

Emerging Trends Radar Screen

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**"The future is already
here, it's just not evenly
distributed."**

William Gibson

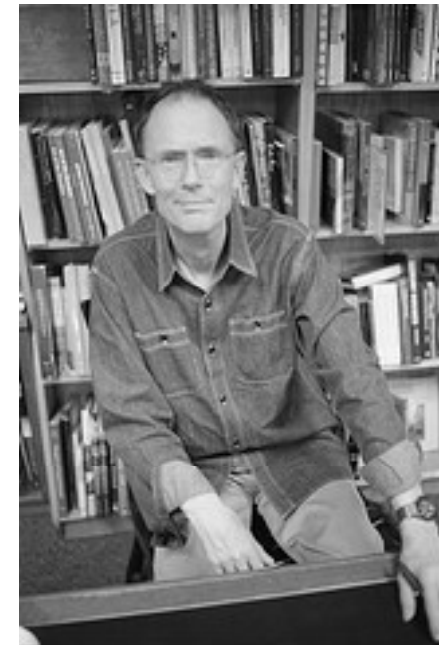
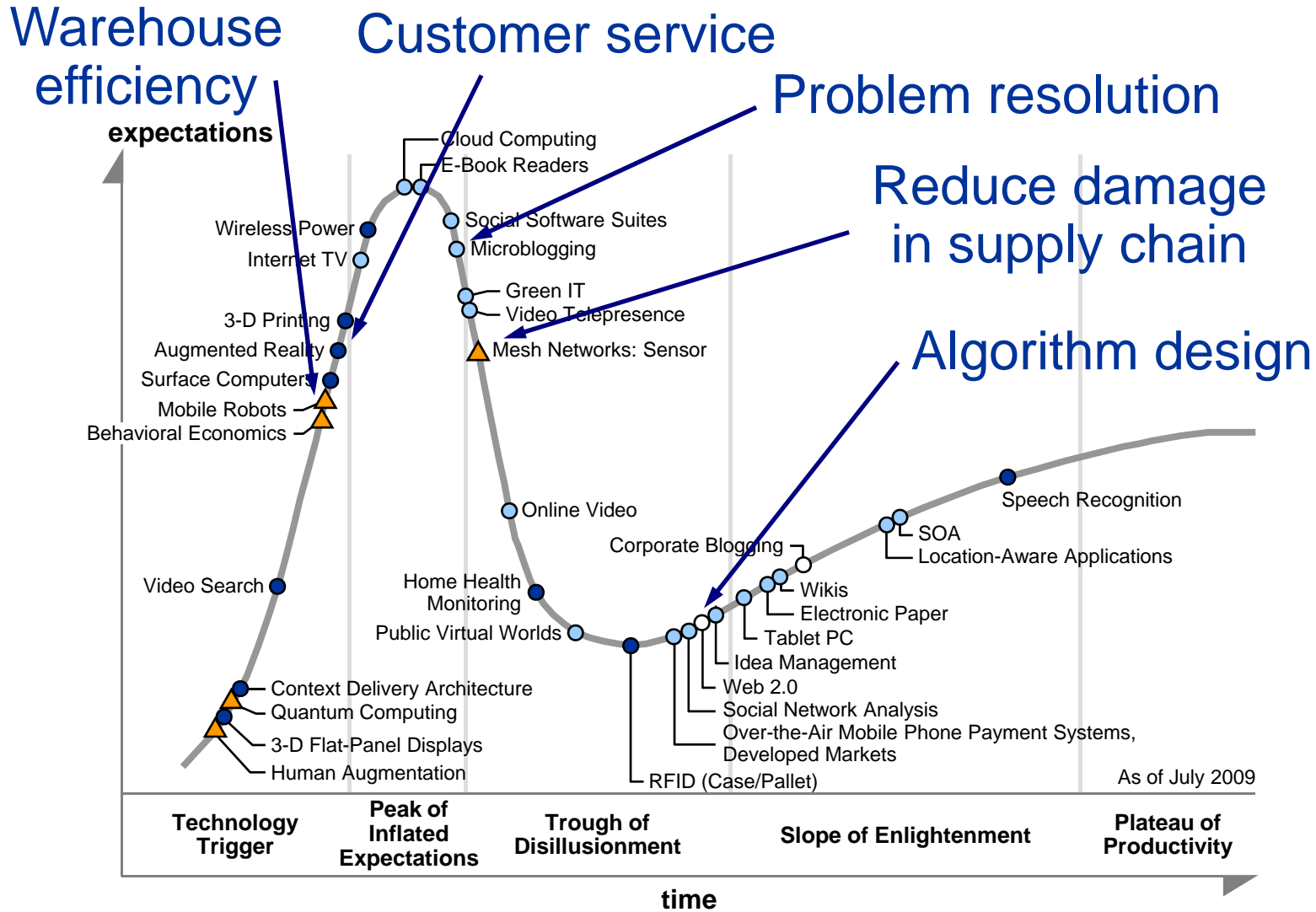


