



PhD. Florin Paun

**Director in France,
practitioner and
theoretician of the
evolutions of the
innovation models
and tools**



1. Can you Introduce yourself & Explain your Previous experiences

PhD. Florin Paun is my name . I work as an innovation Director in France, practitioner and theoretician of the evolutions of the innovation models and tools, I succeeded to encourage the comprehension of the human factors and behaviors during the collaborative processes as innovation, building thus bridges between the world of practitioners and the world of scientists and economists.

My scientific work on Innovation Economics and Technology Transfer, based on more of 200 project I worked on, gained worldwide recognition and put in light the emergence of a new innovation French model but also completed the theories of two Nobel Prize Winners (Stiglitz, J., Sen. A) after having applied and adapted them to the highly collaborative processes like innovation.

My newly developed and implemented strategies and tools aim to support the creation of the shared value between research laboratories, SMEs, multinationals and regions with more than 70 technology transfer agreements succeeded. I have been Innovation director in aerospace sector in France (former Deputy Innovation Director at ONERA and Strategy and Development Director at the Competitive Pole SAFE – PACA region). I started my career in the aerospace research being specialized in structures and multifunctional materials (15 scientific articles, 4 patents). I received my Education at the Aerospace Faculty in Bucharest, in Ecole Polytechnique (Palaiseau, Grand Paris) and I made my Phd. in Mechanical Engineering in Toulouse (ENSICA) and finally completed my education with an Executive Certificate in Management and Leadership at MIT Sloan (United States).

As serial entrepreneur and Business Angel (Celidea, Progonline.com...) I am currently also President and co-founder of the French Start-up Xvaluator.

As French Romanian innovation leader, I am also one of the 10 French experts and one of the 3 Romanian experts in the Pilot Jury of the European Council of Innovation.



I am the Inventor of several tools and methods for collaborative innovation such as: « Demand Readiness Level » completing the «TRL», « Contract of shared risks and benefits », « asymmetries identification and compensation in the highly collaborative process ». Last but not the least, I am teaching my own innovation methods in international Schools for Master Degrees students and I am also senior advisor in innovation collaborative process of innovation and impact of human factors for Governments, multinationals, networks of practitioners, European INTRA-PRENEURS, Innovation School of ANRT in Paris (ANRT Ecole de l'innovation), ISAE, Ecole de l'Air, ENAC, ESEO, Toulouse Business School.

I have Authored several scientific articles and books on open innovation strategies including the contributions of more than 50 international business and political leaders in the last 10 years: « J'innove donc je suis » (I innovate thus I am!) , « Tous entre-preneurs » (All Entre-Preneurs), « Innover ou périr » (Innovate or disappear).

« If the United States (NASA), offered the “TRL” analysis and innovation tool, Europe, France (through my research and innovations) offered the “DRL” and the strategy of “hybridization and agilisation of the Tech-Push and Market-Pull DRL-TRL approaches, innovation tools and strategies created 10 years ago to support transformations and evolution of the innovation models.

I have the pleasure to quote Denis Mercier, Air Force General, former Chief of Staff of the French Air Force and then NATO Supreme Allied Commander Digital about the utility of my innovative tool : "The " DRL-TRL " tool is interesting to promote synergies between different actors in an asymmetrical and win-win approach. The adoption of a hybrid model allowing to associate the industry that benefits from PI is to be closely studied according to the DRL model".



2- What are your main goals and objectives for 2021 and beyond?

I would like to share more of my knowledge in order to support wise actions influencing micro, meso and macroeconomic evolutions.

Currently, I have the joy to conceive, launch and supervised only Innovation Projects that I like while working with colleagues I appreciate; A radar simulator, a Virtual Pilot Instructor based on AI explainable are some of these Projects for Secapem / Group Rafaut. I also have the pleasure to be Technology Coach for the Start-Ups members of the IoT Tribe Accelerator within Space Endeavour UE funded Project where I'm working for SAFE Competitiveness Cluster in PACA region in France.

Obviously, I'm proud to continue my contributions to the most amazing and evolving Innovation Instrument that, in my opinion, UE highly support, the European Innovation Council and for which I do hope I will be more intensively useful...

