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## Utilizing of information in potato production

## 信息科技在马铃薯生产中的应用

- a-Lab Oy Ltd



# What information? 信息类型

- Weather and soil conditions (automated collection)  
天气和土壤条件(自动收集)
- Harvesting and storage conditions (automated collection)  
收获和贮藏条件(自动收集)
- Use of fertilizers/chemicals (manual input/collection)  
化肥/化学制品的使用(人工输入/收集)
- Packing/processing line quality/quantity data and potato origin (growth place) information.  
包装/处理生产线质量/数量数据和马铃薯的产地等信息



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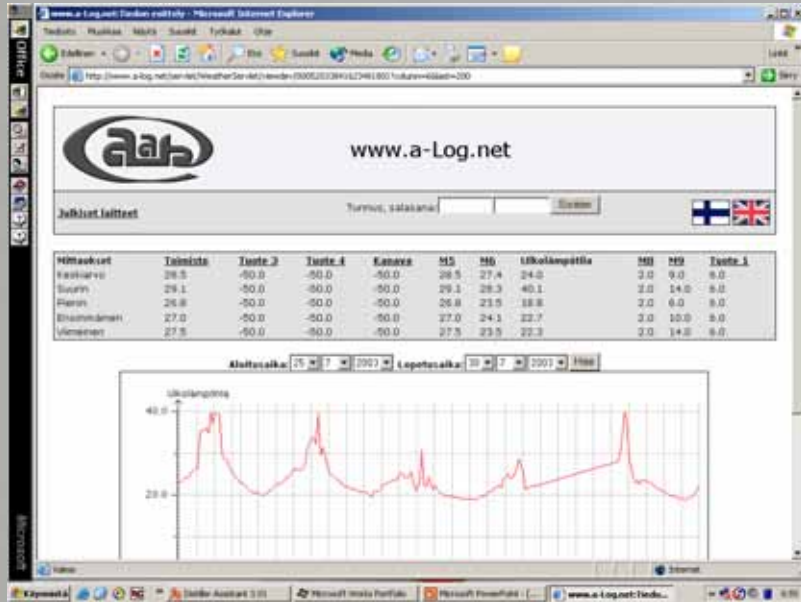
# Weather and soil conditions

## 气候和土壤条件



### Wireless and automated weather station network

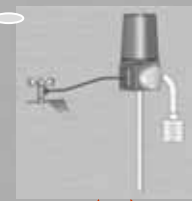
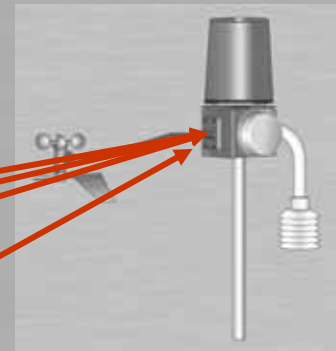
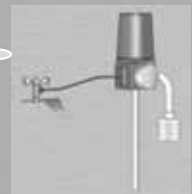
### 无线和自动化的气象工作站网络



