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HardCode

Project summary

Software and service development ecosystem
based on new general-purpose programming language

What we do

- New innovative general purpose programming language
- New innovative service development and deployment platform on top the language
- New innovative enterprise development environment on top of the language
- Software market on top of enterprise development environment

Applications

- Initially we consider major redesign of service development methods and tools
- Next we intend to introduce safe execution of untrusted code at big data processing
- Then we go for desktop applications
- Finally we intend to introduce proper design for browsing protocols thus replacing current Web protocols and software with actually designed ones

The roots of the problems

- No adequate language
  for programming applications created yet
- Even more so about programming language for services
- Programs written in so called high level languages
  execute about 3 to 10 times slower
  than the ones written in low level languages
- There's no properly designed
  service development and deployment system at all

The problems

- Applications are hard to write and support
- Too much time is spent for testing, debugging and analyzing **issues that don't exist** in properly designed language
- Still services tend to **crash and corrupt data**
- Performance bottleneck analysis is hard and inconsistent
- Microservice architecture is complex, inefficient and unnecessary
- Service deployment is hard while it should be done in 2 clicks
- Companies keep a big team to develop and maintain custom non-portable CI solutions
- Developers tend to **burn out fast** seeing how tools get more complex and weird rather than becoming more powerful and convenient

The solution

- The solution is to reinvent every part of infrastructure
- No more UNIX-way (save it for new unexplored things)
- We use smart design, tight integration and synergy between subsystems instead
- We designed new programming language and service platform solving issues of existing systems
- We wrote presentation full of technical concepts
- Now we develop prototypes and demos

Benefits

- Way more resource efficient service development
  → dramatically reduced costs
- Hugely reduced costs for service maintenance
  → hugely reduced costs
- Reliable services, fastest support
  → loyal customers
- Revolutionary cloud service solution
  → conquering and reforming cloud service market
- Efficient and convenient technologies
  → highly reduced developers’ burnout and turnover

Innovative technologies

- Strict expressive error handling
  → shorter code and no unhandled logical run-time errors
- Hybrid memory model → ultimate convenience
- Non-freezing garbage collector
- Fully analyzable control flow
- Safe and predictable untrusted code execution
- Dynamic compilation for statically typed language
- Cloud network protocol
- Service development and deployment platform

Current state

- Detailed HardCode programming language concept has been written
- Technical description with source code snippets
  in both current languages and the HardCode language has been written
  (Detailed technical presentation takes about 2 hours excluding Q&A)
- Innovative multithreaded non-blocking Garbage Collector
  playing key role in memory management
  has been designed and implemented
- Language-integrated version control and hot development system has been
  implemented and verified in production
- Detailed Service as a Service platform concept has been described
- IT-related content distribution concept has been developed
- Development and integration financing scheme has been described
  as well as roadmap and hiring list
- General monetization principles of the product have been defined
  based on top IT solutions of the market
- All the technical aspects have been reviewed by experts
- Initial MVP compiler is being developed
- Several demonstrational applications are being developed

Team

Grigoriy Okopnik, Architect
Leading developer at «Tinkoff Bank»
Telegram: *https://t.me/hc_guy*

Evgeniy Okopnik, Business development manager
25+ years in BDM for automation area in global multinational companies
PhD in automation
Telegram: *https://t.me/BDM_HC*

R&D crew
5 programmers

Worldwide software development market

Table 1. Worldwide IT Spending Forecast (Millions of U.S. Dollars)

	2022 Spending	2022 Growth (%)	2023 Spending	2023 Growth (%)	2024 Spending	2024 Growth (%)
Data Center Systems	221,223	16.6	217,880	-1.5	235,530	8.1
Devices	766,279	-6.3	700,023	-8.6	748,150	6.9
Software	811,496	10.7	922,745	13.7	1,052,956	14.1
IT Services	1,305,699	7.5	1,420,905	8.8	1,585,373	11.6
Communications Services	1,423,075	-1.9	1,461,662	2.7	1,517,877	3.8
Overall IT	**4,527,772**	**2.8**	**4,723,215**	**4.3**	**5,139,886**	**8.8**

Source: Gartner (July 2023)

Total costs (CAPEX + OPEX) for software development according to Gartner estimate over $2,300 billion with 8-13% annual growth rate.

Service platforms competitors

Amazon Web Services (AWS) is currently the biggest cloud service platform. AWS revenue for 2022 was 80 $BN having an estimated 32% of the total cloud market.

The HardCode-based Cloud Service Platform is designed to make service development and deployment far more easy and resource efficient thus becoming capable of getting similar or greater amount of cloud market.

