

"Case History"

Ecapital Business Plan Competition 2019



Author: Andrea Pizzarulli, CEO – 31st May 2019 Pedaso, Italy



- Brief introduction – Andrea Pizzarulli
- The Company Vision – Business model
- Company history and growth
- Technology and Expertise
- Competition – Competitive advantages
- Enterprise management tools – Business Planning
- Conclusions



- Recanati – 9th September 1973
- Electronic Engineering in Ancona – 1998
- Wonderland Business Plan Competition winner in 1999
- 5 years in Silicon Valley California – 2000-2005
- 2 years in Turin – 2005-2007
- 4 years in defence company in Marche – 2007-2011
- Co-founder of Civitanavi Systems in 2012





Andrea Pizzarulli

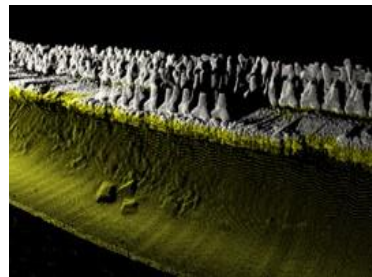
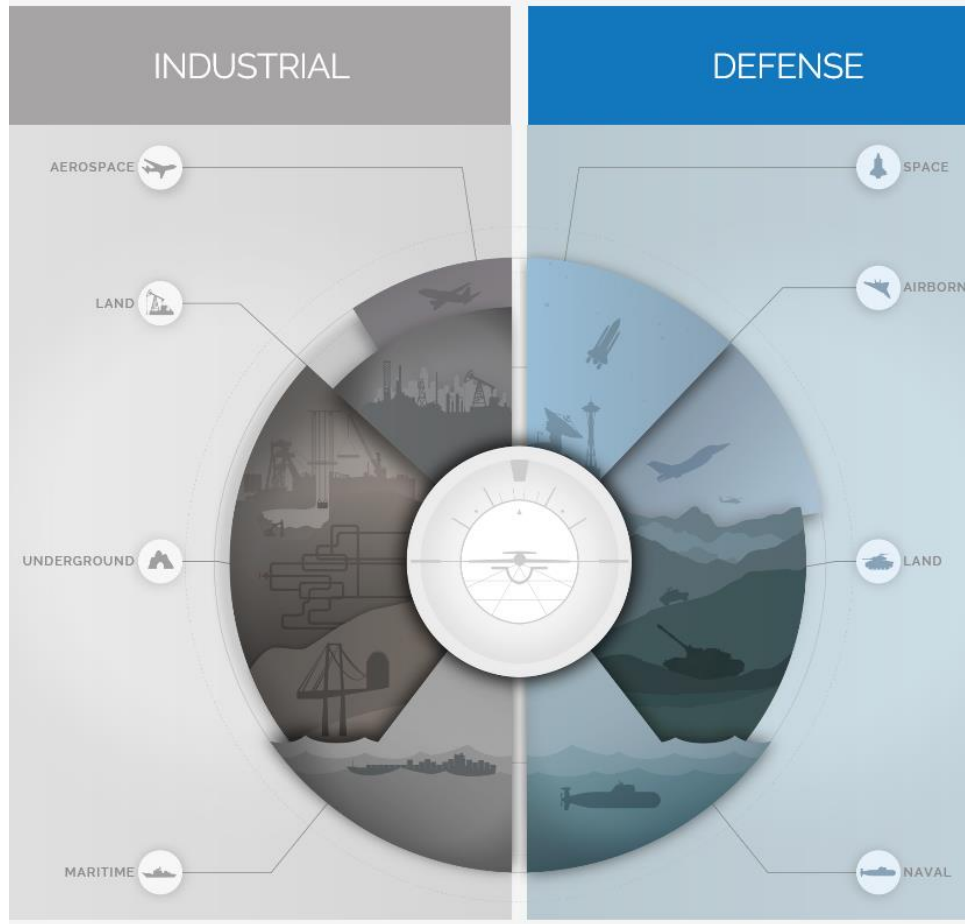
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Company Vision

