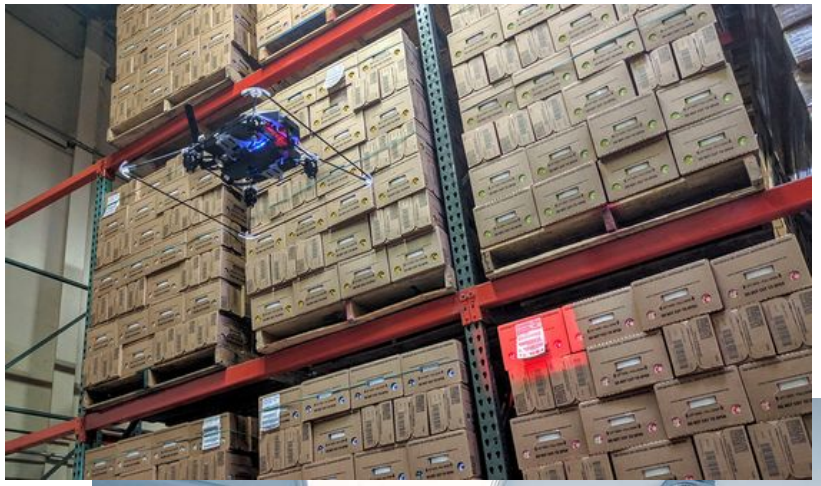
ARTIFICIAL INTELLIGENCE IN THE WAREHOUSE

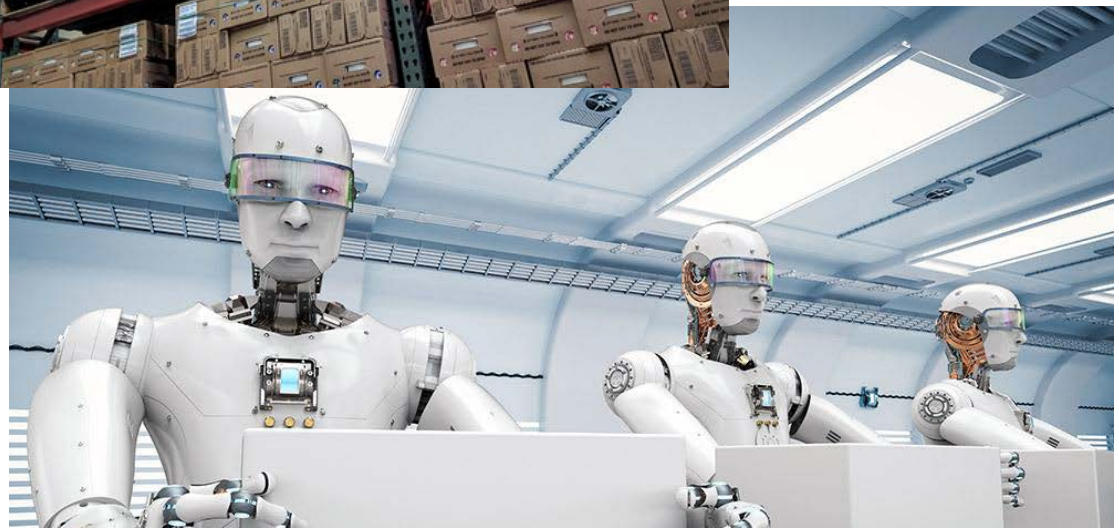
INVENTING YOUR FUTURE

KEY MESSAGES

- Robotic Warehouse Automation is promising... and big
- Many opportunities for creating cognitive solutions with significant returns
- Innovation is intentional and continuous
- Institute your Innovation Method
- Invent You Future

WHAT DO YOU THINK OF?





SMALL CHANGES CREATE BIG RESULTS

A Big Bang is good to create a universe, but…

Innovation most often happens incrementally

Unless you have Steve Jobs in your brainstorming session?

