



The Development of

AeroLogLab **ITA**

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Summary

Objective: to present the development of AeroLogLab-ITA and its role in education and research to provide proper logistics engineering background for students and researchers

- Motivation
- Reasoning behind AeroLogLab
- AeroLogEdu
- AeroLogR&D
- Conclusion

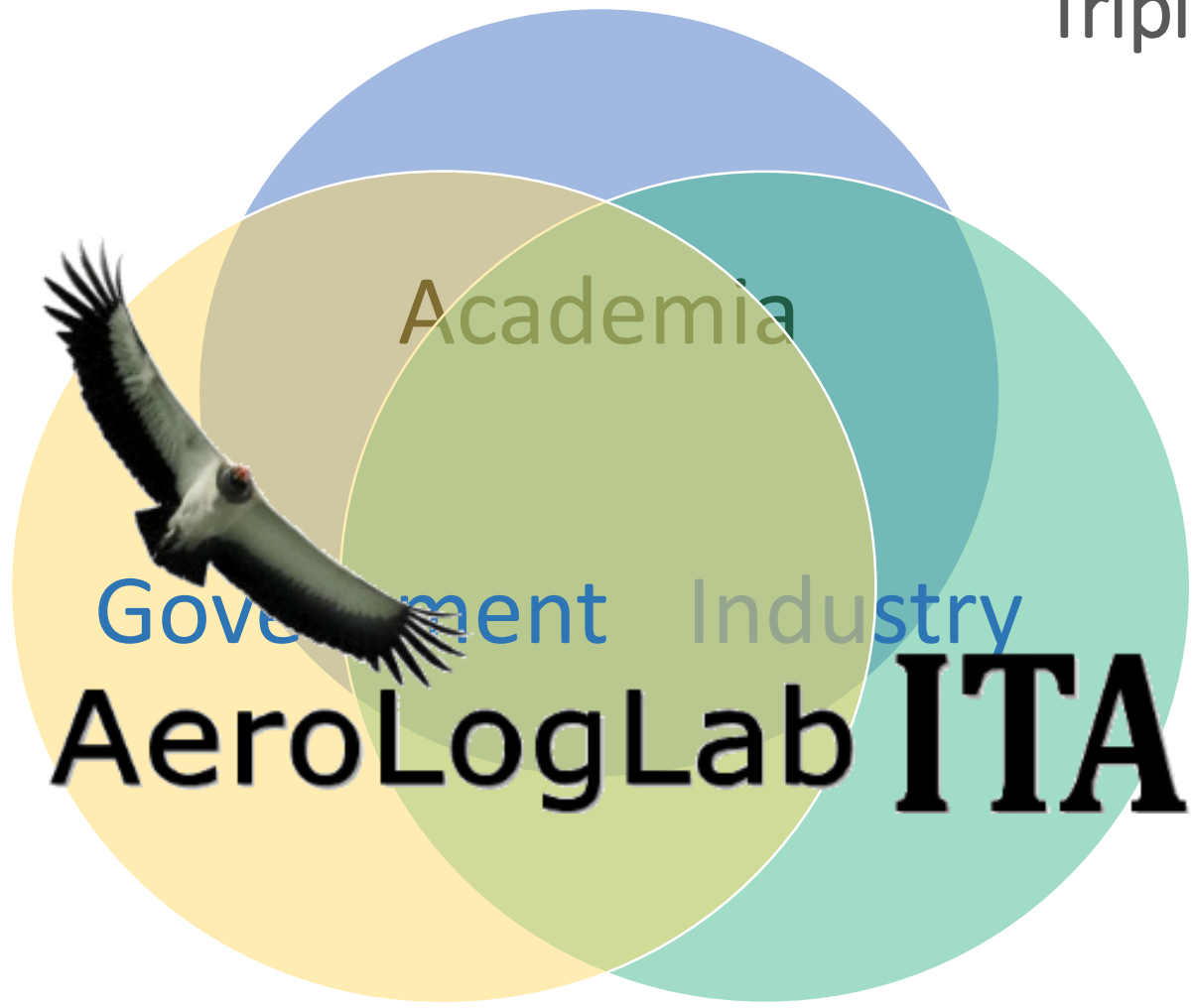
Motivation

- Motivations come from consequences of limitations in logistics engineering understanding from the acquisition/aeronautical engineering community;
- The recent acquisitions of new and complex weapon systems and their expected support complexities (and/or simplicities) for the Brazilian Air Force - FAB and for potential customers;
- Logistics engineering efforts in aerospace education may be considered limited, specially in undergraduate courses, since it may not address these limitations in a systemic/cross-disciplinary way, and are focused on only maintenance engineers and not on developers.

