

Evaluation of the Impact of Open Data

Strategic Imperative

- The connected home market is a fast evolving segment that is being influenced by a number of emerging industry trends.
- The recent developments in the implementation of end-to-end smart grid at the utility level as well as the changes witnessed in the area of managed home devices and systems is expected to further impact the dynamics of this market segment.
- The connected home suppliers catering to this fast evolving market are facing the challenges of keeping abreast with technology development in meeting new grid infrastructure requirements as well as innovating solutions that are compatible with changing standards and communication topologies.
- Additionally, there are uncertainties with regard to which technologies will remain current and adaptable to emerging changes in digital home requirements, energy dynamics as well as smart grid infrastructure deployment.
- For industry participants, it is critical to be well-informed of the distinct challenges, the market gaps, the influence of key channels and the evolving market environment to execute a successful market strategy.

Project Background

- CABA's Smart Grid Working Group, under the Connected Home Council, is currently involved in discussions led by committee members concerning the deployment of Smart Grid, and the implications this would have on the market prospects for connected home solutions.
- Through a series of brainstorming sessions the committee members have agreed to a set of objectives and research areas that require to be validated. These include an understanding of the changing business models, technology commercialization prospects in the event of smart grid deployment, changes to communication standards, time to market, among others.
- Frost & Sullivan is pleased to put together this proposal that can help frame the various discussions on this topic to result in a concrete project, which the committee can pursue to seek answers to their questions.

Project Objectives

CABA's Connected Home Research Council's objectives:

- Increase awareness and generate demand for connected home solutions
- Understand the changing dynamics of the industry with smart grid deployment and the impact on connected home solutions
- Create the right business models and technology roll-out initiatives to meet changing demand
- Achieve standardization with regard to codes, communication standards and topologies that will be critical for market adoption of these solutions
- Understand the technology market curve and isolate hype elements from actual growth trajectory
- Create differentiating platforms for solutions - demonstrate value adds through field trial data and case studies
- Define growth zones and prospects for market participants

Frost & Sullivan's consulting approach will aid CHC to formulate and execute key initiatives for technology commercialization, positioning and aligning efforts in the light of smart grid deployment initiatives.

Why partner with Frost & Sullivan

Global Perspective and Reach

Frost & Sullivan's more than 1,800 Consultants and Analysts in 41 global locations provide clients with a truly global perspective.

We serve more than 10,000 active clients globally in more than 300 industry sectors and markets including:

- Emerging companies
- Global 1000 companies
- Universities, business and tech schools

Our clients are provided with a full spectrum of industry and market coverage including :

- The investment community
- Comprehensive understanding of all industry and market opportunities
- Analysis of potential competition from outside Client's industry
- Identification of growth opportunities in areas other than Client's current



Growth Environment

Internal Challenges

The connected home market is characterized by both established technology and product solutions, as well as those that are being newly added, or undergoing improvisations based on the changing dynamics of the industry. Given this position, there are challenges that the CHC member companies have to face internally to create a strong position for themselves in the market, including:

- Making sure that their internal product development capabilities are properly aligned to create the right solution for the end market
- Assembling the requisite investment to embark on R&D and technical development
- Understanding the competitive scenario and the inevitable entry of new wave of technology providers
- Understanding market gaps, niches and demand dynamics for various product types
- Identifying and capitalizing on their core competencies to address market needs
- Creating awareness for their product lines to penetrate customer segments effectively

Ultimately CHC members faces the challenge of capturing market demand and customer base in a fast changing and growing market with existing strong players.

External Challenges

The connected home solutions market appears to be a fairly fragmented, with presence of key tier one participants and a host of smaller market players. As new product developments are dictated by changing market dynamics, CHC members are likely to face certain external challenges, including:

- Dealing with price pressures from early entry stages, thus taking longer than expected to reach break even point
- Factoring in the potential changes in customer demand dynamics – particularly because customers are looking at product substitutes due to rapid changes in their connected home and managed services environment
- Sustaining an uncertain revenue growth process with the residual impact of the economic downturn and a sluggish new home construction market
- Keeping ahead of new trends and impact variables including technological advancements
- Creating a position for themselves in a market with virtually undefined market channels and fast changing partner ecosystem
- Forging alliances and partnerships with market channels and distribution

Most critically, for CHC members the real challenge lies in creating a solid presence for their solutions in a rapidly evolving market domain and creating a place within the supply chain of the market.

