Connected Lighting – The New Frontier
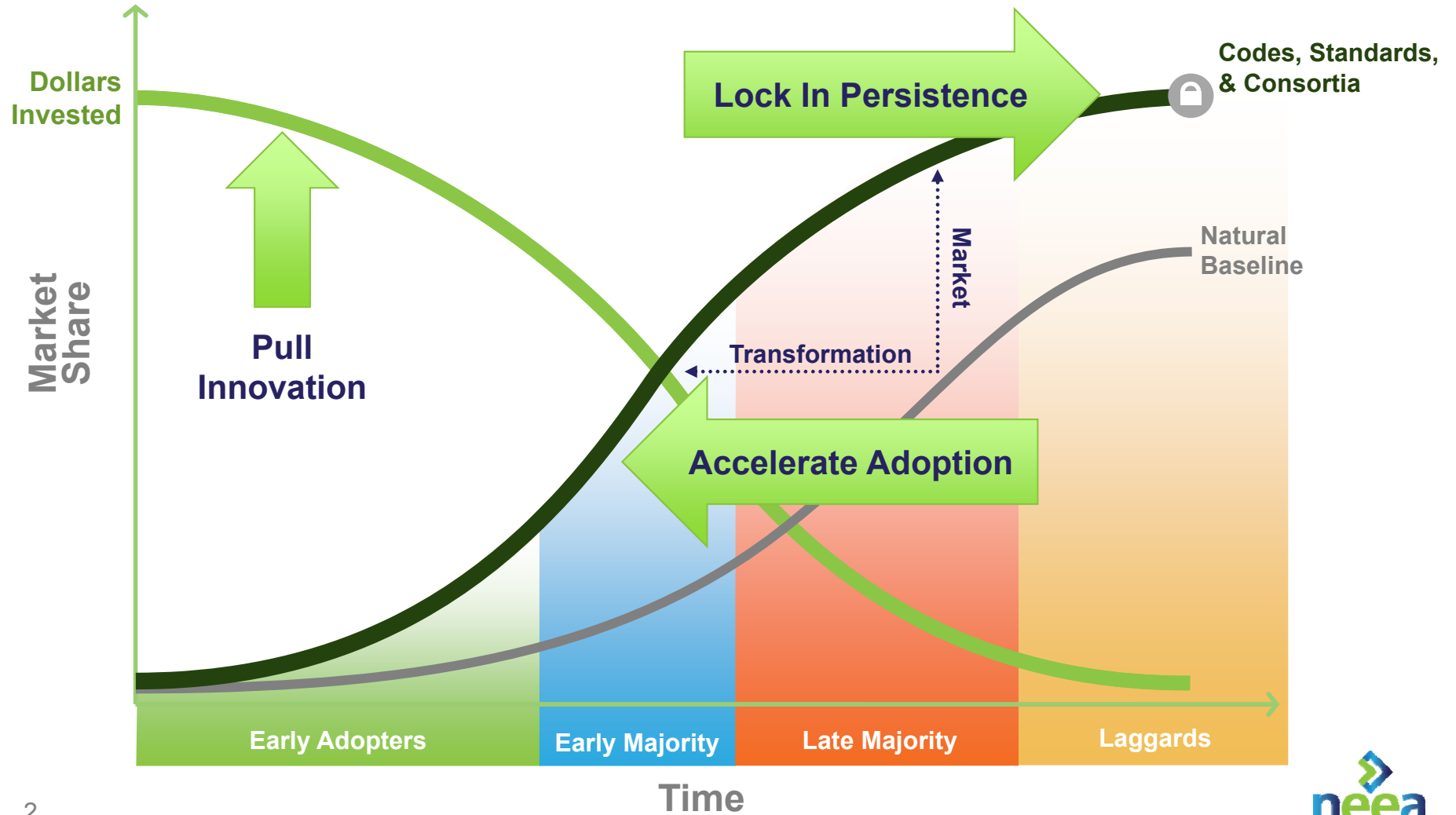## ACEEE MT Symposium

Kelly Sanders, Senior Product Manager
Emerging Technologies Group

NORTHWEST ENERGY EFFICIENCY ALLIANCE

NEEA – A Transformational Focus

How Does MT Happen?

