

*Capture of  
3<sup>rd</sup> Tier Suppliers Requirements*

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# VIVACE

V ALUE  
I MPROVEMENT THROUGH A  
V IRTUAL  
A ERONAUTICAL  
C OLLABORATIVE  
E NTERPRISE

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## Objectives of task “3<sup>rd</sup> Tier Suppliers Requirements”

- **3<sup>rd</sup> Tier Suppliers**
  - Smaller size, typically in the range of SMEs and in any case below 1000 employees;
  - Most often do not participate to the sharing of programme risks;
  - Offer products and services at lower levels of the reference aircraft work breakdown structure
- **The scenario**
  - Growing relevance of suppliers in the aeronautical chain
  - Need to adopt approaches which allow for efficient integration of lower tier suppliers into new work environments
- **Objectives**
  - Eliciting requirements of 3rd tier suppliers in view of new work environments for aeronautics
  - Ensuring that those requirements are adequately accounted for in the research and innovation initiatives of Large Enterprises.

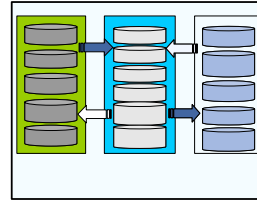
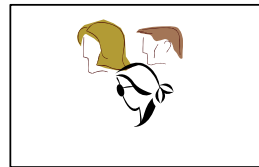
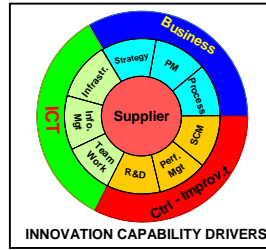


## **Task Approach Requirements elicitation**

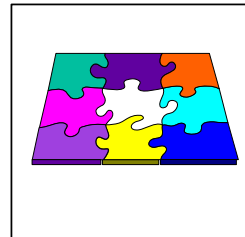
- Requirements elicitation task is conducted by ESOCE (European Society of Concurrent Engineering)
- Identification of themes to be addressed in the requirements elicitation activity => taxonomy of enterprise areas/processes impacting innovation capability and readiness:
  - Business (Strategy and financing; Project Management; Process);
  - Enabling ICT (Infrastructure; Information management; Team working);
  - Control and improvement (Supply chain management; Performance management; Research and Development);
- Grouping the suppliers into homogeneous classes;
- Eliciting the initial set of 3rd tier suppliers' requirements relevant to VIVACE research themes;
- Involving 3rd tier suppliers for consolidating and evolving requirements (consensus building).



# Eliciting requirements

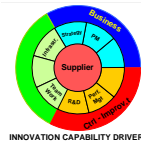
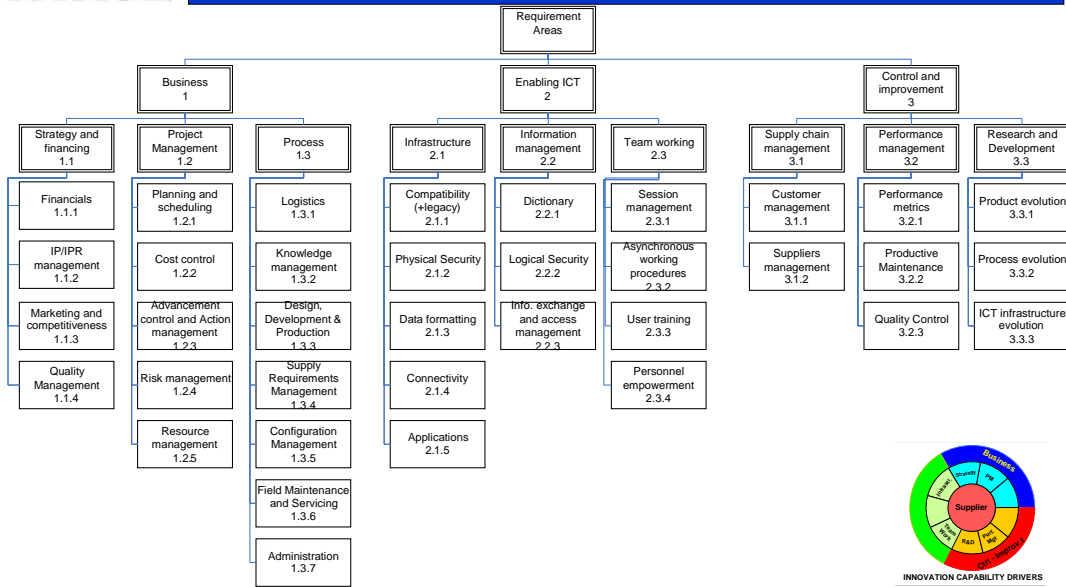


