



Project **INSIGHT**

National Enterprise Augmented Reality
Ecosystem

About **INSIGHT**

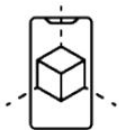
- ▶ **Complex Augmented Reality** solution that would help enterprises, government and military officials see a bigger, deeper and more comprehensive picture
- ▶ It contains both **Software** and **Hardware** platforms to fulfill customer needs through various set of technologies, including cross-platform content delivery

Insight - the clear (and often sudden) understanding of a complex situation. *Insight* isn't based on hard facts or evidence. And it doesn't have anything to do with using your senses such as sight or smell. When you gain *insight*, you are using your *intuition*, or *sixth sense*.

AR Devices Ecosystem Today

- ▶ Existing AR Devices capabilities are not enough for sustainable growth
- ▶ Offer enough mobility (aside of smartphones)
- ▶ Support mobile broadband (4G- 5G)
- ▶ Work outdoors
- ▶ Provide good FOV (Field of View)
- ▶ Last long on one battery charge





INSIGHT AR Headset

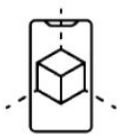
First 5G-enabled AR Headset
in the world

- Important specs:
 - Own Open Ecosystem
 - Eye Tracking
 - Separate Compute Module
 - Security Certified
- Competitive
 - Mobile and Outdoor
 - 5G connectivity
 - Brightness - x2 from HoloLens and Magic Leap



Headset Components





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Software Platform

- ▶ Cross-platform software solutions for Enterprise that would be available on different headsets
- ▶ Primary Software Enterprise Platform contain:
 - ▶ AR Digital Twin Platform
 - ▶ AR Remote Assist Platform
 - ▶ AR Guidelines Platform
 - ▶ AR Modular Cloud Platform
 - ▶ Rendering Platform
 - ▶ Experience Storage
 - ▶ Shared Experience Communications





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Technologies



5G

System on Chip and 5G

- ▶ Hardware device would use ARM-based SoC with integrated 5G support for mobile connectivity with low power consumption
- ▶ Possible partners:
 - ▶ Huawei - Kirin 990 5G SoC
 - ▶ Qualcomm - Snapdragon 8cx SoC + X55 5G modem
 - ▶ Mediatek - Helio M70 5G SoC
 - ▶ Samsung - Exynos 9820 5G SoC



