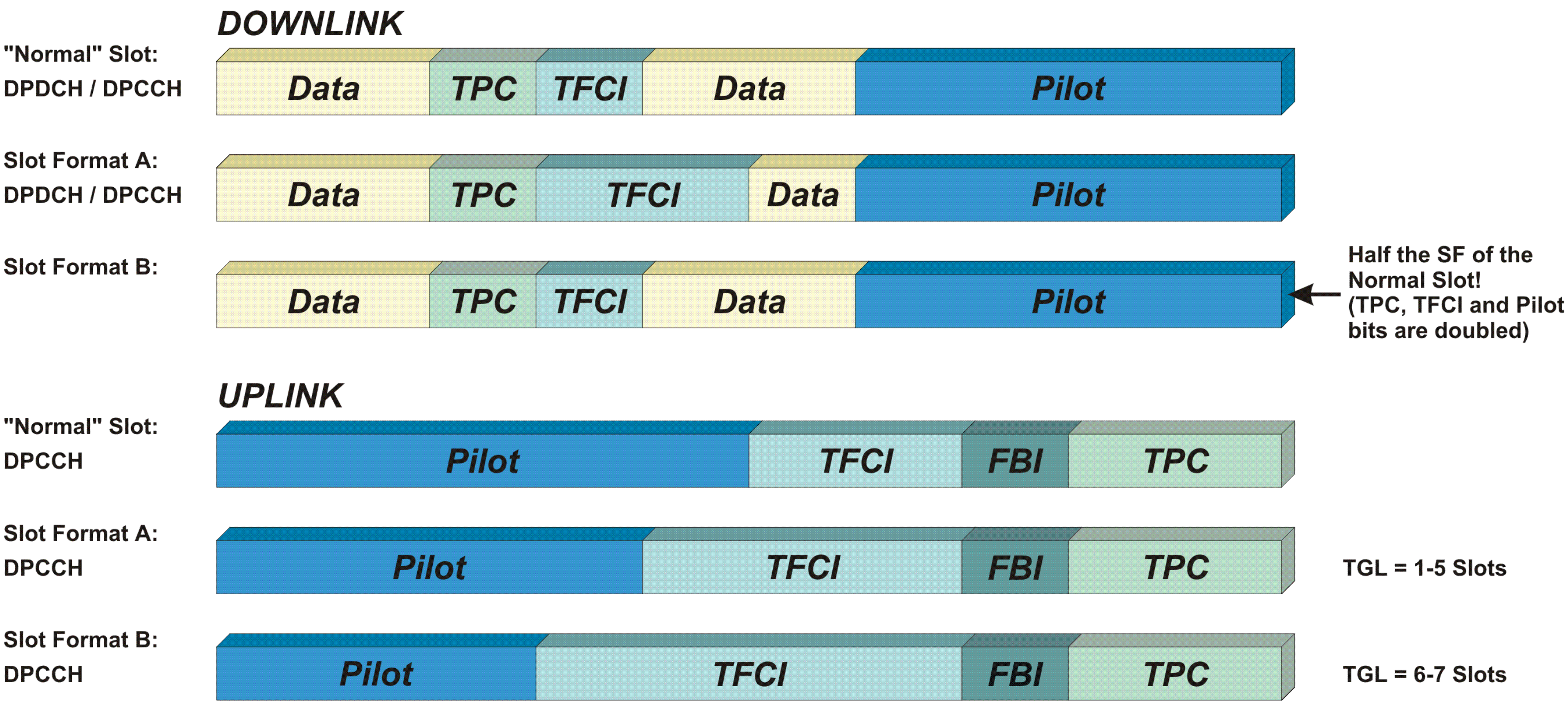
The second example shows the SIB information message for a complete SIB.

The last example includes one or several complete SIBs and the first segment of a SIB. Two complete SIBs follow each with SIB type and SIB data field. For the last SIB of which only the first segment is included again the number of segments is included to show how many segments will follow.

Note: in case a complete or last segment will not fill the system information message completely padding shall be applied.

[3GPP TS 25.331 (8.1.1.1.3 & 10.2.48.x)

Slot formats for Compressed mode



Slot formats for Compressed mode

In compressed mode less slots are transmitted as in normal mode. Therefore on DPCCH less data can be transmitted. But since the number of TFCI-bits to be transmitted per frame in compressed mode is the same as in normal mode, the number of TFCI bits per slot has to be increased in compressed mode.

Downlink:

In DL there are two different slot formats defined:

⇒ Slot Format A:

In Slot Format A the number of TFCI bits per frame is doubled, in order to allow for the transmission of the 30bit TFCI word per frame. If 7 slots out of 15 are not transmitted, twice the number of bits per slot is needed to transmit the same data per frame. Since the DPCCH and the DPDCH are time multiplexed in DL, the number of DPDCH bits has to be reduced in order to expand the DPCCH.

Slot Format A is used when the transmission time reduction method is either puncturing or higher layer scheduling.

⇒ Slot Format B:

This slot format is used if the transmission time is reduced by reducing the SF by 2. For this Slot Format the number of pilot bits and TPC (transmission power command) bits is doubled compared to the “normal” slot format.

This is necessary since the processing gain is decreased with spreading factor reduction. In order to keep the BER of the pilot bits and the TPC bits constant, either the output power can be changed or the number of bits can be increased. To avoid a higher interference level on the DL path, the second method is used to keep the BER of the pilot bits and the TPC bits constant. Mind that the TFCI must be doubled anyway to fit the TFCI bits!

Slot Format B is used when the transmission time is reduced by reducing the SF by the factor two.

