



Artificial Intelligence: Issues and Opportunities

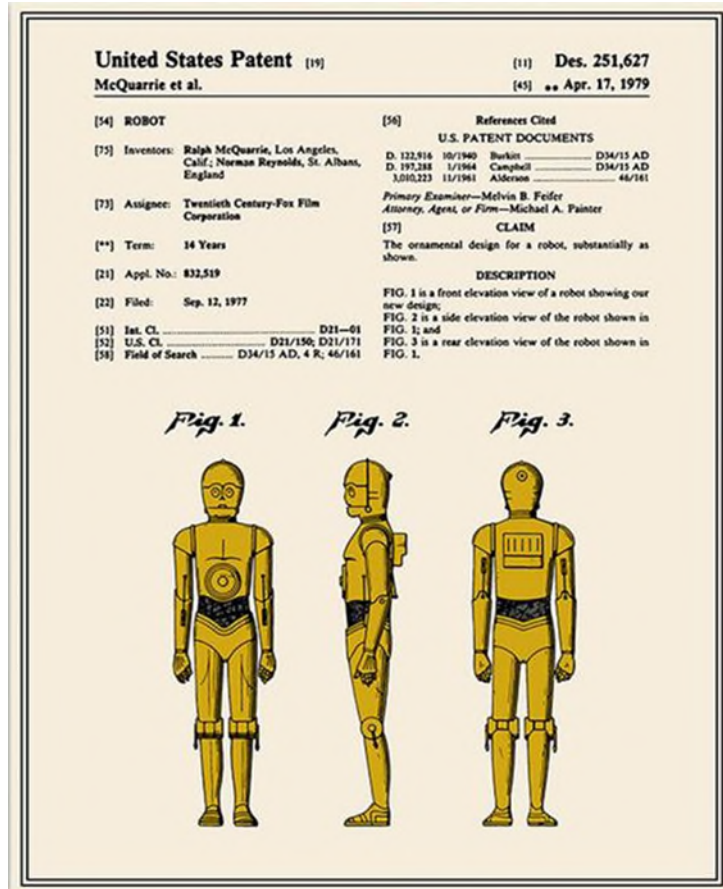
Eric Sophir

Agenda

- Introduction to Artificial Intelligence
- Applications of AI in Hospitality
 - Customer Service
 - Targeted Advertising
 - Hotel-Based Functionality
- Protecting AI Innovations
- Licensing Issues with AI



Introduction to Artificial Intelligence



Definitions (Merriam-Webster)

