The 3GPP vision

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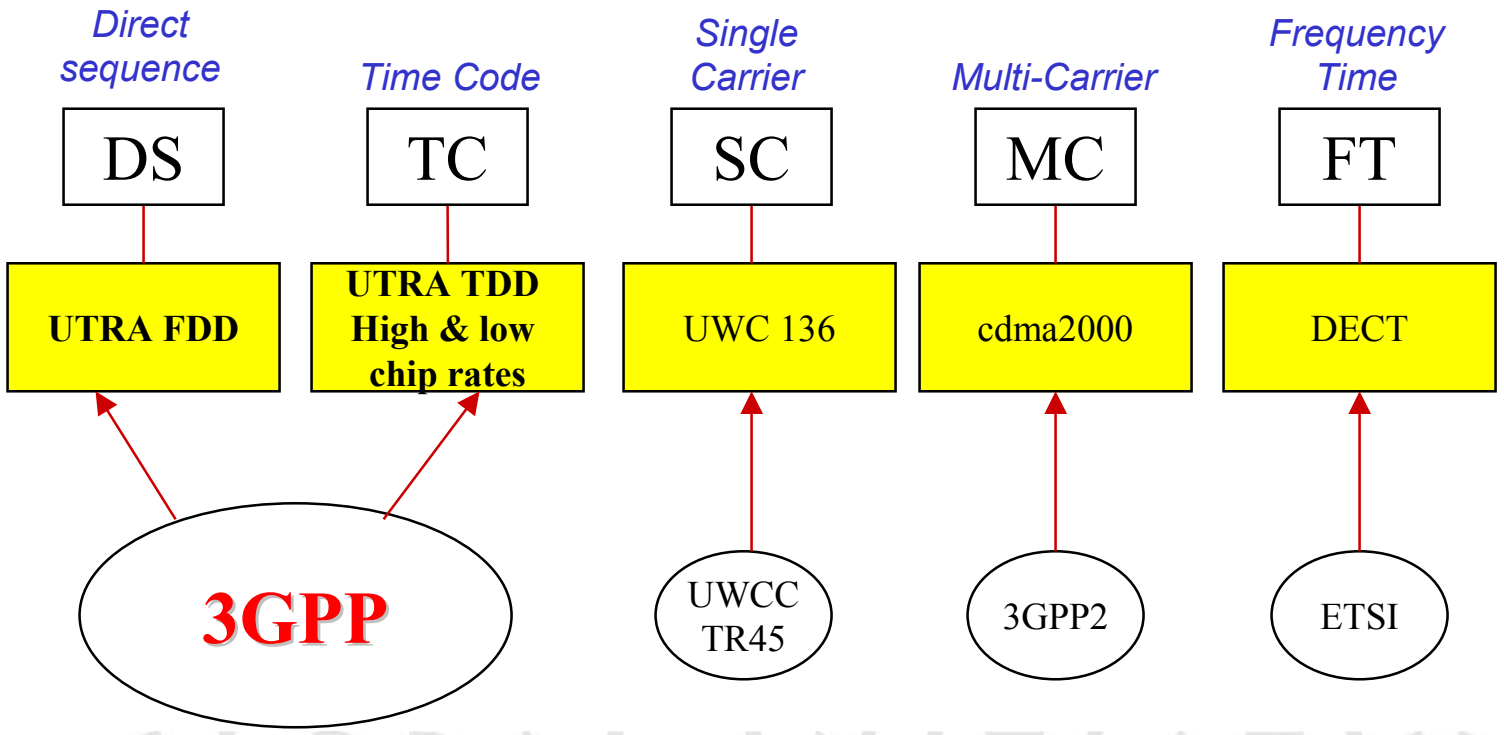
Chairman, 3GPP Project Co-ordination Group

IMT-2000

The 5 IMT 2000 terrestrial interfaces agreed by ITU-R



What is 3GPP ?

3GPP is:

A collaborative agreement between Standards Development Organizations (SDOs) and other related bodies for the production of a complete set of globally applicable Technical Specifications and Reports for:

- a 3G System based on the evolved GSM core network and the Universal Terrestrial Radio Access (UTRA), FDD and TDD modes;
- the Global System for Mobile communication (GSM) including GSM evolved radio access technologies

Collaboration between 3GPP & 3GPP2

- Considerable ad hoc collaboration as many companies active in both groups
- Joint meetings since 1999 to address interoperability, roaming and harmonization needs, centred on:
  - Radio access
  - Terminal design
  - Core network
- Harmonization also being enhanced by adoption of external common specifications
  - Notably, IETF RFCs (approx. 40)
  - RFC 3113 lays down basis of co-operation between 3GPP and IETF

Collaboration between 3GPP & 3GPP2

- 1999 "Hooks & Extensions" workshops
  - Interoperability between radio access technologies
  - Dual mode terminals
- 2001 Harmonization of HSDPA (3GPP) and 1xEV-DV (3GPP2)
  - Various issues noted:
    - terminal design; services; spectrum; implications of All-IP
  - Initial attention on
    - common definitions for channel models and traffic models
    - common physical requirements for future terminal designs
  - Joint meeting of core network experts April 2002
    - All-IP core network harmonization
    - already significant commonality between 3GPP and 3GPP2 core networks
  - Joint meeting of radio experts in June 2002
    - radio-related aspects

Organizational Partners

3GPP is:

- Open to all national/regional Standards Development Organizations irrespective of their geographical location *(Organizational Partners)*

CWTS

ETSI

ARIB

Standards Committee T1
Telecommunications

Telecommunication Technology Committee

TTA

Market Representation Partners

3GPP receives market advice from the following organizations:

Observers

Observers are Standards Development Organizations (SDOs) who have the qualifications to become future Organizational Partners.