Frost & Sullivan's Strategic Approach

Scope of Work – Product Focus

The Connected Home Market Solutions Overview

Safety

Gas and Smoke Detection; Fire Detection; Leak Detection; Notification Systems

Security

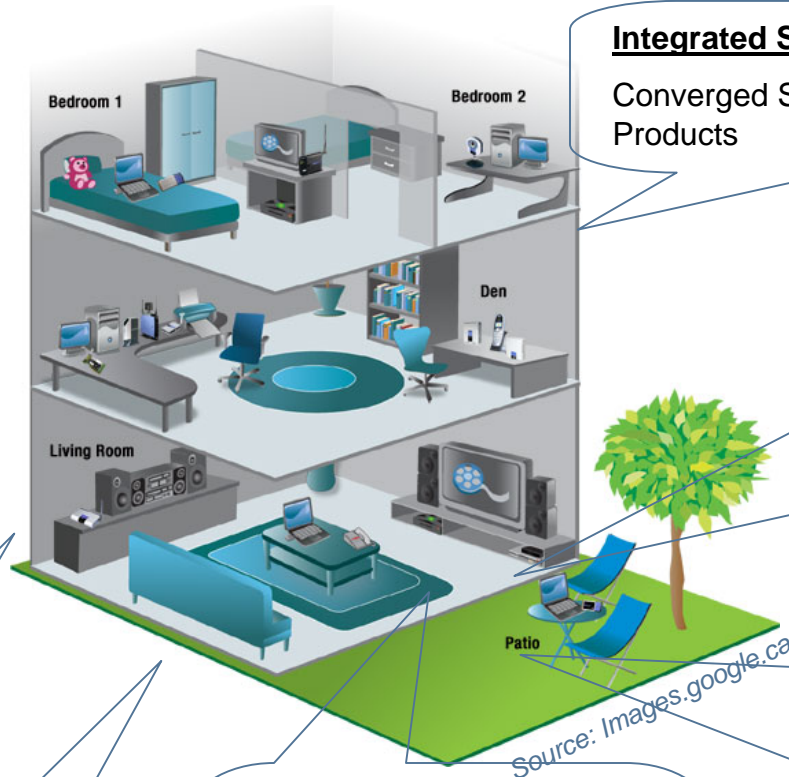
Intrusion Detection; Remote Audio/Video Surveillance; Access Control and Locks; Camera Systems

Health

Health/Medical Alert Systems; Health/Medical/Fitness Records Vaults; Patient Monitoring

Monitoring

Alarm Monitoring; Remote Home Monitoring



Integrated Solutions Platform

Converged Solutions; Multi-functional Products

Entertainment

Audio and Volume Controls; Multi-media Room Controls; Home Theater/Entertainment System Controls; IPTV; Digital Video Recorders and Set Top boxes; Gaming Controls

Home Controls and Automation

HVAC and Temperature Controls; Day lighting Systems; Drapery Controls; Multi-room Controls/Intercoms; Touch-screens; Irrigation Controls; Pool & Spa Controls; Appliance Controls

Energy Management

Lighting Control and Automation; Zone and Climate Controls, Plug-in Systems; Fan Speed Controls, Load Shedding Systems; Smart Metering and Grid Connected Controls

The product-types enlisted here represents leading products under each segment.