HUAWEI

Qualcomm

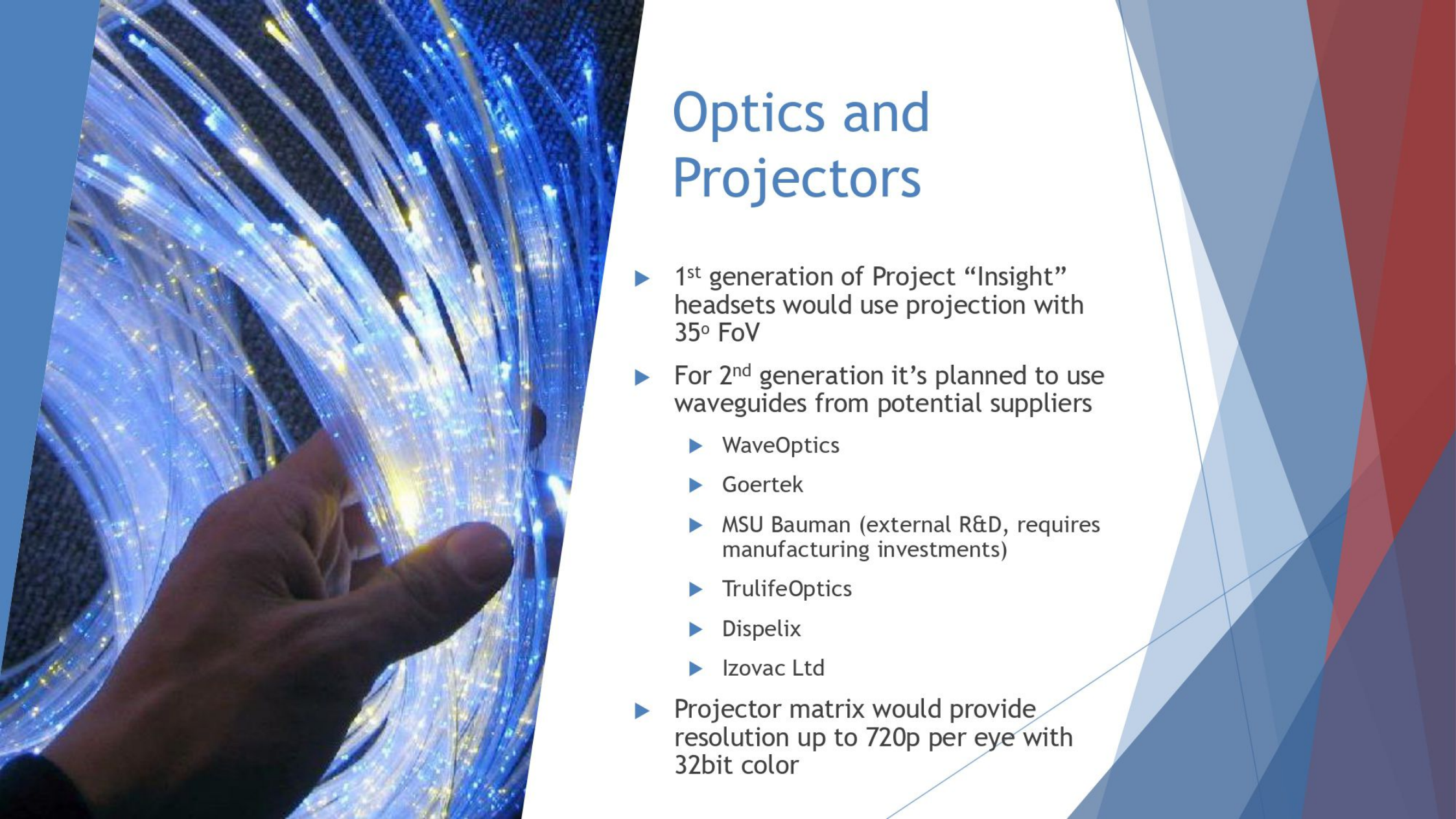
MEDIATEK

SAMSUNG



Operating System

- ▶ Possible ecosystem solutions
 - ▶ Android OS (opensource or with Google)
 - ▶ Huawei HongMeng OS
 - ▶ Microsoft Mixed Reality
- ▶ Key decision factors:
 - ▶ Ecosystem openness
 - ▶ Middleware support
 - ▶ AR Hardware drivers availability
 - ▶ Geo-political independence



Optics and Projectors

- ▶ 1st generation of Project “Insight” headsets would use projection with 35° FoV
- ▶ For 2nd generation it’s planned to use waveguides from potential suppliers
 - ▶ WaveOptics
 - ▶ Goertek
 - ▶ MSU Bauman (external R&D, requires manufacturing investments)
 - ▶ TrulifeOptics
 - ▶ Dispelix
 - ▶ Izovac Ltd
- ▶ Projector matrix would provide resolution up to 720p per eye with 32bit color



Vizor Mobility

- ▶ Flippable Vizor is an effective way to make user more productive in real environment by giving him wider field of view for routines.
- ▶ HoloLens 2 realized one of the scenarios where vizor flips with most of the optics, but that's a more complicated approach.
- ▶ We're going to realize motorcycle helmet mechanics where only vizor is flappable and possible replaceable with a new one in case of damage



Dynamic Transparency

- ▶ To enable outdoor usage of an AR headset would require for 3d-objects to be seen in direct sunlight
- ▶ Possible solutions - Adaptive Polarization or Dimming
 - ▶ No use cases in mass market - requires additional R&D
 - ▶ Vizard would be covered with additional dynamic transparency layer
 - ▶ Layer would be segmented and dynamically dim required zones just below 3D-objects (opposite concept of dynamic xLED backlight on TV panels)
 - ▶ Hardware driver should be manageable through separate SDK





Depth Camera

- ▶ Depth sensing is important to embed 3D-objects into real world environment and provide up to 500% efficiency relative to default 2D-cameras for SLAM and object recognition
- ▶ ToF Camera should be compact enough to fit into the headset form-factor and energy efficient enough to provide reasonable battery life.
- ▶ Potential manufacturers:
 - ▶ Intel Realsense
 - ▶ DepthEye
 - ▶ Orbbec

