

Developing a **common global vision** for the  
future of wireless **to drive research and**  
**standardization**

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# Outline

- ❖ Common global vision for wireless
- ❖ Role of standardization
- ❖ Technology -> Product -> Market
- ❖ Technology trends
- ❖ The way forward: WWRF
- ❖ Conclusions



# Common Global Vision: WWRF View

**7 trillion wireless devices  
serving 7 billion people  
by 2020**

- All people will be served with wireless devices
- Affordable to purchase and operate
- Calm computing: technology invisible to users
- Machine to machine communications
  - Sensors and tags: e.g. in transport and weather systems, infrastructure, to provide ambient intelligence and context sensitivity
  - Rapid on-demand build-out and build-down from anywhere
- All devices are part of the (mobile) internet
- Internet of Things



# At a second glance

- Wireless device(s) becomes **our** interface to the digital world
- **An ambient life style where**
  - ... our mobile device becomes the key enabler to interact with smart environments and users
  - ... our mobile guides and supports us against “digital threats”
  - ... our surroundings (physical world) gets closer to the digital world
  - ... users are in control when generating and consuming content
- Has to be charged once a month only – green technology
- Untethered and connected user experience
- Ubiquitous service delivery with consistent and engaging user experience
- In Other Words:

**Wireless – The Way to Future**



# Services In Next 10 Years....

## Digital Society



By 2020....

Connected

ICT  
Enabled

Digitalized



From voice to data (including voice going IP)

5.5 billion MBB users, 1.5 billion FBB users



From pipe to content  
all media will be on-line , 750 million connected TV users



From people to machines  
50 billion connections (the Internet of Things)



From CT to ICT

70% of companies (especially SMEs) will be using Cloud-based services





WIRELESS WORLD  
RESEARCH FORUM®



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# Improving the Probability of Success of Standardization and Research through Market Connect!

- ✓ Ingredients to success
- ✓ Research market chasm

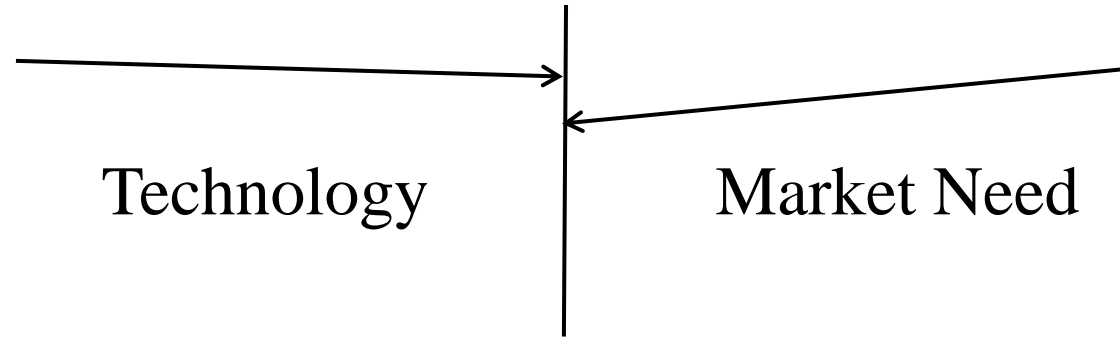
# Technology --> product --> market

- ✓ Technologies alone does not mean success!
- ✓ Customer/user need: outside-in
- ✓ Market opportunity: utility, cost, barrier to entry, IP
- ✓ Internal selling: bottom->up & top->down
- ✓ External selling
- ✓ Have an unbiased opinion
- ✓ Be prepared to fall out of love – avoid “fatal vision” syndrome!
- ✓ GTM strategy
- ✓ Improve your luck by improving odds!!
- ✓ Standards and building to standards a must to be successful, but not easily done!

