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Consulting ▪ Contracting ▪ Technology

Global-i Consulting Webinars

Topic

Development and Delivery of Cloud & Hosted-based Infrastructure Services

Presenter

Dave Roy

Founder/President of Global-i, Inc.

and Cloud Computing & Hosted Communications Consulting Practice Leader

Date

October 8, 2010

Presenter Bio

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Presenter Bio:

Dave is the founder/ president of Global-i, Inc., with about 20 years of experience in the Converged Communications & IT industry. He is also the Cloud Computing & Hosted Communications Consulting Practice Leader for Global-i.

His experience ranges from successful project turnarounds & leadership roles in Global/National CSPs & Infrastructure OEMs. Dave has been part of building multiple Commercial Products & Services Programs across Wireless, Wireline, IP, Cable MSO, Broadband, Satellite, etc. Specifically, in the Cloud/Hosted Services areas, Dave was closely tied to efforts at Fonality, XO, Primus, Sprint, T-Mobile, Glenayre (now Movius Corp). Here Dave was responsibile for Hosted & Managed VoIP, IPT, UC, Video, SAAS, PAAS & related Rich Applications, etc across Enterprise, Consumer & Carrier Space for Full-Lifecycle Management activities. At Global-i related to Cloud/Hosted Services, Dave spearheaded efforts with RCN Business Services on TalkWare VoIP (Hosted PBX, SIP Trunking) launch & with BT Americas for Managed Network/Infrastructure/Datacenter Services. Over the last decade & more he has worked closely with several leading Cloud/Hosted/Managed Infrastructure & Services Vendors.

Dave has an M.B.A. from University of Toledo (USA) & M.A. in Public Admn. & Info Systems from University of Akron (U.S.A). He has a Bachelor's in Economics from Delhi University (India).

Dave & Global-i Cloud/Hosted Consulting Practice team can be reached at Cloud-HostedPractice@globaliconsulting.com

What do we think of Cloud Services?

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Cloud Services and Cloud-based Service Providers are Surely “Not” anything to do with Clouds in the Sky!

Cloud-based Datacenter and Hosted Technologies are Starting to be seen Everywhere – Telecommunications, SAAS, Utilities, Power, Smart Grids, Clean Tech serving Consumer, SMBs, Enterprise, Government and Carrier Space

Agenda

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- Definition of “The Cloud”
- Evolving Cloud and Hosted Landscape
- Cloud and Hosted - Key Drivers
- Cloud Computing Challenges
- Cloud Computing Reference Architecture
- Cloud and Hosted – Service Provider Deployment Models
- Cloud Vendor Portfolio Launch
- Our Capabilities
- Our Approach
- Q&A

Cloud and Hosted Defining "The Cloud"

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- Cloud Technology has many names: Cloud Computing, Utility Computing, Datacenter Technologies, Hosted Technologies, Software-as-a-Service (SAAS), Smart Grid, Clean Tech, Green Tech and more
- Cloud names are Different but mean the same underlying Technology Approach to solving Information Computing and Delivery
- Cloud Computing describes a new generation, consumption, and delivery model for Communications and IT services based on the Internet
- Typically involves over-the-Internet provision of dynamically scalable and often virtualized resources – like Electricity Grids

Cloud and Hosted Defining "The Cloud"

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- The term "Cloud" is based on the cloud drawing used in the past to represent the Public Switched Telephone Network (PSTN)
- Typical Cloud Computing infrastructure consists of services delivered through common centers and built on servers
- Takes form of Web-based tools or applications that users can access and use through a web browser as if it were program installed locally
- Cloud offers are expected to meet Quality of Service or QoS requirements for Cloud customers via Service Level Agreements (SLAs)

Cloud and Hosted Defining "The Cloud"

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- Cloud Computing is also referred to as Smart Grid or Grid Computing and is a form of Distributed Computing and Parallel Computing, where a cluster of networked computers act together to perform very large tasks
- Cloud Computing is also referred to as Utility Computing and is a Packaged computer environment with Computation and Storage, as a Metered Service similar to a Public Utility as Electricity and Power
- Cloud Computing utilizes both the Client-Server Model as well as a Peer-to-Peer Model. In the latter case, the Architecture is Distributed with participants being at the same time suppliers and consumers of resources

Cloud and Hosted Evolving Landscape

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- In the 1960s early Cloud Proponents talked about Public Utility Type of Computing
- In the 1990s Telecom Companies furthered the term “Cloud” by offering Virtual Private Network (VPN) services with comparable QoS as the PSTN, but at a much lower costs
- Amazon modernized their Data centers to provide Utility Cloud-based Services and launched Amazon Web Services (AWS) in 2006
- In 2007, several major Cloud Vendors and Service Providers embarked on Large-Scale Cloud Computing Architecture
- By mid-2008 started to emerge a Commercial Opportunity for Organizations to Switch from Capital Expense (CAPEX) Models to Per-use Service-based Models (OPEX)