Uplink:

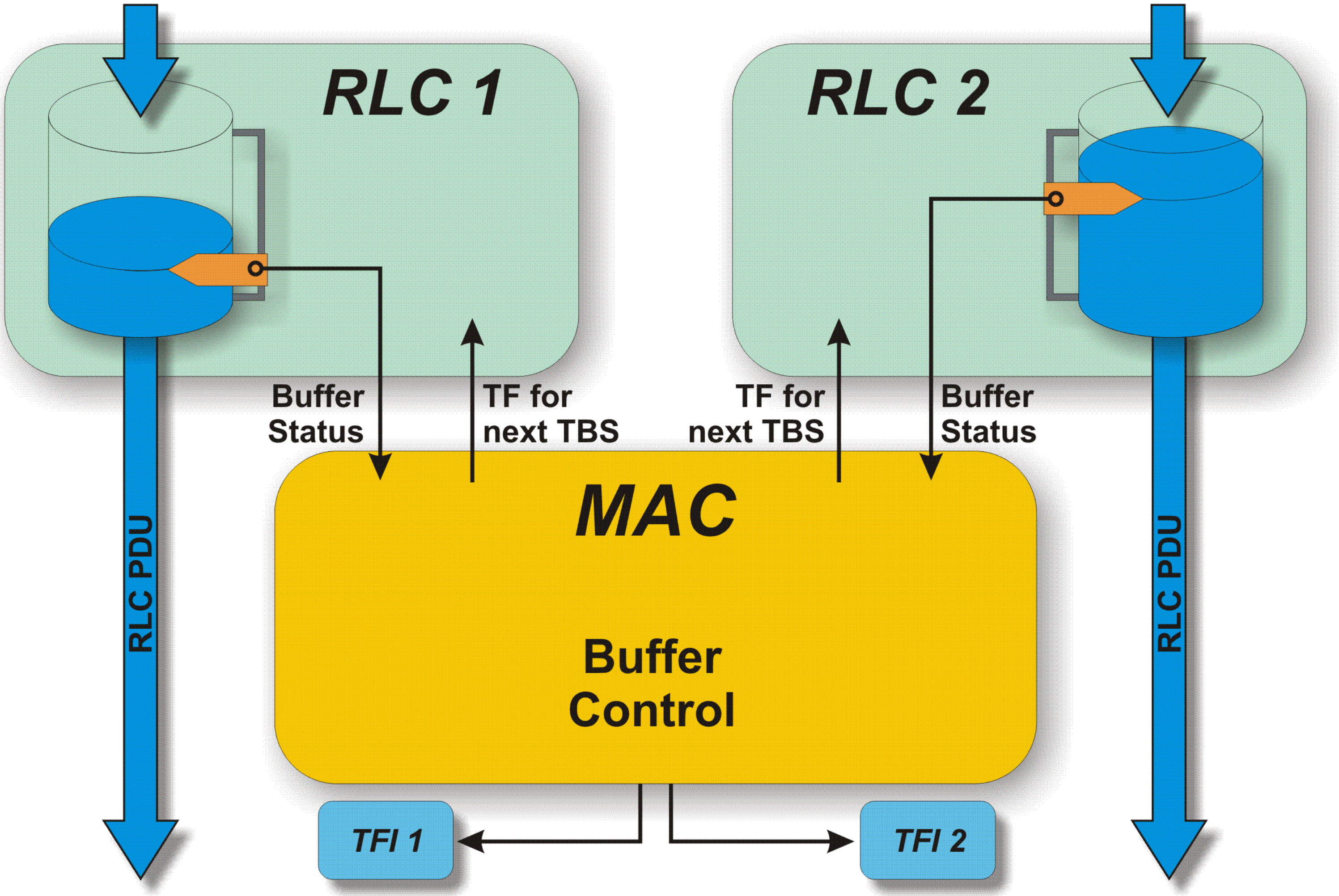
In UL also two different slot formats are defined for the DPCCH. Which slot format has be used is defined by the TGL.

The intention is the same like in DL -> since the DPCCH and the DPDCH is compressed, the number of bits in the frame would not fit the TFCI.

⇒ Slot Format A is used if the TGL is 1 to 5Slots

⇒ Slot Format B is used if the TGL is 6 or 7 slots.

Buffer Control



Buffer Control

Traffic volume measurement is made by MAC using the buffer status of the RLC buffer. MAC receives RLC PDUs together with the buffer status from RLC (MAC may multiplex these PDUs)

The buffer status indicates for each logical channel the amount of data in number of bytes that is available for transmission and retransmission in the RLC layer. When MAC is connected to an acknowledge mode RLC entity, control PDUs to be transmitted and RLC PDUs outside the RLC transmit window shall also be included. But RLC PDUs that have been transmitted but not negatively acknowledged by the peer entity shall not be included.

Based on the buffer status of the different RLC data streams (in case of MAC multiplexing of different user application data streams) MAC selects the transport format combination (TFC) for the next frame and sends the TF back to the individual RLC entities. Further MAC forwards the transport format indicators (TFI) and the data for this transport block set (TBS).

The traffic volume measurement parameters like mode, reporting quantity identifiers, time interval to take an average or a variance, reporting interval and threshold values for range control for each transport channel are given to MAC via internal primitives.

Note: there is no buffer in the MAC layer, MAC delivers its data always unacknowledged.

[3GPP TS 25.321]

MAC Header and Channel Mapping

	Logical Channels					
	User Plane		Control Plane			
Transport Channels	DTCH	CTCH	DCCH	CCCH	BCCH	PCCH
RACH	TCTF, UE-Id type UE-Id C / T		TCTF, UE-Id type UE-Id C / T	TCTF		
FACH	TCTF, UE-Id type UE-Id C / T	TCTF	TCTF, UE-Id type UE-Id C / T	TCTF	TCTF	
DCH	(C / T)		(C / T)			
CPCH	UE-Id type UE-Id (C / T)		UE-Id type UE-Id (C / T)			
DSCH	UE-Id type UE-Id (C / T)		UE-Id type UE-Id (C / T)			
BCH					No Header required	
PCH						No Header required

MAC Header and Channel Mapping

For BCCH and PCCH no MAC header will be included. Both transport channels are transmitted in a downlink point-to-multipoint manner, no direct UE addressing is possible, also no other logical channels will be mapped.