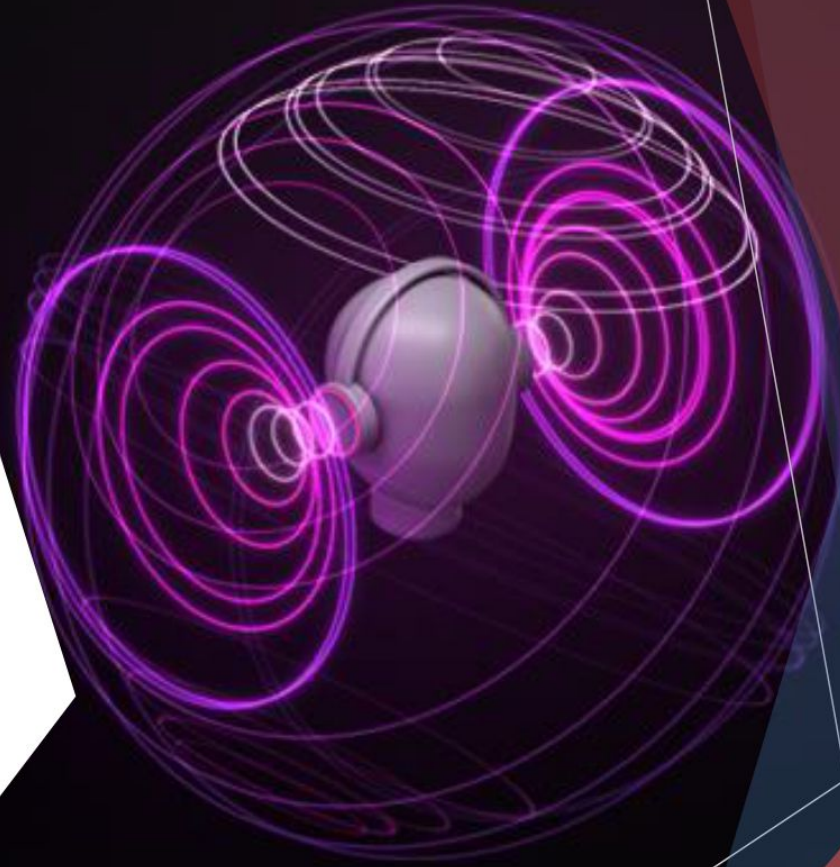
Battery & Mobility

- ▶ Device should be capable of working around 2-4 hours on a single charge
- ▶ Depending on power consumption, battery volume should be around 3000-4000 mAh
- ▶ Enterprise scenarios could require 8-10h battery life, so possible solution - hot-swappable batteries



Spatial Sound

- ▶ Sound processing for the headset could be done with bone conduction acoustic technologies
 - ▶ 2 speakers would be placed on both sides of the headsets
 - ▶ Sound privately delivered to user
- ▶ In terms of compatibility for construction casks or other head covers, regular beams could be used



DOLBY ATMOS

A close-up photograph of a human eye with blue irises. Overlaid on the eye are three concentric circles: a solid white outer circle, a dashed white middle circle, and a dotted white inner circle centered on the pupil. The background of the slide features abstract geometric shapes in shades of blue and red on the right side.

Eye Tracking

- ▶ 2 Eye tracking sensors would be integrated into headset to optimize rendering quality for 3d objects
- ▶ It could also be used to interact with objects on the scene and change focus depending on users behavior

AR Input

- ▶ There are few possible scenarios for input, available on the market:
 - ▶ Eye tracking
 - ▶ Gestures recognition
 - ▶ Controller (3 DoF, 6 DoF, etc.)
- ▶ All 3 input methods would be supported by design and their usage would be appropriate depending on App scenario



An isometric illustration of cloud computing infrastructure. It features a large blue server rack with 'Yandex Cloud' written on it, a shopping cart icon on a screen, a stack of blue disks, a yellow server unit, a red location pin, and various other server components connected by lines.

Cloud Rendering

- ▶ Like many other mobile devices, “Insight” hardware performance capabilities would be limited and balanced
- ▶ Enterprise scenarios require complex interactions with high definition 3D-models including DWG and BIM files that wouldn’t fit into device RAM or GPU memory
- ▶ Cloud rendering platform with GPU units should be used for optimizing and streaming 3D content on device via 5G networks
- ▶ Possible cloud providers:
 - ▶ Yandex Cloud
 - ▶ Mail.ru Cloud Solutions
 - ▶ Reg.ru GPU Cloud

Hardware Certification

- ▶ To be able to use “Insight” headsets on high-risk enterprise facilities, it requires special security certificates:
 - ▶ FSTEK
 - ▶ FSB
 - ▶ Flame-resistance
 - ▶ Explosion-resistance
- ▶ Certifications are a security requirement for many industries like Oil and Gas, Nuclear Facilities etc.