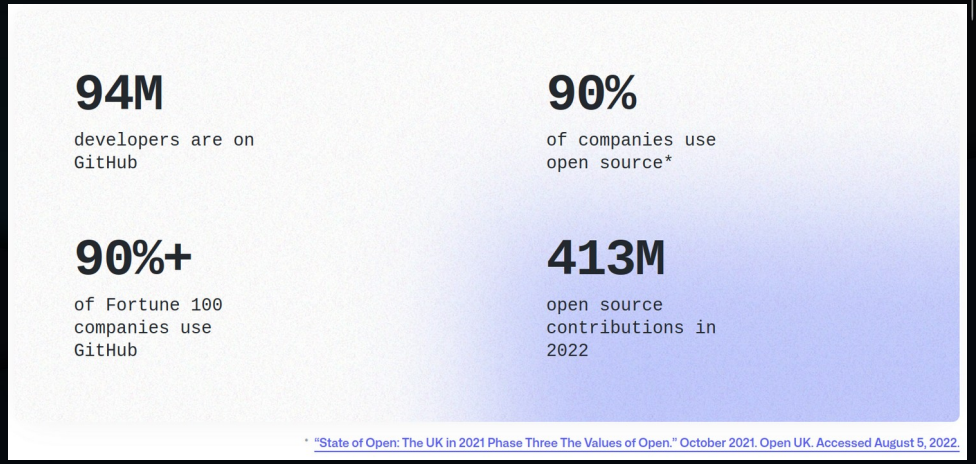
Amazon Web Services annual revenue 2014 to 2022 ($bn)

Year	Revenue ($bn)
2014	4.6
2015	7.8
2016	12.2
2017	17.4
2018	25.6
2019	35
2020	45.3
2021	62.1
2022	79.9

Development platforms competitors

GitHub (Microsoft) is biggest Open Source Software hosting service.

94M developers are on GitHub today



Existing programming language don't require specific VCS hosting for development.

HardCode-based software hosting provides far more advanced tools for software development.
HardCode language has so tight integration with VCS making it effectively impossible to use without VCS hosting we provide.

Product users

- **Programmers**.
  The HardCode programming language,
  service development and deployment platform and
  next gen IDE are the very advanced tools for programmers.
- **System administrators**.
  Service deployment system is necessary for deploying
  developed software at production clusters.
- **Project managers**.
  Next gen IDE enterprise development components are
  necessary for project management.

Product buyers

- **Corporations.**
  Service development and deployment platform and next gen IDE are to be bought by corporations, not by actual users.
  The reasons behind this are traditional stack diversity, licensing policy and coverage mostly of team management tools.
- **Programmers**.
  We expect the paradigm shift over time.
  Due to our stack uniformity, rich platform profile features and integrated software market we expect programmers to start buying personalized set of tools rather than relying on corporations.

Stage 1: alpha release

- First we need to turn our demos
  into product at alpha stage
- The product is FaaS (Function as a Service)-inspired
  Next Generation Cloud Service Platform
- Based on a programming language
  with no logical crashes and built-in performance analysis