Cloud and Hosted Key Drivers

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- Agility - Improves with users' ability to rapidly and inexpensively re-provision IT infrastructure resources
- Cost - is claimed to be greatly reduced and CAPEX is converted to OPEX
- 3rd Party Infrastructure - does not need to be purchased for one-time or infrequent intensive computing tasks
- Pricing - on a Utility Computing basis is fine-grained with Usage-based options
- Multi-Tenancy - enables sharing of resources and costs across a large pool

Cloud and Hosted Key Drivers

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- Infrastructure implementation is Shorter - fewer IT skills are required for implementating in-house
- Device and Location independence – access via a Web Browser regardless of location or device
- Access Anywhere - accessed via the Internet, users can connect from anywhere
- Reliability - is improved if multiple redundant sites are used
- Scalability - via on-demand provisioning of resources on a self-service basis near real-time

Cloud and Hosted Key Drivers

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- Performance - is monitored and consistent
- Security - could improve due to centralization of data, increased security-focused resources, etc. But concerns can persist about loss of control over certain sensitive data
- Maintenance - of cloud computing applications is easier to support and to improve since the changes reach the clients instantly
- Metering - cloud computing resources usage is measurable and metered per client and application

Cloud Computing Challenges

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- **Privacy**
  - Cloud Providers hosting the Cloud services control and monitor at will the communication and data stored
- **Compliance**
  - In order to obtain compliance with regulations users may have to adopt community or hybrid deployment modes which are typically more expensive and may offer restricted benefits
  - Many providers also obtain SAS 70 Type II certification but this has been criticized on the grounds that the set of goals and standards are often not disclosed and can vary widely
- **Legal**
  - Host of Legal issues around Patents, Branding, Metering, Policies, etc
- **Security**
  - Argued that customer data is more secure when managed internally. Also argued that cloud providers have a strong incentive to maintain trust
  - Cloud Security Alliance is a non-profit organization formed to promote the use of best practices for providing security assurance within Cloud Computing

Cloud Computing Challenges

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- **Open Source and Open Standards**
  - Open Cloud Consortium (OCC) is working to develop consensus on early cloud computing standards and practices
  - Number of open standards are under development, including the OGF's Open Cloud Computing Interface
  - Cloud providers expose APIs which are typically well-documented but also unique to their implementation and thus not interoperable. Some vendors have started to adopt others APIs
- **Availability and Performance**
  - Businesses are also worried about acceptable levels of availability and performance of applications hosted in the cloud
  - Concerns about cloud providers shutting down for various reasons
- **Sustainability**
  - Although cloud computing is often assumed to be a form of "green computing", there is as of yet no published study to substantiate this assumption
  - In areas where climate favors natural cooling and renewable electricity is readily available, the environmental effects will be more moderate

Cloud Computing Reference Architecture

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- Cloud Architecture typically includes
  - Multiple components communicating with each other over Application Programming Interfaces (APIs) and Web Services
- Two most significant components of Cloud Computing architecture are known as the
  - Front-End and the Back-End
- The Front-End interfaces to the Client
  - i.e. the Cloud Computing User (such as a PC, Smartphone, PC Tablet, etc)
- The Back-End of the Cloud Computing Architecture is the "Cloud" itself
  - i.e. the Cloud Network

Cloud Components or Layers:

- Client
  - is the Interface for Cloud Computing Delivery (i.e. Computers, Smart Phones, Mobile Tablets, etc)
- Application Services
  - is the "Software as a Service (SaaS) delivers Software Services over the Internet

Cloud Computing Reference Architecture

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  - Eliminates the need to install and run the software on local resources (ie Local PC, Corporate Servers, etc)
  - Network-based access to and management of commercially available (non-custom) software
  - Activities managed from a centralized datacenter
  - Application delivery typically closer to a pay-per-use and one-to-many model including architecture, pricing, partnering and application management
  - Centralized feature updating and application management
- Platform Services
  - Cloud Platform services or “Platform as a Service” (PaaS) delivers a Computing Platform
  - It facilities deployment of applications without the cost and complexity of buying and managing the underlying platform hardware and software
- Infrastructure Services
  - Cloud Infrastructure Services or “Infrastructure as a Service” (IaaS) delivers Infrastructure to support the Platform Virtualization Environment.
- Server Layer
  - Consists of Multi-core processors, Cloud-specific Operating Systems and Combined Server Resources

Cloud Computing Reference Architecture

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Hosted Unified Communications Services Enabling a Complete Portfolio of Enterprise Communications Services

PBX Phone Services	Contact Center	Attendant Console	Unified Communi-cations	Web Collaboration and Conferencing	Custom XML Apps	On-Net Trunking	Fixed Mobile Convergence

