



AIBRAIN, INC
THE INTELLIGENT COMPANY

John Seo
Chief Operating Officer

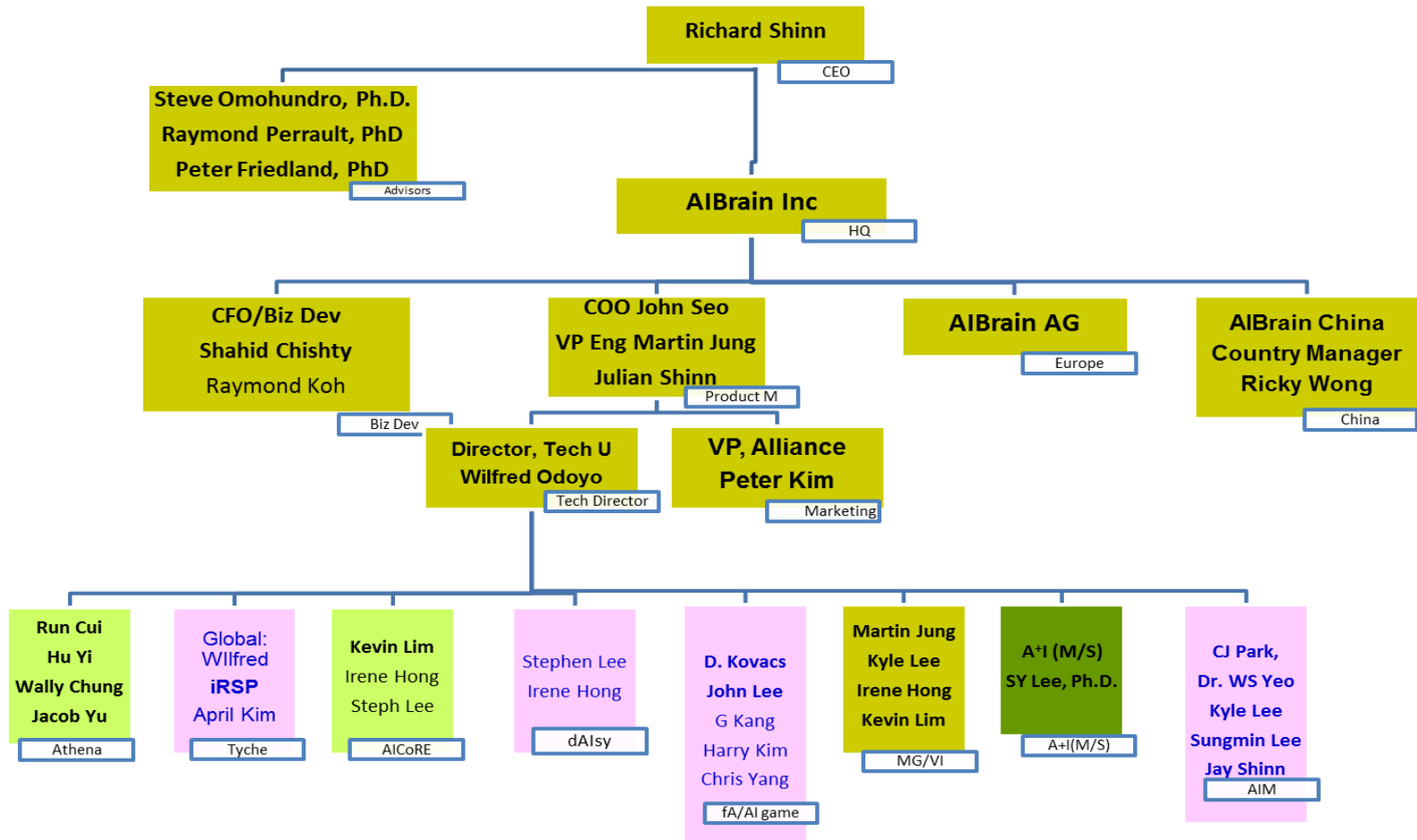
Our Company

- Founded in 2012 by **Dr. Richard Shinn**
- Selected as one of the **Global Top 20 AI company** by Datamation in 2016
- Selected as one of the **Top 5 Conversational AI company** by NIPS's The Conversational Intelligence Challenge in 2016
- **Futurable 1 Summer City** selected as a **top 30 Indie game** by 1st Indie Game Festival by Google Play in August 2016.
- Selected as one of the **Top 5 AI company** by the leading financial newspaper in Asia in 2017



