

# Smart Menu Solution Project

## Evaluation Schemes

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## iMenu



- *Bach Hop company (BICWeb.VN).*
- *Choosing dishes through IPAD or another tablet.*
- *Lowering investment cost.*

## iMenu



- *iMenu system is installed on server.*
- *Application runs on IPAD/Tablet (Client) though server.*

# Introduction

# Existing System

## ezMenu



Nhà bếp

Bàn số	Món ăn	Số lượng	Đầu bếp	Phục vụ
1	Bò lúc lắc	1	Nguyễn Châu Á	Phan Ánh Vi
1	Tiger	1	Lý Thu Dung	Phan Ánh Vi
1	Gà xé phay	5	Phạm Ngọc Lệ	Phan Ánh Vi
2	Hèo nướng	1	Vũ Hoàng Hoa	Phan Ánh Vi
6	Tiger	1	Lý Thu Dung	Hồ Mai Liên
5	Hèo quay	1	Vũ Hoàng Hoa	Hồ Mai Liên
5	Bò nướng	1	Nguyễn Châu Á	Hồ Mai Liên
5	Bò lúc lắc	1	Nguyễn Châu Á	Hồ Mai Liên
5	Bò nướng	1	Nguyễn Châu Á	Hồ Mai Liên
3	Gà xé phay	1	Phạm Ngọc Lệ	Trần Lê Nga
3	Hèo nướng	20	Vũ Hoàng Hoa	Trần Lê Nga
3	Cá chẽm	10	Vũ Hoàng Hoa	Trần Lê Nga
3	Hèo quay	30	Vũ Hoàng Hoa	Trần Lê Nga

