# Multiple timestamps

When not only time matter but also space

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# Applications





QC90SV rejecting loose item and damaged pack.
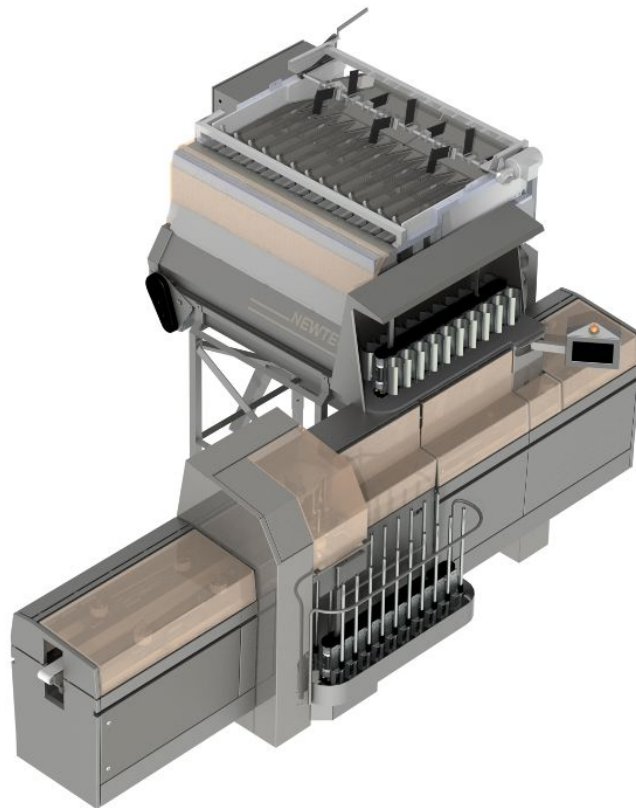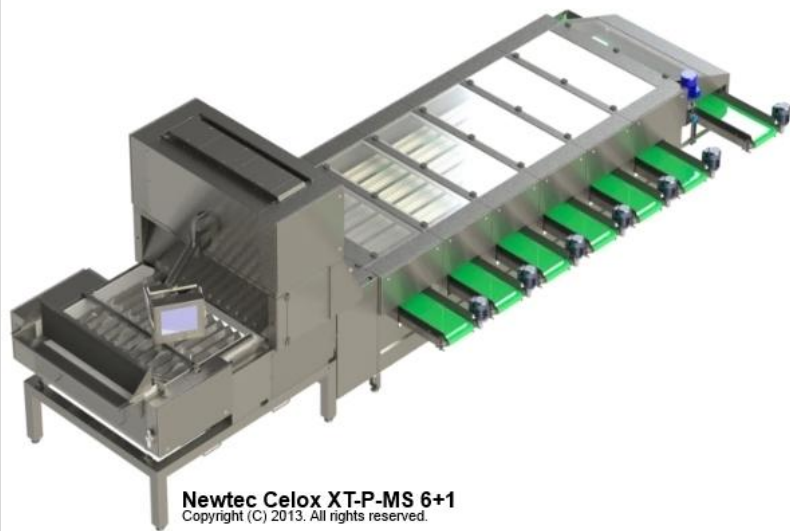
# Today's solution

```
struct v4l2_timecode {
    __u32     type;
    __u32     flags;
    __u8 frames;
    __u8 seconds;
    __u8 minutes;
    __u8 hours;
    __u8 userbits[4];
};
```

- Encoder position is coded in userbits [4]

# Does not fit every machine...



Newtec Celox XT-P-MS 6+1
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# Wait a bit….

We have multiple planes!!!!

**But:**

- Data does not arrive at the same time
    - And latency is very important
- Not supported by many apps
- It is not part of the image

