Standardisation
- A driving force ?

Jari Vainikka
Director, Standardisation
Nokia Networks

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Contents

- Standardisation and Standard Organizations

- Standardisation and Corporations

- Standardisation Strategies

- Summary

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What are Standards?

- Why Standards are required?
  - Interoperability – All vendors follow the Same Specifications
  - Quality Assurance – Minimum Performance Specifications
  - Consistency in Evolution – Evolve from the same Base
  - IPR protection – Means of Control

- How Standards are made?
  - Operators and Vendors define the needs
  - Specification Drafts by Standard Setting Bodies
  - Approved and Published by Standard Setting Bodies or by Standard Development Organizations
  - The process can apply to new or revisions of Standards

- Standard Setting Bodies can be:
  - International or Government agencies (e.g. ITU, MPT), or are created by government agencies (e.g. FCC, CWTS), and have an official status.
  - "Semi-official", that is they are recognized by a government but are not a part of it (e.g. ETSI, ARIB, ETRI)
  - Volunteer organizations (e.g. 3GPP, 3GPP2, TIA, T1, IETF)
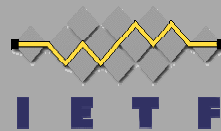
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Why do we do standards work?

1. Telecommunication without globally agreed standards is impossible!
   - Nokia has always emphasized the need to open standards
2. We need to influence to the content of the standards because
   - With standards we can partially influence where our industry is heading
   - We want the standards to support our product roadmaps and to be aligned with our competencies
   - We want to oppose proposals which threaten Nokia's business interests
   - Regulations are often based on standards (type approvals, security, privacy, radiation levels...)
   - It is expected that a company of Nokia's size must be present in standards making
3. Only through active participation we can insert our own IPR's to the standards.

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Standardisation Playground

- Focus shifting to services and applications

- Separation ~~application~~

> The most important ones are/ will be

3GCF

MPLS Forum

MGIF

3GPP
A GLOBAL INITIATIVE

I E T F

oma
Open Mobile Alliance

- Standards and can be slower

- Content Provision and IT industry also converge within this process

SIP Forum

IPDR.org

MeT

Telecomms/Voice

Red: Standard Bodies
Green: Industry Fora

Internet/Content

Global Standardisation

- 3GPP is the main standards organisation for Nokia
- 3GPP responsible for system architecture standardisation
- IETF protocols to be used as applicable in 3GPP systems
- 3GPP output part of ITU's IMT 2000
- Role of local / regional standards organisations to be decreased.
- 3GPP2 standardising cdma2000
- OMA; Services and service enablers to play more increasing role in market making, technology development and standardisation
- 3GPP organisational partners:

  ARIB - Association of Radio Industries and Businesses

  CWTS - China Wireless Telecommunication Standard group
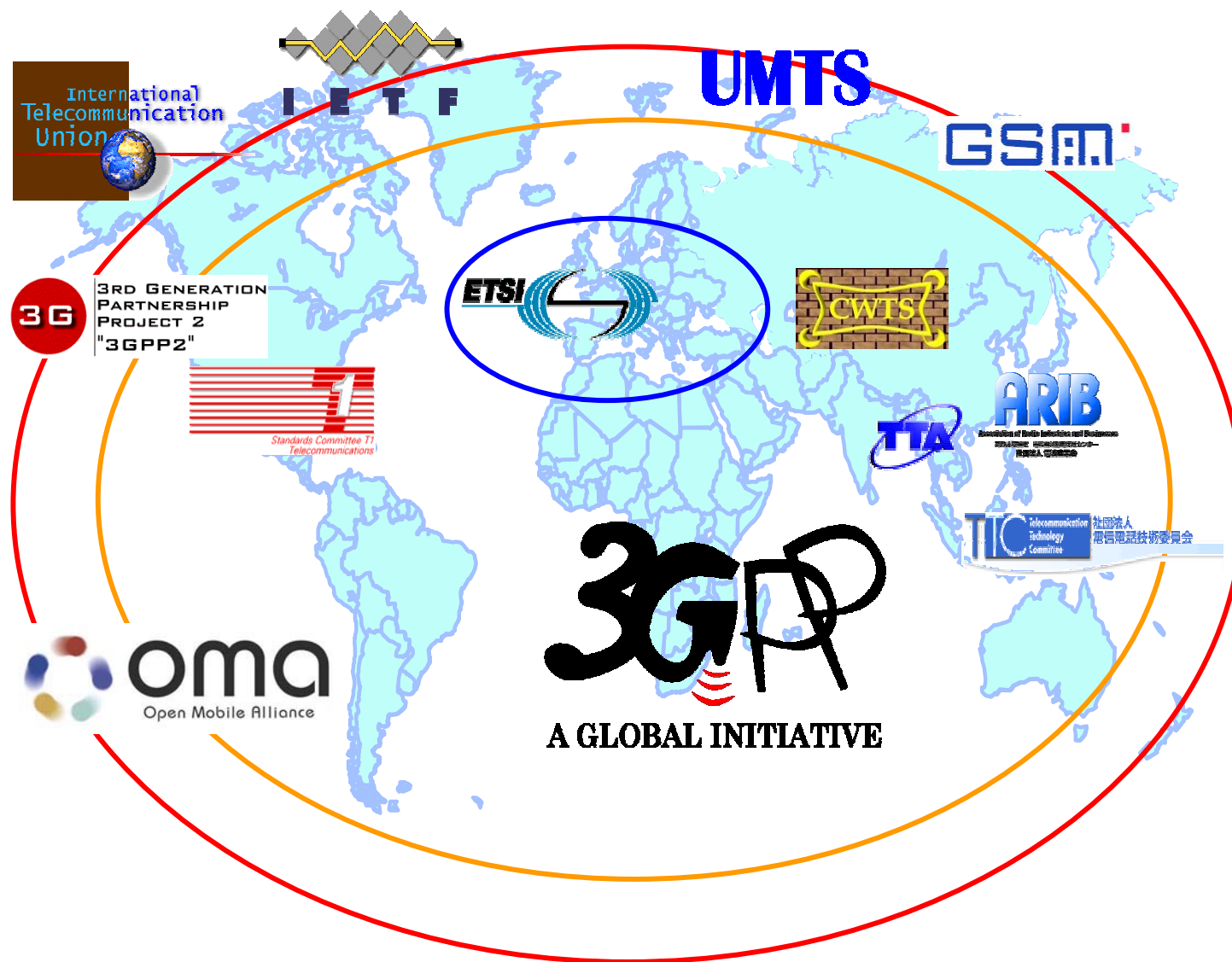
  ETSI – European Telecommunications Standards Institute

  T1 - Standards Committee T1 Telecommunications

  TTA – Telecommunications Technology Association

  TTC – Telecommunication Technology Committee

International Telecommunication Union

IETF

UMTS

GSM

3G — 3RD GENERATION PARTNERSHIP PROJECT 2 "3GPP2"

ETSI

CWTS

Standards Committee T1 Telecommunications

TTA

ARIB

TTC — Telecommunication Technology Committee

OMA Open Mobile Alliance

3GPP — A GLOBAL INITIATIVE

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Mobile Data Services Yesterday (Today?) – The Challenge