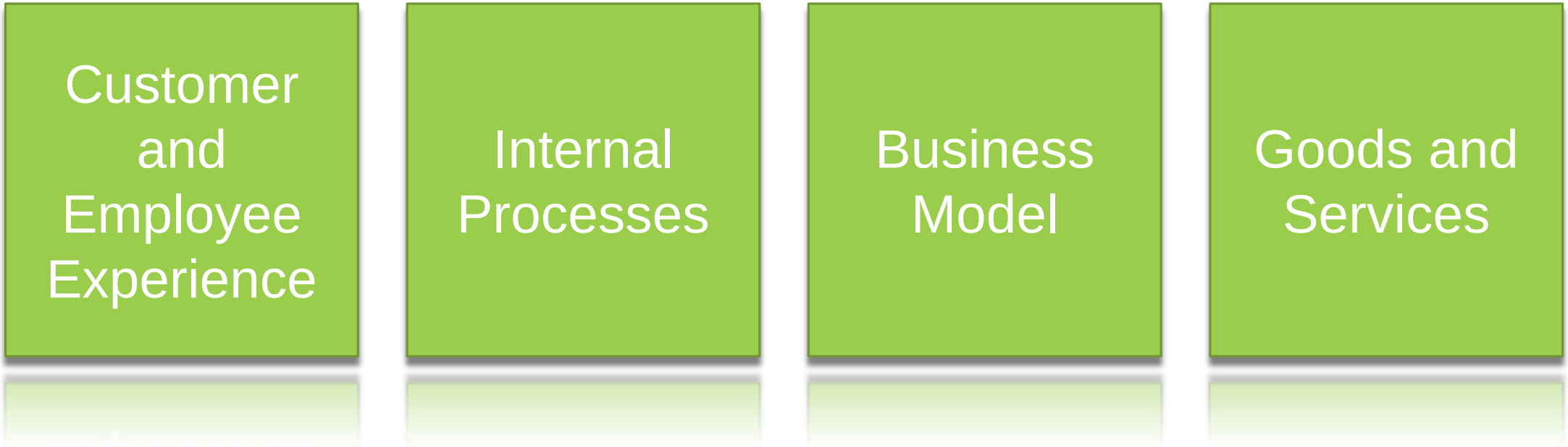
INVENT YOUR FUTURE

Large robotics and physical automation companies are spending $B's inventing those systems

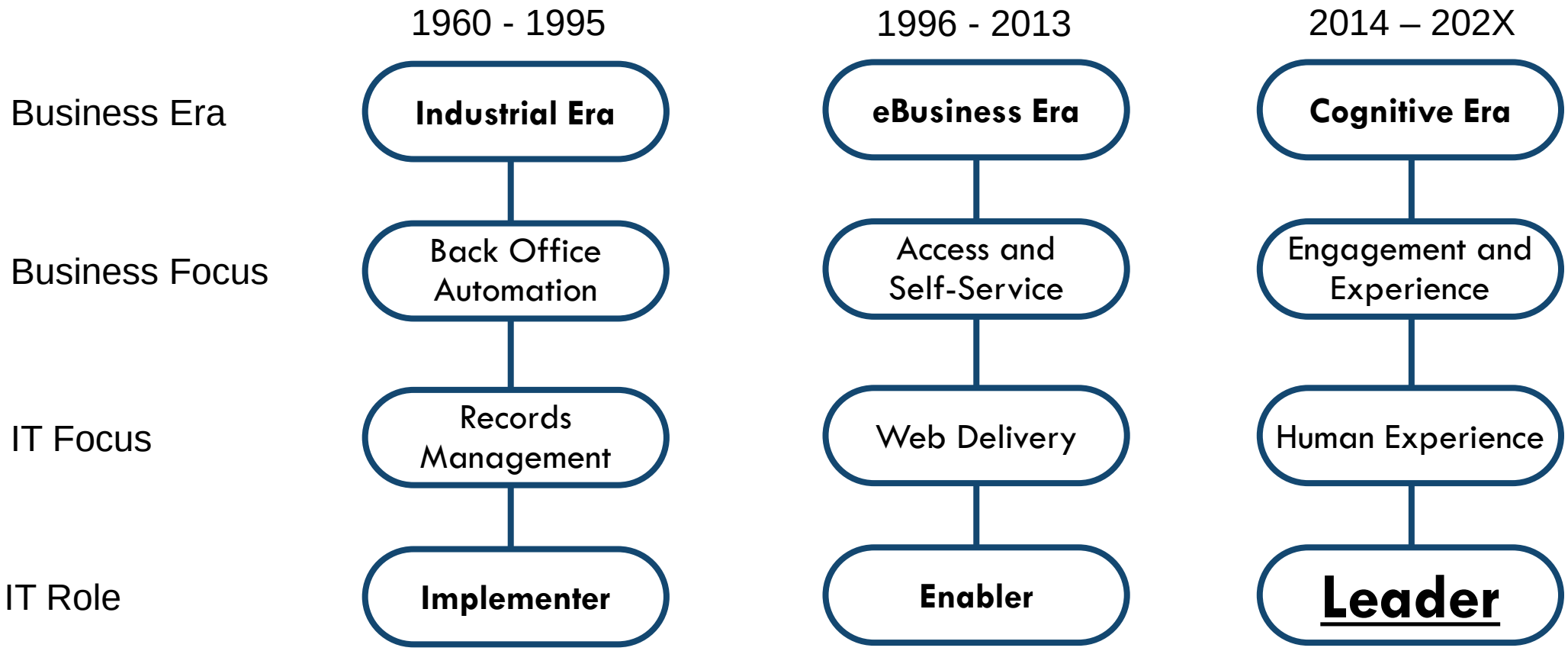
The future cannot be predicted, but futures can be invented. *- Dennis Gabor, 1963*