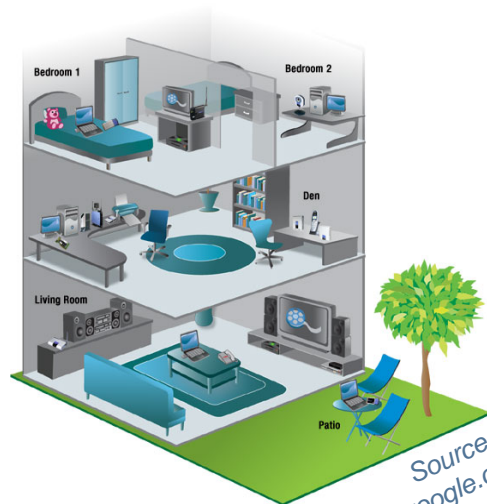
Smart Grid and the Connected Home

Next Generation Infrastructure

- ❑ Highly adaptable, sustainable, cost-effective solutions
- ❑ Fully networked systems that integrate data, voice and video with security, HVAC, lighting and other controls on a single IP-network platform
- ❑ Conserve energy, reduce waste

- ❑ Micro-generation and distributed energy resources– wind, solar etc.
- ❑ Advanced metering infrastructure (AMI) facilitates 2-way communication
- ❑ Demand response; energy use can be shifted to off-peak hours

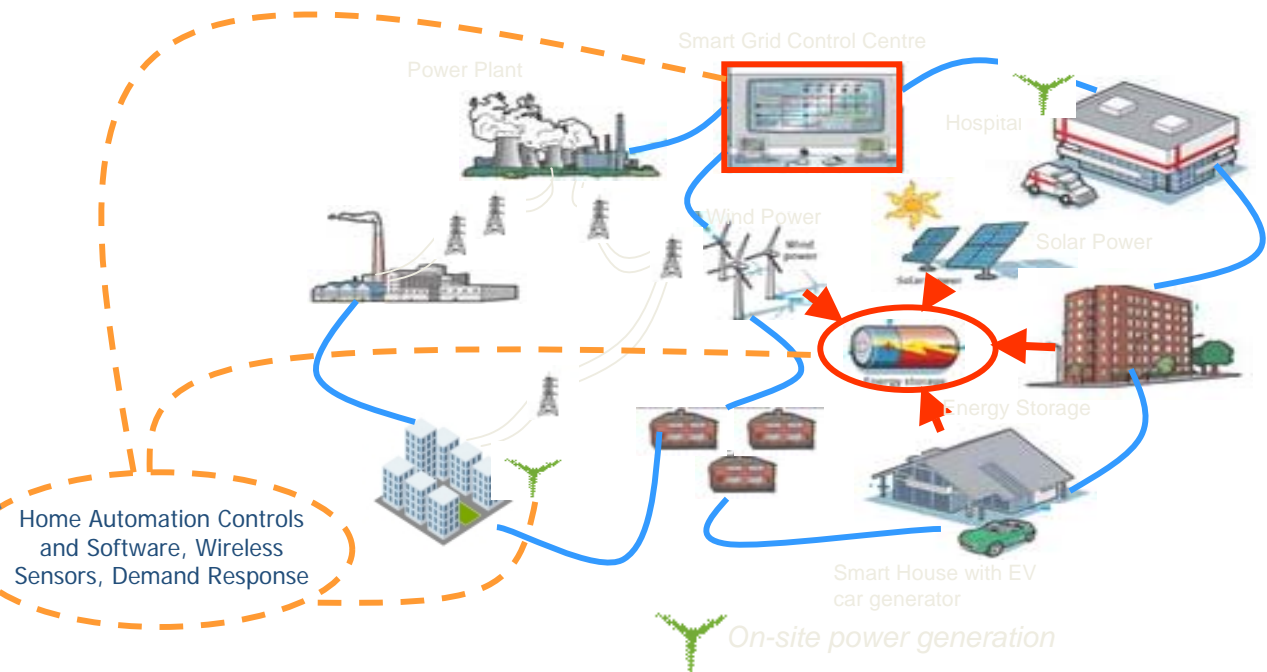
Transformation of Conventional Homes to Connected Homes