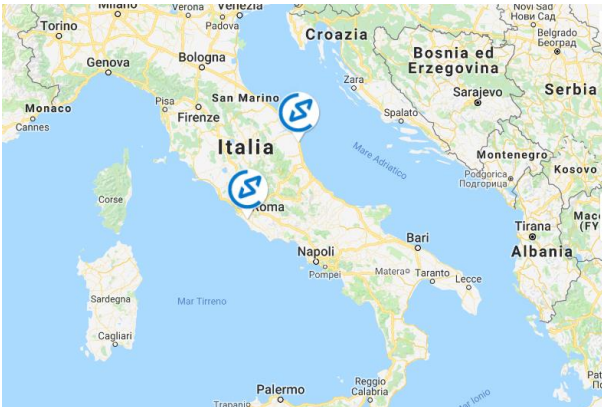
“To be a worldwide supplier of Inertial Navigation, Geo-reference and Stabilization solutions provider, for commercial and dual use applications”





Fast growing company founded in 2012

Headquarter
Pedaso



Rome Office

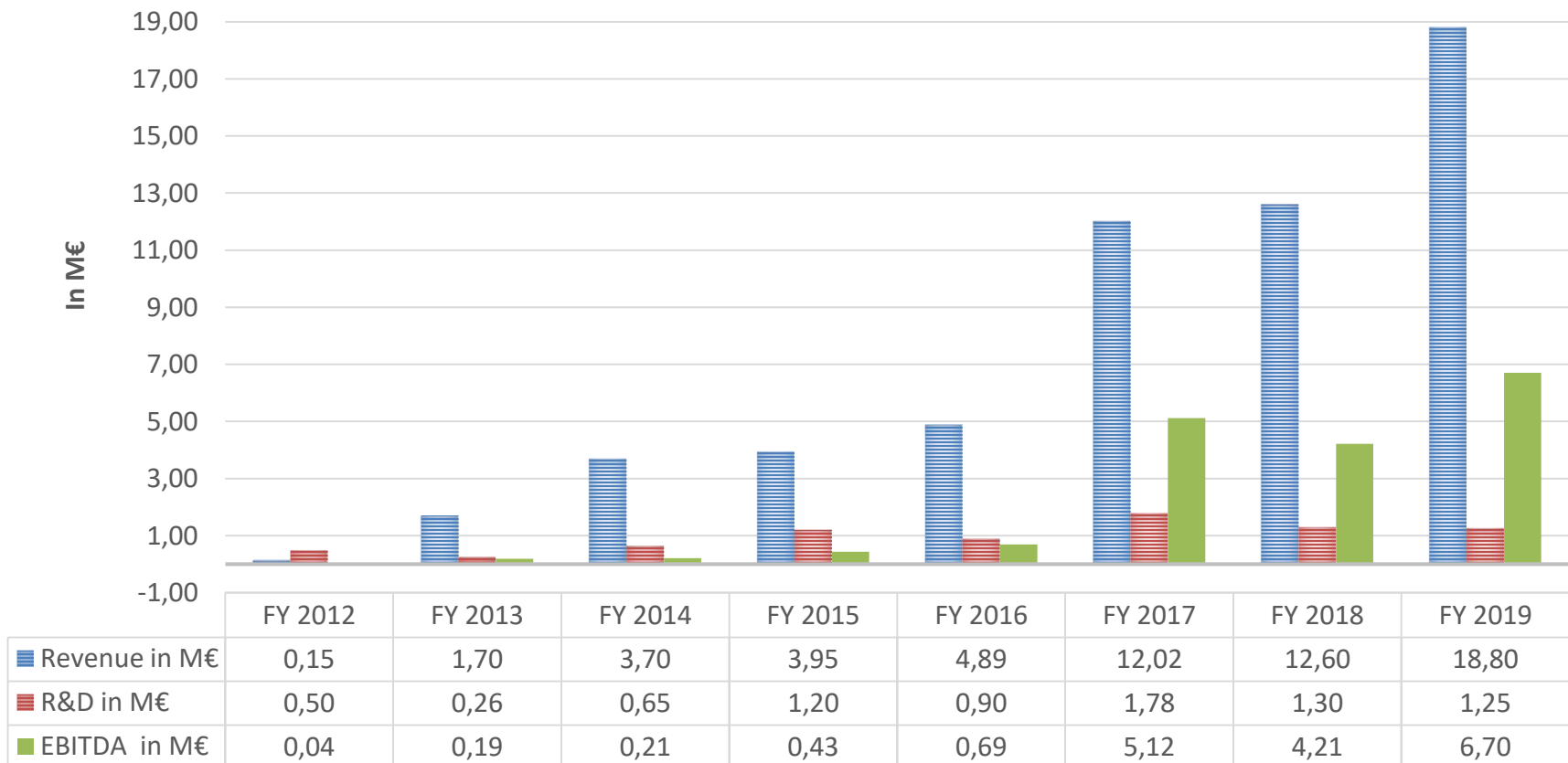


- Founded by 2 partners with long established 40+ year track record in FOG navigation system design and development using European ITAR free IP
- Facilities at:
 - Pedaso (FM), Italy Headquarter – System & Sensor Design, Manufacturing
 - Ardea (Rome), Italy - Software Engineering, HW/SW Certification
- Civitanavi is a fast growing, innovative SME (Small Medium Enterprise) with a current workforce of 73+ skilled engineers and manufacturing team that has delivered more than 1000 navigation grade systems in the past 6 year period reaching 12.6M€ (preliminary) revenue in 2018
- Elected Fastest growing enterprise in Italy by Ernest Young with the EY Entrepreneur of the Year Awards 2016
- Production capacity:
 - Currently maximum capacity of 35 INS or IMU/month
 - 2000sqmt facility



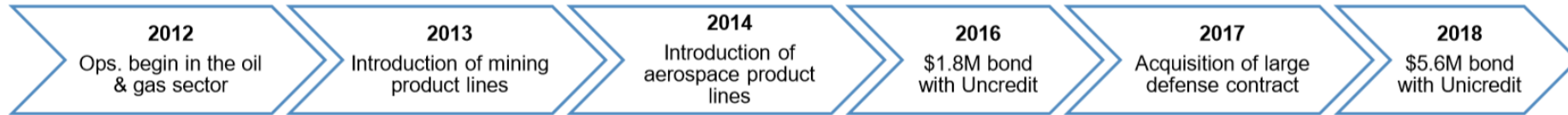
Company growth

- 2013 – 1.7M€ revenue, headcount 11
- 2014 – 3.7M€ revenue, headcount 24
- 2015 – 4.0M€ revenue, headcount of 29