Photo: Midnightzulu

Real Value From Early-Stage Technologies



Years to mainstream adoption:

○ less than 2 years

○ 2 to 5 years

● 5 to 10 years

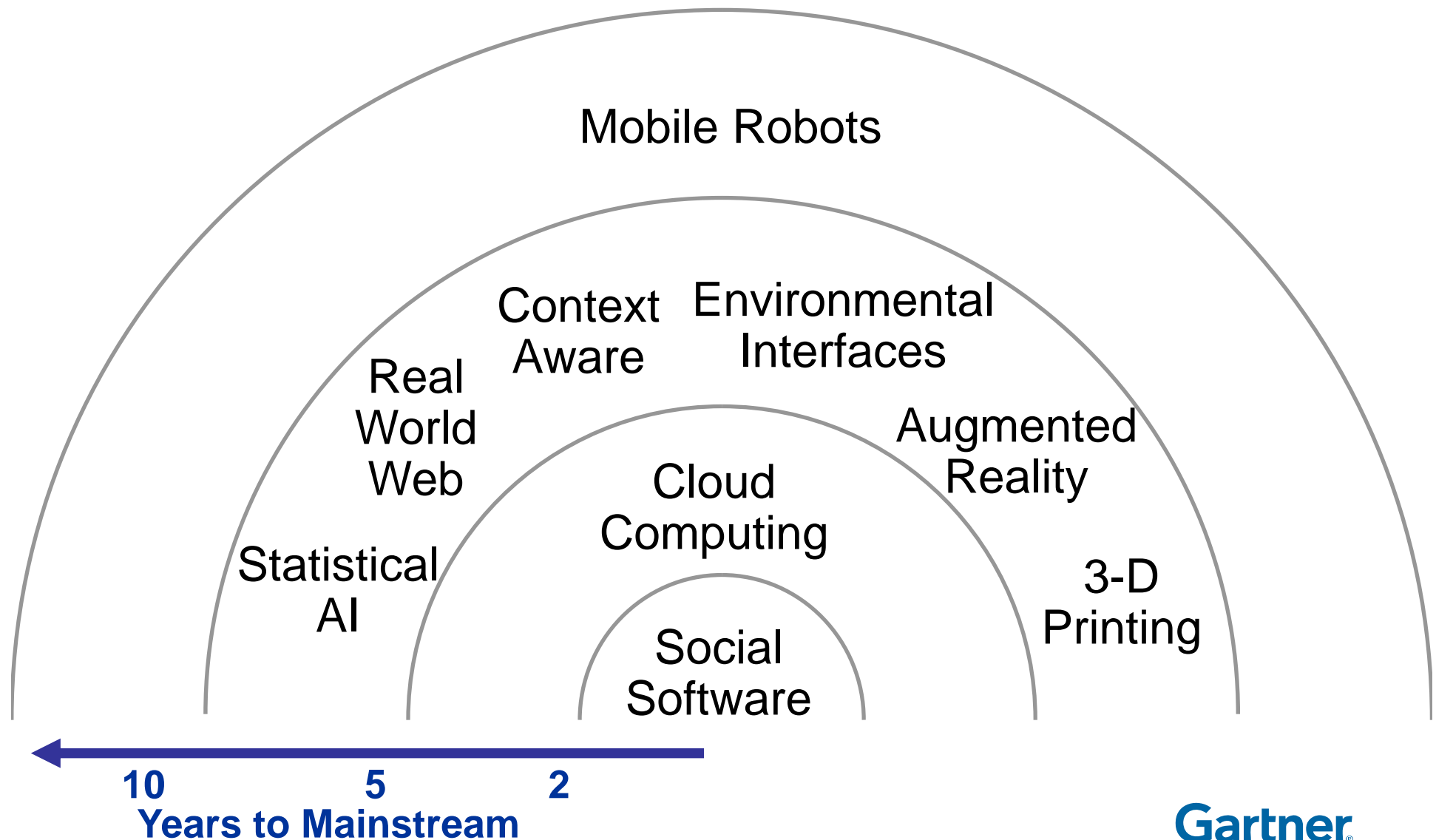
▲ more than 10 years

⊗ obsolete before plateau

Key Issues

1. What are the most disruptive trends and the most significant opportunities arising from emerging technologies?
2. Which emerging and embryonic technologies should organizations be examining for competitive advantage?