RTD FOCUS ↓ ↑ Suppliers' Requirements





# Innovation Capability Drivers





## *Business Area*

- **Business Strategy**  
Drivers considered address financial sustainability of investments, management of intellectual property, marketing and competitiveness issues, and Quality policy and management
- **Project Management**  
Focused on the issues related to the integrated management of projects in the supply chain, areas considered are Planning and scheduling, Cost control, Advancement control, Risk Management, and Resource management
- **Process**  
In the area of Process management, both operational and non-operational processes are addressed, and in particular: Design, Development and Production, Field Maintenance and Servicing, Supply requirements management, Configuration Management, Logistics, Knowledge Management and Administration



## ICT Area

- **Infrastructure**  
Compatibility at organisational and interorganisational level, connectivity, physical security, data formatting harmonisation and application policies
- **Information Management**  
Common interpretation of information (Data Dictionary), Logical security, control of information exchange and data accession
- **Team Working**  
Organisational support to collaborative sessions management, integration of asynchronous working procedures, training of users and personnel empowerment policies

Compatibility area covers the aspects of infrastructure harmonisation for ensuring an adequate capability of data processing across chain platforms and between new chain-specific systems and legacy systems at individual suppliers

Physical Security - Requirements in the physical security area include both computer / communication hardware related security (e.g. the shielding of computers from visibility from external places), and the methods and equipments for ensuring the controlled access to machines that allow for access to sensitive information

Data formatting - Requirements associated to the data formatting area address the theme of physical media for data transfer and storage, and of capability of processing information independently of specific platform in use at the information owner's site

Connectivity area is devoted to the requirements associated to the establishment of bandwidth for communication across the supply chain; specific themes are associated to guaranteed bandwidth in one-to-one and one-to-many interfaces, as well as to special requirements for advanced tools

Applications - Main themes in the applications area concern the establishment of harmonised user interfaces (to improve user familiarity across applications that are resident at different companies) and the definition of commonly agreed data processing rules and algorithms, in order to increase confidence in results from external calculations. Constraints addressed in the area are related to the existence of well established solutions at individual suppliers, and to the organisational impact from the introduction of new/modified ones

Data dictionary area covers the requirements for the establishment of a common view and understanding of data meaning and use. Specific themes are strictly linked with the skill issues, in relation to the needs of aligning data requests to the skills and processes in use by individual suppliers

Logical Security - Requirements associated to the logical security area cover the processes and tools dedicated to protect data from internal and external threats, i.e. both in relation with malicious access, use and modification and for the prevention and correction of events of data loss or corruption

Information Exchange and Access Management - The area covers the aspects of control on information transfer across organisations and on management of access to data. Specific themes address the definition of data use requirements, the assurance of information delivery (exclusion of repudiation), and the optimisation of information flow so to ensure that all (completeness) and only (no data overflow) relevant data reach individual users, at the right time

Session management - Themes considered under session management concern the session preparation and conduction, in relation with skills and attitude of attendees. Specific aspects are related to criticalities in the interfacing, to be aligned to the objectives of individual sessions and managed in accordance with agreed inter-organisational collaboration rules

Asynchronous workin procedures - Asynchronous collaboration area covers the theme of management of work flow and the day-by-day team work procedures for remotely located participants, addressing principles for establishing agreed procedures in planning, allocating and controlling team work

Users training - Training requirements are related to the specific characteristics of inter-organisational team working, with respect to the behavioural mechanisms and to the challenge of representing own company towards external entities

Personnel empowerment - Personnel empowerment for team working covers the issues associated to the identification of decision making limits to the company's personnel participating to joint team with other entities, as well as the development of procedures for facing decisions that lay outside the area of empowerment of team members



