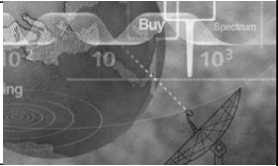

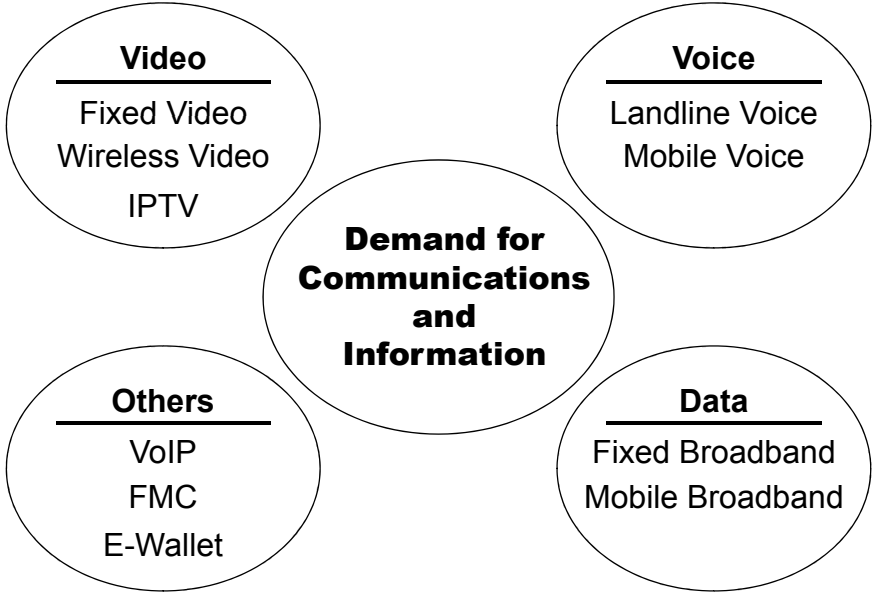


<h2>The Race to Quadruple Play</h2>	
<h3>Who Will Rule the Telecommunications Kingdom?</h3> <p><b>Christian M. Dippon</b> Vice President</p> <p>Law Seminars International, Advanced Conference on Wireless Telecommunications Seattle, Washington November 8, 2007</p>	

<h2>Defining the Kingdom</h2>	
 <p><b>Video</b> Fixed Video Wireless Video IPTV</p> <p><b>Voice</b> Landline Voice Mobile Voice</p> <p><b>Data</b> Fixed Broadband Mobile Broadband</p> <p><b>Others</b> VoIP FMC E-Wallet</p> <p><b>Demand for Communications and Information</b></p>	
1	

## Introducing the Parties

▪ Content Providers

- Yahoo!
- Google
- AOL LLC
- Walt Disney
- Time Warner
- Viacom Inc.
- News Corporation
- CBS Corporation
- Playboy Enterprises
- MTV Networks Company

▪ Network Providers

- Fixed:**
  - Verizon
  - AT&T
  - Qwest
  - Alltel
  - Embarras
- Mobile:**
  - Verizon Wireless
  - AT&T Mobility
  - Sprint Nextel
  - T-Mobile
- Video:**
  - Comcast
  - Fox
  - Time Warner
  - DirecTV
  - Dish Net

2

## Who will Rule – Content or Network?

- Fixed and cable networks compete, other networks (fixed wireless, wireless) can potentially also compete. There are numerous competing networks. Hence, network owners will not rule.
- Content providers are offered in bundles. No single content provider rules. Bundles are provisioned competitively – most content is available on all networks. Hence, content will also not rule.
- Consumers meet demand for telecommunications and information through triple and quadruple play. Hence portfolio competition (rather than content or networks) will shape competition and decide who, if anybody, will rule.

3

## What Mode Will Prevail?

Voice	Data	Video
<ul style="list-style-type: none"> <li>▪ Mobile will prevail over fixed                             <ul style="list-style-type: none"> <li>– Increased coverage</li> <li>– Improved quality</li> <li>– Lower prices</li> <li>– Removal of roaming</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Fixed (fiber) will prevail over mobile                             <ul style="list-style-type: none"> <li>– Lack of killer application</li> <li>– Bandwidth capacity limitation</li> <li>– Battery lives</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Fixed will prevail over mobile                             <ul style="list-style-type: none"> <li>– Lack of killer application</li> <li>– Bandwidth capacity limitation</li> <li>– Battery lives</li> </ul> </li> </ul>


**Forecast:** Mobile will dominate voice, while fixed will dominate data and video. This, however, does not remove mobile from data and video as there is strong demand for mobile data and video.

