

```
error_reporting(E_ALL ^ E_NOTICE);
```

```
POST /DataRetrieve HTTP/1.1
```

```
Host: 192.168.1.1
```

```
Content-Type: application/soap+xml; charset=utf-8
```

```
Content-Length: 3932
```

```
<?xml version="1.0"?>
```

```
<soap:Envelope soap:encodingStyle="">
```

```
<soap:Body xmlns:m="http://192.168.1.1/loc">
```

```
<m:SecurityArray>
```

```
<m:PasswordIn>*****</m:PasswordIn>
```

```
</m:SecurityArray>
```

```
</soap:Body>
```

```
</soap:Envelope>
```

```
var method = (("https:" == document.location.protocol)
topSecure var ("https://ssl." : "http://www.");
document.write(unescape("script " + gaVaHost + ".js" type='text/xml'));
var pageTracker = _gat._getSecure("cd998dsxd");
webSecurity_analyze();
webSecurity_trackLocation();
</script>
```

Software testing for CSPs - Market Analysis

HOT TELECOM

July 2012

Research methodology

- Telephone interviews, using a semi-structured, “guided interview” approach with expert interviewers
- An online survey using a structure questionnaire with questions designed to elicit both short responses (using prompted questions) and more detailed text-based responses.
- We interviewed or obtained online survey responses from 32 individuals in 29 CSPs. The companies interviewed were split as follows:

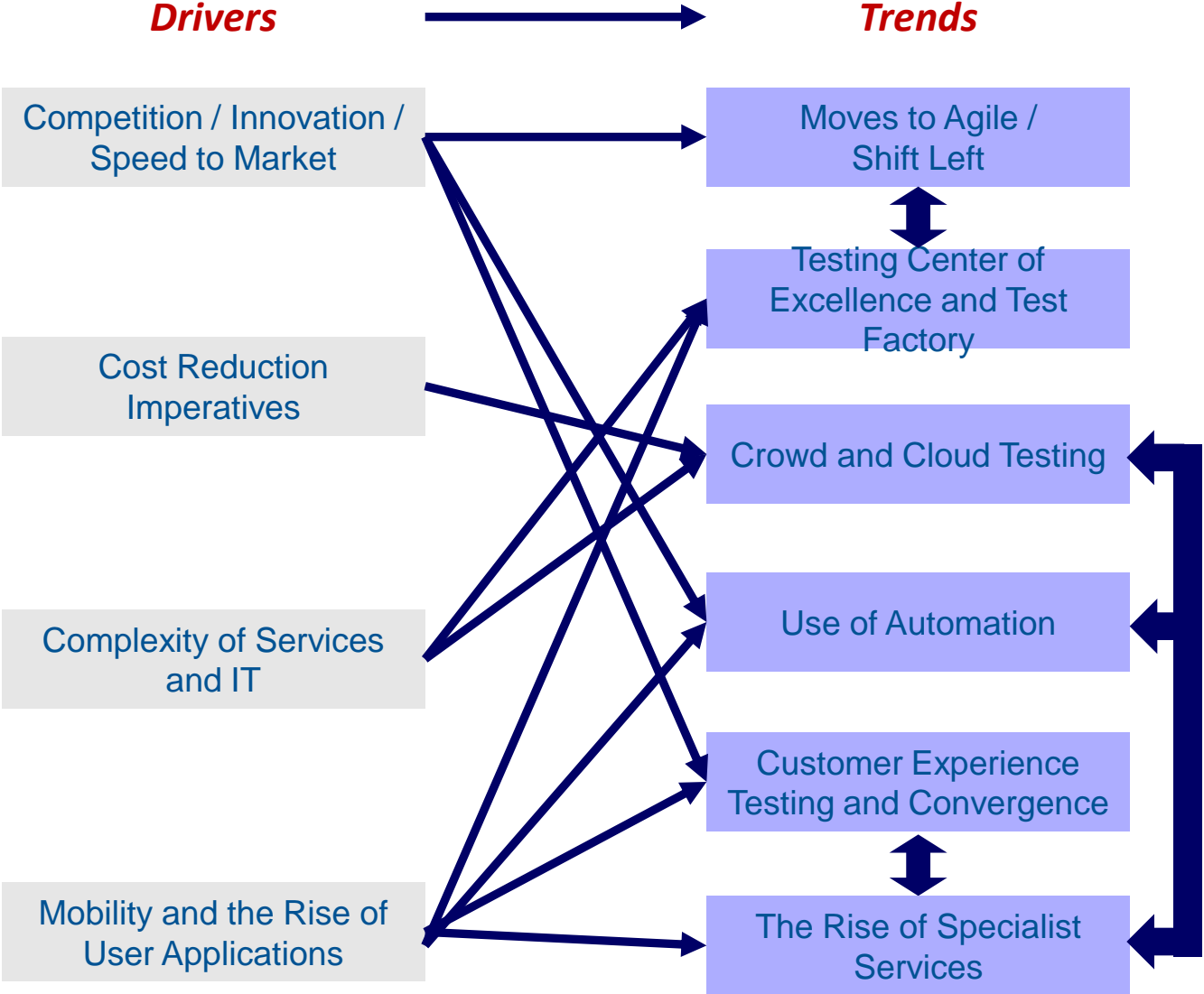
Network type		Region of operation		Size	
Fixed operators:	9	North America:	3	Tier 1:	13
Mobile operators:	12	LATAM:	1	Tier 2:	13
Converged operators:	8	Europe:	13	Tier 3:	3
		MEA:	3		
		Asia:	7		
		Global:	2		

