Earth L.A.T. 12:00

Watch the Rotating Earth
https://EarthLAT1200.org

General Project Information

The earth is rotating.

Due to the relative slow motion with respect to human observation this dynamic can only be checked by active closer inspection. This rotation can abstractly be described by formulas, simulations, and technical data as a hint but not representing reality.

aim of the project

This project aims to visualize the rotation and therefore produce a real sense of the rotation at the observer: Via a website live web camera streams of shadows or sun projections crossing static local lines, are displayed.

The according time definition is "Local Apparent Time" (L.A.T.):
When the sun is south it is 12:00 LAT at this position on earth -
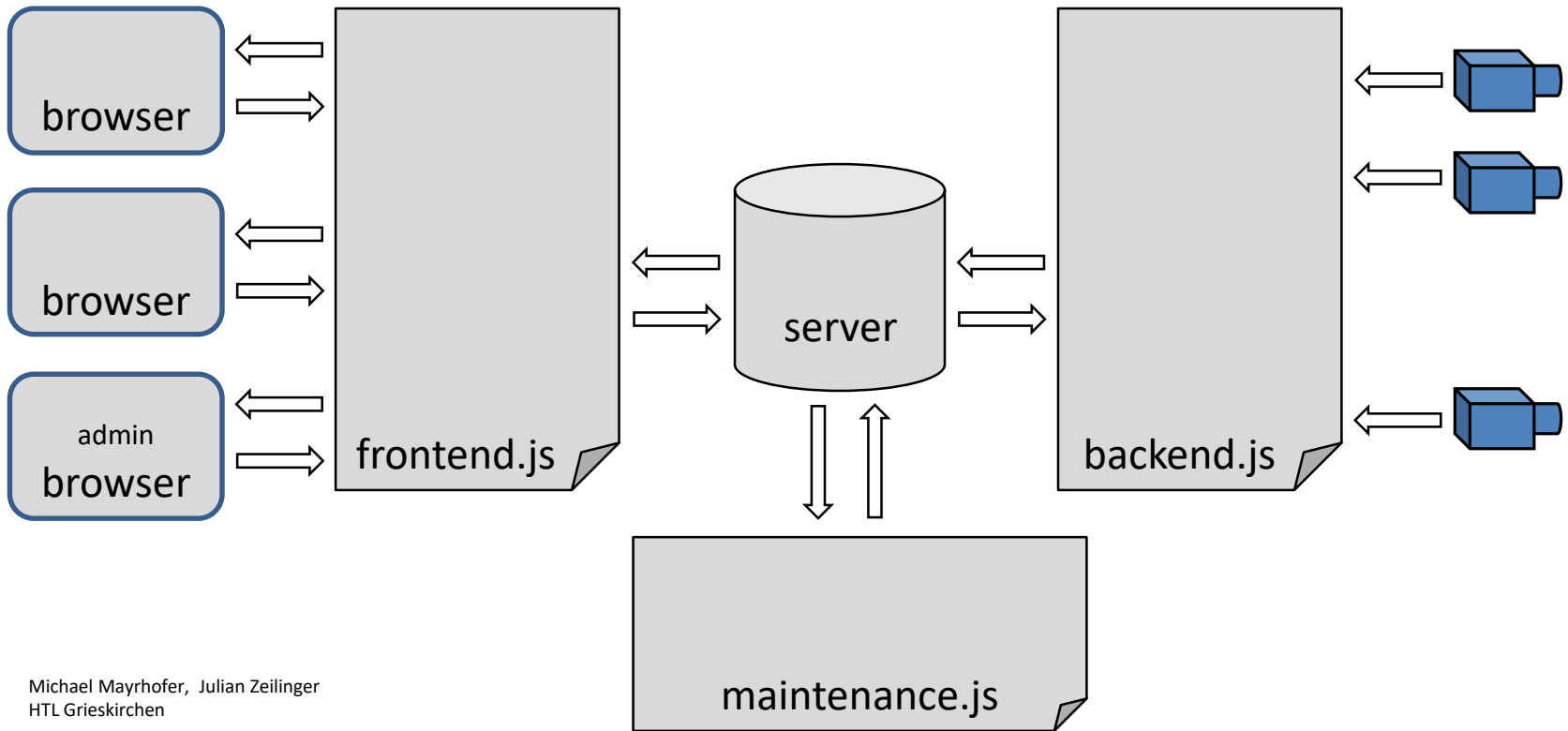*Midday is High Noon.*
Within one day this 12:00-LAT-line goes round the earth from east to west.

core meeting point

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The website displays the live stream of an automatically selected web camera. The selection is based on the actual availability, according LAT, and weather condition. The partner stations transfer their live stream to the server.