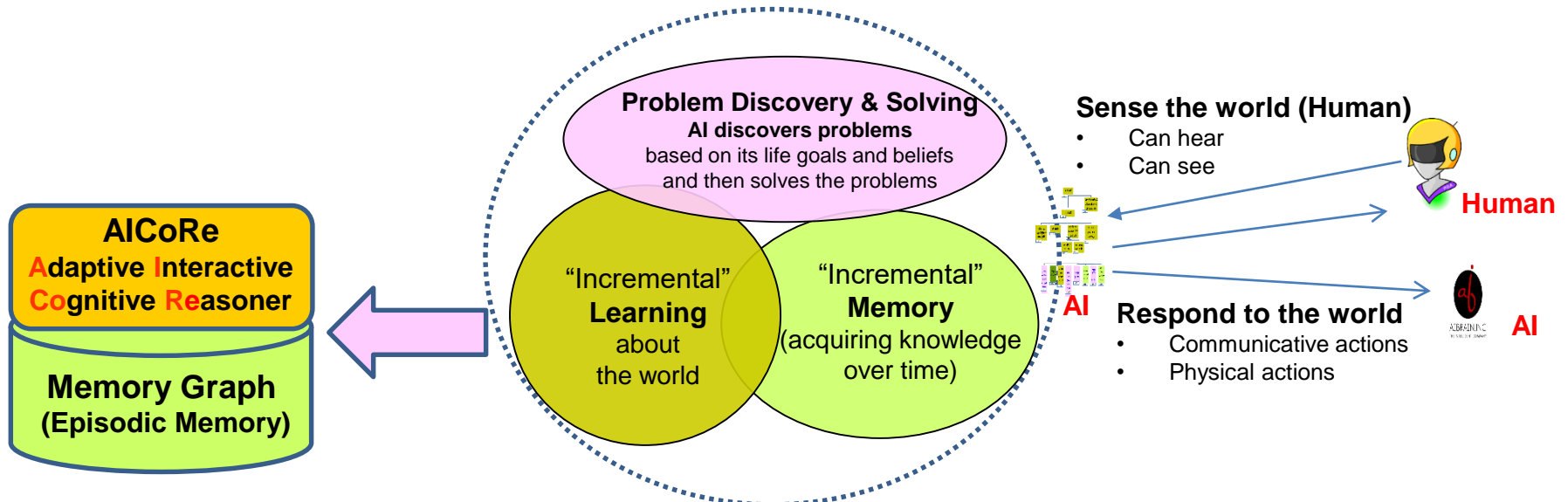
Our Company

AIBrain Global Organization Chart



Our Technology

- **AICoRe**: Holistic, Fully Autonomous AI accommodating both Neural Network and Cognitive AI



Solution Architecture: **AICoRe**

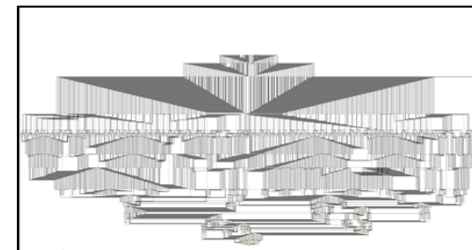
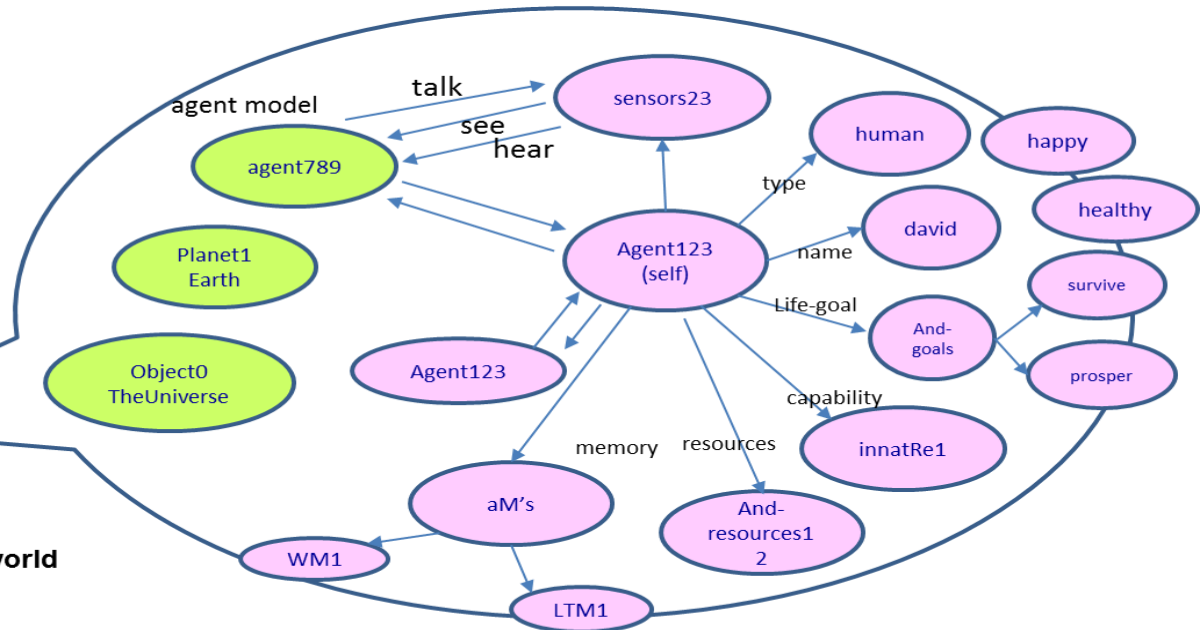
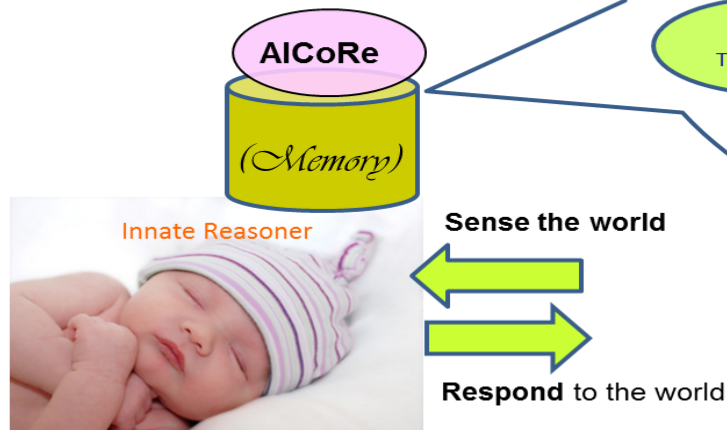
Conceptual Architecture: **AICoRe** as Autonomous Agent Reasoner