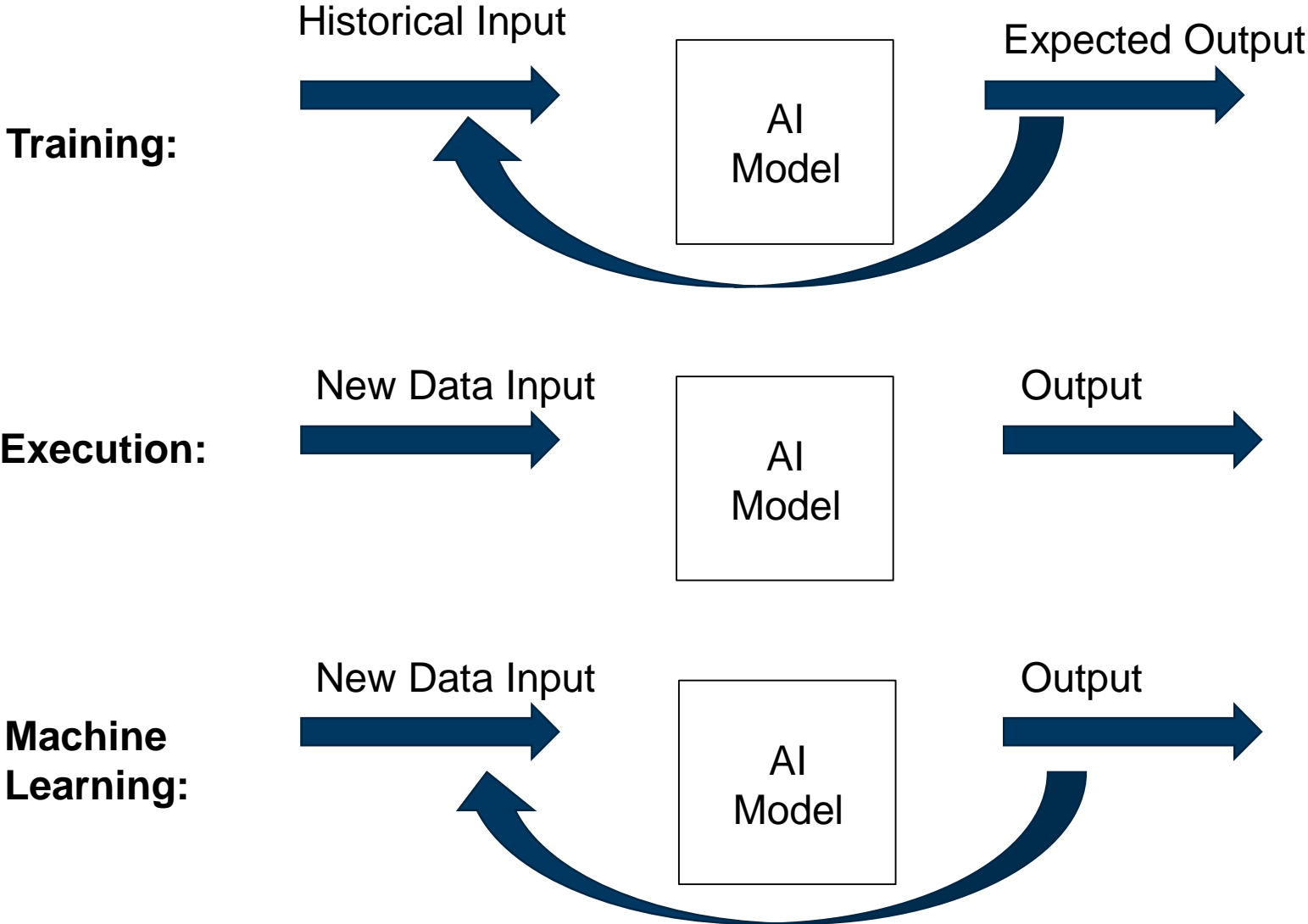
– Artificial Intelligence

- a branch of computer science dealing with the simulation of intelligent behavior in computers
- the capability of a machine to imitate intelligent human behavior

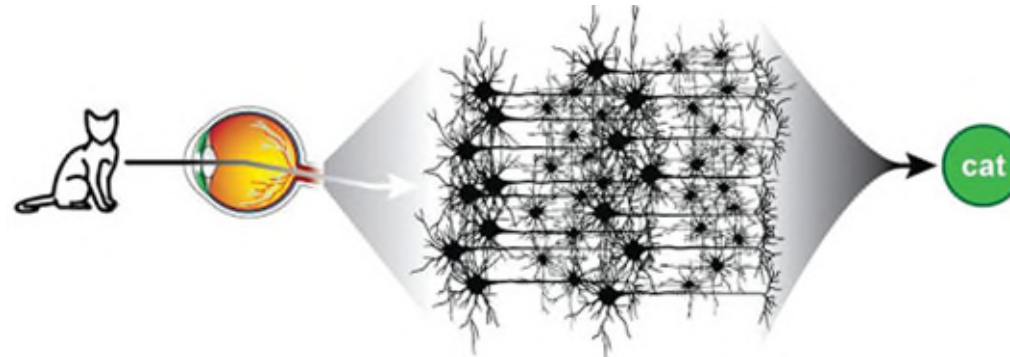
– Machine Learning

- the process by which a computer is able to improve its own performance by continuously incorporating new data into an existing statistical model

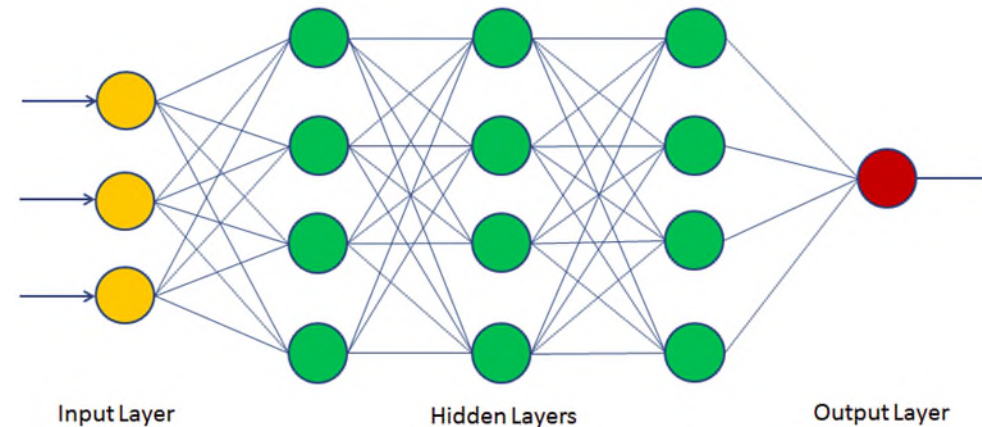
Basic AI Implementation Phases



Neural Network



- May have multiple hidden layers
- Each layer may perform a different function
- Signals go to the next node if the value exceeds a threshold
- Each node can be weighted during learning