Thu ngân (BichHanh-PC) Số kết nối: 1





# Introduction Idea

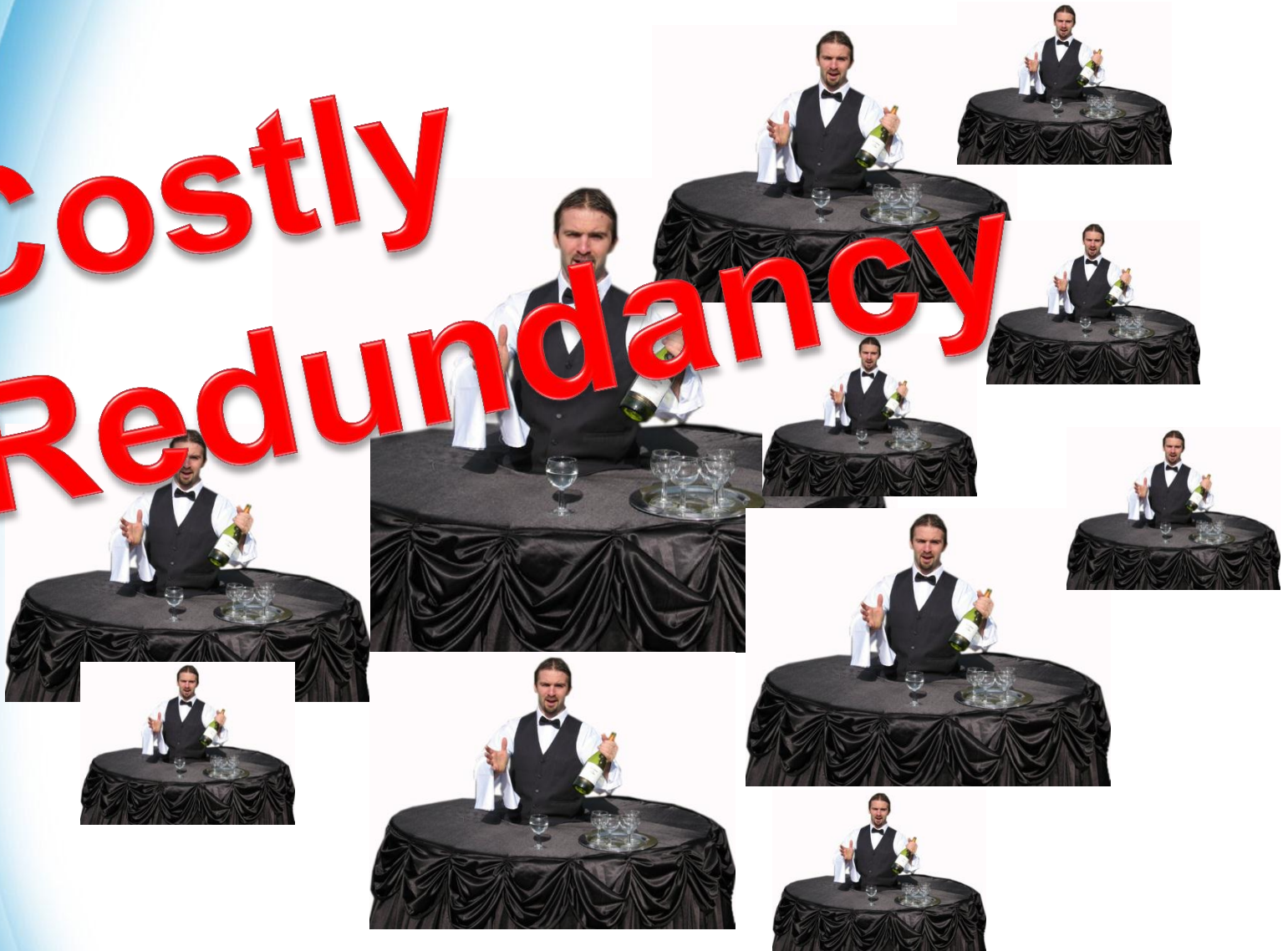


**Waste time**



# Introduction Idea

# Costly Redundancy



# Introduction Idea (cont)

## 1. Actual needs:

- *Lost time for waiting to note orders.*
- *Have errors and lead to debate later when notes by papers.*
- *Lost money and hard to control a lots waiter.*