"Don't worry about what anybody else is going to do… ***The best way to predict the future is to invent it.*** *Really smart people with reasonable funding can do just about anything that doesn't violate too many of Newton's Laws!"*
— Alan Kay in 1971,

WHERE TO INNOVATE?



DIGITAL TRANSFORMATION IS NOT NEW



ARTIFICIAL INTELLIGENCE IS NOT NEW EITHER!

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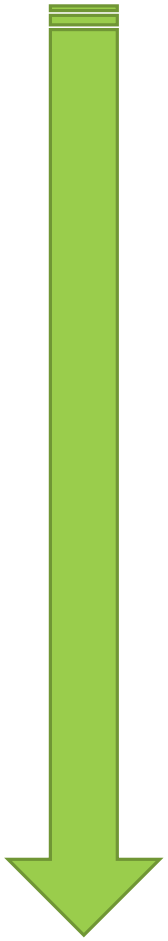


2017

- Records Management and Calculation
- Simple if-then logic
- Process Automation and Management
- Business Rule Management Systems
- Data Warehousing and Business Intelligence
- Predictive Analytics
- Machine Learning
- Cognitive Systems and Deep Learning

COGNITIVE SOLUTIONS ARE DIFFERENT

UNDERSTAND  Adapt and make sense of all data; “read” text, “see” images and “hear” natural speech with context

REASON  Interpret information, organize it and offer explanations of what it means, with rationale for the conclusions

LEARN  Accumulate data and derive insight at every interaction, perpetually. They get smarter, and develop “expertise.”

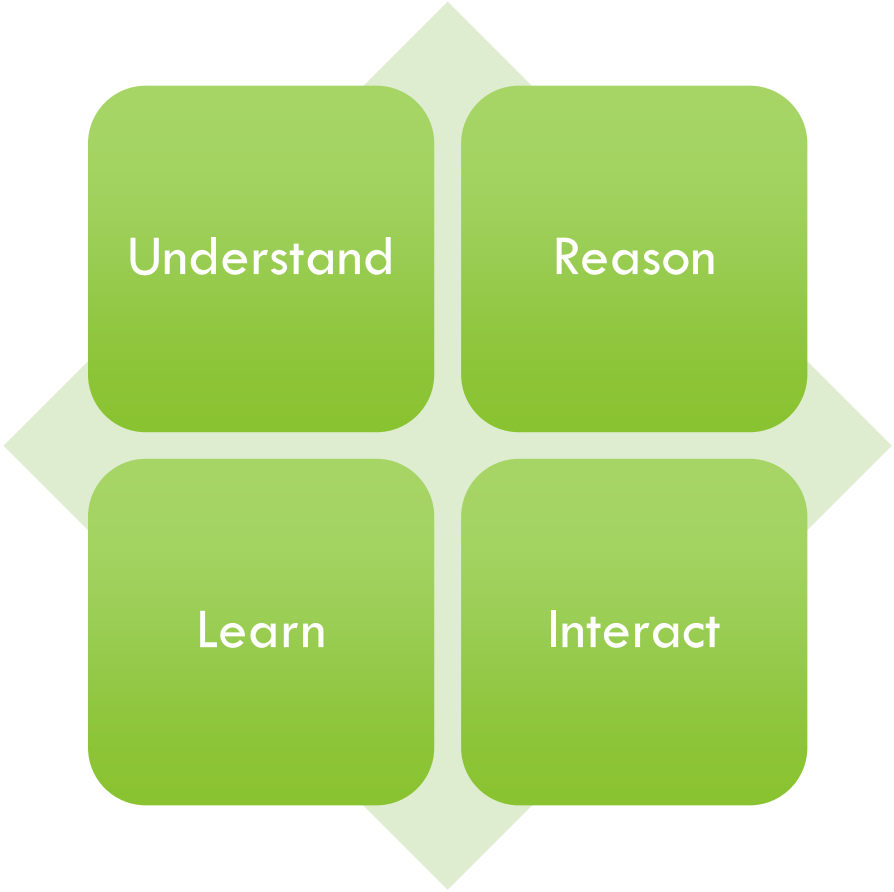
INTERACT  With abilities to see, talk and hear, cognitive systems interact with humans in a natural way.