Service Provider Services

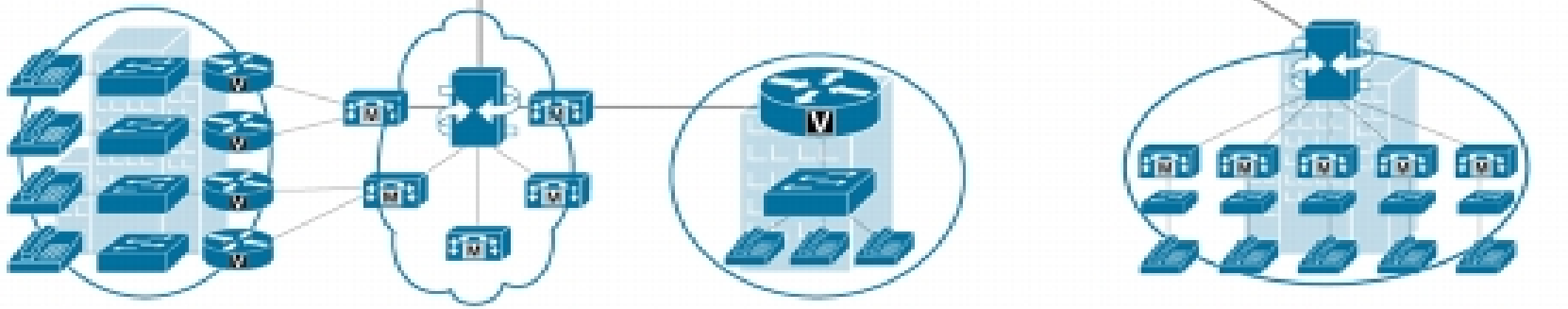
Remote Nework Management and Operations

Vison OSS Business Voice Services Manager Provisioning

Call Routing	Scalability Reliability	Security, QoS	Regulatory LNP, Layer 1	PSTN Connectivity	Call Accounting

Service Provider Business Voice Infrastructure

Service Model Options



Hosted Multi-Tenant Unified Communications Services

Hosted Dedicated Unified Communications Services

Hosted Systems Integrated Unified Communications Services

Cloud Computing Reference Architecture

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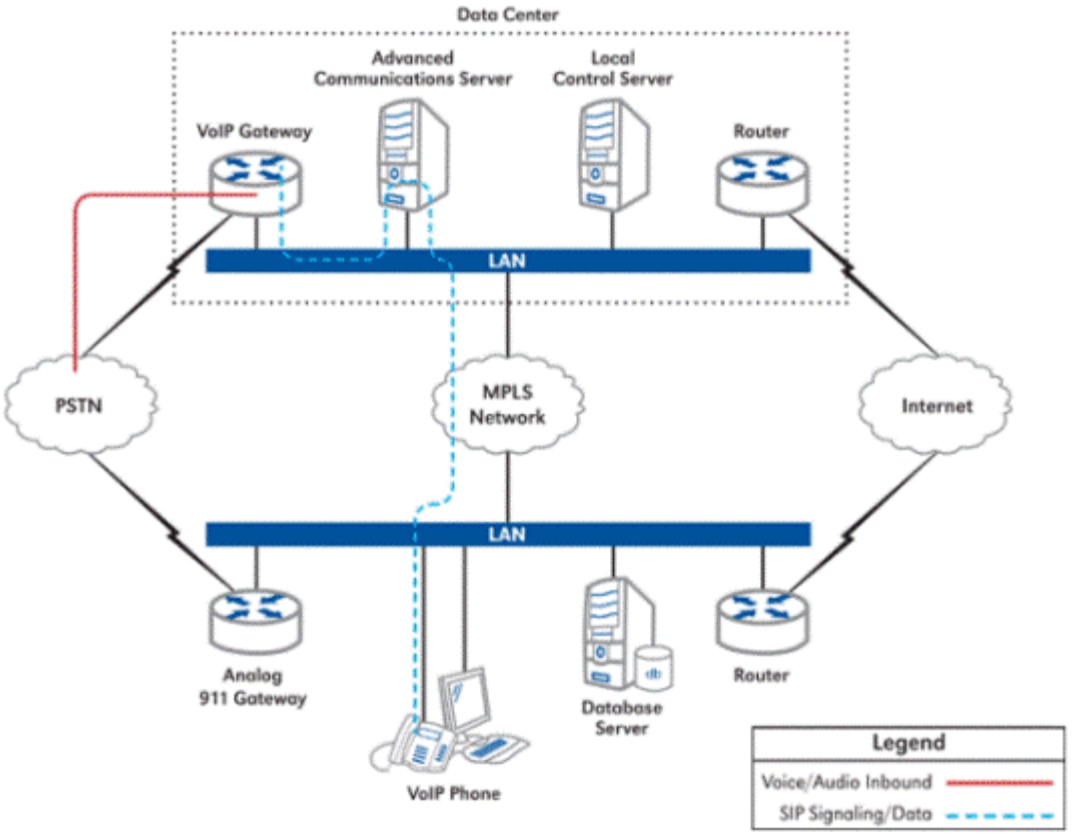
Communications as a Service (CaaS) Infrastructure for a Caas based Voice-Over-IP Provider



