



## INSTITUTE OF ROCK MECHANICS AND TUNNELLING

### DEPARTMENT HEAD

Univ.-Prof. Dipl.-Ing. Dr.-Ing.  
Thomas Marcher

### CONTACT

Institute of  
Rock Mechanics and Tunnelling  
Graz University of Technology

Rechbauerstraße 12  
8010 Graz, Austria

tunnel@tugraz.at  
www.tunnel.tugraz.at

Tel.: +43 316 873 8114  
Fax: +43 316 873 8618

## FACT SHEET to the research project RCRM

### SHORT TITLE / ACRONYM

RCRM

### LONG TITLE

Remote Characterization of Rock Masses

### DESCRIPTION

Discontinuities dominantly influence the mechanical behaviour of rock masses. Thus, it is important in rock mechanics to have a profound knowledge about the discontinuity network. Traditional mapping techniques are limited within time and scale. Furthermore, the results are rather subjective and not reproducible.

The application of remote sensing in geotechnics helps to collect data about the discontinuity network and reduces the bias, introduced by manual mapping. Together with numerical models, reliable predictions about the stability of the discontinuous rock are possible. But there is still missing an automatic data collection and analysis process, as well as an automatic implementation of the collected data in a numerical rock simulation.

This research focusses on the automatic mapping of discontinuities aided by remote sensing techniques. This means:

- Discontinuity extraction from coloured images (RGB) and digital surface models
- Numerical simulation of discontinuous rock masses for stability analyses

### PROJECT COORDINATOR

Andreas Buyer, M.Sc., B.Sc.  
Graz University of Technology  
Institute of Rock Mechanics and Tunnelling,  
[a.buyer@tugraz.at](mailto:a.buyer@tugraz.at)  
+43(0)3168738615

### CONTRIBUTORS

Wulf Schubert, Em.Univ.-Prof. Dipl.-Ing. Dr.mont.  
Graz University of Technology  
Institute of Rock Mechanics and Tunnelling

Gerald Pischinger, Mag.rer.nat. Dr.rer.nat.  
Geoconsult Holding ZT GmbH

## ACCOMPLISHED MILESTONES

DATE	DESCRIPTION
01/2015	Start of research
09/2019	Planned Submission

## RELATED PUBLICATIONS

YEAR	AUTHOR(S)	PUBLICATION TITLE
2018	Buyer, Schubert, Pischinger	Image-based Discontinuity Identification
2018	Buyer, Schubert	Joint Trace Detection in Digital Images
2017	Buyer, Bongarz, Pischinger, Schubert	Neue Möglichkeiten der Gebirgscharakterisierung im Tunnelbau: Ein Beispiel vom Gleinalmtunnel
2017	Buyer, Schubert	Calculation the Spacing of Discontinuities from 3D Point Clouds
2016	Buyer, Schubert	Extraction of Discontinuity Orientations from Point Clouds - Comparing clustering algorithms