WWW



GSM



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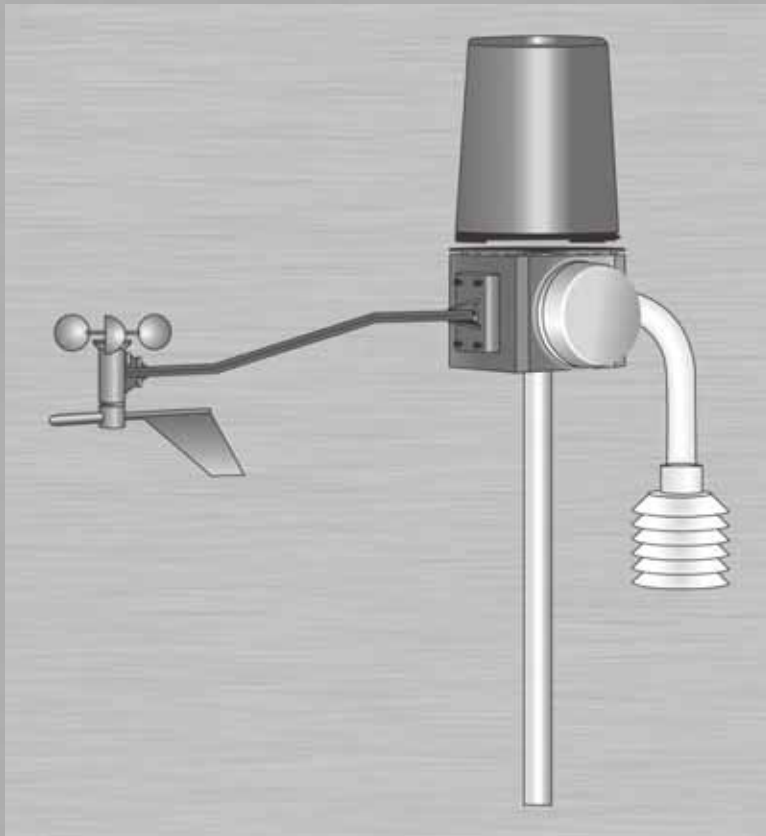
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# Weather and soil conditions

气候和土壤条件

## ● Automated weather/soil stations

自动化的气候/土壤工作站



## a-WeatherStation 气象工作站

a-WeatherStation can measure tens of parameters and send recordings to **a-Log.net** data server.

数据测量,记录和传送

### Measurements 测量

- Air temp.& humidity, max. 16 sensors 气温,湿度
- Soil temp. & moisture - max. 16 sensors 土壤温度和湿度
- Rainfall, wind speed & direction 降雨量,风速和风向
- Light, leaf wetness, pressure, salinity 阳光,叶面湿度,压力,盐度

### Alarms 报警信号

- All parameters can generate alarm message 所有参数可以产生报警信号
- Plant disease or pests risk calculations 植物疾病或有害物威胁统计
- Day degree sums, night frost prediction 日度总和,夜晚霜冻预测
- Suitable spraying weather prediction 适合的喷雾天气预测





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# Weather and soil conditions

## ● Wireless soil condition measurement network



a-SoilSensor measures soil temperature, soil water content and micro-climate temperature and humidity/dew point  
土壤感应器测量土壤温度,水分含量,微气候温度和湿度/露点

### a-SoilSensor 土壤感应器

Measures 1...4 parameters and sends readings to the a-WeatherStation and further on to the a-log.net data server.

测量参数并传送数据至气象工作站,最后传送到数据服务器

### Measurements

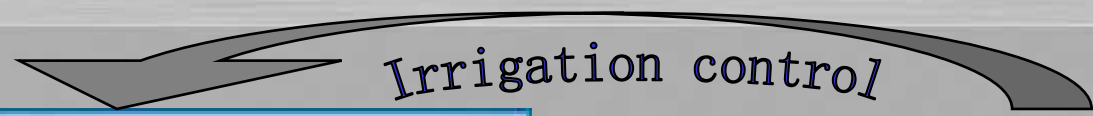
- Soil temperature 土壤温度
- Soil water content 土壤水分含量
- Crop micro-climate air temperature 农作物微气候空气温度
- Crop micro-climate air humidity/dew point 农作物微气候空气湿度和露点



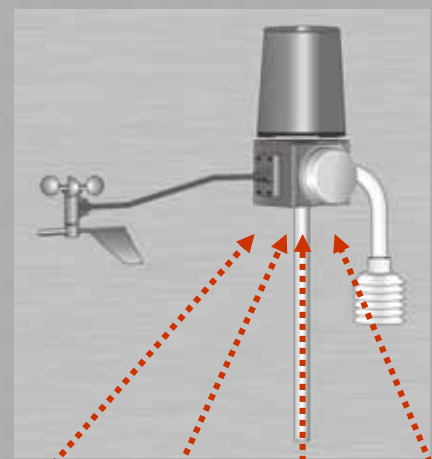
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# Weather and soil conditions

