

Annotation of instruments (and complex technologies) planned for acquisition in IT4Innovations project in 2012

Instrument / Set of instruments	Code CPV		Annotation (comprehensive description, key or minimum parameters)	Main usage	Expected cost CZK w/o VAT	Other requirements (e.g. on SW, service, upgrade)
	primary code	secondary code				
Sapphire laser	38636100-3		An ultrafast laser system to study phonon and electron dynamics. The device will be used to research magnetic thin-films and nano-structured samples. The system will also enable terahertz time-domain spectroscopy. In addition, the device will enable time domain measuring of dynamic phenomena within the ns-fs range. The basic unit includes a sapphie laser, retarder, THz trasmitter and detector and relevant optomechanical elements.	The study of time domain and spectral response of thin-films and nano-structures. Obtained experimental results will be compared to numerical models (ab-initio and the phenomenological approach using electromagnetic waves).	4 205 000	Free services and upgrade for 2 years after installation
Optical coherence tomograph	33115000-9		Optical coherence tomograph using the technology of near-field scanning optical microscopy (NSOM) enables studying optical properties (such as reflectivity, emissions/transmissions/dispersion of light and fluorescence) in surface material layers with achievable resolution of tens of nm. The technology will be used in a wide range of applications such as spintronics, plasmonics, laser technology, material sciences.	The study of optical properties of surface material layers.	3 018 000	Free services and upgrade for 2 years after installation

<p>Supercomputer - Small Cluster</p>	<p>30211100-2</p>	<p>30200000-1 32424000-1 30233141-1 30233100-2 31154000-0 42500000-1 34221000-2 722680000-1 722630000-6</p>	<p>The Small Cluster includes a comprehensive sum of technologies that can be divided into several areas: 1) Hardware. This is a group of computing servers, specialised high-speed and low-latency networks for the implementation of parallel computations and access to shared data depositories and network management for administration. Other parts will include storage capacities, i.e. namely high-performance disks with front-end servers that provide data via a parallel cluster system of files. The entire solution includes active elements of a specialised network for storage devices (SAN). The last group includes active network elements that ensure all technologies and services are reached via a standard network IP, typically the Internet. 2) Non-IT technologies will be rented from the mobile data centre (MDC). The cluster also involves other supportive infrastructure elements such as cooling features, a back-up power supply, air treatment, etc. 3) Software required for the functioning of the entire IT infrastructure, namely: operational systems, source and cluster task planners and managers, back-up software, management software for cluster administration, monitoring and accounting software, user administration, incl. authentication and authorisation, software for file system services, virtualisation software, management software of network elements and other for the monitoring and management of non-IT technologies.</p>	<p>The Small Cluster is the first computing part of the supercomputer (SC). The Small Cluster will be used for development and production computing and will also be used as a preparatory bridge for the engagement of a big cluster.</p>	<p>76 983 809</p>	<p>The main units of the Small Cluster mutually condition their own functions while many marginal parameters can critically influence the device's overall efficiency. In the best case, internal devices together with external shell technologies form one tuned functional unit that will maximise customer values. In the Small Cluster, the computing performance is maximised while the PUE (Power Usage Effectiveness) criterion is minimised. In other words, minimisation of energy intensity and other operating costs.</p>
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SC - specialised system	30211100-2	30200000-1 32424000-1 30233141-1 30233100-2 722680000-1 722630000-6	The specialised system is a complex sum of IT technologies that are primarily optimised to perform computations modelling the global climate processes. This mainly involves computing power, sufficient storage capacities that support the long-term collection of modelled and measures climatic data and software for translating, optimising and running climatic models ARPÉGE/IFS/ALADIN. Other parts include network elements for IT technology network management.	The specialised system involves the computing part of the supercomputer centre equipment that is dedicated to climate modelling.	112 000 000	A highly optimised computing environment for running specialised applications by climate modelling and a high level of support, incl. the implementation and fine-tuning of applications.
Supercomputer - Big Cluster incl. accessories and infrastructure	30211100-2	30200000-1 32424000-1 30233141-1 30233100-2 31154000-0 42500000-1 722680000-1 722630000-6	The Big Cluster includes a comprehensive sum of technologies that can be divided into several areas: 1) Hardware. This is a group of computing servers, specialised high-speed and low-latency networks for the implementation of parallel computations and access to shared data depositories and network management for administration. Other parts will include storage capacities, i.e. namely high-performance disks with front-end servers that provide data via a parallel cluster system of files. The entire solution includes active elements of a specialised network for storage devices (SAN). The last group includes active network elements that ensure all technologies and services are reached via a standard network IP, typically the Internet. 2) Non-IT technologies involve supportive infrastructure elements such as heat sinks and cooling features, a complete energy centre, air treatment, etc. 3) Software required for the	The Big Cluster is the supercomputer centre equipment's largest computing element. The Big Cluster will be used for both development and production computing. The Big Cluster is the crucial computing source of the supercomputer centre.	475 000 000	The main units of the Big Cluster mutually condition their own functions while many marginal parameters can critically influence the device's overall efficiency. In the best case, internal devices together with external shell technologies form one tuned functional unit that will maximise customer values. In the large cluster, computing performance is maximised while the PUE (Power Usage Effectiveness) criterion

			<p>functioning of the entire IT infrastructure, namely: operational systems, resource and cluster task planners and managers, back-up software, management software for cluster administration, monitoring and accounting software, user administration, incl. authentication and authorisation, software for file system services, virtualisation software, management software of network elements and others for the monitoring and management of non-IT technologies.</p>			<p>is minimised. In other words, minimisation of energy intensity and other operating costs.</p>
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