Dollars Invested

Market Share

Pull Innovation

Lock In Persistence

Codes, Standards, & Consortia

Market

Transformation

Natural Baseline

Accelerate Adoption

Early Adopters | Early Majority | Late Majority | Laggards

Time

Connected Lighting… The New Frontier

The Future…
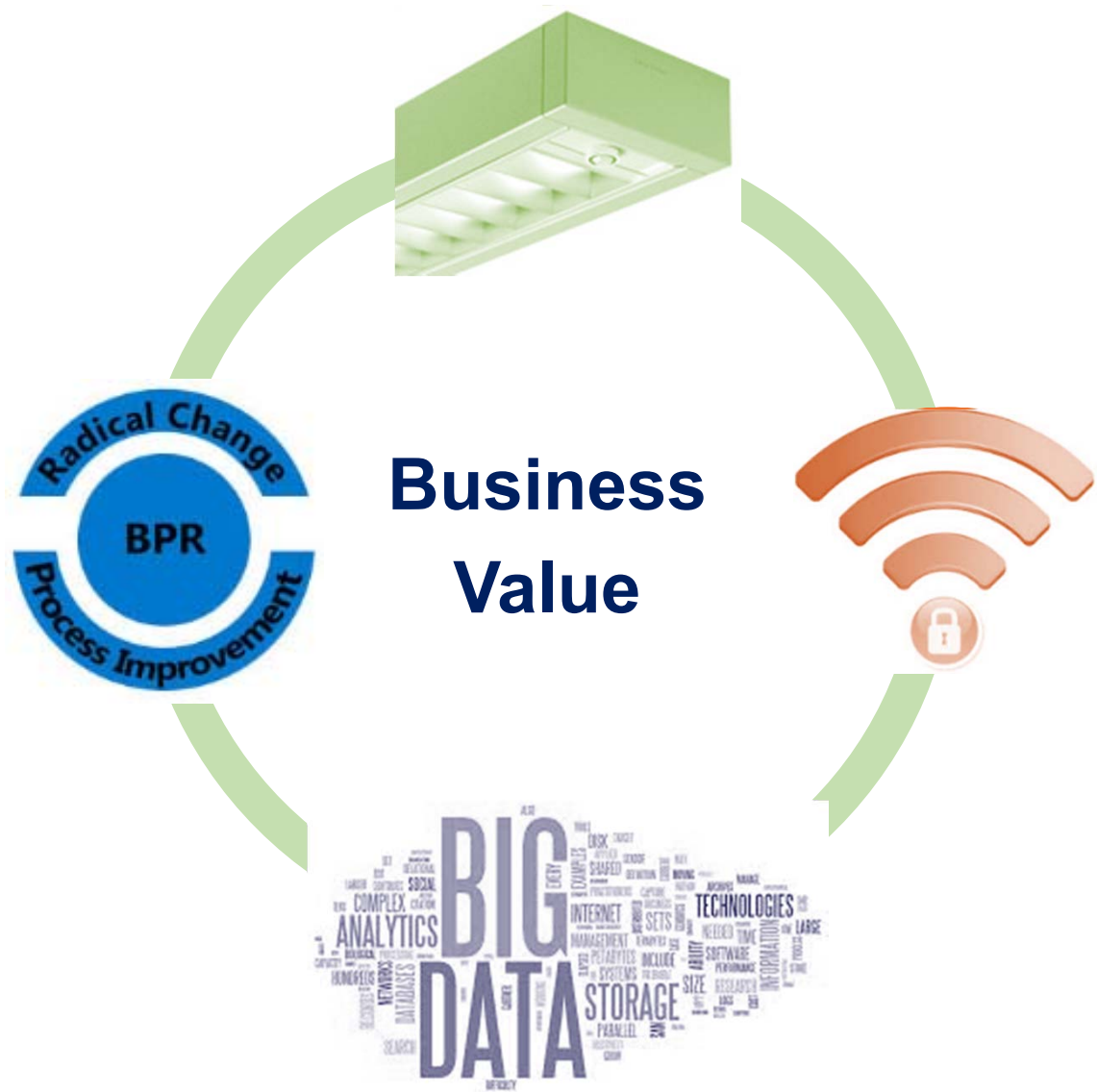
Will be a Sprint

Will be **CONNECTED!!!**

Will be **INTEGRATED**