I could resume hereby my specific intended contributions:

- a). Hybridisation of Tech-Push and Market-Pull through the innovative tool DRL-TRL
- b). Collaborative Innovation, Open Innovation as a state of mind of all RH (Contrat of shared risk and benefice)
- c). « Agilisation » and thus Acceleration in specific context and timing
- d). « Open Qualification » of innovation sources, means, contexts



To finish, I would like here to recall the European Commissioner Thierry Breton who sets the objectives and the common ambition for Europe which I'm fully on line :
« Beyond the health emergency, which remains our current priority, this crisis accelerates changes in the world, in our way of living and producing, in an age of digitalization and awareness of our impact on the planet's resources. Faced with this unprecedented crisis, there is no time to lose. We must start - and this is normal - by saving our industry, as we would otherwise risk Europe's industrial and technological downgrading. This crisis is also a trigger for transforming our entire production and gearing our industry become green, digital and resilient, thereby reducing our dependency. Yes, the challenges are great. But as Jean Monnet said: "We only accept change when it is necessary, and we only see necessity in the crisis".



3. What are some of the challenges facing the innovation and entrepreneurship ecosystem in developed and developing countries?

PhD. Florin Paun: Innovation practitioners and theorists have ignored the importance of the degree of maturity of Demand, of the expression of needs of innovation, and for decades have followed the only technology maturity scale, Technology Readiness Level - TRL (Mankins, 1985). Tech-Push Approaches are often opposed to Market-Pull Approaches.

With the DRL (Demand Readiness Level) tool (Paun, 2012), the foundations for innovative approaches to hybridization between Tech-Push and Market-Pull are finally laid and available for all collaborative innovation processes. Concrete tools make it possible to accelerate innovation, thanks in particular to methodologies that support national strategies, but also companies and innovation networks "tools to compensate for asymmetries between players" (Paun, 2012) and "Tech (TRL) and Market Pull (DRL) hybridization".

Choosing to emphasize the importance of the innovation actors, human factor, partners and management tools of different stages in the collaborative innovation process is part of a hybridization methodology that has been well known for a few years ("TRL-DRL") which also offers solutions to co-quality together with potential partners and stakeholders the degree of maturity of both the innovative technologies (TRL) and the demand and needs for innovation (DRL). The discovery in France of the DRL-TRL tool (Paun, 2012) and its first applications in innovation strategies is quite recent thanks to research, innovation and experimentation in the aerospace field. Collaborative innovation has been the subject of numerous scientific works on open innovation, (Chesbrough, H., Vanhaverbeke, W., & West, J., 2008) as collaborative processes (Von Tunzelman, N., & Richard, P., 2012; Laperche, B., Uzunidis, D., 2012), and defined as an organizational process that integrates a variety of public and private actors, sometimes in the form of communities of thought and action that create, share and disseminate different knowledge aimed at collectively and individually creating value through innovation or incremental disruptions in a diversity of fields.



The theoretical corpus of this new approach is based on research and experiments originally carried out in France at the *Office National de Recherche et Études Aérospatiales* (Paun, 2012) to build a new dynamic of innovation and technology transfer with SMEs through the integration of new specific “asymmetries of collaborative processes” (risk asymmetry, timing asymmetry, cultural asymmetry, etc).

The second main Challenge will be the ongoing transformation of the Economy from Value Distribution Channels to an “Enchanted Mangrove Forest of Value Distribution” (Paun, 2015) where everybody could supply anybody from other domain, market sector or geographic localization... This is currently deeply impacting Business Models themselves and with no awareness inside the Value Distribution Forest, Kodak type cases will be common...

New tools like DRL-TRL enable the “agilization” (Paun, 2019) of disruptive innovation process by transforming the simple Distribution Chain of technological value in a single sector into this veritable "Tree" or "Mangrove Forest" (Paun, 2018) with fiscal, organizational and participative management incentives for technological but also societal innovation processes in several sectors. Thus, we are moving from Design Thinking to “Agile Demo-Tech thinking” (Paun, 2018) strategies that promote disruptive innovation and have positive impacts at méso et macro-economic levels too. Thus, we create a society capable of understanding the Innovation models and their constantly evolution, from C&D ("connect & develop"), "lead user method", "Open Innovation" (Chesbrough, 2008) to the Total Innovation Model (Xu, 2007), "Hybridization Tech Push and Market Pull - "TRL-DRL" (Paun, 2012) or "liberated enterprise" type models, and finally to “Agile Demo Tech Thinking” (Paun, 2018).



