

# 道路三维模型的生成系统和流通

## Generating system and flow of 3D-model

Kawada Technosystem Co., Ltd.



### 3D模型的道路设计

Road design of 3D model.



- 什么是3D模型设计...

What is design with 3D model...

- 可以用来作为一种设计，而不是一个仿真。

That can be used as a design rather than a simulation.

- 什么是3D模型设计...

What is design with 3D model...

可基于构造物的设计要素创建三维模型

It is possible to create a model based on the design elements of the structure.

- 什么是3D模型设计...

What is design with 3D model...

生成的三维模型可配备到相关人员流通的环境里

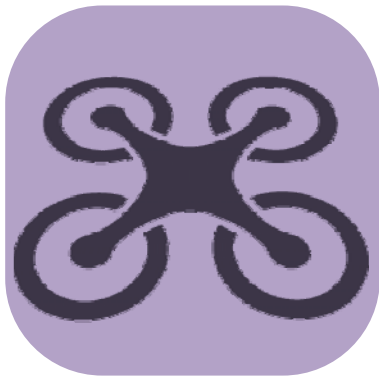
It is equipped with an environment that can distribute the generated 3D models to stakeholders



## 三维模型对道路设计提供技术支持

### Supporting Technologies for road design by 3D model

- 利用无人驾驶飞机或激光扫描仪的点云测量信息
- Utilization of point cloud surveying information by drone or laser scanner
- 三维道路设计专用系统
- Three-dimensional road design dedicated system
- 注册3D模型，共享可分发信息
- Registration of 3D model, sharing of distributable information



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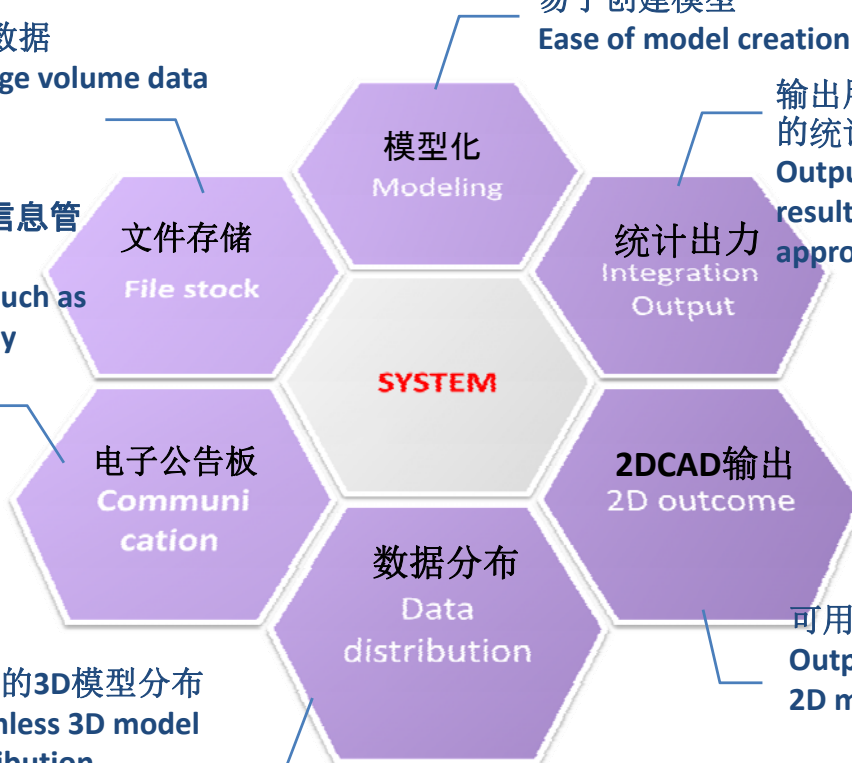
## 通过3D模型实现道路设计的元素

### Elements to be implemented for road design by 3D model

管理大容量数据  
Managing large volume data

变更记录的信息管理  
Information such as change history management

无缝的3D模型分布  
Seamless 3D model distribution



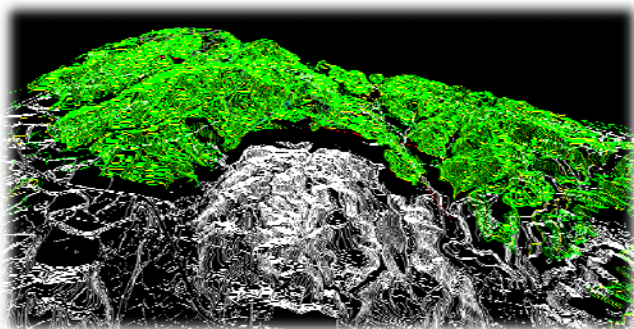
输出用于判断适当性的统计结果  
Output of integration result for judging appropriateness