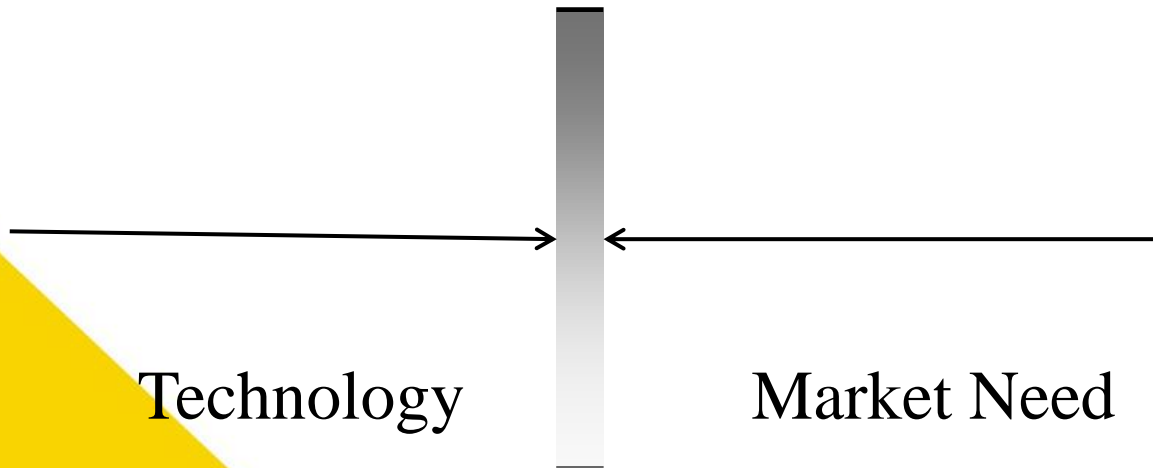




# So, what happens?



Opportunity



And, then

- Time
- Space
- Repeatability



# The Research-Market chasm

**Innovation pipeline**

“asymptotic effort”

Business models

Solution /service

Support

Channel, OEM, Partners

Software platforms

Partner software

Infrastructure

Cloud, security, regulations

Backward compatibility

**Customer need: “solve my problem”**

R&D

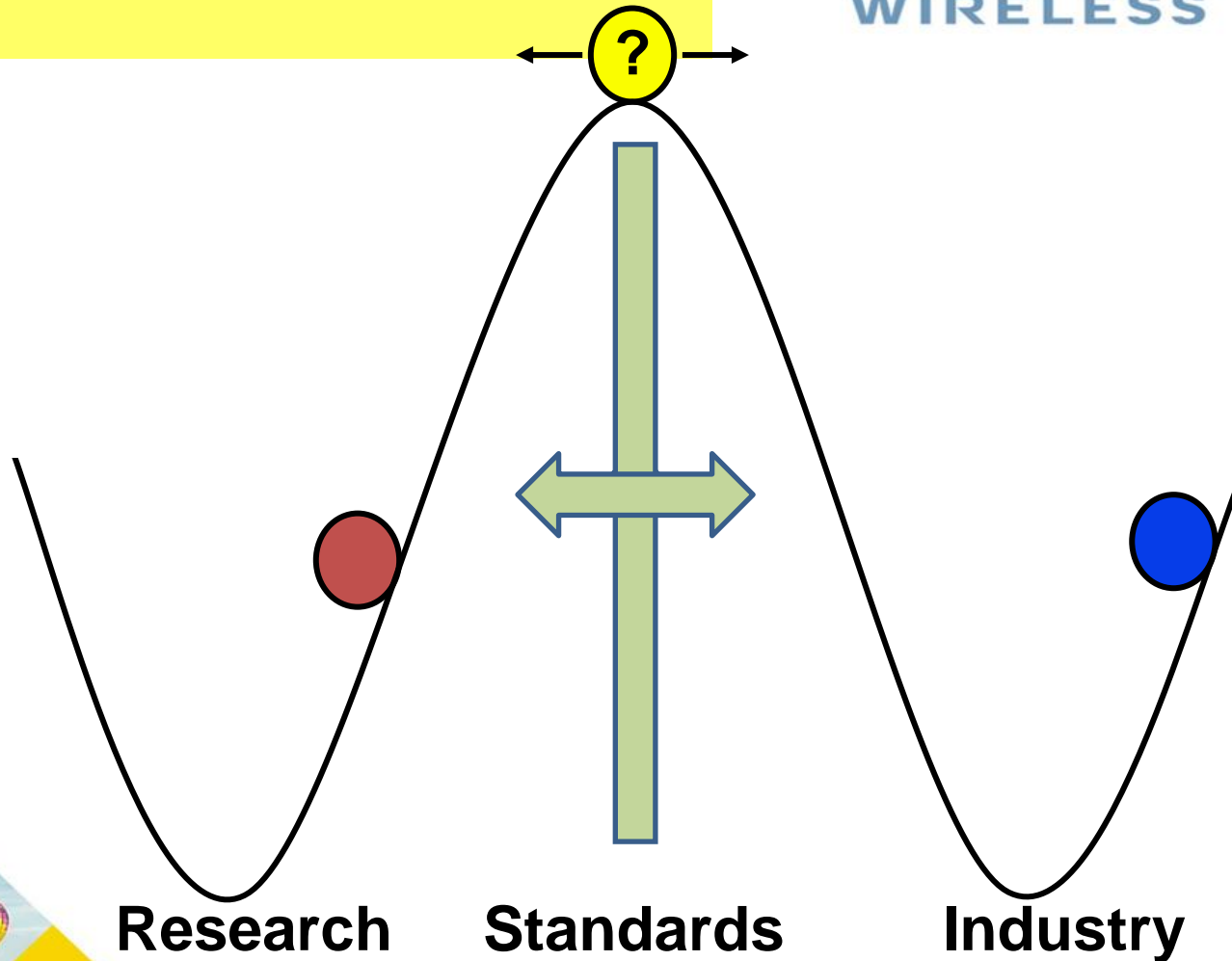
Product, service offerings, and delivery capability:

Nobody has a lot of idle capacity or budget to cater to left or right OR from left to right and vice versa

Account execs + pursuit teams, sales, CTOs, etc.



# The Science-Industry Barrier



Moving between the two sides important and beneficial for all parties

- Standards enable research to go to market
- Few organizations/individuals manage to make the leap - depends on the org/individual
- Environment may support or suppress - bureaucracy, atmosphere, risk, patience, compensation policies etc.

# Technology trends







# The Four Layers!

Make it work for the customer

## Solutions

Customer-centric solutions that make it all work

Add value to the core

## Services

Services that add value to the core

Expand and enable the core

## Software

Software to expand, optimize, and manage the core

The core (infrastructure)

## Hardware

ICT infrastructure (including networking and communications)



# The Road Ahead(1/2)

## Customer challenges

***SPEED INNOVATION***

***ENHANCE AGILITY***

***IMPROVE FINANCIAL  
MANAGEMENT***

## Shifts enabling unconstrained IT access



***Infrastructure  
ANYWHERE***

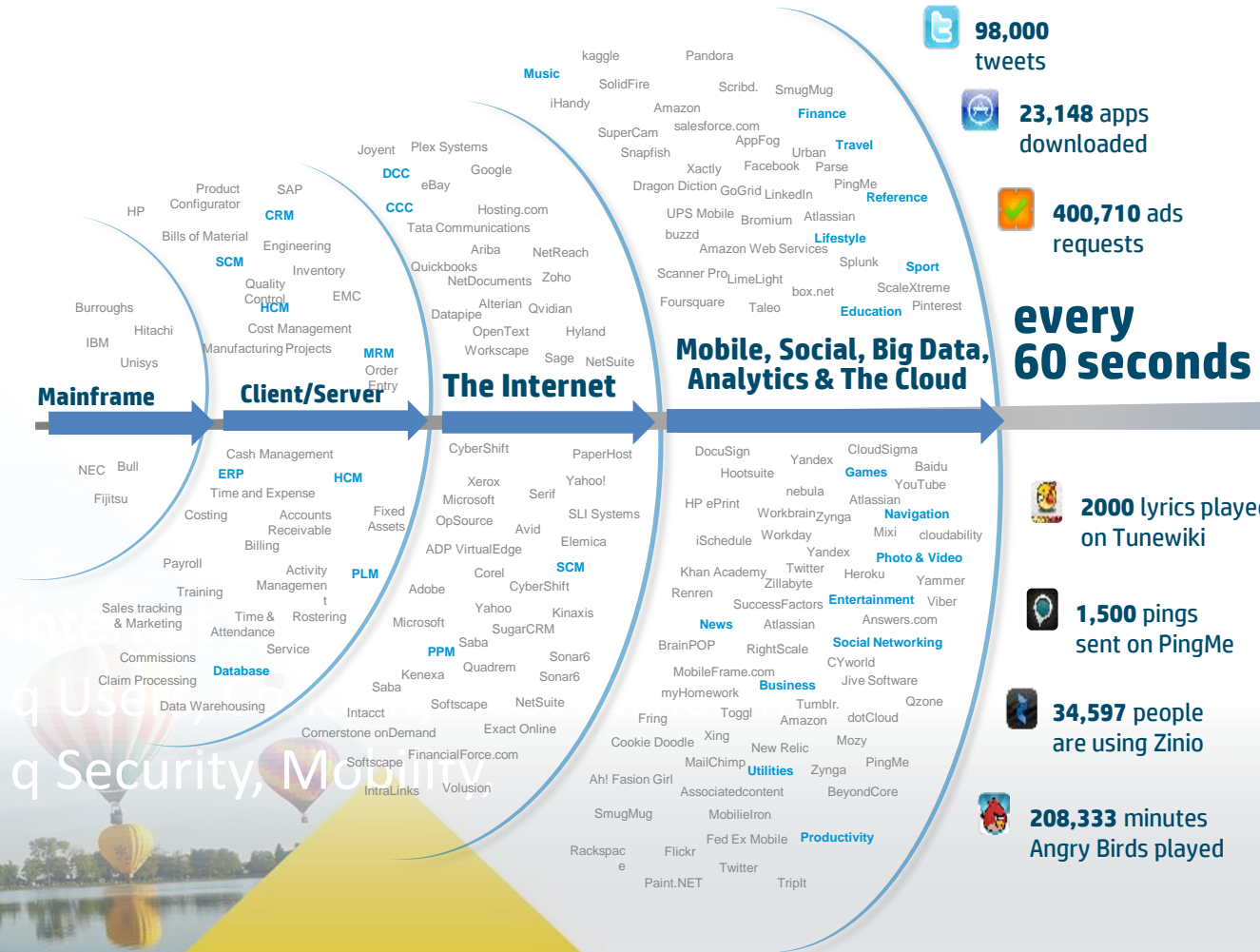
***Applications  
ANYWHERE***