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Software Scenarios



AR Digital Twin

- ▶ **Digital Twin** - one of the most common enterprise scenarios for showcasing complex facilities or hardware with Mixed Reality
- ▶ Software Stack would include:
 - ▶ Cloud platform to convert, optimize, host and stream heavy 3D-models
 - ▶ Easy-to-use self-service Scenario Manager - environment to plan and setup activities and animations on Digital Twin (PC, Tablet)
 - ▶ Cross-platform MR Application to showcase Digital Twin projects (working on “Insight” headset, Microsoft HoloLens, iOS, Android)



AR Guides

- ▶ Sophisticated hardware is complicated to manage and requires special care, while the cost of mistakes remains very high
- ▶ Off-site training require additional costs and time, but couldn't be efficient enough
- ▶ Software Stack would include:
 - ▶ Cloud platform to convert, optimize, host and stream heavy 3D-models
 - ▶ Self-service Scenario Manager - environment to plan and setup activities and animations (PC, Tablet)
 - ▶ Cross-platform MR Application to showcase Digital Twin projects (working on "Insight" headset, Microsoft HoloLens, iOS, Android)



PLC Status			AI
Status	Metric	Value	
●	Servo Temp	220 °F	
●	Air Pressure	285 PSI	
●	Hydolyser	11%	
●	Pressure Pump	2915 PSI	
●	Fan Speed	1300 RPM	
●	Compressor	4450 PSI	



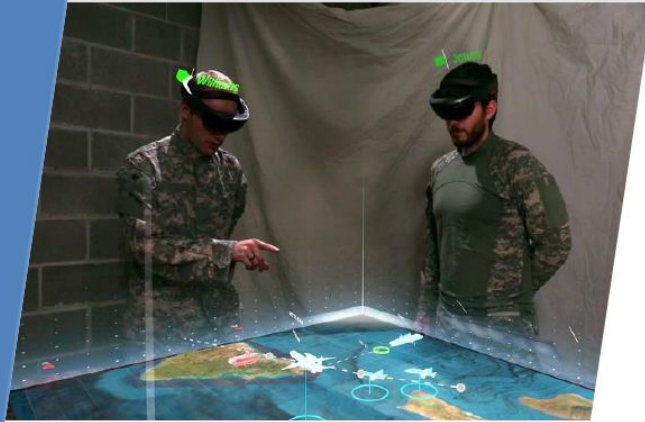
AR Remote Assist

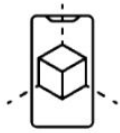
- ▶ Remote assistance offers an on-site technician to receive remote help from a qualified engineer eliminating the need for expensive business trips
- ▶ Remote operator could use a set of pre-defined virtual gestures to guide an on-site technician
- ▶ Software Stack would include:
 - ▶ Video streaming capabilities
 - ▶ Session recording
 - ▶ PC and Mobile version



Military Trainings

- ▶ Mixed Reality headsets became common on Army premises, they are used:
 - ▶ For management and planning
 - ▶ For tactical trainings
 - ▶ For equipment usage onboarding etc.
- ▶ Efficient geo-politically independent solution for that usage - important pillar of national security in innovation usage
- ▶ Project “Insight” would be capable to work autonomously, without cross-bordered connections in isolated secure environment