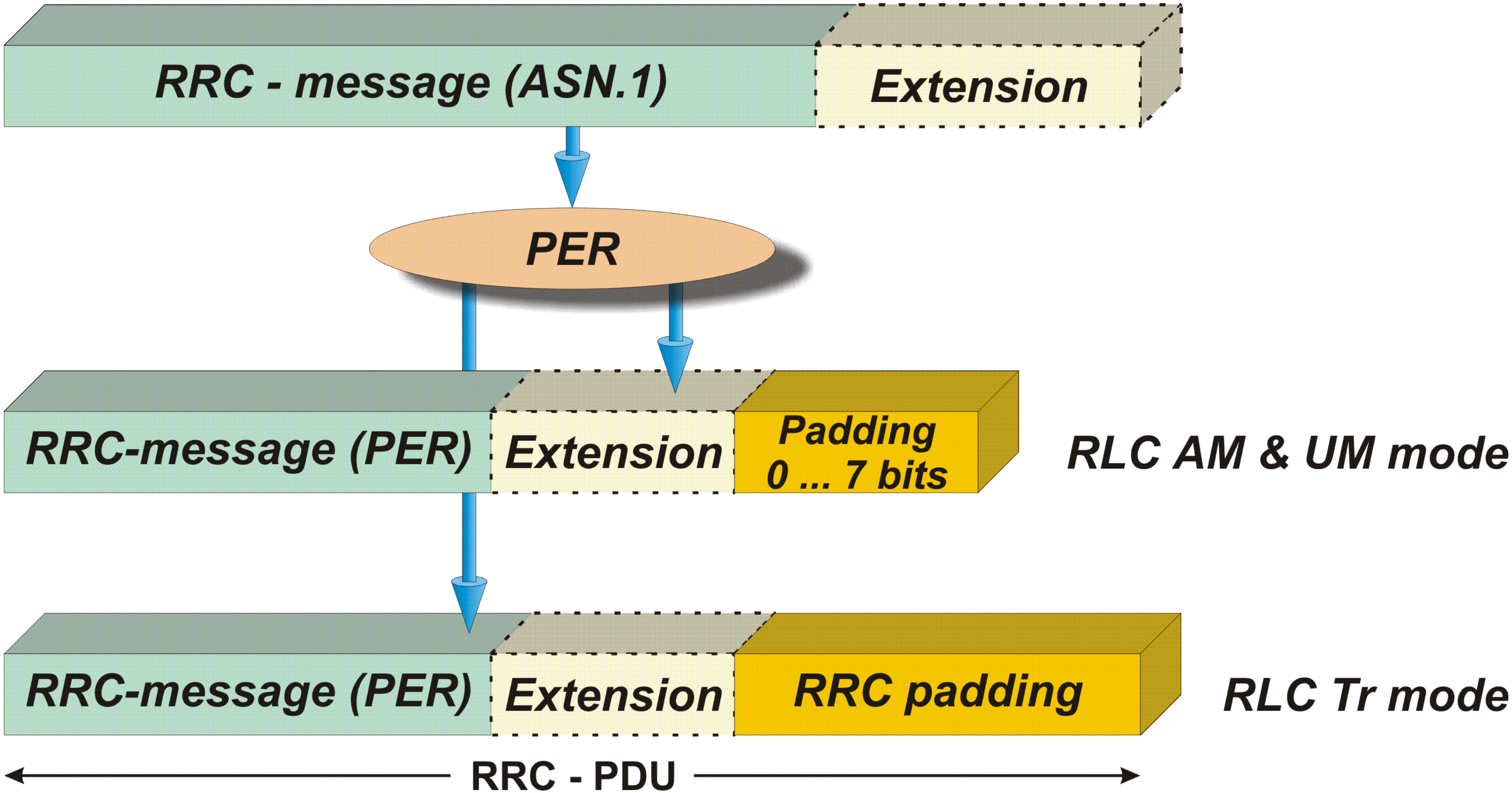
Mapping of dedicated channels on RACH/FACH require the TCTF field to indicate a dedicated logical channel as source and the C/T field to separate DTCH and DCCH. Additionally UE identification is necessary because several UE will use the same common channel. For the CCCH no UE identification is possible because temporary identifiers are not yet assigned. Identification of the UE is given by the “Initial UE identity IE” in the message part of RRC connection messages.
For CTCH and BCCH transmitted over FACH as broadcast channels there is also no other header necessary as to identify the logical channel source.

For dedicated transport channel a C/T field has to be included only in case of MAC multiplexing of different DTCH (or DCCH).

Over common channels like CPCH or DSCH only dedicated logical channels are transmitted so only UE identification is required and additionally the C/T field in case of MAC multiplexing.

[3GPP TS 25.321 (9.2.1)]

RRC Message Encoding



RRC Message Encoding

An RRC PDU which will be transferred to the RLC layer for transmission is built up by concatenation of the encoded RRC message, an extension part and a padding part.

The RRC message is defined by information elements in a tabular form, the discrete information elements are described in the ASN.1 notation and then encoded by applying the Packet Encoding Rules (PER).

The encoded message may contain an extension part for future extensions like extended values, additional choices or even new information elements. During the encoding step padding bits may be applied according to the encoding rules.

For RLC acknowledged or unacknowledged mode transfer padding to an octet aligned number is performed.