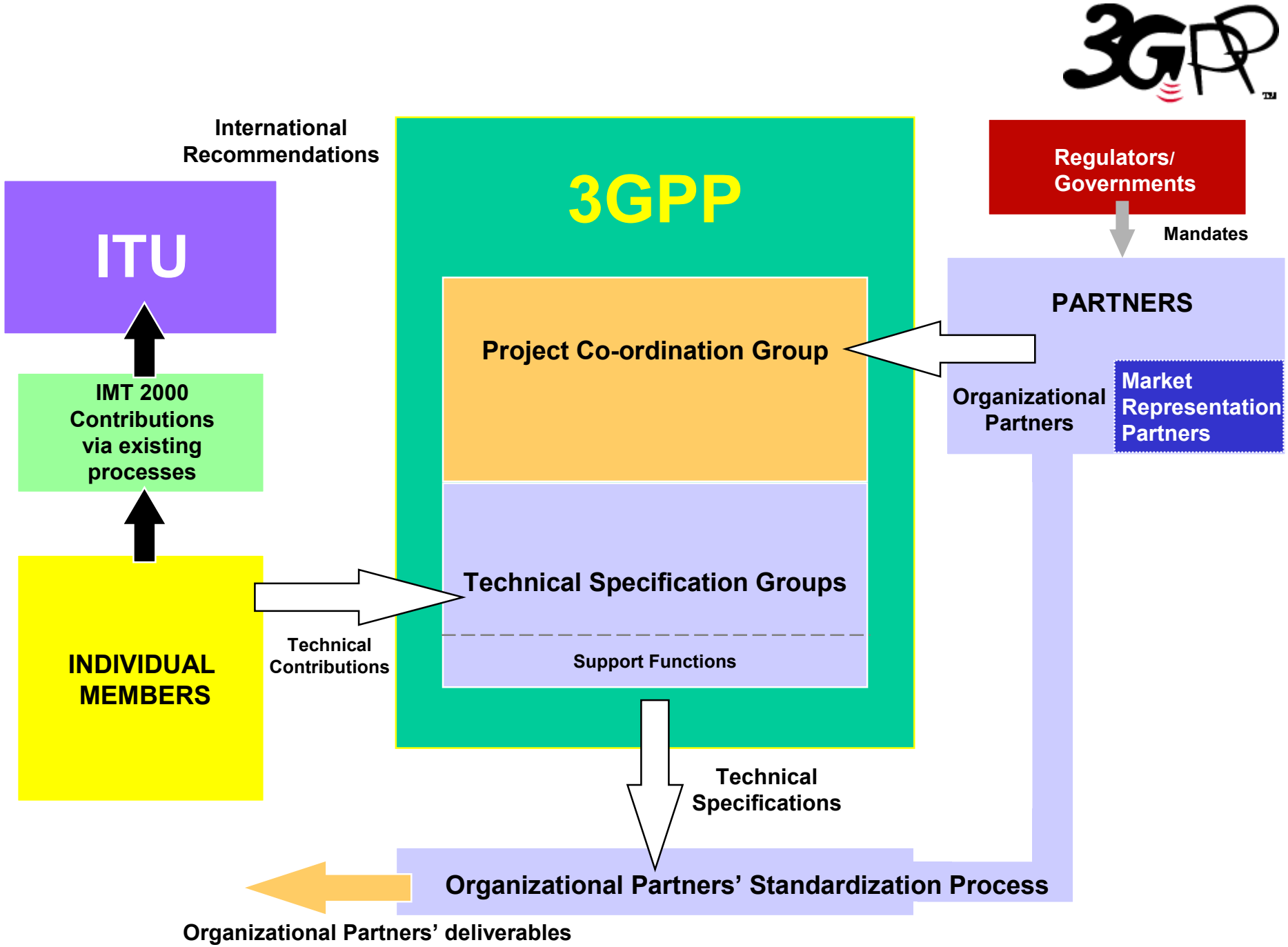
3GPP currently has three Observers:

- Telecommunications Industries Association (TIA)
- Telecommunications Standards Advisory Council of Canada (TSACC)
- Australian Communications Industry Forum (ACIF)

Individual Members

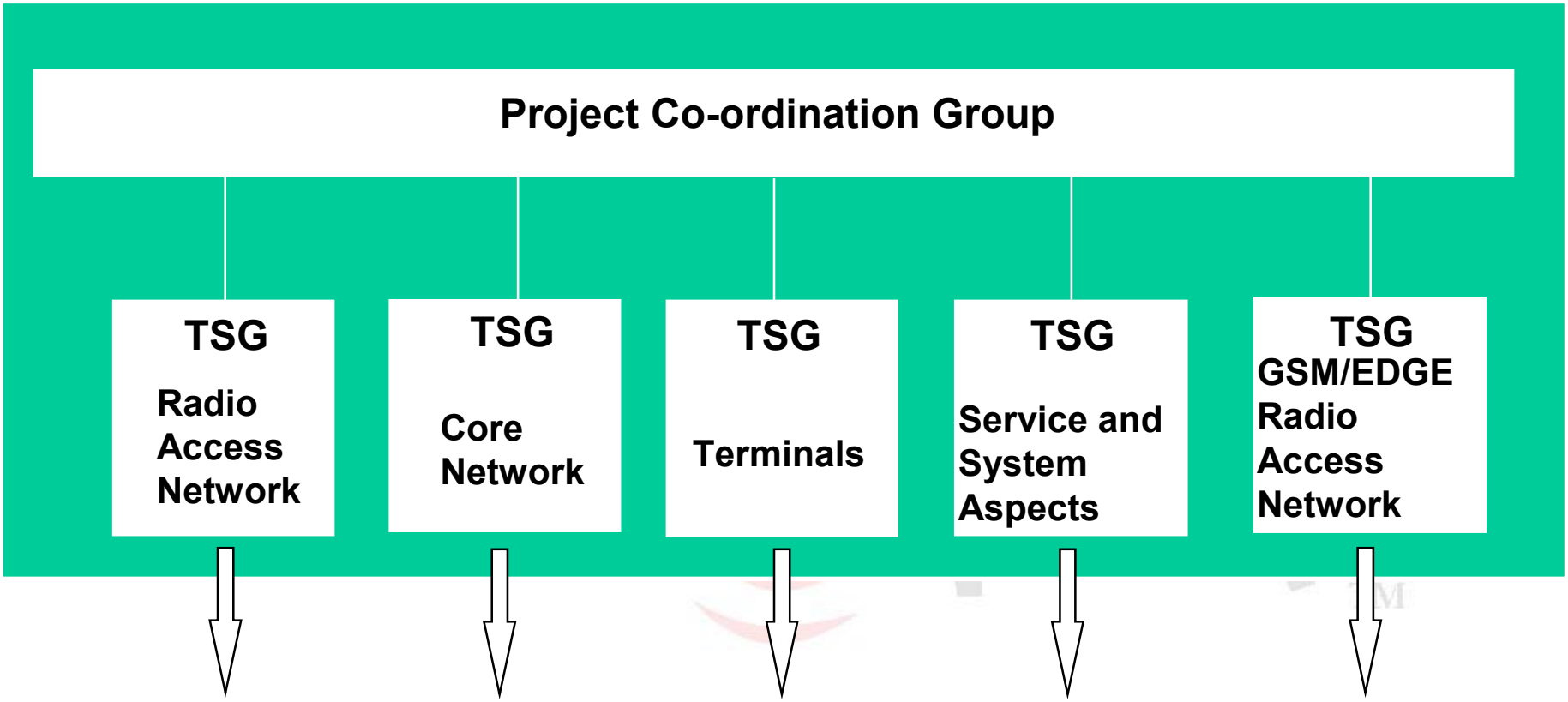
3GPP is:

- Open to the members who belong to each Organizational Partner
- Currently, more than 450 Individual Member companies are actively engaged in the work of 3GPP


International Recommendations
ITU
IMT 2000 Contributions via existing processes
INDIVIDUAL MEMBERS
Technical Contributions
3GPP
Project Co-ordination Group
Technical Specification Groups
Support Functions
Technical Specifications
Regulators/ Governments
Mandates
PARTNERS
Organizational Partners
Market Representation Partners
Organizational Partners' Standardization Process
Organizational Partners' deliverables

How does 3GPP work ?

