The Most Promising Use-cases of Enterprise Blockchain Adoption

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Phil Fersht, CEO and Chief Analyst, HfS Research

**Overview:**
- Industry analyst, author, speaker, strategist, entrepreneur and blogger
- 20 years’ in the global IT and business process outsourcing and shared services industry spanning analyst and consulting roles
- Coined the As-a-Service Economy in 2014
- Coined The Digital OneOffice™ in 2017
- Advised and on 100’s of global IT services, BPO and shared services engagements
- Oversees the largest global network of enterprise services and operations professionals

**Career Experience:**
- Founded HfS Research in 2010, overseeing an unprecedented growth story in the analyst industry
- Practice Lead, Global IT Services & BPO Research, Gartner, Inc
- Global BPO Marketplace Leader, Deloitte Consulting
- Consulting Practice Head, IDC Asia/Pacific
- European IT Markets Practice Lead, IDC Europe

**Education:**
- BSc. Honors in Business & Technology, Coventry University, UK
- Diplôme Universitaire de Technologie in Business & Technology, University of Grenoble, France

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Blog: horsesforsources.com
The HfS Mission & Vision: Deconstructing Business Operations

- HfS’ mission is to provide visionary insight into the major innovations impacting business operations: automation, artificial intelligence, blockchain, Internet of Things, digital business models and smart analytics. We focus on the future of operations across key industries.

- We influence the strategies of enterprise customers to develop operational backbones to stay competitive and partner with capable services providers, technology suppliers, and third party advisors.
HfS RESEARCH, BY THE NUMBERS

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>Horses for Sources blog founded</td>
</tr>
<tr>
<td>2010</td>
<td>HfS Research founded</td>
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<tr>
<td>23,000+</td>
<td>Members of the HfS LinkedIn community</td>
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<td>100,000+</td>
<td>Subscribers to the blog, website and communications</td>
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<tr>
<td>1,000,000+</td>
<td>Annual pageviews on the HfS network of sites</td>
</tr>
</tbody>
</table>

OUR CLIENTS AND SUBSCRIBERS

- THEY’RE INFLUENTIAL
  - 74% C-level, VP, Director or Managers from multiple industries

- THEY’RE BUYERS
  - 40% are buyers or evaluators

- THEY’RE EAGER TO PARTICIPATE
  - 93% want to discuss global business initiatives

- THEY’RE WILLING
  - 79% want to participate in HfS surveys
Analyst 2.0: Knowledge and Influence that impacts and educates

**KNOWLEDGE**
- HfS ThinkTank
- Global Analyst Team and Unrivalled Market Data

**INFLUENCE**
- Annually One Million Readers
- Summits for Operations Leaders
- The Leading Publisher of Operations Research

Interview Enterprise Customers within the Global 2000 each year
Upcoming FORA Summits

www.hfsevents.com

New York – March 2018
Sydney & Melbourne – April 2018
Cambridge UK – July 2018
Bangalore – September 2018
Boston – November 2018
Success in the future will be determined by how well clients and service providers are able to combine the power of multiple change agents into integrated solutions that solve crucial business problems.
The insights in this webinar are based on HfS’ assessment of 20+ leading blockchain providers, 200+ blockchain engagements, and multiple client interviews.

20+ leading blockchain solution providers assessed

Sources include clients, providers, and advisors and influencers of blockchain services

- **Data on 200+ blockchain engagements** was collected via RFIs, interviews, briefings, and publicly available information sources Q3 2017

- **Tales from the Trenches**: Interviews with buyers who have evaluated service providers and experienced their services

- **Sell-Side Executive Briefings**: Structured discussions with service providers regarding their vision, strategy, capability, and examples of innovation and execution

- **Publicly Available Information**: Thought leadership, investor analyst materials, website information, etc.
Saurabh Gupta, Chief Strategy Officer, HfS Research

Overview:
- Oversees HfS’ global research function managing the global team of analysts across US, Europe, and Asia-Pac
- Works closely with the CEO to set the strategic research focus and agenda for HfS Research
- Leads HfS’ research in business services (e.g., finance, procurement, HR & payroll, and industry-specific) and horizon 3 change agents (e.g., blockchain)
- 15+ years’ in the global IT and business process outsourcing and shared services industry spanning analyst, consulting, service provider, and client roles
- Authored over 125 research reports, is a frequent speaker, and advises digital operations executives

Career Experience:
- Led strategy for Genpact’s CFO and transformation services
- Shape the Business Process Services (BPS) strategy for AbbVie
- Managed Everest Group’s global BPS practice
- Worked as a techno-functional consultant at Infosys

Education:
- MBA (Gold medalist) from IIT Bombay
- Mechanical Engineer from Delhi College of Engineering
We thought RPA was hyped....and then came blockchain

Price to Sales (PSR) ratios as we enter 2018
(PSR = Market capitalization / revenues)

2.27  
S&P 500  
(record all-time high historically!)

1.99  
Global Service Providers  
(IBM, Accenture, Capgemini)

3.53  
India-heritage Service providers  
(TCS, Cognizant, Wipro, Infosys)

25-50  
RPA providers

500+  
Enterprise blockchain

Reality

Fantasy?