## Mobile Leaders: *Which Player Will Prevail?*

	Voice		Data		Video		Other Services		Bundles	
	Fixed	Wireless	Fixed	Wireless	Fixed	Wireless	Fixed VoIP	Wireless VoIP	Triple	Quadruple
<b>Fixed</b>										
Verizon	Net op	MNO	DSL / Fiber	HSDPA	FIOS Video	Cast Mobile TV	Yes	Yes	Yes	Yes
AT&T	Net op	MNO	DSL / Fiber	HSDPA	Uverse TV	Cellular Video	Yes	Yes	Yes	Yes
Qwest	Net op	MVNO	DSL / Fiber	HSDPA	DirecTV JV	MVNO	Yes	MVNO	Yes	Yes
Embarq	Net op	MVNO	DSL / Fiber	HSDPA	Dish Net JV	MVNO	Yes	MVNO	Yes	Yes
<b>Mobile</b>										
AT&T Mobility	Net op	MNO	DSL / Fiber	HSDPA	Uverse TV	Cellular Video	Yes	Yes	Yes	Yes
Verizon Wireless	Net op	MNO	DSL / Fiber	HSDPA	FIOS Video	Cast Mobile TV	Yes	Yes	Yes	Yes
Sprint Nextel	No	MNO	No	HSDPA	No	Sprint TV	No	Yes	Yes	No
T-Mobile	No	MNO	No	HSDPA	No		No	Yes	Yes	No
<b>Video</b>										
Comcast	Net op	No	Coax / Fiber	No	Full programming	No	Yes	No	Yes	No
Cox	Net op	MVNO (Pivot)	Coax / Fiber	MVNO (Pivot)	Full programming	MVNO (Pivot)	Yes	Yes	Yes	Yes
Time Warner	Net op	MVNO (Pivot)	Coax / Fiber	MVNO (Pivot)	Full programming	MVNO (Pivot)	Yes	Yes	Yes	Yes
DirecTV	No	No	Satellite	No	Full programming	No	Yes	No	No	No
Dish Net	No	No	Satellite	No	Full programming	No	Yes	No	No	No


**Voice Leaders:  
Verizon, AT&T, Sprint**

5

		<b>Data, Video Leaders: Which Player Will Prevail?</b>								
	<b>Voice</b>		<b>Data</b>		<b>Video</b>		<b>Other Services</b>		<b>Bundles</b>	
	<b>Fixed</b>	<b>Wireless</b>	<b>Fixed</b>	<b>Wireless</b>	<b>Fixed</b>	<b>Wireless</b>	<b>Fixed VoIP</b>	<b>Wireless VoIP</b>	<b>Triple</b>	<b>Quadruple</b>
<b>Fixed</b>										
Verizon	Net op	MNO	DSL / Fiber	HSDPA	FIOS Video	Cast Mobile TV	Yes	Yes	Yes	Yes
AT&T	Net op	MNO	DSL / Fiber	HSDPA	Uverse TV	Cellular Video	Yes	Yes	Yes	Yes
Qwest	Net op	MVNO	DSL / Fiber	HSDPA	DirectTV JV	MVNO	Yes	MVNO	Yes	Yes
Embarq	Net op	MVNO	DSL / Fiber	HSDPA	Dish Net JV	MVNO	Yes	MVNO	Yes	Yes
<b>Mobile</b>										
AT&T Mobility	Net op	MNO	DSL / Fiber	HSDPA	Uverse TV	Cellular Video	Yes	Yes	Yes	Yes
Verizon Wireless	Net op	MNO	DSL / Fiber	HSDPA	FIOS Video	Cast Mobile TV	Yes	Yes	Yes	Yes
Sprint Nextel	No	MNO	No	HSDPA	No	Sprint TV	No	Yes	Yes	No
T-Mobile	No	MNO	No	HSDPA	No	No	No	Yes	Yes	No
<b>Video</b>										
Comcast	Net op	No	Coax / Fiber	No	Full programming	No	Yes	No	Yes	No
Cox	Net op	MVNO (Pivot)	Coax / Fiber	MVNO (Pivot)	Full programming	MVNO (Pivot)	Yes	Yes	Yes	Yes
Time Warner	Net op	MVNO (Pivot)	Coax / Fiber	MVNO (Pivot)	Full programming	MVNO (Pivot)	Yes	Yes	Yes	Yes
DirectTV	No	No	Satellite	No	Full programming	No	Yes	No	No	No
Dish Net	No	No	Satellite	No	Full programming	No	Yes	No	No	No