Issues in mobile services industry

- Silos of technologies and standards work
- Lack of uniform interoperability plans and implementation
- No clear focus on requirements for specifications that match market needs in timing and in quality
- Driven by technology, not by services and applications
- Lack of common industry view on architectural framework
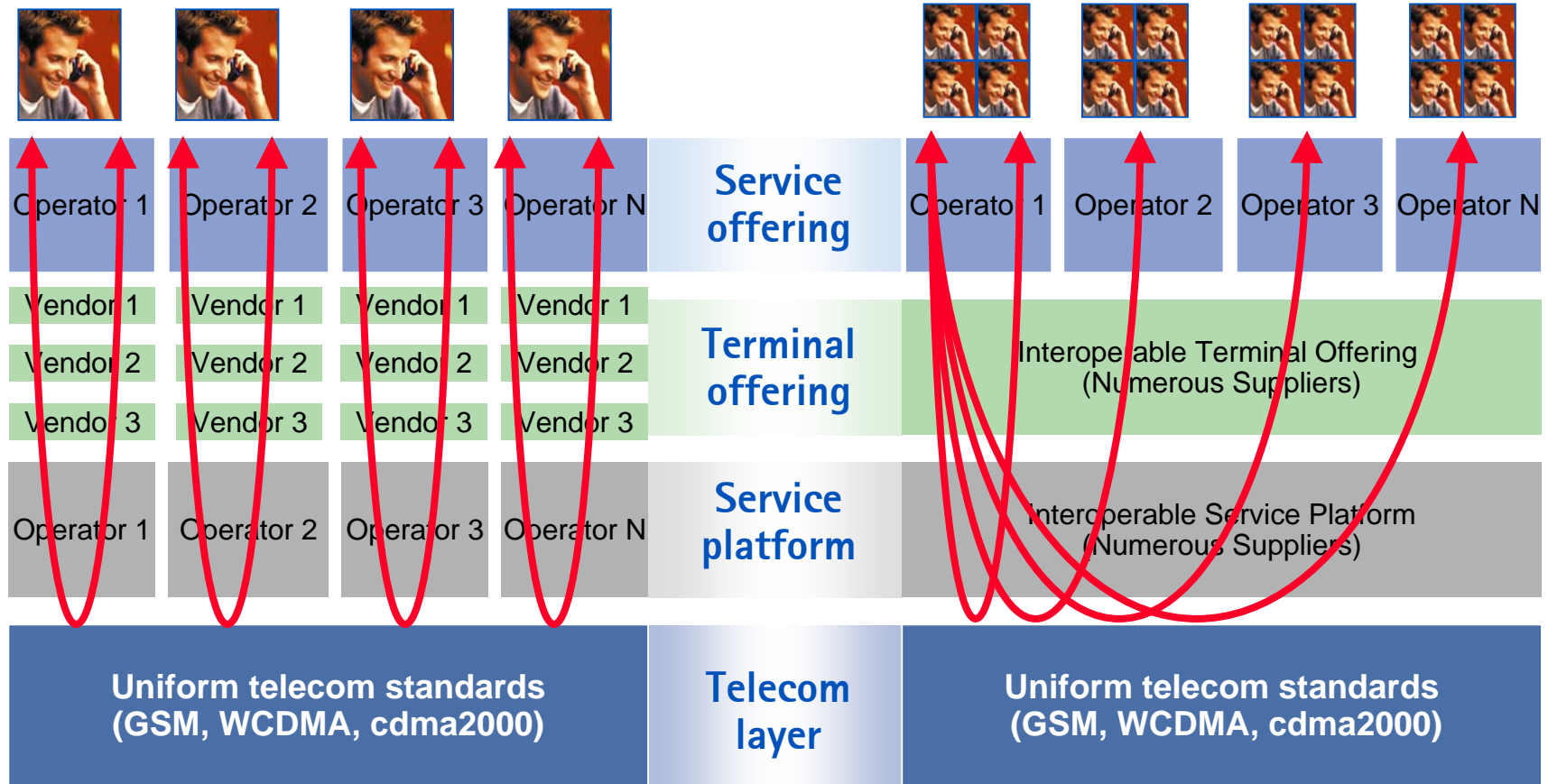
Implications of fragmentation

- Impacts innovation in services and applications
- Increases costs for all involved
- Slows down 3rd party content and application development
- Lack of multi-standard interoperability, detracts from the mobile consumer experience

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Open Mobile Alliance – engine for future growth

Wireless Standard Evolution

1G

**Analog
(NMT, TACS,
AMPS)**

- Mobility
- FM Voice Quality
- No Transcoding
- Low Capacity
- Almost no Data

2G

**Digital
(GSM,
IS 95, IS 136)**

- Mobility
- Digital Transcod.
- OK Voice Quality
- High Capacity
- Low Speed Data
- GSM vs. US
- 2G Services