## Control & Improvement Area

- **Research and Development**  
Product evolution strategies and individual capabilities, process innovation policies, ICT infrastructure evolution approach
- **Performance Management**  
Relevance of individual performance metrics to overall supply chain, productive maintenance for quality and availability of supply, alignment of quality processes
- **Supply Chain Management**  
Interaction policies and means towards Customer and Suppliers

Product evolution area covers the issues associated to the change of offering by suppliers, due to the innovation of product. Innovation strategies and constraints constitute the main focus for the associated requirements

Process evolution - The area covers requirements and criteria for process evolution at suppliers', both for imposed and for internally originated innovation actions. Specific attention is paid to the optimisation of process deriving from imposed changes

ICT infrastructure evolution - The area covers requirements and criteria for suppliers' deciding the evolution of their ICT infrastructure

The performance metrics area covers issues associated to the translation of project requirements or global supply chain requirements into performance criteria and associated measurements, as well as the metrics reporting mechanisms and the criticalities on that theme

Productive maintenance issues are related to the processes and procedures used by suppliers to ensure the quality and availability of means in use for the delivery of the supply. Specification and reporting issues are particularly significant, due to their relevance to the effective and timely management of the global chain

Quality control area includes the requirements related to the acceptability of suppliers' control activities, as well as the harmonisation of test/validation/verification methods across the relevant elements of the supply chain

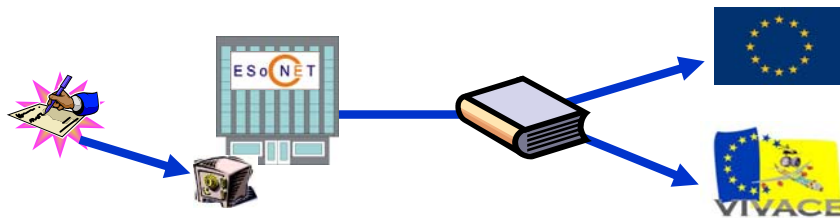
Customer management requirements address the themes of information openness for the different subjects in the work collaboration, of relationships management in the area of contract execution and changes and of setting and controlling criteria for customer satisfaction, and customer interaction or account management

The requirements belonging to this area concern the interaction mechanisms with suppliers and in particular the acquisition and forwarding of programme-relevant information. Further areas of attention include the transferring of customer's information requirements to the suppliers



## Information gathering for Suppliers profiling

- Information gathering Mechanism: questionnaire, to be compiled by individual companies
- Individual compiled questionnaires kept confidential by ESOCE and destroyed at end of task
- At integrated/sanitized level, National and European level profiling made available to the stakeholders (sponsoring large organisations and participating suppliers)





## *Profiling characteristics and target*

- Focus of profiling is on characteristics and conditions likely to affect the “innovation readiness” and the “innovation appetite” of suppliers, with specific attention to new collaborative work approaches
- The wider the differentiation among participants, the better:
  - improve the identification of sources for resistance/ motivation to innovation
  - enhance the robustness of the approach for re-use on a wider sample of suppliers or for different evaluation objectives



## *Requirements elicitation*

- **Initial set of requirements formulated on the basis of results from:**
  - previous EU RTD projects focused on smaller aeronautical companies (CEPRA, CASH)
  - Virtual Enterprises focused RTD projects (VIVE, ARICON)
  - results of SCRIA (Supply Chain Relationships In Action) initiative of SBAC (Society of British Aerospace Companies)
- **Using drivers to solicit contribution of aeronautical suppliers – ICE 2005**
  - 20 experts participating to the VIVACE suppliers workshop on day 2 of the conference
  - Identification of additional requirements, growing from 109 to 183



## Suppliers' needs and VIVACE requirements

- Transposition of needs into requirements for specific VIVACE research themes / Subprojects / WPs
- Checking for relevance w.r.t. actual activities focus
- Updating req.s along project
- Verifying proper consideration of Suppliers' requirements

Strategy and financing	
1. Suppliers commitments over the product life cycle (development, prototyping, series, specials, spares) should be clearly identified in long-term agreements	WP1.3, WP1.6, WP2.4, WP2.5, WP3.2
2. The overall strategic vision of the supply chain should be documented, as well as visible and known to all	WP1.3, WP1.6, WP2.4, WP2.5, WP3.2
3. The technology roadmap from 1 <sup>st</sup> tiers should be developed with key suppliers at the various supply chain levels and propagated along the supply chain	SP1, SP2, WP3.4, WP3.5, WP3.6
Financial area	
4. Suppliers' strategies must be aligned and/or understood. Supplier's business strategy and decisions may affect the purchaser's programme.	SP1, SP2, SP3
5. Information on likely changes in market conditions should be disseminated through the supply chain.	SP1, SP2, SP3