3GPP internal structure



What is the relationship between 3GPP and ITU ?

ITU-R

3GPP contributes to the ongoing ITU Rec M.1457 (IMT.RSPC) activity:

- specification work is performed in the Partnership Project
- the resulting specifications are transposed by the Organizational Partners (OPs)
- the OPs provide inputs to update Recommendation M.1457
  - according to the OPs' individual working arrangements (e.g. input to ITU-R via Individual Members)
  - according to the ITU timetable

ITU-T

- Special Study Group "IMT-2000 and Beyond"
- 3GPP liaises closely and contributes to ITU-T IMT-2000 "road map"

Direct participation of ITU in PCG meetings

ITU-R WP 8/F

TSG RAN

Approved

Updated

3GPP specifications

SDO standards

Transposed

Submitted by SDOs to ITU-R

ETSI

ARIB

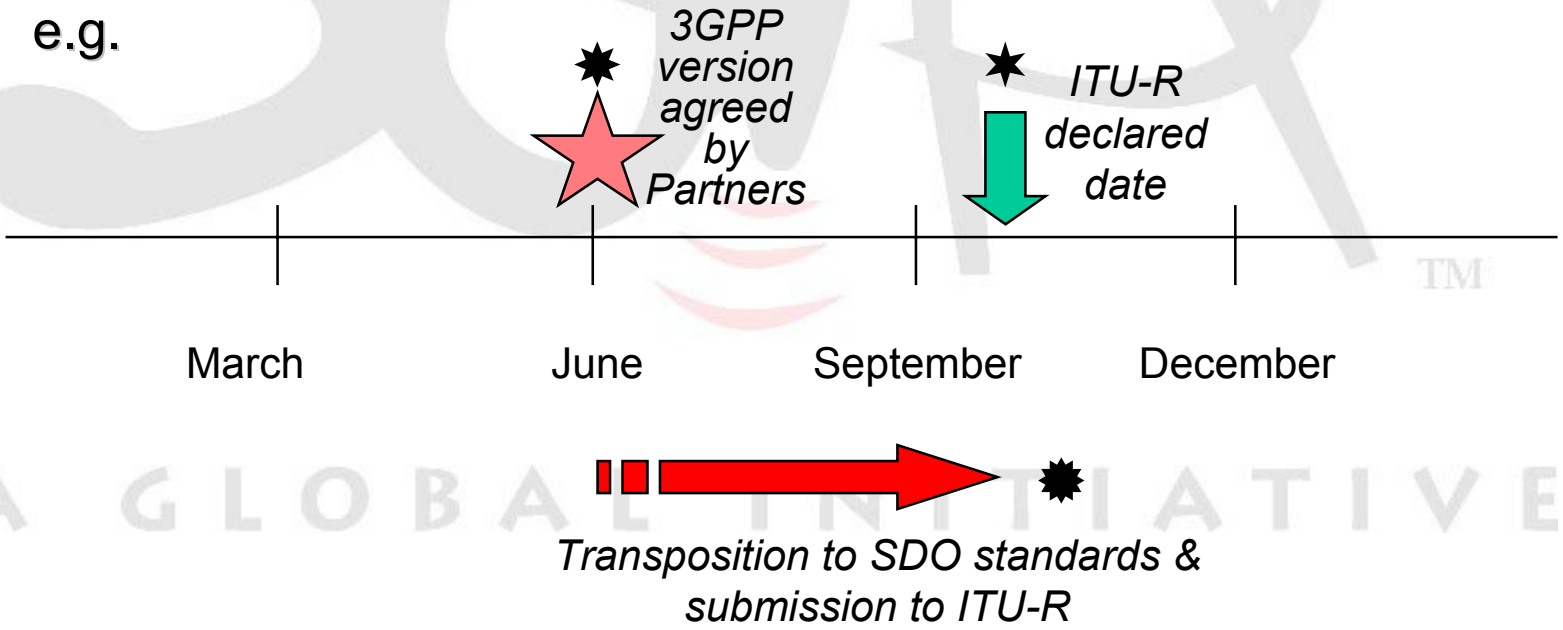
etc

Rec M.1457

- High level description of air interfaces
- Refers out to the SDOs' standards (ETSI, T1, etc.)

Contributions to ITU-R

- 3GPP produces updates of specifications every 3 months
- ITU-R announces date for contributions to update M.1457
- 3GPP Partners agree which versions will be the basis of submissions to ITU-R…
- …allowing sufficient time for transposition of the 3GPP specifications into SDO standards before submission to ITU-R
- e.g.



ITU-T SSG

TSG CN

Approved

Updated

3GPP specifications

SDO standards

Transposed

Submitted by SDOs to ITU-R

ETSI

TTC Telecommunication Technology Committee

etc

Rec Q.1741.1

- 3G road map
- Refers out to the SDOs' standards (ETSI, T1, etc.)

