

Development of the knowledge base for the severe accident management of LWR plants

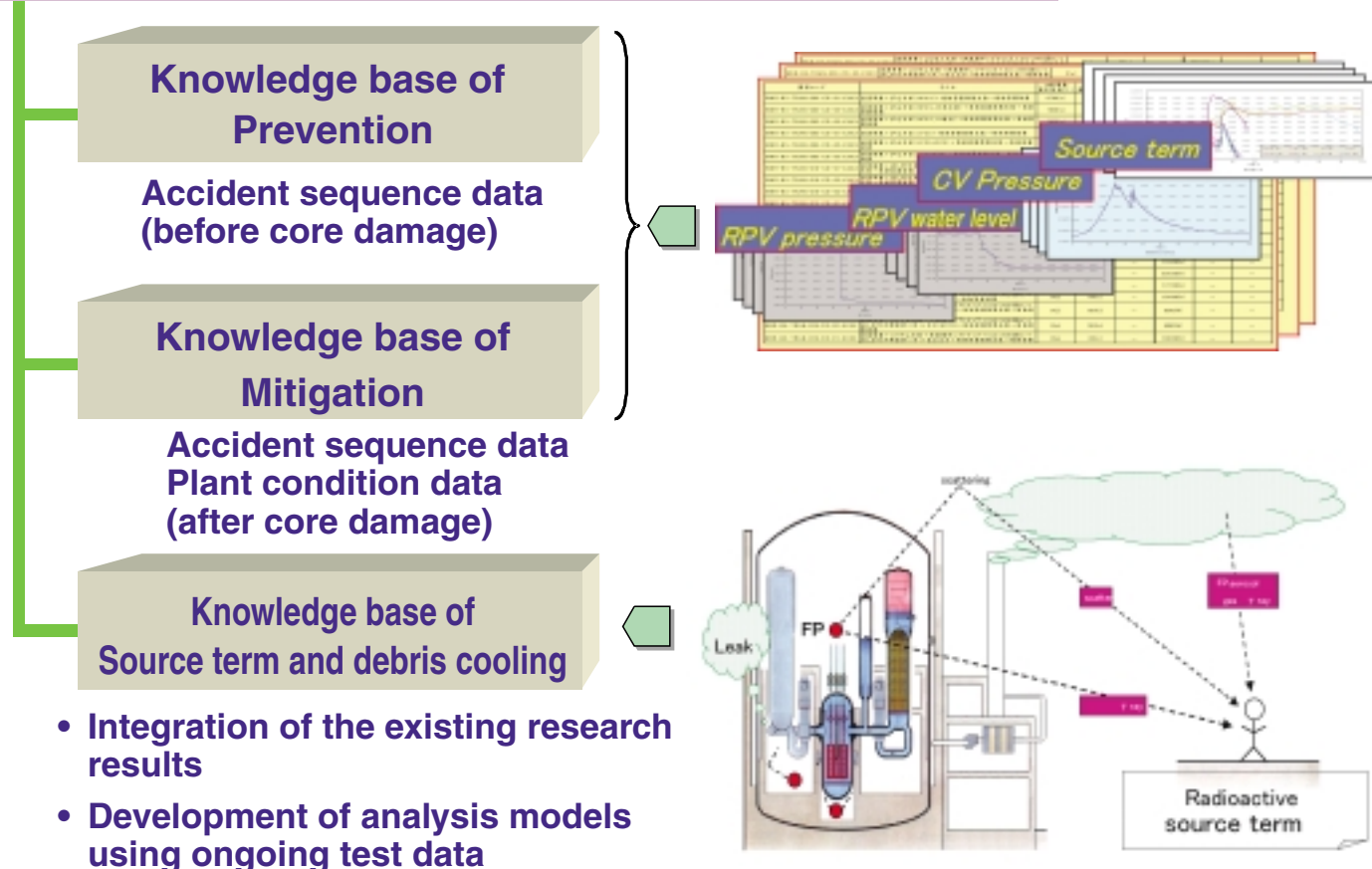
Objectives

- This project is aiming at making an advancement of the emergency planning of nuclear power plant by development of the analytical models and the database necessary to evaluate and to confirm the technical adequacy and effectiveness of the accident management (AM). Some tests and data evaluation regarding the radioactive source term and the molten core debris cooling during a severe accident are carried out in this project.

