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*Space and Finance
Exploring Planet Finance*

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SPACE INDUSTRIAL WAR : **TOWARDS A RISK OF CREEPING TAKEOVERS** **IN THE GLOBAL SPACE INDUSTRY?**

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Scope of the study

Facts

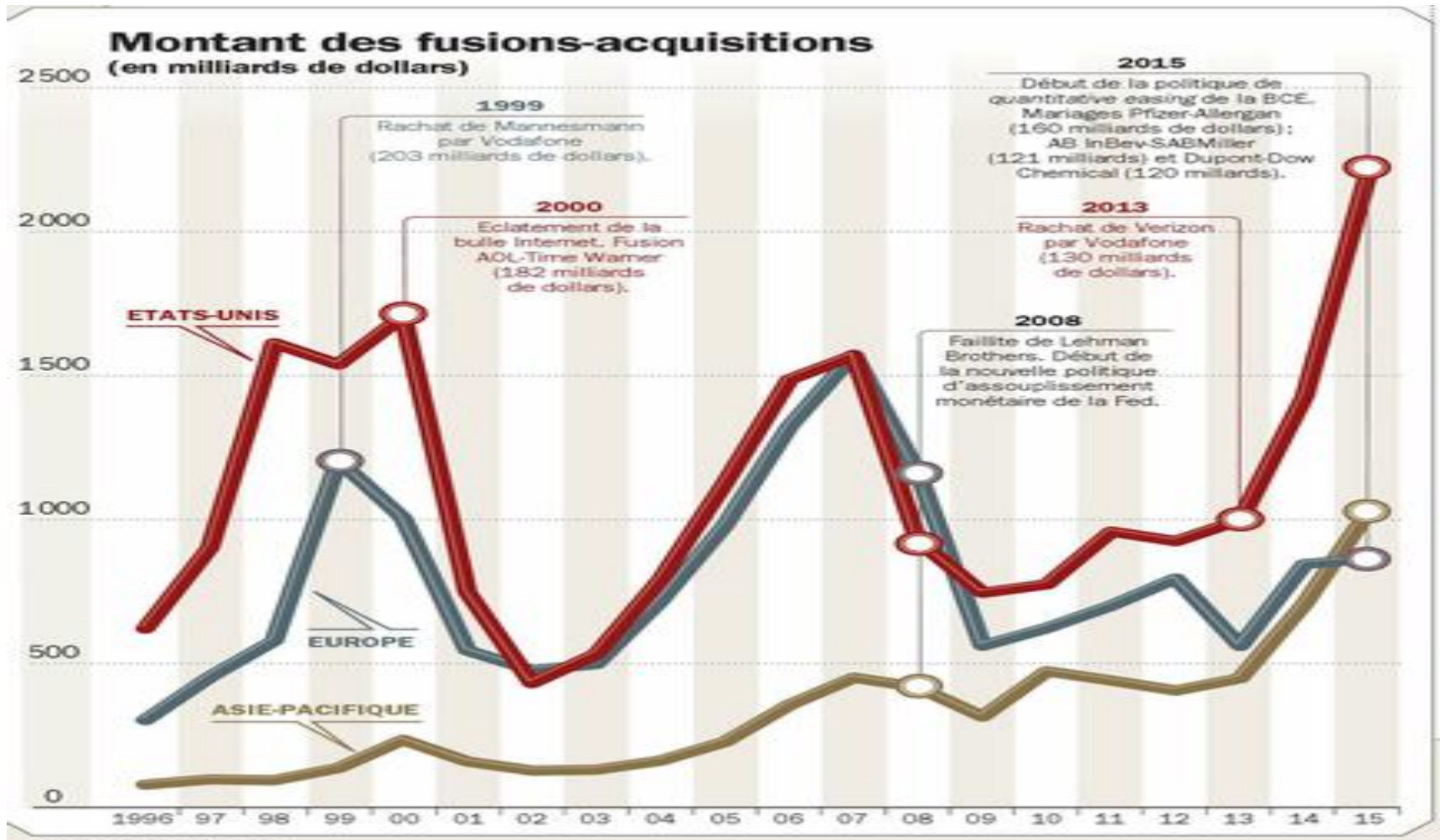
- Increasing number of **acquisitions/sales** of space industries of **2nd and 3rd tiers** (ex. sale of Airbus Group Electronic Defense division to the US investment fund KKR, following a beauty contest where Carlyle was shortlisted) ...
- From **private equity funds** specializing in space industry (coming from advanced or emerging economies) ...
- In a context of consolidations : (i). 2015 as a record year in terms of M&A worldwide ; and (ii). a **growing attractiveness** of space sector

