

Smart & Green Total Building Solution



**...** 

FMS



# Acropolis SG Platform

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**Solideo** Solideo Systems Co., Ltd.

# **ACROPOLIS SG** FOR TODA TOMORROW

For the last 15 years of history, Solideo Systems has grown to be an outstanding IT Company specialized in architectural engineering and construction industry, sharing the trust with our valuable partners as always.

XX In Whatever We Excel.

Just in Time We Deliver.

In Customers We Trust.

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Solideo's products and solutions are proudly presented with a solid determination to meet your demands and bring your business under control.

A variety of Solideo's solutions are ready to help attain your aspiration level of management with all sorts of smart devices from anywhere at any time.

Whatever your business is, with trust we are ready to help you as far as it is information-related concern.



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### Aiming at the World of Smart Buildings...

Our mission with Smart Building Solution is to realize harmonious integration of systemic components, "Architectural Information, Telecommunication, Office and Building Automation" and to ensure with its advanced technologies "Economy, Efficiency, Comfort, Functionality, Reliability, and Safety" of the buildings.



**SMART & GREEN** TOTAL BUILDING SOLUTION

Acropolis SG (Smart & Green) Platform enables integration of building facilities, electricity, communications, fire alarming and energy monitoring services automatically as a whole.

### History







As named after Acropolis, a citadel containing Greek ancient buildings of great architectural and historic significance, Acropolis SG, Solideo System's Smart Building Solution is pursuing the creation of Smart and Green Environment for the Buildings and the City.





### Goals of Acropolis SG

### Special Features of Acropolis SG



### Sustainable

Keep sustainable and automatic control of full whole machine, electric- of comfortable and range of managerial processes for facilities, fire alarm services, so energy and security, etc. that an entire building of the building.

Mutually integrate as a Attain the creation ity, communication and safe environment, the energy saving, and the increased value of the building.

Attainable

#### **R**evolutionary **T**ranscendent

Make revolutionary change of the building with 3D BIM-based integration of IBS, BEMS, FMS technologies.

Transcend the traditional idea of building automation (simply BAS) into holistic Building Management Information Systems through the convergence of advanced technologies.





Mutual

can be managed by a

single solution.







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BIM-based Smart Building Solution with BMS, BEMS, FMS integrated

Visual management solution for BIM Data



### ß

Ideal building management solution as an open platform for various devices with different protocols

#### 

On-going monitoring of the energy efficiency analysis and optimal system operations

# For WHOM

#### **Business Area**

Best answer for building information management system and state-of-the art smart building solution.

Can be applied to all types of buildings including factory and other industrial plants.



### **New Building Business**

#### **BUSINESS PROCESS**



	Category	Item	
	BAS	Auto facility control	Control every facility &
		Auto power control	Control electric power
		Auto lighting control	Control lighting fixture
	ICT	Structured cabling	Provide connectivity of adapters & auxiliary d
		LAN	Install and set up the o NMS servers & Aps.
		PAS	Broadcast content & E
		CATV	Support receiving digit
		PBX	Provide voice commun
		Integrated Security	Provide security servic CCTV systems
	SI FMS	SI	Provide integrated mo
		FMS	Support FMS allied by
		BEMS	Improve energy efficier
	ETC	Energy saving	Save building energy b high efficiency chiller,
		New & Renewable Energy	Enable energy saving a solar thermal, fuel cel