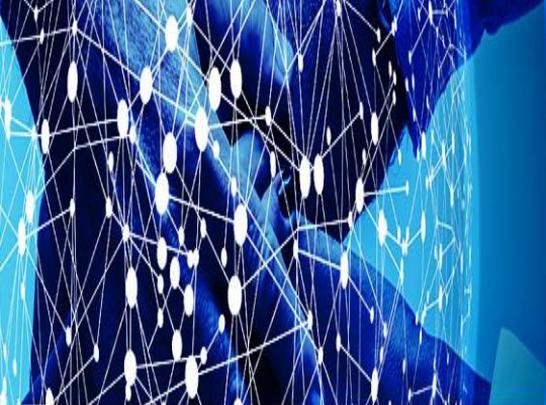
4- What are some of the opportunities facing the innovation and entrepreneurship ecosystem in developed and developing countries?

The opportunities are in the same time challenges facing the innovation and entrepreneurship ecosystem : collaboration ! collaboration ! collaboration !

And this become more obvious since all the funnels where open as professor Chesbrough theorized it since 2003 through his Open Innovation Model. It is this opening who broke the sealings of the former Industrial Programs and thus shift the world from Value Distribution Channel to this Mangrove Forest of Value Distribution!

The tools are lacking as we use innovation strategies developed for the former economic models and not in the today's highly collaborative economic models.

Attention to the Intellectual Property rights as collaboration is not an « open bar » to the IP !



5- What is best innovation strategy implemented to leverage the ranking of the countries?

Build the complete Ecosystem to allow Collaboration but also Implement Mechanisms which will change the Culture towards collaboration for any actor of the ecosystem!

There are already **Multiple Impacts on Organisations and transformations :**

- The R&D Centres as Centre of Competencies vs Centre of PoCs'
- The Production Centre for Technology Scouting
- The Innovation Structures as Centre for Demo-Tech Production
- The Development Offices & Programs as Production Integrator
- The Supply Chain Offices as Managers for Technology Sourcing qualifying & reinforcing Start-Ups intermediating & negotiating TechTransfer - working within Innovation Structure
- The Financial as Invest on Innovation Path vs Innovation Cycle
- The CULTURE as Agile Thinking



Intensifying collaboration is the key of efficient and fair innovation system !

As an exemple, with the DRL scale, which offers an in-depth and dynamic understanding of Market Pull approaches, and the innovative patented DRL-TRL tool we have a new reference system to accelerate and "agilize multi-sector and multi-function innovation processes" in the face of a dynamic of "reducing innovation cycles" (Paun, 2018). We can thus better understand and anticipate the actions, stages and specificities of all the players during the different stages of collaborative processes aimed at creating market value and knowledge capital for manufacturers and research laboratories. By articulating the determinants of supply as well as demand (by entrepreneurs and intra-entrepreneurs and their innovation ecosystems), collaborative innovation acceleration cycles can be described as "hybrids" (Paun, 2018) because of the variation in their magnitude over time, but also because of the superposition of classic sectoral innovation trajectories and multifunctional innovation trajectories.

If we integrate the system of the two references TRL and DRL, one for the Tech-Push (TRL) approach and the other for the Market-Pull (DRL) approach, we are able to determine the optimum conditions (the sum of the two scales being equal to or greater than 9) and the ideal period for a technology transfer or collaboration agreement even for disruptive innovation to be signed in an efficient way for all the partners.