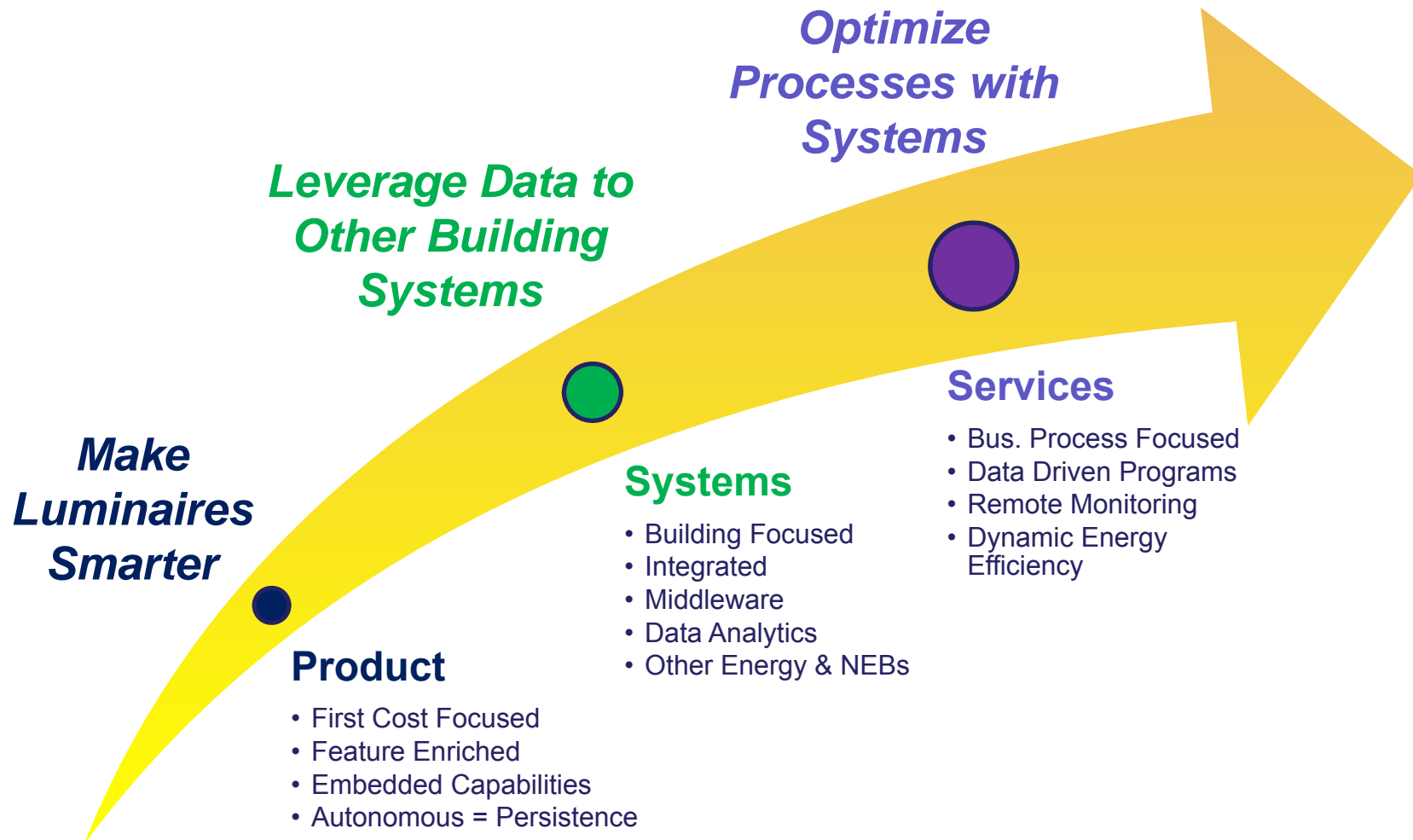Will be about **DATA & MIDDLEWARE**

Will be about **PROCESSES**
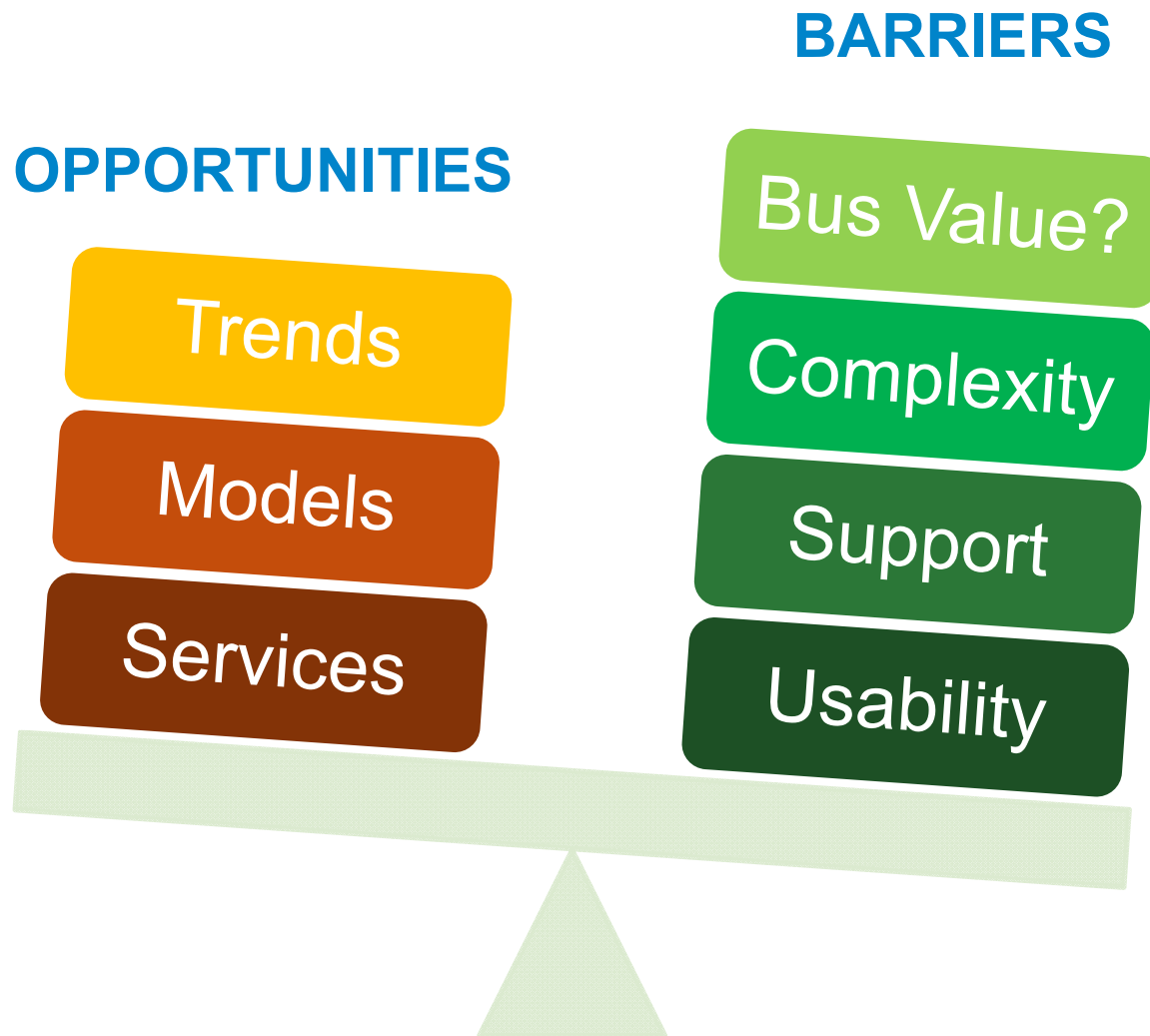
Will be about **INTERFACE DESIGN**