Source: images.google.ca

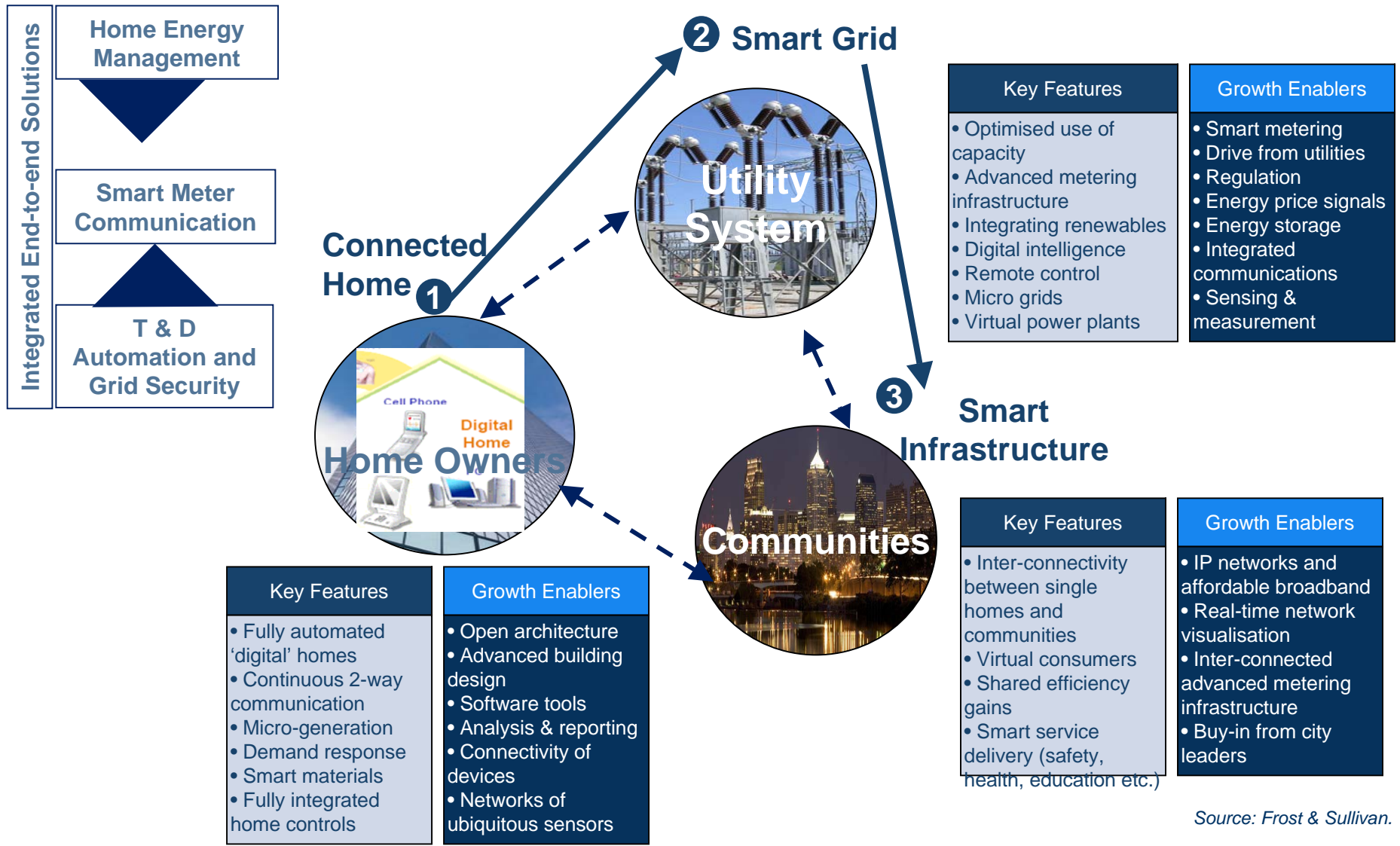
Home Automation Controls and Software, Wireless Sensors, Demand Response

Transformation of Conventional Grid to Energy Internet (Smart Grid)



