



Clouds Ahead - A Sign of Positive Things to Come

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The Emergence of Cloud Computing and Other Cloud Services in the Life Science Industry

As one of the hottest new trends in information technology, cloud services promise to transform the storage, analysis, and management of data within and across the health industry spectrum in the years to come. “Hype” or reality, which will prove out.

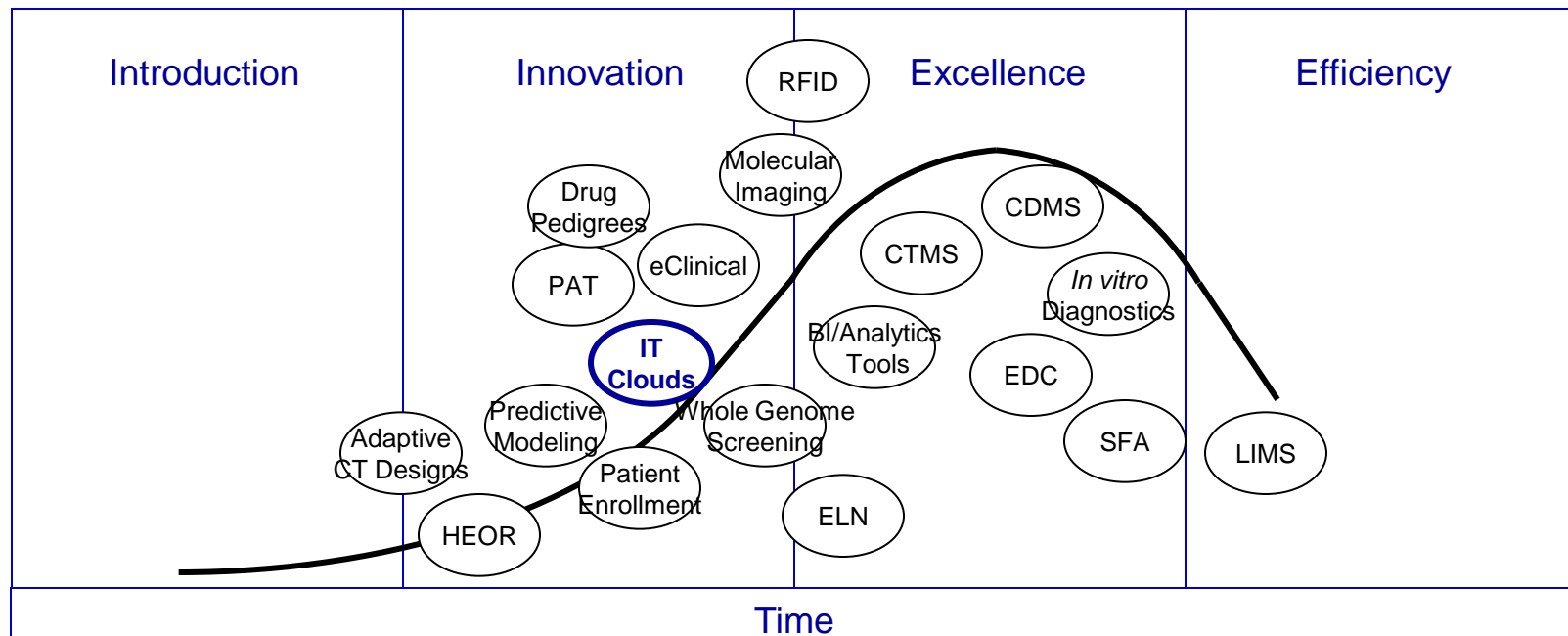
Agenda

- Innovation phase of adoption
- Definitions
- IDC market survey
- Adoption predictions
- Commercial vendors
- Business Pressures
- Panel Discussion



