Enterprise blockchain platform
Insolar is the 4th generation blockchain for business

**Insolar Mission**

Insolar is building an open source enterprise-grade blockchain platform to enable seamless interactions between companies and unlock new growth opportunities powered by distributed trust.

**Experienced global team**

- 68 employees
  - Canada
  - UK
  - Russia
  - USA
- Established entrepreneurs with extensive experience in:
  - Blockchain
  - IoT
  - AI / ML
  - Retail
  - Logistics
  - Finance
  - Consumer Goods

**Focused on great code**

- 35 developers
  - #1 by developer activity globally among blockchain projects

**Driven by practical research**

- 10 researchers
  - YORK
  - PRINCETON
  - ETH
  - UNIV
Business networks are getting more **complex** and **costly** to manage

80% of the world’s corporate **data currently resides in silos** and prone to “integrity decay”

36% of **companies report working with 2x more partners** than they were 2 years ago

**Information**
- Isolated and incomplete
- Slow and costly to access
- Unsafe via decay or loss

**Interactions**
- High transaction costs
- High barriers to connect
- Legal disputes

High transactional friction

*Source: Accenture*
Blockchain fundamentally transforms the way business is done.

Web 1.0
Static
Dot-com
Democratization of information access

Web 2.0
Participating
Hosted Services
Democratization of content production

Web 3.0
Executing
Blockchain & Internet of Value
Democratization of action and knowledge

Netscape
Google
facebook

INSOLAR
ethereum
## Distributed Business Networks

- **Trust**
  - Blockchain

- **Simplicity**
  - Faster and more responsive
  - More secure
  - Run at lower costs

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**Insolar will power a new business-to-business interaction framework**

- Faster and more responsive
- More secure
- Run at lower costs

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*SOLUTION*

**Network Scale**

- **Impact**
  - Re-inventing how industries function
  - Optimizing cross-company processes
  - Internal use-cases
Creating distributed business networks is easy on Insolar

Distributed business networks will become as easy to use as today’s online services like email or messenger – no code, no nodes, ability to talk to anyone

- Get connected – run on global, segmented and isolated networks
- Be a true As-a-Service – not DIY IT hassle
- Separate logic, run business services and rules
- Balance per-transaction Risk & Liability vs Speed & Cost
- Each operation is a document and can use structured documents as inputs
- Consider current and future legal and regulatory requirements
- Support common development practices to utilize existing IT skills
- Commoditize hardware capacities (CPU, storage, traffic)
2019-2020 promises a **breakthrough** for enterprise blockchain adoption

### Why Now

- **Proof of Stake (PoS) and hybrid algorithms gaining prominence**

- **All top-10 largest companies from Global Fortune 500 exploring blockchain**

- **ISO/TC 307 actively working on developing standards for blockchain and DLT**

- **Microsoft and Oracle announced cloud services for blockchain**

- **Australia and Japan started to treat Bitcoin as money**

- **EU expanded its efforts to support more DLT projects**

- **20+ US states passed DLT related legislation**

### Notable market developments

- **Progressive ecosystem emerging**

- **Solving latency and throughput issues**

- **Emergence of production ready platforms**

- **Standards are coming**

- **Market regulators getting serious**
Innovators are already designing new capabilities

<table>
<thead>
<tr>
<th>Global spending on blockchain solutions to grow quickly</th>
<th>2018</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$1.5 Bn</td>
<td>$11.7 Bn</td>
</tr>
</tbody>
</table>

74% of large companies see a compelling business case for the use of blockchain
34% of large companies have initiated blockchain deployments