DCH Iub/Iur FP Services

Transmission of Transport Block Sets

Radio parameter update

Timing Adjustment

Outer loop power control

Link Synchronization

DSCH TFCI Signaling

Node synchronization

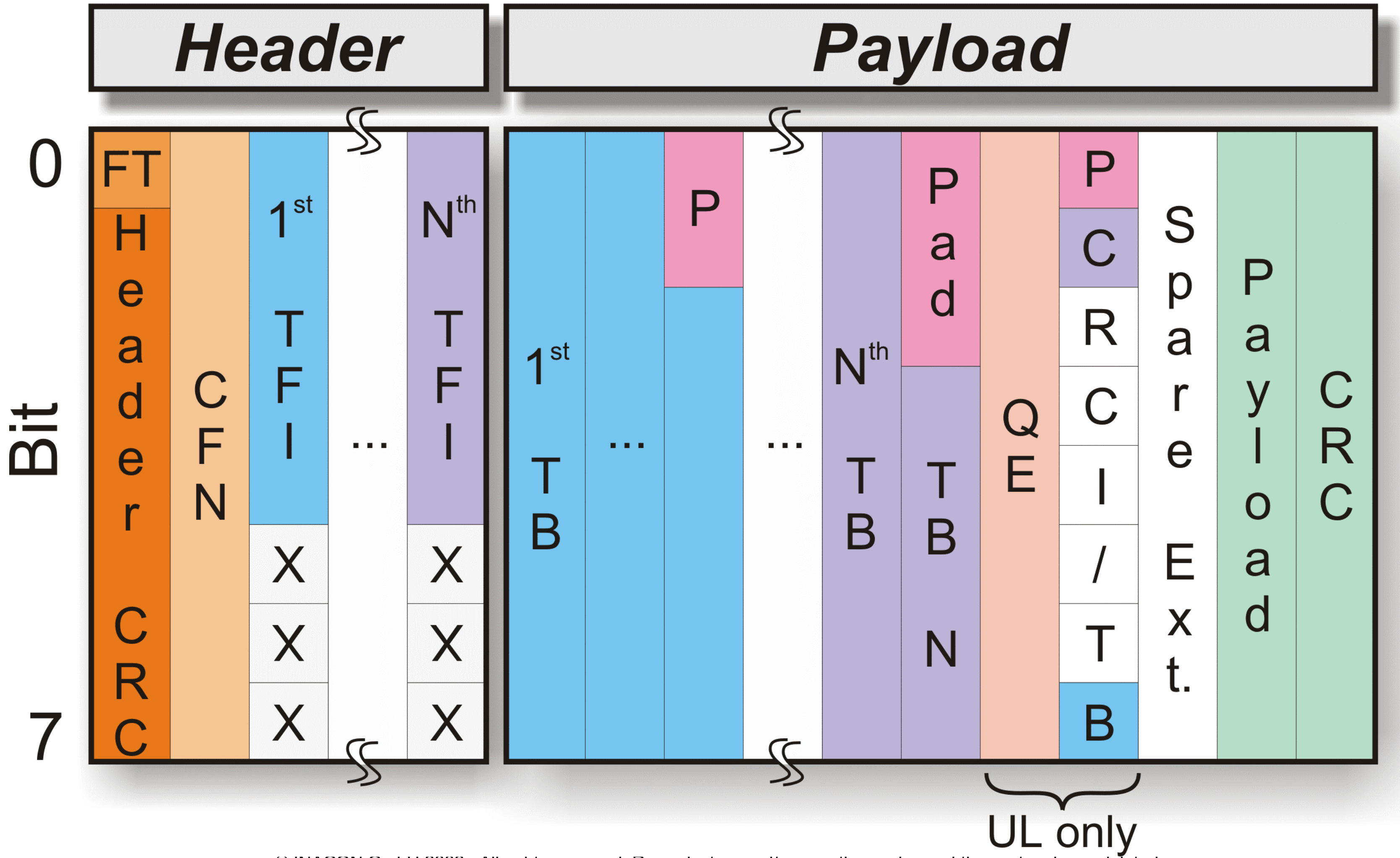
DCH Iub/Iur FP Services

Besides the main task for the Iub/Iur frame protocol for dedicated channels which is the transfer of transport block sets, several control functions are also handled:

- **Radio interface parameter update**
  With this procedure power control parameter for all radio links of one UE will be updated. This message will include an offset value between DPDCH information and the TPC bits on the DPCCH to be applied in DL.
- **Timing adjustment**
  This procedure is used to keep the synchronization of the DCH data stream in DL direction, i.e. to ensure that the Node B receives the DL frames in an appropriate time for the transmission of the data in the air interface.
- **Link synchronization**
  The synchronization procedure is used to achieve or restore the synchronization of the DCH data stream in DL direction, and as a keep alive procedure in order to maintain activity on the Iur/Iub transport bearer.
- **Outer loop power control**
  Based, for example, on the CRC Indicator (CRCI) values and on the quality estimate in the UL frames, SRNC modifies the SIR target used by the UL Inner Loop Power Control by including the absolute value of the new SIR target in the OUTER LOOP PC control frame sent to the Node B's.
- **Node synchronization**
  This procedure is used by the SRNC to acquire information on the Node B timing. Based on frame numbers the node B indicates when it has received a RNC synchronization request and when the response is send back.
- **DSCH TCFI Signaling**
  This procedure allows the node B to build the TFCI word(s) which have to be transmitted on the associated DPCCH. It consist of sending the DSCH TCFI signaling control frame from the SRNC to the node B. It contains the TFCI of the DSCH and the corespondent connection frame number and is send every radio frame interval as long as there are data to be transmitted to that UE on the DSCH.

[3GPP TS 25.427]

DCH Data PDU Format



DCH Data PDU Format

The general structure of a DCH UP frame consists of a header and a payload. The header contains a CRC checksum, the frame type field and information related to the frame type. There are two types of DCH UP frames (indicated by the Frame type field): 0=DCH data frame, 1=DCH control frame.
The payload of the data frames contains radio interface user data, quality information for the transport blocks and for the radio interface physical channel during the transmission time interval (for UL only), and an optional CRC field.