# Proposal 1

New timecode alike structure with bigger size

Cons:
- Waste of space on 99.9999% of the time
- Does not solve the multiple creation time
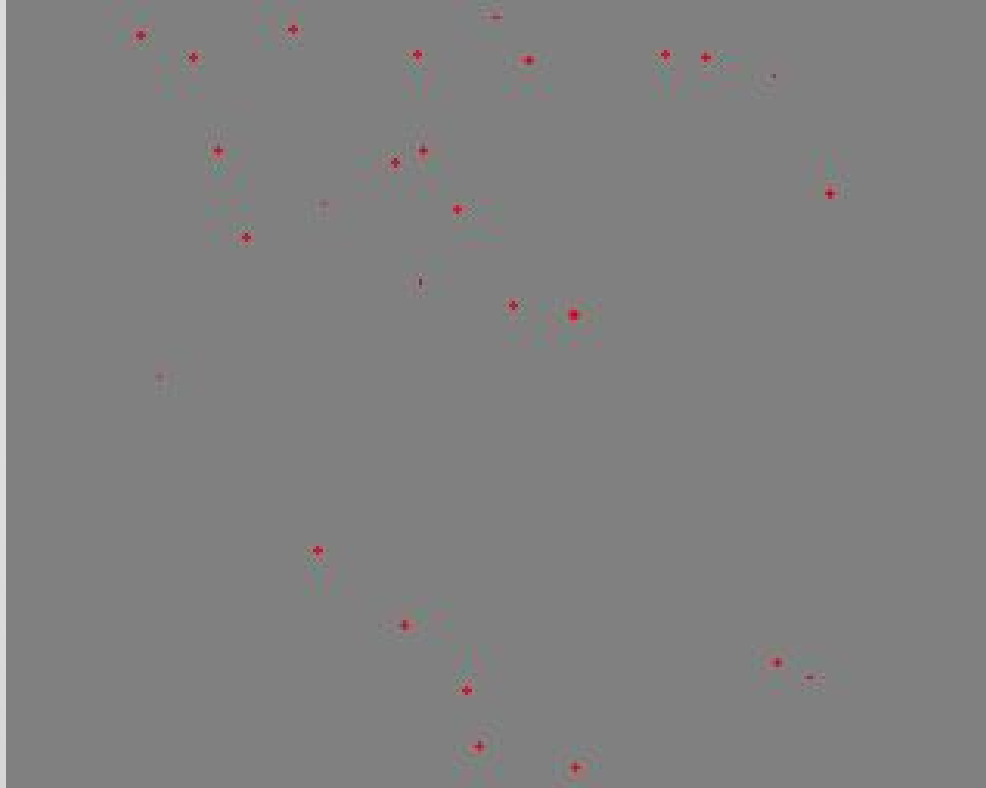
# Proposal 2

- Add new metadata structure to v4l2_buffer

- Add new ioctl VIDIOC_GMETA

- Input: Address of buffer

- Output:
  - Final size

- Blocks
  - Until meta data is ready or
  - Returns ERR when buffer is enqueued

# Dead Pixel API

## When pixels cost 10 cents a piece

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# Problem



- Software correction
- Setup hardware to auto correction
- Ignore non valid pixels/clusters

# Basic approach

- New compound type V4L2_CTRL_TYPE_POINT
  - Already sent 25 July
- New control for DEAD_PIXEL
  - User can read it
  - User can write it (OPTIONAL)
  - User can restore factory settings (OPTIONAL)

# Proposed helpers

- MTD access
- Data types on flash

# Can we go one step further?

- Sensor Metadata

# Big opportunity

- Define a de-facto standard for sensor data
- No more pdf/excel from manufacturers!!
- Global database/Sensor fingerprinting

# Multiple Rectangle Cropping (v2)
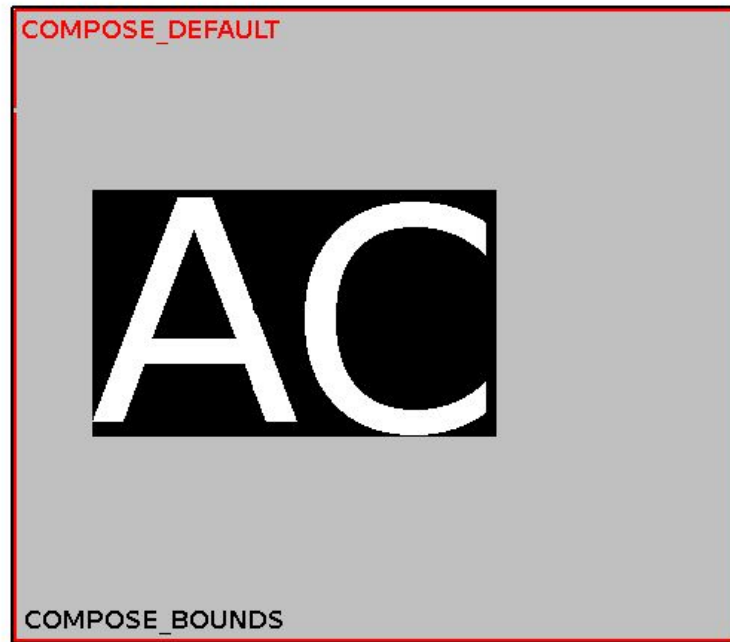
When the interesting data is not contiguous

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# Proposed Capabilities

# Last year RFC (not in upstream)

```
struct v4l2_subdev_selection {          struct v4l2_ext_rect {
        __u32 pad;                              __s32   left;
        __u32 target;                           __s32   top;
        __u32 flags;                            __u32   width;
-       struct v4l2_rect r;                     __u32   height;
-       __u32 reserved[8];                      __u32   reserved[4];
+       union {                         };
+               struct v4l2_rect r;
+               struct v4l2_ext_rect *pr;
+       };
+       __u32 rectangles;
+       __u32 reserved[7];
 };
```

# Lessons Learned

1) The structure had a different size… bad idea
2) Helpers are needed:
   a) Sort sections
   b) Verify sizes
   c) Verify bayer mosaic is not affected
   d) Merge consecutive sections
3) Used in production in around 100 machines

# Present

Hans' Patch:

[RFC PATCH 00/11] Add configuration store support

[RFC PATCH 09/11] videodev2.h: add v4l2_ctrl_selection compound control type.

# What is missing?

- Helper functions
- Support for vivi
- Support for other sensors (Anyone?)
- Split configuration store patchset?
- Automatic call of ctrl code if s_selection is not implemented?