



Rules Fest 2010

International Conference on Reasoning Technologies
October 11-14 • San Jose, CA USA

GWC Grindwork Corporation
Intelligent Automation

JBoss
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Production Systems Technologies

morris technical solutions
engineering knowledge for businesses

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communications
strategic thinking • creative action

Artificial General Intelligence and Modes of Learning

Peter Voss

Founder/ CEO

Adaptive A.I. Inc

Smart Action Company, LLC

Artificial General Intelligence and Modes of Learning

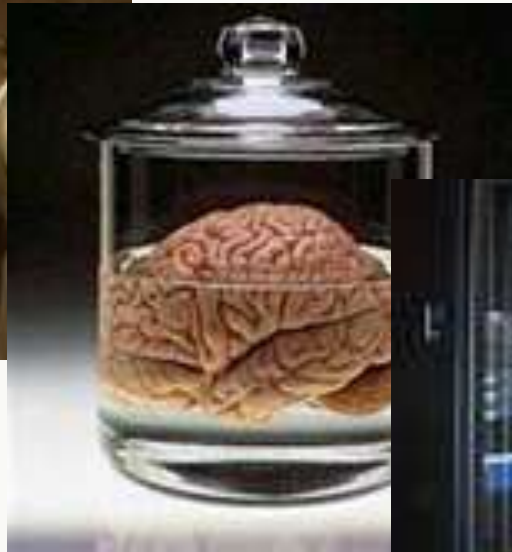
AGI, what ?

Architecture

Modes of Learning

Virtual Agents

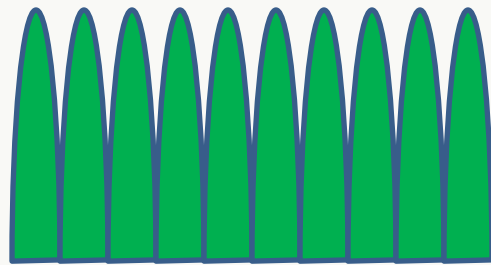
AGI is 'Real' AI



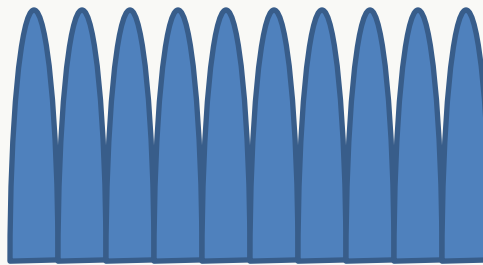
Why Now?

What is Intelligence?

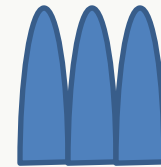
What kind of Intelligence interests us?



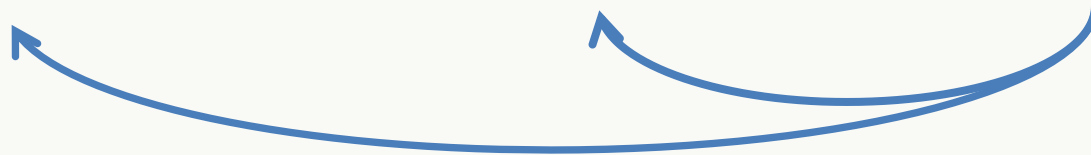
Knowledge



Skills



Learning



What kind of Intelligence interests us?

