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Project 2016

Integration of sensors and mathematical models into a modern structure of data exchange for the complex 3D-geomonitoring of Stuttgart TV-tower

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About the project



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This project is implemented in cooperation between the Laboratory of GNSS Technologies & Navigation (Karlsruhe), the Engineering Surveying Office (Stuttgart) and LF. Net company

The total height of the antenna's installation point 216,8 m

The height of the upper observation platform 153,5 M

Height of lower observation platform 150 M



GOCA = GNSS/LPS based Online Control and Alarm System Integrated Deformation-Analysis – Dynamics FEM Approach

General Vibration of a Structure in FEM Dynamics

$$\mathbf{K}(\mathbf{p}_K) \cdot \mathbf{u}(t) + \mathbf{C}(\mathbf{p}_C) \cdot \dot{\mathbf{u}}(t) + \mathbf{M}(\mathbf{p}_M) \cdot \ddot{\mathbf{u}}(t) = \mathbf{f}(t)$$

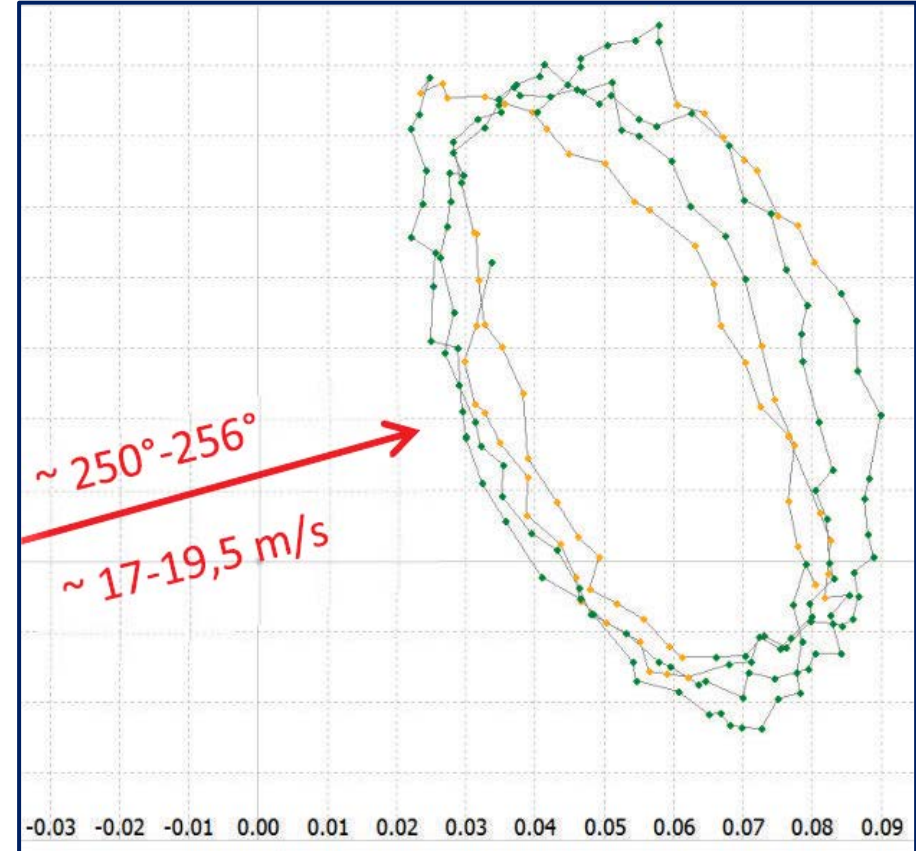
$\mathbf{K}(\mathbf{p}_K)$ = Parametrized Stiffness Matrix