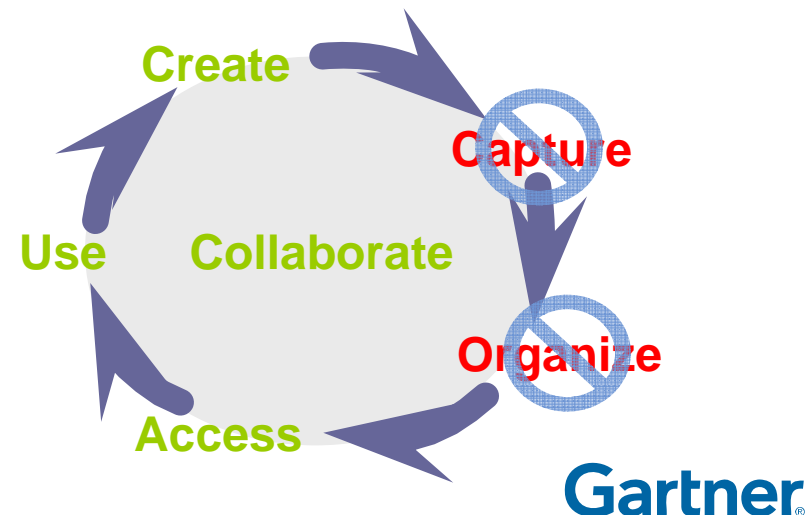
Emerging Trends Radar Screen



Social Software: The Next Stages of the Journey

- Crowdsourcing and collective Intelligence
 - Open innovation and ideation
 - Innovation marketplaces
 - Task completion
 - Ratings, reputation and trust
- Internal collaboration
 - Consumer-led innovation and adoption continues
 - Try "adopter-style" rollouts
- Knowledge management reborn
 - Tacit knowledge captured as a side-effect of communication

Rank	Team Name	Best Score	% Improvement	Last Submit Time
1	The Ensemble	0.8553	10.10	2009-07-26 18:38:22
2	BellKor's Pragmatic Chaos	0.8554	10.09	2009-07-26 18:18:28
Grand Prize - RMSE <= 0.8563				
3	Grand Prize Team	0.8571	9.91	2009-07-24 13:07:49
4	Opera Solutions and Vandelay United	0.8573	9.89	2009-07-25 20:05:52
5	Vandelay Industries!	0.8579	9.83	2009-07-26 02:49:53
6	PragmaticTheory	0.8582	9.80	2009-07-12 15:09:53
7	BellKor in BigChaos	0.8590	9.71	2009-07-26 12:57:25
8	Dace	0.8603	9.58	2009-07-24 17:18:43



Cloud Computing: Reshaping IT

"All that matters is results; I don't care how it is done."

"I don't want to own assets — I want to pay for elastic usage, like a utility."

"I want accessibility from anywhere, from any device."

"It's about economies of scale, with effective and dynamic sharing."

Acquisition Model
Service

Business Model
Pay for usage

Access Model
Internet

Technical Model
Scalable, elastic, shareable

Cloud Computing:
A style of computing in which massively scalable IT-enabled capabilities are provided "as a service" across the Internet to multiple external customers

The cloud extends the elastic economic model to the process.