Will be about…

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Business Value

BPR

Radical Change

Process Improvement

BIG DATA

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A Possible Adoption Path…

Optimize Processes with Systems

Leverage Data to Other Building Systems

Make Luminaires Smarter

Product
- First Cost Focused
- Feature Enriched
- Embedded Capabilities
- Autonomous = Persistence

Systems
- Building Focused
- Integrated
- Middleware
- Data Analytics
- Other Energy & NEBs

Services
- Bus. Process Focused
- Data Driven Programs
- Remote Monitoring
- Dynamic Energy Efficiency

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...but How To Make This Happen?

BARRIERS

OPPORTUNITIES

Trends

Models

Services

Bus Value?

Complexity

Support

Usability

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Disruptive Trends in the News

"A Strategic Inflection Point is that which causes you to make a fundamental change in business strategy. Nothing less is sufficient."
Andrew Grove - Intel

Market Insight: LED Lighting Reaches an Inflection Point
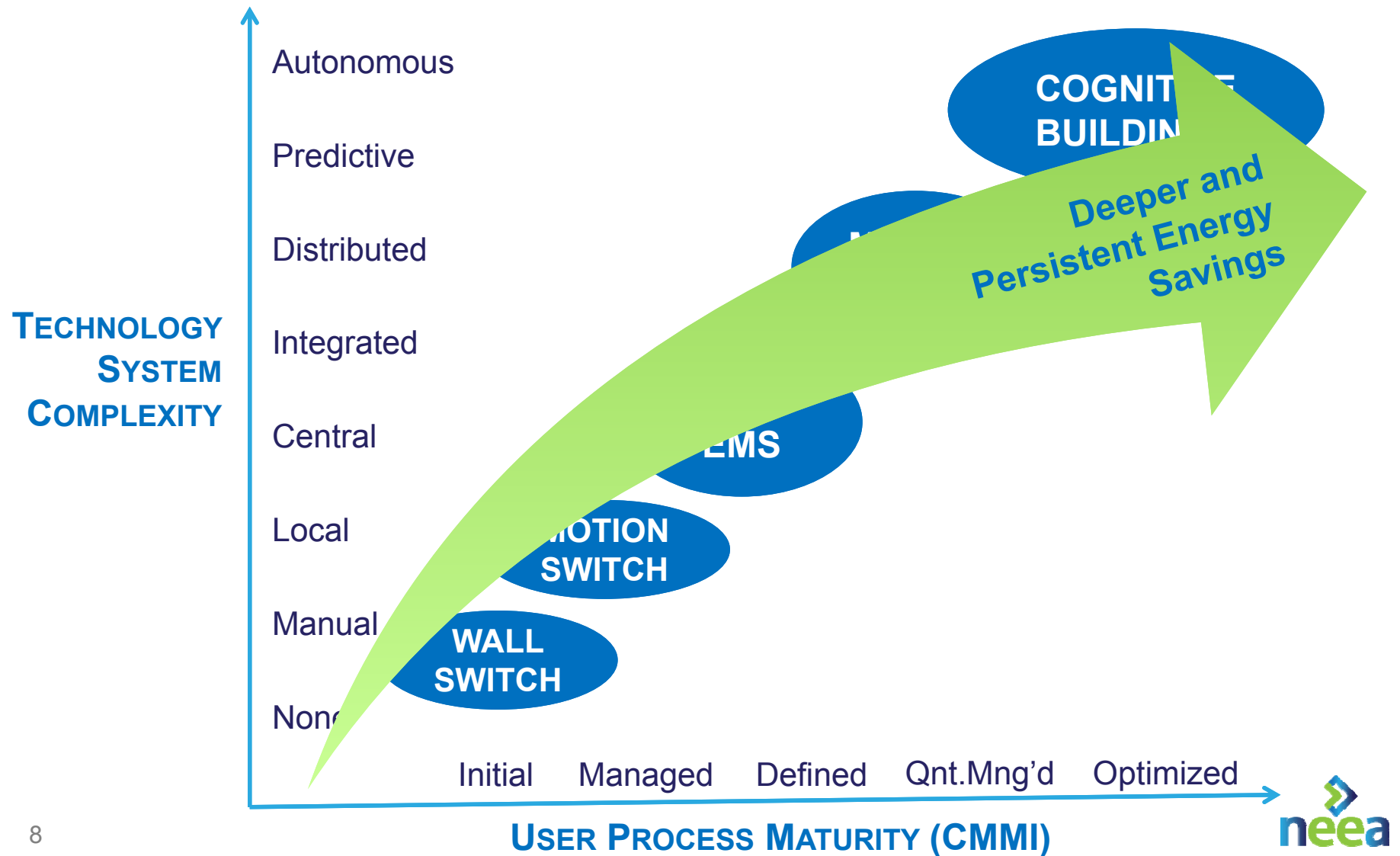
06 January 2014   G00259192