US Life Sciences Technology Adoption Map

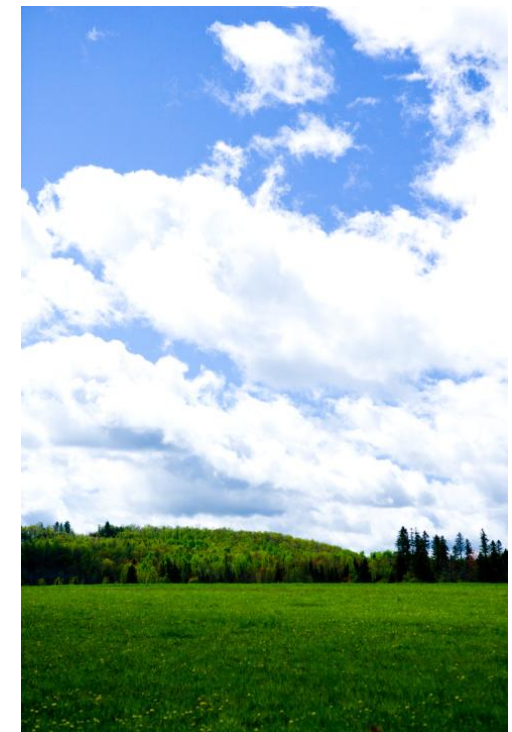
The use of IT clouds in the life science industry lies squarely at the innovation stage. Adoption has occurred much more rapidly than historical adoption of new technologies, in part due to increased willingness by the industry to evaluate new and innovative solutions in an environment of



IDC Definition of Cloud Services

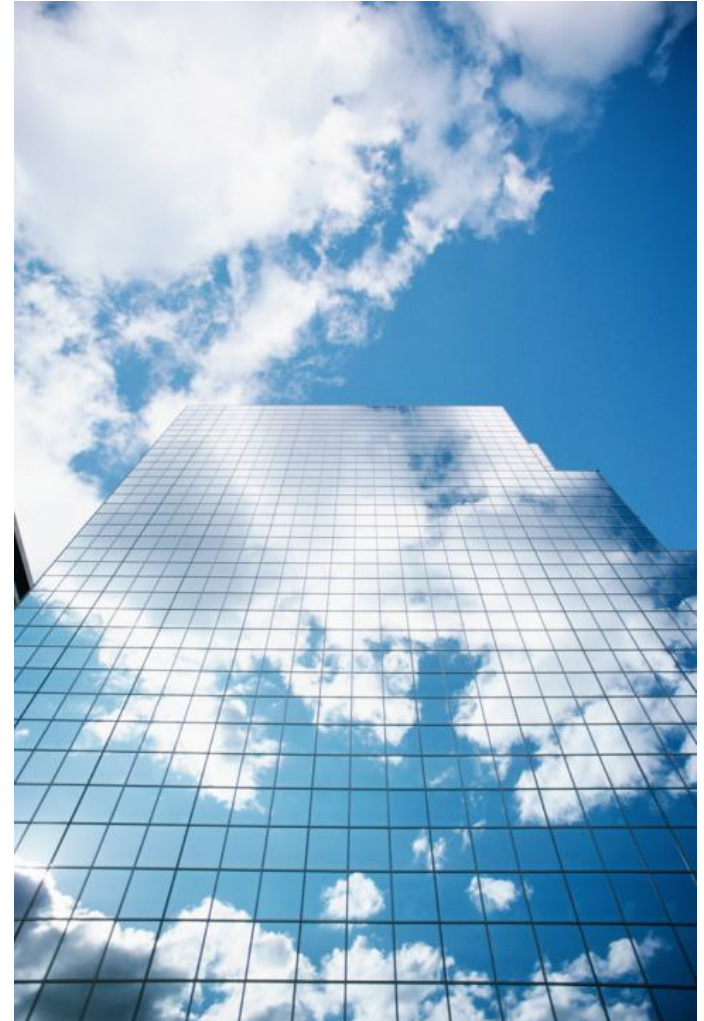
IDC defines public cloud services to be business and consumer products, services, and solutions delivered and consumed in real time over the Internet. Further, the cloud solution has all or most of the following characteristics (and is on an evolutionary path to support all of them in the future):