Statistical AI: New Sources Help Old Problems and Bring New Opportunities

From	To
"Strong" artificial intelligence	Functional equivalence
Knowledge-based systems and rules	Huge example bases
Inferencing	Machine learning



Dramatic improvements in:

Speech recognition

Machine translation

Image recognition

Backed up by (human) crowdsourcing

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Real World Web: Unifying the Digital and Physical Worlds

Location identification and geo-tagging

Object identification:
RFID, QR bar code, image recognition

Sensor networks:
temperature, humidity, acceleration, light



Consumer services

Environmental monitoring

Supply chain improvements

Collective sensing

Augmented reality



Source: Violet



Source: Sensor Wireless



Source: Sensor Wireless

The Emerging Architecture of Context-Aware Computing

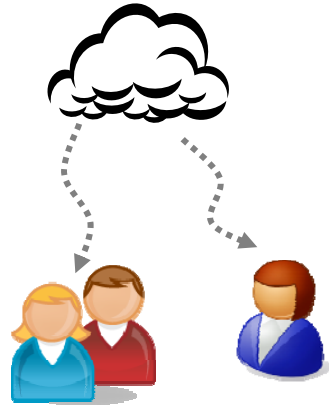
Pre-context



Presence,
PIM

2009

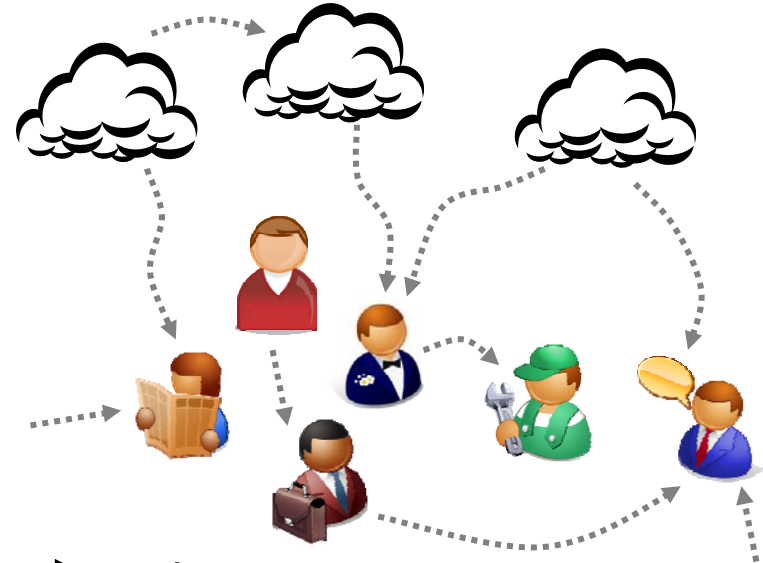
Simple systems &
walled gardens



... +
Location,
Identity,
Simple behaviour & habits,
Social networks
Simple proactive alerts

2010 - 2012

Open systems and federations



... +
Sensors, Bio sensors
Adjacent devices & people,
Complex anticipatory behavior,
Complex federated services,
Complex communities

2015 - 2020

Information in Context: Augmented Reality



Source: Nokia



Source: MIT Media Lab

- Context-based information at point of decision/action
- Mobile devices with location information at leading edge of augmented reality
- Emerging wearable and "glanceable" interfaces
- Leveraging "learnable moments": Accenture Personal Performance Coach, views of future self

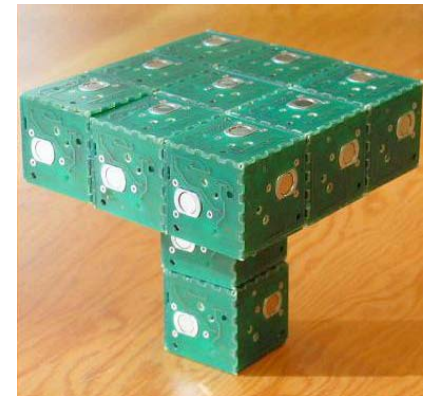
User Interface: The Environment Is the Computer

- Commercialization of gesture and touch technologies
- New display types: flexible, 3-D, projected
- Ambient displays: off the desktop and into the world
- Tangible interfaces
- Speech and handwriting STILL emerging

