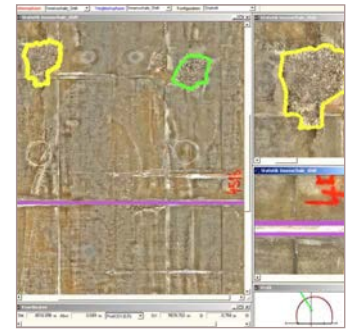
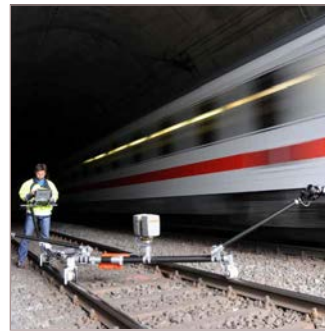
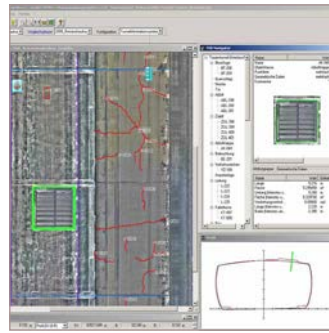


## TUNNEL INFORMATION SYSTEM

The dibit TIS is a powerful database application for efficient management of tunnel related data. dibit TIS provides the capability to map objects of interest such as defects, structure elements, repairs etc. on a digital tunnel surface generated from a tunnel scan. In the course of mapping object related data, such as crack length can be calculated and stored

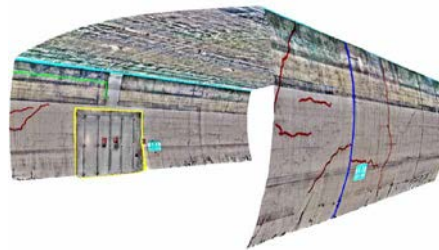
in the database. The dibit TIS also provides the function to compare different digital tunnel surfaces and the capability to map changes as well as to generate standardized reports. A key advantage of dibit TIS is that it provides a comprehensive and impartial view with regard to the tunnel condition for the user.



## APPLICATIONS

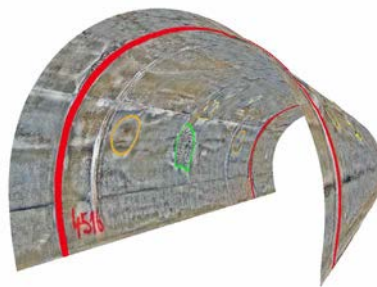
### As-built Documentation

- mapping of structure elements  
e.g. blocks, segments, niches
- mapping of material zones,  
e.g. concrete, shotcrete, rock, brick
- mapping of tunnel installations  
e.g. utility cables, illumination
- production of as-built drawings



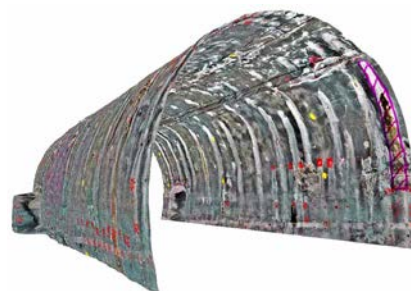
### Tunnel Inspection

- mapping of defects  
e.g. cracks, spalling, water ingress
- mapping of defect changes  
e.g. crack elongation, additional cracks
- production of actual condition drawings
- production of alteration drawings



### Tunnel Rehabilitation / Repair

- mapping of rehabilitation areas  
e.g. cracks, spalling, water ingress
- quantification of repair work for tendering
- calculation of actual repair quantities  
e.g. total length of cracks, area of spalling
- production of rehab/repair drawings



## DIBIT SOFTWARE

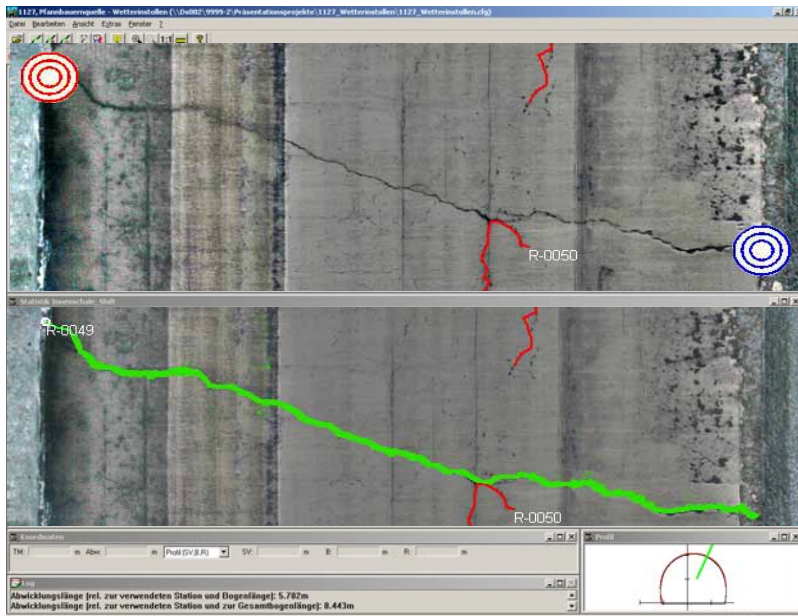
- provides for analysis of the tunnel surface in 2D- and 3D-views
- easy mapping with standardized object types
- predefined objects available
- automated calculation of statistic values for objects
- comparing function for different recordings
- automated report generation
- automated generation of drawings
- data export to AutoCAD

