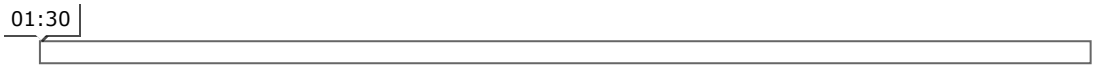
FoCAS Metro Map

from **FET FoCAS**



The FoCAS coordination action is an umbrella project which aims to integrate, coordinate and help increase visibility for research carried out in the FOCAS Proactive Initiative and in research fields related to collective adaptive systems. Activities include:

- Roadmapping – defining the future research agenda by engaging with experts within and outside of Europe and running consultation events
- Facilitating community building and collaboration opportunities for researchers interested in collective adaptive systems through workshops and conferences
- Online media lounge with downloadable resources to encourage improved collaboration between researchers within Europe and internationally
- Providing dissemination opportunities, a positive interface between scientists, industry and the science-aware public to demonstrate how CAS can impact on society
- Providing training opportunities for researchers through summer schools and exchange opportunities

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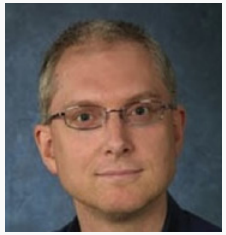

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FoCAS coordinates the research of 12 projects, but anyone or group can join if they have a research interest in Collective Adaptive Systems:

Objective

A key feature of Collective Adaptive Systems (CAS's) is that they comprise many units/nodes, which have their own individual properties, objectives and actions. Decision-making is distributed and possibly highly dispersed, and interaction between the units may lead to the emergence of unexpected phenomena. They are open, in that nodes may enter or leave the collective at any time, and boundaries between CAS's are fluid. The units can be highly

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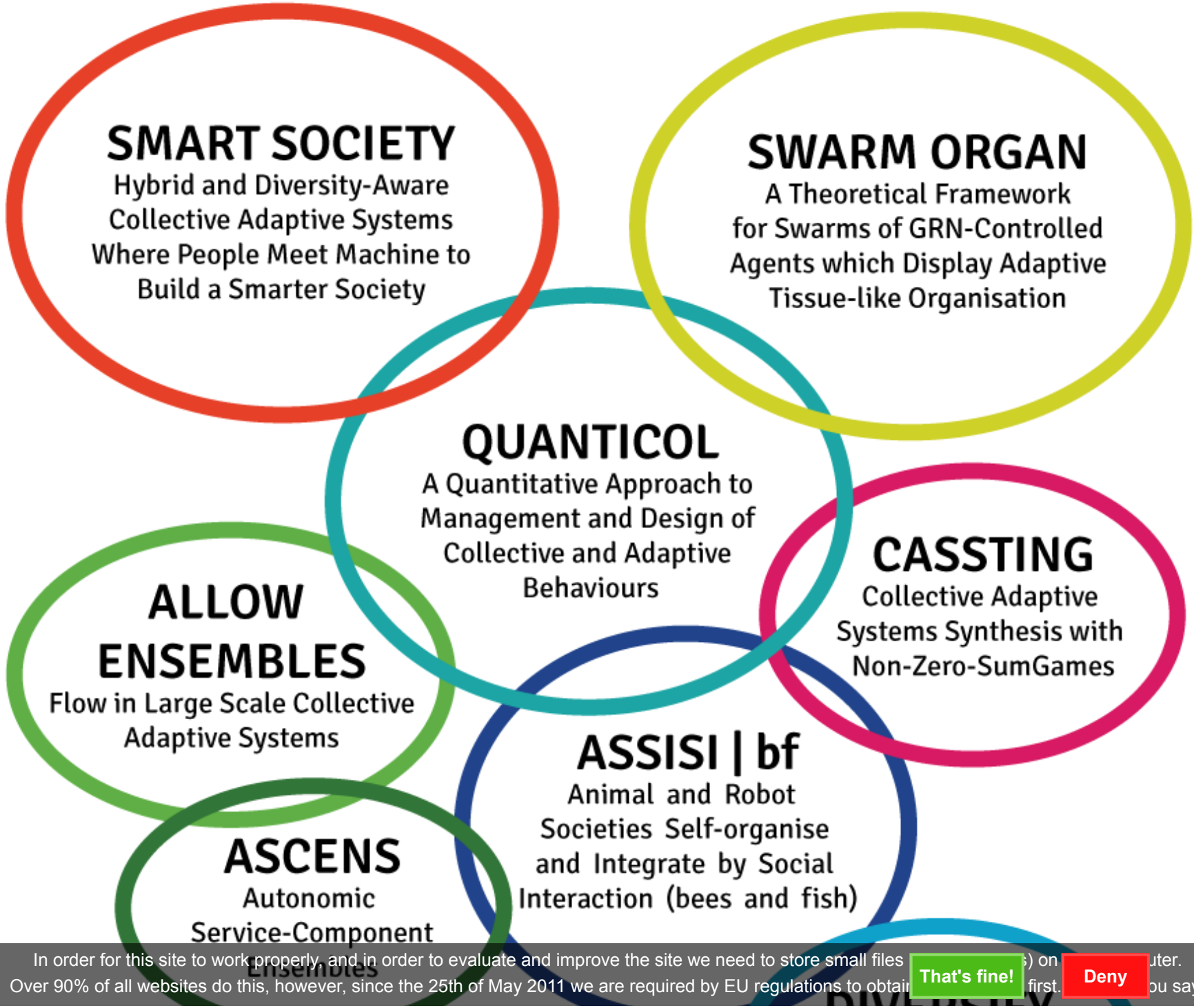