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Three items have to be fulfilled by a partner station:

(1) A sundial which shows a moving shadow/reflection of the gnomon/nodus/sun across a noon line (meridian).
(2) A fixed camera producing a live stream of the shadow/reflection moving across the noon line.
(3) A device sending this live stream via ftp or similar to the server.
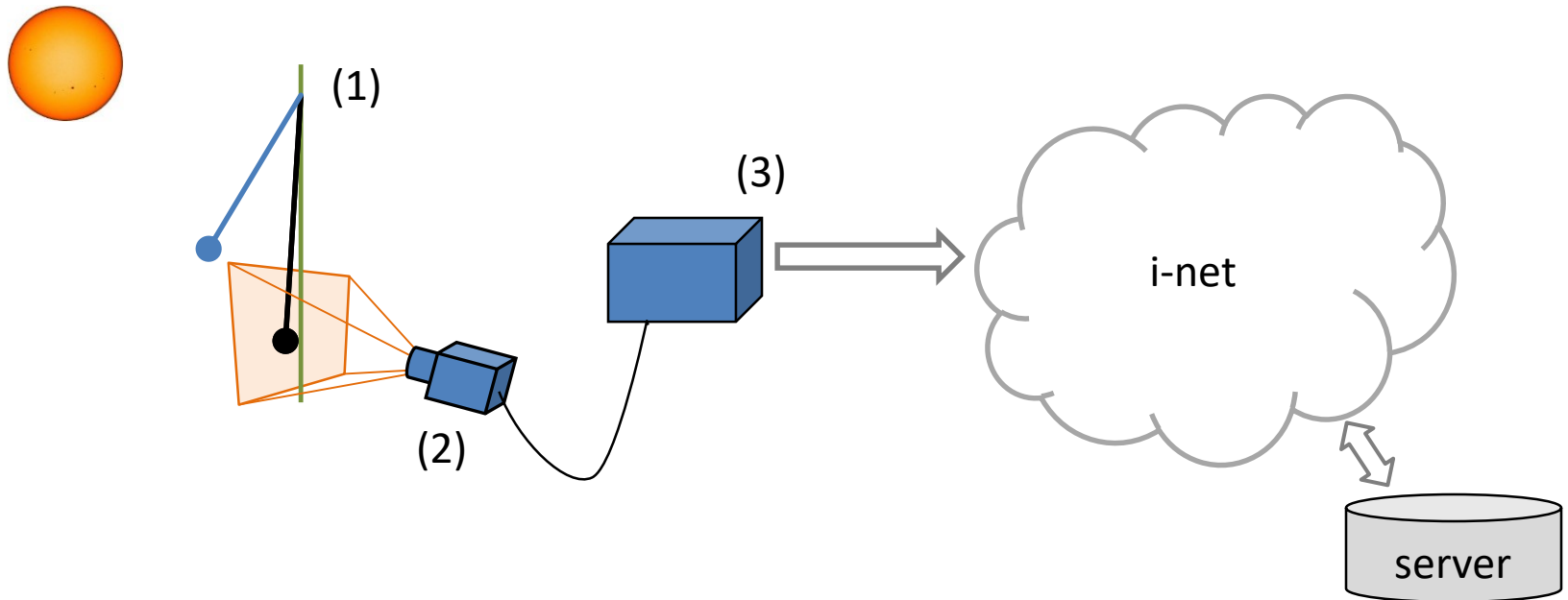
There are four different contribution levels for the partner stations – the partners can choose which level they want to fulfil:

Contribution	Base	Supplemented	Advanced	Full	Remark
frequent (<= 5 min) upload of webcam images total	☀	☀	☀	☀	full image of the dial
frequent (<= 5 min) upload of webcam images detail		☀	☀	☀	selected crop of actual shadow
insert UTC, LAT into image		☀	☀	☀	calculated by position parameter and EoT, EoL
single upload of station info		☀	☀	☀	description, team, type, e.g. website
measure and frequent upload of camera temperatures			☀	☀	embed and read in- and outcast sensors
detect and upload status sunny/cloudy/night, online/offline				☀	check brightness and contrast for automated evaluation of weather conditions
accept remote commands				☀	change crop window and upload frequency by server

The upper limit of costs cannot seriously be given. Depending on ideas and realizations regarding sundial and webcam there is no upper limit.

Three parts have to be fulfilled:
(1) Sundial showing the sun crossing the south meridian
(2) A camera capturing the LAT 12:00 line and producing a live video stream
(3) A device connecting to the internet and uploading this live video stream
       to the server.

(1) The simplest sundial can be any stick orientated
parallel to the earth axis producing a shadow line
to any flat with a painted LAT 12:00 line →   U$ 0

(2)+(3) The camera plus the device with a connection
to the internet can be e.g. a RaspberryPi / PiCam
with access to a WLAN or a modem to the internet →   U$ 100

Total HW costs with a simple device e.g. →   **U$ 100**
Plus monthly costs for data transfer e.g. →   **+ U$ 5 / month**
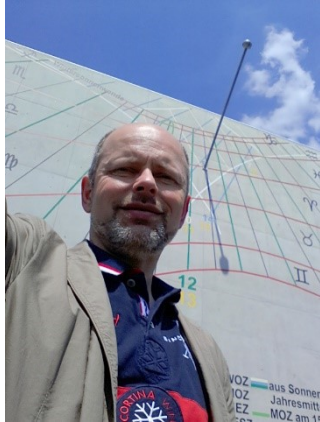
Kurt Niel, Grieskirchen, Austria

FH-Professor at the University of Applied Sciences Upper Austria
Fields: metrology, image processing, automation engineering

Design & Implementation of the huge sundial https://KEPLERUHR.eu
Initiator of a local group volunteering astronomy https://FHAstros.blog

Interested in putting STEM to the public.

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and is developed assisted by a high school team of the HTL Grieskirchen.