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Optimized interaction of the brain with environment requires the four-dimensional representation of space-time in the neuronal circuits. Information processing is an important part of this interaction, which is critically dependent on time-dimension. Information processing has played an important role in the evolution of mammals, and has reached a level of critical importance in the lives of primates, particularly the humans. The entanglement of time-dimension with information processing in the brain is not clearly understood at present. Time-dimension in physical world – the environment of an organism – can be represented by the interval of a pendulum swing (the cover page depicts temporal unit with the help of a swinging pendulum). Temporal units in neural processes are represented by regular activities of pacemaker neurons, tonic regular activities of proprioceptors and periodic fluctuations in the excitability of neurons underlying brain oscillations. Moreover, temporal units may be representationally associated with time-bins containing bits of information (see the Editorial), which may be studied to understand the entanglement of time-dimension with neural information processing. The optimized interaction of the brain with environment requires the calibration of

neural temporal units. Neural temporal units are calibrated as a result of feedback processes occurring during the interaction of an organism with environment. Understanding the role of time-dimension in the brain information processing requires a multidisciplinary approach, which would include psychophysics, single cell studies and brain recordings. Although this Special Issue has helped us move forward on some fronts, including theoretical understanding of calibration of time-information in neural circuits, and the role of brain oscillations in timing functions and integration of asynchronous sensory information, further advancements are needed by developing correct computational tools to resolve the relationship between dynamic, hierarchical neural oscillatory structures that form during the brain's interaction with environment.