#### Content

equipment with support of Smart Building solutions, BEMS & FMS

supplies with support of Smart Building solutions, BEMS & FMS

es & equipments with support of BEMS & FMS

telephony services, data terminals, ICT equipment, evices

core backbone switch, sub backbone switches, workgroup switches,

BGM in case of fire via interacting with fire alarms

tal cable TV programs in auditorium or meeting rooms where available

nication services

es by monitoring & controlling the building through access control /

nitoring by IBS

other systems

ncy with SI/FMS

by devices like LED lighting, high performance pump, heat recovery system

and carbon reduction by geo thermal system, photovoltaic, l, water recycling

### Energy Saving Business (old building)

#### **BUSINESS PROCESS**



### Energy Saving Business (old plant)

#### **BUSINESS PROCESS**



#### **ENERGY SAVING BUILDING SYSTEM**





• System 0&M

#### **ENERGY SAVING PLANT SYSTEM**

### **Operation & Maintenance Business**

#### **ARCHITECTURE**



#### SERVICE

					E FMS(CAFM) E BEMS	
Off-line	Development consulting			Facility management agency		
	Purchase / sale agency			BCP / BCM management		
	Asset risk management			Facility management standardizati	on Energy system operation agency	
Service	Real estate value estimate	Lease man	agement agency	Building performance audit	Energy saving consulting	
	Profitability analysis	Budget and	udget analysis LCC consulting		Energy audit consulting	
	BPI(Building Performance Indicator)					
On-line	Asset management	Profit mana	agement	Facility management	Energy management	
Service	Space management					
	BPI(Building Performance Indicator)					
	Monitoring		Remote control		Patrol	
Integrated control	🔺 Data		▼ Control ▲		Regular check / Emergency	
	Local building I/F					

### New & Renewable Energy Saving Business

#### WHAT IS NEW & RENEWABLE ENERGY?

New & Renewable Energy refers to energy that comes from the replenishable resources such as sunlight, geothermal heat, exhaust heat, bio-organism, waste, etc., and replaces conventional fossil fuel.

#### Geo Thermal Energy



Thermal energy generated and stored in the Earth.





#### Photovoltaic



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Electrical power obtained by converting solar radiation into direct current electricity.

#### **Bio Energy**



Renewable energy made available from any organic material (biomass) which has stored sunlight in the form of chemical energy.

#### **Exhaust Heat recovery**



Energy recovered from thermal losses in the exhaust pipe, using temperature difference with heat pump.

#### Solar Thermal Energy



Heat energy generated by absorbing radial rays from the sun.

#### Waste to Energy



Energy generated from the incineration of combustible wastes.



FACILITY MANAGEMENT SYSTEM

# **SOLUTIONS**

### **System Features**

- Integrated solution with BAS / BEMS / BIM combined together
- BIM-based visual facility operations and management
- Interactive technology enabled between blueprints and databases
- Efficient energy management support

### **Expected effectiveness**

- Reduced building operation costs
- Maximized space utilization
- DB established for effective management
- Systematized business processes

### Main Function



Management

### System Schematic



# **BMS**

#### **INTEGRATED SI**

## **System Features**

- Real-time monitoring and control of individual system points

### **Expected effectiveness**

- Integrated management by checking individual systems all at once
- Effective operation based on the linked scenarios

### **Main Function**





Fire Control

### System Schematic

**Building Safety Center** 



- Open protocol-based system interfaces
- Configuration of scenarios for event occurrences
- Integrated database saving / analyzing / checking
- Various reporting functions
- Dual monitoring of individual and integrated systems together
- Building life extension through optimum operations

Water Supply

CCTV Control

Waste Control



**BUILDING ENERGY** MANAGEMENT **SYSTEM** 

### **System Features**

- Data management for energy usage status
- Trend analysis of energy usage over time
- Energy planning with target usage level
- Energy saving guidelines by energy consumption analysis
- Various reporting functions

### **Expected effectiveness**

- Energy reduction through BEMS data analysis
- Facility life extension & cost saving by efficient facility operations
- Occupants' satisfaction improved through the control of indoor environment & cooperative system management

### Main Function



### System Schematic



# **System Features**

**BIM** 

BUILDING

MODELING

INFORMATION

### **Expected effectiveness**

### **Main Function**

in the second		
-	in the second	
-		
200	100	
10.0		1.1
	• 0.11	
-	1000	



### System Schematic



Apply to variety of Applicating

• Management of DB made up of Big Data • Management of Big Data to create added value • Integration of other applications via OpenAPI • Support of the various analytic techniques

• Efficient examinations via visualized 3D modeling • Linkages between BIM and Real-data with each other • Co-efficient working operations via systemic analysis • Improved public relations through the effects of well-formed