$\mathbf{C}(\mathbf{p}_C)$ = Parametrized Damping-Matrix

$\mathbf{M}(\mathbf{p}_M)$ = Parametrized Mass-Matrix

$\mathbf{f}(t)$ = External Nodal Point Force



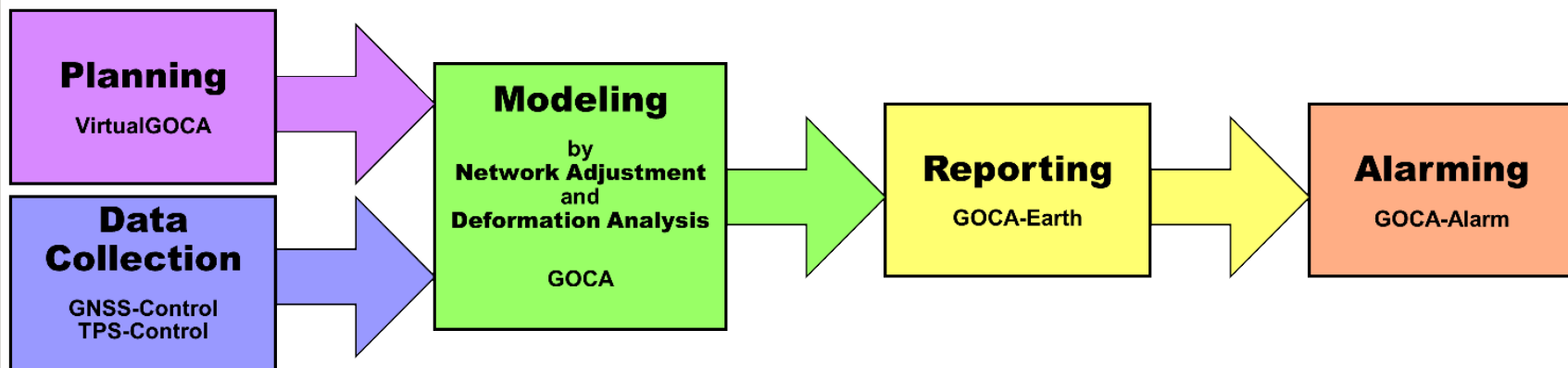




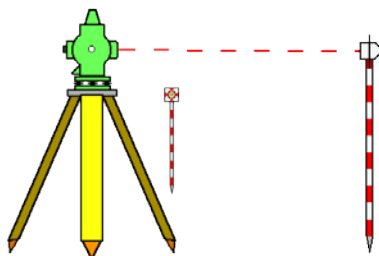
Geo-Monitoring Chain



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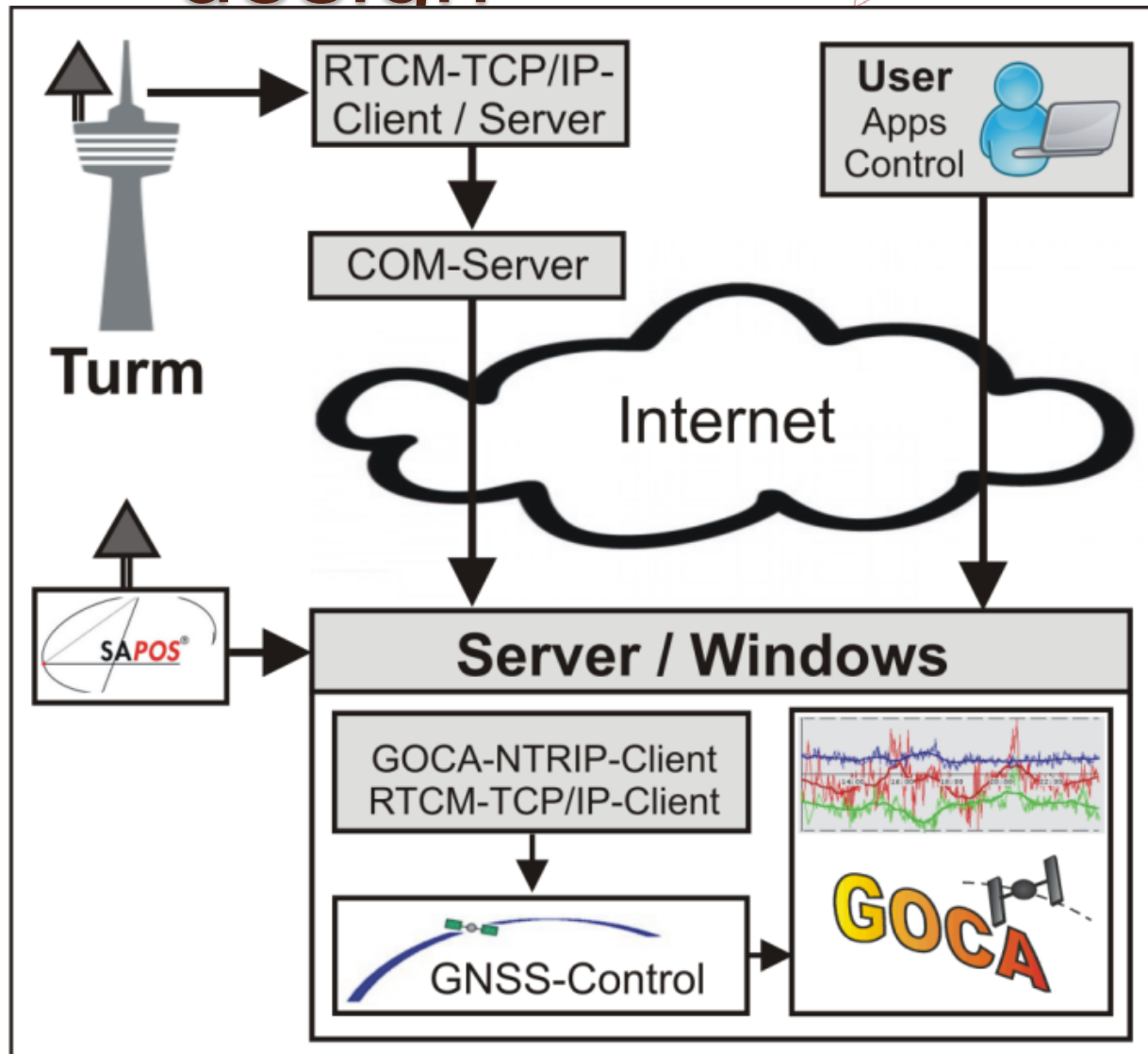
Communication



