

# Adopting STP for diet management

L. Anselma, A. Mazzei, L. Piovesan, F. De Michieli  
 {mazzei,anselma,piovesan}@di.unito.it  
 franco.demichieli@unito.it  
 Università degli Studi di Torino



MADiMAN has been partially funded by Regione Piemonte, Innovation Hub for ICT, 2011-2014, POR-FESR 07-13.

## The MADiMAN project

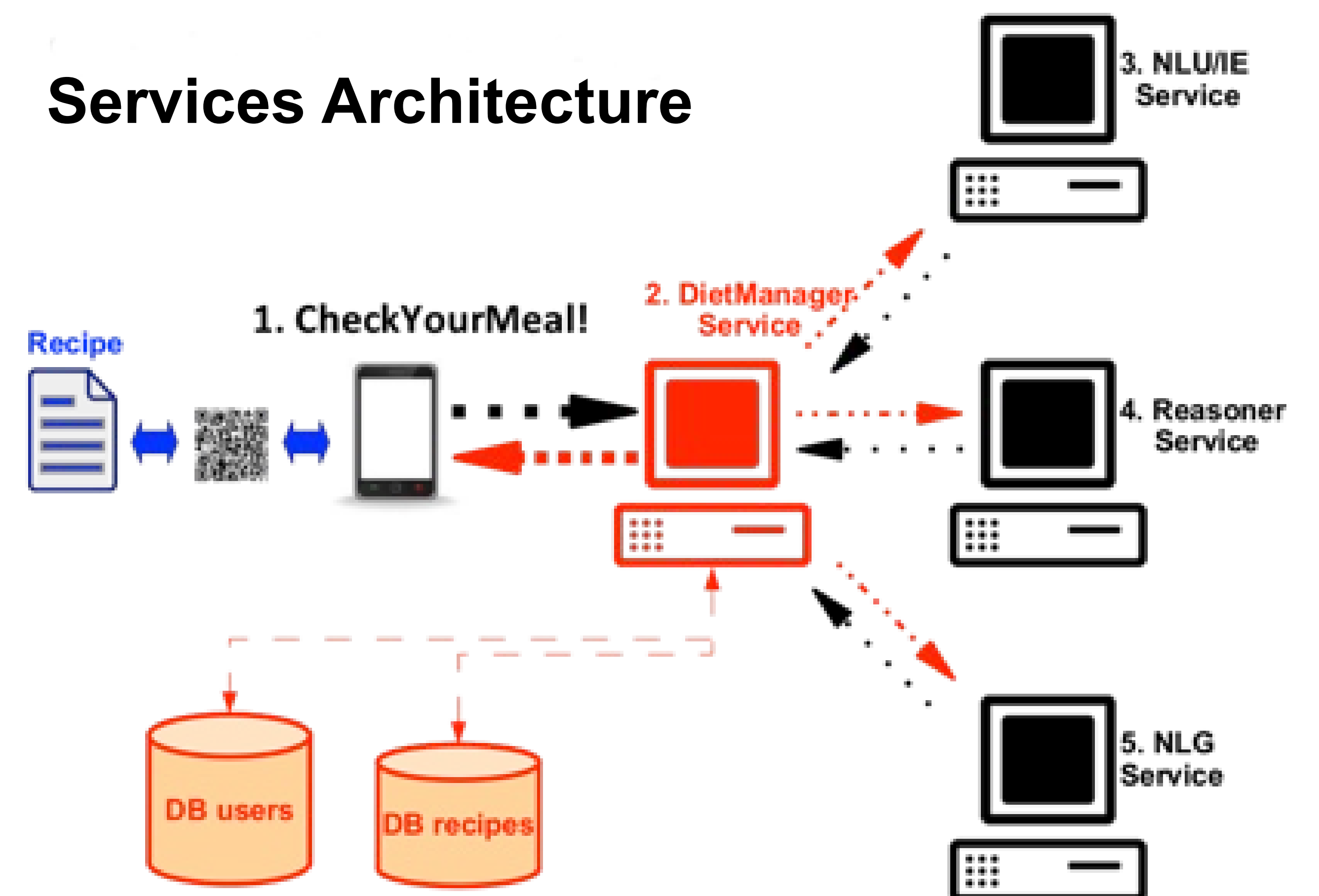
<http://di.unito.it/madiman>

Artificial Intelligence for diet management

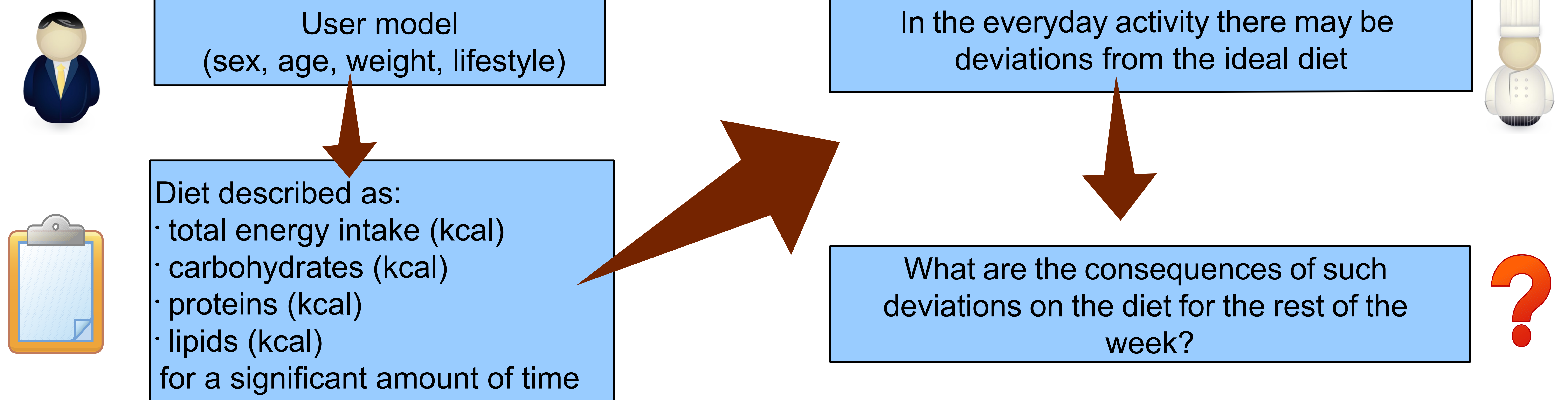
- NLP for recipe analysis
- Automate Reasoning about diet and recipes
- Persuasive multimedia NLGeneration

Cloud Architecture

## Services Architecture

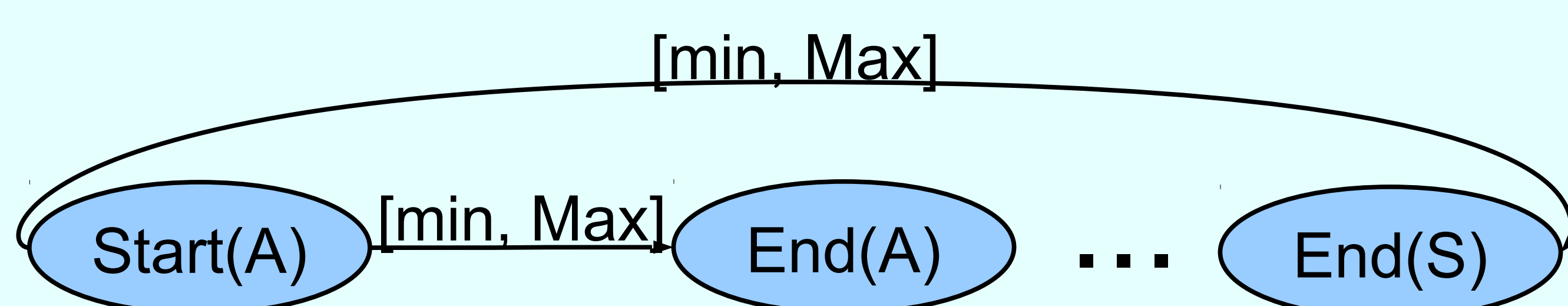


## The problem



## STP for diets

Simple Temporal Problem

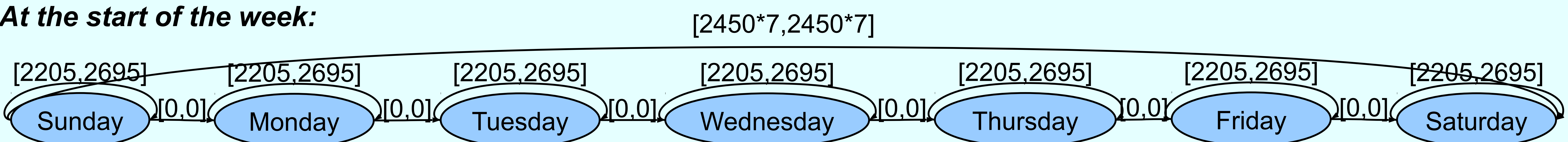


The constraint propagation (Floyd-Warshall's all-pairs shortest paths,  $O(n^3)$ ) checks the consistency and gives the minimum and maximum distance between each pair

*We adopt STP and represent **energy (kcal) instead of time***  
*We impose the strict dietary constraints over a week, and allow a deviation of  $\pm 10\%$  a day*

**Example:** John, 40-year-old male, 1.80 m tall, weighs 71.3 kg, sedentary lifestyle.  
 Total energy requirement: 2450 kcal/day (at the moment we neglect the breakdown in macronutrients)

At the start of the week:



Assuming that John ate 2690 kcal on Sunday, Monday and Tuesday and propagating the constraints (only the most significant edges are shown): John has to eat 2270 kcal/day and for reaching such goal he has to eat between 2205 and 2465 kcal/day