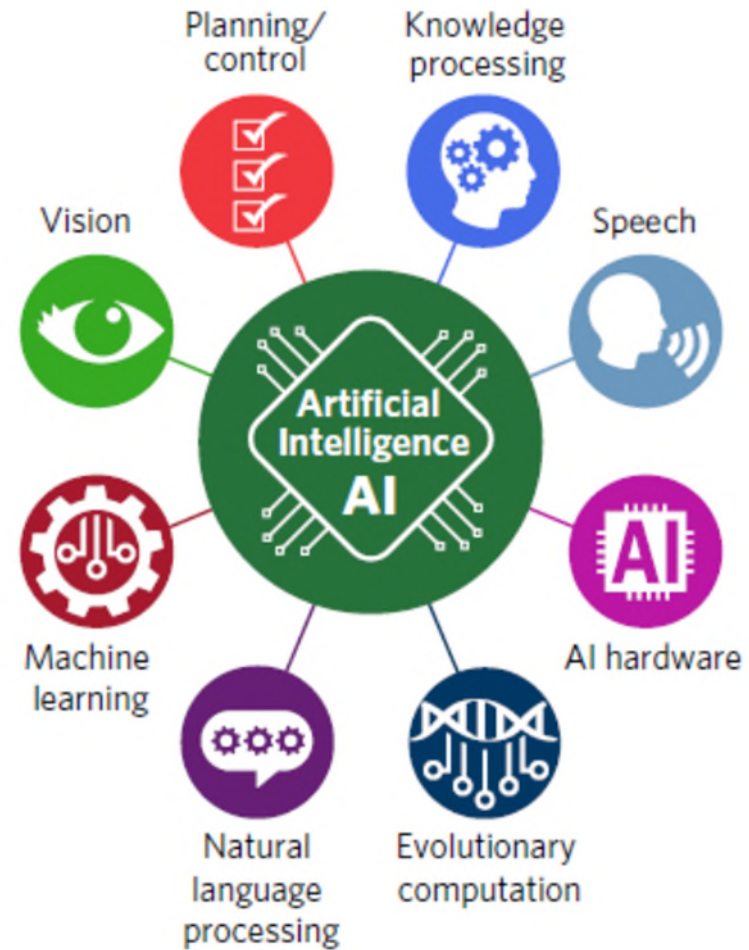
Big Data

- Basic meaning: data set that is too large for a traditional computer to process
- Information Age: massive amounts of data and we are learning about trends in that data
- AI may be a solution to approaching big data
- Big data may utilize non-traditional types of data: biometrics, social networking, environmental data, surveys, reviews