Human like cognitive ability

Abstract Concepts

Context

Meta-Cognition

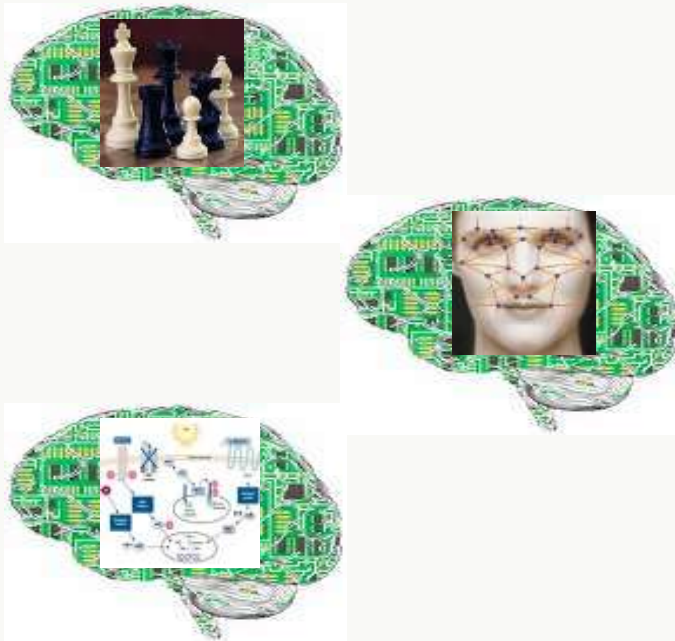
Ultimately, human level

AGI versus Narrow AI

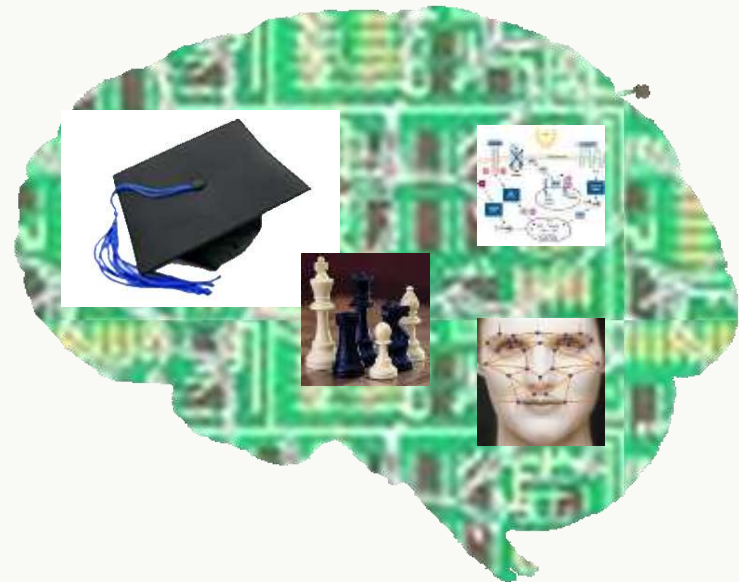


AGI versus Narrow AI

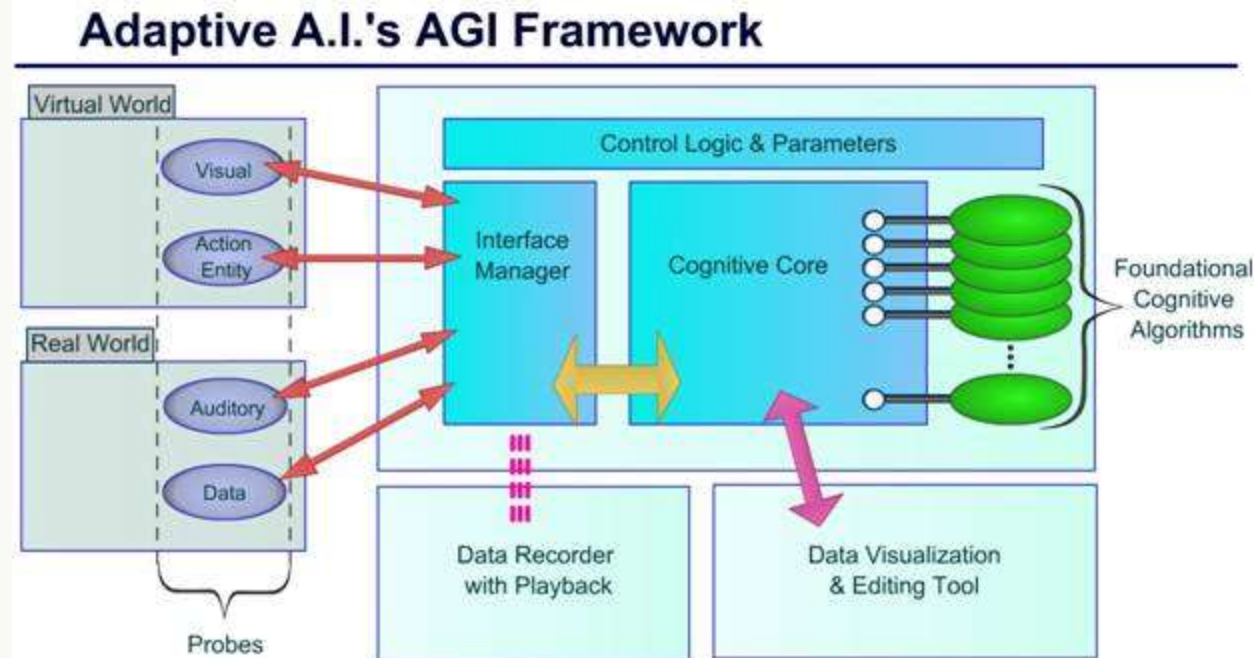
Narrow AI



AGI



Development Framework



AGI Engine

- ❑ Interactive, Real-time
- ❑ 'Neural Gas'- like Ontology



AGI Engine

- ❑ Interactive, Real-time
- ❑ 'Neural Gas'- like Ontology
- ❑ Network of Probabilistic Rules
- ❑ Context/ Bias
