ReSIST

Resilience for Survivability in IST

A European Network of Excellence

Information Society Technologies

SIXTH FRAMEWORK PROGRAMME

- Rationale
- Joint Programme of Activities and Logic
- Partnership
- Organisation
- First Year Results
- Open Workshop and Review
- About Resilience

Rationale

(Reasonably) known: High dependability
for safety-critical or availability-critical systems

Avionics, railway signalling, nuclear control, etc.

Transaction processing, back-end servers, etc.

Continuous complexity growth
Large, networked, evolving, applications running on open systems, fixed or mobile,
i.e., *ubiquitous systems*

Dependability gap between necessary trust for realistic AmI and operational statistics

Scalability of Dependability

In addition to rigorous functional design, provision of

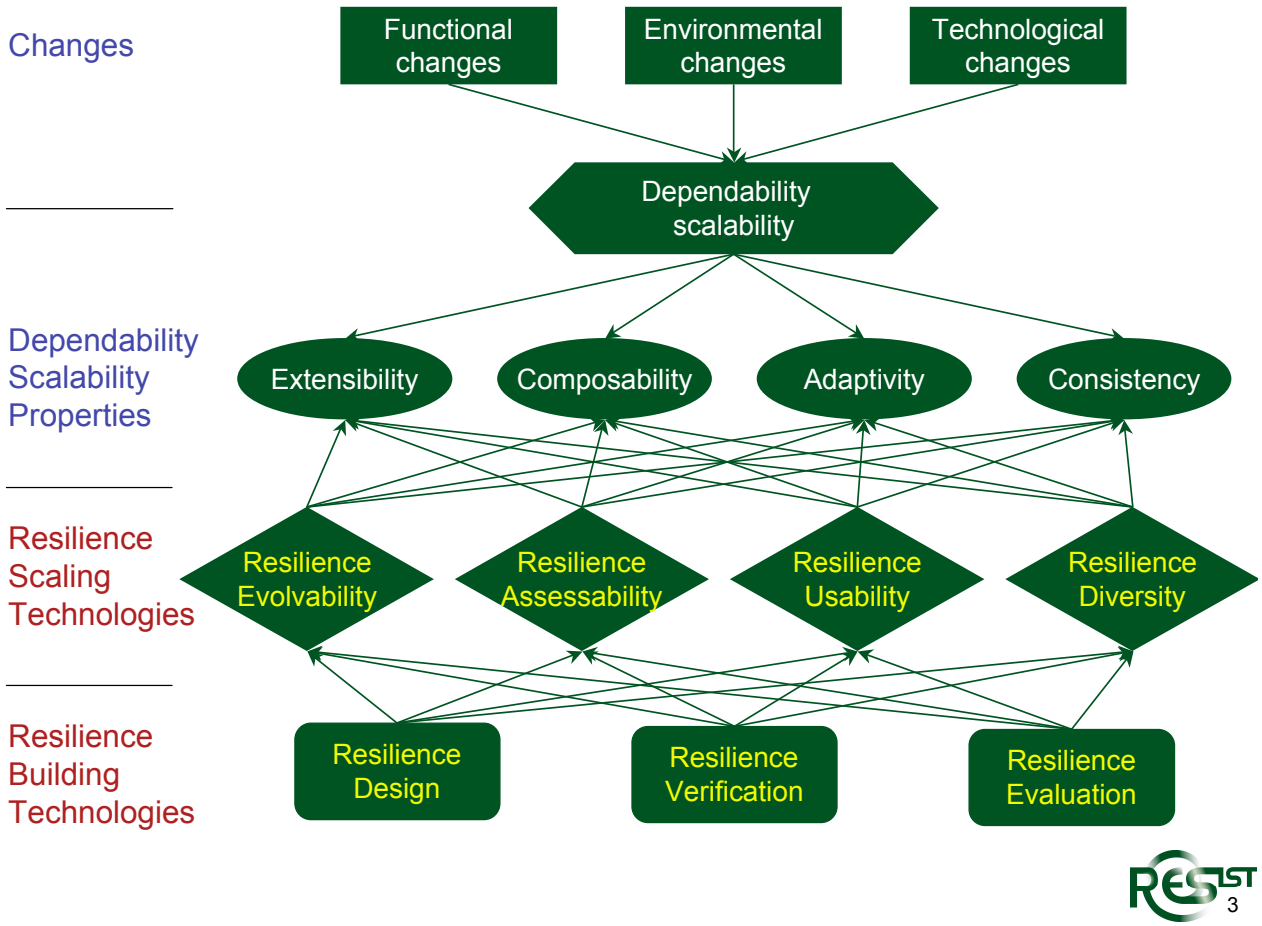
Resilience for Survivability

Development or physical accidental faults

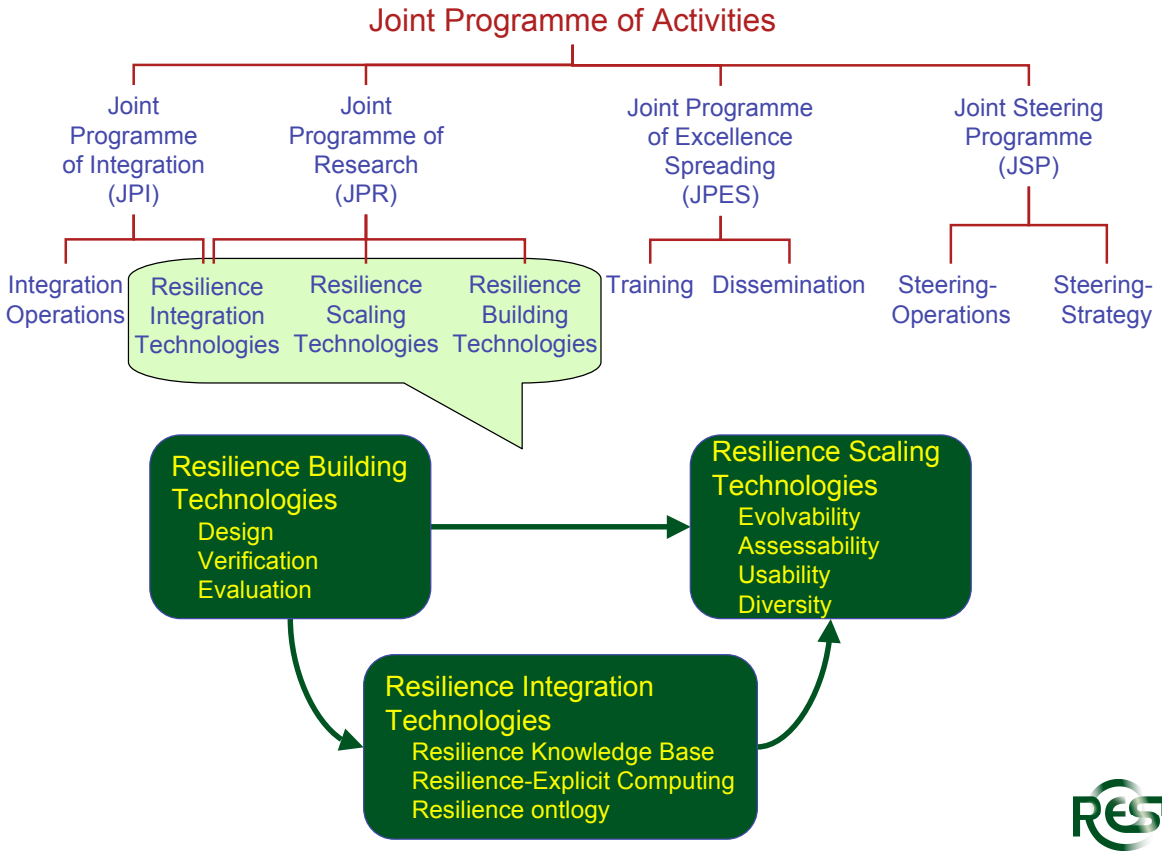
Malicious attacks

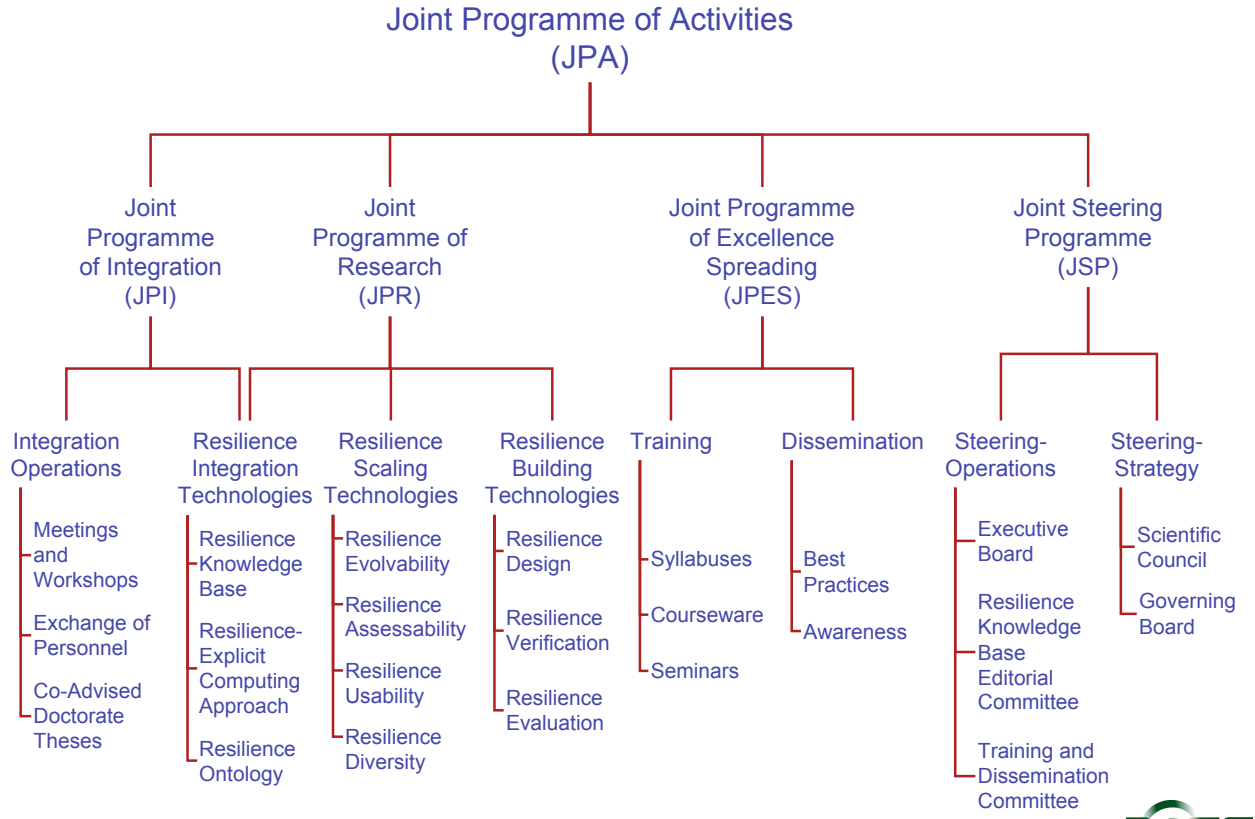
Interaction mistakes

Vulnerabilities



Joint Programme of Activities and Logic





Partnership

110 researchers
61 students

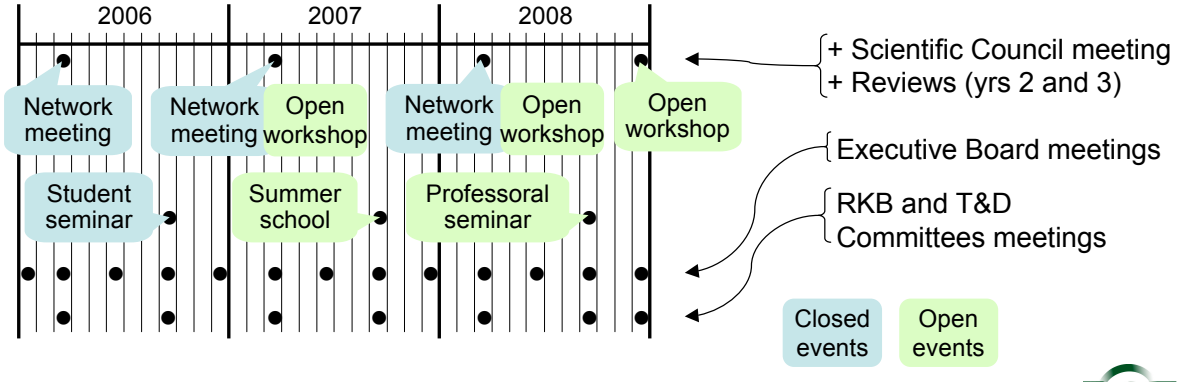
	Expertise				Country	Academia (Ac) / Industry (Ind)
	Threat resilience: development or physical Accidental faults (A) / Malicious attacks (M) / Interaction mistakes (I)			Mobile computing		
	A	M	I			
LAAS-CNRS [coordinator]	X	X		X	FR	Ac
Budapest U.	X				HU	Ac
City U., London	X	X	X		UK	Ac
Darmstadt U.	X	X			DE	Ac
Deep Blue			X		IT	Ind - SME
Eurecom		X		X	FR	Ac
France Telecom R&D	X	X		X	FR	Ind
IBM Research Zurich		X			CH	Ind
IRISA	X			X	FR	Ac
IRIT			X		FR	Ac
Vytautas Magnus U., Kaunas	X				LT	Ac
Lisbon U.	X	X		X	PT	Ac
Newcastle U.	X	X	X		UK	Ac
Pisa U.	X	X	X		IT	Ac
QinetiQ	X	X			UK	Ind
Roma-La Sapienza U.	X			X	IT	Ac
Ulm U.	X				DE	Ac
Southampton U.	Resilience Knowedge Base building				UK	Ac