- Irrigation control 灌溉控制



Irrigation control



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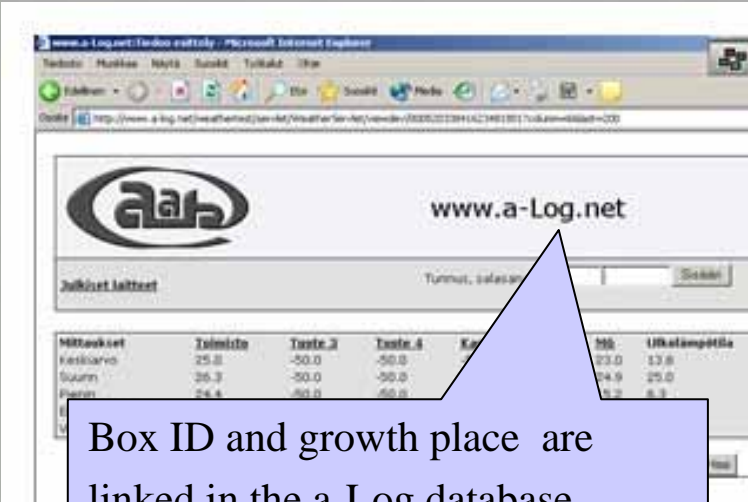




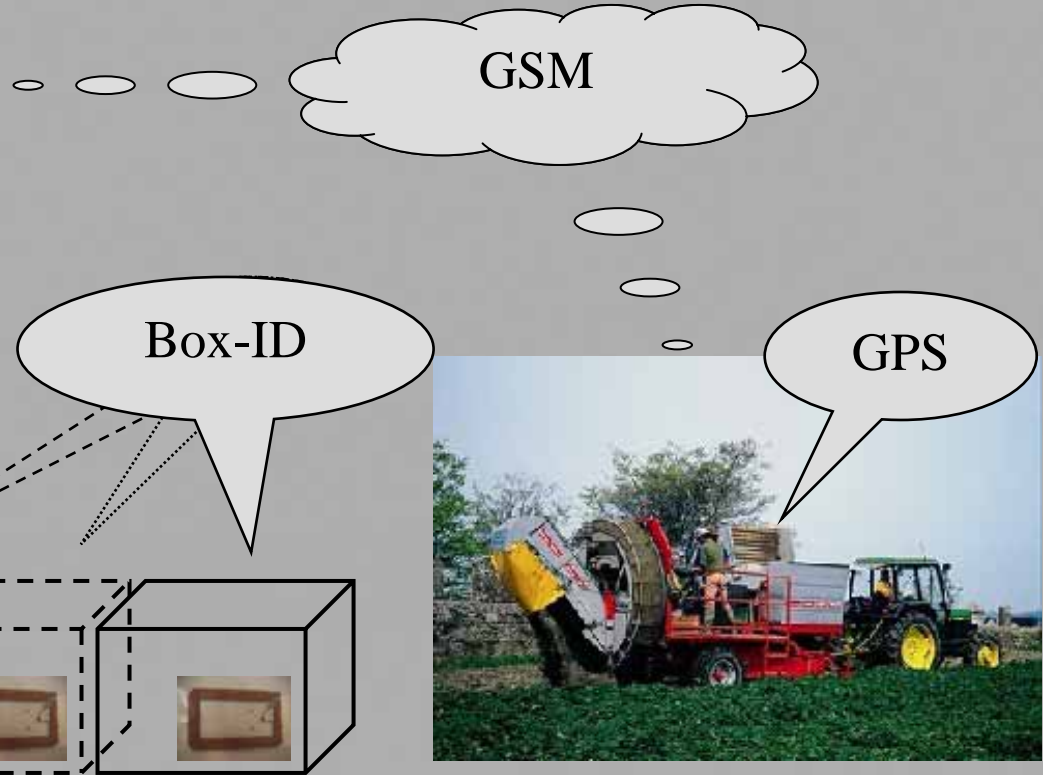
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# Harvest time data 收割期数据

- Harvester saves growth place for every box  
收割机保存每箱产品的生长地点
- Boxes have RFiD-labels for automated recording  
每个箱子都有RFID标签自动记录