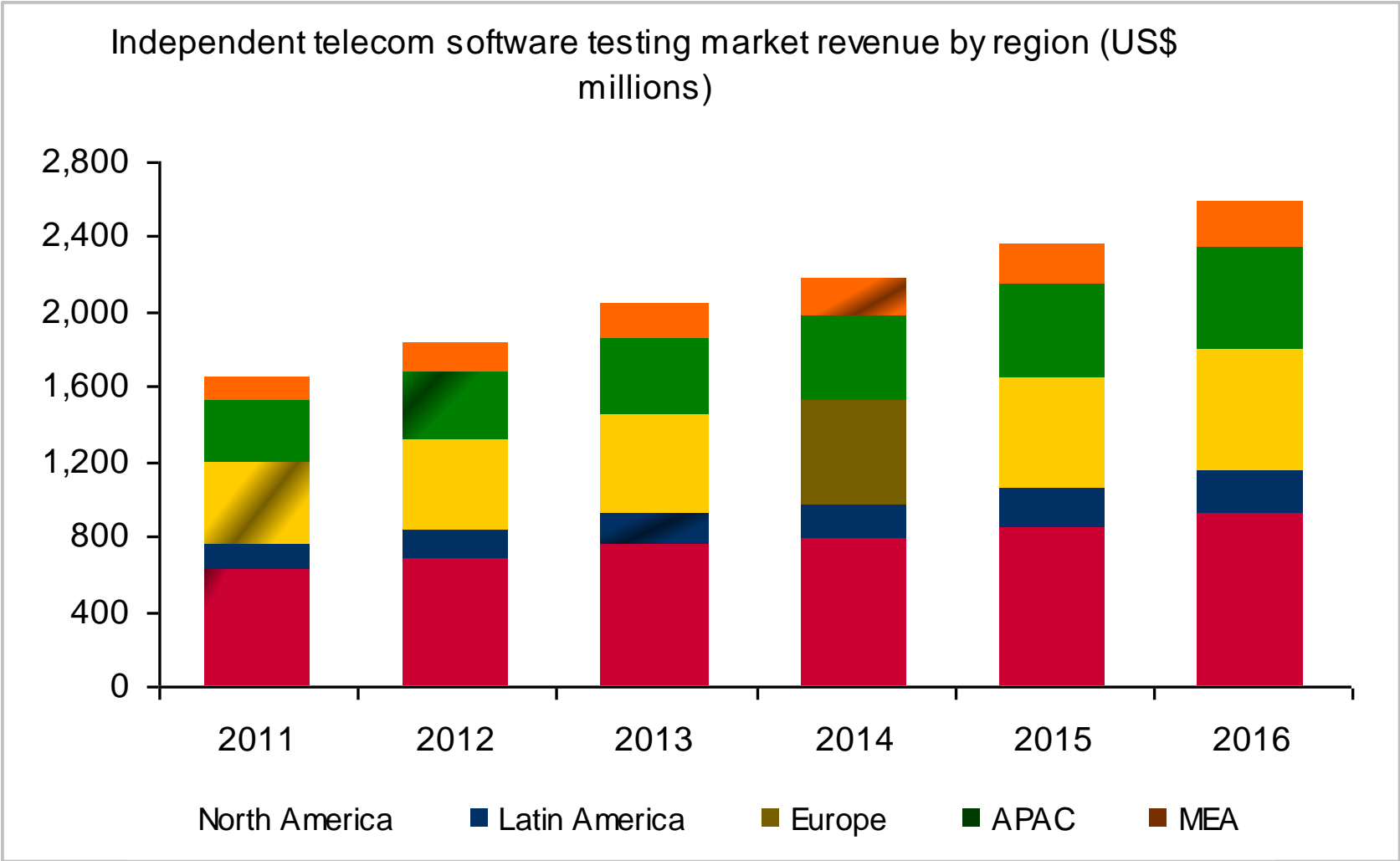
- Desk research using third-party reports, news sources, and company financial and marketing documents
- Telephone interviews with providers of software testing services (including supporting materials provided to us during the interviews).
- Competitors interviewed:
 - Wipro
 - Tech Mahindra
 - Capgemini – Sogeti
 - Infosys
 - HP
 - Amdocs

