GRIT WORLD

大规模智慧城市仿真
LARGE-SCALE SMARTY CITY SIMULATION

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粒界科技

关于粒界科技
About GritWorld GmbH

粒界科技责任有限公司（GritWorld　GmbH）于2015年12月由吴小毛博士在德国美茵河畔的法兰克福创立。公司在中国上海、广州设有分公司。目前粒界科技有来自9个国家和地区的国际化核心技术团队。 公司的使命是颠覆人与数字世界的交互方式，在肩负使命的同时公司致力于研发实时图形渲染技术和实时大规模3D重建技术，并应用到不同工业领域，包括影视动漫、数字城市及工业仿真、高维数据可视化，以及大规模商品数字化和广告等，以便极大地推动这些领域的数字变革，提高制作效率并降低批量制作成本。

GritWorld GmbH was founded in December 2015 by Dr. Wu Xiaomao in Frankfurt am Main, Germany. The company has branches in Shanghai and Guangzhou, China. Gritworld currently has international core-technology team members from 9 different countries. The mission of the company is to subvert the way of interaction between human and the digital world, which required a core development of real-time graphics & rendering technologies and real-time large-scale 3D reconstruction technologies, and applying them to different industrial fields including cartoon animation, film, digital city & industrial simulation, high-dimension data visualization and large-scale commodity digitization and advertisement. We promote digital transformation in these fields, improve production efficiency and at the same time reduce the cost of batch production.

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创始人和公司简介

The Founder & GritWorld

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创始人背景
Founder’s Background

计算机图形学和计算机动画领域全球科学家；
The world’s scientist in computer Graphics& Animation ；

美国计算机协会（ACM）《娱乐计算》期刊的高级主编；
Senior Editor of ACM Computers in Entertainment;

全球最大出版商施普林格即将出版的大型百科全书《计算机图形学与游戏》的工业主席；
Industrial Chair of going-to-be-published book “Computer Graphics and Games” by Springer, the biggest publisher globally;

美国计算机协会SIGGRAPH“游戏中的动画”（Motion in Games）；
SIGGRAPH Motion in Games；

虚拟现实会议（VRST）欧洲图形学会议的委员；
Member of VRST;

欧洲图形学（Eurographics）会议的工业主席；
Industrial chair of Eurographics；

Germany+China

•拥有来自9个国家的强大技术研发制作团队；

Top DEV team from 9 regions；

•团队成员在游戏与影视领域具有丰富的经验；

Years of experience in game& film industry;

•具有Cross-Engine core technology development & usability 能力；

Cross-Engine core technology development & usability capabilities；

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城市仿真的发展

Simulation for City Development

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国内外目前智慧城市的现状
Smart City around the world

智慧城市最早可追溯到1992年新加坡首次提出“智慧岛”计划，随着信息技术不断快速地发展，社会水平不断进步，很多国家和地区开始进行智慧城市建设。21世纪初期，美国、英国、德国、荷兰、日本、韩国、新加坡等国均开展了智慧城市的实践，全球掀起了智慧城市建设的热潮，其中，欧洲和亚洲是智慧城市建设开展较为积极的地区。

The concept of Smart City can be dated back to 1992 in Singapore, where the plan of “Smart Island” was firstly established. With the tremendous development of information technology and society, more and more countries join the construction of Smart City. In the beginning of 21st Century, countries such as US, UK, Germany, Netherland, Japan, South Korea and Singapore has put the concept into practice. Among them, countries in Asia and Europe are regions that start the Smart City effectively.

国外著名智慧城市

维也纳相继出台一系列规划全力推进智慧城市。

多伦多全球十大智慧城市排名中，多伦多位居第二。

巴黎作为法国首都，欧洲第三大城市，在可持续发展方面表现突出。

纽约的“城市互联”行动。

杜伊斯堡成为华为在欧洲最大智慧城市项目。

2009年英国，明确提出将英国打造成世界的“数字之都”。

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国内外目前智慧城市的现状：
Smart City in China

目前全球已启动或在建的新型智慧城市1000多个。中国已有500个形成大型新型智慧城市群，是全球建设规模最大的新型智慧城市国家，也形成了遍地开花的总体建设格局。

Currently, there are more than 1000 cities globally starting or planning new Smart City construction. There are 500+ cities in China, which has formed a large-scale Smart City group. The modern concept also blossoms everywhere in China.

国内著名智慧城市

- 智慧上海核心是互联网经济。
- 数字广东今年腾讯提出了“一三五七”的定位。
- 智慧宁波致力打造宜居城市。
- 智慧福州走出了一条独具福州特色的数字城管建设之路。
- 智慧雄安其定位是疏散北京非首都职能。
- 智慧江苏建设智慧基础设施与平台一体化。

国内外目前智慧城市的痛点
Difficulties: Smart City in China：

智慧城市发展仍处于初级阶段，顶层设计脆弱、落地难，盈利模式不清晰、城市基础设施投入力度小、信息基础设施方面重视硬件建设、忽视市场需求、面向应用开放程度不够、城市感知与数据采集的系统建设进步不明显、数据共享困难、因部门条块分割问题而出现门槛更高、接口更难的巨型信息孤岛、重复建设、资源浪费现象严重等方面，其共性在于智慧城市的标准体系不完善。

It's still in initial stage for Smart City, with such difficulties as fragile top design, hard execution, unclear profit mode, as well as limited invest in urban facilities. However, the great emphasis on hardware construction in terms of data base, which causes market demand, insufficient degree on applications, inadequate progress in urban perception and data collection, trouble in data sharing, boundary between departments caused by division, repetitive construction, great waste in resource, all caused by the standard imperfection of Smart City.