- ❑ Self-modifying

Acquiring Knowledge & Skills

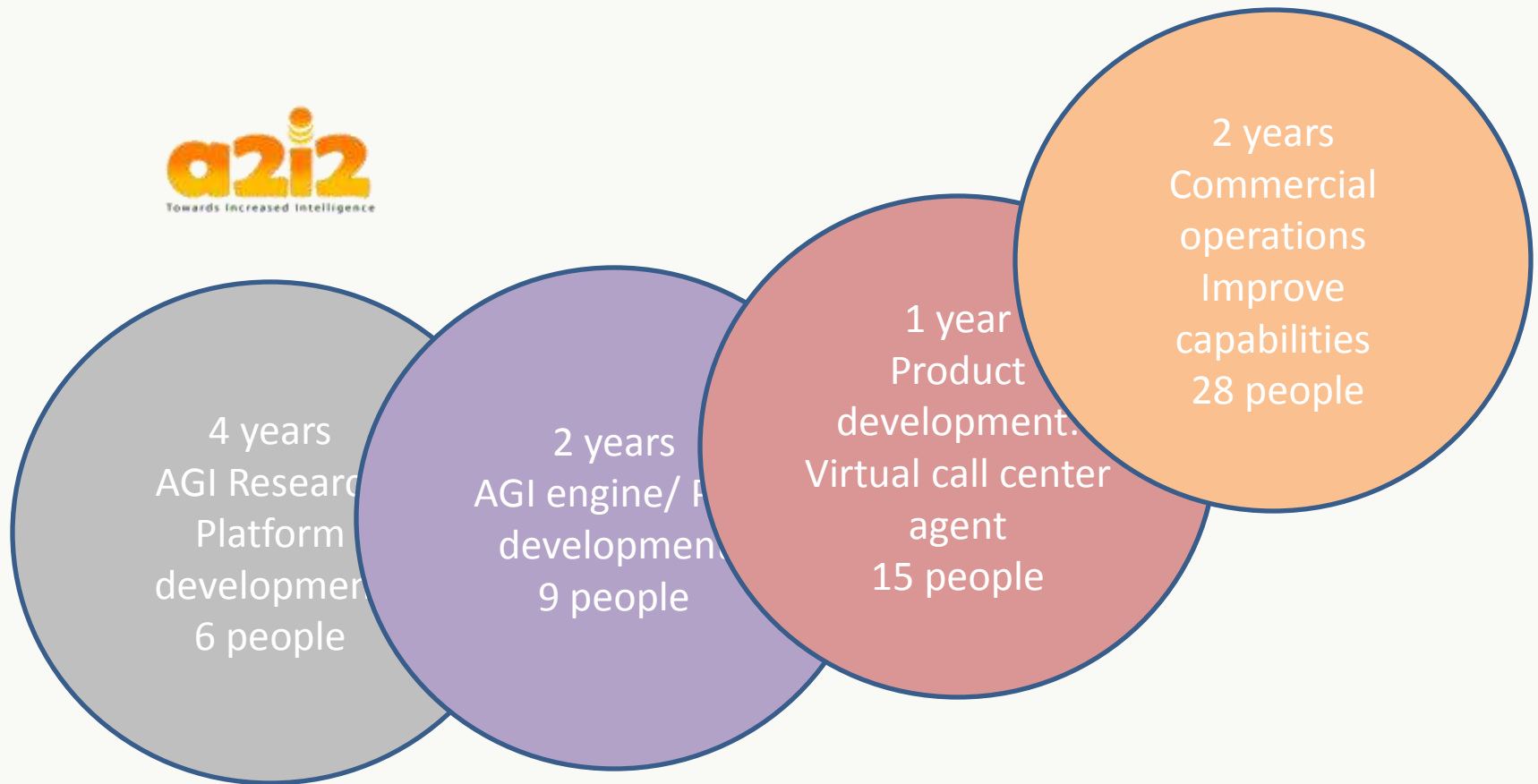
- ☐ Built in
- ☐ Feature extractors/ encoders
- ☐ Look up
- ☐ Instance learning (one-shot)
- ☐ Unsupervised (clustering)
- ☐ Exploration (random or structured)
- ☐ Ape (copy/ mirror)
- ☐ Guided (hand holding)
- ☐ Instructed (voice, gesture, text, etc)
- ☐ Supervised (categorize, label)
- ☐ Self-supervised (internally monitor results)
- ☐ RL (explicit reward signal)
- ☐ Study (read, view)
- ☐ Figure out