***Information  
ANYWHERE***

=

***Services  
ANYWHERE***

# Accelerating innovation & change (2/2)



98,000 tweets

23,148 apps downloaded

400,710 ads requests

every 60 seconds

2000 lyrics played on Tunewiki

1,500 pings sent on PingMe

34,597 people are using Zinio

208,333 minutes Angry Birds played

## New business and technology access methods

- Change how technology is consumed & value it can bring
- Open up new business models
- Remove current inhibitors & unleash power of innovation

# Technology trends and a purpose...

## Technology trends

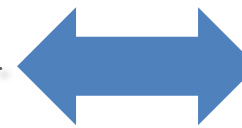


- Web 3.0/Internet 3.0 (2009 – 2029?)
- Social and collaboration
- Crowd and cloud
- Distributed computing
- SDN and cognitive networks
- Cognitive computing
- Mobility and heterogeneous devices
- Simplified, intuitive, and immersive interactions
- Real world comes closer to the digital world
- Multimedia analytics and business intelligence
- Computing for societal impact (i.e., sustainability)
- Bioinformatics
- CyberSecurity and privacy

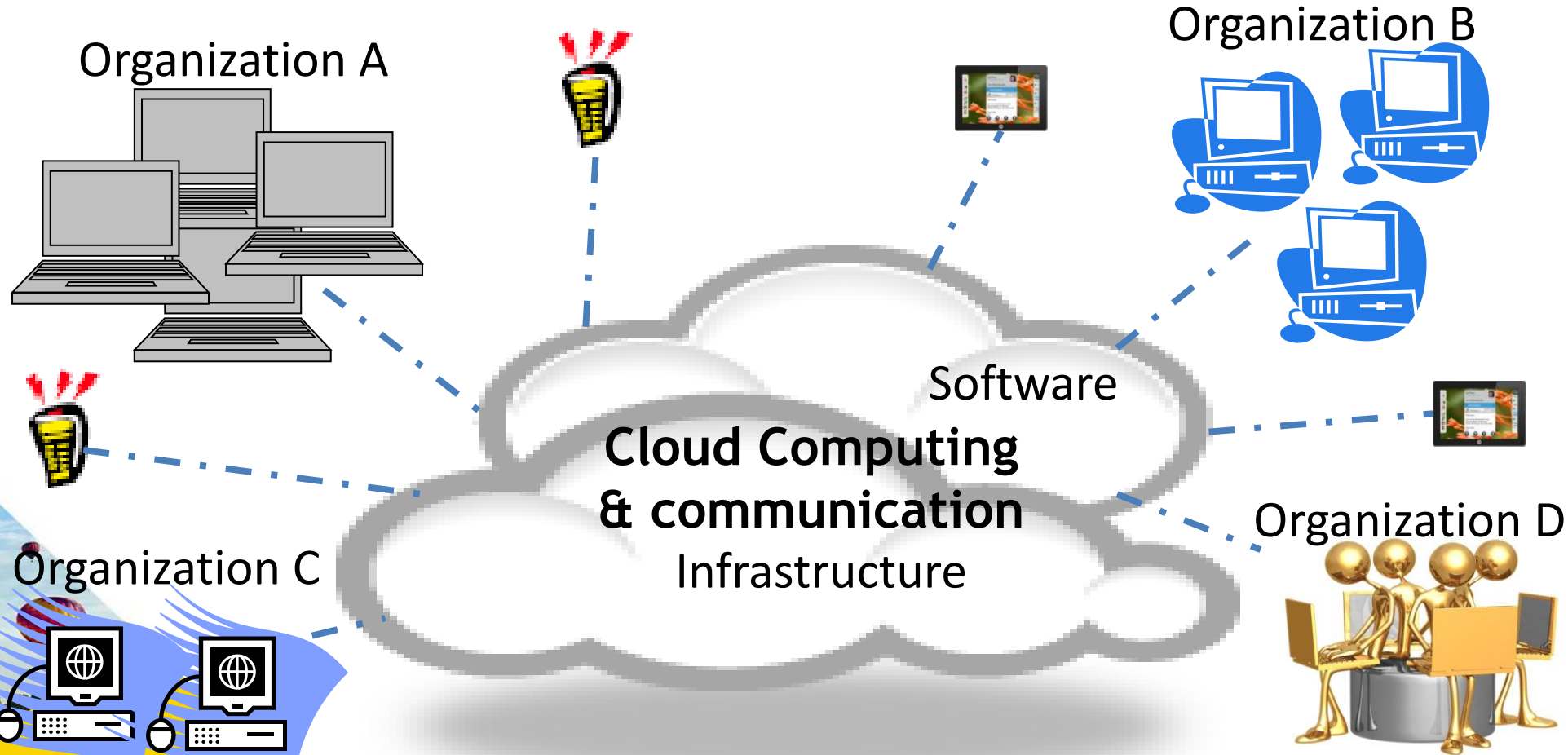
**Solutions and Services**  
(driven by customer problems  
and use cases in various verticals)