3G

**Wideband Digital
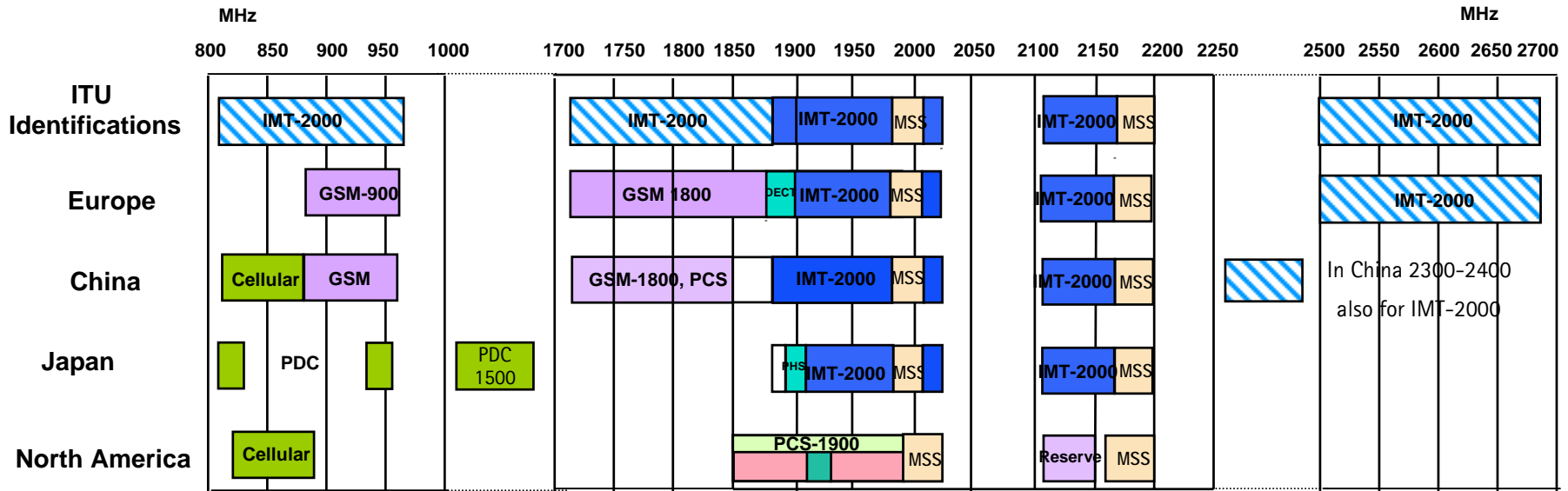(W-CDMA)
(EDGE)
(CDMA2000)
(TD-SCDMA)**

- ITU IMT 2000
- High Mobility
- Digital Transcoding
- Better Voice Quality
- High Capacity
- High Speed Data
- IP Core Network
- 3G Services

4G

**High Rate
Wireless Data
?**

- ITU and other Org.
- High Data Rate
- Wideband Codecs
- Voice and Image
- IP Core Network
- IP RAN
- More?

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Overall Mobile Spectrum Plan After WRC2000

New spectrum for IMT-2000 identified at 2.5 GHz

Most existing mobile spectrum identified as extension bands for IMT-2000

WRC did not define the exact use of the extension bands

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ITU 8F 2.5 GHz band scenarios