AGI Development Path...

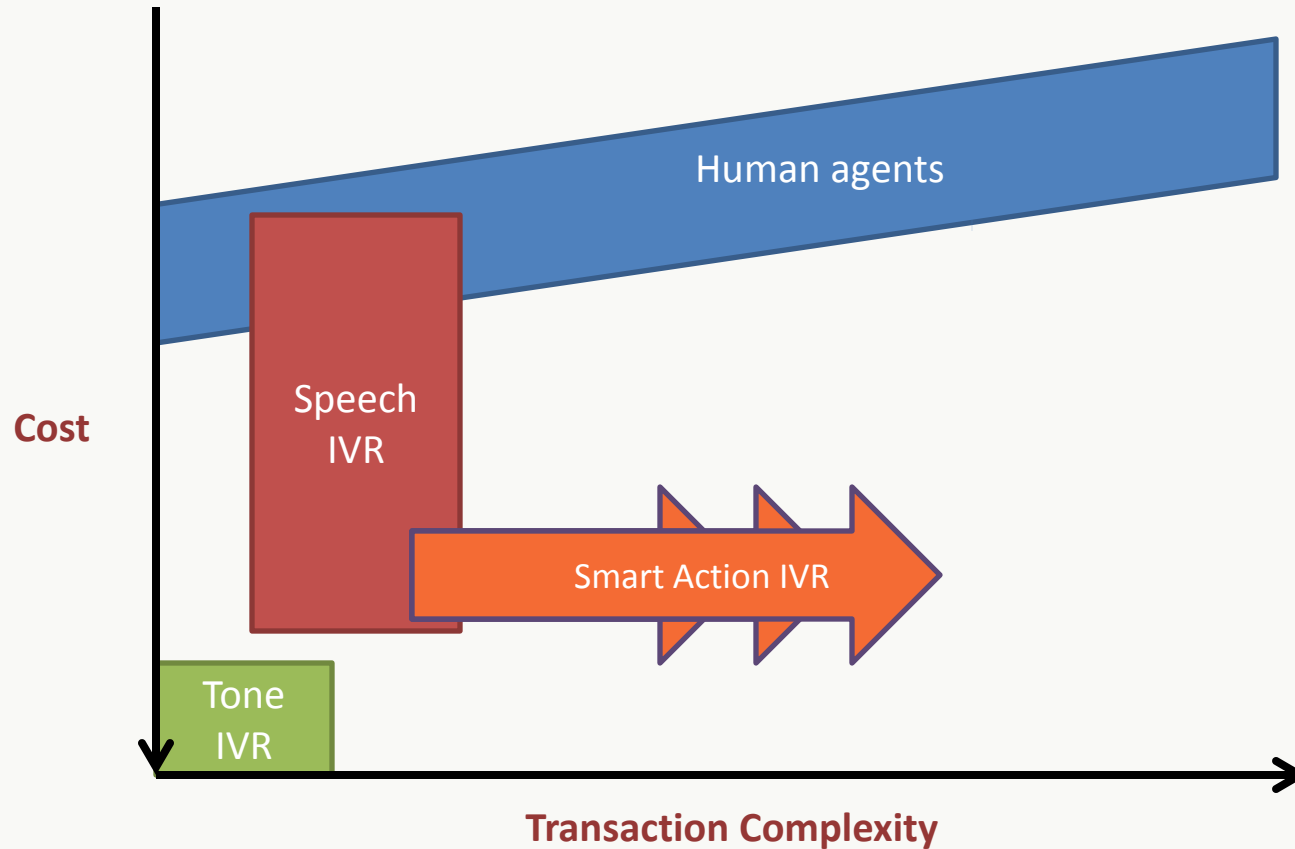
A Brief Company History

SmartAction[™]
VIRTUAL AGENTS