- Consumer
- Retail
- Education
- Network operators
- Manufacturing
- Healthcare
- Transportation
- Banking, finance, insurance
- E-Governance
- Public utilities
- Law enforcement and defence
- etc



# Emerging Technological Revolution





## So, what is the way forward?

- ✓ **An organization with participation from industry, academia, regulatory bodies, governments, regional bodies, users, and customers who discuss and deliberate without a personal agenda!!**
  - **Such as the WWRF**



# The Wireless World

*WWRF's goal is to encourage research that will achieve unbounded communications to address key societal challenges for the future*

*We are using the term "Wireless World" in this broad sense to address*

- the support of innovation and business,*
- social inclusion and*
- infrastructural challenges*

*This will be achieved by creating a range of new technological capabilities from wide-area networks to short-range communications, machine-to-machine communications, sensor networks, wireless broadband access technologies and optical networking, along with increasing intelligence and virtualization in networks*

*This will support a dependable future Internet of people, knowledge and things and the development of a service universe*

# What is WWRF's role?

- Develop future vision of the wireless world
- Inform and educate on trends and developments
- Enable and facilitate the translation of the vision into reality
- Bring a wide range of parties together to identify and overcome significant roadblocks to the vision

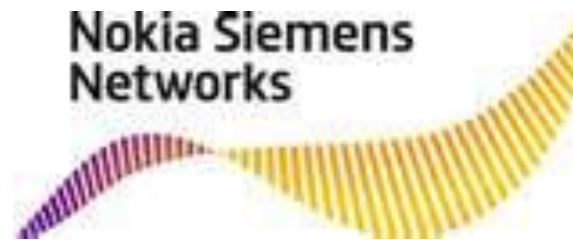


# Principles of Operation

- Global
- Open to all
- Not
  - standards body
  - research funding body
  - A typical research conference
- Based on membership
- All can attend meetings and make contributions



# Current Sponsor Members



DOCOMO Euro-Labs





# Membership

Over 80 member organisations



- Manufacturer
- Network operator
- Industry organization
- Academic institute
- Research organization