WHAT IS COGNITIVE COMPUTING?

Computers should interact with humans on human terms

rather than humans interacting on the computers terms

Human Language
Visual Recognition
Audio Data
Huge Data Sets



Pattern Recognition
Latent Trend Analysis
Infer causes and correlations
Predict outcomes

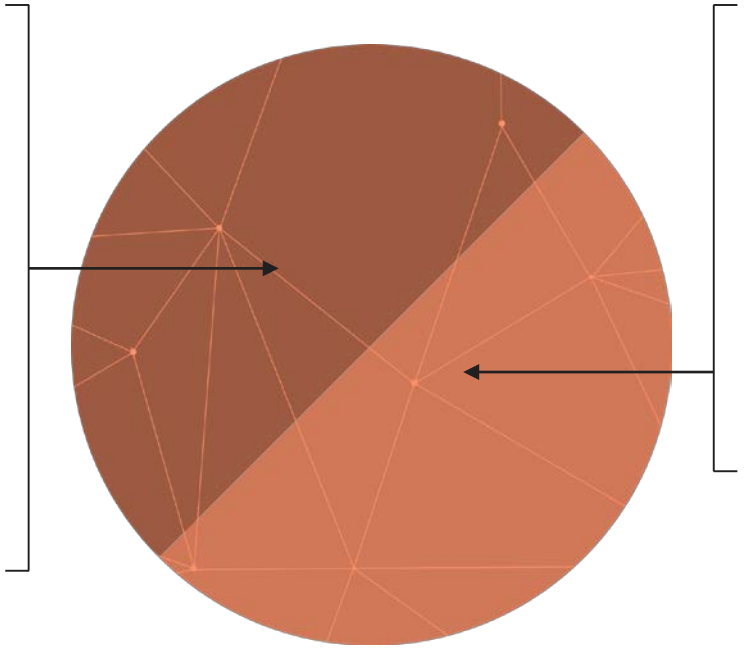
Incorporate human feedback
Automatically verify outcomes
Continually add data points
Check conclusions

Contextual Understanding
Vision and Hearing
Language and Speech
Haptic

COGNITIVE SYSTEMS AMPLIFY HUMANS

HUMANS EXCEL AT:

- Common Sense
- Morals
- Imagination
- Compassion
- Abstraction
- Dilemmas
- Dreaming
- Generalization



COGNITIVE SYSTEMS EXCEL AT:

- Locating Knowledge
- Pattern Identification
- Natural Language
- Large Data Sets
- Eliminate Bias
- Endless Capacity

INNOVATION IN THE WAREHOUSE

- Visual Augmentation for Pick and Pack
- Warehouse (re)Organization and Optimization
- Customer Service Order Status and Prediction
- Cognitive Supply Chain
- Weather and Hyperlocal for routing outgoing and predicting incoming shipments
- Dynamic Forecasting
- Sales Projections vs Actual Forecasting Reconciliation
- Video Analysis for Safety - Hazards and Employee movement
- Video Analysis for Damage and Inventory Reconciliation
- Predictive Maintenance
- Perishables Analysis