## ***Business Requirements – Selected Issues***

- **Visibility and commitment**
- **Constraints on suppliers' business models**
- **Coordination of knowledge management policies and confidentiality of sensitive information**
- **Visibility and understanding by suppliers of most competitive options**
- **Standardisation of supplier assessment criteria and quality approvals**
- **Integrated project planning and efficiency in change notification**
- **Alignment of practices at interfacing**

Visibility: Suppliers commitment over the product life-cycle; notification and consensus building on supply chain strategic vision, technology roadmap and expected market evolution



## ***ICT Requirements – Selected Issues***

- **Interfacing legacy systems with collaborative environment**
- **Alignment of solutions with companies' in-house IT policies**
- **ICT based collaborative processes to be aligned with existing suppliers' processes**
- **Standardisation of physical security requirements**
- **Data elements to include information relevant to data processing**
- **Suppliers connectivity external constraints to be adequately considered**
- **Use of open user interfaces in applications**
- **Harmonising methods and tools across primes**
- **Attention to individual company engineering culture in collaborative sessions**
- **Support to management of liability in team decision making**



## **Control & Improvement Requirements Selected Issues**

- **Two way notification along the chain of impact by new technologies**
- **Involvement of suppliers in the assessment of impact for new processes**
- **Alignment of innovation with actual human resources for small companies**
- **Support to suppliers in management of changes from new ICT solutions**
- **Integration of performance monitoring and improvement along the chain**
- **Exploitation of suppliers' practices developed in other markets**
- **Efficiency driven integration of planning along the chain**
- **Management of down-propagation of contractual requirements**



## Participation means

- Direct invitation to participate to the profiling activity
- Workshops and events
  - ICE 2005, Munich, June 2005
  - VIVACE Forum 1
  - Next ESoCE events and VIVACE Forums
- The VIVACE Suppliers' web site
  - Open to all European aeronautical companies
  - Qualification process
  - Registration required to access full set of functions
  - Downloading/uploading
  - e-Forum facilities

**VIVACE** VALUE IMPROVEMENT THROUGH A VIRTUAL COLLABORATIVE ENTERPRISE  
3rd Tier Suppliers' Site - Online Research Community

**Main Menu**

- HOME
- File Manager
- Suppliers Profiling
- Online Survey
- Forum
- User Area

**Events**

- ICE2005 Workshop
- VIVACE Forum 1

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Third tier suppliers in the aeronautical supply chain are identified as companies that:

- Have a smaller size, typically in the range of SMEs and in any case below 1000 employees;
- Most often do not participate to the sharing of programme risks;
- Offer products and services at lower levels of the reference aircraft work breakdown structure (level 3 or below).

All supply chain companies are impacted by the innovative approach driven by upper tier companies, while often smaller entities are not given the possibility to interact with larger players to evidence their needs and views on relevant research subjects.

Research efforts to evolve competitiveness of European Aeronautics must take in due account the relevance of smaller companies in modern supply chain: efficiency and often effectiveness in development, production and servicing are more and more relying on competence and responsiveness of suppliers. It paid in the aeronautical supply chain.

VIVACE Project partners acknowledged that evolving scenario, and paid specific attention to lower tier suppliers, by creating a dedicated Package of Work, aimed at collecting and analysing aeronautics suppliers needs and views, in order to feed results back to research subprojects, for adequate management of related impact on research themes.

**Level 1**  
Supplier Development Strategy  
• Business models  
• Adapting for WFO

**Level 2**  
Supplier Development Strategy  
• Business models  
• Adapting for WFO

**Level 3**  
Supplier Development Strategy  
• Business models  
• Adapting for WFO

**Level 4**  
Supplier Development Strategy  
• Business models  
• Adapting for WFO

**Level 5**  
Supplier Development Strategy  
• Business models  
• Adapting for WFO

<http://www.vivaceproject.com/AeroSupply/>