Collision Check







#### Analysis by Spatial Legend Shortest Distance Analysis



2D Plain Analysis



Holistic Viewing

Extract the BIM file or value from core contents

# BAS

#### BUILDING AUTOMATION SYSTEM

Local Control Panel			
Product Name	Product Summary	Product Content	
GCU(LSU-2000)	Product passing control point to gateway which keeps and manages the Site DDC(Digital Direct Control) data and connects with central controlling gear protocol controlling device	<ul> <li>Power Supply : DC12V</li> <li>Communication port : RS-485, RS-232, Ethernet (TCP/IP)</li> <li>Size : 210 x 140 x 40 (mm)</li> <li>Allowed environment : -10°C ~ 60°C / 95% R.H.</li> </ul>	
IDC-3032W	DDC product enabling to collect, manage, calculate information on site devices and control site's individual devices and sending it to central or local controlling gear for remote observation and control	<ul> <li>Power Supply : AC24V</li> <li>Communication port : RS-485, RS-232, Ethernet(TCP/IP)</li> <li>Input : AI(16), DI(16)</li> <li>Output : DO(8), AO(8)</li> <li>Size : 205 x 300 x 50 (mm)</li> <li>Allowed environment : -10°C ~ 60°C / 95% R.H.</li> </ul>	
SFMC(nFMC-3000)	Individual LCD Panel which checks and monitors the control point information on site through Master IDC (or GCU) and TCP/IP communication	<ul> <li>Power Supply : DC5V</li> <li>LCD : 7" TFT-LCD, 800 x 480 / 10.4" TFT-LCD, 640 x 480</li> <li>Communication port : Ethernet(TCP/IP), RS-232, RS-485, USB</li> <li>Size : (7") 220 x 150 x 40 (mm) / (10.4") 330 x 180 x 50 (mm)</li> <li>Allowed environment : -10°C ~ 60°C / 95% R.H.</li> </ul>	

# LED & LIGHT **CONTROL**

### System Features

#### • LED

- Light Control System

### System Schematic



### Local Control Equipment

Product Name	Product Summary	Product Content
Duct temperature- humidity sensor	<ul> <li>Detects relative humidity and temperature at the duct of the air ventilation &amp; conditioning system</li> <li>Used as control detector of air supply &amp; exhaust</li> <li>Also used to detect and measure humidity and temperature at interfaces of the building auto gear system</li> </ul>	<ul> <li>Operate Power : 24V a.c. ±20%</li> <li>Frequency : 50 or 60Hz</li> <li>Power Consumption : below 1VA</li> <li>Detection Scope : 0~100% Rh40°C ~+130°C</li> <li>Output Signal : 0~10V (4~20mA) d.c., Pt100(1000)Ω</li> </ul>
Indoor temper- ature-humidity sensor	Detects indoor relative humidity & temperature • Used as control detector • Also used to detect and measure humidity and temperature at interfaces of the building auto gear system	<ul> <li>Operate Power : 24V a.c. ±20%</li> <li>Frequency : 50 or 60Hz</li> <li>Power Consumption : Below 1VA</li> <li>Detection Scope : 0~100% Rh10°C ~+70°C</li> <li>Output Signal : 0~10V (4~20mA) d.c., Pt100(1000)Ω</li> </ul>

### **Product lists**

#### Name of product



Sensor LED Light

- 40 ~ 60% lighting electricity saving

- 50,000 hours or more of life time, saving maintenance cost

- Real Time & auto ON / OFF control system

- Auto dimming control system on operation scenarios

#### Specifications

- Input Voltage : AC 220VSMPS : DC 24V
- LED Driving Voltage : DC 24V
- Dimming Control Method : PWM Method
- Power Consumption : 25WATT(Max), 5WATT(Min)
- Defection Method : Passive infrared
- Element & No : Dual Element X 1
- LENS : Fresnel of Dual Type
- Driving Voltage : DC 24V
- Current Consumption : Below 30mA



### **System Features**

- CCTV System
- Monitoring the outskirts of a building
- Monitoring main entry, exits, and doors
- Monitoring invasion
- Monitoring parking lot
- Access control System
- Door control
- Access control for the main facilities
- History management of entry restrictions