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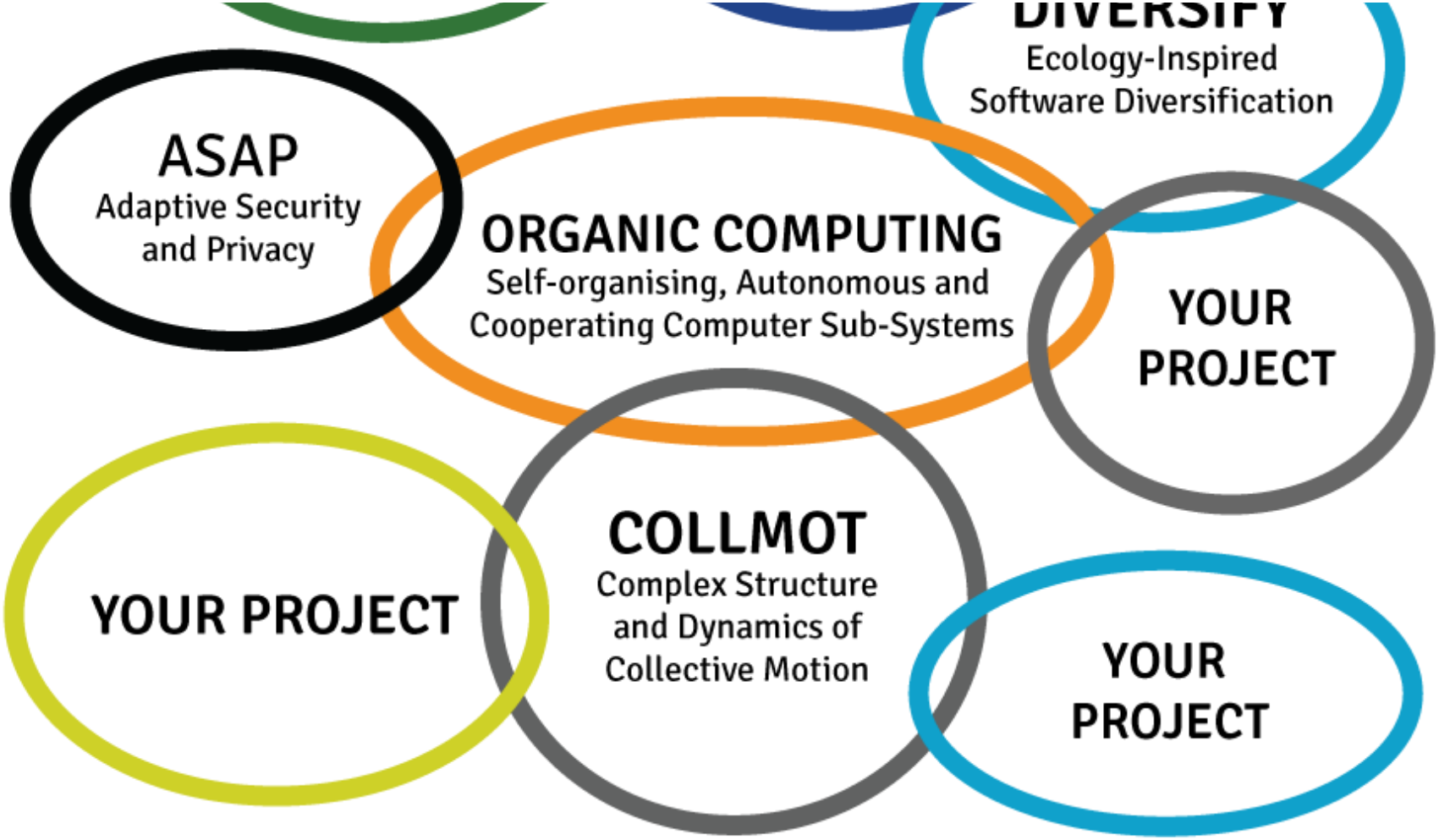

Target outcomes

Operating Principles: principles by which CAS's can operate. These should go beyond existing control and optimisation theories, taking into account the diversity of objectives within the system, conflicts resolution, long term stability, and the need to reason in the presence of partial, noisy, out-of-date and inaccurate information

Design Principles: principles necessary to build and manage CAS's, such as enabling the emergence of behaviour and facilitating prediction and control of those behaviours. These principles should exploit the inherent concurrency and include methods for system validation

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Evolutionary Properties: properties concerning the evolutionary nature of CAS's, e.g. open-ended (unbounded) evolutionary systems, the trade-off and interaction between learning and evolution, and the effect of evolution on operating and design principles

Expected impact

New functionalities for adaptive ICT systems enabled through novel principles, methods and technologies for designing and operating collective adaptive systems. New insights into the general properties of large scale distributed systems.

Future & Emerging Technologies (FET) Proactive Initiative

FET-Proactive initiatives aim at focusing resources on visionary and challenging long-term goals that are timely and have strong potential for future impact. These goals provide a common strategic perspective and a focal point around which a critical mass of research can be assembled and synergies developed.

Proactive initiatives are launched through calls for proposals. The total budget per initiative in a call may be in the range of 15 to 30 million Euro.

General information on FET Proactive Initiatives.

Further detail on FET FoCAS.

FoCAS is a Future and Emerging Technologies Proactive Initiative
funded by the European Commission under FP7.
Background image 'Breakfast' courtesy of Penousal Machado Et Al

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