Cloud Computing Reference Architecture

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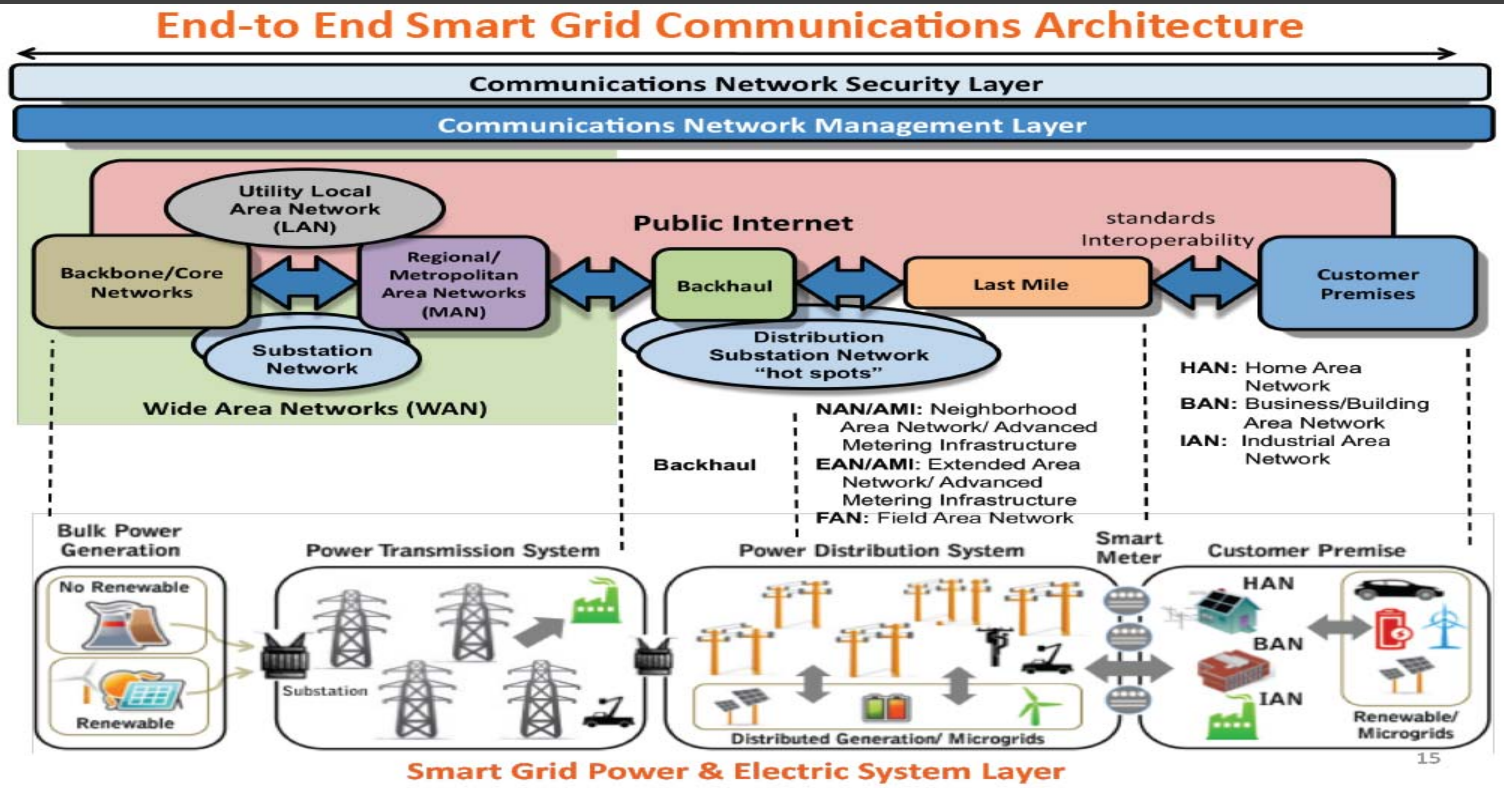
Smart Grid Communications Architecture



3 Main Layers: Communications Network Security Layer, Communications Network Management Layer, Smart Grid Utilities Layer