- 2016 – 5M€ revenue, headcount of 35
- 2017 – 12M€ revenue, headcount of 52 FTE
- 2018 – 12.6M€ revenue (preliminary), headcount of 65 FTE
- 2019 – 18.8M€ revenue (target), headcount of 80 FTE (Currently 72 FTE @ March 2019)





Company growth



Leonardo sceglie i primi 22 fornitori per l'Elite Lounge

In corsa con oltre 2.700 aziende, Civitanavi Systems è uno dei 22 fornitori strategici scelti per entrare a far parte del programma Elite Leonardo Lounge, il progetto di rafforzamento delle aziende dell'industria Aerospaziale e della Difesa, lanciato dal gruppo industriale...

Navigazione Inerziale per applicazioni aeronautiche: Andrea Pizzarulli, CEO di Civitanavi Systems, entra nel network Endeavor

Andrea Pizzarulli, CEO e co-founder di Civitanavi Systems, è il nuovo imprenditore selezionato da Endeavor, il network internazionale non-profit che supporta la crescita degli imprenditori ad alto potenziale. Civitanavi Systems sviluppa, produce e commercializza sistemi di navigazione basati su sensori a tecnologia proprietaria...



Vertically integrated Inertial House



Design, Development and Manufacture of FOG Inertial Navigation Systems 100% in-house, ITAR Free. Make or buy decisions are made based on strategic, technology sense.



