A scheme of how HEP Collaborations work at CERN

CERN is the hosting institution.
Typically it takes care of resources needed to run the machines (e.g. LHC): buildings, power, technicians, general services, part of the computing, etc...

Each collaboration (= organized ensemble of international groups) makes an agreement with CERN (Memorandum of Understanding, MoU) on how to operate the experiment and which kind of support is obtained. CERN binds the experiment to a certain set of rules: safety, publications, outreach, management, etc... MoUs are not legally binding, although an arbitration procedure is defined.

Inside each Collaboration, groups agree on:
1) list of collaborating institutes and management scheme
2) share of responsibilities and of elements of the detector construction (including some common items, e.g. online, electronics)
3) share of responsibilities and of elements of the detector operation (common items, computing, maintenance of sub-systems, shifts, etc...)

Items no. 1 and 2 are regulated by a MoU for the Construction, item no. 3 by a MoU for the Operation. Both MoUs are signed by group leader representatives.
Publications are signed by all members of the collaborating groups. Typically, yearly costs of detector operation are shared pro quota of signing authors.

Detector components are shared on a group interest basis. A cost is evaluated for each subsystem and groups share this cost.

Example
Collaboration PARADISE plans to have 4 subsystems: Tracker, CALO, Muon, OnLine, with 5 institutions contributing: LNF, DESY, Orsay, CERN and London. The sharing is

Tracker 10 ME: CERN 5 ME, London 5 ME
CALO 5 ME: France 5 ME
Muon 10 ME: LNF 5 ME Orsay 2 ME CERN 3 ME
Online 8 ME: CERN 4 ME DESY 4 ME
Total ---- 33 ME

A "money matrix" (MM) is built to define the resources for the construction of experiment PARADISE:

	Tracker	CALO	MUON	Online		TOTAL
LNF			5			5
DESY				4		4
Orsay		5	2			7
CERN	5		3	4		12
London	5					5
					TOT	33

Money matrix (MM) must be approved by funding agencies. Host institutions take care that this happens, inviting FA to regular meetings.

Money matrix reflects (but not strictly) the "fair share" in the experiment (i.e. the no. of signing authors).

Contributions are expected to be "on budget": extra-costs are at charge of the proponents group(s). Some contributions can be also "in kind" and have to be evaluated economically. In European standards, labour costs are not included in MM.

It may happen that some common parts (e.g. special elements similar in all subsystems, or special equipment is needed) have to be paid by the whole Collaboration. This again is shared on the basis of "fair share".

This system has worked very well at CERN for the last 30 years or so. It may be applied, with some caveats and changes to EuPRAXIA, if we plan to go for 2 pillar and several satellites. We do not need super-structures like ERIC.

I am looking for MoU of LHCb. I think these are restricted documents. I will let you know.