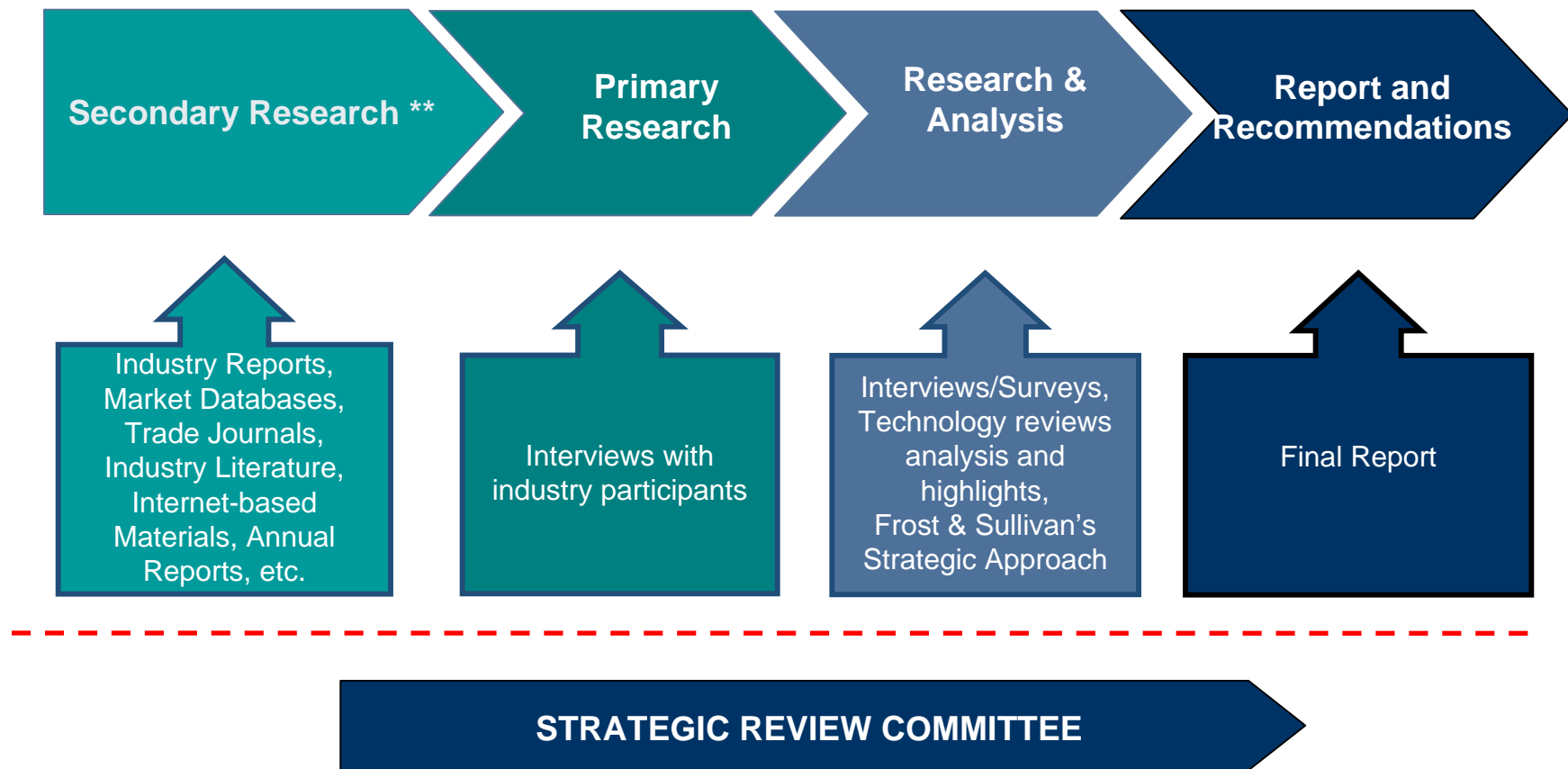
Key Growth Enablers and Roadblocks

Immediate and Long Term Impact



Source: Frost & Sullivan.

Frost & Sullivan's Approach: Our Methodology



**** Frost & Sullivan has ongoing customer research projects on perceptions and demand analysis in the 'Connected Home' area with regard to adoption behavior, smart appliances, demand response, targeted advertisement and marketing etc. This will be leveraged for this research. In addition, CABA's research on 'Energy as a Managed Service' will also provide additional assistance in this regard.**

Process Flow and Timeline

The project timeline as discussed on the previous slide is depicted below:

- Completion time is 12 working weeks after initial kickoff meeting.
- The final deliverable will be in MS word format. An overview of the analysis and results will be presented to the steering committee via web session and conference call.
- Bi-weekly conference calls with the steering committee will serve to keep client abreast of progress and key findings.