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我们的优势与解决方案：

A 打破行业壁垒做智慧城市的先行者；
break the industrial barrier and be the pioneer;

B 克服阻碍将智慧城市项目落地；
break the bound and take the Smart City Project into execution;

C 几百平方公里的大规模城市重建；
Big-Scale city reconstruction;

D 几十个政府/企业数据的无缝对接，真正的优化智慧体系；
Seamless joints between Government& Enterprise, the true optimization of Smart City;

E 像玩游戏一般管理数字城市和企业数据；
Manage Digital City and Enterprise Data, just like playing games;

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杭州城市数字化

- 实时大规模三维数据模拟与交互;
 Simulation& interaction of massive real-time 3D models ;

- 成百上千的建筑体;
Thousands of Props;

- 几个GB到上百GB的照片和视频采集;
video collection with different size(from 1G to 100+G);

- 几平方公里的三维数据动态模拟与交互;
dynamic simulation& interaction of 3D models within several square kilometers;

- 将游戏技术进行深度的定向研发;
directional and deeper development using game technology ;

- 数据导入时间从几天缩短到几分钟;
 save the import time, from days to minutes;

- 所改即所得：实时动态更新和互动;
what we see is what we obtain, real-time dynamic update and interact;

- 城市模拟的AI系统: 车辆、交通和信号灯等;
simulated AI system in urban area, traffic and traffic light, etc;

智慧城市仿真和各学科的融合

广州麻涌数字城市项目

•城市规划下的公共管理学;
Public administration under urban planning;

•城市建设中摸索政治、经济、社会与文化相适应的学科理论体系;
explore politics, economics and theoritical systems that are suitable for society and culture during city construction;

•人文地理、资源环境与物理工程等学科的交叉与互补;
The intersection and complementarity of human geography, resource& environment and physical engineering;

- 支持移动开发;
support mobile platform;

- 支持surface、Windows以及ios等多系统连接;
support various systems such as Surface, Windows, iOS;

- 显示端支持实时4k、8k超高分辨率;
support high-resolution(4k,8K) on display device;

智慧交互平板系统

智慧城市仿真在各专业的应用前景

- **智慧城市管理 management of smart city**

促进城市规划、建设、管理和服务智慧化的新理念和新模式，实现了对城市精确、敏捷、高效、全时段和全方位覆盖的城市管理模式。
Encourage the new concept and mode of urban planning, construction, management and smart service, and realize the full-time&converage management mode in accurate, flexible, efficient way.

- **智慧小区 smart community**

集成视频监控系统、入侵报警系统、车辆管理系统、门禁管理系统等多个系统，通过上层综合管理平台的统一协调从而达到管理便捷性、数据直观性，实现各应用子系统之间的智能化联动和处置突发事件的应急指挥。
Several systems like Integrated monitoring system, IAS(Intrusion Alarm System), Vehicle management system, Access control System; Top Integrated management platform to implement unified coordination, realizing the management convenience, data intuition; Implement the smart interaction between subsystems and command in emergency.

- **环保管理 management of Environmental protection**

协助市政设施、市容环卫、园林绿化与城管执法等，实时空气质量检测、环境污染源、风险源检测等。
Assist municipal facilities, urban sanitation, landscaping and management, real-time air quality testing, environmental pollution sources and test on risk resource.

智慧城市仿真在各专业的应用前景

- **资源管理 resource management**

集管线数据普查、数据入库管理、数据维护更新、地下管线精细化管理，通过地理信息系统（GIS）定位在电子地形图上形成数据库，完成新建管线实时更新、管线数据统计分析、管线碰撞分析、爆管分析及三维模型展示等。
Pipeline data check, data stocking management, data maintenance& updating, refined management on underground pipeline, GIS positioning and database construction, real-time update, statistical analysis for new pipeline, collision analysis for pipeline, pipe explosion and 3D display.

- **数字政务 digital government affairs**

依托城市政务专网连接市政府和相关委办局，构建面向“数字城市”的数据共享与联合审批。实现跨部门、跨行业、跨地区及跨级别的数据共享、资源整合。
Depending on the government network to connect with municipal government and other relevant commissions and offices, data sharing and joint approval. Implementation of data sharing and resource integration in cross department, industrial, regional way.