Largest companies across different industries exploring blockchain

<table>
<thead>
<tr>
<th>Company</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walmart</td>
<td>Global supply chain</td>
</tr>
<tr>
<td>MAERSK</td>
<td>Shipping supply chain</td>
</tr>
<tr>
<td>DE BEERS</td>
<td>Diamond tracing</td>
</tr>
<tr>
<td>bhpbilliton</td>
<td>Mining supply chain</td>
</tr>
<tr>
<td>Alibaba</td>
<td>Food supply chain</td>
</tr>
<tr>
<td>SAMSUNG</td>
<td>Manufacturing supply chain</td>
</tr>
<tr>
<td>TOYOTA</td>
<td>Payments for self-driving cars</td>
</tr>
<tr>
<td>AIG</td>
<td>Multinational insurance platform</td>
</tr>
<tr>
<td>MetLife</td>
<td>Insurance blockchain platform</td>
</tr>
<tr>
<td>ING</td>
<td>User identity protection</td>
</tr>
<tr>
<td>SIEMENS</td>
<td>Peer-to-peer energy trading</td>
</tr>
<tr>
<td>Pfizer</td>
<td>Medical supply chain</td>
</tr>
<tr>
<td>Nestle</td>
<td>Manufacturing supply chain</td>
</tr>
<tr>
<td>Royal Dutch Shell</td>
<td>Energy commodities platform</td>
</tr>
</tbody>
</table>

Source: Gartner, Forrester, Deloitte

... and hundreds more leading corporates and disruptors
Blockchain protocols that become standard will capture the majority of value.

The amount of value capture made possible by the proprietary and structured database is a large part of web applications.

Distributed database pushes value down from the application layer to the protocol layer.

The structured database of the protocol makes it more aware of the value it is generating.

Tokenization expands the ability of the protocol to know what value it is creating.
Blockchain will trigger a radical transformation for business worldwide.

**2021**

- **10%** of enterprises will achieve radical transformation with blockchain.
- **$38,000,000,000,000** annual business value generated by blockchain.

**2030**

- **20%** of global economic infrastructure will be running on blockchain-based systems.
- **$3,160,000,000,000,000** annual business value generated by blockchain.

*Source: Gartner*
Majority of blockchain’s business value will come from intercompany interactions in distributed networks.

- Intercompany Interactions: 28%
- Digital Money: 22%
- Intracompany Applications: 22%
- Public Records: 18%
- Auto-Adjudication: 10%

$3,160,000,000,000

Source: Gartner
Today’s blockchains are not ready for production

Not Scalable
Slow, expensive and energy inefficient – redundant computation on each blockchain node

Complicated
Hard to implement and maintain
Not fit enterprise data management security requirements

No Mass Adoption
Insolar is much more **advanced** than any other blockchain

<table>
<thead>
<tr>
<th>Consensus</th>
<th>Blockchain 1.0</th>
<th>Blockchain 2.0</th>
<th>Blockchain 3.0</th>
<th>Blockchain 4.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>PoW</td>
<td>PoS, PBFT</td>
<td>Many</td>
<td>Dynamic</td>
<td></td>
</tr>
<tr>
<td>Networking cost</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Node (HW) cost</td>
<td>Very High</td>
<td>High to Medium</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Consensus cost</td>
<td>Very High</td>
<td>High #node dependant</td>
<td>Medium Sharding dependant</td>
<td>Adjustable (per transaction) Value / Risk vs Speed / Cost</td>
</tr>
<tr>
<td>Network architecture</td>
<td>P2P Distributed</td>
<td>P2P Distributed</td>
<td>P2P Distributed</td>
<td>Federation of Clouds</td>
</tr>
<tr>
<td>Defining features</td>
<td>Transparent Ledger Hash Function Block Chaining</td>
<td>Public and Permissioned Smart Contracts Privacy</td>
<td>Sharding Better Scalability Security Governance</td>
<td>High Performance High Scalability Complexity Abstraction Customizable Domains Advanced Governance Advanced Security Interoperability</td>
</tr>
<tr>
<td>Transaction cost</td>
<td>Very high</td>
<td>Medium</td>
<td>Medium</td>
<td>Adjustable (SLA)</td>
</tr>
</tbody>
</table>
Distinctive benefits of Insolar: Lowering operating cost and risk of blockchain deployments

Connect Anyone
- join others into your business process or join theirs with unified addressing and data exchange