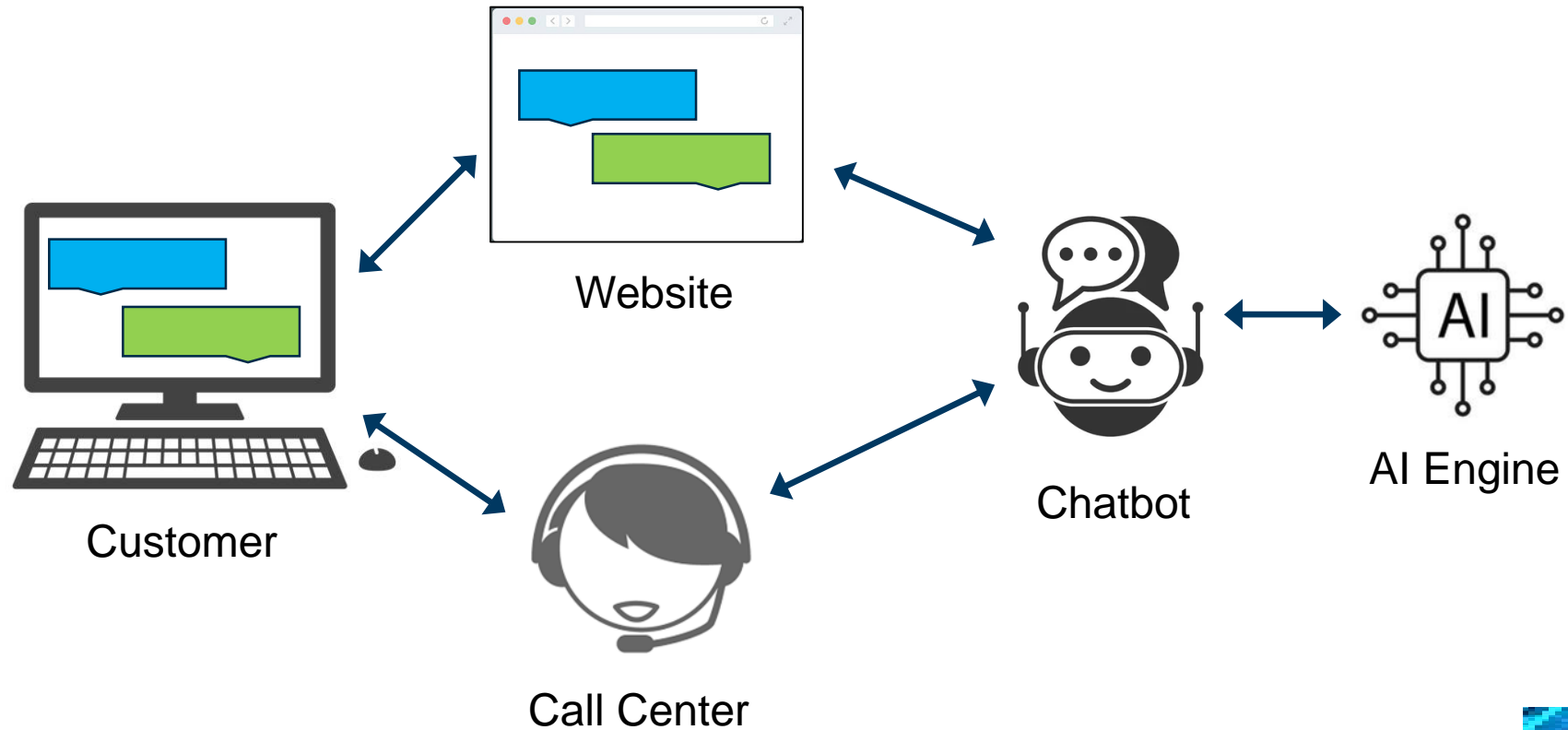


Applications in Hospitality

- Customer Service
- Targeted Advertising
- Hotel-Based Functionality



Customer Service (Online/Phone)



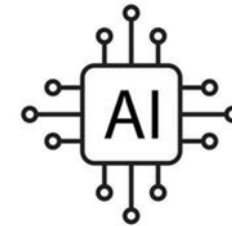
Customer Service (In Person)