Organisation

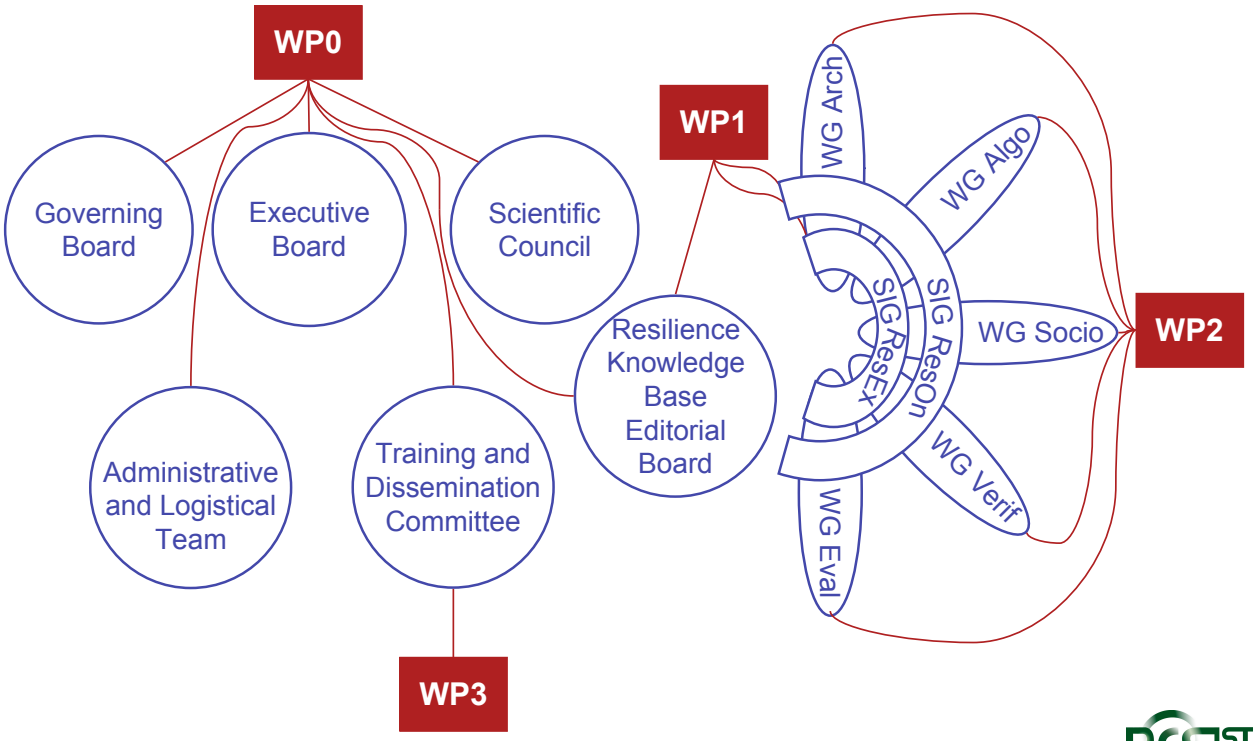
☞ JPA - Workpackages