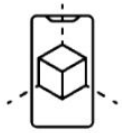


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Ecosystem and Middleware

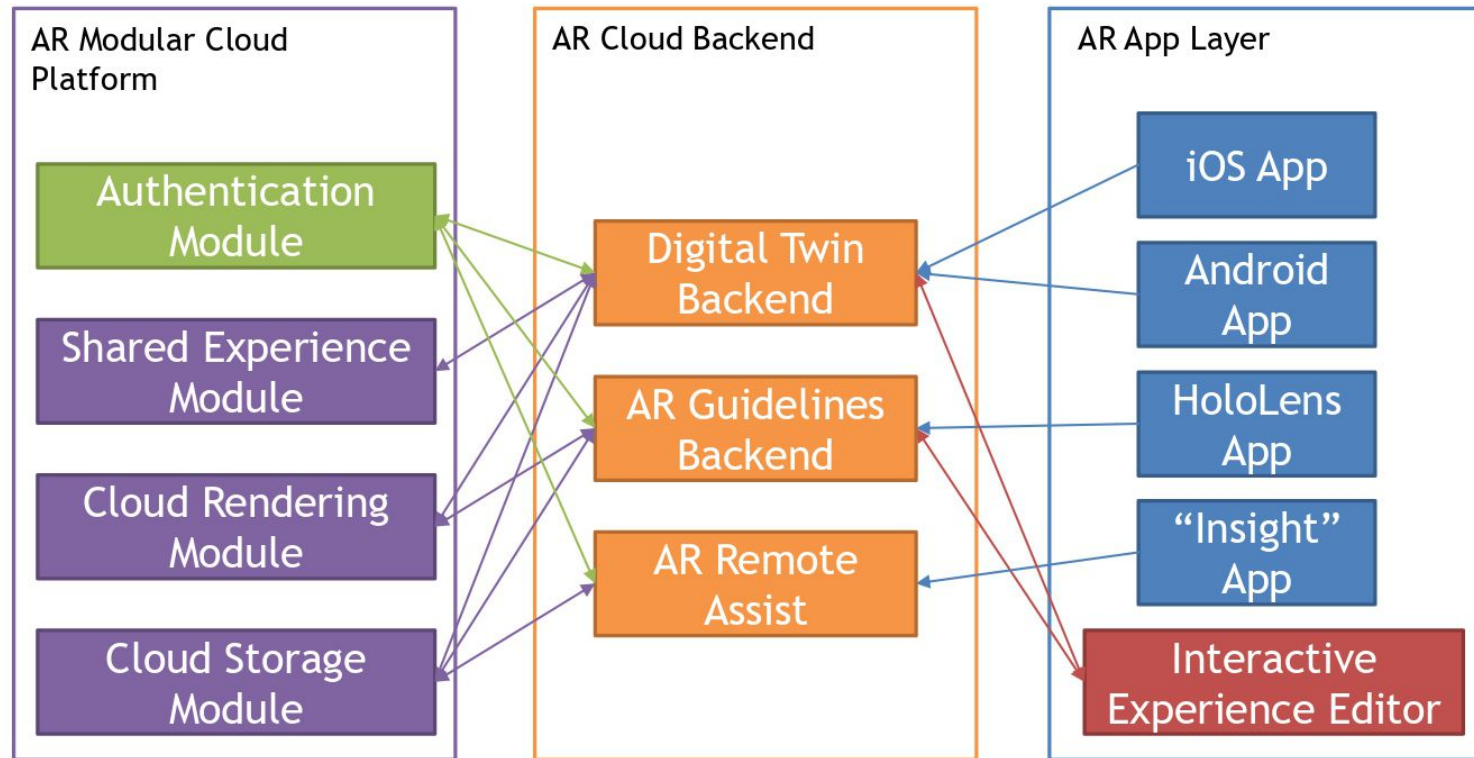
- ▶ Market expansion requires open software ecosystem and necessary tools for developers to create new experiences
- ▶ Dedicated developer toolkit with “Insight” SDK would be developed and widely distributed
- ▶ Initial negotiation is already done with Unity and Epic Games (Unreal Engine) to enable support for Project “Insight” headsets and integrate with native SDK





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Software Platform Architecture



Consumer Scenarios

- ▶ Primary audience of Project “Insight” are enterprises and manufacturers with complex requirements
- ▶ But it’s possible that it could be useful in few consumer scenarios:
 - ▶ Outdoor Navigation
 - ▶ Indoor Navigation
 - ▶ Interactive AR Games





INSIGHT

Overview

Team, Prototype and Roadmap





Ilya Zelenskiy

Founder, CEO

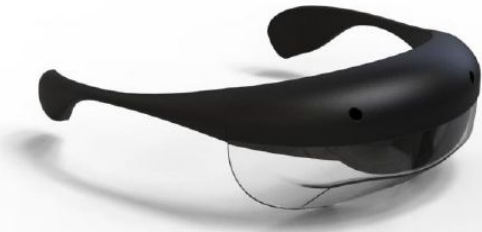
- ▶ Founder of RVMedia and ScaleRichview
- ▶ Independent AR\VR expert in AVRA
- ▶ Developer of the AR-prototype for "Ratnik" Russian Army
- ▶ Author of the technology of stretching electronics on gallium alloys
- ▶ More than 10 years of experience in developing AR glasses
- ▶ Author of the "Quantic Lake" technology - smart glass