Cloud Computing Reference Architecture

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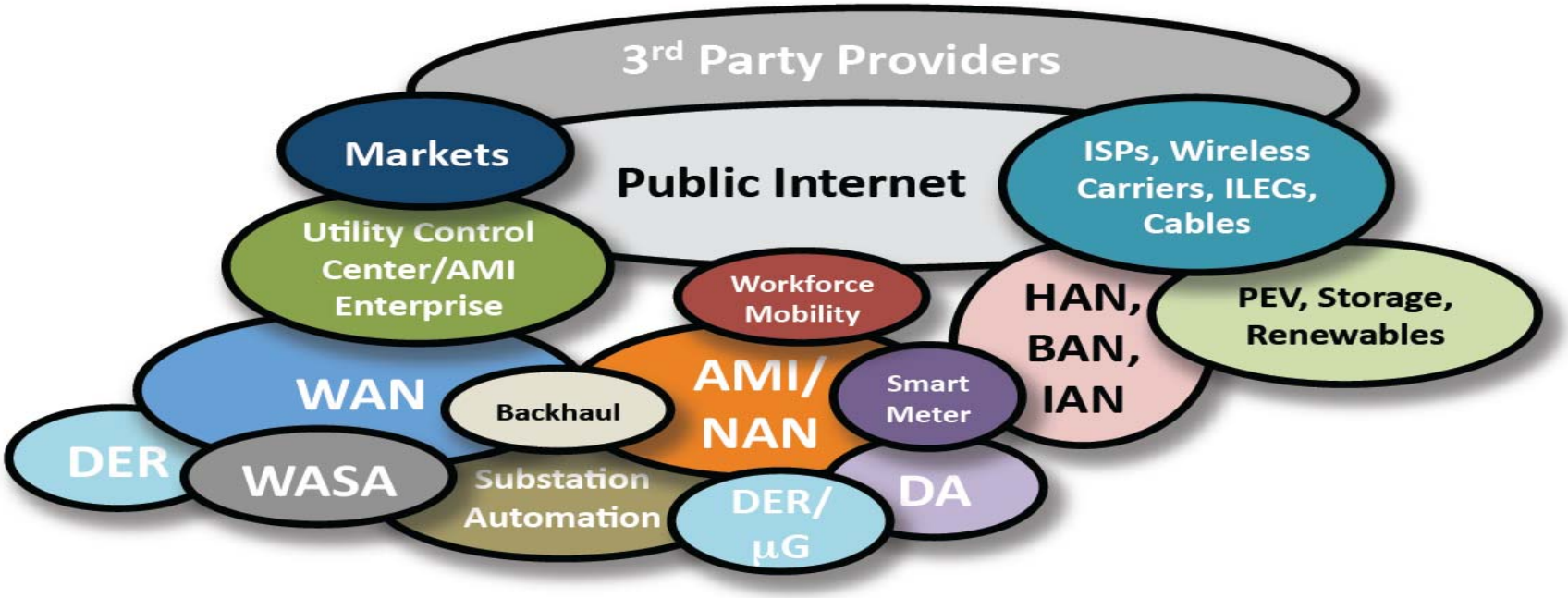
Smart Grid Framework for Mapping of Use Cases and Requirements



Smart Grid is a Large System of 17 Sub-Systems

Cloud Computing Reference Architecture

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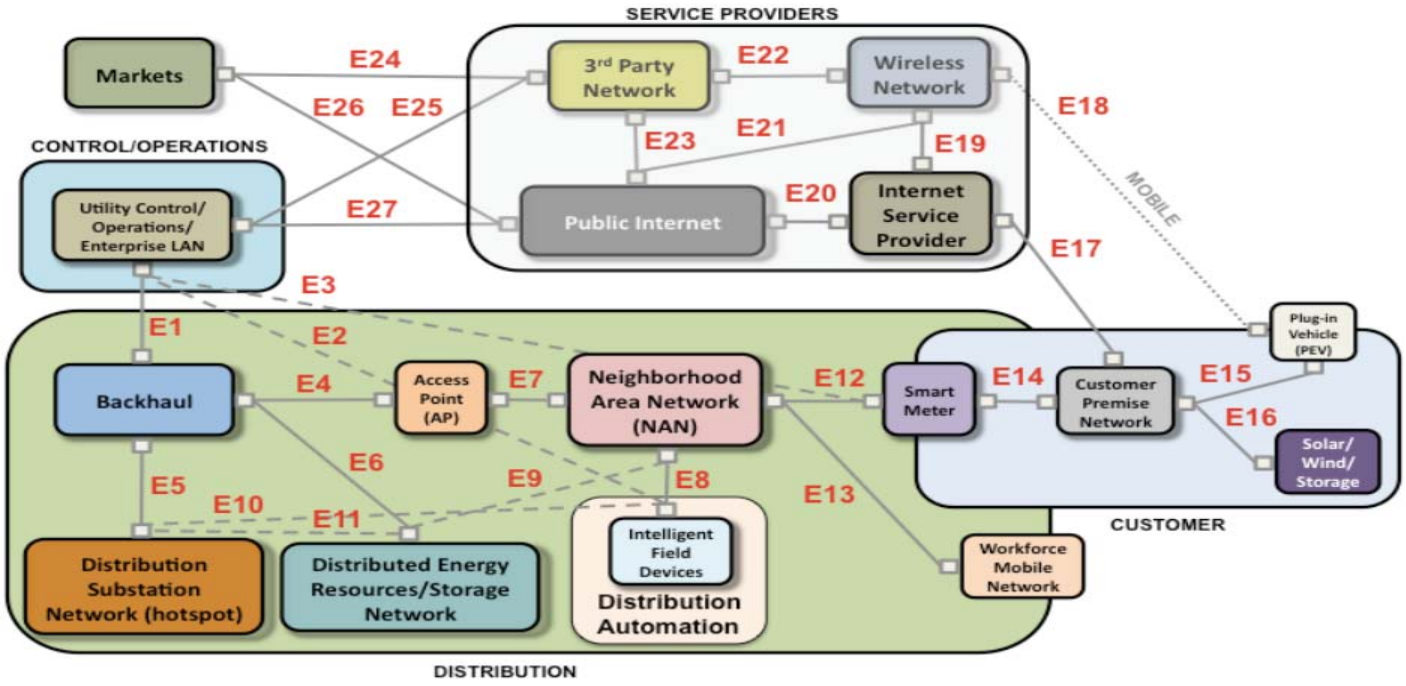
Smart Grid Communications Architecture