Sources of information
• S&P 500 PSR: multipl.com
• Global and India Heritage Service Providers: Y Charts and financial reports
• RPA providers: HfS estimates
• Enterprise blockchain: Coinmarketcap.com and HfS estimates
The nascent Enterprise Blockchain Services will grow by 100%+ in 2018 to cross $1 Billion

1. Coinmarketcap.com as of Jan 18, 2018 4:00 AM UTC
2. HfS estimates based on 2017 headcount assessment of 20+ leading blockchain service providers
The blockchain ecosystem has multiple sets of players

**Blockchain provider ecosystem**

<table>
<thead>
<tr>
<th>Blockchain Solution Providers</th>
<th>Service Providers</th>
<th>Consulting Firms</th>
<th>Consortiums</th>
<th>Startups</th>
<th>Academia, regulators, and not-for profits</th>
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<td><strong>Blockchain Tools and Software Providers</strong></td>
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<td>Bitcoin</td>
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<td>Hyperledger Fabric</td>
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<td>Ethereum</td>
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<tr>
<td>Stellar</td>
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<td>MultiChain</td>
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<td>CorDana</td>
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<tr>
<td>Chain</td>
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<tr>
<td>Monax</td>
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Illustrative, not comprehensive
Distributed ledgers, blockchain, and smart contracts are interrelated, but different

A **distributed ledger** is replicated, shared, and synchronized digital data geographically spread across multiple sites, countries, or institutions.

*Distributed Ledgers do not have a central administrator. They are based on peer-to-peer networks with a consensus algorithms*

**Blockchain** is a distributed ledger used to maintain a continuously growing list of records, called blocks. Each block contains a timestamp and a link to a previous block. By definition, blockchains are inherently resistant to modification of the data. Once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks and a collusion of the network majority.

*All blockchains are distributed ledgers, but not vice versa*

**Smart contracts** are computer protocols that facilitate, verify, or enforce the negotiation or performance of a contract, or that obviate the need for a contractual clause.

*Not all blockchain frameworks support smart contracts*
There are six built-in features of blockchains that manifest into a disruptive potential over the long run for enterprises

The Blockchain “Six-Pack”

<table>
<thead>
<tr>
<th>Distributed shared data</th>
<th>Consensus-driven trust</th>
<th>Immutable transactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>over peer-to-peer (P2P) network reduces single points of failure</td>
<td>trust cuts out the middle-man</td>
<td>ensure trust</td>
</tr>
<tr>
<td>Hashing-based data ensures integrity and security</td>
<td>Automated smart contracts promote touchless interactions across process chains</td>
<td>Permissioned and permissionless flavors give enterprise users flexibility</td>
</tr>
</tbody>
</table>
The market is witnessing an explosion in blockchain PoCs and pilots but in-production solution are few and far between

1. Strategic advisory
   - 30%
   - Identifying blockchain-based use cases, creating business cases, or selecting a platform

2. Prototype development
   - 40%
   - About 35%-40% of engagements are at the PoC stage while 15%-20% of engagements have progressed to pilots

3. Production build
   - 50%
   - Only a handful of successful pilots progress to production. Almost all engagements at this stage are parallel or shadow production environments

4. System Integration
   - 5%-10%
   - There are negligible blockchain solutions that have been completely integrated with clients’ existing process and systems landscape

N = ~200 blockchain engagements across 20 service providers
Enterprise blockchain adoption is going through the “90-9-1” set of challenges

- Overall nascency of blockchain solutions
- Lack of understanding in distributed ledger technologies and use cases
- Lack of maturity of blockchain platforms
- Lack of success stories in the market
- Internal stakeholder buy-in around business model changes and threat of disruption
- Consortia-related challenges (set-up, management, and governance)
- Difficulty in quantifying the benefits (ROI)
- Lack of clarity on technical architecture
- Permissioned versus permissionless decision
- Security and privacy concerns
- Uncertainty and lack of formal regulations
- Lack of talent availability
- Lack of market standards, interoperability issues
- Integration issues with legacy
- Cultural change management (internal and external)
- Latency or throughput issues in production
- Service support for blockchain largely undefined
Financial services lead blockchain adoption; however, credible use cases across almost all industries are emerging

Enterprise blockchain adoption heatmap by industry

<table>
<thead>
<tr>
<th>Financial Services</th>
<th>Insurance</th>
<th>Manufacturing / CPG / Retail</th>
<th>Professional Services*</th>
<th>Public sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; utilities</td>
<td>Healthcare</td>
<td>Life Sciences</td>
<td>Telecom &amp; Media</td>
<td>Travel &amp; hospitality</td>
</tr>
</tbody>
</table>

**Live in-production**

Pilots

Exploration

Limited activity

**Professional services industry coverage includes auditing, accounting, legal, real-estate, etc.**

*Based on assessment of 200+ enterprise blockchain engagements across 20+ solution providers*
Beyond FS use-cases (payments, trade finance, wallets), identity and provenance management are some of the hottest blockchain use-cases.