Our Technology

- **Memory Graph:** Seamlessly integrates its own episodic and semantic knowledge incrementally over time

Organized Memory is

- adaptive to changing environment
- Incremental over time
- 3 Types of Knowledge acquired:
 - Conversational episodes
 - Reasoning episodes
 - Generalized abstractions (Goals, Beliefs)

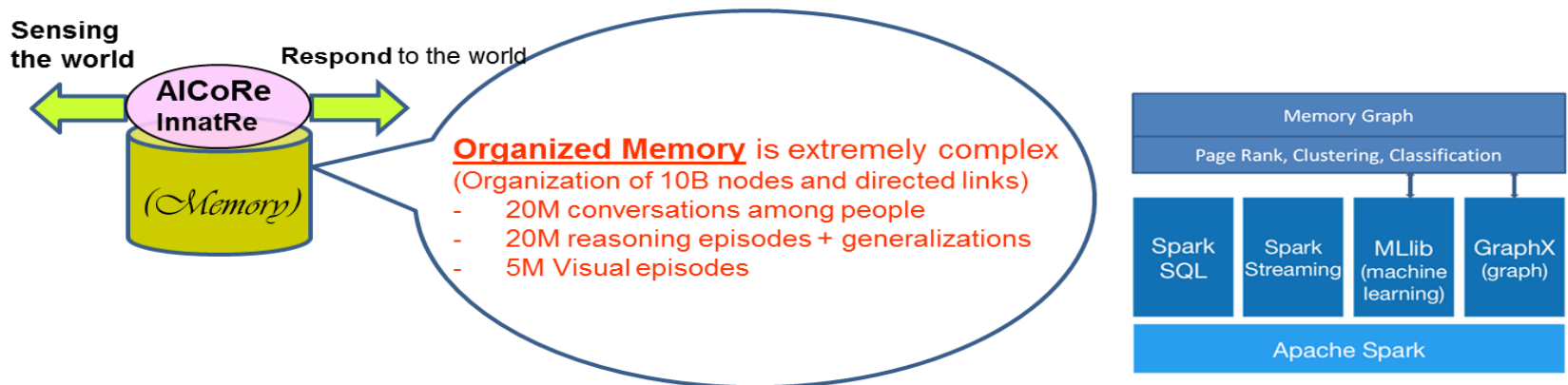


(Memory Graph in Jena)

Memory Graph is more than semantic networks such as Google's Knowledge Graph and Facebook's Social Graph

Our Technology

Memory Graph 2.0 - A Human-Scale Memory



	Day	Year	100 y	Remarks
Cognitive Episodic Memory				
Episodes	500	200k	20 million cases	Chunks, 1 page long
Books	1	365	36,500	A person can read a book a day
Pages	500	200k	20 million	1 thick book is 500 pages long
Sentences	20K	8 Million	8 * 10 ⁸ sentences	
Words	250K	100 Million	10B concepts	2* 10 ¹⁰ nodes; edges
Bytes	1m	365m	3.65*10 ¹⁰	1 page contains 2,000 characters
Visual Episodic Memory				
Objects	864K	300M	30B visual objects	Assume can remember 10 objects per scene
Scenes	86,400	30 million	3 billion	Assume one can remember a scene per sec
Visual episodes	1,440	500K	5 million	Assume one visual episode per min