Findings

- Strategies of **'buy and build'** + interest in **firms of tiers 2 and 3** justified by their referencing and qualification
- Challenging **control procedures** put in place by States to protect their national interests
- Risk of **creeping takeovers** likely to cause a series of **exocentric shocks** (wars?)
- “Black scenario” : (i). (using) **space (industry) control**, (ii). (in view of) **space (sector) dominance**, (iii). (towards) (outer)**space militarization**



Global Context





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Macro-economics of M&A

- **Global macro-economic context : In 2015, *5 operations of over \$ 100 billion* (including 3 in the final months of 2015)**

Factors: (i). currency war + collapse of interest rates; (ii). abundance of cash / role of funds (investment, pension, sovereign, hedge funds); (iii). industrial dynamism (patents); (iv). deteriorating situation of emerging countries ...



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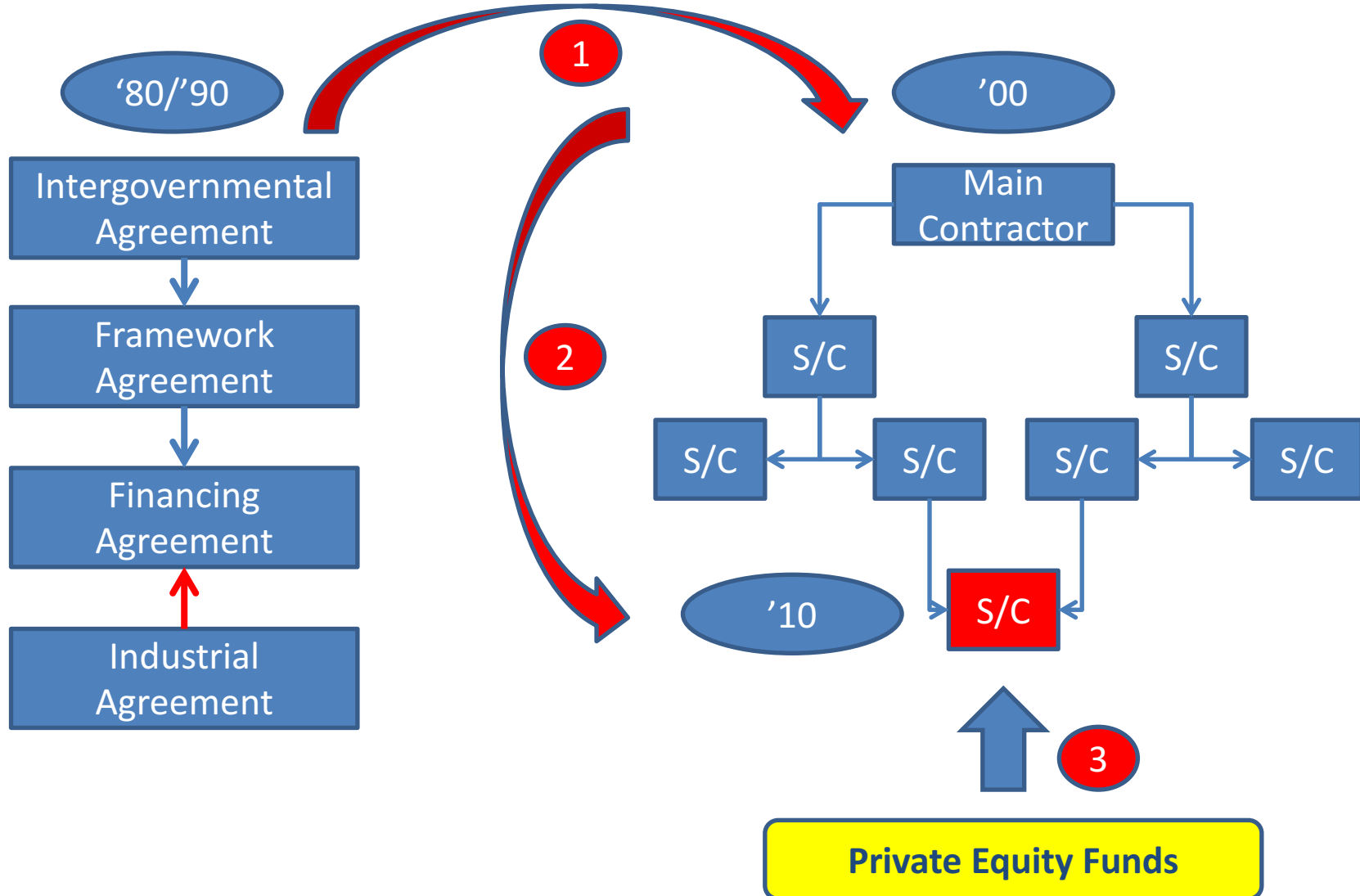
Attractiveness of Space Sector