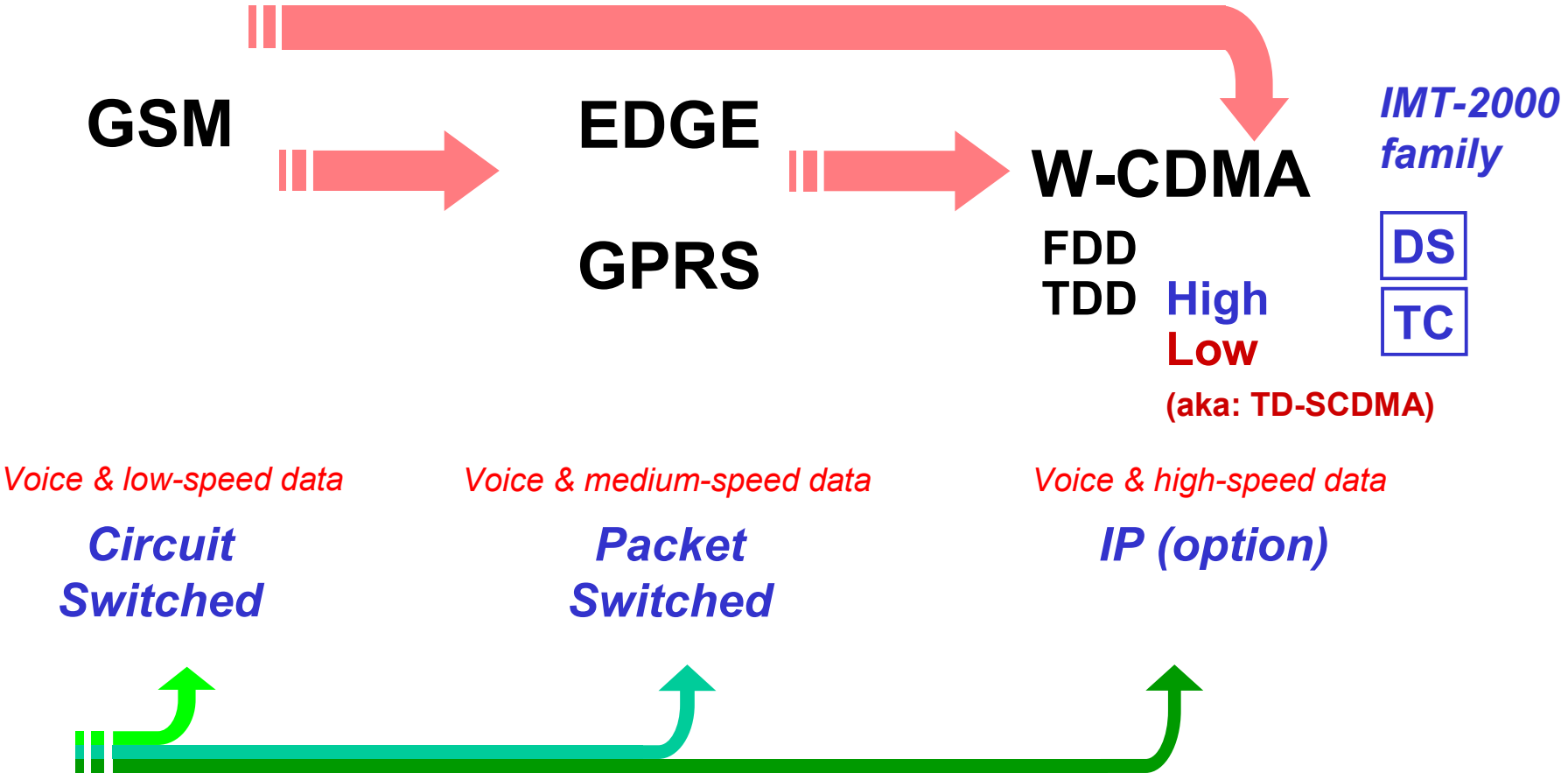
Principle

Do the work where the right competence exists

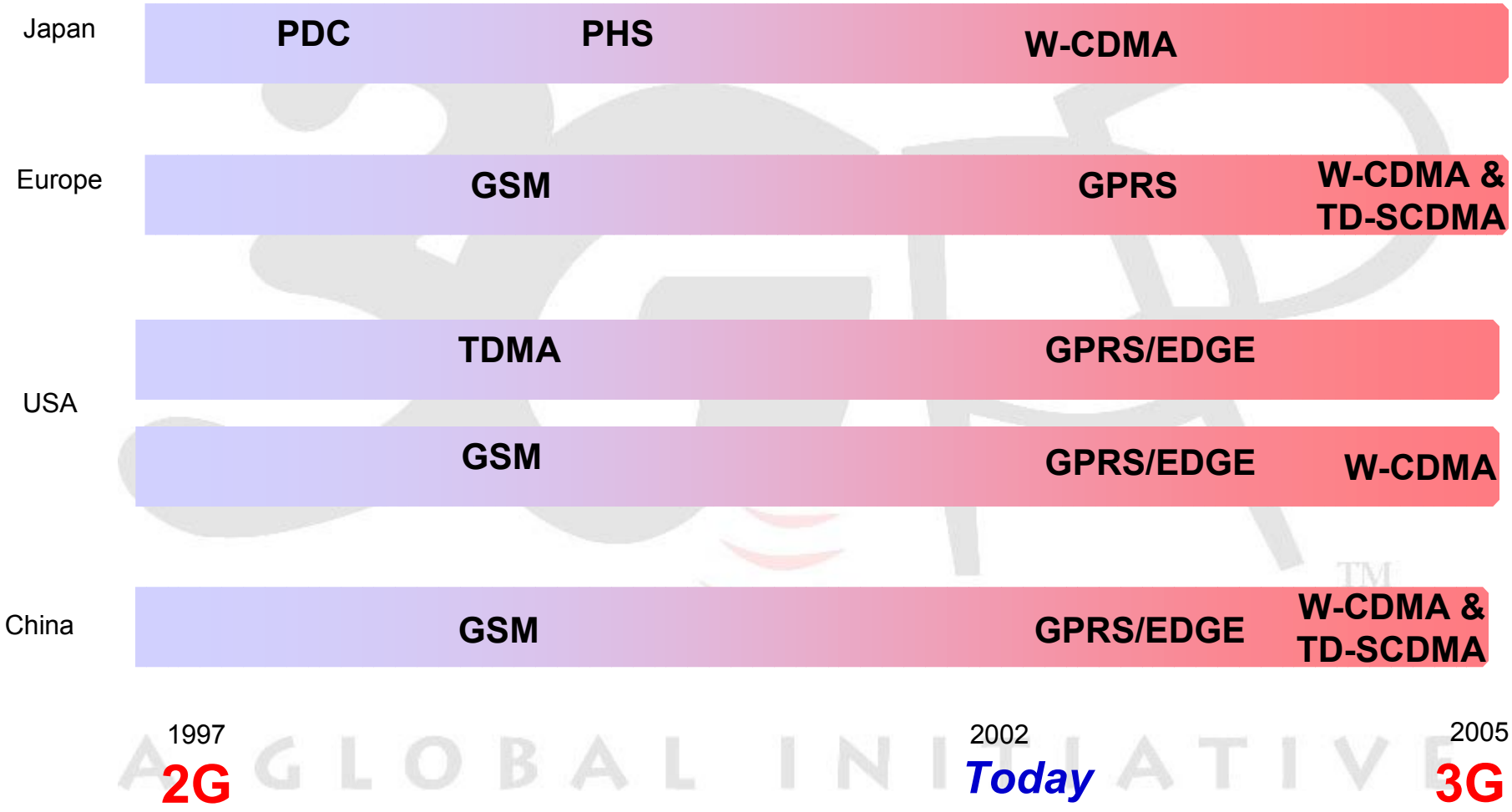
- ITU – excellent for the global recognition
- 3GPP – excellent for detailed technical work