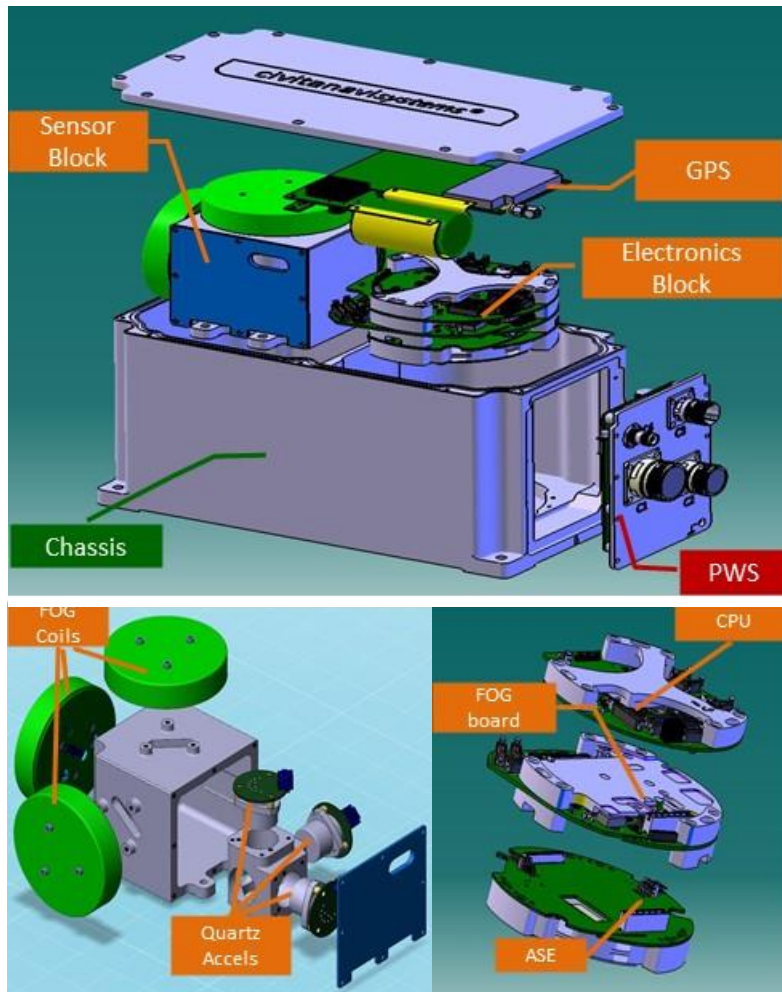
Space grade Fiber Optic Gyro (FOG) winding capability gives us flexibility to wind gyro coils of all sizes/forms and control of desired accuracy. Leveraging scalability (performance and cost) based on Telecom industry.



Innovative test and calibration facility with automatic process using 4 state-of-the-art, high-accuracy, 2 axes rate tables (motion simulators).



Leading Edge INS Design



- System Design Team
 - Italy's leading experts in INS system design
 - Hands on experience from a multitude of domestic and international programs.
- Sensor, Hardware and Software Design
 - Leading sensor design experts
 - Multi year experience and developed skills in design and development of INS
 - Experienced Kalman Filter designers
- INS System Integration and Calibration
 - Leading edge capability in specific to type test and calibration processes
 - Sensor performance enhancement through integrated sensor-hardware-software optimisation
- Avionic certified Complex Hardware and Software capabilities (Do-178B/C and DO-254 up to DAL A)



Aerospace & Defence Products



ARGO 4000 - Airborne

- Civitanavi's new generation, full accuracy performance, FOG INS
- Low weight 4.2-3.8Kg (configuration dependent), reduced volume, high reliability and high accuracy performance
- High reliability true solid state system
- SW/HW certification DO-178C and DO-254 DAL A
- Dimensions **106x132x223mm**
- **Dual use, Industrial** and **MIL** spec applications
 - All domain INS with emphasis in ETSO for Civil Aerospace applications





KRIO - Tactical IMU/AHRS

- Latest generation of compact tactical sensors consists of a self contained strapdown inertial sensors package (IMU – Inertial Measurement Unit)
- FOG accuracy from $1^\circ/\text{hr}$ to $0.1^\circ/\text{hr}$
- Quartz or MEMS accels option with the same IMU package size
- Size (width, depth, height) $<118 \times 128 \times 87$ mm (4.6x5x3.4 inches)
- Weight $< 1\text{kg}$
- RS422 digital I/O
- AHRS or IMU system.