## 2. None of the existing system is widely applied in Viet Nam because:

- *Price,*
- *Functionality,*
- *Usability, etc.*

→ **The market is still available for our product.**



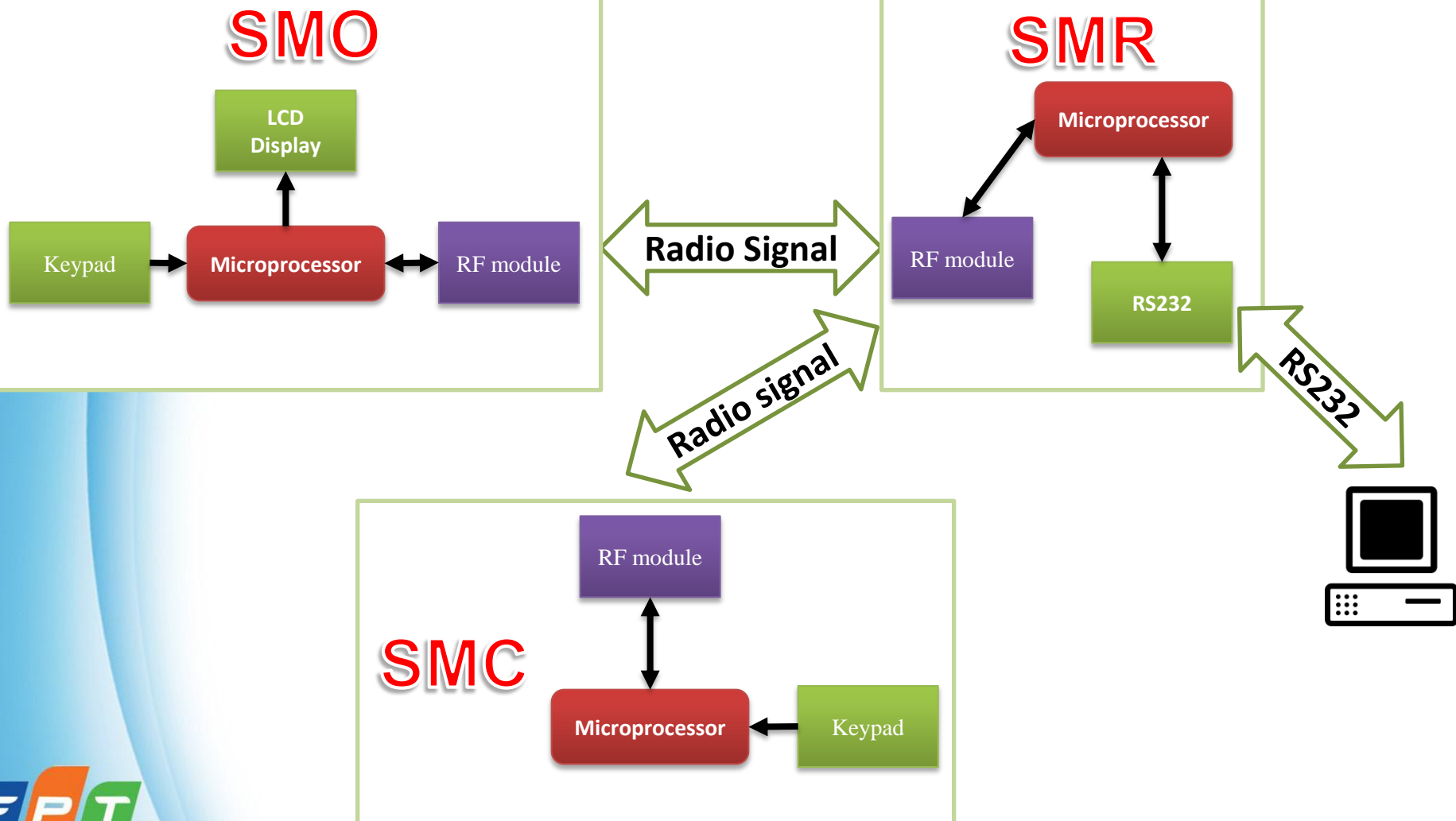
# Introduction Scope

1. *Provide the basic functions:*
  - **Ordering:** *Provide a new electric device replace a traditional ways in ordering dishes.*
  - **Management:** *Provide a window management software to manage orders, billing, statistic and automatically distribute dishes to chef.*
2. *Research & apply formal methods development (Yakindu) into executable embedded system.*
3. *Provide a long-term stable system.*
4. *Have acceptable price.*

# Scope



# Introduction Product

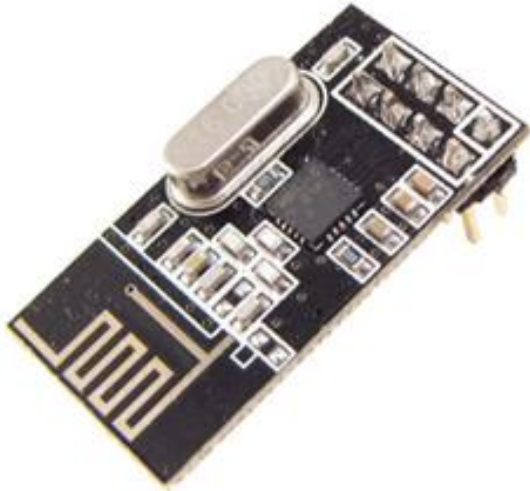




ATmega128-16AU

- High-performance, Low-power AVR® 8-bit Microcontroller
- High Endurance Non-volatile Memory segments
- JTAG (IEEE std. 1149.1 Compliant) Interface
- Peripheral Features
- Special Microcontroller Features
- I/O and Packages
- Operating Voltages: 4.5 - 5.5V
- Speed Grades: 0 - 16 MHz





nRF24L01

- Low cost single-chip 2.4GHz GFSK RF transceiver IC
- Worldwide license-free 2.4GHz ISM band operation
- 1Mbps and 2Mbps on-air data-rate
- Enhanced ShockBurst™ hardware protocol accelerator
- Ultra low power consumption – months to years of battery lifetime