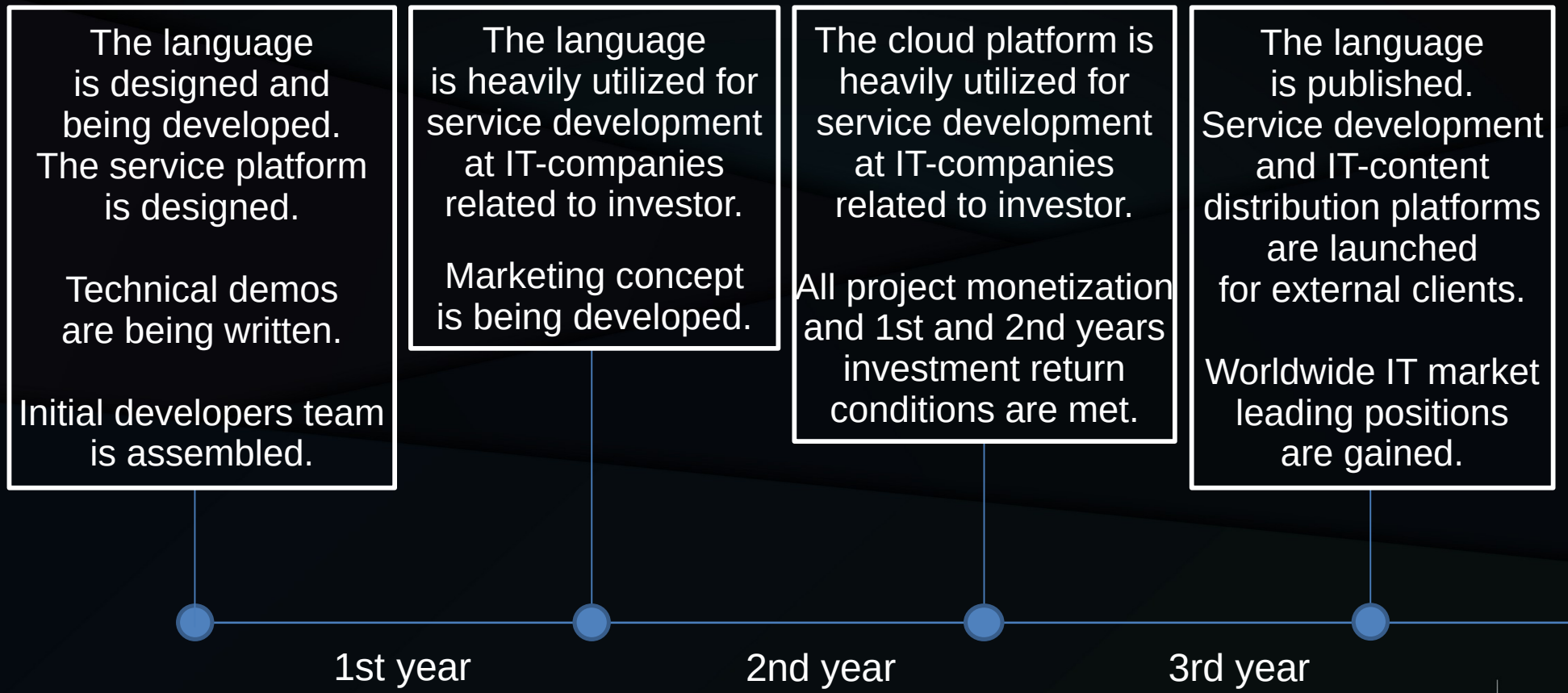
Stage 2: promoting the solution

- The only efficient way to promote a programming language or cloud service infrastructure today is to start using it at some big company
- That way we can build community get proper feedback for the language and the service platform and bring them to stable release
- So we design our startup to be appealing to companies like Google, Amazon, Microsoft, etc. and we partner with such a company
- By the end of this stage we expect to publish the cloud service platform as a commercial service

Stage 3: ultimate programming environment

- By now we should have a popular programming language which is practically only possible to program with our IDE and a service platform managed by our IDE
- At this stage we turn our IDE into ultimate enterprise IDE – the only application needed for teamed application development and service deployment
- Also we turn our IDE into ultimate source code market and programmers' news feed (like Steam, Google, Stack Overflow and more altogether)
- By the end of this stage our key asset is attention of developers starting our IDE every day

Project roadmap (annual results)



Business approach

- We expect to maintain our autonomy for a long-term play
- Yet at the early stages we need a huge partner for product improvement and promotion