Milestones / Week	1	2	3	4	5	6	7	8	9	10	11	12
Project Set-up and Kick-off Meeting	█											
Secondary Research	█	█	█	█								
Primary Research		█	█	█	█	█	█	█				
Analysis and Reviews						█	█	█	█			
Draft Final Report Delivery								█	█	█		
Report Presentation - Project Team Conference with Steering Committee/Project Manager, review and incorporation of feedback										█		
Final Report Delivery and Closure											█	█

Key Project Deliverables

Project Deliverables

Report on “Evaluation of the impact of Smart Grid implementation on the Connected Home Market”

A. Market Dynamics

- State of the connected home market and current dynamics
- Emerging drivers and challenges

B. Smart Grid Deployment and Impact on Connected Home Solutions

- The rate of deployment of Smart Grid and management of residential devices in North America
- Integrating connected home devices to the grid – key issues and challenges
- Compatibility of solutions
- Topology and protocols connecting these devices

C. Analysis of macro indicators and external variables

- Impact of economic development and growth
- Energy Security Concerns and Regulatory Mandates
- Impact of changing customer requirements – personalization needs for energy use, control of their energy usage and costs,
- Impact of social media and communication technologies

D. Smart Grid and Technology Innovation

- Ability of existing technologies to meet new requirements
- Scalability and flexibility of these technologies to support new modes of operation (with demand response/load shedding; synchronized with time-of-use electricity pricing)
- Topology and communication paths between EMS provider and smart device – proprietary network, smart meter, Internet, HAN/EMS console, other central device; direct to managed device, any others
- Comparative share assessment - which of these are going to establish market presence and why?
- Types of protocol – Zigbee, Z-Wave, WiFi, cell phone protocol, signal over power line, others
- Viability of reverse communication – smart device to EMS provider; current status review
- Current and impending standards - what is in process or proposed and development status
- Standards activities that would impact communication within the home – NIST-H2G, AHAM standards, others and collaborative approaches

Project Deliverables, continued

Report on “Evaluation of the impact of Smart Grid implementation on the Connected Home Market”

E. Technology Transfer Process

- Current status of development and roll out of technology updates
- Results of existing field trials and successful demonstrations
- Status of commercial roll-out – immediate, mid term, long term

F. Market and Business Model

- What will be ‘connected’?
- What information will be ‘connected’?
- How does this impact the vendor and service provider landscape
- Key benefits and the beneficiaries – parallel market opportunities
- The ‘connected’ business model – where do partners align for best advantage?

G. Implementing the Model

- Role of players in the implementation process
- Strategic alliances and cost sharing
- Redefining market channels and positioning

H. Evaluation of Costs

- Implementing the two-way communication network – utility to customer and back
- Statewide variations in costs – one way versus two way
- Cost of adding Smart Grid responsiveness per managed device to utilities
- Ability to offset costs through rebates or other incentives – current methods devised by utilities

I. Incorporating the Utility Services

- Evaluating the scale of benefit to an electricity provider per residential customer, revenue prospects
- Role of regulation in bringing about this change
- Evaluating the benefit for peak demand reduction and shift of consumption to off peak
- Evaluating the issues related with reductions in total electricity consumption by energy management tools– impact on utilities
- Other issues – bill modification, information analysis and data acquisition

Project Deliverables, continued

Report on “Evaluation of the impact of Smart Grid implementation on the Connected Home Market”

J. Incorporating the Home Owner/Customer into the Model

- Evaluating customer needs and gaps
- Behavioral change inducers – short term; long term
- Adoption Issues, drivers and challenges
- Incentivizing customer participation – rewards Vs penalties