- **Shared, standard service.** Built for a market (public), not a single customer
- **Solution-packaged.** A "turnkey" offering; integrates required resources
- **Self-service.** Admin and provisioning; may require some "onboarding" support
- **Elastic scaling.** Dynamic and fine grained
- **Use-based pricing.** Supported by service metering
- **Accessible via the Internet.** Ubiquitous (authorized) network access
- **Standard UI technologies.** Browsers, RIA clients, and underlying technologies
- **Published service interface/API.** Web services and other common Internet APIs



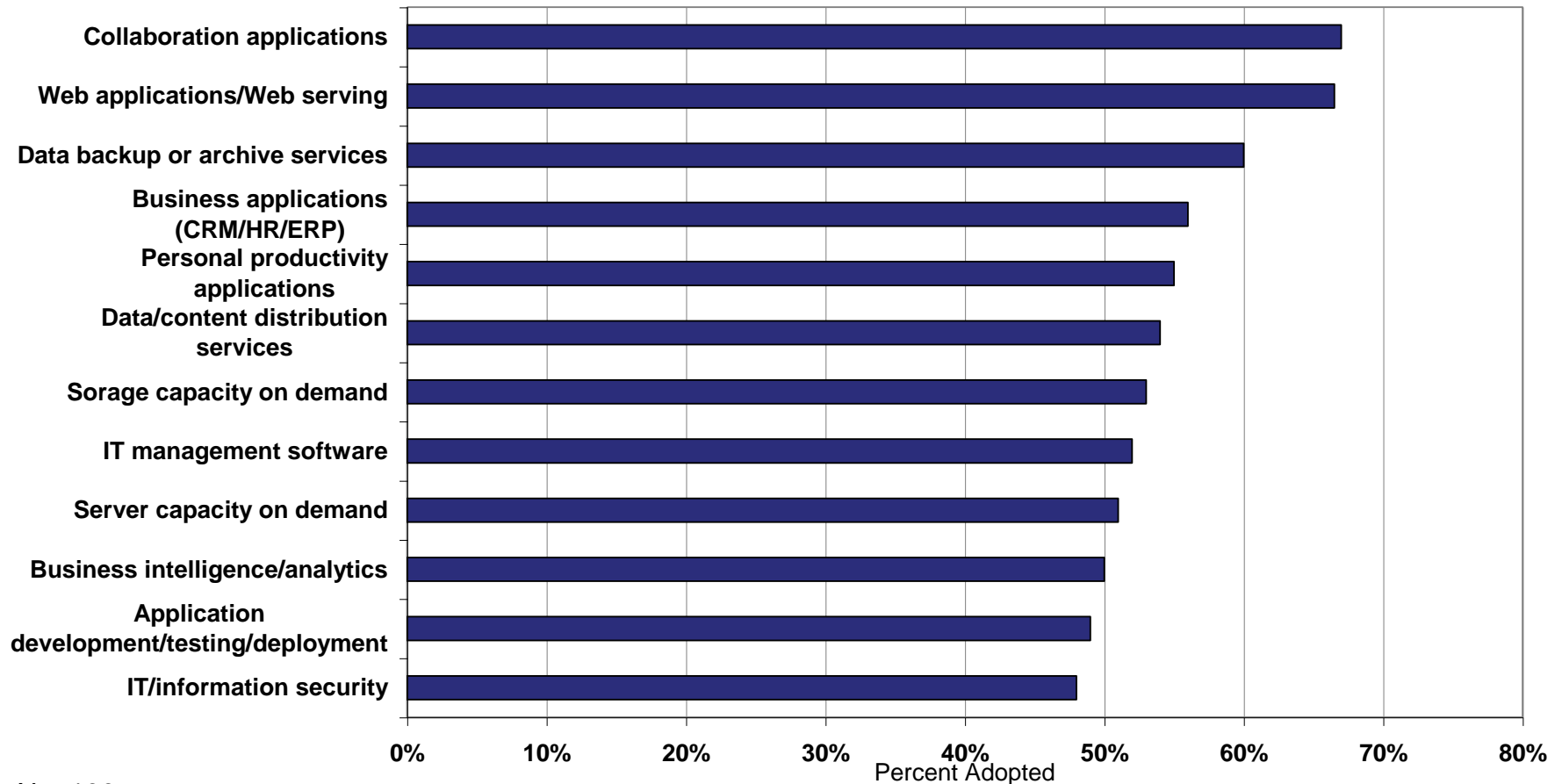
The IDC HI Definition of Cloud Services

“At its root, a cloud is a completely virtualized IT infrastructure, composed of computing capabilities and dedicated virtual storage that can be accessed via the web.”