# Hard & Soft Software Study

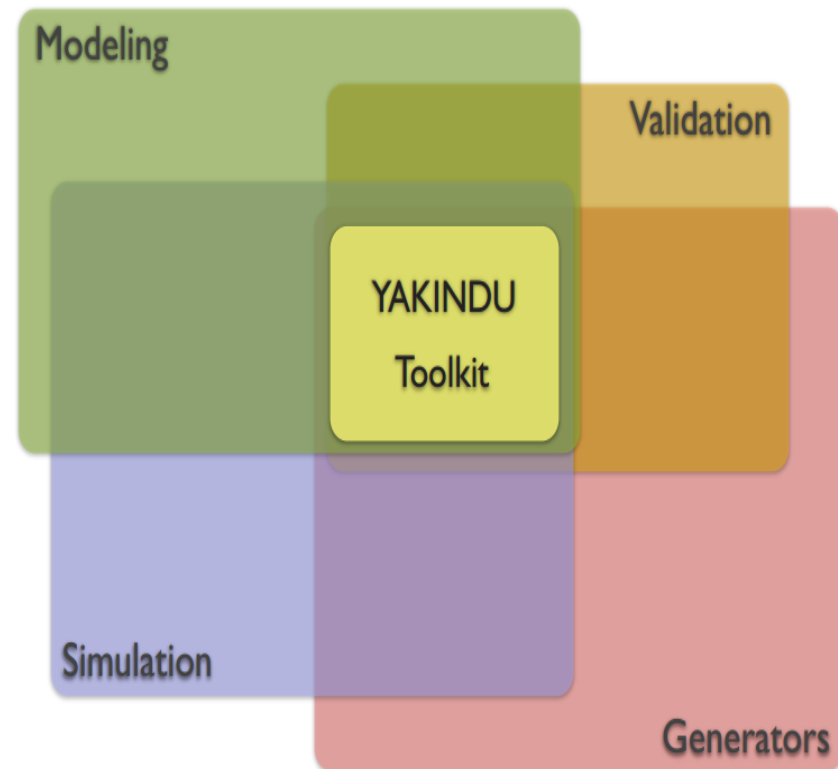
## ❖ What is Yakindu?

1. *Yakindu is a **modular toolkit** for **model driven development** of embedded systems.*
2. *Yakindu is:*
  - *Build on Eclipse.*
  - *Open source.*
  - *Available at Eclipse Labs.*

### Links:

<http://eclipselabs.org/p/yakindu>

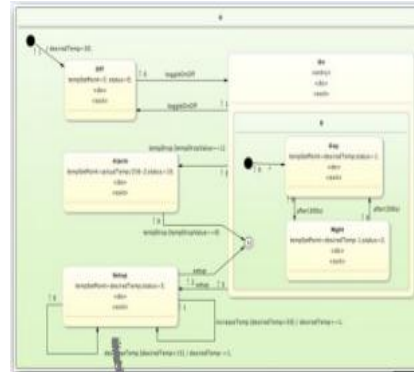
<http://yakindu.org>



# Hard & Soft Software Study

## ❖ Model Driven Development (MDD)

*Abstraction Levels:*



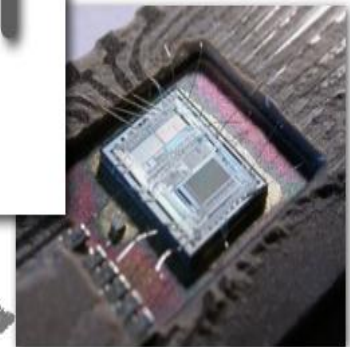
generate

```
average += value;
if (--adcCounter == 0) {
    average = convertADCtoTemperature(
        FIX_FROM_INT(ADC_COUNTER));
    sensor_actualTemperature_send(&average);
    average = 0;
    adcCounter = ADC_COUNTER;
}
```