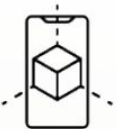
fb.me/ilya.zelenskiy.3



Hardware Prototype v0.3

- ▶ AR Headset of Project “Insight” is already available as early developer prototype
- ▶ Design is preliminary and not include:
 - ▶ Flappable visor
 - ▶ Depth sensor cameras
 - ▶ Mind wave scanner
- ▶ Includes:
 - ▶ Stereo projection with 35° FoV
 - ▶ Projection resolution 1024px per eye
 - ▶ Computation block

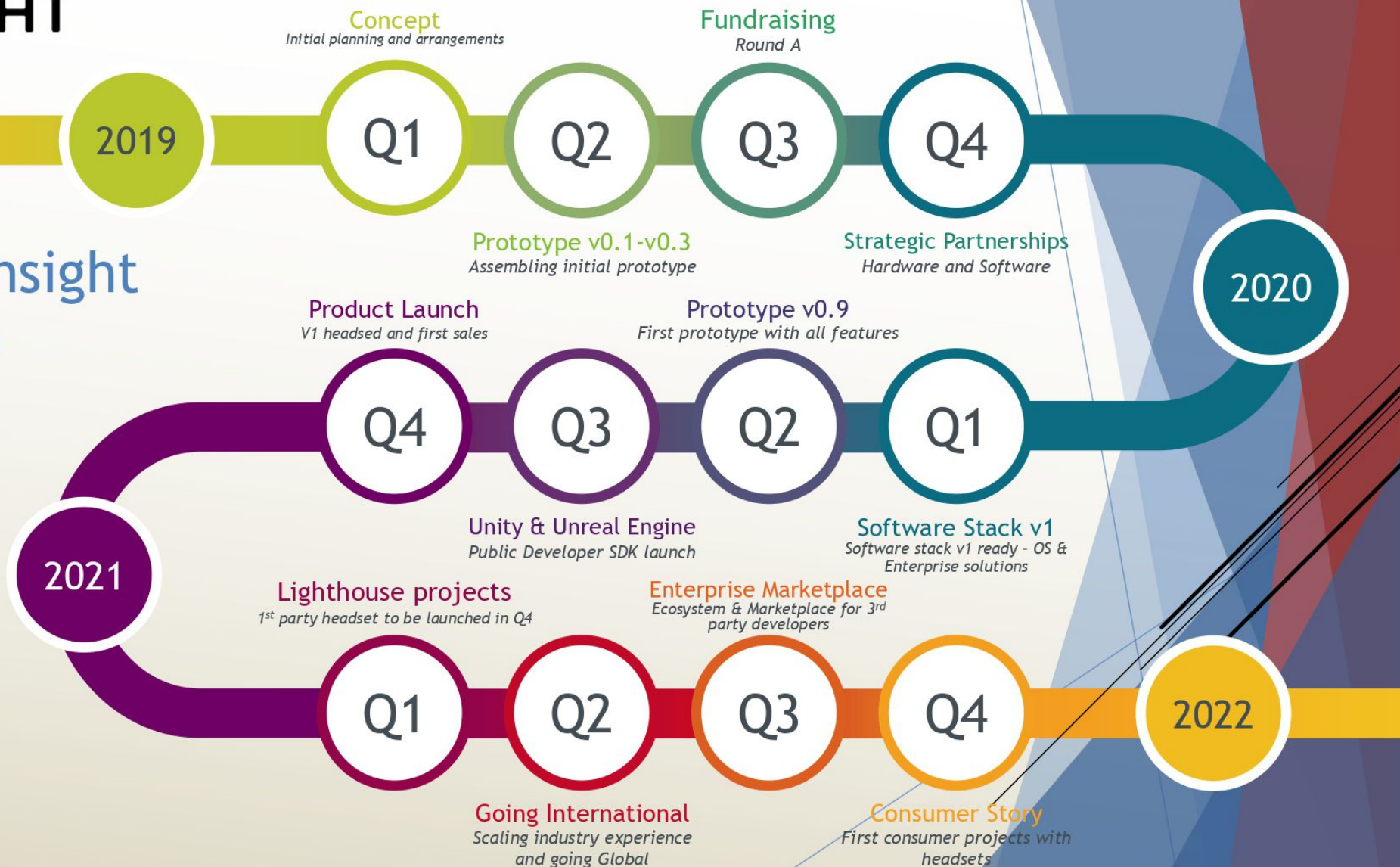




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Project Insight Roadmap

2019-2022



Customer Development



- ▶ Customer Development would be properly done in strategic partnership with big industry players on Russian and Global markets
- ▶ It would cover industries
 - ▶ Oil & Gas
 - ▶ Manufacturing
 - ▶ Nuclear Energy
 - ▶ Firearms Manufacturing
- ▶ Efficient customer development and fulfilment of primary industry requirements would result in hardware sales and integration projects

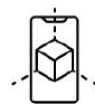


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Financials



Required Funding



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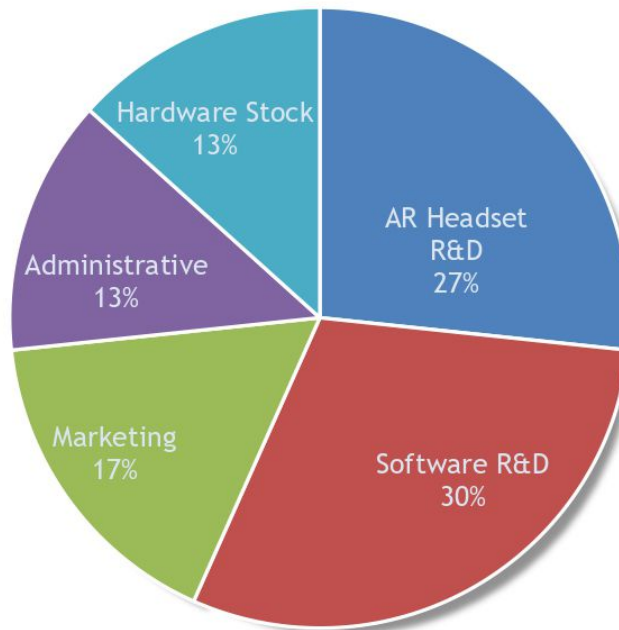
Funding Usage

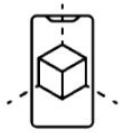
So we can

- ▶ Reach \$3,5M in sales