Box ID and growth place are linked in the a-Log database  
箱子标签和生长地都联接到数据库







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# Harvest time data



- Box ID and growth place are linked in the database

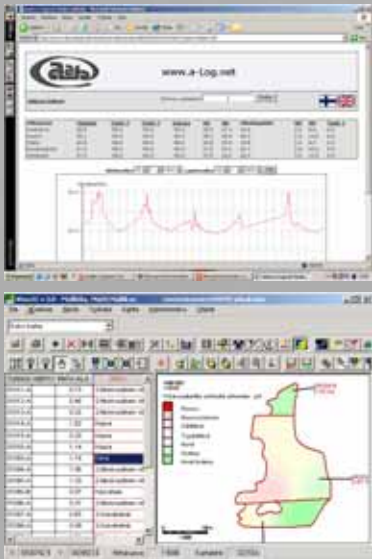
数据库中箱子标签和产地信息相关联

- Weather/soil data is linked with growth place in the database.

数据库中气候和土壤数据与产地信息相联接

- Field section is linked with box ID in the database.

田地部分信息和箱子标签相联接







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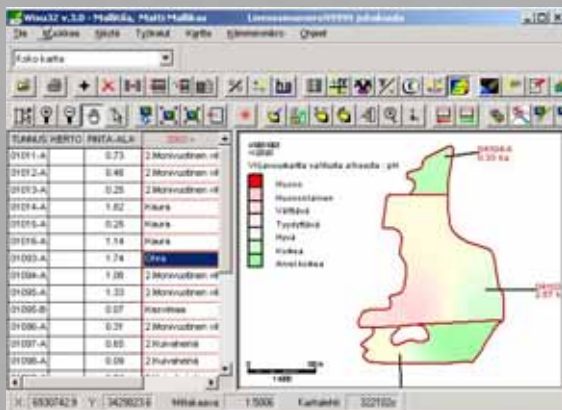
# Use of fertilizers & chemicals

化肥和农药使用



- Location data is recorded during fertilizer spreading and chemical spraying and stored into database.

施放化肥,农药的位置信息都会记录在数据库中



- Field section data and box-ID are linked in database to form traceable chain for potato origin and growth method information.

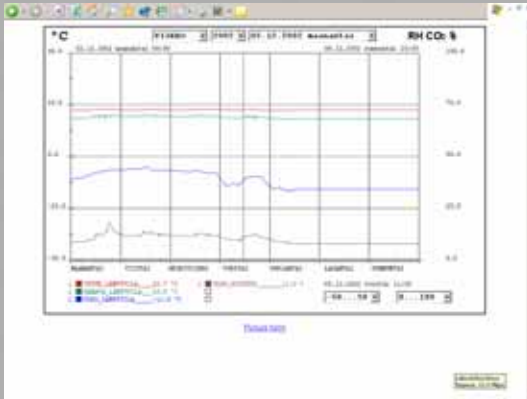
数据库中田地部分数据和箱子标签相联接,形成关于马铃薯从开始到生长方式的全部信息跟踪链



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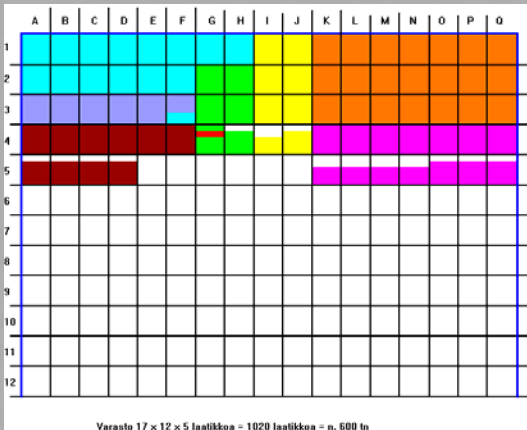
# Storage conditions & logistic data

贮藏条件和运输数据



- Storage conditions are recorded accurately and linked with growth place & weather data.  
贮藏条件准确的记录并与生长地和气候信息相联接