2014 will be an inflection point for Big Data and the Internet of Things: Srinivas Tadigadapa, Intel
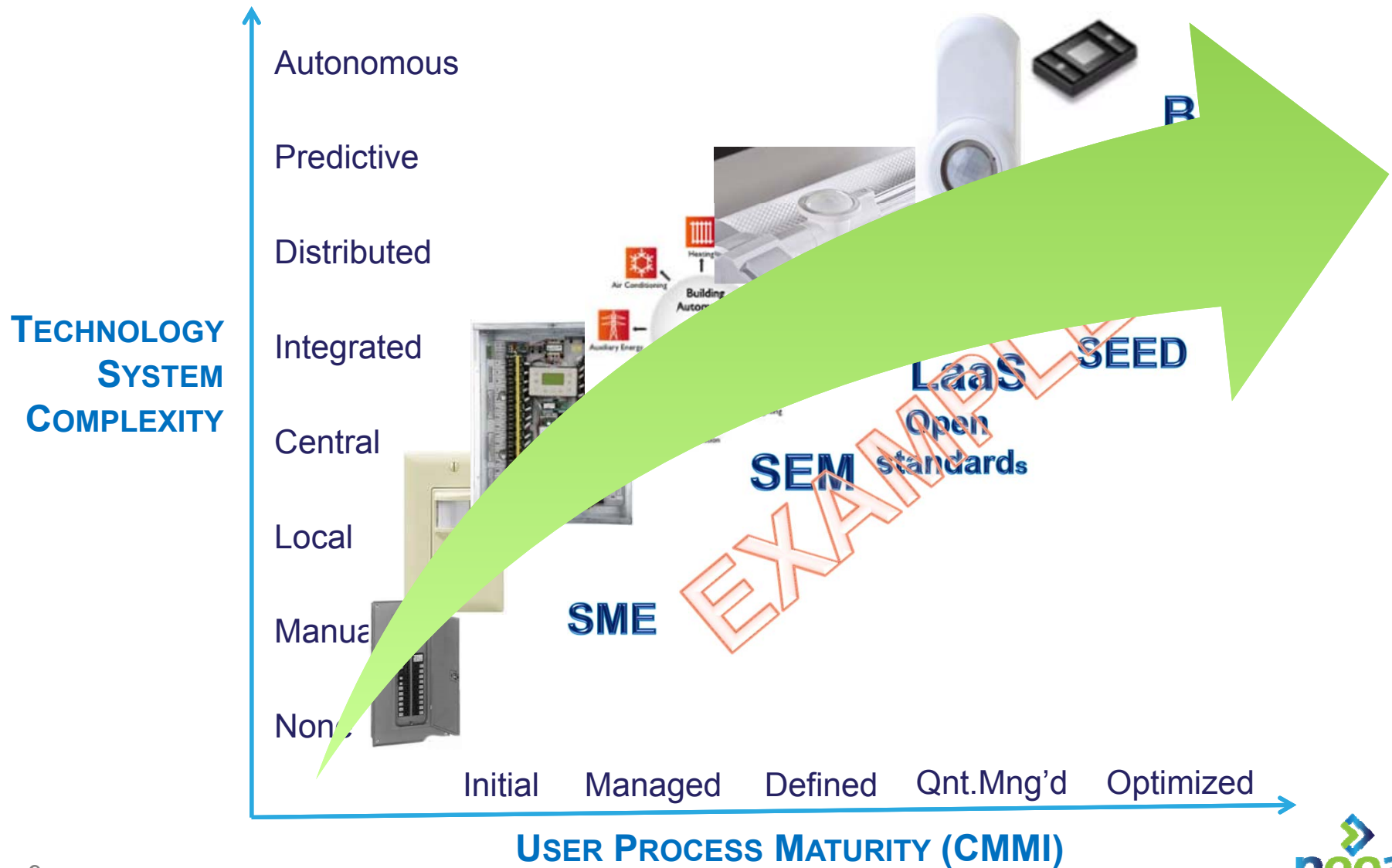
by **Srinivas Tadigadapa**, Intel, January 2, 2014