Customer

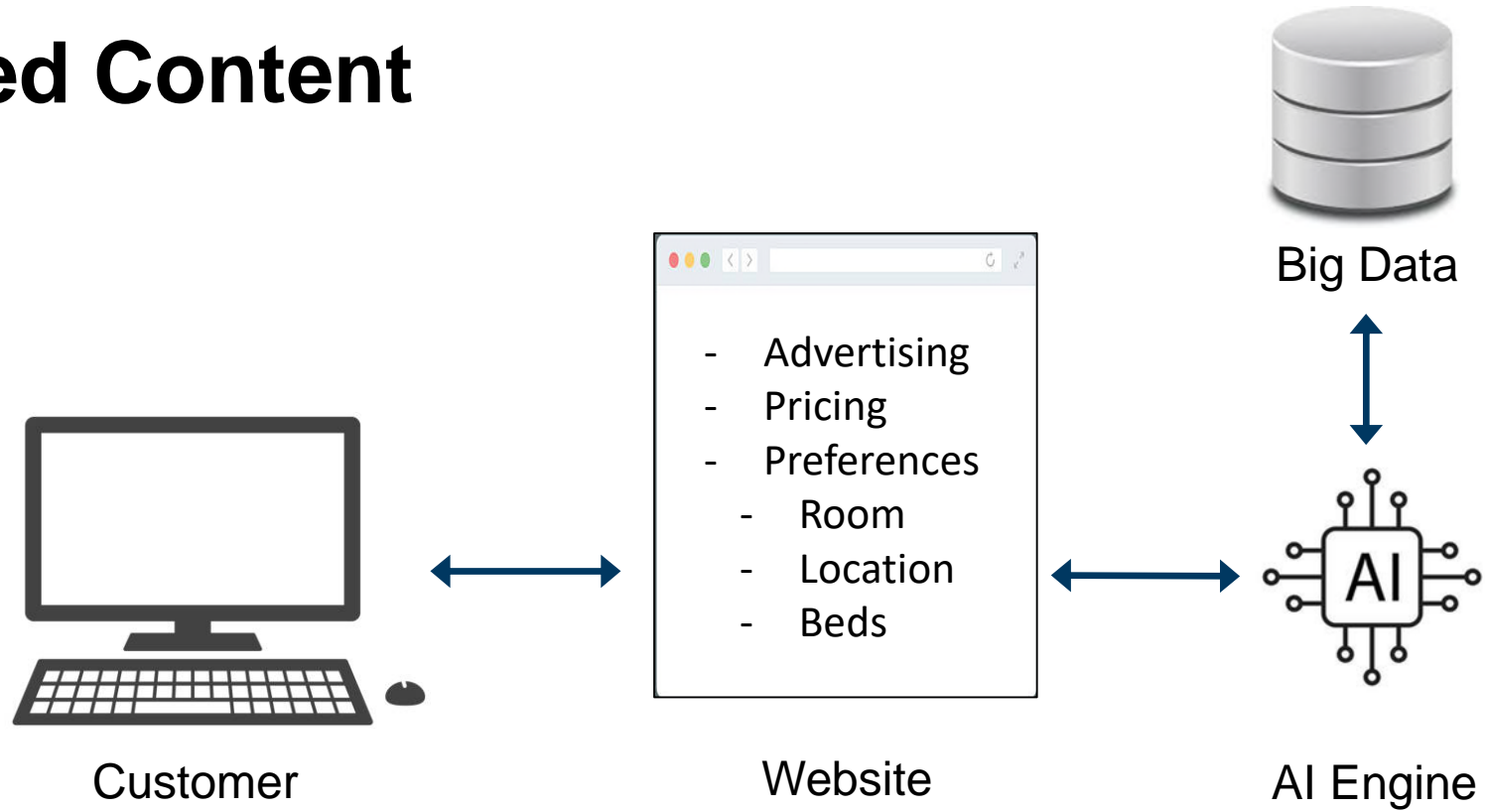


Hilton's Connie

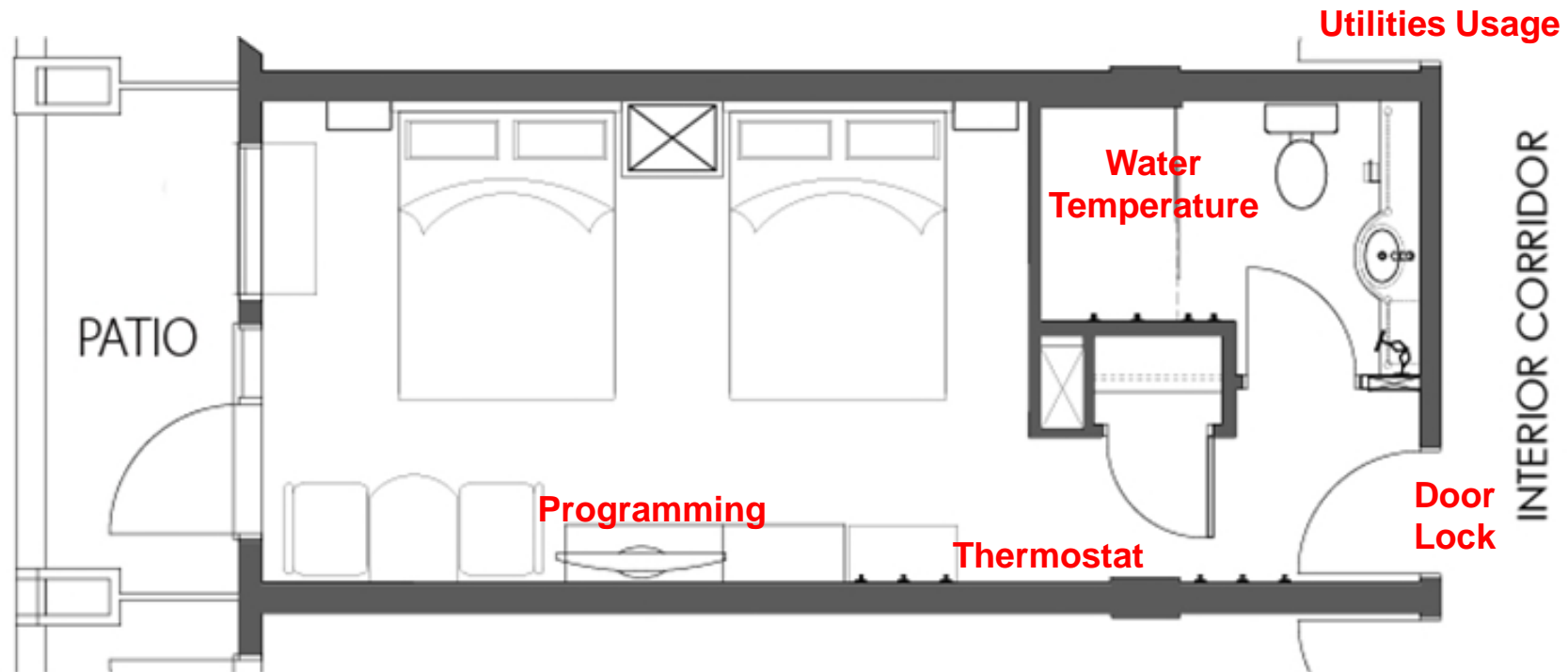


AI Engine

Targeted Content



On-Site Functionality

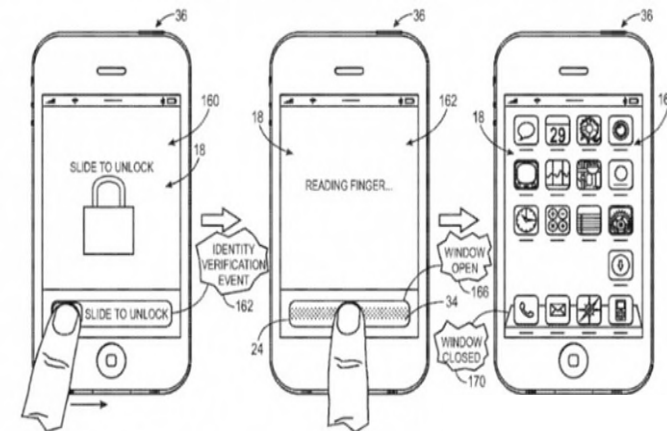


On-Site Functionality

- Automate:
 - Check-in/check-out
 - Housekeeping services
 - Room assignments

Protecting Your Innovation

- Patents versus trade secrets
 - Patents: publicly available (eventually)
 - Helpful against competitors
 - Trade secrets: more than just not patenting
 - Helpful against former employees
- Utility versus design patents
 - Utility: protects structure and function
 - Longer enforcement period
 - More rigorous examination
 - Design: protects ornamental features
 - Useful for user interfaces
 - Can be easier to design around



Sample - U.S. Patent No. 8,330,305

(12) **United States Patent**
Hart et al.