The purpose of the user data frames is to transparently transport the transport blocks between Node B and Serving RNC. A PDU spans exactly the data volume of one TTI interval.The protocol allows for multiplexing of coordinated dedicated transport channels, with the same transmission time interval, onto one transport bearer. The transport blocks of all the coordinated DCHs for one transmission time interval are included in one frame.
(Coordinated DCHs are always established and released in combination and cannot be handled separately, e.g. if one DCH fails during establishment all the other DCHs establishment would be terminated unsuccessfully. An example for coordinated DCHs are the three DCH for the three different bit protection classes of an AMR PDU). SRNC indicates the multiplexing of coordinated dedicated transport channels in the appropriate RNSAP/NBAP message (e.g. *Radio Link Setup Request* message).

There are as many TFI fields as number of DCH multiplexed in the same transport bearer. The size and the number of TBs for each DCH is defined by the correspondent TFI. If the TB does not fill an integer number of bytes, then bit padding is used in order to have the octet aligned structure.

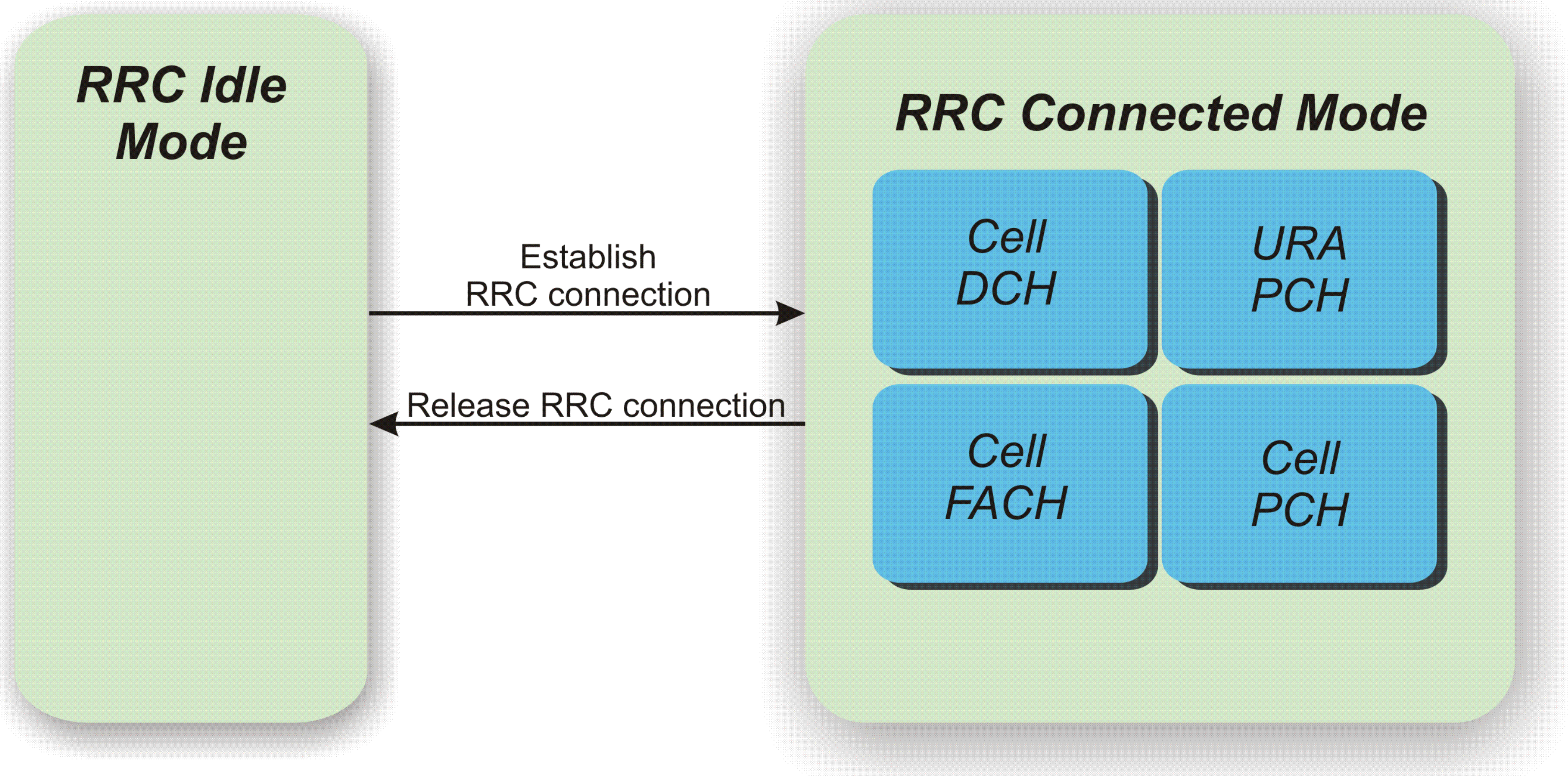
The 8 bit quality estimate (QE) is derived from the transport channel bit error rate
There is a CRCI for each TB included in the frame irrespective of the size of the TB, i.e. the CRCI is included also when the TB length is zero. The CRCI indicates if the CRC check for radio transmission was correct (0) or not (1).

The payload CRC is optional, i.e. the whole 2 bytes field may or may not be present in the frame structure (this is defined at the setup of the transport bearer).

The Spare Extension indicates the location where new IEs can in the future be added in a backward compatible way. The Spare Extension shall not be used by the transmitter and shall be ignored by the receiver.

[3GPP TS 25.401 (3.1); 25.427 (6.2)]

RRC States


RRC Idle Mode
Establish RRC connection
Release RRC connection
RRC Connected Mode
Cell DCH
URA PCH
Cell FACH
Cell PCH

RRC States

As in GSM the radio control states are divided into two major parts, the idle mode and the connected mode. In the idle mode no dedicated radio resource is allocated, however the UE has to perform a lot of different tasks, like neighbour cell monitoring, cell reselection, paging channel observation, and broadcast messages reception and decoding.