☞ Management

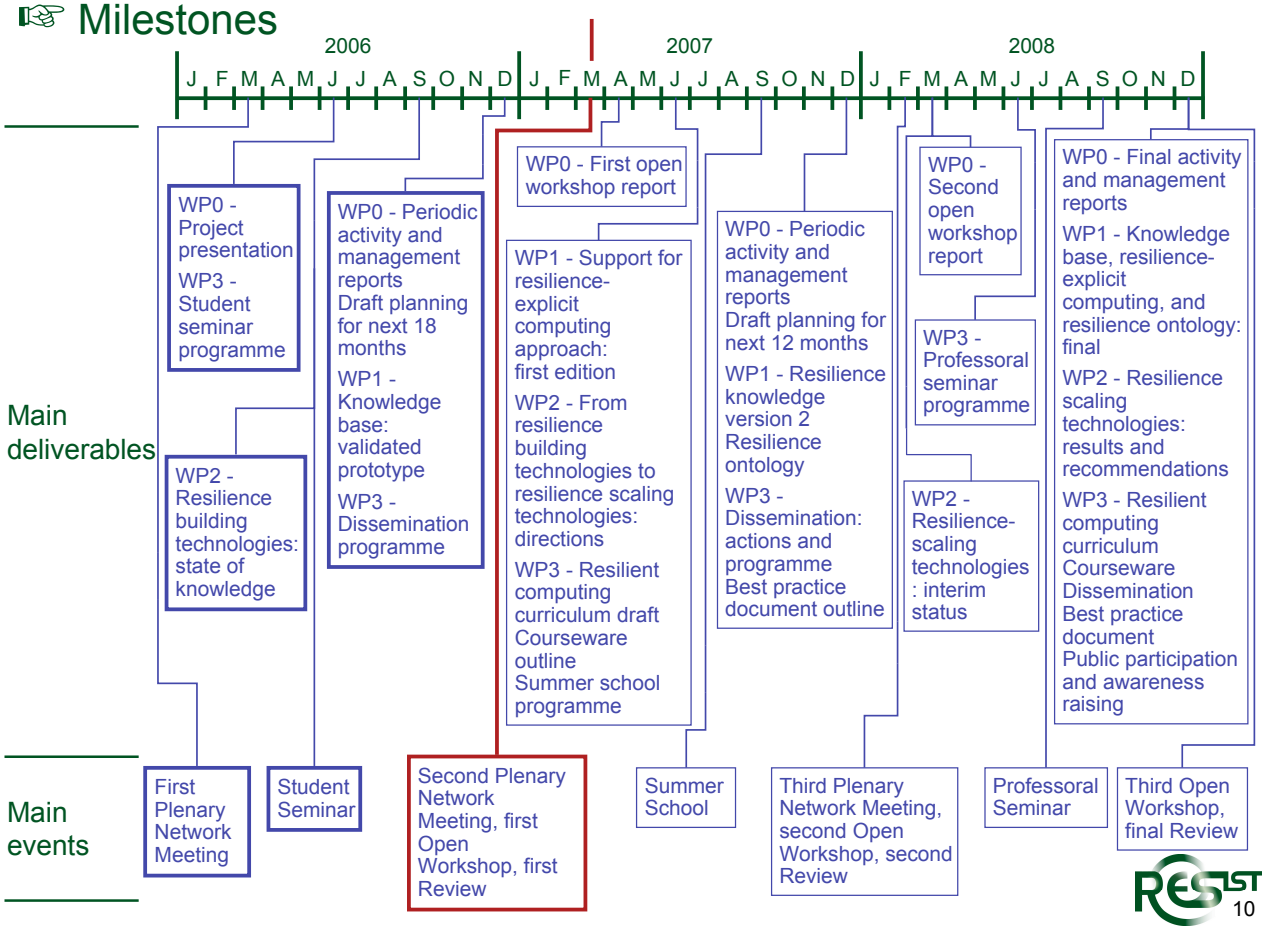
☞ Event Schedule