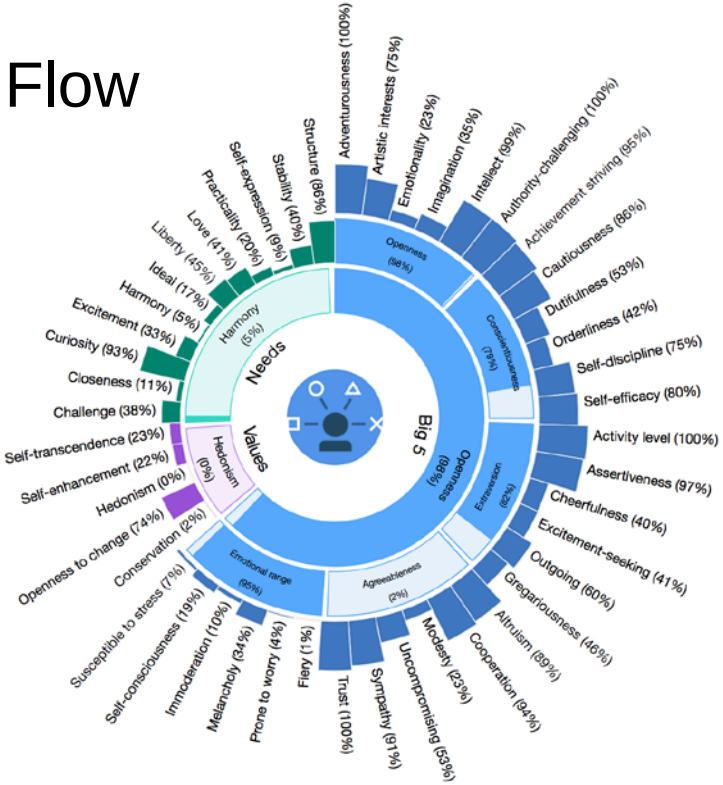
AUGMENTED REALITY

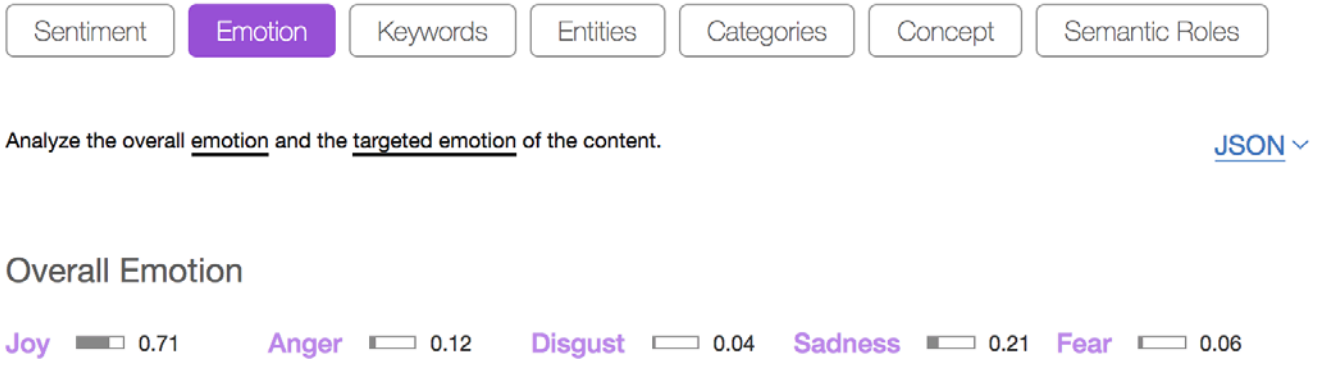
SPATIAL OPTIMIZATION & REORGANIZATION

- Find complex relationships
- Events and Hyper-localization
- Weather
- Seasonal

CONVERSATIONAL AND NLU APPLICATIONS

- Utilize Natural Language Understanding and Dialog Flow
- Expert Sales Assist
- Customer Service Agent Assist and Augmentation
- Employee Training