- Increasing ***geo-political*** concerns
- Current trend of ***technological innovations*** in the space industry: increasing use of composites (resin, carbon / glass fiber reinforced plastic) ; improvements in turbine efficiency and propeller technology ; alternate energies / fuels)
- Opening-up of the space industrial sector : (i).space ***commercialization***; (ii). ***convergence*** of networks (ultimate convergence ; increasing the number of players; (iii). new ***US industrial dynamism re. exploitation of space natural resources***)
- Expensive cost of big groups' subsidiaries in the field of ***security/defense***



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Gradual Shifting



Gradual Emancipation

- **1960 : Government programs (1960 : 26 (USA) / 29 (CCCP), Moon Missions)**
- **1970 : Licensing and co-production**
- **1980 : Strategic Alliances**
- **1990/2000 : Mergers, acquisitions, absorptions**
- **2010 : Joint Ventures**

Space Industry Structure

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- **Highly vertically integrated industries**



- **Structuring role of dominant companies (highly concentrated market)**



- **Limited productive internationalization (few plants, national, strongly skilled employees)**



Challenged by ...

(i). increasing technological complexity,
(ii). rise of specialized equipment manufacturers and suppliers

(i). outsourcing need : subcontracting of study and ability, (ii). relative decline of the rate of integration

(i). transformation of conditions of production (core : tier1/external : tiers 2 and 3), (ii). companies of tiers 2 and 3 are looking for capex and competitive size/market power