### System Schematic



### Product lists

Name of product	Specifications
Finger print verification energy	<ul> <li>Dimensions : 5.20" H x 1.96" W x 2.20" D</li> <li>Number of Fingerprint Templates : 4,500 per unit</li> <li>Fingerprint Template Size : 350 bytes</li> <li>Equal Error Rate : 0.0005</li> <li>Supply Voltage Sleep : .060 amps at 12 V Idle : .170 amps at 12 V</li> <li>Communications 260 amps at 12 V</li> <li>Verify/Enroll (peak) .300 amps at 12 V</li> </ul>
Proximity Card Reader	<ul> <li>Size : 127x127x25mm</li> <li>Weight : 336g</li> <li>Decode Distance : 20.3Cm(MAX)</li> <li>Input Power Source : 10~28.5 VDC</li> <li>Currents cost : 100mA</li> </ul>





inside Kiosk





- A variety of visual posting and notices
- Floor information services for the building
- Location of the current position
- Building management guide services
- A variety of information display
- Easy control with multi-touch screen

### System Schematic

#### Specifications

- Spec. Category : 40" KIOSK
- Dimentions(W x D x H) : 638 x 270 x 2240mm
- Resolution : 1920 x 1080pixels
- Brightness : 700cd/m<sup>2</sup>
- Touch screen : 40" IR Touch (2point)
- Embedded CPU : Intel I3 / Memory 2GB / SSD 64GB / Win 7 EM
- Spec. Category : 42" KIOSK
- Dimentions(W x D x H) : 1070 x 90 x 1447mm
- Resolution : 1920 x 1080pixels
- Brightness : 700cd/m<sup>2</sup>
- Touch screen : 42" IR Touch (2point)
- Embedded CPU : Intel I3 / Memory 2GB / SSD 64GB / Win 7 EM

# **EFFECTS**

### **Expected Benefits from Smart Building Solution**

- The most notable advantage of the smart building solution is the enhancement of building's value which will bring significant economic gain to the owner of the building.
- Optimized system of the building provides the well-being life and comfortable indoor environment to the occupants.





### Best Answers to the Energy Saving & Amiable Environment

►Cost down

#### Architectural solution

- Wall insulation
- Double window system
- Insulation film
- ▶10~15% cooling & heating load down

#### Mechanical solution

- Retrofit of cooling system
- Improvement of heating system efficiency
- Heat recovery and heat exchange system
- ▶ 10~20% LNG or LPG consumption down

#### Integrated system

- BEMS, BAS
- EMS, FMS
- ► 10~15% building energy performance improvement

### What is Green Building? Your Benefits

#### Site Planning

- Lower site development costs • Lower site maintenance costs

#### Indoor Environmental Quality

- Healthier environment
- Reduction in sick days, absenteeism
- Higher productivity

#### Water Management

- Lower site development costs
- Lower site maintenance costs

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Maintenance service Regular / Cyclic audit Mechanical system monitoring



Power/ electricity solution

- Sub-station management system
- Inverter control system in pump and fan
- High efficient motor
- ▶10~20% power consumption down

New&renewable energy

- Photovoltaic system
- Geothermal system
- Fuel cell
- ► 10~20% energy saving and less carbon

#### Lighting system solution

- LED lighting
- Lighting auto control system
- ►40~60% lighting energy saving



• 30~50% reduction in use • Lower maintenance costs

Energy

Material Use

• Healthier environment

The value of Building maintenance efficiency Total building performance





Energy consumption Building maintenance cost Carbon emission





# on PROJECTS

### Building Project References

- Intercontinental Hotel Seoul Parnas
- University of Seoul
- e-Mart energy saving Project
- Seoul Fire Station energy saving Project
- Chun An City Hall
- Seoul Metropolitan City Hall
- Seasons City Smart Building Project
- Intiland Smart Building Project
- GMP Tower Smart Building Project