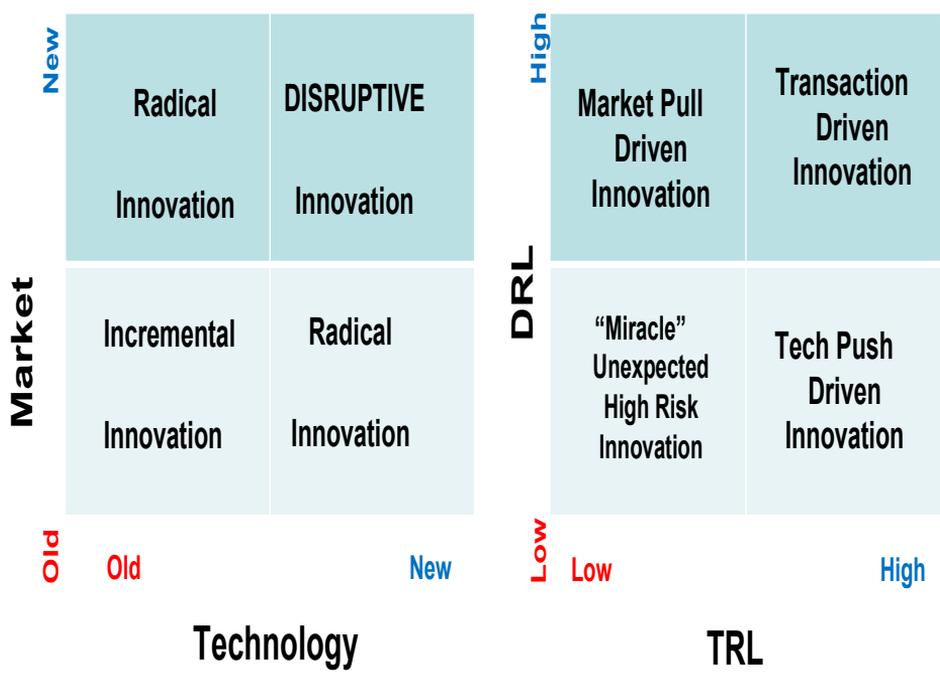
Figure : Various uses and adaptations in France of the DRL-TRL tool for accelerating disruptive innovation



DRL/TRL

Innovation Typologies in Acceleration process

(Resumed© IPRD)



ANR - ERANET Workshop, Paris, 8th of February 2011

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Another recent example of collaborative innovation is the **Space Endeavour and IoT European Program** that integrated the heterogeneity of start-ups and their different specific stages of development offering different opportunities for collaborative innovation (Early stage Start-Up, Start-Up in the process of their “crossing the chasm”, Mature Booming Start-Ups: <https://sodigital.fr/le-projet-space-endeavour-et-iot/>).

If we consider the evolution of humanity as another example, we realize that it is based on collaboration and on disruptive innovation. Disruptive innovation in materials has forged the evolution of humankind's eras. We have thus moved, with technological mastery, from the era of stone to that of bronze, iron, steel, and probably to that of silicon, graphene and perhaps the materials of tomorrow (JEDI - Joint European Disruptive Initiative - European MoonShot, December 2018) adaptable and nano-reformable, "living materials".

And quoting the EIC Director Jean-David Malo, Europe is mature and ready for this challenge: “A new battle is now taking place in deeptech innovations, an area where Europe has competitive advantages, with a research of excellence at international level. The only question is: will we be able to transform this knowledge in the form of innovations that create new markets and therefore jobs? ”

Indeed, this will require more collaboration and public sector, including the European Commission, to intervene with means other than just subsidies in order to open innovation capabilities, including increasing the serendipity acting within players of different sectors and actively involving European leading entrepreneurs such as Florin Talpes, founder of Softwin and BitDefender, European leader in cybersecurity.



6-What is your opinion about the roadmap of economic growth & diversification through Technology, Innovation, entrepreneurship programs?

It is clearly one of the ways but it will not work without changing the culture and the education. Cultivate the Entrepreneurship has to be an important mission for the education system together with bringing the basis for the general knowledge...

To understand economic growth is important today more than ever to understand the role of the human factor and of the newly identified different asymmetries between actors of growth (more than just Stiglitz 's "information asymmetry").

The value is only created based on asymmetries and when the process is highly collaborative there is no other solution but the compensation of these asymmetries between people.