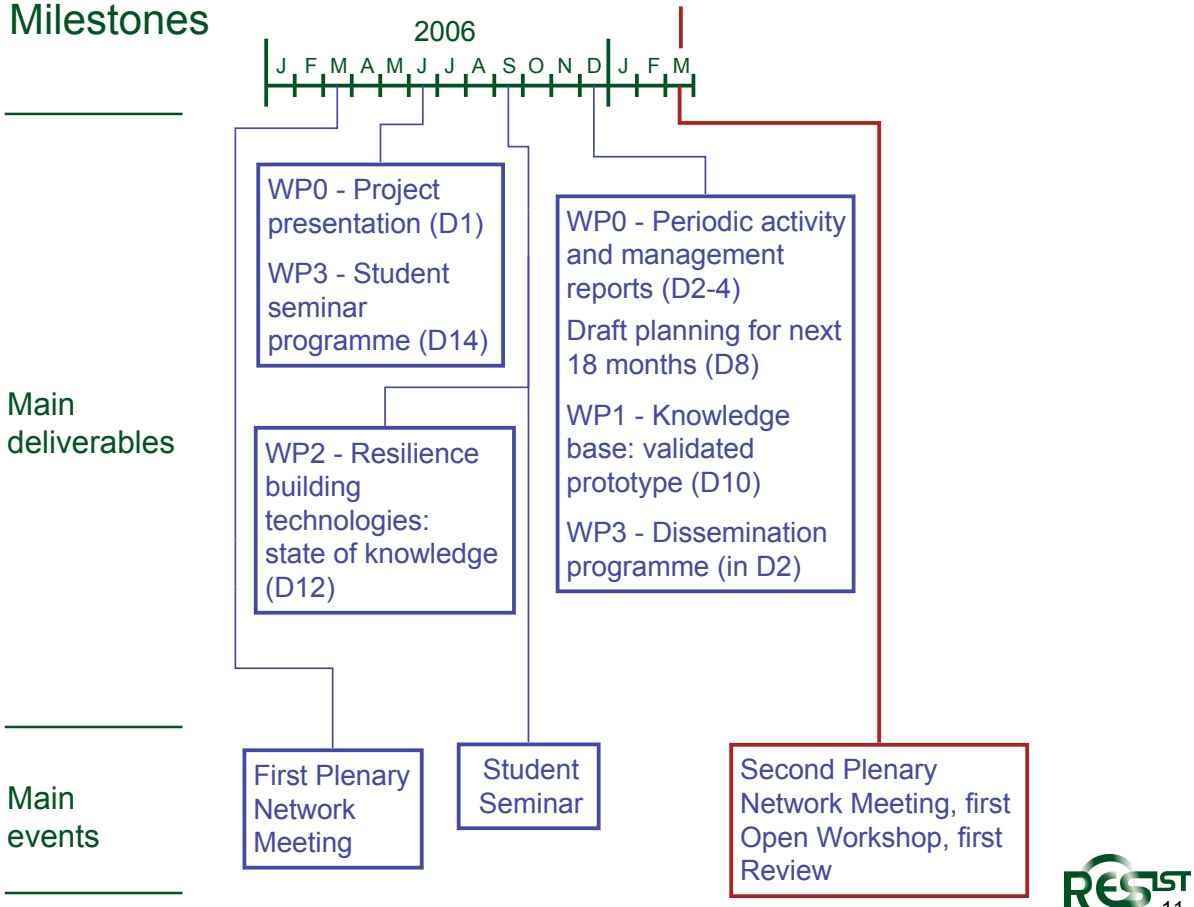
☞ Workpackages and organisational entities