- ▶ Scale software & hardware infrastructure
- ▶ Scale/refine marketing & sales
- ▶ Scale customer service (enterprise)

▶ Initial Funding Required - \$3M

- ▶ AR Headset R&D - \$0.8M
- ▶ Software R&D - \$0.9M
- ▶ Marketing - \$0.5M
- ▶ Administrative - \$0.4M
- ▶ Hardware Stock - \$0.4M





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Financial Planning

OPEX	Year 1	Year 2	Year 3
AR Headset R&D	\$ 400k	\$ 400k	\$ 200k
Software R&D	\$ 450k	\$ 450k	\$ 250k
Sales & Marketing	\$ 250k	\$ 250k	\$ 250k
Administrative	\$ 200k	\$ 200k	\$ 200k
Hardware Stock	\$ 100k	\$ 100k	\$ 100k
Customer Service	\$ 100k	\$ 100k	\$ 200k
TOTAL OPEX	\$ 1500k	\$ 1500k	\$ 1200k

Profits	Year 1	Year 2	Year 3
Clients	2	10	25
Projects	2	15	35
Average Price per project	\$ 100k	\$ 100k	\$ 100k
REVENUE	\$ 200k	\$ 1500k	\$ 3500k
GROSS PROFIT	\$ 140k	\$ 1050k	\$ 2450k

	Year 1	Year 2	Year 3
GROSS PROFIT	\$ 140k	\$ 1050k	\$ 2450k
TOTAL OPEX	\$ 1500k	\$ 1500k	\$ 1200k
EBIT	-\$ 1360k	-\$ 450k	\$ 1250k

Growth Strategy

How we're going to scale



Marketing & Sales

- Development of regional offices.
- Affiliate co-marketing
- B2B Social Media Marketing
- Volume/loyalty discounts for enterprise clients
- Incentive programs for HR, education & product managers