Smart Grid Logical Connectivity and Inter-Relationships on the Smart Cloud

Cloud & Hosted Deployment Models

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- Public Cloud
  - Traditional Cloud existing as an External or Public Cloud
  - Computing Resources are Dynamically Provisioned from a 3rd Party Provider who bills on an Utility Computing basis
- Community Cloud
  - Established as several customers have similar requirements and seek to share infrastructure
  - Costs are spread over fewer users than a public cloud, but offers higher levels of privacy, security and Compliance
- Hybrid Cloud
  - Cloud Environment Consisting of multiple Internal and External Providers transitioning into a Public Cloud
  - Typical for most Large Enterprises, specially in the Hybrid Web Hosting area or Hybrid Storage area
- Public Cloud
  - Traditional Cloud existing as an External or Public Cloud
  - Computing Resources are Dynamically Provisioned from a 3rd Party Provider who bills on an Utility Computing basis

Cloud & Hosted Deployment Models

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- InterCloud
  - Interconnected Global Clouds or “Clouds or Clouds”
    - much like the Internet or “Networks of Networks”
  - Concept based on every Cloud not necessarily has the infinite physical and computing resources
  - Allows the Virtualization Infrastructure to take on
    - Additional Storage Capacity, Application Diversity, etc
  - Could form as Newer Pay-for-use Models for Cloud Providers
  - Raises additional challenges concerning
    - Cloud Federation and Trust
    - Security
    - Interoperability
    - QoS
    - Metering and Billing
    - Legal and Compliance
    - Vendoring and Partnering

Cloud Implementation Sample Service Provider Client

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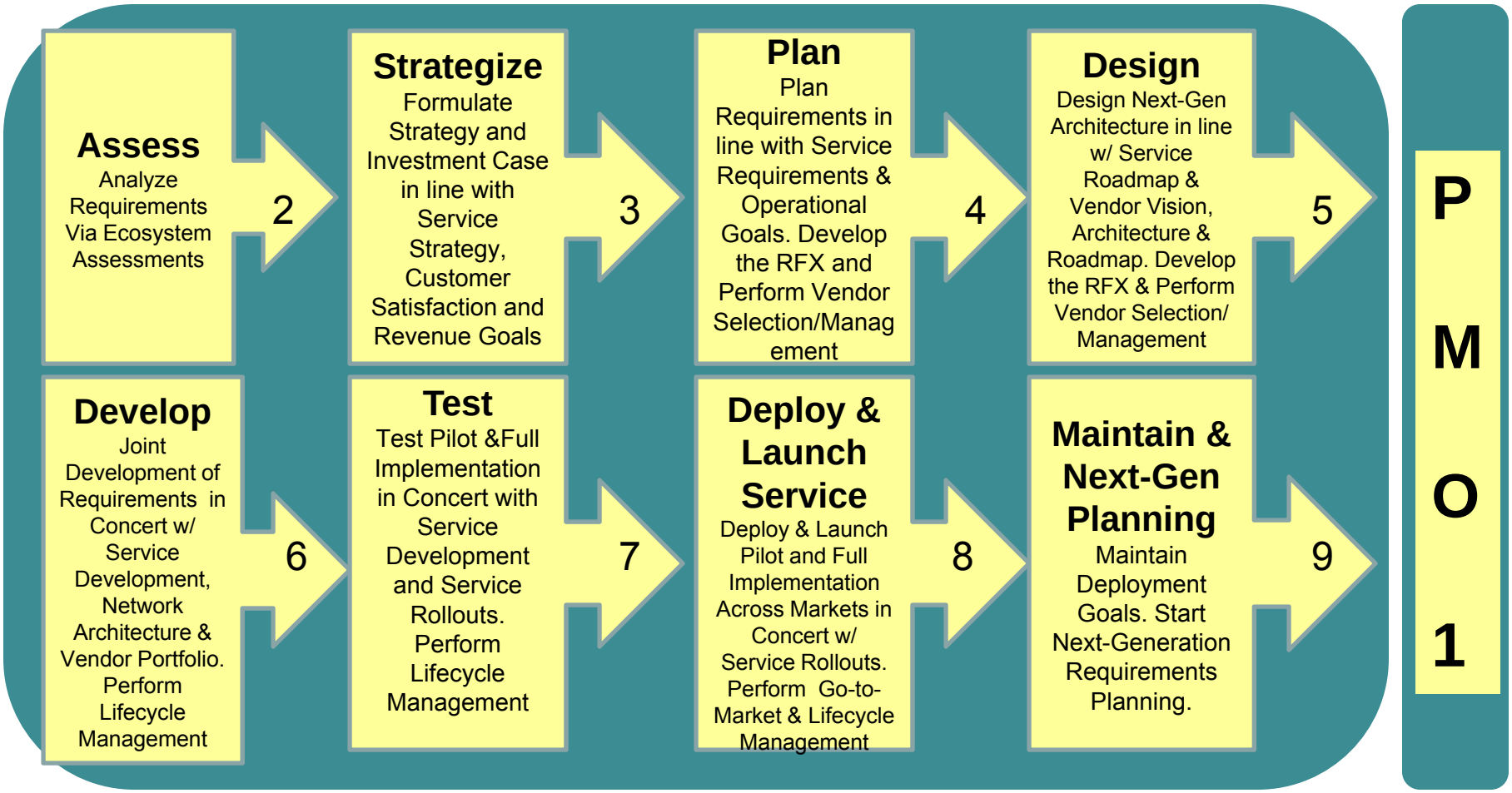