As an example, the importance of Competitiveness Poles for the Open Innovation acceleration with SMEs it was particularly addressed with the identification of specific innovative tool to "compensate asymmetries in the innovation process" (PAUN, 2009): especially risk asymmetry that need to be managed and shared in order to favor shared value creation through Open innovation. First, the framework and evolution of innovation and entrepreneurial models will be presented as one of the drivers of the increasing role of Competitiveness Poles as supporting ecosystems for SMEs innovation performance.



According to Schumpeter, without innovation the economy stagnates and does not generate growth because there is a lack of risk-taking and a dearth of entrepreneurship. He therefore offered up a dynamic analysis of the evolution of the economy when conditions for change have been identified, at the heart of which entrepreneurs “create without letup because they cannot do otherwise”.

Each industrial cycle is unique and generates growth over long paths of technological maturation. These paths are followed by a slowdown in growth and the emergence of new innovations, thereby creating the conditions for new economic growth (for example, in textiles and iron in the 18th century, steam engines, rail and steel in the

19th century, electricity, chemistry and internal combustion engines in the 20th century). Entrepreneurs play an instrumental role in this “creative destruction” (Schumpeter) process, which allows the economy to rejuvenate itself through successive industrial revolutions. The evolution is therefore cyclical, taking place in simultaneous waves, together with a phase of expansion through the appearance, as “innovation clusters”, of new productive combinations as well as of new enterprises (suppliers, customers, and then imitators) and new markets.



There is a tendency on the part of both industrialists and governments not to want to leave to chance the emergence of new innovation cycles (long waves of innovation). Thus, resources are being mustered to identify flagship technologies capable of speeding up innovation processes (technology intelligence). Indeed, it is during phases of growth and expansion, at the beginning of each new cycle of innovation, that players can envisage significant margins and even contribute to setting new benchmarks so as to establish themselves as leaders in new markets.

Entrepreneurs are not always driven by the lure of profit, but also by irrational reasons such as the search for recognition and power, the desire to win or the joy of creating value.



These selfsame values are to be found today in the reasons that underpin the desire of intra-preneurs within large groups to promote open innovation. That entails innovating together within ecosystems made up of start-ups and SMEs. Here are some examples of open innovation mechanisms currently at work: the innovative approach of the Bizlab, the A3 accelerator and the use of the “HYPER” platform for collaborative innovation within Airbus; the integration of start-ups into the research and innovation programmes of major aeronautical groups thanks to the Starburst and Pegase Croissance accelerators, the Aerospace Valley Business Nursery or the joint accelerator at BPI and GIFAS.

Schumpeter refers to “innovation clusters”, “legions of entrepreneurial troops” and “cluster shot” to emphasize that change drives change. Change succeeds in spreading and establishing itself as a new cycle of innovation.

In continuation of Schumpeter’s insights and expectations about the power of innovative ecosystems and the role of collaboration in innovation processes, strategies for accelerating innovation are nowadays being designed by also integrating the practice of open innovation, collaborative processes, etc., par excellence, with a view to making innovation faster. These practices include a great many players



Innovation cycles are becoming increasingly hybrid, thereby integrating both supply and demand factors through collaborative innovation processes with customers, consumers and technology providers. The hybrid nature of these cycles is due to variations in their magnitude over time and to the overlapping of traditional sectorwide innovation trajectories and of functional innovation trajectories, particularly due to the emergence of new fields encompassing mobility, which generally combine several sectors to meet new uses and needs.

We can thus identify short cycles of sector-wide innovation. Some start-ups and SMEs are experimenting with short cycles of innovation and providing true proof-of concept (POC) to large groups. The latter are capable of integrating innovations from several business segments (e. g. electric cars or self-driving cars) into intermediate innovation cycles, but also of developing partnerships over longer innovation cycles, as is the case for investments in artificial intelligence.



This type of cycle is built through collaborative innovation ecosystems (large groups, territories, institutions, SMEs, mid-sized companies, start-ups) that together generate changes in functional innovation trajectories. These cycles therefore crop up amid what can be properly described as augmented sectors such as “mobility”, which must concurrently integrate the trajectories of innovations made in the automotive sector, land use (Smart Cities), flow management (Smart Grids), digital, and health and environment, etc.