In RRC Idle mode the UE is identified by a CN associated identity (IMSI, TMSI, P-TMSI). In this mode it is the broadcast MM system information (e.g. information about the present LA and present RA) that determines when the UE initiates a location registration procedure towards the CN. An UE crossing an LA border, in state MM-IDLE and RRC Idle mode, shall initiate a LA update towards the CN. An UE crossing an RA border, in state PMM-IDLE and RRC Idle mode, shall initiate a RA update towards the CN.

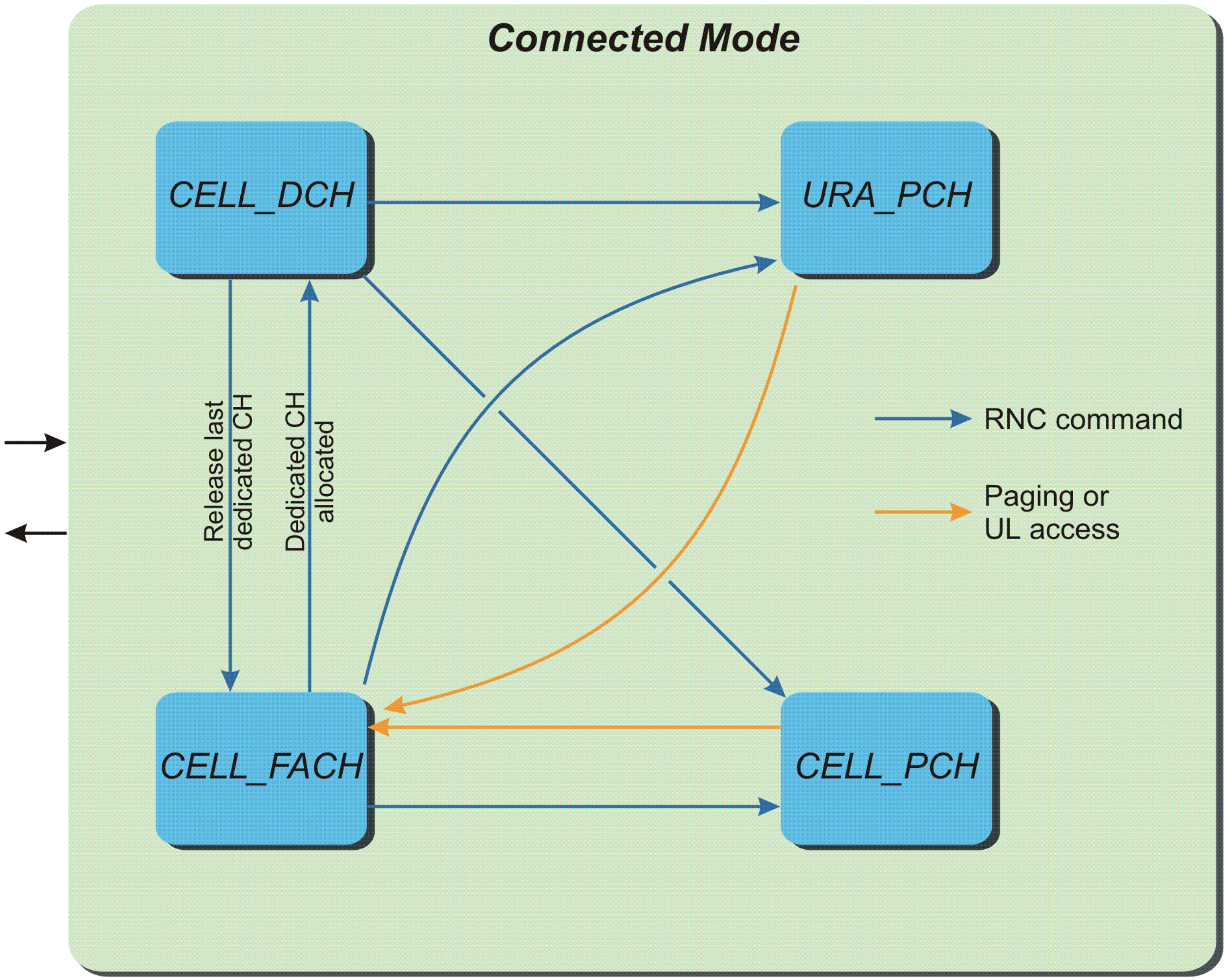
The UE is not visible in the UTRAN and cannot be paged by the UTRAN.

In RRC Connected mode a duplex radio connection exists and the UE is assigned a Radio Network Temporary Identity to be used as UE identity on common transport channels. When the UE is allocated dedicated transport channels, it uses the inherent addressing provided by these transport channels. In this mode, the UE receives the MM system information on the established RRC connection (i.e. the broadcast MM system information is not used by the UE in the RRC connected mode.). An UE receiving information indicating a new LA, in state MM-IDLE and RRC Connected mode, shall initiate LA update towards the CN. An UE receiving information indicating a new RA, in state PS-IDLE and RRC Connected mode, shall initiate RA update towards the CN. An UE in state MM- res. PMM-CONNECTED and RRC Connected mode, shall not initiate LA res. RA update towards the CN.

The UE position is known on cell or URA level.

[3GPP TS 25.331]

RRC Connected Mode States and Transitions



RRC Connected Mode States and Transitions

In RRC connected mode four different states are defined:

CELL_DCH

With the set up of a dedicated connection this state is entered. It will be left when the connection is released. The UE is known on cell level. Depending on the service different RRC procedures may be applied, e.g. for services with highest QoS class like circuit switched speech service handovers will be performed, for lower QoS classes like web surfing cell update procedures will be used. However if there is no data to be transferred the RNC will move to the CELL_PCH state.