可用2D模型的输出  
Output of available 2D model

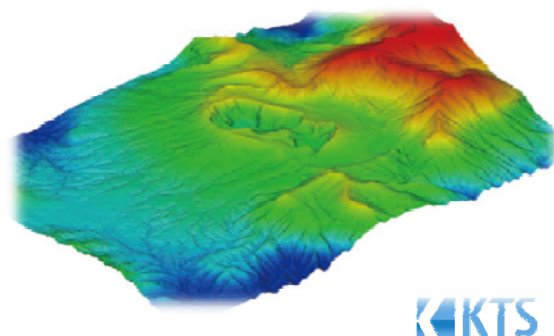
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# 三维地形的自动化作为三维模型的基础

## Automation of 3D terrain as the base of 3-dimensional model



- 2维等高线图面3维信息化的转换技术 Technology for converting 3D data from 2D contour maps
- 点云数据的利用技术 Use of point cloud data



# 易于变更道路计划线和布置构造物

## Change of road plan lines and ease of arrangement of structures

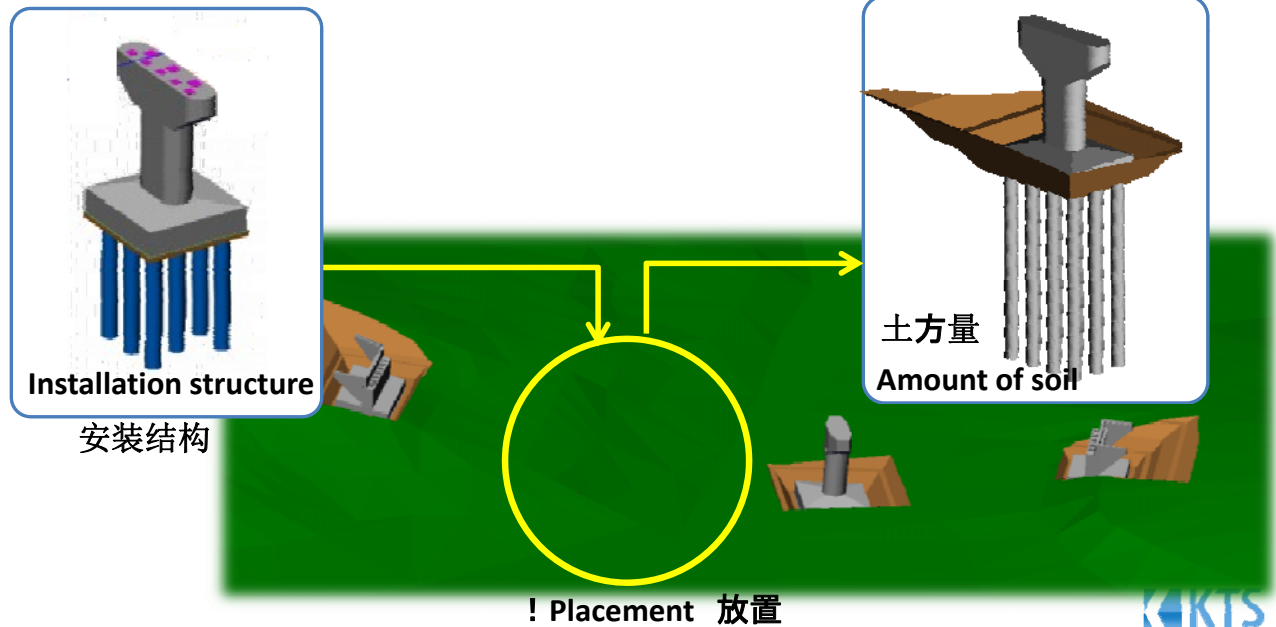
- 布置道路计划线和自动计算最佳填方、挖方
- Automatic calculation of optimal embankment, cuts when placing road plan lines
- 填、挖相对困难的地方布置桥梁、隧道  
Place bridges, tunnels in places where adaptation of embankment, cut is difficult