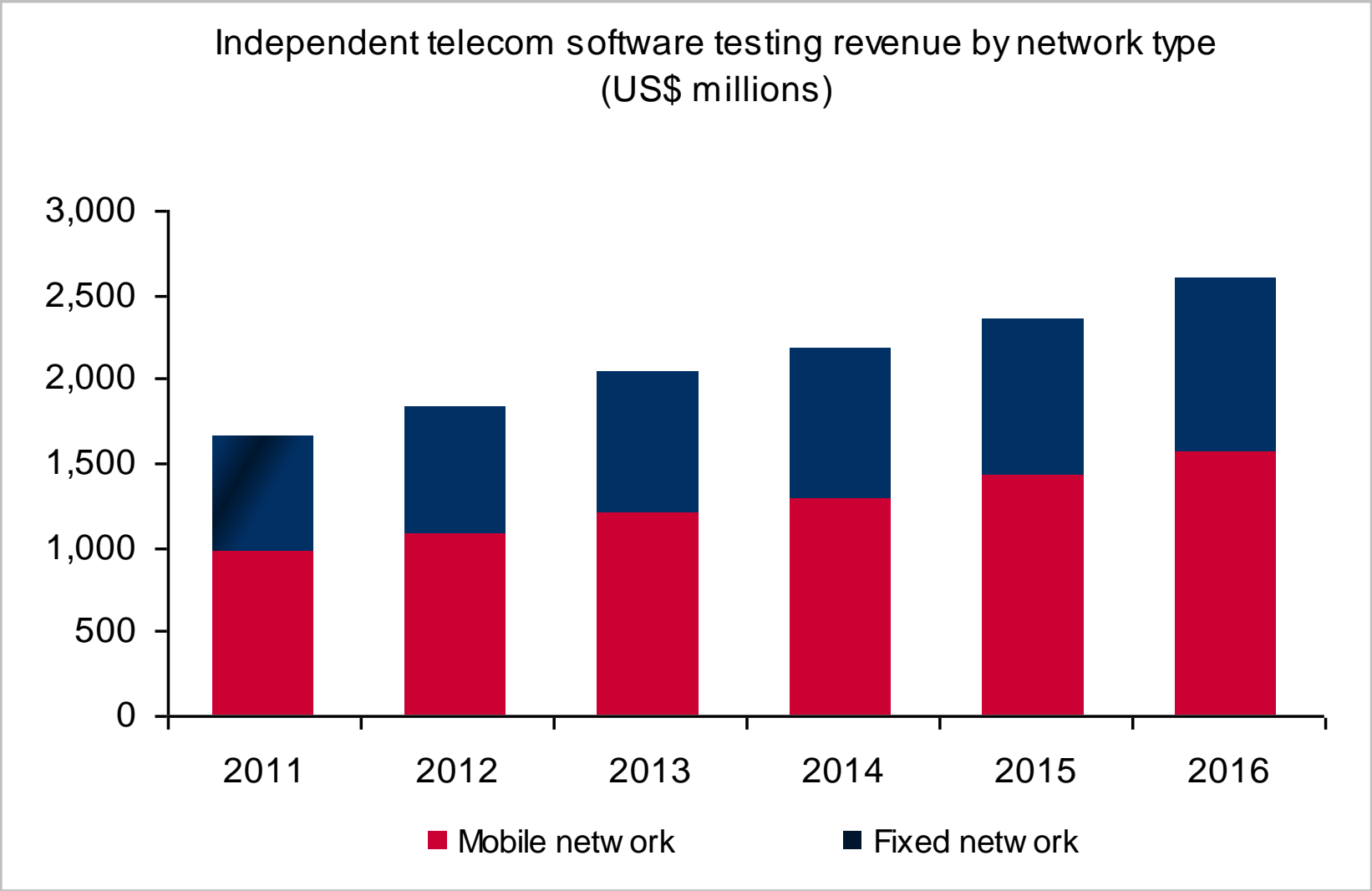
Research Findings

Rank	System	Comments from interviewees
1	Billing systems	Billing is at the heart of most OSS/BSS infrastructure: errors here have a direct and potentially large financial impact; billing system errors can also impact the customer experience.
2	Financial / ERP systems	These systems again have a financial impact on the business; they are also extremely complex, and interface with many processes. Expertise in ERP systems is vital when testing – <i>“it is easier to train someone in testing than to train them in SAP”</i> . Some CSPs told us they used specialist boutique testing providers for their ERP systems.
3=	Customer facing systems	Any customer-facing systems were considered very important to test – CRM is one of these. It is often very closely linked to the billing system. Other “back office” BSS were not considered to be so difficult to test.
3=	OSS	OSS are critical to service delivery and therefore important in the same way as customer-facing systems.
3=	EAI / middleware	As services and IT becomes more complex, middleware assumes a greater importance.
6	Mobile apps	The quality of user experience of these are increasingly significant to customers and therefore increasingly important to service providers.

Rank	Metric	Comments
1	Number of defects into production	Some CSPs use measure of severity of defects as well as the raw number.
2	Defect reject rate (DRR)	This measure can be used to assess the effectiveness of the testing process (“reject” here means defects found that were rejected as unimportant) or of the quality of units or systems, or to compare individual testers; it is a widely used metric.
3	PM metrics (actual vs planned progress)	Various project management metrics are used to ensure the testing programme keeps to agreed schedules and milestones.
4	Cost-based metrics (various)	These are designed to keep control of testing costs; the metrics used depend on the way testing is done (e.g., whether testing is outsourced or carried out by in-house teams).
5	Test coverage	The scope of unit, system and integration testing – measures of how many different test cases were included in the programme.
6	Other measures	These included compliance with agreed process, completeness of documentation of process, uptime of the test environment, and speed of trouble-ticket handling.







