



[www.visceral.eu](http://www.visceral.eu)

## Plan and Call for Participation for Competition 1

<b>Deliverable number</b>	<i>D5.1</i>
<b>Dissemination level</b>	<i>Public</i>
<b>Delivery date</b>	<i>21 December 2012</i>
<b>Status</b>	<i>Final</i>
<b>Author(s)</b>	<i>Bjoern Menze</i>



*This project is supported by the European Commission under the Information and Communication Technologies (ICT) Theme of the 7th Framework Programme for Research and Technological Development.*

*Grant Agreement Number: 318068*

## **Executive Summary**

This deliverable presents a detailed planning and timeline for the organisation of the first Competition, as well as a Call for Participation to be publicly distributed.

## **Table of Contents**

<b>1</b>	<b>Timeline and Plan Challenge 1 .....</b>	<b>3</b>
<b>2</b>	<b>Call for participation .....</b>	<b>4</b>

# 1 Timeline and Plan Challenge 1

## VISCERAL Identification, Localization and Segmentation Challenge

### Timeline 2013

Jan	Apply for “MICCAI Medical Computer Vision” workshop with dedicated session on VISCERAL Challenge.
Jan	Have annotated reference data sets ready to show case the segmentation and annotation problem to possible participants.
Jan	Approach relevant research groups in the field with a questionnaire to evaluate specific interests in the challenge, and to refine challenge settings to maximize the number of interested participants, if necessary.
Feb/Mar	If questionnaire indicates interest or need for or interest in further discussion, organize workshop for discussing the following topics: a) image data, b) anatomical segmentation and annotation, c) cloud infrastructure d) evaluation measures, e) final publication and dissemination of results.
Jul	Have images and annotations ready for the training data, have finished quality control of image data and annotations.
Jul	Have cloud infrastructure ready and tested, have basic evaluation measures implemented (such as dice scores, or surface distances).
Aug-Nov	Run challenge, provide feedback to participants.
Sept/Oct	Organize workshop session on VISCERAL Challenge at MICCAI 2013 in Nagoya/Japan (if accepted) in order to discuss with challenge participants, and to invite final round of possible participants for challenge 1 as well as advertise challenge 2.


### Timeline 2014

Jan	Apply for “MICCAI Medical Computer Vision” or “MICCAI Image Retrieval” workshop with dedicated session on VISCERAL Challenge.
Mar	Have final publication of challenge 1 ready, e.g., as publication in a journal such as Medical Image Analysis or IEEE Transactions on Medical Imaging, and as volume in a book series, e.g., from Springer.
Sept/Oct	Organize workshop session on VISCERAL Challenge at MICCAI 2014 in Munich/Germany (if accepted) in order to discuss with participants of challenge 1 and challenge 2

## 2 Call for participation



### Identification, Localisation, and Segmentation Benchmark



---

#### Call for participation

While a growing number of benchmark studies compare the performance of algorithms for automated organ segmentation or lesion detection in images with restricted field of views, no efforts have been made so far towards benchmarking these and related routines for the automated identification and segmentation of bones, inner organs and relevant substructures visible in an image volume of the abdomen, the trunk or even the whole body.

In order to gauge the current state-of-the-art in automated whole-body image annotation and compare different methodological approaches, we are organizing the "VISCERAL Identification, Localisation and Segmentation Benchmark". For this purpose, we are making available a large dataset of clinical whole-body MRI and CT scans in which major organs and their substructure have been manually delineated, as well as specific anatomical interest points.

To deal with the large amount of data that are to be processed, we will provide data and computing resources via a decentralized ("cloud") architecture that will provide participants with access both to several hundreds of image volumes and computing resources that will be used for training algorithms and for applying them to the test data.

#### Whole-body image processing

The automated annotation of all anatomical structures in a given image volume provides means, for example, to:

- ⇒ initialize semi-automated algorithms for anatomical annotation, for example, in radiation therapy planning
- ⇒ initialize dedicated algorithms analysing specific diseases and pathologies in a second level
- ⇒ improve the presentation of image information to human interpreter, as well as order and prioritize image information for archiving
- ⇒ transform unstructured image data into structured information, e.g., for image retrieval to access archived information in clinical diagnostics
- ⇒ quantify anatomical structures in vivo from a large collection of clinical images for the first time, and provide technology to do this in the future also for patient populations with diseases that may affect macroscopic anatomy patterns

Moreover, it will allow testing the generalization properties of medical image processing routines and allow identifying general concepts that perform well in a multitude of situations.

---


#### How the benchmark challenge will be organized

The "VISCERAL Identification, Localization and Segmentation Benchmark" addresses researchers in fields such as medical image processing, computer vision, machine learning, image and information retrieval. Routines employed by the participants can process all or few selected anatomical structures or interest points, but must be able to perform their analysis without human interaction on test data similar to the training image.

It will take place from **1 August 2013 to 30 November 2013**. Within this time window participants can set up, optimize, and train their segmentation, detection, or annotation routines. After November 2013 the routines will be applied to the test data and results will be released (see below).

For further information see [www.visceral.eu](http://www.visceral.eu) also providing updates and contact details. We kindly ask possible participants to contact any of the organizers as early as possible.





The VISCERAL Identification, Localization and Segmentation Benchmark is organized as part of the EU FP7 project VISCERAL.

[www.visceral.eu](http://www.visceral.eu)