Heatmap of most promising enterprise blockchain use-cases

<table>
<thead>
<tr>
<th>Financial Services Use-cases</th>
<th>Non-Financial Services Use-cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payments / settlements</td>
<td>Identity</td>
</tr>
<tr>
<td>Trade finance</td>
<td>Provenance / track and trace</td>
</tr>
<tr>
<td>Wallets / KYC</td>
<td>Claims processing and payment</td>
</tr>
<tr>
<td>Trading</td>
<td>Title records / Ownership recording</td>
</tr>
<tr>
<td>Asset mgmt.</td>
<td>Anti counterfeiting</td>
</tr>
<tr>
<td>Compliance</td>
<td>Security</td>
</tr>
<tr>
<td>Lending</td>
<td>Loyalty / Voting</td>
</tr>
<tr>
<td>Auditing</td>
<td>Health records</td>
</tr>
<tr>
<td>Investing / Transfer pricing</td>
<td>Master patient index</td>
</tr>
<tr>
<td>Microfinance</td>
<td>Clinical trials</td>
</tr>
</tbody>
</table>

Based on assessment of 200+ enterprise blockchain engagements across 20+ solution providers.
HfS Blueprint: Enterprise Blockchain Services

Nov 17, 2017 | Tanmoy Mondal, Saurabh Gupta

MARKET DYNAMICS
Distributed ledger technologies, including blockchain, promises to fundamentally change and disrupt business models, potentially as significant as the internet itself. HfS recognizes blockchain as a Horizon 3 change agent for digital operations – with significant value potential but still nascent for mainstream adoption.

The 2017 Enterprise Blockchain Services Blueprint investigates the blockchain space to provide a comprehensive and foundational analysis of the blockchain solutions and services market for enterprises.

WHAT YOU’LL KNOW AFTER READING
• The report defines the blockchain ecosystem and analyzes
• Heatmaps to understand the relative adoption of blockchain services across all industries and use cases
• Key market trends shaping enterprise blockchain services including value proposition and adoption challenges
• Blockchain capabilities of 21 service providers with detailed profiles

WHO SHOULD READ THIS REPORT
Executive leaders, business unit leaders, and technology leaders across all industries.

SERVICE PROVIDERS WE DISCUSS
Accenture, Capgemini, Cognizant, Deloitte, DXC, EPAM, EY, HCL, IBM, Infosys, KPMG, LTI, Luxoft, NTT DATA, Persistent, PwC, TCS, Tech Mahindra, ThoughtWorks, Virtusa, and Wipro

HfS Blueprint: Enterprise Blockchain Services 2017
$3,000.00  (59 Pages)

Add to cart

Key assessment dimensions

Execution
• Market commitment
• Client base
• Industry coverage
• Use-case coverage
• Value chain experience

Innovation
• Value proposition
• Partnership ecosystem
• Blockchain platform experience
• Market development contributions
• IP investments
• Ability to drive adoption beyond PoCs

More Blockchain Research
• The Blockchain Reality Check: Where Are We and What Can We Expect in 2018?
• The Five Drivers for the Future of Procurement Services: Cloud Platforms, Ecosystems, Sourcing Talent, ‘Amazonification’, and Blockchain
• The Spectacular Volatility of Cryptocurrencies and the Role of Blockchain

View all of topic >>
Ethereum accounts for nearly half of the enterprise use cases. Adoption of Hyperledger Fabric is expected to pick-up

<table>
<thead>
<tr>
<th>% service providers with experience</th>
<th>% blockchain engagements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethereum</td>
<td>93%</td>
</tr>
<tr>
<td>Hyperledger Fabric</td>
<td>93%</td>
</tr>
<tr>
<td>R3 Corda</td>
<td>60%</td>
</tr>
<tr>
<td>Ripple</td>
<td>33%</td>
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<tr>
<td>Quorum</td>
<td>27%</td>
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<tr>
<td>Multichain</td>
<td>27%</td>
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<tr>
<td>BigChainDB</td>
<td>19%</td>
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<tr>
<td>Chain</td>
<td>7%</td>
</tr>
<tr>
<td>Others</td>
<td>21%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>52%</strong></td>
</tr>
</tbody>
</table>