☞ Milestones



☞ Milestones



First year results

☞ Main Achievements

- ❖ State of Knowledge in Resilience-Building technologies
  - ➢ Main body
    - 5 parts (one per WG), 22 survey chapters
    - 68 co-authors from all ReSIST partners (54 researchers, 14 doctorate students)
    - Extensive review process, with emphasis on viewpoint of scientists who are not specialists of the sub-disciplines covered
    - A stepping stone in the process of integration
    - Substantial surveys that will be useful for the community at large
  - ➢ Appendices: Papers produced by ReSIST since January 2006

❖ Prototype Resilience Knowledge Base

- ➢ A semantic web environment for effective access to a body of knowledge on resilience concepts, methods and tools
- ➢ Current prototype: three classes of information, totaling 40 millions basic facts
  - ▪ Partners' resilience data
  - ▪ External sources including CORDIS, NSF, Citeseer, ACM publications, RISKS
  - ▪ Two ontologies: Dependability and Security, Systems concepts
- ➢ Information access enables relationships between entities to be displayed in the form of Communities of Practice
- ➢ Prototype reviewed by all ReSIST partners, and updated in response to feedback

☞ Significant events and advances

- ❖ Initial plenary meeting of the network (LAAS, 21-23 March), 101 ReSIST participants
- ❖ Student Seminar (San Miniato, Italy, 5-7 September), 32 Doctorate Students and 15 Senior Members
- ❖ Personnel exchange for at least one month stays, 5 ReSIST members, totalling 17 months of stay
- ❖ Co-advising of 4 doctorate theses.
- ❖ Production of 8 articles in scientific journals, and presentation of 52 communications (texts in proceedings)
- ❖ Presentation of ReSIST at 11 national, European and international events.