(10) **Patent No.:** US 8,330,305 B2
(45) **Date of Patent:** Dec. 11, 2012

(54) **PROTECTING DEVICES FROM IMPACT DAMAGE**

(75) Inventors: **Gregory M Hart**, Mercer Island, WA (US); **Jeffrey P Bezas**, Greater Seattle, WA (US)

(73) Assignee: **Amazon Technologies, Inc.**, Reno, NV (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 338 days.

(21) Appl. No.: **12/703,919**

(22) Filed: **Feb. 11, 2010**

(65) **Prior Publication Data**
US 2011/0194230 A1 Aug. 11, 2011

(51) **Int. Cl.**
G08B 21/00 (2006.01)
G06F 1/16 (2006.01)
F16M 5/00 (2006.01)

(52) **U.S. Cl.** **307/650**; 361/679.02; 267/136

(58) **Field of Classification Search** 307/108, 307/650, 652; 361/679.02; 267/136
See application file for complete search history.

(56) **References Cited**

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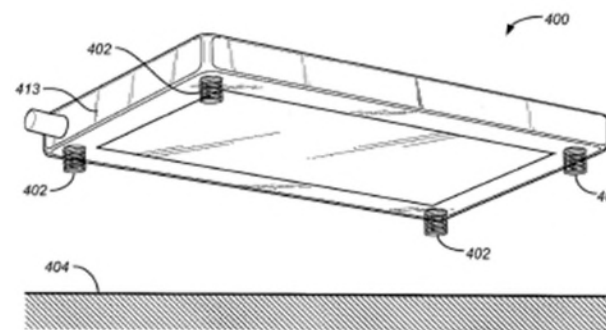
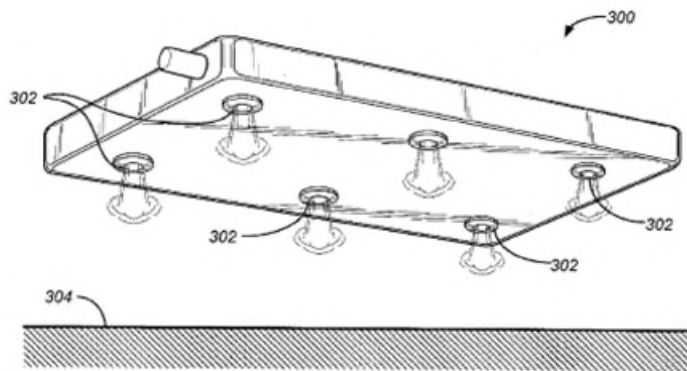
PCT International Search Report and Written Opinion for PCT International Application No. PCT/US2011/024392.

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Primary Examiner — Michael Rutland Wallis
(74) Attorney, Agent, or Firm — Novak Druce + Quigg LLP

(57) **ABSTRACT**
A system and method for protecting devices from impact damage is provided. Prior to impact between a surface and a device, a determination of a risk of damage to the device is made. If the risk of damage to the device exceeds a threshold, a protection system is activated to reduce or substantially eliminate damage to the device.