- Box-ID and storing place are linked.  
箱子标签和贮藏地相联接



- Linking field section data and storage place data can help logistic problems in operations handling large number of boxes.  
在处理大量产品箱的操作中,田地数据和贮藏地数据相联接可以解决很多物流问题

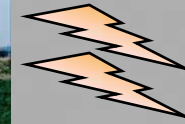
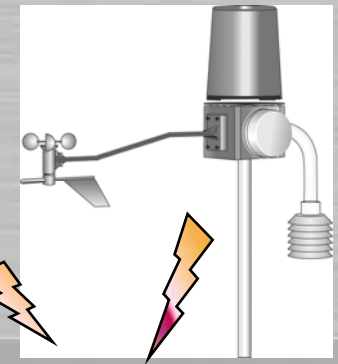
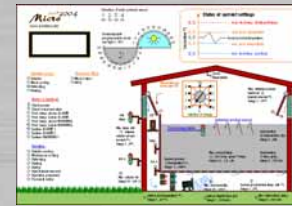


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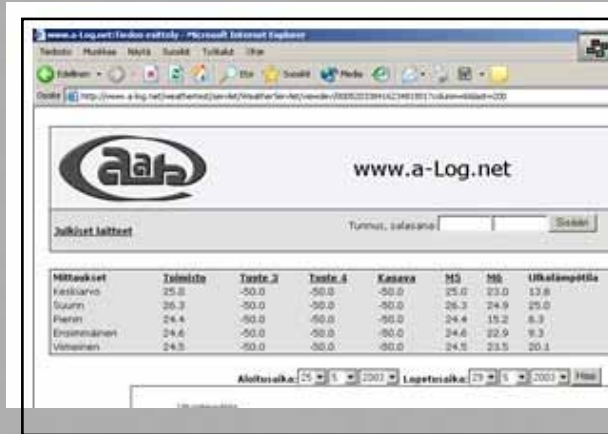
# Principal of a-log.net server

数据网络服务器

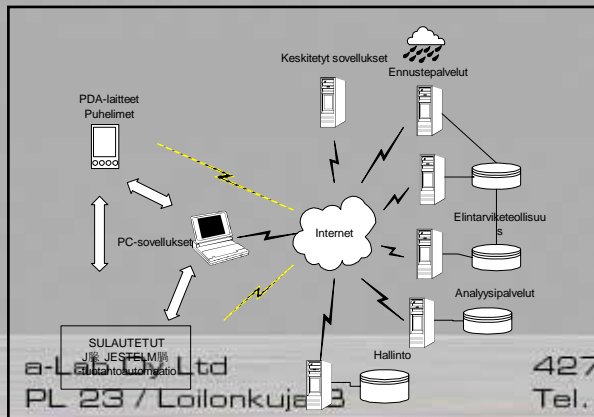
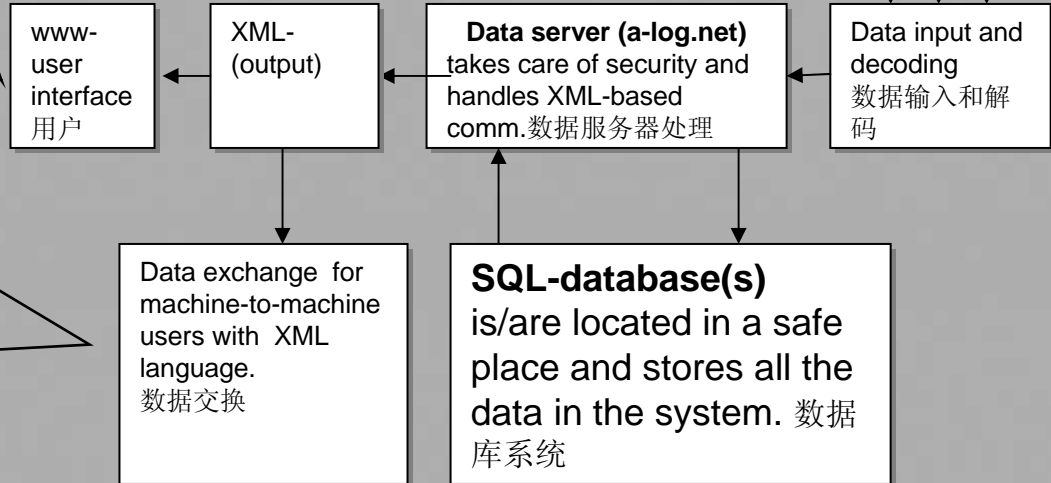
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Field data gathering trough GSM network  
数据采集通过移动网络