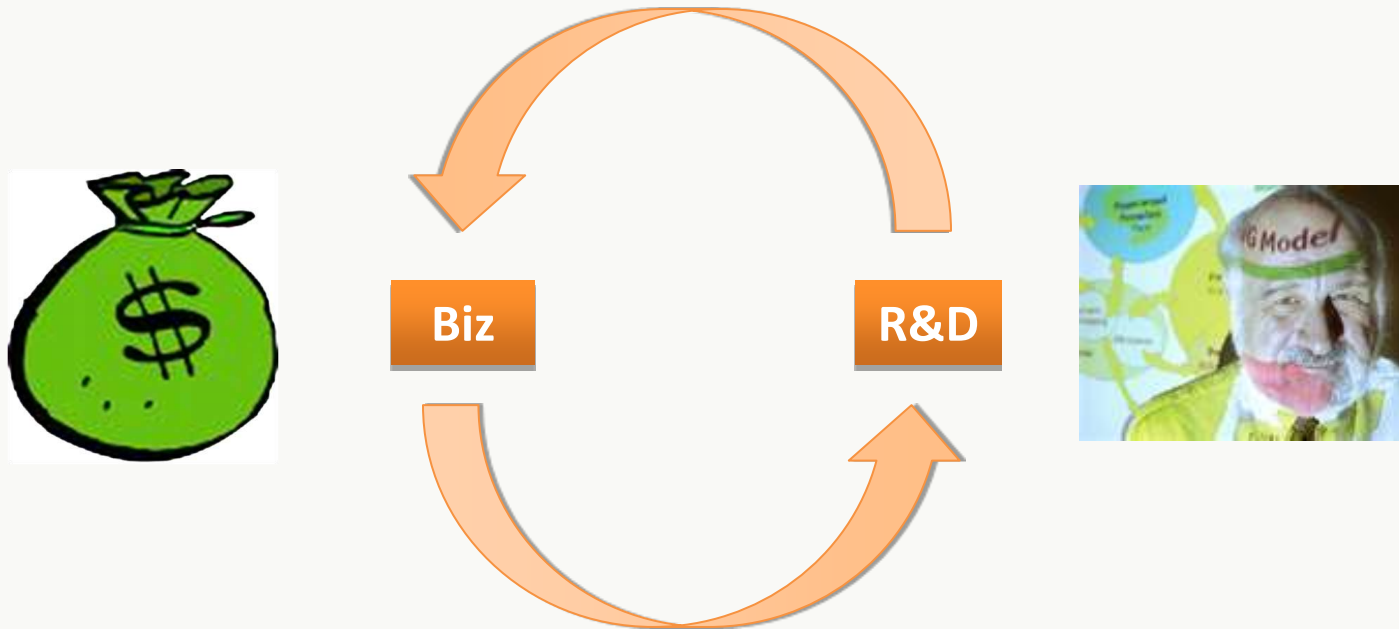
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Towards Increased Intelligence