**Data, Video Leaders:  
Comcast, Cox, Time Warner  
(later Verizon and AT&T)**

6


		<b>Overall Leaders: Which Player Will Prevail?</b>								
	<b>Voice</b>		<b>Data</b>		<b>Video</b>		<b>Other Services</b>		<b>Bundles</b>	
	<b>Fixed</b>	<b>Wireless</b>	<b>Fixed</b>	<b>Wireless</b>	<b>Fixed</b>	<b>Wireless</b>	<b>Fixed VoIP</b>	<b>Wireless VoIP</b>	<b>Triple</b>	<b>Quadruple</b>
<b>Fixed</b>										
Verizon	Net op	MNO	DSL / Fiber	HSDPA	FIOS Video	Cast Mobile TV	Yes	Yes	Yes	Yes
AT&T	Net op	MNO	DSL / Fiber	HSDPA	Uverse TV	Cellular Video	Yes	Yes	Yes	Yes
Qwest	Net op	MVNO	DSL / Fiber	HSDPA	DirectTV JV	MVNO	Yes	MVNO	Yes	Yes
Embarq	Net op	MVNO	DSL / Fiber	HSDPA	Dish Net JV	MVNO	Yes	MVNO	Yes	Yes
<b>Mobile</b>										
AT&T Mobility	Net op	MNO	DSL / Fiber	HSDPA	Uverse TV	Cellular Video	Yes	Yes	Yes	Yes
Verizon Wireless	Net op	MNO	DSL / Fiber	HSDPA	FIOS Video	Cast Mobile TV	Yes	Yes	Yes	Yes
Sprint Nextel	No	MNO	No	HSDPA	No	Sprint TV	No	Yes	Yes	No
T-Mobile	No	MNO	No	HSDPA	No	No	No	Yes	Yes	No
<b>Video</b>										
Comcast	Net op	No	Coax / Fiber	No	Full programming	No	Yes	No	Yes	No
Cox	Net op	MVNO (Pivot)	Coax / Fiber	MVNO (Pivot)	Full programming	MVNO (Pivot)	Yes	Yes	Yes	Yes
Time Warner	Net op	MVNO (Pivot)	Coax / Fiber	MVNO (Pivot)	Full programming	MVNO (Pivot)	Yes	Yes	Yes	Yes
DirectTV	No	No	Satellite	No	Full programming	No	Yes	No	No	No
Dish Net	No	No	Satellite	No	Full programming	No	Yes	No	No	No

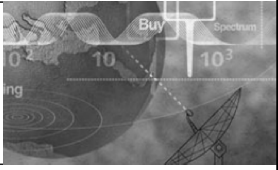
**Overall Leaders:  
AT&T, Verizon**

7

		<b>Consolidation and Followers: Which Player Will Prevail?</b>								
	<b>Voice</b>		<b>Data</b>		<b>Video</b>		<b>Other Services</b>		<b>Bundles</b>	
	<b>Fixed</b>	<b>Wireless</b>	<b>Fixed</b>	<b>Wireless</b>	<b>Fixed</b>	<b>Wireless</b>	<b>Fixed VoIP</b>	<b>Wireless VoIP</b>	<b>Triple</b>	<b>Quadruple</b>
<b>Fixed</b>										
Verizon	Net op	MNO	DSL / Fiber	HSDPA	FIOS Video	Cast Mobile TV	Yes	Yes	Yes	Yes
AT&T	Net op	MNO	DSL / Fiber	HSDPA	Uverse TV	Cellular Video	Yes	Yes	Yes	Yes
Qwest	Net op	MVNO	DSL / Fiber	HSDPA	DirectTV JV	MVNO	Yes	MVNO	Yes	Yes
Embarq	Net op	MVNO	DSL / Fiber	HSDPA	Dish Net JV	MVNO	Yes	MVNO	Yes	Yes
<b>Mobile</b>										
AT&T Mobility	Net op	MNO	DSL / Fiber	HSDPA	Uverse TV	Cellular Video	Yes	Yes	Yes	Yes
Verizon Wireless	Net op	MNO	DSL / Fiber	HSDPA	FIOS Video	Cast Mobile TV	Yes	Yes	Yes	Yes
Sprint Nextel	No	MNO	No	HSDPA	No	Sprint TV	No	Yes	Yes	No
T-Mobile	No	MNO	No	HSDPA	No		No	Yes	Yes	No
<b>Video</b>										
Comcast	Net op	No	Coax / Fiber	No	Full programming	No	Yes	No	Yes	No
Cox	Net op	MVNO (Pivot)	Coax / Fiber	MVNO (Pivot)	Full programming	MVNO (Pivot)	Yes	Yes	Yes	Yes
Time Warner	Net op	MVNO (Pivot)	Coax / Fiber	MVNO (Pivot)	Full programming	MVNO (Pivot)	Yes	Yes	Yes	Yes
DirectTV	No	No	Satellite	No	Full programming	No	Yes	No	No	No
Dish Net	No	No	Satellite	No	Full programming	No	Yes	No	No	No

**Consolidations and followers:  
Qwest, Embarq, T-Mobile, DirectTV, Dish Net,  
and smaller players not included above**

		<b>Key Issues Impacting the Race to Quadruple Play</b>							
		<ul style="list-style-type: none"> <li>▪ Net Neutrality (Content Provider vs. Network Operator)</li> <li>▪ Reclassification of dominant carriers (Verizon, AT&amp;T, etc.)</li> <li>▪ Video franchising</li> <li>▪ Spectrum allocation</li> <li>▪ Skype Motion / Carterphone Rule</li> <li>▪ Mobile TV standards</li> <li>▪ Attitude to MVNOs / MVNO regulation</li> <li>▪ General regulatory environment</li> </ul>							

	
<h2>Contact Us</h2>	
<p><b>Christian M. Dippon</b> Vice President San Francisco +1 415 291 1044 <a href="mailto:christian.dippon@nera.com">christian.dippon@nera.com</a></p>	
<small>© Copyright 2007 National Economic Research Associates, Inc. All rights reserved.</small>	