- The model works well!
- ITU-R, ITU-T, 3GPP all satisfied by the model
- All parties wish it to continue

The paths to 3GPP technologies



Evolution to 3GPP technologies



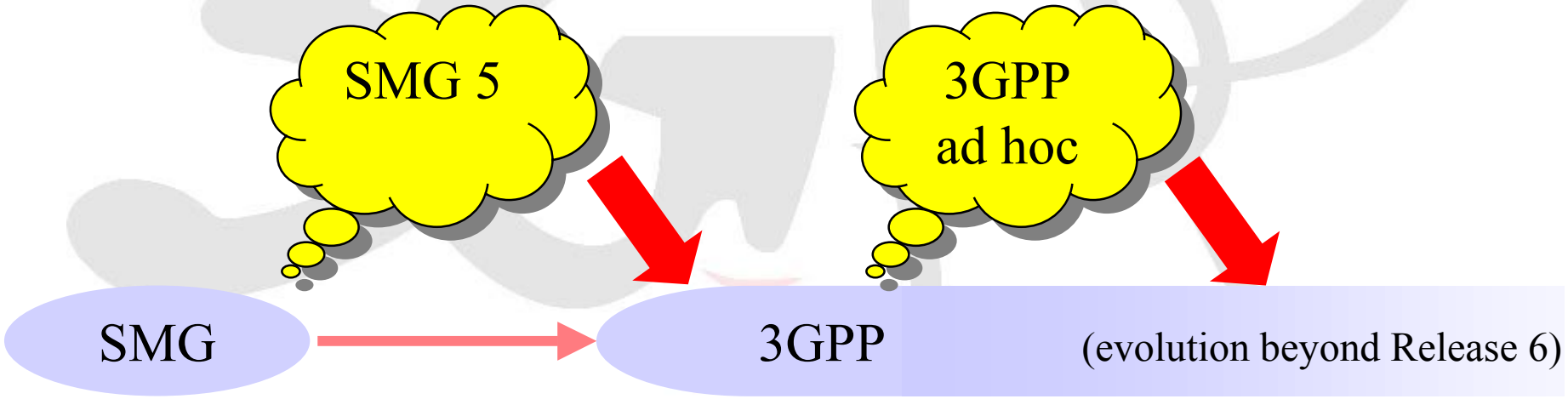
A smooth evolution to 3G

- In fact, the evolution path is already more than 10 years old!
- Remember this?

BT

A smooth evolution to 3G…

…and beyond

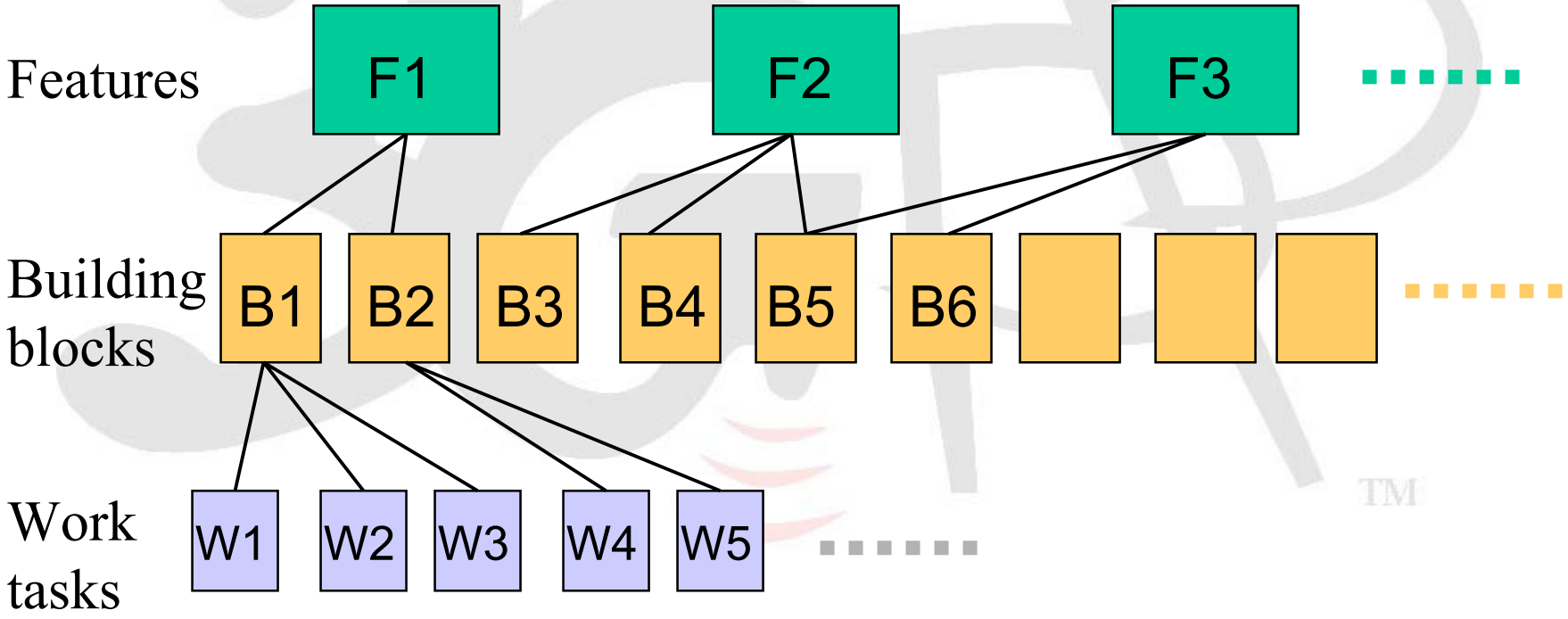


Rigorous development

- Professional project management
  - Permanent, paid project team
  - Significant resources deliberately committed
- Thorough testing
  - Interoperability is paramount
  - Major investment in TTCN testing
    - 1 M€ invested in 2002 alone
    - Permanent team to draft and deploy TTCN