The green arrows have been studied in 3GPP (TR 25.889

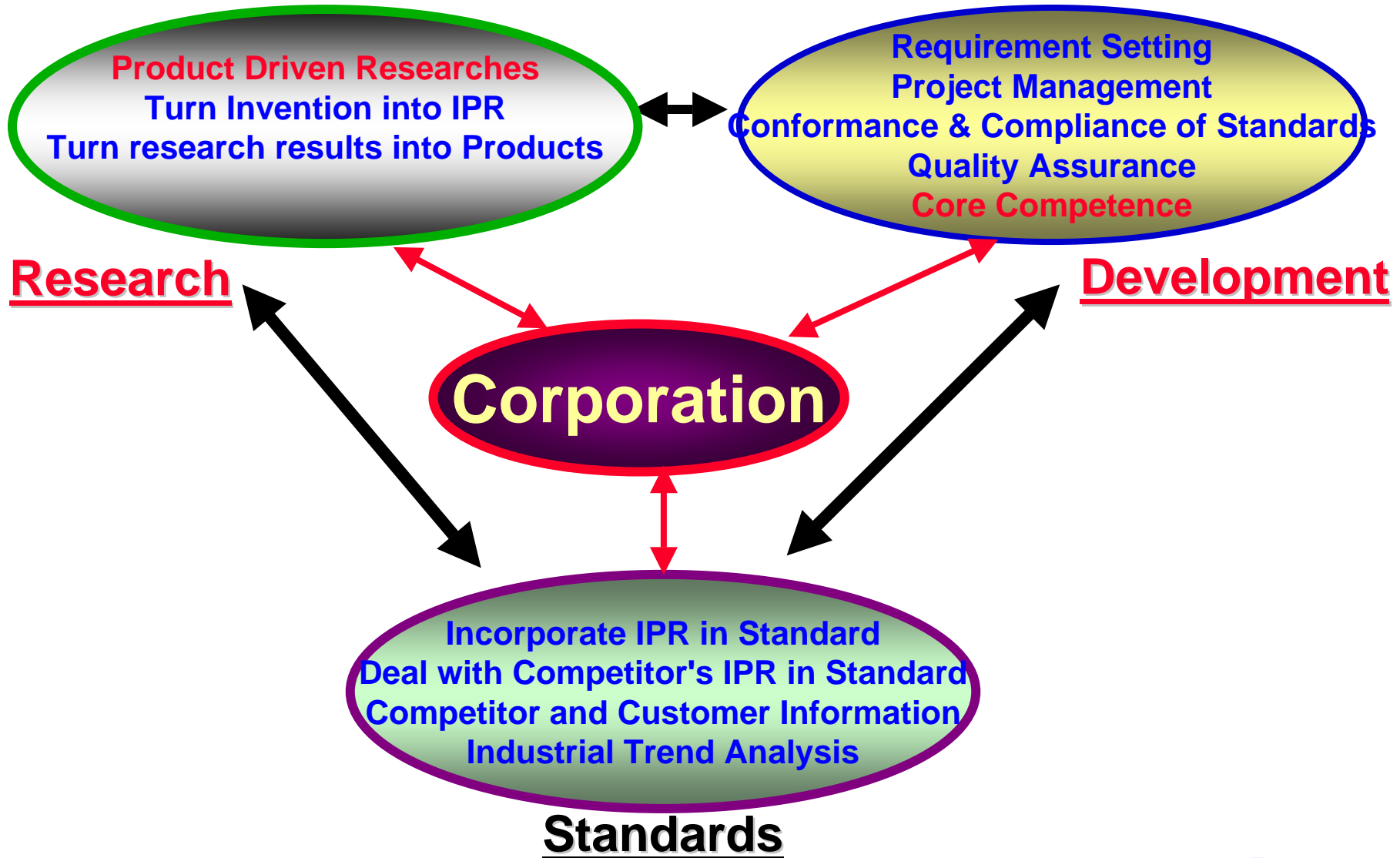| Band 2500–2690 MHz						
MHz 2500						2690
Block	**A** ↔	**B** ↔	**C** ↔	**D**		
Scenario 1	FDD UL	TDD		FDD DL		
Scenario 2	FDD UL (internal)	FDD DL (external)		FDD DL (internal)		
Scenario 3	FDD UL (internal)	TDD	FDD DL (external)	FDD DL (internal)		
Scenario 4	FDD DL (external)		TDD			
Scenario 5	TDD		FDD DL external			
Scenario 6	TDD					
Scenario 7	FDD DL (external)					
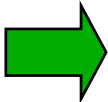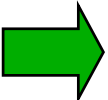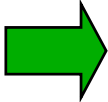
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Contents

- Standards and Standard Organizations

- **Standards and Corporations**

- Standards Strategy

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Standards and Corporations

- How much should be invested in Standards?

- What kind of role should a company play?

- Can I have a free ride?

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Standards and Corporations

Research

Product Driven Researches
Turn Invention into IPR
Turn research results into Products

Development

Requirement Setting
Project Management
Conformance & Compliance of Standards
Quality Assurance
Core Competence

Corporation

Incorporate IPR in Standard
Deal with Competitor's IPR in Standard
Competitor and Customer Information
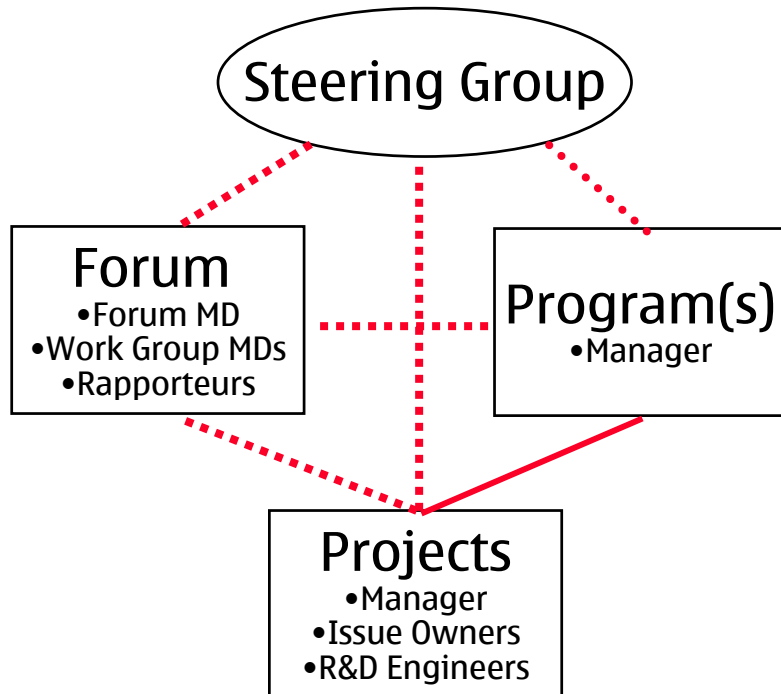Industrial Trend Analysis