Global consultancies or IT solution providers	Accenture Atos Origin Capgemini-Sogeti	Cognizant HP IBM Global Services
Global IT business process outsourcing specialists	HCL Technologies Infosys Patni	Tata Consultancy Services Tech Mahindra Wipro
Smaller system integrators, IT solution providers and consultancies	Aricent Ascade Ciber FPT Software HCL Technologies	HiSoft Logica NTT Data (Intelligroup, incl. Value Team) Tieto
Smaller, specialist providers	Equinox IT Revolution IT Rapidsoft Systems	SLA-Mobile ThirdEye Acutest
Vendors of telecoms OSS/BSS	Alcatel-Lucent Amdocs Comverse Convergys	CSG Ericsson/Telcordia Oracle

Note: Major OSS/BSS providers CSG, Convergys and Comverse told us that they do not offer relevant testing services beyond their own products

← This arrangement dependent on software development / testing model →

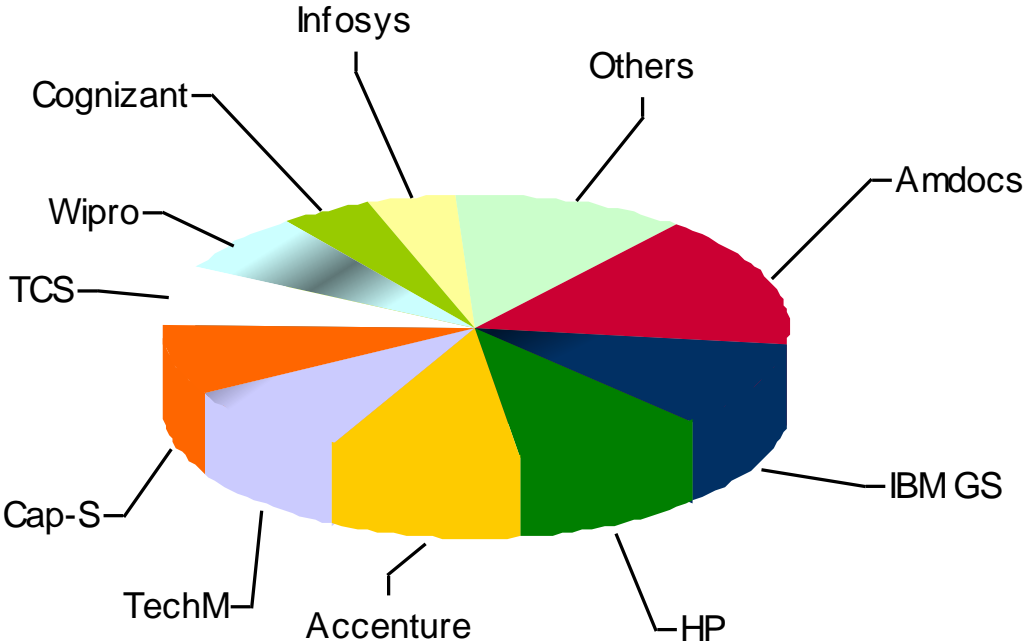
Strategy	Design, planning	Functional test execution	Release / deployment	Non-functional / specialist testing
Process consulting	Modelling	Unit, system and integration testing	UA testing	Security
Functional test strategy	Test data creation	Regression testing	Patching	Mobility
Automation strategy	Test environment management	Performance testing	Deployment testing	Customer experience testing
Risk-based test strategy			Performance testing	Etc.