- Most mature with proven smart contract framework; prevalent across industry use cases
- Designed for enterprises; production-ready version recently released – adoption expected to pick-up
- Prevalent in banking industry
- Prevalent for payments use cases
- Enhanced speed and security features
- For asset-based use cases
- Includes Bitcoin, Monax, Factom, IPFS, and Stellar
Blockchain initiatives are starting to get woven with other emerging technologies especially IoT and AI

- Identity and security are major issues in the IoT space today and centralized solutions for both are not proving to be adequate
- IoT can make use of blockchain to alleviate scalability, privacy, and reliability concerns.
- Since the blockchain is tamper-proof, customers will see a reduced risk of their personal data being leaked via a security breach
- Blockchain can be used in tracking billions of connected devices, enable the processing of transactions and coordination between devices

- AI and blockchain technologies will intersect as the sources of this data become more diverse and more sensitive, governance, quality, and integrity become even more important
- There is a latent need for sophisticated AI-driven analytics as blockchain adoption increases and more complex and critical data is stored in distributed ledgers

- As blockchain solutions become production-ready, there is a strong market for system integration across blockchains and existing legacy and ERP technology
- Service providers are already starting to build a variety of integration tools and methodologies to support this
Despite the challenges, 2018 promises to be a break-through year for enterprise blockchain adoption

- The Enterprise Ethereum Alliance (EEA) reaches 200 members
- Hyperledger recruited 183 diverse organizations to back Linux Foundation’s open blockchain consortium

**Notable market developments in 2017 (not exhaustive)**

- Proof of Stake (PoS) and hybrid algorithms gaining prominence
- Next General Proof of Work (PoW) promise to be much faster
- Production ready Hyperledger Fabric 1.0 released
- IBM launches enterprise ready blockchain platform
- Oracle announces Blockchain Cloud Service
- Australia started to treat Bitcoin as money
- EU expanded its efforts to support more DLT projects
- LedgerX became the first federally regulated digital currency options exchange
- At least eight US states passed DLT related legislation

**Progressive ecosystem emerging**

- Standards are coming
- Market regulators getting serious

**Solving latency and throughput issues**

- Emergence of production ready platforms

**ISO/TC 307 continues to work on developing standards for blockchain and DLT**

- The Blockchain Interoperability Alliance emerged to collaborate on researching interchain transactions and communications
## HfS’ 2018 Research Agenda for Enterprise Blockchain

### Recently published research and blogs
- **HfS Blueprint: Enterprise Blockchain Services**
- **The Blockchain Reality Check: Where Are We and What Can We Expect in 2018?**
- **How the Blockchain Six-Pack is changing how we think about business transactions, storing data and new revenue models**
- **The Five Drivers for the Future of Procurement Services**
- **The Spectacular Volatility of Cryptocurrencies and the Role of Blockchain**
- **Blockchain Basics: Q&A For Services Buyers**
- **Hyping the hyperledger with blockchain boffin Brian Behlendorf**

### Timeline

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Horizon 1: Act now</th>
<th>Horizon 2: Watch out</th>
<th>Horizon 3: Investigate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 2018</td>
<td>The Blockchain Reality Check: Where Are We and What Can We Expect in 2018? <em>(Published)</em></td>
<td>Market Analysis: Enterprise Blockchain Services Market Size and Forecast</td>
<td><strong>POV: Top 10 Initial Coin Offerings (ICOs) in 2017</strong></td>
</tr>
<tr>
<td>Q2 2018</td>
<td><strong>POV: Client case study on Blockchain in Financial Services</strong></td>
<td><strong>POV: All you need to know about Blockchain Platforms</strong>&lt;br&gt;<strong>POV: Hottest Enterprise Blockchain use-cases beyond Financial Services</strong></td>
<td></td>
</tr>
<tr>
<td>Q3 2018</td>
<td><strong>BP: Enterprise Blockchain Services in Supply Chain</strong>&lt;br&gt;<strong>POV: Enterprise Blockchain in Action – Live introduction examples of Blockchain</strong></td>
<td><strong>POV: The intersection of the HfS Triple-A Trifecta and Blockchain</strong>&lt;br&gt;<strong>POV: Emerging Blockchain standards and regulations</strong></td>
<td><strong>POV: Will Quantum Computing destroy Blockchain?</strong></td>
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**Premium research**
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HfS is the changing face of the analyst industry combining knowledge with impact:

- ThinkTank model to collaborate with enterprise customers and other industry stakeholders.
- 3000 enterprise customer interviews annually across the Global 2000.
- A highly experienced analyst team.
- Highest quality global industry summits.
- Comprehensive data products on the future of operations and IT services across industries.
- A growing readership of over one million annually.

"The As-a-Service Economy" and "OneOffice™" are revolutionizing the industry.