CELL_FACH

In this state no dedicated connection exists, but data can still be transferred. Data transfer will take place via common or shared channels like FACH or CPCH. Such a transfer is beneficial if no great amount of data have to be transferred because the total channel capacity is split among several users. This saves channelization codes. On the other hand the UE has to monitor the Forward Access Channel which means more power consumption. Therefore in inactive periods the RRC moves from the CELL_FACH state to the CELL_PCH state (based on RRC command via information element “RRC state indicator” with value CELL_PCH).

CELL_PCH

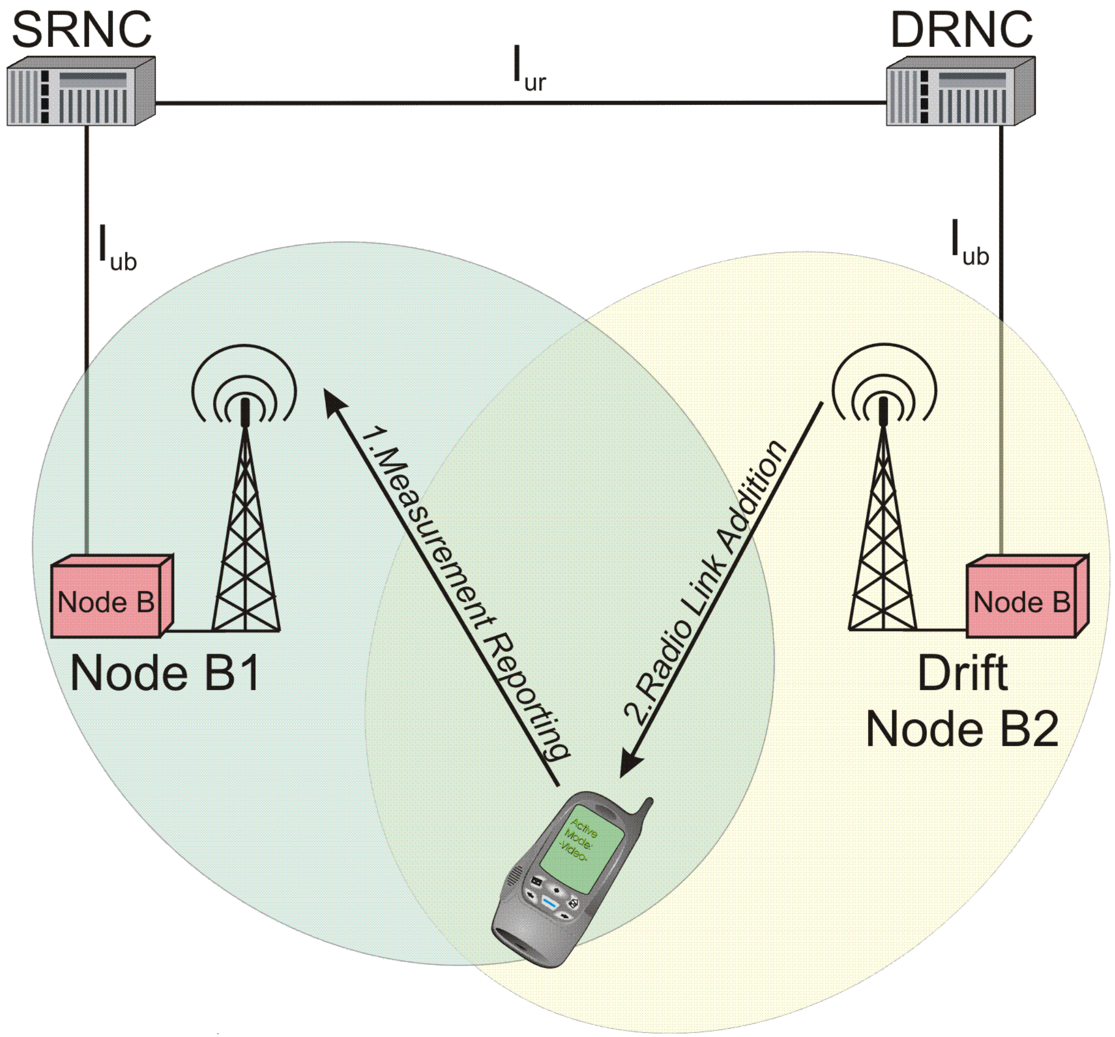
In the CELL_PCH state the UE has to monitor the Page Indication Channel (PICH) only. Also the cell broadcast messages and the system information blocks are received. There still exists a logical RRC connection. The CELL_FACH state will be re-entered after reception of a paging message or when an uplink transfer in initiated. In this state the UE is known to the UTRAN on cell level, hence in this state the UE will perform cell update procedures.

URA_PCH

Again if the activity of the UE is low or the UE mobility is high the UTRAN may request a move to the URA_PCH state which is similar to the CELL_PCH state. In this state an update procedure is only initiated when the UTRAN registration area changes, this reduces the signaling effort on the air interface. On the other hand in case of downlink transfer initiation paging has to be performed in a greater area which means increasing of the overall noise level. Paging will be performed also by the UTRAN/RNC in case of mobile positioning processes.

[3GPP TS 25.331]

Soft Handover



Soft Handover

Soft handover requests that there is a further cell available to which the UE may set up a connection. Only if a cell fulfils the criteria set by the network for cell selection this cell may be added to the active set. If such a cell is identified by related measurements, the UE sends a measurement report to the network.
The decision whether the cell can be added to the active set of the UE is done by the RNC.
The RNC will not add the cell to the active set, if e.g. the cell is overloaded, when the estimated resulting total interference level on the air interface is higher than it would be without the Soft Handover, etc.