The IDC and the Cloud

End-user cloud-based Applications, 3Q09



N = 100

Source: IDC Enterprise IT Panel 2009

Our View of Cloud Services Adoption

As a relatively new technological innovation with its commercial roots extending back to 1999, cloud services have experienced an unusually rapid adoption by the life sciences industry. Buoyed by industry transformation, cloud services are providing near term value and may offer long term opportunity. We anticipate a phased approach to the adoption of cloud services, described below.

Early adoption:

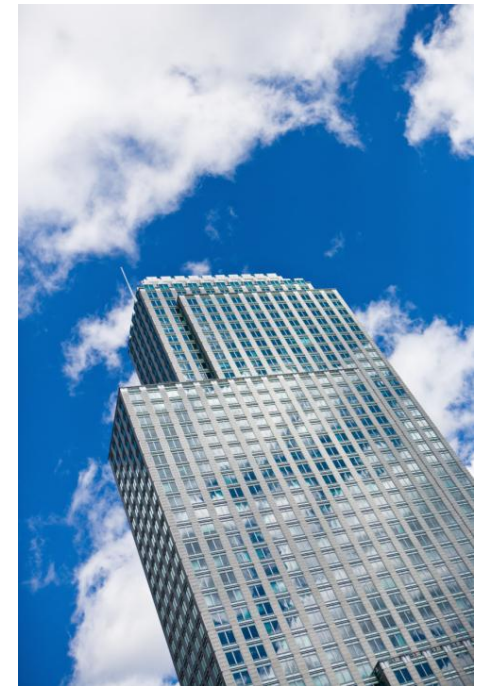
- Discovery research IT infrastructure
- Commercial software hosting
- Commercial SaaS offerings

Middle adoption:

- Translational research patient data
- Internal clouds
- Partnership common IT infrastructure

Late adoption:

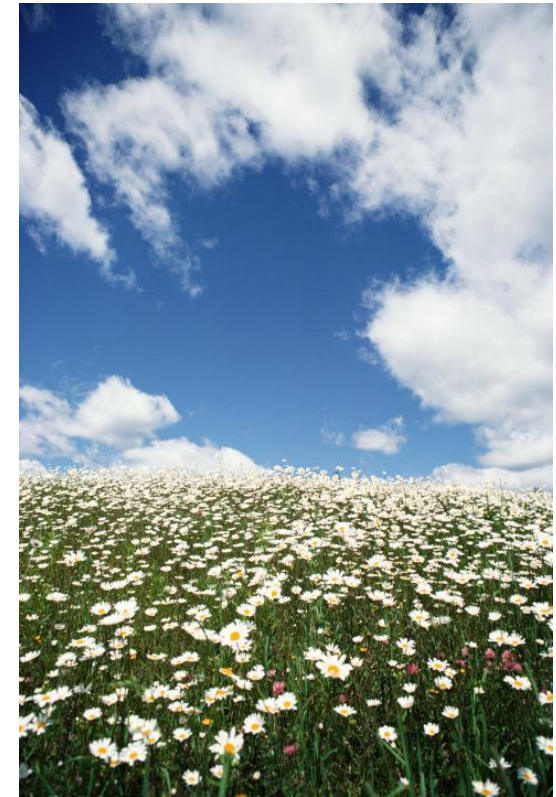
- Clinical development studies
- M&A information management



Commercial Cloud Services Vendors

As a relatively new technological innovation with its commercial roots extending back to 1999, cloud services have experienced an unusually rapid adoption by the life sciences industry.