# 道路设计的整合自动化

## Automation of accumulation on road design

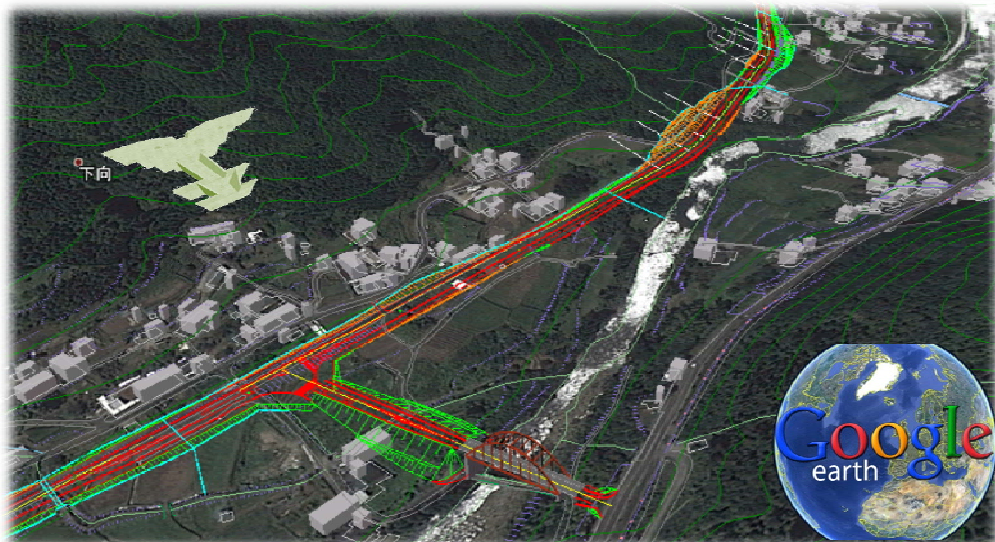
- 3D模型生成, 无需画一般的土木结构
- 3D model generation without drawing general civil construction
- 映射结构计算废弃土方量
- Calculating emissions volume simply by mapping structures



## 信息传输性和可见性

### Information transmission and information visibility of 3D model

- 作为广域显示方法输出到 谷歌地图  
Output to Google Earth as a wide area display method
- 自动创建并输出到模拟的3D-PDF  
Automatic creation of simulation and output to 3D-PDF

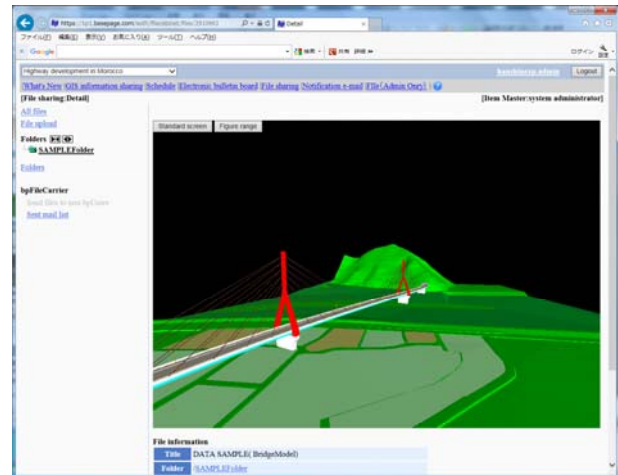




# 的信息流通性和共享性

## Information distribution and information sharing of 3D models

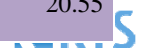
- 作为广域显示方法输出到 谷歌地图  
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# 各系统的工作时间比较

## Work time comparison by each type cad system

	工作比率 Work ratio	2D CAD专用 2D-CAD for road	3D通用CAD 3D-generic CAD	本系统 3D-CAD for road
创建或读取地形的形状 Create or capture of terrain shape	5	1.00	0.20	0.20
设定道路中心线和道路宽度组成 Setting of road plan line	10	1.00	8.25	0.70
自动算出和判断纵横断信息 Automatic calculation and determination about Vertical and transverse	10	1.00	12.50	0.80
设置构造物和输出结果 Installation of structure and output of result	20	1.00	7.25	0.03
土方量的自动计算和输出结果 Auto calculation of soil quantity and output of result	10	1.00	15.25	0.2
调整平面线形、纵段线形、横断面坡度 Adjustment of each design result	30	1.00	10.25	0.04
模拟运行 Make running simulation	15	1.00	0.10	0.05
对照 Comparison		100.00	815.00	20.55



## 三维模型的视频和信息共享示范建模

Demonstration of 3D model modeling video and information sharing



3D road design making video and demonstration of information sharing.



## 利用三维道路设计专用系统的作用

Utilization effect of road design exclusive system.

- 易于对道路铺设进行适应性评价  
Ease of suitability evaluation for road laying.
- 多种因素导致计划改变的灵活性和快速对应性  
Flexibility and responsibility to plan changes to various factors.
- 在山区设置构造物和广域道路计划的迅速性和计划变更的对应性  
Especially, installation of structures on mountain areas and wide area road plan.
- 通过仿真改进说明  
Improve of explanation by simulation.
- 从计划到统计的信息集中管理  
Unified management of information from planning to accumulation.



**非常感谢你！！**

**Thank you very much.**