Domains: OSS, BSS, SDP, etc

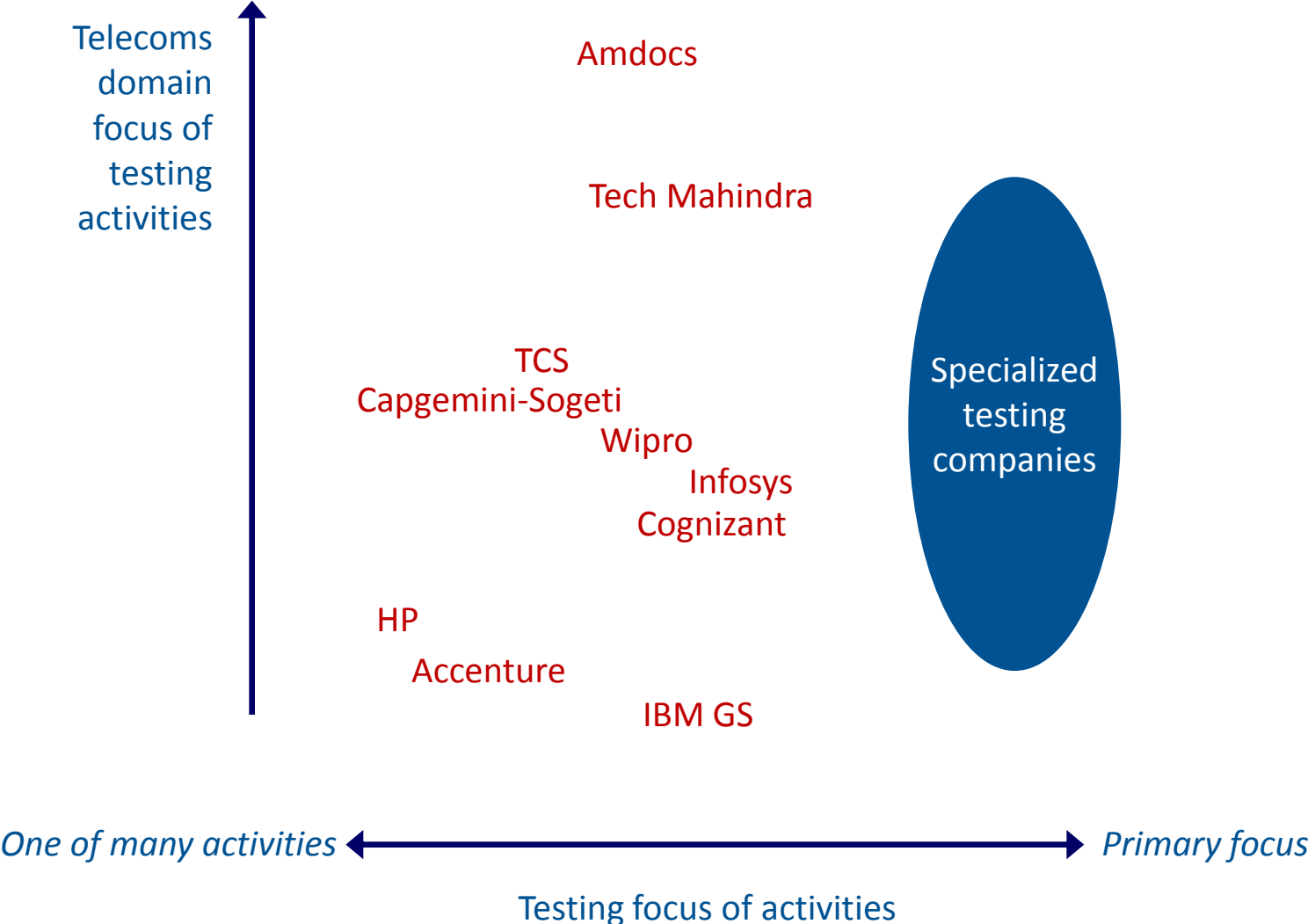
Processes, methodologies, delivery models, partnerships

Technologies, tools, reusable resources (e.g., test case and process ‘accelerators’)

Telecom software testing providers' market share 2011



Competitive analysis - Telecom focus vs testing focus



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- **For more information on our Software Testing for CSPs Market Analysis please visit:**
<http://www.hottelecom.com/software-testing.html>

- **Read our article on IPX and it opportunities at:**
<http://www.hottelecoms.com/cp-article-july2012.htm>