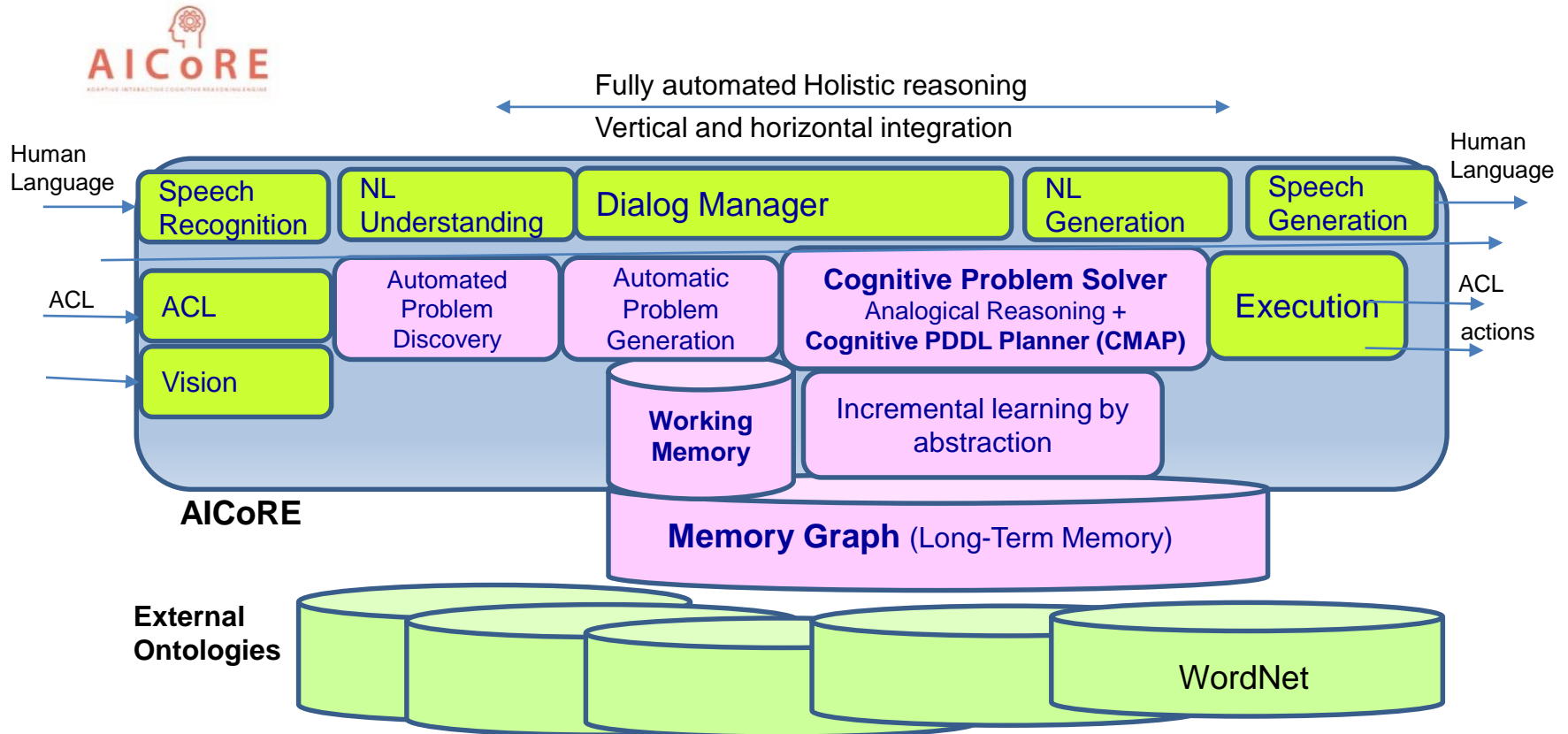
(Note 1. Data is approximate estimates for internal evaluation)



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Our Technology

Detailed Conceptual Architecture



AICoRE (Adaptive Interactive Cognitive Reasoning Engine)
is a **Holistic Human-like Reasoning Engine**

Market Trend

IPA (Intelligent Personal Agent): An Evolutionary Path



- Predefined keyword matching and slot filling

→ No deep parsing!