Reasoning behind

- Tripple Helix;
- Partnership;
- ILS Development and Requirements

Reasoning behind... Triple Helix



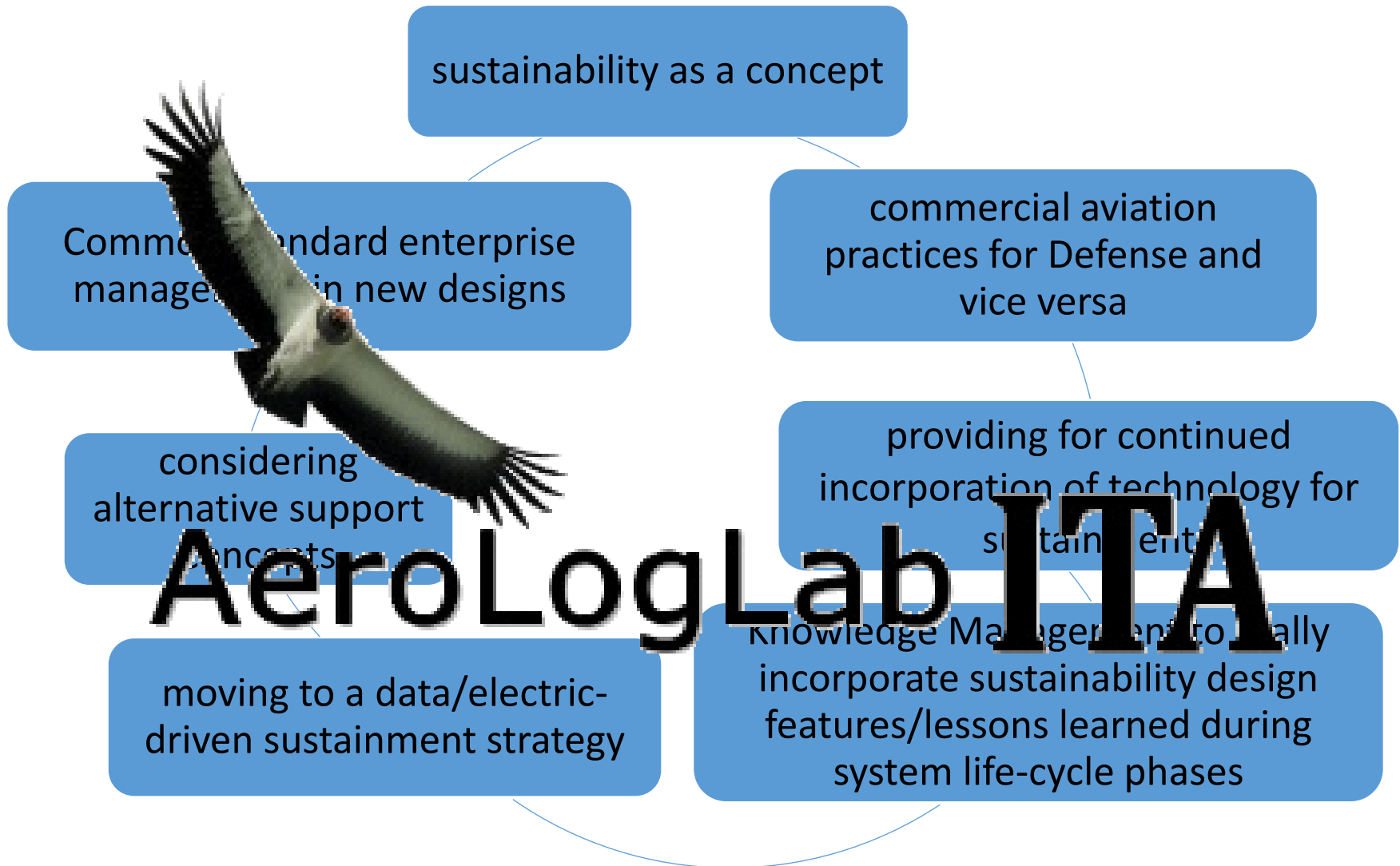
Reasoning behind...
Partnership



AeroLogLab ITA



Reasoning behind... ILS Development and Requirements



São José dos Campos Airspace Cluster...