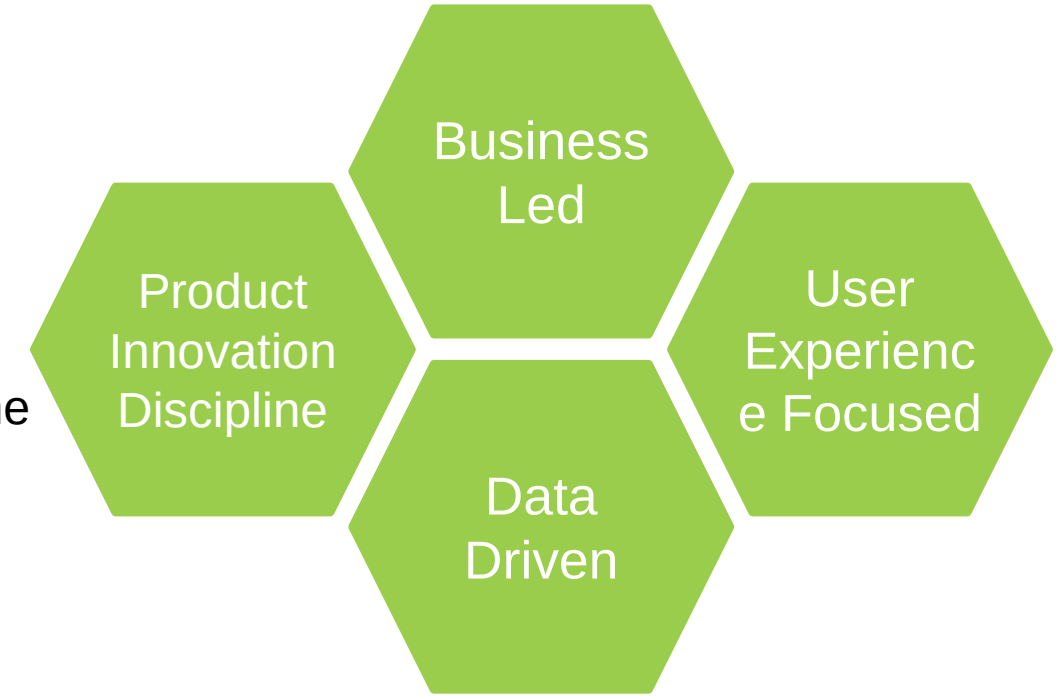




KEY ELEMENTS FOR INNOVATION

Cool doesn't cut it
Start with a problem needing a solution
Tie innovations directly to business outcomes

Innovation is intentional
There is a method for that!
Focus on Problem-Person-Outcome



Engage in context
Interact like a human
Be helpful not pushy

Data is everywhere
Constantly learn from user interaction
User Interactions are the new data warehouse

THE BUSINESS / IT GAP

Business

- Changes as quickly as market changes
- Not always involved in day-to-day delivery of solutions