Outline

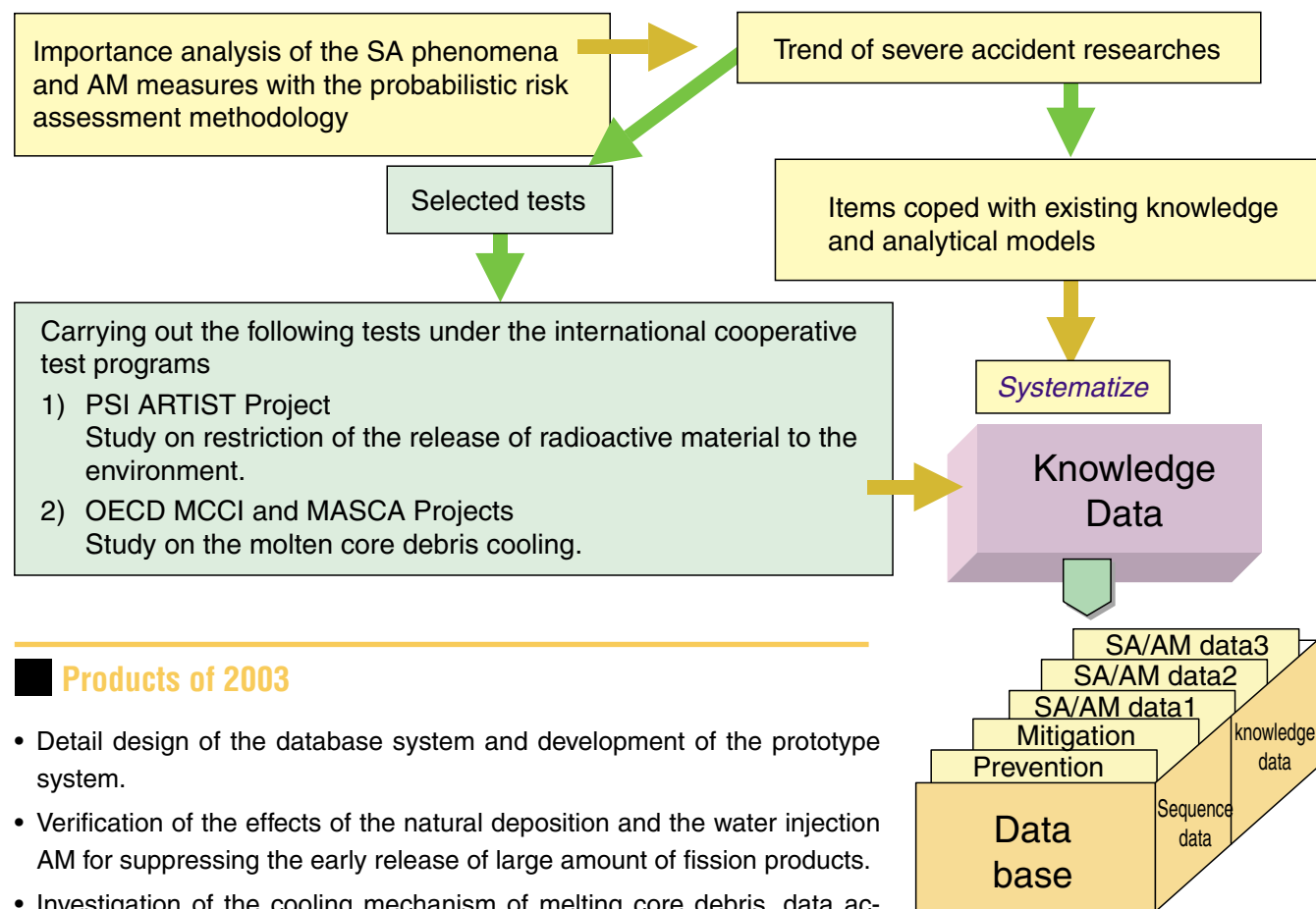
- Even if a severe accident were happened, the accident management of prevention & mitigation of accident and confinement of fission product release to the environment can ensure the safety of nuclear power plant.
- To establish the accident management knowledge base, the following works are carrying out.
 - Evaluation and analysis of the existing research results concerning the severe accident and accident management.
 - Participation with the international cooperative test research programs.
 - Development and improvement of the analysis models necessary for accident management review.

Accident management knowledge base



Task

- Important severe accident phenomena and accident management measures are extracted with making use of the methodology of probabilistic risk assessment. Based on the risk analysis, existing research results and further high-priority test data are evaluated and converted to a database



Products of 2003

- Detail design of the database system and development of the prototype system.
- Verification of the effects of the natural deposition and the water injection AM for suppressing the early release of large amount of fission products.
- Investigation of the cooling mechanism of melting core debris, data acquisition in order to mechanically understand the cooling effect, and development of the analytical model.

Schedule

Items	2002	2003	2004	2005	2006	2007	2008
(1) Data base system							
• SA Prevention	[Bar]						
• SA Mitigation	[Bar]						
• FP release to environment			[Bar]				
(2) SA/AM knowledge data							
• Tests - OECD MCCI Project		[Bar]					
• Tests - OECD MASCA Project			[Bar]				
• Tests - PSI ARTIST Project		[Bar]					
• Model development and analysis		[Bar]					