- **Amazon Web Services**
- **Appnexus “Netezza in the Cloud”**
- **Google Code**
- **HP Cloud services**
- **IBM cloud solutions**
- **Others, including Cycle Computing, Isilon, Nirvanix, ParaScale, Siemens, StrataScale**

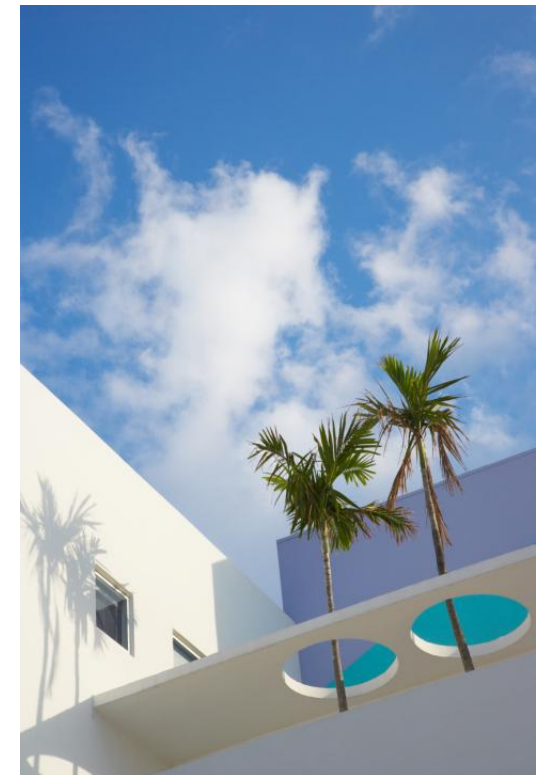


Cloud Service Business Pressures

As with all emerging technologies, cloud services provide both opportunity and risk as companies consider whether to test the waters. Key drivers supporting cloud services adoption include:

Drivers

- Cost savings
- Outsourcing non-core competencies
 - Eliminate capital costs, IT overhead, routine maintenance, upgrades, obsolescence
- Agility to respond to changing needs
 - On demand scalability
 - Geometric data growth
 - Predictive modeling computational horsepower
- Geographically independent collaboration environment

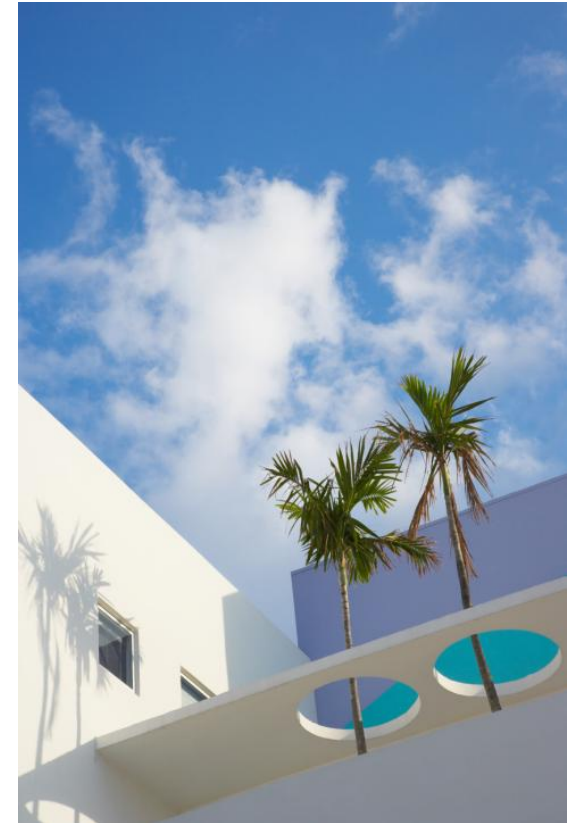


Cloud Service Business Pressures

On the converse, risks include:

Risks:

- Data security
 - Interim opportunity: internal enterprise cloud services
- Vendor stability
- Data privacy issues
- Difficulty in moving data between vendors



Panel Discussion

Looking forward...

- Panelist opening thoughts
- Best practices
- Hurdles to adoption



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