Downstream players will have the greatest potential to generate value, particularly when demand for distributed generation hits an inflection point after 2015. **McKinsey**

The Internet of Things' inflection point
The convergence of six factors is creating a climate for mainstream IoT adoption.

by Barb Edson | Comment | June 24, 2014

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Complex Systems Maturity Model

TECHNOLOGY SYSTEM COMPLEXITY

- Autonomous
- Predictive
- Distributed
- Integrated
- Central
- Local
- Manual
- None

COGNITIVE BUILDING

Deeper and Persistent Energy Savings

EMS

MOTION SWITCH

WALL SWITCH

Initial   Managed   Defined   Qnt.Mng'd   Optimized

USER PROCESS MATURITY (CMMI)

8

Complex Systems Maturity Model

TECHNOLOGY SYSTEM COMPLEXITY

- Autonomous
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- Local
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- None

Initial · Managed · Defined · Qnt.Mng'd · Optimized

USER PROCESS MATURITY (CMMI)

SEED · LaaS Open standards · SEM · SME · EXAMPLE

Product placement is anecdotal only, at a point in time AND will change quickly.

9

The Future? Data Driven Programs

The ~~Internet~~ **Energy** of Things: the real-time capability of electrical devices to converse with us about their energy use and needs.

Services!

Pay for Performance

Power Purchase

Grid Stability

Deep Retrofit Financing

Carbon Counting

Power Quality Monitoring

Demand Response

Program Persistence

Remote M&V

Energy Efficiency as a Service

Distributed Energy Resources

Training as a Service

Predictive Maintenance

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Putting It All Together

What would your programs look like if you had all the real-time energy data you wanted?

1 **Step One:** Enable Tomorrow! Focus on **CONNECTED** devices which are Autonomous, Interoperable, and 'Speak Energy'.

2 **Step Two:** Move to Data-Driven Programs by supporting Open Communications and Data Standards.

3 **Step Three**: Focus on Driving Lasting Business Value through Process Maturity equal to System Complexity.

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Questions & Comments

Filling the Energy Efficiency Pipeline	Accelerating Market Adoption	Leveraging Regional Advantage

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Thank You!

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