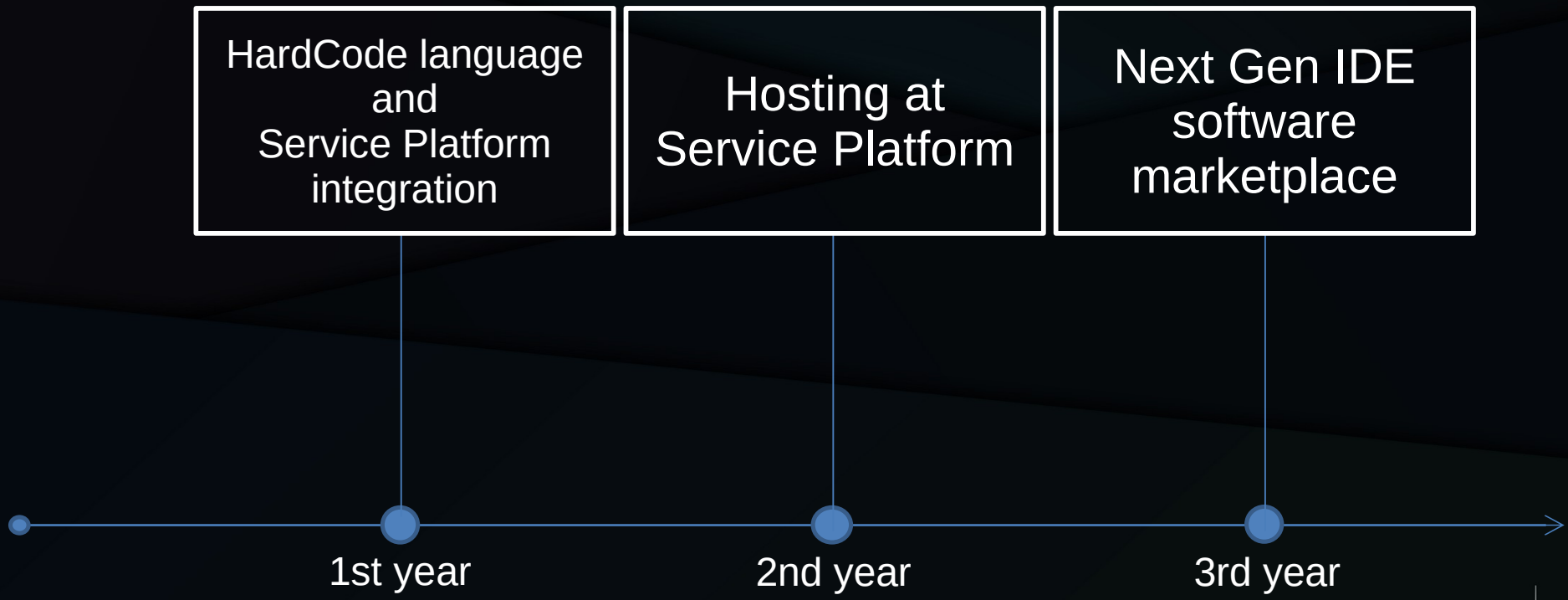
Organization

- CEO & BDM: Evgenii Okopnik
- CTO & Architect: Grigoriy Okopnik
- Core development team: 12 programmers
- Marketing
- Accounting & financial control

Monetization sources

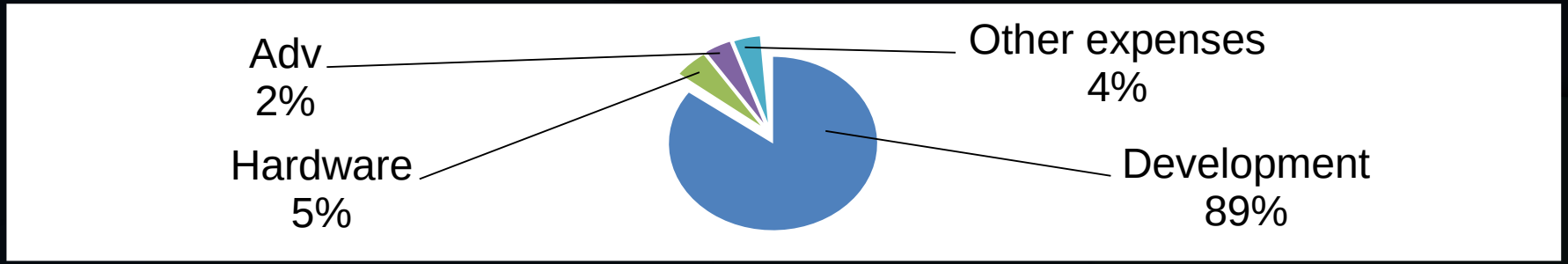
- **HardCode Language and Service Platform integration**.
  The primary target of such integration is the project promotion.
  Yet cost savings may be quiet significant at early stages.
  And so we would benefit having share of those savings.
- **Hosting at Service Platform**.
  The unique feature of the hosting is predictable cost
  per request right after service compilation rather than at run-time.
- **Next Gen IDE software marketplace**.
  The most commercially exciting part of the Next Gen IDE
  is being the only entry point for programming thus being
  ready marketplace for software and educational content.
  In addition to that a very rich profile it gathered out-of-the-box.
  For such effective and precise distribution instrument
  a 25% fee would be quiet generous.

Monetization roadmap



Financial plan

	1st year	2nd year	3rd year	4th year
Expenses, $'000,000	3.0 (14 emp.)	4.0 (17 emp.)	6.0 (20 emp.)	20.0 (70+ emp.)
Revenue, $'000,000	0	2.0	70.0	550.0



Financial estimates

- Consider a company where
  1000 developers would start using HardCode infrastructure.
  Consider 100% performance increase
  for development, testing and deployment
  Average developer salary including taxes would be $8K/month or $96K/year
- This way total saving for salary would be $48M/year
- Consider HardCode Service Platform covering 1% of AWS market per 2022
- That would be revenue of $800M/year

Investment offer