- **智慧交通 smart transportation system**

构建安全、通畅、低碳、便捷、高效与智慧的现代综合交通运输体系。实现交通信号灯联网控制，实时发布交通信息，停车诱导系统，特殊车辆引导等。强化交通指挥调度手段，实时发布交通信息，为市民提供便捷的公共交通出行服务。
Traffic& Logistic system, implement network control of traffic lights, publish traffic info, parking guide system, guide system for special vehicle in real-time; enhance the traffic dispatching solution and real-timely publish the traffic information and provide citizens more convenient service to go out.

智能交通系统
Smart Transportation System

- **实时路口监控;**
  Monitoring in cross roads;
- **GIS 信息精准对接;**
  Accurate connection for GIS info;
- **国内首个打通交通职能部门的智慧交通落地项目;**
  The first project in progress that breaks the barrier between department of transportation and smart traffic;
- **更一目了然的震撼呈现;**
  Obvious& intuitive display;

智慧社区案例

- 实时人流、车流、物流监控;
  Real-time monitoring on stream of people& vehicles;
- 任意一个或者多个信号叠加到其他信号之上显示;
  Overlap one or more signals onto others;
- 实时数据对比，实现智能分析、联网布控功能;
  Real-time data comparison, realizing smart analysis, networking deployment;
- 更完善的数据存储和读取性能;
  Improved performance on data storage and reading performance;
- 更便捷的工程实施与系统维护;
  Engineering construction and system maintenance in more convenient way;

智慧社区案例

•实时的设备监控;
real-time monitoring system;

•配置信息统一数据库管理与对接;
unified database to call the configuration information;

•可实时重复调用设备所有功能数据、运行参数;
Repeatedly call function data and operational parameter in device;

传统

A 低分辨率

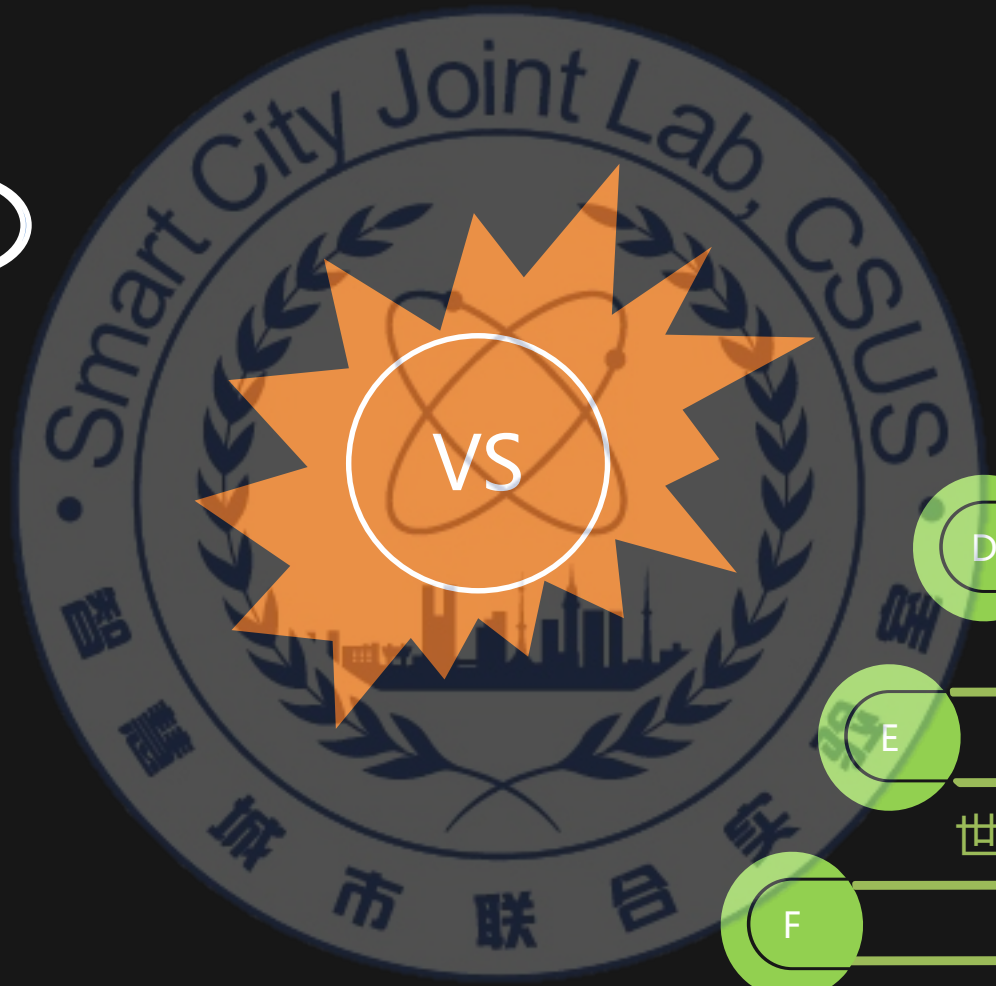
B 单一系统

C 数据不能充分利用

D 团队配置不齐

E 画面效果不美观

F



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A 大分辨率

B 1:1三维仿真

C 多系统运行

D 数据实时对接

E 世界顶尖团队

F 游戏影视结合

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谢谢！
Thank you

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