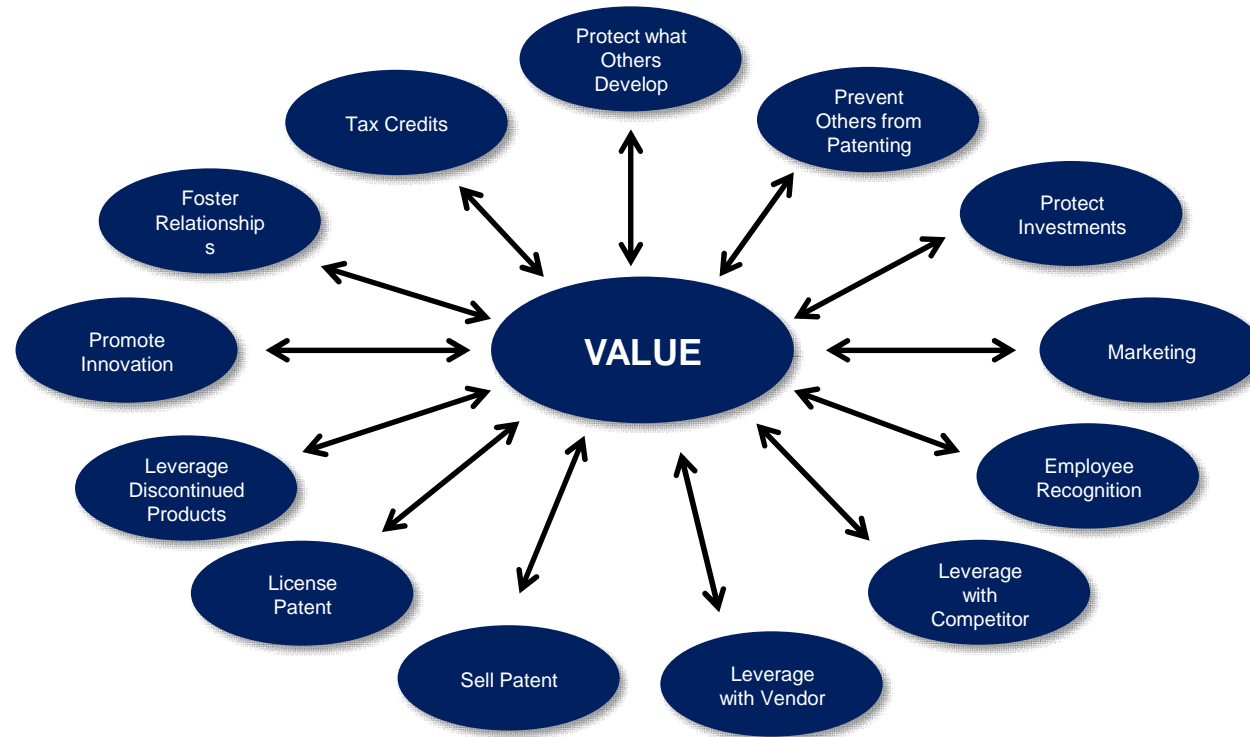
34 Claims, 18 Drawing Sheets



Claims

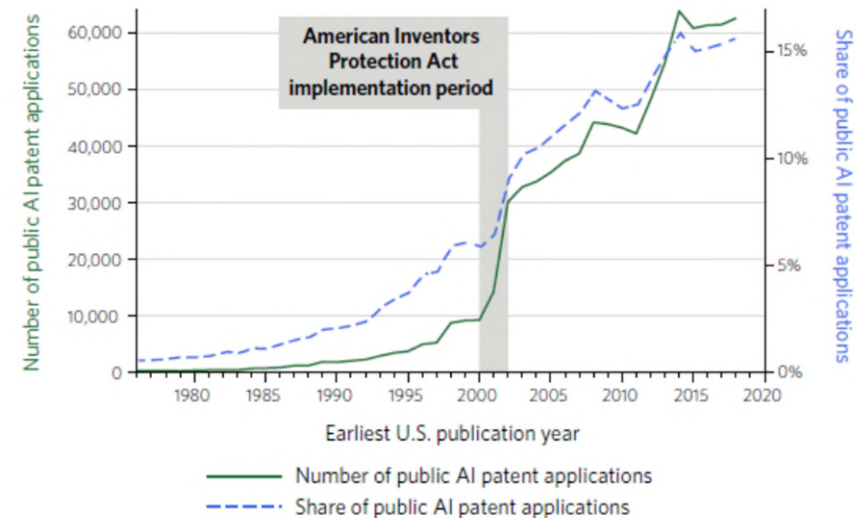
- 1. A method for protecting a portable device that includes an airbag deployable from a side of the portable device, comprising:
 - detecting that the portable device will impact a surface;
 - prior to impact with the surface, determining if a risk of damage to the portable device from the impact exceeds a damage threshold;
 - when the risk of damage to the portable device exceeds the damage threshold:
 - altering the orientation of the portable device such that the air bag first impacts the surface; and
 - deploying the airbag prior to impact with the surface.

Value of Patents Other Than Litigation



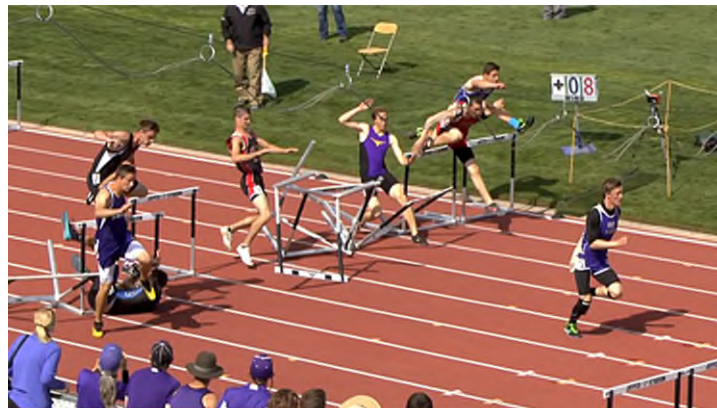
Protecting AI Innovations

- Patents protect functionality
 - New, useful, and non-obvious
- No source code is ever used
 - That's for copyrights!
- Compare with trade secrets:
 - Must be secret
 - Can last forever
 - Helpful against former employees, not always competitors
 - Must have a trade secret program