## ADVANTAGES

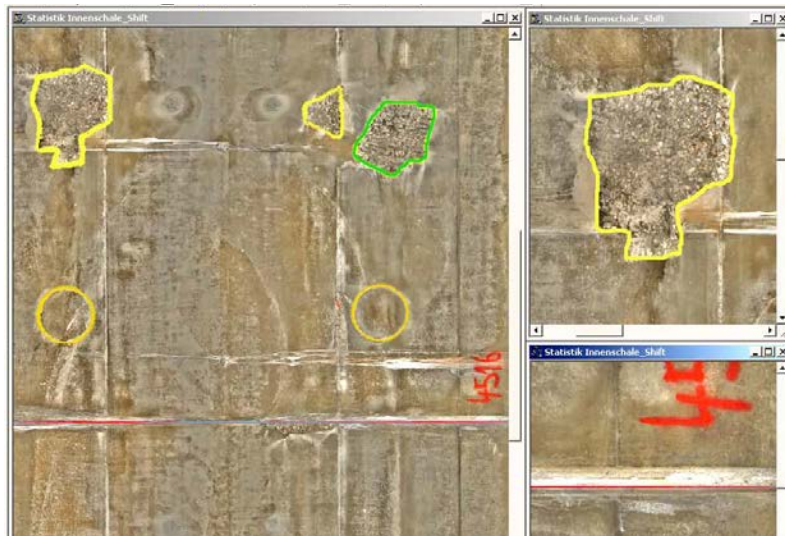
- image resolution up to 1 x 1 mm
- semi automated crack detection
- 3d tunnel inspection on computer screen
- fast and easy workflow



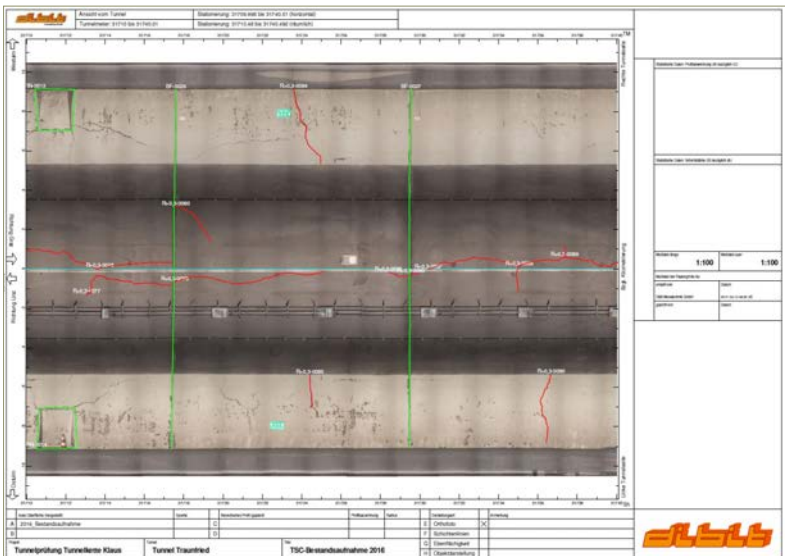
## TIS - WORKFLOW AND RESULTS



Fast crack detection (semi-automated)



TIS user interface



Combination of as-built and actual condition drawing

## Map and Compare

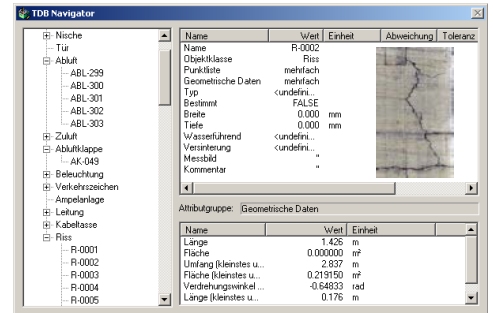
- mapping of objects can be done by redrawing the object on the digital tunnel surface
- mapping is supported by efficient tools such as automated crack detection or predefined objects



Easy compare of two records

## Database

- object oriented navigation
- calculation of statistic values of the mapped objects
- link to external documents



TIS Database

## Results

- as-built drawings
- actual condition drawings
- alteration drawings
- reports

Objekt	Station	Station Anfang	Station Ende	Name	Wert	Einheit	Abweichung	Toleranz
R-0001	23606.45	23606.45	23606.45	Länge	1.425	m		
R-0002	23606.45	23606.45	23606.45	Fläche	0.000000	m²		
R-0003	23606.45	23606.45	23606.45	Umfang (kleinstes u...	2.837	m		
R-0004	23606.45	23606.45	23606.45	Fläche (kleinstes u...	0.21510	m²		
R-0005	23606.45	23606.45	23606.45	Verdrehungswinkel...	-0.84823	rad		

Reports