- Africa
- Americas
- Asia
- Europe

# Current Working Groups

**A User Needs & Requirements in a Secure Environment in different Socio-Economic settings**

**B Services, devices and service architectures**

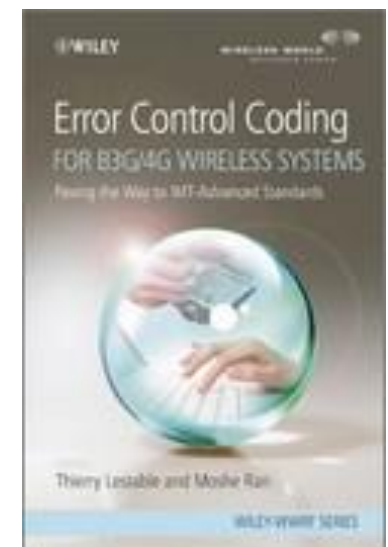
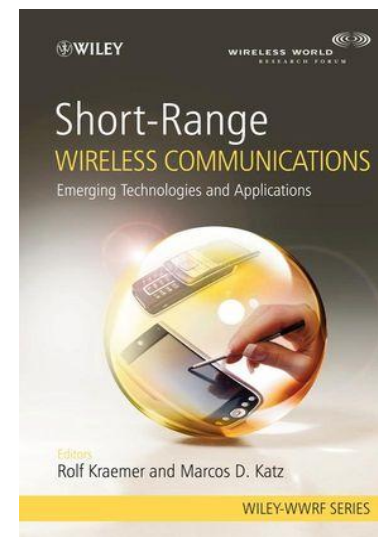
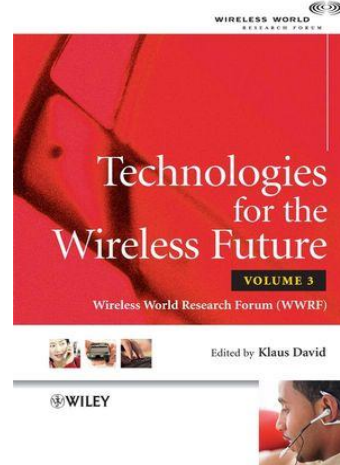
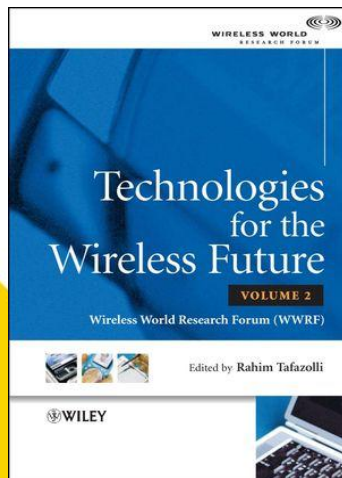
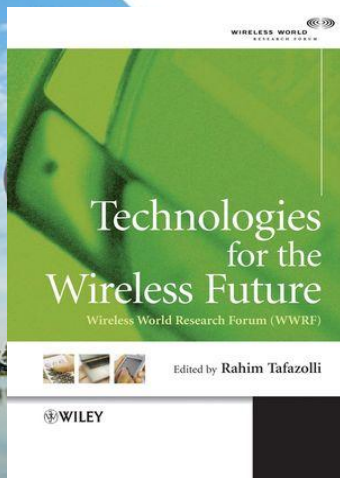
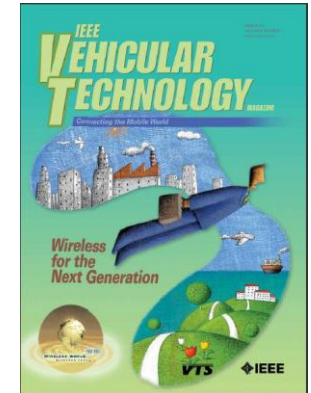
**C Communication architectures and technologies**

**D Radio Communication Technologies**



# WWRF outputs

- WWRF Outlook – published version of White Paper
- WWRF Library – proceedings of each meeting
- WWRF – Wiley Book series (5 published, 3 in prep.)
- WWRF – IEEE Journal Series (IEEE VT Magazine)



# Next WWRF Meetings

WWRF31 Vancouver, Canada  
22-24 October 2013  
Hosted by University of British Columbia



WWRF32 Marrakech, Morocco  
13-15 May 2014  
Hosted by Kings College London



WWRF33 Guildford, UK  
2014  
Hosted by University of Surrey





# Conclusions and the way ahead



PHOTO: WARNER BROS./GETTY IMAGES

- Services, usability, and trillions of devices drive the wireless world beyond 2020
- Research and standardization are key to taking innovations to market
- Business success relies on strong market connect and customer/user problem solving
- Strong need to bridge gap between research and industrialization that not many organizations are able to fill
- WWRF (or a similar organization) a perfect platform to bring research, industry, government, users together to define meaningful research topics, direction and pre-standard requirements





**Thank you!**

**For more information on WWRF and  
how to become a member  
visit [www.wwrf.ch](http://www.wwrf.ch)**