3GPP Work Item Management

3GPP project management is based upon a concept of …



Project plan

- All Features, Building Blocks and Work Tasks are contained in the 3GPP Project Plan
- Plan based on Microsoft Project
- Gantt presentation available on 3GPP web site
- Open access – everyone can view the plan

http://www.3gpp.org/3G_Specs/wi_management.htm

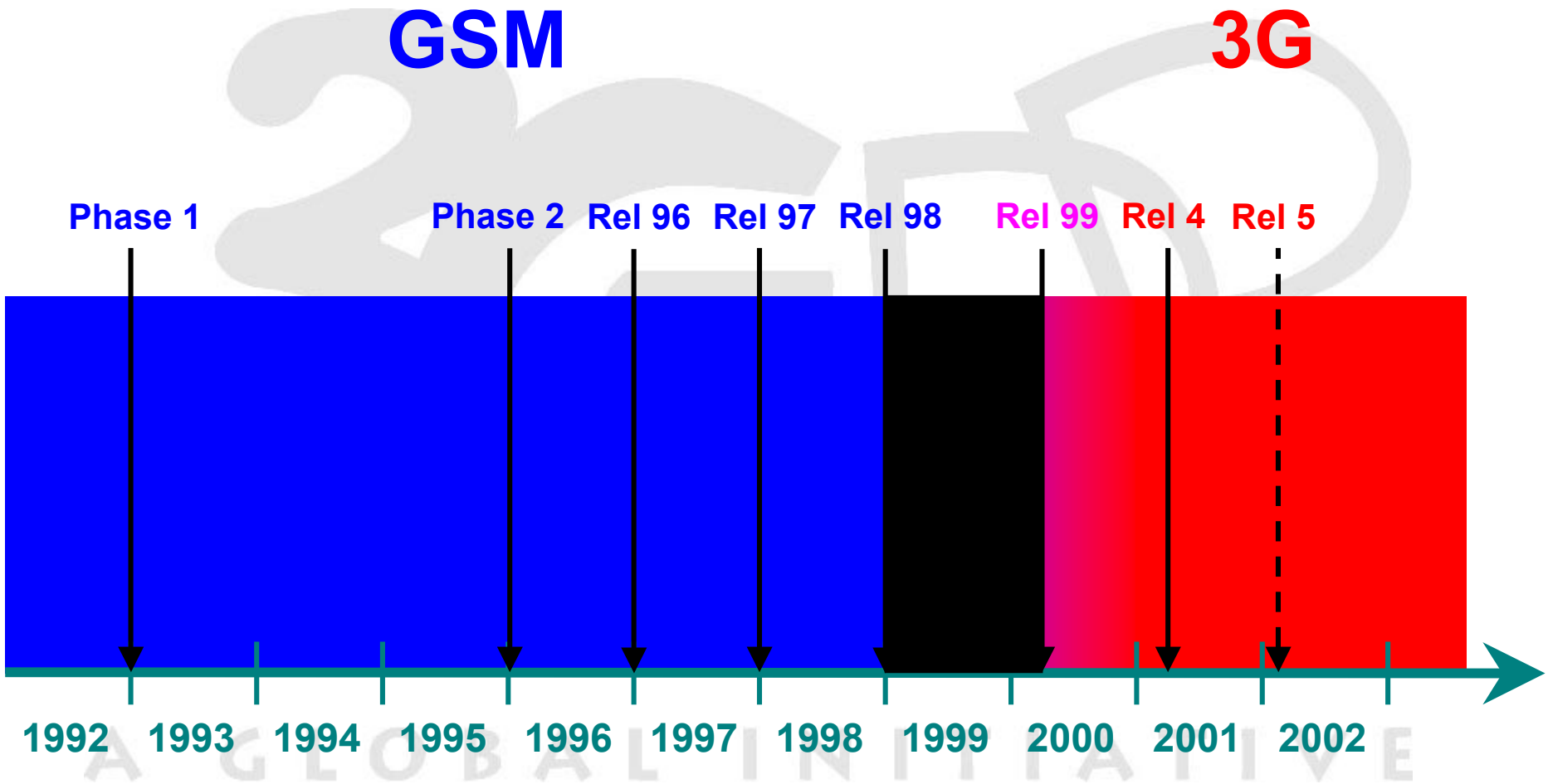
3GPP Releases

- **Specifications are grouped into "Releases"**
  - A mobile system can be constructed based on the set of all specifications which comprise a given Release
  - A Release differs from the previous Release by having added functionality introduced as a result of ongoing standardization work

The 3GPP Specification Releases

- ***Release 99***
  - content frozen December 1999
- ***Release 4***
  - content frozen March 2001
- ***Release 5***
  - functionality frozen March 2002
- ***Release 6***
  - functionality to be frozen 2003 (second half?)

Release 99


GSM
3G
Phase 1
Phase 2
Rel 96
Rel 97
Rel 98
Rel 99
Rel 4
Rel 5
1992
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2002

Release 99

- Main feature:
  - Creation of the Universal Terrestrial Radio Access (UTRA) both in FDD and TDD (3.84 Mcps) modes. (Fully referenced in ITU-R M.1457)
- Other features:
  - CAMEL phase 3
  - Open Service Architecture (basic version)
  - Location Services (LCS): improvements and corrections of the basic version
  - Narrowband AMR (new codec)
- Lot of other smaller uncorrelated improvements (multicall, HSCSD for 2G, etc)