Unlike Schumpeter’s representation, innovation no longer seems to accelerate in an homogeneous manner. Indeed, a short-cycle, sector-wide innovation trajectory on the part of an SME can, through the implementation of collaborative tools, tax and organizational incentives, develop into a multi-sector innovation trajectory (cross-fertilization), in partnership with a large group outside its original segment. This evolution can also be functional and thus contribute to radical innovations in augmented sectors.



7-In conclusion, today, the cycles of radical innovation mentioned by Schumpeter are being speeded up by the processes of collaborative, open innovation and porosity across various sectors. Approaches oriented towards the development of agile technological demonstrators will further accelerate these trends.

Instead of trying to force the acceleration of innovation without understanding the impacts on the acceleration of innovation cycles and on the economic, social and environment impacts, it is needed a new view and holistic approach of «agilisation » of innovation processes and organizations mobilizing all sectors, all human resources and monitoring all impacts through « open qualification » of innovations.

The more one integrates (at all stages of the DRL-TRL innovation process) the impacts perceived and thus monitored through “open qualification and evaluation tools” (Paun, 2018) (like the French innovative Data qualifier Xvaluator) by one or more stakeholders, the more one increases the capacities and capabilities to "make innovation processes more agile", thus more efficiency in using budgets and resources. In this way, the resilience of collaborative innovation actors is strengthened.

Thus, micro-economic tools like DRL-TRL could have macroeconomic impacts and transform national innovation strategies. In fact, the more companies and institutions adopt (at the micro level) the tools (DRL-TRL, Impact Readiness Level, Risk and Shared Benefit Contracts, Agile Demo Tech Thinking, etc.) for the agilization and hybridization of Tech Push and Market Pull strategies (at the meso-economic level, at the level of regions and sectors, even branches), the more a real "culture of collaborative and agile innovation" emerges from the bottom-up.



8- In your opinion who we deploy the innovation mindsets in any organizations?

We all need to understand the evolution of Economic Models and interdependent changes of the Innovation models.

Analyzing the evolution of the innovation models, from the linear process (“concept” for Schumpeter, “R&D push” for Abernathy, Utterback, “co-innovation” for Shapiro), integrated and systemic process (“coordination process” for Hardy, Iansiti, Chen, “innovative management” for Tucker) to total innovation management (3 totalities for Xu) we could understand the evolution of the practices and actors of innovation.

Thus, the Importance of the innovation ecosystem in the performance evolution of firms is justified by the evolution of the entrepreneurship economic model from the concept in the XIXth century of Schumpeter of an entrepreneur as individual risk taker with the intention of a destructive creation by replacing one product or service with another towards an ‘transformational entrepreneurship’ (MIT, 2010) concerned by the shared value creation within its ecosystem, an environment ‘intra and extra – preneurial’, un augmented entrepreneurship (de Rosnay, 2015).

In the coherence to the new strategies of « The Open Innovation » (Chesbrough, 2008) but also the « All Totalities » Innovation Strategies (Xu, 2007), I would say that the innovation should become « the state of mind » of all human resources and not just a programmed objective of a function, or of a department R&D.



The collaboration tools and comprehension of the potential of continuous shared value creation should be diffused in the practitioner's activities and open new methodologies to create either confidence but also connections between sectors, departments, regions, ideas to enhance serendipity.

Agilising Innovation processes and organizations as shared attitude and tools in a society of the of 21st century could mean not only more performance, efficiency in using resources for transformation of our economies and their role in everyday life but also resilience facing multi-form future potential crisis.

The importance of these new collaborative tools and strategies for innovation "agilization" is that they generate, in a "recursive causality" (in the meaning of Morin, 2010) of new centers of value creation, economic changes at the interdependent micro, meso and macro levels, which makes it possible to anticipate the trajectories and cycles of multi-sector and multi-functional innovations. Innovation management and mindsets are thus based on agile methods of "open and participative qualification" (Paun, 2018) that are more and more compatible with economic, social and environmental impacts and expectations.



VIP Interviewee Report

As part of our GCC journal of "Techno park ", we conducted a series of interviews with high profile experts in the field to better understand How leadership support the best practices of innovation & entrepreneurship ecosystem toward smart growth & economic diversification.