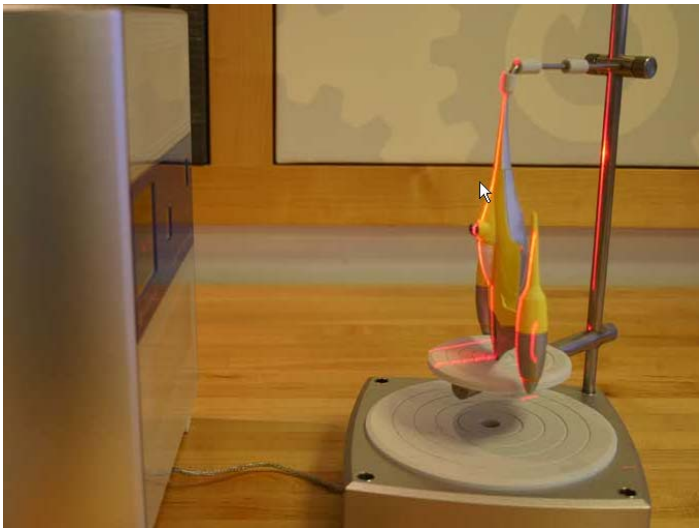


3-D Printing: From \$200K to \$20K

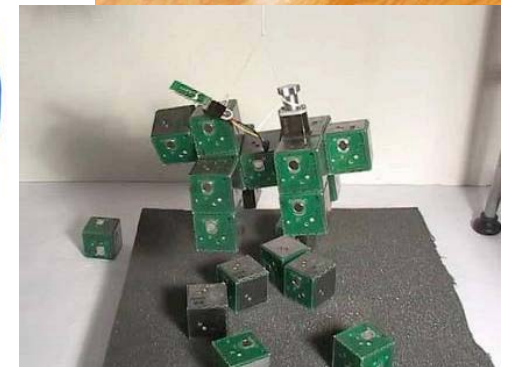
- Industrial prototyping and 3-D faxing — product design, production prototyping, architectural models, medical modeling
- 3-D printing bureaus, home printing of replacement parts
- Scanning and replication
- Challenge — range and combination of materials
- DARPA programmable matter program



Source: NextEngine



Source: Z Corporation



Source: Programmable Matter Research in Daniela Rus's Laboratory at CSAIL MIT

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Mobile Robots Drive Mobile Infrastructure

- Traditional applications: telepresence in hostile environments, autonomous vehicles, cleaning, delivery, toys, companions, humanoids
- Emerging applications in mobile infrastructure: telepresence, RFID, warehousing
- R&D in carrying, lifting and rescue: military, emergency response, home healthcare
- Human augmentation: exoskeletons, walking aids