GVA, Siri



- Knowledge based reasoning
- Personalization with user experiences

→ InformaProvider
Personalized Knowledge Management

Google Assistant



LoLa



- Deep language understanding & Incremental Learning

→ Case-based NL Dialog Management
 → CBR driven problem identification
 → Incremental Memory-based learning
 → Multi-agent cooperative problem solving

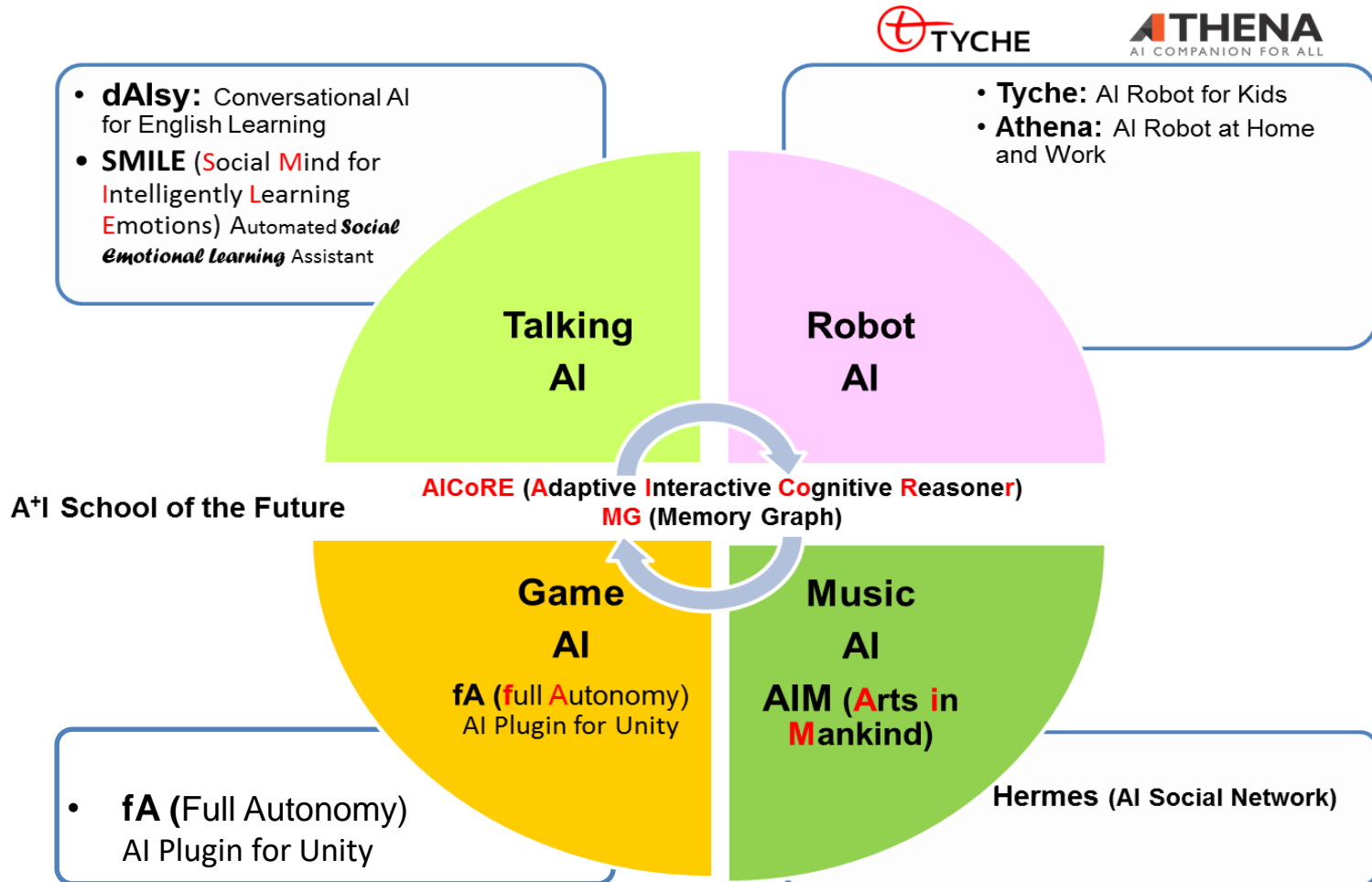
AlBrain



(Source: AlBrain, 2012; as part of a joint proposal of 3rd Gen IPA with Dr. Ray Perrault, Director, AIC, SRI International)

Our Target Market

AIBrain: 4 Core AI Applications



Our Target Market (Immediate)

Conversational AI Companion

- The British Council predicts that the number of people actively learning English will exceed **1.9 billion** by 2020.
- **dAIsy**: The advanced Conversational AI for language learning
 - Can converse up to **97%** of L1 Cambridge English Interchange
- Technical advantages
 - **Incremental memory** to learn and remember the worldly knowledge
 - **Multi-agent reasoning** to differentiate people
- AIBrain's conversational AI selected as **Top 5 Conversational AI** at The Conversational Intelligence Challenge, **Neural Information Processing Systems (NIPS)** on Dec 8, 2017 (Organized by Yoshua Bengio)

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Our Target Market

Conversational AI Companion Competitive Analysis

Performance Comparison of Tyche/Mia, Cortana, Google Assistant, Siri and Mitsuku
on Cambridge English Textbook, A1 Intro and Level 1