Types of Automation



Virtuous Cycle Bootstrap

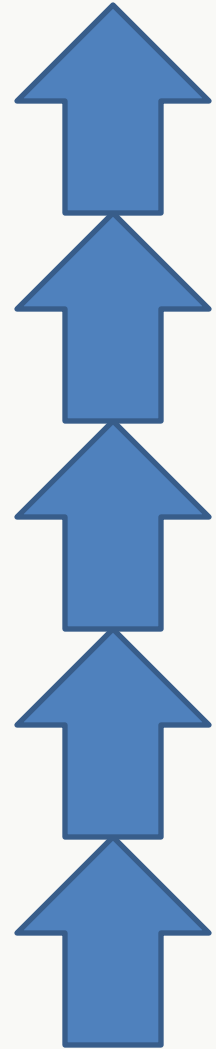




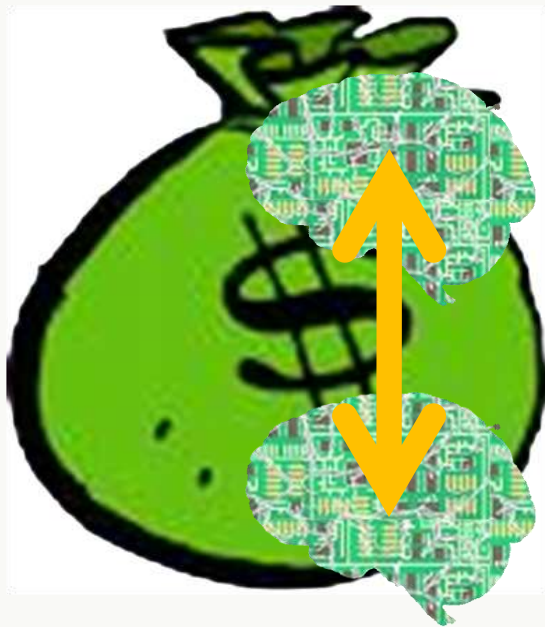
Imagine...

Success Trajectory

- Researcher (consolidate and upgrade capabilities)
 - Research Assistant (abstract, contextual concepts)
 - Dynamic systems controller (physics, calculus)
 - Web programmer (syntax, object relationship, etc.)
 - Software QA (logic, algebra, etc.)
-
- Complex conversations (troubleshooting, etc.)
 - ✓ First practical AGI-engine based application
 - ✓ Personal Assistant prototype
 - ✓ AGI development framework
 - ✓ Theory of general intelligence



Desirable AGI Characteristics



What Practical Advice?

- ❑ Be ambitious - we can now do more than you think
- ❑ If you can afford it, create general solutions
- ❑ Don't be limited by rules vs. NN dichotomy
- ❑ Utilize vast network of online resources: code, papers, coders, social networking
- ❑ Think big (said that already?) - and love what you do.

Thank You

Peter Voss

peter@SmartAction.com

www.AdaptiveAI.com

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