Standards

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Modest Investment, Huge Returns

- Cost
  - Personnel
  - Travel Expenses
  - Standard Association Dues
  - Content Creation Programs
    - IPRs, competenes, contributions

- Benefits
  - Reduce IPR Royalty Payments (€ to €€€)
  - Buildup Core Competence (€€ to €€€)
  - Improve Product Quality (€€€€)
  - Advance Market Information (€€)
  - Enhance Corporate Image (€)

- Develop World Class Leaders
  - Executive Training Through Standard Operations
    - Logistics, Marketing, Sales, IPR, ...

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Standard Coordination

- The key to successful standard operations:
  - Communications, Communications, and Communications!
- Nokia is proud to have good coordination: Connecting People Works!

Steering Group

Forum
- Forum MD
- Work Group MDs
- Rapporteurs

Program(s)
- Manager

Projects
- Manager
- Issue Owners
- R&D Engineers

- **Steering Group** – Direction setting, Resource Allocations and Coordination among different internal entities.

- **Forum MDs** – Strategic Planning and Execution, int./ext. coordination

- **Rapporteur** – Technical lead

- **Issue Owners** - Subject Matter Experts

The value of Information increases as it flows.

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What is purpose of standardisations strategy?

- Standardisation is a business/market making effort
  - Equalizes technical
  - Stabilizes technical

- Creates a roadmap for the journey. No "Sunday-Driving" possible

- Provide an operational plan to achieve standardisation objectives

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What should be in a standards strategy?

- Summary of related business strategy
- Summary of related product strategy
- Summary of related technical strategy
- Summary of related external standards body(ies) "landscape"
- Impact description of business+product+technical strategies and external standards "landscape"
- Clearly defined objectives and target setting for standardisation
- Action Plan: schedule of activities, milestones and deliverables
- Identification of needed content creation programs and their roles
- Binding of proposed standards activities to standards management
- Identification of challenges and other issues/gaps

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Drivers for Standards activities

1. Proactively driving/contributing (Strategic issue / included in the roadmaps)
   - Benefits: We get important feature standardised, leading the way towards our preference. Enhancing Nokia IPR position
   - Risks if not done: Standards develop into different direction than our internal product plans. Market and momentum lost.

2. Following and reacting (Not necessarily in the business roadmaps)
   - Benefits: We make sure that the feature fits into our products if business need is found later. Maintaining Nokia IPR position
   - Risks if not done: If forced to implement later due to operator pressure, our platform and current product portfolio is not compatible with the standardised feature.

3. Actively objecting (Against strategy / harming business)
   - Benefits: Our competitors don't get the advantage of this feature. We are not forced to implement it later.
   - Risks if not done: We loose business to competitors. Headache for implementation

4. Don't care, not actively following
   - Benefits: Saving standardisation resources.
   - Including risks: May have impact to other features which we support. No Nokia IPR content created

ace

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Summary

- Evolution Direction Influence

- Role of IPRs

- No Standards, No global markets

- Modest Investment, Good Returns

- Content Creation Programs

- Topic based Standardisation Strategies

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... and some travelling opportunities exists...

...but everything that shines is not gold: Jeju Island in South Korea is in 27h flying time, in this picture it's +6ºC and we had 3h outdoor evening session after 12h sitting in meeting rooms and no one was having "winter clothes"...

Thank you!

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Back up material

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3GPP Basics

- The 3rd Generation Partnership Project (3GPP) is a collaboration agreement established in December 1998. It brings together several telecommunications standards bodies.

- The scope is to produce Technical Specifications (TS) and Technical Reports (TR) for the 3G Mobile System based on evolved GSM core networks and the radio access technologies (WCDMA) that they support.