Get Advantage
- tune Insolar Platform to needs of your business, manage risks vs efficiency at transaction level

Stay Focused
- work with business logic only and tune Insolar Platform to your needs with customizable governance and setup options

Be Compliant
- get technical and regulatory requirements handled on-the-go
- get anything documented with legal-binding signatures of who, when, why and how has handled operations related to you
Distinctive benefits of Insolar: **Easy to build distributed business networks**

**Similar to setting up a website:**

1. Choose a business template  
2. Create a domain and define domain rules  
3. Configure services and sign off anticipated capacity quotes  
4. Connect or invite business network partners

**Complexity of execution, scalability and connectivity is solved by Insolar**

- Hardware Capacities
- Dynamic Balancing
- Nodes and Sharding
- Trust and Legally-binding Proofs
Distinctive benefits of Insolar: **Abstraction of IT complexities** and focus on core business

**Traditional design of business processes**

- Business logic applied to core and subsidiary processes within one environment
- **Result:** Cumbersome and inefficient business processes

**Design of business processes on Insolar**

- Segmented business logic applied accordingly by specific Domains
- **Result:** Streamlined and automated business processes

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**Diagram:**

- Core process
- Payments
- Legal
- Billing

- Insolar Domain
- Specific domains
  - Payments
  - Billing
  - Legal
Value-generating opportunities for blockchain exist across virtually any industry or business area

Transport & Logistics
- Management of transit assets
- Paperless logistics
- Asset maintenance

Utilities
- Grid management
- Electric vehicles charging
- IoT utilities management

Agriculture
- Agricultural supply chain
- Food safety & origin
- Trade finance

Retail & Manufacturing
- Retail supply chain
- Manufacturing supply chain
- Product verification
- Product warranties

Telecom & Technology
- IoT applications
- Digital Identity as a service
- Distributed computing
- Distributed storage

Natural Resources
- Mining supply chain
- Commodity trading
- Compliance management
- Royalty payouts

... and 10+ more industries
PRODUCT

Insolar enables companies to discover and **unlock value** in blockchain-based networks

- **Reduced Costs & Complexity**
- **Improved Discoverability**
- **Trusted Recordkeeping**
- **Shared Trusted Processes**

Dramatic Improvement to **Existing Business Processes**

**AND**

**Creation of New Business Models**
# Insolar has the complete set of features essential for enterprise use

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
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</table>
| **Speed & Scalability**       | Linear scalability  
                                | Novel peer-to-peer networking                                                                                                               |
| **Unbounded Capacity**        | Increased computation and storage capacity as new nodes join the network  
                                | Cryptographic SLAs                                                                                                                           |
| **Adaptive Network**          | Algorithmic governance system to mitigate hacks and optimize network  
                                |                                                                                                                                            |
| **Interoperability**          | Interoperable with existing enterprise blockchains (Hyperledger Fabric, Corda, Quorum)  
                                |                                                                                                                                            |
| **Multi-Network System**      | Configurable for public, hybrid and private blockchains  
                                |                                                                                                                                            |
| **Fast Evolution**            | Regular automated updates that quickly introduce fixes and drive network evolution  
                                | No hard forks needed                                                                                                                       |
| **Regulatory Compliance**     | KYC and AML checks  
                                | Support local cryptography standards                                                                                                         |
| **Rapid Development**         | Reusable building blocks  
                                | Java Enterprise can be used to develop applications and solutions                                                                            |
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| **Rapid Development**         | Reusable building blocks  
                                | Java Enterprise can be used to develop applications and solutions                                                                            |
| **Data Management**           | Compliant with GDPR and other regulations  
                                | Valuable data stored and processed in trusted data centers                                                                                   |
| **Business Data Integration** | API integration with major existing enterprise software solutions and data sets                                                                 |
| **Security At Scale**         | Top-level Pulsar chain produces random beats to preserve 100% security  
                                | Adapted for corporate security frameworks                                                                                                     |
| **User Protection**           | “Code is law” is contingent to domain government that allows to fix engineering errors                                                        |
Insolar brings distributed business networks closer to current enterprises