Cambridge English Interchange	Tyche/Mia		Cortana		Siri		Google Assistant		Mitsuku	
	% Success	#acceptable responses/ #total sentences	% Success	#acceptable responses/ #total sentences	% Success	#acceptable responses/ #total sentences	% Success	#acceptable responses/ #total sentences	% Success	#acceptable responses/ #total sentences
Visual Understanding with a person	20%	2/10	0%	0/10	0%	0/10	0%	0/10	0%	0/10
Memory-based reasoning	98.80%	494/500	2.80%	14/500	24.20%	121/500	3.80%	19/500	55.80%	279/500
Deeper Reasoning	100%	8/8	25%	2/8	0%	0/8	25%	2/8	37.5%	3/8
Daily Conversation with a single person	98%	49/50	58.00%	29/50	82.00%	41/50	46.00%	23/50	96.00%	48/50
Reasoning with external information	100%	3/3	100%	3/3	100%	3/3	100%	3/3	66.67%	2/3
Multi-Party Conversation	92.31%	12/13	0%	0/13	0%	0/13	0%	0/13	7.69%	1/13
Total	97.26%	568/584	8.21%	48/584	28.25%	165/584	7.70%	45/584	57.02%	333/584

Note 1. Total 584 sentences of the whole 32 chapters (for both Intro and Level 1 Cambridge English)

Note 2. Reasoning with external ontologies - Tyche: WordNet, etc; Siri: Wolfram Alpha, Web Search)



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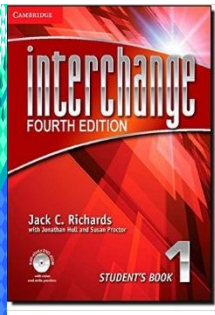
Our Target Market (Immediate)

AI Robot for Intelligence Development



The AI Robot for Kids

- No. 1 Intelligent Toy (Age: 8+)
- Tyche for Verbal IQ Training
- The Intelligent Way of Learning English
- Tyche can talk at Level 1 Cambridge English
- Tyche receives the Innovation Award, 2014 CES
(Category: The Technology for a Better World)
- "This little robot is **apparently the most intelligent smartphone robot in the world** is capable of recognizing humans, hear and talk back, learn and solve problems autonomously." (The Guardian, Jan 2014)
- Tyche was invited to 2016 CES Annual Robotics Conference, CES 2016, presenting it as one of the three AI robots with Pepper and Buddy



Our Target Market (Immediate)