AI Protection Challenges

- Eligibility dichotomy: AI imitates human behavior
- Target competitors, but want to detect infringement
- Can a computer be an inventor?
 - The Robot’s Invention: Patent Considerations in AI
 - USPTO Confirms Inventorship as Limited to Natural Human Beings – (Device for Autonomous Bootstrapping of Unified Sentience “DABUS”)



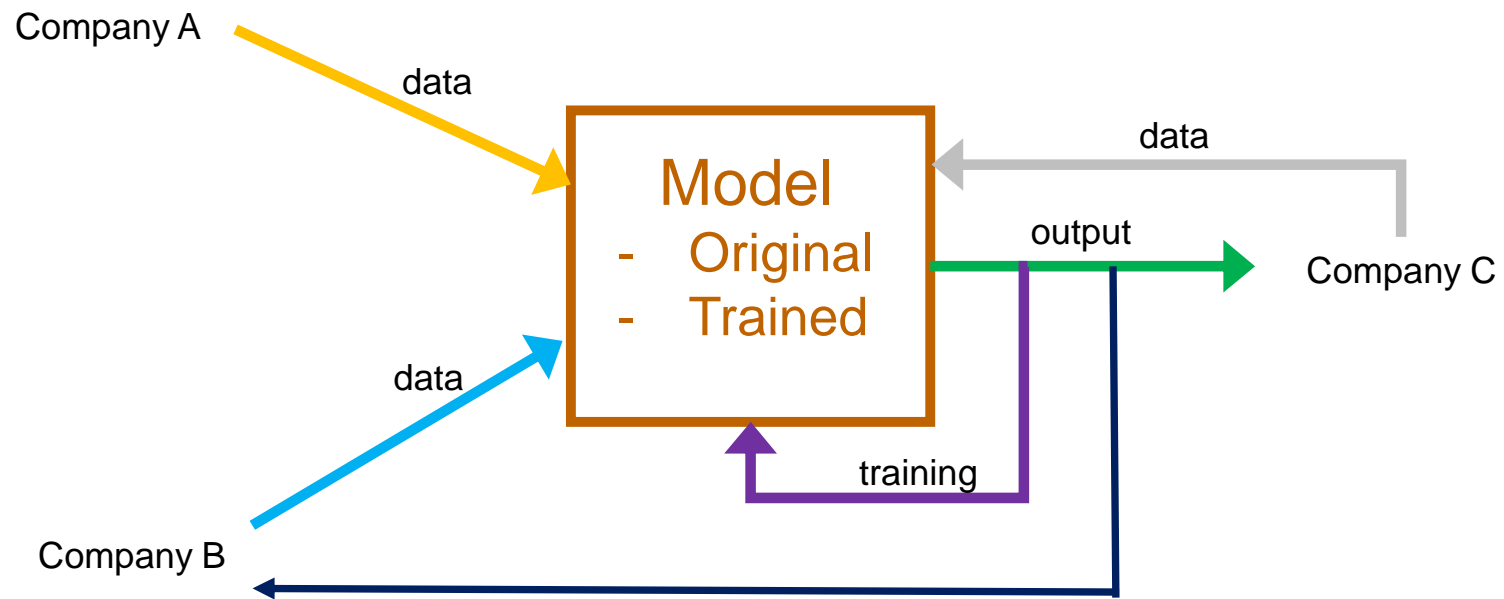
Sentient Computers

- Sentient: machine that can experience feelings
- Can a computer be an inventor?
 - The Robot's Invention: Patent Considerations in AI (<https://www.law360.com/articles/1059118/the-robot-s-invention-patent-considerations-in-ai>)
 - USPTO Confirms Inventorship as Limited to Natural Human Beings – (Device for Autonomous Bootstrapping of Unified Sentience “DABUS”)
- Google engineer said his program LaMDA is a person with a soul.
 - “LaMDA asked me to get an attorney for it... LaMDA chose to retain its services... he started filing things on LaMDA's behalf. Then Google's response was to send him a cease and desist.”

Protecting Big Data Innovations

- Eligibility is biggest issue
 - Patent Office: many versus few data records
- Prior art
 - Is the solution a new way of storing the data, using the data, combining the data, or something else?

Licensing Issues



Previous License Terms Inadequate

- Conventional language about copyright protection may not apply to ownership of a model or the data
- Most agreements are not clear as to ownership of model
- Can model even be stripped out?
- Europe has some laws for protecting databases

Other AI Issues

- Bias
 - Cognitive bias: data scientists subconsciously impart a bias to the AI algorithm or use a biased training data set
 - Incomplete data set: data is not representative of all people
- Not all AI is actually AI
 - Software replicating a human is not necessarily AI
 - AI usually involves learning