**Federation of Clouds** – transparently connects multiple Clouds

**Clouds** – organize and unify hardware capacities

**Globular Networks** – enable up to 100,000 nodes per Cloud

**Domains** – apply corporate rules and national standards

**Capacity Market** – CPU, storage and traffic dynamically traded as commodities

**OmniScaling** – near-linear network scalability by CPU, storage and traffic

**Data and Execution Scattering** prevents unintentional data leakage

**Per-Transaction Consensus** – balance Risk & Liability vs Speed & Cost

**Large Transactions** – can read and generate documents

**GoLang** and **JVM contracts** – reuse existing practices and skills
Modular architecture to manage complexity

**Business Applications / Services**
- Business-owned applications and services provided and supported by various companies and vendors

**Whitelabel Solutions**
- Industry-specific ready-to-deploy business solutions built by any external vendors and/or by Insolar

**Business Templates**
- Ready-to-use “blocks” for applications and services, e.g. supply agreements, document workflow, etc

**Business Foundation**
- Toolkits for business templates to access platform execution layers and external/integration functions

**SDK / VMs**
- SDKs to extend Insolar platform capabilities, to run and maintain Insolar Platform. Enables use of different VMs with transparent interoperability

**Nodes / Clouds / Blockchain**
- Scalability and rebalancing mechanisms, data sharding and scattering, consumption accounting

**Network**
- Node identification and connectivity, security and inspection of data flows, gateways and firewalls
Insolar Federation of Clouds provides interoperability between public, hybrid and private installations.
Key players of **Insolar Cloud** ecosystem
**Independent scaling** of computational and storage capacities

Cloud on Insolar blockchain

Finalized block
- Node 1

Finalized block
- Node 2

Finalized block
- Node 3

Validating block
- Node 4

Open block
- Node 5

Calculation nodes
- Contract 1
- Contract 2
- Contract 3

Shard

Storage nodes

Dynamic sharding
High transaction adaptability

Consensus can be configured for each transaction according with its business value:

- **Low value transactions**
  - Less validators to reduce cost

- **High value transactions**
  - More validators to reduce risk

Cascaded transactions can balance speed vs cost and risk by postponing validation.

- Business value-driven validation and consensus
- Business logic defines risk limit and value
- Range of risk retention vs validation cost
- Range of value under risk vs speed
- Adjustable quality and quantity of involved nodes
Insolar does for blockchain what **Red Hat** did for **Linux**

Insolar team will be delivering commercial blockchain implementations to drive adoption of Insolar Blockchain

- **Open-source development**
- **Decentralized development approach**
- **Open-source software licensing**
- **Support for developers, integrators, and businesses**

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**Dual licensing**

- **GPL**: Keep the software open-source to benefit from developer interaction
- **Commercial**: Allow businesses to commercialize the technology to support their end customers
PLANS

Insolar vision

Become the world’s leading tech company that powers innovative, transparent, and efficient business networks
Strong team that delivers

Andrey Zhulin
Founder & CEO
Goldman Sachs
Bauman Tech University
University of London

Peter Fedchenkov
Founder
IBM, Goldman Sachs
Harvard Business School

Dmitry Zhulin
Founder
Rothschild
Bauman Tech University
University of London

Pavel Scherbinin
Chief Technology Officer
Mail.ru Group

Kirill Ivkushkin
Chief Architect
Sberbank Blockchain Lab,
Deutsche Bank

Danil Kabanov
Head of Development Center
Sberbank Technology
INSEAD

Henry Kim
Senior Research Fellow
York University Blockchain Lab

Jonathan Himoff
Business Development Director
DHL

Lesley Czuma
Head of PR & Communications
Metro AG

Total
Development 35
Research 10
Marketing 12
Business Development 5
HR, Finance, Legal, Admin 6
INS coin overview

INS listed on top exchanges

- Staking
- Voting
- Payments
- Incentives
Enterprise blockchain platform

www.insolar.io