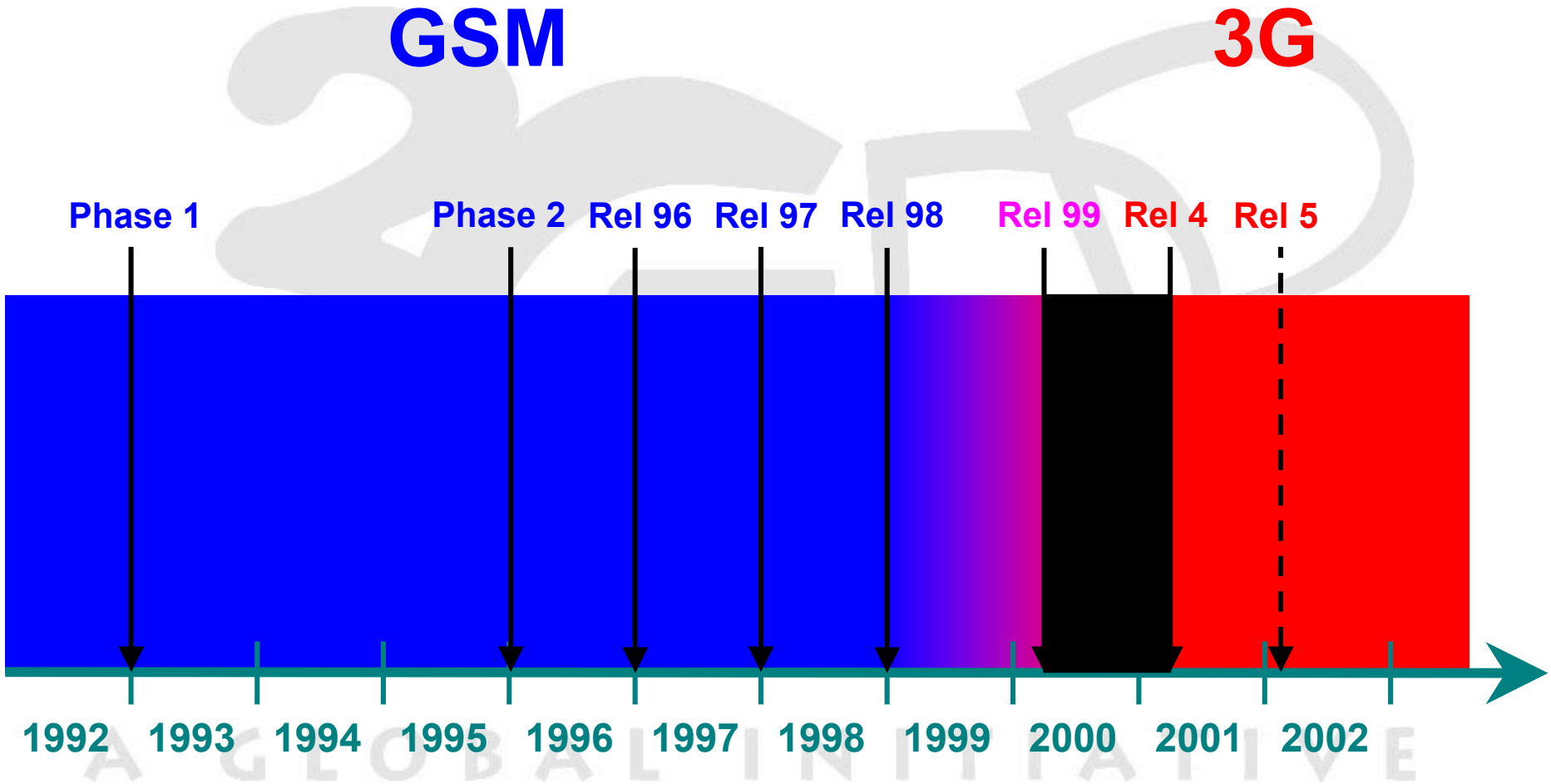
Release 99

Current operational systems are based on Release 99:

- Japan - *FOMA*
- Isle of Man - *Manx Telecom*
- Monaco - *Monaco Telecom*

NTT DoCoMo

Release 4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Release 4

- Main features:
  - Low Chip Rate TDD (1,28 Mcps) – i.e. TD-SCDMA
  - GERAN concept established (EDGE/GPRS Iu interface)
  - Bearer independent Circuit Switched network architecture
    - the MSC is split in “Media Gateway” for transport and “MSC server” for signalling
  - Streaming
    - Retrieval of real time video (e.g. movie playback)
  - Multimedia messaging
    - Enhanced messaging (rich text formatting and still image)
    - Multimedia messaging (multimedia attachments)

Release 4

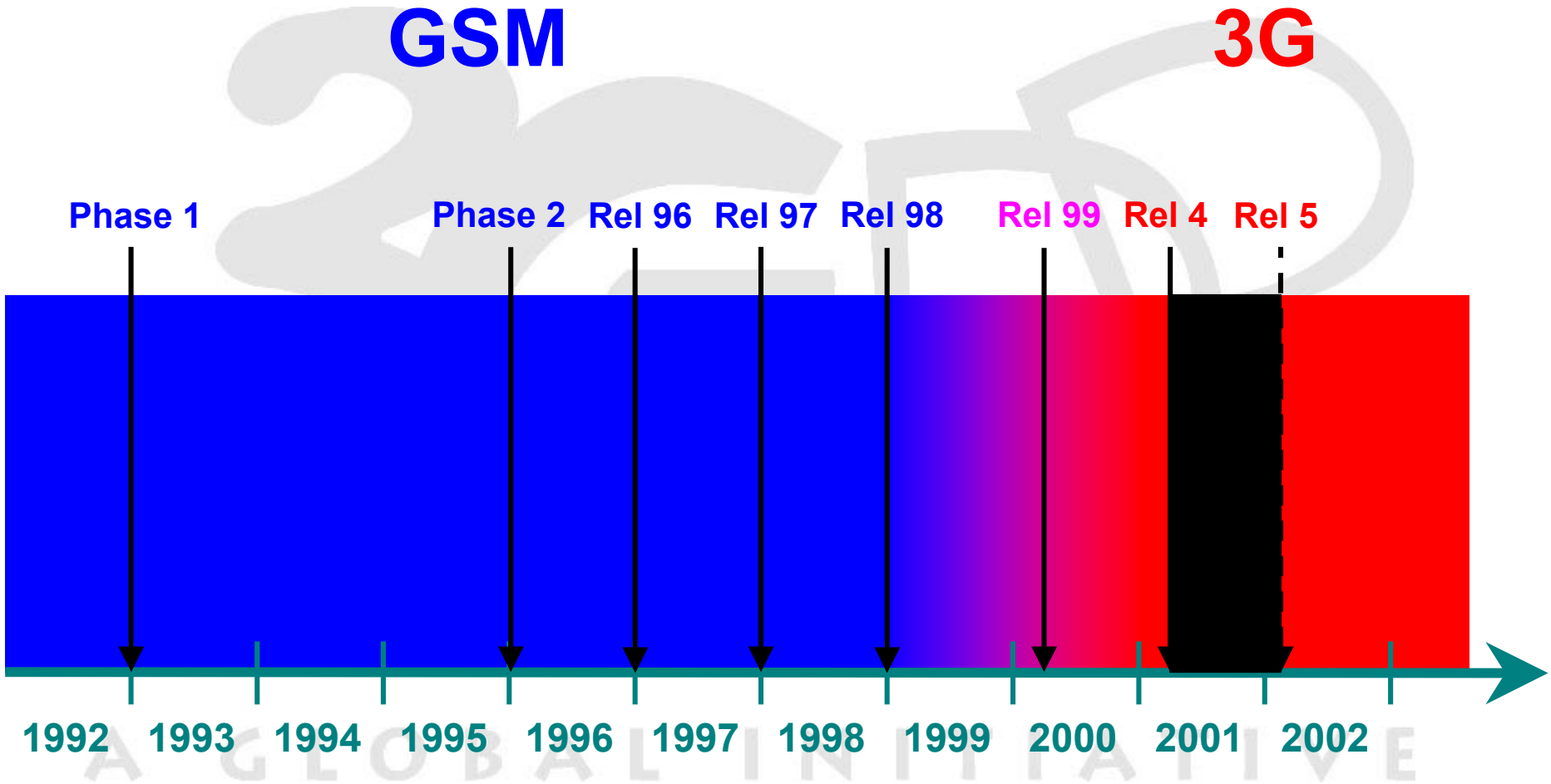
- Lot of other uncorrelated smaller improvements including:
  - UTRAN repeater specification
  - Real time facsimile
  - Transcoder Free Operation (mobile to mobile)
  - Improvements in: MExE, USIM toolkit, AT command, LCS, emergency calls in CS domain, security, etc.