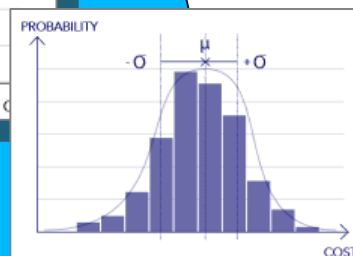
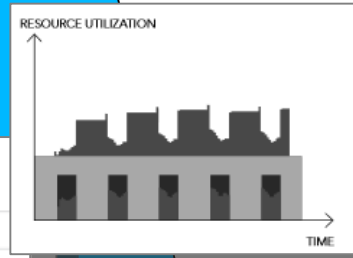
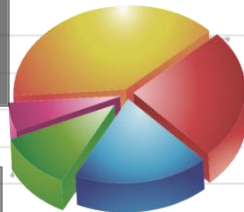
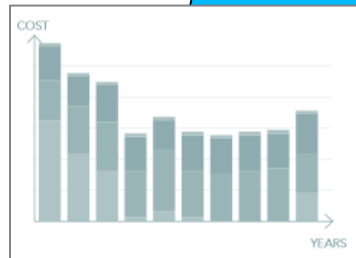
The partnership with the Ops and Mnt Engineering Division from LTU. ITA and LTU are complementary in terms of education and research related to aeronautical and ops/mnt engineering and both have a good education/research relationship with the aeronautical industry and the government. Focus on knowledge management is crucial for the development of AeroLogLab in a potential full triple helix environment.

AeroLogLab	Undergraduate Engineering					
	Aeronautics	Electronics	Mechanics	Infrastructure	Computing	Airspace
Maintenance Engineering	X	X	X	X	X	X
Logistics Engineering	X	X	X	X	X	X
Engineering tools to manage Fleets of Complex Systems	X	X	X	X	X	X

		2016	2016	2017	2017	2018	2018	2019	2019	2020	2020	
LAB	Implantação											
EDU	Grad/Pós	Engenharia de manutenção e Logística no Desenvolvimento de Sistemas Complexos										
			Simulação									
				EMaintenance								
					Otimização de Suprimentos Reparáveis e Sobressalentes							
						Ferramentas para o Gerenciamento de Frotas de Sistemas Aeroespaciais Complexos						
	Mestrando											
	Doutorando											
P&D	ALI/RAMS											
	eMNT											
Doutor	Pesquisador	2	2	2	2	2	2	4	4	5	5	
Mestre	Alunos	5	5	6	6	7	7	8	8	9	9	
	Menu de Disciplinas oferecidas para todas as Engenharias do ITA											
	Programa de Mestrado											
	Programa de Doutorado Duplo Diploma com a LTU											
	Projetos de Pesquisa											

- **MP – Logistics for the Development of Complex Airspace Systems**
 1. Maintenance Engineering (ARO/VAL) PRO
 2. eMaintenance (Marques) PRO
 3. Supply/Inventory Optimization (Júlio) PRO
 4. Simulation (Marques) PRO
 5. Operations Management (Abrahão) PRO
 6. Operations Research for Complex Systems (Valle) PRO
 7. Logistics on the development of Complex Systems (ARO/DAN/MRQ) PRO
 8. Acquisition Logistics (Abrahão) PRO
 9. Methodology (Abrahão/Marques)
 10. Statistics (Denise)
 11. Production Engineering [Eletiva] (Carmen/Rodrigo)
 12. Systems Engineering [Eletiva] (????)
 13. Tools to Support Fleets of Complex Systems (ARO/MRQ/VAL) PRO