Year	Name	Energy saving system	Investment cost (USD)	Energy Saving (USD)	ROI
2012	Dongjak-gu office in Seoul	<ul><li>Cooling&amp;Heating system replacement</li><li>Heatpump system</li><li>LED lighting</li></ul>	1,500,000	300,000	5
2011	Lotte world	<ul><li>LED lighting</li><li>Heat recovery system</li></ul>	1,787,000	1,200,000	1.5
2010	COEX	<ul><li>LED lighting</li><li>Mechanical system replacement</li><li>Heat recovery system</li></ul>	5,568,000	928,000	6
2010	Grand Intercontinental Hotel in Seoul	<ul><li>Cooling&amp;Heating system replacement</li><li>Water supply system replacement</li></ul>	3,000,000	524,000	5.7
2010	Asan Medical Center	<ul><li>Heat recovery system</li><li>LED lighting</li></ul>	709,000	236,300	3
2010	e-Mart 7 stores in Seoul	<ul><li>Chiller replacement</li><li>LED lighting</li><li>Lighting auto control system</li></ul>	5,600,000	985,000	5.7
2009	Seoul National University Hospital	<ul><li>HVAC system retrofit</li><li>BEMS</li><li>Cooling system auto control</li></ul>	836,000	278,600	3
2009	e-Mart 5 stores in Seoul	<ul><li>Chiller replacement</li><li>LED lighting</li><li>Lighting auto control system</li></ul>	2,800,000	500,000	5.6

# **SOLIDEO SYSTEMS**

We offer expertise in System Integration / Management, ISP / BPR and optimized Solutions. Furthermore, we provide and the right cost for you while allowing to take full advantage of the benefits of your business.



### History

#### 2014

MOU, Kookmin University (Korea) MOU, Altibase for FMS DB (Korea) Participated in the K-BIM R&D (Korea) Certified, CMMi Maturity Level 3

#### 2013

MOU, MLIT for Public Open DB (Korea) Strategic Partnership, Autodesk USA (Pro. tier) MOU, Telkom Akses for Smart Building (Indonesia) 2012 MOU, SK Telecom (Korea) 2011 MOU, LG Hitachi for FMS (Korea) MOU, Tilon for Cloud Technology (Korea) 2010 MOU. Solibri for BIM Solution (Finland) 2009 Participated in the Super-tall building R&D (Korea) 2008 MOU, Tumen city for FMS (China) 2006 Awarded, Korea Software Competition 2005 Selected, Beneficiary of the IT Promotion Fund Certified, Superior New-tec. Company 2001 Corporate Information and Technology Research Institute Established 2000 Registered as Venture Company

1998 Corporate Established

### Taking the lead of e-Government System Projects





# SOLIDEO **SYSTEMS**

Specialist in e-Government System

#### Total e-Government Service Solution



#### Awards

- 2014 Outstanding contribution for the promotion of e-Government Industrial Merit
- International Council for Research and Innovation in Building and National University of Singapore - Overall Winner in BIM Competition
  - Discretionary Award for the Best Case of BIM Use for multi-disciplinary interoperability to enhance safety
- 2011 Excellence Award(Runner-up Prize), Building Smart Korea Organization : BIM Division
- 2010 Public Informatization Award (Seoul Metropolitan City)
- 2009 Technology Commercialization Credit (The Ministry of Knowledge Economy)
- The Best Demonstration Award, 2009 e-Challenges, 'Seumter' Architectural Administration System Grand Prize, Excellent Administrative System Competition – Integrated Facility Management System for Computer Information System Department (Youngdeungpo-gu, Seoul)
- 2008 Contribution for the implementation of information society Presidential Citation
- 2007 Prime Minister's Award, Evaluation of e-Government Promotion Outstanding results among 31 e-Government projects (Ministry of Construction and Transportation)
  - Grand Prize, Representative Brand Competition for Government Innovation Internet construction administration system "Seumteo" (Ministry of Construction and Transportation)
  - Prime Minister's Award, 10th Autonomous Informatization and Innovation Competition Fast and convenient administration portal service (Gwangmyeong City, Gyeonggi Province)
  - Presidential Award, Outstanding Innovation Case Competition 2007 for Local Administration Instant civil service request processing system (Cheongju City, Chungbuk Province)
- Outstanding e-Government Case, The 3rd Digital Asia e-Government Summit Conference Internet 2006 Architectural Information System (Ministry of Construction and Transportation)
  - Operated study trip by international students studying the administration manager course ACE Project Development to Realize Digital Cheongju, Cheongju City.
- 2005 2005 Informatization Annual Meeting and Outstanding Case Presentation Session Social Safety Net System (Jung-gu, Seoul)
  - Prime Minister's Award, 8th Autonomous Informatization Innovation Contest Integrated Internet Tax Information Service (Cheongju City)
- 2004 Minister's Award for the case of outstanding informatization by local autonomy
- **2003** Selected, Gangnam-gu Project as the best informatization by local autonomy
- Awarded by Gangnam-gu Office for successful completion of STAR project (Gangnam-gu ISP)