## Data server a-log.net



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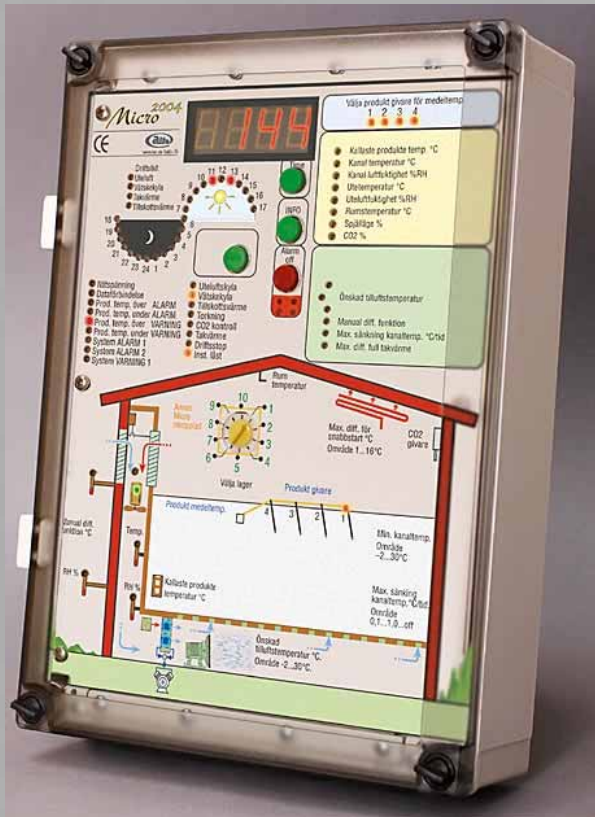




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# The good potato storage controller...

## 马铃薯贮藏控制器



- is reliable and has accurate sensors, i.e. temperature measurement accuracy better than 0,2°C  
可靠准确的感应器
- is very easy to use  
方便使用
- is programmed to a local conditions, not for "general purpose control".  
可根据当地条件设置
- has a sophisticated warning and alarming system  
有先进的警告和报警系统

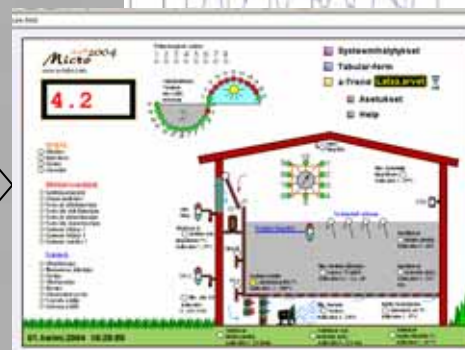
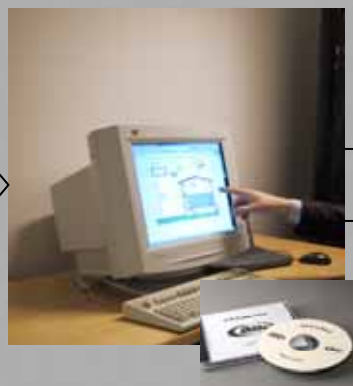
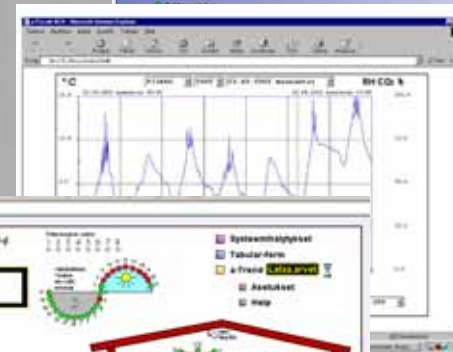
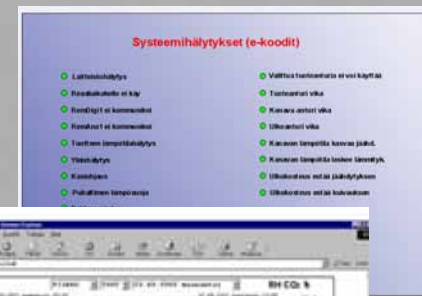




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# The good potato storage controller...