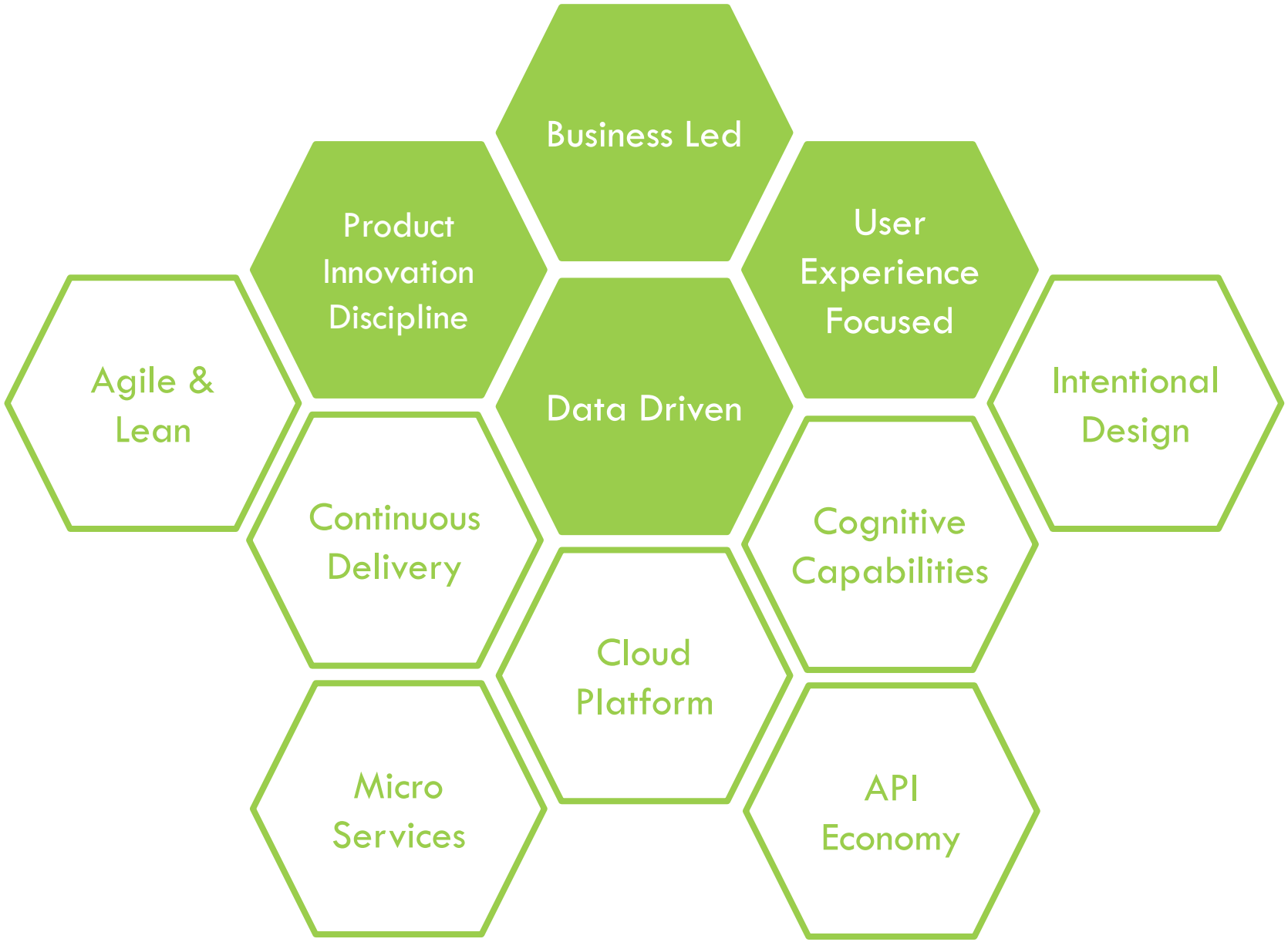
✓✓ Correctness of Solution

⚡ Speed of Delivery

IT

- Prioritizes stability and reliability over speed
- Does not always deliver actual needs of business

KEY TECHNOLOGY ELEMENTS FOR INNOVATION



THERE'S A METHOD FOR THAT

- Cool doesn't cut it
- Innovation is intentional – Design Thinking
  - Problem
  - Person
  - Desired Business Outcomes
- Work the process
  - Explore Potential Solutions
  - Build a backlog
  - Develop

FROM OPPORTUNITY TO PRODUCTION SOLUTION

Business Opportunity

- Problem / Opportunity
- Person
- Desired Business Outcomes

MVP Design Thinking Workshop

- Alignment and agreement
- MVP Definition
- Business Hypotheses
- Business Measurements

MVP Build Up

- Complete product management
- Agile development discipline
- Production Quality Code
- Suitable for real users

Business Testing

- Real users
- Business hypotheses
- Business Measurements
- Incorporate Learnings

Production Build Out

- Full production-ready
- Number depends on complexity
- Enterprise Integration and data connection biggest factor

DON'T PROTOTYPE -- SOLVE

Prototype

Production Quality MVP

- Product Management Discipline
- Production quality code
- Full test suite
- Limited Enterprise Integration
- Possibly feature complete

Production Ready Application

- Incorporates learnings
- Tested on all devices
- Internationalization
- National Language Support
- Architected for scale and resiliency
- Enterprise Integration

Focused on technology
Thrown in trash

Designed to solve a business problem
Measured business outcomes

SUMMARY

- Many opportunities for creating cognitive solutions with significant returns
- Innovation is intentional and continuous
- Institute your Innovation Method
- Invent You Future

THANK YOU!