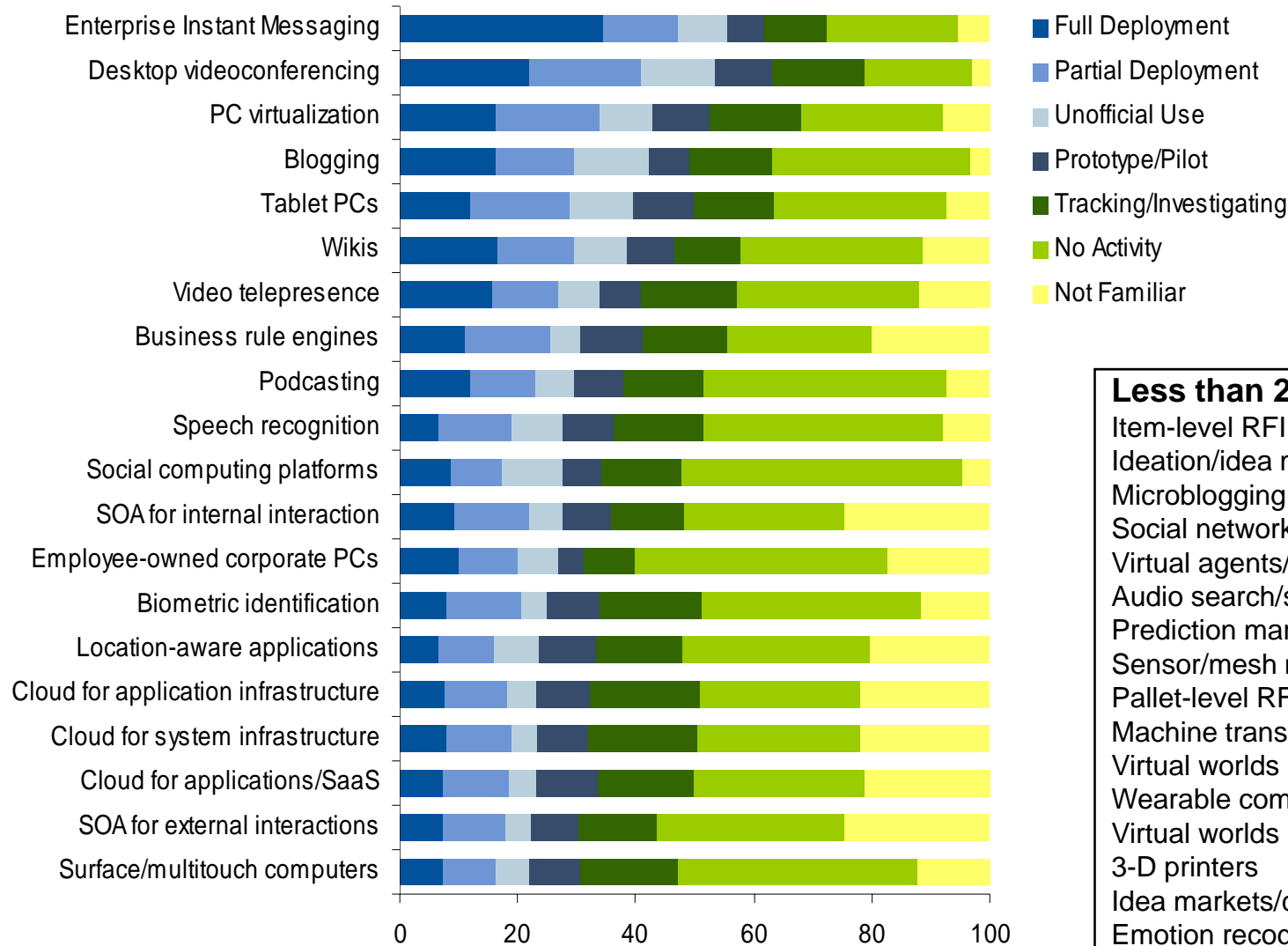


Source: Kiva Systems



Source: Honda News Release

Technology Adoption Survey: Collaboration Technologies Lead



Less than 20%:

- Item-level RFID
- Ideation/idea management (internal)
- Microblogging
- Social network analysis
- Virtual agents/chatbots
- Audio search/speech analytics
- Prediction markets
- Sensor/mesh networks
- Pallet-level RFID
- Machine translation
- Virtual worlds (customer-facing)
- Wearable computers
- Virtual worlds (internal)
- 3-D printers
- Idea markets/crowdsourcing (external)
- Emotion recognition
- Mobile robots

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Source: Gartner Web survey of 444 organizations, conducted in 2H08

Technologies With Most Active Evaluation: Eyes on the Cloud

Technology	Percentage of Respondents Evaluating
Cloud for application infrastructure	27.70
Cloud for system infrastructure	27.25
Cloud for applications/SaaS	26.58
Biometric identification	26.13
Surface/multi-touch computers	25.45
PC virtualization	25.45
Desktop videoconferencing	25.45
Business rule engines	24.77
Location-aware applications	24.10
Tablet PCs	23.87
Speech recognition	23.65
Video telepresence	23.20
Ideation/idea management (internal)	22.52
Social network analysis	22.52
Podcasting	21.85
SOA for external interactions	21.17
Blogging	21.17
SOA for internal interaction	20.72
Social computing platforms	20.50
Item-level RFID	20.05

Your Action Plan

CIOs, CTOs, Architects, Strategic Planners and Emerging Technology Managers Should:

Monday Morning:

- Identify the impact of cloud computing and social computing on today's IT infrastructure and applications.

Your Next 3 Months:

- Use these surveys and "Gartner's Hype Cycle Special Report for 2009" as input to technology planning. What are you missing? Where can you be *selectively aggressive* with emerging technologies to deliver value for YOUR organization?

Your Next 12 Months:

- Find opportunities to exploit context, machine learning, environmental user interfaces and other emerging technologies for near-term value.
- Make sure you have an innovation strategy, and that you follow through on it. Your competitors' focus on innovation and emerging technology is growing.

Related Gartner Research

- ***Gartner's Hype Cycle Special Report for 2009***
Jackie Fenn, Mark Raskino and Brian Gammage (G00169747)
- ***Hype Cycle for Emerging Technologies, 2009***
Jackie Fenn (G00169368)
- ***Cool Vendors 2009: Changing Models and Changing Times***
Frank Kenney and Daryl Plummer (G00167666)
- ***Findings: Poll Shows Increasing, but Shorter-Term, Focus on Emerging Technologies***
Jackie Fenn (G00166414)
- ***Mastering the Hype Cycle: How to Choose the Right Innovation at the Right Time***
Jackie Fenn and Mark Raskino