GOCA System design



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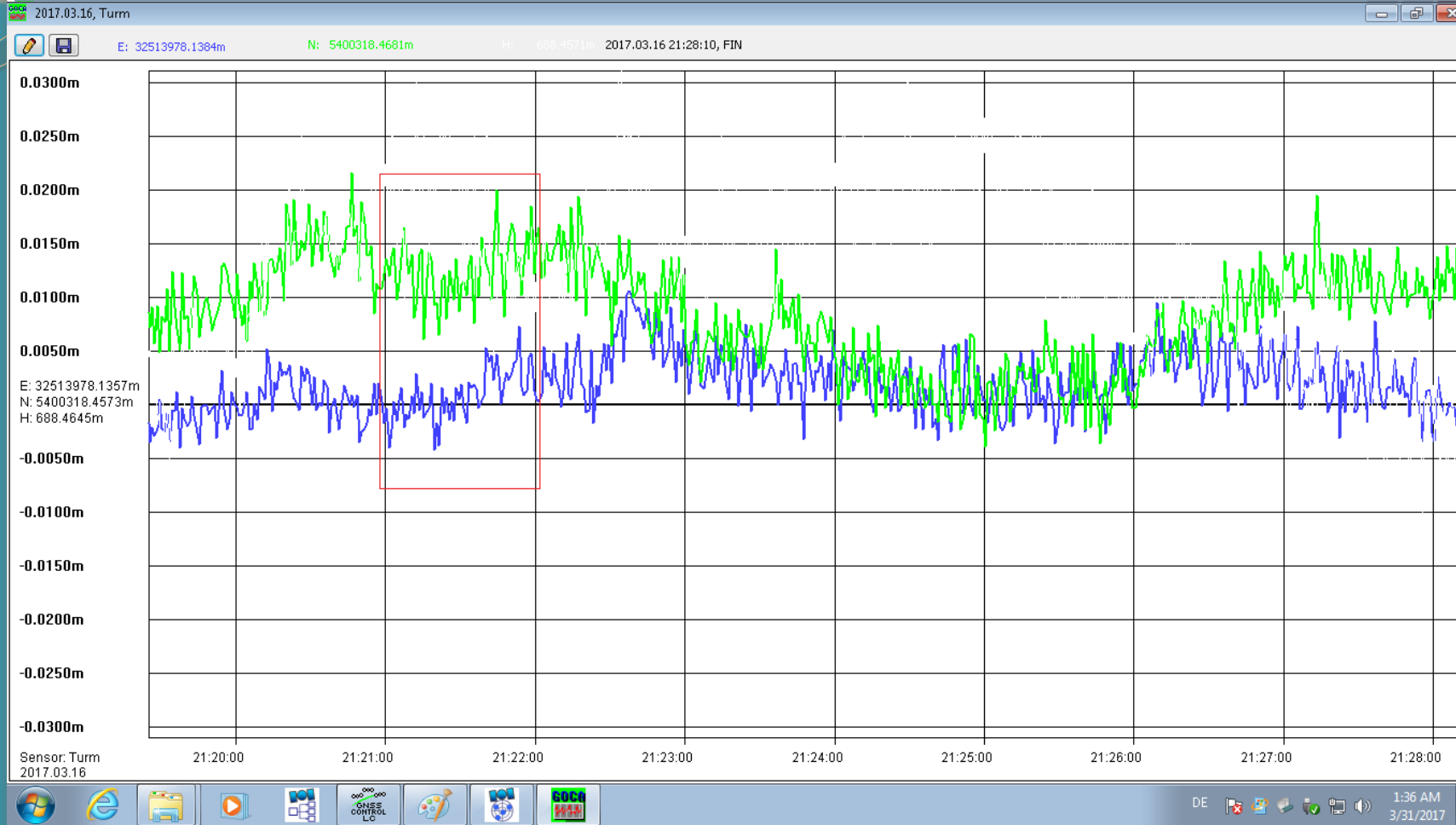




Results



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GOCA Further tasks

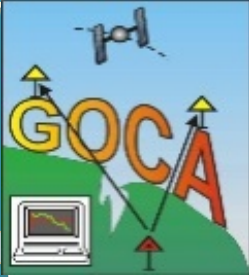


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Development of the App for the Android operation system. For users to get a possibility to see and control the condition of the object.



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Thank you for your attention!