K. Incorporating Third Parties

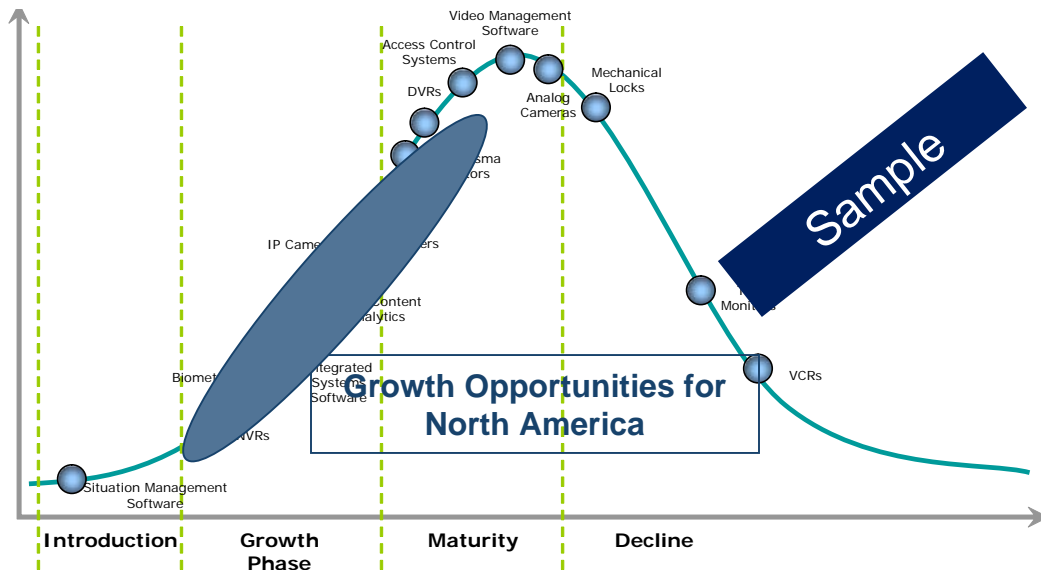
- Understanding the evolving landscape between the vendor and the customer – the new ecosystem
- Emerging service providers between utilities, vendors and customers – their importance in the value delivery model
- Revenue prospects to third party energy management service providers in relation to addressable residential customer base

L. Market timeline and major issues

- Technology and market lifecycle for connected home solutions
- Growth areas and emerging opportunities
- Commercialization priorities – Short Term Vs. Long Term