Measurement Reporting

The RNC configures the measurements to be performed and sets the reporting criteria in the UE. If the reporting criteria is fulfilled (i.e. CPICH better than a defined threshold) the UE reports the measurement result to the network.

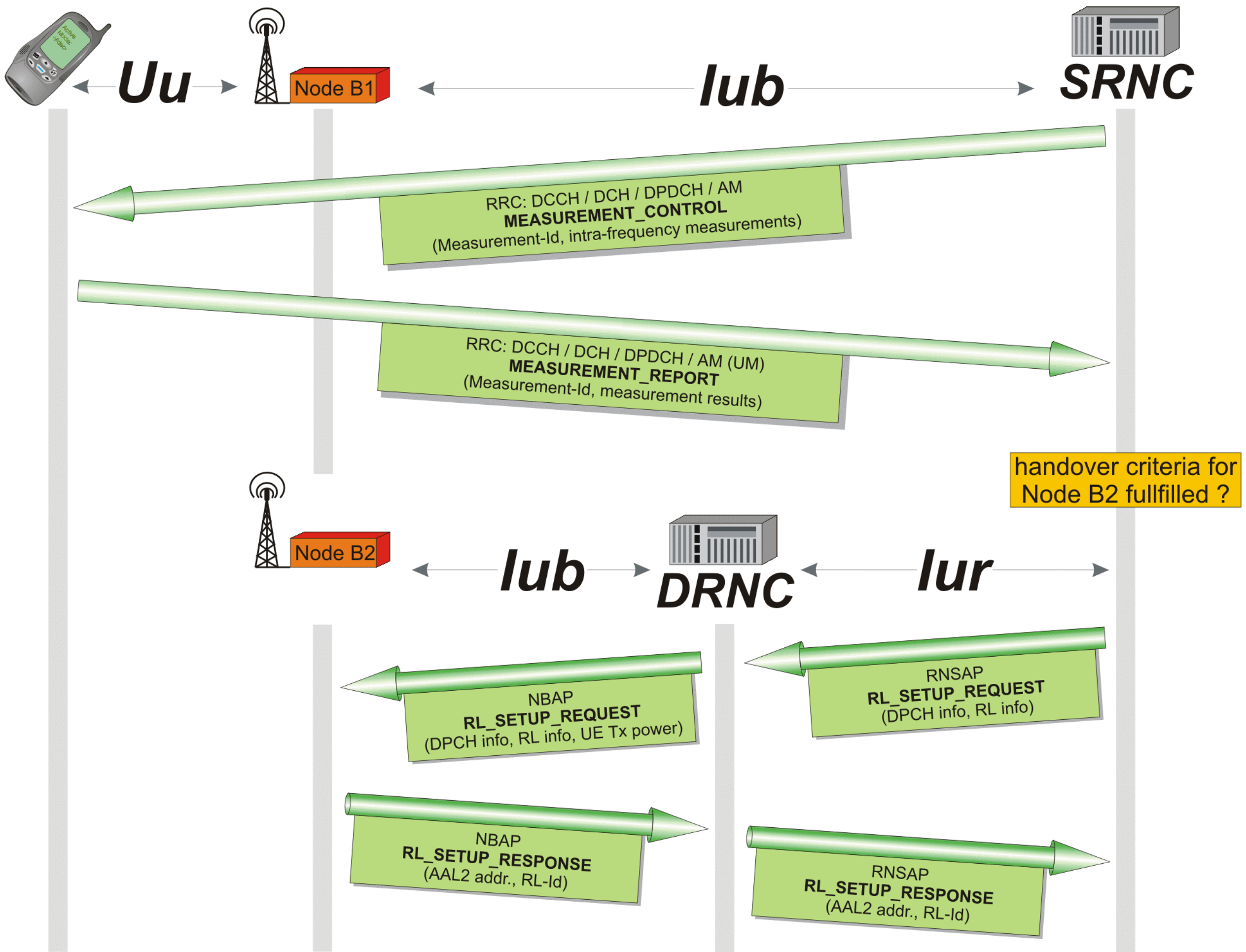
Radio Link Addition

To add a cell to the active set of the UE (all cells used by the UE in the Soft Handover are part of the active set), the network initiates a radio link addition (mind that this procedure is triggered by the measurement results reported by the UE).

Radio Link Deletion

After UE movement when the radio link will not longer fulfil the handover criteria the radio link will be deleted again.

Soft Handover – Radio Link Addition



Soft Handover – Radio Link Addition

Radio Link Addition

The starting point for this scenario is an UE having a DCH connection to the SRNC via nodeB 1. The UE is further connected to the CS domain.

The initiation of measurements to be performed by an UE may be received individually from RNC RRC layer in an RRC_MEASUREMENT_CONTROL message or may be included in a system information (SIB12) broadcasted on the BCCH. The message content will include an identifier and the type of measurements to be performed (inter-frequency, intra-frequency, inter-RAT, UE positioning, traffic volume, etc.) as well as the reporting occasion and the RLC mode (AM or UM).

The handover algorithm located in the SRNC averages and investigates the contents of the received measurement reports. Based on this results it can realize that a radio connection via nodeB 2 will also fulfil the handover criteria.

From the internal network database the SRNC finds out that nodeB 2 is connected to an RNC not belonging to the same RNS.

Using the Iur interface the SRNC will transmit an RNSAP RL_SETUP_REQUEST message to the DRNC. This message will trigger the DRNC to forward an NBAP RL_SETUP_REQUEST message over the Iub interface to nodeB 2 to establish a radio link between nodeB 2 and the UE. The most important contents of this message are DPCH infos (UL scrambling code, UL and DL TFCSs, DPCH power offset, Tx power, etc.). After configuration of the nodeB 2 lower layers this status is confirmed back to the DRNC together with the nodeB 2 AAL2 address in the transport network. Also the nodeB 2 will start to receive the UE UL-data. The SRNC is also informed about the related DRNC address information.

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