- Provides different ways to control the storage  
提供多种方式控制贮藏



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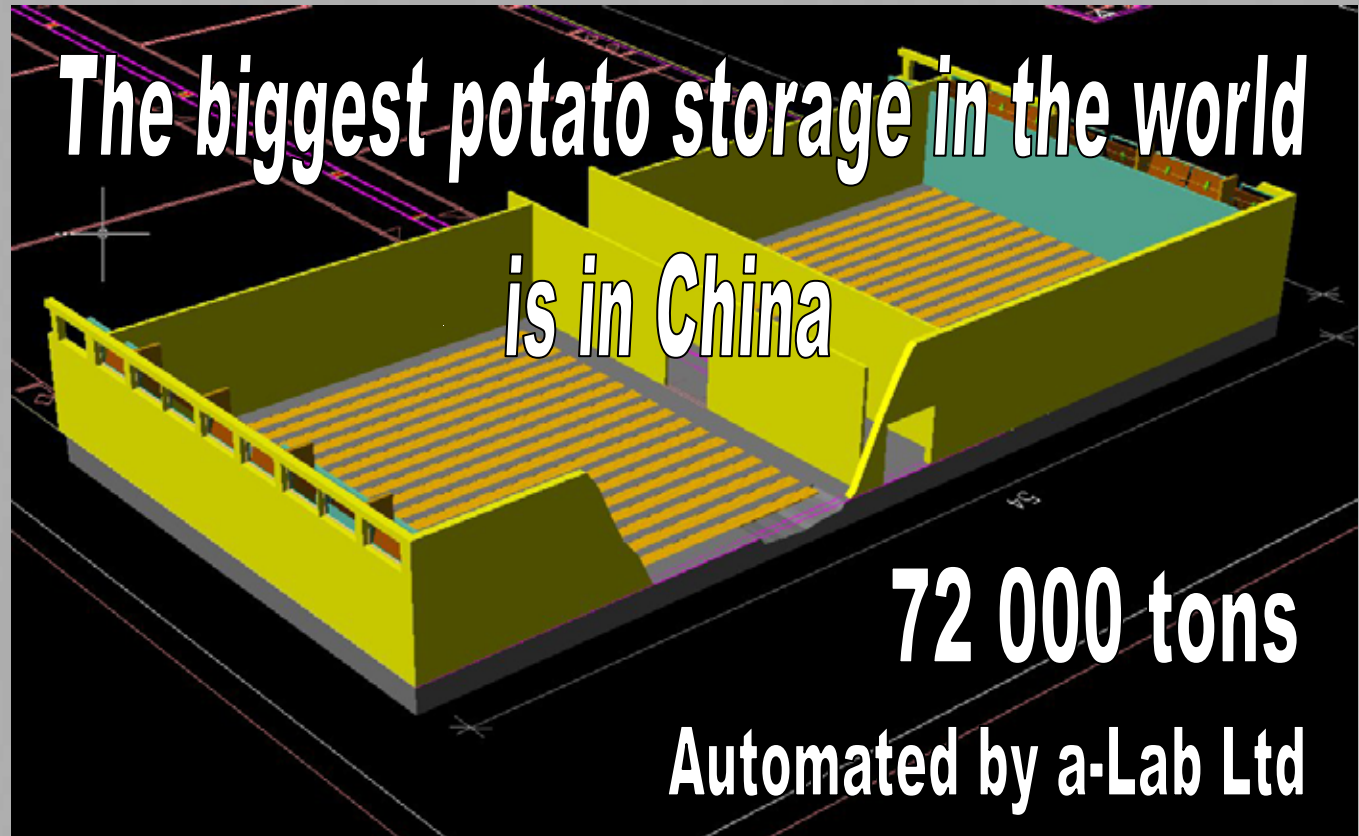
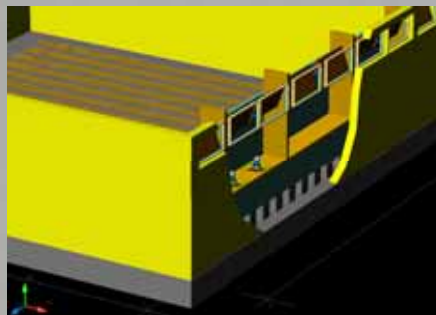
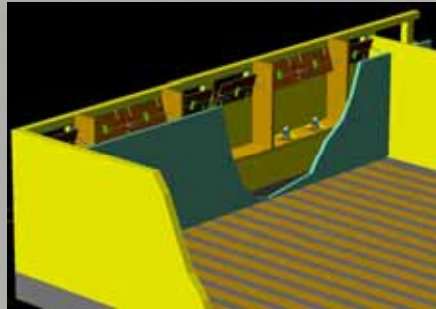
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# For a bigger and smaller storages...