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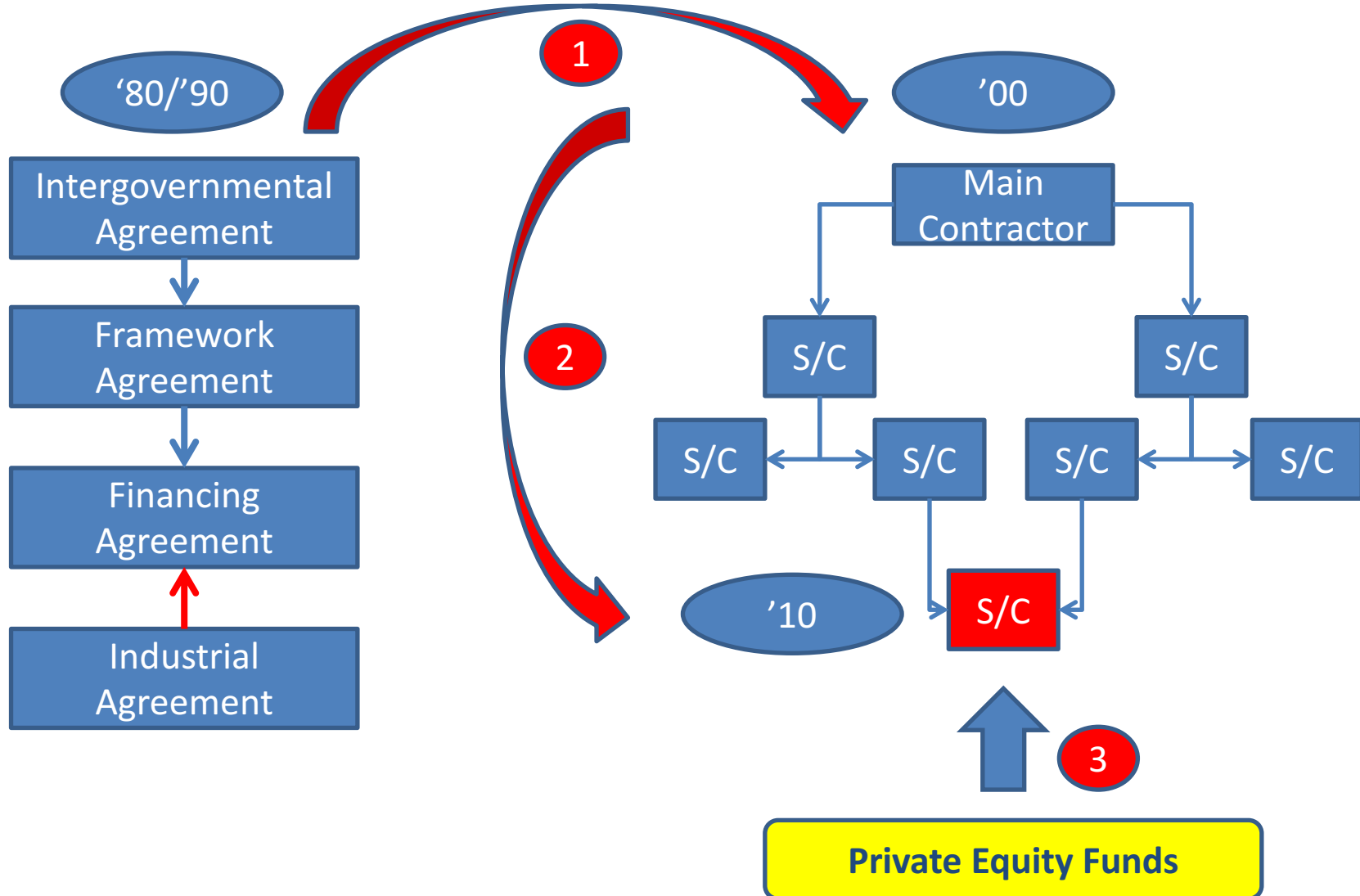
Space Sctor Dynamism

YEAR	COUNTRY	GROUPS	JOINT-VENTURES	JV FOCUS
2014-2016	EU/France	Airbus group/Safran	Airbus Safran Launchers	Launchers for commercial and military satellites
2013	USA	Raytheon Company/General Dynamics information technology	RGnext (Range generation next)	Research and services on launch optimization systems : Launch and Test Range System (LTRS)
2013	Russie/EU	RSC ENERGIA/ Airbus defence and space	Energia - Satellite Technologies	Tracking and communication satellite system
2011	USA	Lockheed Martin, URS Corporation and InDyne	CoRE (Consolidated Range Enterprise)	Research and services on launch optimization systems : Launch and Test Range System (LTRS)
2007	France/Italie	Thales/Finmeccanica	Telespazio	Military and civilian satellite services
2007	France/Italie	Thales/Finmeccanica	Thales Alenia Space	Developer/manufacturer of civil and military services
2006	USA	Lockheed Martin Space Systems/Boeing Defense, space, security	United Launch Allaince	Launchers for commercial and military satellites



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Defence Line #1: Foreign Investment

- Licensing scheme (*United Defense acquisition by BAE System, 2005*) (up to 2001, CFIUS :1391/19 (investigations)/8 withdrawals/11 decisions/**1refusal**)
- Remedies and industrial patriotism (***China National Aero***)
- Failure of the MAI (1997), part of the OECD and conventional regime (IBT)
- Sanctuarization of companies in 'sensitive' areas (art. 346 TFEU / Exception to the OECD Code freeing the capital movements, re. arms trade control)