End-to-End Lifecycle Phases for Successful Cloud & Hosted Infrastructure Investments

Go-to-Market
Sample OEM/ISV Vendor Client

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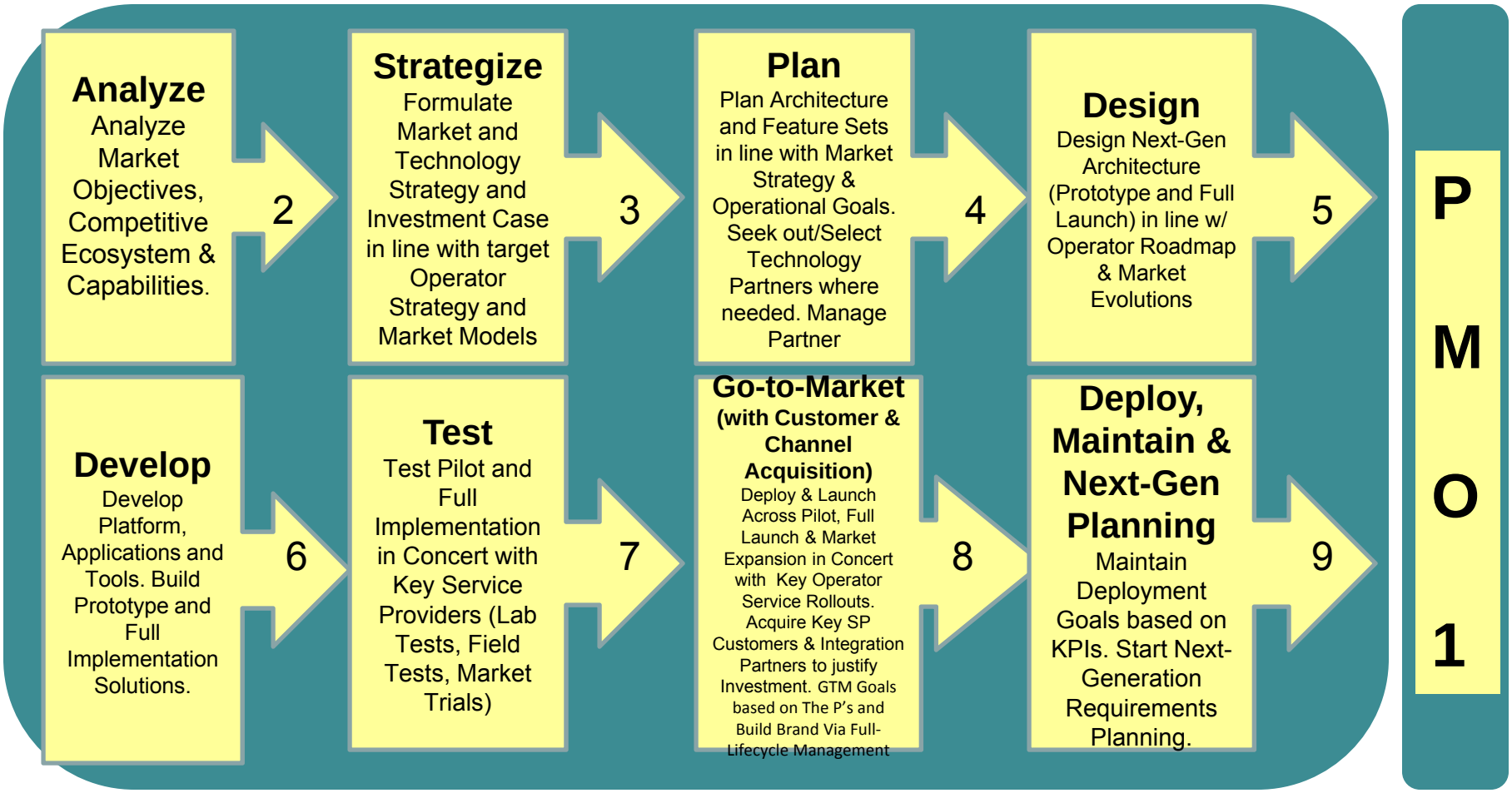

End-to-End Lifecycle Phases for Successful OEM/ISV Vendor Development and Deployment in Alignment w/Market Strategy

Global-i Consulting
Our Capabilities

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Global-i is a Consulting, Contracting, Outsourcing and Technology Services Solution Provider. Created to Deliver Innovation and Achievement, Global-i Collaborates with Primarily Communications and IT Clients to Help them become Value-Driven Entities. Global-i's "Value-Driven Solutions Delivered" Service Philosophy relies on our Expertise in End-to End Lifecycle and Implementation Consulting, Know-how of Technology Markets, Deep Understanding of Legacy/Current/ Emerging Technologies and Outsourcing Models to help Clients Achieve "Value-Driven Solutions" so they in turn can Deliver by Consistently Growing Values for their Customers and all Stakeholders.