- Use only the best designers!



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# For more information, please ask for a brochure...

Broshures available

- Chinese
- English

**e-Wireless Growing**  
Odlings- och väderdata - Direkt från fältet till Internet och användaren.

**a-Weather**  
den revolutionerande väderstationen

**e-Weather Station**

- skickar väder- och jordfuktdata via GSM till Internet-databasen, tillåtet via GSM-internet
- levereras med alla nödvändiga detaljer till exempel av leverantören, "paketet" innehåller även "användarmanualer"
- övervakar väderförhållanden och skickar omgående larm till användaren (SMS, e-post, ljud, ljus, vibrationer, temperaturer, etc.)
- fungerar utan extern strömförsörjning
- batteridrivet en gång per år
- låg inlägspris och tillförlitlig drift i alla väderförhållanden

**www.e-log.net**

- servern gör väder- och jordfuktdata om till digitalt data som kan användas i en dator, PC, mobiltelefon, Digital-TV, Internet etc.
- all information lagras i en säker databas och kan tas fram efter flera år för bearbetning
- informationen kan också laddas ned till kundens datorsystem

<b>Vind</b> • hastighet • riktning	<b>Luft</b> • temperatur • luftfuktighet	<b>Nederbörd</b> • tid • millimeter	<b>Jord</b> • temperatur • vatteninnehåll • ledningsförmåga	<b>Jern</b> • jernprocent • andra jordämnen • säkerhetsdata	<b>data &amp; programmer</b> • linjära data-insamling • flexibla data-insamling
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**e-Wireless Growing**  
Odlingsdata - lagerinformation direkt till Internet och användaren

**Micro 2004+**  
högteknologisk lagerstyrning

Snabbt att lära, lätt att använda - utan manualer

**Levereras med**

- 2. Message mobiltelefon / 7. mobiltelefon (GSM / Internet)
- gratis och program för att förbereda väderdata (konfigurerad program under installationen)
- baklogg system för väder och jordfuktdata (historik, temperatur, luftfuktighet, väder, jord etc.)

Tillval: **www.e-log.net - service**

- väder- och jordfuktdata från server till en mobiltelefon eller terminal (PC, mobiltelefon, Digital-TV, Internet etc.)
- lagrar data i en säker databas. Data kan tas fram efter flera år för bearbetning. Data kan också laddas ned till kundens datorsystem

<b>e-Log.net</b> • databas • Internet-databas server	<b>PC-länk</b> • digitala data-insamling	<b>väderstation/ jordfukt</b> • väder- information • besökslogg av informationer	<b>term</b> • lagringsdata • 24 timmars övervakning • skriptprogram, etc.	<b>algoritmer</b> • program för beräkning av informationer	<b>a-Gate</b> • PC-anslutning • server-anslutning • Internet-anslutning
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