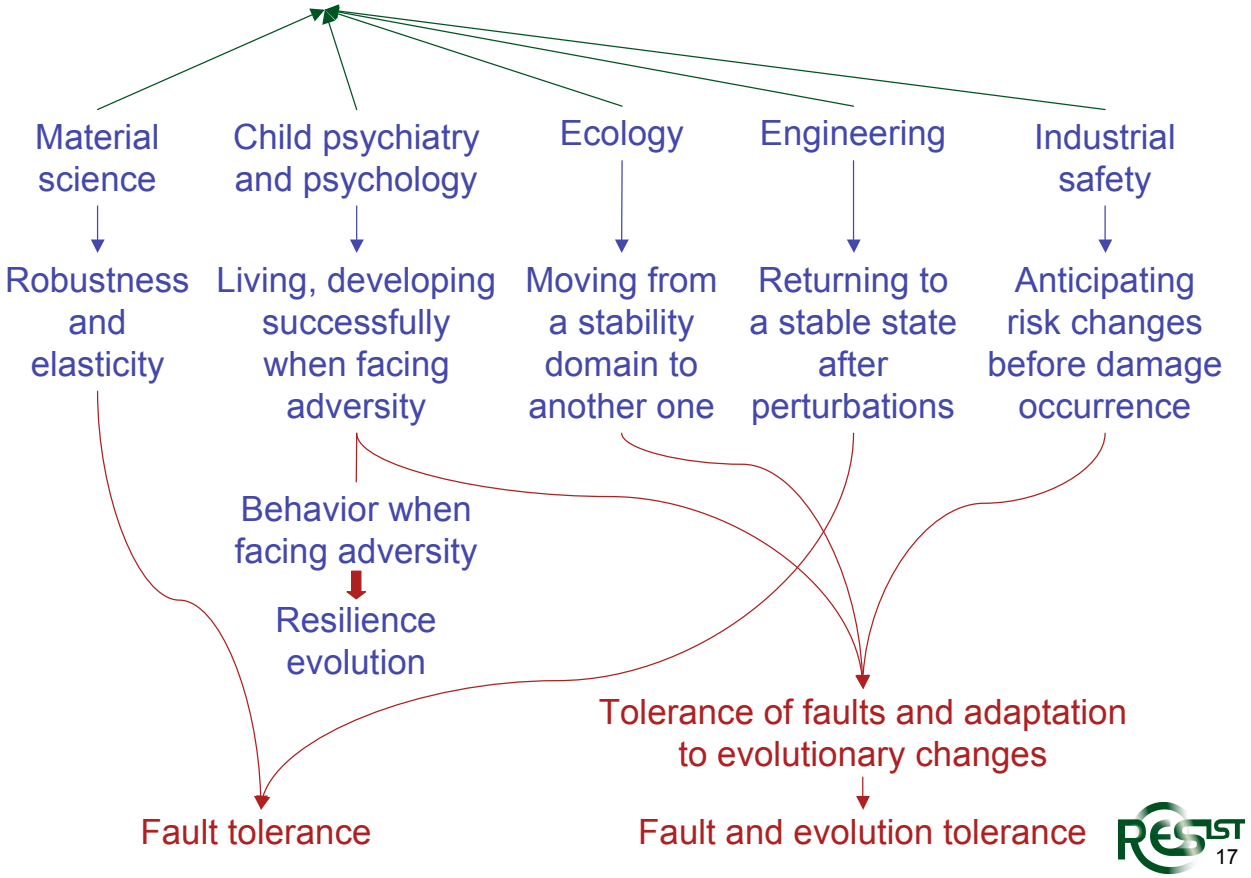
☞ Preparatory gound work

- ❖ Coming events, esp.
  - ➢ Open Workshop
  - ➢ Summer School, 24-28 September 2007, Porquerolles island
- ❖ Deliverables
  - ➢ Research Agenda, *From Resilience-Building to Resilience-Scaling Technologies: Directions*
  - ➢ Resilience-Explicit Computing Approach
  - ➢ Best Practice Document
  - ➢ Curriculum in Resilient Computing

Open Workshop and Review

- ❖ Salient results of the first year of activity
  - ➢ Selection of topics from the State of Knowledge document, covering all five WGs
  - ➢ Demonstration of the ontology-based resilience knowledge base
  - ☞ Comments, criticisms, and suggestions for future investigation welcome and expected
- ❖ Invited talks by two distinguished and highly renowned speakers
- ❖ Panel for presentation of resilience views by selected European projects (DESEREC, ESFORS, HIDENETS, SERENITY), and their comparison with ReSIST's views

About Resilience



Computing systems and information infrastructures

- Resilience: ability to deliver, maintain, improve service when facing threats and evolutionary changes
  - Accidental and deliberate (esp. malicious)
  - functionnal, environmental, technological (hardware and software)
    - short term, e.g., dynamicity, mobility
    - medium term, e.g., new versions, reconfigurations
    - long term, e.g., reorganisations
- Failure: lack of adaptation to the (complexity of the) real world
  - Natural phenomena
  - Human-made features

1) Not (yet) a definition: evolutions ➠ threats
2) ⇒ « Re-visit » of the basic concepts of dependability
   - Extension of underlying system life-cycle model