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Space Powers and International Foreign Investment Regime

	Washington Treaty of 18 March 1965	WTO Membership	Total of International Investment Agreements (IIAS)	Number of BITs (Bilateral Investment Treaties), Other IIAS and IRIs (Investment Related Instruments)
Russian Federation	No	Yes	79	BITs: 57 Other IIAS: 2 IRIs: 20
USA	Yes	Yes	122	BITs: 40 Other IIAS: 49 IRIs: 33
Canada	Yes	Yes	60	BITs: 29 Other IIAS: 2 IRIs: 29
France	Yes	Yes	180	BITs: 96 Other IIAS: 53 IRIs: 31
Japan	Yes	Yes	66	BITs: 20 Other IIAS: 17 IRIs: 29
Popular Republic of China	Yes	Yes	149	BITs: 109 Other IIAS: 18 IRIs: 22
United Kingdom	Yes	Yes	178	BITs: 94 Other IIAS: 54 IRIs: 30
India	No	Yes	102	BITs: 73 Other IIAS: 9 IRIs: 20
Israel	Yes	Yes	65	BITs: 34 Other IIAS: 4 IRIs: 27
South Korea	Yes	Yes	124	BITs: 81 Other IIAS: 15 IRIs: 28
Brazil	No	Yes	31	BITs: 0 Other IIAS: 13 IRIs: 18



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Defence Line #2 : Export Control

American System

- Mandate (according to Constitution) granted by the Congress to the President (DoC / DDTC) : Arms Export Control Act (AECA , 1976), International Emergency Economic Power Act (IEEPA , 1977), Export Administration Act (EAA 1979 expired)
- International Traffic in Arms Regulations (ITAR) (prohibition subject to reserve : "commodity jurisdiction determination"), Commerce Control Lists (CCL) + Mechanism of "enforcement"
- Export license from DDTC (de minimis threshold : 25%). Ex satellite valve

European System

- Scheme (s) European (s) (eg mod. Ordinance n°2004-1374 of 20 December 2004 : prohibition unless authorized ; CIEEMG). Intra-Community transfers (common position and Directive n°2009/43)
- Transnational mechanisms Wassenaar Arrangement on Export Controls ; but : US approach (geopolitical) v/ EU approach (competition)
- ***" ITAR free competition" (sourcing abroad, significant losses in market share for US industry)***

Defence Line #3 : Concentration

- Authorization regime (extra-territoriality : eg conflict between FTC and DG Comp of the European Union about the merger *Boeing / McDonnell Douglas*, re. Exclusive supply arrangement, Spillover effects, expansion of Boeing 's market share and other factoring strengthening dominance, Remedies)
- Impacts on the *business ecosystem* : strategic alliances, joint ventures, coopetition ...
- Role of *intermediation in coopetition* (ESA Convention re. Facilitates data exchange, art.III)



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Present Scenarii

September 2016 :

- Scenario 1. **Conflictual** (closer antitrust look at Airbus Safran Launchers JV, Feb.2016)
- Scenario 2. **Collaborative** (AirbusGroup to sell Defense Electronics to KKR, Carlyle shortlisted, March 2016 ; Safran to sell Morpho)
- Scenario 3. **Cooperative** (intergovernmental or inter-agency agreements with industrial components ex. Airbus Defense and Space and Integrated Petroleum & Energy Services company (PETSE) (Saudi Arabia), re. Terralink Hub V-Sat Services, Nov. 2015 Electronic Warfare Symposium)

Black Scenario

An investment fund (which could be a sovereign wealth fund, Rapp, L., 2013)

- (i). Is looking for *space (industry) control* (acquisition of a strategic company belonging to tiers 2 or 3 of a space global group)
- (ii). In view of taking a *space (sector) dominance,*
- (iii). With the final objective of an (outer) *space militarization*



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*Thank you
for your kind attention*

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