IRS ARGO 4000 – eVTOL



Total address- able market

Theoretically achievable
market with fully
established infrastructure

\$230 billion



200,000
eVTOL units

Graphic: Porsche Consulting



Space launcher VEGA-C from ESA

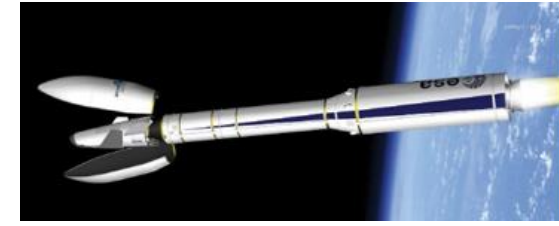
- Contracted by Leonardo for Phase B Vega-C & Space rider to supply high performance IMU (Inertial Measurement Unit) for space launchers.
- Final negotiation for three years Frame Work agreement completed on March 8th 2019





Selected to join “Elite Leonardo Lounge” program

- Selected by Leonardo to become a partner as a preferred supplier within a framework agreement for small and medium enterprises that have excelled as a Leonardo supplier
- Civitanavi currently supplies inertial navigation systems to Leonardo for the following sectors:
 - Naval
 - Land vehicle
 - Radar stabilization and pointing
 - Helicopters
 - Space launchers





Industrial Products



Industrial: Underground, Mining and Maritime

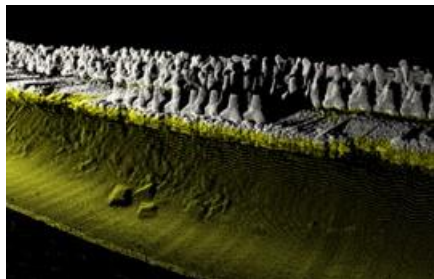
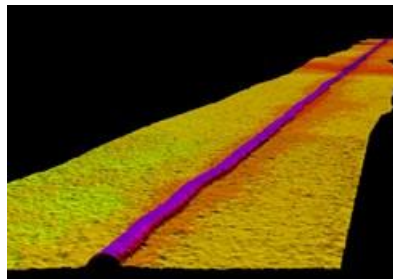


Customised 35mm diameter FOG INS solution for borehole survey applications: world's first!

IMO type-approved CFA-150 FOG INS used in hydrographic and oil & gas survey for both surface and underwater applications with the following few examples



FOG INS providing Drill Alignment for Mining





Conclusion

- Not obvious if the straight way is the best and the easiest
- Learn from the rivers: arrive at sea (hopefully on sandy beach!!)





▪ SME	Small Medium Enterprise
▪ INS	Inertial Navigation System
▪ EGI	Embedded GPS INS
▪ IMU	Inertial Measurement Unit
▪ AHRS	Attitude Heading Reference System
▪ IPR	Intellectual Property Right
▪ EASA	European Aviation Safety Agency
▪ DoA	Design Organization Approval (according to EASA)
▪ PoA	Production Organization Approval (according to EASA)
▪ ETSO	European Technical Standard Order
▪ PPA	Pattugliatori Polivalenti d'Altura (Multipurpose Offshore Patrol Vessel)
▪ SWAD	Sea Watch Dog
▪ MEMS	Micro Electro-Mechanical Systems
▪ SIGINT	Signals intelligence
▪ DIRCM	Directional Infrared Counter Measures
▪ VBM	Veicolo Blindato Medio (8×8 infantry fighting vehicle)
▪ O&G	Oil&Gas
▪ HDD	Horizontal Directional Drilling
▪ NRE	Non Recurring Effort