Global-i Consulting
What We Do

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Using our services we help clients around the world:

- Evaluate New Markets, Technologies and Systems
- Create Prototypes, Pilots and Proof-of-Concepts
- Develop and Launch New Products and Services
- Market Expansion of New and Existing Services
- Reposition and Sustain Existing Offerings
- Implement New Deployments/Major Upgrades of Systems and Infrastructure
- Improve Operational Excellence from Existing Services and Systems
- Create the Best-of-Breed Customers and Partners

Global-i Capabilities
Our Approach

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Project-based Contracting/ Outsourcing	Delivery Center-based Consulting	Consulting & Contracting Services (Full Lifecycle & Implementation Services)
End-to-End Lifecycle Services	Product/Service Development	
Technology Partnerships	Service Deployment/POCs	
Infrastructure Implementation	Professional/Managed Service	

IP/Broadband	Wireless	Wireline	Cable	Internet	Convergence Segments
IT	Web	Media	Entertainment	FMC	IMS

Voice	Data	Video	Mobility	Networking	Access	Disruptive Technologies
Collaboration	Workforce Mgmt.	Contact Centers	Speech			
Infrastructure	Devices	OSS/BSS	SW/HW	Systems		Elements

Service Provider /Carrier	OEM/ ODM/ISV	Enterprise/ Vertical Markets	Government & Agencies	Solutions

Cloud & Hosted Practice
Our Practice Focus

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Our Focus

Consulting ■ Outsourcing ■ Technology

Our Solutions Expertise

Cloud & Hosted Solutions (Hosted VoIP, Hosted IPT, Hosted UC, Hosted CC, Hosted Mail, Hosted Web Services), Service Provider Operations (Network, Converged Applications, Devices, Device Platforms, Application Partners, Sales Channels, Subscriber Management, Business Process, Strategy, Product Development, Service Deployment, Revenue Management), IT Services, Next-Gen Solutions

Our Services Under the Cloud & Hosted Consulting Practice

- **Lifecycle Drive Services** (Full-Lifecycle Serrvices)
- **IT Assessment Services** (IT Assessments, Business, Business Process & Systems Analysis)
- **Re-Strat Service** (Strategy and POCs)
- **Product Dev Services** (Product Planning, Architecture/Design, Development)
- **LEAP Services** (Lab, Engineering and Partner Services)
- **Go-To-Market Services** (Launch Planning & Service Launch)
- **D2IS Services** (Deployment. Implementation, Integration)
- **IntelScape Services** (Thought-Leadership Services, Market Intelligence, Business Management)
- **MarketExpand Services** (Marketing Services, Marketing Campaigns, Customer Acquisition, Channel Acquisition Services)
- **ChannelPartner Services** (Sales Engineering, Pre-Sales, Business Development Channel Marketing Services)
- **Global-i LABS** (OEM/ISV/SP Technology Research & Strategy, Technology Partnerships, Strategic Alliances, Service Partnerships, Business Processes)

Cloud & Hosted Practice Practice Website

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October 8th, 2010,
1:00-2:00 PM EDT USA
Development and Delivery of Cloud and Hosted Communications based Services

Cloud Computing and Hosted Communications Practice

Global-i, Inc. (www.globaliconsulting.com) is a technology and business consulting, integration and contracting services company based in Northern Virginia serving our clients nationally and globally.

We are focused on meeting Communications and IT Consulting and Contracting Services needs (including Full-Lifecycle Services, Product Development & Management, Proof-of-Concept Services, Customer and Partner Assessments, Technical Marketing, IT Services, Pre-Sales & Proposals, Solutions & Sales Engineering, Channel Marketing Support, Training, etc.) of clients across Enterprise Communications (Communications and IT Infrastructure), Carrier/SP/SI Communications (Communications and IT Infrastructure), Managed Services (Managed Communications and IT Services), Hosted Services (Hosted

Contact:: Global-i Cloud Computing & Hosted Communications Practice

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Cloud & Hosted Practice Q&A

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- 15 Minutes Open Forum
- We will try to answer as many questions in the time available
- Remaining Questions will be posted on our site for later viewing
- This presentation will also be available on our site for later viewing
- To discuss our Consulting Services and Solutions further send an email to Cloud-HostedPractice@globaliconsulting.com or call us at 703-574-2917 and 1-888-931-1117

Thank you
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