RAMS Project: Plan/Development 5 - 6 years



LORA
Análise de Nível de Reparo

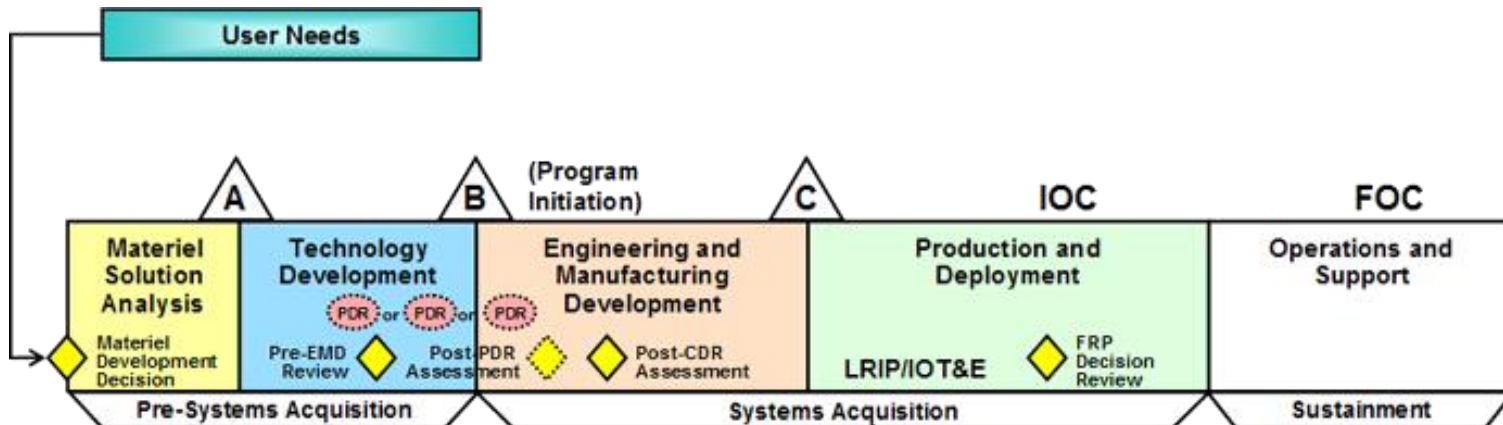
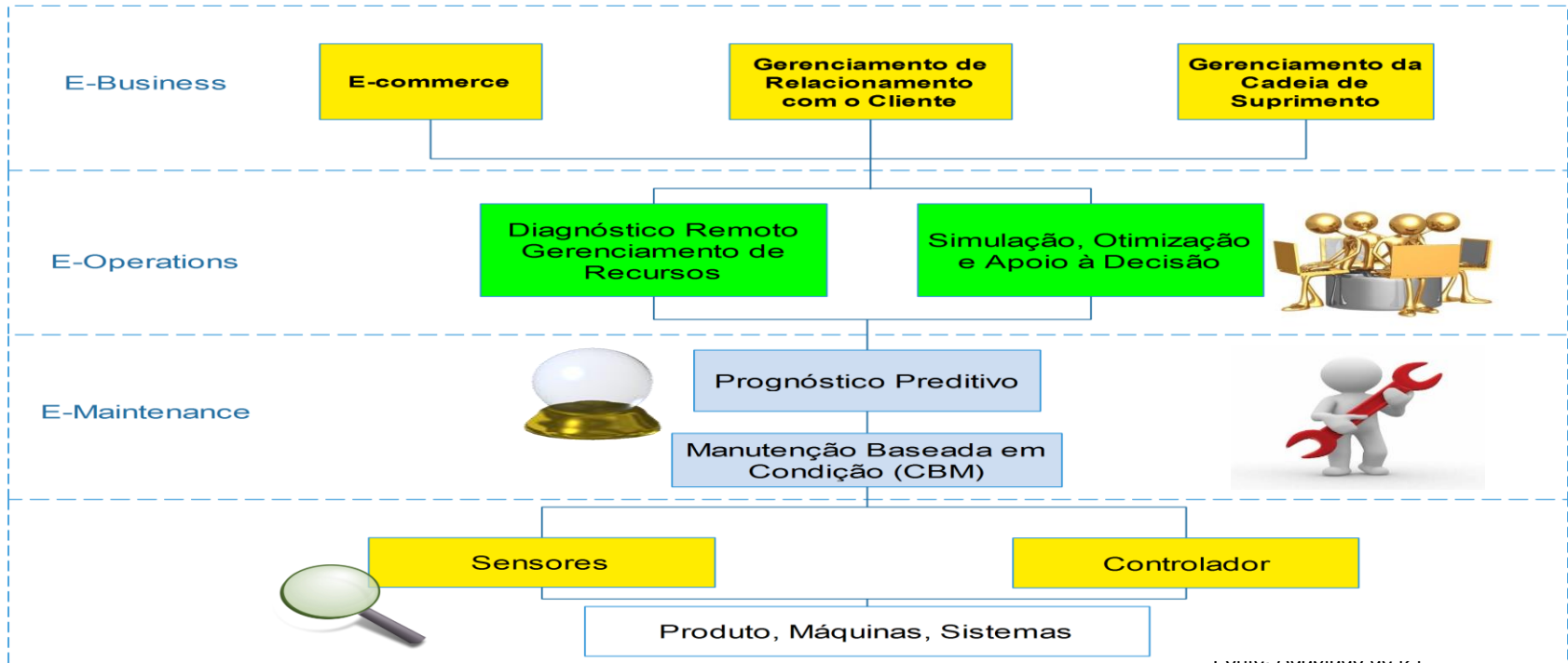
LSA
Análise de Suportabilidade

RAMS
Acomp. e aval. de Confiabilidade

eMaintenance
Otimização Plano de Manutenção

Fleet Deployment
Análise Localiz. e *Design* Logístico

...moving to a data-driven sustainment strategy...



Conclusion

- Instead of only Educating maintainers to be developers, which may not reach the desirable effect, we are also Training and Educating developers to be maintainers.
- This should lead to Manpower able to innovate, develop, integrate and manage logistics engineering for complex airspace systems not just for the product development and manufacturing life cycle, but for the entire life cycle until their disposal.
- Our product is Manpower able to innovate, to research and to learn together with its partners, and to deliver sound applied and academic research on Logistics and Maintenance Engineering in a full triple helix environment.