- The scope was later amended to include the maintenance and development of GSM (2G) including evolved radio access technologies (e.g. General Packet Radio Service (GPRS) and Enhanced Data rates for GSM Evolution (EDGE)).

- Individual Members: membership open to companies that belong to one of the Organisational Partners. Over 400 companies are active within 3GPP.

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3GPP relations to other groups

Market Representation Partners
-Vision, Lobbying

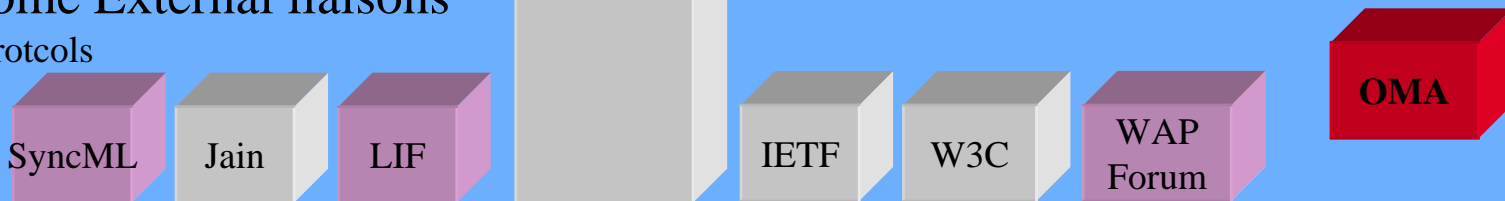GSM-A | UMTS Forum | 3G.IP | MWIF | IPv6 Forum | UWCC | WMF | GSA

System specs
- Some services
- Architecture
- Stages 1 and 2
- Selection or creation of protocols
  (Stage 3)

3GPP

Some External liaisons
-Protcols

SyncML | Jain | LIF | IETF | W3C | WAP Forum | OMA

Complete list at:
http://www.3gpp.org/Management/Liaisons.htm

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3GPP TSG Organisation

TSG T Terminals	TSG CN Core Network	TSG RAN Radio Access Network	TSG SA Services & Systems Aspects	TSG GERAN GSM EDGE Radio Access
WG T1 Mobile Terminal Conformance Testing	WG CN1 MM / CC / SM (Iu)	WG RAN1 Radio Layer 1 specification	WG SA1 Services	WG GERAN1 Radio Aspects
WG T2 Mobile Terminal Services & Capabilities	WG CN2 CAMEL	WG RAN2 Radio Layer 1 specification Radio Layer 3 RR specification	WG SA2 Architecture	WG GERAN2 Protocol Aspects
WG T3 Universal Subscriber Identity Module (USIM)	WG CN3 Interworking with External Networks	WG RAN3 Iub spec'n, Iur spec'n, Iu spec'n	WG SA3 Security	WG GERAN3 Terminal Testing
	WG CN4 MAP / GTB / BCH / SS	WG RAN4 Radio performance & protocol aspects	WG SA4 Codec	
	WG CN5 OSA (Open Service Architecture)		WG SA5 Telecom Mgmt	

ABBREVIATIONS

(CN) MM / CC / SM

Mobily Management/ call Control/Session Management

(CN4) MAP / GTB / BCH / SS

Mobile Application Part / GPRS Tunneling Protol/ Basic Call Handling/ Supplementary Services

(RAN2) RR

Radio Resource

(RAN3 & GERAN3) O&M

Operations and Maintenance

(GERAN3) BSS

Base Station System

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3GPP Releases

Release 6
Dec 2003?

"Add on, IMS part II"

- Rel-5 left-overs & full set of features, optimised voice (UEP, HR), IP RAN
- SIP based Push, groups, messaging, ad-hoc conferences, tones & announcem.
- Regulatory requirements of IMS (Emergency calls, number/name portability, Legal Interception, etc.); CS interworking
- New Work items: DRM, WLAN interworking, DSR (Rel-5), UE functionality split (Rel-5), Generic User Profile, Multimedia Broadcast/Multicast Services

Release 5
June 2002

"Major core ntw release"