Release 4

- Introduces TD-SCDMA
- Early operational systems in China will probably be based on Release 4
- Release 4 compliant products on show at 3GSM Cannes, 2002

Siemens press picture

Release 5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Release 5

- Introduces IMS - IP-based Multimedia Services
  - In two phases (Phase 1 in Release 5)
  - IP core network
  - Handling of multimedia services using SIP signalling and the bearers offered by the PS domain
  - Manufacturers already demonstrating IMS solutions
- HSDPA - High Speed Downlink Packet Access
  - Opens up throughput in order of 10Mbit/s
  - Included in latest ITU-R update of M.1457
- Both are enabling technologies
  - Providing opportunities for advanced services
  - Commercial decision by industry whether Release 5 will be basis of W-CDMA systems in short/medium term

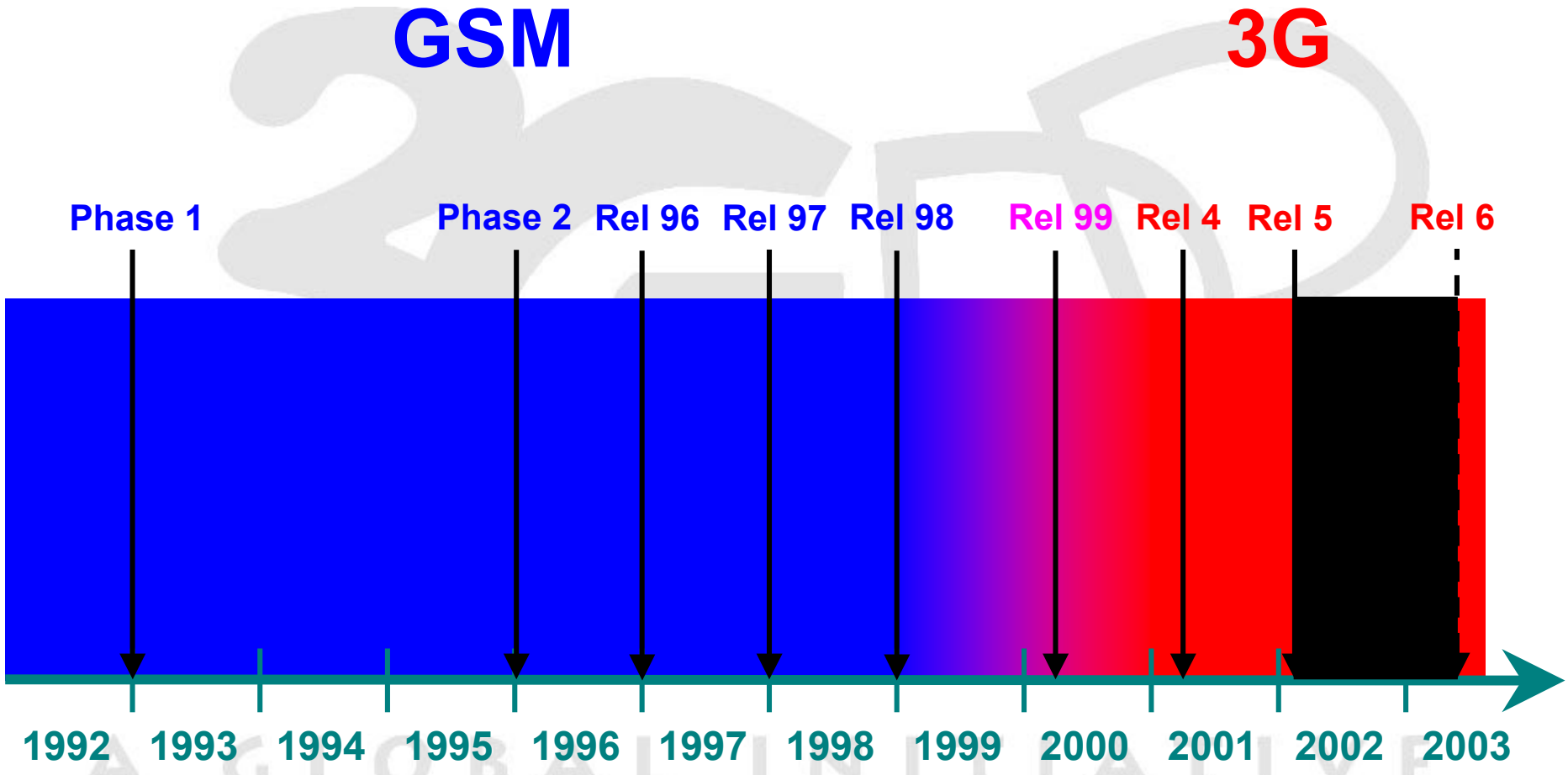
Release 5

- Other major features:
  - Wideband AMR (new 16 kHz codec)
  - CAMEL Phase 4
    - new functions such as mid-call procedures, Interactions with Optimal Routing, etc.
  - End-to-end QoS in the PS domain
  - Global Text Telephony (GTT) (i.e. real time text)
  - Extended transparent end-to-end PS mobile streaming

Release 5

- Other features:
  - IP transport in UTRAN
  - Intra domain connection of RAN nodes to multiples CN nodes (i.e one RNC serving two or more MSCs within the same network)
  - Emergency calls (circuit switched)
  - Messaging enhancements (EMS, MMS)
  - Improvements of Radio Interface (including UMTS1800/1900)
  - Enhancements in GERAN, LCS, OSA, MExE, etc.

Release 6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Release 6

- Currently planned for 2nd half 2003:
  - IMS "Phase 2" (including IMS Messaging, IMS Group Management)
  - Multimedia Broadcast/Multicast Service (MBMS)
  - Push services
  - Wireless LAN interworking
  - Network sharing (maybe Release 5)
  - Digital Rights Management
  - Speech recognition and speech enabled services
  - Identity Portability (formerly Number Portability)
  - Presence (maybe Release 5)
  - Radio optimisation
  - Priority service
  - Generic user profile
  - Enhancements to:
    - MExE, LCS, OSA, emergency calls in PS domain and IMS

And what's beyond Release 6?

- 3GPP studies already looking beyond Release 6
- New areas to explore, e.g.
  - New radio modulation techniques
  - Exploitation of high speed packet operation
  - Exploitation of IP
  - Wireless LANs – threat or opportunity?
- Ultimately, the solutions will be determined by the market

Conclusion

- The future's bright…
- We know where we've come from
- We know where we are now
- We have very high confidence in what we're producing
- And…
- …we know where we're going!