- based official document issuance system official document issuance system.
- 2001 • Selected, Gangnam-gu Project as the best informatization by local autonomy
- 2000 (AIS)
  - Transportation

### Advanced Technology

#### PATENT

- 2014 Method for providing data included in BIM(Building Information System) modeling data file, recording medium thereof, system using the method, and method for providing data (Japan 5576455)
- 2013 Method and its system for facility management (US 8,396,887 B2) (Japan 5399503) Method of supplying data from BIM server to clients on request (10-1230929) Method for providing BIM (Building Information Modeling) data,
- its recording medium , and the system operations (10-1235042)
- 2012 Method for attribute-based data feeding for BIM and its management system (10-1117232)
- Data updating device, update method and its media (10-0927137) 2009 2007 Method for file creation to use raw data (generic information )
- (10-0728548)
- 2006 Document management and its storing devices (10-0628558)
- 2004 Method for Internet-based drawings through real-time collaboration and the operations of communication system (0419400)

#### PATENT PENDING (INTERNATIONAL)

#### 2012 USA, EU, China, Singapore, Philippines, Vietnam

- Method for providing data included in BIM (Building Information System) modeling data file, recording medium thereof, system using the method, and method for providing data
- 2011 China
  - Method and system for facilities management

#### PATENT PENDING (DOMESTIC)

- 2013 Facility management system and its service delivery mechanism
- 2012 Method for providing BIM data

• Presidential Award, Outstanding Local Informatization Case Presentation Contest, Integration of administrative information systems and Internet-

• Chairman's Award for anti-corruption efforts in the public area, the National Commission for Rebuilding Korea – Architectural Information System

Award for anti-corruption efforts, Presidential Commission on Anti-corruption – Architectural Information System (AIS) (Ministry of Construction and

• Award of Excellence for innovation in public domain, The Ministry of Planning and Budget – Architectural Information System (AIS)

#### CERTIFICATION

2014 2013 2008 2007 2006 2005	IFC 2X3 (International Building SMART) : ArchiBIM Server V1.0 IFC 2X3 (Building SMART) : ArchiBIM Server V1.0 Good Software : ArchiFMS Good Software : ezDAS Good Software : ArchiHARD Good Software : ArchiView web
REGIST	TERED PROGRAM
2013 2012	ArchiBFMS (Building Facility Management System) V1.0 ACS (Architecture code Checking system) V1.0 ArchiFMS V1.0
2009	ArchiBIM Server V1.0 ArchiBIM Analyser V1.0 ArchiBIM Viewer V1.0 ArchiIBS V1.0
2008	ArhciFMS Univ. V2.0 UrbanFMS V1.0 UrbanFMS GOV. V1.0 KosCon. V2.0
2007	ArchiCNS Enterprise V1.0 NameCon. V1.0 LayCon. V1.0 PdfCon. V1.0 TifCon. V1.0
2006	ArchiFMS Univ. V1.0 KosCon. V1.0
2005	ArchiHARD ArchiCAFM Archiview Web 3D ArchiviewKOSIDIC
2004 2003 2002 2001	Sysconn ezDAS ArchiViewWeb 1.0 ArchiView1

# SOLIDEO SYSTEMS

### The competitive edges for your business

Solideo Systems brings you the most advanced software solutions.

#### ArchiView web

Viewing solution that enables convenient review on the web of various digital files for drawings, documents, images developed in the course of information systems projects





#### ArchiHARD

A solution to management of drawings and document creation, which brings the entire capacity of data through the internet to your favorite browser

#### ez-DAS

Multi-dimensional hands-on analysis, which enables to integrate the bulk of accumulated data into meaningful information.





### ArchiFMS

A total solution for the integrated management of building facilities and construction facility assets, which enables to manage all the spatial information of the buildings in public, private sectors.

### ArchiBIM

BIM solution, which consists of ArchiBIM Viewer, ArchiBIM Server, ArchiBIM Analyzer is especially useful for visual review of the data, efficient management, and quality assessment.