compile

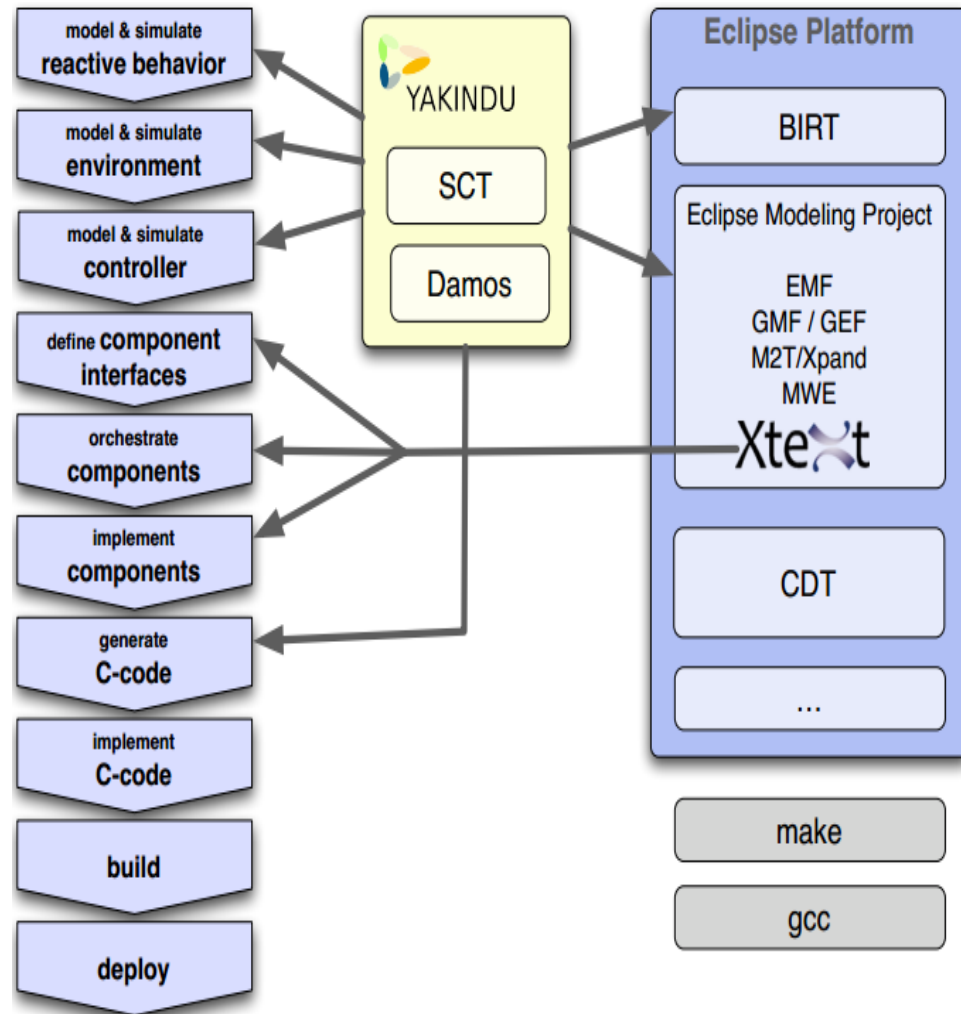
```
lsl r4, r4, #2
movt r0, #upper16:214877907
smull r7, r5, r0, ip
subs r6, r2, r6
mov r7, #2048000
mul r6, r7, r6
asr ip, ip, #31
lsls r7, r2, #10
```

C code as an  
intermediate artifact



# Hard & Soft Software Study

## ❖ Activities & Tools





# Conclusion

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*Q&A*

**Thank you**  
**for your attention!**