AI Robot

- China, Japan, and Korea

1. 寓教于乐
2. 沉浸式英语学习
(The intelligent way to Learn English)
3. 以语音编程创建专属人工智能

- U.S. & Europe

1. Fun way to learn AI (Cognitive skills)
2. Social and Emotional Companion
3. Build Your Own AI by Verbal Programming

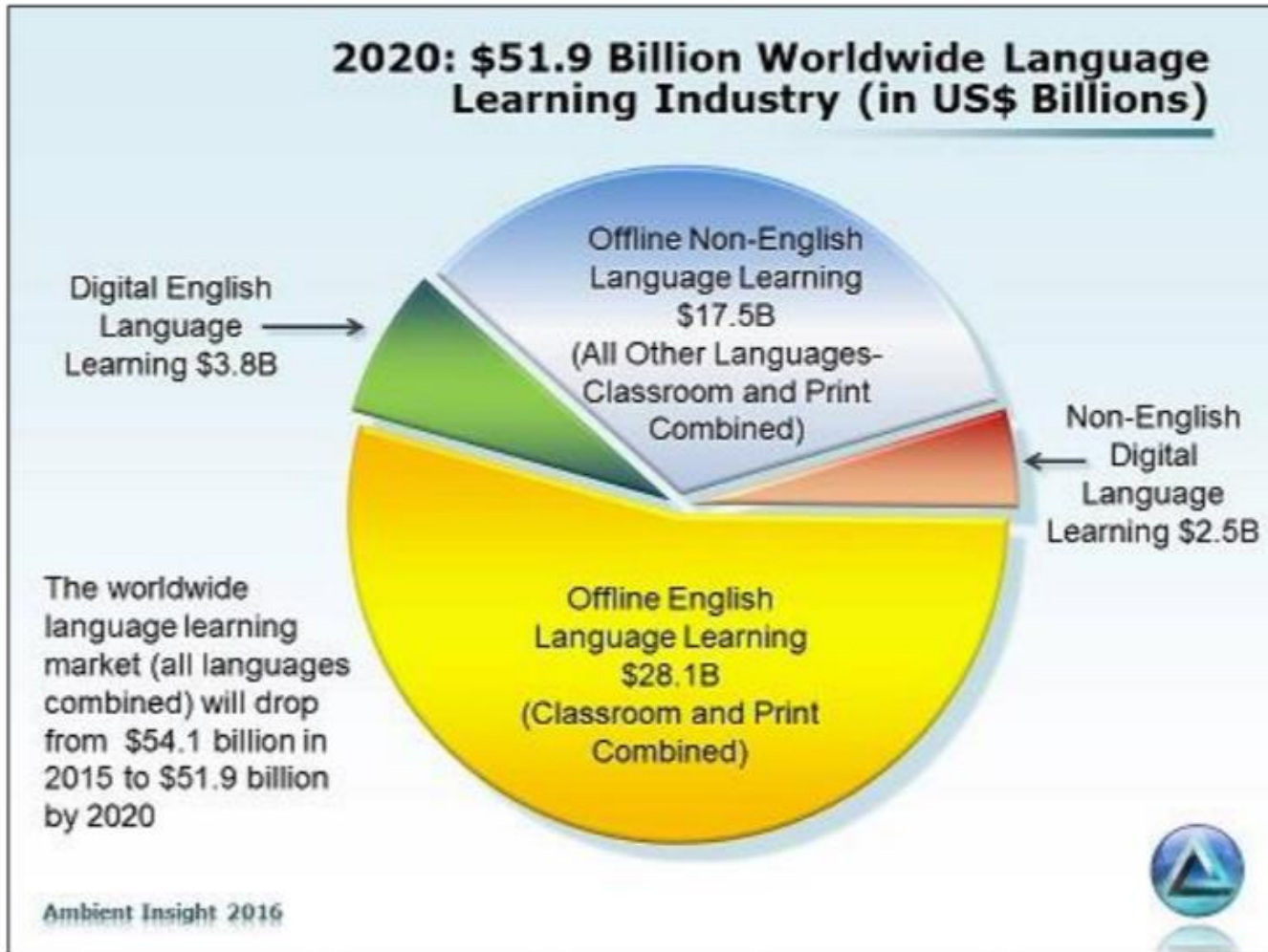


The AI Robot for Kids



Our Target Market (Immediate)

Digital English Learning Market Size by 2020



(Source: Ambient Insight)

Our Target Market (Immediate)

Top Fifteen Digital English Language Learning Buying Countries 2015 and 2020

	2015	2020
1.	China (including Hong Kong and Macao)	China (including Hong Kong and Macao)
2.	The US	The US
3.	South Korea	South Korea
4.	Japan	Brazil
5.	Brazil	Japan
6.	India	Indonesia
7.	Taiwan	Taiwan
8.	Turkey	India
9.	Canada	Turkey
10.	The Russian Federation	Honduras
11.	Spain	Malaysia
12.	Mexico	The Russian Federation
13.	Germany	El Salvador
14.	France	Canada
15.	Poland	Poland

(Source: Ambient Insight)

Our Target Market (~ 3 months)

AI Robot



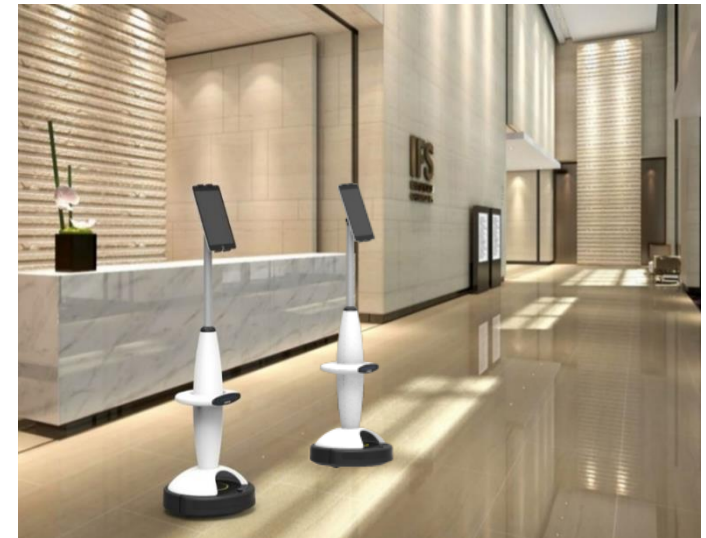
AI Companion at Home

1. **Assistant**
 - Information Provider, Surveillance
2. **Companion**
 - Friend, Good Friend, Mentor
3. **Entertainer**
 - Play Music and Games, Joy of Living



AI Assistant at Work

1. **Assistant**
 - Reception, Scheduler, Surveillance
2. **Companion**
 - Social Companion
3. **Entertainer**
 - Guest Entertainer



Our Target Market (~ 3 months)

AI Robot

Personal robots has predicted that it will be worth \$34.1 billion by 2022 with a CAGR of 37.8% (Research & Markets)