- IP Multimedia Services Subsystem – Basic communications platform
  - IP Multimedia services basic support, SIP signalling, registration, session initiation
  - Dependance of IETF specifications, e.g., IPv6, SIP, Diameter.
  - Service platforms – service capabilities are new compared to R99/R4, SIP based services creation & provisioning
  - QoS for IMS: SDP negotiation, SIP Compression, Signalling PDP context, Basic policy control interface
- GERAN alignment with UMTS (e.g., Iu mode) *(June '02)*
- WCDMA enhancements (e.g., HSDPA, IP transport)
- IMS Authentication, Network domain security, Access security for IMS *(June '02)*
- EMS enhancements, MMS enhancements, LCS enhancements, ISIM

Release 4
March 2001

"Minor release"

- UTRAN access with some QoS enhancements
- CS Domain Evolution, MSC Servers and MGWs, based on IP protocols
- IP transport of CN protocols
- IP Header compression (IETF)
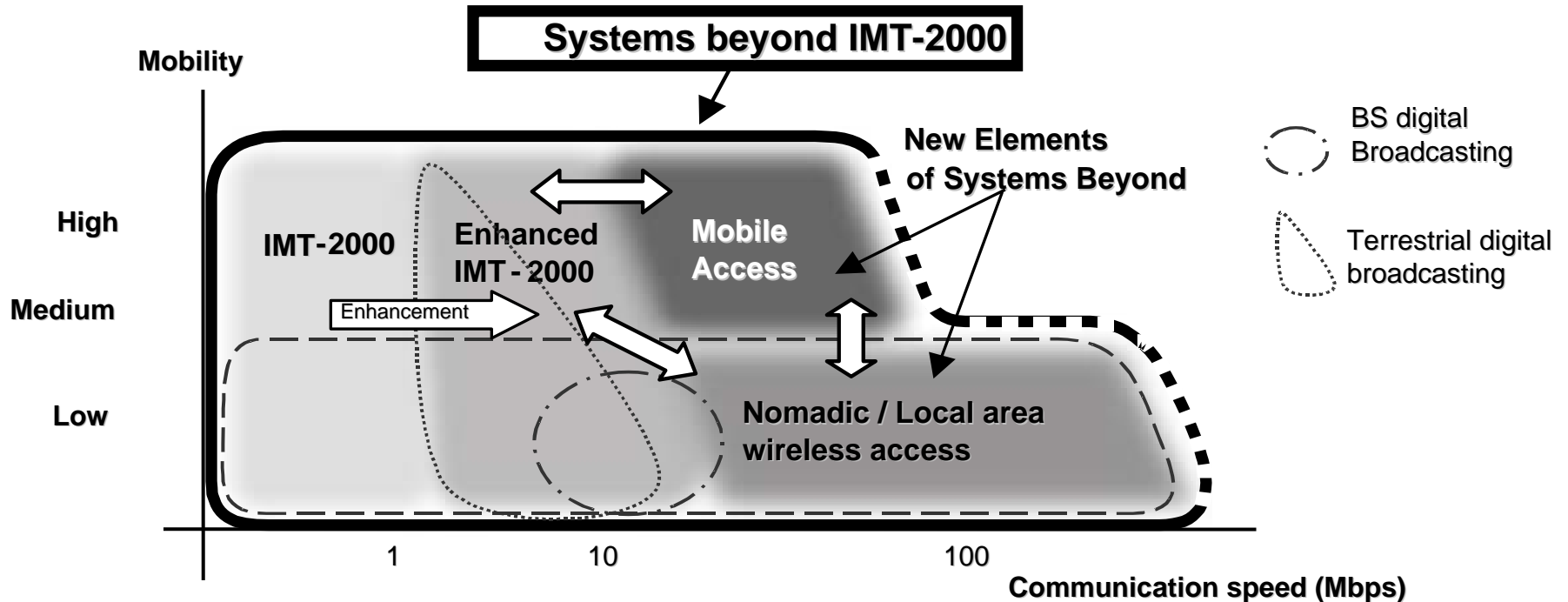- Location services enhancements, MMS, WAP, MExE, Streaming

Release 99
March 2000

"Major RAN release"

- New radio interface - WCDMA
- New RAN architecture - soft handover
- New CN-AN interface (transcoder in CN, SGSN functions to RNC)
- Open Service Architecture for services
- GSM-UMTS interworking

4G Wireless Systems – Reality or Dream?

denotes interconnection between systems via networks or the like, which allows
flexible use in any environments without making users aware of constituent systems.

- **More *Academic Studies* than *Real Planned Systems***
- **The current economic situation may delay the work (by 2020?)**

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