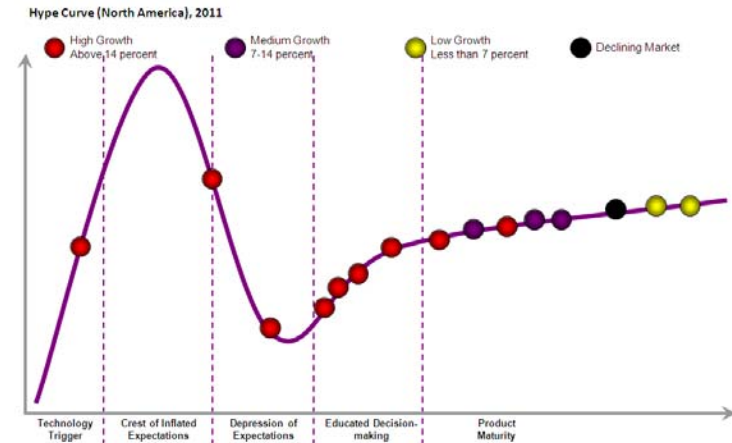
Project Deliverables, continued

Technology Adoption & Opportunity Horizon



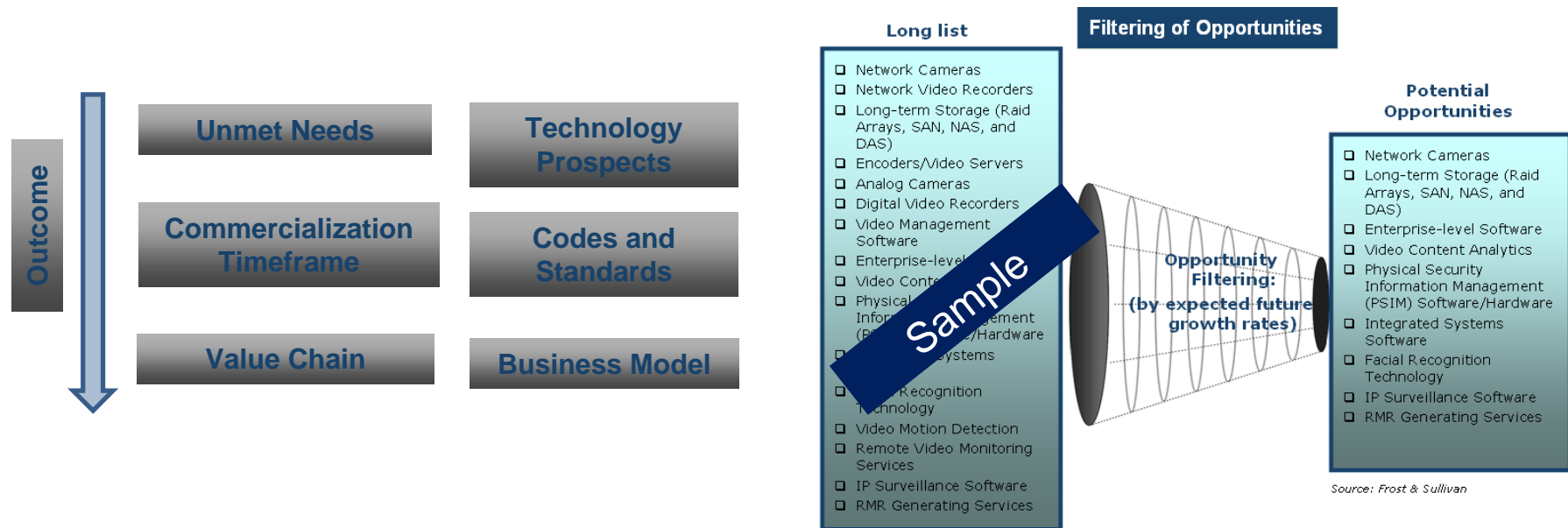
Note: All figures are rounded; the base year is 2007. Source: Frost & Sullivan

Where are we at on the Hype Cycle?



- A key area of investigation would be to understand the actual market acceptance rate for connected home solutions, isolated from the market hype.
- A realistic picture of the actual adoption rate and factors influencing that will be critical for market participants

Project Deliverables, continued



- As part of the analysis Frost & Sullivan will decipher the various opportunities this market represents for key participants and service providers. These opportunities will then be funneled through to classify short and long range opportunities for capitalization.
- Factors such as business model implications, technology adoption roadmap, commercialization timeframe, compliance issues and most importantly the ability to meet unmet market needs will be analyzed to understand how successfully market players will be able to respond to potential opportunities.

Investment

Investment

SPONSORSHIP OPPORTUNITIES

Level 1: \$15,000 per participant

Benefits: Featured case study, Study Steering Committee participation, study scope definition, survey design, study presentation and final reports

Level 2: \$10,000 per participant

Benefits: Study Steering Committee participation, study scope definition, survey design, study presentation and final reports

Level 3: Contributor: \$5,000 per participant

Benefits: Study presentation and final reports

Next Steps

Next Steps

We recommend CABA proceed according to the following next steps:

What	Who	When
Proposal Presentation to CHC	Frost & Sullivan	Dec 1, 2011
Address additional questions	Frost & Sullivan	Dec 1-31 2011
Execute agreement to start the project	CABA and F&S	TBD – Pending Sufficient Steering Committee Recruitment
Project kickoff	Frost & Sullivan	Estimated – First week of April, 2012
Project delivery and presentation to CHC	Frost & Sullivan	Estimated – Mid- to late June, 2012

Additional Points:-

- Frost & Sullivan and CABA to pursue discussions with CHC and its member organizations to gather interest and secure sign-offs
- Organize joint discussion with industry participants, CABA and Frost & Sullivan team to deliberate further course of action
- Crystallize project vision and scope and action items

Contact Information

John Hall
CABA Research Director
1173 Cyrville Road Suite 210
Ottawa ON Canada K1J 7S6
hall@caba.org
www.caba.org
Phone: 613.686.1814 x227
Fax: 613.744.7833

George Grimes
Business Development Manager
Continental Automated Buildings Association
(CABA)
Email: grimes@caba.org Phone: 613.686.1814
x226