Service

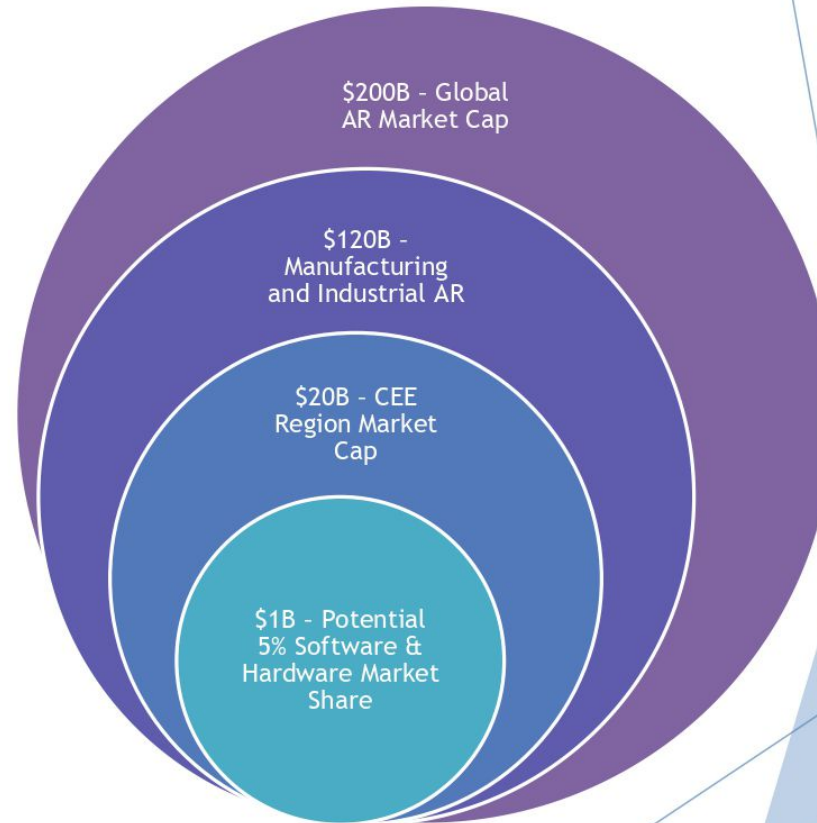
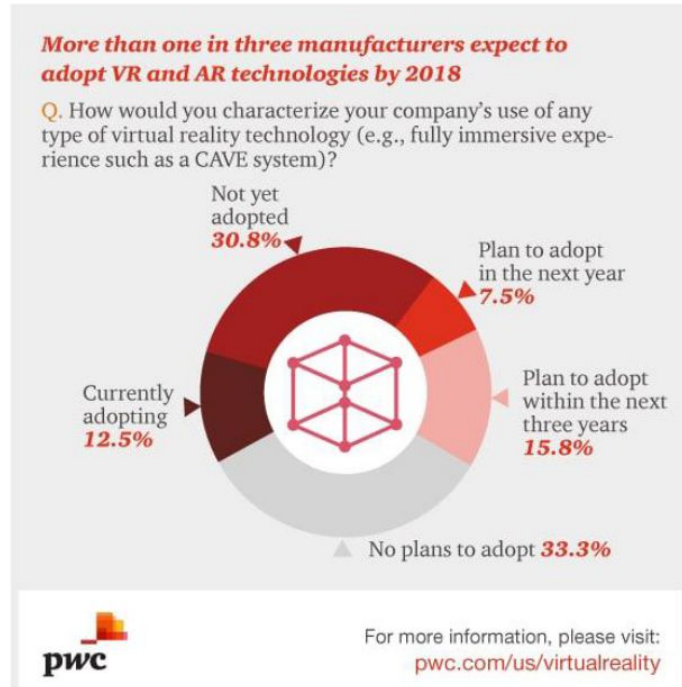
- Development of an account department
- Acceleration corporate programs
- Support 24/7
- Tracking / updating implemented projects
- Consultation on new technological trends



Product

- Development of internal software products:
- Digital Twin Platform
- Remote Assist Platform
- Guiding Platform
- Work on optimization of mobile graphics
- Development of an internal AR Cloud

AR Current Trends



AR Market at 2022 (by Statista)



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Summary

- ▶ Big Opportunity: First both Hardware and Software ecosystem in \$200B AR market
- ▶ Strong Team: Deep Market/Technology/Execution experience
- ▶ Sustainable Technology Advantage
- ▶ Seeking \$3M Initial Funding to achieve \$3,5M in sales & \$9M Series A run rate



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