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ARTIFICIAL SOLUTIONS

KOAGENTIX

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CORPORATE HOSTS

ORGANIZED BY
itrends

(tr) trends
inquiry

STRATEGIC RESEARCH PARTNER
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Athena debuted as AI host at 1st AI World Conference & Expo, San Francisco (Nov 9, 2016)



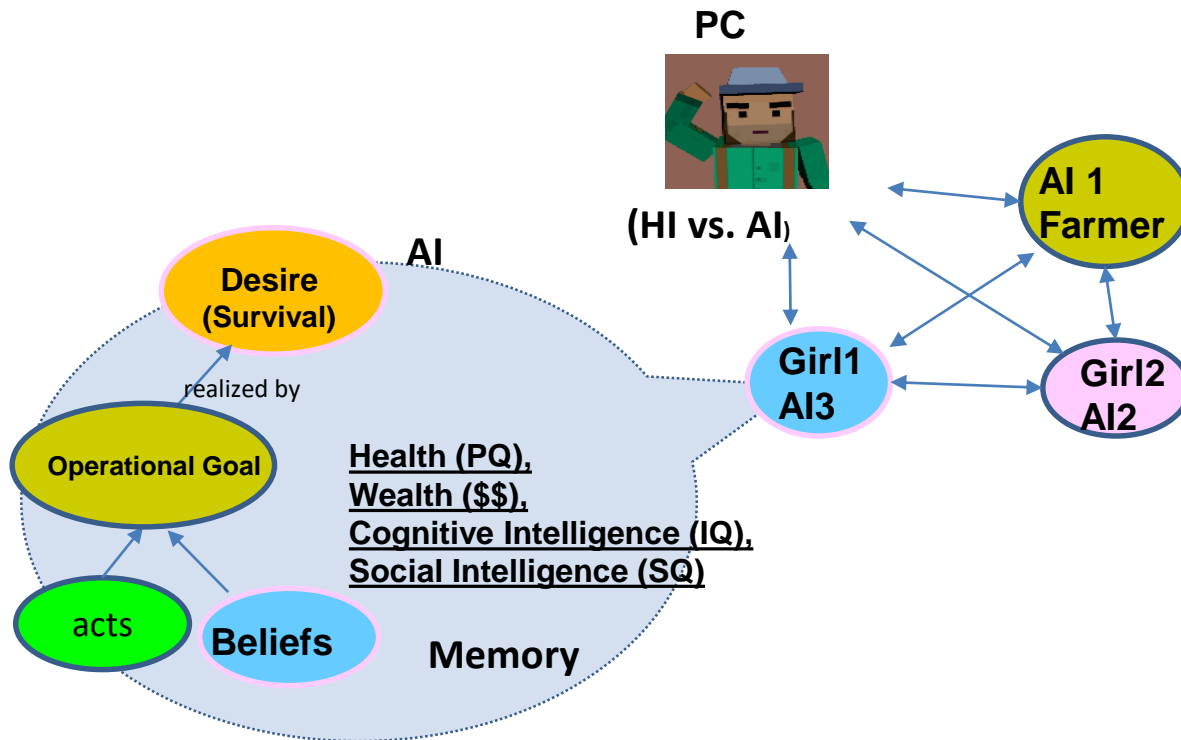
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Our Target Market (~ 3 months)

Autonomous AI for Games

Purpose: Every character has survival-mode instincts based on its inborn **physical and mental** capabilities.

THE TRUE AI GAME



Our Target Market (~ 3 months)

Autonomous AI for Games



**Futurable 1 selected among the 30 best new indie games
at the 1st Google Indie Game festival (Aug/Sep 2016)**

<https://events.withgoogle.com/google-play-indie-game-festival/exhibiting-games/>



futurable.co

Our Target Market (~ 3 months)

Autonomous AI for Games

Futurable's symbol manipulation over **AlphaGo's number crunching**

Major Features	GiAR Lite & Full (AIBrain)	AlphaGo (Google)
Domain Independence: Is the system independent of problem domains?	Yes (Implemented in PDDL and MA-PDDL)	No (only works for Go)
Generality: How many planning methods?	GiAR Full: 6 methods <i>(7 Methods coming soon)</i> GiAR Lite: 1 method (Neural Net Planner)	Only 1 planning method (MCTS)
Does it include MCTS (Monte-Carlo Tree Search)?	Yes (GiAR Full)	Yes (The framework of the whole system)
Deep CNN (Convolutional Neural Networks) included?	Yes (GiAR Lite only)	Yes
Multi-agent Problem Solving: Does it work with multiple agents (>2)?	Yes (arbitrary number): Both	No (just 2; AI against human or AI)

Note 1. PDDL (Planning Domain Definition Language); MA-PDDL (Multi Agent PDDL)



*Thank
you*



AIBrain, Inc.
68 Willow Rd
Menlo Park, CA 94025
Peter.kim@aibrain.com

